CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

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97-AFC-1C
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STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:		
HIGH DESERT POWER PROJECT	)	**Docket No. 97-AFC-1C**
	)	
HIGH DESERT POWER PROJECT, LLC	)	**Order No.** 09-1118-5
	)	**ORDER APPROVING** a Petition to Modify Soil and Water Conditions Relating to Use of Recycled Water for Project Cooling

High Desert Power Project, LLC, the owner/operator of the High Desert Power Project (HDPP), has requested to modify the SOIL and WATER Conditions of Certification to remove the prohibition of the use of recycled water for project cooling. They request authorization to build a short water pipeline to begin using recycled water for about 1/3 of their current cooling needs. They will also conduct a feasibility study to determine viability of increasing the use of recycled water for up to 100 percent of cooling needs and other industrial uses. Specifically, the proposed modifications to the conditions of certification are as follows:

Modify Soil&Water-1 to:

- Remove the prohibition of the use of recycled waste water to supplement or replace the power plant's current potable water supply for project operations.
- Authorize construction of a recycled water pipeline to enable the project to use recycled tertiary-treated water for approximately 1/3 of its project cooling water needs.
- Require a feasibility study to be completed by December 31, 2011, to determine the feasibility of converting to up to 100 percent recycled water use.

Modify Condition Soil&Water-4 to:

- Eliminate water banking milestones because of the lack of availability of State Water Project (SWP) water, and move toward the goal of converting project cooling to 100 percent recycled water, with potable State Water Project water and banked groundwater as a backup.

Add new Condition of Certification Soil&Water-20 to require that copies of the Executed Recycled Water Purchase Agreement be submitted prior to interconnection.

Add new Condition of Certification Soil&Water-21 requiring that water metering systems be installed.

STAFF RECOMMENDATION

Energy Commission staff reviewed the petition and finds that it complies with the requirements of Title 20, Section 1769(a) of the California Code of Regulations. Staff recommends approval of High Desert Power Project, LLC's petition to modify the HDPP Project and amend related Conditions of Certification.

ENERGY COMMISSION FINDINGS

Based on staff's analysis, the Energy Commission concludes that with the above exceptions the proposed changes will not result in any significant impact to public health and safety, or the environment. The Energy Commission public review process has been certified as a CEQA-equivalent, and therefore satisfies CEQA requirements. The Energy Commission finds that:

- The petition meets all the filing criteria of Section 1769(a) concerning post-certification project modifications.
- The modification will not change the findings in the Energy Commission's Final Decision pursuant to Section 1755.
- The project will remain in compliance with all applicable laws, ordinances, regulations, and standards, subject to the provisions of Public Resources Code section 25525;
- The Change will be beneficial to the public because there will be a decrease in the use of potable SWP water for project operation.
- The change is based on information that was not available to the parties prior to Commission certification. The availability of fresh water from the State Water Project has diminished dramatically in comparison with estimates available at the time of certification for reasons that were not anticipated during project certification, which threatens the reliability of project operations.

CONCLUSION AND ORDER

The California Energy Commission hereby adopts Staff's recommendations and approves the following changes to the High Desert Power Project Decision. New language is shown as **underlined**, and deleted language is shown in ~~strikeout~~.

CONDITIONS OF CERTIFICATION

SOIL&WATER-1 ~~The only~~ ~~w~~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.

a. Whenever SWP water is available to be purchased from ~~MWA~~ the city of Victorville, or recycled waste water is available, the project owner shall use direct delivery of such water for project operation.

b. Whenever water is not available to be purchased from the ~~MWA~~ city of Victorville the project owner may use SWP water banked in the ~~seven~~ four HDPP wells ~~identified in Figure Number 1 of the Addendum Number 1 to the "Evaluation of Alternative Water Supplies for the High Desert Power Project" (Bookman-Edmonston 1998)~~ 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.**

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.

~~d. The project shall not use treated water from the Victor Valley Wastewater Authority.~~

e. The project's water supply facilities shall be appropriately sized to meet project needs~~.~~ The project shall make maximum use of recycled waste water for power plant cooling ~~needs~~ 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 no later than December 31, 2011.

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 provide a biannual report on the progress being made on the feasibility study for use of 100 percent recycled water for power plant cooling and other industrial uses. 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.

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, ~~and~~ 6, 20, and 21 as appropriate.

The feasibility study to be submitted by December 31, 2011, 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. Cooling cycles of concentration for existing and potential 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.(PM10, 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 (A/P) of Capital Costs + Annual Costs

G. Cost of Capital

H. Debt to equity ratio

I. Average debt service coverage ratio

J. Identify internal rate of return

K. Monthly and annual energy production since becoming operational

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

SOIL&WATER-4 Injection Schedule:

a. The project owner shall inject one thousand (1000) acre-feet of SWP water within twelve (12) months of the commencement of the project's commercial operation.

b. By the end of four years and two months from the start of commercial operation, the project owner shall install and begin operation of a pre-injection ultraviolet (UV) disinfection system.

c. By the end of the fifth year of commercial operation, the project shall submit a report to the CPM demonstrating that HDPP has maintained an average THM concentration level consistent with the WDR permit requirements.

d. After the end of the fifth year of commercial operation, the project owner shall inject SWP water when it is available in excess of volumes needed to operate the project up to a cumulative quantity of 13,000 acre feet, subject to equipment capabilities and permit requirements. The amount of water available to HDPP for extraction is equal to Injection minus Extraction minus Dissipation minus 1000 acre-feet, as defined in SOIL&WATER-6.

~~d. The project shall install and implement a pre-injection reverse osmosis treatment system within one (1) year if any water banking milestone is not met, as defined in the following table.~~

~~**Table of Milestones for Calculated Water Bank Reserve** (1)~~

~~Water Banking Year~~	~~Anniversary Date (2)~~	~~End of Year Milestones (3)~~	~~Contingency Plan: Criteria for Installation of Reverse Osmosis~~
~~8~~	~~April 21, 2011~~	~~Water Banking Goal~~	~~Calculated Water Bank Reserve ≤ 2,500 ac-ft~~
~~9~~	~~April 21, 2012~~	~~Water Banking Goal~~	~~Calculated Water Bank Reserve ≤ 5,400 ac-ft~~
~~10~~	~~April 21, 2013~~	~~Water Banking Goal~~	~~Calculated Water Bank Reserve ≤ 8,300 ac-ft~~
~~11~~	~~April 21, 2014~~	~~Water Banking Goal~~	~~Calculated Water Bank Reserve ≤ 9,200 ac-ft~~
~~12~~	~~April 21,~~	~~Water Banking~~	~~Calculated Water Bank Reserve ≤~~

	~~2015~~	~~Goal~~	~~10,100 ac-ft~~
~~13~~	~~April 21, 2016~~	~~Water Banking Goal~~	~~Calculated Water Bank Reserve ≤ 11,000 ac-ft~~
~~14~~	~~April 21, 2017~~	~~Water Banking Goal~~	~~Calculated Water Bank Reserve ≤ 12,000 ac-ft~~
~~15~~	~~April 21, 2018~~	~~Water Banking Goal~~	~~Calculated Water Bank Reserve < 13,000 ac-ft~~

~~(1) Calculated Water Bank Reserve = Injection minus Extraction minus Dissipation. (Amount of water available to HDPP is equal to Injection minus Extraction minus Dissipation **minus** 1000 acre-feet, as defined in **SOIL&WATER-6.**)~~
~~(2) Start of Commercial Operation: April 22, 2003.~~
~~(3) Milestones are designed to determine if injection falls significantly behind schedule.~~

~~e. No later than the end of the fifteenth (15) year of commercial operation, the amount of water injected minus the amount of banked groundwater used for project operation, minus the amount of dissipated groundwater shall meet or exceed thirteen thousand (13,000) acre-feet.~~

~~f. After the requirement of section e. has been satisfied and until three (3) years prior to project closure, the project owner shall replace banked groundwater used for project operation as soon as SWP water is available for sale by MWA. The project owner may choose to delay replacement of a limited quantity of banked groundwater used for project operations during aqueduct outages until the cumulative amount of groundwater withdrawn from the bank reaches one thousand (1,000) acre-feet. Once the limit of one thousand (1,000) acre-feet has been reached, the project owner shall replace banked groundwater used for project operation during aqueduct outages as soon as SWP water is available for sale by MWA.~~

Verification: The project owner shall submit an installation and operation report describing the pre-injection ultraviolet disinfection system (UV) by the end of the fourth year of commercial operation. Forecasted estimates of SWP water to be injected shall be included in the quarterly Aquifer and Storage Recovery Well Report. The project owner shall submit a UV performance report by the fifth year of commercial operation. For other related items see the verification to Condition 5. See also the verification to Condition 12.

SOIL&WATER-20: The project owner shall provide the CPM two copies of the executed Recycled Water Purchase Agreement (agreement) with the Victorville Water Dsitrict (VWD) and/or City of Victorville (City) for the long-term supply (20 – 25 years) and delivery of tertiary treated recycled water to the HDPP. The HDPP shall not connect to the City's recycled water pipeline without the final agreement in place. The project owner shall comply with the requirements of Title 22 and Title 17 of the California Code of Regulations and section 13523 of the California Water Code.

Verification: At least 30 days prior to the connection to the City's recycled water pipeline, the project owner shall submit two copies of the executed agreement for the long-term supply and delivery of tertiary treated recycled water to the HDPP. The agreement shall specify a maximum delivery rate of 4000 gpm and shall specify all terms and costs for the delivery of recycled water to the HDPP.

At least 30 days prior to connection to the City's recycled water pipeline, the project owner shall submit to the CPM a copy of the Engineering Report and Cross Connection inspection and approval report from the California Department of Public Health and all water reuse requirements issued by the Lahontan Regional Water Quality Control Board.

SOIL&WATER-21: Prior to the use of recycled water during the operation of the HDPP, the project owner shall install and maintain metering devices as part of the water supply and distribution system to monitor and record in gallons per day the volume of recycled water used by the HDPP. The metering devices shall be operational for the life of the project, and an annual summary of daily water use shall be submitted to the CPM in the annual compliance report.

Verification: At least 10 days prior to use of recycled water for HDPP operation, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational on the recycled water line serving the project. The project owner shall provide a report on the servicing, testing, and calibration of the metering devices in the annual compliance report.

IT IS SO ORDERED.

Date: November 18, 2009

STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

KAREN DOUGLAS
Chairman