

STATE OF FLORIDA

Commissioners
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DIVISION OF APPEALS
DAVID SMITH
DIRECTOR
(850) 413-6245

Public Service Commission

October 9, 2001

Joint Administrative Procedures
Committee
Room 120 Holland Building
Tallahassee, FL 32399-1300

RE: Docket No. 010982-EI - Proposed Rule 25-6.065, F.A.C.,
Interconnection of Small Photovoltaic Systems

Dear Mr. Webb:

Enclosed is an original copy of the following material
concerning the above referenced proposed rule:

1. A copy of the rule.
2. A copy of the F.A.W. notice.
3. A statement of facts and circumstances justifying the
proposed rule.
4. A federal standards statement.
5. A statement of estimated regulatory costs.

If there are any questions with respect to this rule,
please do not hesitate to call on me.

Sincerely,

A handwritten signature in cursive script that reads "Christiana T. Moore".

Christiana T. Moore
Associate General Counsel

ADM6065.CTM

Enclosures

cc: Division of the Commission Clerk
and Administrative Services

DOCUMENT NUMBER-DATE

12853 OCT-95

FPSC-COMMISSION CLERK

1 25-6.065 Interconnection of Small Photovoltaic Systems

2 (1) A small photovoltaic system (SPS) is a solar powered
3 generating system that uses an inverter rated at no more than 10 kW
4 alternating current (AC) power output and is primarily intended to
5 offset part or all of a customer's current electricity requirements.

6 (2) Each investor-owned electric utility (utility), within 30
7 days of the effective date of this rule, shall file for Commission
8 approval a Standard Interconnection Agreement for interconnecting
9 an SPS. Where a utility refuses to interconnect with an SPS or
10 attempts to impose unreasonable standards or conditions, the SPS
11 customer may petition the Commission for relief. The utility shall
12 have the burden of demonstrating to the Commission why
13 interconnection with the SPS should not be required or that the
14 standards or conditions the utility seeks to impose on the SPS are
15 reasonable. The SPS Standard Interconnection Agreement shall, at
16 a minimum, contain the following:

17 (a) A list of standards approved by nationally recognized
18 professional organizations that address the design, installation,
19 and operation of the SPS. It is the customer's responsibility to
20 ensure compliance with such standards.

21 (b) A requirement that the SPS must be inspected and approved
22 by local code officials prior to its operation in parallel with an
23 investor-owned electric utility to ensure compliance with applicable
24 local codes.

25 (c) A requirement for general liability insurance for personal

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~~struck through~~ type are deletions from existing law.

1 and property damage in the amount of no more than \$100,000. A
2 homeowner's policy that furnishes at least this level of liability
3 coverage will meet the requirement for insurance.

4 (d) Identification of a reasonable charge for processing the
5 application for interconnection.

6 (e) Provisions that permit the utility to inspect the SPS and
7 its component equipment, and the documents necessary to ensure
8 compliance with subsections (a) through (d). The utility has the
9 right to have personnel present at the initial testing of customer
10 equipment and protective apparatus.

11 (f) A provision that the customer who operates an SPS is
12 responsible for protecting its generating equipment, inverters,
13 protection devices, and other system components from damage from the
14 normal and abnormal conditions and operations that occur on the
15 utility system in delivering and restoring system power; and is
16 responsible for ensuring that the SPS equipment is inspected,
17 maintained, and tested in accordance with the manufacturer's
18 instructions to insure that it is operating correctly and safely.

19 (3) The SPS Interconnection Agreement may require the customer
20 to:

21 (a) Install, at the customer's expense, a manual disconnect
22 switch of the visible load break type to provide a separation point
23 between the AC power output of the SPS and any customer wiring
24 connected to the utility's system. The manual disconnect switch
25 shall be mounted separate from the meter socket and shall be readily

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1 accessible to the utility and capable of being locked in the open
2 position with a utility padlock. The utility may open the switch,
3 isolating the SPS, without prior notice to the customer. To the
4 extent practicable, however, prior notice shall be given.

5 (b) Provide a written agreement to hold harmless and indemnify
6 the utility from all loss resulting from the operation of the SPS,
7 except in those cases where loss occurs due to the negligent actions
8 of the utility.

9 (4) The utility shall provide the customer with written notice
10 that it has received the documents required by the Standard
11 Interconnection Agreement within 10 business days of receipt. The
12 customer shall not begin parallel operations until the customer has
13 received this written notice.

14 (5) Any of the following conditions shall be cause for the
15 utility to disconnect the SPS from its system:

16 (a) Utility system emergencies or maintenance requirements;

17 (b) Hazardous conditions existing on the utility system due
18 to the operation of the customer's SPS generating or protective
19 equipment as determined by the utility;

20 (c) Adverse electrical effects (such as power quality
21 problems) on the electrical equipment of the utility's other
22 electric consumers caused by the SPS as determined by the utility;

23 or

24 (d) Failure of the customer to maintain the required
25 insurance.

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1 The SPS shall be reconnected to the utility grid as soon as
2 practical once the conditions causing the disconnection cease to
3 exist.

4 (6) The utility may install, at its own expense, an additional
5 meter or metering equipment on the customer's premises capable of
6 measuring any excess kilowatt-hours produced by the SPS and
7 delivered back to the utility. The value of such excess generation
8 shall be credited to the customer's bill based on the host utility's
9 COG-1 tariff, or by other applicable tariffs approved by the Florida
10 Public Service Commission. If the utility does not install such a
11 meter or metering equipment, the utility shall permit the customer
12 to net meter any excess power delivered to the utility by use of a
13 single standard watt-hour meter capable of reversing directions to
14 offset recorded consumption by the customer. If the kilowatt-hour
15 of energy produced by the SPS exceeds the customer's kilowatt-hour
16 consumption for any billing period, such that when the meter is read
17 the value displayed on the register is less than the value displayed
18 on the register when it was read at the end of the previous billing
19 period, the utility shall carry forward credit for the excess energy
20 to the next billing period. Credits may accumulate and be carried
21 forward for a 12-month period specified by the utility in the SPS
22 Interconnection Agreement. In no event shall the customer be paid
23 for excess energy delivered to the utility at the end of the 12-
24 month period.

25 **Specific Authority: 350.127(2), 366.05(1), F.S.**

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1 | Law Implemented: 366.04(2)(c) (5) (6), 366.041, 366.05(1), 366.81,
2 | F.S.
3 | History: New _____.
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NOTICE OF PROPOSED RULEMAKING

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 010982-EU

RULE TITLE:

RULE NO.:

Interconnection of Small Photovoltaic Systems

25-6.065

PURPOSE AND EFFECT: To encourage customers of investor-owned electric utility to use renewable generation for their own needs by enabling the interconnection of small photovoltaic systems with the electric utility and establishing standards to protect the reliability and safety of the electric utility's system.

SUMMARY: Rule 25-6.065 establishes standards for the interconnection of small photovoltaic systems (SPS) with the electric grid and requires investor-owned electric utilities to file an interconnection agreement with the Commission.

SUMMARY OF STATEMENT OF ESTIMATED REGULATORY COST: Additional costs are expected for activities such as reviewing and processing applications for interconnection, the cost of an engineer to be present at testing and inspecting of the SPS, modification of billing systems to handle customer generated kWh credits, additional meter costs if the utility chooses to install a separate meter, and the cost of developing a new tariff.

Although there is an additional cost in lost revenues to the utility under net metering, because the customer is essentially being compensated at the retail rate rather than the avoided cost

rate, there are additional administrative costs when a second meter is installed instead of net metering. In addition to the cost of equipment, the customer will be responsible for paying the utility a fee for processing the application. Customers may also have the cost of purchasing and installing a manual disconnect switch if it is required by the host utility.

Any person who wishes to provide information regarding the statement of estimated regulatory costs, or to provide a proposal for a lower cost regulatory alternative must do so in writing within 21 days of this notice.

SPECIFIC AUTHORITY: 350.127(2), 366.05(1), FS

LAW IMPLEMENTED: 366.04(2)(c), (5), (6), 366.041, 366.05(1), 366.81, FS

WRITTEN COMMENTS OR SUGGESTIONS ON THE PROPOSED RULE MAY BE SUBMITTED TO THE FPSC, DIVISION OF THE COMMISSION CLERK AND ADMINISTRATIVE SERVICES, WITHIN 21 DAYS OF THE DATE OF THIS NOTICE FOR INCLUSION IN THE RECORD OF THE PROCEEDING.

IF REQUESTED WITHIN 21 DAYS OF THE DATE OF THIS NOTICE, A HEARING WILL BE HELD AT THE TIME, DATE, AND PLACE SHOWN BELOW (IF NOT REQUESTED, THIS HEARING WILL NOT BE HELD):

TIME AND DATE: 1:00 P.M., December 5, 2001

PLACE: Room 148, Betty Easley Conference Center, 4075 Esplanade Way, Tallahassee, Florida.

THE PERSON TO BE CONTACTED REGARDING THE PROPOSED RULE IS:

Director of Appeals, Florida Public Service Commission, 2540
Shumard Oak Blvd., Tallahassee, FL 32399-0862, (850) 413-6245.

THE FULL TEXT OF THE PROPOSED RULE IS:

25-6.065 Interconnection of Small Photovoltaic Systems

(1) A small photovoltaic system (SPS) is a solar powered generating system that uses an inverter rated at no more than 10 kW alternating current (AC) power output and is primarily intended to offset part or all of a customer's current electricity requirements.

(2) Each investor-owned electric utility (utility), within 30 days of the effective date of this rule, shall file for Commission approval a Standard Interconnection Agreement for interconnecting an SPS. Where a utility refuses to interconnect with an SPS or attempts to impose unreasonable standards or conditions, the SPS customer may petition the Commission for relief. The utility shall have the burden of demonstrating to the Commission why interconnection with the SPS should not be required or that the standards or conditions the utility seeks to impose on the SPS are reasonable. The SPS Standard Interconnection Agreement shall, at a minimum, contain the following:

(a) A list of standards approved by nationally recognized professional organizations that address the design, installation, and operation of the SPS. It is the customer's responsibility to

ensure compliance with such standards.

(b) A requirement that the SPS must be inspected and approved by local code officials prior to its operation in parallel with an investor-owned electric utility to ensure compliance with applicable local codes.

(c) A requirement for general liability insurance for personal and property damage in the amount of no more than \$100,000. A homeowner's policy that furnishes at least this level of liability coverage will meet the requirement for insurance.

(d) Identification of a reasonable charge for processing the application for interconnection.

(e) Provisions that permit the utility to inspect the SPS and its component equipment, and the documents necessary to ensure compliance with subsections (a) through (d). The utility has the right to have personnel present at the initial testing of customer equipment and protective apparatus.

(f) A provision that the customer who operates an SPS is responsible for protecting its generating equipment, inverters, protection devices, and other system components from damage from the normal and abnormal conditions and operations that occur on the utility system in delivering and restoring system power; and is responsible for ensuring that the SPS equipment is inspected, maintained, and tested in accordance with the manufacturer's instructions to insure that it is operating correctly and safely.

(3) The SPS Interconnection Agreement may require the customer to:

(a) Install, at the customer's expense, a manual disconnect switch of the visible load break type to provide a separation point between the AC power output of the SPS and any customer wiring connected to the utility's system. The manual disconnect switch shall be mounted separate from the meter socket and shall be readily accessible to the utility and capable of being locked in the open position with a utility padlock. The utility may open the switch, isolating the SPS, without prior notice to the customer. To the extent practicable, however, prior notice shall be given.

(b) Provide a written agreement to hold harmless and indemnify the utility from all loss resulting from the operation of the SPS, except in those cases where loss occurs due to the negligent actions of the utility.

(4) The utility shall provide the customer with written notice that it has received the documents required by the Standard Interconnection Agreement within 10 business days of receipt. The customer shall not begin parallel operations until the customer has received this written notice.

(5) Any of the following conditions shall be cause for the utility to disconnect the SPS from its system:

(a) Utility system emergencies or maintenance requirements;

(b) Hazardous conditions existing on the utility system due to the operation of the customer's SPS generating or protective equipment as determined by the utility;

(c) Adverse electrical effects (such as power quality problems) on the electrical equipment of the utility's other electric consumers caused by the SPS as determined by the utility; or

(d) Failure of the customer to maintain the required insurance.

The SPS shall be reconnected to the utility grid as soon as practical once the conditions causing the disconnection cease to exist.

(6) The utility may install, at its own expense, an additional meter or metering equipment on the customer's premises capable of measuring any excess kilowatt-hours produced by the SPS and delivered back to the utility. The value of such excess generation shall be credited to the customer's bill based on the host utility's COG-1 tariff, or by other applicable tariffs approved by the Florida Public Service Commission. If the utility does not install such a meter or metering equipment, the utility shall permit the customer to net meter any excess power delivered to the utility by use of a single standard watt-hour meter capable of reversing directions to offset recorded consumption by the customer. If the kilowatt-hour of energy produced by the SPS

exceeds the customer's kilowatt-hour consumption for any billing period, such that when the meter is read the value displayed on the register is less than the value displayed on the register when it was read at the end of the previous billing period, the utility shall carry forward credit for the excess energy to the next billing period. Credits may accumulate and be carried forward for a 12-month period specified by the utility in the SPS Interconnection Agreement. In no event shall the customer be paid for excess energy delivered to the utility at the end of the 12-month period.

NAME OF PERSON ORIGINATING PROPOSED RULE: Roland Floyd

NAME OF SUPERVISOR OR PERSONS WHO APPROVED THE PROPOSED RULE:
Florida Public Service Commission.

DATE PROPOSED RULE APPROVED: October 2, 2001

DATE NOTICE OF PROPOSED RULE DEVELOPMENT PUBLISHED IN FAW: Volume
26, Number 47, November 22, 2000

If any person decides to appeal any decision of the Commission with respect to any matter considered at the rulemaking hearing, if held, a record of the hearing is necessary. The appellant must ensure that a verbatim record, including testimony and evidence forming the basis of the appeal is made. The Commission usually makes a verbatim record of rulemaking hearings.

Any person requiring some accommodation at this hearing because of a physical impairment should call the Division of the

Commission Clerk and Administrative Services at (850) 413-6770 at least 48 hours prior to the hearing. Any person who is hearing or speech impaired should contact the Florida Public Service Commission by using the Florida Relay Service, which can be reached at: 1-800-955-8771 (TDD).

**STATEMENT OF FACTS AND CIRCUMSTANCES
JUSTIFYING RULE**

Section 187.201(12)(a), Florida Statutes, states that Florida's energy goal is to reduce its energy requirements through enhanced conservation and efficiency measures, while at the same time promoting an increased use of renewable energy resources. Section 187.201(12)(b)7., Florida Statutes, specifically states the policy to promote the development and application of solar energy technologies and passive solar design techniques. In addition, section 366.81, Florida Statutes, of the Florida Energy Efficiency and Conservation Act (FEECA), states the Legislature's intent that the use of solar energy be encouraged.

Rule 25-6.065 establishes appropriate operating, safety, and insurance requirements for customers with small photovoltaic systems (SPS) who request interconnection and parallel operation with an investor-owned electric utility. These small, usually rooftop-mounted solar panels take sunlight and directly convert it to direct current (DC) electricity. Inverters change the DC current to normal household 60 cycle alternating current (AC) current which is then used to power the customer's household load. While there are very few such systems operating in Florida, grant funds are currently available to subsidize installation for homeowners who interconnect to the electric grid and the demand appears to be increasing in Florida. In addition, there are now national interconnection safety standards adopted by the Institute of Electrical and Electronic Engineers and Underwriters Laboratory for small photovoltaic systems. The rule is needed to require investor-owned electric utilities to allow interconnection.

STATEMENT ON FEDERAL STANDARDS

There is no federal standard on the same subject.

M E M O R A N D U M

June 18, 2001

TO: DIVISION OF APPEALS (MOORE)

FROM: DIVISION OF ECONOMIC REGULATION (HEWITT) *CBH* *[Signature]* *[Signature]* *TgS*

SUBJECT: STATEMENT OF ESTIMATED REGULATORY COSTS FOR PROPOSED
RULE 25-6.065, F.A.C., INTERCONNECTION OF SMALL PHOTOVOLTAIC
SYSTEMS

SUMMARY OF THE RULE

The purpose of proposed Rule 25-6.065, F.A.C., Interconnection of Small Photovoltaic Systems, is to require the investor-owned electric utilities (IOUs) to provide service standards and interconnection for any small solar photovoltaic system (SPS). A SPS is defined as a solar powered generating system that uses an inverter rated at no more than 10 kW intended to offset part or all of a customer's current electricity requirements. A SPS system would have to meet the safety standards and insurance minimum set by the proposed rule to interconnect with the electric grid.

ESTIMATED NUMBER OF ENTITIES REQUIRED TO COMPLY AND
GENERAL DESCRIPTION OF INDIVIDUALS AFFECTED

There are five investor-owned electric utility companies operating in Florida. Each would have to comply with the proposed rule to allow SPSs to interconnect with their system under certain conditions. There are an unknown number of SPSs in Florida eligible for interconnection under the proposed rule. Entities would not have to comply with the proposed rule to install a stand-alone SPS where SPSs have a dedicated purpose, e.g., running a pool pump. Entities would have to comply with the relevant rule requirements if they wanted to interconnect with a regulated IOU.

RULE IMPLEMENTATION AND ENFORCEMENT COST AND IMPACT ON REVENUES
FOR THE AGENCY AND OTHER STATE AND LOCAL GOVERNMENT ENTITIES

The Public Service Commission and other state entities are not expected to experience implementation costs other than the costs associated with promulgating a proposed rule. Existing Commission staff would continue to handle the monitoring and review of IOU compliance.

Local government entities may install SPSs, e.g., on a school roof, and would have to conform to the rule requirements to interconnect with an IOU. The cost would be similar to an individual customer: submit certification, have the proper insurance, and, if required by the utility, install a manual disconnect switch.

ESTIMATED TRANSACTIONAL COSTS TO INDIVIDUALS AND ENTITIES

IOUs would have transactional costs to comply with the proposed rule. IOU costs would be borne by the IOU until a rate case. Then, if the costs associated with accommodating SPSs are allowed, the rest of the ratepayers would be subsidizing SPS owners.

Gulf Power Company (GULF) estimated three areas for transactional costs: a) the time for an engineering representative to review and process the customer's documents would cost \$600; b) the cost for a power quality engineer to investigate any power quality issues would be an estimated \$600 per occurrence; c) the incremental cost for an engineering representative to be present at testing and inspecting the customer's site and equipment would be \$600. In addition, GULF does not do net metering and would have to modify its existing billing system to handle customer generated kWh credits and maintain separate account balances, but at an unknown cost. GULF believes that standardizing procedures for interconnecting SPSs will be beneficial the development of these alternative energy resources and provide the information necessary to insure the safe and proper connection between the SPS and host IOU grid.

Florida Public Utilities (FPU) stated that the proposed rule would significantly impact operations at FPU in several areas. Depending on the acceptance of this type of technology, operational cost involved with inspections and documentation of SPS installations could be significant. Cost would depend on the complexity and size of the installation. Safety problems and injuries could result from this proposed rule with associated cost varying dependent on the situation. Back feed could result from SPSs with improperly operating protection features thereby endangering utility personnel. Restoration times of utility systems would be increased due to the requirement to verify the condition of all SPSs prior to beginning restoration efforts. FPU's Marianna Division has not filed a COG-1 tariff and should it be filed and changes required to the computer information system, cost could easily approach \$100,000. The additional metering costs for multiple meter installations would be a minimum of \$500. However, the use of single meters capable of metering the reverse flow of electricity would not result in significant additional costs.

Tampa Electric Company (TECO) filed the most detailed cost estimates. The estimates are attached as Table 1 and Table 2. The total costs would be \$1,105 the first year for two

additional SPS customers. The cumulative total cost to add two SPS customers each year for five years would be \$9,602 or \$960 per customer.

Florida Power & Light (FPL) stated that it believes that the rule as proposed is inadequate since it does not address issues identified by FPL in its response to FPSC staff's post-workshop comments. However, for the proposed rule, FPL estimated costs, based on certain assumptions. Processing 1000 SPS interconnection inquiries would cost \$13,841 and 25 applications would cost \$12,228 for a total of \$26,070 annually. Considering that SPS installations would be few and far between, FPL estimated that the cost to identify, locate, and disconnect would be \$118 per SPS for a total the first year of \$2,950. The estimated cost for SPS disconnect switch inspections would be \$30 times 25 or \$750 per year. Legal review of the rule, the compliance process, and tariff revisions, if any, would take 100 hours at a cost of \$17,000 to \$20,000. The total would be a maximum of \$49,770 the first year for FPL to interconnect 25 SPSs.

If, however, FPL chose to install an additional meter for SPSs, the cost would jump significantly by approximately \$1,467,500. FPL stated it would incorporate an electronic meter with two channels to capture the two readings necessary for billing purposes under FPL's COG-1 rate. The electronic meter would cost \$400 each including installation, \$10,000 for 25 meters. A one-time software to interface the data gathering system would be approximately \$40,000. The major cost of a new Photovoltaic Residential Tariff would be to change the Billing System, estimated at approximately \$1,404,000. A detailed cost list was provided by FPL, but the alternative to changing the automated CIS II billing system would be to hand-bill the SPS ratepayers. Additionally, for a new tariff, development costs would be an estimated \$8,000 for 150 hours time and a yearly administrative cost of \$5,500. Finally, FPL is concerned that the insurance provision is illusory because homeowners' insurance policies may not provide coverage under the circumstances required by the rule. When the ratepayer receives monetary consideration for the amount of electricity they put onto the system, FPL believes that makes the SPS a business and a homeowner's policy would not provide coverage.

The Florida Solar Energy Center (FSEC) submitted an example one-page form for a SPS application and compliance for interconnection. FSEC also submitted comments on clarification and suggestions for the proposed rule. FSEC is concerned that a SPS customer may think they have to hire an attorney to comply with the "certification" requirements or to draw up a contract, costing \$500 or more. Although the cost of the manual disconnect may not be great, the cost of installing the disconnect will be high (around \$250), especially if there is a long distance between the inverter(s) and the location of the disconnect. FSEC also stated that the meter cost could be as low as \$10 for a reconditioned residential meter or \$250 for a single-phase electronic meter

with automatic meter reading functions. The lowest cost alternative would be net metering, which is allowed if the utility does not choose to install, at its own expense, an additional meter or metering equipment.

The Legal Environmental Assistance Foundation (LEAF) submitted comments on the proposed rule also. LEAF stated that it, “strongly objects to the proposed rule’s failure to continue the Commission’s current net metering policy. The Commission now gives a customer who owns a small grid-connected PV system the option of net metering (Rule 25-17.082(2)(b), FAC). The rule as proposed would give utilities this option.” However, the cited rule concerns cogeneration and Qualifying Facilities (QFs). A SPS owner apparently could, under that rule, petition the Commission for QF status. But, the small PV (under 10 kW) owner would not likely undertake the additional expense and procedural requirements to seek QF status for a small SPS costing around \$8,000 to save approximately \$9 per month on his utility bill. Whether the utility, at its own cost, would decide to install an additional meter or metering equipment for small SPSs, is unknown at this time.

IMPACT ON SMALL BUSINESSES, SMALL CITIES, OR SMALL COUNTIES

Small businesses, small cities, and small counties would be affected if they installed SPSs and wished to interconnect with an IOU. The cost would be similar for any individual customer: submit certification, have the proper insurance, and, if required by the utility, install a manual disconnect switch.

ALTERNATIVE METHODS

Several alternatives were suggested by parties. Gulf Power Company (GULF) believes that the required insurance coverage should be \$1,000,000 rather than \$100,000 with the utility named as an additional insured. This requirement would raise the cost for SPS owners unless they were already insured for \$1,000,000. In addition, GULF proposes that the reference to a “standard” homeowner’s policy be stricken since homeowner policies vary for diverse reasons. GULF also recommends changing the Section 3 requirement to provide the customer with written notice of receiving documentation within ten(10) business days to thirty(30) days to insure adequate time to review and inspect for proper installation and operation of the SPS.

TECO suggested an alternative metering scheme, which would eliminate additional expense for hand billing, to allow a single totalizing detented meter (detented means it will only record energy moving from the grid to the customer). Then the standard billing programs, meter reading, and record keeping systems could operate without modification. Eliminating dual meter

reading and hand billing would reduce the incremental cost over the first five years by about 50%. Also, TECO believes that Section 8 needs to be modified to state that the costs for interconnection should be borne by the cost-causing customers that choose to interconnect. However, the best lower cost alternative according to TECO, would be to allow utilities to move forward with pilot interconnection agreements designed to collect information that would be beneficial in ultimately crafting a comprehensive, well-designed rule that would address the uncertainties found in the current proposed rule.

Cc: Mary Bane
Hurd Reeves
Lee Colson
svserc.cbh