



Sycamore Cogeneration Company

Box 80598, Bakersfield, CA 93380

New Phone Number
661-615-4630

Neil E. Burgess. Executive Director

December 5, 2007

SY-9195

Mr. Christopher Meyer
Compliance Project Manager Siting and
Environmental Division California
Energy Commission 1516 Ninth Street
Sacramento, CA 95814-5512

Re: **Sycamore Cogeneration Company (84-AFC-6)**
Petition for Insignificant Amendment

Dear Mr. Meyer:

This petition is being submitted to seek permission for use of the North of the River Municipal Water District (NORMWD) potable water supply as a back-up when the Chevron fresh water supply quality is unacceptable. The existing NORMWD connection has adequate capacity for the additional service to Sycamore such that only minor water system modifications within the fence line would be required and no offsite construction would be necessary to implement the use of the NORMWD back-up supply. The NORMWD water source would be a **back-up** source of fresh water; monitoring of the primary water supply would be performed and Sycamore would switch from the primary service water source to the NORMWD water source only in the event that the water supplied by Chevron does not meet water quality criteria.

The petition does not require the addition, elimination or modification of any conditions of certification. Furthermore, the proposed change poses no potential for adverse environmental impacts. Under these circumstances, pursuant to Section 1769 (a) (2), CEC Staff have the authority to approve the proposed change without full CEC approval providing a 14-day notice is provided to the docket, each commissioner and any party on the post-certification mailing list.

If you have any questions, please contact Daniel Beck at (661) 615-4660 or David Stein of CH2M HILL at (510) 587-7787.

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DLB: yh Attachment

xc: D. Stein, *D. Stein* CH2M HILL - (w/attachment)

007-0902

1.0 OVERVIEW

Sycamore Cogeneration Company (Sycamore) received original approval (84-AFC-6) in December 1986 from the California Energy Commission (CEC) for a 300 megawatt (MW) cogeneration plant in Kern County, California. The facility consists of four (4) 75 MW (nominal) natural-gas fired General Electric Frame 7EA combustion turbines equipped with dry Low NO_x (DLN) combustors, four (4) unfired heat recovery steam generators (HRSGs), each capable of generating up to 450,000 pounds per hour (lb /hr) of steam for delivery to the adjacent oilfield operator for use in enhanced oil recovery and ancillary equipment. Sycamore is owned jointly by Chevron and Edison Mission Energy. Post-certification petitions for the operation of the four combustion turbines in simple cycle mode and removal of a requirement to meet explicit cogeneration efficiency criteria were approved by the CEC on December 1, 2004 (Units 1 and 4) and on July 26, 2006 (Units 2 and 3).

Sycamore currently uses water supplied by the adjacent Chevron oilfield operations as the service water for evaporative cooling of the combustion turbines' inlet air and reverse osmosis systems. A separate water supply line from the North of the River Municipal Water District (NORMWD) exists for sanitary and potable uses at the facility. This petition is being submitted to seek permission for use of the NORMWD potable water supply as a back-up when the Chevron fresh water supply quality is unacceptable. The existing NORMWD connection has adequate capacity for the additional service to Sycamore such that only minor water system modifications within the fence line would be required and no offsite construction would be necessary to implement the use of the NORMWD back-up supply. The NORMWD water source would be a back-up source of fresh water; monitoring of the primary water supply would be performed and Sycamore would switch from the primary service water source to the NORMWD water source only in the event that the water supplied by Chevron does not meet water quality criteria.

The petition does not require the addition, elimination, or modification of any conditions of certification. Furthermore, the proposed change poses no potential for adverse environmental impacts.

This petition for a post-certification amendment is being submitted under the provisions of Section 1769 of Title 20, California Administrative Code (*CEC Rules of Practice and Procedure and Power Plant Site Certification Regulations*) to seek a minor modification to the conditions of certification. Because the proposed amendment does not require a change to any conditions of certification, pursuant to Section 1769 (a) (2), CEC Staff have the authority to approve the proposed change without full CEC approval, providing that a 14-day notice is made to the docket, each commissioner, and any party on the post-certification mailing list. The petition is organized to address the informational requirements of Section 1769 in the order they appear in the section. The requirement appears in ***bold italics*** followed by a narrative response.

2.0 INFORMATION REQUIRED BY SECTION 1769

(A) A complete description of the proposed modifications, including new language for any conditions that will be affected

In late 2006, Sycamore experienced fouling of the compressor blades in the compressor section of two of its combustion turbine units that caused the compressors to stall and the units to trip offline. The same fouling was found on inspection of the other two units. Sycamore has traced this problem back to the variable mineral content in its service water used for evaporative cooling of the combustion turbine intake air. The variable quality service water is being supplied by Chevron oilfield operations from groundwater wells.

Sycamore would make minor piping changes within the facility fence line to extend the NORMWD service to the evaporative cooling and RO systems. Sycamore would install monitoring equipment on the existing primary water source and the following procedures would be enacted:

Conductivity and total dissolved solids (TDS). Sycamore would perform daily conductivity and TDS analyses of the service water supply and would also install an in-line conductivity analyzer capable of alarming via the facility control system. Historical water analyses have indicated that conductivity correlates well with TDS. Sycamore would use the conductivity to alarm at a conductivity value equivalent to a TDS value of 300 ppm at which time Sycamore operations staff would increase the frequency of TDS analyses to every 4-6 hours. If the measured TDS value were to exceed 500 ppm, Sycamore would manually switch the evaporative coolers and RO system to the NORMWD water supply. The service water supply would be placed in bypass, and would continue to be tested every 4-6 hours. When levels drop below 500ppm, the service water supply will be returned to service and the NORMWD water supply will be valved out.

Turbidity and/or total suspended solids (TSS). The manufacturer of the evaporative cooling equipment has indicated a recommended upper TSS limit of 5 milligrams per liter (mg/L). Sycamore would install an in-line turbidity/TSS analyzer capable of alarming via the facility control system, if an instrument capable of reliable operation at this level can be identified. Otherwise, Sycamore would monitor turbidity on discreet samples. If the TSS concentration exceeds 5 mg/L, Sycamore Operations would switch to the NORMWD source of water. The service water supply would be placed in bypass, and discreet samples would continue to be taken. When levels drop below 5 mg/L, the service water supply will be returned to service and the NORMWD water supply will be valved out.

Sycamore believes that it could potentially need to switch to the NORWMD water source up to 6 times in a given calendar year, based on water quality data supplied by Chevron. The duration of any one of these occurrences would be dictated by its cause and nature, but based on historical operations, Sycamore believes that each of the occurrences could last up to 5 days. Therefore, during a given year, the amount of time that service from NORMWD would be required could range up to 30 days.

No changes to any conditions of certification are required to implement this proposed amendment.

(6) A discussion of the necessity for the proposed modifications

In September 2006, two gas turbine units at Sycamore Cogeneration Company (Units 1 and 4), tripped off-line as the result of a compressor surge and subsequent stall. Upon inspection of the gas turbine units it was discovered that the compressor section of each unit was heavily fouled, but neither unit had experienced any significant mechanical damage. The units were returned to service the following day at significantly reduced load in order to prevent a recurrence of the surge phenomena. Subsequent visual inspections of the compressor sections of the remaining two gas turbine units (Units 2 and 3) revealed that they, too, were heavily fouled. All four units were removed from service at various points throughout the remainder of the fall 2006 to perform extensive cleaning of the compressor sections to remove the accumulated deposits.

Following the events in September, a detailed root cause analysis was performed on the incident. It was concluded that inadequate quality control and/or external contamination of the service water supplied to the facility resulted in contamination of the evaporative cooling media that are used to cool the air entering the compressor inlets of the GT units. This contamination resulted in excessive liquid water carryover in the air stream that continuously fouled the compressor blades over a period of time. The declining aerodynamic performance of the compressor sections caused by the continued fouling of the blade surfaces is ultimately what led the two units to stall.

Sycamore evaluated onsite and source treatment of the supplied water to correct the problem. Source water treatment was determined to be prohibitively expensive because there is not a dedicated line from the proposed treatment location to Sycamore; therefore, Chevron would need to treat all of the water it supplies to oilfield facilities. Onsite treatment was evaluated and determined to be infeasible because of the lack of sufficient space for the treatment units at the facility and because of the high cost.

The use of the NORMWD service as a backup source with a testing program of the primary water source to monitor water quality was determined to be the best approach to addressing this water quality issue. Sycamore personnel met with the manager of the NORMWD to discuss the possibility of using additional water. NORMWD informed Sycamore that a formal proposal would be necessary, but indicated that it has sufficient capacity water to service Sycamore's needs. NORMWD stated that a benefit of the additional water use by Sycamore would be to increase the turnover rate in the storage tank and service lines that supply Sycamore. These facilities only service approximately 100 homes in addition to Sycamore but are sized for several thousand. Sycamore's extra use would help move more water through the line, and prevent the possibility of water stagnating.

(C) If the modification is based on information that was known by the petitioner during the certification proceeding, an explanation why the issue was not raised at that time

The modification is not based on information that was known to the petitioner at the time of the certification. The water originally supplied to Sycamore by Chevron was of

consistently higher quality and was used for both process and potable needs. In 2003, this water system was deemed by Chevron to be non-potable, and as such, treatment of this water was significantly reduced. Since that time, there have been issues with pumps and wells that have potentially contributed to variable water quality.

(D) If the modification is based on new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision, an explanation of why the change should be permitted

The proposed modification is based on new information that was not available at the time of the original decision. The modification does not change or undermine the assumptions, rationale, findings, or other bases of the final decision. Therefore, the change should be permitted.

(E) An analysis of the impacts the modification may have on the environment and proposed measures to mitigate any significant adverse impacts

The proposed change does not increase the overall water use at Sycamore nor does it affect the quality or quantity of wastewater discharges. In fact, on days when the NORMWD water would be used, the facility would use 5 gpm/unit less water (up to 28,800 gal/day less water) due to the higher quality of water. Avoiding use of NORMWD water through onsite treatment is not feasible due to space constraints and cost. Constructing a pipeline to bring in a remote source has the potential for adverse environmental impacts. No other environmental issues or concerns are affected by the proposed change and no additional analysis is needed to evaluate other environmental areas.

(F) A discussion of the impact of the modification on the facility's ability to comply with applicable laws, ordinances, regulations, and standards

The proposed change does not affect Sycamore's ability to comply with applicable laws ordinances, regulations, and standards.

(G) A discussion of how the modification affects the public

The proposed revisions may have a minor beneficial impact on the public because the additional water use will alleviate the potential for water stagnation in the underutilized portion of the NORMWD distribution system.

(H) A list of property owners potentially affected by the modification

There are no property owners that will be affected by the proposed modification. A single property owner is located within 1000 feet of the Sycamore site, Chevron. The applicable contact information for Chevron is provided below:

	Physical Address	Mailing Address
Chevron	1546 China Grade Loop Bakersfield, CA 93302	P.O. Box 1392 Bakersfield, CA 93380

- (l) *A discussion of the potential effect on near by property owners, the public and the parties in the application proceedings*

The proposed revisions will not affect nearby property owners.

3.0 SCHEDULE

Sycamore would like to have approvals for the backup water supply in place by March 1, 2008 which is the start of the time period when evaporative cooling is required. We respectfully request that the CEC process this petition to approve the described change in the method of operation of the facility as expeditiously as is possible.

4.0 PETITION CONTACTS

Questions regarding this petition should be directed to:

Daniel Beck
HES Supervisor
Sycamore Cogeneration
Company P.O. Box 80598
Bakersfield, CA 93380
Phone: (661) 615-4660
Fax: (661) 615-4610

David A. Stein, PE
Vice President
CH2M HILL
155 Grand Avenue
Oakland, CA 94612
Phone: (5 10) 587-7787
Fax: (510) 622-9177
Email:
dstein@ch2m.com

5.0 SUMMARY

This minor amendment will require no changes to existing conditions of certification and will have no significant adverse environmental impacts. Pursuant to Section 1769 (a) (2) of the CEC Siting Regulations, CEC staff is authorized to approve this proposed change without the need for full Commission approval, provided a 14-day notice is submitted to the docket, each Commissioner and any party on the post-certification mailing list.

Expedited processing of this petition is respectfully requested.