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**STATE OF CALIFORNIA**

**ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION**

<i>In the Matter of:</i>	)	
	)	
Application for Certification of the Pecho Energy Storage Center	)	Docket No. 21-AFC-01
	)	
Application for Certification of the Gem Energy Storage Center	)	Docket No. 21-AFC-02
	)	
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**JOINT REPLY TO CEC STAFF’S RESPONSE TO APPLICANTS’ FILING REQUESTING  
EXEMPTION FROM THE NOTICE OF INTENT (“NOI”) PROCESS**

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March 8, 2022

Attorneys for Pecho LD Energy Storage, LLC and  
GEM A-CAES LLC

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EXEMPTION FROM THE NOTICE OF INTENT (“NOI”) PROCESS**

**INTRODUCTION**

Pecho LD Energy Storage, LLC (“Pecho”) and GEM A-CAES LLC (“Gem” (collectively, the “Applicants”)) submit this joint reply to California Energy Commission (“CEC” or “Commission”) Staff’s *Response to Applicant’s Filing Requesting Exemption from the NOI Process*<sup>1</sup> for both the Pecho Energy Storage Center (“Pecho”; “Pecho Response”) and Gem Energy Storage Center (“Gem” and “Gem Response”).

The Applicants agree that the relevant questions that the CEC must answer in applying Public Resources Code section 25540.6(a)(3) to the proposed projects are the following:

- (1) Whether the caverns it will build to contain the compressed air in specified geological conditions, the specific locational market node on the grid allowing for bidirectional energy flow, or both, are the energy sources qualifying for the exemption;
- (2) If one or both of the above constitute an energy source pursuant to the exemption, whether the applicant has made a sufficient showing that it would be technologically or economically infeasible to locate the project farther away from the identified energy sources.

The Applicants agree with CEC Staff that the air storage caverns constitute an energy source for purposes of Section 25540.6(a)(3).<sup>2</sup> This can and should be enough to find the Pecho and Gem projects

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<sup>1</sup> The Pecho Response is available at TN#: 241935. The Gem Response is available at TN#: 241936.

<sup>2</sup> Pecho Response, p. 6; Gem Response, p. 6.

meet the criteria set forth in Section 25540.6(a)(3) and are exempt from the CEC’s notice of intent (“NOI”) process.

However, the Applicants disagree with CEC Staff’s assertions that additional information is required to answer the second question in the affirmative.<sup>3</sup> The Applicants have provided sufficient information demonstrating that the Pecho and Gem projects both qualify for exemption from the NOI process pursuant to Section 25540.6(a)(3) of the Warren-Alquist Act.

Further, the Applicants are concerned that despite the “plain language” of Section 25540.6(a)(3), CEC Staff is proposing that the Applicants be required to provide information that is not relevant to any determination that the CEC must make on the issue of whether the projects are exempt from the NOI process. For example, CEC Staff proposes that the Applicants also be required to demonstrate that “there are only a limited number of sites in California where these types of facilities could be located either from a technological or economic basis”<sup>4</sup> and provide “scale up analyses for the A-CAES technology that show the factors considered in deciding the MW capacity of the projects, and the expected reliability of the proposed operating plants that is supported by the analyses.”<sup>5</sup> Neither of these analyses are required by the plain language of Section 25540.6(a)(3).

Based on the substantial information presented in the Applications for Certification, the February 9<sup>th</sup> *Joint Response of the Pecho Energy Storage Center and the Gem Energy Storage Center Supporting Exemption from the NOI Process and Request for Commission Order at March 9, 2022 Business Meeting* (“February 9<sup>th</sup> Joint Response”), and the additional information provided with this filing, the Committee should issue a proposed decision finding that the Pecho and Gem projects are exempt from the CEC’s NOI process.

Before responding to specific issues raised in the Pecho Response and the Gem Response, the Applicants feel compelled to point out one irony in this NOI debate. Hydrostor’s Advanced Compressed Air Energy Storage System (“A-CAES”) has the important environmental benefit of avoiding the natural gas-fired technology employed by most compressed air energy storage facilities. If, rather than being available to store electricity, including that from surplus renewable generation, without

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<sup>3</sup> Pecho Response, p. 6; Gem Response, p. 6.

<sup>4</sup> Pecho Response, p. 5; Gem Response, p. 5.

<sup>5</sup> Pecho Response, p. 8; Gem Response, p. 8.

the use of natural gas, Hydrostor had instead gone the route of traditional compressed air energy storage facilities by adding natural gas-fired technology (and the associated emissions impacts) to supplant its zero-emissions, natural gas-free energy storage, then the projects would have a second, more familiar basis for being exempt from the NOI process.<sup>6</sup> That irony should weigh in the CEC’s review of the sound public policy reasons that support granting the exemption, fortified by the legal analyses that confirm that the Pecho and Gem projects qualify for the NOI exemption.

**I. THE APPLICANTS’ JOINT RESPONSE AND APPLICABLE APPLICATION FOR CERTIFICATION (“AFC”) DOCUMENTS PROVIDE SUBSTANTIAL EVIDENCE TO DEMONSTRATE THAT THE PECHO AND GEM PROJECTS ARE EXEMPT FROM THE NOI PROCESS BECAUSE THE FACILITIES MUST BE LOCATED AT OR NEAR THE ENERGY SOURCE.**

As explained in the Applicants’ February 9<sup>th</sup> Joint Response, because Pecho and Gem are facilities that are only technologically or economically feasible to site at or near the two energy sources needed to generate electricity, these projects are exempt from the NOI process. In particular, stored energy is provided through subsurface air storage caverns, which have specific geological requirements, which are located below the A-CAES topside facilities.<sup>7</sup>

It is neither technologically nor economically feasible to site the generating equipment away from the air storage caverns that serve as the source of stored energy for the facility.<sup>8</sup> In particular, the projects’ surface generation and thermal facilities cannot be located at any significant distance from the subsurface caverns without a significant loss of overall round trip efficiency and a significant increase in the capital costs for the respective projects.<sup>9</sup> This is a direct result of the costs and losses associated with

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<sup>6</sup> Section 25540.6(a)(1) exempts from the NOI process “(1) ... a thermal powerplant that will employ natural gas-fired technology, ...” This NOI exemption has been used by nearly every powerplant reviewed by the CEC in the last more than 30 years. By employing natural gas-fired technology, traditional compressed air facilities qualify for the same NOI exemption. Because the Hydrostor A-CAES technology has eliminated the use of natural gas in its process it does not qualify for this exemption, and is instead having to meet a higher burden of proving that it qualifies for exemption under Section 25540.6(a)(3).

<sup>7</sup> Declaration of Curt Hildebrand in Support of Joint Response of the Pecho Energy Storage Center and Gem Energy Storage Center Supporting Exemption from the NOI Process (Feb. 9, 2022; hereinafter, “Hildebrand Feb. 9 Decl.”), ¶ 7; Declaration of Curt Hildebrand in Support of Joint Reply to CEC Staff’s Response to Applicants’ Filing Requesting Exemption from the NOI Process (March 8, 2022, hereinafter, “Hildebrand March 8 Decl.”), ¶¶ 8-12.

<sup>8</sup> Hildebrand March 8 Decl., ¶¶ 8-12.

<sup>9</sup> Hildebrand Feb. 9 Decl., ¶ 10; see also, Hildebrand March 8 Decl., ¶¶ 8-12.

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pipng high pressure air and water over long distances, similar and significant thermal energy losses due to remote facility locations, increased shaft construction, piping, and materials costs.<sup>10</sup>

CEC Staff states that the Applicants “should be ordered to provide a discussion of the specific geological requirements for this technology, including any additional physical or other characteristics a site must have in order to support this technology.... This discussion should contain information on key geological characteristics such as bedrock formation targeted for the storage caverns.”<sup>11</sup> The information requested by CEC Staff has already been provided in both the Applicants’ February 9<sup>th</sup> Joint Response and Applications for Certification for each facility.<sup>12</sup> For example, specific geological requirements for this technology, including any additional physical or other characteristics a site must have, include the following:

- Ultra-low hydraulic conductivity and permeability in deep subsurface geological formations, such as that found in volcanic related geologic conditions, to ensure that the storage caverns retain water and air under pressure.<sup>13</sup>
- Suitable overburden characteristics (limited thickness, constructible soil type).<sup>14</sup> Overburden thickness can require significant structural support, or lead to construction or operational concerns.<sup>15</sup>
- Competent geological structural integrity to sustain an excavated storage cavern at depth intact indefinitely, allowing for repeated compressed air injection and discharge cycles over the life of the project.<sup>16</sup>
- Locations away from large bodies of water that may present water inflow concerns.<sup>17</sup>

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<sup>10</sup> Hildebrand Feb. 9 Decl., ¶ 10; see also, Hildebrand March 8 Decl., ¶¶ 8-12.

<sup>11</sup> Pecho Response, p. 6; Gem Response, p. 6.

<sup>12</sup> See, Gem AFC, pp. 6-3 through 6-9; Pecho AFC, pp. 6-3, 6-6 through 6-8.

<sup>13</sup> Hildebrand Feb. 9 Decl., ¶ 9.

<sup>14</sup> Gem AFC, p. 6-3.

<sup>15</sup> Gem AFC, p. 6-3.

<sup>16</sup> Gem AFC, p. 6-3.

<sup>17</sup> Pecho AFC, p. 6-7.

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Although the Applicants disagree with CEC Staff's assertion that additional information with respect to specific geological requirements for this technology are necessary, further details are provided in the declaration attached to this reply.

**II. THE PROJECT'S GRID LOCATION FOR BOTH CHARGING AND DISCHARGING IS AN ADDITIONAL "ENERGY SOURCE" QUALIFYING FOR THE EXEMPTION.**

Rather than traditional compressed air energy storage facilities that incorporate natural gas,<sup>18</sup> electrical energy is the second energy source for the Applicants' A-CAES projects. As explained in the February 9<sup>th</sup> Joint Response, the energy source is locational, a specific location on the grid allowing for both charging and discharging that the facilities must be located at or near.

The Staff Response focuses on whether, for example, the Pecho project needs to be located near offshore wind resources. This is the incorrect focus. Instead, both Pecho and Gem are sited on the grid at places in the transmission system where the A-CAES's unique characteristics can be utilized based both on the energy consumption (charging) and generation (discharging) from these facilities: for Pecho at the California Independent System Operator ("CAISO")-controlled Morro Bay Switching Station and for Gem at the Southern California Edison ("SCE") Whirlwind Substation.<sup>19</sup> As stated in the February 9<sup>th</sup> Joint Response, the importance of the electrical energy source is locational, a specific location or market node on the grid; mere system power cannot be used.<sup>20</sup> This locational value of the electrical energy is both technically critical and economically important for the project.

Similar to its statements that the Applicants should be required to demonstrate that there are limited sites for the A-CAES projects, Staff suggest the CAISO studies are necessary to determine whether other places on the grid might support such bidirectional charging and discharging. Whether other locations may provide energy to a hypothetical project is not relevant to the evaluation of whether Section 25540.6 applies. Instead, the question is whether the Gem and Pecho projects must be located at or near to sources of electrical energy to generate electricity. The answer to this question is a definitive "Yes."

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<sup>18</sup> See, Gem AFC, pp. 6-14 through 6-15.

<sup>19</sup> TN # 241502: p. 7.

<sup>20</sup> Hildebrand Feb. 9 Decl., ¶ 16.

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**III. WHETHER THERE ARE POTENTIAL ALTERNATIVE SITES IS NOT RELEVANT TO THE DETERMINATION OF WHETHER THE PROJECTS QUALIFY FOR THE NOI EXEMPTION.**

CEC Staff also proposes that the Applicants be required to provide “an estimate of the number of such sites in California and their general availability for this use”.<sup>21</sup> However, Section 25540.6(a)(3) does not require that an applicant prove that the site is the *only* or one of a “limited number of sites in California where these types of facilities could be located.”<sup>22</sup> Instead, Section 25540.6(a)(3) looks only at the relationship of the location of the powerplant to the energy source. Thermal powerplants which are “only technologically or economically feasible to site at or near the energy source” are exempted from the NOI process.<sup>23</sup>

Section 25540.6(a)(3) does not require a cataloging of every conceivable site that contains such energy sources, nor is it relevant for the purposes of Section 25540.6(a)(3) that “from a purely geological perspective, the proposed facility could be sited anywhere suitable subsurface bedrock conditions exist.”<sup>24</sup> The relevant question, for the purposes of Section 25540.6(a)(3), is this: must the proposed facility be sited at or near air storage caverns, which are located in suitable subsurface bedrock conditions that provide the energy source for the facility? The answer, for the purposes of the A-CAES projects, is “Yes.” Without stored energy from the air storage caverns, one of two energy sources for A-CAES projects, the Pecho and Gem facilities will not be able to generate electricity.

**IV. THE SECTION 25540.6(a)(3) EXEMPTION DOES NOT REQUIRE AN ANALYSIS OF THE OVERALL ECONOMIC FEASIBILITY OR RELIABILITY OF THE PROJECTS.**

CEC Staff states that the Applicants should be required to “show the factors considered in deciding the MW capacity of the projects, and the expected reliability of the proposed operating plants that is supported by the analyses” to enable a determination of the economic feasibility and reliability of the Gem and Pecho projects.<sup>25</sup>

While Section 25540.6(a)(3) examines whether it is economically or technologically feasible to site a powerplant away from its energy source, there is no requirement that an Applicant demonstrate the

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<sup>21</sup> Pecho Response, p. 6; Gem Response, p. 6.

<sup>22</sup> Pecho Response, p. 5; Gem Response, p. 5.

<sup>23</sup> Pub. Resources Code § 25540.6(a)(3).

<sup>24</sup> Pecho Response, p. 6.

<sup>25</sup> Pecho Response, p. 8; Gem Response, p. 8.  
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overall economic feasibility and reliability of a project to qualify for exemption from the CEC’s NOI process. Further, the Applicants are unaware of any other projects subject to exemption from Section 25540.6 that have been required to make a similar showing to be deemed exempt from the NOI process. The Pecho and Gem projects should not be held to a different standard from other projects potentially subject to Section 25540.6.

**V. ALTHOUGH THE EXEMPTION DOES NOT REQUIRE AN ALTERNATIVE ANALYSIS, THE AFC FOR THE PECHO AND GEM PROJECTS PROVIDE SUBSTANTIAL INFORMATION REGARDING SITE SELECTION.**

CEC Staff recommends that the Applicants be required to “submit the economic analyses of the proposed A-CAES technology that show either the economic feasibility at the proposed locations, or the infeasibility at other sites that then limit or steer the siting to the proposed locations.”<sup>26</sup>

As described above, Section 25540.6(a)(3) is focused on the relationship between the location of the facility site and the energy source – specifically, why the facility must be located at or near the energy source. To the extent that the CEC would like further information regarding the Applicants’ site selection processes, or the reasons why the proposed locations for the Gem and Pecho projects were chosen, this information is already set forth in the Alternatives section of the Application for Certification for each project; however, the information is not relevant to the applicability of the NOI exemption.

**VI. THE SPECIFIC FINDINGS IN THE “FINAL” REPORT REQUIRED TO BE MADE AT THE END OF THE NOI PROCESS ARE A LEGAL IMPOSSIBILITY.**

Even assuming, *arguendo*, that the NOI process did apply to other than Investor-Owned Utility (“IOU”) powerplants like Pecho and Gem, the specific findings required at the end of the NOI process cannot be made. Specifically, assuming the Commission subjected the projects to an NOI process, the very first NOI finding the Commission must make at the end of the 18-plus month NOI process<sup>27</sup> cannot be made. Specifically, Public Resources Code Section 25514 sets forth the “Final Report” that the CEC must produce at the end of the NOI process:

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<sup>26</sup> Pecho Response, p. 8.

<sup>27</sup> Although Section 25516.6(a) specifies that a written decision on an NOI must be issued no later than 12 months after filing, an extension to that schedule is available and the Applicants’ pre-NOI submittal preparation and CEC data adequacy review would easily add 6 months to the front end of the NOI process.

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**§ 25514. Final report; contents**

After conclusion of the hearings held pursuant to Section 25513 and no later than 300 days after the filing of the notice [of intent], *a final report shall be prepared and distributed*. The final report *shall include*, but not be limited to, all of the following:

- (a) The findings and conclusions of the commission regarding the conformity of alternative sites and related facilities designated in the notice or considered in the notice of intention proceeding with both of the following:
  - (1) The 12-year forecast of statewide and service area electric power demands adopted pursuant to ***subdivision (e) of Section 25305***, except as provided in Section 25514.5. (Emphasis added.)

*There is no subdivision (e) of Section 25305 in existing law.* Accordingly, satisfying this, the very first finding the Commission must make in an NOI process, cannot be made.

As discussed below, the entire 25300's series of the Warren-Alquist Act, which formerly housed the interrelated NOI and IAN sections, has been substantially amended, renumbered, and repurposed. The cross-reference to former Section 25305(e) is a vestige of a bygone, monopoly-based regulatory regime.

In 1999, the referenced, now deleted Section 25305(e), referenced the former 5- and 12-year planning forecasts – forecasts the Commission no longer prepares in a deregulated setting. Specifically, Section 25305(e) stated in 1999, the former 5- and 12-year planning forecast should include, among other things:

- (e) A statement of the level of statewide and service area electrical energy demand for the forthcoming 5- and 12-year forecast or assessment period which, in the judgment of the commission, will reasonably balance requirements of state and service area growth and development, protection of public health and safety, preservation of environmental quality, maintenance of a sound economy, and conservation of energy and resources reasonably expected to occur. The 5-and 12-year forecasts or assessments established by the commission shall serve as the basis for planning and certification of facilities. [Section now *repealed*.]

This provision is no longer applicable law, and it is impossible for the Commission to comply with this now repealed section. Under applicable, current law, the Commission does not prepare a “5- and 12-

year forecast” focused on the IOUs’ “service area[s].” Nor is there any legal authority to craft anew, Pecho and Gem-only 5- and 12-year planning forecasts in two different IOU service territories. Compliance with repealed Section 25305(e) is a legal impossibility.

It is equally clear that the existing statutory framework presents insurmountable obstacles to the NOI process. One foundational purpose of the NOI process in Section 25502 is “an attempt primarily to determine the suitability of the proposed sites to accommodate the facilities and to determine the general conformity of the proposed sites and related facilities with standards of the commission and assessments of need adopted pursuant to Sections 25305 to 25308, inclusive.”<sup>28</sup> Sections 25305 and 25306 have been renumbered and repurposed.<sup>29</sup> Significantly, Sections 25307 and 25308 do not exist in current law; they have been amended out of the Warren-Alquist Act.

The remaining referenced section deals with other issues: Section 25305, “Public interest energy strategies; analytical components; identification of trends; Section 25305.1, “Report regarding progress made by local publicly owned electric utilities serving end-use customers in meeting requirements of Public Utilities Code Section 9620; Section 25305.2, Inclusion in report of information relating to energy efficiency and demand reduction programs; and Section 25306, “Workshops, hearings and other forums; public and industry perspectives.”

Similarly, NOI-related Section 25504 requires, in part, an applicant to provide “a statement of need for the facility and information showing the compatibility of the proposals with the most recent electricity report issued pursuant to Section 25308.” Again, there is no Section 25308 in existing law. In both the beginning, the NOI application, and the end, the “Final” NOI report, on these facts, the NOI process requires statements or analyses with respect to entire sections of law that have either been renumbered or repurposed to address different subject matter or no longer exists in law, like former, now repealed, Sections 25307, 25308, and 25309.

As discussed next below, the NOI is the companion provision of the monopoly paradigm’s captive ratepayer protection system. Subjecting the Pecho and Gem projects to an NOI process where

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<sup>28</sup> Emphasis added. Section 25502 in the original enactment of the Warren-Alquist Act required compliance with now repealed Section 25309, the detailed, IOU service territory specific analyses of the 5-, 10-, and 20-year forecast used to determine “need” in the monopoly utility paradigm.

<sup>29</sup> See, Pub. Resources Code § 25305, “Public interest energy strategies; analytical components; identification of trends”; see also, Pub. Resources Code § 25306, “Workshops, hearings and other forums; public and industry perspectives.”

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the initial application and the first “Finding” that must be made are legal impossibilities is the quintessence of an act of futility.

**VII. THE INAPPLICABILITY OF THE NOI PROCESS IS CONSISTENT WITH THE LEGISLATURE’S ELIMINATION OF ANOTHER MONOPOLY-ERA CONSTRUCT RELATED TO THE NOI -- THE “INTEGRATED ASSESSMENT OF NEED.”**

In 1999, the State Legislature amended the Warren-Alquist Act to remove the requirement that an Integrated Assessment of Need or “IAN” need be performed in an AFC process. As discussed below, both the NOI and the IAN were intended to protect the captive ratepayers of the IOUs in the former monopoly regulatory scheme.

The Integrated Assessment of Need was performed to protect IOUs’ captive ratepayers from having to pay for facilities that were not needed to serve ratepayers. Senate Bill 110 (Stats. 1999, ch. 581) repealed former Public Resources Code Sections 25523(f) and 25524(a), removing the Integrated Assessment of Need conformity provisions. As the Commission explained in one of several cases shortly after the 1999 Legislation was enacted:

The Commission accepted the Elk Hills Power Project Application for Certification on June 9, 1999. At that time, the Public Resources Code prohibited the Energy Commission from certifying a power plant unless the Commission made a finding that the facility was "needed" in accordance with the Commission’s integrated assessment of need for new resource additions. (*See* Pub. Resources Code, §§ 25523(f) and 25524(a).)

The Public Resources Code directed the Commission to do:

- an "integrated assessment of need," taking into account,
- 5- and 12-year forecasts of electricity supply and demand as well as,
- various competing interests, and
- to adopt the assessment in biennial electricity report.

On September 28, 1999, the Governor signed Senate Bill No. 110, which became Chapter 581, Statutes of 1999. This legislation repeals Public Resources Code sections 25523(f) and 25524(a), and amends other provisions relating to the assessment of need for new resources. It thereby removes the requirement that, to certify a proposed facility, the Commission must make a specific finding that the proposed facility is in conformance with the adopted integrated assessment of need. (CEC Final Decision, Elk Hills Power Project, Docket No. 99-AFC-1; CE Document Number P. 800-00-013; Section II, “Need Conformance,” p. 18.)

The IAN and the NOI were, in the monopoly setting, companion provisions, both intended to protect the captive ratepayers of the IOUs. In fact, the legally impossible first finding in the NOI process, discussed above, was a reference to the former Integrated Assessment of Need section – now repealed – former Section subdivision (e) of Section 25305.<sup>30</sup>

**VIII. LEGISLATIVE INTENT STATEMENTS IN 1999 CONFIRM THAT LIKE THE NOI, THE ELIMINATION OF THE FORMER INTEGRATED ASSESSMENT OF NEED REFLECTED THE FACT THE IOUS’ CAPTIVE RATEPAYERS WERE NO LONGER FINANCIALLY AT RISK FOR POWERPLANT SITING COSTS.**

While most statements of “Legislative Intent” are found outside the four corners of the law in Legislative committee documents and reports, in 1999 the Legislature placed into law a Statement of Legislative Intent memorializing its reasons for eliminating the Integrated Assessment of Need, the companion IOU ratepayer protection vestige of the NOI process:

**§ 25009. Legislative findings and declarations**

The Legislature finds and declares that Chapter 854 of the Statutes of 1996 [AB 1890] restructured the California electricity industry and created a competitive electricity generation market. In a competitive generation market, the recovery by powerplant owners of their private investment and operating costs is at risk and no longer guaranteed through regulated rates. *Before the California electricity industry was restructured, the regulated cost recovery framework for powerplants justified requiring the commission to determine the need for new generation, and site only powerplants for which need was established. Now that powerplant owners are at risk to recover their investments, it is no longer appropriate to make this determination.* It is necessary that California both protect environmental quality and site new powerplants to ensure electricity reliability, improve the environmental performance of the current electricity industry and reduce consumer costs. *The success of California's restructured electricity industry depends upon the willingness of private capital to invest in new powerplants. Therefore, it is necessary to modify the need for determination*

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<sup>30</sup> It is not altogether surprising that a law enacted in 1974, like the Warren-Alquist Act, would still have vestiges of repealed law and the former monopoly utility paradigms. For example, Section 25502 still references the Integrated Assessment of Need and forecasting and planning procedures long since repealed or amended, like former Section 25305 to 25308. Similarly, Section 25504 also references now repealed Section 25308. Section 25535 still says “Applicants,” which would include non-CPUC private entities, can recover the “reasonable and direct costs as the applicant incurs” in CPUC ratemaking proceedings. No private CEC applicant has ever requested ratemaking recovery for the costs borne in the Commission siting process, and it would not be reasonable for them to do so, if the entire Act is read as a whole. Yet this vestige of the former monopoly era also remains current law.

requirements of the state's powerplant siting and licensing process to reflect the economics of the restructured electricity industry and ensure the timely construction of new electricity generation capacity. (Added by Stats. 1999, Ch. 581, Sec. 1. Effective January 1, 2000.)

The IAN and the NOI were separate IOU ratepayer protections. Through their eliminations in reshaping California electricity markets, the Legislature acknowledged that timely construction of new generation in a deregulated market should recognize that powerplant owners are at risk to recover their investments. This shifting of risk justified the repeal of the Integrated Assessment of Need, a foundational part of the NOI process.<sup>31</sup>

**IX. CONTINUED DELAY IN THE PROCESSING OF THE APPLICATIONS FOR CERTIFICATION OF THE GEM AND PECHO PROJECT THREATENS CALIFORNIA'S ACCESS TO THIS LONG-TERM ENERGY STORAGE TECHNOLOGY FOR THE REASONABLY FORESEEABLE FUTURE.**

The California Public Utilities Commission's ("CPUC's") *Decision Requiring Procurement to Address Mid-Term Reliability (2023-2026)* set forth an ambitious goal for the procurement of a minimum of 1,000 MW of capacity from new long-duration energy storage resources that can be online by 2026, with a potential extension to 2028 for the online date if needed to procure such resources.<sup>32</sup> The Applicants are working hard to meet this goal, and future procurement needs identified by the State. Even assuming the most expeditious processing of the Applications for Certification, it will be a challenge to meet the procurement deadlines identified by the CPUC.

In addition to the sound legal, policy, and practical issues highlighted above and in the Applicants' filings, there are good public policy reasons to not impose an additional 18-plus-months-long NOI process on these important projects: doing so will result in the denial of California's access to this important long duration storage technology which is absolutely foundational if California is to have any chance of meeting its Climate Policy objectives. The Applicants are already challenged in meeting their commercial operation date schedules and deadlines set forth in the CPUC Procurement Decision

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<sup>31</sup> In addition to the express statutory Statement of Legislative Intent, the Legislative History supports the conclusion that no NOI is required for Non-IOU powerplants. The Assembly Utilities and Commerce Committee Report on SB 100 stated, "In a competitive electricity generation market, market consequences, and the business savvy of power plant applicants, should determine whether the power plants are needed." California Bill Analysis, Assembly Committee On Utilities and Commerce, SB 110, Date of Hearing, August 23, 1999.

<sup>32</sup> CPUC, R.20-05-003, *Decision Requiring Procurement to Address Mid-Term Reliability (2023-2026)*, Ordering Paragraphs 1, 2 (June 24, 2021; "D.21-06-035"). See, D. 21-06-035, p. 36, for the criteria needed to support the extension.

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(D.21-06-035). This is true even assuming the most expeditious processing of the Applications for Certification. There is a very real and significant risk that a further delay associated with the NOI process will result in the elimination of these two long duration energy storage projects for the reasonably foreseeable future.


### CONCLUSION

The Applicants have provided substantial information demonstrating that the Gem and Pecho projects are exempt from the CEC’s NOI process pursuant to Section 25540.6(a)(3) of the Warren-Alquist Act. CEC Staff’s concerns regarding the A-CAES technology are insufficient reason to subject these projects to informational requirements that have not been applied to any other project exempted from the CEC’s NOI process under Section 25540.6 and that are not found anywhere in the “plain language” of the exemption.

The Commission should find the projects exempt from the NOI process pursuant to Public Resources Code Section 25540.6(a)(3), for the reasons discussed above and in the Applicants’ February 9<sup>th</sup> Joint Response. The Applicants respectfully request that the Committee propose, and the full Commission adopt at the April 13, 2022 Business Meeting, an order affirming the applicability of the exemption from the NOI process for the Pecho and Gem projects.

March 8, 2022

ELLISON SCHNEIDER HARRIS & DONLAN LLP

By:   
\_\_\_\_\_

Jeffery D. Harris  
Samantha G. Neumyer  
Attorneys for the Applicants

1 STATE OF CALIFORNIA

2 ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

3 *In the Matter of:* )  
 4 )  
 5 Application for Certification of the ) Docket No. 21-AFC-01  
 Pecho Energy Storage Center )  
 6 )  
 7 Application for Certification of the ) Docket No. 21-AFC-02  
 Gem Energy Storage Center )  
 \_\_\_\_\_ )

8  
 9 **DECLARATION OF CURT HILDEBRAND IN SUPPORT OF**  
**JOINT REPLY TO CEC STAFF’S RESPONSE TO APPLICANTS’ FILING**  
 10 **REQUESTING EXEMPTION FROM THE NOI PROCESS**

11 **DECLARATION OF CURT HILDEBRAND**

12 I, Curt Hildebrand, declare as follows:

13 1. I am currently the Senior Vice President of Commercial Affairs for Hydrostor,  
 14 Inc. I am a Professional Mechanical Engineer (CA Cert. No. 27324) with extensive experience  
 15 siting thermal power plants before the California Energy Commission (“CEC”). I have personal  
 16 knowledge of the facts set forth in this declaration and, if called upon as a witness, I can and  
 17 will competently testify to these facts.

18 2. My responsibilities include managing and overseeing project development  
 19 activities for Hydrostor in the United States, including the Pecho Energy Storage Center  
 20 (“Pecho”) and Gem Energy Storage Center (“Gem”) projects.

21 3. Hydrostor is a long duration energy storage solutions provider that provides  
 22 reliable and affordable utility integration of long duration energy storage, enabling grid  
 23 operators to scale renewable energy and secure grid capacity. Hydrostor supports the green  
 24 economic transition, employing the people, suppliers, and technologies from the traditional  
 25 energy sector to design, build, and operate emissions-free energy storage facilities. Hydrostor  
 26 has developed, deployed, tested, and demonstrated that its patented Advanced Compressed Air  
 27 Energy Storage (“A-CAES”) technology can provide long duration energy storage and enable  
 28 the renewable energy transition.



1           4.     Pecho is a nominal 400 megawatt (“MW”), 3,200 megawatt-hour (“MWh”),  
2 advanced energy storage center. Gem provides even more long duration energy storage as a  
3 nominal 500 MW, 4,000 MWh advanced energy storage center. Long duration energy storage  
4 on this scale is both currently unavailable and decidedly necessary to decarbonize California’s  
5 electric system.

6           5.     The purpose of this declaration is to provide additional information regarding: (1)  
7 the specific geological requirements for Hydrostor’ Advanced Compressed Air Energy Storage  
8 (“A-CAES”) technology, including physical and other characteristics a site must have to  
9 support the A-CAES technology and (2) why the facilities are only technologically and  
10 economically feasible to locate at or very near the air storage cavern needed to provide stored  
11 energy.

#### 12                   **GEOLOGICAL REQUIREMENTS FOR AIR STORAGE CAVERN**

13           6.     There are many geological factors that are relevant for the construction of an air  
14 storage cavern needed to support the A-CAES technology. Some of the most important  
15 geotechnical factors for cavern viability and acceptable cost include the following:

- 16           a.     **Durability to water exposure:** The most significant factor by far is  
17 compatibility of the host geology to water. The hydrostatic concept  
18 utilized in A-CAES requires that the cavern be flooded by water. If the  
19 geology is not able to withstand the flow of water over its surface (below  
20 the erosional limit velocity) it will not make for a suitable cavern.
- 21           b.     **Rock quality designation:** A quasi-quantitative measure of the degree of  
22 jointing or fracture in a rock mass is measured as a percentage of the drill  
23 core in lengths of 10 centimeters or more. Jointed and fractured rock mass  
24 is both weaker (which would lead to smaller and less economical opening  
25 sizes) and more permeable (prone to leakage).
- 26           c.     **Hydraulic conductivity:** Hydraulic conductivity is a direct measure of the  
27 ability of water to permeate through the rock mass. Because high  
28 permeabilities will lead to more water in-flow during cavern construction,

1 ideal geologic formations would have low permeability. High  
2 permeabilities are costly to manage and may lead to high leakages during  
3 operation.

- 4 d. **Primary permeability:** This is the permeability due to the inherent  
5 porous nature of the rock. As primary permeability cannot be remediated  
6 using pressure injected grout, the porous nature of the rock must be  
7 sufficiently low to result in a cavern with low enough water in-flows  
8 during construction and low enough leakages during operations.
- 9 e. **Overburden thickness and quality:** Overburden is the rock between the  
10 roof of the cavern and the ground surface. It comprises all of the rock that  
11 the shafts must transmit through. This includes ground level soils and  
12 unconsolidated rock, as well as other layers of bedrock other than the  
13 cavern host geology. While the shafts can tolerate being situated in more  
14 permeable rock than the cavern, it has limits, given shaft construction  
15 utilizes water pressure retained partially by the rock faces. Additionally,  
16 certain rock types are challenging to construct shafts through for other  
17 reasons. Sites must be selected where not only the cavern host geology at  
18 cavern depth is suitable for the cavern, but where the intervening layers  
19 are also suitable for shaft construction.
- 20 f. **Depth to storage interval:** The target cavern host geology must be deep  
21 enough to support a sufficiently small and economical cavern as well as  
22 topside facility design. Shallower caverns result in lower storage  
23 pressures and higher volumes of not only the stored air, but also the air as  
24 it passes through the pipes, heat exchangers and turbomachinery of the  
25 facility increasing their sizes and costs. Conversely, it must be shallow  
26 enough to support, as shaft drilling technology is currently limited to  
27 approximately a 600m deep cavern floor.  
28



1 even a few 100's of meters away from the air storage caverns is not technologically or  
2 economically feasible. The required land easements would be challenging to acquire,  
3 particularly as the depth of installation (below the bottom of the reservoir) and large diameter  
4 would result in a significant disruption to the ground level, much more so than a typical pipeline  
5 installation. The buried depth would result in a very high cost of construction, and maintenance  
6 would be all but impossible.

7 12. Similarly, it is not technologically or economically feasible to locate the A-CAES  
8 topside facility and reservoir at a distance from the air storage caverns due to the importance of  
9 the air shaft. The air shaft is a pressure bearing pipe of significant importance with unique  
10 corrosion concerns. Burying such a pipe would make the required maintenance and inspection  
11 unnecessarily challenging. It too would have significant cost, and result in a pressure drop  
12 affecting system efficiency. While some degree of distance could be accommodated by a more  
13 expensive higher diameter foot, it is technologically and economically infeasible for distances  
14 beyond 200 meters. As a result, the A-CAES facility needs to be located at or near to the air  
15 storage cavern that provides the stored energy needed to generate electricity.

16 I declare under penalty of perjury under the laws of the State of California that the  
17 foregoing is true and correct to the best of my knowledge and belief.

18 Executed this 8<sup>th</sup> day of March 2022 in Danville, California.

19  
20  
21 

22 **Curt Hildebrand**  
23 **Senior Vice President, Commercial Affairs**  
24 **Hydrostor, Inc.**