PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

November 22, 2002 Agenda ID #1434

TO: PARTIES OF RECORD IN RULEMAKING 98-07-037

This is the draft decision of Administrative Law Judge (ALJ) Gottstein. It will not appear on the Commission's agenda for at least 30 days after the date it is mailed. The Commission may act then, or it may postpone action until later.

When the Commission acts on the draft decision, it may adopt all or part of it as written, amend or modify it, or set it aside and prepare its own decision. Only when the Commission acts does the decision become binding on the parties.

Parties to the proceeding may file comments on the draft decision as provided in Article 19 of the Commission's "Rules of Practice and Procedure." These rules are accessible on the Commission's website at http://www.cpuc.ca.gov. Pursuant to Rule 77.3 opening comments shall not exceed 15 pages.

Consistent with the service procedures in this proceeding, parties should send comments in electronic form to those appearances and the state service list that provided an electronic mail address to the Commission, including Administrative Law Judge (ALJ) Meg Gottstein at meg@cpuc.ca.gov. Service by U.S. mail is optional, except that hard copies should be served separately on ALJ Gottstein and the Assigned Commissioner, and for that purpose I suggest hand delivery, overnight mail, or other expeditious methods of service. In addition, if there is no electronic 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.

/s/ ANGELA K. MINKIN for
Carol Brown, Interim Chief
Administrative Law Judge

CAB:sid
Attachment

Decision **DRAFT DECISION OF ALJ GOTTSTEIN (Mailed 11/22/2002)**

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

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| 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) |

# INTERIM OPINION REGARDING MAFI-TRENCH CORPORATION'S PETITION FOR MODIFICATION OF DECISION 01-03-073

## Summary

By Decision (D.) 01-03-073, dated March 27, 2001, the Commission adopted program incentives for demand-responsiveness and self-generation, pursuant to Public Utilities Code Section 399.15(b).[1] Today's decision addresses the Petition for Modification of D.01-03-073 (Petition) filed by Mafi-Trench Corporation U.S.A (Mafi-Trench) to include expansion turbines (referred to as "turbo-expanders") in the self-generation incentive program. Turbo-expanders can be used to recover the energy that would otherwise be wasted during the process of stepping down high-pressure natural gas in the gas transmission pipeline to lower pressures for distribution to customers. This waste heat is then used to produce electrical power.

[1] D.01-03-073 has subsequently been corrected by D.01-04-048 and modified by D.01-07-028, D.02-02-026, D.02-04-004 and D.02-09-051, in response to petitions for modification. However, none of these modifications have altered the language in D.01-03-073 concerning the issue raised by Mafi-Trench's Petition.

We find that Mafi-Trench's Petition leaves several questions unanswered concerning this technology, and raises several concerns about its inclusion in the incentive program. For this reason, we deny the Petition at this time. However, we afford Mafi-Trench the opportunity to respond to our concerns by answering several questions.

We direct Energy Division to develop recommendations for our consideration concerning the appropriateness of including turbo-expanders within the self-generation program, based on Mafi-Trench's responses to these questions and the comments of interested parties. As discussed in this decision, Energy Division may request additional data from Mafi-Trench and other sources, as appropriate, and consult with members of the Self-Generation Working Group in developing its recommendations.

## Background

"Self-generation" refers to distributed generation technologies (micro-turbines, small gas turbines, wind turbines, photovoltaics, fuel cells and internal combustion engines) installed on the customer's side of the utility meter that provide electricity for either a portion or all of that customer's electric load. Under the program adopted in D.01-03-073, as modified by D.02-09-051, financial incentives are provided to three different categories (or levels) of distribution technologies:

> Level 1: The lesser of 50% of project costs or $4.50/watt for photovoltaics, wind turbines and fuel cells operating on renewable fuels;
>
> Level 2: The lesser of 40% of project costs or $2.50/watt for fuel cells operating on non-renewable fuel and utilizing sufficient waste heat recovery, and

> Level 3: The lesser of 30% of project costs or $1.00/watt for micro-turbines, internal combustion engines and small gas turbines operating on non-renewable fuel that both utilize sufficient waste heat recovery and meet reliability criteria. For these same technologies operating on renewable fuel: The lesser of 40% of project costs or $1.50/watt.

The Commission authorized combined annual budgets of $125 million for the self-generation programs administered by Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SoCal), Southern California Edison Company (SCE), and San Diego Regional Energy Office (SDREO) over a four-year period.[2] The program was officially launched on June 29, 2001.

On April 24, 2002, Mafi-Trench filed a Petition requesting that the Commission permit turbo-expanders to qualify for the Level 1 incentive payments under the program. In its Petition, Mafi-Trench argues that turbo-expanders represent a "super clean" resource because there are no emissions resulting from the pressure drop that enables the technology to produce electrical power. Therefore, in Mafi-Trench's view, this technology should be eligible for the higher incentives offered under Level 1.

SCE responded to Mafi-Trench's Petition on May 24, 2002. SCE opposes the Petition on the basis that there is nothing on the record to substantiate Mafi-Trench's assertions that turbo-expanders offer "super clean" electrical generation or that the Level 1 incentive is the appropriate incentive level for this

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[2] PG&E, SoCal and SCE are the program administrators for the self-generation program within their service territories. Per D.01-06-035, San Diego Gas & Electric Company (SDG&E) subcontracts to SDREO to administer the self-generation program within its service territory. We refer to PG&E, SoCal, SCE and SDREO collectively as "the program administrators " throughout this decision and in Attachment 1. We refer to PG&E, SoCal, SCE and SDG&E collectively as "the utilities."

technology. SCE requests that the Commission reject the Petition until a sufficient record is developed to establish the qualification of turbo-expanders for Level 1 incentives. In the alternative, SCE suggests that the Commission allow this technology to qualify for Level 2 or 3 incentives until the appropriate record is established. In its reply comments, Mafi-Trench urges the Commission to accept the turbo-expander technology as qualifying for Level 2 incentives at this time, while it works with the Commission staff and parties "in developing the record to permit the technology to qualify for Level 1 incentives in the near future."[3]

## Discussion

In D.02-09-051, we addressed the eligibility of renewable-fuel combustion turbines (e.g., micro-turbines) for self-generation program incentives. This decision was issued in response to a Petition filed by Capstone Turbine Corporation approximately one month earlier than Mafi-Trench's Petition. Our discussion in that decision is relevant to the consideration of Mafi-Trench's Petition. Specifically, we discuss at some length the basis for the incentive structure adopted in D.01-03-073:

> "…the incentives were structured to subsidize a certain percentage of total project costs (i.e, 50%, 40%, 30% for Level 1, 2 and 3, respectively) subject to per-watt dollar limits on total subsidy costs. These limits were based on the average capital costs of the technologies within each category. For example, the per-watt limit for Level 1 was designed with projects that have average capital costs of $9.00/watt in mind (i.e., $4.50/watt divided by 50%).... Similarly, Level 2 incentives were designed

[3] Reply of Mafi-Trench to Response of SCE to Petition, June 4, 2002, p. 2.

> for projects with costs of approximately $6.25/watt (i.e., $2.50 divided by 40%), and level 3 incentives were designed for projects that cost about $3.33/watt (i.e., $1.00 divided by 30%. "[4]

Mafi-Trench has provided no information concerning the average project capital costs of the turbo-expander technology it proposes to include under the self-generation program. Therefore, its assertion that the technology should qualify for Level 1 incentives cannot be substantiated by the record due to the lack of cost data.

More importantly, we not persuaded that turbo-expanders should be considered in isolation when evaluating the eligibility of this technology for distributed generation incentives. In practice, turbo-expanders allow for the recovery of excess pressure in natural gas transmission to produce electrical power much in the same way (although by different processes) as co-generation units allow for the recovery of waste or process heat to produce electrical power. Both increase the efficiency with which fossil fuel inputs are utilized. However, neither technology can generate electricity in isolation, *i.e.*, without fossil fuel inputs somewhere down the line. Natural gas pipelines require fossil-fueled compressors approximately every 50 to 100 miles to boost and maintain the high-pressure transmission that creates the pressure differential used to produce electrical power via turbo-expanders. Were we to consider this technology eligible for self-generation incentives, we believe it is necessary to consider additional data on efficiency based on a broader definition of the energy inputs involved.

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[4] D.02-09-051, p. 11.

Because turbo-expander generation relies on fossil fuel inputs, we do not find this technology to be either super clean or renewable. The record lacks any data on the relative emissions of fuel cells (the only Level 1 technology with operational emissions) and turbo-expander generation when taking the fuel input requirements of compression stations into consideration. Therefore, nothing in the record compels us to equate turbo-expander generation in terms of air emissions with Level 1, Level 2 or Level 3 renewable technologies. However, this technology could be considered eligible for Level 3 non-renewable incentives depending on the efficiency characteristics of turbo-expander generation and the project costs. As discussed above, we require additional information on these issues.

Mafi-Trench's request raises other unanswered questions and concerns. One of the primary objectives of the self-generation program is peak load reduction. Mafi-Trench provides no evidence that this application of turbo-expanders can provide peak load relief to its customers. We also have very limited information on the range of benefits for turbo-expander generation. Since only large industrial customers that receive high pressure natural gas can utilize this technology, the potential appears to be relatively small. In addition, we have concerns about how to monitor the use of turbo-expanders to ensure that they are used for electrical production and not a different industrial process once they are installed.

For these reasons, we deny the Petition at this time. We afford Mafi-Trench the opportunity to respond to our concerns by answering the following questions:

1. What are the installed system costs (on a dollar per kilowatt basis), both average costs and with project examples included?

2. What is the market potential for the application of this technology to recovery waste heat for the production of electrical power, both in terms of customer classes and total potential in California?

3. How would this application aid in peak load reduction and what is an average expected generation profile?

4. What efficiency does electrical power production from turbo-expanders achieve considering total inputs, including those required to produce the pressure differential in the first place? What is the total energy use for compression stations in California?

5. How would this application meet the waste heat recovery and reliability requirements for Level 3 incentives, assuming it was eligible for incentives under that category?

6. How could this application be monitored to ensure that the turbo-expanders are used for electrical production and not a different industrial process once they are installed?

Mafi-Trench should file and serve its responses to these questions no later than 45 days from the effective date of this decision. Interested parties may provide comments on Mafi-Trench's responses within 20 days from the date of that filing and Mafi-Trench may reply within 10 days thereafter. After reviewing this information, Energy Division should develop recommendations for our consideration concerning the appropriateness of including turbo-expanders within the self-generation program. Energy Division may request additional data from Mafi-Trench and other sources, as appropriate, and consult with members of the Self-Generation Working Group in developing its

recommendations.[5] Energy Division should forward its recommendations to the Assigned Commissioner and Administrative Law Judge no later than 150 days from the effective date of this decision.

## Comments on Draft Decision

The draft decision of Administrative Law Judge (ALJ) Meg Gottstein in this matter was mailed to the parties in accordance with Public Utilities Code § 311(g)(1) and Rule 77.7 of the Rules of Practice and Procedure. Comments were filed on _____ and reply comments were filed on _____.

## Assignment of Proceeding

Loretta Lynch is the Assigned Commissioner, and Meg Gottstein is the assigned ALJ in this proceeding.

## Findings of Fact

1. As discussed in this decision, the incentives adopted in D.01-03-073 were structured to subsidize a certain percentage of project capital costs. However, Mafi-Trench has provided no information concerning the average costs of the turbo-expander technology it proposes to include under the self-generation program.

[5] The self-generation program administrators, working with the Energy Division, comprise the Self-Generation Working Group. The California Energy Commission has also participated in Working Group meetings on program coordination issues. The Working Group continues to meet on an as-needed basis to review program compliance and address coordination and consistency issues. See D.02-02-026, pp. 15-17.

2. Considering turbo-expanders in isolation as a stand-alone generation technology would ignore the fact that this technology cannot produce electrical power without the existence of fossil-fueled compressors.

3. Because turbo-expander generation relies on fossil fuel inputs, it is neither super clean nor renewable.

4. The record lacks any data on the relative emissions of fuel cells (the only Level 1 technology with operational emissions) and turbo-expander generation when taking the fuel input requirements of compression stations into consideration.

5. There is no basis in the record to equate turbo-expander generation in terms of air emissions with Level 1, Level 2 or Level 3 renewable technologies. This technology could be considered eligible for Level 3 non-renewable incentives depends on the efficiency characteristics of turbo-expander generation and project costs. As discussed in this decision, we require additional information on these issues.

6. As discussed in this decision, Mafi-Trench's request raises other unanswered questions and concerns that should be addressed before a final determination on the eligibility of this technology for self-generation incentives can be made.

## Conclusions of Law

1. Mafi-Trench's Petition should be denied at this time, without prejudice, pending the receipt and review of additional information concerning turbo-expander generation described in this decision.

2. Energy Division should develop recommendations for our consideration concerning the appropriateness of including turbo-expanders within the self-generation program. Energy Division may request additional data from

Mafi-Trench and other sources, as appropriate, and consult with members of the Self-Generation Working Group in developing its recommendations

3. This order should be effective today.

## INTERIM ORDER

**IT IS ORDERED** that:

1. The Petition for Modification of Decision 01-03-073 (Petition) filed by Mafi-Trench Corporation U.S.A (Mafi-Trench) on April 24 2002 (Petition) is denied without prejudice, pending the receipt and consideration of Mafi-Trench's responses to the questions listed in Ordering Paragraph 2. Should Mafi-Trench elect to forego the opportunity to respond to these questions, the Petition is denied with prejudice.

2. Mafi-Trench may respond to the concerns discussed in this decision by filing and serving responses to the following questions within 45 days from the effective date of this decision:

- What are the installed system costs (on a dollar per kilowatt basis), both average costs and with project examples included?

- What is the market potential for the application of this technology to recovery waste heat for the production of electrical power, both in terms of customer classes and total potential in California?

- How would this application aid in peak load reduction and what is an average expected generation profile?

- What efficiency does electrical power production from turbo-expanders achieve considering *total* inputs, including those required to produce the pressure differential in the

first place? What is the total energy use for compression stations in California?

- How would this application meet the waste heat recovery and reliability requirements for Level 3 incentives, assuming it was considered eligible for incentives under that category?

- How could this application be monitored to ensure that the turbo-expanders are used for electrical production and not a different industrial process once they are installed?

3. Interested parties shall provide comments on Mafi-Trench's responses within 20 days from the date of filing, and Mafi-Trench may reply within 10 days thereafter. After reviewing this information, Energy Division shall develop recommendations for our consideration concerning the appropriateness of including turbo-expanders within the self-generation program. Energy Division may request additional data from Mafi-Trench and other sources, as appropriate, and consult with members of the Self-Generation Working Group in developing its recommendations. Energy Division shall forward its recommendations to the Assigned Commissioner and Administrative Law Judge no later than 150 days from the date of this decision.

4. All filings required by this decision 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 the Assigned Administrative Law Judge. 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.

This order is effective today.

Dated _____, at San Francisco, California.