MEG/jva 8/6/2003

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's Proposed Policies and Programs Governing Energy Efficiency, Low-Income Assistance, Renewable Energy and Research Development and Demonstration.	Rulemaking 98-07-037 (Filed July 23, 1998)

ADMINISTRATIVE LAW JUDGE'S RULING REQUESTING COMMENTS ON ENERGY DIVISION RECOMMENDATIONS REGARDING THE INCLUSION OF TURBO-EXPANDERS IN THE ASSEMBLY BILL 970 SELF-GENERATION PROGRAM

Energy Division has submitted recommendations concerning the appropriateness of including turbo-expanders in the self-generation program, as directed by the Commission in Decision (D.) 03-01-006. Those recommendations are attached, for the convenience of parties filing comments, as set forth in this ruling.

IT IS RULED that:

Comments on Energy Division's recommendations are due no later than August 18, 2003, and reply comments are due by August 25, 2003. All comments shall be filed at the Commission's Docket Office and served electronically on all appearances and the state service list in this proceeding. Service by U.S. mail is optional, except that one hard copy shall be mailed to Administrative Law Judge Meg Gottstein at P.O. Box 210, Volcano, CA 95689. In addition, if there is no electronic mail address available, the electronic mail is returned to the sender, or

the recipient informs the sender of an inability to open the document, the sender shall immediately arrange for alternate service (regular U.S. mail shall be the default, unless another means—such as overnight delivery—is mutually agreed upon). The current service list for this proceeding is available on the Commission's web page, www.cpuc.ca.gov.

Dated August 6, 2003, at San Francisco, California.

/s/ MEG GOTTSTEIN
by Lynn T. Carew
Meg Gottstein
Administrative Law Judge

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ENERGY DIVISION RECOMMENDATIONS CONCERNING THE APPROPRIATENESS OF INCLUDING TURBO-EXPANDERS IN THE SELF-GENERATION INCENTIVE PROGRAM

August 2003

Introduction and Purpose

By Decision (D.) 03-01-006, the Commission directed the Energy Division to develop recommendations concerning the appropriateness of including turbo-expanders in the self-generation incentive program, and if so, at which incentive level. Turbo-expanders may be used in place of throttling valves to step down high-pressure, transmission-level natural gas to lower pressures for customer usage at distribution level. The recovery of excess pressure can be used to produce electrical power.

Staff recommends that turbo-expanders not be considered eligible for incentives at any level.

Background

On April 24, 2002, Mafi-Trench Corporation U.S.A. (Mafi-Trench) filed a Petition for Modification of D.01-03-073 to permit turbo-expanders to qualify for Level 1 payments under the self-generation incentive program. The Commission denied the Petition, citing that turbo-expanders do not qualify as a "super-clean" technology, and that the Petition did not provide enough information to determine if turbo-expanders could qualify for Level 2 or Level 3 incentives. The Commission afforded Mafi-Trench the opportunity to respond to specific questions regarding installed system costs, market potential, ability to reduce

peak demand, efficiencies, waste heat recovery, and monitoring. The Commission invited parties to comment on Mafi-Trench's subsequent filing.

Mafi-Trench submitted a response on December 12, 2002. No parties submitted comments to the filing.

Mafi-Trench describes how turbo-expander-based generating systems lower natural gas pressure from transmission levels to pressure suitable for use by large industrial facilities. As the turbo-expander steps down the pressure, the temperature of natural gas decreases. In an example provided by Mafi-Trench, the stepped-down natural gas is used to fuel steam generators. Waste heat from the flue gas stream of the boilers could be used to heat the natural gas to the required temperature, which would obviate the need for additional fuel.

Installed Costs

Mafi-Trench indicates that installed costs for a turbo-expander are dependent on the size of the project. Costs range from a low of $2.50 per watt for a one megawatt (MW) project to $8.00 per watt for a 100 per kilowatt (kW) system. Mafi-Trench estimates an installed system cost of $4/watt for an oil field project near Bakersfield. The project is expected to produce 500 kW on a continuous basis, for an annual savings of 4,000 MW per year. It is unclear whether eligible generator costs are included in these estimates.

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We note that in 2002, the average cost of a Level 3-N microturbine is $2.69 / watt.[1] We estimate the average cost for a Level 3-N internal combustion engine is approximately $2.16.

Market Potential

According to Mafi-Trench, potential customers for turbo-expander-based power recovery systems are pipeline operators and industrial facilities which use natural gas to produce steam or other forms of process heat, such as manufacturers of steel, glass, aluminum, gypsum, and petrochemicals. Mafi-Trench estimates there are between 100 and 300 candidate sites which could produce an average of 200kW per site, for a potential of 400 MW of generation.

Peak Load Reduction

The turbo expander will operate only when the industrial facility is operating and consuming natural gas. Mafi-Trench indicates turbo-expanders will generally reduce the facility's peak demand.

Efficiency

Mafi-Trench states it is not necessary to consider the total energy input into the natural gas system to estimate the efficiency of turbo-expanders versus traditional pressure regulating stations. Compression energy input to the transmission and distribution systems is necessary to operate these delivery systems, and is independent of whether the pressure "energy" is recovered at the

[1] California Self-Generation Incentives Program – Second Year Impacts Evaluation Report, April 2003, Table 9-11.

point of use. Normal consideration of efficiency is not necessary, as turbo-expanders do not use additional fuel for combustion, just waste heat that would normally be discarded.

Waste Heat Recovery and Reliability Requirements

Mafi-Trench contends that its proposed system exceeds the waste heat recovery requirements of Level 3 because it consumes waste heat and does not require fuel combustion. In contrast, microturbines combust fuel and produce waste heat.

Mafi-Trench indicates that its proposed system has a demonstrated availability of approximately 99% +/-0.5%, which equals or betters most combustion turbines.

Compliance Monitoring

Mafi-Trench believes turbo-expanders could be monitored in the same manner as other eligible technologies, to ensure the units are being used for their stated purpose: electrical production.

Energy Division Recommendations

We recommend the Commission deny the Petition to include turbo-expanders as an eligible project cost at any incentive level. This determination is consistent with prior Energy Division recommendations adopted by the Commission to exclude costs of project components such as processing equipment for renewable materials and nonrenewable fuels, fuel cleanup for nonrenewable fuels (such as waste gases derived from fossil fuel drilling operations), and thermal load equipment that utilizes waste heat. The Commission determined that these components are discrete and separate from the generation facility. Energy Division believes turbo-expanders also fall within this category.

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Considering the limited funding available for self-generation incentives, we do not believe it is practical to expend program funds for a technology which utilizes nonrenewable fuel and has relatively high costs per watt. As with other technologies, turbo-expander system costs per watt are higher for smaller projects. Mafi-Trench estimates an average project size of 200 kW. Given that estimated system costs for the 500kW project near Bakersfield are approximately $4.00 / watt, system costs per watt are likely to be even higher for the proposed 200 kW systems.

Mafi-Trench observes that although the technology is readily available, it is not widely used due to regulatory and economic considerations. The low penetration rate may also attributed to the limited market for the technology. Consequently, there is very little data available to allow us to adequately assess the costs, performance, and benefits of completed projects. We believe Mafi-Trench was constrained by this lack of data as well.

(END OF ATTACHMENT)

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CERTIFICATE OF SERVICE

I certify that I have by mail this day served a true copy of the original attached Administrative Law Judge's Ruling Request For Comments On Energy Division Recommendations Regarding The Inclusion Of Turbo-Expanders In The Assembly Bill 970 Self-Generation Program on all parties of record in this proceeding or their attorneys of record.

Dated August 6, 2003, at San Francisco, California.

/s/ JANET V. ALVIAR
Janet V. Alviar

N O T I C E

Parties should notify the Process Office, Public Utilities Commission, 505 Van Ness Avenue, Room 2000, San Francisco, CA 94102, of any change of address to insure that they continue to receive documents. You must indicate the proceeding number on the service list on which your name appears.