FLORIDA PUBLIC SERVICE COMMISSION
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M E M O R A N D U M

March 7, 1996

TO: DIRECTOR, DIVISION OF RECORDS AND REPORTING (BAYO)

FROM: DIVISION OF ELECTRIC & GAS (FUTRELL, MILLS, BALLINGER)
DIVISION OF LEGAL SERVICES (CULPEPPER)

RE: DOCKET NO. 960041-EG - FLORIDA POWER AND LIGHT COMPANY - PETITION FOR MODIFICATION OF GAS ENGINE DRIVEN CHILLER RESEARCH PROJECT

DOCKET NO. 960042-EG - FLORIDA POWER AND LIGHT COMPANY - PETITION FOR APPROVAL OF GAS COMMERCIAL/INDUSTRIAL BUSINESS CUSTOM INCENTIVES RESEARCH PROJECT

AGENDA: 03/19/96 - REGULAR AGENDA - PROPOSED AGENCY ACTION - INTERESTED PERSONS MAY PARTICIPATE

CRITICAL DATES: NONE

SPECIAL INSTRUCTIONS: I:\PSC\EAG\WP\960041EG.RCM

CASE BACKGROUND

In Order No. PSC-94-1313-FOF-EG, issued October 25, 1994, the Commission set numeric demand-side management (DSM) goals for the four largest investor-owned utilities (IOU). Pursuant to Commission Rule 25-17.0021(4), Florida Administrative Code, these IOUs filed DSM plans including programs designed to meet the utilities' goals. In setting goals, the Commission also determined that the IOUs' analyses lacked sufficiently accurate information to set specific goals relating to natural gas substitution for electricity. Consequently, the IOUs were ordered to conduct natural gas research and demonstration projects in the functional areas of heating, cooling, dehumidification and water heating to develop Florida-specific data on performance and cost-effectiveness of gas technologies.

In Order No. PSC-95-1146-FOF-EG, issued September 15, 1995 (Docket No. 950492-EG), the Commission approved Florida Power and Light Company's (FPL) Natural Gas End-Use Technology Research and Development Plan (Gas R&D Plan). The Gas R&D plan contains five natural gas-fired end-use technologies which will be studied

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including: 1) Residential gas engine driven heat pumps; 2) Commercial/Industrial (C/I) gas engine driven chillers; 3) C/I gas engine driven DX air conditioning; 4) Residential gas water heating; and 5) C/I desiccant cooling. In approving FPL's plan, the Commission stated that it is important to measure all benefits and costs when assessing the cost effectiveness of technologies. Gas chillers produce waste heat which has the potential to be utilized for productive purposes. The Commission required FPL to research one gas engine driven chiller with a waste heat recovery system.

On June 9, 1995, the Commission issued a Notice of Proposed Agency Action, Order No. PSC-95-0691-FOF-EI (Docket No. 941173-EG), approving FPL's DSM Plan, as well as the DSM Plans of the other three IOUs. Protests of that order were filed, including a petition for a formal proceeding by Peoples Gas System, Inc. (Peoples). Thereafter, in order to avoid litigation, the parties began settlement negotiations. Several of the parties filed stipulations resolving their protests including FPL and Peoples, which filed their stipulation on September 19, 1995.

The stipulations were approved, and Order No. PSC-95-0691-FOF-EI was reinstated approving FPL's DSM plan as a final order, and as modified by the stipulations. The stipulation between FPL and Peoples included provisions where: 1) FPL agreed to file a petition seeking to revise its Gas Engine Driven Chiller Research Project to remove waste heat recovery requirements; and 2) FPL agreed to file a petition seeking approval of a gas research and development project patterned after FPL's C/I Business Custom Incentive (BCI) Program. The BCI is a Commission-approved program which provides incentives for the installation of electric end-use equipment, not covered by other FPL programs, which cost-effectively reduces or shifts demand to off-peak periods.

FPL filed the petitions as described above. Docket No. 960041-EG was opened to consider the petition seeking revision of the Gas Engine Driven Chiller Research Project to remove waste heat recovery requirements. Docket No. 960042-EG was opened to consider the petition seeking approval of the Gas Business Custom Incentives Research Project (Gas BCI). If FPL's petition in Docket No. 960041-EG is approved, gas engine driven chillers with waste heat recovery systems would be eligible equipment in the proposed Gas BCI project. Because the issues associated with these dockets are interrelated, staff has combined these dockets into one recommendation.

DISCUSSION OF ISSUES

ISSUE 1: Should Florida Power and Light Company's petition, filed in Docket No. 960041-EG, to modify its Gas Engine Driven Chiller Research Project be approved?

PRIMARY RECOMMENDATION: No. FPL has not presented any additional substantive evidence that the Commission erred in Order No. PSC-95-1146-FOF-EG, requiring FPL to research a gas engine driven chiller with a waste heat recovery system as part of its Gas Engine Driven Chiller Research Project. [FUTRELL, MILLS]

ALTERNATIVE RECOMMENDATION: Yes. The Gas BCI research program is a more appropriate vehicle to gather data on waste heat recovery from gas chillers. By requiring a RIM analysis, FPL will assure that its ratepayers are not spending money needlessly for the sole purpose of gathering data. Had the Gas BCI program been offered to the Commission initially, staff would have recommended its approval. It is only because of timing that the Commission is faced with this issue. [BALLINGER]

PRIMARY ANALYSIS: In approving FPL's Gas Engine Driven Chiller Research Project, the Commission required FPL to select one gas chiller site which incorporates a waste heat recovery process. As discussed in Order No. PSC-95-1146-FOF-EG:

> Gas Chillers typically produce thermal energy as a by product of the cooling process. This waste heat may be used to produce hot water in certain applications. FPL's petition indicates that the company does not plan on selecting a site utilizing the thermal energy from the Engine-Driven Chiller Project because the Company considers these applications to be very customer specific. FPL believes that field results quantifying the thermal output would not be transferable to other customers.
>
> We believe, however, that it is important to measure all benefits as well as costs when performing a comprehensive cost-effectiveness analysis. In many instances the cost-effectiveness of a Gas Chiller is critically dependent on the customer's utilization of the waste heat. Therefore, including both the heating/air-conditioning load and thermal energy production to meet hot water needs is a critical step in identifying cost-effective applications.

FPL's petition to modify the Gas Engine Driven Chiller Research Project is the result of the stipulation between Peoples and FPL settling Peoples' protest of FPL's DSM plan. FPL's petition states four reasons the Gas Engine Driven Chiller Research Project should be modified to delete waste heat recovery requirements. These reasons are restated below, with staff's response:

1) It is consistent with the Commission's approval of the stipulation between FPL and Peoples.

The FPL/Peoples stipulation included a provision that FPL agreed to petition the Commission for approval to delete waste heat recovery requirements. Therefore, by filing its petition requesting modification of the gas engine driven chiller project, FPL has fulfilled that particular provision of the stipulation. The validity of the stipulation is not dependent on the Commission's decision on the petition to modify the gas engine driven chiller research project. The provisions of the stipulation remain enforceable whether the Commission approves or denies FPL's petition.

2) Deletion of the requirement would make gas engine driven chillers with a waste heat recovery system an eligible measure under FPL's proposed Gas Business Custom Incentive Research Project (Docket No. 960042-EG).

In approving FPL's gas engine driven chiller research project, and including waste heat recovery requirements, the Commission assured itself that all the benefits as well as costs would be measured and included in the cost-effectiveness analyses. If the Commission approves FPL's petition, there is no guarantee a gas engine driven chiller with a waste heat recovery system would be approved by FPL for incentives under the proposed Gas BCI project. In the first place a customer would have to come forward with a proposal which included a gas engine driven chiller with a waste heat recovery system. If that customer did appear, the project would have to meet the participation requirements of FPL's proposed Gas BCI project. Also, the project would have to meet the cost-effectiveness criteria of 1.01 under the Rate Impact Measure (RIM) Test with the incentive included, and 1.00 under the Participant Test.

Staff believes if it is still the Commission's intent that all the benefits and costs be measured in analyzing gas engine driven chillers, FPL's petition should be denied. In denying FPL's petition, the Commission can be assured that a gas engine driven chiller with a waste heat recovery system will be thoroughly

researched, analyzed, and the cost-effectiveness can be determined. There is no guarantee that under FPL's petition the intent of the Commission in approving the gas engine driven chiller research project will be realized.

3) Heat recovery systems are site specific and the field results quantifying the thermal output would not be transferable to other customers.

FPL originally stated this point in the project technology description in its Gas R&D Plan. The Commission was aware of this concern when it required FPL to research a gas engine driven chiller with waste heat recovery. Staff acknowledges that customers have different levels of need for waste heat produced by a gas chiller ranging from zero to 100 percent. In addition, the waste heat may be needed by a customer in varying forms such as steam, hot water, or it could be converted into chilled water. Researching one gas chiller with waste heat recovery certainly does limit the transferability of the research results to all the potential configurations which could exist.

This, however, is not a sufficient reason in staff's opinion to delete the waste heat recovery requirements of the gas chiller project. The data collected will allow FPL and Peoples, as well as this Commission to better understand the total potential of a gas chiller in Florida's climate. This information could also be helpful to customers in evaluating the potential for gas engine driven chillers. Deleting the waste heat recovery requirement will limit the information on gas chillers, and the research results will with certainty not be transferable to any customer.

4) The likelihood of FPL utilizing an existing gas engine driven chiller site, thereby reducing research costs would be increased by removing the heat recovery system requirement.

FPL suggests the potential for cost savings by removing the waste heat recovery requirements. The Commission was very sensitive, in approving FPL's Gas R&D Plan, to the total cost of the proposed research. The Commission encouraged FPL to identify existing natural gas sites to avoid unnecessary program costs. Staff is sure that in the competitive environment FPL finds itself, it will take every measure to reduce costs, and keep rates low. Staff, therefore, does not believe FPL's point is sufficient for the Commission to delete waste heat recovery requirements.

In summary, staff believes it is speculative on FPL's part that a customer could propose a gas engine driven chiller project with a waste heat recovery system for qualification under FPL's

proposed Gas BCI project. Staff believes the Commission's reasoning, in originally requiring a waste heat recovery system remains valid. Therefore, FPL's petition should be denied.

ALTERNATIVE ANALYSIS: On April 26, 1995, FPL filed its Gas R&D program. This program contained several programs, including one for gas fired chillers. At that time, staff correctly pointed out that waste heat recovery from gas fired chillers is an excellent means of improving the efficiency of the entire system. Hence, the staff recommended that FPL's program include at least one application of this technology. The Commission approved the staff recommendation. See Order No. PSC-95-1146-FOF-EG. FPL's original program did not provide for any cost-effectiveness analysis prior to installation. The program was simply a means to identify some applications of natural gas end-use applications in order to measure their costs and efficiency for future cost-effectiveness evaluations. Also, FPL alone would select the site to install and monitor the natural gas equipment.

FPL's original gas fired chiller research program was solely for the purpose of gathering data on the cost and efficiencies of natural gas fired chiller applications for use in future cost-effectiveness evaluations. FPL stated that it would select two sites and would purchase and install new equipment if no applicable existing installations could be found. Since the Commission was faced with FPL only selecting two sites, the Commission correctly required FPL to select at least one site to monitor waste heat recovery from gas fired chillers. However, if FPL could not identify an applicable existing installation of waste heat recovery, then FPL's ratepayers would be faced with the additional expense of installing waste heat recovery equipment all without the benefit of a RIM analysis. FPL's proposed Gas BCI program is a more appropriate means to gather this data. By requiring a RIM analysis, FPL will assure that its ratepayers are not spending money needlessly for the sole purpose of gathering data.

If the alternate recommendation is approved, FPL will include waste heat recovery from gas fired chillers as an eligible installation under its proposed Gas BCI research project. This project is similar to FPL's "electric" BCI program in that incentives are customized with regard to the customer and equipment installed. As with the "electric" BCI program, the Gas BCI program requires a RIM analysis prior to any installation or incentive payment. This assures that FPL's ratepayers are not spending money for the sake of gathering data, but rather for cost-effective natural gas end-use applications. In addition, Peoples Gas will provide input and recommendations to FPL on the selection of potential Gas BCI participants. This should help to limit

potential bias of the research data. The staff supporting both the primary and alternate recommendations agree that FPL's proposed Gas BCI is a more appropriate vehicle of allowing electric utilities the means to offer natural gas end-use applications than the current gas chiller R&D project. However, to recommend that FPL be required to monitor at least one waste heat recovery application completely disregards the benefits obtained by performing a RIM analysis prior to any installations. As long as waste heat recovery is an eligible application, FPL's proposed Gas BCI is superior to the original gas chiller research project and should be approved.

ISSUE 2: Should Florida Power and Light Company's Gas Commercial/Industrial Business Custom Incentives Research Project, filed in Docket No. 960042-EG, be approved, including approval for conservation cost recovery?

RECOMMENDATION: Yes, the project should be approved, including approval for conservation cost recovery. An annual progress report should be submitted to the Commission on the research results.

STAFF ANALYSIS: FPL's proposed Gas BCI research project is the result of the stipulation between Peoples and FPL settling Peoples' protest of FPL's DSM plan. The objective of the Gas BCI research project is to reduce or shift to off-peak hours, on-peak electric demand. Incentives will be provided to eligible C/I customers who purchase and operate qualifying, cost-effective natural gas applications. This project will be available to potential customers for a period of two years from Commission approval. Incentives may be paid to qualified participants beyond the two year period.

FPL will provide incentives for cost-effective natural gas applications which are not being actively researched by FPL. Examples of potential qualifying equipment includes commercial water heating, and small cogeneration projects. If the Commission approves FPL's petition in issue one to modify the Gas Engine Driven Chiller Research Project, gas engine driven chillers with waste heat recovery will be an eligible technology under the Gas BCI Research Project.

Cost-effective desiccant cooling applications will be eligible for incentives, despite the existence of FPL's Gas Desiccant Cooling Research Project. Desiccant cooling utilizes a material to absorb moisture (remove humidity) from the air stream, usually outdoor make-up air. The desiccant material is then heated to remove the collected moisture. Gas desiccant cooling utilizes natural gas as the fuel to provide the heat needed to remove the collected moisture from the desiccant material.

In the DSM goal setting dockets for the IOUs, several natural gas-fired technologies were analyzed for cost-effectiveness. The conclusions of all four IOUs were that only one gas technology, desiccant cooling, passed both the RIM and participant tests. It appears that gas desiccant cooling has potential particularly given Florida's humid climate. Staff believes the research to be conducted in FPL's Gas Desiccant Cooling research project will be enhanced by including gas desiccant cooling in the Gas BCI project.

FPL has established specific participation requirements which should ensure that each project is viable and cost-effective to FPL and its ratepayers. Eligible facilities must be served by both FPL and Peoples. Projects which pass the cost-effectiveness analysis may not exceed a savings of 10 mW collectively. A qualifying project must reduce customer demand coincident with FPL's summer system peak by a minimum of 25 kW not to exceed a maximum of 2 mW.

Potential projects must provide a screening application allowing FPL to perform an initial review of the project. Following receipt of a positive response from FPL, the customer must then submit a formal proposal. This will allow FPL to determine the cost-effectiveness of the project, its feasibility, and its impacts on FPL's system.

FPL will conduct a cost-effectiveness analysis for each project and will pay an incentive so that the Rate Impact Measure (RIM) test is at least 1.01 and the Participant test is at least 1.00. This provision allows FPL to tailor the incentive to the specific costs and benefits provided by the project while ensuring cost-effectiveness to FPL and its ratepayers. Incentives will be paid on a schedule agreed to by FPL and the customer which may extend beyond the two year project offering.

Staff would point out that there is a possibility that a project is eligible for an incentive under the Gas BCI project could also be eligible for an incentive from Peoples. FPL will factor any incentive paid by Peoples under an approved DSM program into the analysis performed to determine cost effectiveness under FPL's Gas BCI project. Staff would recommend that if the Commission approves this petition, it be made clear that prior approval is not given to any future expenditures made by Peoples pursuant to FPL's Gas BCI project.

It should be noted that this research project does not have an expenditure limit. Due to the nature of the project, future costs are difficult to estimate. Overall costs should be minimized, however, with the requirement that projects minimally pass the RIM and Participant tests.

FPL has stated that all projects approved under the Gas BCI project will be monitored to ensure that projected savings are realized. The provisions of FPL's petition provide opportunities for staff to adequately monitor this project. Within ninety days of the payment of an initial incentive, FPL will provide staff with the cost-effectiveness analyses upon which the incentive was paid. In addition, FPL will file in its Energy Conservation Cost Recovery filing for a period in which an initial payment is made the

underlying cost-effectiveness analyses. Staff reserves the right to analyze any cost-effectiveness analyses FPL files pursuant to this project. The appropriateness of expenditures associated with this project will be determined as part of staff's obligation to review conservation expenditures. In order for staff to stay informed on any projects approved under this project, FPL should file an annual report on the research results.

It appears that FPL has developed a gas research project with the potential to analyze cost-effective natural gas equipment not covered by existing research projects. This R&D effort will determine the impact of cost-effective gas substitution on FPL's system from financial and operational perspectives while ensuring cost-effectiveness to FPL and its ratepayers. Staff believes the Commission should approve FPL's Gas C/I Business Custom Incentive Research Project, including approval for conservation cost recovery.

ISSUE 3: Should FPL be permitted to count the kW and kWh savings resulting from the Gas Commercial/Industrial Business Custom Incentives Research Project toward meeting its Commercial/Industrial numeric DSM goals?

RECOMMENDATION: Yes. In setting FPL's numeric DSM goals, the Commission acknowledged that part of FPL's goals may be achieved through research projects.

STAFF ANALYSIS: FPL states in its petition for approval of the Gas BCI research project:

> Any savings achieved through this research project will be recognized in determining whether FPL has achieved its conservation goals.

Based upon a discussion with FPL, it is FPL's intent that actual numeric kW and kWh savings attributable to qualifying projects under the Gas BCI project will count toward FPL's C/I numeric goals. In setting FPL's numeric DSM goals in Docket No. 930548-EG, Order No. PSC-94-1313-FOF-EG issued October 25, 1994, the Commission recognized the potential for FPL to utilize the savings from R&D programs and green pricing options to meet its numeric goals. Therefore staff believes it is appropriate for FPL to count any kW and kWh savings toward FPL's C/I goals resulting from the Gas BCI project. Because it is not feasible to project the number of participants and the corresponding demand and energy savings, the potential contribution to meeting FPL's C/I goals can not be estimated at this time.

ISSUE 4: Should these dockets be closed?

RECOMMENDATION: Yes. If no person whose substantial interests are affected by the Commission's proposed agency action, timely files a protest within twenty-one days, these dockets should be closed.

STAFF ANALYSIS: If no person whose substantial interests are affected, files a timely request for a Section 120.57, Florida Statutes, hearing within twenty-one days, no further action will be required and these dockets should be closed.