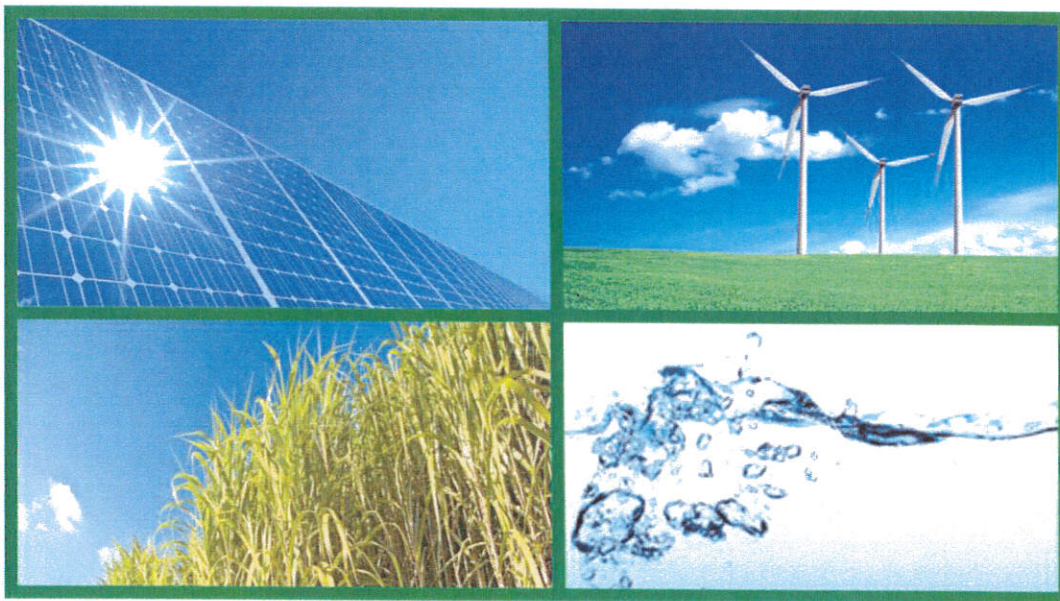




Distributed Energy Resource and Net Metering Implementation



Prepared by the
South Carolina Office of Regulatory Staff

July 31, 2016



Table of Contents

Introduction	1
Act 236 Implementation	2
Step 1: Establish Methodology to Value DER	3
Step 2: Establish DER Programs	5
Step 3: Recover DER Program Costs	8
Conclusion	10
Attachments	11

Introduction

On June 2, 2014, the Distributed Energy Resource (“DER”) Program Act (“Act 236” or “Act”) was signed into law by Governor Nikki Haley. Act 236 was the result of consensus among a diverse group of stakeholders and created a pathway for growth in the renewable energy industry in South Carolina. The goal of Act 236 as stated in S.C. Code Ann. § 58-39-110 is to “promote the establishment of a reliable, efficient, and diversified portfolio of distributed energy resources” for South Carolina.

S.C. Code Ann. § 58-39-140 (E) requires the South Carolina Office of Regulatory Staff (“ORS”) to prepare and submit a report on the status of implementation of the DER Program (Chapter 39) and Net Energy Metering (“NEM”) (Chapter 40). The purpose of this report is to meet the following requirement:

No later than July 31, 2016, the Office of Regulatory Staff shall prepare and submit to the General Assembly with copies to all members of the State Regulation of Public Utilities Review Committee a report on the implementation of this chapter and Chapter 40 of this title. The Office of Regulatory Staff shall update this report no later than July 31, 2017, and each two years thereafter. Upon receipt and review of these reports, and in consultation with the General Assembly, the Public Utilities Review Committee shall make recommendations to the Office of Regulatory Staff as to any changes in implementation that may be needed.

This report summarizes the steps and status of implementation of the DER Programs and NEM for South Carolina’s three largest investor-owned utilities (“Utilities” or “IOUs”)—South Carolina Electric & Gas Company (“SCE&G”), Duke Energy Carolinas, LLC (“DEC”), and Duke Energy Progress, LLC (“DEP”).

Act 236 Implementation

The purposes of Act 236 as summarized in the preamble, are to, among other things:

- provide for a net energy metering program and its requirements, including costs and the responsibilities of the PSC and the ORS; and
- provide for a distributed energy resource program, set goals for the program, and to provide for the process and implementation of the program, including the application and approval process for the program and cost recovery.

The implementation of Act 236 required three critical steps:

1. Establishing a methodology to value distributed energy;
2. Develop programs to promote distributed energy growth; and
3. Determine the costs of DER Programs.

See Attachment A for a timeline of events relating to the implementation of Act 236.

Step 1: Establish Methodology to Value DER

Pursuant to Act 236, the Commission established Docket No. 2014-246-E to conduct a generic proceeding for the purposes of implementing the requirements of Chapter 40, Net Metering, specifically to establish the methodology to set any necessary charges and credits to ensure that the electrical utility recovers its cost of providing electrical service to customer-generators and customers who are not customer-generators (“Methodology”).¹

The ORS was charged with the responsibility of representing the public interest and serving as facilitator to resolve disputes and issues between the Parties² (“Parties”) during this proceeding. The ORS facilitated and hosted more than twenty on-site meetings and communicated extensively with all Parties to determine which components should be included in the Methodology. The ORS retained Energy + Environmental Economics (“E3”), who developed the following Methodology, in collaboration with the Parties, to compute the value of DER generation, which includes all categories of potential costs or benefits to the Utility system capable of quantification or possible quantification in the future:

Net Energy Metering (“NEM”) Methodology

- +/- Avoided Energy
- +/- Energy Losses/Line Losses
- +/- Avoided Capacity
- +/- Ancillary Services
- +/- Transmission and Distribution (“T&D”) Capacity
- +/- Avoided Criteria Pollutants
- +/- Avoided CO2 Emission Cost
- +/- Fuel Hedge
- +/- Utility Integration & Interconnection Costs
- +/- Utility Administration Costs
- +/- Environmental Costs

= Total Value of NEM Distributed Energy Resource

Where there is currently a lack of capability to accurately quantify a particular category and/or a lack of cost or benefit to the Utility system, that category has been included in the Methodology as a placeholder. Placeholder categories will be updated and included in the calculation of costs and benefits of NEM if and when capabilities to reasonably quantify those values become available.

¹ Section 58-40-20 (F)

² See Attachment B for a list of Parties

On December 11, 2014, the ORS filed with the Commission a proposed Settlement Agreement (“Settlement”)³ which included the Methodology as outlined above. On March 20, 2015, the Commission approved the Settlement in Order No. 2015-194, which included:

- The Methodology to be used to compute the value of DER generation;
- The 1:1 NEM Rate⁴ shall be preserved until January 1, 2021; and
- The difference between the value of DER generation, as computed using the NEM Methodology, and the 1:1 NEM Rate shall be treated as a DER program expense and collected through the fuel clause. This difference shall not be recovered through base rates.

The Methodology values are updated annually during each Utility’s fuel proceeding, and are submitted for approval to the Commission. See Figure 1 below for the current Value of Distributed Generation calculated by the IOU’s as of June 29, 2016. Placeholder category values are displayed as “0”.

FIGURE 1: VALUE OF DISTRIBUTED GENERATION AS OF JUNE, 29 2016 (CENTS/KWH)

Components	SCE&G	DEC		DEP	
	All	Small PV	Large PV	Small PV	Large PV
Avoided Energy	3.201	4.495	4.495	3.615	3.613
Energy Losses/ Line Losses	.319	.232	.231	.167	.168
Avoided Capacity	.600	.868	.868	1.047	1.055
Ancillary Services	0	0	0	0	0
Transmission & Distribution ("T&D") Capacity	0	0	0	0	0
Avoided Criteria Pollutants	.006	0	0	0	0
Avoided CO ₂ Emission Cost	0	0	0	0	0
Fuel Hedge	0	0	0	0	0
Utility Integration & Interconnection Costs	0	0	0	0	0
Utility Administration Costs	0	0	0	0	0
Environmental Costs	0	0	0	0	0
Total Value of Net Metered DER	4.126	5.595	5.594	4.829	4.836

³ Docket No. 2014-246-E, Order No. 2015-194

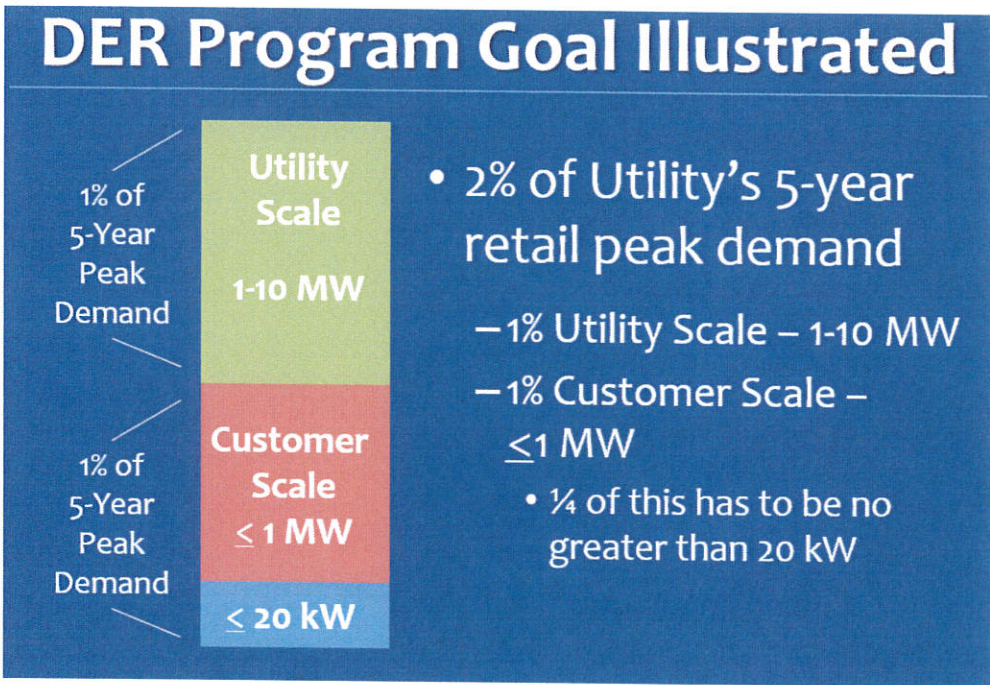
⁴ Commonly referred to as Net Metering 2.0

Step 2: Establish DER Programs

The IOUs agreed, as part of the Settlement, to file an application to establish an initial DER Program consistent with the goals of Act 236. The Act requires that any DER Program shall, at a minimum, result in the development by January 1, 2021, of renewable energy facilities located in South Carolina with a cumulative installed nameplate capacity equal to at least 2% of the previous five-year average of the utility’s South Carolina retail peak demand.⁵ One half of the 2% shall be met by facilities sized between 1 and 10 megawatts (“MW”) (“Utility Scale”). The remaining half of the 2% shall be met by facilities sized less than 1 MW (“Customer Scale”) with a quarter of this 1% nameplate capacity being from facilities sized no greater than 20 kW (“Small Scale”).

See Figure 2 below for an illustration of DER Program goals as outlined in Act 236.

FIGURE 2: ILLUSTRATION OF DER PROGRAM GOALS



See Figure 3 on page 6 for DER Program goals by IOU.

⁵ Section 58-39-130

FIGURE 3: DER PROGRAM GOALS BY IOU TO BE MET BY JANUARY 1, 2021

	SCE&G⁶	DEC⁷	DEP⁸
Total Goals	84.50 MW	80 MW	26 MW
Utility Scale	42.25 MW	40 MW	13 MW
Customer Scale	42.25 MW	40 MW	13 MW

The Act also provided an option to the utility after the 2% goal was met, to allow utility investment in facilities greater than 1 MW and less than or equal to 10 MW with a cumulative installed nameplate capacity equal to at least 1% of the previous five-year average of the electrical utility's South Carolina peak demand.

Each of the IOUs' applications included detailed plans to develop renewable energy facilities, incent participation in the purchase or lease of renewable energy facilities and allow the IOUs to recover DER Program costs. All three DER Program applications recommended solar generation as the best method to reach Act 236 DER goals.

South Carolina Electric and Gas Company

SCE&G received Commission approval on July 15, 2015, in Order No. 2015-512 to implement its DER Programs. The programs offered by SCE&G to meet its DER goals included: 1) Contracts with solar developers for Utility-scale solar farms on company property under power purchase agreements ("PPAs"); 2) Contracts with solar developers for the installation of at least 30 MW of solar farms on property not owned by the utility under 20-year PPAs and where the solar power can be integrated into SCE&G's electrical grid; 3) a Performance Based Incentive ("PBI") bill credit for residential customers fixed for a 10-year term; 4) Bill Credit Agreements ("BCA") for non-residential customers fixed for 10-year terms; 5) a Community Solar program; and 6) the formation of a DER Program Advisory Group.

Duke Energy Carolinas, LLC and Duke Energy Progress, LLC

DEC and DEP also received Commission approval on July 15, 2015, in Order Nos. 2015-515 and 2015-514 respectively, to structure the DER Programs for both IOUs in a similar fashion. Both DEC and DEP DER Programs include: (1) the use of requests for proposals for large-scale renewable generation facilities; (2) up-front solar rebates ("Solar Rebate Program") for residential and non-residential customers; (3)

⁶ Docket No. 2015-54-E, Order No. 2015-512

⁷ Docket No. 2015-55-E, Order No. 2015-515

⁸ Docket No. 2015-53-E, Order No. 2015-514

the formation of a DER Program Collaborative Group; and (4) the offering of a Shared Solar Program. DEC and DEP will solicit offers for 15-year PPAs and turnkey proposals with engineering, procurement and construction agreements to meet Utility Scale goals.

DER Program Results by IOU

Figure 4 below displays each IOU's capacity goals and actual results achieved for Utility Scale and Customer Scale DER Programs.

FIGURE 4: DER PROGRAM CAPACITY GOALS BY IOU AS OF MAY 31, 2016

	SCE&G		DEC		DEP	
Total Goal	84.5 MW		80 MW		26 MW	
Total Remaining	33.2 MW		66.27 MW		22.70 MW	
	Utility Scale	Customer Scale	Utility Scale	Customer Scale	Utility Scale	Customer Scale
Goal	42.25 MW	42.25 MW	40 MW	40 MW	13 MW	13 MW
Remaining	5.71 MW	27.49 MW	40 MW	26.27 MW	13 MW	9.70 MW
Actual Installed	0.5 MW	7.82 MW	0 MW	1.30 MW	0 MW	0.03 MW
Reserved Capacity	36.04 MW	6.94 MW	0 MW	12.43 MW	0 MW	3.27 MW

Step 3: Recover DER Program Costs

Act 236 allows IOUs to recover costs related to their DER Programs to the extent that costs are reasonably and prudently incurred to implement approved programs. DER Program costs are recovered during each Utility's annual fuel proceeding. Each of the costs, including NEM incentives, are separately identified by the IOU, reviewed by the ORS, and submitted for approval to the Commission. The value of each cost component can vary due to a number of factors: fuel costs, capacity costs, generation mix, location of its DER generation, billing procedures, and current retail rates.

DER Program Cost Categories

The DER Program costs are categorized as either incremental or avoided costs and are allocated and recovered from customers under a separate distributed energy component of the overall fuel factor, based on the same method used for variable environmental costs.⁹ Avoided costs, which are payments for purchases of electricity, are calculated using the lesser of rates negotiated pursuant to the Public Utility Regulatory Policies Act ("PURPA") or an electrical utility's most recently approved or established avoided costs rates in South Carolina.¹⁰ Avoided costs include amounts paid for purchases of power from participants in solar rebate programs, shared/community solar programs, net metering, and bill credit agreements at the utility's avoided cost rates. Utilities may also incur avoided costs stemming from their own generation constructed to implement a DER Program and/or from new programs introduced in the future to implement a DER Program.

Incremental costs are costs incurred by the electrical utility to implement a DER Program. Incremental costs include, but are not limited to, costs in excess of the avoided costs or negotiated rates pursuant to PURPA, the full cost of a utility's investment in non-generating distributed energy resources, the utility's weighted average cost of capital as applied to the electrical utility's investment in distributed energy resources, generally accepted expenses associated with a project, and incremental labor associated with implementing a distributed energy resource program.¹¹

See Figure 5 on page 9 for a total of avoided and incremental DER Program costs by IOU as of May 31, 2016.

⁹ Section 58-27-865 (A)(1)

¹⁰ Section 58-39-120 (B)

¹¹ Section 58-39-140

FIGURE 5: TOTAL DER PROGRAM COSTS AS OF MAY 31, 2016

Utility	Incremental Costs	Avoided Costs ¹²
SCE&G	\$1,387,699	\$22,027
DEC	\$997,481	\$0
DEP	\$883,732	\$0

Cost Recovery Mechanisms

Avoided costs are recovered by customer class in the same manner as fuel, variable environmental, and avoided capacity costs. A per kilowatt hour (“kWh”) charge is calculated using the over/(under) recovered avoided costs for a utility’s actual review period, estimated period, and forecasted period divided by the projected kWh sales for the next twelve-month billing period.

Incremental costs are recovered by customer class in a different manner than avoided costs. Incremental costs are collected as a separate fixed dollar amount per account whereas avoided costs are billed per kWh in the customer’s usage charge. S.C. Code Ann. § 58-39-150 requires the incremental costs to be capped for the protection of consumers and to ensure that the cost of DER Programs do not exceed a reasonable threshold. The following incremental cost caps apply to an IOU’s DER Program:

- Residential customers \$12 per year
- Commercial customers \$120 per year
- Industrial customers \$1,200 per year

See Figure 6 below for the current annual DER Program incremental per-account charges by IOU as of June 29, 2016.

FIGURE 6: ANNUAL DER PROGRAM INCREMENTAL CHARGES BY IOU AS OF JUNE 29, 2016

Utility	Residential	Commercial	Industrial
SCE&G	\$4.08	\$15.24	\$1,200.00
DEC	\$5.02	\$11.70	\$708.79
DEP	\$4.27	\$8.43	\$750.66

¹² DEP and DEC do not anticipate incurring avoided costs until 2017 when utility scale generation is in operation

Conclusion

The implementation of Act 236 required three critical steps:

1. Establishing a methodology to value distributed energy;
2. Develop programs to promote distributed energy growth; and
3. Determine the cost of DER Programs.

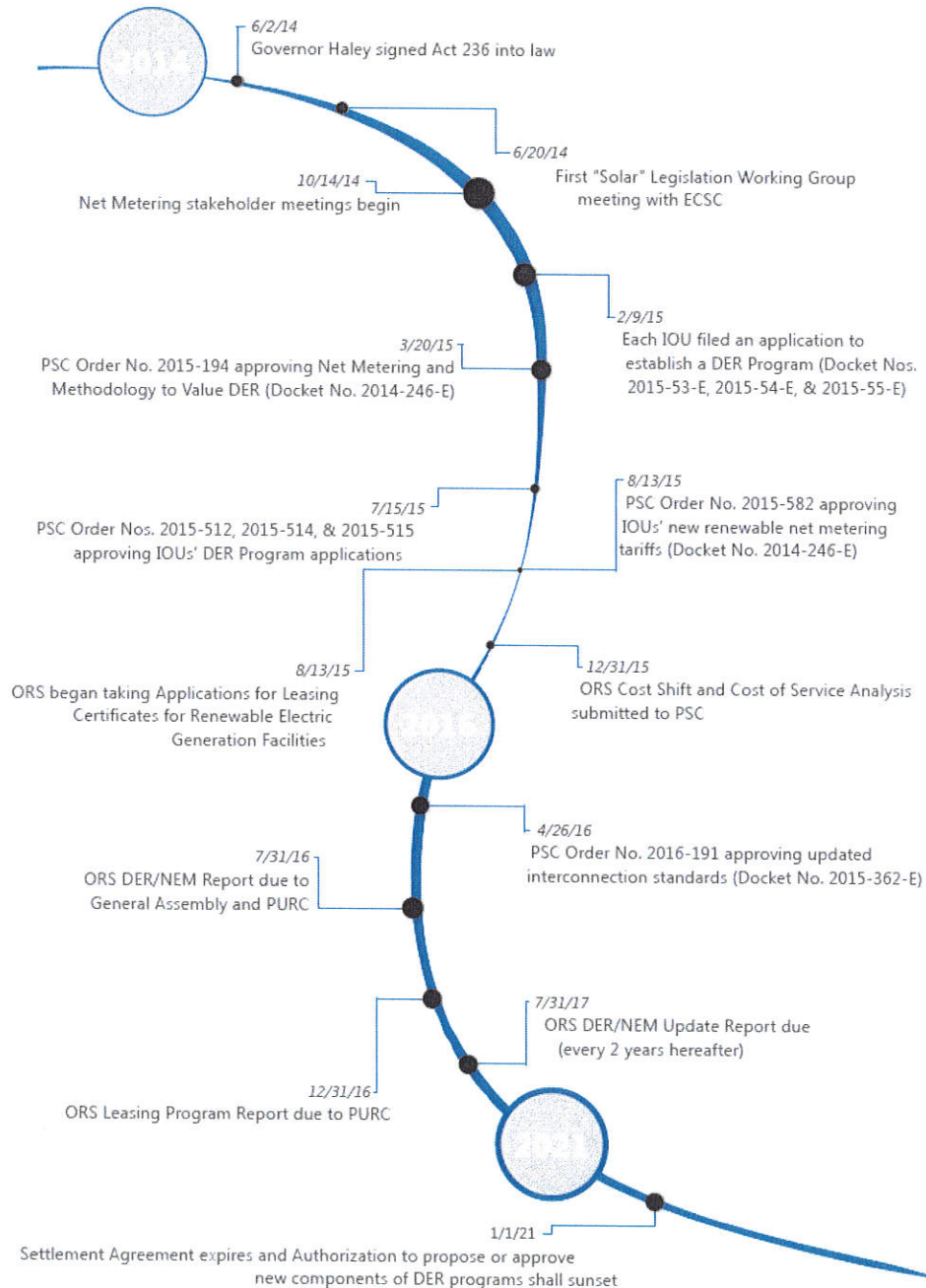
From the time the Act was signed into law to the completion of this first report, the IOUs have reached 36% of the 5-year 190.5 MW goal (actual and reserved capacity), and collaboration continues as the stakeholders work together to ensure that a firm foundation is laid for incorporating renewable energy resources into our state's generation portfolio.

This first report on the status of the implementation of Title 58, Chapters 39 and 40, has focused on the steps required for implementation of the Act and the status of DER and NEM programs.

The next report on the implementation of DER programs and NEM is due on July 31, 2017, and will provide more data on program results

Attachments

Attachment A: Timeline for SC Distributed Energy Resource and Net Metering Development



Attachment B: List of Parties to NEM “Methodology” Settlement Agreement

Docket No. 2014-246-E, Order No. 2015-194

- Central Electric Power Cooperative, Inc.
- The Electric Cooperatives of South Carolina, Inc.
- Frank Knapp, Sr.
- Nucor Steel-South Carolina
- Solbridge Energy, LLC
- South Carolina Coastal Conservation League
- South Carolina Solar Business Alliance, LLC
- Southern Alliance for Clean Energy
- Sustainable Energy Solutions, LLC
- The Alliance for Solar Choice
- South Carolina Electric & Gas Company
- Duke Energy Carolinas, LLC
- Duke Energy Progress, Inc.
- SC Office of Regulatory Staff
- Sierra Club*
- South Carolina Energy Users Committee*
- Wal-Mart Stores East, LP and Sam's East, Inc.*

*Did not sign Settlement Agreement but also did not object.