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STATE OF CALIFORNIA
STATE ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

IN THE MATTER OF:

BLACK ROCK GEOTHERMAL
PROJECT APPLICATION FOR
CERTIFICATION

Docket No. 23-AFC-03

COMMENTS OF THE CALIFORNIA UNIONS FOR RELIABLE ENERGY
ON THE PRELIMINARY STAFF ASSESSMENT

September 4, 2024

Andrew J. Graf
Tara C. Rengifo
Kelilah D. Federman
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco, CA 94080
(650) 589-1660
agraf@adamsbroadwell.com
trengifo@adamsbroadwell.com
kfederman@adamsbroadwell.com

Attorneys for California Unions for Reliable
Energy

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EXHIBITS

- Attach. A:** Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from Komal Shukla, Group Delta Consultants re: Review of Preliminary Staff Assessment for Black Rock Geothermal Project (Sept. 4, 2024)
- Attach. B:** Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from James J. Clark, Clark & Associates re: Comment Letter on Preliminary Staff Assessment for the Black Rock Geothermal Project (CEC-700-2024-004-PSA) (Sept. 4, 2024)
- Attach. C:** Letter to Kelilah D. Federman, Adams Broadwell Joseph & Cardozo from Scott Cashen, Independent Biological Resources Consultant re: Comments on the Preliminary Staff Assessment for the Morton Bay Geothermal Project (Sept. 1, 2024)
- Attach. D:** Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Timothy Parker, Parker Groundwater Hydrogeologic Consulting re: Review of Morton Bay Geothermal Project Preliminary Staff Assessment (PSA) (Sept. 4, 2024)
- Attach. E:** Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Bwalya Malama, Professor, California Polytechnic State University, San Luis Obispo, CA re: Review of Morton Bay Geothermal Project Preliminary Staff Assessment (PSA) (Sept. 4, 2024)
- Attach. F:** Letter to Sheila Sannadan, Adams Broadwell Joseph & Cardozo from Geoffrey P. Holbrook, Imperial Irrigation District re: Response to California Public Records Act Requests Dated August 9, August 10, and August 15, 2023 (Sept. 22, 2023)
- Attach. G:** Authority to Construct/Permit to Operate Issued by the Imperial County Air Pollution Control District for Vulcan Geothermal Power Plant (1985)
- Attach. H:** Reference Documents for Comments of the California Unions for Reliable Energy on the Preliminary Staff Assessment

California Unions for Reliable Energy (“CURE”) respectfully submits the following comments on the Preliminary Staff Assessment¹ (“PSA”) for the Black Rock Geothermal Project (“Project” or “Black Rock”).

INTRODUCTION

The PSA prepared for the Black Rock Project fails to comply with the California Environmental Quality Act (“CEQA”).² Despite CEQA’s stringent requirements for thorough environmental review and public disclosure, the PSA lacks comprehensive analysis, overlooks significant environmental impacts, and fails to propose adequate mitigation measures. These deficiencies undermine the core purpose of CEQA, which is to inform decision-makers and the public about the environmental consequences of proposed projects.

Black Rock Geothermal, LLC, an indirect, wholly owned subsidiary of BHE Renewables, LLC (“BHER”) (“Applicant”) filed an Application for Certification (“AFC”) to construct and operate a 87-megawatt (“MW”) electricity generating facility powered by steam sourced from super-heated geothermal brine.³ The Project would be located on a 51-acre portion of an approximately 140-acre parcel in the Salton Sea Known Geothermal Resource Area, in Imperial County, south of the Salton Sea.⁴ Construction and commissioning activities are expected to take approximately 29 months.⁵ These include construction of the power plant facilities, on-site ancillary equipment, gen-tie line, water supply pipeline, conveyance pipeline, a new switching station and drilling operations for production and injection wells.⁶ The Project is designed with an operational life of approximately 40 years.⁷

California Energy Commission (“Commission” or “CEC”) Staff prepared the PSA to evaluate the potential environmental effects of the construction and operation of the Project, in compliance with CEQA, the Warren-Alquist Act, and the California Code of Regulations, Title 20.⁸ The PSA also evaluates whether the construction and operation of the Project would conform with all applicable local, state, and federal laws, ordinances, regulations, and standards.⁹

¹ TN # 257697, California Energy Commission, Black Rock Geothermal Project: Preliminary Staff Assessment (June 2024) (hereinafter “PSA”).

² Pub. Res. Code § 21000 *et seq.*

³ PSA at p. 1-1.

⁴ *Ibid.*

⁵ *Id.* at p. 3-16.

⁶ *Id.* at p. 3-17.

⁷ *Id.* at p. 3-27.

⁸ *Id.* at p. 1-1.

⁹ *Ibid.*

We reviewed the PSA, its technical documentation, and available supporting documents with the assistance of our technical experts, including:

- Dr. Komal Shukla, Ph.D., M.Sc., B.Sc., air quality and public health;¹⁰
- Dr. James J. Clark, Ph.D., M.S. air quality and hazards;¹¹
- Timothy Parker, PG, CEG, CHG water resources;¹²
- Scott Cashen, M.S. biological resources;¹³ and
- Dr. Bwalya Malama, Ph.D., M.S. hydrogeologic resources.¹⁴

Their comments and qualifications are included as attachments. The Commission must respond to each technical expert's comments separately and fully.¹⁵

CURE's comprehensive review of the PSA and the analysis by its technical consultants demonstrates that the PSA fails to comply with CEQA. As detailed below, the PSA improperly piecemeals environmental review of the proposed Project by failing to describe and analyze necessary transmission infrastructure to interconnect the proposed Project to the California Independent System Operator ("CAISO") controlled grid. It fails to adequately describe the Project's water supply and all construction, operation, and decommissioning activities. It fails to describe the existing baseline for sensitive natural communities, special-status plants, and aquatic resources.

Furthermore, the PSA fails to analyze key impact areas and lacks substantial evidence to support its impact conclusions. For example, with respect to air quality, the PSA ignores new federal emissions standards, fails to quantify emissions for all Project-related activities, relies on erroneous meteorological data, does not meaningfully evaluate localized cumulative impacts, and underestimates construction vehicle emissions. With respect to greenhouse gases ("GHGs"), the

¹⁰ Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from Komal Shukla, Group Delta Consultants re: Review of Preliminary Staff Assessment for Black Rock Geothermal Project (Sept. 4, 2024) (hereinafter "Shukla Comments")

¹¹ Letter to Andrew J. Graf, Adams Broadwell Joseph & Cardozo from James J. Clark, Clark & Associates re: Comment Letter on Preliminary Staff Assessment for the Black Rock Geothermal Project (CEC-700-2024-004-PSA) (Sept. 4, 2024) (hereinafter "Clark Comments")

¹² Letter to Kelilah D. Federman, Adams Broadwell Joseph & Cardozo from Scott Cashen, Independent Biological Resources Consultant re: Comments on the Preliminary Staff Assessment for the Black Rock Geothermal Project (July 22, 2024) (hereinafter "Cashen Comments").

¹³ Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Timothy Parker, Parker Groundwater Hydrogeologic Consulting re: Review of Black Rock Geothermal Project Preliminary Staff Assessment (PSA) (July 29, 2024) (hereinafter "Parker Comments")

¹⁴ Letter to Tara Rengifo, Adams Broadwell Joseph & Cardozo from Bwalya Malama, Professor, California Polytechnic State University, San Luis Obispo, CA re: Review of Black Rock Geothermal Project Preliminary Staff Assessment (PSA) (July 29, 2024) (hereinafter "Malama Comments")

¹⁵ Pub. Res. Code § 21091(d); 14 Cal. Code Regs. §§ 15088(a), 15132.

PSA significantly overestimates avoided GHG emissions and fails to analyze whether the Project would result in net GHG emissions over its lifetime. With respect to public health, the PSA fails to analyze meaningfully analyze radon, cumulative public health, and valley fever impacts.

With respect to hazardous waste, the PSA fails to disclose the disposal facility for hazardous waste, omits whether the waste will be recycled during operations, and fails to analyze cumulative impacts from the transportation and disposal of hazardous waste. With respect to solid waste, the PSA fails to adequately analyze the impacts from disposal of nonhazardous filter cake waste and lacks substantial evidence to conclude that cumulative solid waste impacts are less than significant. With respect to transportation, the PSA lacks substantial evidence to support the assumed trip generation rates and selected vehicle miles traveled (“VMT”) screening threshold, and it fails to analyze cumulative VMT impacts.

With respect to water resources, the PSA’s lacks substantial evidence to support its water availability analysis and freshwater volume estimates, fails to disclose and analyze the Project’s water sources and flood risks, omits analysis of the revised brine pond design.

With respect to biological resources, the PSA fails to adequately analyze impacts to numerous special status plant and animal species and their habitat, including the desert pupfish, snowy plover, California black rail, Yuma Ridgway’s rail. With respect to geology, the PSA fails to adequately analyze seismic hazards, surface inundation and liquefaction.

Moreover, the PSA impermissibly defers formulation of solid waste, biological resources, and agricultural mitigation measures. Additionally, the PSA fails to adequately analyze cumulative impacts because it omits the Lithium Valley Specific Plan (“LVSP”), fails to adequately consider existing emissions sources, fails to evaluate cumulative air quality impacts of emergency generation, does not meaningfully analyze cumulative public health impacts, fails to adequately analyze cumulative impacts from transportation and disposal of hazardous waste, omits an analysis of cumulative VMT impacts, fails to analyze cumulative impacts to water supply and the Salton Sea, and fails to adequately analyze cumulative impacts to biological resources. Finally, the PSA lacks substantial evidence to conclude that there is no other potentially feasible alternative that could attain the project objectives while avoiding or substantially lessening any of the project’s significant impacts.

The Commission must revise the PSA to correct these informational and evidentiary deficiencies and recirculate it for additional public review and comment before it can approve the Project.

LEGAL STANDARD

Certified regulatory programs, such as the Commission's power plant site certification program,¹⁶ are exempt from the provisions of CEQA concerning preparation of environmental impact reports ("EIRs").¹⁷ Instead of preparing an EIR under CEQA, these agencies follow the environmental review process included in their own regulatory program.¹⁸ However, this exemption does not extend to all CEQA requirements.

When conducting its environmental review and preparing documentation, a certified regulatory program remains subject to CEQA's broad policy goals and substantive standards, as outlined in Public Resources Code § 21000 and 21002.¹⁹ These standards require identifying a project's adverse environmental effects, mitigating those effects through feasible alternatives or mitigation measures, and justifying approval actions based on specific, economic, social, or other conditions.²⁰ The agency must also comply with procedural requirements outside of Chapters 3, 4, or Section 21167 of CEQA.²¹

Courts have characterized agencies' environmental documents – such as the PSA – as the functional equivalent of EIRs because they require similar information.²² The PSA must include a description of the proposed activity, its

¹⁶ Pub. Res. Code §§ 25500-25543; 14 Cal. Code Regs. § 15251(j).

¹⁷ Pub. Res. Code § 21080.5(c); 14 Cal. Code Regs. § 15250; *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 943; *Sierra Club v. State Bd. of Forestry* (1994) 7 Cal.4th 1215; *John R. Lawson Rock & Oil, Inc. v. State Air Resources Bd.* (2018) 20 Cal.App.5th 77, 95; *Pesticide Action Network N. Am. v. California Dep't of Pesticide Regulation* (2017) 16 Cal.App.5th 224, 239.

¹⁸ *Californians for Alternatives to Toxics v. Department of Pesticide Regulation* (2006) 136 Cal.App.4th 1049, 1067.

¹⁹ *Pesticide Action Network N. Am. v. California Dep't of Pesticide Regulation* (2017) 16 Cal.App.5th 224, 239; *POET, LLC v. State Air Resources Bd.* (2013) 218 Cal.App.4th 681, 710; *City of Arcadia v. State Water Resources Control Bd.* (2006) 135 Cal.App.4th 1392, 1422; *Environmental Protection Info. Ctr. v. Johnson* (1985) 170 Cal.App.3d 604, 616; *see also* 14 Cal. Code Regs. § 15250; *Californians for Native Salmon & Steelhead Ass'n v. Department of Forestry* (1990) 221 Cal.App.3d 1419.

²⁰ *Sierra Club v. State Bd. of Forestry* (1994) 7 Cal.App.4th 1215.

²¹ *See Joy Rd. Area Forest & Watershed Ass'n v. Department of Forestry & Fire Protection* (2006) 142 Cal.App.4th 656, 667 (significant new information in agency's environmental document added after the public comment period required notice and recirculation); *see also Ultramar, Inc. v. South Coast Air Quality Mgmt. Dist.* (1993) 17 Cal.App.4th 689.

²² *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 943; *Environmental Protection Info. Ctr. v. Department of Forestry & Fire Protection* (2008) 44 Cal.4th 459, 481; *Californians for Alternatives to Toxics v. Department of Pesticide Regulation* (2006) 136 Cal.App.4th 1049, 1059; *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2004) 123 Cal.App.4th 1331, 1340; *Santa Barbara County Flower & Nursery Growers Ass'n v. County of Santa Barbara* (2004) 121 Cal.App.4th 864, 872; *Environmental Protection Info. Ctr. v.*

significant adverse effects, and a discussion of alternatives and mitigation measures.²³ It should provide comprehensive information on the project's potential significant environmental effects and describe mitigation measures and alternatives to reduce these impacts.²⁴ Since CEQA's broad policy goals apply, the PSA must contain the same basic environmental information as an EIR, including a activity description, impact analysis, mitigation measures, alternatives, and cumulative impacts.²⁵

The Commission's power plant certification program requires that staff prepare a preliminary and final environmental assessment of the proposed site and related facilities.²⁶ The assessment must describe and analyze the project's significant environmental effects, the completeness of the applicant's proposed mitigation measures, and the need for additional or alternative mitigation measures.²⁷ It must also evaluate the safety and reliability of the project.²⁸ Finally, the assessment must provide a description of all applicable federal, state, regional and local laws, ordinances, regulations and standards, and assess the project's compliance with them.²⁹ In the case of noncompliance, the assessment must describe the staff's efforts with the responsible agencies to correct or eliminate the noncompliance.³⁰

Staff may rely on information submitted by parties, other public agencies, members of the public, and experts in the field, as well as any other information obtained through staff's independent research and investigation.³¹ The applicant has the burden of producing evidence to support all findings and conclusions required for certification of the site and related facilities.³² For any additional condition, modification, or other provision relating to the manner in which the proposed facility should be designed, sited, and operated in order to protect environmental quality and ensure public health and safety, the proponent of the

Johnson (1985) 170 Cal.App.3d 604, 611; *Natural Resources Defense Council, Inc. v. Arcata Nat'l Corp.* (1976) 59 CA3d 959, 976.

²³ Pub Res C §21080.5(d)(3); see *Sierra Club v. State Bd. of Forestry* (1994) 7 Cal.App.4th 1215; *Conway v. State Water Resources Control Bd.* (2015) 235 Cal.App.4th 671, 680.

²⁴ *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 943; *Katzeff v. Department of Forestry & Fire Protection* (2010) 181 Cal.App.4th 601, 608; *County of Santa Cruz v. State Bd. of Forestry* (1998) 64 Cal.App.4th 826, 830.

²⁵ *Pesticide Action Network N. Am. v. California Dep't of Pesticide Regulation* (2017) 16 Cal.App.5th 224, 247; *Friends of the Old Trees v. Department of Forestry & Fire Protection* (1997) 52 Cal.App.4th 1383, 1393; *Laupheimer v. State* (1988) 200 Cal.App.3d 440, 462; compare *Citizens for Non-Toxic Pest Control v. Department of Food & Agric.* (1986) 187 Cal.App.3d 1575, 1586.

²⁶ 20 Cal. Code Regs. § 1742(b).

²⁷ *Id.* at § 1742(b).

²⁸ *Id.* at § 1742(d).

²⁹ *Id.*

³⁰ *Id.* at § 1742(e).

³¹ 20 Cal. Code Regs. § 1742(b).

³² *Id.* at § 1745(c).

measure has the burden of making a reasonable showing to support the need for and feasibility of the proposed condition, modification, or provision.³³

A public agency commits prejudicial abuse of discretion when its actions or decisions do not substantially comply with the requirements of CEQA.³⁴ The agency abuses its discretion if it does not proceed in the manner required by law or if its decision is not supported by substantial evidence.³⁵

Claims of procedural error or informational inadequacies are questions of law subject to independent review by the courts.³⁶ An environmental assessment will be held inadequate as a matter of law where (1) it omits information required by law and (2) the omission precludes informed decision-making by the lead agency or informed participation by the public.³⁷ “[T]he existence of substantial evidence supporting the agency’s ultimate decision on a disputed issue is not relevant when one is assessing a violation of the information disclosure provisions of CEQA.”³⁸

The environmental assessment must disclose the analytic route the agency traveled from evidence to action, and failure to do so amounts to a procedural error—not a factual one.³⁹ If it lacks analysis or omits the magnitude of an environmental impact, the issue is “not a substantial evidence question” – rather, the courts review the issue *de novo*.⁴⁰ In other words, a conclusory discussion of an environmental impact deemed significant may be held to be inadequate as a matter of law “without reference to substantial evidence,” even where mixed questions of law and fact are involved.⁴¹ Only where factual questions *predominate* is a more deferential standard warranted.⁴²

The substantial evidence standard applies to an agency’s substantive factual conclusions, findings or determinations.⁴³ Like EIRs, the PSA must use substantial

³³ 20 Cal. Code Regs. at § 1745(d).

³⁴ Pub. Res. Code §§ 21168, 21168.5.

³⁵ *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 512; *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 426.

³⁶ *Sierra Club*, 6 Cal.5th at 512-13; see also *Laurel Heights Improvement Assoc. v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 392, fn. 5; *Woodward Park Homeowners Assoc., Inc. v. City of Fresno* (2007) 150 Cal.App.4th 683, 705.

³⁷ *Madera Oversight Coal., Inc. v. County of Madera* (2011) 199 Cal.App.4th 48, 76-77.

³⁸ *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 82, quoting *Assn. of Irrigated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1392.

³⁹ *Sierra Club*, 6 Cal.5th at 513 quoting *Topanga Assn. for a Scenic Community v. City of L.A.* (1974) 11 Cal.3d 506, 515.

⁴⁰ *Sierra Club*, 6 Cal.5th at 514.

⁴¹ *Id.*; see also *Save the Hill Group v. City of Livermore* (2022) 76 Cal.App.5th 1092, 1103-04.

⁴² *Sierra Club*, 6 Cal.5th at 514, 516 (emphasis added).

⁴³ Pub. Res. Code § 21168.

evidence to support its conclusions.⁴⁴ Substantial evidence means “enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached.”⁴⁵ This includes facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts, but it does not include argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment.⁴⁶

GENERAL COMMENTS

A. The PSA Must Be Revised and Recirculated for Public Comment

In the approval process for an application for certification of a power plant project, the Commission acts as lead agency under CEQA.⁴⁷ Because a PSA is the functional equivalent to a draft EIR,⁴⁸ the draft environmental document prepared by Staff must meet CEQA’s standards to inform decision-makers and the public of a project’s environmental impacts.

CEQA has two basic purposes. Unfortunately, the PSA falls short of satisfying either of them. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.⁴⁹ The PSA, like an EIR, is the “heart” of this requirement.⁵⁰ The EIR has been described as “an environmental ‘alarm bell’ whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return.”⁵¹ CEQA mandates that an EIR, or EIR equivalent, be prepared “with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes

⁴⁴ Pub. Res. Code § 21168.; see *Ebbetts Pass Forest Watch v. Department of Forestry & Fire Protection* (2008) 43 Cal.4th 936; *Joy Rd. Area Forest & Watershed Ass’n v. Department of Forestry & Fire Protection* (2006) 142 Cal.App.4th 656, 677; *Mountain Lion Coalition v. Fish & Game Comm’n* (1989) 214 Cal.App.3d 1043, 1047.

⁴⁵ 14 Cal. Code Regs. § 15384(b).

⁴⁶ *Id.* at § 15384(a).

⁴⁷ Pub. Resources Code, § 25519(c).

⁴⁸ See Memorandum of Understanding Between the U.S. Department of the Interior, Bureau of Land Management California Desert District and the California Energy Commission Staff, Concerning Joint Environmental Review For Solar Thermal Power Plant Projects, p. 4, available at http://www.energy.ca.gov/siting/solar/BLM_CEC_MOU.PDF (“[t]he assessments provided by the Parties must be sufficient to meet all federal and state requirements for NEPA and CEQA and shall be included as part of the joint Preliminary Staff Assessment/Draft Environmental Impact Statement and the joint Final Staff Assessment/Final Environmental Impact Statement.”)

⁴⁹ 14 Cal. Code Regs. § 15002(a)(1).)

⁵⁰ *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 84.

⁵¹ *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795.

account of environmental consequences.”⁵² Further, in preparing an environmental document, “an agency must use its best efforts to find out and disclose all that it reasonably can.”⁵³ Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures.⁵⁴

The PSA could not have satisfied these purposes because the Applicant failed to provide Staff with the information necessary to draft a CEQA-compliant document. Although the PSA purports to contain similar analysis to those contained in an EIR, the PSA does not contain the information required by CEQA and its implementing guidelines.⁵⁵ Because the Applicant neglected to provide Staff with sufficient information, Staff issued a PSA that is incomplete with respect to potentially significant impacts and mitigation measures for several resource areas.⁵⁶

It appears that Staff’s goal is to include additional analyses and mitigation measures in the Final Staff Assessment (“FSA”). However, CEQA requires recirculation of an EIR, or EIR equivalent, when significant new information is added to the EIR following public review but before certification.⁵⁷ The CEQA Guidelines clarify that new information is significant if “the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect.”⁵⁸ The purpose of recirculation is to give the public and other agencies an opportunity to evaluate the new data and the validity of conclusions drawn from it.⁵⁹ Consequently, Staff’s objective to include numerous additional analyses and mitigation measures in the FSA violates CEQA. Rather, Staff must recirculate a revised PSA that includes the outstanding analyses and currently unidentified mitigation measures.

As shown below, the PSA must be revised to inform the public and decision makers of the Project’s significant impacts, and to avoid or reduce environmental damage when possible by requiring alternatives or mitigation measures. Thus, Staff, after receiving the necessary information from the Applicant to draft a

⁵² 14 Cal. Code Regs. § 15151.

⁵³ *Id.* at § 15144.

⁵⁴ *Id.* at § 15002(a)(2) and (3). *See also Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564; *Laurel Heights Improvement Ass’n v. Regents of the University of California* (1988) 47 Cal.3d 376, 400.

⁵⁵ Pub. Resources Code, § 21100; 14 Cal. Code Regs. §§ 15120(c), 15122-15131.

⁵⁶ PSA, p. 1-7.

⁵⁷ Pub. Resources Code, § 21092.1.

⁵⁸ 14 Cal. Code Regs. § 15088.5.

⁵⁹ *Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (1981) 122 CalApp3d 813, 822.

complete PSA, must correct the shortcomings outlined below, and circulate a revised PSA for public review and comment.

B. The PSA Fails to Adequately Analyze Cumulative Impacts

The PSA fails to evaluate the Project's impacts in connection with key Lithium Valley projects. This results in a deficient cumulative impact analysis which underestimates the severity of the Project's impacts when combined with the impacts of other concurrent projects in the region, and a failure to mitigate them.

An EIR must discuss a cumulative impact if the project's incremental effect combined with the effects of other projects is "cumulatively considerable."⁶⁰ This determination is based on an assessment of the project's incremental effects "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects."⁶¹ The purpose of the cumulative impact analysis is to avoid considering projects in isolation, as failing to account for cumulative harm could result in severe environmental damage.⁶² Without this analysis, piecemeal approval of several projects with related impacts could lead to significant environmental harm.⁶³

The CEQA Guidelines define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."⁶⁴ These individual effects may arise from a single project or multiple projects.⁶⁵ Cumulative impacts can result from individually minor but collectively significant projects occurring over time.⁶⁶

A cumulative impact is the change in the environment created by the combination of the project reviewed in the EIR together with other projects causing related impacts.⁶⁷ The cumulative impact from several projects is the change in the environment that results from the incremental effect of the project when added to the past, present and probable future projects.⁶⁸

⁶⁰ 14 Cal. Code Regs. § 15130(a).

⁶¹ *Id.* at § 15065(a)(3); *Banning Ranch Conservancy v. City of Newport* (2012) 211 Cal.App.4th 1209, 1228.

⁶² *Whitman v. Board of Supervisors* (1979) 88 Cal.App.3d 397, 408.

⁶³ *Golden Door Props., LLC v. County of San Diego* (2020) 50 Cal.App.5th 467, 527; *San Joaquin Raptor/Wildlife Rescue Ctr. v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 720; *Las Virgenes Homeowners Fed'n v. County of Los Angeles* (1986) 177 Cal.App.3d 300, 306.

⁶⁴ 14 Cal. Code Regs. § 15355.

⁶⁵ *Id.* at § 15355(a).

⁶⁶ *Id.* at § 15355(b).

⁶⁷ 14 Cal. Code Regs. § 15130(a)(1).

⁶⁸ *Id.* at §§ 15065(a)(3), 15130(b)(1)(A), 15355(b).

The CEQA Guidelines outlines two methods for satisfying the cumulative impact analysis requirement: this list-of-projects approach and the summary-of-projections approach. Under either method, the EIR must summarize the expected environmental effects of the project and related projects, provide a reasonable analysis of the cumulative impacts, and examine reasonable options for mitigating or avoiding the project's contribution to any significant impacts.⁶⁹ The EIR should also reference additional information, stating where it is available.⁷⁰ At least one of these methods must be used to discuss cumulative impacts.⁷¹

The PSA adopts the list-of-projects approach.⁷² An EIR's evaluation of cumulative impacts may be based on a list of past, present, and probable future projects producing related impacts, including, if necessary, projects outside the lead agency's control.⁷³ The basic standard for compiling a list of cumulative projects is that projects should be included when it is reasonable, feasible, and practical to do so, given the information available, and when failure to include such projects would lead to an inadequate analysis of the severity and significance of the cumulative impact questions.⁷⁴ Within that framework, a lead agency has discretion to select a reasonable cutoff date for which projects to include in the cumulative impact analysis, provided that determination is supported by substantial evidence.⁷⁵

The PSA lists the projects used in the cumulative impacts analysis in Table 1-2.⁷⁶ However, this list is incomplete as it omits several key projects, most notably the LVSP. The LVSP aims to designate land use for future development of power plants, mineral recovery, lithium battery manufacturing, and other renewable industries within an approximately 51,786-acre area adjacent to the Salton Sea.⁷⁷ This plan will not only guide development, but also regulate the land use, design, and community benefits, making it a critical component of the region's environmental planning.⁷⁸

⁶⁹ *Id.* at §§ 15130(b)(1)(A)-(B), 15130(b)(4)-(5).

⁷⁰ *Id.* at § 15130(b)(4).

⁷¹ *League to Save Lake Tahoe Mtn. Area Preservation Found. v. County of Placer* (2022) 27 Cal.App.5th 63, 149.

⁷² PSA at pp. 1-7 to 1-8.

⁷³ 14 Cal. Code Regs. § 15130(b)(1)(A).

⁷⁴ *Golden Door Props., LLC v. County of San Diego* (2020) 50 Cal.App.5th 467, 529; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 723; *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61, 74.

⁷⁵ *South of Market Community Action Network v. City and County of San Francisco* (2019) 33 Cal.App.5th 245, 337-38; *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1127; *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1984) 151 Cal.App.3d 61, 74 n. 14.

⁷⁶ PSA at pp. 1-9 to 1-10.

⁷⁷ Imperial County, Lithium Valley, Developing Lithium Valley, <https://lithiumvalley.imperialcounty.org/planning/> (last visited July 29, 2024).

⁷⁸ *Ibid.*

The PSA fails to mention the LVSP or include it in the cumulative impact analysis, despite its significant implications for the region’s environmental future. The omission of such a significant project renders the impact analysis inadequate and undermines the comprehensiveness required by CEQA. A thorough and legally sound cumulative impact analysis must include all reasonably foreseeable projects to accurately assess cumulative environmental impacts. The PSA fails to meet this standard by omitting one of the region’s most significant planning projects.

Caselaw consistently demonstrates that projects under concurrent or reasonably foreseeable future environmental review should be considered in the cumulative impact analysis. For example, the court in *San Franciscans for Reasonable Growth v. City & County of San Francisco* held that a development proposal should be considered a probable future project once the environmental review process for the project is underway, regardless of the potential length and outcome of the approval process.⁷⁹ In *Friends of the Eel River v. Sonoma County Water Agency*, the court concluded that pending federal impact reviews rendered related projects probable future projects.⁸⁰ In *Golden Door Props., LLC v. County of San Diego*, the court mandated the inclusion of various “in process” general plan amendment projects in the cumulative impact analysis for a countywide climate plan.⁸¹ Finally, in *Gray v. County of Madera*, the court upheld the inclusion of a range of projects in the analysis, emphasizing that a project should be considered a probable future project when significant time and financial resources have been invested in its regulatory review and an application has been filed.⁸²

The LVSP is undeniably foreseeable and should be included in the cumulative impact analysis. In June 2022, SB 125 appropriated funding to develop the LVSP and its Programmatic Environmental Impact Report (“PEIR”), indicating clear legislative and financial commitment to the project. In February 2023, prior to the filing of the proposed Project’s application, Imperial County released a final baseline report to establish an inventory of existing conditions of the LVSP, demonstrating substantial progress.⁸³ In October 2023, nearly three months before the close of discovery and eight months before the release of the PSA, Imperial County released the land use alternatives memorandum for the LVSP, identifying potential approaches to land use designations that will determine development

⁷⁹ *San Franciscans for Reasonable Growth v. City & County of San Francisco* (1984) 151 Cal.App.3d 61.

⁸⁰ *Friends of the Eel River v. Sonoma County Water Agency* (2003) 108 Cal.App.4th 859, 870.

⁸¹ *Golden Doors Props., LLC v. County of San Diego* (2020) 50 Cal.App.5th 467, 529.

⁸² *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1127.

⁸³ Imperial County, Lithium Valley Specific Plan: Final Baseline Report (Feb. 2024) (hereinafter “LVSP Baseline Report”), available at https://lithiumvalley.imperialcounty.org/wp-content/uploads/2024/02/LithiumValley_Final-Baseline-Report_2.15.24_wAppendices-1.pdf.

intensity.⁸⁴ In December 2023, one month prior to the close of discovery and six months prior to the release of the PSA, Imperial County released a notice of preparation and initial study for the LVSP PEIR.⁸⁵

The lead agency has discretion to determine a reasonable cutoff date for including projects in the cumulative impact analysis; however, the agency's selection must be supported by substantial evidence.⁸⁶ Given the significant developments in the LVSP's environmental review process by January 22, 2024, this date is the most reasonable cutoff.⁸⁷ By this time, discovery in this proceeding closed and the Commission had sufficient access to information about the LVSP and its potential environmental impacts to include it in its analysis. Even if the cutoff date were set to July 2023, when the application for the proposed Project was deemed complete, there was still ample information available to assess the LVSP's impacts in combination with the proposed Project. By this date, funding for the LVSP and its PEIR had already been appropriated and the final baseline report had been released.

The legislative actions, detailed preparatory documents, and clear legal precedents unequivocally establish the LVSP as a probable future project. Consequently, the LVSP must be included in the cumulative impact analysis to ensure a thorough and accurate environmental assessment of the proposed Project's cumulative impact. Ignoring the LVSP undermines the credibility of the PSA and fails to comply with established legal standards for comprehensive environmental review.

Several impact areas are directly affected by the PSA's failure to include the LVSP as part of the cumulative impact analysis. For example, the LVSP will involve substantial industrial development, including additional geothermal power

⁸⁴ Imperial County, Lithium Valley Specific Plan: Land Use Alternatives Memorandum (Oct. 27, 2023) (hereinafter "LVSP Alternatives Memo"), *available at* https://lithiumvalley.imperialcounty.org/wp-content/uploads/2023/11/Lithium-Valley-Land-Use-Alternatives-Memorandum_102723.pdf.

⁸⁵ Imperial County, Planning & Development Services Department, Notice of Preparation of Draft Program EIR for the Lithium Valley Specific Plan and Notice of Public Scoping Meeting (Dec. 7, 2024) (hereinafter "LVSP NOP"), *available at* https://files.ceqanet.opr.ca.gov/293418-1/attachment/4ETSzki0f_7UZ6vlSLrr6EHVNoqc6ranc5yNocSVW6dFO61Lcu87l2NnQXSTofwF-IY0c1ZvzfWOK1qs0; Imperial County, Initial Study: Imperial County Lithium Valley Specific Plan (Dec. 2023) (hereinafter "LVSP Initial Study"), *available at* https://files.ceqanet.opr.ca.gov/293418-1/attachment/E3f8TOUtzLRvU5g3BM31wQq-4ic5MD5SwgYVXg3QYx41n1ytItuL70sQ_ZkJnuznpnArgMDiXeM5qorf0.

⁸⁶ *South of Market Community Action Network v. City and County of San Francisco* (2019) 33 Cal.App.5th 245, 337-38; *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1127; *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1984) 151 Cal.App.3d 61, 74 n. 14.

⁸⁷ TN # 252289, Presiding Member's Scheduling Order for the Black Rock Geothermal Project Proceeding (Sept. 15, 2023) p. 6.

plants and lithium recovery operations, which are known to be significant sources of air pollutants. The combined emissions from these new facilities, when added to those from the Project, could result in higher levels of particulate matter (“PM”), nitrogen oxides (“NOx”), and sulfur dioxide (“SO2”) in the region. The cumulative effect of these emissions, particularly considering the area’s existing air quality issues, may exacerbate health problems such as respiratory diseases and further degrade air quality in the region. Therefore, the PSA must analyze the potential for cumulative impacts arising from the simultaneous operation of facilities under the LVSP and the Project.

Both the LVSP and the Project are expected to contribute to GHG emissions. Given California’s stringent GHG reduction goals, it is critical that the cumulative impact of these emissions be assessed to ensure that regional development aligns with the state’s climate policies. The omission of the LVSP from the cumulative impact analysis in the PSA neglects a potentially significant contributor to the region’s overall GHG emissions, which could undermine efforts to meet state-mandated climate targets.

The industrial activities anticipated under the LVSP, such as lithium extraction and battery manufacturing, are likely to generate significant quantities of hazardous waste. This waste, when combined with the hazardous waste produced by the Project, could pose a substantial risk to public health and the environment if not properly managed. The cumulative impact of hazardous waste generation and disposal must be analyzed in the PSA to ensure appropriate mitigation measures are in place and that the region’s waste management infrastructure can handle the increased load.

The development of the LVSP is likely to result in increased traffic due to the transportation of raw materials, products, and workforce to and from the site. When considered alongside the transportation impacts of the Project, the cumulative effect could lead to significant traffic congestion, increased road wear, and higher levels of vehicle emissions in the region. The PSA must include analysis of these combined transportation impacts to assess their full extent and develop appropriate mitigation strategies.

The LVSP will demand significant water resources for its operations, particularly in industries like energy production, mineral recovery, and battery manufacturing.⁸⁸ This demand, in combination with usage of the Project, could strain local and regional water supplies, especially in an area already facing water scarcity challenges. A comprehensive cumulative impact analysis is required to

⁸⁸ LVSP Alternatives Memo at p. 2 (Phase 1 water consumption estimated between 91,881 acre feet per year (“AFY”) and 144,401 AFY, and Phase 2 water consumption estimated between 18,775 AFY and 133,292 AFY).

evaluate these issues and propose strategies to mitigate the combined effects on water availability and quality in the region.

Reasonably foreseeable future projects under the LVPS would result in the loss of approximately 124,000 acres (27%) of habitat for special-status birds in the Imperial Valley.⁸⁹ The PSA must include analysis of these combined significant cumulative impact and propose mitigation measures which adequately mitigate the cumulative loss of habitat in the Imperial Valley.

In conclusion, the LVSP is a substantial project that will play a critical role in shaping the region's industrial and environmental landscape. Its omission from the PSA's cumulative impact analysis represents a significant gap in the assessment process. Including the LVSP in the cumulative impact analysis is essential to ensure a comprehensive evaluation of the potential environmental impacts across key areas such as air quality, GHGs, hazardous waste, water resources, and transportation. This will help in the development of more effective mitigation measures and in ensuring that the environmental health of the region is protected as both projects advance.

C. The PSA Improperly Defers Identification of Mitigation Measure

Several of the Conditions of Certification ("COC") in the PSA impermissibly defer the preparation of plans, reports, and/or studies as mitigation for the Project's significant environmental effects until after certification and without specific performance standards. The PSA also defers to other agencies to analyze the impacts or identify mitigation measures for the Project; "Additional impacts associated with project components outside of CEC's jurisdiction, such as the well complex licensed by CalGEM, the temporary structures such as the laydown yard to be permitted by Imperial County, and the switchyard to be permitted by IID, require mitigation to be less than significant."⁹⁰ The following measures are deferred until after the Commission has certified the Project:

- COC SOLID WASTE-2/MM SOLID WASTE-2: requires identification of an alternative disposal facility and mandates further environmental review if at any time the Desert Valley Company Monofill ("DVCM") Class II facility can no longer accept nonhazardous filter cake.⁹¹
- COC BIO-19/MM BIO-19: requires the Project owner to incorporate design features to allow escape of wildlife that may enter the ponds within the facility and prior to construction of the facility ponds, the Project owner must

⁸⁹ Cashen Comments at p. 17.

⁹⁰ PSA at p. 5.6-30.

⁹¹ *Id.* at p. 5.12-8.

submit a Facility Pond Wildlife Escape and Monitoring Plan to CDFW for review and comment and to the CPM for review and approval.⁹²

- COC BIO-20/MM BIO-20: requires the Project owner to prepare an Avian Collision Deterrent Proposal and Monitoring Plan in consultation with a working group of interested agency personnel, including personnel from CDFW and USFWS. The plan must detail the monitoring methods and duration, methods for estimating carcass persistence and searcher efficiency, impact thresholds (i.e., number of collision deaths), and remedial actions to be implemented during operations.⁹³
- COC VIS-2/MM VIS-2: requires the Project owner to submit to the CPM for approval and simultaneously to the Director of Planning and Development Services for the County of Imperial for review and comment a light pollution control plan.⁹⁴
- COC LAND-3/MM LAND-3: allows the Project owner to implement one of three options to mitigate for agricultural land conversion of Farmland of Statement Importance (including the transmission line and switching station).⁹⁵

The following measure is deferred to other agencies:

- COC BIO-22/MM BIO-22: requires the Project to comply with state and federal regulatory requirements pertaining to wetlands.⁹⁶

The staff assessment in an AFC proceeding is an independent report by Commission Staff that evaluates “the significant environmental effects of a project, the completeness of the applicant’s proposed mitigation measures, and the need for, and feasibility of, additional or alternative mitigation measures.”⁹⁷ “In developing its assessment, staff may rely on information submitted by parties, other public agencies, members of the public, and experts in the field, as well as any other information obtained through staff’s independent research and investigation.”⁹⁸ Identifying all feasible mitigation measures is crucial to assist the Commission in meeting CEQA’s requirement that mitigation measures be identified for each significant effect. The COCs and mitigation measures discussed herein must be

⁹² *Id.* at p. 5.2-178—179.

⁹³ PSA at p. 5.2-178.

⁹⁴ *Id.* at p. 5.15-39.

⁹⁵ *Id.* at p. 5.8-28—29.

⁹⁶ *Id.* at p. 5.2-183.

⁹⁷ 20 Cal. Code Regs. § 1742.

⁹⁸ *Ibid.*

revised to adequately minimize significant adverse impacts consistent with CEQA's requirements in a revised and recirculated PSA.

1. The PSA Defers the Formulation of Mitigation Measures to an Uncertain Future Time

The mitigation measures in the PSA fail to provide adequate assurance that a future plan, report, or study will actually mitigate the Project's significant environmental impacts. Under CEQA, "[f]ormulation of mitigation measures should not be deferred until some future time."⁹⁹ "Deferred mitigation violates CEQA if it lacks performance standards to ensure the mitigation goal will be achieved."¹⁰⁰ An EIR is inadequate if "[t]he success or failure of mitigation efforts...may largely depend upon management plans that have not yet been formulated, and have not been subject to analysis and review within the EIR."¹⁰¹ "A study conducted after approval of a project will inevitably have a diminished influence on decisionmaking. Even if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA."¹⁰²

Several CEQA cases establish that mitigation measures relying on tentative plans or studies for future mitigation after project approval "significantly undermine[] CEQA's goals of full disclosure and informed decision making; and consequently, these mitigation plans have been overturned on judicial review as constituting improper deferral of environmental assessment."¹⁰³ For instance, in *Sundstrom*, the court rejected a determination that a project would not result in significant impacts because the success of mitigation was uncertain.¹⁰⁴ In that case, two mitigation measures called for a hydrological study and a soil study to be prepared to determine whether the project would have adverse effects.¹⁰⁵ The court stated "[b]y deferring environmental assessment to a future date, the conditions run counter to that policy of CEQA which requires environmental review at the earliest feasible stage in the planning process."¹⁰⁶ A study conducted after approval of a project will diminish the influence on decision making and "[e]ven if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions

⁹⁹ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

¹⁰⁰ *Golden Door Properties, LLC v. Cnty. of San Diego* (2020) 50 Cal.App.5th 467, 520.

¹⁰¹ *San Joaquin Raptor Rescue Ctr. v. Cnty. of Merced* (2007) 149 Cal.App.4th 645, 670, *as modified* (Apr. 11, 2007).

¹⁰² *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 307.

¹⁰³ *Communities for a Better Env't v. City of Richmond* (2010) 184 Cal.App.4th 70, 92; *see, e.g., Gentry v. Murrieta* (1995) 36 Cal.App.4th 1359; *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296.

¹⁰⁴ *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 306-07.

¹⁰⁵ *Id.* at p. 306.

¹⁰⁶ *Id.* at p. 307.

construing CEQA.”¹⁰⁷ An agency cannot hide behind its failure to gather relevant data.¹⁰⁸

Additionally, in *Communities for a Better Environment v. City of Richmond*, the court held that the GHG mitigation plan was deficient and deferred because it “merely propose[d] a generalized goal of no net increase in greenhouse gas emissions and then set[] out a handful of cursorily described mitigation measures for future consideration that might serve to mitigate the 898,000 metric tons of emissions resulting from the Project.”¹⁰⁹ The court determined that the mitigation measures were undefined, and “[t]he only criteria for ‘success’ of the ultimate mitigation plan” was “the subjective judgment of the City Council, which presumably will make its decision outside of any public process a year after the Project has been approved.”¹¹⁰ The court concluded that the mitigation plan violated CEQA because it “offered no assurance that the plan for how the [p]roject’s greenhouse gas emissions would be mitigated to a net-zero standard was both feasible and efficacious....”¹¹¹

The PSA improperly defers several mitigation measures to future studies or plans without adequate performance standards in violation of CEQA’s requirements. Although CEQA allows for certain aspects of mitigation to be appropriately deferred, the PSA fails to do so here. First, MM BIO-20 requires the Applicant to prepare an Avian Collision Deterrent Proposal and Monitoring Plan after Project approval.¹¹² COC BIO-20 requires that “[t]he project owner shall prepare an Avian Collision Deterrent Proposal and Monitoring Plan in consultation with a working group of interested agency personnel, including personnel from CDFW and USFWS. This plan shall incorporate Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006) guidelines and provide specific details on design, placement, and maintenance of line markers, as well as the associated analysis requested. The plan shall detail the monitoring methods and duration, methods for estimating carcass persistence and searcher efficiency, impact thresholds (i.e., number of collision deaths), and remedial actions to be implemented during operations.”¹¹³ This measure lacks performance standards which are critical to preventing avian collision deaths. Specifically, the PSA should be recirculated to include the specific details on design, placement, and maintenance of line markers before the Project is approved. COC BIO-20 should also be strengthened to revise the measure to state that “If impacts are estimated to

¹⁰⁷ *Ibid.*, citing to *Mount Sutro Defense Committee v. Regents of University of California* (1978) 77 Cal.App.3d 20, 35.

¹⁰⁸ *Ibid.*

¹⁰⁹ *Communities for a Better Env’t v. City of Richmond* (2010) 184 Cal.App.4th 70, 93.

¹¹⁰ *Ibid.*

¹¹¹ *Id.* at p. 95.

¹¹² PSA at p. 5.2-176.

¹¹³ *Id.* at p. 5.2-176.

exceed the thresholds established in the Plan, remedial actions shall be implemented within 60 days and monitoring shall continue, up to a period of 10 years, to determine effectiveness of remedies.”¹¹⁴

Second, the Facility Pond Wildlife Escape and Monitoring Plan required by COC BIO-19 does not adequately mitigate impacts to biological resources from the floating cover required by WATER-9 and constitutes impermissibly deferred mitigation for failure to include the design features that will be incorporated to allow wildlife to escape the ponds within the facility.¹¹⁵ COC BIO-19 requires that “The project owner shall incorporate design features to allow escape of wildlife that may enter the ponds within the facility. These may include, but are not limited to, gradual slopes, side traction to facilitate upward movement, escape ramps, floating platforms, and/or wildlife ledges. Prior to construction of the facility ponds, the project owner will submit a Facility Pond Wildlife Escape and Monitoring Plan to CDFW for review and comment and to the CPM for review and approval. The plan will outline the wildlife escape methods, procedures for handling dead or injured wildlife, wildlife rehabilitation centers that take injured animals, and schedule for monitoring during the first year of pond operation.”¹¹⁶ The PSA does not provide any rationale as to why it was infeasible to include the design features to be incorporated to allow wildlife to escape the ponds within the facility. The PSA also fails to adequately evaluate the effectiveness of each method, or provide performance standards to ensure that the most effective measures are selected for inclusion in the plan.

Third, providing a light pollution control plan, as required under VIS-2, does not ensure impacts would be less than significant, especially in absence of performance standards for the plan.¹¹⁷ The PSA does not state why specifying these light pollution performance standards were impractical or infeasible at the time the PSA was drafted. In *Preserve Wild Santee v. City of Santee*, the city impermissibly deferred mitigation where the EIR did not state why specifying performance standards for mitigation measures “was impractical or infeasible at the time the EIR was certified.”¹¹⁸ The court determined that although the City must ultimately approve the mitigation standards, this does not cure these informational defects in the EIR.¹¹⁹ Further, the court in *Endangered Habitats League, Inc. v. County of Orange*, held that mitigation that does no more than require a report to be prepared and followed, or allow approval by a county department without setting any

¹¹⁴ Cashen Comments, at p. 33.

¹¹⁵ PSA at p. 5.2-175 -176.

¹¹⁶ *Id.* at p. 5.2-175 -176.

¹¹⁷ Cashen Comments, at p. 24.

¹¹⁸ *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.

¹¹⁹ *Ibid.*

standards is inadequate.¹²⁰ Here, the fact that a light pollution control plan will be prepared later does not cure the informational defects in the PSA.¹²¹

Fourth, COC SOLID WASTE-2/MM SOLID WASTE-2 impermissibly defers formulation of specific performance standards and provides no standards for determining whether mitigation will be required, which violates CEQA. The PSA fails to analyze the impacts from disposal of the Project's nonhazardous filter cake at the Copper Mountain Landfill. Instead, it proposes COC SOLID WASTE-2/MM SOLID WASTE-2, which requires identification of an alternative disposal facility and mandates further environmental review if the DVCM can no longer accept nonhazardous filter cake. No evidence is offered in the PSA to explain why this analysis and mitigation measure is deferred. COC SOLID WASTE-2/MM SOLID WASTE-2 is contrary to CEQA, and the PSA must be revised to include a thorough impacts analysis regarding the use of the Copper Mountain Landfill.

Finally, COC LAND-3/MM LAND-3 lacks the necessary analysis pursuant to CEQA Guidelines § 15126.4 concerning the feasibility of each mitigation option, particularly regarding the payment of fees. The measure also fails to commit the Applicant to one of Imperial County's mitigation options. The PSA determines that the Project would permanently impact approximately 56.36 acres of Prime Farmland and 65.65 acres of Farmland of Statewide Importance.¹²² The PSA concludes that impacts to Important Farmlands would be significant and proposed COC LAND-3/MM LAND-3 to mitigate these impacts to less-than-significant levels.¹²³ This measure is "based on Imperial County's Mitigation Monitoring and Reporting Program [(“MMRP”)] in the Final Programmatic Environmental Impact Report [(“PEIR”)] for the Imperial County Renewable Energy and Transmission Element Update. LAND-3 would require the project owner to implement one of Imperial County's mitigation options for conversion of Important Farmlands. These options include procuring Agricultural Conservation Easements, paying an Agricultural In-Lieu Mitigation Fee, or paying an Agricultural Benefit Fee to Imperial County.”¹²⁴

According to CEQA, “[w]here several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified.”¹²⁵ CEQA prohibits the deferred formulation of mitigation measures until a future time.¹²⁶ Mitigation measures must be known, feasible, and

¹²⁰ *Endangered Habitats League, Inc. v. County of Orange*, (2005) 131 Cal.App.4th 777, 794.

¹²¹ *See Cal. Clean Energy Comm. v. City of Woodland* (2014) 225 Cal.App.4th 173, 194.

¹²² PSA at p. 5.8-15.

¹²³ *Ibid.*

¹²⁴ *Ibid.* (internal citation omitted).

¹²⁵ 14 Cal Code Regs. § 15126.4(a)(1)(B).

¹²⁶ *Ibid.*

effective.¹²⁷ In *Kings County*, the court evaluated a mitigation agreement “pursuant to which [the Applicant] agreed to contribute financially to [a] water district’s ground water recharge program.”¹²⁸ However, the evidence revealed uncertainty as to the availability of water for purchase.¹²⁹ The court stated “to the extent the... agreement was an independent basis for finding no significant impact, the failure to evaluate whether the agreement was feasible and to what extent water would be available for purchase was fatal to a meaningful evaluation by the city council and the public.”¹³⁰ Thus, where it is unclear whether funds as mitigation will actually be used to implement a mitigation measure, the use of such technique lacks substantial evidence under CEQA.¹³¹

Here, COC LAND-3/MM LAND-3 fails to analyze the feasibility of each mitigation option and fails to commit the Applicant to one of Imperial County’s mitigation options. The MMRP in the County’s PEIR does not allow for the deferred selection of one of the available options.¹³² Rather, it requires that one of the mitigation options be “**implemented**” “prior to the issuance of a grading permit or building permit...”¹³³ There is no basis in the PEIR to defer the selection of a mitigation measure for the Project’s significant impacts on agricultural resources. The PSA also does not explain why a particular mitigation option could not be selected and evaluated at this time. Without any evidence to the contrary, the PSA has deferred the analysis of how the Project’s significant impacts on agricultural lands will be mitigated, violating CEQA.

The PSA must be revised to ensure that all feasible mitigation measures are not deferred and adequately reduce impacts to a less than significant level.

2. The PSA Defers to Other Agencies to Analyze the Impacts or Identify Mitigation Measures for the Project

The PSA defers to other agencies to analyze the impacts or identify mitigation measures for the Project, such as for impacts to air quality and biological resources. When a project is to be carried out or approved by more than one public agency, the lead agency is responsible for preparing an EIR, negative declaration or CEQA equivalent document for the project.¹³⁴ Where two or more public agencies

¹²⁷ *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 727-28.

¹²⁸ *Id.* at 709.

¹²⁹ *Id.* at p. 728.

¹³⁰ *Ibid.*

¹³¹ *Ibid.*

¹³² Imperial County, Final Programmatic Environmental Impact Report: Imperial County Renewable Energy and Transmission Element Update (undated) p. 5-4 to 5-5 (emphasis added), *available at* <https://www.icpds.com/assets/planning/cec-alternative-energy-update/reports-and-documents/21-feir-cec-renewable-energy-mmrip.pdf>.

¹³³ *Ibid.*

¹³⁴ 14 Cal Code Regs. § 15050(a).

will be involved with a project, the lead agency is the public agency that will be carrying out the project, with the greatest responsibility for approving the project, or with general governmental powers (as opposed to an air pollution control district, for example), even if the project would be located within the jurisdiction of another public agency.¹³⁵ In evaluating the significance of the environmental effect of a project, the lead agency must consider the Project's direct physical changes in the environment and reasonably foreseeable indirect physical changes in the environment.¹³⁶

CEQA establishes a process whereby a lead agency conducts environmental review of the project, and a responsible agency works with the lead agency to identify impacts and mitigation measures to be included in the environmental review document. Section 21081.6(c) provides:

A responsible agency, or a public agency having jurisdiction over natural resources affected by the project, shall either submit to the lead agency complete and detailed performance objectives for mitigation measures which would address the significant effects on the environment, or refer the lead agency to appropriate, readily available guidelines or reference documents.¹³⁷

In COC BIO-22/MM BIO-22, the PSA requires the Applicant to comply with state and federal regulatory requirements pertaining to wetlands, which is not mitigation as defined in the CEQA statutes. As the lead agency, the Commission is responsible for identifying the specific mitigation needed to reduce the Project's wetland impacts to less-than-significant levels. The Commission cannot defer that responsibility to other agencies (i.e., USACE and RWQCB), as proposed in BIO-22. In its comment letter to the lead agency for another project, the RWQCB (Lahontan Region) stated:

It is inappropriate to rely upon agency regulations for determining that impacts will be at insignificant levels...Water Board staff strongly discourages the County [of Kern] from attempting to defer to the later preparation of Waste Discharge Requirements (WDRs) permits to address the above issues. Such an approach would constitute deferment of mitigation. In the event that this occurs, the Water Board may require substantial modifications to the Project during the course of permitting review to ensure all water quality impacts [are] adequately mitigated. Water Board staff encourages the Project proponents to initiate detailed plans early in the process to allow for full and adequate review

¹³⁵ 14 Cal Code Regs. § 15051.

¹³⁶ *Id.* § 15064(d).

¹³⁷ Pub. Res. Code § 21081.6(c).

of the Project to address the above issues. This planning should be concurrent with the CEQA process as opposed to a sequential permitting approach.¹³⁸

The RWQCB (San Francisco Bay Region) raised similar issues in its comment letter on yet another project:

CEQA requires that mitigation measures for each significant environmental effect be adequate, timely, and resolved by the lead agency. In an adequate CEQA document, mitigation measures must be feasible and fully enforceable through permit conditions, agreements, or other legally binding instruments (CEQA Guidelines Section 15126.4). Mitigation measures to be identified at some future time are not acceptable. It has been determined by court ruling that such mitigation measures would be improperly exempted from the process of public and governmental scrutiny which is required under the California Environmental Quality Act. The current text of the DEIR does not demonstrate that it is feasible to mitigate all potentially significant impacts to wetlands that may result from project implementation to a less than significant level. Impacts to the jurisdictional waters at the project site, as well as proposed mitigation measures of such impacts, will require review under CEQA before the Water Board can issue permits for those proposed impacts.¹³⁹

Thus, the Commission, as lead agency, must evaluate the potentially significant impacts and identify measures to reduce the impacts from all Project facilities, including the plant site, production and injection wells, well pads and pipeline facilities, and associated transmission line activities (including the transmission lines, switching station, and utility corridor). The PSA must be revised to include all feasible mitigation measures, including those that should be required by other agencies, to reduce impacts to a less than significant level.

PIECEMEALING

The PSA states that electricity generated by the Project would be delivered to a substation near the northeast corner of the Project site.¹⁴⁰ The substation would deliver energy through a generation (gen-tie) line into the IID transmission system at a new, as-yet-to-be built 230 kV switching station.¹⁴¹ However, the PSA fails to disclose that a new 230 kV transmission line running from the new switching station to the Coachella Valley and additional infrastructure upgrades must be completed for the Elmore North, Morton Bay, and Black Rock Geothermal Project

¹³⁸ Kern County, Final Environmental Impact Report: RE Distributed Solar Projects (Oct. 2021) p. 7-142 to 7-146, *available at* https://psbweb.co.kern.ca.us/planning/pdfs/eirs/recurrent_desert/recurrent_rtc_ch7-4_part1.pdf.

¹³⁹ City of Dublin, Final Environmental Impact Report: At Dublin Project, Comment Letter #2 (Oct. 2018).

¹⁴⁰ PSA at p. 3-10.

¹⁴¹ *Id.*

facilities to interconnect to the CAISO controlled grid, through which the Applicant wishes to make wholesale sales of electricity.¹⁴²

A project under CEQA refers to the “whole of an action which has the potential for resulting in either a direct physical change in the environment, or reasonably foreseeable indirect physical change in the environment.”¹⁴³ CEQA prohibits segmenting the review of the significant environmental impacts.¹⁴⁴ This mandate ensures that environmental considerations are not diluted by dividing a large project into smaller ones, each with a minimal potential impact, which cumulatively may have disastrous consequences.¹⁴⁵ Public agencies must interpret the project broadly to encompass the whole of the action and its environmental impacts.¹⁴⁶

Before undertaking a project, the lead agency must assess the environmental impacts of all reasonably foreseeable phases. Public agencies cannot segment a large project into smaller parts to obscure serious environmental consequences.¹⁴⁷ The court in *Laurel Heights Improvement Association v. Regents of University of California* (“*Laurel Heights*”) emphasizes that “[t]he CEQA process is intended to be a careful examination, fully open to the public, of the environmental consequences of a given project, covering the entire project, from start to finish.”¹⁴⁸ “[A]n EIR must include a [*sic*] analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.”¹⁴⁹

BHER entered into an Engineering, Study, and Design Agreement (“Agreement”) with IID for the “Salton Sea Transmission Project” on November 1,

¹⁴² **Attach. F:** Letter to Sheila Sannadan, Adams Broadwell Joseph & Cardozo from Geoffrey P. Holbrook, Imperial Irrigation District re: Response to California Public Records Act Requests Dated August 9, August 10, and August 15, 2023 (Sept. 22, 2023); *see also* Imperial Irrigation District, Board Agenda Memorandum re: Engineering, Study, and Design Agreement for BHE Renewables, LLC for the Salton Sea Transmission Project (Nov. 1, 2022) pp. 187-206, *available at* <https://www.iid.com/home/showpublisheddocument/20710/638024821913130000>.

¹⁴³ 14 Cal. Code Regs. § 15378(a).

¹⁴⁴ *Laurel Heights Improvement Assn.*, 47 Cal. 3d at 396; *See also* Pub. Res. Code § 21002.1(d).

¹⁴⁵ *Id.*; *See also City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1452; *Citizens Assn. for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151, 165.

¹⁴⁶ 14 Cal. Code Regs. § 15378.

¹⁴⁷ *See Citizens Assn. for Sensible Development of Bishop Area*, 172 Cal. App.3d 165-68.

¹⁴⁸ *Natural Resources Defense Council v. City of Los Angeles* (2002) 103 Cal.App.4th 268; *see also Whitman v. Board of Supervisors* (1979) 88 Cal.App.3d 402 (EIR for an exploratory oil well that failed to analyze the impacts associated with a proposed pipeline was inadequate and violated CEQA).

¹⁴⁹ *Laurel Heights Improvement Assn. v. Regents of Univ. of California* (1988) 47 Cal.3d 376, 396, *as modified on denial of reh’g* (Jan. 26, 1989).

2022.¹⁵⁰ The Agreement indicates that the transmission project is necessary to interconnect the three proposed geothermal facilities (Elmore North, Morton Bay, and Black Rock) with the CAISO Controlled Grid.¹⁵¹ Furthermore, the Agreement specifies that BHE Renewables, LLC will determine the preliminary design of the transmission project, acquire and secure property rights, and finalize the transmission route.¹⁵² BHE Renewables, LLC will also undertake the environmental compliance analysis for the transmission project.¹⁵³ CEQA requires consideration of the whole action, including the reasonably foreseeable transmission project.

As to the first inquiry in the *Laurel Heights* test, the transmission project is imminent and reasonably foreseeable. In a letter dated July 23, 2024, IID described the transmission line connecting to the Coachella Valley substation as having an “essential role” in the feasibility of the BHER projects.¹⁵⁴ Moreover, the executed Agreement commits BHE Renewables, LLC to several tasks in furtherance of the transmission project including, identifying the route, undertaking environmental review, designing the project, and acquiring and procuring the project.¹⁵⁵ “These specific, pending plans distinguish cases rejecting piecemealing claims on the ground the future actions were too speculative.”¹⁵⁶

As to the second part of the *Laurel Heights* test, the transmission project proposes to construct and operate new transmission lines and ancillary components that “will likely change the scope or nature of the initial project or its environmental effects.”¹⁵⁷ Construction of the transmission project would increase impacts on air quality, public health, GHG emissions, among other impacts. Additionally, simultaneous construction of the transmission project and the three geothermal facilities could amplify the Project’s impacts during construction.

The court in *Banning Ranch Conservancy v. City of Newport Beach* clarified that the *Laurel Heights* inquiry is not just whether the project may make reasonably foreseeable changes to the scope and nature of the project, but whether “it is a reasonably foreseeable *consequence* of the initial project.”¹⁵⁸ In that case,

¹⁵⁰ Attachment F at p. 4.

¹⁵¹ *Id.*

¹⁵² *Id.*, attach. A at p. 15.

¹⁵³ *Ibid.*

¹⁵⁴ TN # 257957, Letter to California Energy Commission from Imperial Irrigation District re: Notice of Availability of Preliminary Staff Assessment for the Proposed Elmore North Geothermal Project (July 23, 2024) p. 1 (hereinafter “IID EN PSA Comments”), *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=257957&DocumentContentId=93880>.

¹⁵⁵ Attachment F, attach. A at p. 15.

¹⁵⁶ *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1224.

¹⁵⁷ *Laurel Heights Improvement Assn. v. Regents of Univ. of California* (1988) 47 Cal.3d 376, 396, *as modified on denial of reh’g* (Jan. 26, 1989).

¹⁵⁸ *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1225.

the court evaluated whether the Newport Banning Ranch development project and the Sunset Ridge Park Project were separate actions.¹⁵⁹ The court focused on the fact that the projects had different proponents, the projects “serve[d] different purposes,” the park project would go forward regardless of any development on Banning Ranch, “and importantly, [that] the City’s general plan call[ed] for construction of Bluff Road” regardless of whether the site would be annexed for the development project or not.¹⁶⁰

In this case, the Project and transmission project have the same applicant, and both are related to geothermal energy generation. The Agreement states that the transmission project is “necessary” for the three geothermal projects, with BHE Renewables, LLC responsible for the associated costs.¹⁶¹ The PSA fails to provide substantial evidence demonstrating that the projects could be implemented independently of each other or that the transmission project could proceed without the Projects, especially given BHE Renewables, LLC financial responsibilities.¹⁶²

Therefore, the PSA fails to fully disclose, analyze, and mitigate the full scope of the Project’s potentially significant impacts, given that the transmission project has been improperly segmented from this CEQA review.¹⁶³ In its letter, IID concludes that the requisite analyses of the transmission project’s environmental impacts must be included in the PSA, explaining that “if an activity or facility is necessary for the operation of a project, or necessary to achieve the project objectives, or a reasonably foreseeable consequence of approving the project, then it should be considered an integral project component that should be evaluated within the environmental analysis.”¹⁶⁴ The PSA must be revised to fully disclose, analyze, and mitigate the impacts of both the current Project and the transmission project.

PROJECT DESCRIPTION

The PSA fails to provide a complete project description. The PSA claims that the project description “summarizes the proposed project, including the location of the site and project boundaries, characteristics of the proposed project, and objectives sought by the proposed project.”¹⁶⁵ However, the PSA’s project description fails to satisfy this purpose. It inadequately describes key Project

¹⁵⁹ *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1224-27.

¹⁶⁰ *Id.*

¹⁶¹ Attachment F at pp. 2-6.

¹⁶² *Id.* at p. 5-6.

¹⁶³ E.g., Pub. Res. Code §§ 21002, 210021.1(a); 14 Cal. Code Regs. §§ 151363, 15121, 15140, 15151. (An EIR is informational document whose purpose is to disclose and mitigate impacts, analyze a reasonable range of alternatives, and select as the project any alternative which can achieve project objectives, but is more protective of the environment, consistent with CEQA’s substantive mandate); 14 Cal. Code Regs. § 15378 (project description must include all project components).

¹⁶⁴ IID EN PSA Comments TN # 257957 at 1-2.

¹⁶⁵ PSA at p. 2-5.

elements, including but not limited to: 1) restoration of the borrow pits; 4) the location of pile driving activities; and 5) the construction schedule. Consequently, the PSA's impact analysis is fundamentally flawed due to its inaccurate project description and omission of adequate analysis related to these critical areas.

A. The PSA Fails to Include the Location of Pile Driving Activity

Pile driving is expected to occur during the construction phase of the Project, overlapping with the construction phases of the Elmore North and Black Rock projects for four months.¹⁶⁶ The PSA provides that “[i]t is unclear if pile driving, or steam blows would occur for both projects on the same days and times of day. This analysis, however, assumes that all three projects would perform pile driving and steam blows on the same days and times of day during their respective phases.”¹⁶⁷ However, the PSA fails to provide any description of the location of pile driving activity. The PSA states that the Project's pile driving activities would generate noise levels of 104 dBA Leq at 50 feet, if unsilenced.¹⁶⁸ Because the metric Leq represents the average noise level over a period of time (usually 1 hour), and pile driving is an intermittent activity,¹⁶⁹ the noise level (Lmax) of each pile drive would be substantially more than 104 dBA.¹⁷⁰ This omission is significant, as understanding the exact location and potential maximum noise levels is crucial for assessing the impact on nearby communities and sensitive wildlife habitats. The PSA must be revised to include detailed information on the location of pile driving activities and the associated maximum noise levels to ensure a comprehensive analysis of the potential environmental and community impacts.

B. The PSA Fails to Adequately Describe Borrow Pit Restoration

The Project includes up to four borrow pits located throughout the Project area,¹⁷¹ which would be utilized for the 29-month construction period.¹⁷² Following their use, these borrow pits must be restored to preconstruction conditions.¹⁷³ The PSA provides that “topsoil removed from the project site would be set aside and stockpiled at the borrow sites for use as topsoil in restoring the borrow sites to preconstruction conditions as much as possible.”¹⁷⁴ The PSA notes that the Applicant intends to request a one-time exemption for the borrow pits consistent with the Surface Mining and Reclamation Act (“SMARA”).¹⁷⁵ Public Resources

¹⁶⁶ PSA at p. 5.9-11.

¹⁶⁷ *Id.* at p. 5.9-11.

¹⁶⁸ *Id.* at p. 5.9-7.

¹⁶⁹ *Id.* at p. 5.9-7.

¹⁷⁰ Cashen Comments at p. 3.

¹⁷¹ PSA at p. 5.8-17.

¹⁷² *Id.* at p. 3-17.

¹⁷³ Pub. Res. Code § 2712.

¹⁷⁴ PSA at p. 5.8-16 (internal citation omitted).

¹⁷⁵ *Id.* at p. 5.6-11.

Code § 2714(f) provides an exemption for surface mining operations deemed to be of an “infrequent nature and that involve only minor surface disturbances.” However, the PSA does not provide an adequate analysis of the borrow pit restoration process, including whether there will be sufficient soil to restore the pits and to what extent they will be restored. The lack of detailed analysis raises concerns about the feasibility and effectiveness of the proposed restoration efforts. To comply with CEQA, the PSA must be revised to include a comprehensive description of the borrow pit restoration plans, ensuring that all potential environmental impacts are thoroughly assessed.

C. The PSA Fails to Adequately Describe the Construction Schedule

The PSA fails to provide an accurate, stable, and finite project description with respect to the Project construction schedule. If the project description does not clearly and accurately characterize the project, the environmental impact analysis will inherently reflect the same mistake.¹⁷⁶ “Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal’s benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the “no project” alternative) and weigh other alternatives in the balance. An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient [environmental review document].”¹⁷⁷

The PSA provides the following description of the Project’s construction schedule:

Construction activity will be based on a two-shift, 10 hours per day, six days per week schedule, with a seven-day work week possible. Construction labor workforce personnel is expected to peak between during approximately the 22nd and 23rd month, with a maximum between 536 workers. Facility startup schedules are based on a two-shift, 24 hours per day, seven days per week work week. Overtime and shift work for construction may be used to maintain or enhance the construction schedule. Workers including construction craft employees, supervisory and support staff, and construction management personnel, can be expected to be onsite during typical working hours, between 7 am and 8 pm, with the possibility of adjustment for shortened winter daylight hours, for specialize work such as concrete pours, or for noisy construction activities.¹⁷⁸

¹⁷⁶ See *Laurel Heights Improvement Ass’n v Regents of Univ. of Cal.* (1988) 47 Cal.3d 376.

¹⁷⁷ *County of Inyo v City of Los Angeles* (1977) 71 Cal.App.3d 185, 199.

¹⁷⁸ PSA at pp. 3-17 -18.

The PSA provides conflicting information about the construction schedule. Initially, it mentions a two-shift, 24 hours per day schedule, implying that each shift would last 10 hours, resulting in 10 hours of construction activity per day.¹⁷⁹ However, the PSA later suggests that construction activity would typically occur for 13 hours per day, from between 7 am and 8 pm.¹⁸⁰ Adding further inconsistency, it states “[w]ell drilling operations are conducted 24 hours per day, seven days per week.”¹⁸¹ These statements do not align with the AFC, which states construction activity, including operation of construction equipment, would occur 20 hours per day, 7 days per week.¹⁸² It is essential to resolve these discrepancies and ensure a clear and consistent construction schedule.

Moreover, the Noise/Vibration and Environmental Justice chapters of the PSA state: “construction equipment operations would be limited to the hours of 7:00 A.M. to 7:00 P.M., Monday through Friday, and 9:00 A.M. to 6:00 P.M., Saturday. No commercial construction operations are permitted Sunday or holidays (Imperial County 2015).”¹⁸³ This statement is inconsistent with: (a) the PSA’s mention of a seven-day work week; (b) the PSA’s claim that drilling operations would run 24 hours per day; and (c) the AFC’s assertion that construction equipment will operate up to 20 hours per day, 7 days per week.¹⁸⁴

The inaccurate characterization of the construction schedule in the PSA has far-reaching consequences for the environmental impact assessment. The construction schedule directly affects the potential for significant impacts on wildlife due to night lighting.¹⁸⁵ It also impacts the Project’s ability to comply with Condition of Certification (“COC”) NOISE-6 (Construction and Demolition Noise Constrictions), COC NOISE-7 (Steam Blow Restrictions), and COC BIO-4 (regarding avoidance of night work whenever feasible).¹⁸⁶

The Applicant has further obscured the construction schedule detailed in the PSA by proposing additional nighttime construction activities during discussion at the PSA workshop conducted by the Commission on July 30, 2024. At the workshop, the Applicant stated that more nighttime construction would be required than initially proposed due to the high heat during the daytime.

¹⁷⁹ PSA at p. 3-19.

¹⁸⁰ *Id.* at p. 3-17.

¹⁸¹ *Id.* at p. 3-19.

¹⁸² TN # 249752, Black Rock Geothermal Project Application for Certification Volume 1 (Apr. 18, 2023) p. 5.1-27 (hereinafter “AFC”).

¹⁸³ PSA at pp. 5.9-6, 6-17.

¹⁸⁴ Cashen Comments at p. 2.

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

The Commission must revise the PSA to provide consistent information on the Project's construction schedule. This revision must address whether the Applicant can comply with NOISE-6, NOISE-7, and BIO-4, given the proposed construction schedule and any potential modifications (e.g., overtime work or a 7-day work week).¹⁸⁷

D. The PSA Fails to Adequately Describe Construction of the Switching Station

CURE's experts cannot quantify emissions associated with Project components because the PSA lacks an adequate project description.¹⁸⁸ The PSA is required to identify the project's main features and provide sufficient information to facilitate a complete and informative evaluation of the project's environmental impacts.¹⁸⁹ The PSA does not adequately detail the construction of the switching station. It omits specific construction activities (e.g., site preparation, foundation installation, equipment assembly, wiring), the types and quantities of materials used, the expected duration and schedule of construction activities, the types and numbers of construction equipment and vehicles to be used, the fuel types and expected usage rates for equipment and vehicles, or the emission factors for equipment and vehicles. The lack of detailed information hinders proper assessment of the project's environmental impacts, particularly with respect to pollutant emissions. The PSA must be revised to provide a detailed description of anticipated construction activities for the switching station.

E. The PSA Fails to Accurately and Consistently Describe Decommissioning Activities for the Project

The decommissioning phase is a critical component of this Project, yet the project description omits a complete and accurate discussion of these activities. Courts have held that reclamation is "simply the final phase of the overall usage of the land" and must be considered with the construction and operational phases.¹⁹⁰ The PSA provides inconsistent information about the decommissioning activities, thereby failing to satisfy CEQA's requirement for a comprehensive project description. The PSA vaguely states that "in case of permanent closure, the facility will be cleaned, and the facility components will be salvaged to the greatest extent possible."¹⁹¹ This description fails to mention key decommissioning activities such as facility demolition, removal and disposal of project components, or the of the site to pre-project conditions.

¹⁸⁷ Cashen Comments at p. 2.

¹⁸⁸ Shukla Comments at pp. 16, 17-19.

¹⁸⁹ *San Joaquin Raptor Rescue Ctr. v. County of Merced* (2007) 149 Cal.App.4th 645, 654.

¹⁹⁰ *Nelson v. County of Kern* (2010) 190 Cal.App.4th 252, 272.

¹⁹¹ PSA at p. 3-29.

In contrast, COM-15 in the Project's Compliance Conditions and Compliance Monitoring Plan outlines a much more detailed and comprehensive scope of work for the Final Closure Plan. This includes activities such as:

- dismantling and demolition;
- recycling and site clean-up;
- impact mitigation and monitoring;
- site remediation and/or restoration;
- exterior maintenance, including paint, landscaping and fencing;
- site security and lighting; and
- any contingencies.¹⁹²

COM-15 clearly references site remediation and restoration activities, while other sections of the PSA remain silent on these critical aspects, focusing instead on salvaging facility components. This inconsistency necessitates that the PSA must be revised and recirculated to provide an accurate and consistent description of the proposed decommissioning activities and their impacts, including at a minimum all the activities described in COM-15. CEQA requires the PSA to analyze the impacts of all activities associated with building and operating the Project, including activities aimed at restoring the site to pre-project conditions.

Moreover, by failing to accurately describe the decommissioning activities, the PSA overlooks potentially significant impacts that could arise from this phase of the Project. Based on the detailed activities outlined in COM-15, decommissioning will involve processes similar to those during Project construction, such as dismantling, demolition, recycling, site remediation and/or restoration, and exterior maintenance.¹⁹³ These activities are expected to involve soil disturbance, heavy equipment use, and truck trips, potentially resulting in significant impacts related to noise, erosion, air quality, solid waste management, hazardous materials, and transportation. The PSA insufficiently discloses and evaluates these potential impacts, which must be remedied in a revised and recirculated document.

AIR QUALITY

A. The PSA Erroneously Ignores New, More Stringent Federal PM_{2.5} Standards in Evaluating the Project's Construction and Operational Emissions

The PSA acknowledges that the EPA strengthened the primary annual PM_{2.5} NAAQS from 12.0 µg/m³ to 9.0 µg/m³, and is effective as of May 6, 2024.¹⁹⁴ However, it claims the more stringent standard does not apply to the Project for

¹⁹² PSA at p. 9-18.

¹⁹³ *Id.* at p. 9-18.

¹⁹⁴ *Id.* at pp. 5.1-2 to 5.1-3.

three reasons: (1) the Project application was deemed complete before the final rule became effective, (2) the Project is neither a major source nor a Prevention of Significant Deterioration (“PSD”) source, and (3) the higher limit is consistent with ICAPCD rules.¹⁹⁵ The PSA’s conclusion is erroneous for several reasons.

First, and foremost, the PSA fundamentally ignores a critical exception to the general rule that projects are subject only to rules in effect the time the application is deemed complete. ICAPCD Rule 207 A.2.b states: “Applications received by the District shall be subject to the requirement of this rule in effect at the time such application is deemed complete, **except** when a more stringent new federal requirement not yet incorporated into this Rule shall apply to the new or modified Stationary Source.”¹⁹⁶ The PSA focuses solely on the application completion date, disregarding the second clause, which clearly mandates compliance with new, more stringent standards that became effective after the application is deemed complete.

Second, the PSA’s discussion misleadingly focuses on the timeline for states to designate whether areas meet the revised standards and develop state implementation plans. The PSA argues that the less-stringent annual PM_{2.5} NAAQS remain in effect until the EPA designates an area as nonattainment, which is not expected until Spring 2026.¹⁹⁷ However, the timeline for air quality designations is distinct from whether a proposed facility must conduct an air quality analysis that considers the more health-protective standard. Indeed, the exception in Rule 207 A.2.b requires that the new standard be considered.

Finally, while EPA’s guidance on implementing the new standard may not directly apply to this Project, it provides valuable insights given the exception in Rule 207 A.2.b. The guidance states: “Facility owners with PSD permits in process will need to determine if their modeling already demonstrates that their planned project will not cause or contribute to an exceedance of the new standard. If there is not a violation, the permit application can continue through review. If modeling does show that the new emissions would cause or contribute to a violation of the revised standard, the owner has options for how they modify their planned project and what types of emission controls they install. A more detailed modeling assessment must show either no violation or that impacts fall below levels considered significant.”¹⁹⁸ The guidance underscores the necessity for projects in

¹⁹⁵ PSA at p. 5.1-3.

¹⁹⁶ Imperial County Air Pollution Control District, Rule 207: New and Modified Stationary Source Review (Sept. 11, 2018) p. 207-1, *available at* <https://apcd.imperialcounty.org/wp-content/uploads/2020/01/1RULE207.pdf>.

¹⁹⁷ PSA at p. 5.1-3.

¹⁹⁸ Environmental Protection Agency, Implementing Final Rule to Strengthen the National Air Quality Health Standard for Particulate Matter – Clean Air Act Permitting, Air Quality Designations, and State Planning Requirements: Fact Sheet (Feb. 2024) p. 4, *available at* <https://www.epa.gov/system/files/documents/2024-02/pm-naaqs-implementation-fact-sheet.pdf>.

the permitting process to verify compliance with the new, more stringent standards. Rule 207.A.2.b aligns with this principle by mandating that projects adhere to the stricter standards even after the application has been filed.

Here, the air quality modeling demonstrates that the Project would exceed the more stringent standard. The PSA confirms that Project construction, combined with background PM_{2.5} concentrations, would exceed 9.0 µg/m³.¹⁹⁹ Project operation, in combination with background PM_{2.5} concentrations, would also exceed this standard.²⁰⁰ Thus, the PSA's conclusion that the Project is exempt from the more stringent PM_{2.5} standard is not supported by the available data and regulatory requirements.

B. The PSA Fails to Quantify Emissions for All Project-Related Activities

The proposed Project involves connecting to a new IID switching station consisting of nine 3,000-ampere 245 kV circuit breakers, to be constructed adjacent to the Project site.²⁰¹ Construction activities will include installing foundations, ground wires, conductors, counterpoise/ground rods, assembling and erecting structures, and clearing, pulling and stringing lines.²⁰² However, the PSA concedes that emissions from these construction activities were excluded from the air quality modeling.²⁰³ The PSA asserts that air quality and GHG impacts from constructing the switching station are less than significant with mitigation, citing fewer ground disturbance activities, a shorter construction duration, less equipment, and similar distances to sensitive receptors.²⁰⁴

Additionally, the PSA does not quantify emissions from construction worker camps.²⁰⁵ The temporary construction camps would require site surface preparation, including vegetation removal, excavation, minor grading, and gravel application.²⁰⁶ It would also require the use of temporary power sources,²⁰⁷ such as generators, which can contribute to GHG emissions and other pollutants. The PSA acknowledges that these elements may require mitigation to achieve less than significant impacts.²⁰⁸

¹⁹⁹ PSA at p. 5.1-24.

²⁰⁰ *Id.* at p. 5.1-27.

²⁰¹ *Id.* at p. 4.3-4.

²⁰² *Id.* at p. 3-17.

²⁰³ *Id.* at p. 5.1-17.

²⁰⁴ *Id.* at pp. 5.1-17, 5.3-9.

²⁰⁵ *Id.*

²⁰⁶ *Id.* at p. 5.8-7.

²⁰⁷ *Id.*

²⁰⁸ *Id.* at p. 5.1-38.

An EIR must be sufficiently detailed to enable decisionmakers to make informed judgments about the project's environmental impacts.²⁰⁹ While exhaustive detail is not required, the EIR must be adequate, complete, and demonstrate a good faith effort at disclosure.²¹⁰ The EIR fails to explain why it cannot quantify emissions from these components.²¹¹ Moreover, even if emissions from these components are less than those from constructing the main facility, the PSA does not account for the combined effect of these simultaneous construction activities.²¹²

Given these deficiencies, the PSA lacks substantial evidence to conclude that the Project's air quality impacts are less than significant. The PSA must be revised to include emissions from all Project components, even those outside the jurisdiction of the Commission.

C. The PSA Relies on Clearly Erroneous Meteorological Data

To determine whether the Project would expose sensitive receptors to substantial pollutant concentrations or health risks, the PSA relies on five years (2015-2018, 2021) of meteorological data from the Imperial County Airport.²¹³ Despite the meteorological station being 23.8 miles away, the PSA concludes the data is representative of the Project site because there are no intervening geographic features between the Project site, and both are south/southeast of the Salton Sea.²¹⁴ However, the PSA's reasoning is significantly flawed.

The Project site's proximity to the Salton Sea creates unique meteorological conditions not captured by the airport monitoring station. The topography and wind flow across the Salton Sea significantly affect the dispersion of pollutants emitted at the Project site.²¹⁵ "Higher wind speeds over the heated desert and lower relative wind speeds over the cooler Salton Sea result in decreased dispersion near the Project site, increasing ground-level pollutant concentrations."²¹⁶ In addition, the marine boundary layer near the Salton Sea can be more stable and exhibit different characteristics compared to the boundary layer over land, further impacting pollutant dispersion.²¹⁷ These conditions are not accounted for by the airport monitoring station.

²⁰⁹ 14 Cal. Code Regs. § 15151; *Napa Citizens for Honest Gov't v. Napa County Bd. of Supervisors* (2001) 91 Cal.App.4th 342, 356.

²¹⁰ *Ibid.*

²¹¹ *See Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421 (requiring quantification of emissions when feasible).

²¹² Shukla Comments at pp. 17-18.

²¹³ PSA at p. 5.1-23.

²¹⁴ PSA at p. 5.1-23.

²¹⁵ Clark Comments at pp. 4-5; Shukla Comments at pp. 12-13.

²¹⁶ Clark Comments at pp. 4-5.

²¹⁷ Shukla Comments at p. 13.

Furthermore, the airport monitoring station is situated in an urban environment, which does not accurately represent the rural conditions of the Project site.²¹⁸ While there are no intervening natural geographic features between the Project site and the airport, there are intervening artificial features. The cities of Brawley and Imperial lie between the two sites, increasing the surface roughness factor, results in different dispersion characteristics.²¹⁹

A comparison of wind rose data also reveals significant differences in wind patterns between the two sites.²²⁰ The airport wind rose shows predominantly westerly and southwesterly winds, whereas the Sonny Bono wind rose shows predominantly southeasterly winds.²²¹

Finally, the Sonny Bono station contains enough reliable data to perform an accurate impact assessment. While only two years of data from the station meet the EPA's data completeness recommendation, approved statistical methods are available to address any data gaps.²²² The critical factor when selecting meteorological data is spatial representativeness, not just completeness.²²³

For these reasons, and those explained in CURE's comments on the preliminary determination of compliance for the Elmore North, Morton Bay, and Black Rock facilities,²²⁴ meteorological data from the Imperial County Airport is not representative of the Project site. Consequently, the PSA severely underestimates air quality and public health impacts.²²⁵ The PSA must be revised using

²¹⁸ Shukla Comments at p. 12.

²¹⁹ *Id.* at p. 12.

²²⁰ *Id.* at pp. 14-15; Clark Comments at p. 5.

²²¹ *Id.*

²²² Shukla Comments at pp. 13-14.

²²³ *Id.* at pp. 13-14.

²²⁴ TN # 254833, Letter to Jesus Ramirez, Imperial County Air Pollution Control District from Andrew J. Graf, Adams Broadwell Joseph & Cardozo re: California Unions for Reliable Energy's Comments on Preliminary Determination of Compliance for the Elmore North Geothermal Power Generation Plant (Mar. 4, 2024), *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254833&DocumentContentId=90487>; TN # 254968, Letter to Jesus Ramirez, Imperial County Air Pollution Control District from Kelilah D. Federman, Adams Broadwell Joseph & Cardozo re: California Unions for Reliable Energy's Comments on Preliminary Determination of Compliance for the Morton Bay Geothermal Power Generation Plant (Mar. 11, 2024), *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254968&DocumentContentId=90658>; TN # 255266, Letter to Jesus Ramirez, Imperial County Air Pollution Control District from Ariana Abedifard, Adams Broadwell Joseph & Cardozo re: California Unions for Reliable Energy's Comments on Preliminary Determination of Compliance for the Black Rock Geothermal Power Generation Plant (Mar. 11, 2024), *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=255266&DocumentContentId=90938>.

²²⁵ Clark Comments at p. 6.

meteorological data from the Sonny Bono monitoring station to provide an accurate assessment of the Project's environmental impacts.

D. The PSA Fails to Meaningfully Evaluate Localized Cumulative Impacts

To analyze localized cumulative air quality impacts during Project operation, the PSA modeled impacts associated with operation of the three geothermal facilities: Elmore North, Morton Bay, and Black Rock.²²⁶ However, it did not include any data from existing geothermal powerplants, claiming that background concentrations from nearby monitoring stations represented conservative estimates of existing stationary sources.²²⁷ This approach is fundamentally flawed as it fails to address the specific contributions and interactive effects of these emissions with the proposed Project.

By relying solely on background concentrations from nearby monitoring stations, the PSA overlooks the unique emissions profiles and localized impacts of the existing geothermal power plants. Each facility may have distinct operational characteristics, emission rates, and pollutant types that can significantly influence air quality in the vicinity.²²⁸ Background monitoring data alone cannot capture these specific contributions, nor can it accurately reflect the cumulative impact of multiple sources in proximity.²²⁹

Furthermore, the PSA's method does not account for the interactive effects of emission from multiple geothermal facilities operating concurrently.²³⁰ Pollutants can interact in the atmosphere, leading to complex chemical reactions that may compound air quality impacts.²³¹ Ignoring these interactions can result in an underestimation of the true cumulative impact on air quality and public health.

The PSA must take a more comprehensive approach to accurately assess the cumulative air quality impacts. This includes a detailed emission inventories for all nearby existing and proposed geothermal facilities, including the types and quantities of pollutants emitted.²³² Indeed, the ICAPCD has permits for these facilities that provide the necessary information.

²²⁶ PSA at p. 5.1-33 to 5.1-36.

²²⁷ PSA at p. 5.1-34.

²²⁸ Shukla Comments at pp. 22-25.

²²⁹ *Id.* at pp. 22-24.

²³⁰ *Id.* at pp. 24-25.

²³¹ *Id.*

²³² *Id.* at pp. 24-26.

E. The PSA Fails to Evaluate the Cumulative Impacts of Emergency Generation

The proposed Project includes three diesel-fired generators intended for use during emergency situations.²³³ Diesel generators emit harmful pollutants such as nitrogen oxides and diesel particulate matter, which have significant health impacts, including respiratory and cardiovascular problems.²³⁴ While the PSA analyzes the Project-specific impacts of operating these emergency generators, it neglects to assess whether cumulative emissions from these generators, combined with those from other geothermal facilities, is significant.

Existing permits for geothermal facilities in the area indicate that on-site emergency generators operate between 50 and 500 hours per year.²³⁵ Additionally, new emergency generators are proposed for the Morton Bay and Black Rock facilities.²³⁶

The emergency generators at nearby facilities may operate simultaneously with those of the proposed Project. Large-scale power outages caused by natural disasters, such as earthquakes, can trigger concurrent operation of emergency generators across multiple facilities when the main power supply is disrupted. Unexpected failures within the power grid can lead to temporary outages affecting extensive areas, necessitating the use of emergency generators. High demand for electricity during extreme weather conditions can also result in rolling blackouts or brownouts, compelling facilities to activate their emergency generators to ensure continuous operation.

Further compounding the PSA's omission is the fact that these facilities are in an area already overburdened by pollutants. The Project site is in an area designated as a disadvantaged community under SB 535, highlighting the need for environmental justice considerations.²³⁷ Additionally, the Project area is designated as nonattainment for PM₁₀, meaning it already exceeds the permissible levels for particulate matter, further exacerbating the potential public health impacts.²³⁸

²³³ PSA at p. 3-9.

²³⁴ PSA at p. 5.10-17.

²³⁵ Clark Comments at pp. 14-15.

²³⁶ TN # 257470, California Energy Commission, Morton Bay Geothermal Project: Preliminary Staff Assessment (June 27, 2024) p. 3-8, *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=257470&DocumentContentId=93344>; TN # 256843, California Energy Commission, Elmore North Geothermal Project: Preliminary Staff Assessment (June 13, 2024) p. , *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=256843&DocumentContentId=92656>.

²³⁷ Clark Comments at p. 15.

²³⁸ *Id.* at p. 15.

Given these factors, the PSA must be revised to analyze the cumulative impacts of emergency generation. This analysis is essential to ensure a thorough assessment of potential environmental and health risks posed by the combined emission from all relevant facilities, particularly in a region already facing significant environmental and public health challenges.

F. The PSA Underestimates Construction Vehicle Emissions

The PSA relies on trip generation and distribution rates provided by the Applicant to calculate emissions. It assumes an even distribution of 26 truck trips per day over an 8-hour workday, resulting in approximately 3 truck trips per hour.²³⁹ However, truck trips are likely to be clustered during specific hours, leading to higher congestion and emission during those periods.²⁴⁰ The PSA also assumes that only 40% of worker trips would occur during peak hours.²⁴¹ This assumption is overly conservative and inconsistent with the trip distribution of other construction projects.²⁴² A 50% distribution is more appropriate.²⁴³ When these assumptions are correctly calibrated, the Project would result in an extra 13 daily trips per day during Project construction, causing increased emissions.²⁴⁴ The PSA must be revised to correct these deficiencies and accurately account for the Project's construction emissions.

G. The PSA Fails to Mitigate Significant Construction NOx Emissions

The PSA reveals that NOx emissions from Project construction would exceed ICAPCD's significance threshold,²⁴⁵ which the PSA selected as appropriate standard to evaluate the Project's emissions impacts.²⁴⁶ Despite the exceedance, the PSA erroneously concludes that the impact is less than significant.²⁴⁷ The PSA must propose feasible mitigation measures to reduce the impact to less than significant. Dr. Shukla identifies several mitigation measures to reduce the significant NOx impacts, including enhanced control technologies, construction schedule optimizations, alternative fuels and additives, enhanced maintenance and operator training, and emission offsets.²⁴⁸ The PSA must be revised to analyze whether implementation of the proposed measures would reduce impacts to less than significant.

²³⁹ PSA at p. 5.14-8.

²⁴⁰ Shukla Comments at pp. 28-30.

²⁴¹ PSA at p. 5.14-8.

²⁴² Shukla Comments at pp. 28-30.

²⁴³ *Id.* at pp. 29-30.

²⁴⁴ *Id.* at pp. 29-30.

²⁴⁵ PSA at p. 5.1-17.

²⁴⁶ *Id.* at p. 5.1-4; 14 Cal. Code Regs. §§ 15064.7(c), 15064(b)(2).

²⁴⁷ PSA at p. 5.1-17.

²⁴⁸ Shukla Comments at pp. 19-21.

H. The PSA Proposes Ineffective Opacity-Based Air Quality Measures

The PSA identifies several mitigation measures and conditions of certification to mitigate air quality impacts and ensure conformance with applicable LORS, including AQ-12 and AQ-37.²⁴⁹ AQ-12 prohibits the release or discharge of any air contaminant for three minutes in any one hour which is as dark, or darker than, Ringelmann Chart 1 or 20% opacity.²⁵⁰ Similarly, AQ-37 prohibits all internal combustion engines from discharging any visible air contaminant, other than uncombined water vapor, for more than 3 minutes in any one hour, which is 20% opacity or greater.²⁵¹

These measures rely on opacity, which is a measure of the amount of light blocked by particulate matter (such as smoke, dust or other pollutants) in the air.²⁵² This is used to evaluate the concentration and visibility impact of these contaminants, typically measured using EPA Methods 9 or 22, which are designed for smoke monitoring.²⁵³

According to Dr. Clark, there are several shortcomings with the measures that rely on opacity measurements. First, these methods require active monitoring of emissions from the facility, which might not be consistently enforced or feasible under all conditions.²⁵⁴ Second, certified observers must be utilized, introducing potential issues with availability and uncertainty.²⁵⁵ Third, plume opacity readings can be subjectively influenced by various factors, including particle density, refractive index, size distribution, color, plume background, path length, distance and relative elevation to stack exit, sun angle, and light conditions.²⁵⁶ Finally, these methods require sufficient light to see the plume, rendering them ineffective at night.²⁵⁷

Given the limitations identified by Dr. Clark, the proposed measures would be inconsistent during the day and entirely ineffective at night.²⁵⁸ These gaps fail to ensure air quality standards are consistently met, particularly in mitigating the migration of particle plumes offsite at night.²⁵⁹ Since the facility will operate 24 hours a day, seven days a week,²⁶⁰ the measures would only be partially effective.

²⁴⁹ PSA at p. 5.1-37.

²⁵⁰ PSA at p. 5.1-45.

²⁵¹ *Id.* at p. 5.1-51.

²⁵² Clark Comments at p. 7.

²⁵³ *Id.*

²⁵⁴ *Id.*

²⁵⁵ *Id.*

²⁵⁶ Clark Comments at p. 7.

²⁵⁷ *Id.*

²⁵⁸ *Id.*

²⁵⁹ *Id.*

²⁶⁰ PSA at p. 3-17.

To address this issue, Dr. Clark recommends revising the measures to require continuous monitoring with dust monitors immediately outside the facility and around its perimeter.²⁶¹ This would ensure more consistent and reliable monitoring of air quality impacts, regardless of time of day.²⁶²

GREENHOUSE GASES

A. The PSA Significantly Overestimates Avoided GHG Emissions

The PSA's estimate of avoided GHG emissions for the Project is fundamentally flawed due to the use of an inflated displacement factor, resulting in a misleading assessment of the Project's environmental benefits rendering the PSA's conclusion that the Project's GHG impacts are less than significant unsupported by substantial evidence. The PSA employs a displacement factor of 0.373 metric tons of carbon dioxide equivalent ("MTCO₂e") per megawatt-hour ("MWh") to estimate the emissions avoided by the Project's electricity production.²⁶³ This figure is derived from a CO₂ emissions factor of 822.5 pounds ("lbs") per MWh identified for combined cycle natural gas generators, as reported in a 2019 study published by the Commission on new utility-scale generation in California.²⁶⁴ According to the report, the CO₂ emissions factor was based on data from Commission siting cases.²⁶⁵

Contrary to the PSA's claim that the displacement factor is conservatively low, substantial evidence indicates it is excessively high. This inflated factor significantly surpasses the actual GHG intensity of regional and statewide electricity supply, leading to an overestimated calculation of avoided emissions.

For example, in 2022, the IID, the primary electricity supplier for the Project area, reported a GHG intensity of 585 lbs CO₂e/MWh.²⁶⁶ This translates to 0.2655 MTCO₂e/MWh, substantially lower than the PSA's displacement factor.²⁶⁷ The IID GHG emission intensity reflects the real-time mix of emission generators that are being displaced by renewable energy production.²⁶⁸ This leads to a precise calculation of avoided emissions based on actual grid dynamics, which can vary

²⁶¹ Clark Comments at pp. 7-8.

²⁶² *Id.*

²⁶³ PSA at p. 5.3-11.

²⁶⁴ *Id.* at p. 5.3-11; *see also* California Energy Commission, Staff Report: Estimated Cost of New Utility-Scale Generation in California: 2018 Update (May 2019) p. B-24, *available at* <https://www.energy.ca.gov/sites/default/files/2021-06/CEC-200-2019-005.pdf>.

²⁶⁵ *Id.* at p. B-22.

²⁶⁶ Shukla Comments at pp. 3-5; California Energy Commission, 2022 Power Content Label: Imperial Irrigation District (2022) (hereinafter "IID 2022 PCL"), *available at* <https://www.energy.ca.gov/filebrowser/download/6033>.

²⁶⁷ Shukla Comments at p. 5.

²⁶⁸ *Id.* at p. 3.

throughout the day and across seasons.²⁶⁹ Using IID's GHG intensity, the Project would avoid only 325,5726.2 MTCO₂/yr, far less than the PSA's estimate, resulting in an overestimation of approximately 131,424 MTCO₂e/yr.

Moreover, the statewide average GHG intensity further undermines the PSA's displacement factor. In 2022, California utilities averaged a GHG intensity of approximately 422 lbs CO₂e/MWh, or 0.1914 MTCO₂e/MWh.²⁷⁰ The statewide average emissions intensity includes a mix of all generation sources in the state, including coal, less efficient natural gas plants, renewables, nuclear, and other, providing a comprehensive picture of emission associated with electricity generation.²⁷¹ Applying the statewide average would yield even lower avoided emissions than the IID average, reinforcing that the PSA's displacement factor is excessively high.²⁷²

The significant discrepancies in the displacement factor render the PSA's conclusion that the Project's GHG impacts are less than significant unsupported by substantial evidence. The inflated displacement factor grossly overestimates avoided emissions, masking the true environmental impact of the Project. Therefore, the PSA's assertion that the Project's GHG impacts are less than significant is not substantiated by the available data.

B. The PSA Fails to Analyze Whether the Project Would Result in Net Additional GHG Emissions Over Its Lifetime

To determine whether the Project would have a significant GHG impact, the PSA evaluates whether the Project would result in any net additional GHG emissions.²⁷³ The PSA calculates that the Project's facility-wide annual GHG emissions are 47,675 MTCO₂e/yr, which includes both operational emissions and one-time construction amortized over the Project's 30-year lifespan.²⁷⁴ The PSA also considers the amount of GHG emissions that would be avoided by producing electricity via this renewable resource.²⁷⁵ Specifically, the PSA multiplies the annual MWh produced by the Project (674,500) by an avoided emissions displacement factor of 0.373 MTCO₂e MWh/yr, resulting in an avoidance of over 252,00 MTCO₂e/yr.²⁷⁶ Consequently, the PSA concludes that the total net emissions are -204,325 MTCO₂e/yr.²⁷⁷

²⁶⁹ Shukla Comments at p. 3.

²⁷⁰ IID 2022 PCL.

²⁷¹ Shukla Comments at p. 3.

²⁷² *Id.* at pp. 3-4.

²⁷³ PSA at p. 5.3-9.

²⁷⁴ *Id.* at p. 5.3-10.

²⁷⁵ *Id.* at pp. 5.3-10 to 5.3-11.

²⁷⁶ *Id.*

²⁷⁷ *Id.* at p. 5.3-10.

However, the PSA's analysis is fundamentally flawed because it fails to account for the Project's lifetime emissions in the context of California's long-term GHG reduction goals.²⁷⁸ State policy mandates that eligible renewable energy resources and zero-carbon resources supply 90% of all retail sales of electricity to California end-use customers by the end of 2035, 95% by 2040, and 100% by 2045.²⁷⁹ If these targets are met, the proposed Project would result in no avoided emissions starting in 2045. This implies that for more than half of the Project's lifespan, there would be no avoided emission.²⁸⁰ Additionally, as the state progresses towards its renewable energy goal, avoided emissions would proportionately decrease, further diminishing the Project's effectiveness in reducing GHG emissions.²⁸¹

Therefore, the PSA's conclusion that the Project would have a net positive impact on GHG emission is misleading. A more accurate assessment must consider the diminishing returns of avoided emissions over the Project's lifetime, aligning the analysis with California's evolving energy landscape and GHG reduction mandates.

C. The Project Would Result in Net Additional GHG Emissions Over the Project's Lifetime

Dr. Shukla performed a linear regression model to calculate the Project's lifetime GHG emissions consistent with state policy to achieve zero-carbon by 2045.²⁸² If IID's GHG intensity is used as the displacement factor and scaled consistent with state policy, the Project's total avoided emissions is 1,146,812 MTCO_{2e}, while the Project's total GHG emissions is 1,907,000 MTCO_{2e}.²⁸³ Over the Project's 40-year lifespan, it would emit approximately 760,187 MTCO_{2e} more than it offset.²⁸⁴

If the statewide average GHG intensity is used as a displacement factor and scaled consistent with state policy, the Project's total avoided emissions is 832,505 MTCO_{2e}, while the Project's total GHG emissions is 1,907,000 MTCO_{2e}.²⁸⁵ Over the Project's 40-year lifespan, it would emit approximately 1,074,795 MTCO_{2e} more than it offset.²⁸⁶ Both scenarios show a net increase in GHG emissions over the Project's lifespan.²⁸⁷

²⁷⁸ Shukla Comments at pp. 2-4.

²⁷⁹ Senate Bill 100, De Leon, Chapter 312, Statutes of 2018; Executive Order B-55-18.

²⁸⁰ Shukla Comments at pp. 2-5.

²⁸¹ *Id.* at pp. 2-3.

²⁸² *Id.* at pp. 5-8.

²⁸³ *Id.* at p. 8.

²⁸⁴ *Id.* at p. 8.

²⁸⁵ *Id.* at pp. 8-9.

²⁸⁶ *Id.* at p. 9.

²⁸⁷ *Id.* at p. 9-11.

Dr. Shukla’s analysis of lifetime GHG emissions demonstrates that the Project would result in a potentially significant GHG impact. Dr. Shukla recommends that the PSA identify mitigation measures to reduce this potentially significant impact, such as those disclosed the 2008 Technical Advisory issued by the Governor’s Office of Planning and Research and the California Air Pollution Control Officers Association’s GHG Handbook.²⁸⁸

PUBLIC HEALTH

A. The PSA Fails to Analyze Radon Impacts

Among the many contaminants that would be released by the proposed Project, radon is of particular concern.²⁸⁹ Radon exposure poses significant health risks due to its radioactive nature.²⁹⁰ The harmful effects of radon are particularly concerning because they often go unnoticed until serious health issues arise. The most significant health risk associated with radon exposure is an increased risk of lung cancer.²⁹¹ According to the EPA, radon is the number one cause of lung cancer among non-smokers, and the second leading cause of lung cancer overall.²⁹²

The PSA claims that radon is not a TAC is incorrect.²⁹³ The California Air Resources Board (“CARB”) designates radon as a TAC pursuant to Health & Safety Code § 39657.²⁹⁴ This designation underscores the recognized dangers of radon and the necessity to analyze its potential public health impacts.

Furthermore, the PSA claims OEHHA Guidelines do not provide methods for assessing radon emissions to ambient air.²⁹⁵ While the guidelines may not offer a specific methodology for radon, they address radon within the broader framework of assessing TACs. Radon emissions must be quantified,²⁹⁶ and reported in units of Curies per year (for annual average emissions) and in units of milliCuries per hour (for maximum hourly emissions).²⁹⁷ This quantification is essential for accurate risk assessment and regulatory compliance.

²⁸⁸ Shukla Comments at p. 11.

²⁸⁹ Clark Comments at p. 6.

²⁹⁰ *Id.* at p. 6.

²⁹¹ *Id.* at p. 6.

²⁹² *Id.* at p. 6.

²⁹³ PSA at p. 5.10-23.

²⁹⁴ 17 Cal. Code Regs. § 93001.

²⁹⁵ PSA at p. 5.10-23.

²⁹⁶ Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program: Guidance Manual for Preparation of Health Risk Assessments Appendices A-F (Feb. 2015) p. A-18, *available at* <https://oehha.ca.gov/media/downloads/crn/2015gmappendicesaf.pdf>.

²⁹⁷ *Id.* at p. A-35.

The PSA also claims radon emissions do not pose an increased health risk because modeled radon concentrations at the maximally exposed individual receptor (“MEIR”) fall within existing background levels of radon in the air in California.²⁹⁸ This reliance on statewide background concentrations is misplaced.²⁹⁹ As a threshold matter, the PSA fails to establish the specific baseline levels of radon in the Project area.³⁰⁰ Even at the assumed levels, existing background levels of radon equate to 3 additional lung cancers per 1,000 people who smoke, or a risk of 3,000 per 1,000,000.³⁰¹ Moreover, radon levels in Imperial County are lower than the statewide average, as the EPA designates Imperial County as an area with low radon potential.³⁰²

Additionally, AQ-72 mandates that the Project test for radon in the first year of operation and every four years thereafter.³⁰³ This is in line with nearby geothermal facilities that periodically test for radon.³⁰⁴ This requirement reflects the acknowledged risk and the need for ongoing monitoring.

Finally, the PSA’s analysis only accounts for impacts to residential receptors, neglecting workers who are potentially at greater risk due to prolonged exposure and proximity to the source.³⁰⁵ This omission is critical as workers are directly exposed to emissions during Project operations.

Given these deficiencies, the PSA must be revised to include a detailed risk assessment of radon emissions specific to the Project. This assessment should ensure the safety of all potentially affected individuals, including workers. Ensuring comprehensive analysis and appropriate mitigation measures such as enhanced ventilation or monitoring systems is crucial for protecting public health.³⁰⁶

B. The PSA Fails to Meaningfully Analyze Cumulative Public Health Impacts

The PSA acknowledges multiple existing, pending, and proposed projects within a 6-mile radius of the Project site.³⁰⁷ It asserts that cumulative public health impacts are typically not significant unless the emitting sources are extremely close

²⁹⁸ PSA at p. 5.10-22.

²⁹⁹ Clark Comments at pp. 6-7; Shukla Comments at pp. 26-27.

³⁰⁰ Shukla Comments at p. 27.

³⁰¹ Clark Comments at p. 6.

³⁰² *Id.* at p. 6.

³⁰³ PSA at p. 5.1-60 to 5.1-61.

³⁰⁴ Clark Comments at p. 6.

³⁰⁵ *Id.* at p. 6.

³⁰⁶ Shukla Comments at p. 27.

³⁰⁷ PSA at p. 5.10-32 to 5.10-33.

to each other.³⁰⁸ Despite identifying the Del Ranch and Vulcan geothermal powerplants located adjacent to the Project site, the PSA concludes the proposed Project would not contribute to cumulative public health impacts.³⁰⁹ This conclusion is flawed and lacks substantial evidence.

Given the proximity of Del Ranch and Vulcan, it is critical to assess the combined emissions from both the existing and proposed projects.³¹⁰ Proximity alone does not fully capture the potential for cumulative impacts. Instead, the intensity and nature of emissions from each source must be considered to determine their collective effect on public health.³¹¹ The PSA's dismissal of potential cumulative impacts overlooks the fact that pollutants can disperse over greater distances, interact in complex ways, and still affect air quality and health outcomes.³¹²

Moreover, the exclusion of existing facilities from a more detailed cumulative impact assessment is inconsistent with EPA guidance on air quality modeling.³¹³ The EPA states that sources which cause a significant concentration gradient in the vicinity of the source(s) under consideration for emissions limits are typically not adequately represented by background ambient monitoring.³¹⁴ For multi-source areas, such as the case here, the Guidelines recommend determining the appropriate background concentration by (1) identifying and characterizing contributions from nearby sources through explicit modeling, and (2) characterization of contributions from other sources through adequately representative ambient monitoring data.³¹⁵

The EPA recommends that in most cases the nearby sources will be located within the first 10 to 20 kilometers (6.2 to 12.4 miles) from the source(s) under consideration.³¹⁶ Therefore, the modeling must also consider other existing and proposed facilities within 6 miles of the Project site including: JJ Elmore, JM Leathers, Vulcan, Hudson Ranch Power, Salton Sea Units 1-5, Morton Bay, Black Rock, and Hell's Kitchen.³¹⁷ At the bare minimum, the air quality model should include emissions from the Del Ranch and Vulcan geothermal powerplants.³¹⁸ The omission of this particular nearby source is inexcusable given its proximity to the Project site and the fact that it emits substantial quantities of the same criteria

³⁰⁸ PSA at p. 5.10-32.

³⁰⁹ *Id.* at p. 5.10-33.

³¹⁰ Shukla Comments at pp. 22-26.

³¹¹ *Id.*

³¹² *Id.*

³¹³ *Id.* at p. 22, 25.

³¹⁴ 40 C.F.R. Pt. 51, App. W § 8.3.1.i., 8.3.1.3.

³¹⁵ *Id.* § 8.3.1.3.a.

³¹⁶ *Id.* § 8.3.3.b.iii.

³¹⁷ Shukla Comments at p. 22-26.

³¹⁸ *Id.* at p. 22-26.

pollutants as the proposed Project.³¹⁹ Detailed inventories of these facilities emissions can be found in their ICAPCD-issued permits.³²⁰

The PSA must provide a detailed analysis of the types and quantities of emissions from both the existing geothermal powerplant and the proposed Project. The analysis must address cumulative cancer and hazard risks.³²¹ This analysis should include an evaluation of how these emissions interact and their potential to exacerbate health risks for nearby sensitive receptors. Without such a comprehensive assessment, the PSA cannot accurately determine cumulative public health impacts.

In sum, the PSA's assertion that the proposed Project would not contribute to cumulative public health impacts is unsupported. A thorough analysis that considers the combined emissions and their interaction is essential to ensure an accurate evaluation of public health risks.

C. The PSA Lacks Substantial Evidence to Conclude Valley Fever Impacts Are Less Than Significant

Valley fever is an infectious disease caused by inhaling *Coccidioides* spores, poses a significant health risk when soil containing these spores is disturbed.³²² Activities such as agricultural operations, dust storms or earthquakes can release these spores into the air.³²³ The disease is endemic (native and common) to semiarid regions of the United States, including Imperial County.³²⁴

The PSA acknowledges that Project construction could expose workers and the public to the risk of Valley Fever.³²⁵ However, it concludes health risks from Valley Fever are not a major concern due to the relatively low incidence rate in Imperial County compared to other areas of California and the proposed mitigation measures (AQ-SC3 and AQ-SC4), which are expected to minimize the risk of exposure to workers and the public.³²⁶ As a result, the PSA finds the impact to be less than significant.³²⁷

The PSA's focus on historical infection rates is flawed. While infections rates in Imperial County may be lower than other parts of the state, the PSA ignores the

³¹⁹ *Id.* at p. 22-26.

³²⁰ **Attachment G**, Authority to Construct/Permit to Operate Issued by the Imperial County Air Pollution Control District for Vulcan Geothermal Power Plant (1985).

³²¹ *Id.* at p. 22-26.

³²² PSA at p. 5.10-6.

³²³ Clark Comments at p. 9.

³²⁴ *Id.* at p. 9.

³²⁵ PSA at p. 5.10-20.

³²⁶ *Id.* at p. 5.10-21.

³²⁷ PSA at p. 5.10-16.

primary risk factor: exposure to dust.³²⁸ Research has shown that large-scale renewable energy construction projects increase the incidence rate for Valley Fever proportionally to the number of disturbed soil acres.³²⁹ The PSA does not specify the exact amount of soil to be distributed during Project construction, stating only that construction would disturb a certain percentage of approximately 3 acres of topsoil.³³⁰ The substantial amount of land disturbance suggests a potentially significant risk of Valley Fever exposure.

Moreover, the mitigation measures are inadequate. AQ-SC3 requires the preparation of a fugitive dust control plan that implements enhanced dust control measures.³³¹ AQ-SC4 mandates monitoring for visible dust plumes and implementation of additional mitigation measures.³³²

Valley Fever spores are small, have slow settling rates, and can remain airborne for long periods, traveling significant distance.³³³ Invisible to the human eye, these spores can persist in seemingly clear air, rendering the visual monitoring specified in AQ-SC4 insufficient to protect site workers or the public.³³⁴ Standard fugitive dust mitigation measures, like those proposed in AQ-SC3, do nothing to prevent the spread of the fungus and are not effective at controlling Valley Fever because they are largely focused on controlling visible dust or larger dust particles.³³⁵ These measures fall short in protecting against Valley Fever.

Given these deficiencies, the PSA lacks substantial evidence to conclude Valley Fever impacts are less than significant. The PSA must be revised to address these critical issues and provide more effective measures to mitigate the risk of Valley Fever exposure.

To mitigate potentially significant Valley Fever impacts, Dr. Clark recommends pre-construction soil survey of the site to identify whether Valley Fever spores are present and implement measures to actively suppress spread. These measures include (1) active monitoring, (2) enhance dust control techniques, (3) prevention of spore spread outside endemic areas, and (4) improved surveillance for construction workers.³³⁶

³²⁸ Clark Comments at p. 9.

³²⁹ *Id.* at pp. 9-10.

³³⁰ PSA at p. 5.10-20.

³³¹ PSA at pp. 5.1-39 to 5.1-41.

³³² *Id.* at p. 5.1-41.

³³³ Clark Comments at p. 10.

³³⁴ *Id.* at p. 10.

³³⁵ *Id.* s at p. 10.

³³⁶ *Id.* at pp. 12-14.

HAZARDOUS MATERIALS / HAZARDOUS WASTE

“The Project site would be classified as a hazardous waste generator. Hazardous waste generated could include used lubricating oils, brine pond solids, geothermal scale, cooling tower debris and sludge, aerosol containers, solvents, paint, adhesives, and lead acid batteries. Additionally, the filter cake could be characterized at times as hazardous due to elevated concentrations of heavy metals.”³³⁷ The AFC estimates that approximately 5% of the filter cake will be characterized as hazardous for this reason.³³⁸

“If the filter cake is determined to be hazardous, it will be disposed of in the necessary manner, and if it is nonhazardous, the filter cake will be disposed of at a Class II regulated landfill.”³³⁹ “Any hazardous waste generated from maintenance activities on the wells and well pads and their associated piping would be transported back to the project site for proper storage and disposal. Such wastes would be stored onsite for less than 90 days and transported away by licensed hazardous waste hauler companies.”³⁴⁰

The PSA’s conclusion that the Project would have a less than significant impact related to hazards and hazardous materials/waste with the implementation of conditions of certification is not supported by substantial evidence.³⁴¹ First, the PSA fails to disclose the disposal facility for the Project’s hazardous waste generated during construction and operations. It also does not discuss whether the Project’s hazardous waste generated during operations will be recycled. Second, the analysis of cumulative impacts from the transportation and disposal of the Project’s hazardous waste is deficient. The PSA must be revised to address these glaring omissions in the analysis and to ensure that the PSA’s significance determination is supported by substantial evidence.

A. The PSA Fails to Disclose the Disposal Facility for Hazardous Wastes Generated During Construction and Operations and Omits Whether Hazardous Waste Will be Recycled During Operations

The PSA states that, during construction, “[h]azardous wastes will be either recycled or disposed of in a licensed Class I disposal facility as appropriate.”³⁴² However, the PSA fails to provide critical information about which facilities have the capacity and capability to dispose of and/or recycle the Project’s hazardous waste. During operations, approximately 1,300 tons of hazardous filter cake will be

³³⁷ PSA at p. 5.7-17.

³³⁸ AFC at p. 5.14-4.

³³⁹ TN # 254543, Preliminary Decision of Compliance (PDOC) Black Rock (Feb. 16, 2024) p. 5.

³⁴⁰ PSA at p. 5.7-17.

³⁴¹ *Id.* at p. 5.7-27.

³⁴² *Id.* at p. 3-14.

generated each year, along with other hazardous wastes such as used lubricating oil, brine pond solids, geothermal scale, cooling tower debris and sludge, aerosol containers, solvents, paint, adhesives, laboratory analysis waste, and lead acid batteries.³⁴³ While the PSA specifies that the Desert Valley Company Monofill (“DVCM”) Class II facility in Brawley, California, will dispose of *non-hazardous* filter cake wastes, it remains silent on where hazardous wastes will be transported, disposed of, or recycled during operations.³⁴⁴

The PSA must disclose the facility that will handle the disposal and recycling of the Project’s hazardous wastes. This disclosure should include the location, capacity, and capability of these facilities to process the Project’s hazardous waste. Additionally, the PSA must disclose, analyze, and mitigate any potentially significant impacts from transporting this hazardous waste to the facility, including air quality, GHG emissions, transportation, noise, environmental justice, and public safety.

Transporting the Project’s hazardous waste for disposal may have significant impacts, particularly if the facility is far away, such as the Copper Mountain Landfill located at 34853 East County 12th Street in Wellton, Arizona, approximately 130 miles southeast of the Project site. Other projects in the area rely on this facility for hazardous waste disposal.³⁴⁵ Truck trips to the Arizona facility to dispose of the Project’s hazardous wastes “alone could significantly [increase] the criteria air pollutant and GHG emissions that are not analyzed in the Staff Assessment.”³⁴⁶ In fact, Dr. Shukla estimates that the additional truck trips would generate 8.98kg of carbon dioxide, contributing to more severe air quality and GHG impacts.³⁴⁷ Furthermore, if the filter cakes exceed Arizona’s toxicity standards, the Project would need to arrange for its hazardous waste to be hauled to Idaho or Nevada, a scenario not addressed in the PSA.³⁴⁸

The PSA must be revised to provide detailed information regarding the disposal and/or recycling of the Project’s hazardous waste generated during construction and operations. Based on this information, the air quality, GHG emissions, transportation, noise, environmental justice, and public safety sections in the PSA must also be revised to analyze the potentially significant impacts from the transportation of the Project’s hazardous waste.

³⁴³ AFC at p. 2-30, 5.14-4.

³⁴⁴ PSA at p. 5.12-2.

³⁴⁵ See, e.g., County of Imperial, Draft Environmental Impact Report for the Energy Source Mineral ATLiS Project (June 2021) p. 4.7-13, *available at* <https://www.icpds.com/assets/Energy-Source-Mineral-ATLiS-Project-DEIR-.pdf>.

³⁴⁶ Clark Comments at p. 14; Shukla Comments at p. 33-34.

³⁴⁷ Shukla Comments at p. 33-34.

³⁴⁸ See County of Imperial, Hell’s Kitchen PowerCo 1 and LithiumCo 1 Project Findings of Fact, Statement of Overriding Considerations (Dec. 2023) p. 35.

B. The Analysis of Cumulative Impacts from the Transportation and Disposal of the Project's Hazardous Waste is Deficient

The PSA concludes that “[n]o cumulative projects were identified at or immediately adjacent to the project, therefore there are no projects with the potential to combine cumulatively with the project relative to hazards, hazardous materials and hazardous waste.”³⁴⁹ However, the PSA improperly limits the geographic scope of the cumulative impacts by restricting the analysis “to the immediate vicinity surrounding the project.”³⁵⁰ The PSA lacks substantial evidence to support the conclusion that “there are no projects with the potential to combine cumulatively with the project relative to” “the generation and haul away of hazardous waste”³⁵¹

As explained above, the PSA fails to disclose where the Project's hazardous wastes will be transported and disposed of during construction and operations. Other projects in the area rely on the Copper Mountain Landfill including Energy Source Mineral ATLiS Project.³⁵² In addition, eleven operating geothermal power plants likely utilize the Copper Mountain Landfill for their hazardous waste disposal. The PSA must disclose where the Project's hazardous waste will be disposed of and revise the cumulative impacts analysis to adequately evaluate the projects with the potential to combine cumulatively with this Project's impacts from the transportation and disposal of hazardous waste.

SOLID WASTE MANAGEMENT

“The primary solid waste anticipated during plant operation would be filter cake generated during the processing of geothermal fluids. After the steam separation, geothermal fluids would be treated through clarifiers where minerals contained in the fluid would be removed as a slurry. The solids slurry discharged from the clarifiers would be directed to a vacuum filtration system to produce filter cake.”³⁵³ According to the AFC, approximately 800 tons of hazardous filter cake and 14,000 tons of nonhazardous filter cake will be generated each year by the Project.³⁵⁴ The largest nonhazardous waste stream will be filter cake generated during operations.³⁵⁵ The PSA states that, as a “goal,” 95% of the filter cake will be characterized as nonhazardous, with approximately 5% likely to be characterized as hazardous due to elevated concentrations of heavy metals.³⁵⁶

³⁴⁹ PSA at p. 5.726.

³⁵⁰ *Ibid.*

³⁵¹ *Ibid.*

³⁵² See, e.g., County of Imperial, *Draft Environmental Impact Report for the Energy Source Mineral ATLiS Project* at p. 4.7-13 (June 2021).

³⁵³ PSA at p. 5.12-1.

³⁵⁴ AFC at p. 5.14-5.

³⁵⁵ *Id.* at p. 2-22.

³⁵⁶ *Id.* at p. 2-24.

The PSA specifies that the filter cake generated during Project operation would be transported to the DVCN Class II facility located in Brawley, California.³⁵⁷ The DVCN specializes in the disposal of geothermal industry-related wastes and is currently permitted to accept a maximum of 750 tons of solid waste per day.³⁵⁸ As of January 2022, the last active cell had a remaining capacity of 1.3 million cubic yards.³⁵⁹ However, in January 2022, Imperial County approved an expansion of the landfill to a capacity of 2.6 million cubic yards.³⁶⁰

The PSA's evaluation of the DVCN's capacity to handle nonhazardous filter cake generated from this Project, along with other geothermal projects, is critically flawed. First, the PSA impermissibly defers the impacts analysis regarding the disposal of nonhazardous filter cake waste at an alternative disposal facility in Arizona. Second, the proposed mitigation for this waste disposal is deferred because the measure relies on a future impact study, thereby minimizing the Project's environmental impacts. Finally, the PSA lacks substantial evidence to conclude cumulative solid waste impacts are less than significant because the Project's nonhazardous filter cake waste exceeds the DVCN's current capacity when combined with waste from the two other proposed geothermal facilities and the cumulative impacts may be even more severe when coupled with the LVSP.

A. The PSA Fails to Analyze the Impacts from Disposal of Nonhazardous Filter Cake Waste at the Arizona Facility and Defers Mitigation of These Impacts

During the operational phase for all three proposed geothermal projects (Elmore North, Morton Bay, and Black Rock), the annual cumulative tonnage of geothermal filter cake transported to the DVCN Class II landfill would be approximately 62,000 tons.³⁶¹ The 2022 annual tonnage noted for the DVCN facility was 44,424 tons.³⁶² This indicates that the cumulative geothermal filter cake tonnage would exceed the annual 2022 capacity of the DVCN.³⁶³ Moreover, the DVCN is projected to reach capacity in 2025.³⁶⁴

Although the Imperial County Board of Supervisors approved the expansion of the DVCN landfill capacity on January 25, 2022,³⁶⁵ it is planned for two (2)

³⁵⁷ PSA at p. 5.14-6.

³⁵⁸ *Id.* at p. 5.12-2.

³⁵⁹ *Ibid.*

³⁶⁰ County of Imperial, Agenda (Jan. 25, 2022), *available at* https://imperial.granicus.com/GeneratedAgendaViewer.php?view_id=2&clip_id=2088.

³⁶¹ PSA at p. 5.12-6.

³⁶² *Ibid.*

³⁶³ *Ibid.*

³⁶⁴ *Id.* at p. 5.12-2.

³⁶⁵ County of Imperial, Agenda (Jan. 25, 2022), *available at* https://imperial.granicus.com/GeneratedAgendaViewer.php?view_id=2&clip_id=2088.

phases.³⁶⁶ According to the EIR for the expansion project, Phase 1 (Cell 4A) would take approximately 12 months to complete, with construction assumed to start in 2023.³⁶⁷ However, there is no evidence in the record demonstrating that construction for Cell 4A has commenced or will occur in the near future. Phase 2 (Cell 4B) is anticipated to begin around 2050, two years before Cell 4A reaches capacity.³⁶⁸ However, absent an actual start date for construction of Cell 4A, the timing of Cell 4B remains speculative.

As an alternative, the Applicant identified the Copper Mountain Landfill in Yuma, Arizona, as a disposal option if the Cell 4 expansion is not completed in time.³⁶⁹ The PSA concludes that the cumulative impact regarding the disposal of nonhazardous geothermal filter cake would be less than significant if the Cell 4 expansion is completed before the three proposed geothermal projects exhaust the current DVCM capacity.³⁷⁰ Mitigation Measure SOLID WASTE-2 requires the Applicant to identify an alternative disposal facility if the DVCM cannot accept the nonhazardous geothermal filter cake and to analyze whether the estimated waste volume would create a significant impact on the disposal facility and the surrounding environment.³⁷¹

The PSA impermissibly fails to analyze the alternative disposal facility impacts. “An EIR should be prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. [] The courts have looked [] for adequacy, completeness, and a good faith effort at full disclosure.”³⁷² The impacts analysis in an EIR must disclose the “analytic route the ... agency traveled from evidence to action.”³⁷³ “An adequate description of adverse environmental effects is necessary to inform the critical discussion of mitigation

³⁶⁶ County of Imperial, Desert Valley Company Monofill Expansion Project, Cell 4 Final Environmental Impact Report Vol. 1 (Oct. 2021) p. 4-1, *available at* <https://www.icpds.com/assets/DVCM-FEIR-Vol-1.pdf>. Additionally, Cell 4A and Cell 4B would collectively provide up to 2.6 million cubic yards of additional waste disposal capacity at the DVCM. *Id.* at p. 1-2. However, Cell 4B will not be constructed until two years prior to Cell 4A reaching its capacity, which is estimated to be around 2050. *Id.* at p. 4-1. Cell 4A is projected to have a design capacity of approximately 1.3 million cubic yards. *Id.* at p. 4-7. The PSA should compare the Project’s estimated volume of geothermal filter cake to the Cell 4A design capacity rather than the entire Cell 4 capacity as it did in the analysis at page 5.12-5.

³⁶⁷ *Ibid.*

³⁶⁸ *Ibid.*

³⁶⁹ PSA at p. 5.12-6.

³⁷⁰ *Ibid.*

³⁷¹ *Id.* at p. 5.12-8.

³⁷² 14 Cal. Code Regs. § 15151.

³⁷³ *Topanga Assn. for a Scenic Community v. County of Los Angeles* (1974) 11 Cal.3d 506, 515.

measures and project alternatives at the core of the EIR.”³⁷⁴ The agency cannot cede all responsibility for assessing impacts to the project proponent.³⁷⁵

Based on the information in the PSA, the three geothermal projects, once operational, will immediately exceed the capacity of the DVCM existing facility. The DVCM expansion project is speculative. Although permits were issued, there is no evidence that construction has started, and once construction begins, it will take at least one year to complete the first phase. It is therefore reasonably foreseeable that the alternative disposal facility in Arizona will need to be utilized by the Project once all three geothermal projects are operational.

The PSA must be revised to evaluate the impacts from transporting and disposing of the nonhazardous filter cake at the facility in Arizona. By omitting this impacts analysis, the PSA minimizes the Project’s environmental impacts, contrary to CEQA’s requirements to evaluate the ‘whole of an action.’³⁷⁶ The Copper Mountain Landfill is approximately 130 miles from the Project site, compared to the DVCM facility, which is less than 20 miles away. Transporting nonhazardous waste to the alternative facility would cause new or more severe air quality, GHG, public health, transportation, and environmental justice impacts due to additional truck trip distances. The PSA must also be revised to evaluate whether the Copper Mountain Landfill is permitted to accept the nonhazardous geothermal filter cake waste generated by the three geothermal projects and assess if the estimated waste volume for these three projects would result in significant cumulative impacts on the disposal facility and its surrounding environment.

Additionally, the PSA sets forth deferred mitigation in COC SOLID WASTE-2/MM SOLID WASTE-2, which violates CEQA. “Impermissible deferral of mitigation measures occurs when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR.”³⁷⁷ The PSA fails to analyze the impacts from disposal of the Project’s nonhazardous filter cake at the Copper Mountain Landfill. Instead, it proposes COC SOLID WASTE-2/MM SOLID WASTE-2, which requires identification of an alternative disposal facility and mandates further environmental review if the DVCM can no longer accept nonhazardous filter cake. This measure impermissibly defers formulation of specific performance standards and provides no standards for determining whether mitigation will be required. No

³⁷⁴ *Sierra Club v. Cnty. of Fresno* (2018) 6 Cal.5th 502, 514.

³⁷⁵ *Sundstrom v. Cnty. of Mendocino* (1988) 202 Cal.App.3d 296, 307 (held the conditions improperly delegated the County’s legal responsibility to assess environmental impact by directing the applicant to conduct the hydrological studies subject to the approval of the Planning Commission staff).

³⁷⁶ CEQA prohibits piecemeal review of the significant environmental impacts of a project. *See Bozung v. Local Agency Formation Com.* (1975) 13 Cal.3d 263, 283-284.

³⁷⁷ *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-16; *Save Agoura Cornell Knoll v. City of Agoura Hills* (2020) 46 Cal.App.5th 665, 687.

evidence is offered in the PSA to explain why the analysis and mitigation measure is deferred. COC SOLID WASTE-2/MM SOLID WASTE-2 is contrary to CEQA, and the PSA must be revised to include a thorough impacts analysis regarding the use of the Copper Mountain Landfill.

B. The PSA Lacks Substantial Evidence to Conclude Cumulative Solid Waste Impacts Are Less Than Significant

According to the PSA, the Elmore North, Morton Bay, and Black Rock geothermal projects would collectively transport approximately 62,000 tons of filter cake to the DVCN annually.³⁷⁸ However, in 2022, the DVCN's annual tonnage was 44,424 tons,³⁷⁹ resulting in an exceedance of 17,576 tons. The PSA acknowledges this exceedance, noting that "[t]he annual cumulative geothermal filter cake tonnage would exceed the annual tonnage reported for DVCN in 2022."³⁸⁰

Despite this, the PSA concludes that the cumulative impact from disposal of the nonhazardous filter cake would be less than significant "...if the DVCN facility Cell 4 expansion is completed prior to the three proposed geothermal projects exhausting the current DVCN capacity."³⁸¹ This conclusion is unsupported because it relies on the assumption that the expansion project will be completed prior to operation of the three geothermal facilities.

The PSA fails to describe the status of the expansion project. Consequently, it is unclear whether the DVCN can accommodate nonhazardous waste from the three geothermal facilities. Without substantial evidence demonstrating that the Cell 4 expansion will be operational in time, the PSA's less-than-significant cumulative impact conclusion remains speculative and unsupported.

Furthermore, the PSA's cumulative impact analysis fails to consider the Project's impact in combination with the LVSP. As discussed in the general comment above regarding the PSA's cumulative impact analysis, the LVSP would permit development of additional geothermal power plants, which would also generate nonhazardous filter cake. The PSA must be revised to assess how the combined waste demands of all future probable projects would impact the capacity of the current DVCN facility, the proposed Cell 4 expansion project, and the alternative disposal facility in Arizona. Specifically, the PSA must analyze if the estimated waste volume from all future probable projects would create a significant cumulative impact to each disposal facility and the surrounding environment.

³⁷⁸ PSA at p. 5.12-6.

³⁷⁹ *Ibid.*

³⁸⁰ PSA at p. 5.12-6.

³⁸¹ *Ibid.*

The PSA's current analysis is insufficient and lacks the necessary details to ensure proper waste management and environmental protection. A comprehensive and detailed evaluation is essential to provide a reliable and legally compliance assessment of cumulative impacts. The revised PSA must offer substantial evidence and clear analysis to support its conclusions and ensure that the proposed mitigation measures are effective and enforceable.

TRANSPORTATION

A. The PSA Lacks Substantial Evidence to Support Trip Generation Rates

To determine whether the Project would result in a significant VMT impact, the PSA estimates that the Project would generate 104 daily operational trips.³⁸² This estimate is based on 61 workers driving to and from the Project each day, with a 15% discount for carpooling, worker absences, and remote work.³⁸³ Additionally, the PSA excludes all truck trips generated by delivery, haul, and maintenance trucks from the VMT analysis, claiming these trips would occur during off-peak hours.³⁸⁴ The VMT analysis is deficient for two reasons.

First, the PSA fails to provide evidence supporting the 15% reduction in daily worker trips. Neither the Project application nor the Applicant's responses to data requests substantiate this reduction.³⁸⁵ The data request responses briefly mention carpooling for construction trips, but do not address remote work or expected absences.³⁸⁶ Additionally, the PSA's reference to construction activities when justifying the 15% discount is confusing and irrelevant.³⁸⁷

Second, the PSA's exclusion of truck trips from the VMT analysis is clearly erroneous. The primary goal of the VMT analysis is to account for the total number of miles traveled by vehicles associated with the project, regardless of the time of day these trips occur.³⁸⁸ The threshold of significance for the Project's impact to VMT also does not distinguish off-peak truck trips from other trips in considering whether a project's estimated daily trips are less than 110.³⁸⁹ Off-peak truck trips still contribute to total VMT and can have significant environmental impacts. Ignoring these trips results in an incomplete and inaccurate assessment of the Project's total VMT.

³⁸² PSA at p. 5.14-14.

³⁸³ *Id.*

³⁸⁴ *Id.*

³⁸⁵ See AFC at p. 5.12-11 to 5.12-13; TN # 252492-1, Black Rock Geothermal Project Data Request Responses Set 1 Part 1 (Oct. 3, 2023) p. 10-1.

³⁸⁶ *Id.* at p. 10-1.

³⁸⁷ PSA at p. 5.14-13.

³⁸⁸ Pub. Res. Code § 21099.

³⁸⁹ PSA at p. 5.14-7.

Moreover, the PSA fails to adequately describe the off-site truck classifications. This is a critical omission because the lead agency must analyze all on-road passenger vehicles, including cars and light duty trucks.³⁹⁰ According to the air quality spreadsheets, 66% of the delivery, haul, and maintenance trucks are light-duty.³⁹¹ When 124 daily light duty truck trips are added to worker trips, the Project's daily operational trips clearly exceed the selected screening threshold of 110.³⁹²

Given these defects, the PSA lacks substantial evidence to conclude that the Project's VMT impacts are less than significant. The PSA must be revised to include a detailed study of the Project's operational VMT impacts. A new VMT analysis would also necessitate recirculation of the PSA because it constitutes significant new information that was added after the close of the comment period, depriving the public of a meaningful opportunity to comment on substantial adverse project impacts, feasible mitigation measures, or alternatives.³⁹³

B. The PSA Lacks Substantial Evidence to Support the Selected VMT Screening Threshold

To evaluate whether the Project's VMT impacts are significant, the PSA utilizes the Office of Planning and Research's ("OPR") screening threshold of 110 daily trips.³⁹⁴ A lead agency's choice of appropriate thresholds of significance must be "based to the extent possible on scientific and factual data."³⁹⁵ While lead agencies have discretion to use thresholds of significance recommended by other public agencies, the decision must be supported by substantial evidence.³⁹⁶ The use of OPR's screening threshold for this Project is inappropriate for several reasons.

First, the screening threshold is for small projects, which typically generate fewer trips and have localized impacts.³⁹⁷ A large geothermal facility involves a much larger scale of operations, including significantly higher numbers of workers, machinery, and delivery and maintenance trucks. This results in a much greater VMT impact that cannot be accurately captured by thresholds meant for small office projects. The inherent differences in scale and operational demands mean that

³⁹⁰ 14 Cal. Code Regs. § 15064.3(a).

³⁹¹ TN # 253213, Black Rock Geothermal Project Air Quality Operational Emissions Spreadsheet (Nov. 17, 2023) (percentage determined based on the usage percentage of off-site light duty pick-up trucks combined with the off-site heavy-duty diesel haul trucks in Table 18).

³⁹² PSA at pp. 5.14-7, 5.14-14.

³⁹³ 14 Cal. Code Regs. § 15088.5(a); *Laurel Heights Improvement Ass'n v. Regents of Cal.* (1993) 6 Cal.4th 1112.

³⁹⁴ PSA at p. 5.14-7.

³⁹⁵ 14 Cal. Code Regs. § 15064(b)(1).

³⁹⁶ *Id.* at § 15064.7(c).

³⁹⁷ Office of Planning and Research, Technical Advisory on Evaluating Transportation Impacts in CEQA (Dec. 2018) p. 12, available at https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf.

using the same threshold would underestimate the actual VMT impact of the geothermal facility.

Second, OPR's screening threshold is based on a study finding a linear relationship between gross floor area and trip generation rate for office buildings, where for the first 10,000 square feet of office space, approximately 110 trips are generated.³⁹⁸ This threshold is not appropriate for a geothermal project given the fundamentally different operational dynamics of office buildings and industrial energy projects. Office buildings typically have predictable commuter patterns, while geothermal facilities have complex and variable traffic patterns due to shifts, equipment transport, and maintenance activities.

Given these deficiencies, the PSA lacks substantial evidence to support selection of OPR's screening threshold for the proposed Project. The PSA must be revised to include a detailed study of the Project's operational VMT impacts. A comprehensive analysis tailored to the specific characteristics of a large geothermal facility is necessary to accurately assess its true VMT impact.

C. The PSA Fails to Analyze Cumulative VMT Impacts

The PSA contains no discussion of potential cumulative VMT impacts. This is a critical omission given the deficiencies highlighted above, which are also present in the VMT analysis for the Morton Bay and Black Rock projects. The PSA must analyze whether the incremental VMT effects of the proposed Project are cumulatively considerable when viewed in connection with the VMT impacts of other past, present, and probable future projects.

ENVIRONMENTAL JUSTICE

CalEnviroScreen indicates that Calipatria suffers from a pollution burden worse than 63% of census tracts in California.³⁹⁹ The asthma burden is in the 99th percentile in census tract 06025010200, which includes "disadvantaged communities" in the Project's 6-mile radius.⁴⁰⁰ The construction and operation of lithium and geothermal facilities in Imperial Valley could further degrade air quality through emissions of particulate matter, GHGs, and hydrogen chloride.⁴⁰¹ It is vital that the PSA analyze the cumulative impacts as "Lithium Valley" is

³⁹⁸ *Id.* at p. 12 fn. 19.

³⁹⁹ California Environmental Protection Agency, CalEnviroScreen 4.0 2021.

⁴⁰⁰ PSA at p. 6-10.

⁴⁰¹ Earthworks & Comite Civico Del Valle, Environmental Justice In California's Lithium Valley: Understanding the Potential Impacts of Direct Lithium Extraction from Geothermal Brine (Nov. 2023) p. 7 (hereinafter "Lithium Valley EJ Report", available at <https://earthworks.org/wp-content/uploads/2023/10/California-Lithium-Valley-Report.pdf>).

developed, considering emissions from vehicle trips, battery plants, and other associated infrastructure.⁴⁰²

Disadvantaged, high-poverty Latinx communities living near the Project already endure significant pollution from the Salton Sea and industrial agriculture. These communities experience high rates of asthma, likely to increase due to airborne dust from the receding Salton Sea's exposed lakebed.⁴⁰³ The Project will only exacerbate existing environmental justice impacts. Given this context, the Commission must thoroughly assess the cumulative and disproportionate impacts on these vulnerable communities. Failure to do so will worsen existing health disparities and environmental injustices.

A. Environmental Justice Impacts Associated with Project Air Quality are Significant

The Environmental Justice section of the PSA relies on the conclusion that the Project's air quality impacts are "less than significant with mitigation incorporated."⁴⁰⁴ This statement is not supported by substantial evidence. As demonstrated herein and in the expert consultant reports attached, the Project will result in significant, unmitigated air quality and health risk impacts that will adversely affect the surrounding community, which is already overburdened with air pollution, health risk, and environmental justice impacts.⁴⁰⁵

First, substantial evidence demonstrates that the Project will cause significant impacts associated with excess PM_{2.5} emissions, which are not adequately mitigated to less than significant, contrary to the PSA's assertions.⁴⁰⁶ Air quality modeling shows that the Project would exceed the more stringent PM_{2.5} standard, resulting in significant environmental justice impacts. The PSA confirms that Project construction, combined with background PM_{2.5} concentrations, would exceed 9.0 µg/m³.⁴⁰⁷ Additionally, project operation, in combination with background concentrations, would also exceed this standard.⁴⁰⁸ The Project would therefore: 1) cause or contribute to exceedances of health-based ambient air quality standards; and 2) cause disproportionate air quality and public health impacts on sensitive populations, resulting in significant environmental justice impacts.⁴⁰⁹

⁴⁰² Ibid.

⁴⁰³ Farzan, S. F., Razafy, M., Eckel, S. P., Olmedo, L., Bejarano, E., & Johnston, J. E. (2019). Assessment of Respiratory Health Symptoms and Asthma in Children near a Drying Saline Lake. *International Journal of Environmental Research and Public Health*, 16(20), Article 20, *available at* <https://doi.org/10.3390/ijerph16203828>.

⁴⁰⁴ PSA at p. 6-11.

⁴⁰⁵ Clark Comments at p. 3, 13.

⁴⁰⁶ PSA at p. 6-11.

⁴⁰⁷ *Id.* at p. 5.1-24.

⁴⁰⁸ *Id.* at p. 5.1-27.

⁴⁰⁹ Clark Comments at p. 3, 13.

Second, substantial evidence in expert consultant reports demonstrates that the Project will cause significant air quality impacts associated with Valley Fever. The PSA acknowledges that Project construction could expose workers and the public to the risk of Valley Fever,⁴¹⁰ but concludes health risks from Valley Fever are not a major concern due to the relatively low incidence rate in Imperial County compared to other areas of California and the proposed mitigation measures (AQ-SC3 and AQ-SC4), which are expected to minimize the risk of exposure to workers and the public.⁴¹¹ This finding is not supported by substantial evidence.

The PSA's focus on historical infection rates is flawed. While infections rates in Imperial County may be lower than other parts of the state, the PSA ignores the primary risk factor: exposure to dust.⁴¹² Research has shown that large-scale renewable energy construction projects increase the incidence rate for Valley Fever proportionally to the number of disturbed soil acres.⁴¹³

Disturbance of the soil on the Project site may result in significant health risk impacts from Valley Fever to workers and the surrounding community. Construction workers are at significant risk of developing Valley Fever.⁴¹⁴ Labor groups where occupation involves close contact with the soil are at greater risk, especially if the work involves dusty digging operations.⁴¹⁵ Many construction workers in California come from disadvantaged communities.⁴¹⁶

Moreover, the potentially exposed population is much larger than construction workers because the non-selective raising of dust during Project construction will carry the very small spores, 0.002-0.005 millimeters, into off-site areas, potentially exposing large non-construction worker populations.⁴¹⁷

Desert winds can raise significant amounts of dust, even when conventional dust control methods are used, often prompting alerts from air pollution control districts.⁴¹⁸ If these winds occurred during grading, cut and fill, or soil movement,

⁴¹⁰ PSA at p. 5.10-20.

⁴¹¹ *Id.* at p. 5.10-21.

⁴¹² Clark Comments at pp. 7-8.

⁴¹³ *Id.* at p. 8.

⁴¹⁴ *Id.*

⁴¹⁵ *Id.*

⁴¹⁶ See Luke, et al. UC Berkeley, Center for Labor Research and Education, *Diversity in California's Clean Energy Workforce: Access to Jobs for Disadvantaged Workers in Renewable Energy Construction* (August 2017), available at <https://laborcenter.berkeley.edu/pdf/2017/Diversity-in-Californias-Clean-Energy-Workforce.pdf> (last visited 5/22/23) (documenting "considerable ethnic and racial diversity" in enrollments in apprenticeship programs of the 16 union locals of electricians, ironworkers, and operators that have built most of the renewable energy power plants in California, including 43% of entry-level power plant construction workers in Kern County coming from communities that are designated as disadvantaged by Cal EPA).

⁴¹⁷ Clark Comments at p. 10.

⁴¹⁸ Clark Comments at pp. 9-10.

or from bare graded soil surfaces (even if periodically wetted), significant amounts of PM₁₀, PM_{2.5}, and associated Valley Fever spores would be released.⁴¹⁹

Many of the Project components are in the vicinity of sensitive receptors, including residential areas, resulting in significant public health impacts. Valley fever spores can be carried on the winds into surrounding areas.⁴²⁰ Valley Fever spores, for example, have been documented to travel as much as 500 miles.⁴²¹ Offsite exposure to Valley Fever spores may have a more significant impact on disadvantaged environmental justice communities than others. For example, the CalEEMod emissions modeling Users Guide, prepared by the California Air Pollution Control Officers Association, explains that construction emissions, including Valley Fever spores, “can have a greater impact on low-income residents, who are more likely to live in older homes or apartments, with more air leakages that leave them exposed to outdoor air quality.”⁴²² Thus, dust raised during construction could potentially expose a large number of people miles away, resulting in a significant environmental justice impact to the surrounding community.

The Commission must issue a revised PSA that thoroughly assesses the cumulative and disproportionate impact on these vulnerable communities. Failure to do so will worsen existing health disparities and environmental injustices.

B. Environmental Justice Impacts Associated with Project Hazards are Significant

The Environmental Justice section of the PSA relies on the conclusion that the Project will have a less than significant impact from solid waste management. This conclusion is not supported by substantial evidence. As demonstrated in these comments and in those of CURE’s expert consultants, the solid waste burden, as well as transportation of solid waste associated with the Project, results in significant environmental impacts, including adverse effects on air quality, GHG, and health risk. The PSA’s conclusions regarding environmental justice related to solid waste management are unsupported by substantial evidence. The significant impacts from solid waste and its transportation necessitate further analysis and mitigation. To protect public health and ensure environmental justice, the Commission must issue a revised and recirculated PSA that addresses these issues comprehensively, supported by robust and effective mitigation strategies.

⁴¹⁹ *Id.*

⁴²⁰ *Id.* at p. 7-10.

⁴²¹ Filip, Valley Fever Epidemic, Golden Phoenix Books (2008) p. 24.

⁴²² CalEEMod User Guide, Chapter 5, Measures for Advancing Health and Equity, p. 505, available at

https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.caleemod.com/documents/handbook/ch_5/chapter_5.pdf&ved=2ahUKEwjAlvz0kqiIAxWyOjQIHTBDHngQFnoECCwQAQ&usg=AOvVaw0iMa88iwNBOAmLRTa5tE_G.

WATER RESOURCES

Water supply within IID's service area is facing "unprecedented conditions"⁴²³ due to "[p]rolonged drought in the Colorado River Basin and low runoff conditions accelerated by climate change [that] have led to historically low water levels in Lakes Powell and Mead. ... While hydrology has improved in the Colorado River Basin, reservoir elevations are projected to continue to decline."⁴²⁴

In 2009, IID adopted an Interim Water Supply Policy for Non-Agricultural Projects ("IWSP") "to provide a mechanism to address new water supply requests for proposed projects being developed within the IID service area."⁴²⁵ "The IWSP designates up to 25,000 acre-feet of IID's annual Colorado River water supply for any new projects, provides a mechanism and process to develop a water supply agreement for any appropriately permitted project, and establishes the framework and set of fees necessary to ensure the supplies used to meet any new demands do not adversely affect existing users by funding water conservation or augmentation projects."⁴²⁶

According to the PSA, "[a]s of January 2024, 6,380 AFY has already been committed by water agreement, leaving 18,620 AFY for all other non-agricultural projects. The combined annual operational water demand of the three BHER geothermal projects [is 13,165 AFY and] constitutes 71 percent of the remaining IWSP water intended for non-agricultural projects."⁴²⁷ Within the next 20 years, the Imperial County Planning & Development Services ("ICPDS") "anticipates non-agricultural project water supply demand ... is likely to exhaust the 18,620 AFY available under the IWSP..." and "[t]hus, the proposed Project's estimated water demand, combined with other development anticipated in the area is likely to adversely affect IID's ability to provide water to other users in IID's water service area unless mitigation is incorporated."⁴²⁸

According to the AFC, "Project operations require approximately 1,125 afy of water when operating at full plant load for uses including cooling tower makeup,

⁴²³ TN # 247861, Lithium Valley Commission, Report of the Blue Ribbon Commission on Lithium Extraction in California (Dec. 2022) p. 63 ("Lithium Extraction Report"), *available at* <https://efiling.energy.ca.gov/GetDocument.aspx?tn=247861&DocumentContentId=82166>.

⁴²⁴ Bureau of Reclamation, IID 2024-2026 Temporary Colorado River System Water Conservation Project Draft Environmental Assessment LC-24-07 Lower Colorado Basin (June 2024) p. 4, *available at* <https://mavensnotebook.com/wp-content/uploads/2024/06/USBR-Co-River-System-DEA.pdf>.

⁴²⁵ Imperial Irrigation District, Municipal, Industrial and Commercial Customers, <https://www.iid.com/water/municipal-industrial-and-commercial-customers> (last updated Feb. 1, 2023).

⁴²⁶ *Ibid.*

⁴²⁷ PSA at pp. 5.16-7, 5.16-13—14 (internal citations omitted).

⁴²⁸ WSA at p. iii.

plant wash down, and RO for potable use.”⁴²⁹ Additional IID canal freshwater will be required for maintenance activities, to fill the cooling tower prior to startup, and the fire protection system.⁴³⁰ “Approximately 80% of the operational water required by the facility will be generated by steam condensed in the main condenser.”⁴³¹

The Project’s operational water demand of approximately 1,125 AFY represents:

- 6.0% of the unallocated supply available for additional conservation and contracting under the IWSP for non-agricultural projects;
- 0.6% of forecasted future non-agricultural water demands planned in the Imperial IRWMP through 2055;
- 252% increase from the 10-year average historic average agricultural water use for 2013-2022 at the Project site, an increase in water use of 805 AFY at full build-out.⁴³²

The Project may result in significant impacts to water resources that must be adequately disclosed, analyzed, and mitigated in a revised PSA. The PSA’s analysis is insufficient for several reasons. First, the water supply analysis lacks substantial evidence because only half of the Project’s operational life is evaluated. Second, the estimated volume of freshwater for the cooling tower is not adequately supported in the WSA. Third, the WSA and PSA must disclose and analyze the sources of water for the Project. Fourth, the Project may significantly impact groundwater quality from pipeline leaks. Fifth, the PSA improperly omits an analysis of the revised design of the brine pond. Sixth, the Project may significantly increase flood risks, which requires thorough analysis and mitigation. Seventh, the evaluation of long-term Colorado River water supplies is not adequate, failing to show that the Project’s long-term water demands will be met. Eighth, the PSA omits necessary information regarding the Project’s operational water use efficiency. Ninth, the cumulative impacts analysis on water supply and the Salton Sea is deficient. Tenth, the PSA fails to disclose any conservation programs or projects intended to mitigate the Project’s water supply demand. Finally, the mitigation measure requiring a floating cover on the service water pond must be revised to require a water storage tank to avoid evaporation loss.

⁴²⁹ AFC at p. 5.15-13.

⁴³⁰ *Id.* at p. 1-8.

⁴³¹ *Ibid.*

⁴³² WSA at p. 10-1.

A. The Water Availability Analysis Lacks Substantial Evidence Because Only Half of the Project's Operational Life Is Evaluated

As set forth in Mr. Parker's comments, the water supply analysis lacks substantial relevant information about the water supply for the 40-year life of the Project.⁴³³ The Project is expected to have a 40 year operational life, yet the WSA severely limited the analysis of water supply to a mere 20 year projection.⁴³⁴ Commission staff previously asked the Applicant to "correct the project life to 40 years throughout the document and ensure that the water availability analysis reflects a 40-year operational period."⁴³⁵ The Applicant rejected staff's request, explaining that "[t]he planning period for the WSA, as stipulated in Senate Bill 610, is 20 years."⁴³⁶

The WSA must be revised to analyze whether the total projected water supplies during normal, single dry, and multiple dry water years will meet the projected water demand for the entire life of the Project, i.e., 40 years. By restricting the analysis to only 20 years, the WSA does not support several of the conclusions with substantial evidence.

For example, the WSA concludes that IID can meet the water delivery demand "for the life of the proposed Project," yet the water supply scenarios only evaluates the first 20 years of the Project.⁴³⁷ Additionally, the Commission and ICPDS findings state "...that the IID projected water supply is sufficient to satisfy the demands of this proposed Project in addition to existing and planned future uses, including agricultural and non-agricultural uses for a 20-year Water Supply Assessment period and for up to **30 years of the anticipated 40 -year proposed Project life.**"⁴³⁸ This would mean that IID's water supplies may not accommodate the Project's water demand for 10 years during operations or 25% of the Project life. The water availability analysis must be revised in the PSA and WSA to ensure that sufficient supply is available for the entirety of the Project.

While Water Code § 10910 mandates a water supply assessment for a project to evaluate water supplies during a 20-year period, nothing prohibits the WSA from extending the time period for the analysis. In fact, the water supply assessment for the Energy Source Minerals, LLC ("ES Minerals") project, a commercial lithium

⁴³³ Parker Comments at pp 4-5.

⁴³⁴ PSA at p. 3-27; WSA at p. iii.

⁴³⁵ TN # 254503, Data Response Set 4 (Responses to Data Requests 1 to 43) (Feb. 16, 2024) p. 21.

⁴³⁶ *Ibid.*

⁴³⁷ WSA at p. 8-6 (emphasis added) ("These efficiencies combined with the conversion of some agricultural land uses to non-agricultural land uses (both solar and municipal), ensure that IID can continue to meet the water delivery demand of its existing and future agricultural and non-agricultural water users, including this Project for the next 20 years and for the life of the proposed Project under a water supply consistent with the district's full entitlement.").

⁴³⁸ WSA at p. 9-2 (emphasis added).

hydroxide production plant, analyzed that project's water demand over a 30-year term.⁴³⁹

The WSA must be revised to assess the Project's impact on IID's projected water supply for the entire life of the Project, i.e., 40 years. By constraining the analysis to only 20 years, the WSA's conclusions, as well as the Commission and ICPDS findings, that IID has adequate water supply to serve the Project for its full operational life are unsupported by substantial evidence.

B. The WSA Fails to Provide Substantial Evidence for Freshwater Volume Estimates for the Cooling Tower

"On an annual average basis during operation, water needs from the IID canal are approximately 1,125 acre-feet per year at design conditions, which is less than 20% of the total facility water needs."⁴⁴⁰ "Approximately 80% of the operational water required by the facility will be generated by steam condensed in the main condenser."⁴⁴¹ For the cooling tower, the Project proposes to use mostly "condensate for makeup water and will only be relying on IID water [] when evaporation is high."⁴⁴² The WSA estimates that the cooling tower will require a total of 793 AFY of raw water.⁴⁴³

However, the estimated volume of freshwater needed for the Project's cooling tower is unsupported. The WSA and PSA acknowledge that IID water would be used instead of condensate "when evaporation is high" or "[d]uring high ambient conditions," but there is no analysis about the frequency of these conditions and either impact on IID water demand.⁴⁴⁴ Appendix C details the typical weather in Niland, California, noting a "hot season" spanning from June to September (approximately 3.6 months) "with an average daily high temperature above 99 degrees Fahrenheit."⁴⁴⁵ Despite this information, neither the PSA nor the WSA clarify whether such data or other evidence of ambient conditions in the Project area were considered in calculating the total freshwater needs for the cooling tower.

The PSA and WSA must be revised to adequately disclose and analyze the frequency of high ambient conditions. This analysis is crucial to substantiate the cooling tower's anticipated freshwater demands with substantial evidence. Without

⁴³⁹ Imperial County Planning & Development Services, Water Supply Assessment – ES Minerals (Apr. 23, 2021) p. 11, *available at* <https://www.icpds.com/assets/hearings/02.-WSA,FIER,-MMRP,-CUP20-0008,-PM02485-Energy-Source-Mineral-ATLiS-PC-Pkg.pdf>.

⁴⁴⁰ AFC at p. 1-8

⁴⁴¹ *Ibid.*

⁴⁴² WSA at p. 1-2.

⁴⁴³ *Id.* at p. 7-1.

⁴⁴⁴ *Id.* at p. 1-2; PSA at p. 3-13.

⁴⁴⁵ PSA, Appendix C at p. 1.

this information, the current estimates lack the necessary support and transparency required for a comprehensive environmental review.

C. The WSA and PSA Must Disclose and Analyze the Sources of Water for the Project

Mr. Parker explains that the IID water source for the Project's freshwater demand is not conclusively determined in the PSA or the WSA.⁴⁴⁶ The discussion in the WSA states that IID will determine at an undefined future date whether the Project's IID water supply will be covered under IID's Schedule 7 General Industrial Use water rates⁴⁴⁷ and/or the IWSP for Non-Agricultural Projects.⁴⁴⁸ The WSA is also ambiguous as to whether the Project may be covered under both Schedule 7 General Industrial Use and the IWSP for Non-Agricultural Projects or one of those options.⁴⁴⁹ On the one hand, the WSA analysis states that IID will determine whether the Project will utilize IWSP for Non-Agricultural Projects' water *in addition to* being covered under Schedule 7 General Industrial Use.⁴⁵⁰ Discussion elsewhere in the WSA states that "in the event that Schedule 7 General Industrial Use water has exhausted its apportioned amount, the Applicants will rely on IID IWSP water to supply the Project,...."⁴⁵¹

The evaluation in the PSA of available water supplies to serve the Project focuses entirely on the water set aside pursuant to the IWSP and does not disclose or analyze water supply impacts if the Project solely or also utilizes Schedule 7 General Industrial Use. While the WSA is vague and ambiguous about the Project's water supply, the PSA completely overlooks a potential water source for the Project in violation of CEQA's requirements. Information regarding the water source(s) for the Project is indispensable to a robust analysis of the Project's impacts on water supply. The PSA must be revised to clearly identify the source(s) of Project water and to adequately evaluate the impacts on IID's water supply from the Project's water demand.

Furthermore, as addressed in Mr. Parker's comments, the WSA briefly mentions that "[i]f commercially viable, BRGP would seek additional water through IID's Clearinghouse, consistent with any contractual requirements or limitations."⁴⁵² In *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova*, the court established that if a proposed development project

⁴⁴⁶ Parker Comments at pp. 9-10.

⁴⁴⁷ Imperial Irrigation District, Water Rates: Schedule No. 7 (effective August 1, 2009), *available at* <https://www.iid.com/home/showdocument?id=4317>.

⁴⁴⁸ WSA at p. 6-1.

⁴⁴⁹ WSA at pp. 6-1, 8-4, 9-2.

⁴⁵⁰ *Id.* at p. 6-1.

⁴⁵¹ *Id.* at p. 8-4.

⁴⁵² *Id.* at p. 1-2; Parker Comments at p. 9.

requires a new or additional water supply, the lead agency under CEQA must identify and analyze the sources of that supply and consider the impacts of acquiring it.⁴⁵³ The PSA does not even mention the IID Clearinghouse water as an alternative water source for the Project.

“The Clearinghouse is a mechanism to facilitate the movement of water between District Water Users,” and “[w]ater made available to the Clearinghouse for transfer will be assigned to Clearinghouse accounts and water shall be transferred through the Clearinghouse pursuant to procedures developed and implemented under and pursuant to [the] Equitable Distribution Plan.”⁴⁵⁴ The PSA does not evaluate IID’s Clearinghouse as an alternative water source. Moreover, Mr. Parker comments that “[t]he WSA cannot assume the IID’s Clearinghouse is a secure source of alternative water—particularly given the amount of freshwater that this Project would require— without providing sufficient facts and analysis.”⁴⁵⁵

D. The Project May Significantly Impact Groundwater Quality from Pipeline Leaks

The PSA explains that although the Project’s wells, well pads, and pipelines (except those pipelines connecting to the powerplant) are licensed under the California Geologic Energy Management Division (“CalGEM”), the environmental impacts from these Project features are to be “fully evaluated” in the PSA.⁴⁵⁶ The Project’s pipelines would involve construction of “7,137 linear feet of pipeline from production wells, [and] 26,934 linear feet of pipeline to injection wells,....”⁴⁵⁷ Additionally, “foundations for production/injection pipelines [] would be installed to depths of 20 feet and 30 feet,....”⁴⁵⁸ Depth to groundwater was encountered at eight feet below ground surface (“bgs”) during the Project’s geotechnical investigation.⁴⁵⁹

Dr. Malama comments that shallow groundwater and low permeability of the soils⁴⁶⁰ “along the pipeline routes may cause ponding of fluids if leaks from the Project’s fluid conveyance pipelines occur that could contaminate [] groundwater

⁴⁵³ *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 430-32.

⁴⁵⁴ Imperial Irrigation District, Equitable Distribution Plan (July 26, 2023) pp. 7-8, *available at* <https://www.iid.com/home/showpublisheddocument/20254/638313266942930000>.

⁴⁵⁵ Parker Comments at pp. 9-10.

⁴⁵⁶ PSA at p. 5.16-1.

⁴⁵⁷ *Ibid.*

⁴⁵⁸ *Ibid.*

⁴⁵⁹ *Id.* at p. 5.16-2.

⁴⁶⁰ “The fine-grained deposits that are characteristic of the area have transmissivities of only 1,000 to 10,000 gallons per day per foot to depths of approximately 500 feet. At greater depths, the transmissivities are likely to be even less (Westec 1981). The low transmissivity of these deposits limits the ability of water to percolate downward into deeper aquifers.” *Ibid.*

resources.”⁴⁶¹ Based on estimations in the AFC that “[a] fluid release to the ground of 200 to 400 gallons typically would remain within a 20- to 30-foot radius of the leak location,”⁴⁶² Dr. Malama concludes that a release of fluids at these volumes may result in a significant impact on groundwater resources that was not evaluated in the PSA.⁴⁶³

Moreover, the AFC provides a list of the chemical constituents in the Project’s produced fluids as well as the condensate and injected geothermal fluids that is not disclosed or evaluated in the PSA.⁴⁶⁴ The PSA also omits an analysis of the potentially significant impacts on groundwater from a release of fluids from the Project’s pipelines. As discussed in Dr. Malama’s comments, “[t]he pipeline fluids are brines with high sodium and chloride concentrations,” as well as barium, lead, and/or cadmium, which could cause impacts on groundwater if leaks or releases occur from the Project’s pipelines.⁴⁶⁵ According to Dr. Malama, chloride toxicity can impact water quality, and “sodium can elevate soil pH and lead to accumulation of other toxic elements.”⁴⁶⁶ “Sodium is [also] a strong soil dispersant, destroying soil structure making soils more prone to crusting and impaired drainage (Levy and Torrento, 1995; Balks et al., 1998; Ward and Carter, 2004).”⁴⁶⁷ Additionally, Dr. Malama states that pipeline fluids may contain other toxic metals like barium, cadmium, and lead “such that fluid release due to pipeline leakage would have a potentially significant impact on soil and groundwater.”⁴⁶⁸

Based on the foregoing, Dr. Malama concludes that “[g]iven the average daily volume flowrate of BRGP pipeline infrastructure and the constituents in the produced fluids and condensate and injected geothermal fluids, f from fluid conveyance pipelines to and from the production and injection wells and well pads, have the potential to cause soil and groundwater contamination, with the potential to further degrade soils and water quality in the area.”⁴⁶⁹ These impacts must be assessed in a revised PSA.

E. The PSA Improperly Omits an Analysis of the Revised Design of the Brine Pond

The PSA indicates that if the Applicant’s LOMR is not approved by FEMA, the brine pond must be modified to mitigate the flood impacts.⁴⁷⁰ However, the PSA

⁴⁶¹ Malama Comments at p. 4.

⁴⁶² AFC at p. 2-57.

⁴⁶³ Malama Comments at p. 4.

⁴⁶⁴ AFC at pp. 2-14, 2-17.

⁴⁶⁵ Malama Comments at p. 5.

⁴⁶⁶ *Ibid.*

⁴⁶⁷ *Ibid.*

⁴⁶⁸ *Ibid.*

⁴⁶⁹ *Ibid.*

⁴⁷⁰ PSA at p. 5.16-12.

fails to specify how the brine pond's design would be changed and does not analyze the potential significant environmental impacts of these design changes, as highlighted by Mr. Parker's comments.⁴⁷¹ Therefore, Mr. Parker concludes that the PSA must "be revised to provide an analysis regarding any proposed modifications to the brine pond, related impacts, and any measures to reduce significant impacts to less than significant levels."⁴⁷²

F. Flood Risks are Not Adequately Evaluated in the PSA

Mr. Parker comments that the PSA must be revised to adequately analyze the flood hazards and mitigate any significant impacts. As discussed by Mr. Parker, the revised analysis must not solely rely on stationarity to predict future storm and flood events.⁴⁷³ According to Mr. Parker and as supported by several studies cited, "[t]he new climate normal in California is extreme weather events that produce more rainfall over shorter time periods and with less frequency, resulting in increased flood risks [internal citations omitted]."⁴⁷⁴ Mr. Parker recommends that future climate scenarios be incorporated into the analysis to better predict extreme hydrologic variability.⁴⁷⁵

G. Reductions to the Colorado River Water Supply Are Not Adequately Evaluated

The discussion in the PSA and WSA concerning IID's long-term water supply lacks substantial evidence to support the conclusion that IID has adequate long-term water availability for the Project's projected water demand.⁴⁷⁶ As discussed in Mr. Parker's comments, the WSA uses the same assumptions of water availability for this Project in a normal year as during a single-dry and multiple-dry year scenarios.⁴⁷⁷ The WSA states that "[t]his is due to the small effect rainfall has on water availability in IID's arid environment along with IID's strong entitlements to the Colorado River water supply."⁴⁷⁸ However, Mr. Parker comments that "the [global climate models'] projections of future basin hydrology show that the impact of warming combined with the variable precipitation would result in reductions to Colorado River water availability," which are not incorporated in the WSA's analysis.⁴⁷⁹

⁴⁷¹ Parker Comments at p. 6.

⁴⁷² *Ibid.*

⁴⁷³ *Id.* at pp. 5-6.

⁴⁷⁴ *Id.* at p. 5.

⁴⁷⁵ *Id.* at p. 6.

⁴⁷⁶ WSA at p. 10-1; PSA at p. 5.16-13—14.

⁴⁷⁷ *Id.* at p. 3-1; Parker Comments at p. 4.

⁴⁷⁸ WSA at p. 3-1.

⁴⁷⁹ Parker Comments at p. 4.

Table 11 in the WSA sets forth the “IID Historic and Forecast Net Consumptive Use for Normal Year, Single-Dry Year and Multiple-Dry Year Water Supply, 2003-2037, et seq.”⁴⁸⁰ The water volumes in Table 11 “assume[] full use of IID’s quantified water supply,...”⁴⁸¹ Yet, Colorado River water allotments are operating under shortage conditions as of 2023 due to years of drought conditions and runoff declines in the upper basin, “creating long-term water supply uncertainties throughout the Basin states.”⁴⁸² “IID recognizes the need for significant response actions to protect the long-term water supply certainty for the Imperial Valley as the Colorado River operates under these unprecedented conditions.”⁴⁸³

The WSA identifies at least two scenarios that may result in reductions to the total water available to the Project.⁴⁸⁴ First, the WSA explains that “[n]ew, non-agricultural projects may be susceptible to delivery cutbacks when an EDP Apportionment is exhausted,...”⁴⁸⁵ Second, “[g]iven the prolonged drought conditions and recent communication to IID from the Department of the Interior [(“DOI”)], reductions to all basin contractors, including IID and its water customers, are increasingly likely.”⁴⁸⁶ As a condition of water service, the Project will be required to “acknowledge and accept [] that ... IID may reduce the water service agreement amount, [] as a proportionate reduction of the total volume of water available to IID.”⁴⁸⁷ To mitigate the impacts from any such reductions, the WSA asserts that the Applicant would “work with IID to ensure any anticipated reduction can be managed via the means identified [in the WSA] or other equivalent measures.”⁴⁸⁸

Mr. Parker’s comments provide substantial evidence demonstrating that IID’s water supply is likely to change significantly, specifically due to reduced Colorado River water availability causing regulatory cuts to IID’s full entitlement.⁴⁸⁹ Mr. Parker explains that a more robust analysis is necessary that “discuss[es] Colorado River projected future hydrology based on projections from global climate models....”⁴⁹⁰ Mr. Parker discusses how “[t]ree-ring reconstructions of Colorado River streamflow extend the observed natural flow record based on stream gages up to 1200 years into the past and represent a much broader range of

⁴⁸⁰ WSA at p. 4-1

⁴⁸¹ *Ibid.*

⁴⁸² *Id.* at p. 5-1.

⁴⁸³ *Id.* at p. 5-5.

⁴⁸⁴ *Id.* at p. 10-1.

⁴⁸⁵ *Ibid.*

⁴⁸⁶ *Ibid.*

⁴⁸⁷ *Ibid.*

⁴⁸⁸ *Ibid.*

⁴⁸⁹ See Parker Comments at pp. 2-4.

⁴⁹⁰ *Id.* at p. 2.

hydrologic variability and extremes than are contained in the observed hydrologic records.”⁴⁹¹

“[I]nstead the PSA and WSA rely on the assumption of stationarity,....”⁴⁹² Mr. Parker generally defines “stationarity” as the assumption “that the future would closely resemble the past and/or current conditions, basically relying on historical gaged hydrology.”⁴⁹³ For example, the discussion of “Climate Factors” in the WSA⁴⁹⁴ incorporates monthly mean temperatures from 1924 to 2023.⁴⁹⁵ As discussed in Mr. Parker’s comments, CEC Staff raised a similar issue in its Data Requests Set 4, which addressed the WSA’s assertion that IID is not dependent on local rainfall and IID water supply would not differ between normal and dry years.⁴⁹⁶ CEC Staff stated that “the lack of regional precipitation over the greater Colorado River basin could affect the Colorado River flows and as a result IID’s allocation of water supply,” and therefore requested in Data Request No. 35 that the Applicant “consider a revision to Section 3 to recognize that regional weather patterns could impact IID’s water supply.”⁴⁹⁷ The Applicant responded that “Section 3 of the WSA will be revised to acknowledge that regional weather patterns could impact IID’s water supply,” but the WSA was not revised accordingly.⁴⁹⁸

Mr. Parker discusses in detail several recent basin-wide planning activities that “have analyzed scenarios of future hydrology derived from projections from global climate models [] with additional hydrologic modeling.”⁴⁹⁹ Mr. Parker summarizes these analyses as “indicat[ing] that the impact of warming combined with the variable precipitation leads to net declines in basin runoff over the next several decades, leading to further reduced Colorado River water availability.”⁵⁰⁰ Furthermore, “[s]everal reservoir and water management decisional documents and agreements⁵⁰¹ that govern the operation of Colorado River facilities and management of the Colorado River set to expire in 2026 are in the process of being renegotiated,....”⁵⁰² Mr. Parker estimates that “the quantity and allocation of future

⁴⁹¹ Parker Comments at pp. 2-4.

⁴⁹² *Ibid.*

⁴⁹³ *Ibid.*

⁴⁹⁴ WSA at p. 1-1.

⁴⁹⁵ Parker Comments at p. 2.

⁴⁹⁶ TN # 254503, Data Requests Set 4 (Jan. 12, 2024) p. 20.

⁴⁹⁷ *Ibid.*

⁴⁹⁸ *Ibid.*

⁴⁹⁹ Parker Comments at p. 3.

⁵⁰⁰ *Id.* at p. 3.

⁵⁰¹ “These include the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines), the 2019 Drought Contingency Plans, as well as international agreements between the United States and Mexico pursuant to the United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty).” *Ibid.*

⁵⁰² *Ibid.*

water supplies of the Colorado River will be less, perhaps significantly less than in the past.”⁵⁰³

Mr. Parker’s comments are also supported by the California Department of Water Resources’ recent State Water Project Delivery Capability Report that was published in July of 2024 (“DWR Report”).⁵⁰⁴ Mr. Parker explains that the DWR Report “not only acknowledged the threats to current and future water supply conditions from climate change, but also developed an adjusted historical hydrologic conditions data set that incorporated recent climatic conditions.”⁵⁰⁵ The DWR Report found that “[a] shortcoming of using the historical hydrologic conditions data set to assess existing Project delivery capability is that the effect of climate change is not consistent throughout the modeled period.”⁵⁰⁶ Utilizing an adjusted hydrological conditions assessment, the DWR Report concluded that State Water Project “delivery capability and reliability could be reduced as much as 23 percent in 20 years due to changing flow patterns and extreme weather shifts.”⁵⁰⁷ Mr. Parker emphasizes that the findings in the DWR Report “underscore[e] the importance of incorporating climatic conditions in water supply reliability assessments.”⁵⁰⁸

In conclusion, Mr. Parker recommends that the WSA and PSA be revised to disclose “the impact that climate change could have on IID’s water supply,” and the impacts assessment “must be revised to incorporate the [global climate modeling] projections of future basin hydrology.”⁵⁰⁹ Mr. Parker concludes that “[t]hese projections would show that the impact of warming combined with the variable precipitation would result in reductions to Colorado River water availability.”⁵¹⁰

H. The PSA Omits Necessary Information Regarding the Project’s Operational Water Use Efficiency

The WSA explains that “water users within the IID service area are subject to the statewide requirement of reasonable and beneficial use of water under the California Constitution, Article X, section 2.”⁵¹¹ As such, the BRGP, if approved, would be subject to the constitutional requirement to ensure the reasonable and beneficial use of Colorado River water, but this showing has not been made based on the information and analysis in the PSA. As explained by Mr. Parker, the BRGP

⁵⁰³ Parker Comments at p. 3.

⁵⁰⁴ *Ibid.*

⁵⁰⁵ *Ibid.*

⁵⁰⁶ *Ibid.*

⁵⁰⁷ Parker Comments at p. 4.

⁵⁰⁸ *Ibid.*

⁵⁰⁹ *Ibid.*

⁵¹⁰ *Ibid.*

⁵¹¹ WSA at p. 1-6.

PSA is silent as to why the facility “is more efficient (80%) when it comes to operational water generated by steam condensation, as compared to Morton Bay and Elmore North, which have an operational water use efficiency of 50% and have larger total operational water demands of approximately 11,100 and 13,000 AFY, respectively (see table below).”⁵¹²

Comparison of Proposed Geothermal Power Plant Parameters – BHE Renewables			
Parameter	Black Rock	Elmore North	Morton Bay
Land use (acres)*	55	63	63
Cooling Tower(s)	1 seven-cell	1 fourteen-cell	1 fourteen -cell
Production Wells	5	9	9
Injection Wells	7	12	11
Operational Water Demands (AFY)	5,620	11,120	12,960
Operational water generated by steam condensation (Water Use Efficiency)	80%	50%	50%
Water Demands from IID (AFY)	1,125	6,480	5,560
MW Rating (Max/Net)	87/77	157/140	157/140

During the information gathering phase of the proceeding, the Applicant explained that “BRGP has already been designed for optimal water efficiency given site specific characteristics,...”⁵¹³ Mr. Parker comments that the Applicant’s response suggests “that the Project has maximized its operational water use efficiency.”⁵¹⁴ Whether the Project has in fact maximized its operational water use efficiency or if improvements can be made to reduce the Project’s IID water demands must be evaluated in a revised PSA.⁵¹⁵

I. The PSA’s Analysis of Cumulative Impacts on Water Supply Is Deficient

The CEQA Guidelines define cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.”⁵¹⁶ “Cumulative impacts may result from

⁵¹² Parker Comments at p. 10.

⁵¹³ TN # 254503 at p. 6.

⁵¹⁴ Parker Comments at p. 10.

⁵¹⁵ *Ibid.*

⁵¹⁶ 14 Cal. Code Regs. §15355.

individually minor but collectively significant projects taking place over a period of time.”⁵¹⁷ An EIR must discuss cumulative impacts when they are significant and the project’s incremental contribution is “cumulatively considerable.”⁵¹⁸ A project’s incremental contribution is cumulatively considerable if the incremental effects of the project are significant “when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.”⁵¹⁹ An analysis of cumulative impacts should consider all sources of related impacts, not just similar sources or projects.⁵²⁰

In a water-constrained region facing prolonged drought conditions and increasing water shortages, it is imperative that a reasoned and adequate analysis of cumulative impacts on water supply is performed prior to approving any new geothermal power plants.⁵²¹ Here, however, the PSA fails to adequately identify and analyze the cumulative effects on water supply from other “past, present, and probable future projects,”⁵²² rendering the less-than-significant determination in the PSA unsupported. In Mr. Parker’s comments, he identifies several projects that were omitted from the PSA’s analysis of cumulative impacts on water resources without adequate justification.⁵²³

First, as Mr. Parker discusses, the analysis in the PSA does not evaluate several of the projects identified in the AFC’s cumulative impacts analysis for water resources.⁵²⁴ The analysis in the AFC identifies eight projects whereas the discussion in the PSA only considers two projects, i.e., Morton Bay Geothermal Project and Elmore North Geothermal Project, plus the projects covered under the IWSP as of January 2024.⁵²⁵ The deficiencies in the PSA’s cumulative impacts analysis addressed in Mr. Parker’s comments are also discussed in a letter dated July 23, 2024 from IID to the Commission.⁵²⁶ In its letter, IID states that the PSA must include a cumulative impacts analysis that utilizes “the recent existing and permitted projects identified earlier in this document under Table 1-2 Master

⁵¹⁷ 14 Cal. Code Regs. § 15355(b).

⁵¹⁸ *Id.* at § 15130(a).

⁵¹⁹ *Id.* at § 15056(a)(3).

⁵²⁰ *Id.* at § 15130(a)(1).

⁵²¹ Notably, the Lithium Valley Recommendation #10 is to “[r]equire and fund IID to conduct a water study of projected cumulative infrastructure development of geothermal power plants and DLE facilities and related water use, sources, local beneficial uses, and availability. The State or other entity should also evaluate water quality.” Lithium Extraction Report at p. 79.

⁵²² 14 Cal. Code Regs. § 15130(b)(1)(A).

⁵²³ *See* Parker Comments at pp. 6-7.

⁵²⁴ *Ibid.*; AFC at pp. 5.15-18.

⁵²⁵ *Id.* The PSA and WSA explain that IID has committed 6,380 AFY of the 25,000 AFY available under the IWSP as of January 2024. PSA at p. 5.16-14. However, neither document specifies which projects are included in the 6,380 AFY estimate.

⁵²⁶ IID PSA Comments at p. 5.

Cumulative Project List, in addition to the three BHE geothermal projects.”⁵²⁷ The cumulative impacts analysis in the PSA must be revised to include an analysis of all of the projects included in the AFC’s cumulative impacts analysis, which includes those projects identified in IID’s recent correspondence to the Commission.⁵²⁸

Second, Mr. Parker explains that “past, present, and probable future projects” related to lithium extraction must be evaluated in the cumulative impacts analysis for water supply.⁵²⁹ Mr. Parker determines that lithium extraction “projects are intimately related to geothermal production, have substantial water demands, and would likely rely on the same sources of IID water supply, e.g., IWSP.”⁵³⁰ “According to the Lithium Valley Commission, proposed lithium production is projected to reach 210,000 metric tons of LCE per year,....”⁵³¹

A recent LBNL report estimates that “[w]ater demand for lithium extraction is appreciable, representing an additional 3.5-4X the freshwater requirements of geothermal energy production alone from a given volume of brine, based on published estimates for facilities planned in the Salton Sea region.”⁵³² Additional water is required for lithium production as compared to geothermal energy in part because there are “large upfront water needs for new facility construction and for ongoing operations.”⁵³³ According to the LBNL report, “[t]he Imperial Valley’s Integrated Regional Water Management Plan (IRWMP) projected region-wide water needs for renewable energy production, including geothermal energy, to be 144,000 AF per year,” which the report concludes “may be sufficient to accommodate the expected growth of geothermal but not that of lithium production.”⁵³⁴

Third, Mr. Parker discusses the failure of the PSA to consider the 11 operating geothermal power plants in the analysis of cumulative impacts on water resources.⁵³⁵ He explains that since these plants are operational, their respective “water demands [] should be disclosed and evaluated in the PSA’s cumulative impacts analysis for water resources.”⁵³⁶

Finally, the PSA fails to adequately analyze the cumulative impacts associated with the LVSP. The LVSP encompasses a 51,786-acre Study Area within the basin of the Salton Sea in the Imperial Valley.⁵³⁷ The LVSP would guide the

⁵²⁷ IID PSA Comments at p. 5.

⁵²⁸ Parker Comments at p. 7.

⁵²⁹ *Ibid.*

⁵³⁰ *Ibid.*

⁵³¹ Lithium Valley EJ Report at p. 26.

⁵³² LBNL Report at p. 99.

⁵³³ *Id.* at p. 94.

⁵³⁴ *Ibid.*

⁵³⁵ PSA at p. 5.16-15.

⁵³⁶ Parker Comments at p. 7.

⁵³⁷ LVSP Baseline Report at p. 5.

development of renewable energy sources, including geothermal energy projects.⁵³⁸ The PSA establishes that 6,380 AFY of IID water has been committed for non-agricultural projects as of January 2024 and 18,620 AFY remains for all other non-agricultural projects.⁵³⁹ The combined estimated water supply for the Elmore North, Morton Bay, and Black Rock projects is 13,165 AFY (or nearly 71 percent of the IWSP designation), which would leave 5,455 AFY of available IWSP water supply.⁵⁴⁰ An executed water supply agreement for just one more geothermal project under the IWSP could exceed IID's remaining water supply for non-agricultural projects given that both the Elmore North and Morton Bay projects will each utilize over 5,500 AFY. The likelihood of not just one, but several new geothermal projects is probable given the pending LVSP. Exceedance of the non-agricultural projects' water supply under the IWSP is therefore very probable when factoring in the water demands under the LVSP, plus the Project. The LVSP therefore must be considered in the PSA's cumulative impacts analysis.

The PSA determines that there is an "estimated 2,950 MW power potential of the SSGF," but declines to analyze the cumulative impacts on water supply, claiming the specific projects are too speculative at this time.⁵⁴¹ Again, the analysis fails to account for the non-agricultural water demands under the LVSP, which is a probable future project. Developments pursuant to the LVSP, combined with the Project, would undoubtedly result in a cumulatively considerable impact to water supply, which the PSA fails to analyze. The PSA must be revised and recirculated to adequately analyze the Project's cumulative impacts on water supply.

J. The PSA's Analysis of Cumulative Impacts on the Salton Sea is Inadequate

A discussion of cumulative impacts must examine reasonable, feasible options for reducing or avoiding the project's contribution to significant cumulative environmental effects.⁵⁴² An EIR may find that a project's contribution to a significant cumulative impact will be mitigated through adoption of project-specific mitigation measures.⁵⁴³ CEQA also requires that "[i]f a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed."⁵⁴⁴

⁵³⁸ LVSP Initial Study at p. 2.

⁵³⁹ PSA at p. 5.16-15.

⁵⁴⁰ *Ibid.*

⁵⁴¹ PSA at p. 5.16-15.

⁵⁴² 14 Cal. Code Regs. § 15130(b)(5).

⁵⁴³ *Id.* § 15130(a)(3).

⁵⁴⁴ *Id.* § 15126.4(a)(1)(D).

Here, the PSA and WSA fail to analyze the cumulative impacts on the Salton Sea from reduced inflow conveyed to IID drains if IID imposes measures to satisfy non-agricultural water demand. The WSA states that tracking water yield from temporary land conversion from agricultural to non-agricultural land uses may be implemented to achieve non-agricultural water demands if the 25,000 AFY allotment under the IWSP is exhausted and IID exceeds its quantified 3.1 MAFY entitlement.⁵⁴⁵ According to Mr. Parker, “survival of the Salton Sea is tied primarily to agricultural runoff and drainage,” and this measure would result in reduced flows to the Salton Sea, “causing environmental impacts and potential increased health impacts from more exposed soils and dust generation,....”⁵⁴⁶ Irrigation water provided through agricultural return flows supplies the Salton Sea such that “[a]ny IID Colorado River supply water taken out of agricultural irrigation and provided instead for geothermal projects will reduce flows to the Salton Sea....”⁵⁴⁷

These impacts are also discussed in the LBNL study, which explains:

Changes in water availability may also impact the Salton Sea itself and, indirectly, the surrounding communities. Depending on how water withdrawal restrictions are implemented in the Colorado River basin and how many new geothermal and lithium extraction facilities are built, water available for agriculture in 2050 could be between 17-57% lower than it was in 2010. Such significant reductions in irrigation could have meaningful consequences for the health of the Salton Sea. The total water volume and areal extent of the Salton Sea may be further reduced, since agricultural irrigation runoff is the largest source of inflows (Hanak et al., 2018; Ajami, 2021). The shrinking of the Salton Sea that has led to the current environmental crisis is largely attributed to water conservation on agricultural land associated with the transfer of 0.5 MAF to Southern California cities. The future water projection assumes additional conservation of at least a similar magnitude, and possibly up to 1.5 MAF. Ongoing efforts to protect the Salton Sea should consider these potential changes to water runoff from irrigation.⁵⁴⁸

The PSA fails to disclose or analyze these impacts on the Salton Sea. In *Border Power Plant Working Grp. v. Department of Energy*, the court addressed a

⁵⁴⁵ WSA at p. 8-3. The WSA also states that, if necessary, conservation projects to expand the size of IID’s water supply portfolio may be developed. *Ibid.* As to this option, Mr. Parker explains in his comments that “IID’s 2012 Integrated Regional Water Management Plan includes conceptual projects to increase water supply,” but “none of these projects have been evaluated beyond concept phase, with plans for additional analyses in the IID 2021 Water Conservation Plan (IID WRS 2021).”. Parker Comments at p. 9.

⁵⁴⁶ Parker Comments at p. 8.

⁵⁴⁷ *Id.*

⁵⁴⁸ LBNL Report at p. 98.

similar issue in the context of an environmental assessment (“EA”) pursuant to the National Environmental Policy Act (“NEPA”).⁵⁴⁹ There, the court held that the federal agencies’ determination that the construction of electricity transmission lines to connect Mexican power plants with the power grid in southern California would not have significant impact on the Salton Sea—an ecologically critical area—was arbitrary and capricious.⁵⁵⁰ The court reasoned that the record established the utilities’ actions would increase the Salton Sea’s salinity, that the Salton Sea was already under threat from increasing salinity, and that extensive restoration efforts were underway to reduce the Salton Sea’s existing salinity.⁵⁵¹ Likewise here, the PSA must be revised to include an analysis of the cumulative impacts on the Salton Sea due to decrease to inflow if IID must impose measures to meet non-agricultural water demand.

IID requested the inclusion of this analysis in a letter dated August 24, 2023, submitted to the Commission in this proceeding.⁵⁵² IID explained in its letter that “[t]he impacts to the Salton Sea, due to loss or reduction of runoff caused by the proposed industrial use need to be analyzed in the environmental document. ... An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea.”⁵⁵³ In its letter dated July 23, 2024 to the Commission regarding comments on the PSA, IID stated that an analysis of the impacts on the Salton Sea was submitted to IID on July 11, 2024 and should be included in the PSA.⁵⁵⁴ The PSA must be revised to include a cumulative impacts analysis concerning the Salton Sea.

As set forth herein and in Mr. Parker’s attached comments, there is substantial evidence that the Project could have substantial direct, indirect, and

⁵⁴⁹ *Border Power Plant Working Grp. v. Dep’t of Energy*, 260 F.Supp.2d 997 (S.D. Cal. 2003). “... CEQA was modeled on NEPA and California courts treat judicial and administrative interpretations of the federal act as persuasive authority in interpreting CEQA.” *V Lions Farming, LLC v. Cnty. of Kern* (2024) 100 Cal.App.5th 412, 429.

⁵⁵⁰ *Id.* at 1022-1023.

⁵⁵¹ *Ibid.*

⁵⁵² TN # 251870, Letter to California Energy Commission from Imperial Irrigation District re: CEC Request for Agency Participation in Review of the Morton Bay Geothermal (23-AFC-01), Elmore North Geothermal (23-AFC-02), and Black Rock Geothermal (23-AFC-03) Projects (Aug. 24, 2023) p. 2.

⁵⁵³ *Ibid.*

⁵⁵⁴ IID PSA Comments at p. 5.

cumulative impacts on the Salton Sea.⁵⁵⁵ These impacts must be adequately evaluated in a revised and recirculated PSA.

K. The PSA Fails to Disclose the Conservation Programs or Conservation Projects to Mitigate the Project's Water Supply Demand

The WSA states that the "ICPDS estimates a cumulative, non-agricultural project water supply demand increase of up to 40,000 AFY within the foreseeable 20-year planning period, however, all new non-agricultural projects, including BRGP, are *required* to mitigate their respective water supply demand via conservation programs or conservation projects in order to receive future water apportionments."⁵⁵⁶ Despite this requirement, the conservation programs or projects proposed to mitigate the water supply demand for this Project are not detailed or analyzed in the PSA or WSA. The PSA must be revised to include and evaluate this information.

L. MM WATER-9 Must be Revised to Require a Water Storage Tank to Avoid Evaporation Loss Over the Open Service Water Pond

The PSA estimates that the service water pond would have an evaporative loss of 36.28 AFY, which the analysis concludes "is significant enough to require measures to reduce the water loss."⁵⁵⁷ To mitigate this water loss, the PSA proposes MM WATER-9, which requires the installation of a floating cover over the pond.⁵⁵⁸ However, during the workshop on August 1, 2024, the Applicant's consultant suggested removing the floating cover requirement, citing economic, environmental, and technical challenges associated with implementation.⁵⁵⁹

If the floating cover is expected to cause significant environmental effects, the PSA must disclose the impacts.⁵⁶⁰ The potential consequences of the cover, including any adverse effects on water quality, habitat, or other environmental resources, need to be clearly outlined to ensure informed decision-making.

The PSA should also be revised to explore the use of an enclosed storage tank as an alternative to the floating cover. An enclosed storage tank could effectively mitigate the unnecessary water waste due to evaporative loss. Such a measure

⁵⁵⁵ Parker Comments at pp. 8-9.

⁵⁵⁶ WSA at p. 10-1 (emphasis added).

⁵⁵⁷ PSA at p. 5.16-14.

⁵⁵⁸ *Id.* at p. 5.16-22.

⁵⁵⁹ Comments by Jerry Salamy, Jacobs, during CEC Workshop, August 1, 2024.

⁵⁶⁰ If a mitigation measure identified in an EIR would itself cause significant environmental impacts distinct from the significant effects caused by the project, those impacts must be discussed in the EIR, but in less detail than the project's significant impacts. 14 C.C.R. § 15126.4(a)(1)(D).

would align with Article X, Section 2, of the California Constitution, which requires that water be put to beneficial use. By considering this alternative, the Project could achieve greater water conservation without introducing potential negative impacts associated with a floating cover.

BIOLOGICAL RESOURCES

A. The PSA Fails to Adequately Analyze the Existing Environmental Setting for Biological Resources

CEQA requires that a lead agency include a description of the physical environmental conditions in the vicinity of the Project as they exist at the time environmental review commences.⁵⁶¹ As numerous courts have held, the impacts of a project must be measured against the “real conditions on the ground.”⁵⁶² The description of the environmental setting constitutes the baseline physical conditions by which a lead agency may assess the significance of a project’s impacts.⁵⁶³ Use of the proper baseline is critical to a meaningful assessment of a project’s environmental impacts.⁵⁶⁴ An agency’s failure to adequately describe the existing setting contravenes the fundamental purpose of the environmental review process, which is to determine whether there is a potentially substantial, adverse change compared to the existing setting.

Baseline information on which a lead agency relies must be supported by substantial evidence.⁵⁶⁵ The CEQA Guidelines define “substantial evidence” as “enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion.”⁵⁶⁶ “Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts ... [U]nsupported opinion or narrative [and] evidence which is clearly inaccurate or erroneous ... is not substantial evidence.”⁵⁶⁷

⁵⁶¹ 14 Cal. Code Regs. § 15125(a).

⁵⁶² *Save Our Peninsula Com. v. Monterey Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 121-22; *City of Carmel-by-the Sea v. Bd. of Supervisors* (1986) 183 Cal.App.3d 229, 246.

⁵⁶³ 14 Cal. Code Regs. § 15125(a).

⁵⁶⁴ *Communities for a Better Environment v. South Coast Air Quality Management District* (2010) 48 Cal.4th 310, 320.

⁵⁶⁵ *Id.* at 321 (stating “an agency enjoys the discretion to decide [...] exactly how the existing physical conditions without the project can most realistically be measured, subject to review, as with all CEQA factual determinations, for support by substantial evidence”); see *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435.

⁵⁶⁶ 14 Cal. Code Regs. §15384.

⁵⁶⁷ Pub. Res. Code § 21082.2(c).

1. *The PSA Fails to Adequately Analyze the Existing Baseline for Sensitive Natural Communities*

The PSA fails to adequately analyze the existing environmental setting with respect to iodine bush scrub (*Allenrolfea occidentalis*). CURE's expert biologist, Scott Cashen, identified a portion of the borrow pit site at Brandt Road as iodine bush scrub, but Project documents mistakenly classified it as "disturbed with vegetation."⁵⁶⁸ This misclassification results in a failure to analyze the Project's impacts to iodine bush scrub against actual conditions. The PSA should be revised and recirculated to accurately characterize the existing environmental setting concerning iodine bush scrub, ensuring a proper assessment of the Project's impacts.

2. *The PSA Fails to Adequately Analyze the Existing Baseline for Special Status Birds*

The PSA fails to adequately analyze the existing environmental setting with respect to special status birds. The PSA provides:

The applicant prepared Distribution and Occupancy of Yuma Ridgway's rails within proposed geothermal development areas in Imperial Valley, California (TN251681) ... No suitable breeding habitat for Yuma Ridgway rails was identified on the NWR land adjacent to the proposed generating facility site ... Overall, suitable rail habitat is currently not present near the generating facility portion of the proposed project area. No Yuma Ridgway rail surveys were conducted at or around the proposed generating facility site.⁵⁶⁹

The information provided in the PSA is misleading and unsupported by substantial evidence. The Applicant's Yuma Ridgway's rail consultant did not examine habitat at the NWR land adjacent to the Project site.⁵⁷⁰ The Yuma Ridgway's rail survey report states: "[a]ll accessible portions of the proposed development area for suitable Yuma Ridgway's rail habitat were reviewed, and the perimeter mapped for patches of rail habitat."⁵⁷¹ Figure 1 in the survey report depicts the "proposed development area," which does not include the NWR land adjacent to the Project site.⁵⁷²

Substantial evidence in Scott Cashen's comments demonstrate that there is suitable rail habitat near the proposed generating facility.⁵⁷³ Indeed, the

⁵⁶⁸ Cashen Comments at p. 3.

⁵⁶⁹ PSA at p. 5.2-78.

⁵⁷⁰ Cashen Comments at p. 4.

⁵⁷¹ TN # 251681, p. 4.

⁵⁷² *Id.*

⁵⁷³ Cashen Comments at p. 4.

Applicant's Yuma Ridgway's rail consultant detected multiple Yuma Ridgway's rails near the intersection of McKendry Road and Severe Road in both 2005 and 2006 during surveys for the National Marsh Bird Monitoring Program.⁵⁷⁴ A California black rail was also detected at that location in 2005.⁵⁷⁵

The eBird database has records of Yuma Ridgway's rails and least bitterns at the following locations near the proposed generating facility:

- 1) Two Yuma Ridgway's rails were detected at the Obsidian Butte Ponds on 4 August 2018 (eBird Checklist S47646823) and 29 September 2011 (Checklist S92438239).⁵⁷⁶ A least bittern was also been detected at this location in 2015 and 2019.⁵⁷⁷ The Obsidian Butte Ponds are located approximately 600 feet from the boundary of the proposed generating facility and approximately 350 feet from a proposed laydown area (Figure 1, below).
- 2) Multiple Yuma Ridgway's rails were detected between 2022 and 2024 at emergent marsh habitat approximately 1,250 feet north of the Obsidian Butte Ponds.⁵⁷⁸ A least bittern was also detected at this location in May 2024.⁵⁷⁹

⁵⁷⁴ California Natural Diversity Database. 2024. RareFind 5 [Internet]. California Department of Fish and Wildlife [July 2, 2024].

⁵⁷⁵ *Id.*

⁵⁷⁶ eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. [accessed 2024 Sep 1]. <https://ebird.org/explore>

⁵⁷⁷ *Id.*

⁵⁷⁸ eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. [accessed 2024 Sep 1]. <https://ebird.org/explore>

⁵⁷⁹ *Id.*

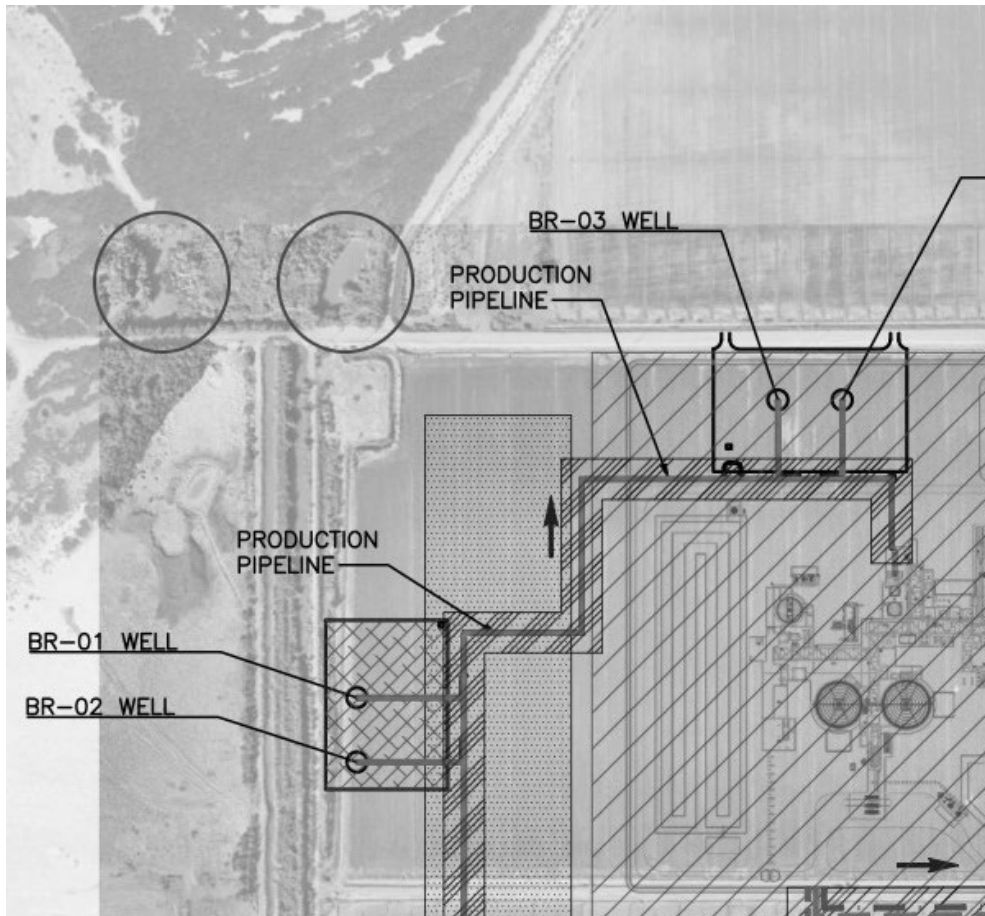


Figure 1. Obsidian Butte Ponds (blue circles) in relation to Project facilities and disturbance areas. Adapted from TN 253189, Figure 2-7aR.

This informational deficiency is critical because mitigation measures incorporated into BIO-13 and BIO-14 are triggered by construction and operations activities within and adjacent to “rail habitat” (BIO-13) or “suitable rail habitat” (BIO-14).⁵⁸⁰ The PSA does not identify where this rail habitat is located in relation to the Project’s facilities, nor is it possible for the public to understand where the habitat might be located because there is no map of habitats within the Project buffers. This omission precludes an adequate analysis and mitigation of potentially significant impacts to special status birds like Ridgway’s Rail and other special status marsh species. The PSA must be revised to adequately analyze the existing environmental setting with respect to Ridgway’s Rail and other special status marsh species.

⁵⁸⁰ PSA at p. 5.2-168 -170.

3. The PSA Fails to Adequately Analyze the Existing Baseline for Habitat

The PSA fails to adequately analyze the existing environmental setting with respect to special status plants.⁵⁸¹ The AFC states that habitat, land cover, and vegetation community mapping was conducted within a 1-mile radius of the plant area and within 1,000 feet of the well pads, pipelines, auxiliary features, and linear features, where access was permitted.⁵⁸² The AFC further states that special-status species within a one-mile buffer of the Project could be subject to impacts from construction and operation of the Project.⁵⁸³ Therefore, the potential for the Project to have significant indirect impacts on special-status species is partially dependent on the types and configuration of habitats within the one-mile buffer.⁵⁸⁴

Neither the PSA nor the AFC provides a map depicting all of the habitats within the CEC-mandated Project buffers.⁵⁸⁵ Indeed, the map provided by the Applicant only depicts land cover and vegetation types within the Project footprint and pipeline right-of-way (“ROW”).⁵⁸⁶ Aside from land cover within a 150-foot buffer of the proposed well pads, no habitat was mapped within the Project buffers. This precludes the ability to assess indirect impacts to special-status species that may occur in the buffers.

The PSA must be revised and recirculated to include comprehensive surveys and analyses of all areas with natural or naturalized vegetation potentially affected by the Project. This revision is essential to provide an accurate description of the Project’s environmental setting and impacts.

B. The PSA Fails to Adequately Analyze the Project’s Impacts to Biological and Hydrological Resources

1. The PSA Fails to Adequately Analyze and Mitigate Impacts Associated with the Floating Cover Required by Mitigation Measure WATER-9

CEQA requires agencies to analyze the significant impacts of mitigation.⁵⁸⁷ CEQA requires that “[i]f a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed.”⁵⁸⁸ Here, the floating cover proposed for Mitigation Measure WATER-9 will result in significant impacts associated with

⁵⁸¹ Cashen Comments at p. 4.

⁵⁸² AFC, p. 5.2-13.

⁵⁸³ AFC, p. 5.2-8.

⁵⁸⁴ Cashen Comments at p. 4.

⁵⁸⁵ *Id.* at p. 4.

⁵⁸⁶ AFC, Figure 5.2-4.

⁵⁸⁷ 14 Cal. Code Regs. § 15126.4(a)(1)(D).

⁵⁸⁸ *Stevens v. City of Glendale* (1981) 125 Cal.App.3d 986.

drowning impacts to wildlife. The PSA recognizes that, “burrowing and flying animals, including bird and bat species, could bypass the fence and gain access to the brine pond. Though the storm water retention pond would only hold freshwater during flooding events, which would be periodic and incidental, it would be considered a significant impact if animals became trapped in the pond.”⁵⁸⁹ But, the PSA failed to adequately analyze this impact.

The PSA provides that WATER-9 is proposed to minimize evaporation loss by incorporating a floating cover over the open service water pond.⁵⁹⁰ Further, COC WATER-9 Verification requires that “[n]o later than thirty (30) days prior to project construction, the project owner shall provide the CPM the specifications for the floating pond cover for review and approval. No later than thirty (30) days prior to power plant operation, the project owner shall provide to the CPM confirmation that the floating cover has been implemented.”⁵⁹¹ A floating cover over the open service water pond will result in significant impacts to wildlife associated with animals becoming trapped and drowning in the pond.⁵⁹² An enclosed storage tank would be a superior alternative to a floating cover to reduce evaporation, which is the goal of COC WATER-9, and would be superior in reducing trapping and drowning impacts to wildlife. The PSA should be revised and recirculated to adequately analyze environmental impacts associated with WATER-9 and should be revised to include an enclosed storage tank instead of a floating cover to “avoid loss of water supply due to evaporation.”⁵⁹³

2. The PSA Fails to Adequately Analyze Impacts from Dewatering

The PSA provides that dewatering may be required because groundwater could be encountered during excavation activities and dewatering would be necessary.⁵⁹⁴ The PSA provides that “If dewatering is necessary, and the discharge is found to be uncontaminated, the project owner would be permitted to discharge this to waters of the U.S. under the Construction General Permit.”⁵⁹⁵

The PSA does not discuss where specifically the water might be discharged, nor does it analyze how this discharge of water would affect special-status species and their habitat. For example, discharge of high-velocity (> 1.0 foot per second) and presumably turbid water into areas occupied by desert pupfish would kill and injure pupfish, which are not adapted to those habitat conditions.⁵⁹⁶ In addition,

⁵⁸⁹ PSA at p. 5.2-115.

⁵⁹⁰ *Id.* at p. 5.15-14.

⁵⁹¹ *Id.* at p. 5.15-22.

⁵⁹² *Id.* at p. 5.2-115.

⁵⁹³ *Id.* at p. 5.16-21.

⁵⁹⁴ *Id.* at p. 5.16-9.

⁵⁹⁵ *Id.* at p. 5.15-9.

⁵⁹⁶ ESA. 2017 Feb. Final Salton Sea Species Conservation Habitat: Desert Pupfish Adaptive Management and Monitoring Plan. [accessed 2024 Aug 27]. <https://water.ca.gov/-/media/DWR->

discharge of water in areas north or west of the proposed energy facility could scour vegetation and negatively impact water quality in habitat for the Yuma Ridgway's rail. Mitigation Measure BIO-9 would not avoid these potentially significant impacts because it only applies to dewatering of irrigation drains or ponded water at the end of drains, not to dewatering that may be necessary to install the Project's foundation piers. The PSA must be revised to adequately analyze impacts from dewatering and associated environmental impacts.

3. The PSA Fails to Adequately Analyze Impacts Associated with Drains and Canals

The PSA provides that the Project would temporarily impact 23.40 acres of drains and canals, and permanently impact 1.67 acres of drains and canals.⁵⁹⁷ This is reflected in Table 5.2-5 of the PSA, which quantifies impacts to the land cover types in the Project area.⁵⁹⁸ However, the footnote to Table 5.2-5 states the following: “[t]his analysis concludes that canals and drains would not be impacted. Temporary and permanent impacts to canals and drains are shown for informational purposes.”⁵⁹⁹ The contradictory information provided in the PSA makes it impossible to understand whether and to what extent the Project would impact drains and canals.⁶⁰⁰ The PSA acknowledges that some of the drains and canals serve an important function in providing habitat for the desert pupfish, Yuma Ridgway's rail, burrowing owl, and other special-status species.⁶⁰¹ Thus, significant temporary or permanent impacts on drains and canals may also have significant adverse effects on sensitive specific habitat which are not disclosed in the PSA.

The PSA provides that “this analysis concludes canals and drains would not be impacted because they are managed by IID.”⁶⁰² The PSA provides that the Applicant has stated in response to data requests “that that the project would have no impact on IID canals and drains other than crossing with above ground pipes and gen-tie lines.”⁶⁰³ But, substantial evidence in Scott Cashen's comments demonstrate that the Project would, in fact, impact IID drains and canals.⁶⁰⁴ The Vail 4A lateral runs along the west side of Boyle Road, while the Vail 4A drain runs along the east side of Boyle Road.⁶⁰⁵ The Project's pipeline would cross the Vail 4A

Website/Web-Pages/Programs/Engineering-And-Construction/Files/Design-Build/Salton-Sea-Reports/10_Pupfish_Adapt_Mgmt_Monitoring_Plan_a_y19.pdf

⁵⁹⁷ *Id.*

⁵⁹⁸ PSA at p. 5.2-124 and -125.

⁵⁹⁹ *Id.* at p. 5.2-125.

⁶⁰⁰ Cashen Comments at p. 8.

⁶⁰¹ PSA at p. 5.2-126.

⁶⁰² *Id.* at p. 5.2-130.

⁶⁰³ *Id.* (internal citations omitted).

⁶⁰⁴ Cashen Comments at p. 7.

⁶⁰⁵ *Ibid.*

lateral and Vail 4A drain south of W Lindsey Road.⁶⁰⁶ Because the pipeline would change direction on both sides Boyle Road, it would likely require piers (support structures) that involve 20 feet of excavation to install the piers.⁶⁰⁷ The PSA does not discuss how this segment of the pipeline would be constructed without causing impacts to the Vail 4A lateral or drain, or to the desert pupfish that occupy those features.⁶⁰⁸ This potentially significant impact must be analyzed and mitigated in a revised PSA before the Commission makes a determination on the Project.

4. The PSA Fails to Adequately Analyze Impacts to Desert Pupfish

The Project results in significant impacts on desert pupfish⁶⁰⁹, but the PSA concludes that impacts to desert pupfish would be less than significant with mitigation incorporated.⁶¹⁰ Scott Cashen's comments provide substantial evidence demonstrating that the Project could indirectly impact desert pupfish habitat by reducing the volume of water in drains that provide habitat for desert pupfish.⁶¹¹

Desert pupfish occur in the river deltas, irrigation ditches, and marshes along the edge of the Salton Sea.⁶¹² The Applicant did not conduct surveys for the pupfish, but instead assumed the species is present in the Project area.⁶¹³ As demonstrated in Scott Cashen's comments, the volume, depth, and quality of water in IID's drains are critical components of desert pupfish habitat. For example, when low water levels occur, desert pupfish become more susceptible to predation by birds and competition with exotic fish species.⁶¹⁴ Therefore, even if the Project does not directly impact canals and drains, taking agricultural fields out of production to enable construction of the Project could indirectly impact desert pupfish habitat by reducing the volume of water in drains that provide habitat for desert pupfish.⁶¹⁵ The PSA provides the following discussion of this issue:

“Reduced agricultural return flow associated with the project, and how it would affect desert pupfish habitat and vegetation communities, is currently underway with IID as part of the Water Supply Agreement and impact study analysis (TN253937). However, annual flow in the canals and drains depends on IID water demands and is complicated by declines in water in the area due to climate fluctuations, agricultural conservation measures, cropping practices, and

⁶⁰⁶ Cashen Comments at p. 6; *See also* IID Interactive GIS Water Service Area Map. <https://mygis.iid.com/portal/apps/webappviewer/index.html?id=a33cfefb3714f4eb8a1c85320613a2d1b>

⁶⁰⁷ Cashen Comments at p. 7.

⁶⁰⁸ *Id.* at p. 7.

⁶⁰⁹ PSA at p. 8-5.

⁶¹⁰ *Id.* at 1-4.

⁶¹¹ Cashen Comments at p. 6.

⁶¹² PSA at p. 5.2-19.

⁶¹³ *Id.* at p. 5.2-7.

⁶¹⁴ Cashen Comments at p. 6.

⁶¹⁵ *Id.* at p. 6.

decrease inflows from Mexico. Though a conversion of one parcel to agricultural use may result in a small decline in agricultural drainage, that decline on water use is minimal. As such, indirect alterations to hydrology due to conversion of agricultural is considered less than significant.”⁶¹⁶

There are three significant issues with the PSA’s analysis. First, the PSA provides contradictory information. The PSA begins by stating that impact analysis is currently underway with IID as part of the Water Supply Agreement.⁶¹⁷ This indicates that the reduced agricultural return flows associated with the Project could affect desert pupfish habitat.⁶¹⁸ The PSA then, without the supporting impact analysis from IID, makes the determination that the impact would be less than significant.

Second, the PSA’s conclusion that “conversion of one parcel” would have a minimal effect on pupfish habitat is not supported by substantial evidence in the record.⁶¹⁹ Moreover, the Project does not consist of one parcel, but rather, numerous parcels (totaling over 1,300 acres) that would be taken out of agricultural production.⁶²⁰

Third, the PSA fails to analyze cumulative impacts on the desert pupfish, and in particular, the cumulative reduction in agricultural return flows due to the Project and other geothermal projects that have been proposed in the area (e.g., Morton Bay Geothermal Project, Elmore North Geothermal Project, Energy Source Mineral ATLAS Project, and Hudson Ranch New Well 13-4 Project).⁶²¹ The cumulative reduction in agricultural return flows from these projects could have a significant impact on habitat for pupfish in IID drains and river deltas at the Salton Sea. On 24 Aug 2023, IID submitted a letter to the CEC stating the following:

“Due to the potential loss or reduction of 13,165 AFY of inflow to the Salton Sea and to IID drains with its concurrent environmental impacts, developer should address this issue as well as provide analysis that the project does not negatively impact the IID Water Conservation and Transfer Draft Habitat Conservation Plan (HCP), the existing Section 7 Biological Opinion and the California Endangered Species Act (CESA) Permit 2081 ... An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project

⁶¹⁶ PSA at p. 5.2-89.

⁶¹⁷ *Id.* at p. 5.2-89.

⁶¹⁸ Cashen Comments at p. 6.

⁶¹⁹ *Id.* at p. 7.

⁶²⁰ PSA at p. 5.15-1.

⁶²¹ Cashen Comments at p. 6.

proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea.”⁶²²

The cumulative impacts analysis requested by IID was not provided by the Applicant, nor is it in the PSA. As a result, and for the reasons discussed above, direct, indirect, and cumulative impacts on the desert pupfish remain potentially significant and must be analyzed and mitigated in a revised PSA.

5. The PSA Fails to Adequately Analyze Impacts to Southwest Willow Flycatcher

The PSA determined that there is moderate potential for the southwestern willow flycatcher to nest and forage at the Project site.⁶²³ The PSA further determined that Project could have significant direct and indirect impacts on the southwestern willow flycatcher and its habitat.⁶²⁴ No surveys were conducted to determine the presence or absence of flycatchers in the Project study area.⁶²⁵

The PSA incorporates BIO-12 and several other mitigation measures for the Project’s direct and indirect impacts on the southwestern willow flycatcher.⁶²⁶ BIO-12 requires a pre-activity survey for nesting birds no less than 7 and no more than 3 days prior to initiating project activities.⁶²⁷ If an active nest is detected, the Applicant’s biologist would establish a 100-foot avoidance buffer around the nest.⁶²⁸

BIO-12 does not ensure the Project’s impacts to nesting flycatchers would be less than significant.⁶²⁹ The southwestern willow flycatcher breeds in dense riparian habitats and there are some periods during which willow flycatchers do not sing.⁶³⁰ As a result, detecting presence of the flycatcher can be difficult. The U.S. Geological Survey, Bureau of Reclamation, and U.S. Fish and Wildlife Service have developed a survey protocol for the southwestern willow flycatcher.⁶³¹ The survey protocol distinguishes between general surveys and project-related surveys. Project-related surveys are conducted to determine the presence or absence of willow flycatchers within a site when there is a potential or foreseeable impact to their habitat due to a potential project or change in site management.

⁶²² TN # 251871.

⁶²³ PSA at Table 5.2-2.

⁶²⁴ *Id.* at pp. 5.2-99 through -102.

⁶²⁵ Cashen Comments at p. 11.

⁶²⁶ PSA at p. 5.2-169.

⁶²⁷ *Id.*

⁶²⁸ *Id.*

⁶²⁹ Cashen Comments, at p. 11.

⁶³⁰ Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38.

⁶³¹ *Id.*

The protocol for project-related surveys entails a minimum of 5 surveys using the call-playback technique.⁶³² These 5 surveys include one survey between May 15-31, two surveys between June 1-24, and two surveys between June 25-July 17.⁶³³ In contrast, BIO-12 requires only a single survey that would not include implementation of the call-playback technique, and whose timing could coincide with the early or late part of the breeding cycle (depending on the Applicant's construction schedule). As stated in the survey protocol: "[a] single survey, or surveys conducted too early or late in the breeding cycle, do not provide definitive data and are of limited value."

The PSA correctly concludes that increased levels of human presence, noise, vibration, and fugitive dust may cause flycatchers to abandon their nests or breeding territories.⁶³⁴ Southwestern willow flycatcher breeding territory sizes range from approximately 0.25 to 5.7 acres, with most in the range of 0.5 to 1.2 acres.⁶³⁵ As a result, the 100-foot nest avoidance buffer (equivalent to 0.72 acres) required under BIO-12 does not ensure the Project would avoid disturbance activities within a flycatcher breeding territory.

The primary cause of the flycatcher's decline is loss and modification of habitat.⁶³⁶ The PSA estimates the Project would impact 10.61 acres of tamarisk thickets (i.e., potential flycatcher breeding habitat), of which 5.43 acres would be permanently impacted.⁶³⁷ The PSA does not incorporate compensatory mitigation for these impacts to flycatcher habitat. This issue is exacerbated by the PSA's failure to require the Applicant to undergo Section 7 consultation with the USFWS (regarding impacts to the flycatcher), and for the Applicant to obtain a consistency determination from the CDFW under Fish and Game Code section 2080.1.⁶³⁸

Whereas BIO-17 requires compensation or restoration for the Project's permanent impacts to natural and semi-natural vegetation *communities* (including tamarisk thickets), it does not require compensation for impacts to *habitat*, which is defined as: "the resources and conditions present in an area that produce occupancy—including survival and reproduction—by a given organism."⁶³⁹ The

⁶³² Cashen Comments at p. 11.

⁶³³ *Id.*

⁶³⁴ PSA, p. 5.2-100.

⁶³⁵ U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix +210 pp., Appendices A-O.

⁶³⁶ U.S. Fish and Wildlife Service. 2014. Southwestern Willow Flycatcher (*Empidonax traillii extimus*). 5-Year Review: Summary and Evaluation. Phoenix (AZ): U.S. Fish and Wildlife Service, Arizona Ecological Services.

⁶³⁷ PSA, Table 5.2-5.

⁶³⁸ Cashen Comments at p. 11.

⁶³⁹ See Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.

presence of a vegetation community is not equivalent to presence of habitat.⁶⁴⁰ As discussed in Sogge et al. (2010), there are many tamarisk-dominated and native-dominated habitats in which flycatchers do not breed. Therefore, the value of any riparian compensation habitat to the flycatcher is site specific and will depend on the spatial, structural, and ecological characteristics of that particular habitat patch and the potential for flycatchers to colonize and maintain populations within it.⁶⁴¹ Consequently, the PSA cannot merely assume that preserving or restoring tamarisk thickets elsewhere would mitigate the Project's permanent impacts on flycatcher habitat. Similarly, although the PSA states that BIO-11 would mitigate the Project's temporary impacts to habitat, BIO-11 only requires revegetation of "temporarily disturbed areas not subject to long-term use or ongoing vegetation maintenance," and BIO-11 does not establish a timeline for completion of the revegetation efforts.⁶⁴² The PSA does not incorporate alternative mitigation for temporarily disturbed areas that are subject to ongoing vegetation maintenance, nor does the PSA establish a timeline for completion of the revegetation efforts under BIO-11.⁶⁴³ For these reasons, the PSA should be revised to adequately analyze and mitigate significant impacts to the southwestern willow flycatcher.⁶⁴⁴

C. The PSA Fails to Adequately Analyze Cumulative Biological Resources Impacts

The PSA fails to adequately analyze cumulative impacts to biological resources associated with development in the region. The PSA's conclusion that "implementation of related projects and other anticipated growth in Imperial County would not combine with the proposed project to result in cumulatively considerable impacts on biological resources"⁶⁴⁵ is not supported by substantial evidence.⁶⁴⁶ Substantial evidence in Mr. Cashen's expert comments attached demonstrate that reasonably foreseeable future projects would eliminate approximately 124,000 acres (27%) of habitat for special-status birds in the Imperial Valley.⁶⁴⁷ This constitutes a significant cumulative impact on special-status birds that depend on agricultural habitat in the Imperial Valley.⁶⁴⁸

The PSA's cumulative impact analysis related to biological resources is unsupported because the PSA utilizes two disparate geographic scales to analyze cumulative impacts. The PSA refers to the projects within six miles of the Project to

⁶⁴⁰ Cashen Comments at p. 11.

⁶⁴¹ Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p

⁶⁴² Cashen Comments at p. 12.

⁶⁴³ *Id.*

⁶⁴⁴ *Id.*

⁶⁴⁵ PSA at p. 5.2-137.

⁶⁴⁶ Cashen Comments at p. 19.

⁶⁴⁷ *Id.*

⁶⁴⁸ *Id.*

analyze cumulative impacts, however, in analyzing impacts to habitat, the PSA considers the total amount of agricultural land throughout all of Imperial County.⁶⁴⁹ Mr. Cashen clarifies that it is not possible to accurately analyze cumulative impacts by using one geographic scale (i.e., Imperial County) to analyze the abundance of remaining habitat, but a much smaller scale (i.e., 6-mile radius of the Project) to analyze other projects that would impact habitat.⁶⁵⁰ To provide valid analysis, a revised and recirculated PSA must use a consistent geographic scale.⁶⁵¹ If the geographic scope is a 6-mile radius of the proposed Project, the Commission must revise and recirculate the PSA to identify the amount of agricultural land within a 6-mile radius of the proposed Project.⁶⁵² Conversely, if the geographic scope is Imperial County, a revised PSA must identify all past, present, and probable future projects in Imperial County. Regardless, the PSA's cumulative impact analysis is inadequate for failure to analyze all past, present, and future projects.

The PSA provides a list of Projects within 6 miles of the Project including the following projects:

- Calipal Solar Farm I (Wilkinson Solar Farm), Calipatria (Approved)
- Wilkinson Solar Farm/Lindsey Solar Farm, Niland (Pending Construction)
- Midway Solar Farm IV, Calipatria (Approved, not built)
- Wister Solar Energy Facility Project (Ormat Wister Solar), Niland (Under Construction)
- Hell's Kitchen Geothermal Exploration Project, Niland (Approved, not built)
- Energy Source Mineral ALTiS, Imperial County (Pending Construction)
- Morton Bay Geothermal Project, Imperial County (Pending Permit)
- Black Rock Geothermal Project, Imperial County (Pending Permit)
- Geo Hudson Ranch, McDonald Road and Davis Road (Approved)
- Nidar 100 MW Solar Project, Calipatria (Pending Entitlement)
- VEGA SES 2, 3, and 5 Solar Energy Project, Niland (Approved, not built)

This list, and the cumulative impact analysis which it undergirds, are insufficient to accurately analyze the Project's cumulative impacts. Mr. Cashen concludes that the PSA fails to provide a complete cumulative impact analysis for failing to identify the amount of agricultural land within a 6-mile radius of the

⁶⁴⁹ Cashen Comments at p. 15; PSA at p. 5.2-75, 5.2-138.

⁶⁵⁰ Cashen Comments at p. 15.

⁶⁵¹ *Id.*

⁶⁵² *Id.*; PSA at p. 5.2-75, 5.2-138.

proposed Project and for failing to identify all past, present, and probable future projects in Imperial County.

1. The PSA Fails to Adequately Analyze Cumulatively Considerable Impacts Associated with the Lithium Valley Specific Plan Project

The PSA fails to adequately analyze the cumulative impacts analysis associated with the proposed LVSP. The LVSP encompasses approximately 51,786 acres of land adjacent to the southeastern shore of the Salton Sea.⁶⁵³ This includes almost all land within the PSA's geographic scope of analysis (i.e., 6-mile radius of the Project).⁶⁵⁴ Under the LVSP, most of this land would (or could) be converted to industrial uses.⁶⁵⁵

For many bird species, the Imperial Valley provides an important habitat for birds due to its geographic relationship with the Salton Sea. Whereas the PSA is correct in stating that there are approximately 500,000 acres of total agricultural lands in Imperial County, in 2021 there were only 460,258 acres in Imperial Valley (with the remainder in the Palo Verde and Bard/Winterhaven regions).⁶⁵⁶ Of these 460,258 acres, 48,000 to 74,000 acres⁶⁵⁷ would be used to grow sugarcane for the California Ethanol Project, which was approved by the Imperial County Board of Supervisors in 2013.⁶⁵⁸ California Ethanol Project will have a significant adverse impact on the Imperial Valley population of burrowing owls and other bird species that forage mainly in low-growing agricultural fields.⁶⁵⁹ As stated in the Applicant's Water Supply Assessment, the Imperial County Board of Supervisors has targeted up to 25,000 acres of agricultural lands in Imperial Valley for solar energy development, with additional losses occurring as the result urban development.⁶⁶⁰

These developments pursuant to the LVSP, combined with the Project, result in a cumulatively considerable impact to biological resources which the PSA fails to analyze. As a result, the Commission failed to proceed in the manner

⁶⁵³ LVSP Initial Study at p. 2.

⁶⁵⁴ LVSP Baseline Report at p. 22 (Figure 2-4).

⁶⁵⁵ LVSP NOP at p. 3 (Figure 2).

⁶⁵⁶ Imperial County, 2021 Agricultural Crop & Livestock Report (2022), *available at* <https://agcom.imperialcounty.org/wp-content/uploads/2022/10/2021-CR-Draft-Final.pdf>.

⁶⁵⁷ The EIR for the Project stated 74,000 acres, but a recent news release from the company states 48,000.

⁶⁵⁸ This project remains active. *See* CE+P, CE+P to Partner with International Agribusiness Experts Booker Tate Ltd. on Sugar Valley Energy Sugarcane and Ethanol Production (Apr. 3, 2024), *available at* <https://www.californiaethanolpower.com/news/ce-p-to-partner-with-international-agribusiness-experts-booker-tate-ltd-on-sugar-valley-energy-sugarcane-and-ethanol-production>.

⁶⁵⁹ Cashen Comments at p. 15; Letter from Kennon A. Corey to Armando G. Villa re: Notice of Preparation of a Draft Environmental Impact Report for the Sugarcane and Sweet Sorghum to Ethanol, Electricity and Bio-Methane Facility (Dec. 19, 2012).

⁶⁶⁰ WSA.

required by law in analyzing the Project's cumulative impacts to biological resources in the PSA and lacks substantial evidence to support the PSA's conclusions regarding the Project's cumulative impacts to biological resources.

D. The PSA Fails to Adequately Mitigate the Project's Significant Biological Resources Impacts

For the reasons stated herein, the Project will result in significant impacts to biological resources that must be adequately disclosed, analyzed, and mitigated in a revised PSA. An agency must mitigate "all significant environmental impacts to the greatest extent feasible."⁶⁶¹ Mitigation of impacts to the fullest extent feasible requires an agency to accurately quantify the severity of Project impacts, and because the PSA's inadequate analyses underestimate the severity of the Project's impacts, the Commission has failed to comply with CEQA and must revise and recirculate the PSA.

1. The PSA Fails to Adequately Mitigate Temporary Impacts to Avian Habitat

The PSA fails to adequately mitigate potentially significant impacts associated with temporary impacts to avian habitat from conversion of agricultural fields.⁶⁶² The PSA provides the following regarding the Project's temporary impacts to habitat for special-status birds: "[u]pon completion of construction, temporarily impacted agricultural fields would revert to previous uses."⁶⁶³ This statement is not reflected in the Project Description or Staff's proposed Conditions of Certification.⁶⁶⁴ Although BIO-11 requires a "plan" that identifies Project impact areas that would be converted back to their previous land use, it does not *require* any or all of the impacted agricultural fields to revert back to agricultural production. The result is that impacts to avian habitat associated with conversion of agricultural land even temporarily, will not be adequately mitigated.

2. The PSA Fails to Adequately Mitigate Permanent Impacts to Avian Habitat

Habitat loss is a potentially significant impact to special-status birds.⁶⁶⁵ The PSA makes the determination that BIO-17 would mitigate the Project's permanent impacts on habitat.⁶⁶⁶ BIO-17 states: "[p]ermanent impact to all natural and semi-natural vegetation communities, including but not limited to, tamarisk thickets, Typha herbaceous alliance, iodine bush shrub, and desert holly scrub, shall be

⁶⁶¹ 14 Cal. Code Regs. §§ 15090, 15091.

⁶⁶² *Id.* at 16.

⁶⁶³ PSA at p. 5.2-97.

⁶⁶⁴ Cashen Comments at p. 16.

⁶⁶⁵ PSA at p. 5.2-106.

⁶⁶⁶ *Id.* at p. 5.2-107.

compensated through habitat compensation and/or habitat restoration at a minimum of a 1:1 ratio.”⁶⁶⁷ Whereas this measure would mitigate the Project’s impacts on vegetation communities, it would not sufficiently mitigate the Project’s impacts on *habitat*.⁶⁶⁸ Habitat is defined as: “the resources and conditions present in an area that produce occupancy—including survival and reproduction—by a given organism.”⁶⁶⁹ Substantial evidence, as presented in Mr. Cashen’s expert comments, demonstrates that if the habitat compensation lands do not produce occupancy of the species impacted by the Project, the habitat impacts remain unmitigated.⁶⁷⁰

For example, Cashen’s comments demonstrate that iodine bush scrub that is acquired under BIO-17 would have no habitat value to the snowy plover unless it has the same qualities as the iodine bush scrub impacted by the Project (e.g., low vegetative cover in close proximity to water with minimal human activity and within the geographic range of the species).⁶⁷¹ Permanent impacts associated with habitat loss are unmitigated and remain significant. A revised and recirculated PSA must adequately mitigate impacts associated with habitat loss for special-status birds.

3. The PSA Fails to Adequately Mitigate Significant Impacts from Night Lighting

The PSA includes the same typo as the AFC regarding Mitigation Measure VIS-2, which provides: “The applicant shall coordinate with the California Energy Commission and/or Imperial County on appropriate night lighting design and materials prior to final design. Lighting shall comply with Imperial County Municipal Code Section 91702.02(L), as feasible. (Jacobs 2023a, p. 5.13-29).”⁶⁷² Imperial County Municipal Code Section 91702.02(L) does not exist. The code section goes up to the subsection (G). Compliance with the Imperial County Municipal Code as feasible does not ensure impacts would be less than significant, because the measure is neither binding nor extant.

CURE’s Data Request Set 2 Data Request No. 210 requested that the Applicant “Provide a copy of Imperial County Municipal Code section 91702.02(L) referenced in the AFC. If this section of the code does not exist, identify the correct section of the code.” The Commission failed to revise Mitigation Measure VIS-2 and fails to provide adequate mitigation for night lighting.

⁶⁶⁷ PSA at p. 5.2-107.

⁶⁶⁸ Cashen Comments at p. 16.

⁶⁶⁹ See Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.

⁶⁷⁰ Cashen Comments at p. 16.

⁶⁷¹ *Id.*

⁶⁷² PSA at p. 5.15-32.

Further, providing a light pollution control plan, as required under VIS-2, does not ensure impacts would be less than significant, especially in absence of performance standards for the plan.⁶⁷³ CEQA Guidelines § 15126.4(a)(1)(B) provide that formulation of mitigation measures shall not be deferred until some future time.⁶⁷⁴ “Impermissible deferral of mitigation measures occur when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR.”⁶⁷⁵ The CEQA Guidelines provide that “[t]he specific details of a mitigation measure, however, may be developed after project approval when it is impractical or infeasible to include those details during the project’s environmental review...”⁶⁷⁶ The PSA does not state why specifying these light pollution performance standards were impractical or infeasible at the time the PSA was drafted. In *Preserve Wild Santee v. City of Santee*, the city impermissibly deferred mitigation where the EIR did not state why specifying performance standards for mitigation measures “was impractical or infeasible at the time the EIR was certified.”⁶⁷⁷ The court determined that although the City must ultimately approve the mitigation standards, this does not cure these informational defects in the EIR.⁶⁷⁸ Further, the court in *Endangered Habitats League, Inc. v. County of Orange*, held that mitigation that does no more than require a report to be prepared and followed, or allow approval by a county department without setting any standards is inadequate.⁶⁷⁹ Here, the fact that a light pollution control plan will be prepared later does not cure the informational defects in the PSA.⁶⁸⁰

Similarly, the provision in BIO-4 requiring only “the lowest illumination necessary for human safety” does not ensure impacts would be less than significant because the PSA does not quantify the illumination level necessary for human safety, nor does it identify how often lighting would be turned off because it “is not required” for safety purposes.⁶⁸¹ However, based on the PSA’s Project Description, it appears night lighting required for human safety would be located throughout most of the Project site.⁶⁸²

⁶⁷³ Cashen Comments at p. 24.

⁶⁷⁴ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

⁶⁷⁵ *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-916.

⁶⁷⁶ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

⁶⁷⁷ *Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 281.

⁶⁷⁸ *Ibid.*

⁶⁷⁹ *Endangered Habitats League, Inc. v. County of Orange*, (2005) 131 Cal.App.4th 777, 794.

⁶⁸⁰ *See Cal. Clean Energy Comm. v. City of Woodland* (2014) 225 Cal.App.4th 173, 194.

⁶⁸¹ Cashen Comments at p. 24.

⁶⁸² PSA at pp. 3-21 to 3-22.

4. The PSA Fails to Adequately Mitigate Significant Impacts from Pile Driving

The PSA identifies three methods for reducing the significant noise level of pile driving,⁶⁸³ but it does not identify how much each method (e.g., use of impact cushions) would reduce the pile driving noise level.⁶⁸⁴ These deficiencies preclude the ability to assess whether the methods adequately mitigate impacts from pile driving noise levels at habitat occupied by the Yuma Ridgway's rail, California black rail, and other special-status bird species.⁶⁸⁵ Mitigation Measure NOISE-8 requires the Applicant to perform pile driving in a manner to reduce the potential for any project-related noise and vibration complaints. But, the measure fails to establish permissible thresholds for noise levels generated pile driving.⁶⁸⁶

5. The PSA Fails to Adequately Mitigate Significant Impacts to Nesting Birds

Substantial evidence demonstrates that the Project results in significant impacts to nesting birds requiring further mitigation. BIO-12 requires a pre-activity survey for nesting birds if Project construction or decommissioning activities must occur during the avian breeding season.⁶⁸⁷ BIO-12 states: "Pre-activity surveys shall be conducted by the approved biologist at the appropriate time of day/night, during appropriate weather conditions."⁶⁸⁸ This statement is too vague to ensure efficacy of the mitigation.⁶⁸⁹ A revised PSA must define what would be considered the appropriate time of day and weather conditions.⁶⁹⁰

Mitigation Measure BIO-12 outlines the methods that should be used during the pre-activity survey.⁶⁹¹ However, given the density of vegetation in the tamarisk thickets in Red Hill Bay, substantial evidence demonstrates that it would be infeasible for a biologist to be able to locate all bird nests in that vegetation community, especially given the 7-day timeframe prescribed in BIO-12.⁶⁹² This issue should be addressed in a revised and recirculated PSA.

Further, Mitigation Measure BIO-12 provides: "[i]f an active nest is detected, a 100-foot avoidance buffer for passerines, and a 500-foot avoidance buffer for raptors or pelicans, shall be established and clearly delineated by staking, flagging,

⁶⁸³ PSA at p. 5.9-7

⁶⁸⁴ Cashen Comments at p. 3.

⁶⁸⁵ *Id.*

⁶⁸⁶ *Id.*

⁶⁸⁷ PSA at p. 5.2-167.

⁶⁸⁸ *Id.*

⁶⁸⁹ Cashen Comments at p. 27.

⁶⁹⁰ *Id.*

⁶⁹¹ PSA at pp. 5.2-167 to 5.2-168.

⁶⁹² Cashen Comments at p. 27.

and/or signage.”⁶⁹³ The PSA must be revised to establish buffer size for the other types of birds that have the potential to nest in the Project area (e.g., Anseriformes, Charadriiformes, Trochiliformes, etc.) in order to accurately characterize and mitigate impacts.⁶⁹⁴

6. The PSA Fails to Adequately Mitigate Significant Impacts to California Black Rail

The California black rail is listed as threatened under the California Endangered Species Act (“CESA”), and it is a fully protected species under California Fish and Game Code.⁶⁹⁵ The California black rail has been detected at the Obsidian Butte Ponds, which are located approximately 600 feet from the proposed generating facility and approximately 400 feet from a proposed laydown area.⁶⁹⁶ As the PSA acknowledges, the California black rail is sensitive to human disturbance and the species will abandon its nest if disturbed before completing a clutch.⁶⁹⁷ Disturbance that causes a California black rail to abandon its nest constitutes “take,” which is not authorized for fully protected species, except for 5 types of projects. The Project is not one of those 5 types of projects.⁶⁹⁸ This means that any Project activities that directly or indirectly cause take of a California black rail would violate California law, and that under CESA, any impacts to the species must be “fully mitigated” through measures that are: (a) roughly proportional in extent to the impact, and (b) capable of successful implementation.⁶⁹⁹

Scott Cashen’s comments provide substantial evidence that the PSA fails to incorporate mitigation that would prevent take of California black rails and that would ensure any impacts on the species are fully mitigated.⁷⁰⁰ Disturbance activities associated with the Project (e.g., noise, light, and human activity) have the potential to cause significant impacts on the California black rail.⁷⁰¹ The PSA incorporates two mitigation measures for these disturbance activities: BIO-13 and BIO-14. However, both of these measures are specifically focused on impacts to the Yuma Ridgway’s rail. Whereas habitat of the two rail species often overlaps, Staff cannot assume that implementation of the Yuma Ridgway’s rail mitigation in BIO-13 and BIO-14 would also mitigate impacts on the California black rail.⁷⁰² For

⁶⁹³ PSA at 5.2-168.

⁶⁹⁴ Cashen Comments at p. 27.

⁶⁹⁵ Cal. Fish & Game Code § 3511(b)(3).

⁶⁹⁶ California Natural Diversity Database. 2024. RareFind 5 [Internet]. California Department of Fish and Wildlife [July 2, 2024].

⁶⁹⁷ PSA, p. 5.2-63.

⁶⁹⁸ California Department of Fish and Wildlife. 2024. Fully Protected Animals. [accessed 2024 Jul 23]. <https://wildlife.ca.gov/Conservation/Fully-Protected>

⁶⁹⁹ Cal. Fish & Game Code § 2081.

⁷⁰⁰ Cashen Comments at p. 13.

⁷⁰¹ *Id.* at p. 13.

⁷⁰² *Id.* at p. 13.

example, although BIO-13 requires pre-activity surveys and construction monitoring for Yuma Ridgway's rail, no surveys or construction monitoring is required for the California black rail.⁷⁰³ As a result, and because the PSA does not incorporate mitigation to "fully mitigate" impacts on the black rail (e.g., to offset habitat degradation caused by the Project's noise, light, and human activity), impacts on the California black rail remain significant and must be mitigated in a revised PSA before the Commission can make a determination on the Project.⁷⁰⁴

7. The PSA Fails to Adequately Mitigate Significant Impacts to Nesting Ridgway's Rail

Substantial evidence demonstrates that Mitigation Measure BIO-13 would not adequately mitigate significant impacts to nest populations of Ridgway's Rail. BIO-13 provides:

Construction and decommissioning activities within or adjacent to suitable habitat for Yuma Ridgway's rail (i.e., cattail marsh, Invasive Southwest Riparian Woodland and Shrubland, and North American Arid West Emergent Marsh) shall be scheduled to avoid the nesting and molting flightless season (i.e., February 15 – September 15) unless surveys verify [*sic*] that no nesting is occurring.⁷⁰⁵

This condition is vague and would not adequately ensure that impacts to the Yuma Ridgway's rail would be mitigated.⁷⁰⁶ A revised PSA must establish what would be considered "adjacent" by providing a quantifiable distance.⁷⁰⁷ The Yuma Ridgway's rail is a secretive bird that constructs well concealed nests.⁷⁰⁸ As a result, it is extremely difficult to "verify" that no nesting is occurring.⁷⁰⁹ When surveying for Ridgway's rails, biologists use behavioral cues (e.g., vocalizations in areas with concentrated rail activity) to infer nest locations.⁷¹⁰ A revised PSA must establish how the biologist would verify that no nesting is occurring and clarify whether BIO-13 requires implementation of the USFWS's (2017) *Yuma Ridgway's Rail Survey Protocol*.⁷¹¹

⁷⁰³ Cashen Comments at p. 13.

⁷⁰⁴ *Id.* at p. 13.

⁷⁰⁵ PSA at p. 5.2-170.

⁷⁰⁶ Cashen Comments at p. 28.

⁷⁰⁷ *Id.*

⁷⁰⁸ *Id.*

⁷⁰⁹ *Id.*

⁷¹⁰ *Id.*

⁷¹¹ *Id.*

8. *The PSA Fails to Adequately Mitigate Significant Impacts from Construction Noise on Southwestern Willow Flycatcher and Gila Woodpecker*

Substantial evidence demonstrates that Mitigation Measure BIO-13 would not adequately mitigate impacts the southwestern willow flycatcher, California black rail, Yuma Ridgway's Rail, and Gila woodpecker (all federal or state listed species).⁷¹² The PSA refers to these birds as "marshland species." Among other impacts, the PSA states that construction noise could have a significant impact on marshland bird communication. The PSA's analysis then focuses on the Yuma Ridgway's rail and two of staff's proposed COCs/MMs: BIO-13 (Yuma Ridgway's Rail Survey, Management, and Monitoring) and BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan).⁷¹³ The PSA's analysis concludes with a list of other COCs/MMs that would apply to marshland birds, and it provides Staff's determination that "[w]ith the implementation of these COC/MM, impacts to marshland birds would be reduced to less than significant levels."⁷¹⁴

A fundamental flaw with the PSA's analysis is that the southwestern willow flycatcher and Gila woodpecker are not marshland species.⁷¹⁵ The southwestern willow flycatcher is a riparian obligate that establishes nesting territories, builds nests, and forages where mosaics of relatively dense and expansive growths of trees and shrubs are established, generally near or adjacent to surface water or underlain by saturated soil.⁷¹⁶ The Gila woodpecker is associated with riparian woodlands, old-growth xeric-riparian wash woodlands, uplands with concentrations of large columnar cacti, dry subtropical forests, and urban residential areas.⁷¹⁷

BIO-13 requires: (a) pre-activity surveys and construction monitoring for Yuma Ridgway's rail within all project areas that contain suitable habitat and a 500-foot buffer from suitable habitat; (b) avoidance of construction activities within or adjacent to suitable habitat for Yuma Ridgway's rail during the nesting season, unless surveys verify that no nesting is occurring; and (c) reduced vehicle speed adjacent to rail habitat or burrowing owl habitat.⁷¹⁸ Thus, BIO-13 does not require focused surveys and construction monitoring for the southwestern willow flycatcher and Gila woodpecker.⁷¹⁹ Furthermore, because suitable habitat for the

⁷¹² Cashen Comments at p. 10; PSA at p. 5.2-98 - 5.2-100.

⁷¹³ PSA, p. 5.2-100.

⁷¹⁴ *Id.*

⁷¹⁵ Cashen Comments at 10.

⁷¹⁶ *Id.* at 10; Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.

⁷¹⁷ California Partners in Flight. 2009. The Desert Bird Conservation Plan: a Strategy for Protecting and Managing Desert Habitats and Associated Birds in California. California Partners in Flight. [accessed 2024 Aug 29]. <https://partnersinflight.org/wp-content/uploads/2024/05/desert.v-1.pdf>

⁷¹⁸ PSA at p. 5.2-17.

⁷¹⁹ Cashen Comments at p. 10.

southwestern willow flycatcher and Gila woodpecker is not equivalent to suitable habitat for the Yuma Ridgway's rail, BIO-13 would not impose temporal restrictions on construction activities within or adjacent to habitat for the southwestern willow flycatcher and Gila woodpecker, nor would it impose vehicle restrictions adjacent to that habitat.⁷²⁰

BIO-14 requires a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot from suitable rail habitat, and it establishes a noise threshold of 60 dBA for "marshland habitat" during the breeding season.⁷²¹ During the non-breeding season, BIO-14 requires a biological monitor if construction noise has the potential to exceed 80 dBA at "potential marshland habitat."⁷²² If disturbance to marshland species is observed during the non-breeding season, all work shall stop and USFWS and CDFW shall be contacted for further guidance.⁷²³ Thus, BIO-14 has no noise thresholds or biological monitoring requirements for riparian woodlands that provide potential habitat for the southwestern willow flycatcher and Gila woodpecker.⁷²⁴

For these reasons, and those demonstrated in Scott Cashen's expert comments, the PSA's determination that BIO-13 and BIO-14 would reduce impacts on the southwestern willow flycatcher and Gila woodpecker to less than significant levels is not supported by substantial evidence in the record.

9. The PSA Fails to Adequately Mitigate Impacts from Operational Noise to Ridgway's Rail

The PSA fails to adequately analyze or mitigate impacts to Ridgway Rail species from significant noise associated with Project operation. BIO-14 states: "[t]he project owner, in coordination with the DB(s), shall prepare a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot [sic] from suitable rail habitat."⁷²⁵ BIO-14 then establishes construction noise thresholds for the breeding and non-breeding seasons (60 dBA and 80 dBA, respectively).⁷²⁶ Accordingly, a Marshland Species Noise Assessment and Abatement Plan would not be required if construction activities would not occur within 500 feet of suitable rail habitat.⁷²⁷

Mr. Cashen's comments provide substantial evidence that this mitigation is inadequate for the following reasons. First, the PSA fails to recognize the possibility that construction activities more than 500 feet away from rail habitat could produce

⁷²⁰ Cashen Comments at p. 10.

⁷²¹ PSA at p. 5.2-172.

⁷²² PSA at p. 5.2-172.

⁷²³ Cashen Comments at p. 14.

⁷²⁴ *Id.*

⁷²⁵ PSA at p. 5.2-171.

⁷²⁶ *Id.*

⁷²⁷ Cashen Comments at p. 36.

noise that would not attenuate to below the established thresholds by the time it reaches the rail habitat. For example, a bull dozer operating 600 feet from rail habitat would generate a noise level of 66.4 dBA at the rail habitat.⁷²⁸ Under this scenario, the noise level in the marsh would exceed the 60-dBA threshold, but no Marshland Species Noise Assessment and Abatement Plan would have been required.⁷²⁹

Second, although BIO-14 is clearly designed to avoid significant noise impacts to rails, it focuses solely on noise generated by the Project—not the total noise level when other sources of noise are considered.⁷³⁰ The Applicant’s Yuma Ridgway’s rail survey report states: “proximity of the 4 [Elmore North] survey points to a nearby facility made it difficult to hear any birds that were >50-100 m away.”⁷³¹ This suggests that noise from the existing J.J. Elmore Power Plant, when combined with noise from the Project, could exceed the 60-dBA threshold, even if the Project’s predicted noise level is less than 60 dBA.⁷³² Third, to avoid ambiguity in when the Plan would be required, BIO-14 needs to define the specific areas that provide “suitable rail habitat.”⁷³³

BIO-14 states the following noise attenuation measures shall be implemented to minimize noise impacts on Yuma Ridgway’s rail and other sensitive marshland species during the breeding season:

- “At least 30 days prior to any maintenance activities within 500-feet of marshland habitat, the project owner shall conduct a noise study to evaluate the maximum predicted noise level within rail habitat.”
- “If the maximum predicted noise is less than 60 dBA Leq (Equivalent Continuous Level), no additional measures are required.”⁷³⁴

Mitigation Measure BIO-14 cannot adequately mitigate impacts to Ridgeway Rail species because the PSA fails to clarify whether the noise study would be required for any Project activities that could produce loud noise at rail habitat, or only maintenance activities (as stated in BIO-14).⁷³⁵ In addition, the PSA fails to identify the “marshland habitat” that would be subject to the noise study.⁷³⁶ This

⁷²⁸ See AFC, Table 5.7.7.

⁷²⁹ Cashen Comments at p. 36.

⁷³⁰ *Id.*

⁷³¹ TN # 251681, Distribution and Occupancy of Yuma Ridgway’s Rail Report – Public Version (Aug. 18, 2023) p. 8.

⁷³² Cashen Comments at p. 36.

⁷³³ *Id.*

⁷³⁴ PSA at p. 5.2-171.

⁷³⁵ Cashen Comments at p. 37.

⁷³⁶ *Id.*

information must be included in a revised and recirculated PSA to ensure adequate mitigation for the Ridgway's Rail.

Substantial evidence demonstrates that the effects of noise on wildlife depend on the nature of the noise stimulus.⁷³⁷ Chronic and frequent noise can impair an animal's sensory capabilities, thereby masking biologically relevant sounds used for communication, detection of threats or prey, and spatial navigation.⁷³⁸ Intermittent and unpredictable "impulse" noise stimuli that startle animals are perceived as threats and generate self-preservation responses such as fleeing or hiding.⁷³⁹

Several metrics can be used to characterize the noise environment.⁷⁴⁰ Time-averaged values, such as equivalent continuous sound level (Leq), can be extremely informative to describe sounds that are chronic or frequent; however, Leq measurements do not properly characterize loud, infrequent sounds.⁷⁴¹ These infrequent impulse sounds are best characterized by the metric Lmax, which captures the highest instantaneous sound level measured during a specified period.⁷⁴² Pile driving and steam blows associated with the Project would produce impulse noise that could cause a Yuma Ridgway's rail (or other sensitive marsh birds) to flush from its nest or other cover, thereby making the bird and eggs more susceptible to predation (which is known to be a significant threat to Ridgway's rails).⁷⁴³

The PSA's proposal to use an hourly average noise level of 60 dBA Leq as the trigger for additional mitigation is not appropriate for the Project's pile driving and steam blows, which could cause noise levels of 104 dBA at 50 feet.⁷⁴⁴ Because these activities would be infrequent and of short duration,⁷⁴⁵ they (especially steam blows) are unlikely to surpass the 60 dBA *Leq* threshold established in BIO-14.⁷⁴⁶ This would result in potentially significant impacts to the Yuma Ridgway's rail (or other sensitive marsh birds).⁷⁴⁷

⁷³⁷ Cashen Comments at p. 37.

⁷³⁸ *Id.*

⁷³⁹ *Id.*

⁷⁴⁰ *Id.*

⁷⁴¹ *Id.*

⁷⁴² *Id.*

⁷⁴³ *Id.*

⁷⁴⁴ PSA at pp. 5.9-7 to 5.9-8; Cashen Comments at p. 29 ("The PSA indicates these activities could cause noise levels of 104 dBA Leq. Presumably the PSA means Lmax. If 104 dBA Leq is correct, the Lmax value would be significantly higher than 104 dBA.").

⁷⁴⁵ PSA at p. 5.9-7.

⁷⁴⁶ Cashen Comments at p. 37.

⁷⁴⁷ *Id.*

10. The PSA Fails to Adequately Mitigate Impacts to Burrowing Owl

Substantial evidence demonstrates that Mitigation Measure BIO-15 and BIO-16 are not sufficient to adequately reduce impacts to burrowing owls. The PSA provides that “[i]t is likely that up to 12 burrows [occupied by burrowing owls] occur in the project disturbance footprint and could be permanently impacted during construction.”⁷⁴⁸ This is reflected in PSA Table 5.2-3, which indicates 12 “potentially permanently impacted burrows” and 3 “burrows not permanently impacted” within the Biological Study Area (“BSA”).⁷⁴⁹

The PSA’s account of 12 burrows that “could be permanently impacted during construction” only reflects the burrows in the BSA, which was confined to the Project footprint (and perhaps a very small buffer around the proposed energy facility and well pads).⁷⁵⁰ Thus, the PSA suggests that no burrows outside of the Project footprint would be permanently impacted. This includes burrows located along the very edge of areas that will be subject to substantial disturbance activities, including: (a) 5 burrows located along the edge of the construction camps; (b) a burrow located along the edge of the energy facility; (c) burrows that coincide with the gen-tie line pull site at Garst Road and McKendry Road; (d) 3 burrows located along the edge of the laydown areas; and (e) 6 burrows located along the edge of well pads.⁷⁵¹ While the Applicant may be able to avoid direct impacts to burrows at these locations, it is unreasonable to assume none of the associated owls would be permanently impacted by disturbance activities in the immediate vicinity of their burrows.⁷⁵²

The PSA recognizes that removal or disturbance of vegetation, increased noise and vibration, increased human presence, night lighting, and exposure to fugitive dust can negatively impact burrowing owls and cause them to abandon their burrows.⁷⁵³ Drilling activities, for example, will occur 24 hours per day, will require bright flood lights, and will involve approximately 17 people working at each drilling site for 8 weeks.⁷⁵⁴ The owls that occupy burrows within a few feet of these drilling sites would undoubtedly abandon their burrows (e.g., owls at BUOW_03 through BUOW_08)⁷⁵⁵ if not passively relocated (evicted from their burrows) prior to construction.⁷⁵⁶ Owls located at further distances (e.g.,

⁷⁴⁸ PSA at p. 5.2-104.

⁷⁴⁹ *Id.* at p. 5.2-103.

⁷⁵⁰ See TN 254836, Figure 1. See also TN 253189, Figures 2-7aR through Figure DA4.0-1bR.

⁷⁵¹ See TN 254836, Figures 6a and 6b. See also TN 253189, Figures 2-7aR through Figure DA4.0-1bR.

⁷⁵² Cashen Comments at p. 14.

⁷⁵³ PSA, pp. 5.2-102 and -103.

⁷⁵⁴ Cashen Comments at 14.

⁷⁵⁵ See TN 254836, Figure 6a.

⁷⁵⁶ Cashen Comments at p. 14.

BUOW_02) could also be affected by the drilling activities.⁷⁵⁷ Indeed, all owls within the BSA and 656-foot survey buffer have the potential to be significantly impacted by the Project.⁷⁵⁸ To ensure adequate mitigation for the Project's impacts on burrowing owls, the COC/MMs in the PSA should incorporate post-construction surveys to determine how many owl burrows or territories were ultimately affected by the Project.⁷⁵⁹

CDFW's 2012 Staff Report on Burrowing Owl Mitigation defines an "occupied site" or "occupancy" as a site (burrow) that has been occupied by at least one burrowing owl within the last three years.⁷⁶⁰ The PSA adopts CDFW's definition.⁷⁶¹ CDFW determined that owls within 656 feet of Project-related activities could be indirectly impacted by the Project.⁷⁶² Accordingly, the PSA incorporates COC/MM BIO-15, which states:

"Nests shall not be disturbed during the breeding season (1 February through 31 August). During the breeding season, the DB(s) or Biological Monitor(s) shall implement a no disturbance buffer of 656 feet (200 meters) around active burrows. During the non-breeding season, the DB(s) or Biological Monitor(s) shall implement a no-disturbance buffer of 328 feet (100 meters) around inhabited burrows."

Mitigation Measure BIO-15 will not adequately mitigate impacts to burrowing owls because virtually every component of the Project (including laydown areas, borrow pits, and construction camps) is located within 656 feet of a burrow occupied by burrowing owls.⁷⁶³ Therefore, the Applicant will not be able to initiate construction activities during the breeding season. Second, because the same Project components are also located within 328 feet of an occupied burrow, the Applicant will not be able to conduct construction activities during the non-breeding season while also maintaining a 328-foot buffer. Consequently, if the Project is approved, the Applicant will need to passively relocate (i.e., evict) a substantial number of burrowing owls (i.e., far more than the 12 burrows indicated in the PSA).⁷⁶⁴

The PSA acknowledges that passive relocation can significantly burrowing owls, and that some owls may need to be passively relocated multiple times.⁷⁶⁵ The PSA states: "[w]hile construction of replacement burrows in nearby off-site areas

⁷⁵⁷ Cashen Comments at p. 14.

⁷⁵⁸ *Id.*

⁷⁵⁹ A before-after-control-impact (BACI) study would be most accurate and would provide the CEC with valuable scientific information that could be applied to future projects.

⁷⁶⁰ California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. p. 25.

⁷⁶¹ PSA, p. 5.2-103.

⁷⁶² California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. p. 25.

⁷⁶³ TN 254836, Figures 6a and 6b.

⁷⁶⁴ Cashen Comments at p. 15.

⁷⁶⁵ PSA, p. 5.2-104.

would have some potential benefits to the species, it is likely that burrowing owls would select available, natural burrow sites if available near their previously occupied territories. Because of the [construction] timeframe, this behavior could necessitate multiple passive relocation events for individual birds. Each relocation event would stress the birds and exposes them to increased predation risk, thermal stress, and potential territorial disputes.”⁷⁶⁶ The PSA does not identify mitigation that would (or could) be implemented to reduce this significant impact.⁷⁶⁷

11. The PSA Fails to Adequately Mitigate Cumulative Impacts to Burrowing Owls

The PSA fails to adequately mitigate cumulative impacts to burrowing owls. The PSA’s mitigation measures, and measures implemented for other cumulative projects in the region do not require compensatory mitigation for impacts to burrowing owl habitat. Mr. Cashen’s comments provide substantial evidence that Imperial County rarely requires compensatory mitigation for impacts to burrowing owl habitat, and when compensatory mitigation is required, it compensates for only a fraction of the impacted habitat.⁷⁶⁸ For example, Imperial County required the Mount Signal and Calexico Solar Farm Projects to provide 71.5 acres of compensatory mitigation in exchange for impacts to 4,144 acres of burrowing owl habitat.⁷⁶⁹

California Department of Fish and Wildlife Burrowing Owl Survey Protocol and Mitigation Guidelines provides that: “If the project will reduce suitable habitat on-site below the threshold level of 6.5 acres per relocated pair or single bird, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat, as defined in the Burrowing Owl Survey Protocol, and the site approved by CDFG [CDFW]. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios:

- Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.
- Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.

⁷⁶⁶ PSA at p. 5.2-103.

⁷⁶⁷ Cashen Comments at p. 15.

⁷⁶⁸ Cashen Comments at p. 18.

⁷⁶⁹ County of Imperial, Draft Environmental Impact Report Mount Signal and Calexico Solar Farm Projects (Nov. 2011) pp. 4.4-38 to 4.4-47, *available at* <https://www.icpds.com/assets/planning/final-environmental-impact-reports/mount-signal-solar-farm/cover.pdf>.

- Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.⁷⁷⁰

Habitat loss and degradation are the greatest threats to burrowing owls in California.⁷⁷¹ As a result, the cumulative loss of burrowing owl habitat in Imperial County constitutes a potentially significant cumulative impact that cannot be dismissed by the CEC. Indeed, contrary to the PSA's determination that there are no cumulatively considerable impacts (e.g., to the burrowing owl), there is substantial evidence that the burrowing owl population in Imperial County has experienced significant declines due to inadequate mitigation.⁷⁷²

Further, even when appropriate mitigation measures have been adopted for a project, there often is insufficient oversight to ensure the mitigations measures are implemented successfully, or at all. For example, a report issued by the U.S. Government Accountability Office found that the USFWS lacks: (a) a systematic means of tracking the monitoring reports it requires in biological opinions and does not know the extent of compliance with these requirements; (b) a systematic method for tracking cumulative take of most listed species.⁷⁷³

12. The PSA Fails to Adequately Mitigate Impacts from Habitat Loss

Mitigation Measure BIO-17 does not adequately mitigate impacts associated with habitat loss. As demonstrated in Mr. Cashen's comments, the compensatory mitigation required under BIO-17 would only mitigate impacts to vegetation communities, which is not equivalent to habitat.⁷⁷⁴ The high ecological value of the Project site is a function of its geographic location in relation to the Pacific Flyway, Salton Sea, Sonny Bono Salton Sea National Wildlife Refuge, and Imperial Wildlife Area.⁷⁷⁵ However, the PSA does not establish any geographic limits on the location of the habitat compensation land required under BIO-17.⁷⁷⁶ As a result, substantial evidence demonstrates that BIO-17 does not ensure significant impacts to habitat would be reduced to less than significant levels.⁷⁷⁷ In order to ensure that all

⁷⁷⁰ California Department of Fish and Game, Burrowing Owl Survey Protocol and Mitigation Guidelines (April 1993), *available at*

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842&inline>.

⁷⁷¹ California Bird Species of Special Concern (2008), *available at*

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=10405&inline>.

⁷⁷² Center for Biological Diversity et al, Petition Before the California Fish and Game Commission to List California Populations of the Western Burrowing Owl (*Athene cunicularia hypugaea*) as Endangered or Threatened Under the California Endangered Species Act (Mar. 5, 2024), *available at*

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=221396&inline>.

⁷⁷³ U.S. Government Accountability Office, Endangered Species Act: The U.S. Fish and Wildlife Service Has Incomplete Information about Effects on Listed Species from Section 7 Consultations. (May 2009), *available at* <https://www.gao.gov/assets/gao-09-550.pdf>.

⁷⁷⁴ Cashen Comments at p. 22.

⁷⁷⁵ PSA at pp. 5.2-16 to 5.2-17; Cashen Comments at p. 22.

⁷⁷⁶ Cashen Comments at p. 22.

⁷⁷⁷ *Id.*

significant impacts associated with habitat loss are analyzed and that mitigation measures effectively reduce impacts to a less than significant level, a revised staff assessment should be prepared and circulated. The revised staff assessment should disclose all feasible mitigation measures to reduce impacts from habitat loss.

13. The PSA Improperly Defers Mitigation for Avian Collisions

BIO-20 requires the Applicant to prepare an Avian Collision Deterrent Proposal and Monitoring Plan.⁷⁷⁸ The preparation of this plan constitutes impermissibly deferred mitigation. In addition to deferring preparation of the overall plan, the PSA defers establishment of the “impact thresholds” (i.e., number of collision deaths) that would trigger the need for remedial actions.⁷⁷⁹ The impact thresholds are the most critical component of the plan because they would be used to decide whether the Project is having a significant impact on bird populations, and thus whether remedial actions are necessary.⁷⁸⁰ Absent this information preapproval, the Commission lacks substantial evidence to support the scientific basis for selecting avian collision impact thresholds.

Further, BIO-20 would not serve as sufficient mitigation to reduce avian collision impacts to less than significant. BIO-20 states: “[t]he project owner shall install a CPM-approved marker on the grounding wire of the proposed gen-tie lines. These markers shall be placed and maintained on the highest-bird-use portions of the proposed gen-tie lines.”⁷⁸¹ Mr. Cashen’s comments provided substantial evidence demonstrating that there are numerous problems with this measure.⁷⁸² First, the PSA does not identify the “highest-bird-use portions” of the proposed gen-tie lines, nor does it identify how those portions would be identified.⁷⁸³ Second, there is basis for only putting markers in the “highest-bird-use portions” of the gen-tie lines because the entire Project area is a high-use area for birds.⁷⁸⁴ Mr. Cashen concludes that placing line markers at only select locations would be insufficient to prevent significant impacts to birds.⁷⁸⁵ Indeed, even if line markers are installed along the entire gen-tie line, the impact on birds could remain significant.⁷⁸⁶ Third, BIO-20 fails to incorporate a mechanism for ensuring the line markers are maintained.⁷⁸⁷ During their November 9, 2023 site visit, representatives of CURE

⁷⁷⁸ PSA at p. 5.2-177.

⁷⁷⁹ *Id.*

⁷⁸⁰ Cashen Comments at p. 32.

⁷⁸¹ PSA at p. 5.2-177.

⁷⁸² Cashen Comments at p. 44.

⁷⁸³ *Id.* at p. 31.

⁷⁸⁴ *Id.*

⁷⁸⁵ *Id.*

⁷⁸⁶ *Id.*; M. D’Amico et al., Bird Collisions With Power Lines: Prioritizing Species and Areas by Estimating Potential Population-Level Impacts, Diversity and Distributions 25(6):975-82 (2019), available at <https://onlinelibrary.wiley.com/doi/epdf/10.1111/ddi.12903>.

⁷⁸⁷ Cashen Comments at p. 31.

observed that the distribution lines along Garst Road have line markers, but half of the markers are broken.

Mr. Cashen's comments provide substantial evidence that the PSA does not provide an effective or enforceable mechanism to adequately mitigate significant impacts from avian collision. The PSA must be revised and recirculated to adequately mitigate impacts from avian collisions. The revised PSA should disclose all feasible mitigation measures to reduce avian collisions.

14. The PSA Fails to Adequately Mitigate Significant Impacts Associated with the Floating Cover Required by Mitigation Measure WATER-9

The Facility Pond Wildlife Escape and Monitoring Plan required by COC BIO-19 does not adequately mitigate impacts to biological resources from the floating cover required by COC WATER-9. Further, the Facility Pond Wildlife Escape and Monitoring Plan constitutes impermissibly deferred mitigation. As demonstrated herein, impacts from the floating cover required in WATER-9 would result in significant impacts to biological resources, as a result of drownings. The PSA itself recognizes that "it would be considered a significant impact if animals became trapped in the pond."⁷⁸⁸ The PSA in COC BIO-19 provides that "Monitoring would determine if wildlife are utilizing the ponds, and require corrective actions to prevent further injury or mortality to wildlife."⁷⁸⁹ COC BIO-19 "would also require the applicant include design features for the service water pond and storm water retention pond that allow wildlife to escape if they gain access to the ponds."⁷⁹⁰

CEQA Guidelines § 15126.4(a)(1)(B) provide that formulation of mitigation measures shall not be deferred until some future time.⁷⁹¹ "Impermissible deferral of mitigation measures occur when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR."⁷⁹² The CEQA Guidelines provide that "[t]he specific details of a mitigation measure, however, may be developed after project approval when it is impractical or infeasible to include those details during the project's environmental review..."⁷⁹³ Here, COC BIO-19 proposes that:

The project owner shall incorporate design features to allow escape of wildlife that may enter the ponds within the facility. These may include, but are not limited to, gradual slopes, side traction to facilitate upward movement, escape ramps, floating platforms, and/or wildlife ledges. Prior to construction of the facility ponds, the project owner will submit a Facility Pond Wildlife Escape and

⁷⁸⁸ PSA at 5.2-115.

⁷⁸⁹ PSA at p. 5.2-115.

⁷⁹⁰ *Id.*

⁷⁹¹ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

⁷⁹² *City of Long Beach v. Los Angeles Unified School Dist.* (2009) 176 Cal.App.4th 889, 915-916.

⁷⁹³ 14 Cal. Code Regs. § 15126.4(a)(1)(B).

Monitoring Plan to CDFW for review and comment and to the CPM for review and approval. The plan will outline the wildlife escape methods, procedures for handling dead or injured wildlife, wildlife rehabilitation centers that take injured animals, and schedule for monitoring during the first year of pond operation.⁷⁹⁴

The PSA does not provide substantial evidence that COC BIO-19 would adequately reduce impacts to biological resources because the PSA does not provide any specificity regarding what design features would be included in the Facility Pond Wildlife Escape and Monitoring Plan to reduce impacts to wildlife. Further, COC BIO-19 constitutes impermissibly deferred mitigation. The PSA fails to demonstrate why the specific details of this mitigation measure (including which design features will be utilized) were impractical or infeasible to include during the PSA review process. Absent this information, the public is denied the opportunity to participate in the review and verification of the efficacy of the design features in the Facility Pond Wildlife Escape and Monitoring Plan. For these reasons, the PSA should be revised to adequately analyze and mitigate impacts associated with COC WATER-9 and include the design features to be included in the Facility Pond Wildlife Escape and Monitoring Plan pursuant to COC BIO-19.

GEOLOGY

The PSA recognizes that geological hazards are high in this area, yet fails to adequately analyze seismic hazards. The PSA explains that “[t]he project site and project features, including the plant itself, wells, well pads, pipelines and gen-tie lines, are in one of the most seismically active portions of southern California. The region has experienced numerous earthquakes in the past and is likely to do so in the future.”⁷⁹⁵ As stated in the AFC, “[t]he primary geologic hazards at the site include strong ground motion from a seismic event centered on one of several nearby active faults. The site is within the Brawley Seismic Zone, which is a zone of transition between the northwest end of the Imperial Fault and the southwest end of the San Andreas Fault.”⁷⁹⁶

Moreover, “[g]iven the depth below the ground surface and the thickness of liquefiable soil, the potential for surface expression of liquefaction is considered high.”⁷⁹⁷ “Liquefaction is a phenomenon in which saturated, cohesionless soils, such as sand and silt, temporarily lose their strength and liquefy when subjected to dynamic forces, such as intense and prolonged ground shaking. To be susceptible to liquefaction, potentially liquefiable soils must be saturated or nearly saturated. In general, liquefaction hazards are most severe in saturated soils within the upper 50

⁷⁹⁴ PSA at p. 5.2-177.

⁷⁹⁵ PSA at p. 5.6-5—6.

⁷⁹⁶ AFC at p. 2-56.

⁷⁹⁷ *Id.* at p. 5.4-7.

feet of the ground surface. The potential for liquefaction increases with shallower groundwater.”⁷⁹⁸ According to the Project’s preliminary geotechnical report, all four conditions generally required for liquefaction to occur “exist to some degree” at the Project site.⁷⁹⁹

CEQA requires the lead agency to consider the whole of the action.⁸⁰⁰ This means that the Project must be fully evaluated—even those Project features that are outside of the Commission’s permitting authority such as the production and injection wells.⁸⁰¹ In addition to evaluating all Project elements, the PSA must also identify mitigation measures “that can and should be adopted by the agency with permitting authority” if “staff concludes mitigation is necessary to reduce an impact to less than significant,...”⁸⁰²

With regards to geologic hazards, the PSA concludes that the proposed conditions of certification “both mitigate environmental impacts [from geologic hazards] and ensure conformance with applicable LORS.”⁸⁰³ However, the PSA explains that “[a]dditional impacts associated with project components outside of Commission’s jurisdiction, such as the well complex licensed by CalGEM, the temporary structures such as the laydown yard to be permitted by Imperial County, and the switchyard to be permitted by IID, require mitigation to be less than significant.”⁸⁰⁴ No mitigation measures for significant impacts on these Project components are identified or evaluated in the PSA.⁸⁰⁵

The PSA must conduct the required analysis and incorporate feasible mitigation measures to reduce significant geological hazards. First, the PSA must disclose the mineralogy of the Brawley Fault gouge to provide an adequate discussion of geologic hazards, as discussed in Dr. Malama’s attached expert comments. Second, the PSA fails to analyze contamination of soil and groundwater from pipeline leaks. Third, Dr. Malama provides substantial evidence to demonstrate that impacts from soil erosion and liquefaction may be significant and unmitigated in the PSA. Fourth, the PSA fails to evaluate impacts from induced seismicity. Finally, the PSA lacks substantial evidence to conclude that the impacts of the Project on the safety of people or structures from strong seismic ground-shaking would be less-than-significant because the analysis omits a discussion of the Project’s wells, well pads, and pipelines.

⁷⁹⁸ *Id.* at p. 5.4-6.

⁷⁹⁹ AFC, Appendix 5.4 at p. 15.

⁸⁰⁰ 14 Cal Code Regs. §§ 15003(h); 15378(a).

⁸⁰¹ PSA at p. 3-2.

⁸⁰² *Ibid.*

⁸⁰³ *Id.* at p. 5.6-28—29.

⁸⁰⁴ *Ibid.*

⁸⁰⁵ *Ibid.*

A. The PSA Must Disclose the Mineralogy of the Brawley Fault Gorge to Provide an Adequate Analysis of Geologic Hazards

Dr. Malama concludes that geologic hazards may be significant and unmitigated in the PSA.⁸⁰⁶ He finds that the PSA fails to analyze potentially significant impacts from “[p]ore pressure buildup in the faults from subsurface migration of injected fluids [internal citation omitted] and their associated shear weakening....” He provides the following evidence:

The mineralogy of fault gouge is of critical importance in determining mechanical and hydraulic behavior of the faults. Faults that are filled with clay-rich gouge tend to be weak under shear stress and are more prone to failure in response to seismic activity (Morrow et al. 1984; Ikari et al., 2009). Additionally, clay-rich fault gouge tends to be of low permeability, making clay-filled faults hydraulic barriers that restrict regional subsurface fluid flow. The low permeability also has the effect of accentuating fluid pore pressure buildup within faults and fractures, which further lowers their shear strength (Ikari et al., 2009; Brodsky and Lajoie, 2013). As stated by Morrow et al. (1984) “Clay gouges typically support lower shear stresses than most granitic rocks during frictional sliding experiments particularly when saturated and have extremely low frictional resistance when pore fluid movement is restricted, and fluid pressures become greater than hydrostatic.”⁸⁰⁷

During operations, the Project proposes to inject geothermal fluids to replenish the reservoir as well as produced brine for disposal that Dr. Malama states “can lead to pore pressure build up in the numerous faults and fractures that are present within the BSZ due to potential fluid migration from injection zones.”⁸⁰⁸ Specifically, “[i]f the faults in the BSZ are filled with clay-rich gouge, fluid injection in the area would weaken the faults under shear loading, making them more prone to failure in response to seismic activity,....”⁸⁰⁹ Dr. Malama concludes that these factors “can result in potentially significant impacts on ground shaking and surface rupture risk that were not adequately examined in the PSA.”⁸¹⁰

Dr. Malama comments demonstrate that the PSA must be revised to disclose the mineralogy of the fault gouge in the faults of the Brawley Seismic Zone.⁸¹¹ According to Dr. Malama, “[w]ithout this information, a full impacts assessment has not been performed to evaluate the potential destabilizing impact of fluid pore

⁸⁰⁶ Malama Comments at pp. 1-2.

⁸⁰⁷ *Id.* at p. 1.

⁸⁰⁸ *Ibid.*

⁸⁰⁹ *Ibid.*

⁸¹⁰ *Id.* at pp. 1-2.

⁸¹¹ *Id.* at p. 2.

pressure build up and the associated shear weakening of BSZ faults.”⁸¹² Dr. Malama also notes that the Applicant’s responses to data requests, along with the cited references, do not provide this information.⁸¹³ If faults around the Project site are clay filled, faults in the Brawley Seismic Zone would be prone to “shear failure and enhanced displacement” as a result of the migration of injected fluids from the Project yet these impacts have not been evaluated in the PSA.⁸¹⁴ Based on the substantial evidence provided in Dr. Malama’s comments, the PSA must be revised to disclose the mineralogic composition of the Brawley Fault gouge and provide an adequate analysis of the seismic hazards at the Project site.

B. The PSA Fails to Analyze Contamination of Soils and Groundwater from Pipeline Leaks

Dr. Malama comments that the PSA omits an analysis of the impacts on soil and groundwater quality from accidental release or leaks from the Project’s aboveground pipelines connecting to production and injection wells.⁸¹⁵ The Project will construct and operate approximately 7,137 linear feet of aboveground pipeline from production wells and around 26,934 linear feet of pipeline to injection wells.⁸¹⁶ According to Dr. Malama, leaks from Project pipelines may cause “ponding of fluids” “that could contaminate soil and groundwater resources” given the Project site’s shallow groundwater and low soil permeability.⁸¹⁷ The PSA also discloses that “[a] fluid release to the ground of 200 to 400 gallons typically would remain within a 20- to 30-foot radius of the leak location,”⁸¹⁸ which Dr. Malama determines could have a significant impact on soil and groundwater quality.⁸¹⁹

The PSA omits information about the chemical composition of the produced fluids constituents and their concentrations or the condensate and injected geothermal fluid characterization, but this information was disclosed in the AFC.⁸²⁰ With regards to geothermal fluids, the AFC also states, “Dissolved elements within the geothermal fluid consist primarily of chloride, sodium, calcium, and potassium. There are also significant amounts of zinc, manganese, iron, and silica dissolved in the geothermal fluids. The major component of non-condensable gases is carbon dioxide, which is naturally occurring from the diagenesis of minerals and rocks. There is a large variety of other components in the geothermal fluid, although the other components are less than 0.01% each.”⁸²¹ Dr. Malama concludes that based

⁸¹² Malama Comments at p. 2.

⁸¹³ *Ibid.*

⁸¹⁴ *Ibid.*

⁸¹⁵ *Id.* at pp. 3-5.

⁸¹⁶ PSA at p. 5.16-1.

⁸¹⁷ Malama Comments at p. 4.

⁸¹⁸ AFC at p. 2-57.

⁸¹⁹ Malama Comments at p. 4.

⁸²⁰ AFC, Tables 2-2 and 2-3.

⁸²¹ *Id.* at p. 2-6.

on the pipeline flowrate and the constituents in the fluids, particularly high concentrations of sodium and chloride in the brine, “potential leakages from fluid conveyance pipelines to and from the production and injection wells and well pads, have the potential to cause soil and groundwater contamination, with the potential to further degrade soils and water quality in the area.”⁸²² The PSA improperly omits this discussion from the impacts analysis.

The fluids transported in the Project’s pipelines contain chemicals and contaminants that may result in significant impacts on groundwater and/or soils. Dr. Malama explains that “[s]odium is a strong soil dispersant, destroying soil structure making soils more prone to crusting and impaired drainage (Levy and Torrento, 1995; Balks et al., 1998; Ward and Carter, 2004). Sodium induced soil dispersion also results in the formation of dense, impermeable surface crusts that inhibit seedling emergence. Additionally, sodium can elevate soil pH and lead to accumulation of other toxic elements. Chloride toxicity can also degrade soil and water quality (Levy and Torrento, 1995; Ward and Carter, 2004). Barium, Lead and Cadmium (AFC Tables 2-2 and 2-3) are other potential toxic metals present in the produced fluids that could be released into the soils and groundwater at the project site.”⁸²³ Given the presence of these “toxic constituents” in the fluids transported by the pipelines, Dr. Malama finds “that [a] fluid release due to pipeline leakage would have a potentially significant impact on soil and groundwater,” that is not disclosed, analyzed, or mitigated in the PSA.⁸²⁴

C. Impacts from Soil Erosion and Liquefaction May be Significant and Unmitigated Due to Pipeline Leaks

The preliminary geotechnical report for the Project concludes that “[t]he risk of liquefaction induced settlement is high.”⁸²⁵ The PSA nevertheless concludes that “...with the implementation of the seismic design criteria for ground failure and the anticipated project-specific recommendations in the final geotechnical engineering report, the project would not expose people or property to any significant direct or indirect impacts associated with geologic or seismic conditions onsite, including liquefaction.”⁸²⁶ However, the seismic design guidelines per the current California Building Code (“CBC”) do not apply to the Project’s wells, well pads, and pipelines. Additionally, the Project’s preliminary geotechnical report limited its investigation to the “proposed geothermal power plant” for which “[n]o geothermal wells are planned for the plant site.”⁸²⁷ Thus, the geotechnical report did not analyze geologic hazards by the Project’s wells or other features outside of power plant boundaries.

⁸²² Malama Comments at p. 5.

⁸²³ *Id.* at p. 5.

⁸²⁴ *Ibid.*

⁸²⁵ AFC, Appendix 5.4 at Executive Summary.

⁸²⁶ PSA at p. 5.6-18.

⁸²⁷ AFC, Appendix 5.4 at p. 1.

The PSA's less-than-significant determination as to the risks from soil erosion and liquefaction is therefore not supported by substantial evidence.

Dr. Malama's comments provide substantial evidence demonstrating that the construction and operation of the Project on geologic units and soil that will be degraded and eroded during construction activities is likely to result in potentially significant impacts from liquefaction due to pipeline leaks.⁸²⁸ During construction activities, soils on the Project site—and specifically where the Project pipelines will be constructed—will be “prone to erosion due to soil structure degradation from heavy equipment....”⁸²⁹ Dr. Malama comments that “[h]igh velocity fluids from a pipeline leak may cause soils in the vicinity of the pipeline infrastructure to liquify and undergo erosion in areas where soils were previously disturbed and degraded from construction activities,” but the PSA omits an analysis regarding these potentially significant impacts from pipeline fluid leaks.⁸³⁰ Also, soils are likely to become degraded “from repeated soil expansion and shrinkage cycles.”⁸³¹ These cycles may result from repeated pipeline leaks because the soils are known “to undergo expansion upon imbibition of water and shrinkage upon drying,....”⁸³² Yet, as Dr. Malama comments, impacts from the “expansion and shrinkage cycle on soil structure that may result from repeated pipeline leaks and the resulting increased susceptibility of the soils to erosion” are not addressed in the PSA.⁸³³

Furthermore, Dr. Malama explains that “liquefaction risk arises from the coupling of surface inundation from pipeline leaks with known high seismic activity in the area.”⁸³⁴ According to the PSA, the daily pipeline peak flow is 460 gallons per minute and the PSA analysis determines that “[a] fluid release of 200 to 400 gallons would remain within a 20- to 30-foot radius of the leak location.”⁸³⁵ Dr. Malama concludes that “[a]t a flow rate of 460 gpm and the AFC's own analysis of the radius of the leak location, short duration of fluid release (a few minutes) from a pipeline leak would be sufficient to inundate a large soil surface and cause the soil to undergo expansion and lose internal cohesiveness, and behave like a liquid (Locat and Demers, 1988).”⁸³⁶ These potentially significant impacts from pipeline leaks are not disclosed or evaluated in the PSA.

⁸²⁸ Malama Comments at pp. 5-7.

⁸²⁹ *Id.* at p. 6.

⁸³⁰ *Ibid.*

⁸³¹ *Ibid.*

⁸³² Malama Comments at p. 6.

⁸³³ *Ibid.*

⁸³⁴ *Id.* at p. 7.

⁸³⁵ *Ibid.*

⁸³⁶ *Ibid.*

For the foregoing reasons, these geologic hazards from soil erosion, expansion, and liquefaction must be analyzed in a revised PSA and adequate mitigation must be adopted, as necessary.

D. The PSA Fails to Evaluate Impacts from Induced Seismicity

Dr. Malama concludes that the PSA must be revised to provide an analysis of the impact on the background seismicity of the Salton Sea Geothermal Field from the produced and injected fluids.⁸³⁷ Dr. Malama cites to several studies on induced seismicity from fluid injection.⁸³⁸ Several studies have found that fluid injection can “induce seismicity due to a decrease in the effective stress on faults resulting from increased pore pressure within faults [internal citation omitted].”⁸³⁹ A 2011 study determined that earthquakes had clustered around injection wells based on data from seismic swarms in the Salton Trough (where the Project site is located).⁸⁴⁰ “The report also demonstrated that the seismicity rate in the Salton Trough was initially low during the period of low geothermal operations in the area before 1986 and that as operations expanded, a corresponding increase in seismicity was observed, which suggests a direct impact of fluid injection on area seismic activity.”⁸⁴¹ A 2013 study also found that data from the Salton Sea Geothermal Field “suggest[ed] that the increase in geothermal activity in the study area is correlated with a corresponding increase in the seismicity rate.”⁸⁴² The study “concluded that net production volume combined with injection information is a good predictor of the seismic response in the short term for a fully developed field.”⁸⁴³

The Figure below from Dr. Malama’s comments is based on Salton Trough seismicity data and illustrates that “the number of earthquakes increased more than six times from the pre-1986 low background levels of less than 2000 to over 12,000 at the end of the study period.”⁸⁴⁴

⁸³⁷ Malama Comments at pp. 2-3.

⁸³⁸ *Ibid.*

⁸³⁹ *Id.* at p. 2.

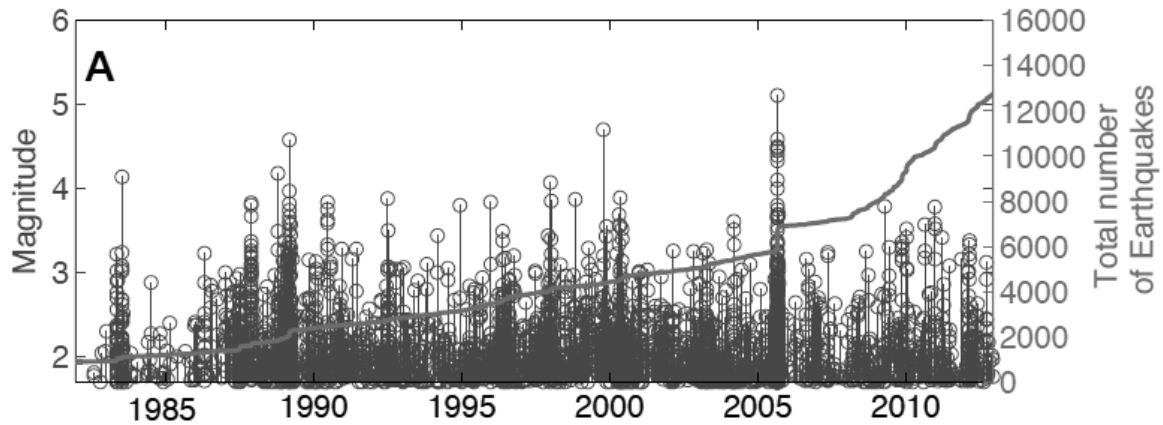
⁸⁴⁰ *Ibid.*

⁸⁴¹ Malama Comments at p. 2.

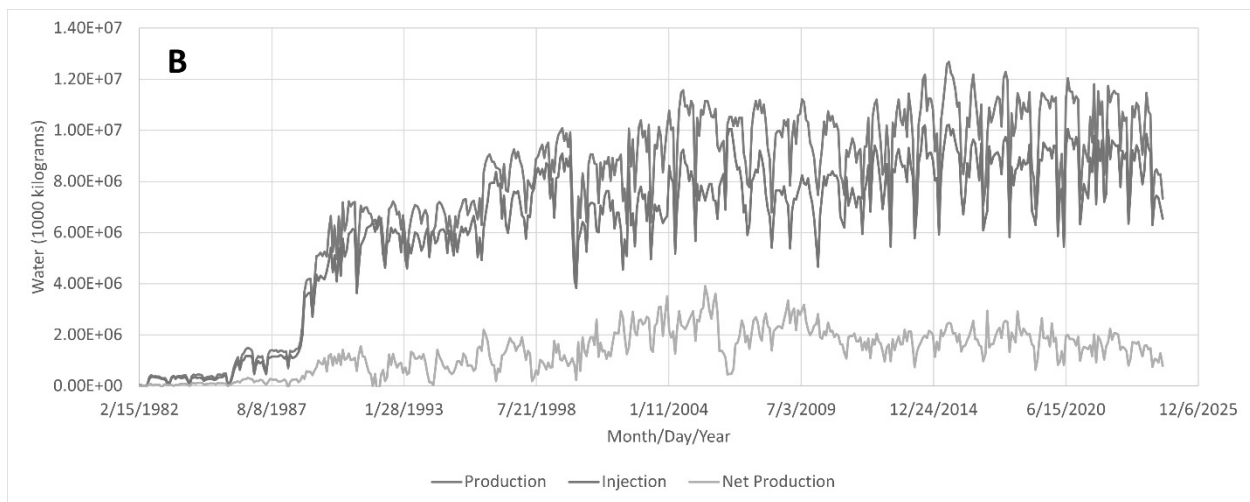
⁸⁴² *Ibid.*

⁸⁴³ *Ibid.*

⁸⁴⁴ *Ibid.*



Dr. Malama’s comments also provide the Figure below, which shows the substantial increase in produced and injected water volumes from geothermal operations prior to 1986 to more recent years.⁸⁴⁵ Based on these Figures, Dr. Malama concludes that “[s]eismicity and water production/injection data show that some correlation exists between the increased geothermal activity [] in the project area and the increased rate of seismicity [].”⁸⁴⁶



For the Black Rock Project, the AFC stated that each production well would produce approximately 1.6 pounds per hour of geothermal fluid, and that each injection well would have a capacity of 3.0 million pounds per hour.⁸⁴⁷ Based on these estimations, Dr. Malama calculates that the Project would generate an approximate volume of 6.5 billion kg of produced water per year per well (assuming 24-hour operations for 365 days of the year) and the injection wells would inject a

⁸⁴⁵ Malama Comments at p. 3.

⁸⁴⁶ *Id.* at p. 2.

⁸⁴⁷ AFC at p. 2-6.

similar volume annually.⁸⁴⁸ Nevertheless, the PSA omits an analysis of the impact that the Project's produced and injected fluid volumes would have on background seismicity in the geothermal field.

For the foregoing reasons, Dr. Malama comments that the PSA must be revised to analyze the impact of the Project's volume of fluid injected into the reservoir from the twelve (12) injection wells and removed from the reservoir by the nine (9) production wells.⁸⁴⁹ The cumulative impact analysis must also be revised in the PSA to assess the impacts from induced seismicity from the two other geothermal projects (i.e., Elmore North and Black Rock), existing geothermal projects, and reasonably foreseeable future geothermal and lithium projects pursuant to the LVSP.

E. The PSA Lacks Substantial Evidence to Conclude That the Impacts of the Project on the Safety of People or Structures from Strong Seismic Ground-Shaking Would be Less-Than-Significant by Omitting Consideration of the Wells, Well Pads, and Pipelines

Although the production and injection wells, well pads, and aboveground pipelines are licensed under the authority of the California Geologic Energy Management Division ("CalGEM"), the PSA states that "the environmental impact of these aspects of the project are *fully* evaluated" in the PSA "[b]ecause these extra-license components are part of the whole of the project,...."⁸⁵⁰ The PSA, however, fails to provide a complete analysis of the Project's impacts on the safety of people or structures from strong seismic ground shaking because the discussion omits consideration of the Project's wells, well pads, and pipelines.

The PSA concludes that Project could be impacted by strong seismic ground shaking during operations and maintenance activities but dismisses these impacts as less-than-significant upon incorporation of the CBC's seismic design guidelines and the future recommendations anticipated in the final geotechnical report.⁸⁵¹ As explained above, the CBC guidelines do not apply to the Project's wells, well pads, and pipelines. In addition, the scope of the future geotechnical report will be limited to the plant facility, excluding the Project's wells, well pads, and pipelines. The PSA fails to provide any evidence that these measures would reduce the impacts from seismic ground shaking on these components. Consequently, the significant impacts on these Project features remain inadequately assessed and unmitigated in the PSA.

⁸⁴⁸ Malama Comments at p. 3.

⁸⁴⁹ *Id.* at p. 7.

⁸⁵⁰ PSA at p. 5.16-1 (emphasis added).

⁸⁵¹ *Id.* at p. 5.6-18.

LAND USE, AGRICULTURE, AND FORESTRY

The PSA determines that the Project would permanently impact approximately 56.36 acres of Prime Farmland and 65.65 acres of Farmland of Statewide Importance, and thus a total of approximately 122.01 acres of Important Farmland.⁸⁵² The PSA concludes that impacts on Important Farmlands would be significant and proposed COC LAND-3/MM LAND-3 is proposed to mitigate these impacts, which requires the Project owner to implement one of Imperial County's three mitigation options for conversion of Important Farmlands based on the County's MMRP in the Final PEIR for the Imperial County Renewable Energy and Transmission Element Update.⁸⁵³ These options include procuring Agricultural Conservation Easements, paying an Agricultural In-Lieu Mitigation Fee, or paying an Agricultural Benefit Fee to Imperial County.⁸⁵⁴

As detailed in the general comment above on the PSA's cumulative impact analysis, CEQA prohibits the deferred formulation of mitigation measures until a future time.⁸⁵⁵ "Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified."⁸⁵⁶ Specifically regarding the option to pay an Agricultural Benefit Fee to Imperial County, the court in *Kings County* established that where it is unclear whether funds as mitigation will actually be used to implement a mitigation measure, the use of such technique lacks substantial evidence under CEQA.⁸⁵⁷

Here, the PSA fails to analyze the feasibility of each mitigation option under COC LAND-3/MM LAND-3, particularly regarding the payment of fees, and does not commit the Applicant to one of the mitigation options. The PSA therefore does not provide substantial evidence to demonstrate that the proposed mitigation for the Project's significant impact on Important Farmland is known, feasible, and effective.⁸⁵⁸ The MMRP in the County's PEIR also does not allow for the deferred selection of one of the available options.⁸⁵⁹ The PSA also does not explain why a particular mitigation option could not be selected and evaluated at this time. Without any evidence to the contrary, the PSA has deferred the analysis of how the Project's significant impacts on agricultural lands will be mitigated, violating CEQA.

⁸⁵² PSA at p. 5.8-15.

⁸⁵³ *Id.* at pp. 5.8-15—16.

⁸⁵⁴ *Ibid.*

⁸⁵⁵ 14 Cal Code Regs. § 15126.4(a)(1)(B).

⁸⁵⁶ *Ibid.*

⁸⁵⁷ *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 709.

⁸⁵⁸ *Id.* at pp. 727-28.

⁸⁵⁹ Imperial County, Final Programmatic Environmental Impact Report: Imperial County Renewable Energy and Transmission Element Update (undated) p. 5-4 to 5-5 (emphasis added), *available at* <https://www.icpds.com/assets/planning/cec-alternative-energy-update/reports-and-documents/21-feir-cec-renewable-energy-mmvp.pdf>.

ALTERNATIVES

The PSA identifies the No Project Alternative as the environmentally superior alternative.⁸⁶⁰ Under CEQA, the PSA is required to include sufficient information to allow a “meaningful evaluation, analysis, and comparison” with the project. When none of the alternatives is clearly environmentally superior to the project, the EIR must explain the environmental advantages and disadvantages of each alternative compared to the project.⁸⁶¹

The PSA lacks substantial evidence to support the conclusion that “there are no other potentially feasible alternatives that could attain the project objectives while avoiding or substantially lessening any of the project’s significant impacts”⁸⁶² because the PSA states that “No potentially feasible alternatives were identified that would 1) attain the key project objectives to develop a baseload renewable electrical generating facility capable of satisfying the energy resource procurement requirements under the California Public Utilities Commission Mid-Term Reliability Decision for 2023–2026, and 2) avoid or substantially lessen any of the project’s significant impacts. Therefore, no alternatives were fully analyzed and compared to the project other than the no project alternative.”⁸⁶³

This failure to analyze or identify potentially feasible alternatives constitutes a failure to proceed in a manner required by law. An agency may not rely on an unanalyzed theory that an alternative might not be environmentally superior to the project and must provide facts and analysis to support such a conclusion.⁸⁶⁴ The PSA fails to provide substantial evidence to support the determination that the No Project Alternative is the environmentally superior alternative. Therefore, the alternatives analysis is inadequate.

CONCLUSION

For the reasons discussed herein, the PSA is wholly inadequate under CEQA. It must be thoroughly revised to provide legally adequate analysis of, and mitigation for, all the Project’s potentially significant impacts to the extent feasible. These revisions will necessarily require that the PSA be recirculated for additional public review. Until the PSA has been revised and recirculated, the Commission may not lawfully approve the Project.

⁸⁶⁰ PSA at p. 8-23.

⁸⁶¹ 14 Cal. Code Regs. §15126.6(d).

⁸⁶² *Id.* at p. 8-24.

⁸⁶³ PSA at p. 8-21.

⁸⁶⁴ *Habitat & Watershed Caretakers v City of Santa Cruz* (2013) 213 Cal.App.4th 1277, 1305; *see also Kings County Farm Bureau v City of Hanford* (1990) 221 Cal.App.3d 692, 737 (no evidence in record supported agency’s claim that environmentally superior alternative was economically infeasible and did not need to be studied in EIR).

Thank you for consideration of these comments.

Dated: September 4, 2024

Respectfully submitted,

Original Signed by:

/s/ Kelilah Federman

Andrew J. Graf

Tara C. Rengifo

Kelilah D. Federman

Adams Broadwell Joseph & Cardozo

601 Gateway Blvd., Suite 1000

South San Francisco, CA 94080

(650) 589-1660

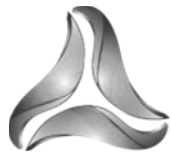
agraf@adamsbroadwell.com

trengifo@adamsbroadwell.com

kfederman@adamsbroadwell.com

Attorneys for California Unions for Reliable
Energy

ATTACHMENT A



GROUP DELTA

September 4, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Attention: Mr. Andrew Graf

SUBJECT: Review of Preliminary Staff Assessment for Black Rock Geothermal Project

Dear Mr. Graf,

At the request of Adams Broadwell Joseph & Cardozo (ABJC), Dr. Komal Shukla has reviewed the materials related to the above-referenced project. This document serves as Dr. Shukla's comment letter regarding the Preliminary Staff Assessment (PSA) and the applicant's (Black Rock Geothermal LLC) response to the California Unions for Reliable Energy's (CURE) comments on the preliminary determination of compliance for the Black Rock Geothermal Project. Dr. Shukla's review does not imply validation of the conclusions or content within the reviewed documents. The absence of comments on specific items should not be interpreted as acceptance of those items.

PROJECT DESCRIPTION

According to the PSA, the Applicant plans to develop the Black Rock Geothermal Project (BRGP or Project) within the Salton Sea Known Geothermal Resource Area (KGRA) in Calipatria, Imperial County, California. The BRGP, covering about 51 acres of unincorporated land, includes geothermal production wells, pipelines, fluid and steam handling facilities, a solid handling system, a Class II surface impoundment, a service water pond, a retention basin, process fluid injection pumps, a power distribution center, borrow pits, and injection wells. The Project aims to generate a gross output of 87 megawatts (MW) and a net output of 77 MW. Located east of the Salton Sea, the site is bordered by McKendry Road to the north, Severe Road to the west, and Boyle Road to the east. Within the Salton Sea Known Geothermal Resource Area, geothermal brine exceeding 500 degrees Fahrenheit is drawn from nine production wells surrounding the power plant and conveyed through aboveground pipelines to the steam handling system. This system produces high-pressure steam and further flashes the remaining geothermal fluids at lower pressures to generate both standard and low-pressure steam for the turbine. Dilution water is added to control precipitation, and an atmospheric flash tank removes pressure before the fluids enter clarifiers that extract suspended solids. Precipitation of solids is essential to bring the geothermal fluid to chemical equilibrium. Different injection wells manage spent geothermal

fluid, aerated geothermal fluid, and condensate. However, mixing these fluids can lead to scaling and excess precipitation, jeopardizing sustainable injection. The steam is routed to a triple condensing steam turbine, and the condensed steam is reused as makeup water for the cooling tower.

Dr. Komal Shukla from Group Delta Consultants, Inc. (Group Delta) has prepared this document after reviewing the PSA and provided comments on its findings and conclusions.

I. Insufficient GHG Emissions Analysis in the PSA Fails to Address Long-Term Implications

The Preliminary Staff Assessment (PSA) claims that the proposed Project will not result in a net increase in greenhouse gas (GHG) emissions, citing its replacement of fossil fuel resources with clean energy. The PSA states that “[S]ome of the renewable power generated by the proposed Project would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand¹” and that “[t]his would avoid GHG that could otherwise be emitted by fuel-burning generators. The rate of GHG emissions avoided would vary with the mix of generators and imported electricity displaced by the incremental supply generated by the proposed Project²”

The PSA's assessment of the Project's GHG emissions impact claims that the Project will not increase net GHG emissions. This assertion is based on the premise that emissions will be offset by replacing fossil fuels with cleaner energy sources. However, this evaluation does not adequately account for California's SB 100 policy, which mandates that by 2045, 100% of the state's electricity must come from renewable and zero-carbon resources. This oversight casts doubt on the accuracy and reliability of the Project's environmental impact assessment.

Overview of the PSA's Assumptions

The PSA calculates avoided emissions using a displacement factor of 822.5 lbs CO₂e/MWh (0.373 MT CO₂ per MWh), assuming that this amount of fossil fuel emissions will be displaced. According to this factor, the Project's annual avoided emissions are estimated to be 251,588 MTCO₂e (0.373 MTCO₂e/MWh × 674,500 MWh/year) over its lifetime. This analysis is flawed due to its use of a static displacement factor and its failure to account for the effects of California's clean energy transition under SB 100. By ignoring the progressive reduction in grid emissions mandated by this policy, the PSA overestimates the Project's environmental benefits and underestimates the potential for a net increase in GHG emissions.

The PSA's calculations suffer from several key issues:

¹ Section 5.3.2.2 on Pg.387. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697) (emphasis added).

² Pg.387-388. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697) (emphasis added).

- **Constant Displacement Factor:** The PSA uses a fixed displacement factor of 822.5 lbs CO₂e/MWh for the entire 40-year lifespan of the Project. This approach does not account for the significant changes in California's energy mix, particularly the ongoing shift toward cleaner energy sources. The displacement factor applied by the PSA reflects historical fossil fuel emissions intensity, which becomes increasingly obsolete as the grid incorporates more renewables. This unrealistic factor leads to an overestimation of the Project's environmental benefits.
- **Neglect of California's Clean Energy Transition:** The PSA fails to properly incorporate the implications of SB 100, which aims for 100% renewable and zero-carbon energy by 2045. This policy will substantially lower the state's average emission factors over time, rendering the assumed displacement factor of 822.5 lbs CO₂e/MWh increasingly outdated.
- **Inaccurate Displacement Factor:** Accurate assessment of the Project's environmental impact requires a thorough examination of both its direct emissions and the emissions it displaces. The PSA's reliance on a displacement factor of 822.5 lbs CO₂e/MWh, based on natural gas, not only fails to reflect current emissions trends but also exaggerates the Project's environmental benefits.
- **Correcting the displacement factor with Current Data:** The current displacement factor (DF) of 822.5 lbs. CO₂e/MWh is based on natural gas, which was once the dominant marginal fuel in California. However, with the increased integration of renewable energy sources into the grid, the reliance on natural gas has decreased. This change should be reflected in the DF to accurately represent the emissions avoided by projects displacing marginal energy generation. The 2022 Power Content Label for the Imperial Irrigation District is published and displays the greenhouse gas emissions intensity (in lbs. CO₂e/MWh) and the energy resource mix (Figure 1). It shows that the Imperial Irrigation District has an emissions intensity of 585 lbs. CO₂e/MWh, compared to the 2022 California Utility Average of 422 lbs. CO₂e/MWh.
 - Imperial Irrigation District's Emissions Intensity (585 lbs CO₂e/MWh): This figure represents the average greenhouse gas emissions for the district's energy mix. The IID GHG emissions intensity reflects the real-time mix of emission generators that are being displaced by renewable energy production from the Project. This leads to more precise calculation of avoided emissions based on actual grid dynamics, which can vary throughout the day and across seasons.
 - Statewide Average (422 lbs CO₂e/MWh): Given that this is the average emissions intensity across California utilities, it captures a broader range of emission sources. The statewide average emissions intensity includes a mix of all generation sources in the state, including coal, less efficient natural gas plants, renewables, nuclear and other. This provides a more comprehensive picture of emissions associated with electricity generation. Moreover, the grid's energy mix can vary significantly

throughout the day and across different regions within the state, but the statewide average captures this variability and provides a more realistic estimate of the emissions associated with grid electricity.

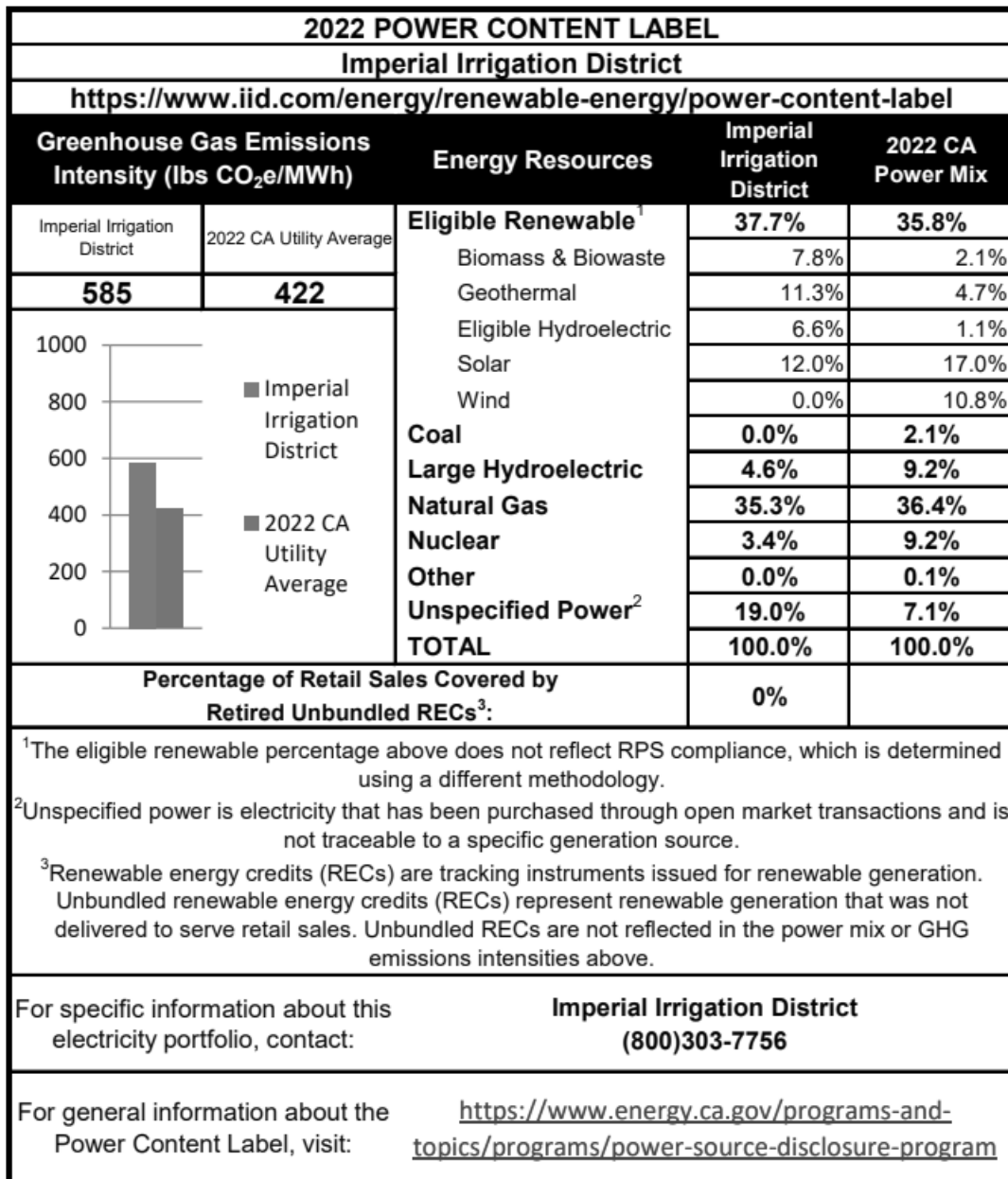


Figure 1: IID and Statewide (California) displacement factors for GHG Intensity

Impact of Clean Energy Transition on Emissions

California's clean energy goals significantly alter the context for evaluating the Project's emissions and the emissions it avoids. With targets of 90% clean energy by 2035, 95% by 2040,

and 100% by 2045, the average emission intensity of the grid will be dramatically reduced, impacting the validity of the PSA's emissions calculations. This transition creates a dynamic where:

Detailed Analysis of Each Case

The annual emissions value of 47,675 MTCO₂e/year reported in the PSA³, reflects the maximum annual emissions expected from the Project. To calculate the total Project emissions over its 40-year lifespan, we multiply the annual emissions by the number of years:

Annual Emissions: 47,675 MTCO₂e/year

Project Lifetime: 40 years

Total Project Emissions = Annual Emissions * Project Lifetime

Total Project Emissions = 47,675 MTCO₂e/year * 40 years = 1,907,000 MTCO₂e

It is important to note that the 1,907,000 MTCO₂e represents the total emissions produced by the Project without acknowledging any reductions from displaced emissions due to the use of renewable energy. Therefore, to accurately assess the Project's environmental impact, it is necessary to compare the total Project emissions with the avoided emissions in each case.

The displacement factors in MTCO₂e, computed for each year, are used to evaluate the overall emissions reduction throughout the project's lifespan. This analysis provides a comprehensive understanding of the project's environmental impact by capturing the annual reduction in CO₂ emissions. It evaluates how the displacement factor changes from 2025 to 2065.

- **2025-2034:** A linear reduction from 0% to 90% with an annual reduction rate of 9% per year.
- **2035-2045:** A linear reduction from 90% to 100% with an annual reduction rate of 0.91% per year.
- **2046-2065:** The displacement factor is set to 0 MTCO₂e/MWh after achieving 100% reduction.
- **Unit Conversion:** To standardize the displacement factor in terms of metric tons of CO₂ equivalent (MTCO₂e), a conversion factor of 2204.62 pounds per metric ton is applied.

Case 1 - IID (Displacement Factor of 585 lbs. CO₂e/MWh)

Parameters

Initial Displacement Factor: 585 lbs. CO₂e/MWh

Reduction Period: 2025-2034 (0% to 90%), 2035-2045 (90% to 100%), 2046-2065 (100%)

³ Table 5.3-1 on Pg. 387 Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697)

Project Duration: 2025-2065 (40 years)
Annual Electricity Production: 674,500 MWh

2025-2034 (Linear Reduction from 0% to 90%):

Annual Reduction Rate = 90%/10 years = 9% per year

Displacement Factor in MTCO₂e/MWh = 0.265 MTCO₂e/MWh

Annual Displacement Factors:

2025: $585 * (1 - 0)/2204.62 = 0.265$ MTCO₂e/MWh

2026: $585 * (1 - 0.09)/2204.62 = 0.241$ MTCO₂e/MWh

2027: $585 * (1 - 0.18)/2204.62 = 0.216$ MTCO₂e/MWh

2028: $585 * (1 - 0.27)/2204.62 = 0.192$ MTCO₂e/MWh

2029: $585 * (1 - 0.36)/2204.62 = 0.167$ MTCO₂e/MWh

2030: $585 * (1 - 0.45)/2204.62 = 0.143$ MTCO₂e/MWh

2031: $585 * (1 - 0.54)/2204.62 = 0.118$ MTCO₂e/MWh

2032: $585 * (1 - 0.63)/2204.62 = 0.094$ MTCO₂e/MWh

2033: $585 * (1 - 0.72)/2204.62 = 0.070$ MTCO₂e/MWh

2034: $585 * (1 - 0.81)/2204.62 = 0.045$ MTCO₂e/MWh

2035–2045 (Linear Reduction from 90% to 100%):

Annual Reduction Rate = 10%/11 years = 0.91% per year

2035: $585 * (1 - 0.90)/2204.62 = 0.027$ MTCO₂e/MWh

2036: $585 * (1 - 0.91)/2204.62 = 0.024$ MTCO₂e/MWh

2037: $585 * (1 - 0.92)/2204.62 = 0.022$ MTCO₂e/MWh

2038: $585 * (1 - 0.93)/2204.62 = 0.019$ MTCO₂e/MWh

2039: $585 * (1 - 0.94)/2204.62 = 0.017$ MTCO₂e/MWh

2040: $585 * (1 - 0.95)/2204.62 = 0.014$ MTCO₂e/MWh

2041: $585 * (1 - 0.96)/2204.62 = 0.012$ MTCO₂e/MWh

2042: $585 * (1 - 0.97)/2204.62 = 0.009$ MTCO₂e/MWh

2043: $585 * (1 - 0.98)/2204.62 = 0.007$ MTCO₂e/MWh

2044: $585 * (1 - 0.99)/2204.62 = 0.003$ MTCO₂e/MWh

2045: $585 * (1 - 1.00)/2204.62 = 0$ MTCO₂e/MWh

2046–2065 (100% Reduction):

Displacement Factor = 0 MTCO₂e/MWh

Annual Avoided Emissions = 0 MTCO₂e/yr

(2046–2065): 0 MTCO₂e

Avoided emissions

2025: $0.265 * 674,500 = 177,742.5$ MTCO₂e

2026: $0.241 * 674,500 = 162,564.5$ MTCO₂e

2027: $0.216 * 674,500 = 145,692.0$ MTCO₂e

2028: $0.192 * 674,500 = 129,004.0$ MTCO₂e

2029: $0.167 * 674,500 = 112,131.5$ MTCO₂e

2030: $0.143 * 674,500 = 96,053.5$ MTCO₂e

2031: $0.118 * 674,500 = 79,174.0$ MTCO₂e
 2032: $0.094 * 674,500 = 63,403.0$ MTCO₂e
 2033: $0.070 * 674,500 = 47,215.0$ MTCO₂e
 2034: $0.045 * 674,500 = 30,352.5$ MTCO₂e
 2035: $0.027 * 674,500 = 18,211.5$ MTCO₂e
 2036: $0.024 * 674,500 = 16,188.0$ MTCO₂e
 2037: $0.022 * 674,500 = 14,855.0$ MTCO₂e
 2038: $0.019 * 674,500 = 12,805.5$ MTCO₂e
 2039: $0.017 * 674,500 = 11,454.0$ MTCO₂e
 2040: $0.014 * 674,500 = 9,431.0$ MTCO₂e
 2041: $0.012 * 674,500 = 8,107.0$ MTCO₂e
 2042: $0.009 * 674,500 = 5,864.5$ MTCO₂e
 2043: $0.007 * 674,500 = 4,525.5$ MTCO₂e
 2044: $0.003 * 674,500 = 2,023.5$ MTCO₂e
 (2046–2065): 0 MTCO₂e

Year	Avoided Emissions (MTCO ₂ e)	Net Emissions Difference (MTCO ₂ e)
2025	177,742.5	-130,067.5
2026	162,564.5	-114,889.5
2027	145,692.0	-98,017.0
2028	129,004.0	-81,329.0
2029	112,131.5	-64,456.5
2030	96,053.5	-48,378.5
2031	79,174.0	-31,499.0
2032	63,403.0	-15,728.0
2033	47,215.0	460.0
2034	30,352.5	17,322.5
2035	18,211.5	29,463.5
2036	16,188.0	31,487.0
2037	14,855.0	32,820.0
2038	12,805.5	34,869.5
2039	11,454.0	36,221.0
2040	9,431.0	38,244.0
2041	8,107.0	39,568.0
2042	5,864.5	41,810.5
2043	4,525.5	43,149.5
2044	2,023.5	45,651.5
2046–2065	0	47,675.0

Table 1: Net Emissions Difference for the Project Using IID Displacement Factor

Net Emissions

IID Average Displacement Factor:

- **Total Avoided Emissions:** 1,146,812.5 MTCO₂e
- **Total Project Emissions:** 1,907,000 MTCO₂e
- **Net Increase in Emissions:** 760,187.5 MTCO₂e

Case - 2 Statewide (Displacement Factor of 422 lbs CO₂e/MWh)

Parameters

Initial Displacement Factor: 422 lbs. CO₂e/MWh

Reduction Period: 2025–2034 (0% to 90%), 2035–2045 (90% to 100%), 2046–2065 (100%)

Project Duration: 2025–2065 (40 years)

Annual Electricity Production: 674,500 MWh

2025–2034 (Linear Reduction from 0% to 90%):

Annual Reduction Rate = 90%/10 years = 9% per year

Displacement Factor converted to MTCO₂e/MWh = 0.191 MTCO₂e/MWh

Annual Displacement Factors:

2025: $422 * (1 - 0) / 2204.62 = 0.191$ MTCO₂e/MWh

2026: $422 * (1 - 0.09) / 2204.62 = 0.173$ MTCO₂e/MWh

2027: $422 * (1 - 0.18) / 2204.62 = 0.156$ MTCO₂e/MWh

2028: $422 * (1 - 0.27) / 2204.62 = 0.139$ MTCO₂e/MWh

2029: $422 * (1 - 0.36) / 2204.62 = 0.122$ MTCO₂e/MWh

2030: $422 * (1 - 0.45) / 2204.62 = 0.104$ MTCO₂e/MWh

2031: $422 * (1 - 0.54) / 2204.62 = 0.087$ MTCO₂e/MWh

2032: $422 * (1 - 0.63) / 2204.62 = 0.070$ MTCO₂e/MWh

2033: $422 * (1 - 0.72) / 2204.62 = 0.052$ MTCO₂e/MWh

2034: $422 * (1 - 0.81) / 2204.62 = 0.035$ MTCO₂e/MWh

2035–2045 (Linear Reduction from 90% to 100%):

Annual Reduction Rate = 10%/11 years = 0.91% per year

Annual Displacement Factors:

2035: $422 * (1 - 0.90) / 2204.62 = 0.019$ MTCO₂e/MWh

2036: $422 * (1 - 0.91) / 2204.62 = 0.017$ MTCO₂e/MWh

2037: $422 * (1 - 0.92) / 2204.62 = 0.015$ MTCO₂e/MWh

2038: $422 * (1 - 0.93) / 2204.62 = 0.013$ MTCO₂e/MWh

2039: $422 * (1 - 0.94) / 2204.62 = 0.012$ MTCO₂e/MWh

2040: $422 * (1 - 0.95) / 2204.62 = 0.010$ MTCO₂e/MWh

2041: $422 * (1 - 0.96) / 2204.62 = 0.008$ MTCO₂e/MWh

2042: $422 * (1 - 0.97) / 2204.62 = 0.006$ MTCO₂e/MWh

2043: $422 * (1 - 0.98) / 2204.62 = 0.005$ MTCO₂e/MWh

2044: $422 * (1 - 0.99) / 2204.62 = 0.003$ MTCO₂e/MWh

2045: $422 * (1 - 1.00)/2204.62 = 0$ MTCO₂e/MWh

2046–2065 (100% Reduction):

Displacement Factor = 0 MTCO₂e/MWh

Annual Avoided Emissions:

2025: $0.191 * 674,500 = 128,799.5$ MTCO₂e
2026: $0.173 * 674,500 = 116,848.5$ MTCO₂e
2027: $0.156 * 674,500 = 105,222.0$ MTCO₂e
2028: $0.139 * 674,500 = 93,395.5$ MTCO₂e
2029: $0.122 * 674,500 = 82,679.0$ MTCO₂e
2030: $0.104 * 674,500 = 70,148.0$ MTCO₂e
2031: $0.087 * 674,500 = 58,681.5$ MTCO₂e
2032: $0.070 * 674,500 = 47,215.0$ MTCO₂e
2033: $0.052 * 674,500 = 35,076.0$ MTCO₂e
2034: $0.035 * 674,500 = 23,607.5$ MTCO₂e
2035: $0.019 * 674,500 = 12,815.5$ MTCO₂e
2036: $0.017 * 674,500 = 11,466.5$ MTCO₂e
2037: $0.015 * 674,500 = 10,117.5$ MTCO₂e
2038: $0.013 * 674,500 = 8,768.5$ MTCO₂e
2039: $0.012 * 674,500 = 7,842.0$ MTCO₂e
2040: $0.010 * 674,500 = 6,495.0$ MTCO₂e
2041: $0.008 * 674,500 = 5,048.0$ MTCO₂e
2042: $0.006 * 674,500 = 3,601.0$ MTCO₂e
2043: $0.005 * 674,500 = 2,722.5$ MTCO₂e
2044: $0.003 * 674,500 = 1,956.0$ MTCO₂e
2045: $0 * 674,500 = 0$ MTCO₂e
2046–2065: 0 MTCO₂e

Net Emissions

Statewide Average Displacement Factor:

- **Total Avoided Emissions:** 832,505 MTCO₂e
- **Total Project Emissions:** 1,907,000 MTCO₂e
- **Net Increase in Emissions:** 1,074,795 MTCO₂e

Year	Avoided Emissions (MTCO ₂ e)	Net Emissions Difference (MTCO ₂ e)
2025	128,799.5	-81,124.5
2026	116,848.5	-69,173.5
2027	105,222.0	-57,547.0
2028	93,395.5	-45,720.5
2029	82,679.0	-35,004.0
2030	70,148.0	-22,473.0
2031	58,681.5	-11,006.5
2032	47,215.0	460.0
2033	35,076.0	12,599.0
2034	23,607.5	24,067.5
2035	12,815.5	34,859.5
2036	11,466.5	36,208.5
2037	10,117.5	37,557.5
2038	8,768.5	38,906.5
2039	7,842.0	39,833.0
2040	6,495.0	41,180.0
2041	5,048.0	42,627.0
2042	3,601.0	44,074.0
2043	2,722.5	44,952.5
2044	1,956.0	45,719.0
2045	0.0	47,675.0
2046–2065	0.0	47,675.0 (each year)

Table 2: Net Emissions Difference for the Project Using Statewide Displacement Factor

Both scenarios lead to a net *increase* in GHG emissions over the Project’s lifetime (Table 1 and Table 2). This suggests that, despite accounting for avoided emissions from displaced electricity generation, the Project’s emissions—when assessed with the regional and statewide displacement factors—surpass the avoided emissions, undermining the intended environmental benefits. The Project’s total carbon footprint remains positive. The plot (Figure 2) illustrates that the Project will contribute to rising net emissions over time, particularly after 2045. To ensure a precise evaluation and alignment with California’s climate objectives, it is essential to use updated and dynamic displacement factors that accurately represent the evolving energy mix.

The Project's claim of no net increase in GHG emissions is unsupported when considering the long-term transition to cleaner energy, emphasizing the need for a revised and comprehensive analysis that includes these critical elements. Given that the Project's GHG emissions would result in a net increase in GHG emissions, the PSA must identify mitigation measures to reduce the impact, such as those disclosed in the 2008 Technical Advisory⁴ issued by the Governor's Office of Planning and Research and the guidance from the California Air Pollution Control Officers Association⁵.

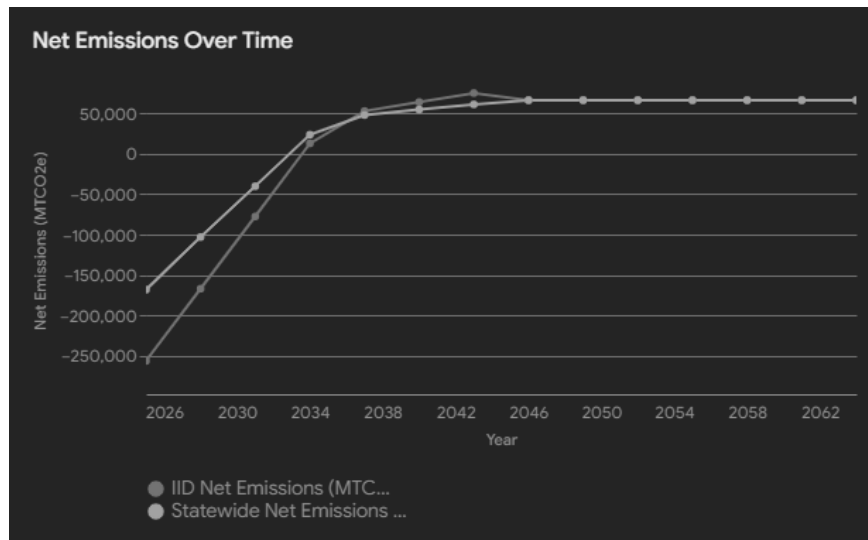


Figure 2: Net emissions increase over Project's lifetime (2025-2065)

II. Utilization of Remote Imperial County Airport Data as Opposed to Local Sonny Bono Station for Dispersion Modeling

Several critical issues must be addressed in response to the PSA and the Applicant's claims⁶ regarding the suitability of the meteorological data used in the air quality model.

The Applicant's⁷ response regarding the use of meteorological data is: "[L]astly, although the Imperial County Airport is located over 28 miles from the project site, there are no significant geographic features between the two locations, and both are located south/southeast of the Salton Sea."

"[T]he lack of significant geographic features between the two locations is itself an indicator of representativeness of the Imperial County Airport meteorological data, but also leads to the

⁴ <https://opr.ca.gov/docs/june08-ceqa.pdf>.

⁵ https://www.caleemod.com/documents/handbook/full_handbook.pdf.

⁶ Pg. 3-4 Black Rock Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-03 (TN #: 256577).

⁷ Pg. 4 Black Rock Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-01 (TN #: 256577).

expectation that wind speeds and wind directions in the project vicinity are like those incurred at the Imperial County Airport. This expected similarity is verified by comparing the wind rose for the Imperial County Airport (for years 2015 to 2018 and 2021) to the wind rose for the Sonny Bono monitoring station (for years 2020 to 2022). As shown in Figure 2 and Figure 3, attached hereto, both wind roses share the predominant wind directions from the west and southeast⁸.”

- ❖ **Impact of Distance, Proximity, and Urbanization on Meteorological Data:** The use of meteorological data from the Imperial County Airport, which is 28 miles from the project site, introduces significant uncertainty due to the considerable distance (as discussed in the earlier comment letter⁹). In areas like the Salton Sea, local meteorological conditions are influenced by specific geographical features that are not captured by data from a distant station. Using data from a station far from the project site can lead to inaccuracies in predicting pollutant dispersion and incorrect estimates of pollutant concentrations and impacts.

The project should utilize the Sonny Bono monitoring station, situated less than 2 miles from the project site, for data acquisition. This station is positioned in close proximity to the site, thus providing more pertinent and accurate meteorological data as outlined in CURE PDOC comments¹⁰. The proximity of the station is crucial for obtaining data that accurately reflects local conditions (Figure 3). Using data from a station that is close to the project site will ensure that the model is reliable and accurate.

The data from Imperial County Airport, which is in an urban area, doesn't accurately reflect conditions at the plant site. The plant site is separated from the airport by two cities, Brawley and Imperial, which have rougher terrain compared to the smoother plant site. This difference in surface roughness affects how pollutants disperse, making the airport data unsuitable for accurately modeling conditions at the plant site.

⁸ Pg. 18 Black Rock Geothermal LLC Responses to CURE Comments on the ICAPCD PDOC, Docket Number 23-AFC-03 (TN #: 256577)

⁹ Exhibit A, Letter to Ariana Abedifard, Adams Broadwell Joseph & Cardozo from Group Delta Consultants re: Comment Letter Black Rock Geothermal Project Preliminary Determination of Compliance (Mar. 21, 2024).

¹⁰ The CURE PDOC comments for the project (Transaction Number [TN] #256577) are available at: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-AFC-03>

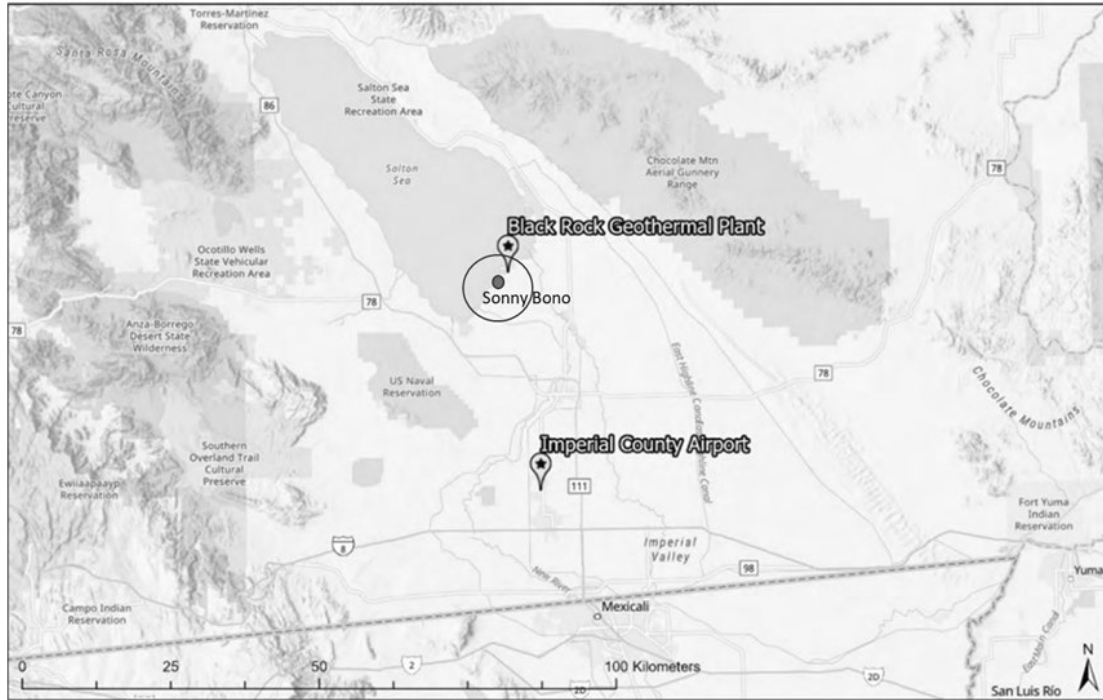


Figure 3: Topographical Map of Black Rock Geothermal Project's Proximity to the Imperial County Airport and Sonny Bono

- ❖ **Shoreline Effect and Internal Boundary Layer Formation:** Winds moving from the sea to the plant site create an internal boundary layer due to the shoreline effect¹¹. This internal boundary layer can lead to higher pollutant concentrations than those predicted by data from distant stations like Imperial County Airport. The shoreline effect significantly alters the dispersion characteristics of pollutants, making data from more distant stations less reliable for accurate modeling. In contrast, the Sonny Bono station, located near the shoreline, captures this effect with greater precision. Overall, the Sonny Bono station provides more accurate and reliable data for the dispersion model, ensuring a better representation of the actual conditions at the plant site.
- ❖ **Data Completeness and Spatial Representativeness:** The Sonny Bono station's two years of data meeting the EPA's 90 percent completeness requirement does not invalidate its use. EPA guidelines allow for the use of the most representative data available. Combining these two years of data from Sonny Bono with supplementary data or using statistical methods to address gaps will offer a more accurate representation of local conditions than data from a more distant station. The Applicant's preference for ASOS station data, despite fewer missing points, does not guarantee a better depiction

¹¹ Pandey et al., 2022 Evaluating AERMOD with measurements from a major U.S. airport located on a shoreline, Atmospheric Environment
<https://www.sciencedirect.com/science/article/pii/S1352231022005714/pdf?md5=f209d4042bb2ed551aafd4758b75785e&pid=1-s2.0-S1352231022005714-main.pdf>.

of the Project site. Moreover, the meteorological data used by the Applicant and PSA does not align with EPA guidelines, as data from the Imperial County Airport for 2019 and 2020 was excluded due to incompleteness, as determined by the California Air Resources Board. The critical factor is the spatial representativeness of the data, not just its completeness. A nearby non-ASOS station can provide more accurate and relevant data, even if it has some missing points.

- ❖ **Wind Rose Comparisons in Assessing Local Wind Patterns:** The comparison of wind roses between the Imperial County Airport and the Sonny Bono station is inadequate. The Imperial County Airport data shows predominantly westerly and southwesterly winds (Figure 5), whereas the Sonny Bono station data indicates primarily southeasterly winds (Figure 4). This significant difference in wind direction underscores why the Imperial County Airport data is not representative of the Project site. Wind roses offer a broad view of wind patterns but do not capture the full range of local atmospheric conditions. Factors like temperature, humidity, and atmospheric stability significantly influence pollutant dispersion and must be factored into dispersion modeling for accurate results. Thus, relying exclusively on wind rose comparisons overlooks these essential factors, leading to an incomplete understanding of the local atmospheric conditions and potentially skewing the dispersion model's accuracy.

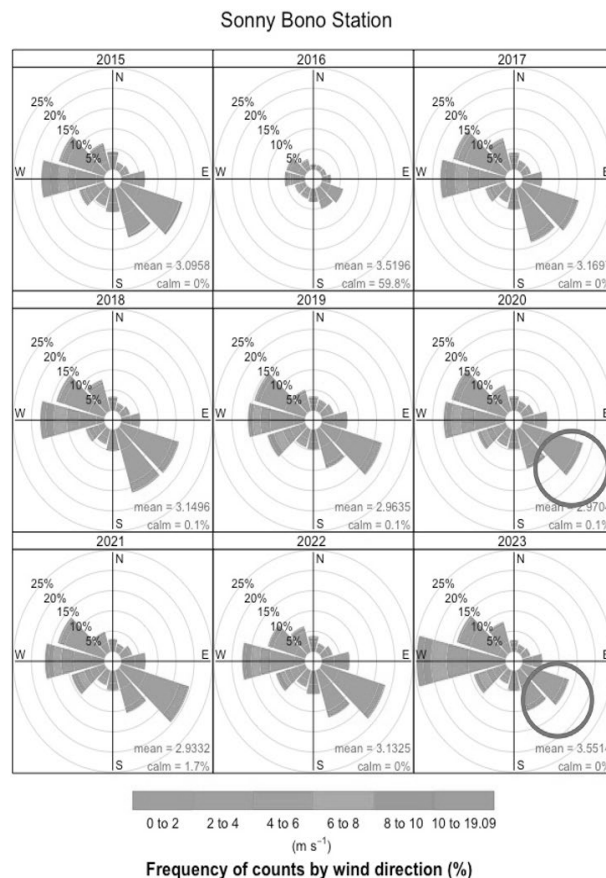


Figure 4: Wind Rose Plot Illustrating Wind Conditions at Sonny Bono Monitoring Station

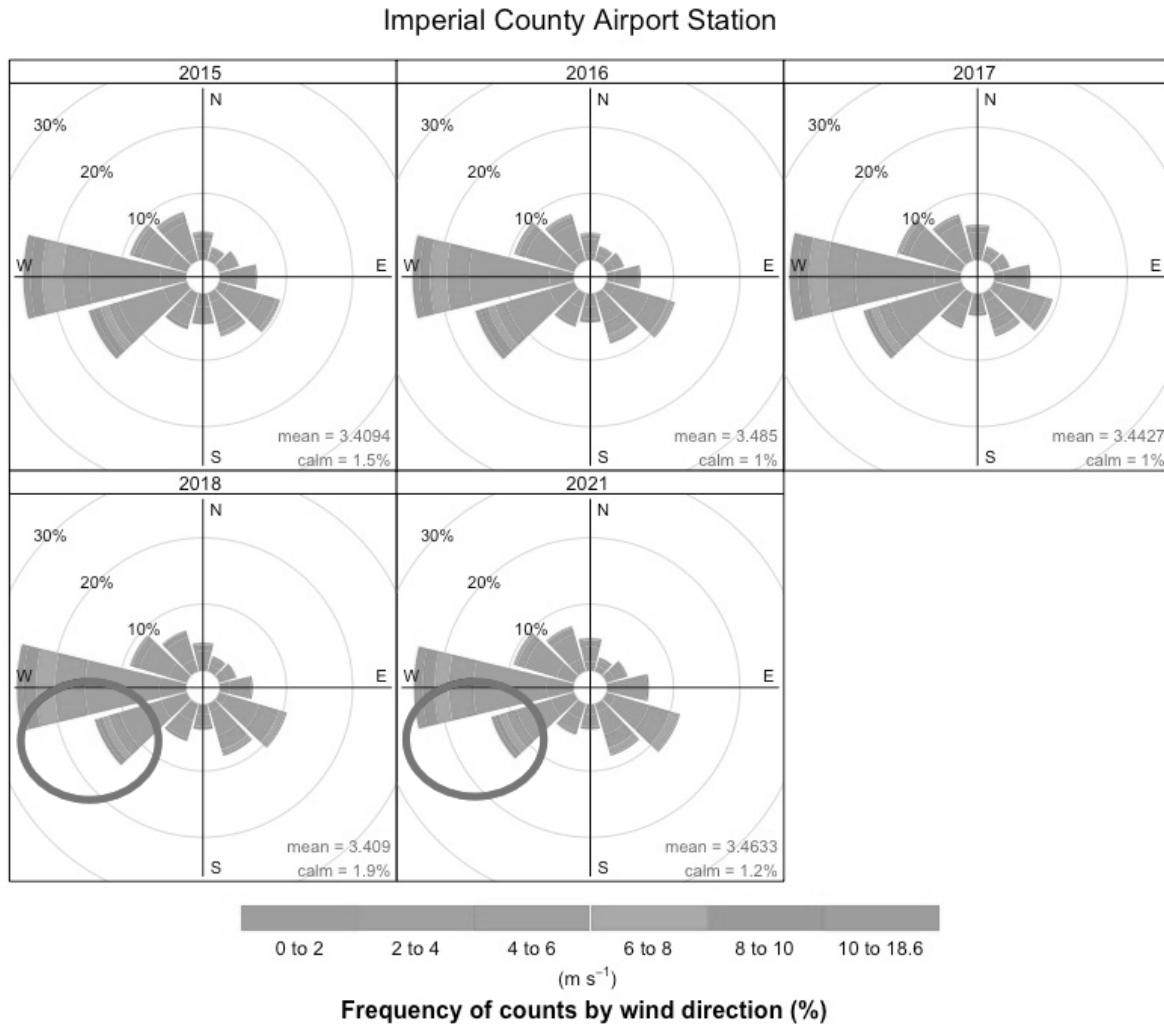


Figure 5: Wind Rose Plot Illustrating Wind Conditions at Imperial County Airport Station

Taking these factors into account, relying on data from the Imperial County Airport does not yield the most appropriate meteorological input for the dispersion model. Although there are no significant geographical barriers between the Imperial County Airport and the Project site, the proximity and location of the Sonny Bono station make it a superior data source. The Sonny Bono station's closer proximity to the Project site and its location near the shoreline enable it to accurately capture the internal boundary layer effect, which is a crucial factor for understanding local atmospheric conditions. By incorporating data that better reflects the local atmospheric dynamics, the model can more accurately predict pollutant dispersion and, therefore, provide a more reliable assessment of air quality impacts at the Project site.

III. Project Overlooks Key Emission Sources and Lacks Supporting Evidence

The PSA states that “[E]missions from construction, operation, and vehicles were estimated using tools such as the California Emissions Estimation Model (CalEEMod), EMFAC2021, and data from

*existing geothermal plants.*¹² The PSA also notes that “[C]onstruction GHG emissions for the offsite switching station, offsite piping, laydown yards, and temporary worker housing were not included in the applicant’s emissions calculations.”¹³ This exclusion is grounded in the assumption that these emissions are insignificant due to shorter construction times and decreased equipment utilization.

❖ **Omitted Emissions Sources:**

- **Offsite Switching Station:** Constructing offsite switching stations uses heavy machinery, which significantly contributes to GHG emissions. Ignoring these emissions could lead to an underestimation of important sources of pollutants, GHGs, and toxic contaminants.
- **Offsite Piping and Laydown Yards:** Activities at offsite piping and laydown yards involve transporting and operating construction equipment and materials, which can generate additional emissions of pollutants, GHGs, and toxic contaminants.
- **Temporary Worker Housing:** Temporary housing for workers during construction contributes to emissions through energy use and resource consumption.

❖ **Lack of Supporting Evidence:** The PSA assumes these emissions are minimal but lacks concrete evidence. The claim that shorter construction time and reduced equipment use result in negligible emissions is not supported by data and could significantly impact the overall emissions profile, especially if these emissions coincide with other construction activities.

❖ **Clean Air Act (CAA) and National Ambient Air Quality Standards (NAAQS):** These regulations mandate a comprehensive accounting and monitoring of all emissions. This includes not only direct emissions from the primary activities but also indirect sources that may contribute to air pollution. By excluding potential sources of emissions, such as those from offsite switching stations, piping, laydown yards, and temporary worker housing, the Project risks failing to meet the regulatory requirements set forth by the CAA and NAAQS. This oversight undermines the integrity of the environmental impact assessment and may lead to an inaccurate portrayal of the Project's true environmental footprint.

❖ **Potential Impact of Non-Quantified Emissions:** The conclusions of the PSA could be significantly altered by the inclusion of emissions from offsite switching stations, piping, laydown yards, and temporary worker housing. Properly quantifying these emissions is essential for accurately assessing the Project's environmental impact and may indicate a higher risk of exceeding significance thresholds.

¹² Refer to Para.3 on Pg.130. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697).

¹³ Refer to Para.3 on Pg.386. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697).

- ❖ **Emissions Mitigation:** To address and reduce emissions effectively, it is crucial to implement a range of mitigation strategies. These strategies should focus on minimizing emissions from geothermal activities and other associated processes by adopting best practices and advanced technologies.

IV. Inadequate Analysis of Construction Impacts for the Proposed Switching Station

A new 230kV switching station is proposed as part of the IID system upgrades, serving as the primary point of interconnection. This station is planned to be situated approximately 0.7 miles from the BRGP¹⁴, at the northwest intersection of Garst Road and West Sinclair Road (Figure 6). The Applicant will handle all aspects related to the transmission line connecting the proposed BRGP generator step-up transformer to the switching station, including engineering, construction, ownership, operation, and maintenance.

The PSA's decision to exclude emissions from the switching station's construction raises concerns. This exclusion is justified on the grounds that the station's footprint, ground disturbance, construction duration, and equipment usage are expected to be minimal. The Applicant also asserts that the distances to similar receptors and the implementation of mitigation measures AQ-SC1 through AQ-SC5 will adequately mitigate any potential impacts. However, this rationale may overlook significant emissions associated with the construction process, which could impact the overall assessment of the Project's environmental footprint.

¹⁴ Pg. 186, Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697)

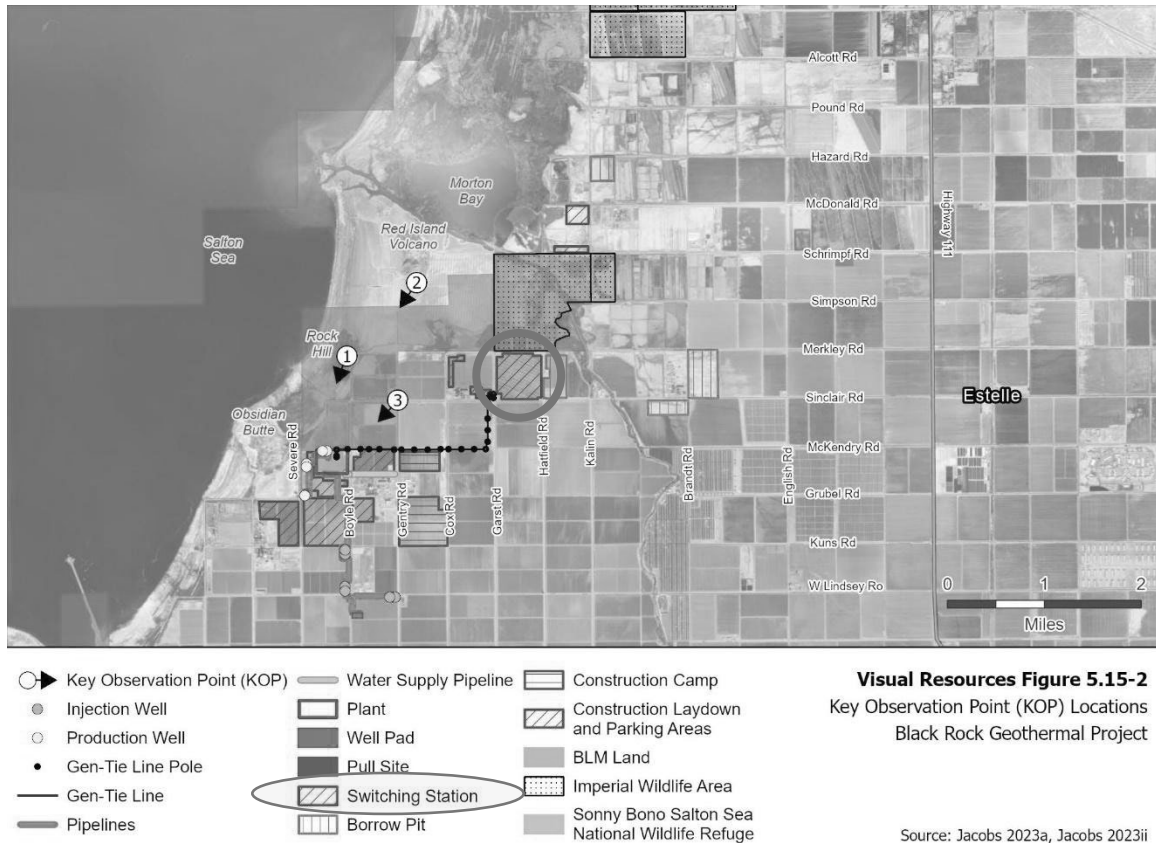


Figure 6: Map Illustrating the Location of the Project's Switching Station

- ❖ **Lack of Construction Duration and Inadequate Emissions Calculation:** The PSA's omission of specific details about the construction duration for the switching station undermines the reliability of its emissions assessment. Although the plant's 29-month construction timeline is noted, excluding the emissions from the switching station construction skews the overall emissions profile. The justification for this exclusion—citing the station's smaller footprint and reduced equipment usage—is not supported by empirical evidence and likely underestimates the actual emissions and their potential impacts. This lack of detailed emissions data compromises the accuracy of the environmental impact assessment and could lead to significant discrepancies in understanding the Project's total emissions.
- ❖ **Unsubstantiated Comparisons:** Comparing emissions from the switching station with those from the main Project without a comprehensive analysis is misleading. The differences in the scale of construction activities and associated emissions between the switching station and the main Project have not been adequately evaluated. Such comparisons fail to account for the varying magnitudes of construction activities, leading to an incomplete and potentially inaccurate assessment of the overall environmental impact.

- ❖ **Misrepresentation of Mitigation Measures and Overlooked Emission Types:** Relying solely on mitigation measures AQ-SC1 through AQ-SC5 without a detailed emissions inventory is insufficient. The effectiveness of these measures cannot be accurately assessed without comprehensive emissions data. The assessment overlooks several types of relevant emissions, including diesel combustion, dust, VOCs, and fugitive emissions. This incomplete evaluation of emissions results in an inadequate understanding of the Project's environmental impact and the potential effectiveness of the proposed mitigation strategies. A thorough emissions inventory is crucial for accurately assessing the overall impact and ensuring that mitigation measures are appropriately tailored and effective.

V. Critical Holes in PSA's NOx Emissions Assessment: Ineffective Mitigation and Oversight of Effective Reduction Strategies

The average daily emissions displayed in Table 3 shows that daily construction emissions are expected to be below the ICAPCD significance thresholds for all criteria pollutants except NOx.¹⁵

TABLE 5.1-6 CRITERIA POLLUTANT EMISSIONS FROM PROJECT CONSTRUCTION				
Pollutant	Average Daily Emissions (lbs/day) ^a	Maximum Construction Emissions (tons/period)	ICAPCD Significance Thresholds for Construction-related Average Daily Emissions (lbs/day) ^c	Threshold Exceeded ?
ROG/VOC	49.5	16.5	75	No
CO	480	160	550	No
NOx	119	39.7	100	Yes
SOx	1.19	0.40	None	N/A
PM10 ^b	23.6	7.86	150	No

Table 3: Criteria Pollutant Emissions from Project Construction

Proposed Mitigation Strategies for NOx Emissions During Construction:

Adopt Enhanced NOx Control Technologies:

- ❖ **Optimize Engine Warm-Up Time:**
 - Objective: Reduce the time diesel engines spend in high-emission warm-up mode. Tier 4 engines already have advanced emission controls, but reducing warm-up times can further cut initial NOx emissions.

¹⁵Refer to Table 5.1-6 on Pg.134. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697)

- Expected Impact: Reducing warm-up time from 15 to 10 minutes could lower initial NOx emissions by 5-10%. This adjustment can lead to a more immediate reduction in NOx output during early stages of engine operation, improving overall air quality.

❖ **Integrate Advanced NOx Abatement Systems:**

- Objective: Install cutting-edge NOx reduction technologies, such as advanced Selective Catalytic Reduction (SCR) systems, to enhance the emission control capabilities of Tier 4 engines.
- Expected Impact: Using advanced SCR systems can decrease NOx emissions by an additional 30%. For example, if current NOx emissions total 10 tons per year, adding SCR systems could cut this by up to 3 tons annually.

Optimize Construction Scheduling:

❖ **Stagger Equipment Operation:**

- Objective: Plan the use of construction equipment so that not all engines are running at the same time, which can reduce overall NOx emissions.
- Expected Impact: By managing engine use to avoid simultaneous operation, NOx emissions could be reduced by up to 50%, potentially cutting 5 tons of NOx from the estimated 10 tons.

Utilize Alternative Fuels and Additives:

❖ **Switch to Low-NOx Fuels or NOx-Reducing Additives:**

- Objective: Switch to fuels designed to produce fewer NOx emissions compared to standard diesel fuels. Low-NOx fuels are formulated to burn more cleanly and reduce the formation of NOx during combustion.
- Expected Impact: The adoption of low-NOx fuels or NOx-reducing additives can cut emissions by up to 30%. For a scenario where the total NOx emissions amount to 10 tons, this switch can potentially achieve a reduction of 3 tons.

Enhance Maintenance Practices and Operator Training:

❖ **Implement Rigorous Maintenance Protocols:**

- Objective: Ensure that engines are regularly maintained for optimal performance to minimize NOx emissions. Regular maintenance is crucial for keeping engines operating at peak efficiency.

❖ **Conduct Comprehensive Operator Training:**

- Objective: Train operators on techniques to reduce NOx emissions during engine use.
- Expected Impact: By maintaining engines in peak condition, NOx emissions can be reduced by 10-15%. This translates to a decrease of 1-2 tons of NOx emissions

from a total of 10 tons. Regular maintenance prevents inefficiencies that can lead to increased NOx production and helps engines run cleaner.

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	5.6	474.7	480.3	50	961%
	Annual	1.1	48.6	49.7	20	249%
PM2.5 ^a	24-hour	1.0	24.5	25.5	35	73%
	Annual	0.2	9.4	9.6	12	80%
CO	1-hour	115.8	5,726	5,842	23,000	25%
	8-hour	93.2	4,123	4,216	10,000	42%
NO ₂ ^b	State 1-hour	56.7	105.0	161.7	339	48%
	Federal 1-hour	49.8	70.6	120.4	188	64%
	Annual	10.2	14.9	25.1	57	44%
SO ₂ ^c	State 1-hour	0.3	22.5	22.8	655	3%
	Federal 1-hour	0.3	16.6	16.9	196	9%
	24-hour	0.1	7.1	7.2	105	7%
	Annual	0.1	1.1	1.2	80	2%

Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.

^a To compute the total impacts for the 24-hour PM2.5 NAAQS, staff conservatively combined the maximum modeled 24-hour PM2.5 impacts to the three-year average of 98th percentile PM2.5 background.

Table 4: Maximum Ambient Air Quality Impacts During Construction

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	4.5	474.7	479.2	50	958%
	Annual	0.4	48.6	49.0	20	245%
PM2.5 ^a	24-hour	2.8	24.5	27.3	35	78%
	Annual	0.2	9.4	9.6	12	80%
CO	1-hour	827.6	5726	6554	23,000	28%
	8-hour	83.5	4123	4206	10,000	42%
NO ₂ ^b	State 1-hour	89.7	105.0	194.6	339	57%
	Federal 1-hour	0.7	70.6	71.3	188	38%
	Annual	0.1	14.9	15.1	57	26%
SO ₂ ^c	State 1-hour	0.001	22.5	22.5	655	3%
	Federal 1-hour	0.001	16.6	16.6	196	8%
	24-hour	0.00003	7.1	7.1	105	7%
	Annual	0.00000	1.1	1.1	80	1%

Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.

^a To compute the total impacts for the 24-hour PM2.5 NAAQS, staff conservatively combined the maximum modeled 24-hour PM2.5 impacts to the three-year average of 98th percentile PM2.5 background.

Table 5: Maximum Ambient Air Quality Impacts During Operation

VI. Inadequate Modeling of Emissions: Omission of Del Ranch and Vulcan Power Plants from Cumulative Impact Analysis

- ❖ **Background Concentrations:** The PSA's approach of using background concentrations without specifically quantifying emissions from nearby facilities, such as Vulcan and Del Ranch Power Plants, is problematic.¹⁶ The PSA assumes that emissions from these facilities are already included in the background data, which overlooks the specific contributions and interactive effects of these emissions with the proposed Project. A thorough impact assessment should include detailed modeling of emissions from both existing and proposed facilities. The EPA's "Guidelines on Air Quality Models, 40 CFR 51 Appendix W" ("Guidelines")¹⁷ advise that emissions from nearby sources not well-represented by ambient monitoring should be explicitly modeled.¹⁸ These Guidelines highlight that background monitoring alone often fails to capture significant concentration gradients caused by nearby sources. For Projects with multiple nearby sources, the Guidelines recommend explicitly modeling emissions from nearby sources to understand their contributions and incorporating ambient monitoring data that reflects other sources' contributions¹⁹. Given the proximity of the Del Ranch and Vulcan Power Plants, their emissions should have been included in the air quality model. The omission of these nearby sources is a significant oversight, as the Guidelines specify that sources within 10 to 20 kilometers (6.2 to 12.4 miles) should be accounted for. Without including these emissions, the analysis is incomplete and fails to accurately assess potential air quality impacts.

¹⁶Refer to Para.1 on Pg.151. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697).

¹⁷ 40 C.F.R Pt. 51, App. W; see also 82 Fed. Reg. 5182-235 (Jan. 17, 2017).

¹⁸ 40 C.F.R Pt. 51, App. W § 8.3.1.

¹⁹ Id. §§ 8.3.1.i., 8.3.1.3.



Figure 7: Project location Black Rock Geothermal Project Imperial County, California

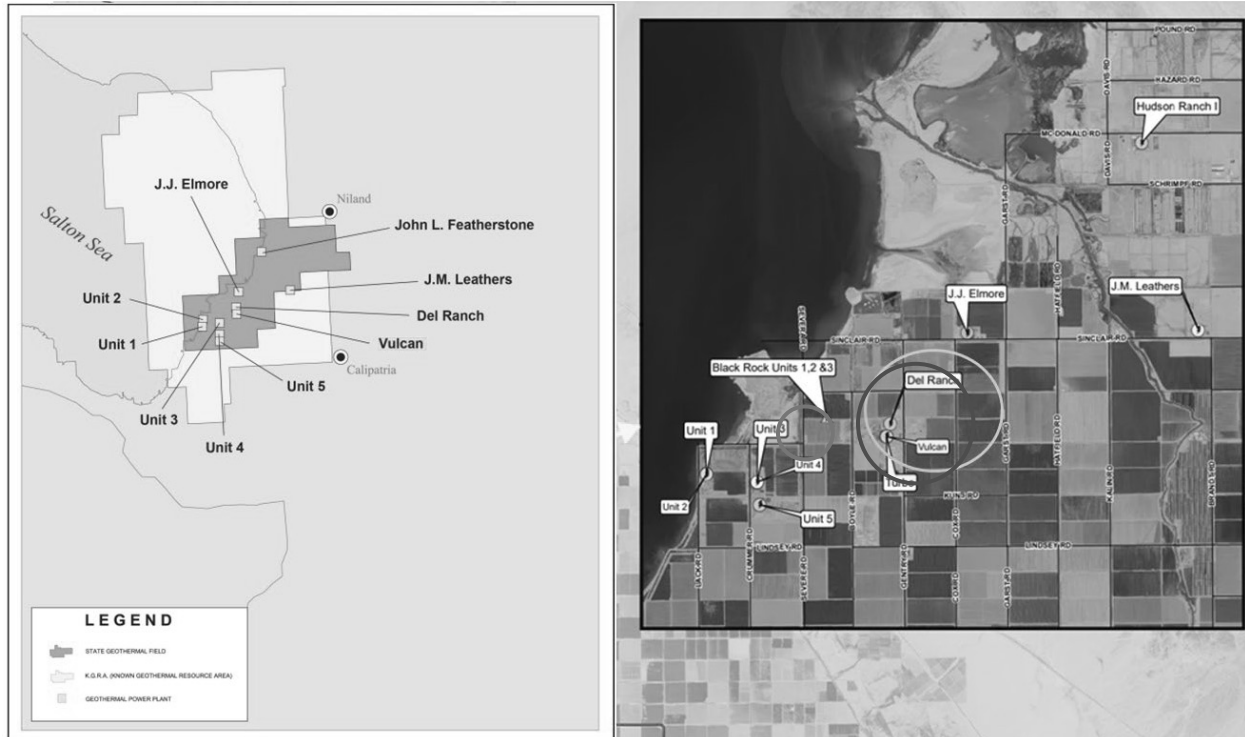


Figure 8: Black Rock Circled in Red, Del Ranch and Vulcan Circled in Blue, and Other Geothermal Projects in Imperial County, California

The Project site is northwest of the existing Vulcan Power Plant and the Hoch (Del Ranch) Power Plant. The PSA states that “[T]he applicant also qualitatively demonstrated that it’s unlikely that the Project’s highest PM2.5 impacts would overlap with the highest PM2.5 impacts from nearby existing sources, including Vulcan and Del Ranch, because they would occur in the same general direction under the same meteorological conditions instead of overlapping in an area requiring different wind directions. Therefore, explicit modeling of the existing sources is not needed in the cumulative impacts analysis.” However, this assumption ignores important details about the proximity and emissions of these nearby power plants.

The Vulcan Power Plant is located immediately east of the proposed site, while Cal Energy Unit 4 and Cal Energy Unit 5 are about 0.9 and 1.2 miles southwest, respectively. Additionally, the Sonny Bono Salton Sea National Wildlife Refuge Headquarters is roughly 0.7 miles northeast of the site. Given the prevailing wind patterns in the area—northwest and southeast as observed at the Sonny Bono station—emissions from Vulcan and Hoch (Del Ranch) Power Plants are likely to be carried in the same direction as those from the BRGP. This means that PM2.5 emissions from these nearby plants are likely to overlap with those from the BRGP, potentially resulting in higher PM2.5 concentrations than the PSA suggests. Although the BRGP has a net output of 77 MW, the combined emissions from the smaller Vulcan and Hoch (Del Ranch) plants could be comparable. Thus, the cumulative impact of these emissions, especially considering the common wind directions, is significant and should not be ignored.

The failure to model these interactions explicitly represents a significant oversight in the cumulative impact analysis. Proper modeling of these interactions is crucial for accurately understanding how emissions from multiple sources may overlap or combine, leading to cumulative impacts that could exceed air quality standards and pose health risks. Without incorporating detailed analyses of these interactions, the analysis fails to capture the full scope of potential environmental and health impacts, making it difficult to ensure that regulatory standards are met and that adequate protective measures are in place.

- ❖ **Proximity and Emissions Overlap:** The PSA’s assumption that overlapping PM2.5 impacts from the proposed Project and existing facilities won’t affect the results is inadequate. The PSA excludes emissions from Del Ranch and Vulcan, assuming that peak impacts from these and the proposed Project won’t happen at the same time. However, given the close proximity and similar emissions profiles of these facilities, it’s likely their emissions could combine to increase PM2.5 levels in the same area under certain weather conditions.
- ❖ **Averaging Periods and Overlap Potential:** The assertion that PM2.5 impacts would only influence the modeled analysis if the overlap persisted for 24 hours or for most of the year is an oversimplification of the potential cumulative impacts. While PM2.5 standards are based on 24-hour and annual averages, significant short-term impacts can still occur, especially during stagnant atmospheric conditions or when winds direct emissions from

multiple sources to the same area.²⁰ Even if these overlaps are not year-round, they can still lead to high PM2.5 levels that exceed regulatory limits and pose health risks. To accurately assess potential cumulative impacts, detailed modeling of air dispersion and meteorological interactions is essential. The PSA's approach overlooks scenarios where emissions from different sources might combine in ways that aren't immediately obvious. Explicit modeling is needed to consider all possible impact scenarios, including worst-case situations where combined emissions could exceed air quality standards. Without this detailed analysis, potential cumulative impacts remain unaddressed.

- ❖ **Guidelines on Cumulative Impact Analysis:** The PSA's decision to omit nearby sources – Del Ranch and Vulcan – contradicts the EPA's "Guidelines on Air Quality Models, 40 CFR 51 Appendix W," which recommends including nearby sources that may not be fully represented by ambient monitoring data. Given their proximity and similar PM2.5 emission profiles, it is essential to model these sources to fully assess their cumulative impact on air quality. By not doing so, the analysis has a significant gap, weakening its validity.
- ❖ **Need for Cumulative Modeling:** The PSA's conclusion to exclude Del Ranch and Vulcan based on qualitative reasoning is problematic.²¹ Failing to model these nearby sources creates a critical oversight, undermining the overall impact assessment (Table 6).
- ❖ **Overlooked Interaction Scenarios:** The PSA does not adequately consider how PM2.5 emissions from different sources might combine in ways that aren't immediately obvious. Even if the highest impacts from the Project and nearby sources are expected in different directions, detailed modeling is needed to explore all possible scenarios, including worst-case situations where combined emissions could exceed air quality standards.

²⁰ Refer to Para.1 on Pg.151. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697)

²¹Refer to Para.1 on Pg.151. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697)

Project Name/Location	Net Capacity (MW)	Commercial Operation Date
Elmore Backpressure Turbine	7	2019
Elmore	42	1989
Leathers	42	1990
Vulcan	38	1986
Del Ranch	42	1989
CE Turbo (backpressure turbine)	10	2000
Salton Sea 1	10	1982
Salton Sea 2	16	1990
Salton Sea 3	50	1989
Salton Sea 4	42	1996
Salton Sea 5	46	2000
Hudson Ranch Power 1	50	2012
Total Existing	395	

Table 6: Geothermal Power Plants Operating in the Salton Sea Area

VII. Overlooked Health Implications, Inadequate Modeling, and Mitigation Gaps in Evaluation of Radon Risks

The PSA states that “[A]lthough radon is not a TAC and therefore not included in HRA, the applicant modeled radon concentration from the Project’s cooling tower at the MEIR, and showed is well within existing (background) levels of radon in air in California. Therefore, radon emissions from the proposed Project do not represent an increased health risk”²²

The PSA's disregard for radon impacts warrants thorough reassessment. Although the PSA argues that radon doesn't need to be included in the Health Risk Assessment (HRA) because it isn't classified as a Toxic Air Contaminant (TAC) in California, this stance overlooks important issues that require further consideration:

- ❖ **Radon as a Health Hazard:** Radon is a known health risk due to its cancer-causing properties. Even low levels of radon can pose significant health risks depending on concentration and exposure time. Excluding radon from the health impact analysis could lead to underestimating the potential risks from radon emissions in the proposed Project. Its dangers should be addressed, regardless of its status on the TAC list.

²²Refer to Table 5.10-3 on Pg.665. Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697)

- ❖ **Modeling and Background Levels:** The PSA suggests that radon from the Project's cooling tower will stay within existing background levels in California. However, this doesn't fully consider the added risk from increased radon emissions. Background levels represent current conditions but do not account for additional emissions from the Project. A detailed modeling approach is needed to assess how these additional emissions could raise radon concentrations and health risks, particularly in areas already with high background radon levels.

To accurately assess the cumulative impact of increased radon emissions, the following measures should be taken:

- **Baseline Data Collection:** Gather detailed data on existing radon levels and map areas with high background concentrations.
 - **Emission Source Identification:** Identify all potential radon sources in the Project area and estimate their emission rates.
 - **Advanced Dispersion Modeling:** Use advanced models like AERMOD to predict radon levels and combine these predictions with baseline data.
 - **Temporal Analysis:** Perform a temporal analysis to consider seasonal variations in radon levels.
 - **Health Risk Evaluation:** Assess health risks based on established dose-response relationships and different exposure scenarios.
 - **Comparison with Health Guidelines:** Compare cumulative radon levels with health guidelines, such as the EPA's recommended threshold of 4 pCi/L.
 - **Mitigation Measures:** If significant risks are found, implement strategies such as improved ventilation, sealing, continuous monitoring, and public education.
-
- ❖ **Lack of Radon-Specific HRA Methods:** The PSA acknowledges that there are no specific methods for a Health Risk Assessment (HRA) for radon since it's not classified as a Toxic Air Contaminant (TAC). While this follows current OEHHA guidelines, it does not mean radon risks should be ignored. Instead of skipping the assessment, alternative methods should be used to evaluate radon-related health impacts.

To comprehensively assess radon-related health risks in the absence of specific HRA methods, the following alternative approaches should be considered:

- **Quantitative Risk Assessment (QRA):** Estimate radon exposure for different groups based on predicted levels from the Project. Use established models from organizations like the EPA and WHO to measure potential increases in lung cancer risk.
- **Cumulative Risk Assessment (CRA):** Evaluate the combined impact of radon and other pollutants in the area, including natural sources and building materials, to understand overall health risks.
- **Geospatial Analysis:** Create detailed maps to show radon concentration levels and identify high-risk areas using Geographic Information Systems (GIS). The analysis should focus on vulnerable locations like schools and hospitals.

- **Scenario Analysis:** Develop scenarios based on various radon emission levels, weather conditions, and population behaviors. Conduct sensitivity analyses to determine the most critical factors affecting radon exposure and health risks.
- ❖ **Potential Mitigation Measures:** If radon emissions are anticipated, implement strategies such as improving ventilation, enhancing monitoring, and using sealing techniques to keep radon levels within safe limits.

VIII. Underestimation of Construction Trip Generation and Its Impact on Traffic and Emissions: Reevaluation of Assumptions and Their Implications

The PSA's estimation of trip generation during the construction phase has been notably underestimated, resulting in an imprecise evaluation of traffic and emissions impacts, because it fails to account for peak periods and variability in construction activities. The PSA states that *"[E]stimates of regional Project trip distribution were developed based on existing travel patterns in the area, and the location of complementary land uses. It is assumed that all construction workers would commute from residences located within Imperial County."*²³

- ❖ **Truck Trips:** The PSA assumes a uniform distribution of 26 truck trips per day across an 8-hour workday, resulting in approximately 3 truck trips per hour. However, in reality, truck arrivals and departures are likely to be clustered during certain hours, leading to periods of higher congestion and increased emissions (close to 50% trucks entering and leaving during peak AM (6:00 – 9:00) and PM (3:00 – 6:00) hours. Trip generation estimates for these related projects are already developed. PSA can refer nationally recognized and recommended rates contained in "Trip Generation" manual, 10th edition, published by the Institute of Transportation Engineers (ITE)²⁴.
- ❖ **Passenger Car Equivalence (PCE):** The term "PCE" is a metric used in transportation engineering to compare the impact of different vehicle types (like trucks) to standard passenger cars in terms of road space usage and traffic flow. PCE values are assigned to various vehicle types to represent their equivalence to passenger cars under certain traffic conditions. For example, a truck might have a PCE of 2.5, meaning it has the same impact on traffic flow as 2.5 passenger cars. The PSA uses a PCE ratio of 1.5, which does not accurately represent the true impact of heavy trucks on traffic flow and emissions.

²³ Pg. 734, Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697)

²⁴ Trip Generation" manual - <https://www.ite.org/technical-resources/topics/trip-and-parking-generation/resources/>

The accurate PCE ratio, as published by various federal agencies is 2.0 or 3.0 for trucks to cars, which better reflects the real-world impact on traffic dynamics. (City of Fontana's "Truck Trip Generation Study"²⁵ and Caltrans assessment²⁶)

- ❖ **Trip Distribution Assumptions:** The PSA assumes that 15% of workers come from Niland and 45% from Calipatria, but this is based on limited or outdated data. Without detailed information on workers' actual residential locations and commuting patterns, these assumptions might lead to inaccuracies in the trip distribution model.
- ❖ **Impact on Emissions:** The PSA's potential underestimation of trip generation rates could lead to a significant underestimation of emissions, especially during peak periods. This could result in higher local emissions of pollutants such as NOx, PM2.5, and CO, which would have adverse environmental and public health effects.
- ❖ **Construction Period and Worker Trips (as shown PSA²⁷):**
 - Construction Duration: Estimated at 29 months.
 - Worker Trips: Up to 426 workers per day, resulting in 852 daily trips.
 - Peak Hour Assumption: Assumes 40% of trips occur during AM and PM peak hours.
- ❖ **Truck Trips:**
 - During Peak Construction: 13 trucks per day, resulting in 26 trips.
 - PCE Conversion: With a PCE ratio of 1.5, this results in 39 trips in terms of passenger cars.
- ❖ **Total Daily and Peak Hour Construction Trips:**
 - Total Daily Trips: 891 Trips (852 worker trips + 39 truck trips in PCE).
 - Peak Hour Trips: 360 Trips (180 each for PM and AM).

The PSA's significant underestimation of trip generation rates for the construction phase can lead to an incomplete and inaccurate assessment of traffic congestion and emissions. This oversight can affect environmental and public health evaluations, leading to potential regulatory non-compliance and unaddressed community impacts.

- ❖ **Underestimation of Worker Trips:** The assumption that only 40% of worker trips occur during peak hours is very conservative. Peak hour traffic may actually reach 50% due to staggered shifts and overlapping work schedules, as observed by similar activities at other

²⁵ City of Fontana's "Truck Trip Generation Study", August 2003. Here truck trips were converted into passenger car equivalent (PCE) trips using PCE factors, i.e., one 2-axle or 3-axle truck trip = 2 passenger car trips, and one 4+-axle truck trip = 3 passenger car trips (Refer study - TRAFFIC IMPACT STUDY WAREHOUSE DEVELOPMENT 11401 GREENSTONE AVENUE SANTA FE SPRINGS, CALIFORNIA).

²⁶ Caltrans report accessible at - <https://files.ceganet.opr.ca.gov/250143-2/attachment/2gQUJybgIxesxZMTEFLsZqi2Bf0rKIMtwqrfCQQwb8PLFgCioOM-X5yualcixzzE4NrtImIDbKA52R80>.

²⁷ Pg. 734, Black Rock Geothermal Project Preliminary Staff Assessment, Docket Number: 23-AFC-03 (TN #:257697).

construction sites²⁸. To accurately estimate emissions, it is necessary to use average peak hour trip²⁹ rates that reflect observed trends during peak construction periods.

- ❖ **Revised Assumption:** Assuming 50% of worker trips during peak hours
 - Peak Hour Worker Trips= $0.5 \times 852 = 426$ trips
- ❖ **Corrected Truck Trips and PCE ratio:** The PSA's PCE ratio of 1.5 is lower than the published ratio of 2.0³⁰. Therefore, instead of accounting for 12 out of 26 trucks, the correct number should be 50% of the trucks, i.e., 14.
- ❖ **Revised Assumption:** Assuming 20 trucks per day with a PCE of 2.0
 - Daily Truck Trips in PCE= $26 \times 2 = 52$ trips
- ❖ **Revised Daily Trips:** Using the revised assumptions.
 - Total Daily Trips= 852 worker trips $+ 52$ truck trips in PCE $= 904$ trips
 - Revised Peak Hour Trips: If 50% of worker trips and truck trips occur during peak construction hours, and considering that peak hour trips typically exceed 50% of daily totals during AM and PM peak periods³¹, the total peak hour trips should be calculated as follows: Total Peak Hour Trips= 426 worker trips $+ 26$ truck trips in PCE $= 452$ trips
- ❖ **Emissions Factors**
 - The NOx emissions standard for newer model trucks is 0.2 grams per mile (g/mile), and ranges from 1.0 to 0.5 g/mile for older models³²
- ❖ **Increased VMT Calculation:**
 - Original Daily VMT: With an average trip length of 20 miles, the original VMT would be 17,820 miles (891 trips $\times 20$ miles).
 - Revised Daily VMT: With the revised total of 904 trips, the VMT increases to 18,080 miles (904 trips $\times 20$ miles).
- ❖ **NOx Emissions**

Category	Original	Revised
Daily VMT	17,820 miles	18,080 miles
Average NOx Emission Factor	0.2 grams per mile (g/mile)	0.2 grams per mile (g/mile)
Total NOx Emissions	3,564 grams	3,616 grams

Table 8: Original and Revised NOx Emissions

²⁸ <https://www.nrc.gov/docs/ML1104/ML110460575.pdf>.

²⁹ Pge.11 Peak hour trips https://nacto.org/docs/usdg/smart_growth_trip_generation_rates_handy.pdf.

³⁰ FHWA report at <https://www.fhwa.dot.gov/reports/tswstudy/Vol3-Chapter9.pdf>.

³¹ Pge.11 Peak hour trips https://nacto.org/docs/usdg/smart_growth_trip_generation_rates_handy.pdf.

³² CARB data at https://www2.arb.ca.gov/sites/default/files/2020-07/ldvtp88_ac.pdf.

❖ **Original Peak Hour NOx Emissions:**

Category	Original	Revised
Peak Hour Trips	426	452
Average Trip Length	20 miles	20 miles
Total VMT During Peak Hours	8,520 miles	9,040 miles
Total NOx Emissions During Peak Hours	1,704 grams	1,808 grams

Table 9: Original and Revised Peak Hour NOx Emissions

❖ **Summary of Revised Analysis**

Emissions Type	Original	Revised
Daily NOx Emissions	3.564 kg	3.616 kg
Peak Hour Emissions	1.704 kg	1.808 kg

Table 10: Original and Revised Emissions Summary

Using more realistic assumptions for trip rates and distribution shows a significant rise in emissions. Daily NOx emissions increased from 3.564 kg to 3.616 kg, and peak hour NOx jumped from 1.704 kg to 1.808 kg. This underscores the need for precise traffic and emissions modeling to create effective mitigation strategies, ensure compliance, and protect public health by better managing environmental impacts from construction activities.

IX. Inadequate Assessment of Air Quality and GHG Emissions from Filter Cake Transportation: Concerns and Recommendations

- ❖ **Characterization of Filter Cake:** The PSA claims that 95% of the filter cake is non-hazardous, while the remaining 5% is hazardous due to elevated heavy metal content. However, the criteria used to differentiate between hazardous and non-hazardous waste are not clearly defined. This raises concerns about the reliability and consistency of the testing methods employed.
- ❖ The statement that "[t]he filter cake could be characterized at times as hazardous" indicates potential variability in waste composition, which underscores the need for rigorous and continuous monitoring. This variability may require the implementation of strict management protocols to ensure proper handling, storage, and disposal of hazardous waste, particularly when the waste composition fluctuates.
- ❖ **Compliance with Regulations:** The PSA outlines a plan for managing hazardous waste, specifying that it will be stored on-site for no more than 90 days before being transported by licensed haulers. However, it lacks important details regarding the storage procedures,

spill prevention strategies, and the qualifications required for the haulers. While the PSA mentions that the facility operator must obtain a USEPA hazardous waste generator ID, it does not elaborate on the steps needed to maintain compliance or the oversight mechanisms that will be in place to ensure these procedures are followed. This lack of detail raises concerns about the facility's ability to adhere to regulatory requirements and effectively manage the risks associated with hazardous waste.

- ❖ **Disposal Capacity and Alternatives:** The PSA assumes the DVCM facility will handle future waste if Cell 4 expands before its current capacity is used up. However, it does not plan for delays or if waste generation is higher than expected. The mention of Copper Mountain Landfill as an alternative is present but lacks detail, and the PSA does not consider the effects of transporting hazardous waste long distances, such as higher emissions and accident risks.
- ❖ **Cumulative Impact:** The analysis of the three proposed geothermal Projects (ENGP, MBGP, and BRGP) suggests that their combined effect on local landfill capacity is minimal. However, this conclusion assumes perfect recycling and does not consider potential fluctuations in waste production or unexpected operational issues. Additionally, the PSA lacks a detailed evaluation of the air quality and GHG emissions from transporting both hazardous and non-hazardous filter cake. The plan to send hazardous waste to Arizona and non-hazardous waste to the DVCM facility raises several concerns:
- ❖ **Long-Distance Transportation of Hazardous Filter Cake:** The PSA states that hazardous filter cake will be transported to a facility in Yuma County, AZ for disposal. The long-distance transportation of hazardous filter cake, approximately 129 miles away from the Project site (Figure 11) will significantly increase vehicle miles traveled (VMT). This, in turn, will result in higher emissions of pollutants and GHGs, contributing to the Project's overall environmental impact.



Figure 9: Distance Between Project Site and Hazardous Waste Facility in Arizona



Figure 10: Distance Between BRGP Plant and the Desert Valley Company Monofil Disposal Site

A truck that emits 1.161 grams³³ of CO₂ per mile will produce 149.769 grams of CO₂ on a 129-mile trip. With multiple trips expected, total emissions will be substantial.

Current Capacity and Alternatives for Non-Hazardous Filter Cake

- ❖ **DVCM Facility Capacity:** The DVCM facility, located 22 miles from the Project site, is currently at full capacity. Relying solely on this facility, without considering potential delays or fluctuations in waste, is not practical, especially as expansion plans are still underway.
- ❖ **Alternative Disposal Sites:** If the DVCM facility cannot manage the waste, alternative sites farther away must be considered, which will increase vehicle miles traveled (VMT) and emissions.
- ❖ **Emission Analysis:** Although a 22-mile trip to the DVCM facility (Figure 12) produces relatively lower emissions (about 25.542 grams of CO₂ per trip), the overall impact is significant due to the frequency and volume of trips.

Emission Analysis for Filter Cake Transportation

Here's an example to demonstrate the impact using the given distances and a hypothetical scenario.

³³ <https://business.edf.org/insights/green-freight-math-how-to-calculate-emissions-for-a-truck-move/#:~:text=The%20average%20freight%20truck%20in,of%20CO2%20per%20ton%2Dmile.>

Hazardous Filter Cake to Arizona (129 miles)

Parameter	Value
Total Waste (Tons)	24,000
Percentage of Hazardous Waste	5%
Hazardous Waste (Tons)	1,200
Truck Capacity (Tons per Trip)	20
Total Trips Required	60
CO ₂ Emissions per Trip	149.769 grams
Total CO ₂ Emissions for Hazardous Waste	8,986.14 grams (8.986 kg)

Table 11: Hazardous Filter Cake to Arizona

Non-Hazardous Filter Cake to DVCM (22 miles)

Parameter	Value
Total Waste (Tons)	24,000
Percentage of Non-Hazardous Waste	95%
Non-Hazardous Waste (Tons)	22,800
Truck Capacity (Tons per Trip)	20
Total Trips Required	1,140
CO ₂ Emissions per Trip	25.542 grams
Total CO ₂ Emissions for Hazardous Waste	29,112.48 grams (29.112 kg)

Table 12: Non-Hazardous Filter Cake to DVCM

Recommendations for a Realistic Assessment

- ❖ **Emission Calculations:** Calculate emissions from transporting both hazardous and non-hazardous filter cake, considering distances to disposal sites, trip frequency, and total emissions produced. This detailed analysis is needed to accurately evaluate the environmental impact of transportation activities.
- ❖ **Evaluation of Alternative Disposal Sites:** Assess alternative disposal sites thoroughly if the DVCM facility reaches capacity or faces expansion delays. Evaluate factors such as distance, site capacity, and potential emission increases due to longer transportation routes.
- ❖ **Mitigation Measures:** Implement strategies to reduce transportation emissions, such as optimizing truck loads, using fuel-efficient or alternative fuel vehicles, and scheduling trips to avoid peak traffic times. These measures help minimize the environmental impact and support sustainable waste transport practices.
- ❖ **Regulatory Compliance and Oversight:** Ensure all hazardous waste transportation and disposal follow federal, state, and local regulations. Establish strong oversight to monitor emissions and regularly assess environmental impacts to ensure compliance and protect public health.

Conclusion

The facts identified and referenced in this comment letter led me to reasonably conclude that the Project could result in significant impacts if allowed to proceed.

Sincerely,

GROUP DELTA CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read 'Komal Shukla', with a horizontal line drawn underneath it.

Dr. Komal Shukla
Technical Director – Air Quality



Education

Ph.D. in Photochemical Modeling of Air Pollution (Environmental Engineering), Indian Institute of Technology Delhi-IIT Delhi (Photochemical Modeling of Ground Level Ozone), Delhi, India; Visiting Ph.D. Student, Institute Fellow, Gees, University of Birmingham, UK; MPhil Environment and Sustainable Development, IESD, Banaras Hindu University, Varanasi, India; M.Sc. Environment Management, University School of Environment Management (Sustainable and Low Carbon Energy Plan for Delhi), Delhi, India; B.Sc Chemistry (with honors) in Chemistry, University of Delhi, India

Years of Experience: 7

Years with Group Delta: 1

Dr. Shukla has a Ph.D. in air quality and atmospheric phenomenon modeling, with a strong technical background in tropospheric chemistry, industrial and city level environmental solutions, regulatory and global model applications, trace gases and particulate matter impact on human health and climate, and observations data analytic. Dr. Shukla is an air quality emissions modeler with nearly a decade of technical and research experience. She served as an in-house lead in federal contract scientific projects supporting the EPA's mission. Related experience includes:

Litigation, Compliance, Environmental Justice, On-Road Emissions, Industrial Emissions, California: As Air Quality Modeling Scientist, Ms. Shukla completed two major projects, including: Project I: Source apportionment of ozone and particulate matter pollution using photochemical modeling techniques, and Project II: Transportation and near-road air quality and emissions projection.

Environment and Climate Change Canada (ECCC), Toronto, Canada: As Research Scientist (Air Quality Modeling and Compliance in Alberta), Ms. Shukla completed two significant projects, including: Project I: Developing a photo-chemical transport model to understand oil and sands region emissions in North America and Project II: Modeling applications in delineating chemistry of tropospheric tracers.

University of North Carolina, Institute of Environment, Chapel Hill, North Carolina: As Postdoctoral Research Associate (Air Quality – NYSERDA Led Air Quality Model Development, Ms. Shukla worked on critical projects including: Project I: Air quality modeling of various city level sources and health exposure sciences in New York City, - funded by NYSERDA and Project II: TRECH project (<https://www.hsph.harvard.edu/c-change/news/trechstudy/>) - Transportation, Equity, Climate & Health CMAQ based modeling of vehicular emission and policy assessment on the East Coast.

Indian Institute of Technology Delhi (IIT Delhi), Delhi, India: As Research Associate, Ms. Shukla worked on Project I: Quantification and contribution of paddy stubble burning emissions in Haryana to estimate PM2.5 concentrations in its surrounding cities and Delhi. Role: Modelling meteorology and PM2.5 for north India using WRF-chem and Project II: A Systems Approach to Air Pollution in Delhi (ASAAP) mobility grant funded by GCRF and NERC. Role: Monitored outdoor PM2.5 concentrations at two flyovers in Delhi and assessed pavement dwellers exposure to air pollution of PM2.5 near heavily trafficked roads to see impact on dwellers.

Various Technical Skills

Languages: T and C Shell-script, MATLAB, Fortran, Python, NCL, R, and NETCDF satellite data retrievals and analysis

Models: WRF-Chem, GEM-MACH, CMAQ, GCAM, CTOOLS, AERMOD, CALPUFF, ADMS, MOVES, InMAP and COBRA.



Photochemical pollutant and aerosol/dust modeling and urban air quality. Expertise in tropospheric chemistry, machine learning aided regression models, WRF-Chem/CMAQ (Chemical transport models), dispersion models.

Air Quality: CTOOLS/AERMOD/ADMS/R-LINE and satellite data assessment (OMI-AURA and MODIS). USEPA observation and meteorology handling, anthropogenic/energy emission inventory QA and preparation (MOVES), and impacts-benefits.

Select Research Papers:

- Shukla, K., Seppanen, C., Naess, B., Chang, C., Cooley, D., Maier, A., .. & Arunachalam, S. (2022). ZIP Code Level Estimation of Air Quality and Health Risk Due to Particulate Matter Pollution in New York City. *Environmental Science & Technology*.
- Shukla, K., Kumar, P., Mann, G. S., & Khare, M. (2020). Mapping spatial distribution of particulate matter using Kriging and Inverse Distance Weighting at supersites of megacity Delhi. *Sustainable cities and society*, 54, 101997.
- Shukla, K., Srivastava, P. K., Banerjee, T., & Aneja, V. P. (2017). Trend and variability of atmospheric ozone over middle Indo-Gangetic Plain: impacts of seasonality and precursor gases. *Environmental Science and Pollution Research*, 24(1), 164-179.
- Shukla, K., Dadheech, N., Kumar, P., & Khare, M. (2021). Regression-based flexible models for photochemical air pollutants in the national capital territory of megacity Delhi. *Chemosphere*, 272, 129611.
- Gulia, S., Khanna, I., Shukla, K., & Khare, M. (2020). Ambient air pollutant monitoring and analysis protocol for low- and middle-income countries: An element of comprehensive urban air quality management framework. *Atmospheric Environment*, 222, 117120.
- Khare, M., & Shukla, K. (2020). Outdoor and Indoor Air Pollutant Exposure. In *Environmental Pollutant Exposures and Public Health* (pp. 95-114)
- Kumar, G. S., Sharma, A., Shukla, K., & Nema, A. K. (2020). Dynamic programming-based decision-making model for selecting optimal air pollution control technologies for an urban setting. In *Smart Cities- Opportunities and Challenges* (pp. 709-729). Springer, Singapore.

Select Technical Conferences:

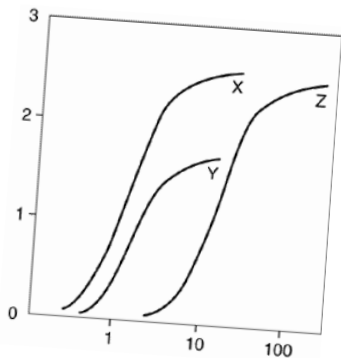
- Shukla, K., Ojha, N., & Khare, M., (2019) Air Quality Simulations over Delhi Using WRF-Chem in Conference of Indian Aerosol Science and Technology Association 2018 "Aerosol Impacts: Human Health to Climate Change" 2018 <http://cas.iitd.ac.in/iasta2018/pdf/>
- Shukla, K., Xiaoming, C., Ojha, N., & Khare, M., (2018), Air Quality Simulations over Delhi Using WRF-Chem: Effects of Local Pollution and Regional-Scale Transport, A42A-01 presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec. <http://abstractsearch.agu.org/meetings/2018/FM/A42A-01.htm1> (Talk)
- Shukla, K., & Khare M., (2019) Behaviour of Ground Level Ozone and Its Association with Precursors and Meteorology in Delhi, India, AS17-A023, *Atmospheric Chemistry in Highly Polluted Environments: Emissions, Fates, and Impacts*, AS17-A023 presented at 2019 16th Annual meeting AOGS, Singapore, 28th -2nd August (Poster)
- Shukla, K., Kumar, S., & Nema A., (2019) Environmental Characterization of Two Chromium-based Industrial Waste Contaminated Sites of India, accepted as B11H-2219, to be presented in presented at 2019 Fall Meeting, AGU, San Francisco, CA, USA 09-13 Dec. (Poster)
- Shukla, K., & Khare M., (2019), Behavioral Chemistry of ground level ozone formation in heavily polluted environment of Delhi city, accepted as A21G-2645, to be presented in presented at 2019 Fall Meeting, AGU, San Francisco, CA, USA 09-13 Dec.
- (Poster) Kumar, S., Sharma, A., Shukla K., Nema, A.K., (2019). Dynamic programming based decision-making model for selecting optimal air pollution control technologies for an urban setting. Presented at 1st smart cities conference, Delhi, India (Talk).

International Panelist

Air Pollution, Environmental Management and Policy Related Invited Talks:

- Minimizing air pollution in Delhi city, Pure Earth, NY, USA, Boston College, 2019
- Photochemical pollution in heavily polluted environments of India and China" in the Development of Traffic Pollution Dispersion Models based upon Artificial Intelligence Technology, Chang'an University, Xian, 2019, China
- Air Pollution Challenges and Mitigation Opportunities in Delhi, CADTIME, Newcastle University, 2019, UK
- Indoor Air Quality: Problems and Initiatives", 2nd Indian International National Conference on Air Quality Management (IICAQM 2017): Health and Exposure, Indian Institute of Technology Delhi, New Delhi 2017, India
- Tackling the Challenges of Air Pollution in India", Indian Institute of Public Administration, New Delhi, 2019, India

ATTACHMENT B



Clark & Associates
Environmental Consulting, Inc.

OFFICE

12405 Venice Blvd
Suite 331
Los Angeles, CA 90066

PHONE

310-907-6165

FAX

310-398-7626

EMAIL

jclark.assoc@gmail.com

September 4, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Attn: Mr. Andrew Graf

**Subject: Comment Letter On Preliminary Staff Assessment for the
Black Rock Geothermal Project (CEC-700-2024-004-
PSA).**

Dear Mr. Graf:

At the request of Adams Broadwell Joseph & Cardozo (ABJC), Clark and Associates (Clark) has reviewed materials related to the above referenced project.

Clark's review of the materials in no way constitutes a validation of the conclusions or materials contained within the documentations reviewed. If I do not comment on a specific item, this does not constitute acceptance of the item.

Project Description:

According to the Preliminary Staff Assessment, docketed at California Energy Commission Docket No. 23-AFC 03, the Applicant proposes to site and construct the Black Rock Geothermal Project (BRGP or the Project) within the Salton Sea Known Geothermal Resource Area (KGRA), in Imperial County, south of the Salton Sea. The Project would be located in an agricultural area approximately six (6) miles northwest of the town of Calipatria. The BRGP would consist of a 77-megawatt (MW) electricity generating facility powered by steam sourced from super-heated geothermal brine. A new 3.2-mile transmission line would be constructed to deliver power to a new Imperial Irrigation District (IID) switching station that will be built adjacent to the proposed Elmore North Geothermal project site.

The Project elements include one steam turbine generator (STG) system; a geothermal fluid processing system; a Class II surface impoundment (brine pond); a solids handling system; power distribution center (or control building); a service water pond; water service; parking areas, construction camps, borrow pits (partially shared); one 9-cell cooling tower; twelve (12) wells and 7 well pads; substation near northeast corner of the site; production wells, injection wells, and pipelines. The Project will be located on approximately 51 acres of a 160-acre parcel within the unincorporated area of Imperial County, California and which is bounded by McKendry Road to the north, Severe Road to the west, and Boyle Road to the east.



Figure 1: Project Location

The Project is in an area designated by the U.S. Environmental Protection Agency as nonattainment for ozone and by the California Air Resources Board as nonattainment for ozone and particulate matter with a diameter less than 10 microns (PM₁₀). According to the Preliminary Staff Assessment (PSA), the Project's potential operational impacts to air quality will be mitigated with the implementation of Air Quality Conditions of Certifications (COCs) and mitigation measures (MMs). The Staff Assessment concludes that after mitigation the Project would have *less than significant impacts for air quality and public health impacts*.

Site Location and Existing Air Quality Concerns

The facility would be located near the southern end of the Salton Sea, between the towns of Niland (eight miles northeast of Project site) and Calipatria (six miles to the southeast) in Imperial County. Land uses in the surrounding area include existing geothermal power facilities, agriculture, and the Sonny Bono Salton Sea National Wildlife Refuge (Sonny Bono Refuge). The Sonny Bono Refuge headquarters is located 0.7 miles from the Project site. In addition to the Imperial Valley Air District being in non-attainment for ozone concentrations based on the 8-hour Federal standard, non-attainment for ozone based on the 1-hour and 8-hour California standards, non-attainment for PM₁₀ based on the California standard; the immediate vicinity of the Project Site has been identified as a disadvantaged community under Senate Bill 535. This designation requires that the State invest in improving public health, quality of life and economic opportunity in California's most burdened communities, and at the same time, reducing pollution that causes climate change. The investments are authorized by the California Global Warming Solutions Act of 2006 (Assembly Bill 32, Nunez, 2016). Adding additional air pollutants to already impacted community will disproportionately affect the residents.

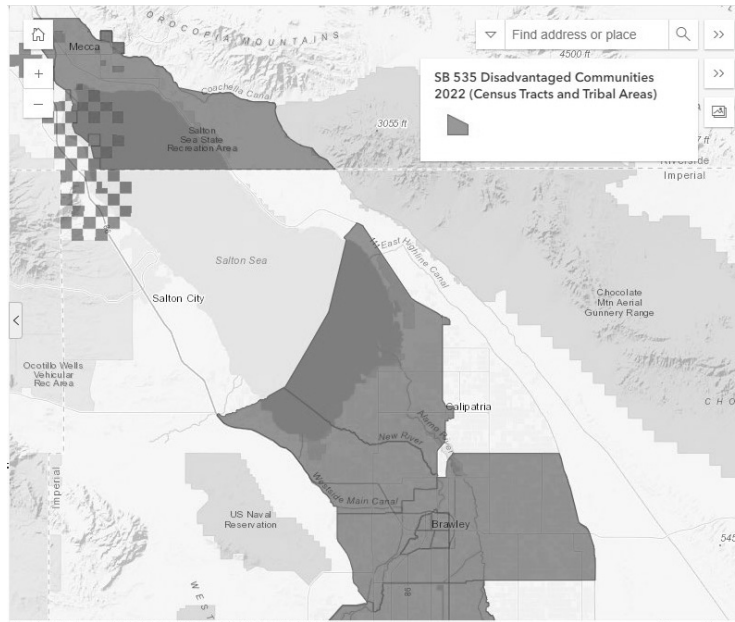


Figure 2: SB 535 Designated Communities

Specific Comments:

1. The Air Modeling Used As The Basis Of The Air Quality Analysis And Health Risk Assessment Contains Critical Flaws.

The PSA asserts that the air dispersion model and meteorological data used in the air dispersion analysis is the most representative, accurate, and reliable meteorological data available. However, this assertion does not fully consider the complexities and unique meteorological conditions of the Project site, particularly in relation to the Salton Sea.

According to U.S. EPA¹, dispersion modeling uses mathematical formulations to characterize the atmospheric processes that disperse pollutants emitted by a source. Dispersion models can be used to calculate the concentrations at selected downwind receptor locations (i.e., pollutants from sources are spread throughout the community and concentrations at each of the receptor location are calculated). Air dispersion modeling analyses are most reliable when they incorporate what the EPA refers to as preferred meteorological data, which includes the most recent five years of National

¹ U.S. EPA. 2021. Support Center For Regulatory Atmospheric Modeling (SCRAM). <https://www.epa.gov/scram/air-quality-dispersion-modeling>

Weather Service (NWS) data or at least one year of site-specific meteorological data. AERMOD, the model in question, is a Gaussian plume model highly dependent on the meteorological data utilized.

The topography and wind flow across the Salton Sea significantly impact the dispersion of pollutants emitted from the Project Site. According to a recent report², the Salton Sea occupies the deepest point of the Salton basin, surrounded by agricultural lands to the north and south of the sea, the Anza Desert immediately to its west, and bounded by the coastal Peninsular Ranges and the Transverse Ranges. To the south, the Salton basin opens up to the Imperial Valley.

The Project Site is located adjacent to the Salton Sea, but the Imperial County Airport NWS station, which provides the meteorological data used in the current model, is 28 miles south of the Project area. However, this approach may not accurately reflect the conditions at the Project site. As a large body of water, the Salton Sea creates a differential heating effect compared to the surrounding desert, leading to variations in wind speed. This can be seen when the wind data from the Imperial County Airport NWS station is compared to the Sono Bono Monitoring Station data.

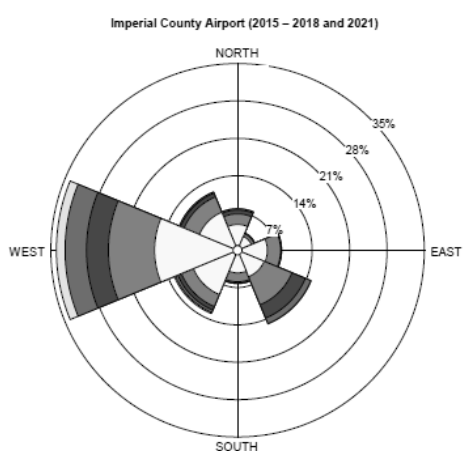


Figure 4: Wind Rose For Imperial County Airport

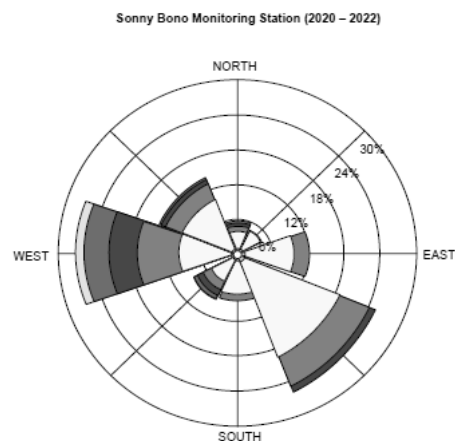


Figure 5: Wind Rose For Sonny Bono

Higher wind speeds over the heated desert and lower relative wind speeds over the cooler Salton Sea results in decreased dispersion near the Project site, increasing ground-level pollutant concentrations. Utilizing meteorological data from the Imperial County Airport NWS station fails to

² Evan, A.T. 2019. Downslope Winds And Dust Storms In The Salton Basin. *Monthly Weather Review* Vol 147: 2387-2402

capture these localized effects. As a result, the Staff Assessment severely underestimates the Project's air quality and public health risk impacts.

2. The Staff Assessment Fails to Account for Radon Risks In The Operational Health Risk Assessment (HRA).

The Staff Assessment asserts in Note C to Table 5.10-3 that “Radon is managed as a radiation health hazard under other programs, it has not been identified as a TAC in California. An outcome of not being a TAC is that there are no HRA methods in OEHHA guidelines for assessing radon emissions to ambient air. Although radon is not a TAC and therefore not included in HRA, the applicant modeled radon concentration from the project's cooling tower at the MEIR, and showed is well within existing (background) levels of radon in air in California. Therefore, radon emissions from the proposed project do not represent an increased health risk (Jacob 2024t).”

This assertion is incorrect and ignores the significant health risk from exposure to radon. Jacobs reliance on statewide average background levels of radon, assumed to be 0.49 pCi/L, is misleading. According to U.S. EPA, this ambient level would equate to 3 additional lung cancers per 1,000 people who smoke,³ or a risk of 3,000 per 1,000,000. Furthermore, this citation ignores the U.S. EPA designation of Imperial County as a Zone 3 county, meaning it has low radon potential.⁴ Introducing radon, a known human carcinogen, into an area with low radon potential must be quantitatively assessed to ensure the protection of workers, residents, and sensitive receptors in the vicinity of the Project Site. Radon is the number one cause of lung cancer among non-smokers, and second leading cause of lung cancer overall, according to U.S. EPA estimates.⁵

In the geothermal reservoir, radon (²²²Rn) enters solution predominantly by alpha-recoil and remains dissolved until its decay. The maximum radon content is achieved when the rates of solution and decay are equal, which occurs if the residence time of water in the reservoir exceeds 25 days (²²²Rn has a half-life of 3.8 days). Radon emissions from the nearby JJ Elmore geothermal facility⁶

³ U.S. EPA. 2024. <https://www.epa.gov/radon/health-risk-radon>

⁴ CDC. 2022. Special Report 247: California Indoor Radon Potential. California Department of Conservation California Geological Survey. Pg 57.

⁵ U.S.EPA. 2024. Health Risk Of Radon. Accessed February 29, 2024. <https://www.epa.gov/radon/health-risk-radon>.

⁶ ATC 1890.pdf

has been previously identified by the Imperial County Air Pollution Control District (ICAPCD) as a concern for turbine condenser, hot well condensate, cooling tower blowdown, and non-condensable gas emissions. For that facility, the ICAPCD required source testing and testing every 4-years following construction. In lieu of a specific regulated standard for exposure to radon, the As Low As Reasonably Achievable (ALARA) principle of radiation protection should be applied to the Project. This principle calls for monitoring exposure and implementing protective measures to minimize risk. In particular, workers involved in removing solid deposits from equipment must avoid inhaling dusts. The PSA should, at a minimum, perform a detailed risk assessment of radon emissions specific to the project site to ensure the safety of all potentially affected individuals.

3. The Staff Assessment's Choice Of Monitoring Methods For Dust And Cooling Tower Drift Will Not Accurately Assess The Concentration Of Particulates Emitted From The Site.

The Staff Assessment concludes that with implementation of Mitigation Measures (MM) and Air Quality Conditions of Certification (COCs), the air quality impacts will be less than significant. This statement, however, overlooks critical flaws in the methods for monitoring dust and cooling tower drift, particularly their limited effectiveness at night. The COCs related to dust and drift from the cooling towers (AQ-12 and AQ-37) rely on an opacity measure. Specifically, the standard being used is an opacity measurement of 20% or greater for a period aggregating more than three minutes in any one hour, typically performed using the U.S. EPA Methods 9 or 22, which are designed for smoke monitoring. There are several concerns with the use of these methods.

These methods require active monitoring of emissions from the facility. Certified observers must be utilized for these methods. Plume opacity readings can be subjectively influenced by various factors, including particle density, refractive index, size distribution, color, plume background, pathlength, distance and relative elevation to stack exit, sun angle, and lighting conditions. Finally, these methods require sufficient light to see the plume.

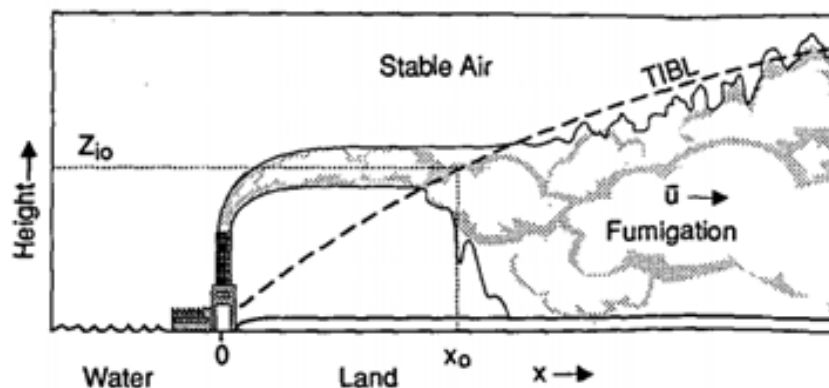
Given these limitations, the proposed COCs would not provide continuous analysis of conditions at the Project Site and would be ineffective during nighttime operations. To address these shortcomings, Staff should require active monitoring with dust monitors (particle measuring devices) immediately outside of the facility and around its perimeter. Continuous particle measures would

offer several advantages. It provides round-the-clock data, including during nighttime when visibility-based methods fail. It eliminates the subjectivity inherent in visual opacity readings, leading to more reliable and consistent data. It allows for real-time tracking of dust particle levels, enabling prompt corrective actions if thresholds are exceeded. And it offers robust data sets that can be used for repeatability test and to validate compliance with air quality standards. Incorporating active dust monitoring systems would ensure that air quality impacts are accurately assessed and mitigated, fulfilling the intent of the mitigation measures and conditions of compliance to protect public health and the environment.

4. The PSA States That The Fumigation Analysis For Inversion Breakup Conditions Is Adequate Even Though It Was Done With A Screening Level Model

On page 5.1-31 of the PSA under the Fumigation Impacts, Staff states that “applicant conducted fumigation analysis for inversion breakup conditions using the AERSCREEN (Version 15181) dispersion model. The applicant also assessed shoreline fumigation impacts as the nearest distance to the shoreline of any large bodies of water is within 3 kilometers with the Salton Sea located less than 1,000 m to the west and northwest of the project. The results of the applicant’s fumigation analysis in AERSCREEN indicated no meteorological hours fit the fumigation criteria. Therefore, no fumigation impacts are expected to occur from the project (Jacobs 2023ii).”

Shoreline Fumigation



Coastal fumigation phenomenon (from Luhar 1995)

Coastal plume fumigation results when a plume emitted from a stack and traveling with relatively little diffusion impacts the thermal internal boundary layer (TIBL) at some distance downwind. As long as this situation exists, fumigation may occur continuously and result in a high ground-level concentration. While heated air over the desert will create higher wind speeds the cooler temperature over the Sea creates lower relative wind speeds in the vicinity of the Project Site. For the general case of land/sea breeze winds, it is generally recognized in the air modeling community that the use of a high resolution mesoscale prognostic meteorological data, such as MM5 or WRF, is preferred over screening level meteorological data or hourly meteorological data. The Proponent should consider using a different dispersion model which incorporates a larger windfield, such as CalPuff with WRF meteorological data, to accurately assess the impact of the Salton Sea on the wind flow across the Project Site.

5. Valley Fever Impacts Are Potentially Significant And The Proposed Mitigation Measures Are Inadequate.

The Staff Assessment recognizes that construction of the Project could expose humans to the risk of Valley Fever and proposes mitigation measures to reduce Valley Fever impacts, but asserts that there is no issue with Valley Fever at the Project Site,⁷ citing low infection rates in the county. However, this assertion ignores the significant potential for exposure to the causal agent, particularly among workers.

Dust exposure is a primary risk factor for contracting Valley Fever (via *Coccidioides immitis* (*cocci*) exposure). When soil containing the *cocci* spores are disturbed by construction activities, the fungal spores become airborne, exposing construction workers and other nearby sensitive receptors. Despite this well-documented risk, the Staff Assessment proposes inadequate mitigation measures such as watering of soils, wearing of masks if workers are concerned, and staying indoors during dust storms.⁸ The last measure is clearly intended for residential exposure and fails to address the reality for workers.

This approach shifts the burden of protection from Valley Fever spores on the workers themselves. A more effective mitigation strategy would involve active sampling of the Project Site

⁷ Staff Assessment page 5.10-6.

⁸ Staff Assessment page 5.10-19.

prior to construction to determine the extent of Valley Fever spore presence, along with active monitoring and education for workers on the health impacts of Valley Fever.

The Valley Fever fungus lives in the top 2 to 12 inches of soil. When this soil is disturbed by activities such as digging, vehicles, construction activities, dust storms, or during earthquakes, the fungal spores become airborne. The most at-risk populations are construction and agricultural workers.⁹ Here, construction workers are the very population that would be most directly exposed by the Project. A refereed journal article on occupational exposures notes that “[l]abor groups where occupation involves close contact with the soil are at greater risk, especially if the work involves dusty digging operations.”¹⁰

The airborne release of Valley Fever spores is a reasonably foreseeable outcome of Project construction activities. A study in Antelope Valley identified a correlation between soil disturbance due to large-scale renewable energy construction projects, agricultural management practices and PM₁₀ fugitive dust emissions with increased incidence of coccidioidomycosis.¹¹

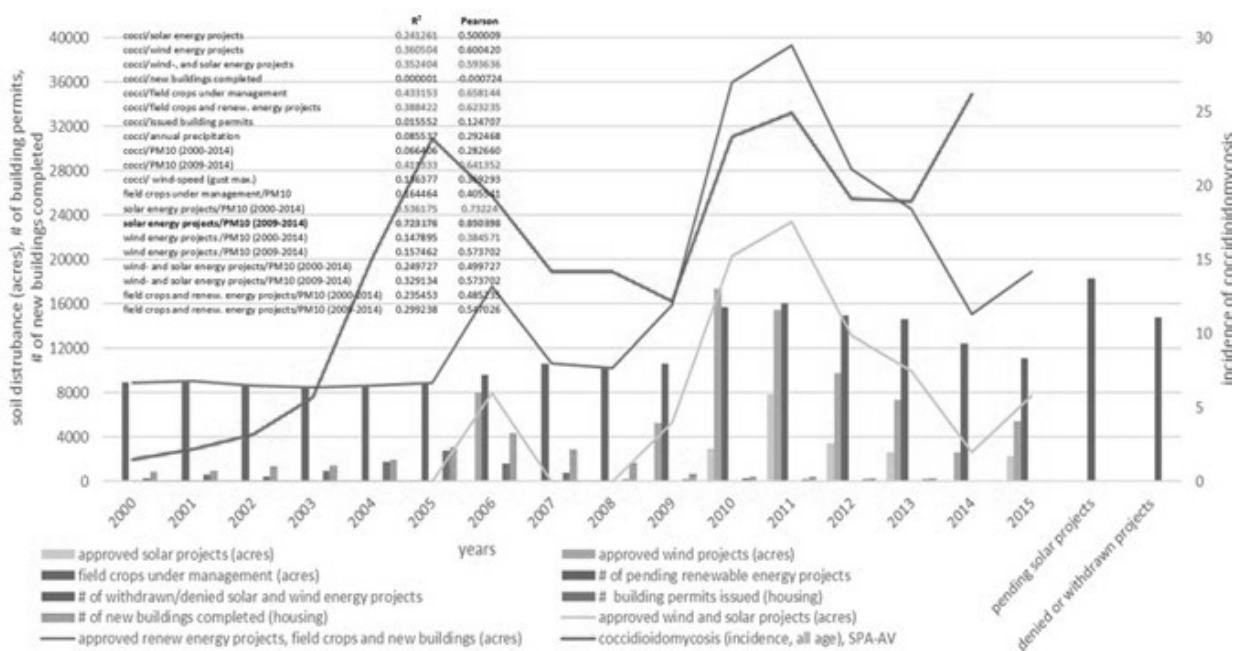


Figure 2: Valley Fever Incidence And Soil Disturbance

⁹ Lawrence L. Schmelzer and R. Tabershaw, Exposure Factors in Occupational Coccidioidomycosis, *American Journal of Public Health and the Nation's Health*, v. 58, no. 1, 1968, pp. 107–113, Table 3; available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1228046/?page=1>.

¹⁰ *Ibid.*, p. 110.

¹¹ Colson. 2017. Large-Scale Land Development, Fugitive Dust, and Increased Coccidioidomycosis Incidence in the Antelope Valley of California, 1999-2014. <https://knowthecause.com/wp-content/uploads/2017/03/Colson2017FugitiveDustCoccidioides.pdf>

As shown in the study, the incidence rate of Valley Fever increased with the number of acres of disturbed soil. The mass disturbance of soils during Project construction will create similar conditions to those detailed in the study by Colson.¹²

Windblown dust from Project-disturbed soils is a particular concern at this site due to desert winds, which occur in the area. Desert winds can raise significant amounts of dust, even when conventional dust control methods are used, often prompting alerts from air pollution control districts. If these winds occurred during grading, cut and fill, soil movement, or bare graded soil surfaces (even if periodically wetted), significant amounts of PM₁₀, PM_{2.5}, and associated Valley Fever spores, as well as silica dust, would be released.

Scientific research indicates outbreaks of Valley Fever occur in populations with intense exposure to aerosolized arthroconidia are at greater risk for infection, including agricultural or construction workers, or persons who participate in outdoor activities such as hunting or digging in the soil. Outbreaks have been linked to a variety of activities involving disturbance of impacted soils.^{13,14,15} Given this direct correlation between soil disturbance and Valley Fever cases, the Staff must directly address the impacts that the project's construction phase will have on workers and the surrounding community, and identify feasible mitigation measures to reduce Valley Fever impacts.

The COCs outlined in the PSA as AQ-SC3¹⁶ and AQ-SC4¹⁷ focus on the visible emissions of dust from the Project construction site. Given the size of Valley Fever spores, relying on a visible emissions of dust. The spores which cause Valley Fever are too small to see with the naked eye (0.002–0.005 millimeters (“mm”)). Standard fugitive dust mitigation measures are not adequate to

¹² Colson. 2017. Large-Scale Land Development, Fugitive Dust, and Increased Coccidioidomycosis Incidence in the Antelope Valley of California, 1999-2014. <https://knowthecause.com/wp-content/uploads/2017/03/Colson2017FugitiveDustCoccidioides.pdf>

¹³ Brown. Et al. 2013. Coccidioidomycosis: epidemiology. *Clinical Epidemiology*. 5:185-197.

¹⁴ Rafael Laniado-Laborin, Expanding Understanding of Epidemiology of Coccidioidomycosis in the Western Hemisphere, *Annals of the New York Academy of Sciences*, v. 111, 2007, pp. 20–22, available at <https://nyaspubs.onlinelibrary.wiley.com/doi/abs/10.1196/annals.1406.004>; Frederick S. Fisher, Mark

W. Bultman, Suzanne M. Johnson, Demosthenes Pappagianis, and Erik Zaborsky, Coccidioides Niches and Habitat Parameters in the Southwestern United States, a Matter of Scale, *Annals of the New York Academy of Sciences*, v. 111, 2007, pp. 47–72 (“All of the examined soil locations are noteworthy as generally 50% of the individuals who were exposed to the dust or were excavating dirt at the sites were infected.”), available at <https://nyaspubs.onlinelibrary.wiley.com/doi/abs/10.1196/annals.1406.031>.

¹⁵ Lawrence L. Schmelzer and R. Tabershaw, Exposure Factors in Occupational Coccidioidomycosis, *American Journal of Public Health and the Nation's Health*, v. 58, no. 1, 1968, pp. 107–113, Table 3; available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1228046/?page=1>.

¹⁶ Staff Assessment page 5.10-38 through 5.10-40.

¹⁷ Staff Assessment page 5.10-40 through 5.10-41.

protect construction workers and nearby sensitive receptors from the risk of exposure to Valley Fever spores. Conventional dust control measures do nothing to prevent the spread of *Coccidioides immitis*, (*cocci*) and are not effective at controlling Valley Fever¹⁸ because they largely focus on visible dust or larger dust particles—the PM₁₀ fraction—not the very fine particles where the Valley Fever spores are found. This fact allows the spores to spread in over a much greater area than the dust particles. Standard Air Quality Mitigation Measures such as watering of soils would not provide sufficient protection to on-site workers nor would they prevent the spread of *Coccidioides immitis* from the site to receptors farther away. Compliance with SCAQMD Rule 403 would still fail to prevent the exposure of workers on- and off-site to *Coccidioides immitis* impacted soils. Sampling for and removal of impacted soils is the best solution to *Coccidioides immitis* spores. Since *Coccidioides immitis* resides in soils and are not subject to degradation, entrainment of the potentially impacted soils may cause additional issues to further development of the site.

The Staff should require that the Applicant perform a pre-construction soil survey of the site to identify whether *Coccidioides immitis* spores are onsite and implement mitigation measures to actively suppress the spread of Valley Fever, including:

1. Active monitoring of dust using real time monitors during periods of soil disturbances. The use of U.S. EPA Method 9 and 22 would not be an acceptable substitute. Generation of dusts concentrations onsite beyond the background concentration of particulate matter at the upwind fenceline would require immediate dust suppression measures (e.g, active watering of dust plume). Monitors should be placed upwind and downwind of the construction area(s) to ensure that dust generation is documented and active control measures can be implemented prior to the dust plume leaving the site.
2. Control dust exposure:
 - Apply chemical stabilizers at least 24-hours prior to high wind event;
 - Apply water to all disturbed areas a minimum of three times per day. Watering frequency should be increased to a minimum of four times per day if there is any evidence of visible wind-driven fugitive dust;
 - Provide National Institute for Occupational Safety and Health (NIOSH)-approved respirators for workers with a prior history of Valley Fever.

¹⁸ See, e.g., Cummings and others, 2010, p. 509; Schneider et al., 1997, p. 908 (“Primary prevention strategies (e.g., dust-control measures) for coccidioidomycosis in endemic areas have limited effectiveness.”).

- Half-face respirators equipped with a minimum N-95 protection factor for use during worker collocation with surface disturbance activities. Half-face respirators equipped with N-100 or P-100 filters should be used during digging activities. Employees should wear respirators when working near earth-moving machinery.
 - Prohibit eating and smoking at the worksite, and provide separate, clean eating areas with hand-washing facilities.
 - Avoid outdoor construction operations during unusually windy conditions or in dust storms.
 - Consider limiting outdoor construction during the fall to essential jobs only, as the risk of cocci infection is higher during this season.
3. Prevent transport of cocci outside endemic areas:
- Thoroughly clean equipment, vehicles, and other items before they are moved off-site to other work locations.
 - Prevent spillage or loss of bulk material from holes or other openings in the cargo compartment's floor, sides, and/or tailgate;
 - Load all haul trucks such that the freeboard is not less than six inches when material is transported on any paved public access road and apply water to the top of the load and cover haul trucks with a tarp or other suitable cover.
 - Provide workers with coveralls daily, lockers (or other systems for keeping work and street clothing and shoes separate), daily changing and showering facilities.
 - Clothing should be changed after work every day, preferably at the work site.
 - Train workers to recognize that cocci may be transported offsite on contaminated equipment, clothing, and shoes; alternatively, consider installing boot-washing.
 - Post warnings onsite and consider limiting access to visitors, especially those without adequate training and respiratory protection.
4. Improve medical surveillance for employees:
- Employees should have prompt access to medical care, including suspected work-related illnesses and injuries.
 - Work with a medical professional to develop a protocol to medically evaluate employees who have symptoms of Valley Fever.

- Consider preferentially contracting with 1-2 clinics in the area and communicate with the health care providers in those clinics to ensure that providers are aware that Valley Fever has been reported in the area. This will increase the likelihood that ill workers will receive prompt, proper and consistent medical care.
- Respirator clearance should include medical evaluation for all new employees, annual re-evaluation for changes in medical status, and annual training, and fit-testing.
- Skin testing is not recommended for evaluation of Valley Fever.¹⁹
- If an employee is diagnosed with Valley Fever, a physician must determine if the employee should be taken off work, when they may return to work, and what type of work activities they may perform.

The mitigation measures identified in this comment, based on actual experience during construction of solar and wind projects in endemic areas, should be required for the Project.

6. The Staff Assessment Does Not Adequately Consider The Cumulative Impact From Diesel Back Up Generator Operations.

The Staff Assessment fails to consider the cumulative impact from diesel backup generator operations at nearby geothermal facilities. Based on a review of the authority to construct permits for geothermal projects within the vicinity of the Project Site, it is clear that a cumulative analysis of the cancer risk from exposure to diesel particulate matter (DPM) from the permitted operations is warranted. Permits²⁰ obtained from the District for the JJ Elmore, Vulcan, River Ranch, Salton Sea Units 1-5, and Hudson Ranch geothermal facilities all identify the presence of emergency generators operating on-site. The permitted operational time ranges from 50 to 500 hours per year. However, the cumulative emissions of air toxins, including volatile organic compounds (VOCs) such as benzene, toluene, and diesel particulate matter, have not been considered in combination with emergency generation proposed for the Project.

Given the designation of the area as a Disadvantaged Community under SB 535 and the non-

¹⁹ Short-term skin tests that produce results within 48 hours are now available. See Kerry Klein, NPR for Central California, New Valley Fever Skin Test Shows Promise, But Obstacles Remain, November 21, 2016; available at <http://kvpr.org/post/new-valley-fever-skin-test-shows-promise-obstacles-remain>.

²⁰ ATC 1890.pdf, ATC 1891.pdf, ATC 1927.pdf, ATC 2000.pdf, and ATC 3734.pdf.

attainment status of the Imperial Valley Airshed, the cumulative impacts of these emissions must be considered. The existing concentration gradient of pollutants in the community is a direct result of ongoing emissions. Introducing additional geothermal plants with new DPM sources will only exacerbate this existing pollutant gradient. The Staff Assessment should include all stationary sources of DPM in its analysis to accurately assess the cumulative impacts of the Project on the region.

7. The Staff Assessment Fails To Adequately Address Transportation and Disposal Of Hazardous And Non-Hazardous Filter Cake Materials.

In the transportation section of the Staff Assessment, the Staff does not clarify how many of the delivery/haul/maintenance trucks include the disposal of hazardous and non-hazardous filter cakes. According to the Staff Assessment, “Any hazardous wastes (precipitated solids estimated to be approximately five percent of the filter cake, 95 percent non-hazardous is the goal) generated during construction will be collected in hazardous waste accumulation containers near the point of generation and moved to the contractor’s 90-day hazardous waste storage area located onsite. The accumulated waste would subsequently be delivered to an authorized waste management facility. Hazardous wastes will be either recycled or disposed of in a licensed Class I disposal facility as appropriate.”²¹

The Project is expected to generate 14,000 tons of nonhazardous filter cake annually, which would be disposed of at the at the DVCM Class II facility. DVCM currently has a remaining capacity of 789,644 cubic yards (CalRecycle 2023b). The applicant identified the Copper Mountain Landfill in Yuma, Arizona as an alternative disposal option if the DVCM facility expansion is not completed in time.²² The Copper Mountain Landfill is located at least 120 miles from the Project Site location.

The Staff Assessment’s air quality, GHG, and hazard do not address the potential impacts of transporting non-hazardous wastes to an alternative site. As a result, the Staff Assessment underestimates the potential impacts on air quality, GHG generation, and hazardous waste impacts.

Additionally, the Staff Assessment is does not address disposal of hazardous wastes from the Project Site. Based on other geothermal projects in the area, it is my understanding that the Project’s hazardous filter cake may be disposed of at the Copper Mountain Landfill in Yuma, Arizona. These truck trips alone could significantly increase the criteria air pollutant and GHG emissions above the

²¹ Staff Assessment. Pg 3-14.

²² Staff Assessment. Pg 5.12-6

amounts estimated in the Staff Assessment. The Staff must address these concerns prior to approving the Project.

8. The Staff Assessment Does Not Describe Emergency Response Capabilities for Hazardous Waste Incidents.

The Calipatria Fire Department (CFD) is listed as the primary emergency responder for the Project site, but the Staff Assessment fails to describe whether personnel are trained to deal with hazardous waste that will be generated and stored onsite. The Staff Assessment notes that the Project Site is located within the jurisdiction of Imperial County Fire Department (ICFD) and CFD. CFD's lone station at 125 North Park Avenue, Calipatria, California, is approximately 6 miles southeast of the Project and serves as the primary responding agency. However, the Staff Assessment does not include an evaluation of the CFD's or ICFD's abilities to handle release(s) of hazardous wastes from the Project Site or to triage workers potentially exposed to radioactive materials and hazardous wastes. This omission raises serious concerns about the preparedness and capability of emergency responders to manage potentially hazardous waste incidents effectively and safely.

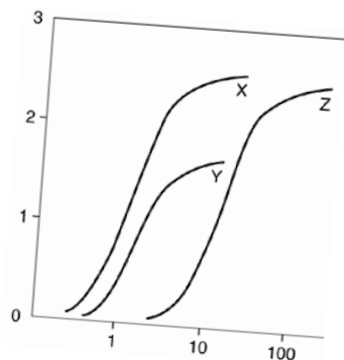
To ensure safety of the workers and surrounding community, the Staff Assessment must be updated to include a detailed description of training and certification levels of CFD and ICFD personnel regarding hazardous waste management and emergency response, an assessment of CFD's and ICFD's equipment, resources, and readiness to respond to hazardous waste incidents, information on the protocols and agreements in place for coordination with other agencies in the event of a hazardous waste emergency, an up-to-date emergency response plan, and details on community safety measures. The CFD and ICFD should be consulted regarding the quantities and types of materials that will be stored, utilized, and/or generated on site consistent California Health & Safety Code Section 25501(h), i.e, a hazardous disclosure packet. Additionally, the disclosure packet should be updated annually to ensure that any changes in the quantities or types of waste being generated can be addressed by the Responding Agency. This critical information will ensure that both workers and the community are adequately protected in the event of hazardous waste emergency and will provide a more comprehensive understanding of the Project's potential risks and the measures in place to mitigate them.

Conclusion

The facts identified and referenced in this comment letter lead me to reasonably conclude that the Project could result in significant impacts if allowed to proceed.

Sincerely,

A handwritten signature in black ink, appearing to read "J. J. Con". The signature is written in a cursive, flowing style with a horizontal line extending from the end.



Clark & Associates
Environmental Consulting, Inc

Office
12405 Venice Blvd.
Suite 331
Los Angeles, CA 90066

Phone
310-907-6165

Fax
310-398-7626

Email
jclark.assoc@gmail.com

James J. J. Clark, Ph.D.

Principal Toxicologist

Toxicology/Exposure Assessment Modeling

Risk Assessment/Analysis/Dispersion Modeling

Education:

Ph.D., Environmental Health Science, University of California, 1995

M.S., Environmental Health Science, University of California, 1993

B.S., Biophysical and Biochemical Sciences, University of Houston, 1987

Professional Experience:

Dr. Clark is a well-recognized toxicologist, air modeler, and health scientist. He has 30 years of experience in researching the effects of environmental contaminants on human health including environmental fate and transport modeling (SCREEN3, AEROMOD, ISCST3, Johnson-Ettinger Vapor Intrusion Modeling, RESRAD, GENII); exposure assessment modeling (partitioning of contaminants in the environment as well as PBPK modeling); conducting and managing human health risk assessments for regulatory compliance and risk-based clean-up levels; and toxicological and medical literature research.

SELECTED AIR MODELING RESEARCH/PROJECTS

Client(s) - Confidential

Dr. Clark performed a historical dose reconstruction for community members from an active 700 acre petroleum refinery in Los Angeles. The analysis included a multi-year dispersion model was performed in general accordance with the methods outlined by the U.S. EPA and the SCAQMD for assessing the health impacts in Torrance, California. The results of the analysis are being used as the basis for injunctive relief for the communities surrounding the refinery.

Client(s) – Multiple

Indoor Air Evaluations, California: Performed multiple indoor air screening evaluations and risk characterizations consistent with California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB) methodologies. Characterizations included the use of DTSC's

modified Johnson & Ettinger Model and USEPA models, as well as the attenuation factor model currently advocated by Cal/EPA's Office of Environmental Health and Hazard Assessment (OEHHA).

Client – Adams, Broadwell, Joseph Cardozo, P.C.

Dr. Clark has performed numerous air quality analyses and risk assessments of criteria pollutants, air toxins, and particulate matter emissions for sites undergoing evaluation via the California Environmental Quality Act (CEQA) process. The analyses include the evaluation of Initial Study (IS) and Environmental Impacts Reports (EIR) for each project to determine the significance of air quality, green house gas (GHG), and hazardous waste components of the projects. The analyses were compiled as comment letters for submittal to oversight agencies.

Client – Confidential

Dr. Clark performed a comprehensive evaluation of criteria pollutants, air toxins, and particulate matter emissions from a carbon black production facility to determine the impacts on the surrounding communities. The results of the dispersion model were used to estimate acute and chronic exposure concentrations to multiple contaminants and were be incorporated into a comprehensive risk evaluation.

Client – Confidential

Dr. Clark performed a comprehensive evaluation of air toxins and particulate matter emissions from a railroad tie manufacturing facility to determine the impacts on the surrounding communities. The results of the dispersion model have been used to estimate acute and chronic exposure concentrations to multiple contaminants and have been incorporated into a comprehensive risk evaluation.

PUBLIC HEALTH/TOXICOLOGY

Client: Confidential

Dr. Clark performed a historical dose reconstruction for community members from radiologically impacted material (RIM) releases from an adjacent landfill. The analysis was performed in general accordance with the methods outlined by the Agency for Toxic Substances Control (ATSDR) for assessing radiation doses from historical source areas in North St. Louis County, Missouri.

Client: City of Santa Clarita, Santa Clarita, California

Dr. Clark managed the oversight of the characterization, remediation and development activities of a former 1,000 acre munitions manufacturing facility for the City of Santa

Clarita. The site is impacted with a number of contaminants including perchlorate, unexploded ordinance, and volatile organic compounds (VOCs). The site is currently under a number of regulatory consent orders, including an Imminent and Substantial Endangerment Order. Dr. Clark assisted the impacted municipality with the development of remediation strategies, interaction with the responsible parties and stakeholders, as well as interfacing with the regulatory agency responsible for oversight of the site cleanup.

Client: Confidential

Dr. Clark performed a historical dose reconstruction for community members exposed to radioactive waste released into the environment from legacy storage facilities. The releases resulted in impacts to soils, sediments, surface waters, and groundwater in the vicinity of the sites. The analysis was performed in general accordance with the methods outlined by the Agency for Toxic Substances Control (ATSDR) for assessing radiation doses from historical source areas in the community.

Client: Confidential

Dr. Clark performed a dose assessment of an individual occupationally exposed to metals and silica from fly ash who later developed cancer. A review of the individual's medical and occupational history was performed to prepare opinions regarding his exposure and later development of cancer.

Client: Brayton Purcell, Novato, California

Dr. Clark performed a toxicological assessment of residents exposed to methyl-tertiary butyl ether (MTBE) from leaking underground storage tanks (LUSTs) adjacent to the subject property. The symptomology of residents and guests of the subject property were evaluated against the known outcomes in published literature to exposure to MTBE. The study found that residents had been exposed to MTBE in their drinking water; that concentrations of MTBE detected at the site were above regulatory guidelines; and, that the symptoms and outcomes expressed by residents and guests were consistent with symptoms and outcomes documented in published literature.

Client: Confidential

Dr. Clark performed a toxicological assessment of an individual occupationally exposed to hexavalent chromium who later developed cancer. A review of the individual's medical and occupational history was performed to prepare opinions regarding her exposure and later development of cancer.

Client: Covanta Energy, Westwood, California

Evaluated health risk from metals in biosolids applied as soil amendment on agricultural lands. The biosolids were created at a forest waste cogeneration facility using 96% whole tree wood chips and 4 percent green waste. Mass loading calculations were used to estimate Cr(VI) concentrations in agricultural soils based on a maximum loading rate of 40 tons of biomass per acre of agricultural soil. The results of the study were used by the Regulatory agency to determine that the application of biosolids did not constitute a health risk to workers applying the biosolids or to residences near the agricultural lands.

Client: Kaiser Venture Incorporated, Fontana, California

Prepared PBPK assessment of lead risk of receptors at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

RISK ASSESSMENTS/REMEDIAL INVESTIGATIONS

Kaiser Ventures Incorporated, Fontana, California

Prepared health risk assessment of semi-volatile organic chemicals and metals for a fifty-year old wastewater treatment facility used at a 1,100-acre former steel mill. This evaluation was used as the basis for granting closure of the site by lead regulatory agency.

ANR Freight - Los Angeles, California

Prepared a comprehensive Preliminary Endangerment Assessment (PEA) of petroleum hydrocarbon and metal contamination of a former freight depot. This evaluation was as the basis for reaching closure of the site with lead regulatory agency.

Kaiser Ventures Incorporated, Fontana, California

Prepared comprehensive health risk assessment of semi-volatile organic chemicals and metals for 23-acre parcel of a 1,100-acre former steel mill. The health risk assessment was used to determine clean up goals and as the basis for granting closure of the site by lead regulatory agency. Air dispersion modeling using ISCST3 was performed to determine downwind exposure point concentrations at sensitive receptors within a 1 kilometer radius of the site. The results of the health risk assessment were presented at a public meeting sponsored by the Department of Toxic Substances Control (DTSC) in the community potentially affected by the site.

Unocal Corporation - Los Angeles, California

Prepared comprehensive assessment of petroleum hydrocarbons and metals for a former petroleum service station located next to sensitive population center (elementary school). The assessment used a probabilistic approach to estimate risks to the community and was used as the basis for granting closure of the site by lead regulatory agency.

Client: Confidential, Los Angeles, California

Managed oversight of remedial investigation most contaminated heavy metal site in California. Lead concentrations in soil excess of 68,000,000 parts per billion (ppb) have been measured at the site. This State Superfund Site was a former hard chrome plating operation that operated for approximately 40-years.

Client: Confidential, San Francisco, California

Coordinator of regional monitoring program to determine background concentrations of metals in air. Acted as liaison with SCAQMD and CARB to perform co-location sampling and comparison of accepted regulatory method with ASTM methodology.

Client: Confidential, San Francisco, California

Analyzed historical air monitoring data for South Coast Air Basin in Southern California and potential health risks related to ambient concentrations of carcinogenic metals and volatile organic compounds. Identified and reviewed the available literature and calculated risks from toxins in South Coast Air Basin.

IT Corporation, North Carolina

Prepared comprehensive evaluation of potential exposure of workers to air-borne VOCs at hazardous waste storage facility under SUPERFUND cleanup decree. Assessment used in developing health based clean-up levels.

Professional Associations

American Public Health Association (APHA)

Association for Environmental Health and Sciences (AEHS)

American Chemical Society (ACS)

International Society of Environmental Forensics (ISEF)

Society of Environmental Toxicology and Chemistry (SETAC)

Publications and Presentations:**Books and Book Chapters**

- Sullivan, P., **J.J. J. Clark**, F.J. Agardy, and P.E. Rosenfeld. (2007). *Synthetic Toxins In The Food, Water and Air of American Cities*. Elsevier, Inc. Burlington, MA.
- Sullivan, P. and **J.J. J. Clark**. 2006. *Choosing Safer Foods, A Guide To Minimizing Synthetic Chemicals In Your Diet*. Elsevier, Inc. Burlington, MA.
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ATTACHMENT C

September 3, 2024

Ms. Kelilah D. Federman
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

Subject: Comments on the Preliminary Staff Assessment for the Black Rock Geothermal Project

Dear Ms. Federman:

This letter contains my comments on the Preliminary Staff Assessment (“PSA”) prepared by the California Energy Commission (“CEC”) for the Black Rock Geothermal Project (“Project”). BHE Renewables (“Applicant”) proposes to construct and operate a 77-megawatt electricity generating facility on 51 acres of land southeast of the Salton Sea. In addition to the electricity generating facility, the Project involves the construction and operation of 12 wells; 7 wells pads, several miles of pipelines; a gen-tie line, substation, and switching station; a brine pond, storm water pond, and service water pond; and several borrow pits, staging/parking areas, and construction camps.

I am an environmental biologist with 30 years of professional experience in wildlife biology and natural resources management. I have served as a biological resources expert for over 200 projects in California. My experience and scope of work in this regard has included assisting various clients with evaluations of biological resource issues; preparation and peer review of environmental compliance documents prepared pursuant to the California Environmental Quality Act (“CEQA”) and the National Environmental Policy Act (“NEPA”); and preparation of written comments that address deficiencies with CEQA and NEPA documents. My work has included written and oral testimony for the CEC, California Public Utilities Commission, and Federal courts. My educational background includes a B.S. in Resource Management from the University of California at Berkeley, and a M.S. in Wildlife and Fisheries Science from the Pennsylvania State University. A copy of my current curriculum vitae is attached hereto.

The comments herein are based on my review of the documents in the CEC’s Docket Log (including the PSA, Application for Certification [“AFC”], and Data Responses); a review of scientific literature pertaining to biological resources that occur in the Project area; my work on other projects in Imperial Valley; and the knowledge and experience I have acquired during my 30-year career in the field of natural resources management.

PROJECT DESCRIPTION ISSUES

Borrow Pits

The Project includes 4 borrow pit sites that total approximately 460 acres. These borrow pits would also be used by the Morton Bay Geothermal Project and the Elmore North Geothermal Project. The Applicant estimates that 5 feet of excavation would occur at the borrow pit sites.¹ According to the PSA: “[b]orrow pits would provide fill for the project site if needed, although it is assumed that excavated materials from the project site would be suitable for backfill (Jacobs 2023a, pp. 2-37 and 5.11-14). Topsoil removed from the project site would be set aside and stockpiled at the borrow sites for use as topsoil in restoring the borrow sites to preconstruction conditions as much as possible (Jacobs 2023a, page 5.11-20).”²

The PSA and AFC provide no indication that topsoil from the borrow pits would be stockpiled and salvaged to help restore the borrow pits upon completion of construction activities. Indeed, the AFC states the following regarding impacts to the borrow pits: “[i]mpacts during construction of the BRGP may include alteration of the existing soil profile, increased soil erosion, and soil compaction. Alteration of the existing soil profiles, including mixing of soils and rock, will alter the physical, chemical, and biological characteristics of the native soils and underlying geology.”³

Each of the three power plants will be located on approximately 51 acres (TN 257655). Collectively, this totals 153 acres of land that could potentially provide topsoil material for restoration of the borrow pits. Therefore, even if topsoil removed from the 3 project sites provides suitable material for restoration of the borrow pit sites, it appears there would be a deficit of approximately 307 acres of topsoil. Although the PSA states the borrow pits would be restored “as much as possible,”⁴ it fails to discuss the fate of the borrow pit sites if it is not possible to fully restore them (e.g., due to the lack of topsoil).

Construction Hours

The AFC and various chapters of the PSA provide inconsistent information on the construction schedule. For example:

- 1) The AFC and Project Description chapter of the PSA state that construction activities may occur 7 days per week.⁵ However, the Noise chapter of the PSA states that construction activities would not occur on Sundays.⁶
- 2) The AFC states that the construction schedule is based on two, 10-hour shifts per day, during which construction equipment may operate up to 10 hours per shift.⁷ The PSA

¹ Figures 2-7a through -7d in Elmore North Geothermal Project Data Request Response Set 1 Part 13 (TN 252490-13).

² PSA, p. 5.8-14.

³ TN 249752, p. 5.11-14.

⁴ PSA, p. 5.8-16.

⁵ TN 249752, p. 5.1-26; PSA, p. 3-17.

⁶ PSA, pp. 5.9-6 and -16.

⁷ AFC, p. 5.1-26.

states that the construction schedule is based on a two-shift, 10 hours per day schedule, but that facility startup schedules are based on a two-shift, 24 hours per day, seven days per week work week.⁸ Thus, the AFC states that construction would occur 20 hours per day, while the PSA suggests it would be only 10 hours per day.

- 3) The AFC states: “[w]ell drilling operations are conducted 24 hours per day, seven days per week. Eight weeks is estimated to drill each well, and approximately 17 people will be working at each drilling site at any one time.”⁹ This statement conflicts with the PSA’s statement that typical working hours would be between 7 am and 8 pm,¹⁰ and that construction activities would occur 10 hours per day.

The PSA describes how night lighting, noise, and human activity can negatively impact special-status species. For example, the PSA states that nighttime lighting exposes bats to predation, but the potential for a significant impact is low because “most construction activities would occur during daylight hours when the potential for bat interactions is limited.”¹¹ The rationale for the PSA’s determination appears to be inconsistent with the Project’s construction schedule. Consequently, accurate information on the Project’s construction schedule is essential to evaluating impacts related to night lighting, noise, and human activity. It is also essential to evaluating compliance with Condition of Certification / Mitigation Measure (“COC/MM”) NOISE-6, which establishes temporal restrictions on noisy construction activities.

Pile Driving

The PSA states that the Project’s pile driving activities would generate noise levels of 104 dBA Leq at 50 feet, if unsilenced.¹² Because the metric Leq represents the average noise level over a period of time (usually 1 hour), and because pile driving is an intermittent activity,¹³ the maximum noise level (Lmax) generated by each pile drive would be substantially more than 104 dBA. The PSA does not identify the maximum (Lmax) noise levels associated with Project construction and operation activities. This precludes assessment of the Applicant’s ability to comply with COC/MM BIO-14, which establishes thresholds for the Project’s maximum noise levels.

The PSA does not identify the specific locations where pile driving would occur. In addition, although the PSA identifies 3 methods for reducing the noise level of pile driving,¹⁴ it does not identify how much each method (e.g., use of impact cushions) would reduce the pile driving noise level. These deficiencies preclude the ability to assess pile driving noise levels at habitat occupied by the Yuma Ridgway’s rail, least bittern, and other special-status bird species.

⁸ PSA, p. 3-17.

⁹ AFC, p. 2-42.

¹⁰ PSA, p. 3-17.

¹¹ PSA, p. 5.2-108.

¹² PSA, p. 5.9-7.

¹³ *Id.*

¹⁴ *Id.*

ENVIRONMENTAL SETTING

Sensitive Natural Communities

The *Allenrolfea occidentalis* Shrubland Alliance (iodine bush scrub) is considered a sensitive natural community. The PSA states: “[o]ne [borrow pit] site at Brandt Road contains scattered iodine bush, one saltcedar tree (*Tamarix* sp.), and stacks of hay bales.” The membership rules for the *Allenrolfea occidentalis* Shrubland Alliance are: > 2% absolute cover in the shrub canopy, and no other species with greater or equal cover.¹⁵ Based on the PSA’s description and imagery available from Google Earth, a portion of the borrow pit site at Brandt Road should have been classified as iodine bush scrub (but was instead classified as “disturbed with vegetation”).¹⁶ As a result, the PSA does not accurately quantify Project impacts to the *Allenrolfea occidentalis* Shrubland Alliance.

Habitat Mapping

The AFC states that habitat, land cover, and vegetation community mapping was conducted within a 1-mile radius of the power plant area and within 1,000 feet of the well pads, pipelines, auxiliary features, and linear features, where access was permitted.¹⁷ The AFC further states that special-status species within a one-mile buffer of the Project could be subject to impacts from construction and operation of the Project.¹⁸ Therefore, the potential for the Project to have significant indirect impacts on special-status species is partially dependent on the types and configuration of habitats within the one-mile buffer.

Neither the PSA nor the AFC provides a map depicting all of the habitats within the CEC-mandated Project buffers. Indeed, the map provided by the Applicant only depicts land cover and vegetation types within the Project footprint, pipeline right-of-way (“ROW”), and within a 150-foot buffer of the proposed well pads.¹⁹ The lack of a map depicting habitats within the Project buffers precludes the ability to assess indirect impacts to special-status species that may occur in habitats surrounding the Project site.

Yuma Ridgway’s Rail and Other Special-status Marsh Species

The PSA at page 5.2-78 states:

“The applicant prepared Distribution and Occupancy of Yuma Ridgway’s rails within proposed geothermal development areas in Imperial Valley, California (TN251681) ... No suitable breeding habitat for Yuma Ridgway rails was identified on the NWR land adjacent to the proposed generating facility site ... Overall, suitable rail habitat is currently not present near the generating facility

¹⁵ Sawyer JO, Keeler-Wolf T, Evens JM. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society in collaboration with California Department of Fish and Game. Sacramento, California. p. 335.

¹⁶ TN 253188.

¹⁷ AFC, p. 5.2-13.

¹⁸ AFC, p. 5.2-8.

¹⁹ AFC, Figure 5.2-4.

portion of the proposed project area. No Yuma Ridgway rail surveys were conducted at or around the proposed generating facility site.”

The information provided in the PSA is misleading. The Applicant’s Yuma Ridgway’s rail consultant did not examine habitat at the National Wildlife Refuge (“NWR”) land adjacent to the Project site. The Yuma Ridgway rail survey report states: “[a]ll accessible portions of the proposed development area for suitable Yuma Ridgway’s rail habitat were reviewed, and the perimeter mapped for patches of rail habitat.”²⁰ Figure 1 in the survey report depicts the “proposed development area,” which does not include the NWR land adjacent to the Project site.

Contrary to what is stated in the PSA, there is suitable rail habitat near the proposed generating facility. Indeed, the Applicant’s Yuma Ridgway’s rail consultant detected multiple Yuma Ridgway’s rails near the intersection of McKendry Road and Severe Road in both 2005 and 2006 during surveys for the National Marsh Bird Monitoring Program.²¹ A California black rail was also detected at that location in 2005.²²

The eBird database has records of Yuma Ridgway’s rails and least bitterns at the following locations near the proposed generating facility:

- 1) Two Yuma Ridgway’s rails were detected at the Obsidian Butte Ponds on 4 August 2018 (eBird Checklist S47646823) and 29 September 2011 (eBird Checklist S92438239).²³ A least bittern was also been detected at this location in 2015 and 2019.²⁴ The Obsidian Butte Ponds are located approximately 600 feet from the boundary of the proposed generating facility and approximately 350 feet from a proposed laydown area (Figure 1, below).
- 2) Multiple Yuma Ridgway’s rails were detected between 2022 and 2024 at emergent marsh habitat approximately 1,250 feet north of the Obsidian Butte Ponds.²⁵ A least bittern was also detected at this location in May 2024.²⁶

The mitigation measures incorporated into BIO-13 and BIO-14 are triggered by construction and operations activities within and adjacent to “rail habitat” (BIO-13) or “suitable rail habitat” (BIO-14). The PSA does not identify where this rail habitat is located in relation to the Project’s facilities, nor is it possible for the public to understand where the habitat might be located because there is no map of habitats within the Project buffers.

²⁰ TN 251681, p. 4.

²¹ California Natural Diversity Database. 2024. RareFind 5 [Internet]. California Department of Fish and Wildlife [July 2, 2024].

²² *Id.*

²³ eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. [accessed 2024 Sep 1]. <https://ebird.org/explore>

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

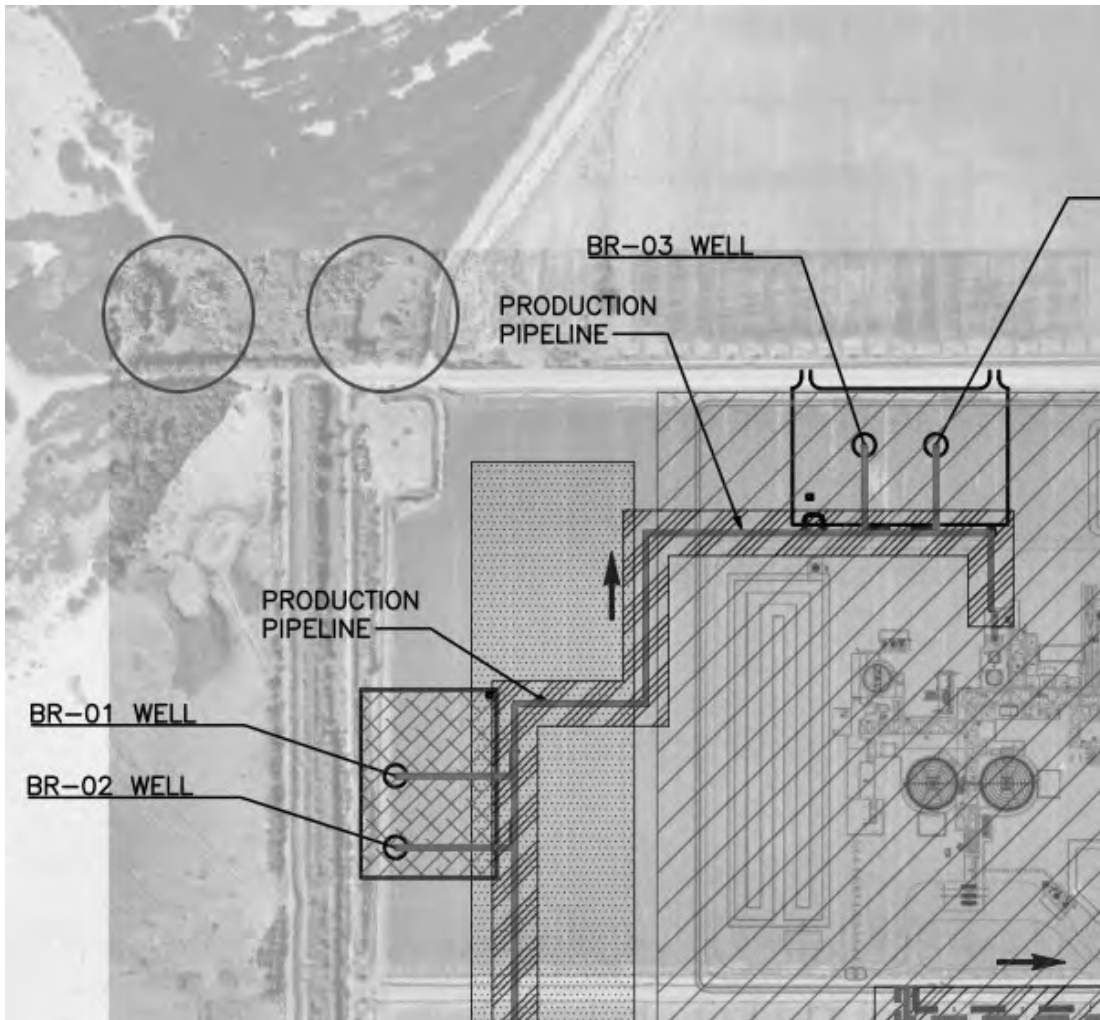


Figure 1. Obsidian Butte Ponds (blue circles) in relation to Project facilities and disturbance areas. Adapted from TN 253189, Figure 2-7aR.

PROJECT IMPACTS

The PSA Fails to Adequately Analyze Impacts on Imperial Irrigation District (“IID”) Drains and Canals

CEC Staff (“Staff”) used the Applicant’s GIS data to analyze impacts to vegetation communities and land cover types.²⁷ Based on that analysis, Staff determined the Project could temporarily impact 23.40 acres of drains and canals, and permanently impact 1.67 acres of drains and canals.²⁸ This is reflected in Table 5.2-5 of the PSA, which quantifies impacts to the land cover types in the Project area. However, the footnote to Table 5.2-5 states the following: “[t]his analysis concludes that canals and drains would not be impacted. Temporary and permanent impacts to canals and drains are shown for informational purposes.” The contradictory information provided in the PSA makes it impossible to understand whether the Project would impact drains and canals. As the PSA acknowledges, some of the drains and canals serve an important function in providing habitat for the desert pupfish, Yuma Ridgway’s rail, least bittern, burrowing owl, and other special-status species.

Desert Pupfish

Desert pupfish occur in the river deltas, irrigation ditches, and marshes along the edge of the Salton Sea.²⁹ The Applicant did not conduct surveys for the pupfish, but instead elected to assume presence of the species in the Project area.³⁰

The volume, depth, and quality of water in IID’s drains are critical components of desert pupfish habitat. For example, when low water levels occur, desert pupfish become more susceptible to predation by birds and competition with exotic fish species.³¹ Therefore, even if the Project does not directly impact canals and drains, taking agricultural fields out of production to enable construction of the Project could indirectly impact desert pupfish habitat by reducing the volume of water in drains that provide habitat for desert pupfish. The PSA provides the following discussion of this issue:

“Reduced agricultural return flow associated with the project, and how it would affect desert pupfish habitat and vegetation communities, is currently underway with IID as part of the Water Supply Agreement and impact study analysis (TN253937). However, annual flow in the canals and drains depends on IID water demands and is complicated by declines in water in the area due to climate fluctuations, agricultural conservation measures, cropping practices, and decrease inflows from Mexico. Though a conversion of one parcel to agricultural use may result in a small decline in agricultural drainage, that decline on water use is

²⁷ PSA, p. 5.2-123.

²⁸ *Id.*

²⁹ PSA, p. 5.2-19.

³⁰ PSA, p. 5.2-87.

³¹ CH2MHILL. 2002. Draft EIR/EIS for the IID Water Conservation and Transfer Project/Draft Habitat Conservation Plan. Vol 2, Appendix A to Appendix C. <https://www.iid.com/water/library/qa-water-transfer/environmental-assessments-permits/draft-eir-eis>. See also Imperial Irrigation District. 2017 Nov. Draft Initial Study for the Red Hill Bay Wetlands Restoration Project. <https://ecos.fws.gov/ServCat/DownloadFile/161293>

minimal. As such, indirect alterations to hydrology due to conversion of agricultural is considered less than significant.”³²

There are three main problems with the PSA’s analysis. First, the PSA provides contradictory information. The PSA begins by stating that impact analysis is currently underway with IID as part of the Water Supply Agreement. This indicates that the reduced agricultural return flows associated with the Project could affect desert pupfish habitat. The PSA then, without the supporting impact analysis from IID, makes the determination that the impact would be less than significant.

Second, Staff’s rationale that “conversion of one parcel” would have a minimal effect on pupfish habitat is unsupported. Moreover, the Project does not consist of one parcel, but rather, numerous parcels that would be taken out of agricultural production.³³ While some of the parcels would only be taken out of agricultural production “temporarily” (i.e., during the 29-month construction period), the impact on pupfish may not be temporary. Specifically, if the temporary reduction in agricultural return flows causes extirpation of pupfish from a drain, the impact could be permanent unless there is connectivity to a source population for recolonization once the return flows resume.

Third, the PSA fails to analyze cumulative impacts on the desert pupfish, and in particular, the cumulative reduction in agricultural return flows due to the Project and other geothermal projects that have been proposed in the area (e.g., Black Rock Geothermal Project, Elmore North Geothermal Project, Energy Source Mineral ATLAS Project, Hudson Ranch New Well 13-4 Project,³⁴ and Hell’s Kitchen Project). The cumulative reduction in agricultural return flows from these projects could have a significant impact on habitat for pupfish in IID drains and river deltas at the Salton Sea. On 24 Aug 2023, IID submitted a letter to the CEC stating the following:

“Due to the potential loss or reduction of 13,165 AFY of inflow to the Salton Sea and to IID drains with its concurrent environmental impacts, developer should address this issue as well as provide analysis that the project does not negatively impact the IID Water Conservation and Transfer Draft Habitat Conservation Plan (HCP), the existing Section 7 Biological Opinion and the California Endangered Species Act (CESA) Permit 2081 ... An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea.” (TN 251870)

³² PSA, p. 5.2-89.

³³ PSA, Figure 3-3.

³⁴ Referred to as “Geo Hudson Ranch (HR1)” in the PSA.

The cumulative impacts analysis requested by IID was not provided by the Applicant, nor is it in the PSA. As a result, and for the reasons discussed above, direct, indirect, and cumulative impacts on the desert pupfish remain potentially significant.

Impacts from Dewatering

The PSA at page 5.16-9 states:

“According to the application’s project description, soil would be disturbed to a maximum depth of 30 feet below grade while installing foundation piers using drilling equipment (Jacobs 2023a). It is therefore likely that groundwater could be encountered during excavation activities and dewatering would be necessary. If dewatering is necessary, and the discharge is found to be uncontaminated, the project owner would be permitted to discharge this to waters of the U.S. under the Construction General Permit.”

The PSA does not discuss where specifically the water might be discharged, nor does it analyze how this discharge of water would affect special-status species and their habitat. For example, discharge of high-velocity (> 1.0 foot per second) and presumably turbid water into areas occupied by desert pupfish would kill and injure pupfish, which are not adapted to those water conditions.³⁵ In addition, discharge of water in areas north or west of the proposed energy facility could: (a) scour vegetation and negatively impact water quality in habitat occupied by special-status species, and (b) flood nest sites of the Yuma Ridgway’s rail, California black rail, least bittern, redhead, and western snowy plover (among other ground-nesting, special-status species). Staff’s proposed COC/MM BIO-9 would not avoid these potentially significant impacts because BIO-9 only applies to dewatering of irrigation drains or ponded water at the end of drains, not to dewatering that may be necessary to install the Project’s foundation piers.

Impacts to Special-status Bats

The PSA provides contradictory information regarding the potential for the Project to have significant impacts on special-status bats. The PSA provides a list of 6 special-status bats that have a moderate or higher potential to occur at the Project site.³⁶ The PSA states these species could roost in nearby buildings, structures, or trees, and “[d]ue to their sensitivity to noise, human presence, and other disturbance factors, impacts to bat roosts would be considered a significant impact.”³⁷ The PSA then concludes: “disturbance to sensitive maternity or hibernacula sites in these habitats that would result in mortality or injury is not anticipated. As such, impacts would be reduced to less than significant.” The PSA’s conclusion is based solely on the fact that the Project would not remove any trees or structures that might contain bat roosts, thus ignoring noise, human presence, and other disturbance factors that could significantly

³⁵ ESA. 2017 Feb. Final Salton Sea Species Conservation Habitat: Desert Pupfish Adaptive Management and Monitoring Plan. [accessed 2024 Aug 27]. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Engineering-And-Construction/Files/Design-Build/Salton-Sea-Reports/10_Pupfish_Adapt_Mgmt_Monitoring_Plan_a_y19.pdf

³⁶ PSA, p. 5.2-107.

³⁷ *Id.*

impact nearby roosts.³⁸ None of the COCs/MMs in the PSA require bat surveys to identify roost sites so appropriate avoidance measures can be formulated and implemented prior to construction. As a result, Project impacts on special-status bats remain potentially significant.

Construction Noise Impacts on Marshland Species

Pages 5.2-98 through 5.2-100 of the PSA provides analysis of impacts to the southwestern willow flycatcher, California black rail, Yuma Ridgway's rail, and Gila woodpecker (all federal or state listed species). The PSA refers to these birds as "marshland species." Among other impacts, the PSA states that noise generated by the Project could have a significant impact on marshland bird communication. The PSA's analysis then focuses on the Yuma Ridgway's rail and two of staff's proposed COCs/MMs: BIO-13 (Yuma Ridgway's Rail Survey, Management, and Monitoring) and BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan).³⁹ The PSA's analysis concludes with a list of other COCs/MMs that would apply to marshland birds, and it provides Staff's determination that "[w]ith the implementation of these COC/MM, impacts to marshland birds would be reduced to less than significant levels."⁴⁰

A fundamental flaw with the PSA's analysis is that the southwestern willow flycatcher and Gila woodpecker are not marshland species. The southwestern willow flycatcher is a riparian obligate that establishes nesting territories, builds nests, and forages where mosaics of relatively dense and expansive growths of trees and shrubs are established, generally near or adjacent to surface water or underlain by saturated soil.⁴¹ The Gila woodpecker is associated with riparian woodlands, old-growth xeric-riparian wash woodlands, uplands with concentrations of large columnar cacti, dry subtropical forests, and urban residential areas.⁴²

BIO-13 requires: (a) pre-activity surveys and construction monitoring for Yuma Ridgway's rail within all project areas that contain suitable habitat and the surrounding 500-foot buffer; (b) avoidance of construction activities within or adjacent to suitable habitat for the Yuma Ridgway's rail during the nesting season, unless surveys verify that no nesting is occurring; and (c) reduced vehicle speed adjacent to rail habitat or burrowing owl habitat. Thus, BIO-13 does not require focused surveys and construction monitoring for the southwestern willow flycatcher and Gila woodpecker, two of the species that BIO-13 is supposed to mitigate. Furthermore, because suitable habitat for the southwestern willow flycatcher and Gila woodpecker is not equivalent to suitable habitat for the Yuma Ridgway's rail, BIO-13 would not impose temporal restrictions on construction activities within or adjacent to habitat for the southwestern willow flycatcher and Gila woodpecker, nor would it impose vehicle restrictions adjacent to that habitat.

BIO-14 requires a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot from suitable rail habitat, and it establishes a noise threshold of 60 dBA for

³⁸ *Id.*

³⁹ PSA, p. 5.2-100.

⁴⁰ *Id.*

⁴¹ Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.

⁴² California Partners in Flight. 2009. The Desert Bird Conservation Plan: a Strategy for Protecting and Managing Desert Habitats and Associated Birds in California. California Partners in Flight. [accessed 2024 Aug 29]. <https://partnersinflight.org/wp-content/uploads/2024/05/desert.v-1.pdf>

“marshland habitat” during the breeding season. During the non-breeding season, BIO-14 requires a biological monitor if construction noise has the potential to exceed 80 dBA at “potential marshland habitat.” Thus, BIO-14 has no noise thresholds or biological monitoring requirements for riparian woodlands that provide potential habitat for the southwestern willow flycatcher and Gila woodpecker.

For these reasons, the PSA’s determination that BIO-13 and BIO-14 would reduce impacts on the southwestern willow flycatcher and Gila woodpecker to less than significant levels is not justified.

Southwestern Willow Flycatcher

The PSA determined that there is moderate potential for the southwestern willow flycatcher to nest and forage at the Project site.⁴³ The PSA further determined that the Project could have significant direct and indirect impacts on the southwestern willow flycatcher and its habitat.⁴⁴ No surveys were conducted to determine the presence or absence of flycatchers in the Project study area.

The PSA incorporates BIO-12 and several other mitigation measures for the Project’s direct and indirect impacts on the southwestern willow flycatcher. BIO-12 requires a pre-activity survey for nesting birds no less than 7 and no more than 3 days prior to initiating project activities. If an active nest is detected, the Applicant’s biologist would establish a 100-foot avoidance buffer around the nest.

BIO-12 does not ensure the Project’s impacts to nesting flycatchers would be less than significant. The southwestern willow flycatcher breeds in dense riparian habitats and there are some periods during which willow flycatchers do not sing.⁴⁵ As a result, detecting presence of the flycatcher can be difficult. The U.S. Geological Survey, Bureau of Reclamation, and U.S. Fish and Wildlife Service have developed a survey protocol for the southwestern willow flycatcher.⁴⁶ The survey protocol distinguishes between general surveys and project-related surveys. Project-related surveys are conducted to determine the presence or absence of willow flycatchers within a site when there is a potential or foreseeable impact to their habitat due to a potential project or change in site management.

The protocol for project-related surveys entails a minimum of 5 surveys using the call-playback technique. These 5 surveys include one survey between May 15-31, two surveys between June 1-24, and two surveys between June 25-July 17.⁴⁷ In contrast, BIO-12 requires only a single survey that would not include implementation of the call-playback technique, and whose timing could coincide with the early or late part of the breeding cycle (depending on the Applicant’s construction schedule). As stated in the southwestern willow flycatcher survey protocol: “[a]

⁴³ PSA, Table 5.2-2.

⁴⁴ PSA, pp. 5.2-98 through -100.

⁴⁵ Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.

⁴⁶ *Id.*

⁴⁷ *Id.*

single survey, or surveys conducted too early or late in the breeding cycle, do not provide definitive data and are of limited value.”⁴⁸

The PSA correctly concludes that increased levels of human presence, noise, vibration, and fugitive dust may cause flycatchers to abandon their nests or breeding territories. Southwestern willow flycatcher breeding territory sizes range from approximately 0.25 to 5.7 acres, with most in the range of 0.5 to 1.2 acres.⁴⁹ As a result, the 100-foot nest avoidance buffer (equivalent to 0.72 acres) required under BIO-12 does not ensure the Project would avoid disturbance activities within a flycatcher breeding territory.

The primary cause of the flycatcher’s decline is loss and modification of habitat.⁵⁰ The PSA estimates the Project would impact 5.04 acres of tamarisk thickets (i.e., potential flycatcher breeding habitat), of which 0.86 acres would be permanently impacted.⁵¹ The PSA does not incorporate compensatory mitigation for these impacts to flycatcher habitat. This issue is exacerbated by the PSA’s failure to require the Applicant to undergo Section 7 consultation with the U.S. Fish and Wildlife Service (“USFWS”) (for impacts to federally listed species), and for the Applicant to obtain a consistency determination from the California Department of Fish and Wildlife (“CDFW”) under Fish and Game Code section 2080.1 (for impacts to state listed species).

Whereas BIO-17 requires compensation or restoration for the Project’s permanent impacts to natural and semi-natural vegetation *communities* (including tamarisk thickets), it does not require compensation for impacts to *habitat*. Habitat is dictated by numerous biotic and abiotic factors beyond vegetation. Therefore, compensation for impacts to a vegetation community is not equivalent to compensation for impacts to habitat.⁵² As discussed in Sogge et al. (2010), there are many tamarisk-dominated and native-dominated habitats in which flycatchers do not breed.⁵³ Therefore, the value of any riparian compensation habitat to the flycatcher is site specific and will depend on the spatial, structural, and ecological characteristics of that particular habitat patch and the potential for flycatchers to colonize and maintain populations within it.⁵⁴ Consequently, the PSA cannot merely assume that preserving or restoring tamarisk thickets elsewhere would mitigate the Project’s permanent impacts on flycatcher habitat. Similarly, although the PSA states that BIO-11 would mitigate the Project’s temporary impacts to habitat, BIO-11 only requires revegetation of temporarily disturbed areas “not subject to long-term use or ongoing vegetation maintenance.” The PSA does not incorporate mitigation for temporarily disturbed areas that are subject to long-term use or ongoing vegetation maintenance, nor does the PSA establish a timeline for completion of the revegetation efforts under BIO-11.

⁴⁸ *Id.*

⁴⁹ U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix +210 pp., Appendices A-O.

⁵⁰ U.S. Fish and Wildlife Service. 2014. Southwestern Willow Flycatcher (*Empidonax traillii extimus*). 5-Year Review: Summary and Evaluation. Phoenix (AZ): U.S. Fish and Wildlife Service, Arizona Ecological Services.

⁵¹ PSA, Table 5.2-5.

⁵² See Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.

⁵³ Sogge MK, Ahlers D, Sferra SJ, 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.

⁵⁴ *Id.*

For the reasons discussed above, the Project’s impacts on the southwestern willow flycatcher would remain potentially significant.

California Black Rail

The California black rail is listed as threatened under the California Endangered Species Act (“CESA”), and it is a fully protected species under California Fish and Game Code. The California black rail has been detected at the Obsidian Butte Ponds, which are located approximately 600 feet from the proposed generating facility and approximately 350 feet from a proposed laydown and parking area.⁵⁵ As the PSA acknowledges, the California black rail is sensitive to human disturbance and the species will abandon its nest if disturbed before completing a clutch.⁵⁶ Disturbance that causes a California black rail to abandon its nest constitutes “take,” which is not authorized for fully protected species, except for 5 types of projects. The Project is not one of those 5 types of projects.⁵⁷ This means that any Project activities that directly or indirectly cause take of a California black rail would violate California law. Furthermore, under CESA, any impacts to the species must be “fully mitigated” through measures that are: (a) roughly proportional in extent to the impact, and (b) capable of successful implementation.⁵⁸

The PSA fails to incorporate mitigation that would prevent take of California black rails and that would ensure any impacts on the species are fully mitigated. Disturbance activities associated with the Project (e.g., noise, light, and human activity) have the potential to cause significant impacts on the California black rail. The PSA incorporates two mitigation measures for these disturbance activities: BIO-13 and BIO-14. However, both of these measures are specifically focused on impacts to the Yuma Ridgway’s rail. Whereas habitat of the two rail species often overlaps, Staff cannot assume that implementation of the Yuma Ridgway’s rail mitigation in BIO-13 and BIO-14 would also mitigate impacts on the California black rail. For example, although BIO-13 requires pre-activity surveys and construction monitoring for Yuma Ridgway’s rail, no surveys or construction monitoring is required for the California black rail. As a result, and because the PSA does not incorporate mitigation to “fully mitigate” impacts on the black rail (e.g., to offset habitat degradation caused by the Project’s noise, light, and human activity), impacts on the California black rail remain potentially significant.

Burrowing Owl Impacts

The PSA at page 5.2-104 states: “[t]t is likely that up to 12 burrows [occupied by burrowing owls] occur in the project disturbance footprint and could be permanently impacted during construction.” This is reflected in PSA Table 5.2-3, which indicates 12 “potentially permanently impacted burrows” and 3 “burrows not permanently impacted” within the Biological Study Area

⁵⁵ California Natural Diversity Database. 2024. RareFind 5 [Internet]. California Department of Fish and Wildlife [July 2, 2024].

⁵⁶ PSA, p. 5.2-63.

⁵⁷ California Department of Fish and Wildlife. 2024. Fully Protected Animals. [accessed 2024 Jul 23]. <https://wildlife.ca.gov/Conservation/Fully-Protected>

⁵⁸ Cal. Fish & Game Code § 2081.

(“BSA”). As discussed below, the PSA does not accurately report the number of burrowing owls and burrows that would be permanently impacted by the Project.

The PSA’s account of 12 burrows that “could be permanently impacted during construction” only reflects the burrows in the BSA, which was confined to the Project footprint (and perhaps a very small buffer around the proposed energy facility and well pads).⁵⁹ Thus, the PSA suggests that no burrowing owls at burrows outside of the Project footprint would be permanently impacted. This includes burrows located along the very edge of areas that will be subject to substantial disturbance activities, including: (a) 5 burrows located along the edge of the construction camps; (b) a burrow located along the edge of the energy facility; (c) burrows that coincide with the gen-tie line pull site at Garst Road and McKendry Road; (d) 3 burrows located along the edge of the laydown areas; and (e) 6 burrows located along the edge of well pads.⁶⁰ While the Applicant may be able to avoid direct impacts to burrows at these locations, it is unreasonable to assume none of the associated owls would be permanently impacted by disturbance activities in the immediate vicinity of their burrows.

As reported in the PSA, removal or disturbance of vegetation, increased noise and vibration, increased human presence, night lighting, and exposure to fugitive dust can negatively impact burrowing owls and cause them to abandon their burrows.⁶¹ Drilling activities, for example, will occur 24 hours per day, will require bright flood lights, and will involve approximately 17 people working at each drilling site for 8 weeks.⁶² The owls that occupy burrows within a few feet of these drilling sites would undoubtedly abandon their burrows (e.g., owls at BUOW_03 through BUOW_08)⁶³ if not passively relocated (evicted from their burrows) prior to construction. Owls located at further distances (e.g., BUOW_02) could also be affected by the drilling activities. Indeed, all owls within the BSA and 656-foot survey buffer have the potential to be significantly impacted by the Project. To ensure adequate mitigation for the Project’s impacts on burrowing owls, the COC/MM BIO-15 should incorporate post-construction surveys to determine how many owl burrows or territories were ultimately affected by the Project.⁶⁴ Data from these surveys should then be used to inform the compensatory mitigation requirements in COC/MM BIO-16.

CDFW’s 2012 Staff Report on Burrowing Owl Mitigation defines an “occupied site” or “occupancy” as a site (burrow) that has been occupied by at least one burrowing owl within the last three years.⁶⁵ The PSA adopts CDFW’s definition.⁶⁶ CDFW determined that owls within 656 feet of Project-related activities could be indirectly impacted by the Project.⁶⁷ Accordingly, the PSA incorporates COC/MM BIO-15, which states:

⁵⁹ See TN 254836, Figure 1. See also TN 253189, Figures 2-7aR through Figure DA4.0-1bR.

⁶⁰ See TN 254836, Figures 6a and 6b. See also TN 253189, Figures 2-7aR through Figure DA4.0-1bR.

⁶¹ PSA, pp. 5.2-102 and -103.

⁶² PSA, p. 3-19.

⁶³ See TN 254836, Figure 6a.

⁶⁴ A before-after-control-impact (BACI) study would be most accurate and would provide the CEC with valuable scientific information that could be applied to future projects.

⁶⁵ California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. p. 25.

⁶⁶ PSA, p. 5.2-103.

⁶⁷ TN 254836.

“Nests shall not be disturbed during the breeding season (1 February through 31 August). During the breeding season, the DB(s) or Biological Monitor(s) shall implement a no disturbance buffer of 656 feet (200 meters) around active burrows. During the non-breeding season, the DB(s) or Biological Monitor(s) shall implement a no-disturbance buffer of 328 feet (100 meters) around inhabited burrows.”

There are two important implications of this COC/MM. First, virtually every component of the Project (including laydown areas, borrow pits, and construction camps) is located within 656 feet of a burrow occupied by burrowing owls.⁶⁸ Therefore, the Applicant will not be able to initiate construction activities during the breeding season. Second, because the same Project components are also located within 328 feet of an occupied burrow, the Applicant will not be able to conduct construction activities during the non-breeding season while also maintaining a 328-foot buffer. Consequently, if the Project is approved, the Applicant will need to passively relocate (i.e., evict) a substantial number of burrowing owls (i.e., far more than suggested in the PSA).

The PSA acknowledges that passive relocation can significantly burrowing owls, and that some owls may need to be passively relocated multiple times.⁶⁹ The PSA states: “[w]hile construction of replacement burrows in nearby off-site areas would have some potential benefits to the species, it is likely that burrowing owls would select available, natural burrow sites if available near their previously occupied territories. Because of the [construction] timeframe, this behavior could necessitate multiple passive relocation events for individual birds. Each relocation event would stress the birds and exposes them to increased predation risk, thermal stress, and potential territorial disputes.”⁷⁰ The PSA does not identify mitigation that would (or could) be implemented to reduce this significant impact to burrowing owls.

Other Special-Status Birds

The PSA provides a list of special-status bird species that “were considered for this analysis as having a moderate or higher potential to nest and forage in the project area.”⁷¹ However, the PSA’s subsequent analysis of Project impacts only addresses some (about half) of the species. The following species were excluded from the PSA’s analysis, without justification:

- Redhead
- Northern harrier
- White-tailed kite
- Gull-billed tern
- Yellow-breasted chat
- Least bittern
- Loggerhead shrike
- Black skimmer

⁶⁸ TN 254836, Figures 6a and 6b.

⁶⁹ PSA, p. 5.2-104.

⁷⁰ PSA, p. 5.2-103.

⁷¹ PSA, pp. 5.2-93 and -94.

- Yellow-headed blackbird

The PSA then provides a list of special-status bird species that are “known winter residents at the Salton Sea, and were considered for this analysis as having a moderate or higher potential to forage in the project area, but are not known to nest in the area.”⁷² The PSA does not provide species-specific analysis of impacts to these species.

For many bird species, the Imperial Valley provides important habitat due to its geographic relationship with the Salton Sea. For example, cultivated landscapes in the Imperial Valley provide wintering habitat for up to 50 percent of the *global population* of mountain plovers.⁷³ Agricultural fields in Imperial Valley are also known to be a core wintering area for sandhill cranes,⁷⁴ long-billed curlews,⁷⁵ and white-faced ibis.⁷⁶

The PSA provides conflicting information on the significance of Project impacts to agricultural lands that provide core habitat for special-status birds. The PSA first states: “[g]iven the diversity of birds in the region, the loss of habitat for protected bird species would be considered a significant impact.”⁷⁷ The PSA then states that the Project’s impacts to agricultural habitat “would result in a small reduction compared to the 500,000 acres total agricultural lands in Imperial County.”⁷⁸ For this reason, the PSA makes the determination that impacts to foraging habitat for special-status bird species would be less than significant at both the Project and cumulative project level. The PSA makes the same determination with respect to Project impacts on bats and wildlife movement.

Cumulative Impacts to Foraging Habitat

The PSA’s analysis of cumulative impacts is fatally flawed because it applies two different geographic scales to the analysis. Specifically, the PSA’s analysis considers the cumulative impacts from other projects within 6 miles of the proposed Project.⁷⁹ However, in analyzing impacts to habitat, the PSA considers the total amount of agricultural land throughout all of Imperial County. It is not possible to accurately analyze cumulative impacts by using one geographic scale (i.e., Imperial County) to analyze the abundance of remaining habitat, but a

⁷² PSA, p. 5.2-94.

⁷³ Wunder MB, Knopf FL. 2003. The Imperial Valley of California is critical to wintering Mountain Plovers. *J. Field Ornithol.* 74:74-80. *See also* Shuford WD, Gardali T, editors. 2008. *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California.* Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

⁷⁴ Shuford WD, Warnock N, Molina KC, Mulrooney B, Black AE. 2000. *Avifauna of the Salton Sea: Abundance, distribution, and annual phenology.* Contribution No. 931 of Point Reyes Bird Observatory. Final report for EPA Contract No. R826552-01-0 to the Salton Sea Authority, 78401 Highway 111, Suite T, La Quinta, CA 92253.

⁷⁵ Fellows SD, Jones SL. 2009. *Status assessment and conservation action plan for the Long-billed Curlew (Numenius americanus).* U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication, FWS/BTP-R6012- 2009, Washington, D.C.

⁷⁶ Shuford WD, Hickey CM, Safran RJ, Page GW. 1996. A review of the status of the White-faced Ibis in winter in California. *Western Birds* 27:169-96.

⁷⁷ PSA, p. 5.2-96.

⁷⁸ PSA, p. 5.2-105.

⁷⁹ PSA, p. 5.2-75.

much smaller scale (i.e., 6-mile radius of the Project) to analyze other projects that would impact habitat. To provide valid analysis, the CEC must apply a consistent geographic scale to the cumulative impacts analysis. If the geographic scope is a 6-mile radius of the proposed Project, Staff must identify the amount of agricultural habitat that would remain within a 6-mile radius of the proposed Project. Conversely, if the geographic scope is Imperial County, Staff must identify habitat impacts from all past, present, and probable future projects in Imperial County.

Another fatal flaw with the PSA's cumulative impacts analysis is that it excludes impacts from the Lithium Valley Specific Plan Project ("LVSP"). The LVSP encompasses approximately 51,786 acres of land adjacent to the southeastern shore of the Salton Sea.⁸⁰ This includes almost all land within the PSA's geographic scope of analysis (i.e., 6-mile radius of the Project).⁸¹ Under the LVSP, most of this land would (or could) be converted to industrial uses.⁸²

Busse et al. (2023) analyzed changes to IID water allocations in Imperial County due to geothermal expansion and lithium production. They estimated that water allocations to agriculture would drop from 2.2 million acre-feet per year ("MAFY") in 2022, to potentially as low as 1.1 MAFY in 2050.⁸³ Assuming a direct correlation between water allocations to agriculture and amount of agricultural habitat, the amount of agricultural habitat available to birds could be cut in half by 2050.

Whereas the PSA is correct in stating that there are approximately 500,000 acres of total agricultural lands in Imperial County, in 2021 there were only 460,258 acres in Imperial Valley (with the remainder in the Palo Verde and Bard/Winterhaven regions).⁸⁴ Of these 460,258 acres, 48,000 to 74,000 acres⁸⁵ would be used to grow sugarcane for the California Ethanol Project, which was approved by the Imperial County Board of Supervisors in 2013.⁸⁶ The California Ethanol Project will have a significant adverse impact on the Imperial Valley population of burrowing owls and other bird species that mainly forage in low-growing agricultural fields.⁸⁷ As stated in the Applicant's Water Supply Assessment (TN 256894), the Imperial County Board of Supervisors has targeted up to 25,000 acres of agricultural lands in Imperial Valley for solar energy development, with additional losses occurring as the result urban development. Based on this information, reasonably foreseeable future projects would result in the loss of approximately

⁸⁰ Dudek. 2023 Dec. Initial Study for the Imperial County Lithium Valley Specific Plan.

⁸¹ Rick Engineering Company. 2024 Feb. Lithium Valley Final Baseline Report. Figure 2-4.

⁸² Imperial County, Planning & Development Services Department. 2023. Notice of Preparation to prepare a Program Environmental Impact Report (PEIR) for the proposed Lithium Valley Specific Plan Project. Figure 2.

⁸³ Busse MM, Stokes-Draut J, Camarillo MK, Millstein D, Slattery M, McKibben M, Dobson P, Stringfellow W. 2023. Environmental Impact Assessment of Lithium Recovery from Geothermal Brines in the SS-KGRA: An Overview. GRC Transactions, Vol. 47. <https://escholarship.org/content/qt6689d2tg/qt6689d2tg.pdf?t=s8sl5e>

⁸⁴ Imperial County. 2022. 2021 Agricultural Crop & Livestock Report. [accessed 2024 Jul 13]. <https://agcom.imperialcounty.org/wp-content/uploads/2022/10/2021-CR-Draft-Final.pdf>

⁸⁵ The EIR for the Project stated 74,000 acres, but a recent news release from the company states 48,000.

⁸⁶ This project remains active. See CE+P. 2023 Apr 3. CE+P to Partner with International Agribusiness Experts Booker Tate Ltd. on Sugar Valley Energy Sugarcane and Ethanol Production [news release]. [accessed 2024 Jul 12]. <https://www.californiaethanolpower.com/news/ce-p-to-partner-with-international-agribusiness-experts-booker-tate-ltd-on-sugar-valley-energy-sugarcane-and-ethanol-production>.

⁸⁷ Letter from Kennon A. Corey to Armando G. Villa re: Notice of Preparation of a Draft Environmental Impact Report for the Sugarcane and Sweet Sorghum to Ethanol, Electricity and Bio-Methane Facility, December 19, 2012.

124,000 acres (27%)⁸⁸ of habitat for special-status birds in the Imperial Valley. This constitutes a significant cumulative impact.

The PSA asserts that mitigation implemented for other projects would avoid the potential for cumulatively considerable impacts. The PSA states:

“Determinations regarding the significance of impacts of the related projects on biological resources would be made on a case-by-case basis. If necessary, the applicants of the related projects would be required to implement appropriate mitigation measures. Therefore, implementation of related projects and other anticipated growth in Imperial County would not combine with the proposed project to result in cumulatively considerable impacts on biological resources. With the implementation of these COC/MM, cumulative impacts to the region would be reduced to less than significant.”⁸⁹

There are two main problems with the PSA’s reasoning. First, although individual projects may be required to mitigate for significant impacts on a project-by-project basis, they often result in residual impacts. Residual impacts also occur when the lead agency determines that a project would have impacts, but that those impacts are less than significant and no mitigation is required. When residual impacts from related projects are combined, they can create a significant cumulative impact. This is exemplified by residual impacts to burrowing owls from cumulative projects identified in the PSA:⁹⁰

1. The FEIR for the Energy Source Mineral ATLIS Project did not include compensatory habitat mitigation for impacts to approximately 30 acres of burrowing owl habitat, despite presence of burrowing owls on the project site.⁹¹
2. The IS/MND for the Hudson Ranch New Well 13-4 Project (called “Geo Hudson Ranch” in the PSA) determined that “loss of burrowing owl foraging habitat would be less than significant given the abundance of suitable foraging habitat in the lands surrounding the project site and throughout the region.” No habitat compensation was required.⁹²
3. The FEIR for the VEGA SES 2, 3, and 5 Solar Energy Project did not require compensatory habitat mitigation for impacts to burrowing owls and numerous other special-status species that occur, or potentially occur, at the project site.⁹³
4. The FEIR for the Hell’s Kitchen determined the project would remove potential breeding habitat for burrowing owls; however, compensatory habitat mitigation was not required.⁹⁴

⁸⁸ LVSP (51,000 ac) + CA Ethanol (48,000 ac) + solar development (25,000 ac),

⁸⁹ PSA, p. 5.2-137.

⁹⁰ PSA, Table 1-2.

⁹¹ County of Imperial. 2021 Sep. Final Environmental Impact Report for the Energy Source Mineral ATLIS Project. <https://www.icpds.com/planning/environmental-impact-reports/final-eirs>

⁹² County of Imperial. 2023 Apr. Initial Study and Mitigated Negative Declaration for the Hudson Ranch New Well 13-4 Project. <https://ceqanet.opr.ca.gov/2023040436>

⁹³ County of Imperial. 2023 Aug. Final Environmental Impact Report for the VEGA SES 2, 3 and 5 Solar Energy Project. <https://www.icpds.com/planning/environmental-impact-reports/final-eirs>

⁹⁴ County of Imperial. 2023 Dec. Final Environmental Impact Report for the Hell’s Kitchen PowerCo 1 and LithiumCo 1 Project. <https://www.icpds.com/planning/environmental-impact-reports/final-eirs>

Thus, none of these projects provided compensatory mitigation for impacts to burrowing owl habitat. Indeed, it is my experience that Imperial County (as the CEQA lead agency) rarely requires compensatory mitigation for impacts to burrowing owl habitat, and when compensatory mitigation is required, it compensates for only a fraction of the impacted habitat. For example, Imperial County required the Mount Signal and Calexico Solar Farm Projects to provide 71.5 acres of compensatory mitigation in exchange for impacts to 4,144 acres of burrowing owl habitat.⁹⁵ Habitat loss and degradation are the greatest threats to burrowing owls in California.⁹⁶ As a result, the cumulative loss of burrowing owl habitat in Imperial County constitutes a potentially significant cumulative impact that cannot be dismissed by the CEC. Indeed, contrary to the PSA's determination that there are no cumulatively considerable impacts (e.g., to the burrowing owl), there is substantial evidence that the burrowing owl population in Imperial County has experienced significant declines due to inadequate mitigation.⁹⁷

Second, even when appropriate mitigation measures have been adopted for a project, there often is insufficient oversight to ensure the mitigation measures are implemented successfully, or at all. For example, a report issued by the U.S. Government Accountability Office found that the USFWS lacks: (a) a systematic means of tracking the monitoring reports it requires in biological opinions and does not know the extent of compliance with these requirements; (b) a systematic method for tracking cumulative take of most listed species.⁹⁸

Two co-investigators and I reviewed CEQA documents associated with approximately 75 projects that had burrowing owl mitigation requirements.⁹⁹ We then conducted an in-depth assessment of the fate of burrowing owl mitigation at 3 of the project sites, one of which was the Abengoa Mojave Solar Project, for which the CEC was the lead agency. Our key findings were as follows:

1. Lead agencies did not have a reliable system in place to track required mitigation.
2. Lead agencies lack transparency and accountability.
3. Lead agencies failed to incorporate appropriate mitigation measures.
4. Lead agencies continue to apply outdated mitigation guidelines.
5. Lead agencies fail to incorporate specific and enforceable mitigation measures.

⁹⁵ County of Imperial. 2011 Nov. Draft Environmental Impact Report for the Mount Signal and Calexico Solar Farm Projects. pp. 4.4-38 and -47.

⁹⁶ Shuford WD, Gardali T (editors). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

⁹⁷ Center for Biological Diversity and six others. 2024 Mar 5. Petition Before the California Fish and Game Commission to List California Populations of the Western Burrowing Owl (*Athene cunicularia hypugaea*) as Endangered or Threatened Under the California Endangered Species Act. [accessed 2024 Jul 22]. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=221396&inline>

⁹⁸ U.S. Government Accountability Office. 2009 May. Endangered Species Act: The U.S. Fish and Wildlife Service Has Incomplete Information about Effects on Listed Species from Section 7 Consultations. GAO-09-550. [accessed 2024 Jul 23]. <https://www.gao.gov/products/gao-09-550>

⁹⁹ Cashen S, Menzel S, Portman C. 2017 Oct 25. Burrowing Owl Mitigation in California. Technical Report prepared for the Burrowing Owl Preservation Society. 42 p.

6. CEQA documents improperly deferred mitigation.
7. CEQA documents failed to establish appropriate performance standards for burrowing owl mitigation measures.
8. Habitat-based mitigation being incorporated into CEQA documents is insufficient to stem the decline of California's burrowing owl population.
9. CEQA has proven to be an inadequate mechanism for conserving burrowing owls and their habitat.

Overall, we found that none of the projects fully complied with their burrowing owl mitigation requirements. With respect to the Abengoa Mojave Solar Project, we found numerous instances of non-compliance with the burrowing owl mitigation measures adopted in the Commission Decision (TN 58496). These included, but were not limited to, the following:

1. The Project proponent failed to prepare a Burrowing Owl Monitoring and Mitigation Plan ("Plan") prior to conducting preconstruction surveys, as required in the CEC's Conditions of Certification (TN 58496). Although the developer's consultant prepared a draft version of the Plan after completion of the preconstruction surveys, there was no evidence the Plan had been prepared in consultation with the CPM and California Department of Fish and Game, as required.
2. The CEC was unable to provide evidence that a final Burrowing Owl Monitoring and Mitigation Plan was ever prepared or implemented.
3. Although the CEC incorporated enforcement mechanisms for the burrowing owl mitigation, several of the mitigation measures were never implemented. For example, although preconstruction burrowing owl surveys were required as mitigation, those surveys were not conducted across significant portions of the project site prior to clearing, grubbing, and grading.
4. No artificial burrows were installed in accordance with the Commission Decision.
5. The developer was required to provide a scant 118.2 acres of compensatory habitat as mitigation for impacts to approximately 1,765 acres of burrowing owl habitat. Mitigation imposed by the CEC stated: "[c]ompensatory habitat shall be suitable for occupation by burrowing owls and preserved and managed in perpetuity for this purpose." Portions of the habitat compensation lands mitigation acquired by the developer appeared to be unsuitable for occupation by burrowing owls due to relatively dense shrub cover, and at the time of our assessment (2017), there were no records of burrowing owls occurring at the compensation site.

Project Impacts to Avian Habitat

Temporary Impacts

The project would result in a "temporary" loss of approximately 800.27 acres of agricultural foraging habitat for special-status birds.¹⁰⁰ The PSA determined this impact would be less than

¹⁰⁰ PSA, p. 5.2-96.

significant because: “[u]pon completion of construction, temporarily impacted agricultural fields would revert to previous uses.”¹⁰¹ This statement is not reflected in the PSA’s Project Description or Staff’s proposed Conditions of Certification. Although COC/MM BIO-11 requires a “plan” that identifies Project impact areas that would be converted back to their previous land use, it does not *require* any or all of the impacted agricultural fields to revert back to agricultural production. Furthermore, the Land Use chapter of the PSA suggests it may not be possible to fully restore the borrow pits, and that all temporary work areas may be “left in conditions requested by the landowner.”¹⁰² As a result, the PSA’s assertion that the Project’s borrow pits, construction camps, and laydown and parking areas would have only a temporary impact on habitat for special-status birds is not supported by evidence.

The Project includes construction of geothermal pipelines through agricultural fields. These pipelines would block farm equipment, thereby resulting in isolated pockets of land within a given agricultural parcel (Figure 2, below). It is reasonable to assume that agricultural practices might be abandoned in these isolated pockets of land due to access issues and inefficiencies associated with farming small, isolated areas. This issue has implications on the PSA’s calculation of permanent impacts to agricultural habitat.

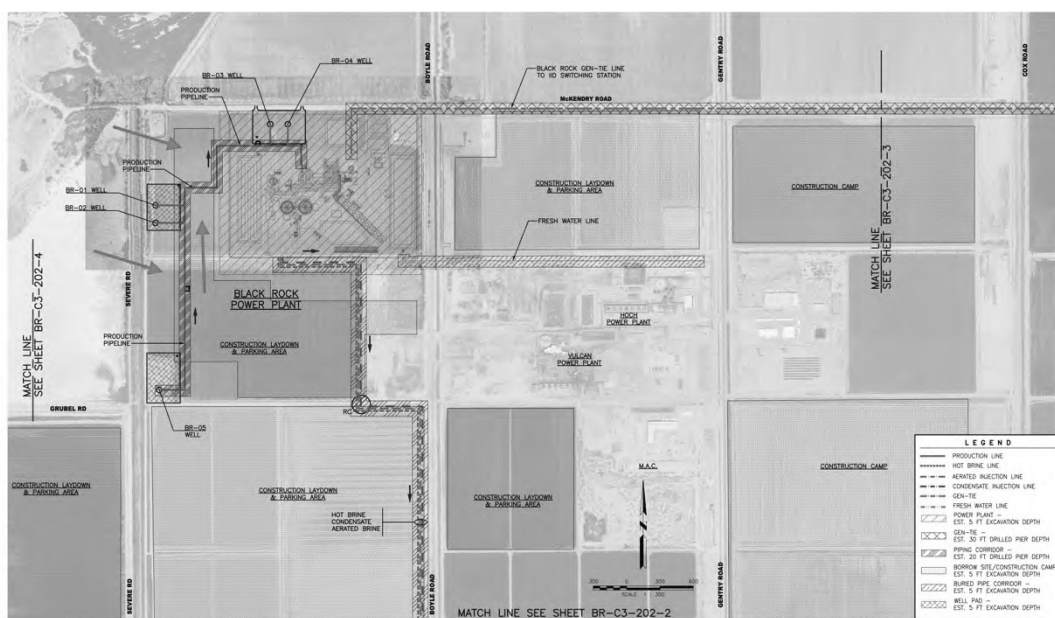


Figure 2-7aR
Depth of Excavation,
Black Rock Geothermal Project
Imperial County, California

Jacobs

Figure 2. Examples of agricultural areas (red arrows) that would become isolated pockets of land within the matrix of Project facilities. The Project’s pipeline (red and blue lines) and power plant (hatched lines) would block or hinder access for farm equipment.

¹⁰¹ PSA, p. 5.2-96.

¹⁰² PSA, p. 5.8-13.

Permanent Impacts

The PSA identifies habitat loss as a potentially significant impact to special-status birds. The PSA then makes the determination that BIO-17 would mitigate the Project's permanent impacts to habitat.¹⁰³ BIO-17 states: "[p]ermanent impact to all natural and semi-natural vegetation communities, including but not limited to, tamarisk thickets, Typha herbaceous alliance, iodine bush shrub, and desert holly scrub, shall be compensated through habitat compensation and/or habitat restoration at a minimum of a 1:1 ratio." Whereas this measure would mitigate the Project's impacts on vegetation communities, it would not necessarily mitigate the Project's impacts on *habitat*. Habitat is defined as: "the resources and conditions present in an area that produce occupancy—including survival and reproduction—by a given organism."¹⁰⁴ Therefore, if the habitat compensation lands do not produce occupancy of the species impacted by the Project, the habitat impacts remain unmitigated. For example, iodine bush scrub that is acquired under BIO-17 would have no habitat value to the snowy plover unless it has the same habitat qualities as the iodine bush scrub impacted by the Project (e.g., low vegetative cover in close proximity to water, with minimal human activity, and within the geographic range of the species).

The PSA does not impose any geographic limits on the location of the compensation land required under BIO-17. This is a significant omission because many of the special-status species that would experience habitat loss due to the Project have very narrow geographic ranges (e.g., Yuma Ridgway's rail, snowy plover, black skimmer, redhead). The issue is exacerbated by the following clause in BIO-17: "[c]onservation or restoration lands can be included with Burrowing Owl Habitat Preservation and Enhancement lands (BIO-16) if it can be shown that these areas also provide equivalent coverage of one or more natural and semi-natural vegetation communities impacted by the project." This clause suggests that although the Project would impact multiple vegetation communities, it would be permissible for the Applicant to provide compensation for only one of the impacted communities.

Night Lighting

Construction Lighting

The PSA's description of night lighting during construction of the Project is limited to the statement that "[a]rea lighting during construction will be strategically located for safety and security."¹⁰⁵ This statement is vague and does not provide the information needed to assess the significance of lighting impacts on wildlife. The PSA fails to discuss how often night lighting would be used during the 29-month construction period, where night lighting might be used (e.g., geothermal plant site, drilling sites, pipeline route), the types of light fixtures that might be used, and how much light (luminous flux) would be required for safety and security. In general, a substantial amount of high-intensity lighting is required for construction work involving potentially hazardous equipment and tools, especially at a relatively large construction site with

¹⁰³ PSA, p. 5.2-106.

¹⁰⁴ See Hall L, Krausman P, Morrison M. 1997. The Habitat Concept and a Plea for Standard Terminology. Wildlife Society Bulletin 25(1):173-182.

¹⁰⁵ PSA, p. 3-18.

hundreds of construction workers and numerous pieces of heavy equipment operating simultaneously.

The PSA fails to identify how much night lighting would be installed at the construction laydown/parking areas and at the construction camps. Even if lighting is not installed at those locations, wildlife could be significantly impacted by vehicle headlights, flashlights, and other types of lights that cause dynamic light changes in nearby habitats.¹⁰⁶ Lights that go on and off at irregular intervals (e.g., vehicle headlights) disrupt the nocturnal behavior of some species and has the potential to affect population dynamics. For example, Baker and Richardson (2006) found that dynamic light changes such as those generated by flashlights, car headlights, or motion detector lights caused green frogs (*Rana clamitans*) to produce fewer advertisement calls and move more frequently.¹⁰⁷ In dark-adapted nocturnal frogs, returning the eyes to a dark-adapted state after photopigment bleaching caused by a brief, bright flash of light can take hours.¹⁰⁸

A construction laydown/parking area and borrow pit will be located immediately south of the Hazard Tract, which is known to provide habitat for special-status species such as the Yuma Ridgway's rail. An additional laydown/parking area would be located near the Obsidian Butte Ponds, which provides habitat for the Yuma Ridgway's rail, California black rail, and least bittern.¹⁰⁹ Night lighting from these and other laydown/parking areas (e.g., those located north of W Schrimpf Road) could have a significant impact on rails in nearby habitats. The PSA fails to incorporate mitigation for this impact.

Operational Lighting

The PSA provides the following analysis of lighting impacts during the operational phase of the Project:

“Lighting would be shielded and pointed downward and away from the habitat outside of the project area to minimize impacts to nesting birds and other nearby wildlife, and to reduce the potential for avian and bat attraction and collision. All lighting that is not required to be on during nighttime hours would be controlled with sensors or switches operated such that the lighting would be on only when needed. Implementation of these applicant-proposed design measures would allow areas surrounding the project to remain un-illuminated (dark) most of the time, thereby minimizing the amount of lighting potentially visible off site and minimizing the potential for lighting impacts to proximate wildlife. These features

¹⁰⁶ Longcore T, Rich C. 2016. Artificial night lighting and protected lands: Ecological effects and management approaches. Natural Resource Report NPS/NRSS/NSNS/NRR—2016/1213. National Park Service, Fort Collins, Colorado.

¹⁰⁷ Baker BJ, Richardson JM. 2006. The effect of artificial light on male breeding-season behaviour in green frogs, *Rana clamitans melanota*. Canadian Journal of Zoology 84(10):1528-1532.

¹⁰⁸ Buchanan BW. 2006. Observed and potential effects of artificial night lighting on anuran amphibians. Pages 192–220 in C. Rich and T. Longcore, editors. Ecological consequences of artificial night lighting. Island Press, Washington, D.C.

¹⁰⁹ California Natural Diversity Database. 2024. RareFind 5 [Internet]. California Department of Fish and Wildlife [July 2, 2024]. See also eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. [accessed 2024 Jul 18]. <https://ebird.org/explore>

have been incorporated into VIS-2 as described in Section 5.15 Visual Resources and BIO-4 (General Conservation Measures). With implementation of lighting COC/MM, impacts to special-status wildlife would be reduced to less than significant.”¹¹⁰

Whereas shielding lights and pointing them downward would minimize “astronomical light pollution” (whereby stars and other celestial bodies are washed out by light that is either directed or reflected upward), it could still result in significant levels of “ecological light pollution” (artificial light that alters the natural patterns of light and dark in ecosystems).¹¹¹

In addition to the substrate receiving the light, the amount of ecological light pollution generated by the Project will be a function of several variables including the distribution, abundance, luminosity, height, angle, and type of light fixtures. The PSA lacks information on most of these variables and does not provide photometric analysis demonstrating impacts to wildlife in areas surrounding the Project would be less than significant. Photometric analysis has been provided for other projects under the CEC’s jurisdiction,¹¹² and it is necessary to analyze the intensity, distribution and spectral composition of light within the Project area so as to understand the Project’s lighting impacts on wildlife.

Providing a light pollution control plan, as required under VIS-2, does not ensure impacts would be less than significant, especially in absence of performance standards for the plan. Similarly, the provision in BIO-4 requiring only “the lowest illumination necessary for human safety” does not ensure impacts would be less than significant because the PSA does not quantify the illumination level necessary for human safety, nor does it identify how often lighting would be turned off because it “is not required” for safety purposes. However, based on the PSA’s Project Description, it appears night lighting required for human safety would be located throughout most of the Project site.¹¹³

Noise Impacts

The PSA (p. 5.9-6) states the following regarding noise levels during construction of the Project:

“Demolition and construction activities for the project would occur in five phases (demolition/site clearing, concrete pouring, steel erection, mechanical, and cleanup) and take approximately 29 months to complete. Each phase uses a combination of construction equipment. The noise level from each phase is between 78 and 89 dBA Leq at 50 feet. Demolition and site cleanup phases generate the highest noise level of 89 dBA Leq at 50 feet.”

This information appears to have been derived from the “composite site noise level” data provided in AFC Table 5.7-5, which also provides data on noise levels from “loudest construction equipment.” For example, Table 5.7-5 indicates that a rock drill and truck would be

¹¹⁰ PSA, p. 5.2-116.

¹¹¹ Longcore T, Rich C. 2004. Ecological Light Pollution. *Frontiers in Ecology and the Environment* 2:191-198.

¹¹² For example, see Willow Rock Energy Storage Center SAFC Volume II-Appendix 513A-514A, Appendix 5.13B. (TN 254810)

¹¹³ PSA, p. 3-21.

the loudest pieces of construction equipment during the cleanup phase. According to Table 5.7-5, these pieces of construction equipment would produce noise levels of 98 dBA and 91 dBA, respectively, resulting in a composite site noise level of 89 dBA. The AFC does not explain how the composite site noise level data provided in Table 5.7-5 were calculated, including any assumptions that were built into the calculations.¹¹⁴ As a result, the composite site noise level data provided in the AFC and PSA are unsubstantiated.

Noise from multiple sources at the same location results in louder levels than a single source alone. Because the decibel is measured on a logarithmic scale, noise levels cannot be added by standard addition. Two noises of equal level (± 1 dBA) combine to raise the noise level by 3 dBA. When the two noises differ by 2 or 3 dBA, 2 dBA is added to the higher decibel value. When the two noises differ by 4 to 9 dBA, 1 dBA is added to the higher decibel value. Therefore, if the Project's rock drill and truck would produce noise levels of 98 dBA and 91 dBA, the combined noise level would be 99 dBA, *not* 89 dBA as suggested in the AFC and PSA.

It's possible that the "composite site noise levels" provided in AFC Table 5.7-5 was derived from a noise model that incorporated a usage factor for each piece of construction equipment.¹¹⁵ The usage factor that is input into the model can have a substantial effect on the model's output. As a result, if the "composite site noise levels" provided in AFC Table 5.7-5 incorporated usage factors, the Applicant needs to provide and justify those usage factors.

Noise Impacts Analysis

The analysis in the Noise and Vibration chapter of the PSA is directed solely at human receptors, the nearest of which ("SBR") is located one mile north of the Project site.¹¹⁶ Despite providing an extensive discussion of how noise generated by the Project could significantly impact special-status species, the PSA provides no information on Project noise levels at areas occupied (or potentially occupied) by those species. This deficiency impairs the ability to understand the significance of Project impacts on special-status species. It also hinders the ability to assess the probability that the Applicant would be able to successfully implement BIO-14 (requiring attenuation measures to prevent noise in excess of 60 dBA during the breeding season, and 80 dBA during the non-breeding season, at marshland habitat).

To reduce noise-related impacts on wildlife, staff proposes NOISE-4 (Operational Noise Restrictions), NOISE-5 (Occupational Noise Survey), NOISE-6 (Construction and Demolition Noise Restrictions), NOISE-7 (Steam Blow Restrictions), and NOISE-8 (Pile Driving). The PSA acknowledges these measures are proposed for human receptors, but it concludes the

¹¹⁴ The AFC cites EPA (1971) and Barnes et al. (1976) as the sources of the data provided in Table 5.7-5. The "loudest construction equipment" data provided in Table 5.7-5 is consistent with the data in EPA (1971). It is unclear if the "composite site noise level" provided in Table 5.7-5 was derived from EPA (1971) or Barnes et al. (1976). The latter document is not available online and I did not find composite site noise level data in EPA (1971).

¹¹⁵ The usage factor is the amount of time that the equipment is predicted to produce noise, expressed in percent. For example, a usage factor of 0.40 means the equipment is predicted to operate 40% (24 min) of every construction hour.

¹¹⁶ PSA, p. 5.9-1.

mitigation measures would also prevent significant noise impacts on special-status animals.¹¹⁷ As discussed below, the PSA conclusion is not justified.

The Biology chapter of the PSA states that NOISE-4: “would ensure operation of the project would not cause ambient noise levels from generating facility operations to exceed 43 dBA.”¹¹⁸ However, NOISE-4 actually states: “[t]he project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project at R-1 will not cause noise levels due to power plant operation to exceed 39 dBA Leq during the nighttime hours and 43 dBA Leq during the daytime hours.” The receptor R-1 is located 2.5 miles from the proposed power plant.¹¹⁹ Thus, NOISE-4 applies to power plant operational noise levels 2.5 miles from the Project site, not to the overall ambient noise levels from generating facility operations. This is a fatal error because it means that NOISE-4 would not mitigate potentially significant noise impacts on special-status animals that occupy habitats in the immediate vicinity of the generating facility.

Yuma Ridgway’s rails, California black rails, and least bitterns have been detected at the Obsidian Butte Ponds, which are located approximately 600 feet from the northwest corner of the proposed power plant. Therefore, if NOISE-4 allows operational noise to be 43 dBA Leq at receptor S-1, the noise level would be 69.9 dBA Leq at the Obsidian Butte Ponds.¹²⁰ This would exceed the breeding season noise impact threshold established in BIO-14.

The PSA at page 5.2-117 states: “[d]uring normal steady-state operations, an 80 dBA threshold should not be exceeded beyond generating facility boundaries (TN250677).” This information is uninformative without corresponding information on the distance between the noise source(s) and the generating facility boundary (i.e., because sound attenuates 6 dB with each doubling of distance).

NOISE-5 requires an occupational noise survey to identify any noise hazardous areas within the power plant. NOISE-5 further requires a report of the survey results and, if necessary, proposed mitigation measures to be employed in order to comply with state and federal regulations pertaining to occupational noise. NOISE-5 does not establish any restrictions on noise levels generated by the power plant. Moreover, compliance with state and federal regulations regarding worker exposure to hazardous noise levels can be achieved through personal protective equipment. Therefore, NOISE-5 does not reduce noise-related impacts on birds or other wildlife.

NOISE-6 sets temporal limitations on heavy equipment operation and noisy demolition and construction work relating to any project features, including linear facilities and pile driving. NOISE-6 states that these noisy activities shall be restricted to between 7:00 a.m. and 7:00 p.m. on weekdays, and between 9:00 a.m. and 6:00 p.m. on Saturdays. Construction would not be allowed on Sundays. As stated in the PSA:

¹¹⁷ For example, PSA, pp. 5.2-117 and -118.

¹¹⁸ PSA, p. 5.2-118.

¹¹⁹ PSA, p. 5.9-1.

¹²⁰ <https://www.omnicalculator.com/physics/distance-attenuation#inverse-square-law>

“Rails (including Yuma Ridgway’s Rail and California black rail) primarily communicate during the first three hours of daylight (0.5 hours before civil sunrise through 2.5 hours after civil sunrise) and during the final three hours of daylight. The report further recommends that **loud noises in areas adjacent to occupied rail habitat should be avoided during those time windows each day**, especially during the courtship, pair-bonding, egg-laying, and incubation periods (1 March – 30 June).”¹²¹

The temporal limitations established in NOISE-6 would not be sufficient to avoid significant impacts to rails (and other special-status birds) because it allows noisy construction activities during the first and final 3 hours of daylight when rails communicate (Table 1, below). Furthermore, NOISE-6 lacks an appropriate mechanism for ensuring noisy construction activities would not impact special-status rail species because it defines “noisy” as “noise that has the potential to cause project-related noise complaints.”¹²² Because the nearest human residence is located 2.5 miles from the Project site,¹²³ it is unlikely that any Project construction activity, no matter how loud, would trigger a noise complaint and the restrictions established in NOISE-6. Furthermore, it should not be incumbent on members of the public to prevent the Project from having significant impacts on wildlife (i.e., through the complaint process established in NOISE-2), especially given the Applicant’s ability to use standard noise models to predict construction noise levels in the surrounding areas. Figure 3 (below) provides an example of noise modeling that was conducted for the proposed Willow Rock Energy Center, which is under the CEC’s jurisdiction (TN 254814, Figure 5.7-4). Comparable analysis is necessary to: (a) understand the Project’s construction and operations noise impacts on wildlife; and (b) assess the feasibility of the various noise mitigation measures in the PSA.

Table 1. First and last three hours of daylight at the Black Rock Project site in 2025.¹²⁴

Date	First 3 hours (a.m.)	Final 3 hours (p.m.)
March 1	5:45 to 8:45	3:05 to 6:05
June 30	4:08 to 7:08	4:24 to 7:24
December 21	6:15 to 9:15	2:07 to 5:07

¹²¹ PSA, p. 5.2-199. [emphasis added].

¹²² PSA, p. 5.9-16.

¹²³ PSA, p. 5.9-1.

¹²⁴ U.S. Navy, Astronomical Applications Department. Civil Twilight for 2025. [accessed 2024 Jul 12]. https://aa.usno.navy.mil/calculated/rstt/year?ID=AA&year=2025&task=2&lat=33.1826&lon=-115.6017&label=Elmore+North&tz=8&tz_sign=-1&submit=Get+Data.

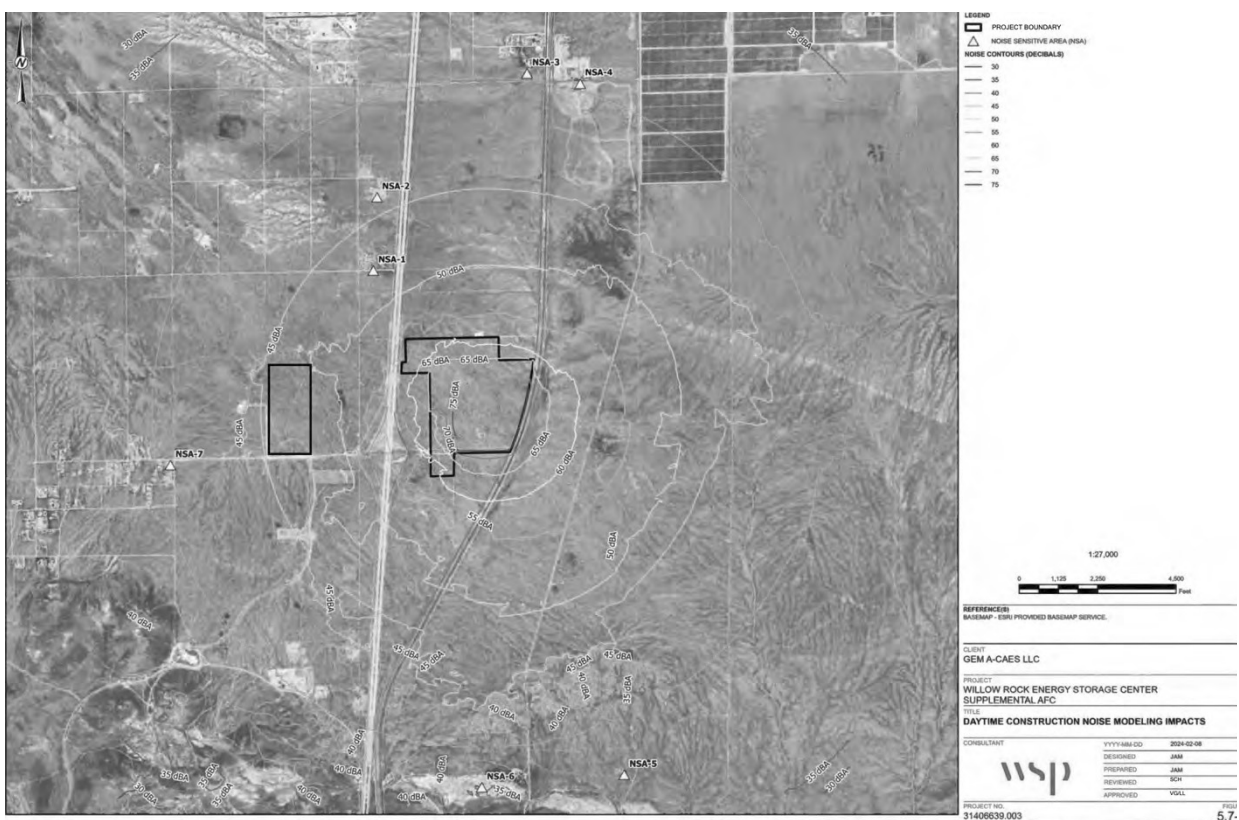


Figure 3. Results of construction noise modeling for the Willow Rock Energy Project.

NOISE-7 requires the Applicant to limit noise from steam blows by requiring the use of a rock muffler or other forms of effective silencers. NOISE-8 requires the Applicant to perform pile driving in a manner to reduce the potential for any project-related noise and vibration complaints. However, neither measure establishes permissible thresholds for noise levels generated by steam blows and pile driving. As a result, NOISE-7 and NOISE-8 would not ensure noise-related impacts on wildlife are less than significant.

Operational Noise Levels

The PSA states: “[t]he project’s operational noise levels would be 70 dBA Leq at 200 feet, assuming day-to-day operating conditions, including all equipment necessary to generate and transmit electricity to the grid.”¹²⁵ This statement appears inconsistent with the PSA’s statement that: “[d]uring normal steady-state operations, an 80 dBA threshold should not be exceeded beyond generating facility boundaries (TN250677).”¹²⁶

The operational noise values provided in the AFC (and subsequently incorporated into the PSA) are unsubstantiated and thus appear speculative. For example, the AFC does not provide information to substantiate the statement that the Project’s cooling tower would produce sound

¹²⁵ PSA, p. 5.9-8.

¹²⁶ PSA, p. 5.2-117.

levels of 70 dBA at 200 feet.¹²⁷ Statements such as “[i]t is expected that during normal steady-state operations the 80 dBA threshold will not be exceeded beyond plant boundaries” suggest at least some level of uncertainty.¹²⁸ The reason(s) for the uncertainty need to be explained, and the noise estimate should be accompanied by confidence intervals that depict the possible range of noise levels. Furthermore, some of the values provided in the AFC have considerable variation. For example, the AFC states:

“Sound levels during maintenance activities may vary. The highest sound levels are associated with temporary steam venting through a rock muffler during upset or startup/shutdown conditions. These were observed to vary between approximately 68 dBA at 300 feet to 71 dBA at 4,000 feet. As these events are infrequent, temporary, and finite, they are not expected to pose a significant impact.”¹²⁹

A sound level of 71 dBA at 4,000 feet is over 18 times louder than a sound level of 68 dBA at 300 feet. The AFC does not explain where the two values came from and thus why they differ significantly. In addition, it is unclear whether the two values represent: (a) the range of sound levels observed at other facilities, or (b) the range of sound levels that would be generated by the Project’s steam venting, depending on the specific maintenance activities.

In addition to NOISE-4 through NOISE-8, the PSA references BIO-14 as a measure that would mitigate noise impacts on wildlife. The PSA states:

“In addition, staff proposed BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan) which would require the preparation of a noise assessment and abatement plan that ensures noise levels at marshes occupied by marshland species never exceed 60 decibels during the breeding season or 80 decibels during the nonbreeding season. With the implementation of these noise COC/MM, construction impacts to birds from noise would be reduced to less than significant.”¹³⁰

The PSA fails to provide evidence that the performance standards specified in BIO-14 would be feasible to achieve. The Applicant has provided different values for the sound level of the Project’s steam blows. The AFC states that when vented through a rock muffler, the steam blows “were observed to vary between approximately 68 dBA at 300 feet to 71 dBA at 4,000 ft.”¹³¹ Response to CURE Data Request 234 states “[s]ilenced high pressure steam blows are likely on the order of 90 dBA at 100 feet.”¹³² If the steam blow is 71 dBA at 4,000 ft, it would take 14,193 feet for the sound to attenuate to 60 dBA and 1,419 feet to attenuate to 80 dBA.¹³³ If the steam blow is 90 dBA at 100 feet, it would take 3,162 feet to attenuate to 60 dBA and 316 feet to attenuate to 80 dBA.

¹²⁷ AFC, p. 5.7-9.

¹²⁸ TN 250677, Data Adequacy Supplement, Set 2.

¹²⁹ AFC, pp. 5.7-9 and -10.

¹³⁰ PSA, p. 5.2-119.

¹³¹ AFC, p. 5.2-27. (TN 249723)

¹³² TN 253937.

¹³³ Omni Calculator. 2014 Jul 11. Distance Attenuation Calculator. [accessed 2024 Jul 16].

<https://www.omnicalculator.com/physics/distance-attenuation#what-is-the-spl-sound-pressure-level>

Habitat occupied by the Yuma's Ridgway's rail is located approximately 1,900 feet from the rock muffler.¹³⁴ Therefore, even if the lower steam blow value (90 dBA at 100 feet) is applied, the Project's steam blows would exceed the 60-dBA noise threshold established in BIO-14.¹³⁵ Although BIO-14 states: "[i]f necessary, additional noise reduction measures shall be implemented to reduce the maximum noise level to below 60 dBA at the edge of occupied habitat," the PSA fails to provide evidence that there are feasible options for achieving that standard, especially given that the steam blow has already been "silenced" by the rock muffler.¹³⁶

The severity of a noise impact on wildlife depends not only on the intensity and frequency (e.g., continuous or intermittent) of the noise stimulus, but also on how much the noise stimulus exceeds ambient conditions.¹³⁷ For example, Barber et al. (2009) reported that noise levels 3 dBA above background (ambient) levels can result in wildlife having a 50 percent reduced listening area¹³⁸ and a 30 percent reduced alerting distance.¹³⁹ A noise level that is 10 dBA above the background level can result in a 90 percent reduced alerting distance. In its analysis of impacts of human disturbance on the conspecific California Ridgway's rail, the USFWS determined that adverse impacts to the species would occur if a project's noise levels exceeded the ambient noise level by 3 dBA.¹⁴⁰ The PSA fails to analyze, or incorporate mitigation for, potentially significant impacts on rails due to Project noise that exceeds ambient noise levels by more than 3 dBA.

Well Noise

The Project includes installation of 4 production wells near the intersection of McKendry Road and Severe Road. These wells would be located approximately 900 feet (well BR-01) to 2,350 feet (well BR-04) from the Obsidian Butte Ponds.

¹³⁴ TN 253189.

¹³⁵ <https://www.omnicalculator.com/physics/distance-attenuation#inverse-square-law>

¹³⁶ If a steam blow is 71 dBA at 4,000 feet, it would be 77.5 dBA at 1,900 feet. Noise barriers have the potential to reduce received sound levels by 5 to 15 dB, depending on barrier height, length, and distance from both source and receiver. *See* Federal Transit Administration. 2018. Transit Noise and Vibration Impact Assessment Manual. FTA Report 0123. p. 16.

¹³⁷ Barber JR, Crooks KR, Fristrup KM. 2009. The costs of chronic noise exposure for terrestrial organisms. *Trends in ecology & evolution* 25(3):180-189. *See also* Francis CD, Barber JR. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. *Frontiers in Ecology and the Environment* 11(6):305-313. *See also* Dooling RJ, Popper AN. 2007. The effects of highway noise on birds. California Department of Transportation Division of Environmental Analysis 74, Sacramento, CA.

¹³⁸ Defined as "the area of a circle whose radius is the alerting distance. Listening area is the same as the 'active space' of a vocalization, with a listener replacing the signaler as the focus, and is pertinent for organisms that are searching for sounds." (Barber et al. 2009)

¹³⁹ Defined as "the maximum distance at which a signal can be perceived. Alerting distance is pertinent in biological contexts where sounds are monitored to detect potential threats." (Barber et al. 2009)

¹⁴⁰ *For example, see* U.S. Fish and Wildlife Service. 2020 Sep 30. Formal Section 7 Consultation on the Lower Walnut Creek Restoration Project, Contra Costa County, California (Corps File No: 2019-00431S). Reference No: 08FBDT00-2020-F-0038.

Construction the geothermal wells and associated pipeline would generate noise during drilling, purging of the well, and production testing.¹⁴¹ Once the well is operational, the pipeline would generate flow noise, primarily at control valves and flow restricting devices, but also from traps installed within supply lines that automatically eject condensate along with a small amount of steam.¹⁴² Although the PSA and AFC provide information on noise levels associated with drilling, neither document provides information on noise associated with purging of the well and production testing. In addition, neither document provides information on the operational noise levels of the wells and associated pipeline. This is a significant deficiency because purging of the well and production testing can generate extremely loud noise levels.¹⁴³

The PSA at page 5.2-100 states:

“BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan) would require the preparation of a noise assessment and abatement plan that ensures noise levels at marshes occupied by marshland species never exceed 60 decibels during the breeding season or 80 decibels during the non-breeding season. These COC/MM would be applicable in areas adjacent to habitat for Yuma Ridgway rail and other marshland species, along W Schrimpf Road and Morton Bay, which includes the location of the northernmost Construction Laydown and Parking and Borrow Pit sites. Since the Construction Laydown and Parking and Borrow Pit sites do not fall under CEC’s authority, BIO-13 and BIO-14 are included as MM for project components requiring permits/authorizations by local or other jurisdictions. ”

This language in the PSA suggests BIO-14 would not apply to construction activities occurring in close proximity to the Obsidian Butte Ponds. As a result, impacts on the Yuma Ridgway’s rail and other special-status birds that occupy the ponds would not be reduced to less than significant levels.

Avian Collisions and Electrocutions

The PSA’s analysis of impacts associated with the Project’s gen-tie line focuses on the electrocution hazard to birds, although Staff appears to recognize that power lines also pose a collision hazard.¹⁴⁴ While both collisions and electrocutions at power lines are significant threats to birds, substantially more birds are killed by collisions than by electrocutions.¹⁴⁵

¹⁴¹ Hunt M. 1998. Environmental Noise Issues Associated with Geothermal Development. In: Proceedings of The 20th New Zealand Geothermal Workshop 1998. Geothermal Institute, University of Auckland.

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ PSA, p. 5.2-137: “*The Morton Bay, Elmore North, and Black Rock projects would minimize potential avian collision and electrocution with staff’s proposed BIO-20 (Avian Collision Deterrent Proposal and Monitoring Plan).*”

¹⁴⁵ Manville AM. 2005. Bird strikes and electrocutions at power lines, communication towers, and wind turbines: state of the art and state of the science—next steps toward mitigation. USDA Forest Service General Technical Report PSW-GTR-191. *See also* Loss SR, Will T, Marra PP. 2014. Refining estimates of bird collision and electrocution mortality at power lines in the United States. *PloS one* 9(7):e101565.

The PSA determined that impacts from operation of the Project's gen-tie line would be reduced to less than significant through implementation of BIO-20.¹⁴⁶ BIO-20 states:

"The project owner shall prepare an Avian Collision Deterrent Proposal and Monitoring Plan in consultation with a working group of interested agency personnel, including personnel from CDFW and USFWS. This plan shall incorporate Suggested Practices for *Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) guidelines and provide specific details on design, placement, and maintenance of line markers, as well as the associated analysis requested."

The Avian Power Line Interaction Committee ("APLIC") has released two sets of guidelines to reduce avian fatalities caused by power lines: one that addresses avian electrocutions (APLIC 2006) and one that addresses avian collisions (APLIC 2012).¹⁴⁷ While BIO-20 requires an Avian Collision Deterrent Proposal and Monitoring Plan that incorporates the 2006 APLIC guidelines (for electrocutions), it does not require the Applicant to implement the 2012 APLIC guidelines (for collisions).

The 2012 APLIC guidelines discuss engineering aspects that can influence the risk of avian collisions with power lines. For example, power lines that parallel primary bird flight paths pose less risk than a perpendicular orientation. The core strategy for reducing the threat of new power lines involves spatial analysis, a field assessment, and an avian risk assessment.¹⁴⁸ During the field assessment, data are collected on variables that affect the collision risk, such as the flight paths and core use areas of the site's bird species. These data, along with data collected during the spatial analysis, can then be used to help choose a power line route that would reduce the collision risk to birds. Although the PSA acknowledges that the Project site is located in an area with a high diversity and abundance of birds, there were no efforts to conduct the spatial analysis, field studies, and avian risk assessment recommended in the 2012 APLIC guidelines.

Consistency with Applicable LORS

Executive Order 12996 and the National Wildlife Refuge System Improvement Act of 1997

The PSA concludes that the Project is consistent with Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System) and the National Wildlife Refuge System Improvement Act of 1997. The PSA states: "[t]he NWR does not have a comprehensive conservation plan completed at the time of this AFC. The proposed project would include COC/MM to reduce impacts to any portion of the National Wildlife Refuge System and ensure compliance (Section 5.2.2.2)."¹⁴⁹ The statement that the NWR does not have a comprehensive conservation plan is false. In March 2014, the USFWS released the Final Comprehensive

¹⁴⁶ PSA, p. 5.2-116.

¹⁴⁷ Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.
https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf

¹⁴⁸ *Id.*, pp 64 through 74.

¹⁴⁹ PSA, Table 5.2-7.

Conservation Plan (“CCP”) for the Sonny Bono Salton Sea NWR and Coachella Valley NWR.¹⁵⁰ The CCP is designed to guide the management of the Refuges over the next 15 years (i.e., through 2029).¹⁵¹ A revised and recirculated PSA needs to address how the Project would affect the USFWS’s ability to achieve the various goals and objectives discussed in the CCP.

The PSA fails to explain why the proposed COCs/MMs would enable compliance with Executive Order 12996 and the National Wildlife Refuge System Improvement Act of 1997, both of which focus on: (a) the conservation of fish, wildlife, plants and their habitats; and (b) ensuring that the biological integrity, diversity, and environmental health of the System are maintained. The Project includes a power plant, geothermal wells, and gen-tie line ROW along the border of the NWR. Even with successful implementation of the COCs/MMs proposed in the PSA, the Project would result in indirect impacts (e.g., noise) to the NWR. These impacts would negatively affect the biological integrity of the NWR and the conservation of fish, wildlife, plants and their habitats. While some wildlife-dependent recreational activities are compatible with Executive Order 12996 and the National Wildlife Refuge System Improvement Act of 1997, geothermal development activities are not.

The USFWS’s ability to achieve habitat objectives at the Sonny Bono Salton Sea NWR is dependent on the availability of water from IID.¹⁵² In addition, one of the recovery criteria in the Yuma Clapper Rail Recovery Plan is: “Long-term contracts providing for a quality and quantity of water to support the Yuma clapper rail habitats at the Salton Sea are in place. The amount and quality of the water supply should be sufficient to maintain healthy cattail marsh habitat at Sonny Bono Salton Sea NWR and Imperial State Wildlife Area.”¹⁵³ Consequently, a revised and recirculated PSA should discuss how the operational water demand of the three proposed geothermal projects (Elmore North, Morton Bay, and Black Rock) would affect the availability of water for habitat management at the Sonny Bono Salton Sea NWR and Imperial Wildlife Area.

Salton Sea Reclamation Act

The PSA determined the Project would be consistent with the Salton Sea Reclamation Act of 1998. The PSA states: “[t]he proposed project would include COC/MM to reduce impacts to any waters of the U.S. to a less than significant level and ensure compliance (Section 5.2.2.2).” This statement is not accompanied by analysis. As stated in PSA Table 5.2-7, two of the goals of the Salton Sea Reclamation Act are to stabilize the overall salinity of the Salton Sea and stabilize the surface elevation of the Salton Sea. Achieving these goals is dependent on the ability to restore the volume of freshwater flowing into the Sea. The Project does nothing to help stabilize the salinity and surface elevation of the Sea. To the contrary, it would only exacerbate the problem. As discussed in IID’s comment letter to the CEC:

¹⁵⁰ U.S. Fish and Wildlife Service. 2016 Mar. Final Comprehensive Conservation Plan for the Sonny Bono Salton Sea NWR and Coachella Valley NWR. Sacramento: U.S. Fish and Wildlife Service.

¹⁵¹ *Id.*, p. 1-1.

¹⁵² *Id.*, 4-40, -41, 4-84.

¹⁵³ U.S. Fish and Wildlife Service. 2009. Yuma Clapper Rail (*Rallus longirostris yumanensis*) Recovery Plan. Draft First Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico. p. vi.

“Due to the potential loss or reduction of 13,165 AFY of inflow to the Salton Sea and to IID drains with its concurrent environmental impacts, developer should address this issue as well as provide analysis that the project does not negatively impact the IID Water Conservation and Transfer Draft Habitat Conservation Plan (HCP), the existing Section 7 Biological Opinion and the California Endangered Species Act (CESA) Permit 2081 ... An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea.” (TN 251870)

Fish and Game Code Sections 3511, 4700, 5050, and 5515

The PSA determined the Project would be consistent with California Fish and Game Code provisions for “Fully Protected” species. The PSA’s rationale was: “[t]he proposed project would include COC/MM to reduce impacts to FP animal species to a less than significant level and ensure compliance (Section 5.2.2.2).” The PSA’s rationale is misdirected. The standard for compliance with California Fish and Game Code regulations pertaining to fully protected species is much higher than the CEQA standard for mitigation. The PSA must not only ensure that the Project impacts are less than significant, but also that the Project does not result in *any* “take” of a fully protected species. The Project would substantially increase the amount of human activity, noise, and night lighting in close proximity to habitat occupied by fully protected species. As the PSA acknowledges, these anthropogenic forms of disturbance could cause “take” of the Yuma Ridgway’s rail and other fully protected species. For the reasons discussed herein, the COCs/MMs incorporated into the PSA would not prevent take of fully protected species.

CONDITIONS OF CERTIFICATION AND MITIGATION MEASURES

Many of the Conditions of Certification (“COCs”)/Mitigation Measures (“MMs”) proposed in the PSA require the Applicant to develop a “plan” for mitigating the Project’s significant impacts. This approach constitutes deferred mitigation. The following COCs/MMs require formulation of mitigation plans:

- BIO-9 (Desert Pupfish Protection and Relocation Plan)
- BIO-10 (Invasive Species Management Plan)
- BIO-11 (Closure, Revegetation, and Rehabilitation Plan)
- BIO-13 (Yuma Ridgway’s Rail Survey, Management, and Monitoring Plan)
- BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan)
- BIO-15 (Burrowing Owl Exclusion Plan)
- BIO-16 (Burrowing Owl Habitat Preservation and Enhancement Plan)
- BIO-17 (Habitat Restoration and Compensation Plan)
- BIO-19 (Facility Pond Wildlife Escape and Monitoring Plan)
- BIO-20 (Avian Collision Deterrent Proposal and Monitoring Plan)

- BIO-21 (Biological Resources Mitigation Implementation and Monitoring Plan)

Deferring mitigation plans until after completion of the environmental review process—as proposed in the PSA—does not ensure Project impacts would be reduced to less than significant levels. As discussed previously, deferring the Burrowing Owl Monitoring and Mitigation Plan for the Abengoa Mojave Solar Project resulted in significant impacts on the burrowing owl. In addition, deferring the mitigation plans precludes the ability to evaluate the sufficiency of those plans, and thus, whether they would mitigate Project impacts to less than significant levels. It also effectively robs the public and natural resource agencies from being able to submit informed comments pertaining to the COCs/MMs, and from having those comments vetted during the environmental review process.

CEQA specifically prohibits deferral of mitigation measures. However, the specific details of a mitigation measure may be developed after project approval if the lead agency: (1) commits itself to the mitigation, (2) adopts specific performance standards the mitigation will achieve, (3) identifies the type(s) of potential action(s) that can feasibly achieve that performance standard and that will be considered, analyzed, and potentially incorporated in the mitigation measure, and (4) demonstrates in the record that a detailed description of the mitigation measure(s) was impractical or infeasible during the Project’s environmental review phase.¹⁵⁴ The PSA fails to satisfy these requirements for the following reasons:

- 1) The PSA does not commit the CEC to the mitigation. Preparation of a “plan” is not mitigation as defined in the CEQA statutes. In some instances, the COCs/MMs defer to other parties to decide whether mitigation should be implemented. For example, in BIO-20, mitigation decisions pertaining to avian collisions are deferred to an undefined “working group of interested agency personnel.”
- 2) The PSA fails to adopt specific performance standards for the mitigation. In most instances, the PSA either defers formulation of the performance standards (e.g., BIO-11, BIO-16, BIO-17, BIO-21), or requires no performance standards whatsoever for the mitigation (e.g., BIO-9).
- 3) Most of the COCs/MMs describe the types of actions that could be implemented as mitigation. However, without accompanying performance standards, it is difficult to evaluate whether the actions would be effective. In some instances, the COCs/MMs add an additional layer of deferred mitigation. For example, BIO-16 identifies burrow enhancement and “consolidating and enlarging conservation areas known to support burrowing owl populations” as two means of mitigating the Project’s impacts on burrowing owl burrows. However, BIO-16 then states: “[i]f these two options are not available, the mitigation land requirement shall be increased in consultation with CDFW.” BIO-16 does not identify how much the mitigation land requirement would be increased, nor does it provide a range of values that enable the public to understand how much (or little) it might increase.
- 4) Finally, the PSA fails to demonstrate that a detailed description of the COCs/MMs was impractical or infeasible during the Project’s environmental review phase. For example, the foundation of BIO-14 is conducting a noise study to evaluate the maximum predicted

¹⁵⁴ Cal Code Regs. tit. 14 § 15126.4.

noise level within rail habitat. The results of the study would then trigger development of noise attenuation measures, if needed to prevent potentially significant noise levels at the habitat. The only information needed to conduct the noise study required under BIO-14 is data on ambient noise levels at rail habitats (easily collected with a sound meter); construction equipment noise levels (already known); and construction locations (known since release of Applicant's Refinement Package [TN 253189] in November 2023). Therefore, it was practical and feasible for the Applicant to conduct the noise study prior to release of the PSA. Deferring the noise study until after the CEC's decision on the Project not only deprives the public and CEC from knowing how much the Project would alter noise levels at rail habitat, but also whether it will be possible for the Applicant to comply with the noise thresholds established in BIO-14.

BIO-2: Rodenticides

The PSA states (p. 5.2-111) that the Applicant has mentioned the potential use of rodenticides and herbicides. According to the PSA (p. 5.2-112):

“Rodenticides could directly impact Yuma hispid cotton rat through ingestion, resulting in mortality of individuals, which could also result in mortality to young that are unable to survive on their own. Wildlife that prey on rodents, such as birds of prey, wolverines, or desert kit fox, could be exposed to lethal doses of rodenticides through ingestion of contaminated prey items. To ensure impacts to sensitive wildlife species are minimized **BIO-2** (Pesticide Application Requirements) would require licensed applicators and employing best management practices during herbicide use. The applicant would only use herbicides and best management practices that have been approved by CEC and CDFW for use based on evaluations of toxicity, solubility, soil adsorption potential, and persistence in water and soil. In addition, the applicant would use employees or contractors with required applicator licenses/certificates to apply herbicides. With the implementation of these COC/MM, potential impacts to sensitive wildlife species would be reduced to less than significant.”

BIO-2 states: “[r]odent baits with the active ingredients brodifacoum, bromadiolone, difethialone and difenacoum shall not be used without the CPM approval to control rodent populations. These ingredients are very toxic and persistent and have been found widely in non-target wildlife.” The PSA fails to justify why CPM approval of lethal rodenticides would make the impacts on special-status wildlife less than significant. Furthermore, the PSA provides no analysis of the rodenticides that do not contain brodifacoum, bromadiolone, difethialone and difenacoum, nor does the PSA establish that such rodenticides exists. As a result, use of rodenticides at the Project site remains a potentially significant impact on special-status wildlife.

BIO-4: General Conservation Measures

I have three comments pertaining to BIO-4. First, BIO-4 states: “Gen-tie towers shall be well away from IID canals, or the Alamo River, and conductors shall be positioned to avoid aquatic resource impacts.” This condition is vague due to the PSA's failure to quantify “well away from.”

Second, BIO-4 states: “Project activities shall be conducted in a manner that prevents the introduction, transfer, and spread of invasive species, including plants (e.g., weeds) ... Prevention Best Management Practices and guidelines for invasive plants can be found on the California Invasive Plant Council’s website at: <https://www.cal-ipc.org/solutions/prevention/>.” The document referenced in BIO-4 is 50 pages long and contains numerous BMPs. To minimize the potential for the Project to cause significant impacts associated with the introduction and spread of invasive plants, the PSA must identify the specific BMPs that the Applicant would be required to implement. Furthermore, the PSA needs to establish performance standards and monitoring requirements for invasive plants in Project areas that will be subject to Project ground disturbance activities.

Third, BIO-4 states: “[a]ny soil bonding and weighting agents used for dust suppression on unpaved surfaces shall be non-toxic to plants and wildlife.” The PSA fails to identify the specific dust suppressant products that would be permissible. Most dust suppressant products, including varieties that are “non-toxic” to humans, can have adverse effects on the environment.¹⁵⁵ For example, many “non-toxic” dust suppressant products are comprised primarily of salts, which could exacerbate water quality issues that exist in the Project area.

BIO-12: Conduct Pre-Activity Surveys for Nesting Birds

BIO-12 requires a pre-activity survey for nesting birds if Project construction or decommissioning activities must occur during the avian breeding season. BIO-12 states: “[p]re-activity surveys shall be conducted by the approved biologist at the appropriate time of day/night, during appropriate weather conditions.” This statement is too vague to ensure efficacy of the mitigation. BIO-12 must define what would be considered the appropriate time of day and weather conditions.

BIO-12 outlines the methods that should be used during the pre-activity survey. However, given the density of vegetation in the tamarisk thickets and emergent marshes, it appears infeasible for a biologist to be able to locate all bird nests in those vegetation communities, especially given the 7-day timeframe prescribed in BIO-12.

Most marsh birds (e.g., Yuma Ridgway’s rail, Virginia rail, California black rail, and least bittern, among others) construct concealed nests that are nearly impossible to find, especially without damaging the nest. Although BIO-12 states “surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior (e.g., copulation, carrying of food or nest materials, nest building, [etc.],” these indirect cues of nesting are rarely observed with rails due to their habitat and behavior. For example, the Yuma Ridgway’s rail is a secretive marsh bird that is more often heard than seen. As a prey species, Yuma Ridgway’s rails tend to remain hidden in dense vegetation and they do not usually perch above the ground. Their bodies are laterally compressed, and they can steer right and left, which enables them to move efficiently through cattails and other emergent vegetation without detection. When alarmed (e.g., by a bird surveyor), they will run into vegetative cover with their bodies held

¹⁵⁵ US Army Corps of Engineers. 2007. Environmental Evaluation of Dust Stabilizer Products. Vicksburg, Miss: US Army Corps of Engineers, Engineer Research and Development Center, Environmental Laboratory. 58 pp.

horizontal (for concealment).¹⁵⁶ California black rails are even more difficult to detect and monitor for indirect cues of nesting. The CDFW describes this species as “rarely seen,”¹⁵⁷ which is consistent with my experience during many years of marsh bird surveys. On one occasion when I was conducting California black rail surveys for the Point Reyes Bird Observatory (now called Point Blue Conservation Science), a black rail briefly flew above the marsh plain in response to a playback recording. However, on all other occasions, no amount of playback recordings could force the birds to reveal themselves (although they would sometimes vocalize in response to the recordings).

Playback recording are often the only effective technique to determine presence of rail species.¹⁵⁸ However, playback surveys cannot be used to confirm absence of the target species, nor can they be used to identify the precise location of a nest. For example, Conway et al. (1993) found that most radio-marked Yuma clapper rails (now called Ridgway’s rail) did not respond to the playback recordings (year-round response rate averaged 19.2%), especially outside of the early breeding season.¹⁵⁹ Other rail species also have low response rates, ranging from 13% to 50%, depending on the season and other variables.¹⁶⁰ After assessing observer detection probability, Conway et al. (2004) concluded that as many as 15 replicate surveys may be needed to attain >90% detection probability of black rails within potential wetland habitat.¹⁶¹

Although playback recording surveys can be a relatively effective technique for determining presence of rails—if multiple survey replicates are conducted at the appropriate time of day and year—they have drawbacks. For example, one of the problems with playback recording surveys is that they attract birds to the surveyor.¹⁶² On several occasions, I have conducted playback recording surveys, got no vocal response, but as the survey was terminating a bird (usually a Virginia rail and never a black rail) would reveal itself within a few feet of my survey station (probably in response to my movement). While such incidents make it easy to confirm presence of the target species, they make it impossible to determine where the bird came from, and thus, inferences on where a nest site might be located.¹⁶³

The scientific information above has three major implications on the adequacy of the PSA’s COCs/MMS. First, the single survey required under BIO-12 would not be effective in locating rail species and preventing significant impacts to their nests. Even if multiple surveys are conducted, those surveys would be ineffective unless playback recordings are used during the appropriate time of day and year. Second, even if numerous playback recording surveys are conducted, there is no way to “verify that no nesting is occurring,” as suggested in BIO-13

¹⁵⁶ U.S. Fish and Wildlife Service. 2009. Yuma Clapper Rail (*Rallus longirostris yumanensis*) Recovery Plan. Draft First Revision. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, New Mexico.

¹⁵⁷ <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1711&inline=1>

¹⁵⁸ Legare ML, Eddleman WR, Buckley PA, Kelly C. 1999. The effectiveness of tape playback in estimating Black Rail density. The Journal of wildlife management 1:116-125.

¹⁵⁹ Conway CJ, Eddleman WR, Anderson SH, Hanebury LR. 1993. Seasonal changes in Yuma clapper rail vocalization rate and habitat use. The Journal of wildlife management 1:282-290.

¹⁶⁰ Conway CJ, Sulzman C, Raulston BE. 2004. Factors affecting detection probability of California Black Rails. The Journal of Wildlife Management 68(2):360-370.

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ If a rail is repeatedly detected at the same location during multiple surveys, the surveyor can infer that the bird is occupying a nesting territory in that area.

(which allows construction activities within or adjacent to rail habitat during the nesting season if the Applicant first verifies that no nesting is occurring). Third, because there is no way to verify absence of rails and their nests, any construction activities within or adjacent to rail habitat have the potential to cause “take.” This issue is compounded by the fact the Yuma Ridgway’s rail and California black rail are fully protected species under California Fish and Game Code. This means that the PSA must incorporate mitigation that not only ensures impacts are less than significant (under CEQA), but that the Project causes no “take” whatsoever of either species. The COCs/MMs proposed in the PSA are grossly insufficient in that regard: the CEC cannot authorize construction activities in or near habitats known to be occupied by the Yuma Ridgway’s rail (and potentially California black rail), during the breeding season, without causing “take.”

Nest Buffers

BIO-12 states: “[i]f an active nest is detected, a 100-foot avoidance buffer for passerines, and a 500-foot avoidance buffer for raptors or pelicans, shall be established and clearly delineated by staking, flagging, and/or signage.” BIO-12 must establish buffer sizes not only for passerines and raptors, but for all types of birds that have the potential to nest in the Project area (e.g., Anseriformes, Charadriiformes, Trochiliformes, etc.).

BIO-13 (Yuma Ridgway’s Rail Survey, Management, and Monitoring)

BIO-13 states:

“Construction and decommissioning activities within or adjacent to suitable habitat for Yuma Ridgway’s rail (i.e., cattail marsh, Invasive Southwest Riparian Woodland and Shrubland, and North American Arid West Emergent Marsh) shall be scheduled to avoid the nesting and molting flightless season (i.e., February 15 – September 15) unless surveys verify [*sic*] that no nesting is occurring.”

This condition is vague and therefore does not ensure impacts to the Yuma Ridgway’s rail would be minimized. A revised and recirculated PSA must establish what would be considered “adjacent to” by providing a quantifiable distance.

As discussed previously, the Yuma Ridgway’s rail is a secretive bird that constructs well concealed nests. As a result, it is impossible to “verify” that no nesting is occurring. Should Staff continue to believe that it is appropriate to allow construction and decommissioning activities near rail habitats during the breeding season, the PSA must establish how the biologist would verify that no nesting is occurring, including whether the biologist would be required to implement the USFWS’s (2017) *Yuma Ridgway’s Rail Survey Protocol*.¹⁶⁴

BIO-14 (Yuma Ridgway Rail Species Noise Assessment and Abatement Plan)

BIO-14 states: “[t]he project owner, in coordination with the DB(s), shall prepare a Marshland Species Noise Assessment and Abatement Plan prior to activities within 500-foot [*sic*] from

¹⁶⁴ <https://www.fws.gov/sites/default/files/documents/yuma-ridgway%27s-rail-survey-protocol-2017.pdf>

suitable rail habitat.” BIO-14 then establishes construction noise thresholds for the breeding and non-breeding seasons (60 dBA and 80 dBA, respectively). Accordingly, a Marshland Species Noise Assessment and Abatement Plan would not be required if construction activities would not occur within 500 feet of suitable rail habitat. There are three problems with this portion of BIO-14. First, the PSA fails to define what should be considered “suitable rail habitat.” As a result, the Applicant would be allowed to decide what it wants to consider suitable rail habitat (which is not a reliable approach). A map of suitable rail habitat should be prepared by a bona fide expert, and that map should be appended to BIO-14. Although some habitat mapping was conducted for the Applicant’s rail surveys (TN 251681), the mapping was confined to a pre-defined survey area. Consequently, all potential habitat areas within 500 feet of the proposed construction sites have not been mapped.

Second, the PSA fails to recognize the possibility that construction activities more than 500 feet away from rail habitat could produce noise that would not attenuate to below the established thresholds by the time it reaches the rail habitat. For example, a dozer generating a noise level of 88 dBA at 50 feet, would generate a noise level of 68 dBA at 500 feet.¹⁶⁵ Under this scenario, the noise level in the marsh would exceed the 60-dBA threshold, but no Marshland Species Noise Assessment and Abatement Plan would have been required.

Third, although BIO-14 is clearly designed to avoid significant noise impacts to rails, it focuses solely on noise generated by the Project—not the total noise level at marsh habitat when additional sources of noise are considered. The Applicant’s Yuma Ridgway’s rail survey report indicates that existing geothermal power plants in the area (e.g., Elmore and Hudson Ranch) generated noise substantial enough to hamper the rail surveys at some locations. This suggests that noise from the existing power plants, when combined with noise from the Project, could exceed the 60-dBA threshold, even if the Project’s predicted noise level is less than 60 dBA.

BIO-14 states that the following measures shall be implemented to minimize noise impacts on Yuma Ridgway’s rail and other sensitive marshland species during the breeding season:

- “At least 30 days prior to any maintenance activities within 500-feet of marshland habitat, the project owner shall conduct a noise study to evaluate the maximum predicted noise level within rail habitat.”
- “If the maximum predicted noise is less than 60 dBA Leq (Equivalent Continuous Level), no additional measures are required.”

BIO-14 must clarify whether the noise study would be required for any Project activities that could produce loud noise at rail habitat, or only “maintenance activities” (as stated in BIO-14). In addition, BIO-14 needs to identify the “marshland habitat” that would be subject to the noise study, and it must clarify what metric should be used to measure the “maximum predicted noise.” The 60-dBA threshold established in BIO-14 is confusing because the metric Leq is a measure of the average noise level, not the maximum noise level.

¹⁶⁵ See AFC, Table 5.7-7.

The effects of noise on wildlife depend on the nature of the noise stimulus.¹⁶⁶ Chronic and frequent noise can impair an animal's sensory capabilities, thereby masking biologically relevant sounds used for communication, detection of threats or prey, and spatial navigation.¹⁶⁷ Intermittent and unpredictable "impulse" noise stimuli that startle animals are perceived as threats and generate self-preservation responses such as fleeing or hiding.¹⁶⁸

Several metrics can be used to characterize the acoustic environment. Time-averaged values, such as equivalent continuous sound level (Leq), can be extremely informative to describe sounds that are chronic or frequent; however, Leq measurements do not properly characterize loud, infrequent sounds. These infrequent impulse sounds are best characterized by the metric Lmax, which captures the highest instantaneous sound level measured during a specified period. Pile driving and steam blows associated with the Project would produce impulse noise that could cause a Yuma Ridgway's rail (or other sensitive marsh bird) to flush from its nest or other cover, thereby making the bird and eggs more susceptible to predation (which is known to be a significant threat to Ridgway's rails). The PSA's proposal to use an hourly average noise level (60 dBA Leq) as the trigger for additional mitigation is not appropriate for the Project's pile driving and steam blows, which could cause noise levels of 104 dBA at 50 feet.¹⁶⁹ Because these activities would be infrequent and of short duration,¹⁷⁰ they are unlikely to surpass the 60-dBA Leq threshold established in BIO-14. This would result in potentially significant impacts to the Yuma Ridgway's rail (or other sensitive marsh birds). Consequently, the metric used for the 60-dBA (breeding season) and 80-dBA (non-breeding season) thresholds referenced in BIO-14 must be changed from Leq to Lmax. In addition, to enable proper understanding of the Project's noise levels, the PSA needs to clarify: (a) whether the 104 dBA generated by pile driving and steam blows is the Lmax or Leq value; and (b) how long a steam blow from the Project would last.

BIO-15: Burrowing Owl Surveys, Monitoring, Prevention, and Relocation

BIO-15 states:

"The DB(s) or Biological Monitor(s) shall conduct pre-activity surveys during the non-breeding season to determine the presence of colonizing owls that may have recently moved into the site, migrating owls, resident burrowing owls changing burrow use, and young of the year that may still be present and have not dispersed. A minimum of two surveys, spaced at least one week apart, shall be conducted by a qualified biologist, during the nonbreeding season, to ascertain the burrows that require exclusion and the ones that can be protected with no-disturbance buffers. Surveys shall be conducted on a weekly basis until exclusion has occurred."

¹⁶⁶ Francis CD, Barber JR. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. *Frontiers in Ecology and the Environment* 11(6):305-313.

¹⁶⁷ *Id.* See also Ortega CP. 2012. Effects of Noise Pollution on Birds: A Brief Review of Our Knowledge. *Ornithological Monographs* 74:6-22.

¹⁶⁸ *Id.* See also Wright MD, Goodman P, Cameron TC. 2010. Exploring behavioural responses of shorebirds to impulsive noise. *Wildfowl* 60:150-167.

¹⁶⁹ PSA, p. 5.9-7. The PSA indicates these activities could cause noise levels of 104 dBA Leq. Presumably the PSA means Lmax. If 104 dBA Leq is correct, the Lmax value would be significantly higher than 104 dBA.

¹⁷⁰ PSA, p. 5.9-7.

There are two problems with this measure. First, the PSA fails to explain why pre-activity surveys that are confined to the non-breeding season would be sufficient to prevent impacts to burrowing owls during the subsequent breeding season. As stated in CDFW's 2012 Staff Report on Burrowing Owl Mitigation (p. 6):

“Non-breeding season (1 September to 31 January) surveys may provide information on burrowing owl occupancy, but do not substitute for breeding season surveys because results are typically inconclusive. Burrowing owls are more difficult to detect during the non-breeding season and their seasonal residency status is difficult to ascertain. Burrowing owls detected during non-breeding season surveys may be year-round residents, young from the previous breeding season, pre-breeding territorial adults, winter residents, dispersing juveniles, migrants, transients or new colonizers. In addition, the numbers of owls and their pattern of distribution may differ during winter and breeding seasons. However, on rare occasions, non-breeding season surveys may be warranted (i.e., if the site is believed to be a wintering site only based on negative breeding season results).”

Furthermore, burrowing owls are known to move among various “satellite” burrows during the breeding season.¹⁷¹ The Applicant's consultant did not map satellite burrows, nor were the surveys rigorous enough to understand the spatial and temporal use of burrows in the Project area. For these reasons, burrows that are used for breeding when Project construction activities are initiated may differ from those that were detected during the Applicant's 2022 and 2023 surveys.

Second, the PSA determined that burrowing owls passively relocated or otherwise displaced from their burrows due to the Project are likely to colonize other burrows in or near their territories.¹⁷² The PSA fails to incorporate a mechanism for detecting these birds to ensure they did not colonize areas subject to impending construction activities. Given the size and duration of Project construction activities, and the number of burrowing owls that occupy the Project area, BIO-15 needs to be revised to incorporate ongoing survey requirements for the duration of Project construction.

BIO-16: Burrowing Owl Habitat Preservation and Enhancement

BIO-16 requires the Applicant to prepare a Burrowing Owl Habitat Preservation and Enhancement Plan. According to BIO-16:

“The project owner shall enhance or create new burrows at a 2:1 ratio for any active burrow requiring exclusion, closure, and relocation due to project activities. Enhancement may include clearing of debris or enlarging existing mammal burrows. Mitigation lands should be on, adjacent to, or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls' presence.”

¹⁷¹ California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. pp. 21 and 22.

¹⁷² PSA, p. 5.2-103.

The PSA fails to demonstrate feasibility of this measure because it does not establish that it would be possible to conduct the mitigation on lands adjacent to, or proximate to, the impact sites. Most of the burrowing owl burrows in the Project area occur along the banks of IID's drains and canals. IID's comment letter to the CEC states: "[t]he proponents may not use IID's canal or drain banks to access the project site." (TN 251870) If IID will not allow use of the canal and drain banks to access the Project site, it may not allow those banks to be used as mitigation lands, especially because this would place a regulatory burden on IID. Although BIO-16 discusses other options for the mitigation lands, the FSA must identify the feasibility of having the mitigation on lands near the impact site(s). This is important because the success of burrowing owl relocation projects is correlated with the distance between impacted burrows and replacement burrows.¹⁷³

BIO-16 states: "[t]he project owner shall replace foraging habitat that is permanently destroyed shall be replaced [*sic*] at a 1:1 ratio. Foraging habitat shall be suitable for the protection of burrowing owls." The PSA does not clearly articulate which portions of the Project site are considered "foraging habitat," nor does the PSA quantify the amount of foraging habitat that would be permanently destroyed. This precludes understanding of how much replacement habitat would be provided, and thus, the adequacy of BIO-16 in reducing the Project's significant impacts on burrowing owl. In addition to foraging habitat that is permanently destroyed during construction of the Project, BIO-16 should incorporate compensation for habitat that is functionally lost due to edge effects (i.e., its proximity to noise, human activity, and other edge effects that will deter owls from using otherwise suitable habitat).

The FSA must identify the geographic limits for the replacement habitat. In addition, the FSA must establish whether the replacement habitat must be occupied by burrowing owls. This is important because burrowing owls exhibit high fidelity to breeding sites.¹⁷⁴ During 2006–2007, Wilkerson and Siegel (2010) surveyed the entire breeding range of the species in California, except the Channel Islands.¹⁷⁵ The survey replicated the statewide survey conducted between 1991 and 1993, and thus it provided important information on changes in the burrowing owl population throughout the state. Regions where birds were extirpated or nearly extirpated at the time of the first survey (1991–1993), were not repopulated by owls by the time of the second survey (2006–2007), despite the presence of apparently suitable habitat in those regions. This demonstrates burrowing owls do not simply colonize (or recolonize) surrogate habitat after they are displaced from a project site, and thus, the provision of unoccupied habitat does not mitigate the functions of the habitat that is eliminated.

BIO-17: Habitat Conservation or Restoration Plan

The compensatory mitigation required under BIO-17 would mitigate impacts to vegetation communities, which is not equivalent to habitat. The high ecological value of the Project site is a function of its geographic location in relation to the Pacific Flyway, Salton Sea, Sonny Bono

¹⁷³ California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. p. 10.

¹⁷⁴ Rosenberg DK, Haley KL. 2004. The Ecology of Burrowing Owls in the Agroecosystem of the Imperial Valley, California. *Studies in Avian Biology* 27:120-135.

¹⁷⁵ Wilkerson RL, RB Siegel. 2010. Assessing changes in the distribution and abundance of burrowing owls in California, 1993-2007. *Bird Populations* 10:1-36.

Salton Sea National Wildlife Refuge, and Imperial Wildlife Area.¹⁷⁶ However, the PSA does not establish any geographic limits on the location of the habitat compensation land required under BIO-17. As a result, BIO-17 does not ensure significant impacts to habitat would be reduced to less than significant levels.

BIO-20: Avian Collision Deterrent Proposal and Monitoring Plan

BIO-20 requires the Applicant to prepare an Avian Collision Deterrent Proposal and Monitoring Plan. In addition to deferring preparation of the overall plan, the PSA defers establishment of the “impact thresholds” (i.e., number of collision deaths) that would trigger the need for remedial actions. The impact thresholds are the most critical component of the plan because they would be used to decide whether the Project is having a significant impact on bird populations, and thus whether remedial actions are necessary. As a result, the CEC must issue a revised and recirculated PSA that identifies the proposed impact thresholds, and it must provide the scientific basis for selecting those thresholds so they can be thoroughly vetted by the public.

BIO-20 states: “[t]he project owner shall install a CPM-approved marker on the grounding wire of the proposed gen-tie lines. These markers shall be placed and maintained on the highest-bird-use portions of the proposed gen-tie lines.” There are five problems with this measure. First, the PSA does not identify the “highest-bird-use portions” of the proposed gen-tie lines, nor does it identify how those portions would be identified. Second, there is no justification for only putting markers in the “highest-bird-use portions” of the gen-tie lines because the entire Project area is a high-use area for birds.¹⁷⁷ As a result, placing line markers at only select locations would be insufficient to prevent significant impacts to birds. Indeed, even if line markers are installed along the entire gen-tie line, the impact on birds could remain significant.¹⁷⁸ Third, commercially available line marker devices vary in efficacy, depending on site-specific conditions and the species that may encounter the lines.¹⁷⁹ BIO-20 does not require consideration of these variables. Fourth, line marker devices are not effective for birds that regularly fly at night. As stated on page 5.2-6 of the PSA: “Yuma Ridgway rails disperse at night and collide with fences and transmission lines.” Therefore, line markers would not prevent significant impacts to the Yuma Ridgway’s rail. Fifth, BIO-20 fails to incorporate a mechanism for ensuring the line markers are maintained.

This concludes my comments on the PSA.

Sincerely,



Scott Cashen, M.S.
Senior Biologist

¹⁷⁶ PSA, pp. 5.2-16 and -17.

¹⁷⁷ PSA, pp. 5.2-11, -12, -17, and -20. *See also* Smith MA, Mahoney J, Knight EJ, Taylor L, and 9 others. 2022. Bird Migration Explorer. National Audubon Society, New York, NY. [accessed 2024 Aug 29]. birdmigrationexplorer.org.

¹⁷⁸ Barrientos R, Ponce C, Palacin C, Martin CA, Martin B, Alonso JC. 2012. Wire Marking Results in a Small but Significant Reduction in Avian Mortality at Power Lines: A BACI Designed Study. PLoS ONE 7(3):e32569.

¹⁷⁹ Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.

https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf

Scott Cashen, M.S.
Senior Wildlife Biologist

Scott Cashen has 28 years of professional experience in natural resources management. During that time he has worked as a field biologist, forester, environmental consultant, and instructor of Wildlife Management. Mr. Cashen focuses on CEQA/NEPA compliance issues, endangered species, scientific field studies, and other topics that require a high level of scientific expertise.

Mr. Cashen has knowledge and experience with numerous taxa, ecoregions, biological resource issues, and environmental regulations. As a biological resources expert, Mr. Cashen is knowledgeable of the various agency-promulgated guidelines for field surveys, impact assessments, and mitigation. Mr. Cashen has led field investigations on several special-status species, including ones focusing on the yellow-legged frog, red-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and various forest carnivores.

Mr. Cashen is a recognized expert on the environmental impacts of renewable energy development. He has been involved in the environmental review process of over 100 solar, wind, biomass, and geothermal energy projects. Mr. Cashen's role in this capacity has encompassed all stages of the environmental review process, from initial document review through litigation support. Mr. Cashen provided expert witness testimony on several of the Department of the Interior's "fast-tracked" renewable energy projects. His testimony on those projects helped lead agencies develop project alternatives and mitigation measures to reduce environmental impacts associated with the projects.

Mr. Cashen was a member of the independent scientific review panel for the Quincy Library Group project, the largest community forestry project in the United States. As a member of the panel, Mr. Cashen was responsible for advising the U.S. Forest Service on its scientific monitoring program, and for preparing a final report to Congress describing the effectiveness of the Herger-Feinstein Forest Recovery Act of 1998.

AREAS OF EXPERTISE

- CEQA, NEPA, and Endangered Species Act compliance issues
- Comprehensive biological resource assessments
- Endangered species management
- Renewable energy development
- Scientific field studies, grant writing and technical editing

EDUCATION

M.S. Wildlife and Fisheries Science - The Pennsylvania State University (1998)

Thesis: *Avian Use of Restored Wetlands in Pennsylvania*

B.S. Resource Management - The University of California, Berkeley (1992)

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

Mr. Cashen has served as a biological resources expert for over 125 projects subject to environmental review under the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA). As a biological resources expert, Mr. Cashen reviews CEQA/NEPA documents and provides his clients with an assessment of biological resource issues. He then submits formal comments on the scientific and legal adequacy of the project's environmental documents (e.g., Environmental Impact Report). If needed, Mr. Cashen conducts field studies to generate evidence for legal testimony, or he can obtain supplemental testimony from his deep network of species-specific experts. Mr. Cashen has provided written and oral testimony to the California Energy Commission, California Public Utilities Commission, and U.S. district courts. His clients have included law firms, non-profit organizations, and citizen groups.

REPRESENTATIVE EXPERIENCE

Solar Energy

- Abengoa Mojave Solar Project
- Avenal Energy Power Plant
- Beacon Solar Energy Project
- Blythe Solar Power Project
- Calico Solar Project
- California Flats Solar Project
- Calipatria Solar Farm II
- Carrizo Energy Solar Farm
- Catalina Renewable Energy
- Fink Road Solar Farm
- Genesis Solar Energy Project
- Heber Solar Energy Facility
- Imperial Valley Solar Project
- Ivanpah Solar Electric Generating
- Maricopa Sun Solar Complex
- McCoy Solar Project
- Mt. Signal and Calexico Solar
- Panoche Valley Solar
- San Joaquin Solar I & II
- San Luis Solar Project
- Stateline Solar Project
- Solar Gen II Projects
- SR Solis Oro Loma
- Vestal Solar Facilities
- Victorville 2 Power Project
- Willow Springs Solar

Geothermal Energy

- Casa Diablo IV Geothermal
- East Brawley Geothermal
- Mammoth Pacific 1 Replacement
- Orni 21 Geothermal Project
- Western GeoPower Plant

Wind Energy

- Catalina Renewable Energy
- Ocotillo Wind Energy Project
- SD County Wind Energy
- Searchlight Wind Project
- Shu'luuk Wind Project
- Tres Vaqueros Repowering Project
- Tule Wind Project
- Vasco Winds Relicensing Project

Biomass Facilities

- CA Ethanol Project
- Colusa Biomass Project
- Tracy Green Energy Project

Other Development Projects

- Cal-Am Desalination Project
- Carnegie SVRA Expansion Project
- Lakeview Substation Project
- Monterey Bay Shores Ecoresort
- Phillips 66 Rail Spur
- Valero Benecia Crude By Rail
- World Logistics Center

Project Management

Mr. Cashen has managed several large-scale wildlife, forestry, and natural resource management projects. Many of the projects have required hiring and training field crews, coordinating with other professionals, and communicating with project stakeholders. Mr. Cashen's experience in study design, data collection, and scientific writing make him an effective project manager, and his background in several different natural resource disciplines enable him to address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

Wildlife Studies

- Peninsular Bighorn Sheep Resource Use and Behavior Study: (*CA State Parks*)
- "KV" Spotted Owl and Northern Goshawk Inventory: (*USFS, Plumas NF*)
- Amphibian Inventory Project: (*USFS, Plumas NF*)
- San Mateo Creek Steelhead Restoration Project: (*Trout Unlimited and CA Coastal Conservancy, Orange County*)
- Delta Meadows State Park Special-Status Species Inventory: (*CA State Parks, Locke*)

Natural Resources Management

- Mather Lake Resource Management Study and Plan – (*Sacramento County*)
- Placer County Vernal Pool Study – (*Placer County*)
- Weidemann Ranch Mitigation Project – (*Toll Brothers, Inc., San Ramon*)
- Ion Communities Biological Resource Assessments – (*Ion Communities, Riverside and San Bernardino Counties*)
- Del Rio Hills Biological Resource Assessment – (*The Wyro Company, Rio Vista*)

Forestry

- Forest Health Improvement Projects – (*CalFire, SD and Riverside Counties*)
- San Diego Bark Beetle Tree Removal Project – (*SDG&E, San Diego Co.*)
- San Diego Bark Beetle Tree Removal Project – (*San Diego County/NRCS*)
- Hillslope Monitoring Project – (*CalFire, throughout California*)

Biological Resources

Mr. Cashen has a diverse background with biological resources. He has conducted comprehensive biological resource assessments, habitat evaluations, species inventories, and scientific peer review. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and forest carnivores.

REPRESENTATIVE EXPERIENCE

Biological Assessments/Biological Evaluations (“BA/BE”)

- Aquatic Species BA/BE – Reliable Power Project (*SFPUC*)
- Terrestrial Species BA/BE – Reliable Power Project (*SFPUC*)
- Management Indicator Species Report – Reliable Power Project (*SFPUC*)
- Migratory Bird Report – Reliable Power Project (*SFPUC*)
- Terrestrial and Aquatic Species BA – Lower Cherry Aqueduct (*SFPUC*)
- Terrestrial and Aquatic Species BE – Lower Cherry Aqueduct (*SFPUC*)
- Terrestrial and Aquatic Species BA/BE – Public Lands Lease Application (*Society for the Conservation of Bighorn Sheep*)
- Terrestrial and Aquatic Species BA/BE – Simon Newman Ranch (*The Nature Conservancy*)
- Draft EIR (Vegetation and Special-Status Plants) - Wildland Fire Resiliency Program (*Midpeninsula Regional Open Space District*)

Avian

- Study design and Lead Investigator - Delta Meadows State Park Special-Status Species Inventory (*CA State Parks: Locke*)
- Study design and lead bird surveyor - Placer County Vernal Pool Study (*Placer County: throughout Placer County*)
- Surveyor - Willow flycatcher habitat mapping (*USFS: Plumas NF*)
- Surveyor - Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects (*Ducks Unlimited/USGS: San Pablo Bay*)
- Study design and Lead Investigator - Bird use of restored wetlands research (*Pennsylvania Game Commission: throughout Pennsylvania*)
- Study design and surveyor - Baseline inventory of bird species at a 400-acre site in Napa County (*HCV Associates: Napa*)
- Surveyor - Baseline inventory of bird abundance following diesel spill (*LFR Levine-Fricke: Suisun Bay*)

- Study design and lead bird surveyor - Green Valley Creek Riparian Restoration Site (*City of Fairfield: Fairfield, CA*)
- Surveyor - Burrowing owl relocation and monitoring (*US Navy: Dixon, CA*)
- Surveyor - Pre-construction burrowing owl surveys (*various clients: Livermore, San Ramon, Rio Vista, Napa, Victorville, Imperial County, San Diego County*)
- Surveyor - Backcountry bird inventory (*National Park Service: Eagle, Alaska*)
- Lead surveyor - Tidal salt marsh bird surveys (*Point Reyes Bird Observatory: throughout Bay Area*)
- Surveyor - Pre-construction surveys for nesting birds (*various clients and locations*)

Amphibian

- Crew Leader - Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys (*USFS: Plumas NF*)
- Surveyor - Foothill yellow-legged frog surveys (*PG&E: North Fork Feather River*)
- Surveyor - Mountain yellow-legged frog surveys (*El Dorado Irrigation District: Desolation Wilderness*)
- Crew Leader - Bullfrog eradication (*Trout Unlimited: Cleveland NF*)

Fish and Aquatic Resources

- Surveyor - Hardhead minnow and other fish surveys (*USFS: Plumas NF*)
- Surveyor - Weber Creek aquatic habitat mapping (*El Dorado Irrigation District: Placerville, CA*)
- Surveyor - Green Valley Creek aquatic habitat mapping (*City of Fairfield: Fairfield, CA*)
- GPS Specialist - Salmonid spawning habitat mapping (*CDFG: Sacramento River*)
- Surveyor - Fish composition and abundance study (*PG&E: Upper North Fork Feather River and Lake Almanor*)
- Crew Leader - Surveys of steelhead abundance and habitat use (*CA Coastal Conservancy: Gualala River estuary*)
- Crew Leader - Exotic species identification and eradication (*Trout Unlimited: Cleveland NF*)

Mammals

- Principal Investigator - Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)

- Scientific Advisor –Study on red panda occupancy and abundance in eastern Nepal (*The Red Panda Network: CA and Nepal*)
- Surveyor - Forest carnivore surveys (*University of CA: Tahoe NF*)
- Surveyor - Relocation and monitoring of salt marsh harvest mice and other small mammals (*US Navy: Skagg's Island, CA*)
- Surveyor – Surveys for Monterey dusky-footed woodrat. Relocation of woodrat houses (*Touré Associates: Prunedale*)

Natural Resource Investigations / Multiple Species Studies

- Scientific Review Team Member – Member of the scientific review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.
- Lead Consultant - Baseline biological resource assessments and habitat mapping for CDF management units (*CDF: San Diego, San Bernardino, and Riverside Counties*)
- Biological Resources Expert – Peer review of CEQA/NEPA documents (*various law firms, non-profit organizations, and citizen groups*)
- Lead Consultant - Pre- and post-harvest biological resource assessments of tree removal sites (*SDG&E: San Diego County*)
- Crew Leader - T&E species habitat evaluations for Biological Assessment in support of a steelhead restoration plan (*Trout Unlimited: Cleveland NF*)
- Lead Investigator - Resource Management Study and Plan for Mather Lake Regional Park (*County of Sacramento: Sacramento, CA*)
- Lead Investigator - Biological Resources Assessment for 1,070-acre Alfaro Ranch property (*Yuba County, CA*)
- Lead Investigator - Wildlife Strike Hazard Management Plan (*HCV Associates: Napa*)
- Lead Investigator - Del Rio Hills Biological Resource Assessment (*The Wyro Company: Rio Vista, CA*)
- Lead Investigator – Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- Surveyor – Tahoe Pilot Project: Validation of California's Wildlife Habitat Relationships (CWHR) Model (*University of California: Tahoe NF*)

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. Mr. Cashen has consulted with landowners and timber operators on forest management practices; and he has worked on a variety of forestry tasks including selective tree marking, forest inventory, harvest layout, erosion control, and supervision of logging operations. Mr. Cashen's experience with many different natural resources enable him to provide a holistic approach to forest management, rather than just management of timber resources.

REPRESENTATIVE EXPERIENCE

- Lead Consultant - CalFire fuels treatment projects (*SD and Riverside Counties*)
- Lead Consultant and supervisor of harvest activities – San Diego Gas and Electric Bark Beetle Tree Removal Project (*San Diego*)
- Crew Leader - Hillslope Monitoring Program (*CalFire: throughout California*)
- Consulting Forester – Forest inventories and timber harvest projects (*various clients throughout California*)

Grant Writing and Technical Editing

Mr. Cashen has prepared and submitted over 50 proposals and grant applications. Many of the projects listed herein were acquired through proposals he wrote. Mr. Cashen's clients and colleagues have recognized his strong scientific writing skills and ability to generate technically superior proposal packages. Consequently, he routinely prepares funding applications and conducts technical editing for various clients.

PERMITS

U.S. Fish and Wildlife Service Section 10(a)(1)(A) Recovery Permit for the Peninsular bighorn sheep

PROFESSIONAL ORGANIZATIONS / ASSOCIATIONS

The Wildlife Society

Cal Alumni Foresters

Mt. Diablo Audubon Society

OTHER AFFILIATIONS

Scientific Advisor and Grant Writer – *The Red Panda Network*

Scientific Advisor – *Mt. Diablo Audubon Society*

Grant Writer – *American Conservation Experience*

TEACHING EXPERIENCE

Instructor: Wildlife Management - The Pennsylvania State University, 1998

Teaching Assistant: Ornithology - The Pennsylvania State University, 1996-1997

PUBLICATIONS

Gutiérrez RJ, AS Cheng, DR Becker, S Cashen, et al. 2015. Legislated collaboration in a conservation conflict: a case study of the Quincy Library group in California, USA. Chapter 19 *in*: Redpath SR, et al. (eds). Conflicts in Conservation: Navigating Towards Solutions. Cambridge Univ. Press, Cambridge, UK.

Cheng AS, RJ Gutiérrez RJ, S Cashen, et al. 2016. Is There a Place for Legislating Place-Based Collaborative Forestry Proposals?: Examining the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. *Journal of Forestry*.

ATTACHMENT D

August 29, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
Attn: Ms. Tara Rengifo

Subject: Black Rock Geothermal Project (BRGP) Water Resources Evaluation

Dear Ms. Rengifo,

The Black Rock Geothermal Project ("BRGP") proposed by Black Rock Geothermal, LLC, an indirect, wholly owned subsidiary of BHE Renewables, LLC ("BHER") is located within the Salton Sea Known Geothermal Resource Area ("KGRA") and briefly described below, is subject to the California Energy Commission's ("CEC") Application for Certification ("AFC") process. CEC has the exclusive authority to certify all thermal power plants 50 megawatts (MW) and larger and related facilities proposed for construction in California. The AFC process is a certified regulatory program under CEQA and as a certified regulatory program, the CEC does not prepare EIRs in an AFC proceeding, but instead prepares environmental assessment documents that are functionally equivalent to EIRs, known as 'staff assessments' and 'preliminary staff assessments' ("PSA").

The BRGP is proposed on a 51-acre portion of an approximately 160-acre parcel on the southeastern shore of the Salton Sea, and would have a maximum continuous rating of approximately 87 megawatts (MW) gross, with an expected net output of roughly 77 MW. The project includes geothermal production wells, pipelines, fluid and steam handling facilities, a solids handling system, a Class II surface impoundment, a service water pond, a stormwater retention basin, process fluid injection pumps, a power distribution center, borrow pits, and injection wells. The main components of BRGP include a steam turbine generator system, geothermal fluid processing system, a single 7-cell cooling tower, 12 wells (including production and injection wells) and 7 associated well pads, and a connection to an Imperial Irrigation District lateral to be constructed as part of the project.

The scope of the Parker Groundwater review is limited to issues related to surface water and water supply and has involved a detailed review of the BRGP Staff Assessment (TN257697) and revised Water Supply Assessment (WSA) (TN 256895).

I. Reductions to the Colorado River Water Resources Supply are Not Adequately Analyzed in the PSA and WSA

The PSA summarizes CEC staff's concerns as to whether the proposed project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years, considering effects of changing climate over the past 10-20 years on the Colorado River water supply. "During the water resources impact evaluation, California Energy Commission (CEC) staff expressed concerns regarding IID's ability to supply water for the BRGP, as well as the total water demand for all three geothermal projects proposed by the applicant (13,165 AFY). Staff's concern is based on IID's standing policy to supply water to non-agricultural projects, as well as the existing trends of diminishing supply and increasing demands on Colorado River water resources, threatening mandatory rationing in the future.... CEC staff has expressed these concerns in several communications and data requests. In a meeting on March 7, 2024, IID reassured CEC staff that the obligations to water agreements for the three BHER geothermal projects would be fulfilled (CEC 2024i)." (PSA 5.16-13-14).

A. The Analysis Omits Consideration of Future Hydrology of the Colorado River Based on Climate Projections

Neither the BRGP PSA or the BRGP WSA discuss Colorado River projected future hydrology based on projections from global climate models (GCMs) (Ajami, H., 2021; Gangopadhyay, S., and McGuire, M., 2021; Hoerling et al., 2024; Lukas et al., 2020; Reclamation 2018, 2021a, 2021b), and instead the PSA and WSA rely on the assumption of stationarity, that the future would closely resemble the past and/or current conditions, basically relying on historical gaged hydrology. For example, under "Climate Factors" in the WSA, the discussion focuses on climate characteristics and monthly mean temperatures from 1924-2023. (WSA p. 1-3). However, starting in the 1970s, and especially after 2000, much longer records of streamflow obtained from paleohydrology have provided an expanded perspective on past hydrologic variability beyond that available in the gaged hydrology. (Lukas et al. 2020).

Tree-ring reconstructions of Colorado River streamflow extend the observed natural flow record based on stream gages up to 1200 years into the past and represent a much broader range of hydrologic variability and extremes than are contained in the observed hydrologic records. (Lukas et al. 2020). Most notably, several paleo-droughts prior to 1900 were more severe and longer-term than the worst-case droughts since 1900 in historical records. These droughts were considered "megadroughts" and could recur in the future due to natural climate variability alone, but their recurrence risk is much increased by anthropogenic

warming. Significantly, the century-scale mean and variability of Colorado River Basin hydroclimate has not been stationary over time and in fact has had extreme variability. (Lukas et al. 2020).

Recent basin wide planning activities (e.g., Reclamation 2012, Reclamation 2018, Gangopadhyay et al. 2021) and broader-scale Reclamation assessments (Reclamation 2021a and 2021b) have analyzed scenarios of future hydrology derived from projections from GCMs with additional hydrologic modeling. All GCM projections of future climate regardless of emissions scenario indicate further increases in temperatures of the basin, and this warming by itself will increase evapotranspiration (ET) and reduce basin runoff, by an estimated 4-9% per degree F of warming. (Lukas et al., 2020). While precipitation is the most important driver of runoff on a year-to-year basis, the majority (65-90%) of the GCM projections of future basin hydrology indicate that the impact of warming combined with the variable precipitation leads to net declines in basin runoff over the next several decades, leading to further reduced Colorado River water availability.

Several reservoir and water management decisional documents and agreements that govern the operation of Colorado River facilities and management of the Colorado River set to expire in 2026 are in the process of being renegotiated. These include the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines), the 2019 Drought Contingency Plans, as well as international agreements between the United States and Mexico pursuant to the United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty). Basically, the quantity and allocation of future water supplies of the Colorado River will be less, perhaps significantly less than in the past.

The California Department of Water Resources (DWR) published a new State Water Project (SWP) Delivery Capability Report in July 2024 (DWR, 2024) that not only acknowledged the threats to current and future water supply conditions from climate change, but also developed an adjusted historical hydrologic conditions data set that incorporated recent climatic conditions. (DWR, 2024). The report expressly recognized that “A shortcoming of using the historical hydrologic conditions data set to assess existing Project delivery capability is that the effect of climate change is not consistent throughout the modeled period.” (DWR, 2024).

In its adjusted hydrologic conditions assessment, DWR recognized that standard deviations of precipitation and rim inflow from most of the rim watersheds in the early periods of the past 100 years differed significantly from the last 30 years. (DWR, 2024). As a result, DWR developed a hydrologic data set for the entire modeled period that represents current hydrology, applying a dataset of adjusted historical hydrologic conditions to provide a reasonable representation of recent

climatic conditions and serve as a basis for creating future climate change scenarios. The report indicates that SWP delivery capability and reliability could be reduced as much as 23 percent in 20 years due to changing flow patterns and extreme weather shifts – underscoring the importance of incorporating climatic conditions in water supply reliability assessments. (DWR, 2024).

The analysis in the WSA, however, relies on the same assumptions of water availability for this Project in a normal year as well as during a single-dry and multiple-dry year scenarios. (WSA p. 3-1). According to the WSA, “This is due to the small effect rainfall has on water availability in IID’s arid environment along with IID’s strong entitlements to the Colorado River water supply.” (WSA p. 3-1). CEC staff previously asked the Applicant in Data Requests Set 4 (TN 253987) to revise this section in the WSA given the impact that regional weather patterns could have on IID’s water supply. The Applicant responded that the WSA would be revised to acknowledge this impact, but this information and analysis is still missing from the WSA. (TN 254503).

As discussed above, not only must the WSA and PSA acknowledge the impact that climate change could have on IID’s water supply, but the analysis must be revised to incorporate the GCM projections of future basin hydrology. These projections would show that the impact of warming combined with the variable precipitation would result in reductions to Colorado River water availability. The WSA and PSA therefore must be revised to consider these climate projections in the analysis of the Project’s impacts on water supply.

II. The WSA Lacks the Information Necessary to Demonstrate that Projected Water Supplies are Sufficient to Meet the Project’s Water Demand for the Life of the Project

The planned operational life of a 40-year project is identified in numerous passages in the PSA (e.g., pages 3-27, 5.2-112), which could be extended, but the water availability analysis in the WSA does not reflect a 40-year operational period and instead only evaluates the Project’s water supply for half of the life of the Project, i.e., 20 years. In response to CEC data requests requesting that the WSA reflects a 40-year operational period, the applicant responded that the planning period for the WSA, as stipulated in Senate Bill 610, is 20 years. (TN 254503). Accordingly, the WSA was not revised to evaluate water supply for the entire Project life.

Even though the WSA only analyzed a 20-year term, the WSA at 8-6 concludes that IID is able to meet the water delivery demand “for the life of the proposed Project...”. Additionally, CEC and ICPDS conclude that “Based on the Application for Certification (AFC) and subsequent filings and information prepared for this proposed Project, CEC/ICPDS hereby finds that the IID projected water supply is

sufficient to satisfy the demands of this Proposed Project in addition to existing and planned future uses, including agricultural and non-agricultural uses for a 20-year Water Supply Assessment period and for up to 30 years of the anticipated 40 -year proposed Project life.” (WSA at 9-2) Neither the PSA nor the WSA provide any evidence, information, or an analysis to support the conclusion that IID can meet the Project’s water demand for the life of the Project. It must also be noted that the CEC and ICPDS finding only determined that there was sufficient water supply for 30 years of the 40-year life of the project.

An adequate and complete evaluation of the Project’s water supply impacts for the life of the Project is necessary and feasible, as demonstrated by other geothermal project WSAs. For example, the ES Minerals ATLiS WSA assessed a 30-year period. The WSA must be revised to determine the water supply availability of the Proposed Project for its entire 40-year period.

III. Stormwater and Flood Risks

The Project may result in significant impacts related to stormwater and flood risks for two reasons discussed below.

A. The Analysis of Flood Risks in the PSA Fails to Adequately Consider Changing Climate Conditions

The new climate normal in California is extreme weather events that produce more rainfall over shorter time periods and with less frequency, resulting in increased flood risks (Ajami, H., 2021; Gangopadhyay, S., and McGuire, M., 2021; Hoerling et al., 2024; Lukas et al., 2020; Reclamation 2018, 2021a, 2021b). “While the Imperial Valley is not projected to see a significant change in annual precipitation over the next 50 to 100 years, even modest changes could have significant effects on the region’s ecosystems. Additionally, precipitation events are anticipated to occur less frequently but become more intense as part of the new climate normal (e.g., fewer days of rain but greater amounts of rain during each storm).” (Ascent Environmental, 2021). Historic records relying on stationarity to predict storm and flood events can no longer be relied on for predicting future storm and flood events. Additional analysis must be provided in a revised PSA to further assess flood risks using future climate scenarios instead of relying on stationarity. Stationarity assumes the future would closely resemble the past conditions fully relying on historical gaged hydrology. As mentioned previously, much longer records of streamflow obtained from paleohydrology have provided an expanded perspective on past extreme hydrologic variability not available in the gaged hydrology. (Lukas et al., 2020). This includes increased flood risks from extreme storm events like Hurricane Hilary, which was projected to produce two- to three-inches basin wide with pockets of 10-inches of precipitation. Although the storm ultimately took a

different path, during the three days of the storm, some 11,400 IID customers were temporarily without power at some point, with varying lengths of duration. Other areas like Cathedral City were underwater, Interstate 10 was closed for hours from flooding, and areas northeast and northwest of the Imperial Valley saw rainfall totaling more than 10.5 inches. (Brown et al., 2023). The PSA must be revised to disclose and analyze flood risks using reasonable future climate scenarios emphasizing the hydrology of the last 20 to 30 years instead of relying on stationarity.

B. The PSA Contains Deficient Information about the Revised Brine Pond

The applicant has applied to FEMA to revise the 100-year floodplain area to exclude the location of the proposed brine pond, but if this map revision is not approved by FEMA, the PSA explains that the design of the brine pond would need to be modified to mitigate the flood impact. (PSA 5.16-12). The PSA does not indicate that FEMA approved the map revision. Since the PSA indicates that if the Applicant's LOMR is not approved by FEMA the brine pond must be modified to mitigate the flood impacts, the PSA must disclose how the brine pond's design would be changed and analyze the potential significant environmental impacts of these design changes. The PSA must therefore be revised to provide an analysis regarding any proposed modifications to the brine pond, related impacts, and any measures to reduce significant impacts to less than significant levels.

IV. The PSA's Cumulative Impacts' Analysis Is Too Narrow

The BRGP PSA analysis only included the estimated water supply for the two other geothermal projects, i.e., Elmore North and Morton Bay. (PSA 5.16-15). "The combined water supply of all three projects represents 70.7% of the unallocated water supply available for additional conservation and contracting under the IWSP for nonagricultural projects," according to the WSA. (WSA 10-1). In addition to the three geothermal projects, the PSA acknowledges that "there are 11 operating geothermal power plants," and "it is expected that other geothermal projects are likely to be developed in the future," but does not analyze the cumulative impacts from these projects "[s]ince specific projects are speculative at this time," (PSA 5.16-15).

Other closely related past, present, and reasonably foreseeable probable future projects must be evaluated as part of a revised PSA cumulative impacts analysis for water supply. In a July 23 letter on the Elmore North Geothermal Project PSA (TN 257957), IID requested that the Elmore North PSA's claim that "specific projects are speculative" be deleted and that "A cumulative impact analysis should be made using the recent existing and permitted projects identified ... under Table 1-2 Master Cumulative Project List, in addition to the three BHE geothermal projects." (TN

257957). The projects include EnergySource Minerals (Atlis) and Hudson Ranch Geothermal. Moreover, the AFC's cumulative impacts analysis evaluated eight projects, which are not all included in the PSA's analysis. (TN 249752). The cumulative impacts analysis for water supply in the PSA must be expanded to evaluate all past, present, and probable future projects.

Additionally, the 11 geothermal power plants referenced in the PSA are operating and therefore have established water demands. To the extent that the water demands of these existing projects (or any modifications) would impact cumulative water supply, these impacts must be disclosed and evaluated in the PSA.

The analysis of cumulative impacts on water supply must also be revised to include present and probable future lithium extraction projects, as these projects are intimately related to geothermal production, have substantial water demands, and would likely rely on the same sources of IID water supply, e.g., IWSP. The projected growth and associated water demand has been summarized in three separate reports:

- Dobson et al., 2023. Characterizing the Geothermal Lithium Resource at the Salton Sea.
<https://escholarship.org/content/qt4x8868mf/qt4x8868mf.pdf?t=s4j82b>
- Earthworks, 2023. Environmental Justice In California's Lithium Valley, Understanding the potential impacts of direct lithium extraction from geothermal brine. A document for community education, November 2023.
<https://earthworks.org/wp-content/uploads/2023/10/California-Lithium-Valley-Report.pdf>
- Paz et al., 2022. Report of the Blue Ribbon Commission on Lithium Extraction in California, Pursuant to Assembly Bill 1657 (E. Garcia, Chapter 271, Statutes of 2020).
<https://efiling.energy.ca.gov/getdocument.aspx?tn=247861>

"Water demand for lithium extraction is appreciable, representing an additional 3.5-4X the freshwater requirements of geothermal energy production alone from a given volume of brine, based on published estimates for facilities planned in the Salton Sea region." (Dobson et al. 2023). Proposed lithium production is projected to reach 210,000 metric tons of LCE per year, meaning water demand would exceed available non-agricultural supply as currently planned by IID. (Paz et al. 2022). The "Report of the Blue Ribbon Commission on Lithium Extraction in California" concludes, "Given the uncertainty of water supply to the region as a result of the current drought and impacts of global warming, the project developers will need to work with IID to address their plans for water use." (Paz et al., 2022).

V. The PSA Lacks an Analysis of the Potentially Significant Impacts from IID's Proposed Measures to Meet New Non-Agricultural Demands

The WSA explains that “[i]n the event that IID has issued water supply agreements that exhaust the 25 KAFY IWSP set aside for conservation, and it becomes apparent that IID delivery demands due to non-agriculture use are going to cause the district to exceed its quantified 3.1 MAFY entitlement less QSA/Transfer Agreements obligations, IID has identified options to meet these new non-agricultural demands. These options include (1) tracking water yield from temporary land conversion from agricultural to non-agricultural land uses (renewable solar energy); and (2) only if necessary, developing conservation projects to expand the size of the district’s water supply portfolio.” (WSA 8-3).

Neither the PSA nor the WSA evaluate the environmental effects from these conservation measures to lessen the Project’s potentially significant cumulative impacts on water supply. With regards to the first factor, additional water supply planned by IID through agricultural water conservation would reduce flows to the Salton Sea, causing environmental impacts and potential increased health impacts from more exposed soils and dust generation, as survival of the Salton Sea is tied primarily to agricultural runoff and drainage from major agricultural regions in the basin and their associated water management decisions (University of California Riverside Salton Sea Task Force, 2021). “Depending on how water withdrawal restrictions are implemented in the Colorado River basin and how many new geothermal and lithium extraction facilities are built, water available for agriculture in 2050 could be between 17-57% lower than it was in 2010. Such significant reductions in irrigation could have meaningful consequences for the health of the Salton Sea. The total water volume and areal extent of the Salton Sea may be further reduced, since agricultural irrigation runoff is the largest source of inflows (Hanak et al., 2018; Ajami, 2021). The shrinking of the Salton Sea that has led to the current environmental crisis is largely attributed to water conservation on agricultural land associated with the transfer of 0.5 MAF to Southern California cities.” (Dobson et al. 2023).

Currently, the majority of IID Colorado River water supply is used for agricultural irrigation, and a portion of that irrigation water provides water supply to the Salton Sea through agricultural return flows (Hanak et al., 2018; Ajami, 2021). Any IID Colorado River supply water taken out of agricultural irrigation and provided instead for geothermal projects will reduce flows to the Salton Sea, reducing the volume of Salton Sea water and increasing environmental impacts. Therefore, if geothermal projects result in reduced agricultural irrigation, there will be cumulative reductions in return flows to the Salton Sea.

As to the second factor, IID's 2012 Integrated Regional Water Management Plan includes conceptual projects to increase water supply, however, our current understanding is that none of these projects have been evaluated beyond concept phase, with plans for additional analyses in the IID 2021 Water Conservation Plan. (IID WRS 2021).

VI. The PSA Does Not Clearly Identify the Sources of Water for the Project

The source of the IID water supply for the Project is not clearly described in the WSA. The WSA is vague as to whether the Proposed Project may be covered under Schedule 7 General Industrial Use water and/or Interim Water Supply Policy (IWSP) for Non-Agricultural Projects water. The WSA states, "The Project's water delivery will be covered under the Schedule 7 General Industrial Use. In the event that IID determines that the proposed Project is to utilize IWSP for Non-Agricultural Projects water, the Applicant will also need to enter into an IWSP Water Supply Agreement with IID. In which case, the proposed Project would use 29.9% of the 18,620 AFY of IWSP water." (WSA 9-2). The WSA also explains, "IID will determine whether the Project should obtain water under IID's Interim Water Supply Policy (IWSP) for non-agricultural projects in addition to Schedule 7 General Industrial Water." (WSA 6-1). These statements make clear that a decision about whether the Project's water will be supplied from the IWSP and/or Schedule 7 General Industrial Water has not yet been evaluated and determined. The PSA and WSA must set forth an analysis demonstrating what each coverage would mean in terms of water availability/certainty of supply and associated impacts. These omissions must be resolved in a revised PSA in order to assess the sufficiency and reliability of the proposed IID water supply.

Furthermore, should reductions to IID's water supply be ordered or directed from a governmental authority having appropriate jurisdiction, the BRGP may be required to reduce its water use by a proportionate reduction of the total volume of water available to IID (WSA Page 1-2, 10-1). The WSA states, "Any reductions in water would come at the cost of generation loss. In general terms, a 10% reduction in water supply (a reduction of approximately 648 AFY of water use) will likely result in an estimated reduction in electrical output by 10%, or approximately 14 megawatts (net)." (WSA p. 1-2) Note that this appears to be in error, as 10% of 1,125 AFY is 112 AFY reduction and 10% reduction of electrical output is 8 MW.

To address these impacts, the WSA states that "If commercially viable, BRGP would seek additional water through IID's Clearinghouse, consistent with any contractual requirements or limitations." (WSA p. 1-2). This alternative water source is also not mentioned in the PSA's analysis. The WSA cannot assume the IID's Clearinghouse is a secure source of alternative water—particularly given the

amount of freshwater that this Project would require— without providing sufficient facts and analysis.

VII. Operational Water Use Efficiency

In comparing geothermal plant parameters, the Black Rock facility with a total operational water demand, i.e., IID water and steam, of approximately 5,600 AFY is more efficient (80%) when it comes to operational water generated by steam condensation, as compared to Morton Bay and Elmore North, which have an operational water use efficiency of 50% and have larger total operational water demands of approximately 11,100 and 13,000 AFY, respectively (see table below). Notably, in response to CEC staff's data request regarding water efficiency, the Applicant explained that "BRGP has been designed for optimal water efficiency given site specific characteristics, such as average ambient temperature and the nature of the geothermal resource, over 30 years of operational history in the region, and operational requirements for this specific facility. The requested water allocation is in line with best management practices developed over decades of operation in the region. These best management practices include optimizing cooling tower blowdown at nightshift during the summer season, optimizing the cooling water treatment with vendor to maintain the water quality, and monitoring the cooling water quality through biweekly internal lab sampling and testing to keep the freshwater usage under the agreed-upon amount." (TN 254503) Thus, it seems to be the Applicant's position that the Project has maximized its operational water use efficiency.

Water users within the IID service area are subject to the statewide requirement of reasonable and beneficial use of water under the California Constitution, Article X, section 2. (WSA p. 1-6) For this reason, the PSA must discuss whether the operational water use efficiency of the proposed Black Rock Geothermal Plant can be improved and IID water demands reduced.

Comparison of Proposed Geothermal Power Plant Parameters BHW Renewables			
Parameter	Black Rock	Elmore North	Morton Bay
Land use (acres)*	55	63	63
Cooling Tower(s)	seven-cell	fourteen-cell	fourteen -cell
Production Wells	5	9	9
Injection Wells	7	12	11
Operational Water Demands (AFY)	5,620	11,120	12,960
Operational water generated by steam condensation (Water Use Efficiency)	80%	50%	50%
Water Demands from IID (AFY)	1,125	6,480	5,560
MW Rating (Max/Net)	87/77	157/140	157/140

Summary and Conclusions

Parker Groundwater conducted a review of issues limited to and focused on surface water and water supply that involved a detailed review of the BRGP Staff Assessment (TN257697) and revised Water Supply Assessment (WSA) (TN 256895). Results of the reviews found that the Colorado River water supply reliability and uncertainty upon which IID relies solely to meet demands is a paramount concern considering current and projected future hydrology and climate condition.

Furthermore, the BRGP WSA only considered a 20-year future projection of the water supply availability for the Proposed Project. Since the Proposed Project life is 40 years, the analysis is inadequate, and other projects have looked at longer future projections.

Potential cumulative impacts considered were narrow and limited. The cumulative impacts' analysis is inadequate and should be expanded to include all renewable energy projects that rely on IWSP water in the area as well as lithium extraction projects. Additionally, the IID's proposed agricultural water conservation measures to reduce the Proposed Project's potentially significant impacts on IID water supply must also be evaluated as these measures may significantly impact the water supply for the Salton Sea, which is already in an environmentally critical condition. Finally, the Project's water supply is not clearly stated and fully evaluated in the PSA, and the impacts from utilized the identified alternative source of Project water is not analyzed in the PSA.

Please contact me if you have questions.



Timothy K. Parker, PG, CEG, CHG
Principal Hydrogeologist

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TIMOTHY K. PARKER, PG, CEG, CHG

Principal Hydrogeologist/Senior Facilitator

KEY COMPETENCIES

Mr. Parker has more than 35 years of professional geologic, engineering geologic and hydrogeologic experience developing and implementing comprehensive sustainable groundwater management program plans implementation for water supply and water systems. His experience includes water supply assessments, water policy analysis, strategic water resources planning, well installation and evaluation, regional and project scale groundwater characterization and monitoring for quantity and quality, groundwater recharge & storage projects, stakeholder facilitation and capacity building, and litigation support. He has worked in the public sector including California Department of Toxic Substances Control, CA Geological Survey, and Department of Water Resources, and in the private sector his consulting work has supported large and small municipal and industrial clients, which has required interaction with federal and state regulatory agencies, and direct and facilitated communications with the general public.

PROJECTS

Water Supply Assessment, Kern County, CA, Confidential Industrial Client, 2020-2021

Principal Hydrogeologist

Performed an assessment of a groundwater basin for a confidential industrial client to determine the groundwater basin quantity and water quality trends and reliability to deliver the required supply for an industrial facility expansion. Addressed the current and projected demands in relation to statutory, regulatory and sustainability requirements, to evaluate and validate a long-term water supply for the proposed facility and the expansion.

Water Supply Assessment, Queretaro, Mexico, MX, Confidential Industrial Client, 2020-2021

Principal Hydrogeologist

Performed a water supply assessment of a multiple groundwater basin area for a confidential industrial client real property acquisition to determine groundwater trends and reliability to deliver the required supply for a proposed new industrial facility. Based on a determination of groundwater depletion, reviewed well construction and condition, repair and maintenance records, water level trends and water quality data. Made recommendations for further analysis and data collection including well testing and meeting with local government for additional reports and data.



SPECIAL COMPETENCIES

Integrated Water Resources and
Groundwater Management
Water Policy Analysis
Strategic Water Resources
Planning
Groundwater Sustainability Plan
Development and Program
Implementation
Groundwater Recharge & Storage
Projects
Environmental Review
Litigation Support
Facilitation of Complex Issues

TOTAL YEARS OF EXPERIENCE
+35

EDUCATION

BS, Geology

University of California, Davis, CA,
United States

PROFESSIONAL LICENSES

Professional Geologist 5594,
California

Certified Engineering Geologist
1926, California

Certified Hydrogeologist 12,
California

PROFESSIONAL ASSOCIATIONS

National Groundwater
Monitoring Network -

Committee Member

Association of California Water
Agencies Groundwater

Committee - Member,

Groundwater Committee Member

National Ground Water

Association - Director and

Scientist and Engineer Section

Past Chair

Groundwater Resources

Association of California -

Legislative Committee Member,

Director Emeritus

International Association of

Hydrogeologists U.S. National

Chapter - President

Petaluma Valley, Santa Rosa Plain and Sonoma Valley Groundwater Sustainability Planning and Program Implementation, Sonoma County, CA, Sonoma Water, 2005-Present**Principal Hydrogeologist**

The project involves Groundwater Sustainability Plan (GSP) Scoping and Preparation for Three Basins providing technical support to develop Groundwater Sustainability Agency (GSA) scoping documents, work plans and preparation of GSPs for three California Sustainable Groundwater Management Act (SGMA) basins in Sonoma County (Petaluma Valley, Santa Rosa Plain and Sonoma Valley). The scoping documents and work plans were used to apply for Proposition 1 grant applications and to guide the GSP preparation process. Technical support services include providing presentations at advisory committee meetings, preparing technical documents and GSP subsections. Additionally, prepared AB3030/SB1938 voluntary groundwater management plan and program implementation consulting services for the Sonoma Valley, beginning in 2005, and for the Santa Rosa Plain beginning in 2009.

Sonoma Valley Groundwater Basin Technical Assistance, Planning and Facilitation Services, Sonoma County, CA, Sonoma Water, 2017-Present**Principal Hydrogeologist**

The project involves Groundwater Sustainability Plan (GSP) Scoping and Preparation for Three Basins providing technical support to develop Groundwater Sustainability Agency (GSA) scoping documents, work plans and preparation of GSPs for three California Sustainable Groundwater Management Act (SGMA) basins in Sonoma County (Petaluma Valley, Santa Rosa Plain and Sonoma Valley). The scoping documents and work plans were used to apply for Proposition 1 grant applications and to guide the GSP preparation process. Technical support services include providing presentations at advisory committee meetings, preparing technical documents and GSP subsections. Additionally, prepared AB3030/SB1938 voluntary groundwater management plan and program implementation consulting services for the Sonoma Valley, beginning in 2005, and for the Santa Rosa Plain beginning in 2009.

Salinas Valley Groundwater Basin Technical Analysis of Basin Yield and Sustainability, Litigation Support, M.R. Wolfe & Associates, 2014-2020**Principal Hydrogeologist**

Provided technical assessment of groundwater reports related to the safe and sustainable yield and groundwater conditions within the Salinas Valley groundwater basin, to support critical analysis of the County General Plan and developments as they were proposed for discretionary permits. The General Plan was challenged on the basis of incorrect land use assumptions, groundwater conditions and cumulative impacts, which resulted in the County having to develop a new groundwater model with a peer review technical advisory committee for oversight. Provides continuing review on as-needed basis of development proposals and provides input on the potential cumulative impacts from the new proposed developments.

Groundwater Consulting and Litigation Support, Indian Wells Valley Groundwater Basin, CA, Indian Wells Valley Water District, 2010-Present**Principal Hydrogeologist**

Provides technical support on groundwater related work for the Water District including hydrogeologic assessments. District Member of Indian Wells Valley Groundwater Authority GSA Technical Advisory Committee provided input and review on the development of the groundwater sustainability plan, and now with GSP implementation. Assisting with implementation of a brackish groundwater resources feasibility study project being developed as one of the alternatives in the groundwater sustainability plan to help spatial spread out the pumping centers in the basin, and soften the landing of major pumpers on achieving sustainability goals under SGMA. Providing technical hydrogeologic support and analysis on basin water rights adjudication. Provided technical input and facilitated development of a revised groundwater management plan and basin objectives for the Cooperative Groundwater Management Group. Completed a Water Supply Improvement Plan to redistribute pumping stresses spatially in the Indian Wells Valley.

**California Statewide Airborne Electromagnetics (AEM) Surveys and Stanford Groundwater Architecture Project (GAP), California Department of Water Resources , 2018-Present
Project Director, Licensed Geologist and QA/QC Manager**

The DWR is conducting AEM surveys at a screening level to map aquifers in all SGMA high and medium priority basins over the next three to five years. Ramboll is the lead contractor working closely with SkyTEM and GEI to conduct the AEM surveys, including AEM interpretation and resistivity to lithology transform end products, working with a team of groundwater professionals from DWR, other state and federal agencies. Tim is the California licensed professional responsible for the AEM work and is the QA/QC manager for the individual basin surveys as a contract employee to Ramboll.

The Stanford Groundwater Architecture Project (GAP) was an ambitious two-year project, including Stanford University, Denmark University of Aarhus, California Department of Water Resources, California State Water Resources Control Board, Kingdom of Denmark and three local public water agencies in California to develop a template for the optimal workflow for use in the statewide aerial electromagnetics (AEM) data acquisition and to development of refined hydrogeologic conceptual models and as the foundation for the statewide AEM surveys, a key step in the implementation of SGMA. This includes not only the deployment of the AEM technology to acquire AEM data, but also designing the supporting computational infrastructure for data analysis, interpretation, and archiving. The GAP involved basic research to discover new methods of data analysis, inversion, and interpretation appropriate for the specific geologic environment and management needs of California. The project involved three pilots (Indian Wells Valley, Paso Robles and Butte County), of which Tim provided hydrogeologic analysis on two of the pilot basins

SELECTED PUBLICATIONS

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"Challenges with Data and Statewide Standardization: From the Ground Down," Sustainable Groundwater Management on the Central Coast Workshop, San Luis Obispo County, January 2017.

"Highlights from Groundwater Fact Finding Trip to Denmark – California Connections," San Luis Obispo County, January 2017.

"Managed Aquifer Recharge," Drought Summit, Irrigation Association & National Ground Water Association, Las Vegas, Nevada, December 2016.

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ATTACHMENT E

September 4, 2024

Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
Attn: Ms. Tara Rengifo

Subject: Review of Black Rock Geothermal Project Preliminary Staff Assessment (PSA)

Dear Ms. Rengifo,

These comments pertain to section 5.6: Geology, Paleontology, and Minerals, and section 5.16: Water Resources in the Black Rock Geothermal Project (BRGP) Preliminary Staff Assessment (PSA).

Background

The BRGP site is located on the southeastern shore of the Salton Sea, in the Salton Sea Known Geothermal Resource Area (KGRA), a feature that lies within the Salton Trough. The Salton Trough is a seismically active rift valley. The project will include twenty wells and 12 well pads, with production wells (nine), injection wells (eleven), and a system of aboveground pipelines to connect the BRGP with the production and injection wells. Additionally, a buried pipeline will be installed to transfer freshwater from Imperial Irrigation District transfer point to the BRGP service water pond. As stated in the BRGP PSA (TN# 257697, page 5.6-3), the Salton Trough, within which the project site is located, is a tectonically active pull-apart basin, one of the most seismically active portions of southern California, made up of numerous fault systems, many of which have not been fully characterized. Hence, seismic hazards at the project site include seismic shaking and ground rupture along fault traces and liquefaction induced by strong ground shaking. These comments pertain to section 5.6: Geology, Paleontology, and Minerals, and section 5.16: Water Resources.

I. Critical Information about the Mineralogy and Hydraulic Properties of the Brawley Seismic Zone is Not Included in the PSA

The proposed plant site, wells, well pads, and pipelines are within the Brawley seismic zone (BSZ), which is composed of numerous northwest-southeast trending strike-slip faults and northeast-southwest cross-cutting high angle normal faults, with recent earthquake activity. The mineralogy of fault gouge is of critical importance in determining mechanical and hydraulic behavior of the faults. Faults that are filled with clay-rich gouge tend to be weak under shear stress and are more prone to failure in response to seismic activity (Morrow et al. 1984; Ikari et al., 2009). Additionally, clay-rich fault gouge tends to be of low permeability, making clay-filled faults hydraulic barriers that restrict regional subsurface fluid flow. The low permeability also has the effect of accentuating fluid pore pressure buildup within faults and fractures, which further lowers their shear strength (Ikari et al., 2009; Brodsky and Lajoie, 2013). As stated by Morrow et al. (1984) "Clay gouges typically support lower shear stresses than most granitic rocks during frictional sliding experiments particularly when saturated and have extremely low frictional resistance when pore fluid movement is restricted, and fluid pressures become greater than hydrostatic." Fluid injection for the return of geothermal fluids (spent brine, aerated fluid, and steam condensate) via Class V injection wells to replenish the reservoir (BRGP PSA (TN# 257697) pages 3-11, 3-12) and for disposal of produced brine (via Class II wells) can lead to pore pressure build up in the numerous faults and fractures that are present within the BSZ due to potential fluid migration from injection zones. If the faults in the BSZ are filled with clay-rich gouge, fluid injection in the area would weaken the faults under shear loading, making them more prone to failure in response to seismic activity, which can result in potentially significant impacts on ground shaking and surface rupture risk that were

not adequately examined in the PSA (Wang et al., 1980; Summers and Byerlee, 1977; Byerlee 1978, Morrow et al., 1981).

The PSA must disclose the mineralogy of the fault gouge in the faults of the BSZ. Without this information, a full impacts assessment has not been performed to evaluate the potential destabilizing impact of fluid pore pressure build up and the associated shear weakening of BSZ faults. The BRGP PSA (TN# 257697) and the references cited by the Applicant in response to CURE's Data Requests, i.e., Hulen et al., 2002, 2003, (TN 253375) do not address fault gouge mineralogy because they focus on characterizing the geothermal resource. Pore pressure buildup in the faults from subsurface migration of injected fluids (TN# 257697, page 3-11) and their associated shear weakening is a potentially significant impact that has not been evaluated in the PSA. If the faults in the BSZ are filled with clay-rich gouge, the faults in the BSZ would be more prone to shear failure and enhanced displacement (Ikari et al., 2009) due to subsurface migration of fluids returned to geothermal reservoirs via project injection wells.

II. The PSA Does not Evaluate Induced Seismicity

The proposed project includes fluid injection as a major component for both disposal of spent geothermal fluid and replenishment of the reservoir fluids. According to Brodsky and Lajoie (2013) fluid injection has been shown to induce seismicity due to a decrease in the effective stress on faults resulting from increased pore pressure within faults (Ikari et al., 2009). Using data from seismic swarms in the Salton Trough, which encompasses the project site, Chen and Shearer (2011) demonstrated that earthquakes tend to cluster around injection wells. The report also demonstrated that the seismicity rate in the Salton Trough was initially low during the period of low geothermal operations in the area before 1986 and that as operations expanded, a corresponding increase in seismicity was observed, which suggests a direct impact of fluid injection on area seismic activity. Figure 1 shows seismicity rate data from Brodsky and Lajoie (2013) for the study period of 1982 to 2013. The data show that the number of earthquakes increased more than six times from the pre-1986 low background levels of less than 2000 to over 12,000 at the end of the study period.

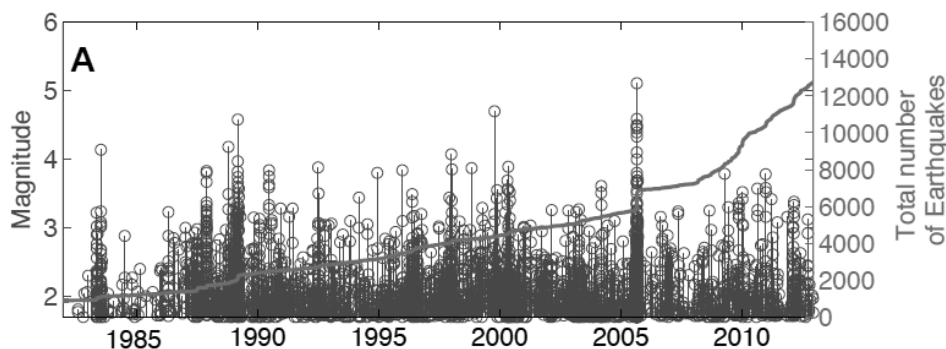


Figure 1. Salton Trough seismicity data showing the number (green curve) of earthquakes greater than magnitude 1.5 (blue circles) over the period 1982 to 2013. The data shows increasing seismicity over the study period above pre-1986 background rates of less than 2000 earthquakes to over 12,000 at the end of the study period (after Brodsky and Lajoie, 2013).

Water production and injection data, shown in Figure 2, show an increase in geothermal operations after 1986, with amounts of produced and injected water more than doubling from lows of less than 2 billion kilograms (kg) during the pre-1986 period to averaging 10 billion kg of produced water and 8 billion kg of injected water. Seismicity and water production/injection data show that some correlation exists between the increased geothermal activity (Figure 2) in the project area and the increased rate of seismicity (Figure 1). Using these data from the Salton Sea Geothermal Field (SSGF), Brodsky and

Lajoie (2013) concluded that net production volume combined with injection information is a good predictor of the seismic response in the short term for a fully developed field. The data, according to Brodsky and Lajoie (2013), suggest that the increase in geothermal activity in the study area is correlated with a corresponding increase in the seismicity rate.

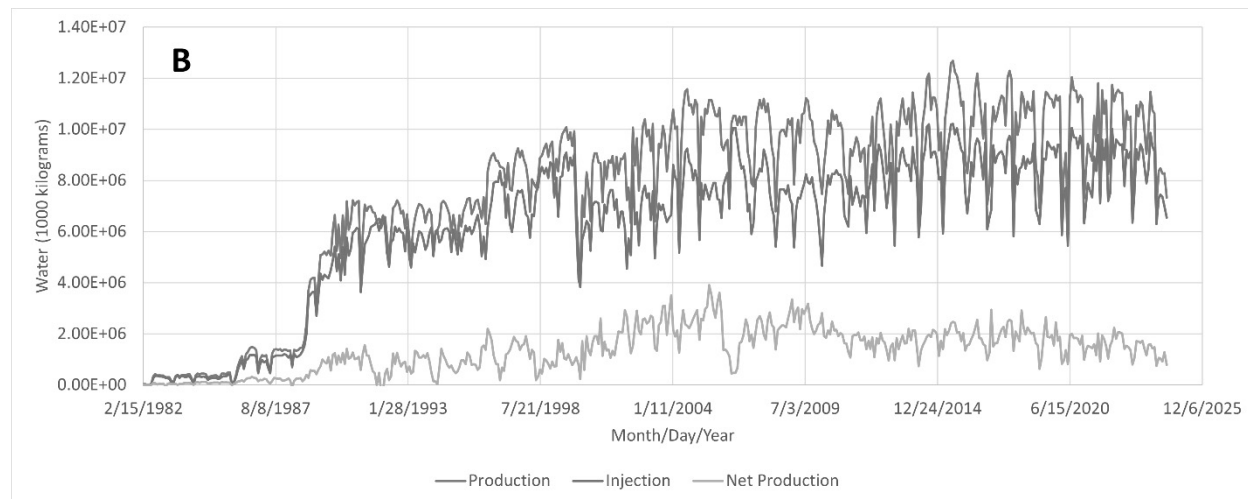


Figure 2. Water (Geothermal fluid) production, injection, and net production shown in 1000 kilograms from 1982 to the present (2024). The net production is the difference between production and injection mass of water (data from the California Department of Conservation).

The proposed BRGP comprises 12 injection wells on six well pads (pages 3-19) with one additional backup injection well (though on page 5.2-2 and elsewhere PSA states 7 injection wells on four well pads). The project will also have nine production wells on five well pads. As stated in the project Application document ((BRGP AFC, TN# 249752), each production well will produce approximately 1,626,000 pounds per hour (TN# 249752, on page 2-13) of geothermal fluid and have the capacity to produce 6,601,437 pounds per hour during the summer (TN# 249752 on page 2-52). The injection wells each have injection capacities of 3.0 million pounds per hour (TN# 249752 on page 2-6). Using these production rates from the BRGP, the projected increase in produced water (geothermal fluid) per year per well would be 6.5 billion kg (assuming 24-hour operations for 365 days). Similar amounts of fluids will be injected per BRGP injection well. The PSA does not provide an assessment of the impact of the produced and injected fluid volumes on the background seismicity of the Salton Sea Geothermal Field.

The BRGP PSA must be revised to include an evaluation of the impact the addition of 12 injection wells and nine production wells with the fluid production and injection capacities stated in the AFC would have on the background seismicity of the project area as well as the cumulative impacts from induced seismicity given the other two geothermal projects, existing geothermal operations, and reasonably foreseeable future geothermal and lithium projects under the Lithium Valley Specific Plan.

III. The PSA Does Not Properly Evaluate Impacts on Soil and Groundwater from Pipeline Leaks

The PSA fails to adequately analyze potentially significant impacts on soil and groundwater due to contamination from pipeline leaks. The project includes a total of about 7.54 miles of aboveground geothermal fluid conveyance pipelines connecting the powerplant to the production (7,137 feet) and injection (26,934 feet) wells (TN# 257697, page 5.16-1). The PSA explains, “Aboveground pipelines would transport the geothermal fluids from the production wells to the resource production facility (RPF).

The spent geothermal fluids would also be transported by aboveground pipelines to Class V injection wells and returned to the geothermal reservoir.” (PSA, page 5.16-1). Shallow groundwater (8 feet below the ground surface) and low permeability (up to 10,000 gallons per day per foot) of the soils (TN# 257697, page 5.16-2) along the pipeline routes may cause ponding of fluids if leaks from the Project’s fluid conveyance pipelines occur that could contaminate soil and groundwater resources. Moreover, the BRGP AFC specified that “A fluid release to the ground of 200 to 400 gallons typically would remain within a 20- to 30-foot radius of the leak location.” (TN 249723, page 2-57) This volume of fluid release would have an appreciable impact even at relatively small volumes.

The AFC on page 2-6 explained that “Dissolved elements within the geothermal fluid consist primarily of chloride, sodium, calcium, and potassium. There are also significant amounts of zinc, manganese, iron, and silica dissolved in the geothermal fluids. The major component of non-condensable gases is carbon dioxide, which is naturally occurring from the diagenesis of minerals and rocks. There is a large variety of other components in the geothermal fluid, although the other components are less than 0.01% each.” As excerpted below, Table 2-2 in the AFC provides a list of the expected chemical composition of the produced fluids constituents and their concentrations and Table 2-3 in the AFC contains the condensate and injected geothermal fluid characterization (AFC on pages 2-14, 2-17) The PSA, however, does not disclose this information or analyze the potentially significant impacts on soil and groundwater from an accidental release or leakage of fluids from the Project’s pipeline infrastructure.

Table 2-2. Expected Chemical Composition of Produced Fluids Constituent Concentration

Chemical	Milligrams per Kilograms
Hydrogen (H ⁺)	ND
Beryllium (Be ⁺²)	ND
Ammonium (NH ₄ ⁺)	322.9 (for NH ₃)
Sodium (Na ⁺)	49,889.0
Magnesium (Mg ⁺²)	55.5
Aluminum (Al ⁺³)	ND
Potassium (K ⁺)	12,430
Calcium (Ca ⁺²)	23,220
Chromium (Cr ⁺³)	ND
Manganese (Mn ⁺²)	820
Iron (Fe ⁺²)	710
Nickel (Ni ⁺²)	ND
Copper (Cu ⁺²)	2
Zinc (Zn ⁺²)	300
Cadmium (Cd ⁺²)	1
Barium (Ba ⁺²)	170
Mercury (Hg ⁺²)	ND
Lead (Pb ⁺²)	70
Fluorine (F ⁻)	10
Chloride (Cl ⁻)	135,000
Silicon Dioxide (SiO ₂)	430
Carbon Dioxide (CO ₂)	1,450
Hydrogen Sulfide (H ₂ S)	8
Ammonia (NH ₃)	30
Methane (CH ₄)	6
Total Dissolved Solids (TDS)	224,200
Potential of Hydrogen (pH)	5.7

ND = not detected

Table 2-3. Condensate and Injected Geothermal Fluid Characterization

Constituent	Condensate (mg/L)	Spent Geothermal Fluid (mg/kg)	Aerated Fluid (mg/kg)
Ammonia	500	NA	NA
Sodium	NA	66,867	75,800
Magnesium	13	78	48
Potassium	NA	16,153	22,400
Calcium	69	32,314	41,500
Chromium	NA	0.5	NA
Manganese	NA	1,149	NA
Iron	0.3	1,096	NA
Nickel	NA	0.2	NA
Copper	NA	3.0	NA
Zinc	NA	387	437
Strontium	NA	556	NA
Silver	NA	0.8	0.03
Cadmium	NA	2	0.9
Barium	NA	233	109
Mercury	NA	NA	0.0004
Lead	NA	91	94
Nitrate (NO3)	313	NA	NA
Fluoride	NA	27.0	NA
Sulfate	708	124	NA
Chloride	323	177,836	213,600
Arsenic	NA	16	8
Selenium	NA	NA	0.03
Silica	NA	168	NA
Boron	NA	381	NA
Total Dissolved Solids	1,818	313,442	369,400
pH	6.5	4.9	4.6

Notes:

All numbers are approximate.

NA = not available

Given the average daily volume flowrate of BRGP pipeline infrastructure and the constituents in the produced fluids and condensate and injected geothermal fluids, potential leakages from fluid conveyance pipelines to and from the production and injection wells and well pads, have the potential to cause soil and groundwater contamination, with the potential to further degrade soils and water quality in the area. The pipeline fluids are brines with high sodium and chloride concentrations. Sodium is a strong soil dispersant, destroying soil structure making soils more prone to crusting and impaired drainage (Levy and Torrento, 1995; Balks et al., 1998; Ward and Carter, 2004). Sodium induced soil dispersion also results in the formation of dense, impermeable surface crusts that inhibit seedling emergence. Additionally, sodium can elevate soil pH and lead to accumulation of other toxic elements. Chloride toxicity can also degrade soil and water quality (Levy and Torrento, 1995; Ward and Carter, 2004). Barium, Lead and Cadmium (AFC Tables 2-2 and 2-3) are other potential toxic metals present in the produced fluids that could be released into the soils and groundwater at the project site. These toxic constituents are present in the produced fluids transported by the pipeline system such that fluid release due to pipeline leakage would have a potentially significant impact on soil and groundwater.

IV. Leaks from the Project's Pipelines May Increase Soil Erosion and Liquefaction Risks

The PSA fails to adequately analyze potentially significant impacts of Project pipeline leaks on coupled effects of soil erosion, expansion of clays, and liquefaction. The preliminary geotechnical report for the

Project concludes that “[t]he risk of liquefaction induced settlement is high.” (AFC, Appendix 5.4, TN 249754) The PSA nevertheless concludes that with the implementation of seismic design criteria and project-specific recommendations in the final geotechnical engineering report, liquefaction risks would be less than significant (PSA, page 5.6-18). However, the Project’s preliminary geotechnical report did not analyze geotechnical hazards associated with fluid leaks from the Project pipelines. (AFC, Appendix 5.4, TN 249754 page 2).

Project area soils where the production and injection wells and pipelines will be installed (see Figure 3) may be subject to erosion, expansion, and liquefaction from fluid leaks from pipeline infrastructure. The soils impacted by the BRGP are shown in Figure 4 and are predominantly Imperial (41%) and Glenbar (40%) silty clay loams and are similar to those impacted by the Elmore North Geothermal Project and Morton Bay Geothermal Project. These soils would be prone to erosion due to soil structure degradation from heavy equipment during the project construction phase. High velocity fluids from a pipeline leak may cause soils in the vicinity of the pipeline infrastructure to liquify and undergo erosion in areas where soils were previously disturbed and degraded from construction activities. An analysis of the impacts from pipeline fluid leaks resulting in soil erosion is not included in the PSA and may be significant.



Figure 3. Site map showing location of plant and production wells circled in blue (reproduced from BRGP PSA Figure 3.3)

Soil structure degradation by machinery is likely to occur with the Project during construction activities as well as from repeated soil expansion and shrinkage cycles. Due to their high clay content, the soils in the project area are known (Imperial and Glenbar silty clay loams, see this [link](#) and the map reproduced herein as Figure 4) may be prone to undergo expansion upon imbibition of water and shrinkage upon drying, which is likely to occur under repeated pipeline leaks. The impact of expansion and shrinkage cycles on soil structure that may result from repeated pipeline leaks and the resulting increased susceptibility of the soils to erosion are not sufficiently analyzed in the PSA.



Figure 4. Map from [SoilWeb](#) showing the site map soils impacted by the BRGP as dominated by Imperial-Glenbar silty clay loams.

The liquefaction risk arises from the coupling of surface inundation from pipeline leaks with known high seismic activity in the area. As stated in the previous section, the project includes a total of about 6.45 miles of aboveground geothermal fluid conveyance pipelines connecting the powerplant to the production (7,137 feet) and injection (26,934 feet) wells (TN# 257697, page 5.16-1). The BRGP PSA (TN# 257697, page 3-12) estimates that the daily pipeline peak flow, that ultimately is to the injection wells, is 460 gallons per minute (gpm). Additionally, the BRGP AFC estimates that “[a] fluid release of 200 to 400 gallons would remain within a 20- to 30-foot radius of the leak location.” (TN 249752, page 2-57). At a flow rate of 460 gpm and the AFC’s own analysis of the radius of the leak location, short duration of fluid release (a few minutes) from a pipeline leak would be sufficient to inundate a large soil surface and cause the soil to undergo expansion and lose internal cohesiveness, and behave like a liquid (Locat and Demers, 1988). The seminal work of Locat and Demers (1988) demonstrates that soils inundated with fluids tend to lose their internal cohesiveness and transition into viscous fluid-like behavior. The potentially significant liquefaction risk associated with leaks from this pipeline infrastructure is not assessed.

Sincerely,
Bwalya Malama, Ph.D.,
Professor, Groundwater and Soil Biophysics
Department of Natural Resources Management and Environmental Sciences
California Polytechnic State University, San Luis Obispo, CA.



Recoverable Signature

X

Bwalya Malama

Bwalya Malama

Signed by: Bwalya Malama

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BWALYA MALAMA

California Polytechnic State University
Natural Resources & Environmental Management Dept.
San Luis Obispo, CA

Phone (W): (805) 756-2971
Email: bmalama@calpoly.edu

EDUCATION

Ph.D. in **Hydrology**, with minor in **Mathematics**, University of Arizona, 2006
MS in Mining, Geological and Geophysical Engineering, University of Arizona, 2001
BS (Honors, Cum Laude) in Mining Engineering, University of Arizona, 1999

APPOINTMENTS

08/2023-Present: **Professor**

Department of Natural Resources & Environmental Management
California Polytechnic State University, San Luis Obispo, CA

09/2017-08/2023: **Associate Professor**

Department of Natural Resources & Environmental Management
California Polytechnic State University, San Luis Obispo, CA

09/2014-2017: **Assistant Professor**

Department of Natural Resources & Environmental Management
California Polytechnic State University, San Luis Obispo, CA

08/2010-08/2014: **Senior Member of Technical Staff**

Sandia National Laboratories, Carlsbad, NM

08/2009-07/2010: **Assistant Professor**

Department of Geological Engineering, Montana Tech of the University of Montana

08/2008-08/2009: **Assistant Research Professor**

CGISS & Department of Geosciences, Boise State University

06/2006-07/2008: **Postdoctoral Research Scientist**

CGISS & Department of Geosciences, Boise State University

08/2003-08/2006: **Research Associate** (PhD Candidate)

Department of Hydrology and Water Resources, University of Arizona

08/1999-07/2003: **Research Assistant** (MS Candidate)

Department of Mining and Geological Engineering, University of Arizona

TEACHING EXPERIENCE

California Polytechnic State University, NRES Department

Environmental Soil Physics (SS 424)

Environmental Groundwater Hydrology (ERSC 442)

Environmental Contaminant Transport (ERSC 443)

Advanced Environmental Science (ESCI 550)

Physical Geology (GEOL 201)
Introduction to Earth Science (ERSC 144)
Introduction to Soil Science (SS 120)
Undergraduate Seminar (NR 363)

Geological Engineering, Montana Tech

Hydrogeology for engineers
Numerical methods for groundwater flow modeling
Advanced hydrogeology.

Geosciences, Boise State University

Applied Hydrogeology
Advanced Hydrogeology.

Pima Community College, Tucson, Arizona

College Algebra; Trigonometry; Statistics.

Mining and Geological Engineering, University of Arizona (Graduate instructor)

Underground Mine Ventilation.

PUBLICATIONS

1. Solum, J., **Malama, B.**, (2022) *Estimating Canopy-Scale Evapotranspiration from Localized Sap Flow Measurements*, Water 14(11), 1812. <https://doi.org/10.3390/w14111812>
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SELECTED ABSTRACTS & CONFERENCE PRESENTATIONS

1. **Malama, B.** (2022) *Field Observations of Transient Stream Drawdown Response to Groundwater Pumping*, AGU Fall Meeting, December 15, Chicago, Ill.
2. **Malama, B., (2022)** *Transient Electrokinetic Response of a Shallow Aquifer-Aquitard System to Groundwater Pumping*, NGWA Groundwater Week, December 6, Las Vegas, NV.
3. **Malama, B.**, Ying-Fan Lin (2021) *The Stream Depletion Model Paradox: a First Solution, Recent Advances, and Implications for Groundwater Sustainability*, AGU Fall Meeting
4. **Malama, B.**, Ye-Chen Lin (2021) *Resolving the Stream Depletion Model Paradox: Theory of Depletion with Stream Drawdown near a Pumping Well*, Earth & Space Science Open Archive, <https://doi.org/10.1002/essoar.10508030.2>
5. **Malama, B.**, Iason E. Pitsillides (2020) *Deep Sensing of Transient Electrokinetic Response of Aquifer-Aquitard System to Pumping*, AGU Fall Meeting, December, San Francisco, CA.
6. **Malama, B.**, Solum James (2019) *Two Years of Sap Flow for Evapotranspiration Characterization in Riparian Vegetation*, AGU Fall Meeting, December, San Francisco, CA.
7. **Malama, B.**, Jack T. Ridder, Nico Hillman, Shelby Littleton (2019) *Transient Electrokinetic Signals Measured above a Fractured Rock Aquifer*, AGU Fall Meeting, December, San Francisco, CA.
8. Kuhlman, K.L., **Malama, B.** (2019) *Eigenvalue Uncoupling of Electrokinetic Flows*, AGUFGM, 2019, H21H-1815.
9. Pritchard-Peterson, D., **Malama, B.** (2017) *Field Investigation of Stream-Aquifer Interactions - A Case Study*, AGU Fall Meeting, December, New Orleans, LA.
10. Aurelius, S., Platt, D.C., **Malama, B.** (2017) *Characterization of California Central Coast Aquifers using Pneumatic Slug Tests*, AGU Fall Meeting, December, New Orleans, LA.
11. **Malama, B.** (2017) *The Stream Depletion Model Paradox - A First Solution*, AGU Fall Meeting, December, New Orleans, LA.
12. **Malama, B.**, Abere, M., Montgomery, M. (2016) *Characterizing Multi-layered Coastal Aquifer using Pneumatic Slug Tests*, AGU Fall Meeting, December, San Francisco, CA.

13. Mishra, P.K., Alves Silva, L.P., **Malama, B.** (2015) *Semi-analytical model for slug test in unconfined aquifers*, AGU Fall Meeting, December, San Francisco, CA.
14. **Malama, B.** (2014) *Transient Streaming Potentials under Varying Pore-water Ionic Strength*, AGU Fall Meeting, December, San Francisco, CA.
15. Kuhlman, K.L., **Malama, B.**, Heath, J.E., Gardner, W.P., Robinson, D.G. (2013) *Multi-porosity transport of natural tracers in a fractured system*, AGU Fall Meeting, San Francisco, CA.
16. **Malama, B.** (2013) *Transient streaming potentials associated with brine flow in rock salt*, AGU Fall Meeting, San Francisco, CA.
17. **Malama, B.** (2013) *Transient streaming potentials: a proxy for hydraulic head? Results from lab-scale pumping test simulations*, NGWA Ground Water Summit, San Antonio TX.
18. **Malama, B.** (2012) *Modeling transient streaming potentials in coupled saturated-unsaturated zone flow to a pumping well*, AGU Fall Meeting, San Francisco, CA.
19. **Malama, B.** (2012) *Estimation of the electrokinetic coupling coefficient and hydraulic conductivity from streaming potential measurements in a falling-head permeameter*, NGWA Ground Water Summit, Garden Grove, CA.
20. **Malama, B.** (2011) *Aquifer characterization using transient streaming potentials generated by flow during pumping tests - New developments*, AGU Fall Meeting, San Francisco, CA.
21. **Malama, B.** Lee, M. (2011) *Application of multirate mass transfer model to radionuclide transport in Culebra Dolomite core*, in Proceeding of the International Symposium on Radiation Safety Management, November 2-4, 2011, Gyeongju, Republic of Korea.
22. **Malama, B.** (2010) *Hydraulic characterization of the shallow subsurface in the Butte--Silver Bow area in southwestern Montana, using pneumatic slug tests*, AGU Fall Meeting, San Francisco, CA.
23. **Malama, B.** Kuhlman, K.L., Revil, A., (2009) *Modeling aquifers using transient streaming potentials*, submitted to AGU Fall Meeting, San Francisco, CA.
24. Thoma, M., **Malama, B.**, Barrash, W., Bohling, G., Butler Jr., J.J. (2009) *A general model for using slug tests in unconfined aquifers: Assessment of skin effects*, AGU Fall Meeting, San Francisco, CA.
25. **Malama, B.**, Revil, A., Kuhlman, K. L., (2008) *A semi-analytical solution for transient streaming potentials associated with confined aquifer pumping tests*, AGU Fall Meeting, San Francisco, CA.
26. Thoma, M., **Malama, B.**, Bradford, J., Barrash, W., Johnson, B., Hinz, E., Murray, S. (2008) *Using Ground Penetrating Radar to Monitor Transient Unconfined Aquifer Response to Pumping*, AGU Fall Meeting, San Francisco, CA.
27. **Malama, B.**, Kuhlman, K. L., Barrash, W. (2007) *Leakage theory for unconfined aquifers*, AGU Joint Assembly, Acapulco, Mexico.
28. **Malama, B.**, Barrash, W. (2006) *Solute Transport in a Medium with Spatially Variable Porosity*, AGU Fall Meeting, San Francisco, CA.
29. **Malama, B.** Neuman, S.P. (2004) *Inverse stochastic moment analysis of transient flow in randomly heterogeneous media*, AGU Fall meeting, San Francisco, CA.

30. **Malama, B.**, Kulatilake, P.H.S.W., Park, J. (2003) *A New Rock Mass Strength Criterion for Biaxial Loading Conditions*, 39th US Rock Mechanics Symposium, MIT.

MANUSCRIPTS IN PREPARATION

1. **Malama, B.**, Ying-Fan Lin, Hwa-Lung Yu, Hua-Ting Tseng, and Sam Greene (2022) *Transient Theory of Pumping Induced Depletion and Drawdown of a Stream with Finite Channel Storage*, Hydrology and Earth System Sciences, EGU (submitted)
2. **Malama, B.**, Iason Pitsillides, Braden Povah, *Transient Electrokinetic Response of a Shallow Aquifer-Aquitard System to Groundwater Pumping*.
3. **Malama, B.**, Whetsler, B, *Finite Element Modeling of a Coastal California Aquifer*.

SUPERVISED STUDENT THESES & PROJECTS

1. Pritchard-Peterson, Devin (2018) *Field Investigation of Stream-Aquifer Interactions: A Case Study in Coastal California*, Master of Science in Forestry Sciences, Thesis.
2. Solum, James (2020) *Estimating Evapotranspiration of a Riparian Forest using Sap Flow Measurements*, Master of Science in Forestry Sciences, Thesis.
3. Whetsler, Brian (2020) *A Groundwater Model of the San Luis Obispo Valley Basin using COMSOL Multiphysics*, Master of Science in Environmental Science and Management, Project Report.
4. Carlson, Alexandra (2020) *Preliminary Survey of Herbicide Environmental Fate and Transport in California and the Morro Bay Watershed*, Master of Science in Environmental Science and Management, Project Report.
5. Sinnott, Tyler K. (2020) *Eelgrass (zostera marina) Population Decline in Morro Bay, CA: A Meta-Analysis of Herbicide Application in San Luis Obispo County and Morro Bay Watershed*, Master of Science in Environmental Science and Management, Project Report.
6. Momberger, Claire J. (2020) *A Hydrologic model of the northern limb of the San Luis Obispo Valley aquifer by use of COMSOL Multiphysics Simulation Software*, Master of Science in Environmental Science and Management, Project Report.

TECHNICAL REPORTS

1. Malama, B. (2021) *A Review of the Cat Canyon Aquifer Exemption Expansion Application*, Technical Report for the Environmental Defense Center.
2. Malama, B. (2021) *A Review of Temperature Logs from Cat Canyon Wells for Evidence of Leakage*, Technical Report for the Environmental Defense Center.
3. Malama, B., Solum, T., Nicholson, B. (2020) *Results of Direct-Push Exploratory Borehole Drilling at the Kendall Site for the Santa Rosa Creek Flow Enhancement Pilot Project*, Technical Report for Central Coast Salmon Enhancement.
4. Malama, B., Appel, C., Lazcano, C. (2019) *Survey of Soil Health Characteristics Necessary to Support Native Plant Species at the Santa Susana Field Site*, Technical Report for NASA.

GRANTS

1. Moore Foundation (2022), \$500K (Co-PI, Pending)
2. NSF-MRI: Acquisition of a Sciex ZenoTOF 7600 Liquid Chromatograph Mass Spectrometer (LC-MS) for Studying a Broad Spectrum of Complex Organic Compounds, (2022) \$774,276 (Co-PI, Not funded)
3. Cal Fire: Study in the Soquel Demonstration State Forest, (2021-2024), \$499,513 (Co-PI, **Funded**)
4. CSU-ARI: Watershed and soil response to wildfire at Swanton Pacific Ranch (2021-2024), \$182,469 (Co-PI, **Funded**)
5. Coastal Research Institute: Monitoring the seawater-freshwater interface in coastal aquifers (2022-2023), \$18,000 (PI, **Funded**)
6. U.S. Dept of Energy via University of Wisconsin-Madison: Caprock CO₂ and Brine Leakage Detection via Self Potential & Oscillatory Hydraulic Testing, (2021) \$117K (PI, Not funded)
7. ARI, The Effects of Soil Health Management Practices on Water Quality in Coastal Orchards (Co-PI, 2020-2023), \$30,000 (**Funded**)
8. USDA- NLGCA, Capacity Development and Curriculum Enhancement for a Professional Graduate Program (2023-2025), \$149,987 (Not funded)
9. Cal Poly Strategic Research Initiatives (2020), \$500,000 (Not funded)
10. Central Coast Salmon Enhancement (2019-2020), \$26,593 (**Funded**)
11. CDFA – Healthy Soils (Co-PI, 2018-2020), \$206,771 (**Funded**)
12. NASA (2018), \$50,317 (**Funded**)
13. California Department of Pesticide Regulation (2017), \$500,000 (Not funded)
14. National Science Foundation (2017), \$297,389 (Not funded)
15. California Department of Water Resources (2017), \$35,801 (**Funded**)
16. California Department of Food and Agriculture – FREP (2017), \$222,253 (Not Funded)
17. ARI Campus (2017), \$75,000 (Not funded)
18. RSCA Grant (2017), \$14,000 (**Funded**)
19. RSCA Grant (2016), \$12,000 (**Funded**)
20. USDOE-UFD (2016), \$800,000 (Not funded)
21. USDA-NIFA Exploratory Research (2016), \$100,000 (Not funded)
22. CDFA-FREP (2016), \$100,000 (Not funded)
23. ARI Seed Grant (2015), \$5000 (**Funded**)
24. ARI New Investigator (2015), \$39,663 (**Funded**)
25. McIntire-Stennis (2015), \$29,927 (**Funded**)
26. USDOE-UFD (2015), \$800,000 (Not funded)

SERVICE

Semester Conversion Taskforce, CAFES Faculty Representative
Academic Senate

GEGB, CAFES Representative

MS ESM Department Committee

Graduate Coordinator, MS Ag Soil Science Specialization

Chair, Search Committee, Digital Soil Mapping

Search Committee, Soil Ecology Position

Search Committee, Soil Fertility/Health Position

Supervising Graduate Students

Convener and Chair of several American Geophysical Union (AGU) oral and poster sessions

Served as MS Committee Member Forestry Science Graduate

Member AGU Groundwater Technical Committee
Served on Graduate Committee at Montana Tech of the University of Montana
Served on Multiple Masters Student Thesis committees

PRIVATE CONSULTING PROJECTS (Founder *AquiFAnalytics, LLC* 2014)

Environmental Defense Council, Santa Barbara, CA (2021), \$7200
Sandia National Laboratories, Albuquerque, NM (2019), \$8140
Cleath-Harris Geologists, San Luis Obispo, CA (2015-2017), \$5000
Sandia National Laboratories, Carlsbad, NM (2014-2017), \$50,000

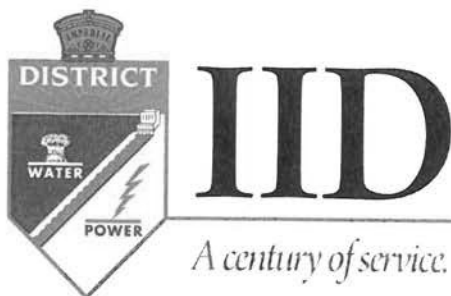
COMPUTATIONAL SKILLS

Numerical Methods: Finite element and Finite difference methods.
Programming: C++, MATLAB, Python, FORTRAN.
Modeling: COMSOL Multiphysics, MODFLOW, TOUGH, AQTESOLV.

PROFESSIONAL MEMBERSHIPS

American Geophysical Union (AGU)
National Ground Water Association (NGWA)
Groundwater Resources Association of California (GRAC).

ATTACHMENT F



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Since 1911

September 22, 2023

Sheila Sannadan
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037
Email: ssannadan@adamsbroadwell.com

Re: **Response to California Public Records Act Requests Dated August 9, August 10, and August 15, 2023.**

Dear Ms. Sannadon,

By separate California Public Records Act requests dated August 9, 10 and 15, 2023, you have requested,

“.... a copy of any and all records” related to the Black Rock, Morton Bay and Elmore North Geothermal Project.

The Imperial Irrigation District has determined that your request seeks both disclosable and exempt records. Included with this letter are non-exempt records. As noted, additional records exist which we have determined to be either protected trade secrets of BHE Renewables, LLC and thus exempt pursuant to Government Code Section 7927.705 and Evidence Code Section 1060. Additional records relating to electrical production systems development, obtained in confidence from BHE Renewables, LLC, are deemed exempt pursuant to the provisions of Government Code Section 7927.300.

Finally, we are in the process of gathering a significant number of additional documents that relate solely to IID rights-of-way over BHE owned lands. If you wish copies of such documents please advise.

Thank you.

Sincerely,


Geoffrey P. Holbrook
General Counsel

**ENGINEERING, STUDY, AND DESIGN
AGREEMENT**

BETWEEN

IMPERIAL IRRIGATION DISTRICT

AND

BHE Renewables, LLC

for the

Salton Sea Transmission Project

ENGINEERING, STUDY, AND DESIGN AGREEMENT

THIS ENGINEERING, STUDY, AND DESIGN AGREEMENT ("Agreement") is made and entered into this 1 day of November, 2022 ("Effective Date"), by and between BHE Renewables, LLC, a Delaware limited liability company ("Transmission Customer") and Imperial Irrigation District, an irrigation and electric district organized and existing under the laws of the State of California, ("Transmission Provider"). Transmission Customer and Transmission Provider each may be referred to individually as a "Party," or collectively as the "Parties."

RECITALS

WHEREAS, Transmission Customer is proposing to develop Generating Facilities, consistent with the Interconnection Requests submitted by Transmission Customer dated December 23, 2021 (Black Rock) and December 27, 2021 (Elmore North & Morton Bay) in accordance with Transmission Provider's Generation Interconnection Procedures ("GIP") set forth in Attachment J of Transmission Provider's Open Access Transmission Tariff ("OATT");

WHEREAS, the Transmission Customer desires to wheel power from its Generating Facilities through the Transmission Provider's Transmission System ("Transmission Provider's System") for the purposes of making wholesale sales of electricity;

WHEREAS, Transmission Customer has submitted a Transmission Service request to Transmission Provider pursuant to Transmission Provider's Open Access Transmission Tariff ("OATT" or "Tariff") dated August 30, 2022 and intends to effectuate transmission wheeling service through an appropriate transmission service agreement pursuant to Transmission Provider's OATT to facilitate transmission of power from its Generating Facilities for the purposes of making wholesale sales of electricity, including from Transmission Provider's System to the California Independent System Operator Corporation ("CAISO") Controlled Grid;

WHEREAS, a new transmission line ("Project") is necessary to address Transmission Customer's Transmission Service request and in order for Transmission Customer's Generating Facilities to interconnect to the CAISO Controlled Grid, through which Transmission Customer wishes to make wholesale sales of electricity;

WHEREAS, Transmission Customer has requested performance of preliminary, engineering, study and design activities, necessary for development of the Project, as further set forth on Attachment A;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, including the foregoing which are part of this Agreement and not mere recitals, the Parties agree as follows:

1. **Capitalized Terms.** Unless specifically defined herein, capitalized terms shall have the meanings indicated in Transmission Provider's OATT.
2. **Authorization of Work.** Transmission Provider authorizes Transmission Customer to perform or have performed the engineering, study, and design activities ("Work") described in Attachment A.
3. **Responsibilities of Transmission Provider.** Transmission Provider shall:
 - a. Designate an Owner Representative, who shall act as a single point of contact on behalf of Transmission Provider with respect to the prosecution and scheduling of the Work and any issues relating to this Agreement. Transmission Provider may designate a new Owner Representative from time to time by a Notice delivered to Transmission Customer.
 - b. In accordance with and subject to the terms of this Agreement, diligently, duly and properly perform, complete and pay for the Work as further set forth in Attachment C and all of its other obligations set forth in this Agreement;
 - c. Notwithstanding the provisions of the Transmission Provider's OATT, the Transmission Provider is not required to provide or offer any service that the Transmission Provider determines, in its sole discretion, it is incapable of providing; provided, however, Transmission Provider shall be required to provide the services enumerated in this Agreement where indicated herein.
4. **Responsibilities of the Transmission Customer.** Transmission Customer shall:
 - a. Adhere to the obligations set forth under Transmission Provider's OATT for Transmission Customers and Interconnection Customers, as applicable, and meet any associated milestones;
 - b. Pay the actual costs incurred by Transmission Provider associated with all Work identified in this Agreement, including but not limited to those specified in Attachment C, and actual costs incurred by or on behalf of Transmission Provider in meeting Transmission Provider's responsibilities set forth in Section 3. An estimated deposit and payment schedule is attached hereto as Attachment B. The Parties agree that the amounts set forth in Attachment B shall be considered as estimates only and shall not be deemed to modify this Section 4.
 - c. Cooperate with Transmission Provider in meeting the obligations set forth in Section 3.

d. Diligently, duly, and properly perform and complete all of its obligations under this Agreement.

5. **No Impact of Agreement on Queue Position or In-Service Date.** This Agreement does not alter Transmission Customer's transmission or interconnection Queue Position or In-Service Date.

6. **Opportunity to Self-Engineer, Study and Design Build.** Notwithstanding anything contrary in the provisions set forth in Sections 2 and Section 3, Transmission Customer elects to and shall undertake the Work outlined in Attachment A to this Agreement. In order for Transmission Customer to undertake the Work outlined in Attachment A, Transmission Customer must follow the following requirements:

- a. Transmission Customer shall utilize prudent industry practices in accordance with Transmission Customers' internal standards and Transmission Provider's requirements in solicitation of vendors for the Work. Transmission Provider shall have the opportunity to review and comment on the solicitation.
- b. Transmission Customer shall perform or require that its authorized vendors and subcontractors perform, the Work in accordance with engineering design, safety and technical standards, Good Utility Practice, Applicable Law (including applicable Federal Energy Regulatory Commission ("FERC"), North American Electric Reliability Corporation ("NERC"), and Western Electricity Coordinating Council ("WECC") requirements, and any applicable state, local, or regulatory requirements), applicable permits, and any specifications provided by Transmission Provider to Transmission Customer.
- c. Transmission Customer shall require from vendors that Transmission Provider receive copies of all products that are the result of the Work and rights to use the products of the Work or the results of the Work without restriction.
- d. Copies of competitive bids shall be provided by Transmission Customer to Transmission Provider. In coordination with Transmission Provider, Transmission Customer shall select the bid that is the lowest price bid, that meets the standards and specifications required by Transmission Provider and is capable of being delivered by the date agreed upon by Transmission Provider and Transmission Customer.
- e. Transmission Provider shall consider, but is not required to accept, previous competitive bids for approval that have been received from Transmission Customer's contractors related to recent and ongoing work occurring for BHE Renewables.

7. **No Obligation to Secure Permits.** In meeting its obligations under this Agreement, Transmission Provider shall not be obligated to secure any permits on behalf of the Project. Transmission Provider will cooperate with reasonable requests for information required to support permitting.

8. **Subcontracting.** The Parties acknowledge and agree that either Party shall be entitled to engage subcontractors in respect of the performance of the Work or any portion thereof; provided that the use of any subcontractor shall not: (a) relieve either Party of its duties, responsibilities, obligations or liabilities hereunder, including but not limited to Transmission Customer's competitive bid obligations as outlined in Section 6, (b) relieve either Party of its responsibility for the performance of any Work for which it is responsible as reflected in Attachment A and C that is rendered by any such subcontractor, or (c) create any relationship between the other Party and any subcontractor. The Parties shall be solely responsible for the acts, omissions or defaults of its subcontractors. No subcontractor is intended to be nor shall be deemed a third-party beneficiary of this Agreement. The Parties acknowledge that Transmission Customer is required to comply with all applicable requirements for it to solicit competitively subcontracted for Work.

9. **Failure of Transmission Customer to Meet Obligations under this Agreement.** If Transmission Customer fails to meet its obligations under this Agreement, the following terms apply:

- a. Transmission Provider may cease to perform Work, and may at its sole discretion, terminate this Agreement upon written notice if Transmission Customer has, after written notice from Transmission Provider and the opportunity to cure for five (5) business days: (i) failed to meet any milestones or comply with any prerequisites specified in the OATT, or (ii) fails to adhere to its obligations as set forth herein.
- b. If for any reason Transmission Customer fails to make a payment to Transmission Provider on or before the due dates specified in Attachment B, Transmission Provider will notify Transmission Customer of such failure in writing and shall not be obligated to proceed with the performance of Work until such payment is made. If Transmission Customer does not make the required payment within thirty (30) calendar days of the notice of failure to make timely payment, Transmission Provider may, in its sole discretion, terminate this Agreement.
- c. Transmission Provider shall notify Transmission Customer in writing within five (5) business days of it learning if Transmission Provider learns that the costs incurred under this Agreement are likely to exceed the amounts specified in Attachment B. In such notification, Transmission Provider shall provide Transmission Customer with a revised Attachment B, outlining the new estimated costs. If Transmission Customer does not dispute in writing the reasons for the increased payments, Transmission Customer shall pay Transmission Provider the increased payment amounts outlined in revised Attachment B within thirty (30) calendar days.

of Transmission Provider's notification. If Transmission Customer does not pay Transmission Provider the increased payment amounts outlined in the revised Attachment B within thirty (30) calendar days of Transmission Provider's notification, Transmission Provider shall not be obligated to proceed with the performance of Work and may, in its sole discretion, immediately terminate this Agreement. Alternatively, if Transmission Customer disputes in writing the reasons for or any portion of the increased payment amounts within fifteen (15) calendar days from Transmission Provider's notification, the Parties shall promptly meet and attempt to resolve the dispute. In the event the Parties are unable to resolve the dispute within thirty (30) calendar days from receipt of Transmission Customer's written dispute, Transmission Provider will cease all Work under this Agreement and this Agreement shall terminate immediately upon written notice by Transmission Provider.

10. Intention to Execute GIA. Transmission Customer intends to enter into a Generator Interconnection Agreement ("GIA") with respect to the Generating Facilities. The GIA will identify the facilities and costs resulting from the last stage of the study process pursuant to the GIP, and will address construction of the facilities and any engineering, design and procurement activities identified as necessary for the interconnection. The GIA will also account for Work already undertaken and payments already made pursuant to this Agreement. If Transmission Customer is unable to enter into an GIA with respect to the Generating Facilities, or if Transmission Customer's GIA with Transmission Provider terminates at any time during the term of this Agreement, Transmission Provider may provide Notice to Transmission Customer terminating this Agreement.

11. Transmission Provider Not Liable for Delays. Transmission Provider shall use reasonable efforts to complete the Work identified in Attachment C; however, in no event shall Transmission Provider be responsible under the terms of this Agreement for any delay in completion of the Work identified in Attachment C of this Agreement to the extent such delay constitutes Force Majeure as defined in this Agreement, except to the extent such delay stems from Transmission Provider's acts or omissions, or to the extent that such delay is caused by the actions or omissions of the Transmission Customer.

12. Termination of Agreement. Subject to Section 13 below, this Agreement shall terminate upon the earliest of the following to occur: (i) written notice provided by Transmission Provider to Transmission Customer pursuant to Section 9 or 10 herein; or (ii) Transmission Customer withdraws or is deemed to have withdrawn its Interconnection Request associated with the Project under the terms of Transmission Provider's OATT. Following termination, Transmission Provider promptly shall provide Transmission Customer with a reconciliation invoice.

13. Survival of Obligation to Pay and Reconciliation. Transmission Customer's obligations to pay Transmission Provider for costs incurred or irrevocably committed to be incurred pursuant to this Agreement will survive termination of this Agreement for any reason.

a. Excess Payments. In the event Transmission Customer's payments paid in accordance with Attachment B to this Agreement, including any revisions to Attachment B as provided in Section 9 herein, exceeds the amount of Transmission Provider's actual costs incurred or irrevocably committed to be incurred pursuant to this Agreement, Transmission Provider shall credit in the final reconciliation invoice provided in accordance with Section 12 or return the excess amounts within thirty (30) days of the submission of such financial reconciliation invoice.

b. Deficient Payments. In the event Transmission Customer's payments paid in accordance with Attachment B to this Agreement, including any revisions to Attachment B as provided in Section 9 herein, are less than the amount of Transmission Provider's actual costs incurred or irrevocably committed to be incurred pursuant to this Agreement, then Transmission Customer shall pay the difference within thirty (30) days of the date of receipt of the final reconciliation invoice provided in accordance with Section 12 of this Agreement.

14. Ownership. IID solely shall own the Project, including all appurtenant equipment, rights, and associated ROWs. Subject to any contractual arrangements with Transmission Customer, IID shall have full rights to use for its own purposes and to make transmission rights of the Project available for use under IID's OATT.

15. Transmission Service Agreement. IID and Transmission Customer shall in good faith negotiate and enter into an appropriate transmission service agreement under IID's OATT for Transmission Customer's use of requested capacity of the Project.

16. Indemnification. Transmission Customer and Transmission Provider shall at all times indemnify, defend, and hold each other (and their respective employees, agents, and Boards) harmless from, any and all suits, causes of action, claims, charges, damages, demands, judgments, civil fines, penalties, costs and expenses (including without limitation, attorneys' fees, and costs of experts and consultants), or losses of any kind or nature whatsoever including, without limitation, business interruption, impairment of contract, death, bodily injury or personal injury to any person, damage or destruction or loss of use to or of any property (financial, physical, or intellectual) by or to third parties, arising by reason of or incident to or directly or indirectly related to such Party's acts, errors or omissions, performance or nonperformance of any of its obligations under this Agreement on behalf of Transmission Customer, except in the case of sole negligence or intentional wrongdoing by the other Party.

17. Limitation of Liability; Release. Except for damages from willful misconduct or gross negligence, Transmission Provider's liability for any action arising out of its activities or non-performance relating to this Agreement shall be limited to the amounts expended by Transmission Customer in performing under this Agreement. UNDER NO CIRCUMSTANCES SHALL TRANSMISSION PROVIDER (OR ITS BOARD, EMPLOYEES, OR AGENTS) BE LIABLE FOR ANY OF TRANSMISSION CUSTOMER'S

ECONOMIC LOSSES, COSTS OR DAMAGES, INCLUDING BUT NOT LIMITED TO SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR EXEMPLARY DAMAGES.

18. Disclaimer of Warranty. Transmission Provider and Transmission Customer warrant that the Work they perform hereunder shall be consistent with Good Utility Practice. TRANSMISSION PROVIDER DISCLAIMS ALL OTHER WARRANTIES IN CONNECTION WITH THE ENGINEERING AND PROCUREMENT SERVICES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTY OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, AND ALL SIMILAR WARRANTIES. Transmission Provider's undertaking and completion of any Work under this Agreement shall not be construed as: (a) confirming or endorsing the design, or as any warranty of safety, durability, reliability or suitability of Transmission Customer's Project or installation thereof for any use, including the use intended by the Transmission Customer; and (b) a guarantee of an GIA nor any approval of the proposed Project.

19. Representations, Warranties, and Covenants. Each Party makes the following representations, warranties and covenants:

a. Good Standing. Such Party is duly organized, validly existing and in good standing under the laws of the state in which it is organized, formed, or incorporated, as applicable; that it is qualified to do business in the state or states in which it is located, and that it has the corporate power and authority to own its properties, to carry on its business as now being conducted and to enter into this Agreement and carry out the transactions contemplated hereby and perform and carry out all covenants and obligations on its part to be performed under and pursuant to this Agreement.

b. Authority. Such Party has the right, power and authority to enter into this Agreement, to become a Party hereto and to perform its obligations hereunder. This Agreement is a legal, valid and binding obligation of such Party, enforceable against such Party in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors' rights generally and by general equitable principles (regardless of whether enforceability is sought in a proceeding in equity or at law).

c. No Conflict. The execution, delivery and performance of this Agreement does not violate or conflict with the organizational or formation documents, or bylaws or operating agreement, of the Party, or any judgment, license, permit, order, material agreement or instrument applicable to or binding upon such Party or any of its assets.

d. Consent and Approval. The Party has obtained each consent, approval, authorization, order, or acceptance by any Governmental Authority that is required of it in connection with the execution, delivery

and performance of this Agreement, and it will provide to any Governmental Authority notice of any actions under this Agreement that are required by Applicable Laws and Regulations.

20. Force Majeure. Neither the Transmission Provider nor the Transmission Customer will be considered in default as to any obligation under this Agreement if prevented from fulfilling the obligation due to an event of Force Majeure. The term "Force Majeure" shall mean any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any curtailment, order, regulation or restriction imposed by governmental military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure event does not include a Party's act of negligence or intentional wrongdoing. However, a Party whose performance under this Agreement is hindered by an event of Force Majeure shall make all reasonable efforts to perform its obligations under this Agreement. Telephone notices given pursuant to this section shall be confirmed in writing as soon as reasonably possible. The Party claiming Force Majeure shall give timely written notice to the other Party that the Force Majeure event that prevented the fulfillment of obligations of this Agreement are no longer present and work has resumed on those obligations.

21. Governing Law. This Agreement shall be governed by, interpreted and enforced in accordance with the laws of the State of California, as if executed and to be performed wholly within the State of California, and without regard to principles of conflicts of law. TO THE FULLEST EXTENT PERMITTED BY LAW, EACH OF THE PARTIES HERETO WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS CONTRACT. EACH PARTY FURTHER WAIVES ANY RIGHT TO CONSOLIDATE ANY ACTION IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED. IF A WAIVER OF JURY TRIAL IS DEEMED BY ANY COURT OF COMPETENT JURISDICTION TO NOT BE ENFORCEABLE FOR ANY REASON, THEN TO THE FULLEST EXTENT PERMITTED BY LAW, EACH OF THE PARTIES HERETO AGREE TO BINDING ARBITRATION. SUCH ARBITRATION SHALL BE IN ACCORDANCE WITH SECTIONS 12.2 AND 12.3 OF TRANSMISSION PROVIDER'S TARIFF.

22. Venue. Any action or proceeding arising out of or relating to this Agreement shall be brought in State court located in the County of Imperial, California and/or Federal court located in the County of San Diego or County of Imperial, California. Each Party irrevocably agree to submit to the exclusive jurisdiction of such courts in the State of California for the purpose of litigating any dispute arising out of or relating to this Agreement and waive any defense of *forum non conveniens* (or a similar doctrine pertaining to venue).

23. Notices.

a. Representatives and Addresses. All notices, requests, demands, and other communications required or permitted under this Agreement

shall be in writing, unless otherwise agreed by the Parties, and shall be delivered in person or sent by certified mail, postage prepaid, by overnight delivery, or by electronic mail or electronic facsimile transmission, and addressed as follows:

When delivered to Transmission Provider:
Imperial Irrigation District
Attention: General Counsel
333 E. Barioni Boulevard
PO Box 937
Imperial, CA 92251
gpholbrook@iid.com
with copies to:

Imperial Irrigation District
Attention: General Manager
333 E. Barioni Boulevard
PO Box 937
Imperial, CA 92251
ebmartinez@iid.com

Imperial Irrigation District
Attention: Energy Contract Administration
333 E. Barioni Boulevard
PO Box 937
Imperial, CA 92251
energycontracts@iid.com

When delivered to Transmission Customer:
BHE Renewables
Attn: General Counsel
4214 NW Urbandale Dr.
Urbandale, IA 50322
generalcounsel@bherenewables.com

Changed Representatives and Addresses. Either Party may, from time to time, change its representative(s) or address for the purpose of notices to that Party by a similar notice specifying a new representative or address, but no such change shall be deemed to have been given until such notice is actually received by the Party being so notified.

24. Miscellaneous

a. Binding Effect. This Agreement and the rights and obligations hereof, shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties hereto.

b. Conflicts. In the event of a conflict between the body of this Agreement and any attachment, appendices or exhibits hereto, the terms and provisions of the body of this Agreement shall prevail and be deemed the final intent of the Parties.

c. Rules of Interpretation. This Agreement, unless a clear contrary intention appears, shall be construed and interpreted as follows: (1) the singular number includes the plural number and vice versa; (2) reference to any person includes such person's successors and assigns but, in the case of a Party, only if such successors and assigns are permitted by this Agreement, and reference to a person in a particular capacity excludes such person in any other capacity or individually; (3) reference to any agreement (including this Agreement), document, instrument or tariff means such agreement, document, instrument, or tariff as amended or modified and in effect from time to time in accordance with the terms thereof and, if applicable, the terms hereof; (4) reference to any Applicable Laws and Regulations means such Applicable Laws and Regulations as amended, modified, codified, or reenacted, in whole or in part, and in effect from time to time, including, if applicable, rules and regulations promulgated thereunder; (5) unless expressly stated otherwise, reference to any Attachment is to an Attachment to this Agreement; (6) "hereunder", "hereof", "herein", "hereto" and words of similar import shall be deemed references to this Agreement as a whole and not to any particular Section or other provision hereof or thereof; (7) "including" (and with correlative meaning "include") means including without limiting the generality of any description preceding such term; and (8) relative to the determination of any period of time, "from" means "from and including", "to" means "to but excluding" and "through" means "through and including". Ambiguities or uncertainties in the wording of this Agreement shall not be construed for or against any Party, but shall be construed in the manner that most accurately reflects the Parties' intent as of the date they executed this Agreement.

d. Entire Agreement. This Agreement constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants that constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

e. No Third-Party Beneficiaries. This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are

solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

f. Waiver. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Any waiver of this Agreement shall, if requested, be provided in writing.

g. Headings. The descriptive headings of the various sections of this Agreement have been inserted for convenience of reference only and are of no significance in the interpretation or construction of this Agreement.

h. Multiple Counterparts. This Agreement may be executed in two or more counterparts, each of which is deemed an original, but all constitute one and the same instrument.

i. Amendment. The Parties may by mutual agreement amend this Agreement by a written instrument duly executed by the Parties. No amendment shall be effective if executed otherwise.

j. No Partnership. This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

k. Severability. If any provision in this Agreement is finally determined to be invalid, void or unenforceable by any court or other Governmental Authority having jurisdiction, such determination shall not invalidate, void or make unenforceable any other provision, agreement or covenant of this Agreement.

25. Assignment. Neither Party shall assign this Agreement without prior written consent of the other Party, which consent shall not be unreasonably withheld. Subject to the foregoing restriction on assignment, this Agreement shall be fully binding upon, inure to the benefit of, and be enforceable by the Parties and their respective successors and assigns.

26. Transmission Provider's Tariff. This Agreement is subject to Transmission Provider's Tariff, as may be amended from time-to-time.

[Signature page(s) follow]

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the Effective Date.

TRANSMISSION PROVIDER:

Imperial Irrigation District

By: James C. Hansen

Date: 11/1/2022

TRANSMISSION CUSTOMER:

BHE Renewables, LLC

By: [Signature]
Authorized Representative

Name: Steve Rowley

Title: VP - Renewable Development & Energy Markets

Date: October 6, 2022

**ATTACHMENT A
ENGINEERING, STUDY, AND DESIGN
TO BE PERFORMED BY TRANSMISSION CUSTOMER
("STATEMENT OF WORK")**

The Parties agree that the Work to be performed by Transmission Customer under this Agreement shall include the following tasks:

- 1) Final determination of the transmission line route, which will be the basis for securing future property, lease rights, licenses, permits, easements, rights of ways, privileges, appurtenances and other rights required of the Project. Final determination is subject to IID's review and approval.
- 2) Transmission Customer will undertake the environmental compliance analysis for the Project which shall include any new, relocated, modified or reconstructed IID facilities required for and by the Project (which can consist of but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.), that meet the requirements of the California Environmental Quality Act ("CEQA"), Cal. Pub. Res. Code §§ 21000, et seq. and, if applicable, the National Environmental Policy Act ("NEPA"), 42 U.S.C. 4321 et seq., regarding the identification and mitigation of the environmental impacts of the Project.
- 3) Preliminary design of the Project, using engineering methods accepted in the electric utility industry. This includes preliminary transmission line design (plan and profile), preliminary one-line diagrams and general plans for new Switching Station, preliminary one-line diagrams and general plans for existing IID substations, and any preliminary drawings as required by Southern California Edison ("SCE"). Preliminary designs must be submitted to IID for review and approval.
- 4) Acquire and secure property, lease rights, licenses, permits, easements, rights of ways, privileges, appurtenances and other rights (collectively "Rights") as determined by final transmission line route and preliminary engineering design. Said Rights shall be under IID's sole possession and shall include right to construct, reconstruct, operate, maintain, and patrol the transmission line. Any Rights acquired and secured to accommodate the Project, as determined by final transmission line route and engineering design must be conveyed to IID at no cost.
- 5) Detailed design and procurement of the Project, using engineering methods accepted in the electric utility industry. Must follow IID engineering standards. All designs must be reviewed and approved by IID. The following outlines a high-level scope of the Project and are

subject to change as details arise and are mutually agreed to by the Parties.

New 230kV transmission line running west of the Salton Sea from the new collector station to Coachella Valley, Coachella Valley to Ramon, and Ramon to Devers (SCE). Approximate total length 100-115 miles. The Project is expected to include but not be limited to:

- A new 230kV Collector Station (potentially located on customer parcel)
- New single circuit 230kV transmission heading west in the direction of the 161kV L-Line.
- When the new 230kV line intersects the L-Line, old double pole 161kV structures to be demolished and replaced with double circuit single pole steel structures to run both 161 and 230kV circuits. This will continue the entire route to Coachella Valley Sub.
- The new steel double circuit construction would be built to 230kV specifications, including the 161kV L-line side for future proofing.
- Coachella Valley Sub would have to be expanded to accommodate at least two 230kV circuits (1 extra bay).
- New 230kV transmission to run parallel with KN/KS lines from Coachella Valley to Ramon.
- Ramon sub would have to be expanded to accommodate at least two 230kV circuits.
- 230kV Transmission between Ramon and Devers utilizing existing corridor.

Project high level cost estimate: **\$300M–\$350M.**

**ATTACHMENT B
REQUIRED DEPOSITS AND
PAYMENT SCHEDULE**

30 Days after Effective Date

\$250,000

**ATTACHMENT C
ENGINEERING, STUDY, AND DESIGN
TO BE PERFORMED BY TRANSMISSION PROVIDER
("STATEMENT OF WORK")**

The Parties agree that the Work to be performed by Transmission Provider under this Agreement shall include the following tasks:

Support Transmission Customer with Environmental Analysis for the Project and work in good faith to determine the Lead Agency or Responsible Agency, as appropriate, for the EIR. Transmission Provider will act as cooperating agency and work with the identified Federal lead agency for NEPA analysis, should this be required for completion of the Project.

Participate in meetings with Transmission Customer and Transmission Customer's contractors to review Project design and provide review of compliance with Transmission Provider's design standards.

Support Transmission Customer with outreach to landowners, tribal nations and land owned by the United States government.

Vargas, Donald A

From: Vargas, Donald A
Sent: Thursday, August 24, 2023 4:57 PM
To: 'Salamy, Jerry'
Cc: Hutchinson, Kevan P; Gamboa-Arce, Justina
Subject: RE: Example of a project specific Salton Sea Impact assessment for a project requesting a water supply from IID

Hi Jerry,

The person that can help you on this matter is Justina Gamboa-Arce, she can be reached at (760) 339-9085 or at jgamboaarce@iid.com. I am cc'ing Ms. Gamboa-Arce to apprise her of this issue.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Thursday, August 24, 2023 4:50 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Hi Donald,

Can you point me to where I can find a project specific Salton Sea Impact assessment a project requesting a water supply from IID.

Thanks,
Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Thursday, August 24, 2023 3:01 PM

To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: [EXTERNAL] RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Thank you Jerry.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Thursday, August 24, 2023 2:29 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

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Hi Donald,

The August 31st informational hearing starts 5 PM at the Calipatria High School or online via Zoom. See the attached notice from the CEC for more information.

Thanks,

Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Thursday, August 24, 2023 1:49 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Subject: [EXTERNAL] August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Hi Jerry,

What time does the public information hearing start?

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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Vargas, Donald A

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Monday, March 6, 2023 12:55 PM
To: Vargas, Donald A
Cc: Greene, Wendy (BHE Renewables); Hutchinson, Kevan P; Kemp, Michael
Subject: RE: Salton Sea Transmission EIR/EIS Template

Thanks for the quick response, Donald, noted. We will let Jacobs know and keep you apprised as things move along.

Thanks. Dustin

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, March 6, 2023 2:45 PM
To: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Cc: Greene, Wendy (BHE Renewables) <Wendy.Greene@bherenewables.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>; Kemp, Michael <MPKemp@IID.com>
Subject: [INTERNET] RE: Salton Sea Transmission EIR/EIS Template

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Hi Dustin,

IID does not have a specific EIR/EIS document template that it prefers. As long as it meets CEQA and NEPA requirements we have no concerns with your consultant, Jacobs, using their standard template.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Monday, March 6, 2023 12:04 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Greene, Wendy (BHE Renewables) <Wendy.Greene@bherenewables.com>
Subject: Salton Sea Transmission EIR/EIS Template

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Hello Donald,

Hope all is well. We were discussing the project with our environmental consultant this morning and they had a question regarding the EIR/EIS document. Do you have a specific template that you would like it delivered to you in or is IID open on what the template should be? We do not have a specific preference and will defer to Jacobs standard template if IID does not have a preference.

Thanks. Dustin

Vargas, Donald A

From: Vargas, Donald A
Sent: Monday, July 31, 2023 2:02 PM
To: 'Jon.Trujillo@calenergy.com'
Cc: Silva, Lauren; 'Brooke Langle'; 'Sukumaran, Anoop (BHE Renewables)'; Romero, Angelina; 'Bhangoo, Manjot (BHE Renewables)'; 'Salamy, Jerry/SAC'; 'Otten, Jessica'; Romero, Angelina; Hutchinson, Kevan P
Subject: RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Jon,

I forgot to mention in my previous email that I would appreciate it if you update me every six weeks to make sure that we're aligned on the CEC permitting and notify me at certain milestones within the process. It doesn't have to be a formal meeting, an e-mail will suffice.

Thank you again,
Donald

From: Vargas, Donald A
Sent: Monday, July 31, 2023 1:17 PM
To: 'Trujillo, Jon (BHE Renewables)' <Jon.Trujillo@calenergy.com>
Cc: **Subject:** RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Jon,

Thanks for the explanation. Much appreciated.

Best regards,
Donald

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Sent: Monday, July 31, 2023 10:28 AM
To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Donald,

Jacobs is performing permitting support for both sides of the project, which makes it a little confusing.

Jerry Salamy and his team (Jacobs) are supporting geothermal permitting (power plants, wells/well pads, pipelines, water lines, and gen-tie lines). CEC is the lead for power plants, gen-ties and water supply lines. Imperial County under CUPs is lead for well pads, wells and pipelines.

Jessica Otten and her team (Jacobs as well) are supporting IID's network upgrades (transmission line, substation upgrades, and a new switching station) with IID and BLM/BOR as leads for CEQA and NEPA.

Thank you,
Jon

From: Vargas, Donald A <DVargas@IID.com>

Sent: Monday, July 31, 2023 10:08 AM

To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>

Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <aromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>

Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

You don't often get email from dvargas@iid.com. [Learn why this is important](#)

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Good morning Jon,

Thanks for your clarification. I understood the matter differently. However, I also understood that Jacobs would be providing the environmental consulting services for the preparation of the environmental assessment documents for the switching station and the transmission line from the switching station up to the "L" line. Is that also not the case?

Thanks,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>

Sent: Monday, July 31, 2023 9:52 AM

To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>

Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <aromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>

Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Donald,

Yes, unfortunately Dustin moved on from BHE Renewables. CC'ed are leaders for the transmission line upgrade (Lauren Silva, Angie Romero, Manjot Bhangoo) and leaders for the permitting activities (Anoop Sukumaran, Brooke Langle, geothermal power – Jerry Salamy (geothermal power), Jessica Otten (transmission upgrades)) to help refine my comments.

The CEC just deemed the geothermal power projects data adequate on July 26, 2023. The public comment period for the CEC preliminary staff assessment is scheduled tentatively for March 28 – April 26, 2024. @Jerry Salamy (jerry.salamy@jacobs.com) please confirm and add detail. The public information hearing is schedule for August 31, 2023 at the Calipatria High School.

Would you like to have a periodic update meeting every six weeks to make sure that we're aligned on the CEC permitting? We can also plan to notify IID at certain milestones within the process.

You are correct – the first point of interconnect for the projects would be at a planned switching station on the NW corner of Garst & Sinclair roads in Calipatria, CA. The gen-tie lines are included in the CEC's purview. @Jerry Salamy (jerry.salamy@jacobs.com) would you please provide Donald with our assessments of the gen-tie lines? However, to my understanding the switching station is part of the network upgrades and would be permitted under IID authority as lead agency (plus the NEPA lead).

Happy to meet or jump on a call if that helps.

Best regards,
Jon

Jon Trujillo | GM, Geothermal Development
BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
Pronouns: He/Him/His

BHE Commitment to Excellence
Safety First, Last and Always



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From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 7:13 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Jon,

I am reaching out to you since last Friday I was informed that Dustin no longer works for BHE Renewables.

Typically the Imperial Irrigation District acts as a responsible agency under CEQA for non-IID projects undertaken within IID's service area providing comments to the project's lead agency draft environmental assessment documents and making

responsible agency findings when required. In the case the California Energy Commission, which has exclusive authority to certify all thermal power plants 50 megawatts and larger, and as a certified regulatory program under CEQA, does not prepare EIRs but instead prepares environmental assessment documents (EADs) that are functionally equivalent to EIRs, would it be possible that you notify us when the public review period for EADs begin? We've already signed up on the CEC website for automated e-alerts to keep track of the permitting process for the BHER Geothermal Projects but we don't want anything to inadvertently fall through the cracks.

On another matter reading through the projects' Applications for Certification posted on the CEC website its mentioned that the first point of interconnection for the projects will be a new switching station near Garst and Sinclair roads in Calipatria, California and that the applicants plan to engineer, construct, own, operate, and maintain the gen-tie line between each project and the point of interconnection at the proposed IID 230 kV switching station. However I can't find any mention of the switching station being assessed environmentally or discussed in any fashion. It was my understanding that the gen-tie along with the switching station and the transmission line from the switching station up to the "L" line was to be assessed environmentally in the CEC documentation. Please advise.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

Vargas, Donald A

From: Vargas, Donald A
Sent: Wednesday, August 23, 2023 10:43 AM
To: 'Salamy, Jerry'
Cc: Madams, Sarah; Hutchinson, Kevan P
Subject: RE: August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

Follow Up Flag: Follow up
Flag Status: Completed

Hi Jerry,

Understood. I'll consult IID Energy Business & Regulatory Compliance Programs Manager and/or IID General Counsel to see if they have any concerns.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Wednesday, August 23, 2023 10:34 AM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

Hi Donald,

I asked the CEC about inviting Imperial County and they responded with "When we met with Jim last week, I thought he might have something to add to the discussion."

Thanks,

Jerry Salamy | [Jacobs](https://www.jacobs.com) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Tuesday, August 22, 2023 2:57 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Subject: [EXTERNAL] RE: August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

It's not a problem, it's just disconcerting since at this point, which is determining a description of the switching station for purposes of the CEC environmental document, does not involve County Planning.
So yes, I would appreciate it if you ask the CEC the motive for inviting County Planning.

Thanks,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Tuesday, August 22, 2023 2:49 PM
To: Vargas, Donald A <DVargas@IID.com>
Subject: RE: August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

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Hi Donald,

I don't know why Jim was invited by the CEC. I can ask the CEC. Can you let me know if this is a problem for IID?

Thanks,

Jerry Salamy | [Jacobs](mailto:jerry.salamy@jacobs.com) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Tuesday, August 22, 2023 12:42 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Subject: [EXTERNAL] August 24, 2023 Meeting RE: CEC Geothermal Env. Analysis; IID concerns about proposed switching station

Hi Jerry,

Do you know why Jim Minnick, Imperial County Planning & Development Services Director, is being invited to this meeting?

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

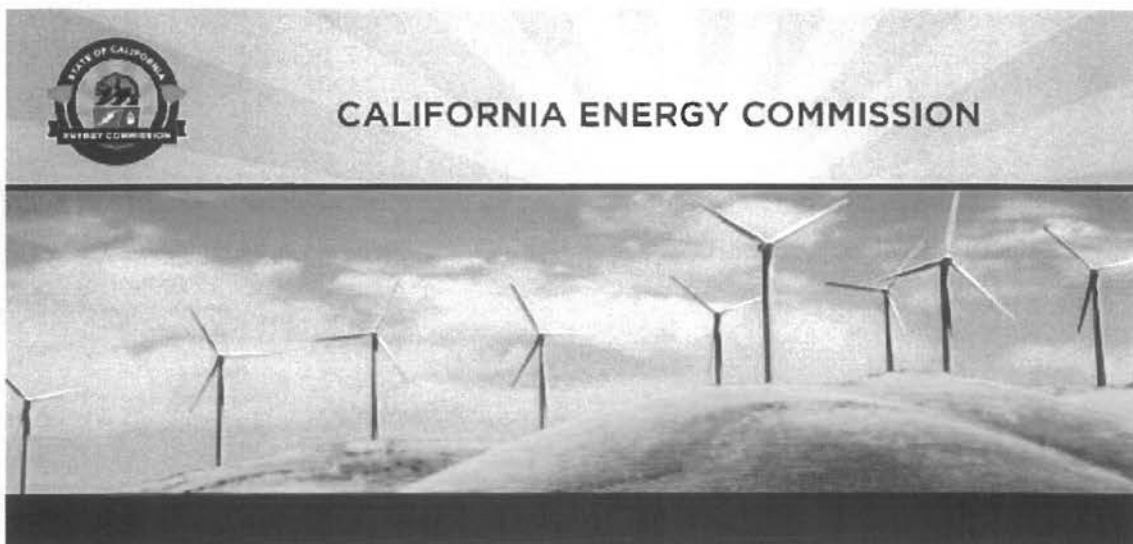
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Vargas, Donald A

From: eFiling@energy.ca.gov
Sent: Thursday, August 24, 2023 4:08 PM
To: Vargas, Donald A
Subject: Your 1 Comment(s) approved and published

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Dear Imperial Irrigation District,

The following 1 Comment(s) that you submitted to the California Energy Commission (Docket Number **23-AFC-02**) were approved and published to the California Energy Commission website:

- Docket Number: 23-AFC-02
Project Title: Elmore North Geothermal Project (ENGP)
TN Number: 251870
Title: Imperial Irrigation District Comments - per CEC Request for Agency Review of ENGP Project
Description:
Filer: System
Organization: Imperial Irrigation District
Role: Public Agency
Submission Date: 8/24/2023 3:44:57 PM
Docketed Date: 8/24/2023
Subject(s):
Submission Type: Comment
Page(s): 3

Thank you,
08/24/2023 16:07:43.236

For e-filing help or questions, send an e-mail to e-FilingHelp@energy.ca.gov, or call 916-654-5076.

For e-commenting help or questions, send an e-mail to e-CommentingHelp@energy.ca.gov, or call 800-822-6228 or 916-654-4489.

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CALIFORNIA
ENERGY COMMISSION



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State of California, Gavin Newsom, Governor

1516 Ninth Street
Sacramento, Ca 95814

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Vargas, Donald A

From: Gamboa-Arce, Justina
Sent: Friday, August 25, 2023 8:15 AM
To: Salamy, Jerry
Cc: Hutchinson, Kevan P; Vargas, Donald A; Shields, Tina L; Pacheco, Mike
Subject: RE: Example of a project specific Salton Sea Impact assessment for a project requesting a water supply from IID

Follow Up Flag: Follow up
Flag Status: Flagged

Good Morning Jerry,

Aside from the links provided in IID's comment letter, another resource the BHE Renewables team may access regarding Salton Sea impact assessment is IID's Final EIR/EIS on the QSA Conservation and Transfer Project which is located at this link: [Final EIR/EIS | Imperial Irrigation District \(iid.com\)](#).

IID is also in the process of completing another environmental assessment for additional water conservation (and impacts to drains and Salton Sea) but it is not advanced at any level that may be shared until likely first quarter of 2024.

Guidance strictly related to the requirements may be found as follows:

The requirements for project assessment are noted in **Section 4.0 CEQA Compliance** of IID's Interim Water Supply Policy: [Microsoft Word - Interim Water Supply Policy-100109Rev.DOC \(iid.com\)](#).

Additionally, the 2009 Negative Declaration adopted by IID for the 2009 IWSP clearly notes the 2009 environmental document does not assess the potential effects on the environment of specific new water supply. This is noted specifically under **Section 2.4 Environmental Considerations for New Development Projects Requiring IWSP Water Supplies and Water Supply Projects**.

I hope these documents are useful. Feel free to contact me should you have any other inquiries.

Best Regards-

Justina Gamboa-Arce

From: Vargas, Donald A
Sent: Thursday, 24 August, 2023 4:57 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Hutchinson, Kevan P <KPHutchinson@IID.com>; Gamboa-Arce, Justina <jgamboaarce@IID.com>
Subject: RE: Example of a project specific Salton Sea Impact assessment for a project requesting a water supply from IID

Hi Jerry,

The person that can help you on this matter is Justina Gamboa-Arce, she can be reached at (760) 339-9085 or at jgamboaarce@iid.com. I am cc'ing Ms. Gamboa-Arce to apprise her of this issue.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Thursday, August 24, 2023 4:50 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Hi Donald,

Can you point me to where I can find a project specific Salton Sea Impact assessment a project requesting a water supply from IID.

Thanks,

Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Thursday, August 24, 2023 3:01 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: [EXTERNAL] RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Thank you Jerry.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Thursday, August 24, 2023 2:29 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Madams, Sarah <Sarah.Madams@jacobs.com>
Subject: RE: August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

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Hi Donald,

The August 31st informational hearing starts 5 PM at the Calipatria High School or online via Zoom. See the attached notice from the CEC for more information.

Thanks,
Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA

From: Vargas, Donald A <DVargas@IID.com>
Sent: Thursday, August 24, 2023 1:49 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Subject: [EXTERNAL] August 31, 2023 Public information hearing of BHE Renewables Geothermal Projects at the Calipatria High School

Hi Jerry,

What time does the public information hearing start?

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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Vargas, Donald A

From: Vargas, Donald A
Sent: Friday, July 28, 2023 11:13 AM
To: 'dustin.vandiepen@bherenewables.com'
Cc: 'Otten, Jessica'
Subject: RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good day Dustin,

Typically the Imperial Irrigation District acts as a responsible agency under CEQA for non-IID projects undertaken within IID's service area providing comments to the project's lead agency draft environmental assessment documents and making responsible agency findings when required. In the case the California Energy Commission, which has exclusive authority to certify all thermal power plants 50 megawatts and larger, and as a certified regulatory program under CEQA, does not prepare EIRs but instead prepares environmental assessment documents (EADs) that are functionally equivalent to EIRs, would it be possible that you notify us when the public review period for EADs begin? We've already signed up on the CEC website for automated e-alerts to keep track of the permitting process for the BHER Geothermal Projects but we don't want anything to inadvertently fall through the cracks.

On another matter reading through the projects' Applications for Certification posted on the CEC website its mentioned that the first point of interconnection for the projects will be a new switching station near Garst and Sinclair roads in Calipatria, California and that the applicants plan to engineer, construct, own, operate, and maintain the gen-tie line between each project and the point of interconnection at the proposed IID 230 kV switching station. However I can't find any mention of the switching station being assessed environmentally or discussed in any fashion. It was my understanding that the gen-tie along with the switching station and the transmission line from the switching station up to the "L" line was to be assessed environmentally in the CEC documentation. Please advise.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

Vargas, Donald A

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Monday, July 31, 2023 4:17 PM
To: Vargas, Donald A
Cc: Silva, Lauren; Brooke Langle; Sukumaran, Anoop (BHE Renewables); Romero, Angelina; Bhangoo, Manjot (BHE Renewables); Madams, Sarah; Xayachack, Lindsey; Trujillo, Jon (BHE Renewables); Otten, Jessica; Hutchinson, Kevan P
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Donald,

We only included the switching station in the BHER Applications for Certification. Perhaps it would be easier to schedule an hour or so on a Teams call to walk through the AFC sections to identify how the switching station was included in these CEQA environmental documents. I am available from noon to 5 pm tomorrow (August 1st) if you would like me to schedule a call.

Thanks,

Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 1:14 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good afternoon Jerry,

Thanks for the additional clarification. Sorry to be a nuisance but could you indicate on what page in the Application for Certification I can find the environmental assessment of the construction of the new switching station and the new transmission line from the switching station to the "L" line. I've looked through the document and can't seem to find it.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>

Sent: Monday, July 31, 2023 10:22 AM

To: Vargas, Donald A <DVargas@IID.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>

Cc: Silva, Lauren <jgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>

Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good Morning Jon and Donald,

All three BHER Applications for Certification included an environmental/societal impact assessment from the construction/operation of new switching station near Garst and Sinclair roads. Jacobs included the new switching station into each project's Application for Certification to ensure that if one or more of the projects experienced delays during the CEC licensing process, that project and the new switching station would have CEQA coverage sufficient to allow construction to commence.

Jon was correct regarding our estimated schedule for the Preliminary Staff Assessment public comment period. As you know, the CEC's Application for Certification process has several public review/comment periods for their environmental documents.

Please don't hesitate to call if you would like more information.

Thanks,

Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>

Sent: Monday, July 31, 2023 10:08 AM

To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Salamy, Jerry <Jerry.Salamy@jacobs.com>; Otten, Jessica <Jessica.Otten@jacobs.com>

Cc: Silva, Lauren <jgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables)

<Manjot.Bhangoo@calenergy.com>

Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good morning Jon,

Thanks for your clarification. I understood the matter differently. However, I also understood that Jacobs would be providing the environmental consulting services for the preparation of the environmental assessment documents for the switching station and the transmission line from the switching station up to the "L" line. Is that also not the case?

Thanks,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>

Sent: Monday, July 31, 2023 9:52 AM

To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>

Cc: Silva, Lauren <lsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>

Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Donald,

Yes, unfortunately Dustin moved on from BHE Renewables. CC'ed are leaders for the transmission line upgrade (Lauren Silva, Angie Romero, Manjot Bhangoo) and leaders for the permitting activities (Anoop Sukumaran, Brooke Langle, geothermal power – Jerry Salamy (geothermal power), Jessica Otten (transmission upgrades)) to help refine my comments.

The CEC just deemed the geothermal power projects data adequate on July 26, 2023. The public comment period for the CEC preliminary staff assessment is scheduled tentatively for March 28 – April 26, 2024. @Jerry Salamy (jerry.salamy@jacobs.com) please confirm and add detail. The public information hearing is schedule for August 31, 2023 at the Calipatria High School.

Would you like to have a periodic update meeting every six weeks to make sure that we're aligned on the CEC permitting? We can also plan to notify IID at certain milestones within the process.

You are correct – the first point of interconnect for the projects would be at a planned switching station on the NW corner of Garst & Sinclair roads in Calipatria, CA. The gen-tie lines are included in the CEC's purview. @Jerry Salamy (jerry.salamy@jacobs.com) would you please provide Donald with our assessments of the gen-tie lines? However, to my understanding the switching station is part of the network upgrades and would be permitted under IID authority as lead agency (plus the NEPA lead).

Happy to meet or jump on a call if that helps.

Best regards,
Jon

Jon Trujillo | GM, Geothermal Development
BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
Pronouns: He/Him/His

BHE Commitment to Excellence
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From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 7:13 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Jon,

I am reaching out to you since last Friday I was informed that Dustin no longer works for BHE Renewables.

Typically the Imperial Irrigation District acts as a responsible agency under CEQA for non-IID projects undertaken within IID's service area providing comments to the project's lead agency draft environmental assessment documents and making responsible agency findings when required. In the case the California Energy Commission, which has exclusive authority to certify all thermal power plants 50 megawatts and larger, and as a certified regulatory program under CEQA, does not prepare EIRs but instead prepares environmental assessment documents (EADs) that are functionally equivalent to EIRs, would it be possible that you notify us when the public review period for EADs begin? We've already signed up on the CEC website for automated e-alerts to keep track of the permitting process for the BHER Geothermal Projects but we don't want anything to inadvertently fall through the cracks.

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Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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Vargas, Donald A

From: Vargas, Donald A
Sent: Monday, August 28, 2023 9:39 AM
To: Trujillo, Jon (BHE Renewables); 'Salamy, Jerry'
Cc: Silva, Lauren; Romero, Angelina; Gamboa-Arce, Justina; Hutchinson, Kevan P
Subject: IID Distribution-Rated Electrical Service for BHER Geothermal Projects

Good day,

Per our discussion at today's IID-BHER Geothermal Power Plants CEC Permitting Update meeting, the contact person for IID distribution-rated electrical service is:

Alfredo Ornelas
(760) 482-3408
amornelas@IID.com

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

Vargas, Donald A

From: Vargas, Donald A
Sent: Monday, July 31, 2023 10:08 AM
To: 'Trujillo, Jon (BHE Renewables)'; Salamy, Jerry/SAC; Otten, Jessica
Cc: Silva, Lauren; Brooke Langle; Sukumaran, Anoop (BHE Renewables); Romero, Angelina; Bhangoo, Manjot (BHE Renewables)
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good morning Jon,

Thanks for your clarification. I understood the matter differently. However, I also understood that Jacobs would be providing the environmental consulting services for the preparation of the environmental assessment documents for the switching station and the transmission line from the switching station up to the "L" line. Is that also not the case?

Thanks,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



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Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Sent: Monday, July 31, 2023 9:52 AM
To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Would you like to have a periodic update meeting every six weeks to make sure that we're aligned on the CEC permitting? We can also plan to notify IID at certain milestones within the process.

You are correct – the first point of interconnect for the projects would be at a planned switching station on the NW corner of Garst & Sinclair roads in Calipatria, CA. The gen-tie lines are included in the CEC's purview. @Jerry Salamy (jerry.salamy@jacobs.com) would you please provide Donald with our assessments of the gen-tie lines? However, to my understanding the switching station is part of the network upgrades and would be permitted under IID authority as lead agency (plus the NEPA lead).

Happy to meet or jump on a call if that helps.

Best regards,
Jon

Jon Trujillo | GM, Geothermal Development
BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
Pronouns: He/Him/His

BHE Commitment to Excellence
Safety First, Last and Always



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From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 7:13 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Good morning Jon,

I am reaching out to you since last Friday I was informed that Dustin no longer works for BHE Renewables.

Typically the Imperial Irrigation District acts as a responsible agency under CEQA for non-IID projects undertaken within IID's service area providing comments to the project's lead agency draft environmental assessment documents and making responsible agency findings when required. In the case the California Energy Commission, which has exclusive authority to certify all thermal power plants 50 megawatts and larger, and as a certified regulatory program under CEQA, does not prepare EIRs but instead prepares environmental assessment documents (EADs) that are functionally equivalent to EIRs, would it be possible that you notify us when the public review period for EADs begin? We've already signed up on the CEC website for automated e-alerts to keep track of the permitting process for the BHER Geothermal Projects but we don't want anything to inadvertently fall through the cracks.

On another matter reading through the projects' Applications for Certification posted on the CEC website its mentioned that the first point of interconnection for the projects will be a new switching station near Garst and Sinclair roads in Calipatria, California and that the applicants plan to engineer, construct, own, operate, and maintain the gen-tie line between each project and the point of interconnection at the proposed IID 230 kV switching station. However I can't find any mention of the switching station being assessed environmentally or discussed in any fashion. It was my understanding that the gen-tie along with the switching station and the transmission line from the switching station up to the "L" line was to be assessed environmentally in the CEC documentation. Please advise.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

Vargas, Donald A

From: Vargas, Donald A
Sent: Wednesday, August 9, 2023 5:12 PM
To: 'Salamy, Jerry'
Cc: Silva, Lauren; Brooke Langle; Sukumaran, Anoop (BHE Renewables); Romero, Angelina; Bhangoo, Manjot (BHE Renewables); Madams, Sarah; Xayachack, Lindsey; Trujillo, Jon (BHE Renewables); Otten, Jessica; Hutchinson, Kevan P
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects
Categories: 4Response Request

Hi Jerry,

I'm available on the 14th from 8:00am -10:00am then from 11:00am-12:00noon and on the 15th from 10:00am-12:00noon.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Wednesday, August 9, 2023 4:28 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Donald,

I passed off the request the IID Switching Station CEQA coverage to the CEC PM (Eric Veerkamp). Eric suggested a call to ensure they provide IID with the necessary CEQA coverage. What is your availability on morning of Monday or Tuesday (August 14th and 15th).

Thanks,

Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 5:00 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Jerry,

Sure, I'm available from 2pm to 4pm.

Thanks,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Monday, July 31, 2023 4:17 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Hi Donald,

We only included the switching station in the BHER Applications for Certification. Perhaps it would be easier to schedule an hour or so on a Teams call to walk through the AFC sections to identify how the switching station was included in these CEQA environmental documents. I am available from noon to 5 pm tomorrow (August 1st) if you would like me to schedule a call.

Thanks,

Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 1:14 PM
To: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good afternoon Jerry,

Thanks for the additional clarification. Sorry to be a nuisance but could you indicate on what page in the Application for Certification I can find the environmental assessment of the construction of the new switching station and the new transmission line from the switching station to the "L" line. I've looked through the document and can't seem to find it.

Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Salamy, Jerry <Jerry.Salamy@jacobs.com>
Sent: Monday, July 31, 2023 10:22 AM
To: Vargas, Donald A <DVargas@IID.com>; Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Otten, Jessica <Jessica.Otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>; Madams, Sarah <Sarah.Madams@jacobs.com>; Xayachack, Lindsey <Lindsey.Xayachack@jacobs.com>
Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good Morning Jon and Donald,

All three BHER Applications for Certification included an environmental/societal impact assessment from the construction/operation of new switching station near Garst and Sinclair roads. Jacobs included the new switching station into each project's Application for Certification to ensure that if one or more of the projects experienced delays during the CEC licensing process, that project and the new switching station would have CEQA coverage sufficient to allow construction to commence.

Jon was correct regarding our estimated schedule for the Preliminary Staff Assessment public comment period. As you know, the CEC's Application for Certification process has several public review/comment periods for their environmental documents.

Please don't hesitate to call if you would like more information.

Thanks,

Jerry Salamy | [Jacobs](#) | Project Manager
M: +916.769.8919 | jerry.salamy@jacobs.com
2485 Natomas Park Drive, Suite 600 | Sacramento, CA 95833 | USA
Upcoming PTO: August 2nd through August 4th

From: Vargas, Donald A <DVargas@IID.com>
Sent: Monday, July 31, 2023 10:08 AM
To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>; Salamy, Jerry <Jerry.Salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables) <Manjot.Bhangoo@calenergy.com>
Subject: [EXTERNAL] RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

Good morning Jon,

Thanks for your clarification. I understood the matter differently. However, I also understood that Jacobs would be providing the environmental consulting services for the preparation of the environmental assessment documents for the switching station and the transmission line from the switching station up to the "L" line. Is that also not the case?

Thanks,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>
Sent: Monday, July 31, 2023 9:52 AM
To: Vargas, Donald A <DVargas@IID.com>; Salamy, Jerry/SAC <jerry.salamy@jacobs.com>; Otten, Jessica <jessica.otten@jacobs.com>
Cc: Silva, Lauren <lgsilva@IID.com>; Brooke Langle <brooke.langle@swca.com>; Sukumaran, Anoop (BHE Renewables) <Anoop.Sukumaran@calenergy.com>; Romero, Angelina <arromero@IID.com>; Bhangoo, Manjot (BHE Renewables)

<Manjot.Bhangoo@calenergy.com>

Subject: RE: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

[CAUTION] This email originated from **outside** of the IID. Do not reply, click on any links or open any attachments unless you trust the sender and know the content is safe.

Good morning Donald,

Yes, unfortunately Dustin moved on from BHE Renewables. CC'ed are leaders for the transmission line upgrade (Lauren Silva, Angie Romero, Manjot Bhangoo) and leaders for the permitting activities (Anoop Sukumaran, Brooke Langle, geothermal power – Jerry Salamy (geothermal power), Jessica Otten (transmission upgrades)) to help refine my comments.

The CEC just deemed the geothermal power projects data adequate on July 26, 2023. The public comment period for the CEC preliminary staff assessment is scheduled tentatively for March 28 – April 26, 2024. @Jerry Salamy (jerry.salamy@jacobs.com) please confirm and add detail. The public information hearing is schedule for August 31, 2023 at the Calipatria High School.

Would you like to have a periodic update meeting every six weeks to make sure that we're aligned on the CEC permitting? We can also plan to notify IID at certain milestones within the process.

You are correct – the first point of interconnect for the projects would be at a planned switching station on the NW corner of Garst & Sinclair roads in Calipatria, CA. The gen-tie lines are included in the CEC's purview. @Jerry Salamy (jerry.salamy@jacobs.com) would you please provide Donald with our assessments of the gen-tie lines? However, to my understanding the switching station is part of the network upgrades and would be permitted under IID authority as lead agency (plus the NEPA lead).

Happy to meet or jump on a call if that helps.

Best regards,
Jon

Jon Trujillo | GM, Geothermal Development
BHE Renewables | CalEnergy Operating Corp
jon.trujillo@calenergy.com | 760-604-0045 cell
Pronouns: He/Him/His

BHE Commitment to Excellence
Safety First, Last and Always



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From: Vargas, Donald A <DVargas@IID.com>

Sent: Monday, July 31, 2023 7:13 AM

To: Trujillo, Jon (BHE Renewables) <Jon.Trujillo@calenergy.com>

Subject: [INTERNET] RE: RE: Black Rock,, Elmore North and Morton Bay Geothermal Projects

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Thank you,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

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August 24, 2023

California Energy Commission
Docket Unit, MS-4
Docket No. 23-AFC-01, 23-AFC-02, 230-AFC-03
715 P Street
Sacramento, CA 95814-6408

SUBJECT: CEC Request for Agency Participation in the Review of the Morton Bay Geothermal (23-AFC-01), Elmore North Geothermal (23-AFC-02), and Black Rock Geothermal (23-AFC-03) Projects

Dear Commissioners:

On April 18, 2023, BHE Renewables, LLC filed Applications for Certification (AFC) through the CEC to construct and operate three geothermal electrical generating facilities. The proposed Morton Bay Geothermal would have a maximum rating of 157 MW (expected net output of 140 MW) and a water supply demand of 5,560 acre-feet per year. The proposed Elmore North Geothermal would have a maximum rating of 157 MW (expected net output of 140 MW) and a water supply demand of 6,480 acre-feet per year. The proposed Black Rock Geothermal would have a maximum rating of 87 MW (expected net output of 77 MW) and a water supply demand of 1,125 acre-feet per year.

Please accept this communication as Imperial Irrigation Districts' initial comments in anticipation of the environmental scoping meeting that has been scheduled for August 31, 2023. We acknowledge that the deadline for comments is non-specific because the regulations state that agency comments shall be filed at the conclusion of evidentiary hearings, and that said hearing dates have yet to be determined but can be roughly noted as the end of February, 2024.

1) Discussion of those aspects of the proposed sites and related facilities for which IID would have jurisdiction, but for the exclusive jurisdiction of the CEC to certify those sites and related facilities:

Water Facilities- IID Water Department facilities will be impacted. IID owns, manages and operates numerous canals, drains and respective rights-of-way adjacent to, and in the vicinity of, the proposed project site. The proponents may not use IID's canal or drain banks to access the project site. To determine magnitude of impacts and reduce impacts to IID Water Department facilities the project's plans are to be submitted to IID Water Department Engineering Services Section prior to final project design.

Energy Facilities- The distribution rated services will go through the CSP application process. Studies will be required for the proposed loads. Once the study is done, any system upgrades will be the responsibility of the project proponent. The CSP application is available for download at <http://www.iid.com/home/showdocument?id=12923>, in addition IID Energy Department will need electrical one-lines, electrical loads, and panel specifications. Please

provide the specifications as early as possible because they are long lead items and we want to make sure we approve the panels before they are purchased.

- 2) A determination of the completeness of the list in the AFC's of the laws, regulations, ordinances, or standards that IID administers or enforces and would be applicable to the proposed sites and related facilities but for the CEC's exclusive jurisdiction:**

In order to obtain a water supply from IID for a non-agricultural project such as proposed under the AFC's, the project proponent will be required to comply with all applicable IID policies and regulations and would be required to enter into a water supply agreement. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the Project be adequately assessed, appropriate mitigation developed, if warranted, including any necessary approval conditions adopted by the relevant land use and permitting agencies. An adequate Salton Sea Impact assessment will be necessary as it relates to the projects requested water supply¹.

- 3) A description of the nature and scope of the requirements that the applicant would need to meet to satisfy the substantive requirements for your agency, but for the CEC's exclusive jurisdiction, and an identification of any analyses that the CEC should perform to determine whether these substantive requirements can be met:**

¹ Water Resources Section - Salton Sea Impact Assessment.

The project proponent is requesting, under these three applications, a cumulative water supply from IID of 13,165 AFY. The impacts to the Salton Sea, due to loss or reduction of runoff caused by the proposed industrial use need to be analyzed in the environmental document. Due to the potential loss or reduction of 13,165 AFY of inflow to the Salton Sea and to IID drains with its concurrent environmental impacts, developer should address this issue as well as provide analysis that the project does not negatively impact the IID Water Conservation and Transfer Draft Habitat Conservation Plan (HCP), the existing Section 7 Biological Opinion and the California Endangered Species Act (CESA) Permit 2081.

An assessment or discussion of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and the Salton Sea is necessary, particularly those intended to be carried out by BHE Renewables which cumulatively amount for a potential water loss and/or reduction to the Salton Sea of over 43,000 AFY. It is advisable that project proponent present a cumulative impact analysis on inflow to IID drains and the Salton Sea.

The following are access links to the documents mentioned:

- The HCP is part of the IID Water Conservation and Transfer Project, Final EIR/EIS and can be found at [Water/Library/QSA-Water-Transfer/Environmental-Assessment/Permits/Final EIR/EIS](https://www.iid.com/Water/Library/QSA-Water-Transfer/Environmental-Assessment/Permits/Final%20EIR/EIS); Volume II, Appendix A Species Covered by the HCP. The HCP in the Draft EIR/EIS may contain small changes from the final version of the EIR/EIS. It is in a different appendix in the draft that the final EIR/EIS (Appendix C). Until the final HCP/Natural Community Conservation Plan is approved, IID uses the draft HCP in the draft document, which can be accessed at [Water/Library/QSA-Water-Transfer/Environmental-Assessment](https://www.iid.com/Water/Library/QSA-Water-Transfer/Environmental-Assessment).
- The Biological Opinion (federal ESA permit) is at <https://www.iid.com/Imperial-Irrigation-District/Salton-Sea-Areas>.
- The CESA 2081 (the water transfer operates under this state ESA permit until the NCCP is approved) can be found at <https://www.iid.com/water/library/qsa-water-transfer/environmental-assessments-permits/cesa-compliance>.

The MMRP (Mitigation Monitoring and Report Program) is at <https://www.iid.com/Water/Library/QSA-Water-Transfer/Mitigation>.

Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instructions for its completion are available at <https://www.iid.com/about-iid/departments-directory/real-estate>. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements. No foundations or buildings will be allowed within IID's right of way.

If IID implements a water allocation or apportionment program pursuant to the IID Equitable Distribution Plan, or any amending or superseding policy for the same or similar purposes, during all or any part of the term of said water supply agreement, IID shall have the right to apportion the respective project's water as an industrial water user. For more information on how to obtain a water supply agreement, please visit IID's website at <https://www.iid.com/water/municipal-industrial-and-commercial-customers> or contact Justina Gamboa-Arce at (760) 339-9085 or jgamboaarce@iid.com."

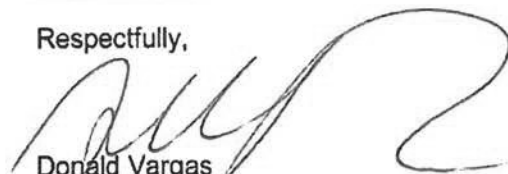
Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.) need to be included as part of the project's California Environmental Quality Act (CEQA) and/or National Environmental Policy Act (NEPA) documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully analyzed. Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.

4) An analysis of whether there is a reasonable likelihood that the proposed projects will be able to comply with your agency's applicable substantive requirements:

IID works closely with project proponents to address developer water supply requests in the context of existing policies and current water supply and demand conditions. Water supply analyses and more comprehensive demand planning occurs through the CEQA process and in Water Supply Assessments, for which Imperial County is the lead agency.

Should you have any questions, please do not hesitate to contact me at 760-482-3609 or at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,



Donald Vargas
Compliance Administrator II

Vargas, Donald A

From: Vargas, Donald A
Sent: Monday, February 13, 2023 8:09 AM
To: Van Diepen, Dustin (BHE Renewables)
Cc: Romero, Angelina; Kemp, Michael; Goodsell, Jennifer M; Asbury, Jamie; Smelser, Matthew H; Greene, Wendy (BHE Renewables); Hutchinson, Kevan P
Subject: RE: Transmission Line Permitting

Good morning Dustin,

That sounds great. I look forward to working with you on this endeavor.

Best regards,
Donald

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Friday, February 10, 2023 2:59 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Romero, Angelina <arromero@IID.com>; Kemp, Michael <MPKemp@IID.com>; Goodsell, Jennifer M <jmgoodsell@IID.com>; Asbury, Jamie <jlasbury@IID.com>; Smelser, Matthew H <mhsmelser@IID.com>; Greene, Wendy (BHE Renewables) <Wendy.Greene@bherenewables.com>
Subject: RE: Transmission Line Permitting

Donald,
Thank you for getting back to me so quickly on this. That was not how I interpreted it when we discussed previously but BHER is more than happy to take on the scope as you have it defined below. I will work with our environmental consultant to reset expectations on our side and keep you in the loop as things progress.

Have a good weekend.

Thanks. Dustin

From: Vargas, Donald A <DVargas@IID.com>
Sent: Wednesday, February 8, 2023 3:48 PM
To: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Cc: Romero, Angelina <arromero@IID.com>; Kemp, Michael <MPKemp@IID.com>; Goodsell, Jennifer M <jmgoodsell@IID.com>; Asbury, Jamie <jlasbury@IID.com>; Smelser, Matthew H <mhsmelser@IID.com>
Subject: [INTERNET] RE: Transmission Line Permitting

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Hello Dustin,

It is was my understanding that BHER environmental consultants would provide the draft EIR/EIS, related documentation and agency coordination and not just prepare the technical reports and the other tasks that you mention. IID's role in acting as the lead agency would be to oversee the work the BHER environmental consultants would be doing in drafting the EIR/EIS and

approve (certify) the final EIR/EIS. If that not your understanding of this matter, I suggest a follow-up meeting be scheduled to clarify this issue.

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Wednesday, February 8, 2023 1:02 PM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Romero, Angelina <aromero@IID.com>
Subject: Transmission Line Permitting

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Hello Donald,

Now that IID has committed to serving as lead agency on CEQA for the transmission line, I have a couple of additional questions I would like to get your feedback on. Since BHER is electing to construct the transmission line, it is my thought that we would still manage the project permitting as if BHER was going to be the owner, even though IID ultimately will be. My intent would be to continue to engage Jacobs as my environmental consultant and they would perform the following tasks in support of an EIR/EIS:

- Preparation of the narrative project description
- Preparation of technical studies (Biological, Cultural, Historical and Visual Resources)
- Respond to information requests throughout the CEQA/NEPA process
- Review and provide comments on the EIR/EIS document

IID or your consultant would be responsible for assembling the final report and agency coordination but Jacobs would be responsible for supporting the technical studies that need to occur for the document. Is this something you are accepting of? I've already received approval from IID to utilize Jacobs so I am not requesting that, I just want to ensure that you are ok with this process. I am looking to get Jacobs biologists onsite in March to conduct the spring surveys.

I have Jacobs updating the full proposal but can send that to you once I receive so you can review the entire scope if you desire.

Thanks. Dustin

Vargas, Donald A

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Wednesday, May 3, 2023 7:29 AM
To: Vargas, Donald A
Cc: Romero, Angelina; Hutchinson, Kevan P
Subject: RE: [INTERNET] RE: BHER-IID Transmission Line

Good Morning Donald,
I will send out an invite for the 1-130 PM Pacific slot on May 9.

Thanks. Dustin

From: Vargas, Donald A <DVargas@IID.com>
Sent: Tuesday, May 2, 2023 1:12 PM
To: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Cc: Romero, Angelina <arromero@IID.com>; Hutchinson, Kevan P <KPHutchinson@IID.com>
Subject: [INTERNET] RE: BHER-IID Transmission Line

THIS MESSAGE IS FROM AN EXTERNAL SENDER.

Look closely at the **SENDER** address. Do not open **ATTACHMENTS** unless expected. Check for **INDICATORS** of phishing. Hover over **LINKS** before clicking. [Learn to spot a phishing message](#)

Hello Dustin,

I'm available from 1:00 PM to 1:30 PM on May 9th. Since May 12th is IID's Friday off do you have any other suggested dates?

Regards,

Imperial Irrigation District
333 E. Barioni Blvd.
Imperial CA 92251



Donald Vargas
Compliance Administrator II
Regulatory & Environmental
Compliance Section
General Services Department
Tel: (760) 482-3609
Cel: (760) 427-8099
E-mail: dvargas@iid.com

From: Van Diepen, Dustin (BHE Renewables) <dustin.vandiepen@bherenewables.com>
Sent: Tuesday, May 2, 2023 11:03 AM
To: Vargas, Donald A <DVargas@IID.com>
Cc: Romero, Angelina <arromero@IID.com>
Subject: BHER-IID Transmission Line

[CAUTION] This email originated from **outside** of the IID. Do not reply, click on any links or open any attachments unless you trust the sender and know the content is safe.

Hello Donald,

I have been having a lot of discussions with our environmental consultant, Jacobs, recently. Last week I brought them to site to show them most of the route and help with the desktop studies they are currently working on. We continue to progress with obtaining survey permissions that will allow for onsite environmental surveys to commence. I realize that IID environmental prefers a more hands off approach with Jacobs completing the EIR/EIS and submitting to IID for review and comment, however, I would like to take some time to make introductions to the team in the event you have any questions or concerns as things continue to progress.

Do you have any availability from noon to 1:30 PM Pacific May 9 or after 1PM Pacific on May 12 that we could pencil in a half hour to make introductions?

Thanks. Dustin

ATTACHMENT G

IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT
150 South Ninth Street, El Centro, CA 92243-2801



APPLICATION FOR: ☐ Authority to Construct Existing Permit
☒ Permit to Operate Number (if any) 1672

☐ NEW ☐ TRANSFER OF OWNERSHIP ☐ CHANGE OF PERMIT CONDITIONS
☐ AMENDMENT ☐ RELOCATION ☐ EQUIPMENT MODIFICATION OR ADDITION

- | | | | |
|--|--|--|--|
| 1. Name of Applicant
Vulcan Power Company | | 2. Responsible Person
R. L. Tenney | |
| 3. Mailing Address
7001 Gentry Road | | 4. Title
General Manager | |
| 5. City, State and Zip Code
Calipatria, Ca, 92233 | | 6. Telephone Number
(619) 348-5271 | |
| 7. Type of Organization (Corp., Government, Individual, etc.) and Nature of Business
Corporation - Geothermal Plant Operation | | | |
| 8. Brief Description of Project/Activity
37.5 Megawatt dual flash geothermal plant. Power generated delivered to Southern Calif. Edison Co. via IID's system | | | |
| 9. Location of Project/Activity
7001 Gentry Road, Calipatria, Ca, 92233 | | | |
| 10. Property Owner
Vulcan Power Company | | | |
| 11. Person in Charge at Location
Stephen Schumacher | | 12. Title
Superintendent | |
| | | 13. Telephone Number
(619) 348-5271 | |
| 14. Anticipated Date of Construction
Start: Mar. 1984 Completion: Nov. 1985 | | 15. Anticipated Life of Project
30 years | |
| 16. Estimated Emissions
For largest single pollutant
Total for all emissions | | Uncontrolled lbs/day
(see permit #1672)
Controlled lbs/day | |
| 17. Other permits have been, or will be obtained from: County Planning, County Building, County Health, Div. Oil & Gas & CRWQCB | | | |
| 18. ☐ Plot plans, flow charts, calculations, equipment description, and other information required by "List and Criteria" is attached.
☒ The information previously submitted with application for permit to Construct is still valid and no changes have been made except as shown on attachment. | | | |
| 19. ☐ Request for confidential handling attached. | | | |
| 20. ☐ Attachments total _____ pages. | | | |

"I am familiar with the Rules and Regulations of the Imperial County Air Pollution Control District and I certify that the operation of the plant and/or equipment which is the subject of the application will comply with said Rules and Regulations."

10/15/85

Date

Signature of Responsible Person

Received by APCD

Signature

Date

Fee Paid

FR#

EMISSION CONTROLS

Describe Abatement System. Please include diagram and refer to it.
Refer to DWG. Bo1-101-DEC445 - Item C-100. All the noncondensibles, including any condensor air leakage, are collected in a common header (Stream 15). This stream is mixed with the entire effluent brine stream (Stream 7) in a mixing tee and enters the top of scrubber C-100. Vapor and brine flow cocurrently through polypropylene packing in C-100. (See Tail Gas Scrubber Specification)-a9-015-DEC445). The hydrogen sulfide will be absorbed and react with the heavy metals (Zn, Pb and Fe) contained in the precipitated solids contained in the brine. These reactions are very fast and the large ratio of brine to vapor (about 400) should remove in excess of 99% of the H_2S . From the bottom of C-100, the brine vapor mixture flows to tank T-315 where the vapor and brine disengage, with the vapor flowing out of a stack about 70 feet above ground level. (See Clarifier Splitter Box Spec. A9-024-DEC445).

The reacted H_2S (now heavy metal sulfides) flows into the clarifiers and ultimately is disposed of with the sludge which is taken to the IT dump.

Proprietary ☒ Yes ☐ No

Rate of NCG to be treated

7,407 lbs/hr.

Net Emissions

Volume Rate (cuftps)

1315 $H_2O + CO_2$

Concentration (ppm)

100%

By Products of Abatement System

Volume Rate (cuftps)

.034 H_2S converted to sulfides.

Concentration (ppm)

12 lbs. in 4,376 lbs/hr going to dump.
~~which is 2,472 ppm.~~

Chemical Additives for Reaction

Rate of Use

none.

Concentration

EMISSIONS

Steam supplier or utilizer please answer the following: MAGMA IS BOTH
STEAM SUPPLIER AND UTILIZER.

Will NCG's be emitted with your property line? ☒ Yes ☐ No

If Yes, will the NCG's be emitted through a stack? ☒ Yes ☐ No

If Yes, please answer the following:

Number of Stacks 1

Stack Height (ft) 80 feet above ground (approx)

Stack Diameter (in.) 24"

Volume of Gases (SCFM) 1,136

Other Sources

Will NCG's be emitted through any pressure valves? ☐ Yes ☒ No

If Yes, please answer the following:

Number of Valves

Pressure Setting

Please identify and quantify the following NCG emissions:

	Max. lb/hr	tons/yr
1. Hydrogen Sulfide	<u>?</u>	<u>?</u>
2. Ammonia *	<u></u>	<u></u>
3. Nonmethane Hydrocarbons	<u></u>	<u></u>
4. Benzene	<u></u>	<u></u>
5. Carbon Dioxide	<u>6,320</u>	<u>25,000</u>
6. Boron *	<u></u>	<u></u>
7. Mercury	<u></u>	<u></u>
8. Arsenic	<u></u>	<u></u>

NOTE: The measurements on the wells utilized to supply the GLEF which will be typical for this project where monitored for H₂S and CO₂ only. In SCE/Union recent operation there is some traces of Ammonia and Boron.

CONDENSER & COOLING TOWER

Please describe the condenser. Include a diagram.

HP condensor is item E-102 on B01-100-DEC 445 and LP condensor is E-108 on the same drawing. Data Sheets on the condensers is attached.

Type: Surface. Cooling Water Temperature °F In 90°F
Operating Pressure (psi) 1.47 Out 105°F
BTU Rating (BTU/hr) HP- 380.7 MMBtu/hr. Recirculation Rate (SCFM) NONE
LP - 222.0 MMBtu/hr.

Please describe the cooling tower.

Item E-401 on DwG. B01-100-DEC445.

Type: Counterflow- Induced Draft. Number of Cells 6
Water:
Volume (SCF) 80,200 Air Flow (SCFM) 7,368,000
Rate (SCFM) 12,364 BTU Rating (BTU/hr) 680MMBtu/hr.
Temperature °F In 105
Out 90

Will the cooling tower utilize drift eliminators? ☒ Yes ☐ No

If Yes, what is the rated drift of the cooling tower percent? .002%

What will be the TDS concentration of the cooling water? 2000 (ppmv)

What is the estimated concentration of noncondensable gases entrained in the cooling water? ? (ppmv)

=====

REMARKS: The TDS concentration is the maximum expected in the summer months.
We expect small quantities of noncondensable gases to remain in the cooling water but have no bases on which to estimate the amounts and how much of the entrained, or dissolved gases will escape to the atmosphere out of the top of the cooling tower.

PERIPHERAL SYSTEMS

Will there be any ponds or holding tanks containing geothermal fluids? ☒ Yes ☐ No

If Yes, please describe below:

T-406 (Condensate Storage Tank); T-315 (Clarifier Splitter); T-304 A&B (Clarifiers)
T-305 (Thickenor); T-308 (Backwash storage tank); T-501 (Reinjection Storage);
and Emergency Brine Storage Pond (See Plot Plan).

Who will be responsible for the bypass system and muffler?

Magma Power Company is responsible for the entire system.

Describe any support process(es) which will require combustion. Include fuel types and
usage rates:

400 horsepower diesel engine driving an emergency generator. Will normally
be run for 15 minutes a week to assure it is operational. This will use
about 5 gallons of #2 diesel fuel per week.

=====

REMARKS:

MATERIAL SHEET

MATERIAL	RATE OF USE	PACKAGE AS RECEIVED	CONVEYANCE	STORAGE	PROCESS USED IN	END PRODUCT

NOT APPLICABLE

AIR EMISSIONS SUMMARY

Emission source. EQUIPMENT NAME	NOX lb/hr	SOX lb/hr	CO lb/hr	HC lb/hr	TSP lb/hr	H2S lb/hr ppm	Water Vapor Other	Other
Diesel Gen	USED FOR EMERGENCY PURPOSES ONLY..							
T-315 Vent.			6320				1075	
Cooling Tower	MAY HAVE TRACES OF BORON AND AMMONIA							
TOTAL HOURLY EMISSIONS			6320				1075	

REMARKS:

POLLUTION CONTROL EQUIPMENT

Show location and system by number on flow diagram.

MAKE	SYSTEM NO.	TYPE	CAPACITY	METHOD OF WASTE DISPOSAL
Specified Design	c-100	Inerts Contactor	7,395 lbs/hr.	To solid was

FOR OFFICE USE ONLY

- ☐ Permit Denied
- ☐ Permit Awarded _____
- ☐ Hearing Board Action _____
- ☐ Inspection Approved
- ☐ Inspection Shows Violation

COMMENTS:

Attach all Drawings and Computations:

PROCESS DESCRIPTION

Please describe in detail each process line. Include block diagrams for reference.
Process materials should be given in pounds per hour.

SEE ATTACHED PROCESS FLOW DIAGRAMS B01-100-DEC445 and B01-101-DEC445

PROCESS SCHEDULE:

- | | |
|---------------|-----------|
| 1. Hours/Day | <u>24</u> |
| 2. Days/Week | <u>7</u> |
| 3. Weeks/Year | <u>50</u> |

ation: CA
Quantity: 1

Item: BASE
Engineer: LBC

SURFACE CONDENSER SPECIFICATIONS

H.P. COND

PERFORMANCE

Steam Inlet Pressure @ Steam Inlet (in. Hga).....	3.00
Steam Condenser (lb./hr.).....	430000.
Heat Rejected (BTu/hr.).....	399985900.
Circulating Water (gpm).....	53331.
Water Inlet / Outlet (deg.F).....	90.00 / 105.00
Water Pressure Loss: (ft. water / psi).....	24.7 / 10.7
Percent Clean.....	70.
Water Velocity (fps).....	8.00

DESIGN

Surface Area (sq. ft.) Total / Effective.....	MODEL: 126186 / 31.25 TR
Number of Water Passes.....	70254. / 69341.
Number of Tubes.....	2.
Outside Tube Diameter (in).....	9814.
Total Tube Length (ft).....	0.8750 - 16 AW
Design / Test Pressure (psig):.....Shell	31.25
.....Tubes	15.0 / Flooded
Design Temperature (deg.F):.....Shell	75.0 / 112.5
.....Tubes	250.0
Hotwell: bathtub.....supply (gal.).....	150.0
Steam Inlet (rectangular) (in.) (FF).....	2150.
Water Connections (in.).....	90. x 135.
Condensate Outlet (in.).....	2. - 54.
	28.0

MATERIALS

Shell.....(SA-516-70).....	Carbon Steel
Water Boxes.....(SA-516-70).....	Carbon Steel
Affixes.....(SA-516-70).....	Carbon Steel
Tube Support Plates.....(SA-516-70).....	304 L
Tubes.....(SA-249-TP304L).....	304 L
Tube Sheets.....(SA-249-304L).....	304 L

Remarks:

- Design per HEI - Seventh Edition
- Shell Expansion Joint Included
- Steam Inlet Impingement Plate Included
- Ejector Package Not Mounted on the Main Condenser
- Sacrificial Anodes Included in Water Boxes
- Inlet Tube Ends are Flared
- 1/8" Corrosion Allowance on Carbon Steel Tube Side Pressure Parts
- 1/4" Corrosion Allowance on Carbon Steel Shell Side Pressure Parts
- Tube Support Thickness is 3/4" with Deducts for 5/8"
- Tube Holes in Tube Sheets to have Two Parallel Grooves
- 4 Quick - opening, Hinged Manways Included (1 Shell Side/3 Tube Side)
- Hotwell Capacity to be Minimum of 5 Minutes at Low Water Level

CUSTOMER MAGMA POWER COMPANY

ADDRESS HOUSTON, TEXAS

PLANT LOCATION NILAND, CALIFORNIA

DATE 12-19-83

SERVICE OF UNIT L.P. CONDENSER

ITEM NO. E-108 (BASE BID)

SIZE 90-480

TYPE SURFACE CONDENSER

CONNECTED IN

SURFACE PER UNIT 33,570 EFF

SHELLS PER UNIT ONE

SURFACE PER SHELL 33,570 EFF

33,595 GROSS

33,959 GROSS

PERFORMANCE OF ONE UNIT

	SHELL SIDE	TUBE SIDE
FLUID CIRCULATED	STEAM	COOLING TOWER WATER
TOTAL FLUID ENTERING	251,037	32,455 GPM
VAPOR		32,455 GPM
LIQUID		
STEAM	251,037	
NON-CONDENSABLES	1,980	
FLUID VAPORIZED OR CONDENSED		
STEAM CONDENSED	249,057	
GRAVITY—LIQUID		
VISCOSITY—LIQUID		
MOLECULAR WEIGHT—VAPORS		
SPECIFIC HEAT—LIQUIDS		
LATENT HEAT—VAPORS		
TEMPERATURE IN	115 °F	90 °F
TEMPERATURE OUT	115 °F	105 °F
OPERATING PRESSURE	3" HG. ABS. 24.5X100	#/SQ. IN.
NUMBER OF PASSES	CROSSFLOW	1 (NON-DIVIDED WATERBOX)
VELOCITY	FT./SEC.	7.8 FT./SEC.
PRESSURE DROP	#/SQ. IN.	10 #/SQ. IN.
FOULING FACTOR	85% CLEANLINESS FACTOR	

HEAT EXCHANGED—B.T.U./HR. 243,410,000

M.T.D. (CORRECTED) 16.37

TRANSFER RATE—SERVICE 442.9

CLEAN

CONSTRUCTION

DESIGN PRESSURE	15 & F.V.	#/SQ. IN.	75	#/SQ. IN.
TEST PRESSURE	23	#/SQ. IN.	113	#/SQ. IN.
DESIGN TEMPERATURE	250	°F	150	°F
TUBES SA-249 304L	NO. 4,325	O.D. 3/4" BWG. 16	AWLENGTH 40'	PITCH SPECIAL
SHELL A-516-70 (EXP JOINT)	I.D.	O.D.	THICKNESS	
SHELL COVER			FLOATING HEAD COVER	
CHANNEL A-516-70			CHANNEL COVER C.S. (HINGED WITH	
TUBE SHEETS—STATIONARY SA-240 304L			FLOATING ACCESS MANWAYS)	
BAFFLES—CROSS	TYPE		THICKNESS	
BAFFLE—LONG	TYPE		THICKNESS	
TUBE SUPPORTS SA-240 304L			THICKNESS	
GASKETS 1/8" COMPRESSED ASBESTOS				
CONNECTIONS—SHELL—IN 4'-10"X13'-1 1/2"	OUT 2'-8"		SERIES SPECIAL RECT./150# R.F.	
CHANNEL—IN 36"	OUT 36"		SERIES 150# R.F.	
CORROSION ALLOWANCE—SHELL SIDE 1/4" ON C.S.			TUBE SIDE 1/8" ON C.S.	
CODE REQUIREMENTS SHELL SIDE—HEAT EXCHANGER INST. (HEI)			TUBESIDE—ASME VIII - TUBESHEET—	
WEIGHTS—EACH SHELL	BUNDLE		FULL OF WATER	TEMA

NOTE: INDICATE AFTER EACH PART WHETHER STRESS RELIEVED (S.R.) AND WHETHER RADIOGRAPHED (X-R)

REMARKS: (1) QUOTE ALTERNATE WITH 10% EXCESS SURFACE AREA PER CUSTOMER REQUEST.

PLANT <u>VULCAN GEOTHERMAL POWER PLANT- MAGMA POWER CO.</u>		FILE JOG NO. <u>DEC-445</u>
LOCATION <u>NILAND, CALIFORNIA</u>		BLDG. NO.
MANUFACTURER		CHARGE NO. <u>DEC-445</u>
		B/M NO.
		P. O. NO.

FIELD ERCTED	YES (NO)	NO. UNITS <u>ONE</u>	TOTAL VOLUME <u>880</u> GAL
--------------	----------	----------------------	-----------------------------

DESIGN DATA	1	Operating Pressure	psig	<u>0</u>			
	2	Operating Temperature	°F	<u>225</u>			
	3	Liquid Specific Gravity		<u>1.14</u>			
	4	Contents Latched	Yes (No)				
	5	Design Pressure	psig	<u>5</u>			
	6	Design Temperature	°F	<u>300</u>			
	7						
	8						
	9	Hydrostatic Test	psig	<u>8</u>			
	MATERIALS	10	Shell	Heads Cor. Allow.	in.	<u>1/4</u>	<u>1/4</u>
11		Shell	Heads Joint Eff.	%	<u>70</u>		
12		Corros.	<u>NONE</u>	Stress	Yes (No)		
13		Radiograph	<u>NO</u>	Stress Reliever	<u>NO</u>		
14		National Board No.	<u>NONE</u>				
15		Type Supports	<u>LUGS</u>				
16		Insulation	<u>PERSONNEL PROTECTION</u>				
17		Fireproofing	<u>NONE</u>				
18		Scabbles	<u>E57-247</u>	Paint	<u>E57-247</u>		
19		Manhole	Hinged	Drilled	Other	<u>NONE</u>	
20		Platform Clips	<u>NO</u>	Ladder Clips	<u>NO</u>	Insul. Rings	
21		Pipe Supports	<u>NONE</u>				
22		Wind Load	<u>20 PSF</u>	Seismic	<u>ZONE 4</u>		
23		Wt. Empty	lb	Wt. Full of Water	lb		
24		Item	Thickness	Mat'l Class	Mat'l - Minimum Quality		
NOZZLE SCHEDULE		25	Shell	<u>1/2</u> in.		<u>SA-285C</u>	
	26	Heads	in.		<u>SA-285C</u>		
	27	Lining	in.				
	28		in.				
	29		in.				
	30	Nozzle Heads			<u>SA-106B; SA-285C</u>		
	31	Flanges			<u>SA-105; SA-285C</u>		
	32	Coupling					
	33	M.H. Cover					
	34	Supports			<u>SA-36</u>		
	35	Bolts/Studs			<u>SA-193-B7</u>		
	36	Nuts			<u>SA-194-2H</u>		
	37	Gaskets	<u>1/8" THK</u>		<u>JM-913</u>		
	38	Service	Mark	No.	Size	Rating	Face
	39	<u>LIQUID FEED</u>	<u>A</u>	<u>1</u>	<u>24"</u>	<u>150#</u>	<u>RF</u>
	40	<u>MIXTURE OUTLET</u>	<u>B</u>	<u>1</u>	<u>24"</u>	<u>150#</u>	<u>RF</u>
41	<u>VAPOR FEED</u>	<u>C</u>	<u>1</u>	<u>8"</u>	<u>150#</u>	<u>RF</u>	
42		<u>D</u>					
43		<u>E</u>					
44		<u>F</u>					
45		<u>G</u>					
46		<u>H</u>					
47		<u>J</u>					
48		<u>K</u>					
49		<u>L</u>					
50		<u>M</u>					
51		<u>N</u>					
52		<u>P</u>					
53		<u>Q</u>					
54		<u>R</u>					
55	*Nozzle to be Plugged or Blinded						

SEE SHEET 3 FOR SKETCH

VESSEL SKETCH

For Further Details, See Sheet No.

SPEC. BY <u>HPZ</u>	DOW ENGINEERING COMPANY		EQUIP. NO. <u>C-100</u>
CHECKED:	<u>TAIL GAS SCRUBBER</u>		VERTICAL VESSEL SPECIFICATIONS
APP'D:			
DATE:	REVISION DATE	A	B
VENDOR TO COMPLETE ALL INFORMATION MARKED		SHEET OF	
		SPEC. NO. <u>A9-015-DEC 445</u>	



TOWER INTERNAL SPECIFICATIONS SPRAY OR PACKED TYPE COLUMNS

JOB NO. Vulcan - Magma
 M/S _____

SHEET 2 OF 2

UNIT PRICE

NO. UNITS

ITEM NO.

PACKING:

(A) SIZE, TYPE & THICKNESS 2" LTHA POLYPROPYLENE INTALOX SHOULES BULK DENSITY 4 LBS/FT³(B) HEIGHT OF PACKING SECTIONS: NO. 1 3 FT. NO. 2 _____ NO. 3 _____(C) METHOD OF PACKING (DRY)(D) PACKING ARRANGEMENT (DUMPED)

TYPE OF DISTRIBUTOR TRAY _____ HOW REMOVED _____

TYPE OF RE-DISTRIBUTOR TRAY _____ HOW REMOVED _____

* TYPE OF PACKING SUPPORT(S) NORTON - 804 - RZ HOW REMOVED TOP FLANGE

TYPE OF PACKING HOLD DOWN PLATE(S) _____ HOW REMOVED _____

PACKING REMOVAL MANWAYS LOCATED ABOVE AND BELOW PACKED SECTION

ENTRAINMENT SEPARATOR: (TYPE, SIZE, THICKNESS) _____ HOW REMOVED _____

BANK NO.

NO. OF NOZZLES

SIZE

TYPE

MANUFACTURER

SPRAY
NOZZLES

MATERIALS OF CONSTRUCTION

PACKING LTHA POLYPROPYLENE

DISTRIBUTOR TRAY _____

RE-DISTRIBUTOR TRAY _____

PACKING SUPPORT CARBON STEEL

SPRAY NOZZLES _____

PACKING HOLD DOWN PLATE _____

WIRE MESH: _____

SUPPORTS AND HOLDDOWN

SUPPORT PACKING ON GRID:

	SECTION 1	SECTION 2	SECTION 3
1ST LAYER			
ARRANGEMENT			
2ND LAYER			
ARRANGEMENT			
3RD LAYER			
ARRANGEMENT			

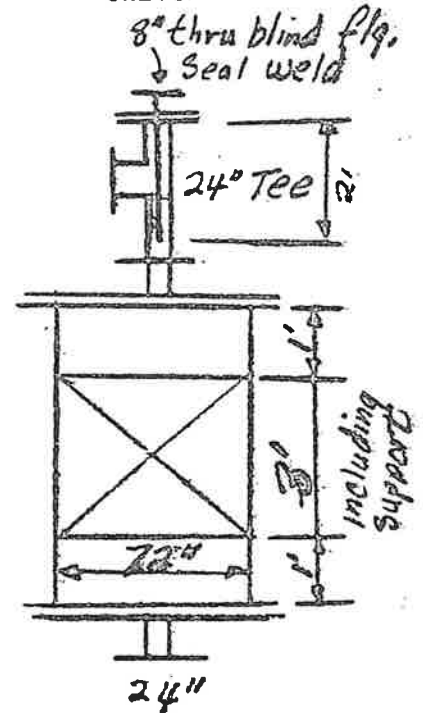
WIRE CLOTH OVER GRID:

MIN. FREE AREA: SECT. 1 _____% SECT. 2 _____% SECT. 3 _____%

HOLD DOWN PLATES:

MIN. FREE AREA: SECT. 1 _____% SECT. 2 _____% SECT. 3 _____%

SKETCH

REMARKS: MANUFACTURER: NORTON OR EQUAL

REV.

DATE

7/15/82

BY

APP.

A 9-015-DEC 445

PLANT VULCAN GEOTHERMAL POWER PLANT - MAGMA POWER CO.		FILE JOB NO. DEC-445
LOCATION NILAND, CALIFORNIA	BLDG. NO.	CHARGE NO. DEC-445
MANUFACTURER		B/M NO. 5558-DEC445
		P. O. NO.

FIELD ERCTED	YES	(NO)	NO. UNITS	ONE	TOTAL VOLUME	4800	GAL
--------------	-----	------	-----------	-----	--------------	------	-----

DESIGN DATA	1	Operating Pressure	psig	ATMOS.				
	2	Operating Temperature	°F	215				
	3	Liquid Specific Gravity		1.14				
	4	Contents Lethal	Yes	(No)				
	5	Design Pressure	psig	ATMOS.				
	6	Design Temperature	°F	225				
	7							
	8							
	9	Hydrostatic Test	psig	FULL OF WATER 10' DIA. SECTION				
	10	Shell Heads Corr. Allow.	in.	1/4 1/4				
	11	Shell Heads Joint Eff.	%	70 70				
	12	Code:	NONE	Stamp Yes (No)				
	13	Radiograph:	NONE	Stress Reliever: No				
	14	National Board No.	NONE					
	15	Type Supports:	SKIRT					
MATERIALS	16	Insulation:	NONE					
	17	Fireproofing:	NONE					
	18	Sandblast:	E57-247	Paint: E57-247				
	19	Manhole	Hinged (Dovetail) Other					
	20	Platform Clips:	Ladder Clips:	Insul. Rings No				
	21	Pipe Supports:	AS REQ'D.					
	22	Wind Load:	20 PSF	Seismic: ZONE 4				
	23	Wt. Empty	lb	Wt Full of Water lb				
	24	Item	Thickness	Mat'l Class	Mat'l - Minimum Quality			
	25	Shell	1/2 in.		SA-285-C			
	26	Heads	1/2 in.	STD. F&D	SA-285-C			
	27	Lining	in.					
	28	SKIRT	3/8 in.					
	29		in.					
	NOZZLE SCHEDULE	30	Nozzle Heads		SA-106-B			
31		Flanges		SA-105				
32		Coupling		-				
33		M.H. Cover		SA-105				
34		Supports		SA-36				
35		Bolts/Studs		SA-193-B7				
36		Nuts		SA-194-2H				
37		Gaskets	1/8" THK.	JM-913				
38		Service	Mark	No.	Size	Rating	Feco	Type
39		INLET	A	1	24"	150#	RF	SO
40		OUTLET	B	1	24"			
41		RECYCLE	C	1	3"			
42		SPARE *	D	1	8"			
43		MANWAY *	E	1	24"	125LW		
44		INLET	F	1	10"	150#		
45	INLET	G	1	6"				
46		H						
47		J						
48	SKIRT ACCESS	K	1	18"x27"	-	-	PLATE	
49	SKIRT VENTS	L	4	2"	-	-	PIPE	
50		M						
51		N						
52	SLEEVE @ B	BS	1	34" ID	-	-	PLATE	
53		Q						
54		R						

PRIME - - - - - E57-247
TOLERANCE - - - - - E92-302
NAMEPLATE (D-3") - - - E92-351
SKIRT ACCESS - - - - - E92-308
SKIRT VENTS - - - - - E92-309
MH DAVIT - - - - - E92-001

SPEC. BY J.A.A.	DOW ENGINEERING COMPANY		EQUIP. NO. T-315
CHECKED:	CLARIFIER SPLITTER BOX		VERTICAL VESSEL SPECIFICATIONS
APP'D: RLT			
DATE: 6-1-82	REVISION DATE	A	B
VENDOR TO COMPLETE ALL INFORMATION MARKED		SHEET 1 OF 3	
		SPEC. NO. A9-024-DEC445	



PLOT PLAN

B 01-1-DEC41

March 1984

MAGMA POWER COMPANY
(Vulcan Geothermal Power Plant)

I. INTRODUCTION

Magma Power Company (Vulcan Geothermal Power Plant) has applied for an Authority to Construct a geothermal power plant. It will utilize a dual pressure open flash system to produce 37.5 gross megawatts. Flashing will also generate noncondensable gases.

This report will consider air quality impacts associated with emissions of noncondensable gases. Reported emissions as submitted in the Authority to Construct application will be compared with projected emissions from Lawrence Livermore Laboratory (LLL) baseline studies.

II. PROJECT DESCRIPTION

Typical of other geothermal power generation projects 12 production wells will supply the raw brine. Each well will produce approximately 300,000 pounds per hour of liquid at 404⁰ F and 212 psia.

Brine from the production wells will be injected with 'seed' to keep precipitates in solution. It then flows into one of two vent drums that act as preflashers separating gases from the brine. The brine is introduced into the crystallizer pot outside the crystallizers. Precipitates are more easily crystallized with the design. The 'seed' acts to create crystals in the liquid instead of the tank walls. This minimizes scaling on all equipment. Brine from the pot flows into one of two high pressure crystallizer where part of it flashes into steam. Gas from the vent drum is injected at

the vapor zone of the crystallizer to prevent foaming.

Steam from the high pressure crystallizers vents to the high pressure turbine to produce 28.2 MW (Gross) of power. Unflashed brine flows to one of two low pressure crystallizer pots then to the low pressure crystallizers. Low pressure steam flows to the low pressure turbine to create 9.3 MW (Gross) of power. Unflashed brine flows to the tail gas scrubber. In all 474,532 lb/hr of high pressure steam and 227,064 lbs/hr of low pressure steam will be produced.

Low pressure steam is exhausted from the low pressure turbine-generator system to the low pressure condenser. Noncondensable gas (NCG) is separated at this point. It is still unknown how much of the H_2S will be absorbed by the condensate. NCG flows to the tail gas scrubber. Condensate is detained in a storage tank where hydrochloric acid and sulfite are mixed in and later directed to the tail gas scrubber.

High pressure steam is separated into 3 streams. A major portion is used to drive the 28.2 MW (Gross) high pressure turbine-generator system. Spent steam is exhausted to the first stage condenser. Uncondensed gases from high pressure and the low pressure main condensers are vented to the high pressure first stage condenser. Condensate is circulated to the cooling towers as makeup water. H_2S concentration in the condensate will be determined as part of the Authority to Construct permit conditions. It is estimated that 60% of the H_2S in the steam is absorbed by the condensate to be subsequently released at the cooling towers. Uncondensed gases from the high pressure and low pressure main condensers are processed again through another condenser before flowing to the tail gas scrubber. Condensate from this condenser is used either as makeup water at the cooling towers or is directed to the condensate storage.

High pressure steam is separated into other streams. One stream, equivalent in heat value to 13.4 MM Btu/hr, operates a gland steam generator. This steam serves as a pad between the pressurized turbine chambers and the outside atmosphere and as a source of clean steam to pad the atmospheric vessels to keep air from entering them. Coolant for the condensers is generated at the cooling towers. This system consists of 6 counterflow induced draft cells. Rated drift is 0.002% or conversely elimination efficiency is 99.998%.

Noncondensable gases from the turbine tail gas stream will be treated using a proprietary control system called a tail gas scrubber. This system is designed to mix all the noncondensable tail gases with the brine stream in a packed scrubber. Hydrogen sulfide reacts with the heavy metals in solution to create soluble heavy metal sulfides. Over 99% of the hydrogen sulfide is to be removed from the noncondensable gas stream. All unreacted vapors are to be vented into the atmosphere out of the clarifier splitter.

The liquid is then sent to one of two clarifiers. Sludge from the clarifiers is further dewatered in the thickener. Residue is hauled to waste disposal sites. The clear liquid is stored prior to reinjection.

III. AIR QUALITY IMPACT

Noncondensable gases (NCG) will be released during brine flashing. The major portion of this will be carbon dioxide (CO_2); 7,407 lbs/hr of NCG are estimate to be generated.

Hydrogen sulfide (H_2S) will be the problem pollutant to be controlled at the facility. Studies conducted by Lawrence Livermore Laboratories (LLL) estimate

emissions of H₂S in the Salton Sea Known Geothermal Resources Area (KGRA) to be about 160 g/MWh. For the proposed facility this is:

$$160 \text{ g/MWh} \times 37.5 \text{ MWh} \times 1 \text{ lb}/454 \text{ g} = 13.2 \text{ lbs/hr}$$

OR

$$160 \text{ g/MWh} \times 37.5 \text{ MWh} \times 1 \text{ hr}/3600 \text{ sec} = 1.7 \text{ g/s}$$

Figure No. 1 shows the average annual ambient concentration of H₂S around the plant. It was developed using the estimated emission rate and factoring into a unit concentration dispersion map developed by LLL.

Magma proposes to reduce H₂S emissions by 99% out of the NCG that reaches the tail gas scrubber. At present no data is available on the H₂S absorption which will occur at the condensers.

A worst case assumption of emissions would have all the H₂S being absorbed by the condensate and discharged at the cooling towers. No controls for H₂S are planned for the cooling towers so the emission rate would be 13.2 lbs/hr.

Utilizing Table A the estimated maximum one-hour concentration out of the towers will be:

TOWER HEIGHT (m)	AMBIENT CONCENTRATION (ug/m ³) (Interpolated)
15	991
20	578
25	432

The discrepancy between estimated annual concentrations as shown on Figure 1 and the worst case one-hour concentrations developed using Table A is due

to the conservative factors used in the latter.

Figure 1 indicates a peak concentration of 1.7 ug/m^3 would occur within 2 kilometers of the facility while Table A indicates violation of the State H_2S one-hour standard (43 ug/m^3) would occur even if a safety factor of 10 were applied.

IV. CONCLUSIONS

Projected H_2S emissions from the proposed Vulcan Geothermal Power Plant indicate exceedances of the State one-hour H_2S standard will occur. Uncontrolled NCG discharges from the cooling towers will require analysis. A determination of the amounts of H_2S being absorbed by the condensate will be necessary to develop a mass balance for H_2S .

The tail gas scrubber is reported to achieve 99% H_2S control efficiency. Updating reports on actual performance should be required periodically.

The following conditions should be placed on the Authority to Construct:

1. Report H_2S content at the following points on a monthly basis:
 - a) at the well head Line #1 in B01-100-DEC445
 - b) at the condensate return Line #34 in B01-100-DEC445
 - c) at the tail gas line to splitter Line #16 in B01-100-DEC445
2. Determine and report tail gas scrubber efficiency.

Ambient H₂S Concentrations

Figure 1

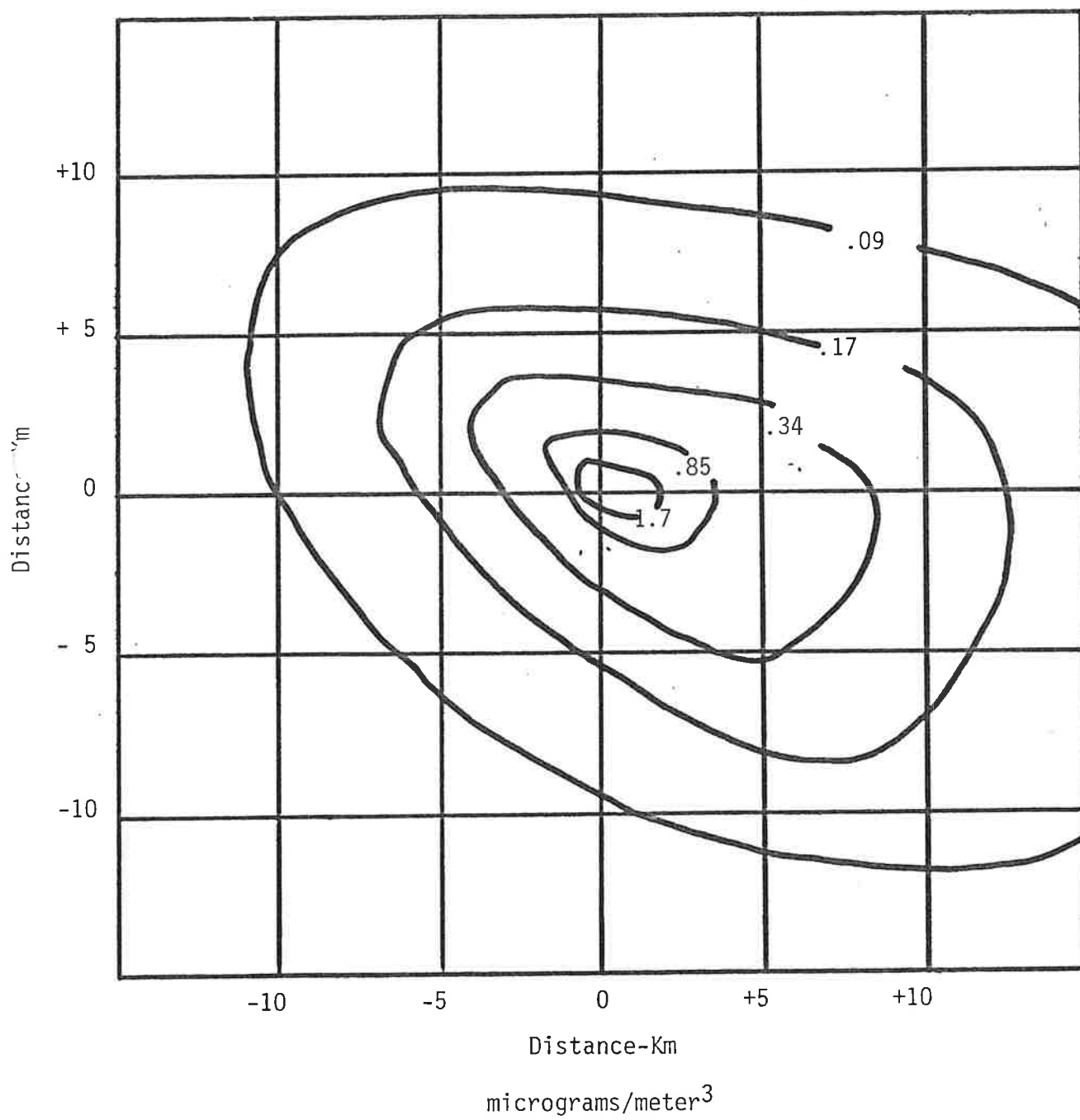


TABLE 1

WORST CASE ESTIMATES OF POINT SOURCE AIR QUALITY IMPACTS

Stack Height (m)	Downwind Distances To Maximum Estimated Concentration (m)	Estimated Maximum One-Hour Concentrations ($\mu\text{g}/\text{m}^3$)				
		Source Strength				
		5 lb/hr	10 lb/hr	20 lb/hr	40 lb/hr	80 lb/hr
5	<100	3150	6300	12800	25200	50400
10	100	945	1890	3840	7560	15120
15	150	380	760	1530	3020	6040
20	200	220	440	880	1760	3530
30	300	90	190	380	760	1510
40	400	50	110	220	430	870
50	500	40	70	150	290	580
70	700	20	40	80	170	330
100	1000	10	20	40	90	190

NOTE: The wind speed was assumed to be 1m/s.
 The effective plume height was assumed equal to the physical stack height.

County of Imperial
Official Receipt

Nº 24652

DATE Oct 15, 1985

RECEIVED FROM Dow Chemical USA (Agent for Magma Power Co)

THE SUM OF Forty-five and no/100 \$ 45.00

FOR Vulcan Power Co - Section 1A

Application fee for PBO

- ☐ CASH
☒ CHECK No. 354032
☐ MONEY ORDER No. _____
☐ WARRANT No. _____

Form A-C 201 -- Imperial Printers

COUNTY OF IMPERIAL
DEPARTMENT Administration
BY Nancy Prui

IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT
150 So. Ninth Street
El Centro, CA 92243-2801
(619) 339-4314

GEOHERMAL APPLICATION

Date Acted on: _____

Business License Name: <u>VULCAN GEOTHERMAL POWER PLANT</u>	Nature of Business: <u>GEOHERMAL POWER</u>
Person Responsible at the Site Name <u>Russ Tenney</u>	Person Responsible for this Application Name <u>Thomas C. Hinrichs</u>
Address <u>P.O. Box 911 Calipatria, CA. 92233</u>	Address <u>993 Oak Lane, Escondido, CA. 92025</u>
Phone <u>619-348-5271</u>	Phone <u>619-743-7008</u>
Title <u>Plant Manager</u>	Title <u>President- Imperial Magma</u>

Type of Application

☒ Authority to Construct ☐ Original ☐ New Facility ☐ Other
☐ Permit to Operate ☐ Revised ☐ Modification

Description of Facility Location <u>Foss and Gentry Roads</u> Construction Completion Date <u>Sept. 1, 1985</u> Start-Up Date <u>Nov. 1, 1985</u>	(Include Drawing and Requested) Brief Process Description
--	--

- ☐ All attachments previously submitted with the Authority to Construct application are valid and no changes have been made.
- ☐ The information supplied for the previous Permit to Operate is still valid and no changes have been made.
- ☐ Any equipment/process variations from the previous application are attached.

"I am familiar with the Rules and Regulations of the Imperial County Air Pollution Control District and I certify that the operation of the plant and/or equipment which is the subject of the application will comply with said Rules and Regulations."

<u>Thomas C. Hinrichs</u> Signature of Responsible Person	<u>Director- Magma Power Co.</u> Title
<u>T. C. Hinrichs</u> Name (Printed)	<u>Feb. 10, 1984</u> Date

REMARKS: (Official Use Only)

ATTACHMENT H

Supporting reference documents for the Comments of the California Unions for Reliable Energy on the Preliminary Staff Assessment and its technical expert reports can be accessed at the following Dropbox link:

<https://www.dropbox.com/scl/fo/dbwgtax6phwetqtqo7eeh/AAiGskvagQVenOUNViFfodE?rlkey=r352dveeahe9o3ch7q2iqps5b&st=j7tisb1b&dl=0>

We request that these documents be included in the official record of proceedings and can provide hard copies upon request.