



# **C&I Solar Partnership Program - Kickoff**

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## Agenda



### **C&I Solar Partnership Program**

- Desired outcomes
- Research focus and site selection process
- Implementation schedule and budget
- **Charter**

# **The C&I Solar Partnership Program is designed to quickly implement FPL-owned solar PV throughout the territory**

## **C&I Solar Partnership Program Objectives**

- **Learn more about the technical benefits and challenges of large-scale DG deployment (R&D Objectives)**
  - R&D objectives have been developed, Power Delivery focused on developing and implementing the test plan
- **FPL expects to achieve a better understanding of solar resource by region, participation, and preferred technologies**
- **Proposed roll-out provides flexibility in timing and scope of projects**
  - Recovery of projects will be sought in future rate case hearings
  - FPL controls the timing and scope
  - An easy proposition for partners with no cost to them, a lease payment to effectively reduce facility expense, and great customer PR value
- **Aligns us with customer partners in achievement of our common longer-term solar objectives**
- **Commitment to R&D emphasizes FPL's commitment to solar in Florida**

**The goal is to execute on first projects during Q2 2014 and to roll-out a total 5 MWs over a two year period**

# **C&I Solar Partnership Program will deploy up to 5MW of distributed solar PV over 2 years throughout territory**

## **C&I Solar Partner Selection Process**

- **Program research objectives and technical criteria have been established to maximize learnings from program results**
  - Will limit the pool of feasible locations for this program
  - Identify a university partner (i.e. FSU) to produce research white paper and provide independent validation of study results
- **Initial geography and corresponding potential site list will be developed based on technical study circuit locations**
- **The potential sites list will further be prioritized prior to engaging in site negotiation**
  - Consistency with Pilot objectives
  - Site capability to host (e.g. adequate real-estate, rooftop condition)
  - Solar resource available
  - Physical configuration (ground vs. rooftop vs. carport)
  - Total install cost and permitting requirements

## **Customer evaluation will be a multi-step process to develop the priority list of best host sites for the Study**

### **C&I Solar Partner Selection Process (Cont'd)**

- **Examples of customers who are likely to show up on the list based on rate class and location**
  - Publix, Academic Inst. (FAU / FSU / UM), Dept. of Defense / Nat'l Guard sites, Dolphins Stadium / Daytona Speedway, Hertz, etc...
- **FPL will pay each eligible C&I customer a market-based lease payment for hosting a supply-side solar asset on their premises (rooftop or ground mounted)**
  - Standardized lease agreement
  - CRE lead for contract negotiations
- **Project Development will lead team from CS, EA, and CRE to engage in partner discussions**
  - Once prioritized partner site list is vetted and approved (Feb)

**Will redefine technical requirements if too restrictive once customer analysis complete**

# The C&I Solar Partnership Program will seek to advance understanding of many technical objectives

## Technical Objectives and Criteria

Description	Study Objective	System Count	Size (kW)	Total (kW)
Grid Benefits	<ul style="list-style-type: none"> <li>Evaluate possibility of delaying T&amp;D upgrades and impact on line loss</li> </ul>	3	1,000	3,000
Power Quality	<ul style="list-style-type: none"> <li>Investigate the impact on a circuit with many independent systems</li> <li>Impact of many different systems and multiple inverter systems</li> </ul>	13	100 to 200	1,500
Smart Grid Integration	<ul style="list-style-type: none"> <li>Evaluate the ability to integrate “Smart Inverters” and utility inverter control</li> </ul>	5	100	500
	<b>Total</b>	<b>21</b>		<b>5,000</b>

**R&D program design to help Power Delivery understand long term operational cost/benefit of increased DG penetration**



**Program design, partner outreach, purchasing, and site planning will need to occur rapidly to support Q2 2014 roll-out**

## **C&I Solar Partnership Implementation Timing**

- **Begin initial customer discussions in Q1 2014**
- **Preliminary design scoping in Q1 to support Q2 pre-purchase of key components (panels, inverters) for 2014 forecast build**
- **Site projects to be bid out to local installers to spread the project benefits**
- **Target 6-10 projects for installation in 2014 with the remainder to be installed in 2015**
- **Host ribbon-cutting events to build interest and awareness**

**Program requires internal support from various groups including E&C, CS, ISC, M&C, Legal, JES, T&D, and CRE**

**FPL will include investment for this type of program as part of base rate request during the next rate case**

**C&I Solar Partnership Spend Curve**

- Jan / Feb spending need of \$100k to support outreach and engineering / design activities
- 2014 budget request of \$8.3MM for first-year project spend
- Incremental \$7.0MM in 2015 for total program cost of \$15.3MM

Category	2014	2015	Total	Expense	Capital
Internal FPL Labor	\$600	\$500	\$1,100	-	X
3 <sup>rd</sup> Party Costs	\$170	\$150	\$320	X	-
M&C	\$50	\$50	\$100	X	-
Direct Project Costs	\$7,500	\$6,300	\$13,800	-	X
<b>Total</b>	<b>\$8,320</b>	<b>\$7,000</b>	<b>\$15,320</b>	<b>\$420</b>	<b>\$14,900</b>

(\$000)

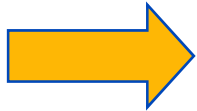
**2014 – 2015 spend curve and budget request to be refined for the February review**





## Agenda

- **C&I Solar Partnership Program**
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### **Charter**

# **Project “Charter” defines our commitment to execute a program to advance our understanding of DG on FPL’s system**

## **Project Charter**

- **FPL development led cross-functional team focused on delivering up to 5MW of distributed generation solar projects by the end of 2015 allowing FPL to:**
  - Advance understanding of operating our system safely and reliably in the face of expanding DG penetration
  - Enable our system planners and operators to evaluate necessary rules, guidelines, and forecasting capabilities
  - Leverage investment in smart grid technologies to integrate new DG technologies and capabilities
  - Establish a standardized set of pre-engineered DG solutions, and
  - Continue to demonstrate our commitment to new utility owned solar in FL

**Team will meet on a weekly basis at least through the first half of the year**

## **Execution Activity**

- **Will refocus the standing Wednesday 1pm meeting for this project only**
- **SharePoint site will remain the tracking location for Action Items as well as posting team documents**
  - New site being set up, will use old DG Solar site in the interim
  - <http://cafe.nexteraenergy.com/sharepoint/projectdev/Renewables/DGSolar/SitePages/Home.aspx>
- **Time charging guidance forthcoming, please charge to internal orders until proper accounts established**
- **Weekly in person core team meeting**
  - Sean Miller, Cory Ramsel, David Bates (DEV), Joel Linton (T&D), Benny Naranjo (T&D), Tracy Davis (CRE), Carlos Alves (PGD), Joe Marchese (E&C), Matt Belger (E&C), John Haney (CS)
  - Others will be included as necessary to focus on key issues as they occur

# Key milestones as we work towards the first projects coming online in early 2Q 2014

## Milestones

- **Jan 21 (Opcomm):** Draft customer ranking list, initial corporate executive visit plan (i.e. Publix), FSU partnership agreement, base lease agreements, technical study scope complete and approved
- **Feb 27 (Exec. Vetting):** Updated budget forecast, procurement plan for key materials (i.e. panels, inverters, etc), standardized design plans and program standards (incl. roof qualifying standards)
- **April/May 2014:** First project under construction, first ribbon cutting event
  - Monthly thereafter: new projects online through end of program
- **Dec 2014:** 1/2 way milestone: ~2.5MW installed
- **Dec 2015:** 100% complete: 5 MW

# Detailed description of R&D objectives and circuit criteria

## Technical Objectives and Criteria

### Technical Objectives

- Determine DG effects on circuit loading
  - Analyze peak demand reduction
  - Benefits to constrained or high load growth circuits
  - Determine impact on line loss and power quality indicators
- Understand operational impacts of “high saturation” on a single circuit
  - Develop DG forecasting models
  - Study harmonics introduced
- Smart Grid integration
  - Test value of “Smart Inverters”
  - Understand impact on reliability using AMI (flicker, voltage, sympathetics, etc.)

### Circuit Criteria Consideration

- Heavily loaded distribution circuits (peak demand above 90%)
- Lightly loaded distribution circuits (demand load below 30%)
- Circuits with multiple generating technologies (i.e. biomass & PV)
- Long laterals with high customer count
- Remote circuits with low voltage/poor coordination

**Technical Objectives and circuit criteria developed to best support program cost recovery**

## Program 1MW Project Assumptions

- **1MW<sub>DC</sub>**
- **1<sup>st</sup> year annual production = 1,510kWh**
- **Annual degradation = 0.5%**
- **Capex = \$2,380/kW<sub>DC</sub> or \$2.38MM/MW<sub>DC</sub>**
- **5 year tax life (MACRS), 30% ITC (normalized), 30 year book life**
- **Insurance = under existing FPL program**
- **O&M = \$15/kW-year**
  - Includes inverter replacements and all site O&M
  - All maintenance done annually with limited non-scheduled activity
- **Land costs (Dominion) = \$2/kW-month**
- **Marketing Costs (Tucson) = \$2/kW-year**
- **All IM billing and M&C above included amounts handled outside of projects**

