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# Self-Generation Incentive Program (SGIP)

## Quarterly Workshop (Q4 2019)

Tuesday, November 5<sup>th</sup>, 2019

Center for Sustainable Energy, San Diego Headquarters

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



# Safety & Housekeeping

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- Safety
  - CPR Trained?
  - Emergency Exits
  - 9-1-1 Caller
- Housekeeping
  - Bathrooms
  - Garbage, recycling
  - Refreshments



**CSE:** Andi Woodall, Joe Bick, Ebony Arendt, Natalie Buffo,  
Hewson Shepherd, Lupe Knox

**SoCalGas:** Jason Legner

**SCE:** Jim Stevenson, Vicky Velazquez, Adrianna Sepulveda-Frias

**PG&E:** Andrew Ace

**AESC:** Dara Salour, Stephanie Raya

**Energy Solutions:** Andrea Vas, Kenzie Marx

**CPUC:** Nora Hawkins



- Program Updates and Metrics – CSE
- Streamlining Items – SCE
- Regulatory Updates - CPUC
- Equity Resiliency Decision – PG&E
- GHG Signal Implementation - SoCalGas
- Database Updates – Energy Solutions
- Q&A

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# Program Updates and Metrics



# Self-Generation Incentive Program Statistics (Data as of 11/1/2019)

Launched in 2001 the SGIP is the longest running generation incentive program in the country. Since inception, SGIP has supported the deployment of behind-the-meter distributed energy technologies through the collection and management of rate payer funds:

Technology	Incentives Paid to Date	MW Deployed
Generation	\$1,219,751,964.91	662.08 MW
Storage	\$219,682,284.49	173.32 MW

\*Includes current payment in process projects (PBI)

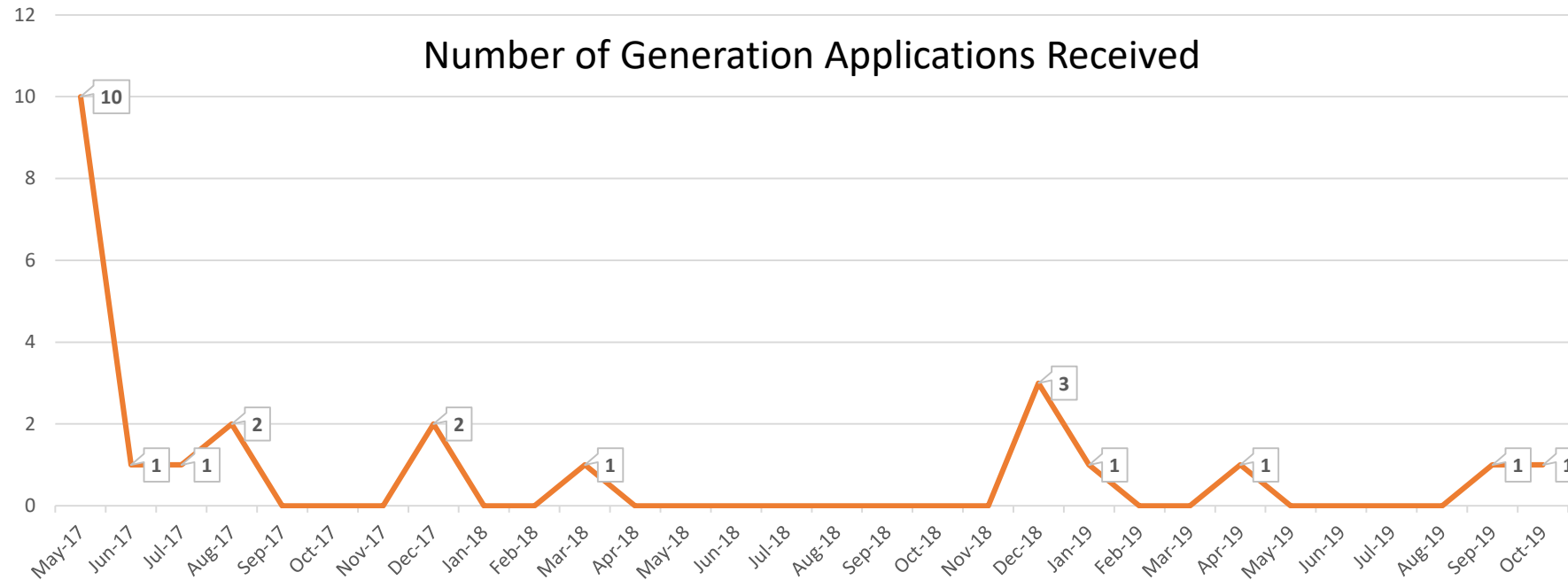
Promoting 835.40 MW of distributed energy technologies through incentive payments totaling over \$1.4B.



# SGIP Generation Participation 2017-2019 (Data as of 11/1/2019)

- As of 2017, all gas generation technologies were required to blend a minimum percentage of renewable fuel. The minimum percentage is determined by the year in which the application is submitted.

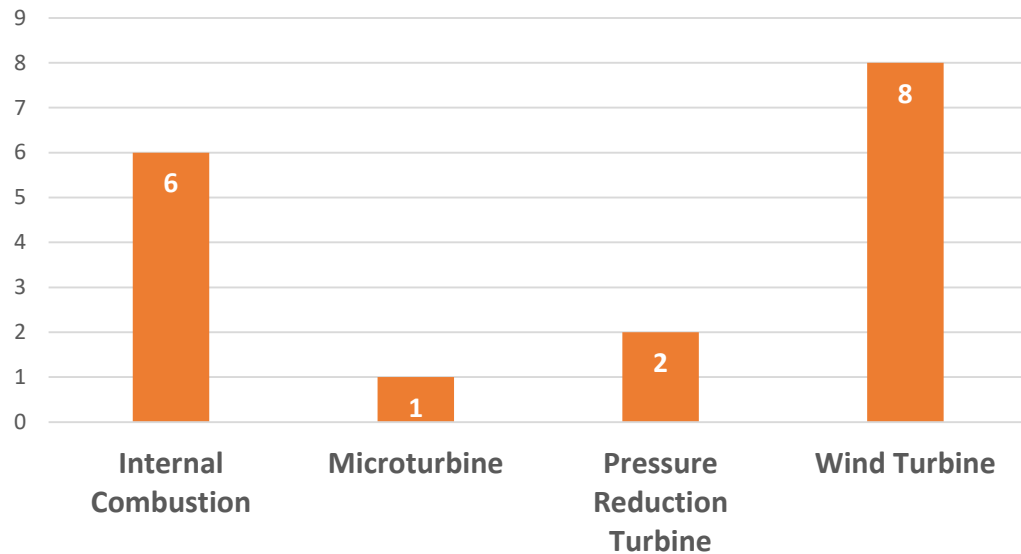
Application Year	% Renewable Fuel Required
2017	10%
2018	25%
2019	50%
2020	100%



# SGIP Generation Participation 2017-2019 (Data as of 11/1/2019)

Program Year	Capacity (MW)	Current Incentives	Number of Active Generation Applications
2017	9.04 MW	\$7,027,338.50	9
2018	8.95 MW	\$7,951,500.00	4
2019	6.27 MW	\$2,659,500.00	4
<b>Totals</b>	<b>24.26 MW</b>	<b>\$17,638,338.50</b>	<b>17</b>

## Equipment Types

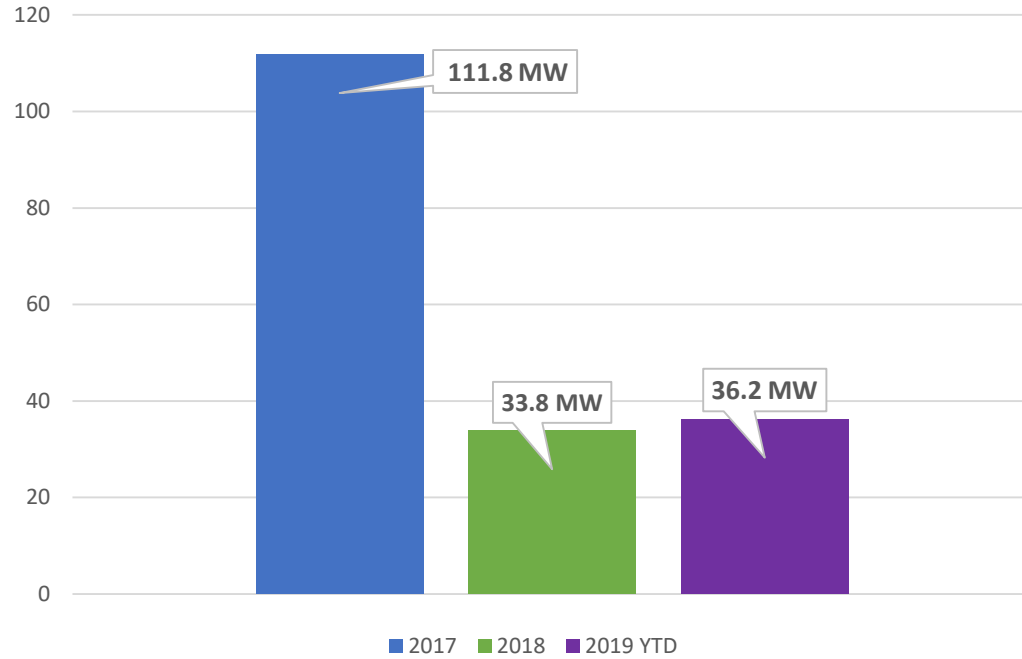


Equipment Type	Onsite Fuel Type	% Renewable Fuel
Internal Combustion	Digester Gas	100
Internal Combustion	Digester Gas	100
Internal Combustion	Digester Gas	100
Internal Combustion	Digester Gas	97
Internal Combustion	Digester Gas	75
Internal Combustion	Landfill Gas	100
Microturbine	Gas Derived from Biomass	100



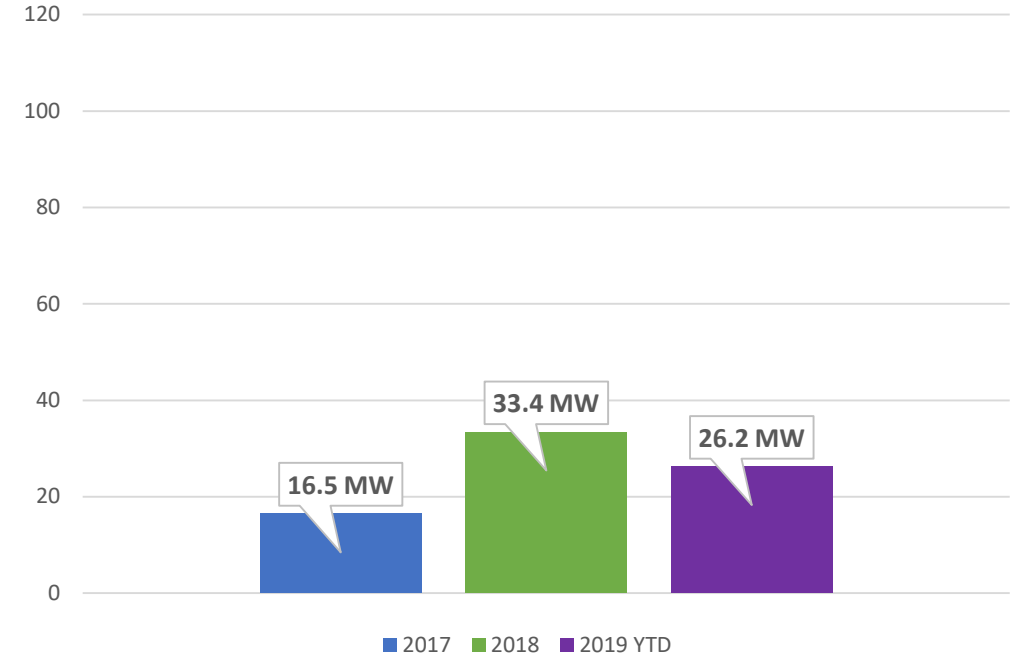
# SGIP: Energy Storage - Capacity by Program Year (Data as of 11/1/2019)

### Large-Scale Storage



Total: 181.8 MW

### Small Residential Storage

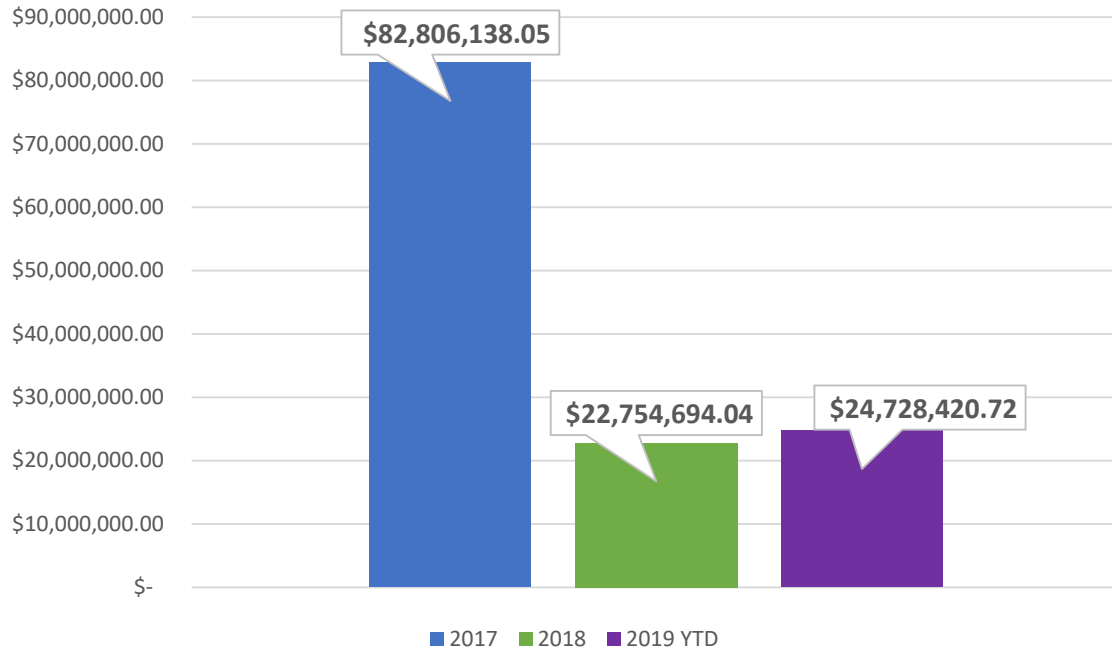


Total: 76.1 MW



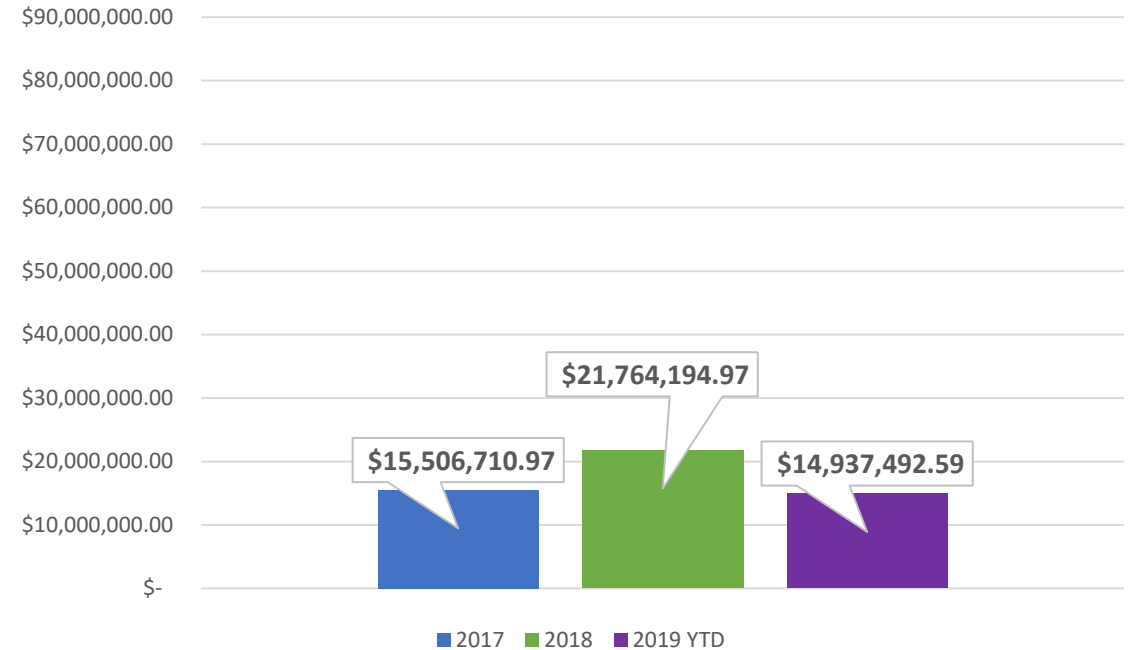
# SGIP: Energy Storage – Incentives (Reserved/Paid) by Program Year (Data as of 11/1/2019)

### Large-Scale Storage



Total: \$130,289,252.81

### Small Residential Storage

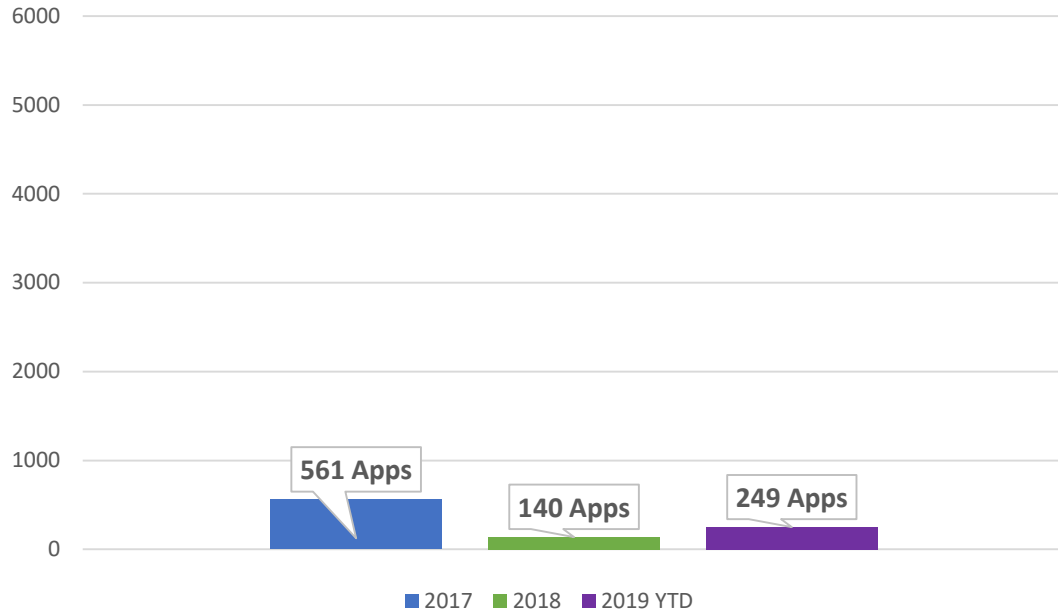


Total: \$52,208,398.53



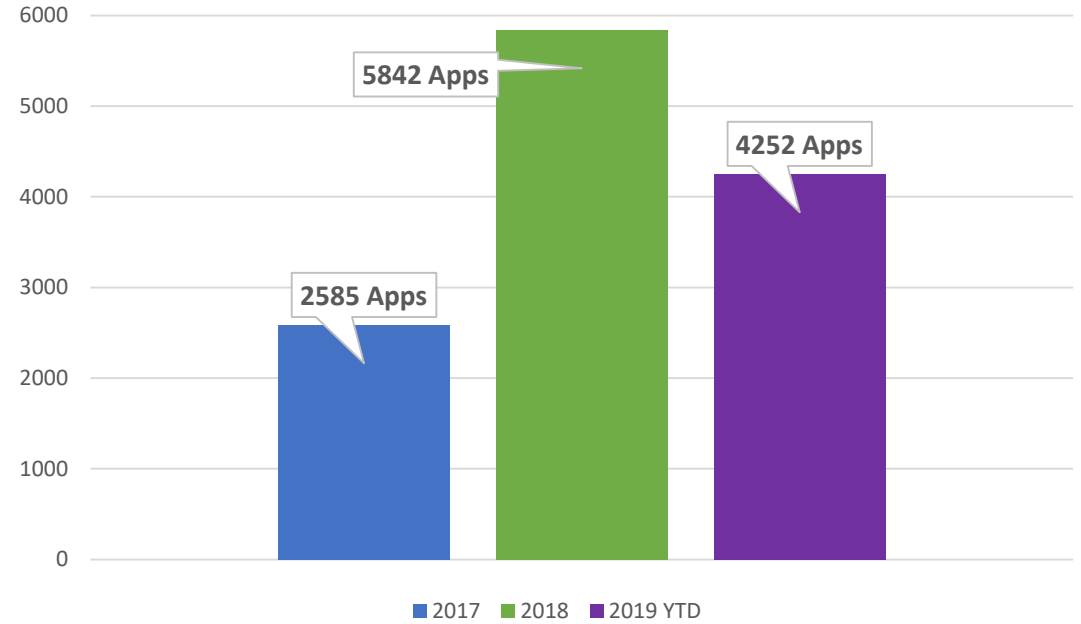
# SGIP: Energy Storage – Number of Applications by Program Year *(Data as of 11/1/2019)*

### Large-Scale Storage



Total: 950 Apps

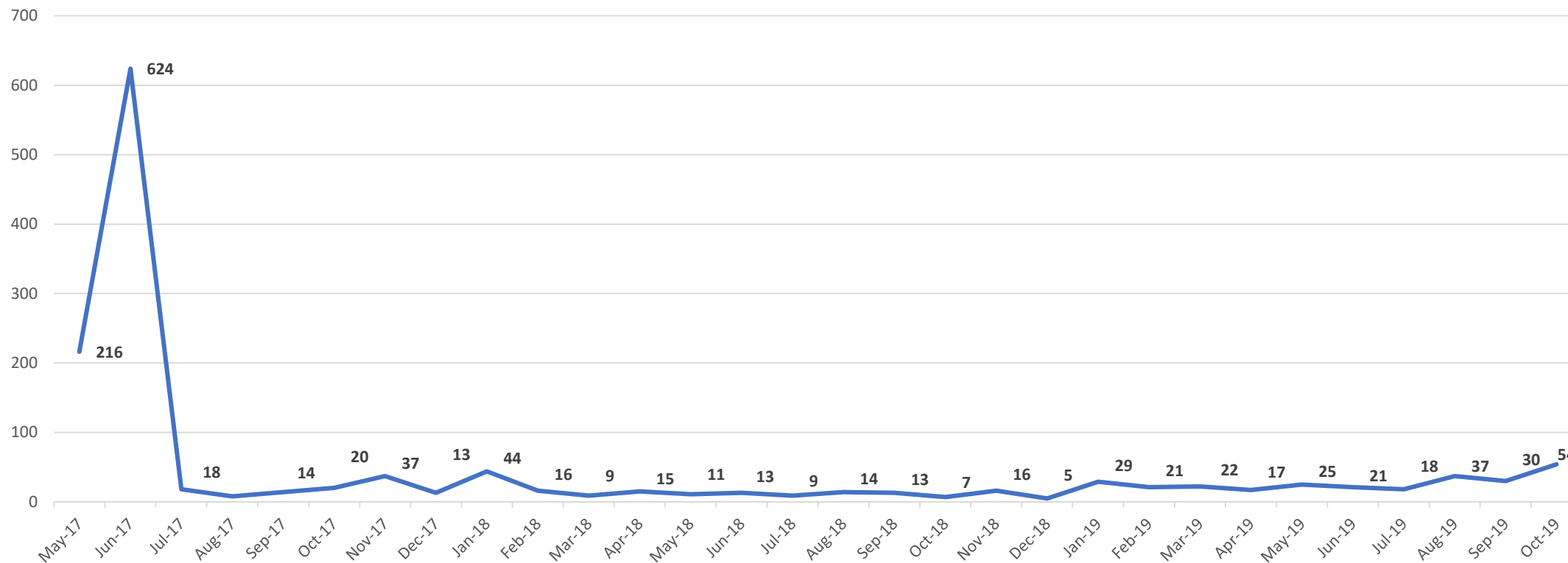
### Small Residential Storage



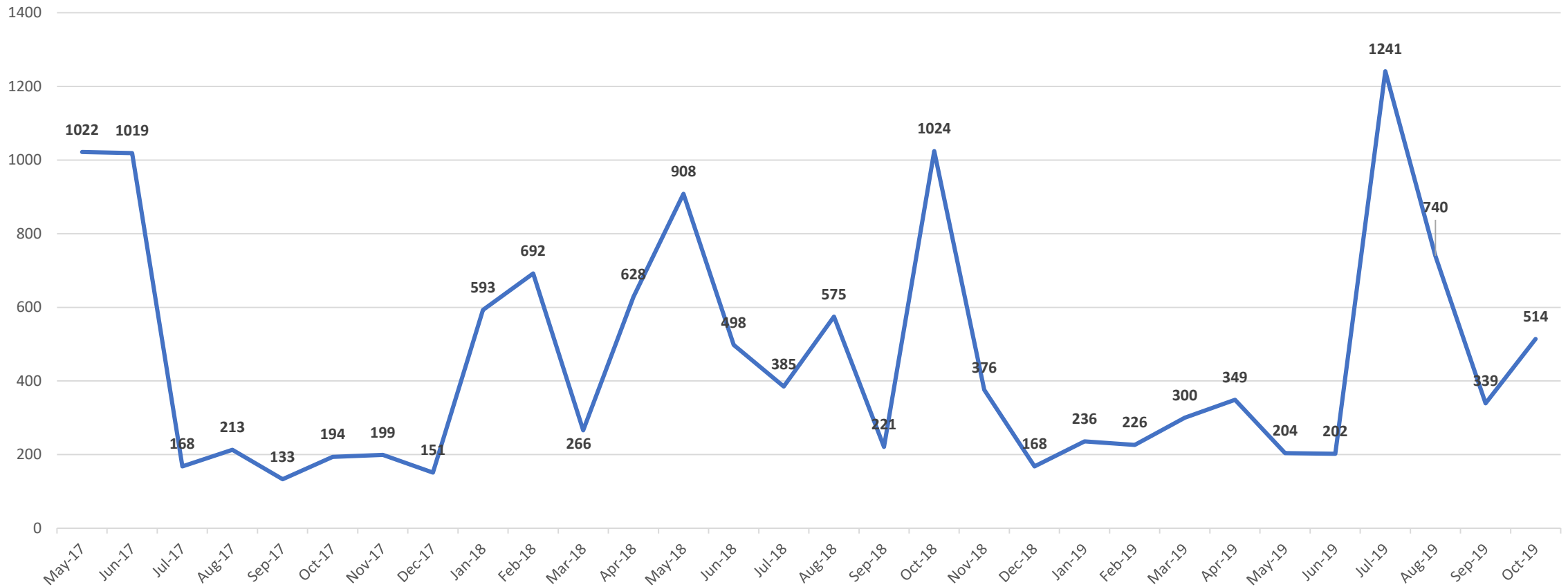
Total: 12,679 Apps



# Statewide Trends (Applications) – Large Scale Storage *(Data as of 11/1/2019)*



# Statewide Trends (Applications) – Small Residential Storage *(Data as of 11/1/2019)*



# SGIP: Energy Storage Equity Participation to Date *(Data as of 11/1/2019)*

## Non-Residential Storage Equity

Number of Apps	22
Capacity (MW)	4.3 MW
Incentives	\$3,520,756.00

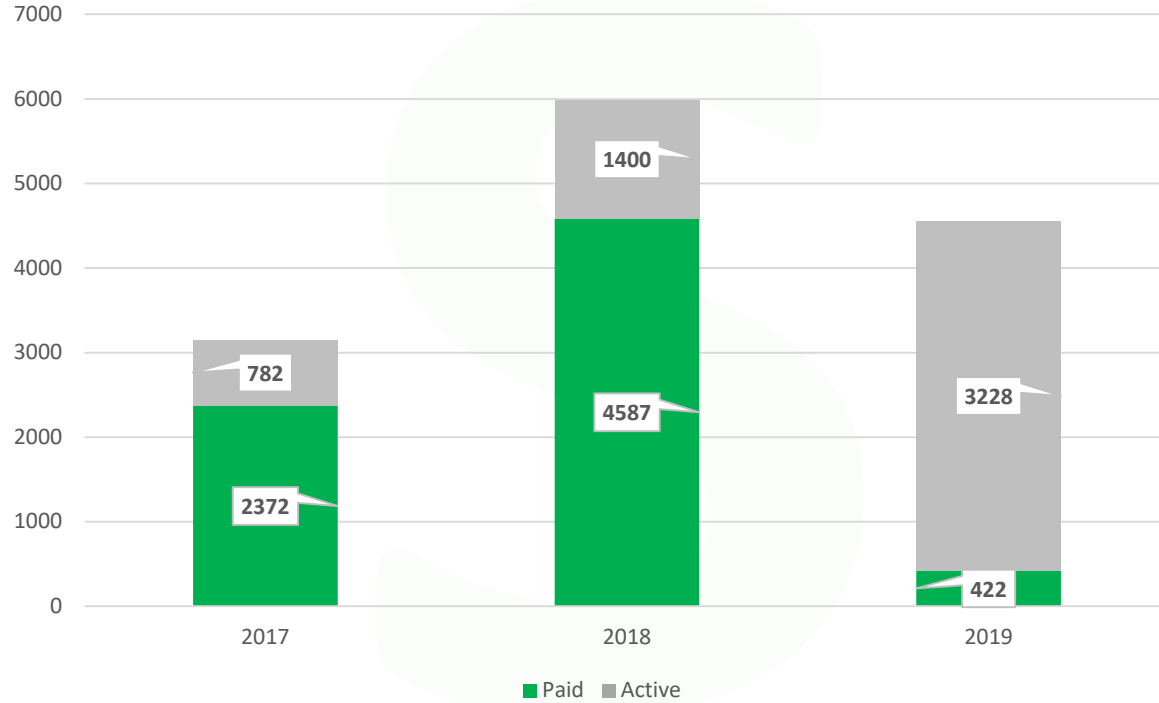
- 21 applications in SCE territory
- 1 application in CSE territory
- All submitted in 2019

## Residential Storage Equity

Number of Apps	2
Capacity (kW)	16.4 kW
Incentives	\$25,187.89

- Both applications in SCE territory
- 1 submitted in 2018, 1 in 2019

# SGIP: Energy Storage – Active vs Payment Approved Applications *(Data as of 11/1/2019)*



Program Year	Payment Approved %
2017	75.2%
2018	76.6%
2019	11.6%

- **“Active”** includes any project at the RRF, PPM, ICF, or Inspection phase. Does not include Waitlist applications.
- **“Payment Approved”** includes any project in ICF Pending Payment, Paid, or PBI Payment in Process statuses.

# Incentive Step Tracker by Program Territory (Data as of 11/1/2019)

## Large Scale Storage

	CSE	SCE	SCG	PG&E
Step Status	Open	Open	Open	Open
Active Step	3	3	3	2
Available Funds	\$14,750,898.78	\$36,079,418.69	\$6,470,390.72	\$24,690,775.62

## Small Residential Storage

	CSE	SCE	SCG	PG&E
Step Status	Waitlist	Waitlist	Closed*	Waitlist
Active Step	5	5	5	5
Number of Waitlist Applications	670	100	*Closed 11/1/19	364

## Residential Storage Equity

	CSE	SCE	SCG	PG&E
Step Status	Open	Open	Open	Will Open Soon
Active Step	3	3	3	3
Available Funds	\$405,924.66	\$1,191,282.54	\$276,147.64	\$1,227,909.39

## Non-Residential Storage Equity

	CSE	SCE	SCG	PG&E
Step Status	Open	Open	Open	Will Open Soon
Active Step	3	3	3	3
Available Funds	\$3,383,321.99	\$7,697,477.85	\$2,485,328.76	\$11,051,184.57

## Generation

	CSE	SCE	SCG	PG&E
Step Status	Open	Open	Open	Open
Active Step	1	1	1	1
Available Funds	\$4,626,664.51	\$2,771,101.71	\$1,120,936.37	\$16,033,266.15



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# Streamlining Items



## SGIP Streamlining Advice Letter (AL 3966-E)

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- SGIP PAs held the Q3 2018 quarterly workshop to discuss the SGIP application process and solicit feedback from participants and stakeholders.
- Based on this feedback, the SGIP Working Group (WG) identified a number of application requirements that could be streamlined or eliminated to improve the operational efficiency of the Program.
- The SGIP PAs submitted as Advice Letter to propose modifications to the SGIP Handbook to improve and streamline the SGIP application process, reduce SGIP administration costs, and provide clarifying amendments.
- Advice letter was filed on March 11, 2019.
  - April 3, 2019 – Initial Suspension (up to 120 days / AL Requires Staff Review)
  - August 7, 2019 – Further Suspension (up to 180 days beyond initial suspension period)



# SGIP Streamlining Advice Letter

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Advice Letter approved on August 28, 2019

## • Implementation

- SGIP Handbook is updated and posted to the SGIP website (selfgenca.com).
- SGIP PAs will work with their SGIP database provider, Energy Solutions, to implement modifications requiring updates to the online platform.
- SGIP PAs will implement modifications as they become ready for release.
- The PAs will post updates to the SGIP website (selfgenca.com) as new features and modifications are implemented.



## IMPLEMENTED ITEMS:

- **REMOVE REQUIREMENT FOR COPY OF CHECK SUBMITTED WITH APPLICATION**
  - Removes requirement to upload a copy of application fee check at the time of SGIP RRF submittal.
- **REMOVE REQUIREMENT FOR CSE 3<sup>RD</sup> PARTY AUTHORIZATION TO RECEIVE CUSTOMER INFORMATION FORM FOR SYSTEMS ≤ 10kW**
  - Removes the requirement to submit LOA form for systems equal to or less than 10 kW.
- **REQUIRE THE FINAL MONITORING SCHEMATIC FOR ALL PROJECTS**
  - The Final Monitoring Schematic submitted for all projects, regardless of system size or whether they are paired with an on-site renewable generator.
- **EXTENDING THE APPLICATION FEE REFUNDABLE PERIOD FOR 3-STEP PROJECTS**
  - App fees become non-refundable once a Confirmed Reservation is issued for 3-step applications.
- **CORRECT THE LANGUAGE FOR PDP AUDITS**
  - The current Handbook language to state that the PA may perform random audits of PDP data.

# SGIP Streamlining Advice Letter

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## PENDING IMPLEMENTATION:

- **SGIP EQUIPMENT LIST**

- Equipment that has been technically reviewed and accepted by the PAs and authorized for release by the manufacturer will be included on the public list.

- **MODIFY ENERGY STORAGE COMPONENT SPECIFICATION REQUIREMENT**

- Not required to upload manufacturer specifications of equipment already approved by PAs and included in the public list of equipment.

- **ALLOW FOR VIRTUAL INSPECTIONS – RESIDENTIAL PROJECTS**

- Allows for virtual inspections to capture information needed to confirm a project is installed according to program requirements (Submit video and photos of the site).

- **INCLUDE PROJECT COST AFFIDAVIT AND PROJECT COST BREAKDOWN IN THE INCENTIVE CLAIM FORM**

- Eliminates the separate Project Cost Affidavit and Project Cost Breakdown Worksheet documents and incorporates the information into the existing ICF framework.

- **RESIDENTIAL CUSTOMER OPT-OUT OF NON-CRITICAL EMAIL COMMUNICATIONS**

- At RRF, Host Customer “opt-out” option to avoid receiving non-critical project information emails.



## Petition For Modification – Background

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- Streamlining suggestions for SGIP from industry was collected at the 2018 3rdQuarter SGIP Workshop and reviewed and scoped by PAs.
- Items that affected a CPUC Decision had to be filed as a Petition For Modification (PFM)
- PFM filed June 19, 2019
  - Rejected by the Docket Office as items were from two different proceedings.
  - Items separated into two PFMs and re-submitted.
- PFMs filed September 17, 2019



# Petition For Modification

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- **REMOVE APPLICATION FEE FOR RESIDENTIAL PROJECTS**

- Residential project only
- Expedite application review and reduce administrative cost in association of processing these app fee checks.

- **REMOVE REQUIREMENT TO SUBMIT COPY OF ENERGY EFFICIENCY AUDIT (EEA)**

- Eliminates the requirement to submit a copy of the EEA.
- Host Customer attest to completing and reviewing an energy audit.



- **REMOVE REQUIREMENT TO SUBMIT BUILDING PERMIT FOR ENERGY STORAGE PROJECTS**

- IOU Interconnection process already receives copy of building permit. Eliminates the requirement for Energy Storage projects in IOU territories to submit the permit during ICF.
- Projects outside of IOUs still required to submit final building permit.



- **REMOVE REQUIREMENT TO SUBMIT BUILDING PERMIT FOR ENERGY STORAGE PROJECTS**
  - D.19-09-027 requires projects accessing Equity Budget Resiliency Funds to provide to the PAs documentation that: (1) an AHJ has approved plans showing that the system can operate in island mode; and (2) an AHJ has inspected the system after installation and has authorized operation.
  - The increased AHJ documentation required for Equity Resiliency projects should needs to be further evaluated prior to the consideration of this PFM.
- **SGIP PAs submitted a joint request to withdraw this PFM on October 31,2019**

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# Regulatory Updates



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# Equity Resiliency Decision



## SGIP Equity and Resiliency Decision D.19-09-027

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- On September 18, 2019, the Commission issued D.19-09-027
  - Modifies existing equity incentives
  - Establishes a new equity resiliency budget
  - Allocates some unused funds to the San Joaquin Valley
  - Workshop on heat pump water heater participation
- D.19-09-027 is available for download on the CPUC website:  
<http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M313/K975/313975481.PDF>



# Modifications to Equity Budget

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“The largest barrier inhibiting equity budget participation is the lack of upfront capital and financing available to low-income customers and, correspondingly, inadequate incentive levels”

New equity rates:

- \$1/Wh for customers eligible for the equity resiliency budget or located in the SJV pilot areas
- \$0.85/Wh for all other equity eligible customers (with discharge duration step-down)

Discharge Duration (hours)	Percent of Base Incentive
0-2	100
2-4	100
4-6	50
6-8	0
8+	0

# New Budget Allocations

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## Equity Resiliency Budget

Program Administrator	Budget (in millions)
PG&E	\$44
SCE	\$34
CSE	\$13
SoCalGas	\$9
<b>Total</b>	<b>\$100</b>

## Equity Heat Pump Water Heater Budget

Program Administrator	Budget (in millions)
PG&E	\$1.76
SCE	\$1.36
CSE	\$0.52
SoCalGas	\$0.36
<b>Total</b>	<b>\$4</b>

# New Eligibility

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## **New Equity Resiliency Eligibility**

Residential host customer with “critical resiliency needs” (such as Medical Baseline) or customers residing in Tier 3 or Tier 2 high fire threat districts that have SASH or DAC-SASH incentives reserved. Or, non-residential customers providing “critical resiliency need” services (such as police and fire stations, medical facilities, nursing homes...).

## **New San Joaquin Valley Eligibility**

Residential host customer from designated SJV pilot areas that are replacing one or more propane or wood-burning appliances with electric appliances. Or, non-residential host customer providing “critical resiliency needs” services within SJV pilot areas.



# Changes to Existing Equity Eligibility

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- Disadvantaged communities definition expanded to include all California Indian Country with exceptions of privately held in-holdings
- Non-residential equity customers expanded to include public agencies for at least 50 percent of census tracts served are DACs
- Customers approved for the Single Family Affordable Solar Homes program (SASH), the SASH for Disadvantaged Communities program (DAC-SASH), the Multifamily Affordable Solar Homes program (MASH), or the Solar on Multifamily Affordable Housing program (SOMAH) are deemed automatically eligible for SGIP equity budget incentives





## Other Notable Changes

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- Equity and resiliency projects are exempt from developer cap
- Eight new requirements for equity and resiliency projects with > two-hour discharges
- Vendors/developers can not sell systems that receive incentives at a higher price than systems that do not receive incentives
- Residential and non-residential equity resiliency and equity budget projects must meet all GHG emission reduction requirements approved in D.19-08-001
- Custom equity ME&O plan developed with disability rights advocates and other stakeholders
- SGIP PAs are to host a workshop on heat pump water heater barriers (Jan 14<sup>th</sup> 2020)
- Work with Commission staff to determine price cap on residential equity systems



# Implementation: Next Steps

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- PAs to file Tier 2 Program Implementation Advice Letter December 17, 2019
- Heat Pump Water Heater Workshop January 14, 2020 at CPUC
- Currently all new features will go into effect April 1, 2020



# SGIP GHG SIGNAL

November 2019



# About WattTime

## Who We Are

- High-tech nonprofit founded in 2014
- Initially built by over 250 volunteers from Google, Microsoft, Berkeley, MIT, U.S. DOE, storage companies, EV companies, and more
- Part of larger nonprofit Rocky Mountain Institute since 2017

# “The power to choose clean energy”

## What We Do

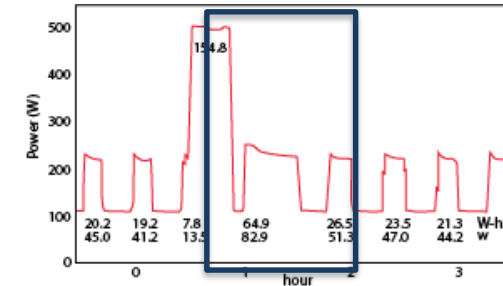
- Make it possible, painless, and profitable for companies to reduce emissions through smarter timing
- Research into marginal emissions algorithms, forecasting, and optimization
- Calculate marginal emissions at 5 minutes level and serve as emissions signal API
- Assist tech companies in understanding and working with the data

# Have learned a great deal about optimizing for emissions

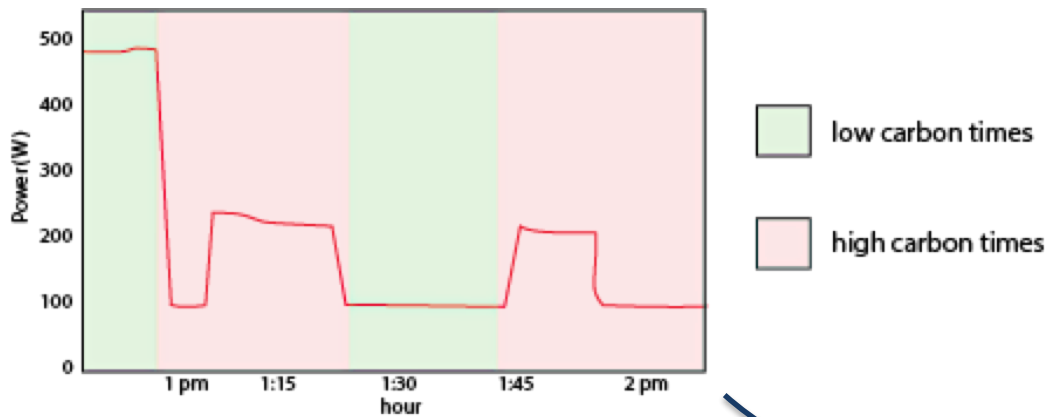
WattTime's Automated Emissions Reduction (AER) technology shifts flexible energy use to times of cleaner energy and avoids times of dirtier energy

70% of devices have flexible energy use

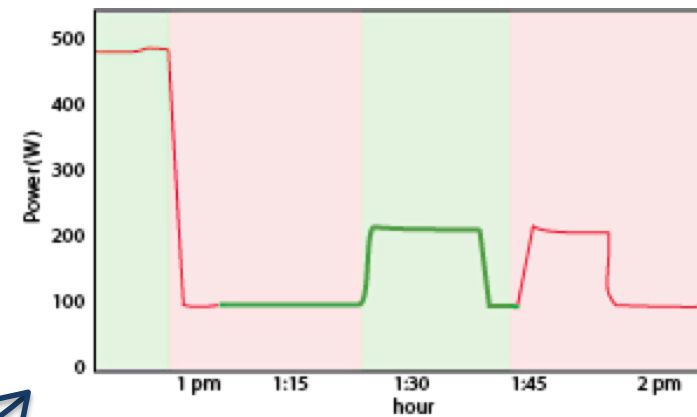
Example: AC compressor



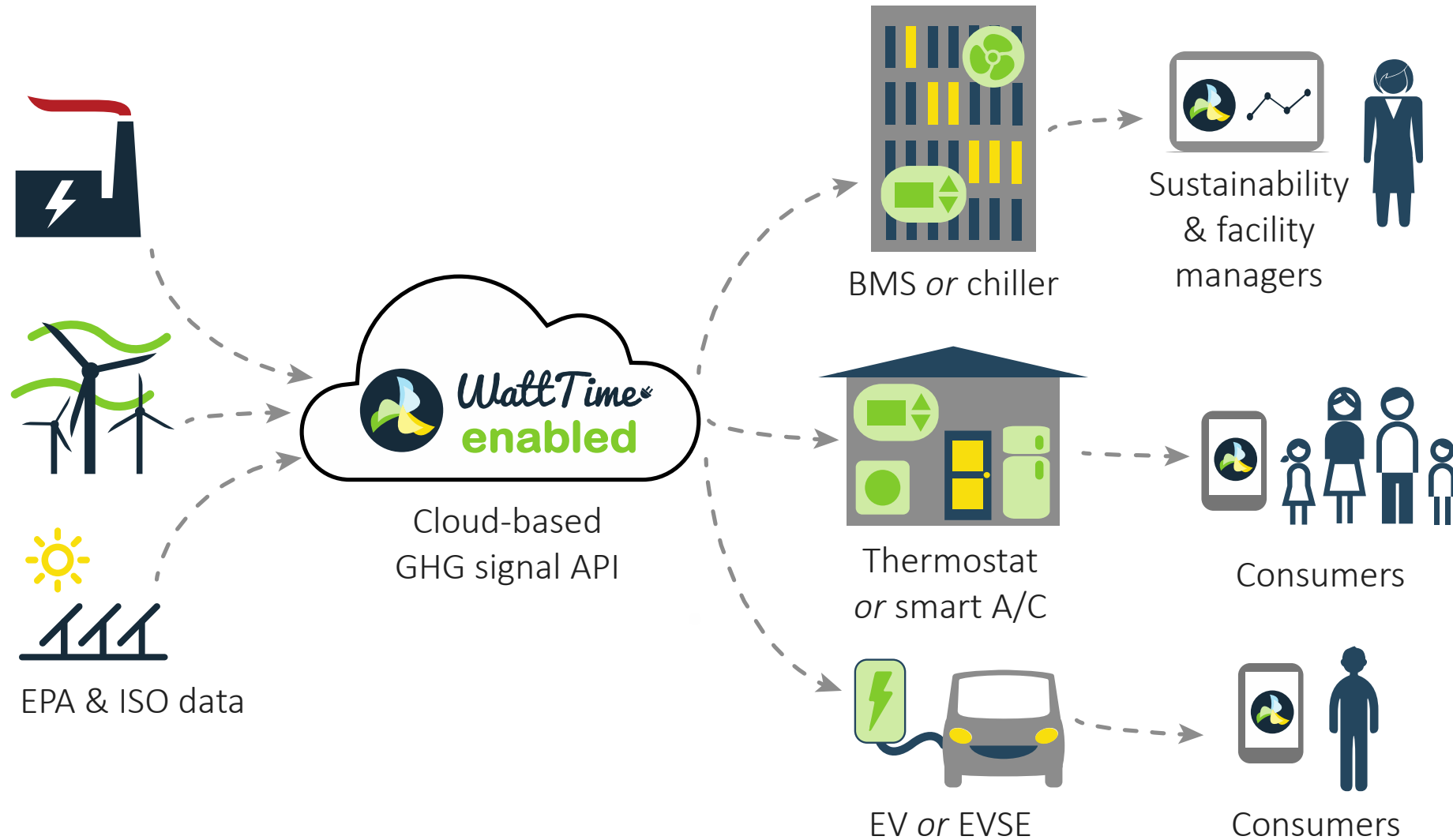
Normal operation



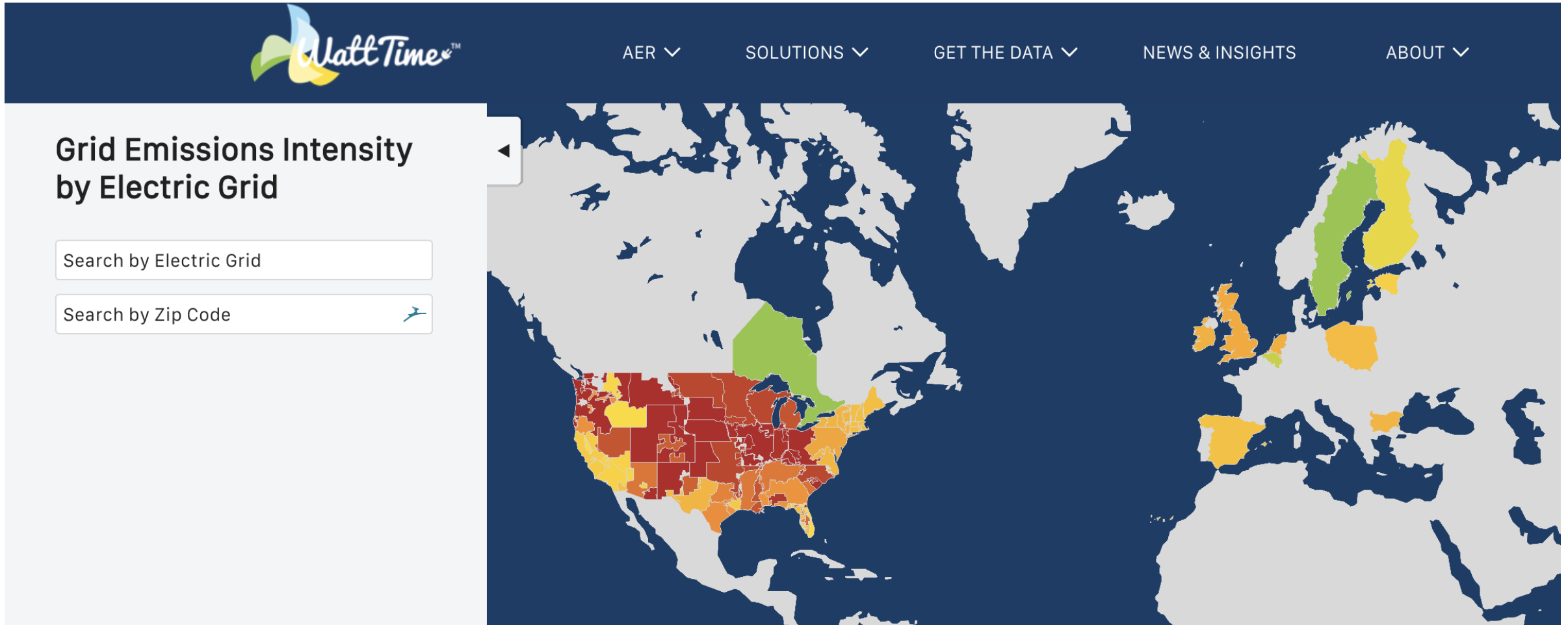
AER optimized



# And designed cloud-based software to minimize emissions



# Global coverage





# SGIP GHG SIGNAL CONTEXT



# Background on the GHG signal

## California PUC Commissioner's Ruling:

Establish working group to “Develop operational requirements for SGIP energy storage systems based on the GHG emissions of the electric grid” based on a real-time marginal GHG emissions signal with a day ahead forecast that can be automatically transmitted to the energy storage system.

1) Source: SGIP Program Annual Evaluation 2017

2) Source: SGIP Program Annual Evaluation 2016

# GHG Working Group Modelling Effort

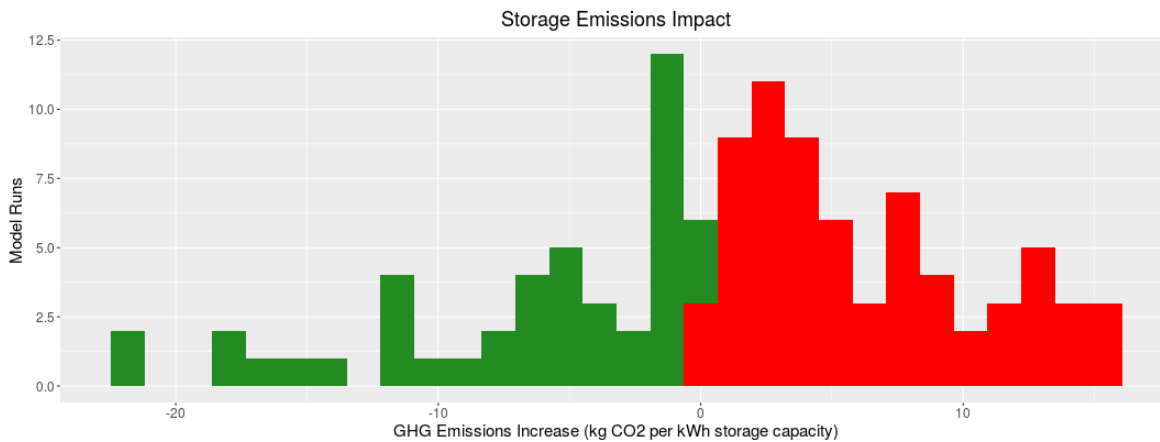
CUSTOMER CLASS	MODEL TYPE INPUT	RETAIL RATE	GHG REDUCTION SOLUTION	MODEL RUNS	% RUNS WITH GHG REDUCTION	MEAN GHG REDUCTION kg/kWH	% RUNS WITH COST REDUCTION	MEAN COST REDUCTION %
Commercial and Industrial	Storage Only	OLD	GHG Signal Co-Optimization	985	23.86	-7.73	99.99	12.53
			No GHG Reduction Solution	153	0	-16.78	97.32	11.45
		NEW	GHG Signal Co-Optimization	792	40.4	-3.63	99.12	21.20
			No GHG Reduction Solution	112	17.86	-10.64	88.68	13.20
	Solar Plus Storage	OLD	GHG Signal Co-Optimization	667	60.12	3.32	100.00	16.08
			No GHG Reduction Solution	148	24.32	-3.45	100.00	13.29
		NEW	GHG Signal Co-Optimization	418	85.41	9.89	100.00	21.30
			No GHG Reduction Solution	176	69.32	10.52	100.00	12.92
Residential	Storage Only	OLD	GHG Signal Co-Optimization	216	3.7	-2.14	33.33	-1.17
			No GHG Reduction Solution	36	0	-2.96	33.33	-1.17
		NEW	GHG Signal Co-Optimization	108	100	21.33	100.00	16.73
			No GHG Reduction Solution	18	22.22	-6.07	100.00	16.73
	Solar Plus Storage	OLD	GHG Signal Co-Optimization	216	58.8	4.57	0.00	-11.27
			No GHG Reduction Solution	36	22.22	-3.48	0.00	-11.27
		NEW	GHG Signal Co-Optimization	243	84.36	14.21	100.00	15.81
			No GHG Reduction Solution	72	72.22	5.08	100.00	14.68

# Working Group Results

## OSESMO Open Source Energy Storage Dispatch Model

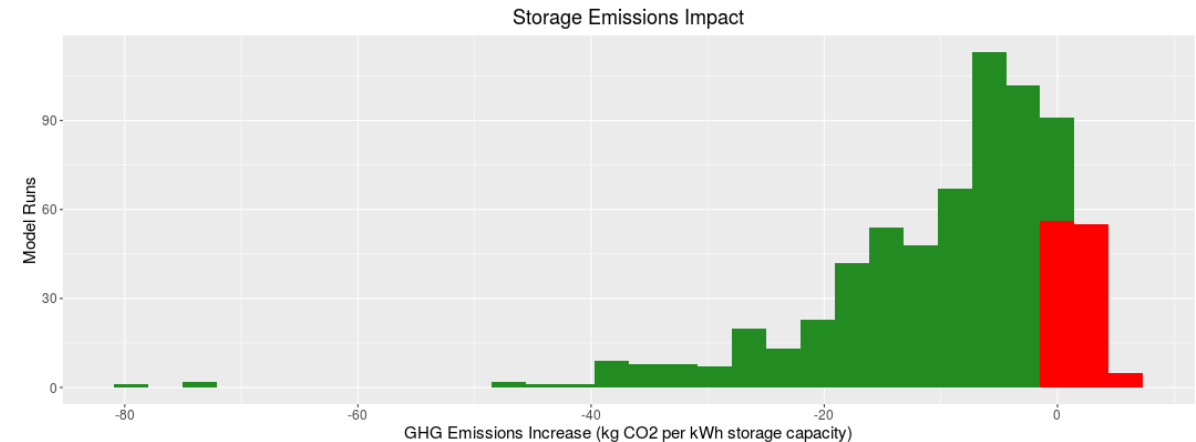
GHG Impact Category  
■ GHG Decrease  
■ GHG Increase

### No Emissions Optimization



39% of Systems  
Reduce Emissions

### GHG Signal Optimization



83% of Systems  
Reduce Emissions

<https://github.com/ryancmann/osesmo>

[https://osesmo.shinyapps.io/osesmo\\_results\\_viewer/](https://osesmo.shinyapps.io/osesmo_results_viewer/)



# SIGNAL IMPLEMENTATION

Looking Forward

# GHG Signal & Forecasts

## Compliance Signal:

- A publicly available signal in API format of marginal GHG emissions
- For CAISO and non-CAISO regions

## Forecasts for operation planning:

- 15-minute (updated every 15 minutes)
- one-hour ahead (with five-minute granularity and updated every 15 minutes)
- 72 hour-ahead (updated hourly)
- month-ahead (updated daily)
- and year-ahead (updated monthly)

## Developer Input:

- Some features of long-run forecast to be developed with industry input

# API Data Access

## Signal Delivery

- API
  - Data provided via push or make it possible to pull signal data at required interval schedule
  - Similar to existing WattTime format
  - Secured with JWT (JSON Web Tokens) providing a cryptographically secure format
  - Robust, scalable architecture using Kubernetes on Amazon Web Services (AWS) cloud infrastructure
  - Plan for CAISO data outages

## Existing WattTime API

- <https://www.watttime.org/get-the-data/api-documentation/>

# How the Compliance Signal Will be Calculated

## Compliance Signal

- The signal will be calculated using the same open source heat rate-based methodology as in the most recent SGIP impact evaluation report, but with updated parameters and data sources more suitable for real-time use.
- This signal will provide the marginal emissions per kWh calculated based on a natural gas-fired power plant producing energy at a price equaling the real-time (five-minute) CAISO Locational Marginal Price with costs equal to the most recent publicly available data on gas prices, CO2 prices, and variable operating costs constrained by reasonable maximum and minimum efficiencies.
- When the calculated heat rate is zero or below, instead it is assumed that the marginal generator is renewable, and the marginal emissions rate is zero.

# Forecast Signal

## Forecasts for operation planning:

- 15-minute (updated every 15 minutes)
- one-hour ahead (with five-minute granularity and updated every 15 minutes)
- 72 hour-ahead (updated hourly)
- month-ahead (updated daily)
- and year-ahead (updated monthly)



# Forecast Signal

## Forecast Types

- Longer-term (72-hour ahead and longer) forecasts shall include:
  - probabilities of GHG emissions ranges depending on the time or day and year
  - current and prior conditions
  - other factors, as is determined to be appropriate by the PAs in conjunction with industry stakeholders.

## Methodology

- Machine learning on historical compliance signal values to provide most accurate forecast possible
- Will use CAISO, weather, etc forecast data as inputs, but more accurate than simply applying heat rate methodology to CAISO forecasted LMP

# Schedule

## Interim GHG Signal

December 31, 2019

- Interim real-time signal (should remain unchanged)
- Historical emissions data (should remain unchanged)
- *Preliminary* forecasts

## Signal Workshop

Flexible

- Developer feedback on signal and forecasts
- Refinement of forecasts

## Final GHG Signal

March 31, 2020

- Final compliance signal
- Forecasts available

Ongoing forecast maintenance and refinement

# Thank You

Henry Richardson

Senior Analyst

[henry@WattTime.org](mailto:henry@WattTime.org)

415.300.7475



# SGIP Workshop – Online Database

Andrea Vas



November 5, 2019

# AGENDA

- 1 **Streamlining Effort**
- 2 **Automatic Waitlist Functionality**
- 3 **Support FAQ**



# Streamlining Effort



# Streamlining Changes in the Database



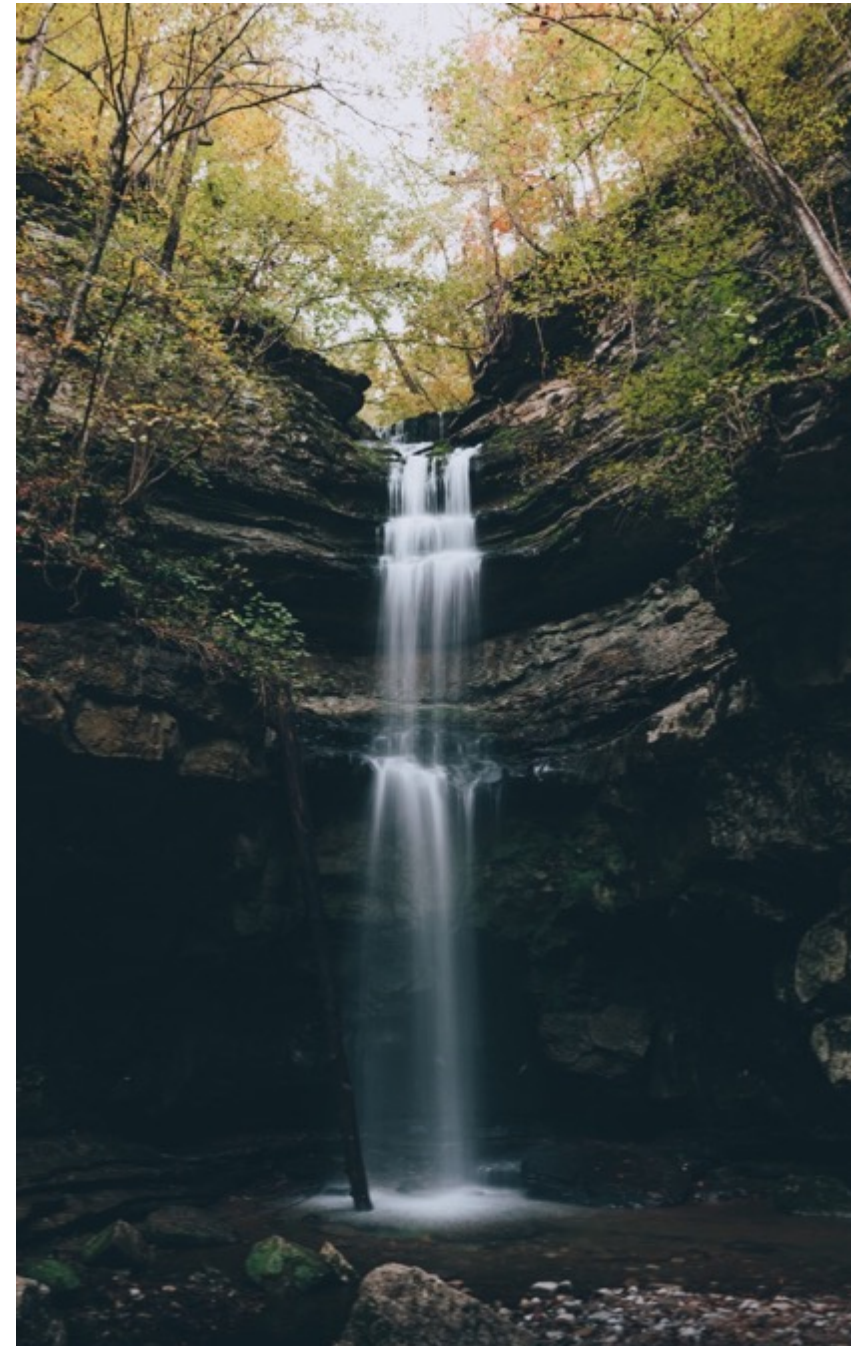
Removed Copy of Application Fee Check



For Systems  $\leq 10\text{kW}$ , remove CSE Authorization to Receive Customer Information



For all projects at ICF, require the Final Monitoring Schematic





## Pending Release

### **Equipment**

SGIP-Verified Equipment List:

- Drop-down choice list
- Pre-determined form entries
- Exempt from providing equipment specs

### **For Residential Customers**

Allow for Virtual Inspections:

- Upload video inspections

Customer Communications:

- Opt-out of Non-critical Email Communications

### **Replace Paper Forms:**

New panels at ICF:

- Project Cost Affidavit
- Project Cost Breakdown







# Automatic Waitlist Functionality





# Automatic Waitlist Principles

## 1. Evaluate by Date Received

- Applications are evaluated statewide in the order received, the date the application entered the waitlist.

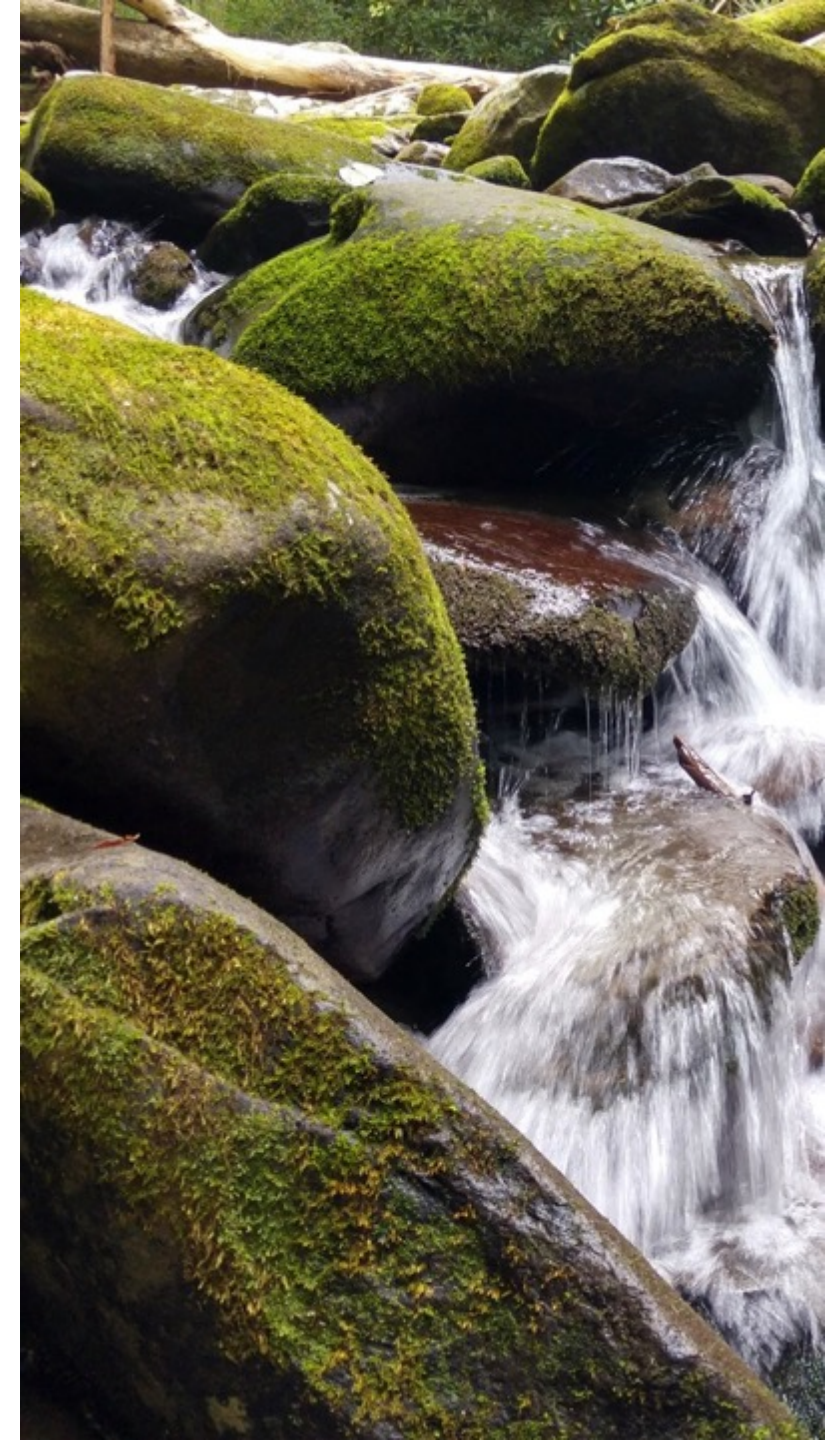
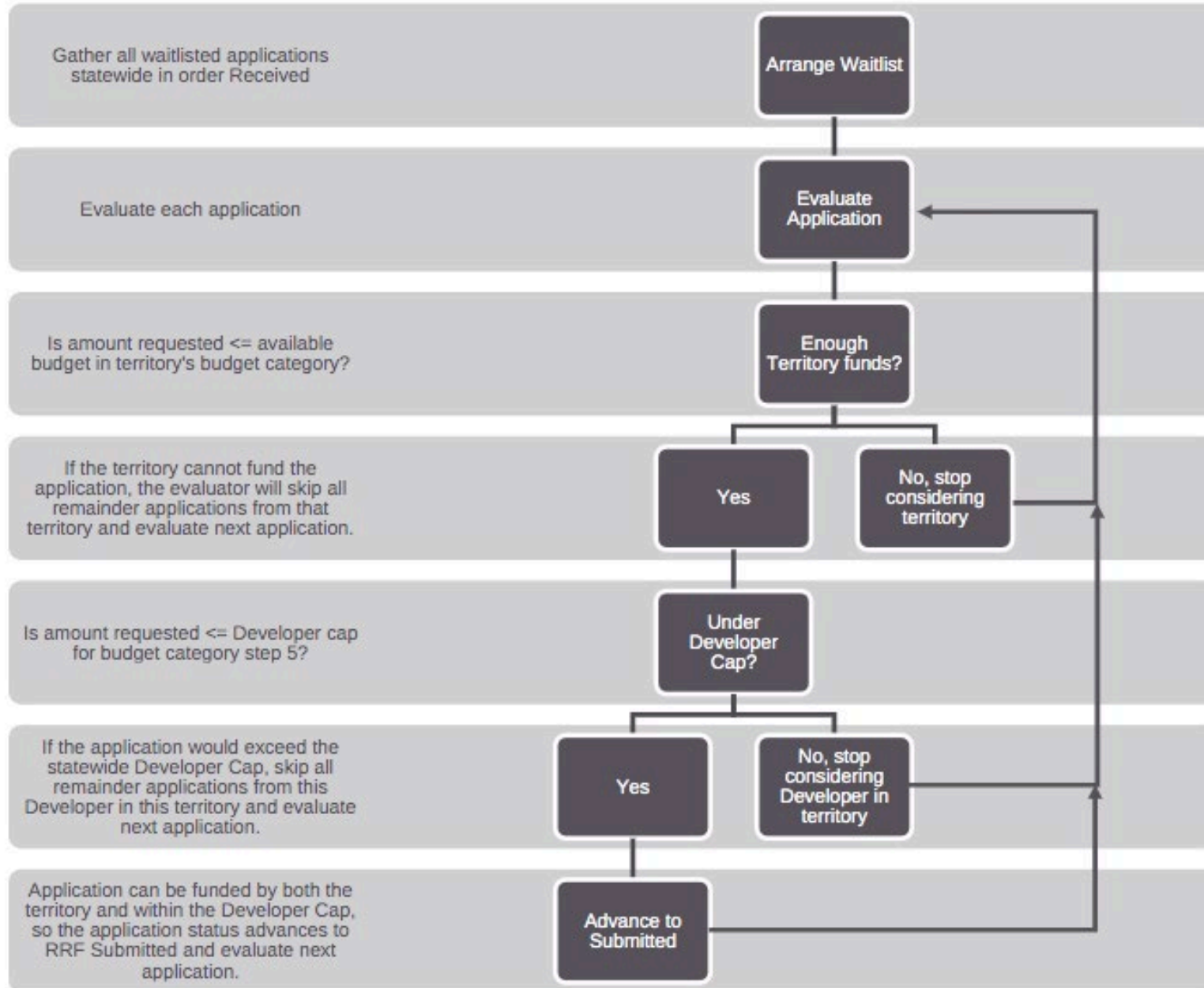
## 2. Allow attrition to build

- Stop evaluating the waitlist at the first eligible application that cannot be funded.
- This allows large applications to keep their place in line until funds become available
- Small applications don't get to skip ahead.

## 3. Skip applications that are capped

- Stop evaluating waitlisted applications from a Developer at the first eligible application that would exceed the cap.

# Automatic Waitlist Logic





# Support Frequently Asked Questions



# Support Categories



Login Help



Revisions/Mistakes



App Status

# Frequently Asked Questions



## I can't login

- We cannot see passwords or set passwords for anyone
- Please use your own accounts
- Must have access to the registered email to reset a password



## What is my application status?

- Please educate host customers about their role and give them the app code.
- Recommend using the "Check Application Status" button on homepage.
- Encourage them to reach out to you first.



## Can you change the budget category?

No. Applications submitted to a budget category cannot be changed after submission. The applicant must submit a new application in the correct budget category at the currently available rate.



## Can you extend our due date? What happens if we miss it???

Due date extensions can only be granted by PAs. Consequences are up to the PA discretion in accordance with the Handbook



## General questions about program rules

The majority of questions are answered by the Program Handbook. While the remainder of questions are about requirements, eligibility, and status can be answered by the Program Administrator email:

[selfgen@pge.com](mailto:selfgen@pge.com)

[selfgeneration@socalgas.com](mailto:selfgeneration@socalgas.com)

[sgipgroup@sce.com](mailto:sgipgroup@sce.com)

[sgip@energycenter.org](mailto:sgip@energycenter.org)





# Questions?

**Andrea Vas**

[avas@energy-solution.com](mailto:avas@energy-solution.com)

[sgipsupport@energy-solution.com](mailto:sgipsupport@energy-solution.com)

(877) 651-8608

