

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition for approval of)	DOCKET NO. 950492-EG
Gas Research and Development)	
Plan by Florida Power & Light)	
Company.)	
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In Re: Petition for approval of)	DOCKET NO. 950535-EG
Gas Research and Development)	
Plan by Florida Power)	
Corporation.)	
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In Re: Petition for approval of)	DOCKET NO. 950520-EG
Gas Research and Development)	
Plan by Gulf Power Company.)	
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In Re: Petition for approval of)	DOCKET NO. 950521-EG
Gas Research and Development)	ORDER NO. PSC-95-1146-FOF-EG
Plan by Tampa Electric Company.)	ISSUED: September 15, 1995
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The following Commissioners participated in the disposition of this matter:

SUSAN F. CLARK, Chairman
J. TERRY DEASON
JOE GARCIA
JULIA L. JOHNSON
DIANE K. KIESLING

NOTICE OF PROPOSED AGENCY ACTION
ORDER APPROVING GAS RESEARCH AND DEVELOPMENT PLANS

BY THE COMMISSION:

NOTICE IS HEREBY GIVEN by the Florida Public Service Commission that the action discussed herein is preliminary in nature and will become final unless a person whose interests are substantially affected files a petition for a formal proceeding, pursuant to Rule 25-22.029, Florida Administrative Code.

CASE BACKGROUND

The Florida Energy Efficiency and Conservation Act (FEECA), Section 366.82, Florida Statutes, requires the Commission to adopt goals to reduce and control the growth rates of electric consumption, and to reduce and control the growth rates of weather

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sensitive peak demand. 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). 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. This research information is necessary to develop Florida-specific data on performance and cost-effectiveness of gas technologies.

Commission Rule 25-17.001(5)(f), Florida Administrative Code, states that electric utilities are to aggressively pursue research, development, and demonstration projects, including technological research. In addition, Commission Order No. 22176, issued November 14, 1989, stated that the FEECA utilities should pursue research, development and demonstration projects designed to promote energy efficiency and conservation.

Pursuant to Order No. PSC-94-1313-FOF-EG each IOU was required to file its plans for natural gas research and demonstration projects within six months. A separate docket was opened for each utility's Gas Research and Development Plan. Each utility timely filed its Gas Research and Development (R&D) plan and requested that the Commission approve its plan and approve conservation cost recovery for the plan. We have consolidated approval of the Gas R&D Plans in this Order.

DECISION

FLORIDA POWER AND LIGHT

Florida Power and Light's (FPL) proposed Natural Gas End-Use Technology Research and Development Plan (Gas R&D Plan) contains the following five individual research and demonstration projects addressing the specific requirements of Order PSC-94-1313-FOF-EG. FPL made proposed changes to its plan relative to the number of installations and program expenditures at the Agenda Conference.

Gas Heat Pump - a residential research project intended to determine the technical feasibility and cost-effectiveness of gas heat pumps. Anticipated project duration is 36 months with anticipated expenditures of \$250,000.

Gas Engine Driven Chillers - a commercial/industrial project intended to determine the actual operating characteristics and

cost-effectiveness of natural gas engine driven chillers. Anticipated project duration is 42 months with expenditures between \$220,000 and \$1,140,000 depending on the use of existing or new chillers.

Gas Engine Driven DX Air Conditioning - a commercial/industrial project intended to determine the actual operating characteristics and cost-effectiveness of the direct expansion air conditioning equipment. Anticipated project duration is 36 months with expenditures between \$115,000 and \$239,000 depending on the use of existing or new equipment.

Gas Water Heating - a residential research project intended to determine the actual operating characteristics and cost-effectiveness of gas water heating equipment. Anticipated project duration is 30 months with expenditures between \$235,000 and \$246,000.

Gas Desiccant Cooling - this project is currently part of FPL's existing Commercial/Industrial Dehumidification study approved by the Commission. Proposed research project is intended to determine the actual operating characteristics and cost-effectiveness of gas desiccant cooling. Existing project to be completed by December 1995, with the total project to be completed 8 months later. Incremental project costs are expected to be \$45,000.

FPL estimates potential Gas R&D program expenses for the gas driven chillers and DX air-conditioning under two scenarios. Scenario one includes replacing two existing electric chillers with natural gas chillers. Additional capital expenses are included to re-install electric chillers at the customer's request. Scenario two utilizes two existing natural gas chillers. If FPL is able to identify existing sites with gas driven chillers and DX air-conditioning, Florida's ratepayers are projected to save \$1,044,000 in new equipment costs. Therefore, we encourage FPL to identify existing natural gas sites to avoid unnecessary program costs.

FPL's stated project focus of the Gas Chiller R&D program is to identify all ancillary costs including auxiliary electrical consumption by the Gas Chiller, condenser system energy consumption, cooling tower water usage, and Operation and Maintenance (O&M) costs. 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. For this reason FPL must select at least one Gas Chiller site which incorporates a waste heat recovery process. The other site shall include provisions to monitor the heat recovery capabilities for future analyses and applications.

FPL is in the process of soliciting bids from outside firms to provide a detailed research plan, develop instrumentation specifications, perform data collection, perform engineering analysis and baseline assessments. FPL will evaluate the economic feasibility based on the newly obtained inputs for the cost-effectiveness analysis. If the research results show the potential for cost-effective programs, FPL will perform a market potential and technical potential analysis. Cost-effective gas technologies will then be compared to competing electric technologies in order to calculate the achievable potential. Final results will be incorporated into FPL's integrated research planning (IRP) process.

We approve FPL's Gas R&D plan, including approval for cost recovery through the Energy Conservation Cost Recovery Clause for a period not to exceed 42 months from the date of this Order. Total expenditures shall not exceed \$1,920,000 if new equipment is utilized, or \$865,000 if existing equipment is utilized. Individual project expenditures shall not exceed the budgeted amounts listed above. An annual progress report shall be submitted to us on the research results with the final report due at the end of the 42 month evaluation period.

FLORIDA POWER CORPORATION

Florida Power Corporation's (FPC) proposed Gas R&D Plan contains two individual research and development projects addressing the specific requirements of the Commission's Order. FPC's plan provides for the identification of existing equipment,

field testing of equipment, analyzing the results, and reporting the results at the conclusion of the research of each project. FPC has proposed the following two natural gas R&D projects:

Commercial Dehumidification - a demonstration project intended to evaluate natural gas dehumidification technologies in the commercial new construction market segment. Project proposes to identify and recruit a commercial customer that plans to install a new gas dehumidification system; thus, the specific technology will be chosen by the customer. However, the primary technology will likely be an overcooling / reheating application. Overcooling removes additional moisture and is the primary existing method used to control humidity. Gas reheating raises temperature of supply air to tolerable working levels without impacting humidity. An alternate technology involves the application of chemical desiccants. Application of this technology in the health care industry is limited due to high cost and sublimation of desiccant into air space.

Anticipated duration of commercial dehumidification project is two years. Specific expenditures will not be known until after the technology is chosen by the customer.

Residential Heating/Cooling/Water Heating - a research project involving the York Triathlon gas heat pump with heat recovery water heater. This project, proposed for the residential new construction market segment, represents the latest natural gas technology currently available for residential cooling, heating, and water heating applications. Anticipated project duration is two years for demonstration and monitoring, with total expenditures estimated at \$38,300.

FPC's plan will utilize new field installations of the equipment described above. FPC is in the process of soliciting bids from outside firms to install metering equipment and perform data collection. FPC will supervise the field testing and will analyze the results and prepare final reports. FPC plans to begin research on its two proposed projects upon receiving Commission approval, and the duration of research on both projects is expected to be approximately two years.

FPC will perform cost-effectiveness analysis on both gas research projects using the Rate Impact Measure (RIM) Test and Participant Test. FPC will use a commercially available electric technology, comparable in both size and function to the gas technology, as a baseline for calculating cost-effectiveness.

We approve FPC's Gas R&D plan, including approval for cost recovery through the Energy Conservation Cost Recovery Clause through August, 1998. Expenditures for the Residential Heating/Cooling/Water Heating Project shall not exceed \$38,300. At the time FPC submits its expenses related to the commercial dehumidification project for cost recovery, we will carefully examine the amounts expended to ensure that they were prudently incurred. An annual progress report shall be submitted to the Commission on the research results with a final report due by August 30, 1998.

GULF POWER COMPANY

Gulf Power Company's (Gulf) proposed Gas R&D Plan contains four individual research and demonstration projects addressing the specific requirements of Order No. PSC-94-1313-FOF-EG. These are:

Triathlon Gas Heat Pump - a residential research project intended to determine long-term system performance, technical feasibility, and cost-effectiveness of engine driven gas heat pumps. Anticipated project duration is 48 months. This project is being conducted as part of an Electric Power Research Institute (EPRI) Tailored Collaboration Project with the Southern Electric System. Although transferability is not within the scope of the EPRI project, Gulf believes that the combination of field and lab tests under various conditions should provide sufficient information to characterize the unit performance for various ambient conditions. Gulf's cost of the project is \$6,000 or an 8.8% share.

Gas Engine Driven Chiller - a commercial/industrial project intended to determine the actual operating characteristics and cost-effectiveness of engine driven chillers. The project is being conducted by the Southern Electric System in cooperation with the U.S. Department of Energy and the ambient summer conditions in Atlanta, Ga. are transferable to Gulf's territory. Gulf's 8.8% share of the cost is \$500.

Dual Fuel Heat Pump Evaluation - a commercial/industrial project intended to determine the gas and electric energy consumption and cost effectiveness. The project is being conducted by the Southern Electric System in a climate area adjacent to Gulf's service area and therefore transferability of results will not be an issue. Gulf's 8.8% share of the cost is \$1,000.

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Gas Fired Cogeneration Plant - Tyndall Air Force Base (AFB), located in Panama City, Florida is in the process of constructing a 500 kW gas fired cogeneration plant. Gulf proposes to fund a monitoring study of the AFB's operational plant to determine cost-effectiveness of utilizing gas technology for cooling, hot water and electric production. The plant will be instrumented and data will be collected to determine the efficiency of the overall process. Gulf estimates that the cost of this study will not exceed \$15,000.

Gulf's gas engine driven chiller project is being conducted by the Southern Electric System in cooperation with the U.S. Department of Energy at an existing installation in Atlanta, Georgia. This project has already begun, therefore the requirement for FPL, that a site be selected which includes a waste heat recovery process, is not applicable.

We approve Gulf's Gas R&D plan, including approval for cost recovery through the Energy Conservation Cost Recovery Clause through December, 1997. Total expenditures shall not exceed \$22,500, and individual project expenditures shall not exceed the budgeted amounts listed above. An annual progress report shall be submitted to us on the research results with a final report due by June 30, 1998.

TAMPA ELECTRIC COMPANY

Tampa Electric Company's (TECO) proposed Gas R&D Plan contains seven individual research and development projects addressing the specific requirements of the Commission Order No. PSC-94-1313-FOF-EG. At the Agenda Conference, TECO advised that although its petition showed expenses only for a one year period, TECO plans to repeat these trials over a three year period.

TECO's plan provides for the identification of existing equipment, field testing of the equipment, analyses of the results, and reporting of the results at the conclusion of the research project. TECO has proposed the following seven natural gas R&D projects:

Commercial/Industrial Gas Engine Driven Chillers - a project intended to determine the actual operating characteristics and cost-effectiveness of gas engine driven chillers. Project expenditures are expected to be \$30,000 per year, with a three year total of \$90,000.

Commercial/Industrial Gas Engine Driven DX Air Conditioning - a project intended to determine the actual operating characteristics and cost-effectiveness of the direct expansion air conditioning equipment. Project expenditures are expected to be \$20,000 per year, with a three year total of \$60,000.

Commercial/Industrial Gas Desiccant Dehumidification System - this project is intended to determine the actual operating characteristics and cost-effectiveness of gas desiccant cooling. Project expenditures are expected to be \$20,000 per year, with a three year total of \$60,000.

Residential Gas Water Heater - a research project intended to determine the actual operating characteristics and cost-effectiveness of gas water heating equipment. Project expenditures are expected to be \$28,500 per year, with a three year total of \$85,500.

Residential Space Hot Water Heating System - a research project intended to determine the actual operating characteristics and cost-effectiveness of this equipment. Project expenditures are expected to be \$32,500 per year, with a three year total of \$97,500.

Residential Dual Fuel Heat Pump - a research project intended to determine the actual operating characteristics and cost-effectiveness of the dual fuel heat pump. Project expenditures are expected to be \$13,500 per year, with a three year total of \$40,500.

Residential Gas Fired Heat Pump - a residential research project intended to determine the technical feasibility and cost-effectiveness of gas-fired heat pumps. Project expenditures are expected to be \$5,500 per year, with a three year total of \$16,500.

TECO's petition is silent regarding the selection of a site utilizing the thermal energy from the Gas Engine Driven Chiller Project. For reasons stated in the discussion of FPL's plan, TECO is required to select at least one gas chiller site which incorporates a waste heat recovery process. The other sites shall include provisions to monitor the heat recovery capabilities for future analyses and applications.

TECO's plan utilizes existing field installations of the equipment described above. TECO is in the process of soliciting bids from outside firms to install metering equipment and perform data collection. TECO will supervise the field testing, and will

analyze the results and prepare final reports. TECO is planning to begin research on the Commercial/Industrial Gas Engine Driven Chillers in August, 1995, and each month thereafter begin research on another technology. TECO's project schedule shows research on the technologies ending at various times with the last one ending in August, 1998.

TECO has advised the Commission that it will not include any of the above listed gas technologies in a DSM program even if it is found to be cost-effective under the Rate Impact test (RIM) and the Participant test. TECO thinks that it has no legal obligation to subsidize or promote the sales of its competitors in the energy marketplace. As we previously stated, the purpose of this research is to acquire Florida-specific data on gas technologies. The issue of whether gas DSM programs should be offered by electric utilities need not jeopardize timely research on gas technologies that will be performed as part of TECO's plan.

We approve TECO's Gas R&D plan, including approval for cost recovery through the Energy Conservation Cost Recovery Clause for the period August, 1995 through August, 1998. Total expenditures shall not exceed \$150,000 per year, or \$450,000 for the three year period, and individual project expenditures shall not exceed the budgeted amounts listed above. An annual progress report shall be submitted to us on the research results with a final report due by August 1998.

The Commission intends for the utilities to investigate new technologies and finds that the plans as submitted by the utilities are a reasonable means of meeting that directive.

Based on the foregoing, it is therefore

ORDERED by the Florida Public Service Commission that the Gas Research and Development Plan for Florida Power and Light Company is hereby approved as discussed herein. It is further

ORDERED that the Gas Research and Development Plan for Florida Power Corporation is approved as discussed herein. It is further


ORDERED that the Gas Research and Development Plan for Gulf Power Company is approved as discussed herein. It is further

ORDERED that the Gas Research and Development Plan for Tampa Electric Company is approved as discussed herein. It is further

ORDERED that approval of the research and development plans for the individual utilities are separable. A protest of one proposed action relative to one utility shall not delay proposed actions relative to the other utilities from becoming final. It is further

ORDERED that this Order shall become final and effective and these dockets shall be closed unless an appropriate petition for formal proceedings is received by the Division of Records and Reporting, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on the date indicated in the Notice of Further Proceedings or Judicial Review. In the event a protest is filed specific to a particular docket, then only that docket shall remain open.

By ORDER of the Florida Public Service Commission, this 15th day of September, 1995.



BLANCA S. BAYÓ, Director
Division of Records and Reporting

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NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.59(4), Florida Statutes, to notify parties of any administrative hearing or judicial review of Commission orders that is available under Sections 120.57 or 120.68, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing or judicial review will be granted or result in the relief sought.

The action proposed herein is preliminary in nature and will not become effective or final, except as provided by Rule 25-22.029, Florida Administrative Code. Any person whose substantial interests are affected by the action proposed by this order may file a petition for a formal proceeding, as provided by Rule 25-22.029(4), Florida Administrative Code, in the form provided by Rule 25-22.036(7)(a) and (f), Florida Administrative Code. This petition must be received by the Director, Division of Records and Reporting, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on October 6, 1995.

In the absence of such a petition, this order shall become effective on the day subsequent to the above date as provided by Rule 25-22.029(6), Florida Administrative Code.

Any objection or protest filed in this docket before the issuance date of this order is considered abandoned unless it satisfies the foregoing conditions and is renewed within the specified protest period.

If this order becomes final and effective on the date described above, any party substantially affected may request judicial review by the Florida Supreme Court in the case of an electric, gas or telephone utility or by the First District Court of Appeal in the case of a water or wastewater utility by filing a notice of appeal with the Director, Division of Records and Reporting and filing a copy of the notice of appeal and the filing fee with the appropriate court. This filing must be completed within thirty (30) days of the effective date of this order, pursuant to Rule 9.110, Florida Rules of Appellate Procedure. The notice of appeal must be in the form specified in Rule 9.900(a), Florida Rules of Appellate Procedure.