

## DOCKETED

<b>Docket Number:</b>	97-AFC-01C
<b>Project Title:</b>	High Desert Power Plant (COMPLIANCE)
<b>TN #:</b>	203003
<b>Document Title:</b>	Staff Analysis of the Proposed Petition to Allow High Desert Power Project to use Alternative Water Supplies
<b>Description:</b>	N/A
<b>Filer:</b>	Joe Douglas
<b>Organization:</b>	California Energy Commission / Joe Dougals
<b>Submitter Role:</b>	Commission Staff
<b>Submission Date:</b>	8/28/2014 2:10:30 PM
<b>Docketed Date:</b>	8/28/2014

**CALIFORNIA ENERGY COMMISSION**

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**DATE:** August 28, 2014  
**TO:** Interested Parties  
**FROM:** Joseph Douglas, Compliance Project Manager  
**SUBJECT: HIGH DESERT POWER PROJECT (97-AFC-1C)**

**Staff Analysis of the Proposed Petition to Allow High Desert Power Project to use Alternative Water Supplies**

On April 23, 2014, High Desert Power Trust, the owner of the High Desert Power Project (HDPP), filed a petition with the California Energy Commission (Energy Commission) requesting to amend the Final Decision for the HDPP. Staff prepared an analysis of this proposed change that can be reviewed on the Energy Commission website (see below).

The 830-megawatt, combined-cycle power plant was certified by the Energy Commission on May 3, 2000, and began commercial operations in April 2003. The facility is located adjacent to the the Southern California Logistics Airport, in the City of Victorville, in San Bernardino County.

The proposed modifications would allow for a change to Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-7** to allow HDPP to use alternative water supplies other than State Water Project Water or recycled water from the Victor Valley Wastewater Reclamation Authority and the city of Victorville's Industrial Wastewater Treatment Plant. According to the petition, the proposed revisions are necessary to avoid possible operational disruptions due to drought-related water reliability impacts.

Energy Commission staff reviewed the petition, assessed the impacts of this proposal on environmental quality and on public health and safety, and proposes language changes to existing Soil and Water conditions of certification. It is staff's opinion that, with the implementation of these changes, the facility would remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed modifications would not result in significant adverse direct or cumulative impacts to the environment (20 Cal. Code of Regs., § 1769). As explained in Staff's Analysis, Energy Commission staff intends to recommend limited approval of the petition at the September 2014, Business Meeting of the Energy Commission.

The Energy Commission's webpage for this facility, [http://www.energy.ca.gov/sitingcases/high\\_desert/](http://www.energy.ca.gov/sitingcases/high_desert/), has a link to the petition and the Staff Analysis on the right side of the webpage in the box labeled "Compliance Proceeding." Click on the "Documents for this Proceeding (Docket Log)" option. The Energy Commission's Order regarding this petition, if approved, will also be available from the same webpage.

This notice has been mailed to the Commission's list of interested parties and property owners adjacent to the facility site. It has also been e-mailed to the facility listserv. The listserv is an automated Energy Commission e-mail system by which information about this facility is e-mailed to parties who have subscribed. To subscribe, go to the Commission's webpage for this facility, cited above, scroll down the right side of the project's webpage to the box labeled "Subscribe," and provide the requested contact information.

Agencies and members of the public who wish to provide comments on the petition or Staff Analysis are asked to submit their comments by 5:00 p.m. on September 8, 2014. To use the Energy Commission's electronic commenting feature, go to the Energy Commission's webpage for this facility, cited above, click on the "Submit e-Comment" link, and follow the instructions in the on-line form. Be sure to include the facility name in your comments. Once submitted, the Energy Commission Dockets Unit reviews and approves your comments, and you will receive an e-mail with a link to them.

Written comments may also be mailed or hand delivered to:

California Energy Commission  
Dockets Unit, MS-4  
Docket No. 97-AFC-1C  
1516 Ninth Street  
Sacramento, CA 95814-5512

All comments and materials filed with the Dockets Unit will become part of the public record of the proceeding.

If you have any questions, please contact Joseph Douglas, Compliance Project Manager, at (916) 653-4677, or by fax to (916) 654-3882, or via e-mail at: [joseph.douglas@energy.ca.gov](mailto:joseph.douglas@energy.ca.gov).

If you would like information on participating in the Energy Commission's amendment process, please call the Energy Commission's Public Adviser's Office at (800) 822-6228 (toll-free in California). The Public Adviser's Office can also be contacted via e-mail at [publicadviser@energy.ca.gov](mailto:publicadviser@energy.ca.gov). News media inquiries should be directed to the Energy Commission Media Office at (916) 654-4989, or by e-mail at [mediaoffice@energy.ca.gov](mailto:mediaoffice@energy.ca.gov).

Enclosure

cc: Mail to list #707  
High Desert Listserv

# HIGH DESERT POWER PROJECT (97-AFC-1C)

Petition to Amend Commission Decision

## EXECUTIVE SUMMARY

Joseph Douglas

### INTRODUCTION

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On April 23, 2014, High Desert Power Trust, the owner of the High Desert Power Project (HDPP), filed a petition with the California Energy Commission (Energy Commission) requesting to amend the Final Decision for the HDPP. Staff prepared an analysis of this proposed change that can be reviewed on the Energy Commission website (see below). The 830-megawatt, combined-cycle power plant was certified by the Energy Commission on May 3, 2000, and began commercial operations in April 2003. The facility is located adjacent to the Southern California Logistics Airport, in the City of Victorville, in San Bernardino County.

The purpose of the Energy Commission's review process is to assess any impacts the proposed modifications would have on environmental quality and on public health and safety. The process includes an evaluation of the consistency of the proposed changes with the Energy Commission's Final Decision (Decision), and if the project, as modified, will remain in compliance with applicable laws, ordinances, regulations, and standards (20, Cal. Code of Regs., § 1769).

This Staff Analysis contains the Energy Commission staff's evaluation of the affected technical area of Soil and Water.

### DESCRIPTION OF PROPOSED MODIFICATIONS

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The modification proposed in the petition would allow HDPP to change Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-7** to allow HDPP to use alternative water supplies other than State Water Project water (SWP) or recycled water from the Victor Valley Wastewater Reclamation Authority.

### NECESSITY FOR THE PROPOSED MODIFICATIONS

Due to the statewide drought, SWP water was substantially curtailed and it is uncertain when it may become available to the project again. The project has reported some issues with the use of recycled water and is requesting:

- The use of a back up groundwater supply from the Mojave River Basin (MRB), and;
- The approval to construct a discharge line from the power plant to the City of Victorville Water District's Industrial Wastewater Treatment Plant (City IWWTP) to send waste water from the pre-treatment of SWP water before it can be banked as a backup water supply for HDPP. This would potentially reduce Total Dissolved Solids (TDS) and silica levels and increase the IWWTP flow volumes to the HDPP. Also it would allow pre-treatment and banking of SWP water when HDPP is not operating.

## **STAFF'S ASSESSMENT OF THE PROPOSED PROJECT CHANGES**

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The Soil and Water technical area contained in this Staff Assessment indicate recommended staff changes to the conditions of certification in the Final Decision. Staff believes that by requiring the proposed changes to the existing conditions, the potential impacts of the proposed changes would be reduced to less than significant levels. Staff's conclusions reached in the other technical areas are summarized in **Executive Summary Table 1**.

Energy Commission technical staff reviewed the petition to amend for potential environmental effects and consistency with applicable laws, ordinances, regulations, and standards (LORS). Staff has determined that the technical or environmental areas of Air Quality, Biological Resources, Cultural Resources, Facility Design, Efficiency, Geological and Paleontological Resources, Hazardous Materials Management, Noise and Vibration, Public Health and Safety, Reliability, Traffic and Transportation, Transmission Line Safety and Nuisance, Transmission System Engineering, Visual Resources, Waste Management, and Worker Safety and Fire Protection are not affected by the proposed changes, and no revisions or new conditions of certification are needed to ensure the project remains in compliance with all applicable LORS.

Staff determined that the technical area of Soil and Water Resources would be affected by the proposed project change and has proposed revised conditions of certification to assure compliance with LORS and/or to reduce potential environmental impacts to a less than significant level. The details of the proposed condition changes can be found in the attached Soil and Water Analysis. Staff recommends a temporary approval of the petition with the following stipulations:

- The project is still required to complete the 100 percent recycled water feasibility study, due November 1, 2014, to continue the project's move to the maximum use of recycled water.
- Staff agrees that drought conditions warrant the project having backup water sources, in case of ongoing interruptions of the SWP water supply, or of recycled water supply. Staff will recommend that the project be allowed limited use of the MRB water;
  - For not more than 2 years, or until November 1, 2016, whichever is later.
  - For not more than 2,000 Acre Feet (AF) per 12 month period.
- Banked SWP water may also be used for backup and blending during this interim period to minimize use of groundwater from MRB.
- To ensure that the HDPP is drought proof for the long term, staff recommends that the owner submit a Petition to Amend (PTA) no later than November 1, 2015 that will implement reliable primary and backup HDPP water supplies that are consistent with state water policies or allow for the construction and operation of an alternate cooling system like dry cooling.
- Given the current lack of SWP water supplies, and staff's recommendation of a PTA to implement a permanent drought solution, staff recommends that the proposed recycled water discharge line not need be considered or approved at this time. Project water infrastructure changes will likely be included in the

November 1, 2015 PTA. Staff is not recommending the changes to the **SOIL&WATER-7**.

Revisions to Condition of Certification **SOIL&WATER-1** would include the following:

- Recycled water shall be used to the maximum extent feasible.
- Banked water and pumped MRB groundwater can be used as backup sources in case of interruptions in SWP water supply. MRB water can only be used for not more than 2 years after this amendment is approved by the Energy Commission, or until November 1, 2016, whichever is later; and for not more than 2,000 AF per 12 month period.
- Monitoring use of water sources.
- The owner shall submit a PTA no later than November 1, 2015, that will implement reliable primary and backup HDPP water supplies that are consistent with state water policies or an alternate cooling system like dry cooling.

**Executive Summary Table 1  
Summary of Impacts to Each Technical Area**

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			New or Modified Conditions of Certification Recommended
	Technical Area Not Affected	No Significant Environmental Impact*	Process As Amendment	
Air Quality	X			
Biological Resources	X			
Cultural Resources	X			
Efficiency	X			
Geological Hazards & Resources	X			
Hazardous Materials Management	X			
Facility Design	X			
Land Use	X			
Noise and Vibration	X			
Paleontological Resources	X			
Public Health	X			
Reliability	X			
Socioeconomics	X			
Soil and Water Resources			X	X
Traffic and Transportation	X			
Transmission Line Safety & Nuisance	X			
Transmission System Engineering	X			
Visual Resources	X			
Waste Management	X			
Worker Safety and Fire Protection	X			

\*There is no possibility that the modifications may have a significant effect on the environment and the modification will not result in a change or deletion of a condition adopted by the commission in the final decision or make changes that would cause the project not to comply with any applicable laws, ordinances, regulations, or standards (LORS) (20 Cal. Code Regs., § 1769 (a)(2)).

## **STAFF RECOMMENDATIONS AND CONCLUSIONS**

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Staff concludes that the following required findings mandated by Title 20, section 1769(a)(3) of the California Code of Regulations can be made and will recommend approval of the petition to the Energy Commission:

- The proposed modification(s) would not change the findings in the Energy Commission's Final Decision pursuant to Title 20, California Code of Regulations, section 1755;
- There would be no new or additional, unmitigated, significant environmental impacts associated with the proposed modifications;
- The facility would remain in compliance with all applicable laws, ordinances, regulations, and standards;
- The modifications would be beneficial to the public and the project owner because they would enable the project owner to optimize operations and maximize power production.
- The proposed modification(s) are justified because there has been a substantial change in circumstances since the Energy Commission certification as the statewide drought has caused a reduction of available water sources.

**HIGH DESERT POWER PROJECT (97-AFC-1C)**  
**Petition for Modification to Water Supply Alternatives**  
**SOIL AND WATER RESOURCES ANALYSIS**  
Abdel-Karim Abulaban, P.E.

**INTRODUCTION**

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On April 23, 2014, High Desert Power Project (HDPP), LLC (project owner) filed a Petition to Amend (PTA) to be permitted to acquire water rights from the pumpers of the adjudicated Mojave River Basin (MRB) as a backup supply when primary and current back up water supplies are not available. The owner also petitioned to be allowed to discharge its filter backwash water to the city of Victorville's (City) industrial wastewater treatment plant (IWWTP) (HDPP 2014a).

The project owner stated that the reasons for filing the amendment are 1) the State Water Project (SWP) water, which is a primary water supply for the project, is not reliable due to the drought conditions that the state has been experiencing, and 2) one of the existing secondary/back up supply (recycled water) from the Victor Valley Wastewater Reclamation Authority (VWVRA) and the City's IWWTP has been available only on an intermittent basis, and at variable quality.

Staff reviewed the project owner's April 23, 2014 petition to identify potential environmental impacts to soil and water resources and for consistency with applicable laws, ordinances, regulations and standards (LORS). Staff agrees that drought conditions warrant the project having backup water sources, in case of ongoing interruptions of the SWP water supply, or of the recycled water supply. Staff will recommend that the project be allowed limited use of the MRB water; staff proposes changes to **SOIL&WATER- 1** that would limit the quantity and duration of MRB water to not more than 2 years, or until November 1, 2016, whichever is later; and for not more than 2000 acre feet (AF) per 12 month period.

Banked SWP may continue to be used for backup and blending during this interim period to minimize use of groundwater from MRB. To ensure that the HDPP is drought-proof for the long-term, staff recommends that the owner submit a PTA no later than November 1, 2015 that will implement reliable primary and backup HDPP water supplies that are consistent with state water policies or an alternate cooling system like dry cooling. Given the current lack of SWP water supplies and the inability to bank SWP water, together with staff's recommendation of a PTA to implement a permanent drought-proofing of the project, staff has determined that that the proposed pipeline to carry backwash streams from the project's aquifer banking water treatment system to the IWWTP does not need to be considered or approved at this time. Therefore, staff does not agree with the proposed changes to **SOIL&WATER-7**. Project water supply and treatment infrastructure changes will likely be included in the drought-proofing PTA required by November 1, 2015.



In a separate letter dated July 21, 2014, the owner proposed water treatments (water softening lime treatment and improved ultraviolet disinfection capacity); these are process modifications that staff intends to process separately as Staff Approved Project Modifications.(HDPP 2014c)

## **PROJECT DESCRIPTION AND BACKGROUND**

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HDPP is an 830-megawatt natural gas-fired combined-cycle power plant located in the City of Victorville in San Bernardino County. The project uses the bulk of its industrial water in evaporative wet cooling towers. The project includes a zero liquid discharge (ZLD) system to treat and recover some water from waste disposal streams.

HDPP has been operational since April 2003, and its primary water supply has been SWP surface water purchased from the City through a contract with the Mojave Water Agency (MWA). The MWA is a Long-Term SWP contractor with a full entitlement of 75,800 acre-feet (AF) of SWP water (CEC 2006 and DWR 2007, Table B-4). Based on its design, the HDPP has the potential to consume up to 4,000 acre-feet per year (AFY) of raw water from the SWP. Based on recent project operations, the historic annual consumption of SWP water has been approximately 3,000 AFY.

Drought and pumping constraints that federal biological opinions have placed on the SWP have resulted in fluctuations in deliveries to MWA. From 2001 to 2005, deliveries of SWP water to MWA averaged less than 10,000 AFY (DWR 2007, Table B-5B). MWA expects SWP deliveries to continue to fluctuate for the next several years due to requests for additional water by other SWP contractors and insufficient yield from SWP conservation reservoirs (MWA 2005, Chapter 4). The California Department of Water Resources (DWR) administers the SWP. DWR's allocation of SWP water to contractors, including MWA, was reduced from five percent (5%) to zero percent (0%) on January 31, 2014 due to extreme water shortage. On April 18, 2014, DWR increased the allocation to contractors back to five percent (5%). Nonetheless, MWA has told HDPP that it does not expect to deliver SWP water to HDPP for the remainder of 2014, which illuminates the lack of reliability of SWP water.

The project owner is required to maintain a groundwater bank as backup, where contract water from the City in excess of HDPP's operational needs is filtered and then injected into the underlying aquifer (groundwater bank) for retrieval for HDPP use when SWP water is not available. Currently, HDPP has about a one year supply, at current HDPP capacity factors, of SWP banked water.

## **HDPP WATER SUPPLY BACKGROUND**

### **2000 Decision (CEC 2000)**

- Back up water supply - SWP water banked as groundwater, with 14,000 AF (13,000 AF and 1,000 AF of margin) to be banked by the end of the 5<sup>th</sup> year of operation (**SOIL&WATER-4.b** and **a**).
- The project shall not use treated water from the Victor Valley Wastewater Authority (**SOIL&WATER -1.d**) – conflicts with riparian uses in Mojave River.

- The project's water supply facilities shall be appropriately sized to meet project needs (**SOIL&WATER -1.e**).
- If there is no water available to be purchased from the MWA and there is no banked water available to the project ....no groundwater shall be pumped, and the project shall not operate. At the project owner's discretion, dry cooling may be used instead, if an amendment to the Commission's decision allowing dry cooling is approved (**SOIL&WATER -1.b**).

### **2006 Order (CEC 2006)**

- Require use of ultraviolet as banking pre-treatment (**SOIL&WATER-1.b**).
- 14,000 AF (13,000 AF and 1,000 AF of margin) to be banked by the end of the 15<sup>th</sup> year of operation (**SOIL&WATER-4.d, e and a**).
- Require Reverse Osmosis treatment if water banking amounts (14,000 AF by 15<sup>th</sup> year) are not met (**SOIL&WATER-1.d**).

### **2009 Order (CEC 2009)**

- Allow use of recycled water from VVWA (**SOIL&WATER-1.a and c**).
- The project's water supply facilities shall be appropriately sized to meet project needs. The project shall make maximum use of recycled water for power plant cooling given the equipment capabilities and permit conditions (**SOIL&WATER-1.e**).
- Up to 14,000 AF (13,000 AF and 1,000 AF of margin) to be banked (**SOIL&WATER-4.d and a**).
- Required feasibility study of using 100 percent recycled water, no later than December 31, 2011(**SOIL&WATER-1.f**).

### **2011 Order (CEC 2011)**

- Required the feasibility study of using 100 percent recycled water, with new date of November 1, 2013 in verification only (**SOIL&WATER-1.f**).

### **2013 Staff Approval (Hoffman 2013)**

- Staff approval to extend the due date for the 100 percent recycled water feasibility study by one year to November 1, 2014.

## **PROPOSED AMENDMENTS**

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The PTA proposes an alternative source of back up water for HDPP's cooling water and industrial use other than the banked SWP water and recycled water. The alternative source of water would be groundwater acquired through acquisition of water rights in the adjudicated MRB. Groundwater would be used when SWP water, banked water, and recycled water are not available in sufficient quantity or quality that can be used by the project. No infrastructure modifications would be required to implement this change, as the MWA would transport the water via an existing HDPP SWP delivery pipeline. The project owner proposed to amend Condition of Certification **SOIL&WATER-1** to reflect

the proposed changes by setting conditions under which recycled water can be used and to allow the project to purchase water rights from the adjudicated MRB.

HDPP is required to maintain a bank of SWP water as a backup water source. The project is required to pre-treat SWP water prior to injection into the groundwater bank. The waste water stream from the pre-treatment can be used directly for cooling tower makeup if HDPP is operating. If HDPP is not operating, and therefore not able to use the pre-treatment waste stream, HDPP cannot bank SWP water. The April 23, 2014 amendment proposes to discharge backwash streams to the City IWWTP. The amendment would allow HDPP SWP water pre-treatment and banking to occur even if HDPP is not operating. The change would require construction of a 1340-foot long waste water pipeline from the project to a connection to the city's sewer system for delivery to the IWWTP. The connection point would be 140 ft. southwest of the project fence line.

The project owner also proposed a change to Condition of Certification **SOIL&WATER-7** allowing the project to discharge its backwash water to the City's municipal sewer system for treatment by the City's IWWTP and to obtain necessary permits to do so.

In a submittal dated July 21, 2014, the project owner informed Energy Commission staff that it is embarking on a water treatment facilities improvement project (HDPP 2014c). The modifications involve an improvement to the ultraviolet (UV) disinfection capacity to treat organic matter from incoming SWP water and also an enhancement to the existing cold lime water softening system. Staff had considered merging this into this PTA analysis, but now intends to process the improvements through a Staff Approved Project Modification.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS COMPLIANCE**

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The same LORS for the original analysis and the subsequent amendments of 2005, 2009, and 2011 are still applicable. In addition, in January 2013 the State Water Resources Control Board (State Water Board) adopted Resolution 2013-003 which modifies the State Water Board recycled water policy. The purpose of the modification is to encourage use of recycled water whenever water is needed for a use for which recycled water is permitted.

## **ANALYSIS**

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The scope of staff's analysis is to evaluate whether the proposed changes would have any adverse environmental impacts and if they would be consistent with applicable LORS and state water policies. Where potential impacts have been identified or LORS compliance was required, staff proposed appropriate mitigation and changes to the conditions of certification. Staff evaluated the project owner's proposed modifications and proposed changes to Conditions of Certification **SOIL&WATER-1** and **-7**.

## **ACQUISITION OF ADJUDICATED GROUNDWATER RIGHTS FROM MRB**

The project owner proposes to purchase groundwater rights from existing MRB producers and use them in perpetuity for project operation as a back up to their primary supply of SWP. The MRB has been in adjudication since 2002 as a result of a law suit filed by the City of Barstow and Southern California Water Company seeking limits on groundwater production volumes for producers as a result of the basin being in overdraft. The law suit advanced all the way to the California Supreme Court after it was considered by both the superior and appellate courts.

The final ruling set limits on the free production allocations (FPA) allowed for producers in the five designated subareas of the MRB. The FPA for a producer was based on the producer's share of maximum production amounts in the five years prior to the date of the ruling, referred to as Base Annual Production (BAP). During the first five years of the implementation of the adjudication the FPAs were decreased by 5 percent per year starting from 100 percent of the BAP. Before the end of the fifth year and each year thereafter, the Watermaster must analyze conditions in each Subarea and recommend to the Court any increase or further reduction in FPA.

The Judgment specified factors that must be taken into consideration by the Watermaster in the development of an FPA adjustment recommendation. Beginning with the sixth year and each year thereafter, the FPA established by the Court for each Subarea is allocated to producers in the ratio of their respective share of the BAP in the Subarea. The ruling was to ensure that production amounts don't exceed the total recharge volumes into the basin. The Mojave Water Agency (MWA) was appointed by the court as the initial Watermaster to oversee implementation of the judgment. As a result of the adjudication, the basin has been in balance and in certain years has even seen increases in water levels, likely due to a number of users not pumping all of their FPAs. However, the storage volume in the aquifer is still more than 700,000 AF below 1930's levels before the overdraft of the basin started.

The Judgment provided a framework for BAP or FPA to be bought, sold or leased within Subareas and between Subareas. The Judgment set forth some rules governing transfers. The rules are designed to assure that the total consumptive use within a Subarea does not exceed the recharge volumes as a result of any transfer.

The Judgment did not directly limit groundwater pumping in the MRB. Pumpers can pump above their FPAs but they would have to pay "Replacement Water Assessments," which are used by MWA to acquire SWP water to recharge the basin. Given the lack of reliability of SWP deliveries noted by the applicant in the PTA and ongoing drought conditions, staff is concerned that even if the assessments are paid by the HDPP owner or others in the basin, there might be no or very limited SWP or alternate water supplies available to acquire replacement water.

Staff concludes that without assurances that there will be replacement water available for purchase there is potential for significant impact that would put the basin in overdraft conditions. Even though the basin has been gaining storage over the past 13 years, probably as a result of recharge with SWP surplus water and some pumpers not pumping all their FPAs, staff believes that this might not be a sustainable trend into the future as other SWP contractors utilize their right to the supply. Staff has the same opinion that was adopted in the original decision for this project, that is, allowing the project owner to participate in the MRB exchange of water rights is not an environmentally desirable alternative compared to the use of recycled water for cooling purposes and is inconsistent with state and Energy Commission policy. Further, reducing or replacing project use of recycled water would also be in conflict with Section 13550 of the Water Code which states in part, “the use of potable domestic water for nonpotable uses...is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available...”.

However, staff understands that the project is currently in a precarious situation due to drought conditions throughout the state, and agrees that the MRB groundwater supply would currently be more reliable than the primary water supply from the SWP. If the MRB groundwater was used as backup to the SWP water, staff believes it is likely that the groundwater would be used on a regular basis and become the primary supply over time given the ease of delivery through existing conveyances, reliability (at least in the near term) of supply, and that HDPP would transfer the costs and responsibility of treating the SWP water for groundwater banking to MRB. Thus, any use of MRB water must be minimal, exclusively as a backup water supply, and limited in duration.

Staff believes that pumping groundwater from MRB is not long-term solution for the project, and given the current practices of using SWP to recharge the MRB, pumping MRB is not drought-proof. Staff believes that the project should come up with a long-term solution for its water supply that is not vulnerable to drought conditions and that is consistent with state water policies.

Further, staff also understands that due to the drought that the state is under, no SWP water is available to the project through the end of 2014, and that the supply of recycled water from VVWRA and IWWTP may be subject to interruptions due to reasons that may be beyond the control of the project owner. If the project does not have a more stable source of water as a backup, the project would be at risk of substantially reducing operations or shutting down. Staff believes that there may be circumstances under which limited use of MRB groundwater as a backup may be justified and would not result in significant impacts.

Staff therefore recommends that the project be permitted to purchase water rights from the adjudicated MRB to be used for the next two years after adoption of the Energy Commission order or until November 1, 2016, whichever is later, so that the project can come up with a long-term solution to deal with drought conditions by switching the project to a drought-proof supply of water. Since the project has been using approximately 3,000 AFY for the past few years on average, and since it has been currently able to successfully blend roughly two parts fresh water with one part recycled water, staff recommends that the project use of water from MRB for the next two years be limited to 2,000 AFY to be used only in emergency situations when other water is not

available in quantity or quality that can be used to meet all of the project's industrial needs.

It should be noted here that for the past several years it has been the intent of staff and the HDPP that the project study the feasibility of, and then convert to 100 percent recycled water use for its industrial water supply. The previous amendments processed for the project so far have been focused on achieving this objective. Staff strongly believes that now is an excellent opportunity for the project to focus on achieving those goals given the vulnerability of water supply from SWP in the drought conditions that the state has been experiencing with no end in sight. Staff emphasizes the importance that the project should take all necessary measures, such as expanding its filtration facilities and the water supply pipeline from VVWRA, so that it can use recycled water for all of its power plant cooling and industrial uses since there is adequate supply available to meet project needs. Staff recognizes that the project will incur capital improvement costs to achieve the conversion, but in the long run this will be beneficial both for the project by giving it a reliable, drought-proof, water supply, and for the environment by preserving fresh water sources for higher priority uses.

The project owner shall complete the feasibility study that was initially required in the 2009 amendment. The results of the study can be incorporated in a petition to amend the project for addition of the necessary equipment and conveyance facilities, if desired. The feasibility study due date was initially set to December 2011, but was later postponed on two different occasions to November 2013 and then to November 2014. Staff was informed in a meeting with project representatives on August 26, 2014 that the feasibility study will be submitted by the current due date of November 1, 2014. In addition, staff will recommend that the project owner be required to submit to the Energy Commission no later than November 1, 2015 a PTA to implement a reliable supply of water that will not be vulnerable to drought conditions, and that is consistent with state water policies or an alternate cooling technology like dry cooling.

## **DISCHARGE OF BACKWASH WATER TO CITY'S IWWTP**

HDPP is currently required to create a bank of SWP water of up to 13,000 AF (plus 1000 AF as a reserve) as a backup water source, and is required to pre-treat SWP water prior to injection into the aquifer. The waste water stream from the pre-treatment can be used directly in the HDPP cooling tower as makeup, if HDPP is operating. If HDPP is not operating, and therefore not able to take the pre-treatment waste stream, HDPP cannot bank SWP water.

The April 23, 2014 amendment proposes to discharge backwash streams to the city IWWTP. The amendment would allow HDPP SWP water pre-treatment and banking to occur regardless of HDPP operating status. Since the filter backwash water from HDPP is lower in TDS, discharge of the backwash water to the IWWTP would result in diluting the TDS in the IWWTP's effluent so that it could be recycled back to HDPP for use. The project owner proposes changes to **SOIL&WATER-7** to accommodate this change.

Staff does not agree with the changes to **SOIL&WATER-7** proposed by the owner related to a new waste water pipeline to carry backwash streams from the project's aquifer banking water treatment system to the IWWTP. Given the current lack of SWP water supplies, and staff's recommendation of a PTA to implement a permanent drought solution, staff concludes that that the proposed recycled water discharge line does not need to be considered or approved at this time. Project water supply and treatment infrastructure changes will likely be included in the drought-proofing PTA required by November 1, 2015.

## **STAFF APPROVED PROJECT MODIFICATION**

In a submittal dated July 21, 2014, the project owner informed Energy Commission staff that it is embarking on a water treatment facilities improvement project. The modifications involve an improvement to the ultraviolet (UV) disinfection capacity to treat organic matter from incoming water and also an enhancement to the existing cold lime water softening system. Also, as described by the owner, the water treatment system improvement project would facilitate and enhance the capability to remove silica in the recycled water and SWP water. Those improvements would result in increasing the capacity of the project filtration facilities to process more recycled water with no issues and move the project closer to achieving the goal of switching to 100 percent recycled water.

All improvements would occur on site in previously disturbed areas. There would be no significant environmental impacts from their implementation. Staff supports the proposed improvements and intends to process the request as a Staff Approved Project Modification in a separate action to this PTA.

## **LORS ANALYSIS**

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The same LORS for the original analysis and the subsequent amendments of 2005, 2009, and 2011 are still applicable. In addition, in January 2013 the State Water Resources Control Board (State Water Board) adopted Resolution 2013-003 which modifies the State Water Board recycled water policy to encourage more use of recycled water whenever water is needed for a use that recycled water is permitted.

Recognizing the drought situation that the State of California has been experiencing and the water stresses that have emerged as a result of the drought, the State Water Board adopted Resolution 2013-003 to modify its Recycled Water Policy. The resolution mandates that the State Water Board and Regional Water Boards exercise the authority granted to them by the Legislature to the fullest extent possible to encourage the use of recycled water, consistent with state and federal water quality laws. Resolution 2013-003 also established a mandate to increase the use of recycled water in California by 200,000 AFY by 2020 and by an additional 300,000 AFY by 2030. These mandates shall be achieved through the cooperation and collaboration of the State Water Board, the Regional Water Quality Control Boards, the environmental community, water purveyors and the operators of publicly owned treatment works. If the HDPP converts to recycled water as a primary supply, then the use of up to 4,000 AFY could be a significant step towards achieving these goals.

The State Water Board will evaluate progress toward these mandates biennially and review and revise as necessary the implementation provisions of the Policy. Further, the State Water Board declared that, pursuant to Water Code sections 13550 et seq., it is a waste and unreasonable use of water for water agencies not to use recycled water when recycled water of adequate quality is available and is not being put to beneficial use, subject to the conditions established in sections 13550 et seq. The State Water Board shall exercise its authority pursuant to Water Code section 275 to the fullest extent possible to enforce the mandates granted it by Resolution 2013-003. Recycled water is available such that it can be used to the maximum extent feasible at HDPP.

## CONCLUSIONS

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The drought is real, and given the volatility of SWP supply, recycled water should be used to the maximum extent feasible to provide project cooling and industrial water, and to blend and extend other project water supplies. The project is still required to complete the 100 percent recycled water feasibility study, due November 1, 2014, to continue the project move to the maximum use of recycled water.

Staff agrees that drought conditions warrant the project having backup water sources, in case of ongoing interruptions of the SWP water supply, or of recycled water supply. Staff recommends that the project be allowed limited use of the MRB water; staff proposes changes to **SOIL&WATER- 1** that would limit the quantity and duration of MRB water to not more than 2 years, or until November 1, 2016, whichever is later; and for not more than 2000 AF per 12 month period.

Banked SWP may also be used for backup and blending during this interim period to minimize use of groundwater from MRB. To ensure that the HDPP is drought-proof for the long term, staff recommends that the owner submit a PTA no later than November 1, 2015 that will implement reliable primary and backup HDPP water supplies that are consistent with state water policies or an alternate cooling system like dry cooling. Given the current lack of SWP water supplies, and staff's recommendation of a PTA to implement a permanent drought solution, staff recommends that that the proposed pipeline to carry backwash streams from the project's aquifer banking water treatment system to the IWWTP does not need to be considered or approved at this time; staff does not agree with the proposed changes to **SOIL&WATER-7**. Project water supply and treatment infrastructure changes will likely be included in the drought-proofing PTA required by November 1, 2015.

The owner proposed separately on July 21, 2014, water treatments (water softening lime treatment and UV) are process modifications that can be processed separately as a Staff Approved Project Modification.



## **PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION**

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Staff agrees that drought conditions warrant the project having backup water sources, in case of ongoing interruptions of the SWP water supply, or of recycled water supply. Staff recommends that the project be allowed limited use of the MRB water; Staff does not agree with the changes to **SOIL&WATER-1** proposed by the project owner. Staff proposes changes to **SOIL&WATER- 1** that would limit the quantity and duration of MRB water to not more than 2 years, or until November 1, 2016, whichever is later; and for not more than 2000 AF per 12 month period.

**SOIL&WATER-1** Water used for project operation (except for domestic purposes) shall be State Water Project (SWP) water obtained by the project owner consistent with the provisions of the Mojave Water Agency's (MWA) Ordinance 9 and/or appropriately treated recycled waste water, **and/or an alternative water supply obtained consistent with the "Judgment After Trial" dated January, 1996, in City of Barstow, et al. v. City of Adelanto, et al. (Riverside County Superior Court Case No. 208568) as administered by MWA (the "Judgment") (collectively, "Adjudicated Water Rights").**

- a. ~~Whenever SWP water is available to be purchased from the city of Victorville, or recycled waste water is available, the project owner shall use direct delivery of such water for project operation~~**Whenever recycled waste water of quality sufficient for project operations is available to be purchased from the City of Victorville, the project owner shall use direct delivery of maximum quantities of such water for project operations. Whenever the quantity or quality of recycled waste water is not sufficient to support project operations, the project may supplement recycled water supplies with SWP water, banked SWP water from the four HDPP wells as long as the amount of water used does not exceed the amount of water determined to be available to the project pursuant to SOIL&WATER-5, and/or MRB Adjudicated Water Rights. Use of water from MRB shall not exceed 2,000 AF per 12 month period and shall be limited to two years from Energy Commission approval or until November 1, 2016, whichever is later. At the project owner's discretion, dry cooling may be used instead, if an amendment to the Commission's decision allowing dry cooling is approved.**
- b. ~~Whenever water is not available to be purchased from the city of Victorville, the project owner may use SWP water banked in the four HDPP wells as long as the amount of water used does not exceed the amount of water determined to be available to the project pursuant to~~**SOIL&WATER-5The project owner shall report all use of water from all sources to the Energy Commission CPM on a monthly basis in acre-feet.**

- c. ~~If there is no SWP water available to be purchased from the MWA city of Victorville, and there is no reclaimed water available and there is no banked water available to the project, as determined pursuant to SOIL&WATER-5, no groundwater shall be pumped, and the project shall not operate. At the project owner's discretion, dry cooling may be used instead, if an amendment to the Commission's decision allowing dry cooling is approved.~~ **The project owner shall submit a Petition to Amend (PTA) no later than November 1, 2015 that will implement reliable primary and backup HDPP water supplies that are consistent with state water policies or an alternate cooling system like dry cooling.**
- d. (Item Deleted)
- e. The project's water supply facilities shall be appropriately sized and utilized to meet project needs. The project shall make maximum use of recycled waste water for power plant cooling given current equipment capabilities and permit conditions.
- f. The project owner shall continue with the feasibility study evaluating the use of 100 percent recycled water for evaporative cooling purposes and other industrial uses. The feasibility study shall be completed by the project owner and submitted to the CPM.

**Verification:** The project owner shall provide final design drawings of the project's water supply facilities to the CPM, for review and approval, thirty (30) days before commencing project construction. **The project owner shall submit to the CPM documentations showing the agreements entered into between the project owner and water right owners in MRB who agree to transfer water rights to project owner. The project owner shall report all use of water from MRB to Energy Commission CPM on a monthly basis.**

The project owner shall provide a biannual report on the progress being made on the project design for use of 100 percent recycled water for power plant cooling. The report shall include information related to project modifications that may be needed for using up to 100 percent recycled water. The first report shall be due six months after adoption of this condition of certification, and the final feasibility report shall be submitted to the CPM no later than November 1, 2013. Verifying compliance with other elements of Condition **SOIL&WATER-1** shall be accomplished in accordance with the provisions of the Verifications for Conditions 2,3, 6, 20, and 21 as appropriate.

**The project owner shall submit a PTA no later than November 1, 2015 that will implement reliable primary and backup HDPP water supplies that are consistent with state water policies or an alternate cooling system like dry cooling.**

The final feasibility study should contain, but not be limited to, the following information:

#### **I- Water Supply**

- A. Potential sources of recycled water, its current and projected use, and alternative pipeline routes

- B. Adequacy of recycled water supplies to meet plant operation demand (provide future projections of supply and demand considering annual volumes, monthly patterns of plant water use vs. availability of water supply, and peak day supply and demand)
- C. Quality of existing and recycled water supplies
- D. Water treatment requirements for existing and recycled water supplies
- E. Water treatment requirements for existing and recycled water supplies

## **II- Cooling & Process Needs**

- A. Consumptive water uses e.g.: cooling tower make-up, evaporative cooling of CTG inlet air, CTG compressor intercooling, and STG condensation; CTG NOx control; CTG power augmentation; boiler water makeup
- B. Space requirements for additional treatment of recycled water supplies vs. space available on the plant site
- C. Water balance diagrams for recycled water use and wastewater discharge for average and peak conditions to include distinctions in using existing vs. recycled water

## **III- Wastewater Treatment Disposal**

- A. Method (existing discharge via sewer system to WWTP, dedicated brine return line, deep well injection, or zero liquid discharge (ZLD) recovery)
- B. Available capacity & operating limitations

## **IV- Economic Costs of Existing Source and Recycled Sources (where applicable)**

- A. Capital costs
  1. water supply pipeline
  2. water supply pumping station(s)
  3. well(s)
  4. water treatment system
  5. wastewater pipeline & facility capacity charge
  6. permitting .(PM 10, Legionella, discharge quality and quantities)
  7. Right of Way and Easement acquisitions
  8. engineering, procurement, construction inspection and testing
  9. biologic surveys/environmental assessment reports

- B. Annual (operating and maintenance) Costs
  - 1. existing and recycled water purchase cost
  - 2. chemicals (cooling tower & water treatment)
  - 3. labor
  - 4. energy (water supply pumping, water .treatment)
  - 5. wastewater discharge fee
  - 6. solids disposal (class of waste, transportation & landfill fees)
- C. Project Life - Identify project life
- D. Total Project Cost (base case)
- E. Installed cost per watt
- F. Total Annualized Cost - expressed as the uniform end-of-year payment (AIP) of Capital Costs + Annual Costs
- G. Cost of Capital
- H. Debt to equity ratio
- I. Average debt service coverage ratio

#### **V- Expected Effects on Electric Customers**

- A. Description of existing electricity rate structure and current rates to customers using existing water source
- B. Description of expected electricity rates to customers using recycled water over remaining life of the plant

#### **VI- Environmental Considerations for the use of Recycled Water**

- A. Describe the potential effects of recycled water use on the generation of hazardous waste and on the quality of its wastewater discharge
- B. Describe the potential impacts to public health through the use and discharge of recycled water
- C. Describe the potential effects of recycled water use and discharge on the degradation of water quality and its potential to be injurious to plant life, fish, and wildlife
- D. Describe potential effects on existing water rights or entitlements

#### **VII- Discussion of applicable California Water Code provisions**

## REFERENCES

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- CEC 1999 -- California Energy Commission. Staff Assessment of the High Desert Power Project, dated 1/21/99.
- CEC 2000 -- California Energy Commission. Final Commission Decision for the Application for Certification of the High Desert Power Project, adopted 5/3/2000.
- CEC 2006 -- California Energy Commission. Staff Analysis of Petition to Amend Condition of Certification Soil & Water-4 Water Banking Schedule Project, dated 5/26/06.
- CEC 2009 -- California Energy Commission. Staff Analysis of Petition to Amend Condition of Certification Soil & Water-1: Prohibition of use of Recycled Wastewater, and Soil & Water-4: Water Banking, dated 4/20/09.
- CEC 2013 -- California Energy Commission. Report of Conversation between Energy Commission staff and HDPP representatives regarding recycled water issues (quality and quantity) preventing HDPP from using the recycled water. Docket's TN # 201470. December 23, 2013.
- DWR 2007 -- California Department of Water Resources. Bulletin 132-06 *Management of the California State Water Project*, published 12/07.
- HDPP 2008 -- High Desert Power Project, LLC. Petition for Modification to Use Reclaimed Water, dated 8/12/08. Submitted to CEC/Docket Unit on 8/14/08.
- HDPP 2014a-- High Desert Power Project, LLC. Amendment Petition for Alternative Water Supplies to Address Drought-Related Reliability Impacts. April 23, 2014.
- HDPP 2014b-- High Desert Power Project, LLC. Biannual Progress Report on the Use of Recycled Water at HDPP. May 18, 2014.
- HDPP 2014c-- High Desert Power Project, LLC. Letter request to update water treatment facilities. July 21, 2014.
- CEC 2013 – email from Craig Hoffman, Energy Commission Compliance Project Manager, providing staff approval to extend the due date for the 100 percent recycled water feasibility study by one year to November 1, 2014. April 4, 2013.