

FLORIDA PUBLIC SERVICE COMMISSION
Capital Circle Office Center • 2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

MEMORANDUM

September 25, 1997

RECEIVED

SEP 25 1997
11:30
FPSC - Records/Reporting

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

FROM: DIVISION OF ELECTRIC & GAS (HAFF) *mdh JJS*
DIVISION OF LEGAL SERVICES (KEATING) *RVE*

RE: DOCKET NO. 970391-EG, PETITION TO TERMINATE RESIDENTIAL
SOLAR WATER HEATING RESEARCH PROJECT AND APPROVE
COMMERCIAL/INDUSTRIAL SOLAR DESICCANT RESEARCH PROJECT BY
FLORIDA POWER & LIGHT COMPANY *JOS*

AGENDA: 10/7/97 - REGULAR AGENDA - PROPOSED AGENCY ACTION -
INTERESTED PERSONS MAY PARTICIPATE

CRITICAL DATES: NONE

SPECIAL INSTRUCTIONS: S:\PSC\EAG\WP\970391.RCM

CASE BACKGROUND

In November, 1995, the Commission approved Florida Power & Light Company's (FPL) Residential Solar Water Heating Research Project (Solar WH Project) as a research and development project under its demand-side management (DSM) plan (Order Nos. PSC-95-1343-S-EG and PSC-95-1343A-S-EG). The Solar WH Project was created out of a prior FPL residential solar water heating program known as the Conservation Water Heating Program. As stated in FPL's petition, the purpose of the Solar WH Project was to:

evaluate solar water heating technology and equipment improvements, their application and installation, and their customer acceptance, and whether specific customer segments are more likely to benefit from the application of this technology.

DOCUMENT NUMBER-DATE

~~09835~~ SEP 25 97

FPSC-RECORDS/REPORTING

DOCKET NO. 970391-EG
SEPTEMBER 25, 1997

The expenditure limit, or cap, for the Solar WH Project was \$789,200. However, after spending only \$12,000 of this amount on a limited study, FPL believes that continuing the project would constitute an uneconomic use of customer DSM dollars. FPL has decided that another promising technology, solar desiccant cooling for commercial/industrial applications, may be more worthy of research. Under the Commercial/Industrial Solar Desiccant Research (C/I Solar Desiccant) Project, FPL proposes to research a hybrid solar desiccant dehumidification system combined with a traditional cooling system. The program has an associated budget cap of \$106,000.

The purpose of FPL's petition in this docket is twofold: (1) to terminate the Solar WH Project; and (2) to gain approval of the C/I Solar Desiccant Project, adding this program to FPL's DSM Plan and approving it for the purpose of cost recovery through the Energy Conservation Cost Recovery (ECCR) Clause. The net impact of these two actions is an approximate \$671,000 reduction to FPL's total DSM research and development budget, from \$13.3 million to about \$12.629 million. FPL does not plan to proceed with the C/I Solar Desiccant Project unless the Solar WH Project is terminated. FPL believes that Commission approval of its dual request will result in a more cost-effective expenditure of research dollars, and is more likely to result in the emergence of viable solar technologies.

DISCUSSION OF ISSUES

ISSUE 1: Should the Commission grant Florida Power & Light Company's (FPL) petition to terminate its Residential Solar Water Heating Research Project (Solar WH Project) and approve its proposed Commercial/Industrial Solar Desiccant Research Project (C/I Solar Desiccant Project), including approval for cost recovery through the Energy Conservation Cost Recovery (ECCR) Clause?

RECOMMENDATION: Yes. The net result of these two actions is an approximate \$671,000 reduction to FPL's total DSM research and development budget, from \$13.3 million to about \$12.629 million.

STAFF ANALYSIS: Since their inception during the 1980's, FPL's residential solar water heating measures have never been cost-effective under any Commission-approved test. However, in its 1995 DSM Plan, FPL attempted once more to determine if residential solar water heating could be made cost-effective. This action is summarized in Order No. PSC-95-0691-POF-EG, issued in Docket No. 941170-EG:

FPL's petition proposed to discontinue the residential solar water heating rebate program, and move the program over to the research and development area. This was done to identify technology improvements and market segments that could potentially help the program pass a RIM test. We agree with these proposed program modifications.

The original expenditure cap for the Solar WH Project was \$789,200. To date, FPL has spent only \$12,168. No money has yet been spent on research, site testing, or installations. FPL believes that its DSM dollars would be better spent on researching other promising technologies such as solar desiccant cooling for commercial and industrial applications. As a result, FPL wishes to terminate the Solar WH Project and start the Commercial/Industrial Solar Desiccant Research (C/I Solar Desiccant) Project.

In the C/I Solar Desiccant Project, FPL proposes to research the potential demand and energy savings associated with, and the cost-effectiveness of, a hybrid solar desiccant dehumidification system combined with a traditional cooling system. This system is expected to be more efficient than a traditional cooling system because a desiccant, or drying, material is used to dehumidify

intake air prior to cooling via currently available air conditioning systems. FPL cites a publication of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), which shows that hybrid desiccant cooling systems can reduce the cost of air conditioning by 60% over traditional cooling systems. Further, FPL's proposed application is unique because it employs solar thermal plate collectors, similar to those used in solar water heaters, to heat the desiccant to remove moisture.

Full-scale use of desiccant cooling systems for commercial buildings has not yet been realized. No Florida-specific solar desiccant cooling research has been performed. The Florida Solar Energy Center has done only preliminary work on desiccant cooling technology for the U.S. Department of Energy and the Florida Energy Office.

FPL's proposed C/I Solar Desiccant Project consist of three steps: (1) a feasibility study; (2) a laboratory test of the technology; and, if these steps show that the technology is promising, (3) a field test where the technology would be tested in a single installation in a structure, such as an office building, with high humidity-related cooling costs. FPL will solicit comments on its feasibility study from the Legal Environmental Assistance Foundation (LEAF), although FPL will retain authority over the final design of the study. While FPL plans to coordinate the overall research project, it anticipates contracting with a laboratory to design, build, and measure the performance of the solar desiccant air conditioning system. End-use monitoring devices, installed during the field test, will provide energy, demand, and load shape data which will allow FPL to analyze the cost-effectiveness of the solar desiccant technology.

FPL estimates that the C/I Solar Desiccant Project will take approximately two years to complete, at a total cost of \$106,000 to be recovered through the ECCR Clause. The following is a proposed breakdown of the total cost:

Equipment and Supplies	\$	20,000
Establish Research Parameters & Concepts	\$	53,000
Determine Cost-Effectiveness	\$	33,000
TOTAL	\$	106,000

DOCKET NO. 970391-EG
SEPTEMBER 25, 1997

If FPL finds it necessary to spend additional funds on the project, staff recommends that FPL request Commission approval to exceed the \$106,000 cap. FPL will file a final report with the Commission within 90 days of the close of the research project.

In summary, continuing the Solar WH Project appears to result in an uneconomic use of ratepayer DSM dollars. On the other hand, FPL's proposed C/I Solar Desiccant Project would allow FPL to continue researching solar technologies, only at less cost and in an area that appears to be more promising. FPL does not wish to have both programs, and the company does not plan to proceed with the C/I Solar Desiccant Project unless the Solar WH Project is terminated. If the Commission grants FPL's petition, FPL's total DSM research and development budget will decrease by approximately \$671,000, from \$13.3 million to about \$12.629 million. These savings will be passed on to FPL's ratepayers through the ECCR Clause. For these reasons, staff recommends that the Commission grant FPL's petition to terminate its Residential Solar Water Heating Research Project and approve its proposed Commercial/Industrial Solar Desiccant Research Project, including approval for cost recovery through the ECCR Clause.

ISSUE 2: Should this docket be closed?

RECOMMENDATION: Yes.

STAFF ANALYSIS: If no person whose substantial interests are affected by the Commission's proposed agency action files a protest within twenty-one days of the issuance of the order, Docket No. 970391-EG should be closed.