Self-Generation Incentive Program (SGIP)

Quarterly Workshop

Friday, November 9, 2018
SoCalGas’ Energy Resource Center, Downey, CA

Hosted by SoCalGas, Center for Sustainable Energy (CSE) Pacific Gas & Electric Company (PG&E), and Southern California Edison (SCE)
Introductions

SoCalGas: Jason Legner, Adrian Martinez, Laura Crump

CSE: Rebecca Feuerlicht, Andi Woodall

SCE: Jim Stevenson, Vicky Velazquez

PG&E: Brian Bishop, Anthony Farmer

CPUC: Mary Claire Evans

AESC: Dara Salour

Energy Solutions: Jason Huffine, Andrea Vas

Itron: William Marin, Brian McAuley
AM Agenda (9:00 AM – 12:00 PM)

• 9:00 – 9:05 Welcome and Introduction
• 9:05 – 9:15 CPUC Update
• 9:15 – 9:30 SGIP Update
• Program Process Improvement
  • 9:30 – 9:45 Demo of Check My App & Questions (Energy Solutions)
  • 9:45 – 10:25 Program Improvements & Discussion
  • 10:25 – 11:00 Virtual Inspections & Discussion (AESC)
• 11:00 – 11:50 Industry Lessons Learned – Success Stories & Best Practices
  • Sanjna Malpani (Advanced Microgrid Solutions)
  • David Mintzer (Maxwell Developments)
• 11:50 – 12:00 Morning Wrap-up
PM Agenda (12:00 PM – 3:00 PM)

- **12:00 – 1:00** Lunch
- **1:00 – 2:30** Itron’s Review of 2017 Impact Evaluation and Q&A
- **2:30 – 3:00** Afternoon Wrap-up
Housekeeping

- All callers and web attendees will be muted throughout the workshop. All questions must be submitted via the Chat feature in Skype.
- The information and recommendations discussed today do not replace or amend existing program rules. All applications continue to be subject to the program rules as defined in the SGIP Handbook until future notice.
CPUC Update
SGIP Program Update
Program Adoption Data: Application Volume as of 08/22/2018

Application Volume: 7918

- Generation: 9
- Large Storage: 705
- Small Storage: 2877, 4215, 7092

NOTE:
- 2017 program opened in May; was open 8 mos.
- 2018 program was open 8 months at this point.
Program Adoption Data: Application Volume as of 11/1/2018

Application Volume: 8873

<table>
<thead>
<tr>
<th>Generation</th>
<th>Large Storage</th>
<th>Small Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>681</td>
<td>2863</td>
</tr>
<tr>
<td>1</td>
<td>133</td>
<td>5186</td>
</tr>
<tr>
<td>10</td>
<td>814</td>
<td>8049</td>
</tr>
</tbody>
</table>

NOTE:
2017 program opened in May; was open 8 mos.
2018 program has been open 10 months so far.
Program Adoption Data: Application Trends

Applications: +955

- Generation
- Large Storage
- Small Residential

Q2 2018  Q3 2018  Q4 2018

+957 apps
-2 apps
0; no change
Program Adoption Data: Incentives as of 8/22/2018

Incentives: $167,354,688

- Generation: $6.7M, $43K, $6.74M
- Large Storage: $105.1M, $21.8M, $126.9M
- Small Storage: $17.4M, $16.2M, $33.6M

NOTE:

2017 program opened in May; was open 8 mos.
2018 program was open 8 months at this point.
Program Adoption Data: Incentives as of 11/2/2018

Incentives: $168,946,172

Generation
- Incentives 2017: $7.07M
- Incentives 2018: $43K
- Total: $7.1M

Large Storage
- Incentives 2017: $100.8M
- Incentives 2018: $23.6M
- Total: $124.4M

Small Storage
- Incentives 2017: $17.2M
- Incentives 2018: $20.1M
- Total: $37.3M

NOTE:
- 2017 program opened in May; was open 8 mos.
- 2018 program has been open 10 months so far.
Program Adoption Data: Incentive Trends, 6 months

Incentives: +$1.6M

Q2 2018  Q3 2018  Q4 2018

Generation  Large Storage  Small Residential

+$3.7M  +400K  -$2.5M
Program Adoption Data: Capacity as of 8/22/2018

Capacity: 225.6MW

- Generation: 9.17 MW
- Large Storage: 141.7 MW (2017), 32.2 MW (2018), 173.9 MW (Total)
- Small Storage: 18.5 MW (2017), 24 MW (2018), 42.5 MW (Total)

**NOTE:**
- 2017 program opened in May; was open 8 mos.
- 2018 program was open 8 months at this point.
Program Adoption Data: Capacity as of 11/2/2018

Capacity (kW): 271.6MW

136.2  34.1  170.3

9.17  .072  9.2

18.3   73.8   92.1

NOTE:

2017 program opened in May; was open 8 mos.

2018 program has been open 10 months so far.
Program Adoption Data: Application Capacity Trend

Capacity: +46MW

-3.6MW

+49.6MW

+0; no change

Q2 2018  Q3 2018  Q4 2018

Generation  Large Storage  Small Residential
PG&E Large Commercial Storage Budget Since May, 2017

Step 2 Opens

Step 1 Opens

Higher balance than June 2017
SCE Large Commercial Storage Budget Since May, 2017

SCE Large-Scale Storage Available Funds

Highest balance ever

Step 1

Step 2

Step 3
SoCalGas Large Commercial Storage Budget Since May, 2017

Step 1

Step 2

Step 3 is flat

Step 3

SoCalGas Large-Scale Storage Available Funds

Date

Available Funds

$12,000,000.00

$10,000,000.00

$8,000,000.00

$6,000,000.00

$4,000,000.00

$2,000,000.00

$0.00
CSE Large Commercial Storage Budget Since May, 2017

Step 2
Step 1
Step 3
Step 3 is flat
Potential Explanations for Current Market Stagnation

<table>
<thead>
<tr>
<th>Market</th>
<th>Investors</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Solar is slow; it drives AES</td>
<td>• Storage is too expensive?</td>
<td>• Interconnection takes a while</td>
</tr>
<tr>
<td>• Stand-alone don’t pencil</td>
<td>• Investors awaiting new rates/tariffs</td>
<td>• Incentive drop @ +2MW hurts ROI.</td>
</tr>
<tr>
<td>• Retrofits don’t get ITC</td>
<td>• Lack of confidence in ROI</td>
<td>• Uncertainty of upcoming rule changes</td>
</tr>
<tr>
<td>• Market not as large as thought?</td>
<td>• Building outside of SGIP?</td>
<td>• Program is complex</td>
</tr>
</tbody>
</table>

Uncertain economics (ROI, timelines) related to operations in a nascent market may be the cause of low adoption. Complex SGIP rules also of concern.
SGIP ONLINE DATABASE UPDATE
AGENDA

NOVEMBER 9, 2018

PRESENTED BY
JASON HUFFINE
ENERGY SOLUTIONS

RECENT IMPROVEMENTS

DEMO: CHECK MY APP STATUS

UPCOMING IMPROVEMENTS

OPEN Q&A
RECENT IMPROVEMENTS
**RECENT DATABASE IMPROVEMENTS**

**IMPROVEMENT GOALS**

- Reduce Support Requests
- Improve Application Quality
- Expedite PA Review Time
- Upgrade Infrastructure
RECENT DATABASE IMPROVEMENTS

IMPROVEMENT OUTCOMES

- REVIEW STATUS FOR AD HOC DOCUMENTS
- NOTES FOR DOCUMENTS
- ENHANCED REVISION HISTORY FOR PAS
- NEW INSPECTIONS WORKFLOW/COMMUNICATION
- FEATURE: CHECK MY APP STATUS
CHECK MY APP STATUS
FEATURE: CHECK MY APP STATUS

- GREATER TRANSPARENCY FOR ALL PARTIES
- LESS BACK AND FORTH WITH APPLICANTS AND SUPPORT
- QUICK AND EASY
FEATURE: CHECK MY APP STATUS

Self-Generation Incentive Program
Online Application Database

Check My Application Status

New! Click the button above to check the status of an application.

Sign In
Forgot Username or Password?

All applications must designate a registered Developer in order to submit an application. Even if the Applicant Company and Developer are the same entity, the Developer must register explicitly through this form. Note to self-installers: Self-installers need to register as a Developer even if they are not a corporate entity.

Developer Registration
Approved SGIP Developer List

Public Announcements
Click here for information about step openings
FEATURE: CHECK MY APP STATUS

Check My Application Status

To check the status of an application, please enter a valid SGIP Application Code in the space provided below and click "Check My App Status". The full application code (e.g., PGE-SGIP-2017-1234) must be provided in order to return results. If you do not know the application code, please contact your Applicant Company.

Enter Application Code Here  Check My App Status

Public Announcements
Click here for information about step openings
FEATURE: CHECK MY APP STATUS

Check My Application Status

App Code: SD-SGIP-2017-1245
Status: Payment Completed
Status Date: 09/12/18
Definition: The incentive has been paid. This application is now complete.

Check My App Status

Applicant Companies must register in order to submit an application for SGIP incentives.

Public Announcements
Click here for information about step openings
FEATURE: CHECK MY APP STATUS
IN THE DEVELOPMENT QUEUE

- Redesigned Technical Reviewer User Experience
- Redesigned Resources Page
- Applicant Self-Registration
- Program Streamlining Efforts
- GHG Reductions Decision Pending
- More TBD
THANK YOU

JHUFFINE@ENERGY-SOLUTION.COM
Streamlining SGIP Application Requirements Update

Rebecca Feuerlicht
SGIP Sr. Project Manager
Center for Sustainable Energy
On August 24, 2018, Program Administrators (PAs) hosted the 3rd Quarterly SGIP Workshop in San Diego, which focused on the current SGIP application process requirements and best practices. PAs asked stakeholders for feedback and ideas regarding ways to streamline the application process and improve customer experience.

PAs reviewed the input from the workshop and subsequent meetings with industry participants and developed a list of supported recommendations.

Disclaimer: The following list is subject to change, and must be approved by the CPUC through standard regulatory procedure (PFM or AL) before going into effect.
Ideas for Reservation Request Stage (RRF):

- Remove the 5% application fee requirement for residential projects
- Remove requirement to upload a copy of the check for nonresidential projects
- Remove requirement to upload *component* specifications for packaged systems (i.e.: battery and inverter) once approved by Technical WG. Integrator specifications would continue to be required for each project.
- Remove requirement to upload LOA for systems ≤ 10 kW (CSE territory only)
Ideas for Reservation Request Stage (RRF) cont.:

• Considering general disclaimer language to allow minor changes on RRF without new signature requirement. Any changes would be confirmed to all parties via conditional/confirmed reservation.

• Remove requirement to upload copy of energy efficiency audit as separate document. Alternatively, RRF form could have section that attests customer has reviewed an energy efficiency audit for their property.

• Allow PMP to be system-specific rather than site specific for non-PBI storage systems claiming to be charged 75% from onsite renewables.

• Database modification to create energy storage system dropdown with pre-populated system capacity values (kWh) for pre-approved equipment.
Ideas for Incentive Claim Stage (ICF) cont.:

• Remove the separate Cost Breakdown Worksheet and Affidavit document requirement and incorporate information into the ICF form. Simplify the cost categories into more meaningful breakouts for energy storage projects.

• Remove requirement to upload final building permit if PTO is provided (SCE and SDG&E only)

• Require Final Monitoring Schematic/Single Line Diagram for all projects regardless of priority status in lottery.

• Create a virtual inspection option as part of the sampling protocol
Streamlining SGIP Application Requirements

Misc. Improvement Ideas

• Create a “1-Step” application option for projects that are already installed and received PTO

• Allow residential customers to “opt out” of receiving non-critical notifications (TBD) and suspension notices sent to the applicant

• Create new application checklist to clarify application requirements

• Clarify suspension notices

• PA-specific contact information
Next Steps

• Consult with Energy Solutions on necessary database development (level of effort, cost, timeline, etc.)

• PAs finalize list of recommended improvements

• File Advice Letter to CPUC Energy Division to amend Handbook (Q4 2018 or Q1 2019)

• File PTM to Commission to amend prior Decision language and Handbook (Q4 2018 or Q1 2019)
Virtual Inspections
Table of Contents
1. Virtual Inspections
2. Video Option
3. Geotagged Photo Option
4. Discharge Data Requirements
• If a project is selected for a virtual inspection, the virtual inspection will be conducted by either the host customer or the developer of the project.

• The inspector, instead of going to the site physically, will ask for video or geotagged photos from the host customer site.

• This video or photos with geotag can be provided by the host customer or the developer and they can be taken on any day after the host customer has been contacted by the inspector for the virtual inspection.

• The host customer will have a 20-day period to turn in the required material.
2 – Video Option

- A continuous video of the project site, starting from the street view of the house with a clear view of the house number. In addition, the video should include:
  - Overall layout of the battery system and other electrical equipment
  - Close-up view of each equipment one by one
  - Serial numbers of the batteries and the inverters should be captured clearly
  - Any display panels showing power, energy or battery/inverter charge status readings should be captured in the video
  - All the electrical panels like the subpanel, backup loads panel, protected loads panel, main service panel, etc. should be opened up after the close-up shots to get a clear view of the breaker switches inside
  - Utility Smart Meter with the meter number clearly visible
3 – Geotagged Photo Option

• Individual geotagged photos of the project site, battery and other electrical equipment. While taking photos the location settings of the camera should be in ON position such that each photo will have a location tag attached to it which will be verified by the inspector. The photos should include:
  • Street view of the house with house number clearly visible
  • Overall layout of the system; if the entire system is not in one place, then capture the overall layout of a subsystem followed by the close-up shots of each equipment in that subsystem and then repeat the same thing for all the subsystems
  • Serial numbers of the batteries and the inverters should be captured clearly
  • Display panels showing power, energy or battery/inverter charge status readings
  • Outer view of all the electrical panels like the subpanel, backup loads panel, protected loads panel, main service panel, etc. followed by the inside view of each panel
  • Utility Smart Meter with the meter number clearly visible

help link for android phones [https://smallbusiness.chron.com/geotagging-android-smartphones-38742.html](https://smallbusiness.chron.com/geotagging-android-smartphones-38742.html),
help link for iPhones [https://www.techwalla.com/articles/how-to-geotag-photos-on-your-iphone](https://www.techwalla.com/articles/how-to-geotag-photos-on-your-iphone)
Being selected for Virtual Inspection does not exempt the project from providing discharge data. Still Required:

1. Factory or Onsite Discharge Data verifying the energy capacity of the system
2. One week discharge data verify the operation of the system.
5 – Thank You!

Dara Salour, PE
dsalour@aesc-inc.com
(925) 200-0499
Industry Lessons Learned: Success Stories & Best Practices
Self-Generation Incentive Program at AMS
Advanced Microgrid Solutions

• Advanced Microgrid Solutions or AMS is an energy platform and services company that designs, develops & monetizes energy storage portfolios to maximize customer value and provide dynamic grid and utility services. The company is headquartered in San Francisco and has just under a 100 MWh of operating energy storage assets under it’s management.

• Sanjna Malpani manages and oversees all utility programs and grants at Advanced Microgrid Solutions. Prior to AMS, she was at Growing Energy Labs, Inc - another energy storage platform company in San Francisco where she worked in Product Strategy. Sanjna holds a Masters in Environmental Management and Policy from Yale University - she’s also a Fellow at the Clean Energy Leadership Institute and a OneEnergy Renewables Scholar.”
SGIP Participation at AMS

- SGIP Program participation since 2014
- Projects in all Four Service Territories/IOUs
- ~100 active SGIP applications
- All Behind-the-Meter Commercial Projects – all PBI
- ~250 KW to 2 MW Projects
SGIP Management within AMS
Focusing on Customer Education & Streamlining Processes

SGIP seems complex - but it's an extremely well designed incentive program

Two foundations of managing SGIP successfully:

1) **Build Confidence through Host Customer Education**
   - The host customer must have a *great experience* overall with the developer (AMS) - SGIP is a huge part of this
   - Explain the *trailblazing nature* of SGIP & program objectives of GHG reduction and market transformation
   - Send personalized *Project Documents* like Cheat Sheets, Case Studies & Program statistics + Customized Timelines (slide 5)
   - Setting expectations with the customers early in the process and doesn’t catch them off-guard with random requests

2) **Internal Process-streamlining & Continuous Improvement**
   - In-house, each team is well aware of the SGIP process and timeline
   - Additionally, SGIP involves so many teams- tools like *RACI matrix* as super helpful in defining responsibility and accountability for such a process (slide 6)
   - We build the SGIP process into our on-boarding for new hires as well
   - Since it’s such a date and timeline driven process, we use online databases like Salesforce to track progress for projects (so each and every person in the company has visibility)
SGIP Timeline
Unique to each Project & Shared with Host Customers

- **Begin Application (RRF)**
  - AMS sends 12 months of SGIP Applicant Electric Utility Bills
  - A SGIP Reservation Request Form (RRF) to SCE

- **Conditional Reservation letter (CDR) Issued**
  - SGIP Applicant must complete EE Audit (or provide evidence of EE Audit in past 5 years - AMS can complete audit in house).
  - SGIP Applicant must issue and award a Request for Proposals for project, if not completed already (required of public entities). AMS will submit this to SCE within 3 months after CDR is issued.

- **Proof of Project Milestone (PPM)**
  - AMS submits 1. Proof of Project Milestone (PPM) form signed by AMS & SGIP Applicant to SCE
  - 2. Executed Contract with RFP awardee, AND
  - 3. Copy of Completed EE Audit to SCE.

- **Incentive Claim Form (ICF)**
  - AMS sends ICF Form signed by AMS & SGIP Applicant to SCE, along with:
    - IF Operating, Permission to Operate system (PID), Single-Line Diagram (SLD) & Inspection letter - OR
    - IF NOT Operating, Schedule + Reason for 6 month Extension

- **Site Inspection & Upfront Payment**
  - AMS sends Discharge Data to SCE, Site walk Completed with AMS & SGIP Program Administrators
  - Check for 50% Upfront Payment sent to AMS. PBI Cycling Requirements begin in Year 1

---

- RRF signed by SGIP Applicant & AMS
- Action from SGIP PAs
- PPM signed by SGIP Applicant & AMS
- ICF signed by SGIP Applicant & AMS
- No Signatures

---

- **DATE**
  - SGIP Process Starts

- **DATE**
  - Construction Begins

- **DATE**
  - Up to 3 Months to Provide RFP (Public Entity)

- **DATE**
  - Up to 8 MONTHS for PPM (Public Entity)

- **DATE**
  - Up to 18 MONTHS to Send ICF

- **DATE**
  - Up to 24 MONTHS to build Project

---

- SGIP allotted timeframes

---

- **DATE**
  - Project is built & Operating

---

- **DATE**
  - Absolute OUTER limit

---
SGIP Management within AMS
Do what you can In-House; Outsource the Rest

SGIP PBI Projects have several requirements – you don’t need to do it all yourself!

- **EE Audits**: needed at the PPM stage - this can be outsourced for a cheap price (ASHRAE Level I Audits work as of 2017) and there are even Utility surveys business owners can complete themselves to fulfil this requirement.

- **Performance Data Provider**: several developers outsource this requirement since you have to report data monthly for 5 years. While this can add up quickly, it’s better to start out outsourcing and eventually bring it in-house (like AMS did).
**SGIP - Program Management**

**How we Define & Allocate Responsibility internally**

- An important piece of Program Management - defining tasks, responsibilities & accountability within AMS

<table>
<thead>
<tr>
<th>Action Items/Deliverables</th>
<th>Policy</th>
<th>Business Development</th>
<th>Development/Field Engineering</th>
<th>Accounting</th>
<th>Analytics</th>
<th>Project Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Associate</td>
<td>Manager</td>
<td>CSM</td>
<td>BD Lead</td>
<td>Associate</td>
<td>Project Manager/Developer</td>
</tr>
<tr>
<td><strong>Step 1: RRF</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Information for item in Salesforce</td>
<td>I</td>
<td>C</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric Utility Billing - 12 months (+ Gas Billing)</td>
<td>I</td>
<td>C</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRF Form generated</td>
<td>R</td>
<td>A</td>
<td>I</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preliminary Monitoring Plan</td>
<td>R</td>
<td>A</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approval for an Application (Re: 15% of Project cost)</td>
<td>I</td>
<td>I</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generating the Check for Application fee</td>
<td>R</td>
<td>A</td>
<td>I</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uploading Copy of Physical Check</td>
<td>R</td>
<td>A</td>
<td>I</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Making Out Check to Utility</td>
<td>R</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conditional Reservation Letter Received - Salesforce Updated</td>
<td>R</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
</tr>
</tbody>
</table>

| **Step 2: PPM (90 Days After RRF)**                |         |         |     |         |          |                           |           |     |             |              |                  |
| Notification of Upcoming Projects (6 weeks prior)  | R       | C        | I   |         |           |                           |           |     |             |              |                  |
| PPM Form Generated                                | R       | A        | I   | I       |           |                           |           |     |             |              |                  |
| Executed Contract (EMAN)                          | R       | I        | I   | I       |           |                           |           |     |             |              |                  |
| Energy Efficiency Audit/Online 02 Survey           | R       | C        | R   | R       |           |                           |           |     |             |              |                  |
| Signing & Uploading PPM Received from customer     | R       | A        | I   | I       |           |                           |           |     |             |              |                  |
| PPM Confirmation Received - Salesforce Updated     | R       | C        | I   | I       |           |                           |           |     |             |              |                  |

| **Step 3: ICF (6 Months After PPM)**               |         |         |     |         |          |                           |           |     |             |              |                  |
| Notification of Upcoming Projects (9 weeks prior)  | R       | C        | I   |         |           |                           |           |     |             |              |                  |
| ICF Form Generated                                 | R       | A        | I   | I       |           |                           |           |     |             |              |                  |
| Site Walk - Scheduling & Compiling                | R       | I        | I   | E       |           |                           |           |     |             |              |                  |
| Building Inspection Report                         | I       |         | K   | C       |           |                           |           |     |             |              |                  |
| Final Monitoring Schematic (As-Built)              | I       |         | K   | C       |           |                           |           |     |             |              |                  |
| Permission to InterConnect (PCS)                   | I       |         | K   | C       |           |                           |           |     |             |              |                  |
| Project Cost Breakdown Worksheet                   | R       | I        | E   | C       |           |                           |           |     |             |              |                  |
Thank you & Questions/Feedback?
David Mintzer
VP Business Development
Dmintzer@maxwelldevelopments.com
510-594-8240
Goal
• Share experience building a positive customer experience including the benefits of SGIP

Topics
• Proposals
• How Utilities can help
• SGIP benefits and best practices
Proposals

- Expressions (project and financial) of the product or service to capture electricity savings
- Many decision makers and the proposal needs to support an un-aided review
- Not all the same
- Good ones include (minimum)
  - **Goal** - self-generation and consumption, savings, resiliency, GHG reduction, etc.
  - **Project Summary** – facility plans (alignment to current and future state), load (dynamic, predictable, demand charges), size of PV & ES, etc.
  - **Billing** - current and new
  - **Demand Profiles** – 15-min, 12 months, Utility API
  - **Electricity rate** - current and proposed
  - **Proposed Design** – PV, ES, other, size, location
  - **Financials (and pro forma)** – current spend, expected spend, with SGIP and without, tax implications, cash vs. lease vs. loan options
  - **Operational breakdown** – HOMER, ETB, GELI, CES, etc.
  - **Equipment and Warranties**
  - **SOW**
Utility Participation

- **Client meeting.** Assuming proposal is accepted, and the facilities managers want to proceed, there will be a meeting with the client’s executives – COO, CFO, sometimes CEO. Generally inspecting/validating the recommendation, will ask at least these questions that need to be answered in real-time (or virtual real-time).

- **Having a Utility representative present at the meeting is invaluable, trusted:**
  - Is this what we can expect in terms of savings if we proceed
  - What if my building load changes (increases/decreases)
  - How much space is this going to occupy
  - Do we need an upgraded integration service
  - How much electricity could we export (excess) and what is it worth
  - What electricity rate am I paying now, what rate am I going to pay and how will this effect savings
  - If we do nothing can we negotiate a better rate with the Utility, what is that worth
  - What incentives are available, how much
  - Has the utility (account executive) seen this project and what do they think
Utility Participation

- **Account Executives** – goals is to provide a great experience but also *per capita* load reduction
- **Rate discussion** – yes, new rate is accurate
- **SGIP**
  - Description of the program
  - Confirmation that SGIP is available and at what Step number
  - Step number and confirmation of incentive value
  - Describe Rebate vs. Incentive portion
  - Confirm that it is a taxable event
  - Assignable to third parties
  - Describe the process to achieve – developer key, payment schedule, other
- **Other** – opportunity for the Utility representative to share other rebates or incentive schedules and other best practices for deeper savings
Morning Wrap-up
Self-Generation Incentive Program (SGIP)

Quarterly Workshop

The webinar is on hold from 12:00 PM – 1:00 PM for a lunch break. We will resume at 1:00 PM
Itron Update
Self-Generation Incentive Program

2017 Energy Storage Impact Evaluation Findings
OVERVIEW

» About Itron and SGIP evaluation activities

» 2017 SGIP Impact Evaluation Report
  - Description of evaluated population and overall approach
  - Summary of observed findings
  - Short term ideal dispatch simulation findings

» Questions
About SGIP Measurement and Evaluation

“If you can’t measure it, you can’t improve it.”
ABOUT MEASUREMENT AND EVALUATION

Policy

Measurement and Evaluation

Program Design

Implementation
ITRON HISTORY EVALUATING THE SGIP

2002 First Year Evaluation
2005 Cost-Effectiveness Evaluation
2016-2017 Program Impact Evaluation
2017 Energy Storage Impact Evaluation
2018 Energy Storage Impact Evaluation
2019

SGIP Evaluation Reports:
http://www.cpuc.ca.gov/General.aspx?id=7890
EVALUATION ACTIVITIES
How Itron Interacts with SGIP Participants

Data Collection

Interviews / Surveys

Metering
EVALUATION CONSIDERATIONS

» Itron will not…

- Disclose metered data provided by SGIP participants or available via PBI
- Reveal SGIP participant names in public reporting

» Evaluation findings will not directly affect PBI payments
2017 SGIP ENERGY STORAGE IMPACT EVALUATION

» Evaluation of energy storage impacts during calendar year 2017

» Scope includes all projects receiving an SGIP incentive on or before December 31, 2017

» **Observed impacts** quantified using sampling methods and metered data

» **Ideal dispatch simulations** provide context to interpret results
Evaluated Population and Approach
EVALUATED POPULATION
Timeline Discussion

2016 - 2017 - 2018

Evaluation Period
EVALUATED POPULATION
By Upfront Payment Year

<table>
<thead>
<tr>
<th>Upfront Payment Year</th>
<th>Cumulative Rebated Capacity (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1,600</td>
</tr>
<tr>
<td>2013</td>
<td>1,914</td>
</tr>
<tr>
<td>2014</td>
<td>5,196</td>
</tr>
<tr>
<td>2015</td>
<td>21,230</td>
</tr>
<tr>
<td>2016</td>
<td>47,741</td>
</tr>
<tr>
<td>2017</td>
<td>66,897</td>
</tr>
</tbody>
</table>
EVALUATED POPULATION
By Customer Class

Project Count
- NonResidential (N = 421) - 51%
- Residential (N = 407) - 49%

Rebated Capacity
- Residential (2 MW) - 3%
- NonResidential (65 MW) - 97%
EVALUATED POPULATION
By Incentive Type, Non-Residential Only

Project Count
- PBI (N = 143) - 34%
- Non-PBI (N = 278) - 66%

Rebated Capacity
- PBI (57 MW) - 89%
- Non-PBI (7 MW) - 11%
EVALUATION APPROACH

2017 SGIP Evaluation

- Observed Impacts
- Short Term Ideal Dispatch Simulations
- Long Term IRP Simulations
Summary of Observed Findings
STORAGE PERFORMANCE METRICS

Background
STORAGE PERFORMANCE METRICS
Capacity Factor and Round Trip Efficiency

![Graph showing SGiP Capacity Factor vs. Round Trip Efficiency]

- Red dots: Non-PBI
- Orange dots: PBI
- Black dots: Residential

SGiP Capacity Factor (60% of observations in denominator)
STORAGE PERFORMANCE METRICS
Parasitic Load Influence on Round Trip Efficiency

![Graph showing RTE vs RTE - Including Parasitics]
CUSTOMER IMPACTS
Non-Coincident Peak Demand Reduction (relative to rebated capacity)
CUSTOMER IMPACTS

Non-Coincident Peak Demand Reduction (relative to gross load)
CUSTOMER IMPACTS
Storage Discharge By Utility Time of Use Period (Non-Residential Only)
CUSTOMER IMPACTS
Non-Residential Bill Impacts
SYSTEM IMPACTS
CAISO Top 200 Hours – Non PBI

[Graph showing storage charge and discharge against CAISO Top 200 Hours (Ranked)]
SYSTEM IMPACTS
CAISO Top 200 Hours – PBI

![Graph showing storage charge (+) and discharge (-) kW/kW vs CAISO Load (MW) for top 200 hours.](image)

Legend:
- PBI
- CAISO Load
UTILITY MARGINAL COST IMPACTS
Non-Residential

$ per rebated capacity (kW)

-40 -30 -20 -10 0 10 20 30

Non-PBI PBI Non-PBI PBI Non-PBI PBI

PG&E SCE SDG&E

Project Type and IOU

Ancillary Services Energy RPS Capacity Distribution Total
GREENHOUSE GAS ANALYSIS
Overview
GREENHOUSE GAS ANALYSIS

Overview

(+) Charge

Increased Grid Load
GREENHOUSE GAS ANALYSIS

Overview

(-) Discharge
Decreased Grid Load
GREENHOUSE GAS IMPACTS

Summary

<table>
<thead>
<tr>
<th>Discharge</th>
<th>Charge</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-PBI</td>
<td>PBI</td>
<td>Residential</td>
</tr>
</tbody>
</table>

Metric Tons of CO₂/εbated kW
GREENHOUSE GAS IMPACTS
Influence of Parasitic Load

Note: not a population estimate
GREENHOUSE GAS IMPACTS
Importance of baselines

» What would the world look like today in the absence of the SGIP?

<table>
<thead>
<tr>
<th>Standalone Storage</th>
<th>Customer installs storage anyway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Customer does not install storage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Storage + PV</th>
<th>Customer installs storage anyway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Customer does not install storage</td>
</tr>
<tr>
<td></td>
<td>Customer installs PV only</td>
</tr>
</tbody>
</table>
GREENHOUSE GAS ANALYSIS
Customer installs PV

» Baseline condition
GREENHOUSE GAS ANALYSIS
Customer installs PV

» SGIP condition:
GREENHOUSE GAS ANALYSIS
Customer would not have installed PV
Simulation Results
Ideal Dispatch
OPTIMAL DISPATCH SIMULATIONS

Overview

» Short term optimization based on perfect foresight

» Three optimization parameters:
  - Bill savings
  - Utility costs
  - Carbon

» Using actual customer load shapes, rates, and storage system characteristics

» Not observed impacts, purely hypothetical
OPTIMAL DISPATCH SIMULATIONS

Customer bill savings

- System Cost Dispatch: $7
- Customer Dispatch: $11
- Carbon Dispatch: $13
OPTIMAL DISPATCH SIMULATIONS

Greenhouse gas emissions

![Bar chart showing emissions for System Cost Dispatch, Customer Dispatch, and Carbon Dispatch.]

- System Cost Dispatch: 4.4 thousands of metric tonnes
- Customer Dispatch: 1.2 thousands of metric tonnes
- Carbon Dispatch: 19.3 thousands of metric tonnes
OPTIMAL DISPATCH SIMULATIONS
Dynamic rate analysis

![Bar chart showing actual and dynamic rate comparisons for PG&E E19S Proposed TOU, SCE TOU-8 Option RTP, and SDG&E GIR.]

- Actual Rate
- Dynamic Rate

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Actual Rate</th>
<th>Dynamic Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG&amp;E E19S Proposed TOU</td>
<td>0.012</td>
<td>0.009</td>
</tr>
<tr>
<td>SCE TOU-8 Option RTP</td>
<td>0.002</td>
<td>0.014</td>
</tr>
<tr>
<td>SDG&amp;E GIR</td>
<td>0.010</td>
<td>-0.127</td>
</tr>
</tbody>
</table>
THANK YOU
Stakeholder Q&A
Afternoon Wrap-up
Thank you for attending the SGIP Quarterly Workshop! Slide materials are also posted at www.selfgenca.com