State of California The Resources Agency of California

Memorandum

To: Jeffrey Byron, Commissioner Presiding Member
John L. Geesman, Commissioner Associate Member
Hearing Officer: Garret Shean

Date : November 9, 2007

Telephone: (916) 651-1462

From : **California Energy Commission -**
1516 Ninth Street
Sacramento CA 95814-5512

Jared Babula
Senior Staff Counsel

DOCKET
06-AFC-10
DATE NOV 0 9 2007
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Subject: Starwood-Midway Energy Project, staff's brief and supplemental testimony.

At the October 30, 2007 prehearing conference for the Starwood Energy Project, the hearing officer requested staff file a brief by November 9, 2007, on how State Water Board Resolution 75-58 and the Commission's policy documents apply to the Starwood project. In addition, staff was given until November 9, 2007, to file additional testimony regarding the Starwood Energy project's agricultural backwash water source. Attached is staff's brief and as well as testimony to be entered into the record at the November 19, 2007 hearing on the Starwood project.

1) Staff's brief regarding cooling water and state water policy.

2) Supplemental testimony of Dick Anderson and Somer Goulet on Soil and Water Resources with attached Exhibits A and B.

3) Supplemental testimony of Steve Baker and Dick Anderson on power plant cooling and inlet fogging with attached Exhibits A and B.

4) Supplemental testimony of Will Walters on Air Quality

   - Condition of certification AQ-SC6 was revised to clarify that the applicant has an agreement with the property owner to lease the residence in question and have the residents relocated.
   - Condition of certification AQ-3 was revised to be consistent with the language that staff was recently directed to utilize on another project.

5) Supplemental testimony of Ellie Townsend-Hough on Waste Management.

6) Supplemental testimony of Shahab Kaoshmashrab on Noise and Vibration

   - Condition of certification NOISE-5 was revised to clarify that the applicant has an agreement with the property owner to lease the residence in question and have the residents relocated. This condition was also revised to reduce the distance at which noise surveys would be required should the residents of ML-1 be relocated nearby.

Proof of Service (Revised 3/16/07) filed with original.
Mailed from Sacramento on 11/9/07.

STATE OF CALIFORNIA

ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:	)	DOCKET No. 06-AFC-10
	)	
The Application for Certification of the	)	STAFF'S BRIEF ON
STARWOOD-MIDWAY ENERGY PROJECT	)	WATER POLICY
	)	

I

INTRODUCTION

At the October 30, 2007 prehearing conference for the Starwood Energy Project, the hearing officer requested staff file a brief on how "State Water Board Resolution 75-58 and the Commission's policy documents" apply to the Starwood project, which the hearing officer determined does not use water for cooling." (10/30/07 RT p29 lns. 12-25.) Staff understands the request to be for a brief that explains why staff believes Resolution No. 75-58, which is the State Water Resources Control Board's (SWRCB) "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling," and the restatement of Resolution 75-58 in the 2003 Integrated Energy Policy Report (IPER) apply to a project that does not use water for cooling purposes. This filing is to clarify that staff agrees the state water policy reflected in Resolution 75-58 and in the 2003 IPER apply by their terms to water used by power plants for cooling purposes. Staff does not agree, however, that the Starwood project is proposing to use water only for non-cooling purposes. In particular, staff respectfully takes issue with the hearing officer's factual determination, based solely on the applicant's prehearing brief, that water used for inlet chilling is not water used for cooling purposes.

II

DISCUSSION

Because the staff agrees the water policy under Resolution 75-58 and the 2003 IEPR apply to water used in cooling power plants, there is no legal issue as to when the water policy applies. The issue, rather, is whether the process of inlet fogging that the applicant proposes to

use for the Starwood project is in fact a cooling process, in which case the water used in the process would be subject to the water policy of Resolution 75-58 and the 2003 IEPR.

The issue remaining, thus, is a factual one, despite the factual determination made by the hearing officer at the prehearing conference. Without any fact finding or staff testimony and completely reliant on the applicant's prehearing brief, the hearing officer determined during the prehearing conference that the Starwood project does not use water for cooling. He made the determination as follows:

> And given that the applicant has filed a prehearing brief discussing the legal issue of whether or not its project, which has no cooling, as that has been traditionally used to describe projects, it has no steam turbine, it has no condenser, and it has no cooling tower... how it is that the staff believes that the State Water Board Resolution 75-58 and the Commission's policy documents compel this project, without cooling as that's been used in its traditional regulatory application, how those policies apply, since they expressly state that they are for cooling water.

(10/30/07 RT, p. 32, lns. 12-25; emphasis added.) Staff disagrees with the applicant's position that inlet fogging is not "cooling" and identifies this as a factual issue for the November 19, 2007 evidentiary hearing.

All factual determinations must be made exclusively on the basis of the hearing record at an evidentiary hearing. (Cal. Code Regs., tit. 20, § 1751.) Indeed, the presiding member's proposed decision, submitted to the full Commission for adoption, "shall be based exclusively upon the hearing record, including the evidentiary record, of the proceedings on the application." (*Ibid.*) More importantly, "only those items properly incorporated into the hearing record pursuant to Section 1212 or 1213 are sufficient in and of themselves to support a finding." (Cal. Code Regs., tit. 20, § 1702(h).) Section 1213 refers to official notice and does not apply here, but Section 1212 is pertinent in that it requires testimony offered by a party to be under oath and subject to cross examination. (Id. at § 1212(b) and (c).) The applicant's prehearing brief has not been offered under oath or been subject to cross examination. The evidentiary hearing, in fact, has yet to occur, being scheduled for November 19, 2007. Thus, the applicant's prehearing brief, cited at the prehearing conference, does not qualify as sufficient basis upon which to make a factual determination.

For that reason, staff's supplemental testimony includes a discussion of the technical aspects of inlet fogging and explains why this process is a cooling process and is one of several

different processes used for power plant cooling. Staff respectfully refers the committee to the supplemental testimony filed concurrently with this brief.

III

CONCLUSION

With respect to the specific question posed by the hearing officer, whether SWRCB's Resolution 75-58 and the 2003 IPER apply to non-cooling water use, staff agrees that they do not apply to non-cooling water. For the reasons discussed above, staff nevertheless files testimony supporting staff's position that inlet fogging, as proposed by the applicant, is a cooling process and, therefore, the project's water use with respect to inlet fogging, is subject to the state water policy of Resolution 75-58 and the 2003 IPER.

Dated: November 9, 2007

Respectfully submitted,

Jared Babula
Attorney for Commission Staff

Starwood Power-Midway LLC. Peaking Project (06-AFC-10)
Soil and Water Resources

Supplemental Testimony of Dick Anderson and Somer Goulet
November 9, 2007

Introduction

On October 10, 2007, staff filed their Final Staff Assessment (FSA) for the proposed Starwood Power-Midway LLC Peaker Project (Starwood). Subsequent to that filing, on October 19, 2007, the applicant (Starwood) submitted supplemental testimony that proposed using Baker Farms irrigation water filter backwash (backwash water) as their water supply for the Starwood project. Below, staff analyzes the backwash water option in light of this filing.

Background

In the AFC, Starwood proposed using semi-confined aquifer water and also proposed two alternative water sources; confined aquifer water and Baker Farms backwash water. In the FSA staff considered backwash water and confined aquifer water to be potable freshwater, but semi-confined aquifer water was not considered to be potable freshwater. In the FSA, staff recommended that Starwood be permitted to use the lowest quality water available, its primary choice, from the semi-confined aquifer. Starwood now proposes using backwash water from Baker Farms, a nearby agricultural operation. Baker Farms receives this water from the Westlands Water District that obtains it from the Central Valley Project.

Backwash water is the highest quality water available to Starwood. Staff concludes that using Baker Farms backwash water would not have a significant adverse impact on water quality in the area. However, staff and applicant disagree on the characterization of the proposed water supply as to whether it should be considered fresh inland water and whether the proposed use is in conformance with state policies for water conservation. State water policy encourages the use of the lowest quality water reasonably available for power plant cooling and process needs, and discourages the use of "fresh water" that can be used for higher beneficial purposes such as domestic, municipal, or agricultural uses. The upper semi-confined aquifer groundwater at the Starwood site is low quality and unfit for municipal, domestic, or agricultural uses. The applicant maintains that the backwash water would be sent to evaporation ponds and evaporated with some percolating into the upper semi-confined aquifer. Therefore, Starwood believes it is a waste of the high quality backwash water to be sent to an evaporation pond to evaporate and percolate, and that it should be put to beneficial use at the power plant. Staff believes, if the high quality backwash water is used for cooling purposes by the power plant, the applicant should compensate for its use by contributing to a conservation program to conserve as much fresh water as would be used for cooling purposes by the Starwood project.

Analysis of Using Baker Farms Irrigation Water Filter Backwash

Now given additional information from the applicant regarding the use of backwash water for the power plant, staff has re-analyzed the use of backwash water. The applicant maintains the backwash water will be evaporated and essentially wasted if not used for the power plant. State Water Resources Control Board (SWRCB) Policy 75-58 sets forth, in priority order, a list of preferable water sources for power plant cooling. This list, in priority order, is as follows: (1) wastewater being discharged to the ocean, (2) ocean, (3) brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low TDS, and (5) other inland waters. (SWRCB Policy 75-58, p. 4; attached as Exhibit A.)

Since adopting Policy 75-58 in 1976, the SWRCB has more recently confirmed the ongoing applicability of its policy for cooling of modern power plants and clarified a basic principle by stating, "The policy requires that the lowest quality cooling water reasonably available from both a technical and economic standpoint should be utilized as the source water for any evaporative cooling process utilized at these facilities" (Letter from SWRCB dated May 23, 2002, attached as Exhibit B).

In light of the stated policy, staff believes that the semi-confined aquifer (as originally proposed by the applicant and recommended in the FSA) is the lowest quality water available and usable by the Starwood project. However, if the backwash water is being wasted when there is an option for a beneficial use, the option merits consideration. That is, if the backwash water is truly being wasted by evaporation and percolation, then putting that backwash water to beneficial use, as for the proposed power plant, could be in furtherance of the State's conservation policies.

At the same time, the backwash water is of such high quality and quantity that Baker Farms, or any other farming operation, could reasonably be expected to recycle the backwash water for agricultural use, such as for irrigation, at some time in the future. The high quality and quantity of the backwash water make the continued practice of wasting the water indefinitely quite unlikely, especially considering California's water shortages and the fact that the backwash water comes from the Sacramento-San Joaquin River Delta, which faces a shortage of fresh water annually. Staff, thus, concludes, that, even if Baker Farms is not presently using the backwash water for agricultural use, given the quality of the backwash water and the overall scarcity of water in California, it is more likely than not this water will be used for irrigation in the foreseeable future, especially if there are any reductions in CVP water allocations.

Because the backwash water has the potential for agricultural use, the Starwood project, if allowed to use the backwash water, should offset that use by conservation of an equal amount of CVP water so that the end result is a no-net-loss of CVP water by the Starwood power plant during the life of the project. This end result would preserve the availability of fresh water for agricultural use in essentially the same amount as would be used by Starwood project.

Westlands Water District's Expanded Irrigation District Improvement Program (EISIP) is a program that conserves CVP water through assisting farmers with loans for more efficient and modern water use technologies. Staff believes if Starwood contributed a one-time amount of $175,000 to the EISIP program that, over the life of the Starwood project, those funds and the resulting conservation efficiencies would result in an average of 136 acre-feet of water savings annually over the life of the Starwood project, which would offset the Starwood project's use of backwash water.

One remaining question is whether Westlands Water District will allow Baker Farms to sell the backwash water to the Starwood project for industrial use. If not, there is an issue over the reliability of backwash water being available. Westland's Water District currently has a moratorium on using its water for municipal or industrial purposes. Therefore, the applicant should provide proof of reliability of the water supply. This can be accomplished through a Condition of Certification (COC) that requires a letter signed by an authorized official at Westlands Water District stating that Baker Farms selling backwash water to Starwood is indeed permissible.

Comparison of Water Quality

A comparison of the quality of the three potential sources of water supply in the vicinity of the proposed Starwood, in order of highest to most degraded quality, is shown in **Soil and Water Resources – FSA Supplement Table 1**.

SOIL AND WATER RESOURCES – FSA Supplement Table 1
Starwood Alternative Water Supplies Water Quality

Constituent (Units)	Proposed Water Supply Baker Farm Backwash Water	Groundwater from the Confined Aquifer	Groundwater from the Semi-Confined Aquifer
Chloride (mg/L)	48	40-85	200
Sulfate as SO_4 (mg/L)	21	370-440	1900
Total Dissolved Solids (mg/L)	170	820-1100	3400
Hardness (mg/L equiv $CaCO_3$/L)	61	40-56	1500
Silica (mg/L)	10	31-40	47

Westlands Water District's Expanded Irrigation System Improvement Program

The District's Expanded Irrigation District Improvement Program (EISIP) offers low interest rates to water users and land owners for the design and lease-purchase of

irrigation system equipment. While the type of irrigation equipment may typically include portable aluminum irrigation pipe, micro irrigation, linear move, center pivots and tail-water re-use systems, about 90% of the program directs its funds towards installation of micro irrigation. The program began in 2000 and has steadily increased its effectiveness in accomplishing water conservation since then. Currently, the program is supported with a revolving fund on the order of about $10 million which allows for about 25% or $2.5 million per year to be available for funding new or ongoing conservation efforts using funds returned to the account from each farmer's loan payments, which are paid over a four-year term.

The micro irrigation systems tend to have a service life of about eight years before needing replacement. At such time as replacement is needed, farmers may apply again for the low-interest loans (at 3.1% annually) to replace their micro irrigation system. Many of the new installations of micro irrigation, such as using buried drip tape, are replacing furrow irrigation practices of row crops with a potential for significant water conservation benefits. The EISIP lease may be executed for up to $130,000, and after requiring a 20% deposit from the farmer, $104,000 may be financed under the low-interest loan. The irrigation improvements for each loan are normally applied to a 160-acre parcel (1/4 of a square mile). If the applicant were to contribute $175,000 to the EISIP, this could be applied to establishing about 1.5 additional leases equivalent to applying more efficient irrigation to about 240 acres (.375 square miles). Based on Westland Irrigation District's experience and studies in the agricultural industry, the annual water savings over the first four years after implementation would be about 75 acre-feet/year (AFY). With the loans being repaid within four years, the funds could be reallocated and applied during the fifth year to an additional 1.5 parcels resulting in an additional 75 AFY for a total water conservation of 150 AFY during the fifth to eighth years of Startwood's project operation. Assuming after eight years the micro irrigation equipment needed replacement for the parcels initially funded, the cycle could be repeated to maintain micro irrigation indefinitely for about three parcels (480 acres) and water conservation of about 150 AFY. The applicant proposes to use up to 136 AFY; thus the applicant's EISIP contribution would result in net conservation of about 10% more water than Starwood would use annually starting in its fifth year of operation and thereafter. This estimate assumes maximum water use possible by Starwood based on an annual operation of 4,000 hours per year. **Soil and Water Resources – FSA Supplement Table 2** provides a cumulative accounting of what staff believes would be Starwood's water use of Baker Farms backwash water compared to conservation of CVP water during the first 20 years.

SOIL AND WATER RESOURCES – FSA Supplement Table 2
Cumulative Accounting of Starwood's Proposed Water Use of Baker Farms Backwash Water Compared to Conservation of CVP Water

End of Year	Starwood's Avg. Annual Water Use (AFY)	Starwood's Cumulative Water Use (AF)	Annual CVP Water Savings from Applicant's Contribution to EISIP (AFY)	Cumulative CVP Water Savings from Applicant's Contribution to EISIP (AF)
Construction			75	75
1	136	136	75	150
2	136	272	75	225
3	136	408	75	300
4	136	544	150	450
5	136	680	150	600
6	136	816	150	750
7	136	952	150	900
8	136	1,088	150	1,050
9	136	1,224	150	1,200
10	136	1,360	150	1,350
11	136	1,496	150	1,500
12	136	1,632	150	1,650
13	136	1,768	150	1,800
14	136	1,904	150	1,950
15	136	2,040	150	2,100
16	136	2,176	150	2,250
17	136	2,312	150	2,400
18	136	2,448	150	2,550
19	136	2,584	150	2,700
20	136	2,720	150	2,850

Based on the accounting above, after experiencing a deficit of water conservation compared to Starwood water use during Starwood's initial three years of operation, the cumulative volume of CVP water conserved begins exceeding the cumulative water used by Starwood during the 11th year of Starwood operation. By Year 20, the cumulative volume of CVP water conserved of 2,850 AF exceeds the cumulative water used by Starwood of 2,720 AF by a net difference of 130 AF. Therefore, staff believes that in consideration of these factors, the applicant's participation in this water conservation plan by contributing to the EISIP would likely achieve within the initial 20 years of Starwood operation the conservation of CVP water at a volume equivalent to or greater than Starwood's use of the backwash water. Historic data actually suggests that a peaking facility such as Starwood is likely to operate at less than the maximum number of hours assumed in the above analysis (4000). A reasonable forecast of Starwood's average annual hours of operation shows the amount of fresh water conserved by Starwood's contribution to the EISIP would

be as much as 10 percent more than the amount of backwash water Starwood is reasonably expected to use.

Merits of the Water Conservation Proposal

Staff believes the applicant's contribution to the EISIP will result in an overall benefit to the water resources of the state, as well as compensate for the project's use of fresh water that would otherwise be available for other beneficial uses, like agricultural use. The applicant's contribution to Westland Water District's EISIP would accomplish the following:

1. Compensate for the project's use of fresh backwash water by conserving an equal or greater amount of CVP water, which is the highest quality water available to the region and has a full spectrum of potential uses due to its high quality;

2. Conserve CVP water by reducing the volume of water needed for sustaining agriculture with more efficient irrigation practices funded by EISIP loans; and

3. Help reduce the effects of CVP water supply curtailments to Westlands Water District by helping fund more efficient irrigation practices.

Conserving high quality CVP water promotes the conservation of fresh/high quality water for beneficial uses other than for power plant processes, consistent with the state water policy. **Soil and Water Resources – FSA Supplement Table 1** provides water quality data regarding the CVP, confined aquifer and the semi-confined aquifer. It is clear that the CVP water is very high quality and has greatest value for other beneficial uses. Staff's recommended water conservation contribution would conserve CVP water over the life of the project by more than Starwood would use, which is a net benefit to the state. Conserving this high quality water over the life of the project is consistent with the state water conservation goals of State Constitution Article X, which encourages conservation of high quality fresh water, and the state water policy as reflected in Resolution No. 75-58 and the 2003 IEPR .

Conclusions

Allowing Starwood to use backwash water would not necessarily result in a significant adverse impact to water quality. Because the backwash water is high-quality fresh water, however, the project's use of it should be offset by staff's recommended condition that would require the applicant to make a water conservation contribution to the EISIP program to result in a no-net-loss overall of the state's fresh water resources. Therefore, staff does not oppose approval of the use of backwash water so long as the following are also approved: (a) proposed revisions to staff's previously proposed Condition of Certification **Soil & Water-4**, (b) newly proposed Condition of Certification **Soil & Water-8,** which requires a letter from Westlands Water District stating that it is permissible for

Baker Farms to provide the backwash water to Starwood, and (c) newly proposed **Soil & Water-9,** which requires Starwood to contribute $175,000 to the Westlands Water District's EISIP for the purpose of conserving an average of 136 acre-feet or more of CVP water per year during the life of the project and also requires an accounting system that verifies and quantifies the water conserved on an annual basis.

Conditions of Certification

SOIL&WATER-4: Water used for project operation for process, sanitary and landscape irrigation purposes shall be groundwater from the upper semi-confined aquifer obtained from the adjacent CalPeak well and/or Baker Farm irrigation water filter backwash (backwash water). Water use shall not exceed the annual water-use limit of 136 acre-feet without prior approval by the CPM. The project owner shall monitor and record the total water used on a monthly basis. If the amount of water that is to be used will exceed 136 acre-feet per year during any annual reporting period, the project owner shall provide a written request and explanation for the anticipated water-use increase to the CPM sixty (60) days prior to the date when the water-use limit is expected to be exceeded. If the project owner can demonstrate that the requested increase is necessary and is not caused by wasteful practices or malfunctions in the water processing systems, the CPM shall approve an up to one-year increase in the water-use limit for the period requested.

Verification: The project owner, in the annual compliance report, shall provide a water-accounting summary that states the source and quantity of water used on a monthly basis in units of gallons and on an annual basis in units of acre-feet.

SOIL & WATER-8: Prior to the construction of a water pipeline from Baker Farm's backwash water pond to the Starwood site, the project owner will provide a letter from Westlands Water District, signed by an authorized officer of Westlands Water District that states that it is permissible for Baker Farms to provide backwash water for use at Starwood (an industrial power plant). If a letter as such cannot be provided to the CPM, Starwood is not permitted to use backwash water and shall use semi-confined aquifer water.

Verification: Prior to construction activities associated with the backwash water pipeline from Baker Farm to the Starwood site, the project owner will submit a signed letter from Westlands Water District stating it is permissible for Baker Farms to provide water to Starwood.

SOIL & WATER-9: Prior to site mobilization, the project owner shall provide a copy of an executed agreement with Westlands Water District (Westlands) and evidence of its one-time payment of $175,000 to Westlands for the purpose of conserving fresh water at an average of, or greater than, 136 ac-ft of water per

year over the life of the project through the Expanded Irrigation System Improvement Program (EISIP). The executed agreement shall include provisions for the following:

1) A term of the agreement equal to the life of the Starwood project;
2) An annual report for the life of the Starwood project indicating the number and acreage of parcels involved in the EISIP for the current and previous years since EISIP inception in 2000, the total funding provided to the EISIP program and an estimate of fresh water conserved.
3) The annual account balance in Starwood's funded EISIP account;
4) The Project Owner shall be responsible for obtaining from Westlands Water District all data or other information necessary to conduct the annual water savings review.

In the event Westlands Water District discontinues the EISIP, the funds represented by Applicant's contribution shall be allocated to other conservation or similar programs. Any such re-allocation shall first be submitted to the Energy Commission for approval.

Verification: Prior to site mobilization for construction of Starwood, the project owner shall submit to the CPM a copy of an executed agreement with Westlands and evidence of its one-time payment of $175,000 to Westlands for the purpose of conserving fresh water through the EISIP. The project owner shall include in its Annual Compliance Report the following information regarding the use of the Starwood contributed funds:

1) The number and acreage of parcels involved in the EISIP for the current and previous years since EISIP inception in 2000, and an estimate of fresh water conserved.

2) The end-of-year account balance in the Starwood's funded EISIP account;

3) A general description for each Starwood related loan funded by the Westlands Water District's EISIP during the previous calendar year including the following:

   i. The date and amount of the loan;

   ii. The change in the irrigation practice from before to after implementation of the irrigation conservation measure (as would apply for new conservation measures compared to replacements-in-kind); and

   iii. The type of new equipment installed or modifications to existing equipment;

Literature Cited

SWRCB (State Water Resources Control Board) 2002a. Letter confirming the SWRCB's Power Plant Water Policy from Chairman of the Board Arthur G. Baggett, Jr. to Energy Commissioners Robert Laurie and Robert Pernell. May 23, 2002.

URS 2006a URS Corporation/ R. Watkins (tn 38405) Application for Certification with Cover Letter for Starwood Power-Midway, LLC Peaking Project. 11/17/2006 Rec'd 1/17/2006

WATER QUALITY CONTROL POLICY

on the

USE and DISPOSAL of INLAND WATERS

USED for POWERPLANT COOLING

ADOPTED JUNE 19, 1975

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 75-58

WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING

WHEREAS:

1. Basin Planning conducted by the State Board has shown that there is presently no available water for new allocations in some basins.

2. Projected future water demands, when compared to existing developed water supplies, indicate that general freshwater shortages will occur in many areas of the State prior to the year 2000.

3. The improper disposal of powerplant cooling waters may have an adverse impact on the quality of inland surface and groundwaters.

4. It is believed that further development of water in the Central Valley will reduce the quantity of water available to meet Delta outflow requirements and protect Delta water quality standards.

THEREFORE, BE IT RESOLVED, that

1. The Board hereby adopts the "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling".

2. The Board hereby directs all affected California Regional Water Quality Control Boards to implement the applicable provisions of the policy.

3. The Board hereby directs staff to coordinate closely with the State Energy Resources Conservation and Development Commission and other involved state and local agencies as this policy is implemented.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the forgoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 19, 1975.

Bill B. Dendy
Executive Officer

WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING

Introduction

The purpose of this policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for powerplants which depend upon inland waters for cooling. In addition, this policy should be particularly useful in guiding planning of new power generating facilities so as to protect beneficial uses of the State's water resources and to keep the consumptive use of freshwater for powerplant cooling to that minimally essential for the welfare of the citizens of the State.

This policy has been prepared to be consistent with federal, state, and local planning and regulatory statutes, the Warren-Alquist State Energy Resources Conservation and Development Act, Water Code Section 237 and the Waste Water Reuse Law of 1974.

Section 25216.3 of the Warren-Alquist Act states:

"(a) The commission shall compile relevant local, regional, state, and federal land use, public safety, environmental, and other standards to be met in designing, siting, and operating facilities in the State: except as provided in subdivision (d) of Section 25402, adopt standards, except for air and water quality,...."

Water Code Section 237 and Section 462 of the Waste Water Reuse Law, direct the Department of Water Resources to:

237. "...either independently or in cooperation with any person or any county, state, federal, or orhter agency, including, but not limited to, the State Energy Resources Conservation and Development Commission, shall conduct studies and investigations on the need and availability of water for thermal electric powerplant cooling purposes, and shall report thereon to the Legislature from time to time...."

462. "...conduct studies and investigations on the availability and quality of waste water and uses of reclaimed waste water for beneficial purposes including, but not limited to ... and cooling for thermal electric powerplants."

Decisions on waste discharge requirements, water rights permits, water quality control plans, and other specific water quality control implementing actions by the State and Regional Boards shall be consistent with provisions of this policy.

The Board declares its intent to determine from time to time the need for revising this policy.

Definitions

1. Inland Water – all waters within the territorial limits of California exclusive of the waters of the Pacific Ocean outside of enclosed bays, estuaries, and coastal lagoons.

2. Fresh Inland Waters – those inland waters which are suitable for use as a source of domestic, municipal, or agricultural water supply and which provide habitat for fish and wildlife.

3. Salt Sinks – areas designated by the Regional Water Quality Control Boards to receive saline waste discharges.

4. Brackish Waters – includes all waters with a salinity range of 1,000 to 30,000 mg/l and a chloride concentration range of 250 to 12,000 mg/l. The application of the term "brackish" to a water is not intended to imply that such water is no longer suitable for industrial or agricultural purposes.

5. Steam-Electric Power Generating Facilities – electric power generating facilities utilizing fossil or nuclear-type fuel or solar heating in conjunction with a thermal cycle employing the steam-water system as the thermodynamic medium and for the purposes of this policy is synonomous with the word "powerplant".

6. Blowdown – the minimum discharge of either boiler water or recirculating cooling water for the purpose of limiting the buildup of concentrations of materials in excess of desirable limits established by best engineering practice.

7. Closed Cycle Systems – a cooling water system from which there is no discharge of wastewater other than blowdown.

8. Once-Through Cooling – a cooling water system in which there is no recirculation of the cooling water after its initial use.

9. Evaporative Cooling Facilities – evaporative towers, cooling ponds, or cooling canals, which utilize evaporation as a means of wasting rejected heat to the atmosphere.

10. Thermal Plan – "Water Quality Control Plan for Control of Temperature In the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California".

11. Ocean Plan – "Water Quality Control Plan for Ocean Waters of California".

Basis of Policy

1. The State Board believes it is essential that every reasonable effort be made to conserve energy supplies and reduce energy demands to minimize adverse effects on water supply and water quality and at the same time satisfy the State's energy requirements.

2. The increasing concern to limit changes to the coastal environment and the potential hazards of earthquake activity along the coast has led the electric utility industry to consider siting steam-electric generating plants inland as an alternative to proposed coastal locations.

3. Although many of the impacts of coastal powerplants on the marine environmental are still not well understood, it appears the coastal marine environment is less susceptible than inland waters to the water quality impacts associated with powerplant cooling. Operation of existing coastal powerplants indicate that these facilities either meet the standards of the State's Thermal Plan and Ocean Plan or could do so readily with appropriate technological modifications. Furthermore, coastal locations provide for application of a wide range of cooling technologies which do not require the consumptive use of inland waters and therefore would not place an additional burden on the State's limited supply of inland waters. These technologies include once-through cooling which is appropriate for most coastal sites, potential use of saltwater cooling towers, or use of brackish water where more stringent controls are required for environmental considerations at specific sites.

4. There is a limited supply of inland water resources in California. Basin planning conducted by the State Board has shown that there is no available water for new allocations in some basins. Projected future water demands when compared to existing developed water supplies indicate that general fresh-water shortages will occur in many areas of the State prior to the year 2000. The use of inland waters for powerplant cooling needs to be carefully evaluated to assure proper future allocation of inland waters considering all other beneficial uses. The loss of inland waters considering all other beneficial uses. The loss of inland waters through evaporation in powerplant cooling facilities may be considered an unreasonable use of inland waters when general shortages occur.

5. The Regional Boards have adopted water quality objectives including temperature objectives including temperature objectives for all surface waters in the State.

6. Disposal of once-through cooling waters from powerplants to inland water is incompatible with maintaining the water quality objectives of the State Board's "Thermal Plan" and "Water Quality Control Plans."

7. The improper disposal of blowdown from evaporative cooling facilities may have an adverse impact on the quality of inland surface and ground waters and on fish and wildlife.

8. An important consideration in the increased use of inland water for powerplant cooling or for any other purpose in the Central Valley Region is the reduction in the available quantity of water to meet the Delta outflow requirements necessary to protect Delta water quality objectives and standards. Additionally, existing contractual agreements to provide future water supplies to the Central Valley, the South Coastal Basin, and other areas using supplemental water supplies are threatening to further reduce the Central Valley outflow necessary to protect the Delta environment.

9. The California Constitution and the California Water Code declare that the right to use water from a natural stream or watercourse is limited to such water as shall be reasonably required for beneficial use and does not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion. Section 761, Article 17.2, Subchapter 2, Chapter 3, Title 23, California Administrative Code provides that permits or licenses for the appropriation of water will contain a term which will subject the permit or license to the continuing authority of the State Board to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

10. The Water Code authorizes the State Board to prohibit the discharge of wastes to surface and ground waters of the State.

Principles

1. It is the Board's position that from a water quantity and quality standpoint the source of powerplant cooling water should come from the following sources in this order of priority depending on site specifics such as environmental, technical and economic feasibility consideration: (1) wastewater being discharged to the ocean, (2) ocean, (3) brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low TDS, and (5) other inland waters.

2. Where the Board has jurisdiction, use of fresh inland waters for powerplant cooling will be approved by the Board only when it is demonstrated that the use of other water supply sources or other methods of cooling would be environmentally undesirable or economically unsound.

3. In considering issuance of a permit or license to appropriate water for powerplant cooling, the Board will consider the reasonableness of the proposed water use when compared with other present and future needs for the water source and when viewed in the context of alternative water sources that could be used for the purpose. The Board will give great weight to the results of studies made pursuant to the Warren-Alquist State Energy Resources Conservation and Development Act and carefully evaluate studies by the Department of Water Resources made pursuant to Sections 237 and 462, Division 1 of the California Water Code.

4. The discharge of blowdown water from cooling towers or return flows from once-through cooling shall not cause a violation of water quality objectives or waste discharge requirements established by the Regional Boards.

5. The use of unlined evaporation ponds to concentrate salts from blowdown waters will be permitted only at salt sinks approved by the Regional and State Boards. Proposals to utilize unlined evaporation ponds for final disposal of blowdown waters must include studies of alternative methods of disposal. These studies must show that the geologic strata underlying the proposed ponds or salt sink will protect usable groundwater.

6. Studies of availability of inland waters for use in powerplant cooling facilities to be constructed in Central Valley basins, the South Coastal Basins or other areas which receive supplemental water from Central Valley streams as for all major new uses must include an analysis of the impact of such use on Delta outflow and Delta water quality objectives. The studies associated with powerplants should include an analysis of the cost and water use associated with the use of alternative cooling facilities employing dry, or wet/dry modes of operation.

7. The State Board encourages water supply agencies and power generating utilities and agencies to study the feasibility of using wastewater for powerplant cooling. The State Board encourages the use of wastewater for powerplant cooling where it is appropriate. Furthermore, Section 25601(d) of the Warren-Alquist Energy Resources Conservation and Development Act directs the Commission to study, "expanded use of wastewater as cooling water and other advances in powerplant cooling" and Section 462 of the Waste Water Reuse Law directs the Department of Water Resources to "...conduct studies and investigations on the availability and quality of waste water and uses of reclaimed waste water for beneficial purposes including, but not limited to... and cooling for thermal electric powerplants."

Discharge Prohibitions

1. The discharge to land disposal sites of blowdown waters from inland powerplant cooling facilities shall be prohibited except to salt sinks or to lined facilities approved by the Regional and State Boards for the reception of such wastes.

2. The discharge of wastewaters from once-through inland powerplant cooling facilities shall be prohibited unless the discharger can show that such a practice will maintain the existing water quality and aquatic environment of the State's water resources.

3. The Regional Boards may grant exceptions to these discharge prohibitions on a case-by-case basis in accordance with exception procedures included in the "Water Quality Control Plan for Control of Temperature In the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California.

Implementation

1. Regional Water Quality Control Boards will adopt waste discharge requirements for discharges from powerplant cooling facilities which specify allowable mass emission rates and/or concentrations of effluent constituents for the blowdown waters. Waste discharge requirements for powerplant cooling facilities will also specify the water quality conditions to be maintained in the receiving waters.

2. The discharge requirements shall contain a monitoring program to be conducted by the discharger to determine compliance with waste discharge requirements.

3. When adopting waste discharge requirements for powerplant cooling facilities the Regional Boards shall consider other environmental factors and may require an environmental impact report, and shall condition the requirement in accordance with Section 2718, Subchapter 17, Chapter 3, Title 23, California Administrative Code.

4. The State Board shall include a term in all permits and licenses for appropriation of water for use in powerplant cooling that requires the permittee or licensee to conduct ongoing studies of the environmental desirability and economic feasibility of changing facility operations to minimize the use of fresh inland waters. Study results will be submitted to the State Board at intervals as specified in the permit term.

5. Petitions by the appropriator to change the nature of the use of appropriated water in an existing permit or license to allow the use of inland water for powerplant cooling may have an impact on the quality of the environment and as such require the preparation of an environmental impact statement or a supplement to an existing statement regarding, among other factors, an analysis of the reasonableness of the proposed use.

6. Applications to appropriate inland waters for powerplant cooling purpose shall include results of studies comparing the environmental impact of alternative inland sites as well as alternative water supplies and cooling facilities. Studies of alternative coastal sites must be included in the environmental impact report. Alternatives to be considered in the environmental impact report, including but not limited to sites, water supply, and cooling facilities, shall be mutually agreed upon by the prospective appropriator and the State Board staff. These studies should include comparisons of environmental impact and economic and social benefits and costs in conformance with the Warren-Alquist State Energy Resources Conservation and Development Act, the California Coastal Zone Plan, the California Environmental Quality Act and the National Environmental Policy Act.

State Water Resources Control Board

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Winston H. Hickox
Secretary for
Environmental
Protection

Gray Davis
Governor

May 23, 2002

Robert A. Laurie, Comissioner
Robert Pernell, Comissioner
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814 -5512

Dear Commissioners Laurie and Pernell:

POWERPLANT WATER POLICY

Thank you for your recent letter inquiring of the status of the Water Quality Control Policy on the use and disposal of inland waters used for powerplant cooling.

I thank you for the opportunity to participate in your April 4, 2002, meeting on water policy as applied to new powerplant licensing. Board member Pete Silva has briefed me on the meeting and the value of the discussions.

The Powerplant Cooling Policy (Policy) is quite old, and I realize that some factors have changed. Most notable in these changes is the move to combined cycle powerplants that need substantially less cooling and added concerns and regulation on the use of once -through cooling using ocean water.

Notwithstanding these changes and the age of the policy, the basic principals of the policy are sound. The policy requires that the lowest quality cooling water reasonably available from both a technical and economic standpoint should be utilized as the source water for any evaporative cooling process utilized at these facilities. Indeed, as we have reached the 21st century, the expected water shortages are being realized. These shortages are heightened by increased awareness of environmental needs for water.

I note from the information provided at the meeting that many of the new and planned powerplants use reclaimed water, dry cooling, or some combination of water saving technology. This encourages me as it indicates that the policy and the efforts of you and your staff are having the desired effect.

I realize that there are many factors that must be considered in the siting of a powerplant and that the type of water available is only one of those factors. In some cases, factors other than water availability may dictate the location of a powerplant. In those cases, I do not expect the policy to prevent the siting.

I have noted that concerns have been raised by persons proposing to build powerplants that the cost of implementing the policy as interpreted by your staff are unnecessarily high. To assist in addressing this concern, I offer the help of our staff to assist in comparing other present and future needs for the water source and identifying alternative sources. Our staff can also assist in evaluating the cost of water in the area and the cost of water saving measures that can offset the use of water by the powerplant. The cost and energy use of alternative water sources such as desalting for use by the powerplant or as an offset can also be considered.

At the present time the Board has a very full schedule including addressing an important part of California's Colorado Water Use Plan to prevent an immediate loss of 800,000 acre feet of water per year from the Colorado River.

Considering the basic soundness of the Policy and the opportunity to work together to solve the concerns that have been raised, we will not begin an immediate review of the Policy. We will, however, add the Policy to those tasks that must be addressed in the near future.

Thank you again for your concerns. We look forward to a continuing excellent working relationship with the Commission. Please feel free to call me at (916) 341-5611.

Sincerely,

Arthur G. Baggett, Jr.
Chair

Starwood Power-Midway LLC. Peaking Project (06-AFC-10)
Soil and Water Resources

Supplemental Testimony of Steve Baker and Dick Anderson
November 9, 2007

Cooling Water for Inlet Fogging

The applicant argues that water used for inlet fogging does not fall within the definition of cooling water as found in State Water Resources Control Board (SWRCB) Resolution 75-58, (Attached as Exhibit A). For that reason, the applicant argues, the state water policy does not apply to the applicant's proposal to use fresh backwash water for the Starwood project. Staff disagrees. Inlet fogging, as explained below, is a form of cooling for power plants. Thus, the applicant's use of fresh backwash water for inlet cooling would be for "cooling purposes" and subject to the state's water policy to conserve fresh water and avoid its use for industrial uses such as power plant cooling.

On May 23, 2002, Arthur Baggett, Jr., Chair of the State Water Resources Control Board, sent a letter to the California Energy Commission in response to an inquiry of the status of the "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling" (Attached as Exhibit B.) Mr Baggett made the following clarifications in his letter.

> The Powerplant Cooling Policy (Policy) is quite old, and I realize that some factors have changed. Most notable in these changes is the move to combined cycle powerplants that need substantially less cooling and added concerns and regulations on the use of once-through cooling using ocean water.
>
> Notwithstanding these changes and the age of the policy, the basic principals of the policy are sound. The policy requires that the lowest quality cooling water reasonably available from both a technical and economic standpoint should be utilized as the source water for any evaporative cooling process utilized at these facilities. Indeed, we have reached the 21st century, the expected water shortages are being realized. These shortages are heightened by increased awareness for environmental needs for water.
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> I note from the information provided at the meeting that many of the new powerplants use reclaimed water, dry cooling, or some combination of water saving technology. This encourages me as it indicates that the policy and the efforts of you and your staff are having the desired effect.

The Energy Commission's 2003 Integrated Energy Policy Report (IEPR) contains a statement explaining how the Energy Commission will apply the state water

policy for water resources used in power plants. It states, "Consistent with the Board [SWRCB] policy and the Warren-Alquist Act, the Energy Commission will approve the use of freshwater for **cooling purposes** by power plants which it licenses only where alternative water supply sources and alternative cooling technologies are shown to be environmentally undesirable or economically unsound" (IEPR 2003, emphasis added.) This policy guidance follows the SWRCB's clarification letter regarding Resolution No. 75-58 and uses the words "cooling purposes by power plants" which does not differentiate between cooling processes.

Water Use for Starwood Power Plant Cooling

Modern power plant cooling typically takes four forms:

1. Steam condenser cooling. This applies to combined cycle power plants, which incorporate a steam cycle. This does not apply to the Starwood project.
2. **Gas turbine inlet air cooling.** This applies to the Starwood project and is discussed more fully below.
3. Gas turbine compressor inter-cooling. This does not apply to the Starwood project.
4. Turbine lubricating oil cooling. This applies to the Starwood project, but represents a very minor heat load and will not be discussed further below.

Inlet Air Cooling

Gas turbines produce power based on the mass flow rate of air through the machine. When ambient temperatures are high, the air is less dense, thus reducing the mass flow rate through the machine. To recover this lost power, the air is typically cooled before it enters the gas turbine air inlet.

Inlet air temperature affects fuel efficiency. More power is required to compress warm air than to similarly compress cooler air. By cooling the gas turbine's inlet air, less power is utilized in compression, leaving more power to drive the generator. This results in a direct increase in fuel efficiency.

This cooling is typically accomplished in one of four ways:

1. Evaporative cooling. Air passes through water, evaporating some of the water and becoming cooled in the process. The cooled air goes into the gas turbine air inlet. Makeup water for the cooling system can be either fresh water or reclaimed water; reclaimed water must be tertiary treated before use. As evaporation concentrates impurities in the water, the water must be blown down and replaced, and the blowdown disposed of.

2. **Fogging**. Demineralized water is misted into ultra-fine droplets and carried into the gas turbine air inlet. This accomplishes the same cooling as the evaporative process, but there is no blowdown to be disposed of. Use of fogging is acceptable only when the gas turbine manufacturer has gained the necessary confidence in the machine's ability to operate without damage to the initial compressor stages.
3. Mechanical chiller. Similar to a home air conditioner or refrigerator, a mechanical chiller uses freon or a similar working fluid to cool the gas turbine inlet air. Waste heat from the chiller must be disposed of; this can be accomplished with any of the cooling technologies used for steam condenser cooling.
4. Absorption chiller. Heat is added to ammonia, producing a cooling effect. The heat may be waste heat from the power plant itself. Not popular due to economics, and to the substantial inventory of ammonia that must be dealt with.

Staff considers inlet fogging to be a cooling process that relies on evaporation of water. Inlet fogging usually requires a small quantity of water as compared to that used in cooling towers of a combined-cycle powerplant. Nevertheless, the smaller quantity of water is for cooling purposes and, for that reason, falls within the scope of SWRCB Resolution 75-58 and the restatement in the 2003 IEPR. In other words, the state's water policy applies to inlet fogging as well as other forms of water-based cooling processes that utilize evaporation for cooling purposes in power plants.

Lierature Cited

IEPR. California Energy Commission Integrated Energy Policy Report. December 2003.

SWRCB (State Water Resources Control Board) 2002a. Letter confirming the SWRCB's Power Plant Water Policy from Chairman of the Board Arthur G. Baggett, Jr. to Energy Commissioners Robert Laurie and Robert Pernell. May 23, 2002.

SWRCB (State Water Resources Control Board). 1975. Water Quality Control Policy 75-58 on the Use and Disposal of Inland waters used for power plant cooling. Adopted June 19, 1975.

WATER QUALITY CONTROL POLICY

on the

USE and DISPOSAL of INLAND WATERS

USED for POWERPLANT COOLING

ADOPTED JUNE 19, 1975

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 75-58

WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING

WHEREAS:

1. Basin Planning conducted by the State Board has shown that there is presently no available water for new allocations in some basins.

2. Projected future water demands, when compared to existing developed water supplies, indicate that general freshwater shortages will occur in many areas of the State prior to the year 2000.

3. The improper disposal of powerplant cooling waters may have an adverse impact on the quality of inland surface and groundwaters.

4. It is believed that further development of water in the Central Valley will reduce the quantity of water available to meet Delta outflow requirements and protect Delta water quality standards.

THEREFORE, BE IT RESOLVED, that

1. The Board hereby adopts the "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling".

2. The Board hereby directs all affected California Regional Water Quality Control Boards to implement the applicable provisions of the policy.

3. The Board hereby directs staff to coordinate closely with the State Energy Resources Conservation and Development Commission and other involved state and local agencies as this policy is implemented.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the forgoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 19, 1975.

Bill B. Dendy
Executive Officer

WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING

Introduction

The purpose of this policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for powerplants which depend upon inland waters for cooling. In addition, this policy should be particularly useful in guiding planning of new power generating facilities so as to protect beneficial uses of the State's water resources and to keep the consumptive use of freshwater for powerplant cooling to that minimally essential for the welfare of the citizens of the State.

This policy has been prepared to be consistent with federal, state, and local planning and regulatory statutes, the Warren-Alquist State Energy Resources Conservation and Development Act, Water Code Section 237 and the Waste Water Reuse Law of 1974.

Section 25216.3 of the Warren-Alquist Act states:

"(a) The commission shall compile relevant local, regional, state, and federal land use, public safety, environmental, and other standards to be met in designing, siting, and operating facilities in the State: except as provided in subdivision (d) of Section 25402, adopt standards, except for air and water quality,...."

Water Code Section 237 and Section 462 of the Waste Water Reuse Law, direct the Department of Water Resources to:

237. "...either independently or in cooperation with any person or any county, state, federal, or orhter agency, including, but not limited to, the State Energy Resources Conservation and Development Commission, shall conduct studies and investigations on the need and availability of water for thermal electric powerplant cooling purposes, and shall report thereon to the Legislature from time to time...."

462. "...conduct studies and investigations on the availability and quality of waste water and uses of reclaimed waste water for beneficial purposes including, but not limited to ... and cooling for thermal electric powerplants."

Decisions on waste discharge requirements, water rights permits, water quality control plans, and other specific water quality control implementing actions by the State and Regional Boards shall be consistent with provisions of this policy.

The Board declares its intent to determine from time to time the need for revising this policy.

Definitions

1. Inland Water – all waters within the territorial limits of California exclusive of the waters of the Pacific Ocean outside of enclosed bays, estuaries, and coastal lagoons.

2. Fresh Inland Waters – those inland waters which are suitable for use as a source of domestic, municipal, or agricultural water supply and which provide habitat for fish and wildlife.

3. Salt Sinks – areas designated by the Regional Water Quality Control Boards to receive saline waste discharges.

4. Brackish Waters – includes all waters with a salinity range of 1,000 to 30,000 mg/l and a chloride concentration range of 250 to 12,000 mg/l. The application of the term "brackish" to a water is not intended to imply that such water is no longer suitable for industrial or agricultural purposes.

5. Steam-Electric Power Generating Facilities – electric power generating facilities utilizing fossil or nuclear-type fuel or solar heating in conjunction with a thermal cycle employing the steam-water system as the thermodynamic medium and for the purposes of this policy is synonomous with the word "powerplant".

6. Blowdown – the minimum discharge of either boiler water or recirculating cooling water for the purpose of limiting the buildup of concentrations of materials in excess of desirable limits established by best engineering practice.

7. Closed Cycle Systems – a cooling water system from which there is no discharge of wastewater other than blowdown.

8. Once-Through Cooling – a cooling water system in which there is no recirculation of the cooling water after its initial use.

9. Evaporative Cooling Facilities – evaporative towers, cooling ponds, or cooling canals, which utilize evaporation as a means of wasting rejected heat to the atmosphere.

10. Thermal Plan – "Water Quality Control Plan for Control of Temperature In the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California".

11. Ocean Plan – "Water Quality Control Plan for Ocean Waters of California".

Basis of Policy

1. The State Board believes it is essential that every reasonable effort be made to conserve energy supplies and reduce energy demands to minimize adverse effects on water supply and water quality and at the same time satisfy the State's energy requirements.

2. The increasing concern to limit changes to the coastal environment and the potential hazards of earthquake activity along the coast has led the electric utility industry to consider siting steam-electric generating plants inland as an alternative to proposed coastal locations.

3. Although many of the impacts of coastal powerplants on the marine environmental are still not well understood, it appears the coastal marine environment is less susceptible than inland waters to the water quality impacts associated with powerplant cooling. Operation of existing coastal powerplants indicate that these facilities either meet the standards of the State's Thermal Plan and Ocean Plan or could do so readily with appropriate technological modifications. Furthermore, coastal locations provide for application of a wide range of cooling technologies which do not require the consumptive use of inland waters and therefore would not place an additional burden on the State's limited supply of inland waters. These technologies include once-through cooling which is appropriate for most coastal sites, potential use of saltwater cooling towers, or use of brackish water where more stringent controls are required for environmental considerations at specific sites.

4. There is a limited supply of inland water resources in California. Basin planning conducted by the State Board has shown that there is no available water for new allocations in some basins. Projected future water demands when compared to existing developed water supplies indicate that general fresh-water shortages will occur in many areas of the State prior to the year 2000. The use of inland waters for powerplant cooling needs to be carefully evaluated to assure proper future allocation of inland waters considering all other beneficial uses. The loss of inland waters considering all other beneficial uses. The loss of inland waters through evaporation in powerplant cooling facilities may be considered an unreasonable use of inland waters when general shortages occur.

5. The Regional Boards have adopted water quality objectives including temperature objectives including temperature objectives for all surface waters in the State.

6. Disposal of once-through cooling waters from powerplants to inland water is incompatible with maintaining the water quality objectives of the State Board's "Thermal Plan" and "Water Quality Control Plans."

7. The improper disposal of blowdown from evaporative cooling facilities may have an adverse impact on the quality of inland surface and ground waters and on fish and wildlife.

8. An important consideration in the increased use of inland water for powerplant cooling or for any other purpose in the Central Valley Region is the reduction in the available quantity of water to meet the Delta outflow requirements necessary to protect Delta water quality objectives and standards. Additionally, existing contractual agreements to provide future water supplies to the Central Valley, the South Coastal Basin, and other areas using supplemental water supplies are threatening to further reduce the Central Valley outflow necessary to protect the Delta environment.

9. The California Constitution and the California Water Code declare that the right to use water from a natural stream or watercourse is limited to such water as shall be reasonably required for beneficial use and does not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion. Section 761, Article 17.2, Subchapter 2, Chapter 3, Title 23, California Administrative Code provides that permits or licenses for the appropriation of water will contain a term which will subject the permit or license to the continuing authority of the State Board to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

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2. Where the Board has jurisdiction, use of fresh inland waters for powerplant cooling will be approved by the Board only when it is demonstrated that the use of other water supply sources or other methods of cooling would be environmentally undesirable or economically unsound.

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5. Petitions by the appropriator to change the nature of the use of appropriated water in an existing permit or license to allow the use of inland water for powerplant cooling may have an impact on the quality of the environment and as such require the preparation of an environmental impact statement or a supplement to an existing statement regarding, among other factors, an analysis of the reasonableness of the proposed use.

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State Water Resources Control Board

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Winston H. Hickox
Secretary for
Environmental
Protection

Gray Davis
Governor

The energy challenge facing Californian is real. Every Cali fornia needs to take immediate action to reduce energy consumption For a list of simple ways you can reduce demand and cut your energy cost, see our Web-site at http:// www. Swrcb.ca.gov.

May 23, 2002

Robert A. Laurie, Comissioner
Robert Pernell, Comissioner
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814 -5512

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Notwithstanding these changes and the age of the policy, the basic principals of the policy are sound. The policy requires that the lowest quality cooling water reasonably available from both a technical and economic standpoint should be utilized as the source water for any evaporative cooling process utilized at these facilities. Indeed, as we have reached the 21st century, the expected water shortages are being realized. These shortages are heightened by increased awareness of environmental needs for water.

I note from the information provided at the meeting that many of the new and planned powerplants use reclaimed water, dry cooling, or some combination of water saving technology. This encourages me as it indicates that the policy and the efforts of you and your staff are having the desired effect.

I realize that there are many factors that must be considered in the siting of a powerplant and that the type of water available is only one of those factors. In some cases, factors other than water availability may dictate the location of a powerplant. In those cases, I do not expect the policy to prevent the siting.

I have noted that concerns have been raised by persons proposing to build powerplants that the cost of implementing the policy as interpreted by your staff are unnecessarily high. To assist in addressing this concern, I offer the help of our staff to assist in comparing other present and future needs for the water source and identifying alternative sources. Our staff can also assist in evaluating the cost of water in the area and the cost of water saving measures that can offset the use of water by the powerplant. The cost and energy use of alternative water sources such as desalting for use by the powerplant or as an offset can also be considered.

At the present time the Board has a very full schedule including addressing an important part of California's Colorado Water Use Plan to prevent an immediate loss of 800,000 acre feet of water per year from the Colorado River.

Considering the basic soundness of the Policy and the opportunity to work together to solve the concerns that have been raised, we will not begin an immediate review of the Policy. We will, however, add the Policy to those tasks that must be addressed in the near future.

Thank you again for your concerns. We look forward to a continuing excellent working relationship with the Commission. Please feel free to call me at (916) 341-5611.

Sincerely,

Arthur G. Baggett, Jr.
Chair

Starwood Power-Midway LLC. Peaking Project (06-AFC-10)
Air Quality

Supplemental Testimony of Will Walters
November 9, 2007

AQ-SC6 The project owner shall ensure, as stated in their agreement with the owner of the multi-unit apartment property located on property adjacent and north of the project site, that this residence is vacated. The residence will need to be vacate prior to and throughout the initial grading/site preparation phase of construction at no expense to the residents.

Verification: The project owner shall provide a written declaration to the CPM signed by the owner or residents of the multi-unit apartment property that the agreement has been executed and in the first MCR verify that the property has been vacated prior to and will be vacated throughout the initial grading/site preparation phase of construction.

AQ-3 ERC certificate numbers (or any splits from these certificates) S-2382-2 and S-2492-5 shall be used to supply the required offsets.[District Rule 2201]

Verification: At least 60 days prior to commencing CTG first fire, the project owner shall surrender ERC certificates in the amounts shown to the District and provide documentation of that surrender to the CPM.

Starwood Power-Midway LLC. Peaking Project (06-AFC-10)
Waste Management

Supplemental Testimony of Ellie Townsend-Hough
November 9, 2007

WASTE-6 The project owner shall provide a protocol and soil sampling plan to the CPM for review and approval. The plan should include a figure showing the proposed alignment for the wastewater pipeline and indicate the location and depth where two samples would be collected. Identify the contaminants that will be analyzed in each discrete sample and the laboratory proposed to do the analyses. Identify the contaminants that will be analyzed in each discrete sample and the laboratory proposed to do the analyses.

Verification: No less than 30 days prior to the start of site mobilization, after the soil sampling plan is approved, complete the sampling and analyses and submit a certified laboratory report of the findings.

Starwood Power-Midway LLC. Peaking Project (06-AFC-10)
Noise and Vibration

Supplemental Testimony of Shahab Khoshmashrab
November 9, 2007

NOISE-5 Prior to ground disturbance, in order to implement the agreement between the project owner and the landowner of the property at ML1, dated November 6, 2006, the project owner shall relocate the residents on this property to a location not near the project site. The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause noise levels due to plant operation plus ambient, during the four quietest consecutive hours of the nighttime, to exceed an average of 45 dBA L_{50} as measured near this new location.

No new pure-tone components may be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

- If the new location is within 3,000 feet of the project site, when the project first achieves a sustained output of 90 percent or greater of rated capacity, the project owner shall conduct a short-term survey of noise at this new location or at a closer location acceptable to the CPM. The short-term noise measurements shall be conducted during every hour of the nighttime hours, from 10 p.m. to 7 a.m., during the period of the survey.
- If during the operating life of the project, the project owner plans to convert the five-unit multiplex at ML1 back to a residential use, the project owner shall repeat this survey at ML1 or at a closer location acceptable to the CPM, prior to any resident(s) occupying the multiplex.
- The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.
- If the results from any of the above noise surveys indicate that the power plant noise level plus ambient (L_{50}) at the affected receptor sites exceeds the above value during the above specified time period, mitigation measures shall be implemented to reduce noise

to a level of compliance with this limit. ML1 shall not be reoccupied (as explained above), unless the SPP can demonstrate compliance with this requirement at this location.

- If the results from the noise surveys indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement, signed by the project owner's project manager, stating that the residents in the property at ML1 have been relocated, and describing the new location and its distance to the project site.

The first noise survey shall take place within 30 days of the project first achieving a sustained output of 90 percent or greater of rated capacity. If the second survey is needed (as described above) it shall take place prior to the property at ML1 being reoccupied. Within 15 days after completing each of the surveys, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report shall be a description of any additional mitigation measures necessary to achieve compliance with the above-listed noise limit, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey (conducted after implementation of the above mitigation measures), the project owner shall submit to the CPM a summary report of this new noise survey, performed as described above and showing compliance with this condition.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE *STARWOOD-MIDWAY POWER PLANT*

Docket No. 06-AFC-10
PROOF OF SERVICE
(Revised 3/16/07)

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 06-AFC-10
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DECLARATION OF SERVICE

I, Julie Mumme, declare that on November 9, 2007, I deposited copies of the attached Memorandum re Starwood Energy Project, including Staff's Brief on Water Policy and supplemental testimony, in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Julie Mumme