Solar® Turbines

A Caterpillar Company

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Submitted Electronically

October 17, 2006

Mike Waugh
California Air Resources Board
mwaugh@arb.ca.gov

Dear Mr. Waugh:

Solar Turbines Incorporated (Solar) would like the following comments to be considered at the California Air Resources Board (CARB) Board meeting on October 19, 2006.

First, Solar would like to complement Staff on the effort they have made on revising the Distributed Generation (DG) Certification Program to accommodate necessary changes identified during the first 3 years of the program. We feel the proposed changes will improve the implementation and success of the program substantially.

Solar does have one concern regarding the DG Certification Program as proposed. It still contains a qualifying efficiency standard for the consideration of recovered heat in determining compliance with the output based standard [94203 (a)(2)]. We feel the qualifying efficiency standard is a misstep and will have unintended consequences. Please refer to Attachment A for discussion on the qualifying efficiency standard issue.

In addition to mandating the development of a certification program for distributed generation systems that do not require permitting, SB 1298 also required CARB to develop a guidance document to assist the local agencies in determining Best Available Control Technology (BACT) for power generation systems that do require district permits, but are below 50 MW in size. In 1999, Staff developed and CARB adopted a guidance document for units above 50 MW. In 2001, Staff completed the Guidance Document for units under 50 MW and in November of that year, the Board adopted the Guidance Document.

Solar would like to remind the Board of the importance of incorporating the improvements proposed to the DG Certification Program into the Guidance Document, where applicable.

Solar would like to draw Staff's and the Board's attention, in particular, to the following items. Refer to Attachment B for additional detail.

- The qualifying efficiency standard in the Guidance Document is currently set at 75%. In the DG Certification Program, it is 60%.

  Also, several other state programs including the Self Generation Incentive Program based qualification on the compliance with the emission levels contained in Table 1 of

the DG Certification Program, but set the qualifying efficiency at 60%. While Solar's preference is for the qualifying efficiency standard to be removed from both the DG Certification Program and the Guidance Document, if the standard is to remain both programs should use the same efficiency standard of 60% or lower. Refer to Attachment A for discussion of the qualifying efficiency standard.

- Changes in the emission levels and compliance dates for landfill gas, digester gas and refinery waste gas as contained in Table 2 of the DG Certification Program.

- There are a number of changes and clarifications to the Testing and Reporting Sections that should be included in the Guidance Document. Solar feels the changes and clarifications would provide assistance to the local districts in permitting DG units under 50 MW.

Solar would like to encourage the Board to take advantage of the work Staff has put into development of the Certification Program revisions and direct Staff to review the Guidance Document to incorporate the appropriate changes.

Thank you for your consideration. Please call me with any questions at 858.694.6609.

Sincerely,
Leslie Witherspoon
Environmental Programs Manager
Solar Turbines Incorporated

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Attachment A

Qualifying Efficiency Standard for Distributed Generation

The following comments relate to the *GUIDANCE FOR THE PERMITTING OF ELECTRICAL GENERATION TECHNOLOGIES* as approved by the Air Resources Board on November 15, 2001 (Guidance Document) and the proposed Amended Sections 94200-94214, in article 3, subchapter 8, chapter 1, division 3 of title 17, California Code of Regulations (DG Certification Program).

Section VII B of the Guidance Document includes the phrase:

> *"For CHP applications that maintain a minimum efficiency of 60 percent and an annual average efficiency of 75% in the conversion of the energy in the fossil fuel to electricity and process heat"*

The revised Section 94203 (a)(2) of the DG Certification Program includes the phrase:

> *"To take the [recovered heat] credit, the following must apply:*
> *...and*
>
> *(2) DG Units achieve a minimum higher heating value (HHV) efficiency of 60 percent (useful energy out/fuel in) in the conversion of the energy in the fossil fuel to electricity and useful heat."*

The concept of the qualifying efficiency standard is not required by SB1298. Solar believes that the provisions are counterproductive.

We assume that the inclusion of a qualifying efficiency standard is intended to encourage DG project developers to use more of the recoverable heat. However, the developer has ample incentive, particularly at recent gas costs, to conserve all of the recoverable heat as practical. The limitation on heat recovery is the process or facility that will be using the heat.

For example, if a California university utilizes a cogeneration unit to generate power for the campus and to provide heat to meet campus heating and air conditioning requirements, the heat that can be used is dictated by the campus requirements. The university cannot create additional heat requirements to meet a qualifying efficiency standard.

If the qualifying efficiency standard remains, it could:

1. Have a negative effect on the environment,
2. Impose an economic hardship on many California companies and State of California institutions, and accordingly,
3. Have a negative impact on the California economy, and
4. Eliminate many distributed generation projects that would have provided much needed electric generation capacity in California.

Attachment A, continued.

The heat credit, used to determine the compliance of a DG unit, is not an incentive to encourage the energy efficiency associated with combined heat and power (CHP). The heat credit is the appropriate means of determining if a CHP system is imposing no more environmental burden than if the applicant were to buy his power and use a boiler (or other fuel fired device) to satisfy the heat requirements of the process or facility.

If a heat credit is justified on the basis of avoided emissions, neither of the qualifying efficiency standards is appropriate. As an example, a Solar *Mercury*™ 50, 4.6 MW turbine generator set, operating as a cogeneration unit, would result in a net environmental benefit with an overall annual average efficiency of over 60% (depending on how the customer operated the unit). The power generation displaced would produce, at best, 0.07 lb/MW-Hr (as required for new generation in the 1999 Guidance for power generation units over 50 MW), and the DG Guidance Document for units under 50MW is also 0.07 lb/MW-Hr (after January 1, 2007). Therefore, the emissions produced to generate the electricity would be the same for the cogeneration unit as the utility. However, the cogeneration unit will also displace emissions from a boiler that would be required to produce up to 13,000 lb/hr of steam, resulting in a net reduction in emissions. Such an analogy suggests that there are many opportunities for cogeneration plants that would save both energy and emissions yet would not be able to achieve the 75% efficiency threshold. .

There are dozens of cogeneration systems operating at UC campuses, CSU campuses, CA prisons, CA hospitals etc. that cannot meet the 75% requirement, and in some cases could not even achieve the 60% required by the DG Certification Program. For the most part, the heat is used for heating and air-conditioning and the operating loads at the sites fluctuate during the year as the seasons change. Since it can be shown that there is a net environmental benefit by using cogeneration, the application of CHP, regardless of annual average efficiency, should satisfy the primary concern of the CARB.

Attachment B

Suggested Changes to the *GUIDANCE FOR THE PERMITTING OF ELECTRICAL GENERATION TECHNOLOGIES*

November 15, 2001

Qualifying Efficiency Standard

Solar feels that the qualifying efficiency standard should be dropped form the Guidance Document (and the DG Certification Program). If it is retained, the standard in the Guidance Document should be the same as the DG Certification Program.

On page 41, Section A, second paragraph, either:

- Delete "Efficient CHP is defined as CHP applications that achieve a minimum of 60 percent efficiency and 75 percent efficiency on an annual basis." or
- Delete "a minimum of 60 percent efficiency and" and change the 75% efficiency to 60%.

On page 45, Section B, third paragraph, either:

- Delete "For CHP applications that maintain a minimum efficiency of 60 percent and an annual average efficiency of 75 percent in the conversion of the energy in the fossil fuel to electricity and process heat, the" or
- Delete "a minimum efficiency of 60 percent and" and change 75% to 60%.

Waste Gas Emission Standards

Extend the same provisions developed for the DG Certification Program to the Guidance Document.

- Incorporate Section 94203 (b) as part of the guidance.
- Deleting paragraphs (1) and (2) or
- Including paragraph (2) with 60% qualifying efficiency standard.

Testing and Reporting

Consider adding a section that incorporates some of the testing and reporting requirements developed for the draft DG Certification Program amendments. For instance, include limiting testing to full load and list the test procedures agreed to for the DG Certification Program.