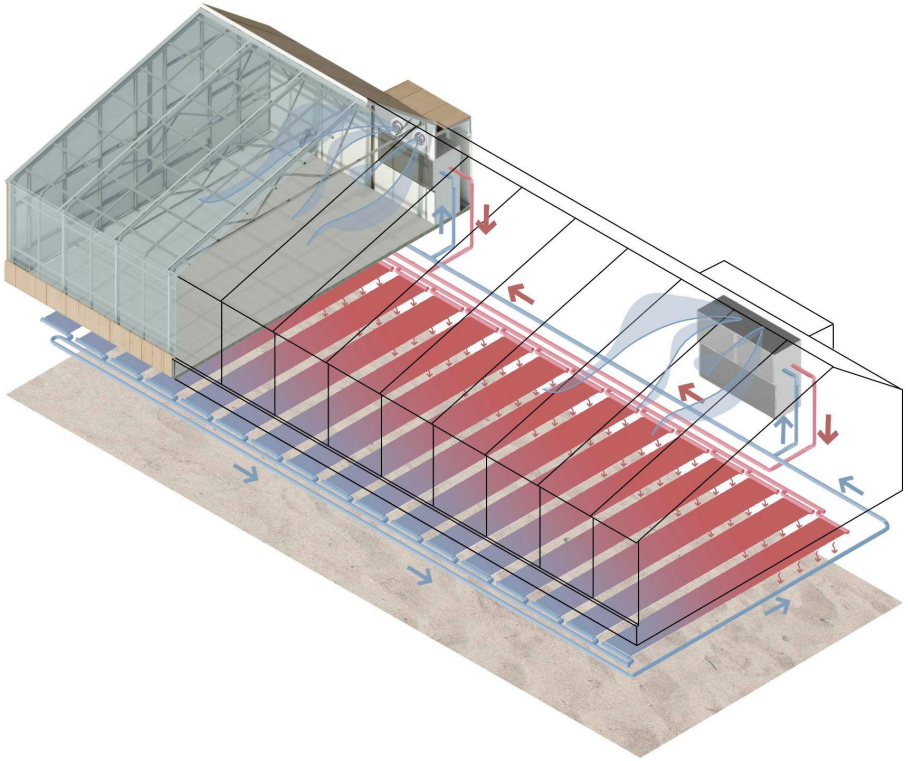

Image credit: Ceres Greenhouse Solutions

Efficient Yields

Best practices on energy, water efficiency, and productivity

Putting It All Together: Case Studies in Efficiency

May 2, 2023

PG&E

RESOURCE INNOVATION INSTITUTE

Disclaimer

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Safety

Earthquake:
Drop
Cover
Hold

Evacuation
Plan

Review Emergency
Plan & Pack Go-Bag

Stretch,
Get Up & Move

Practice Social Distancing,
Wear A Mask

Visit: www.pge.com/emergencypreparedness

Class Survey (feedback)

- Click on the survey link in the chat box
- Written comments are very helpful
- Other topics? Other classes you want?
- Survey also sent in follow up email after the class

SECTION 01

INTRODUCTION

POLL ALERT!

What role do you play in the cultivation space?

- Equipment provider / Vendor
- Owner
- Grower
- Operations Manager
- Consultant / Advisor

Agenda

Introduction & Purpose

Why Case Studies

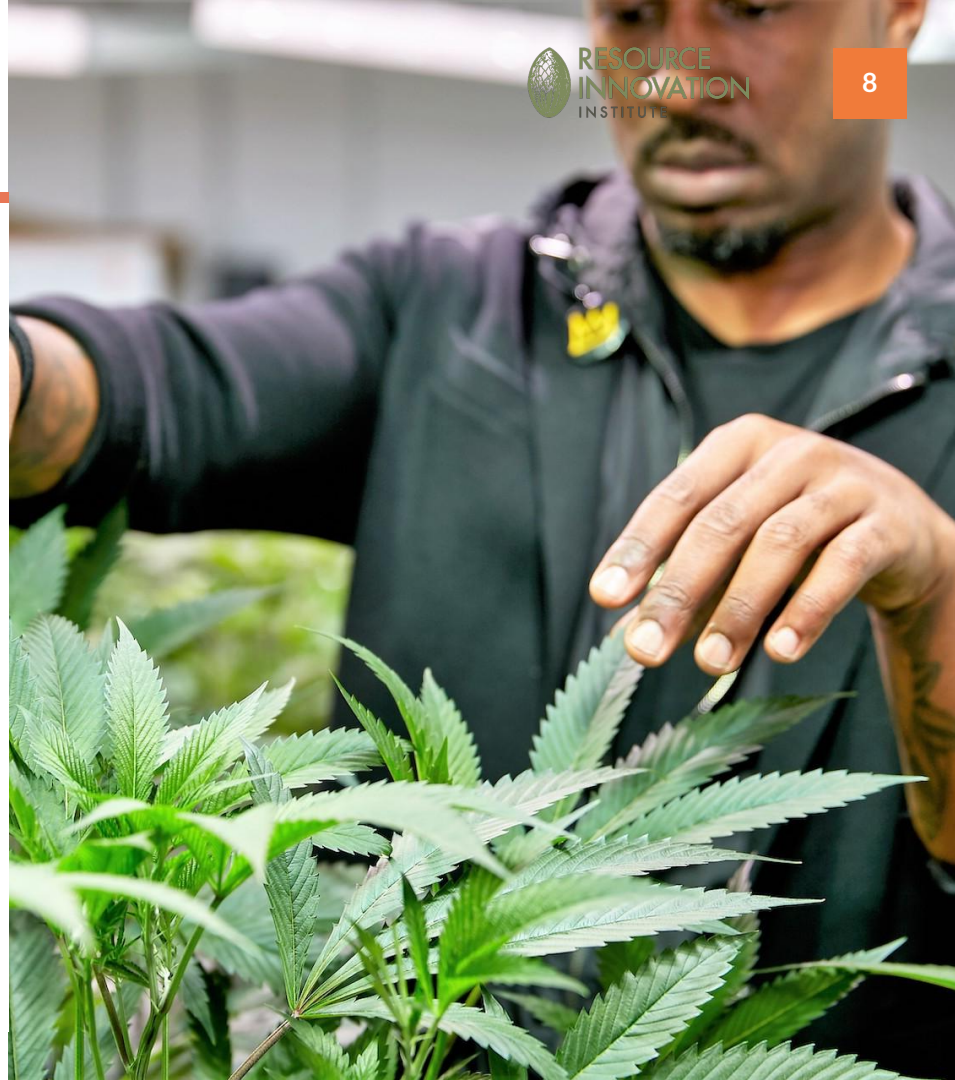
Case Study: Greenhouse

Case Study: Indoor

Utility & State Programs

Tips & Tools slide

Q&A



Today's Experts

Rob Eddy

Mike Zartarian

John Burns

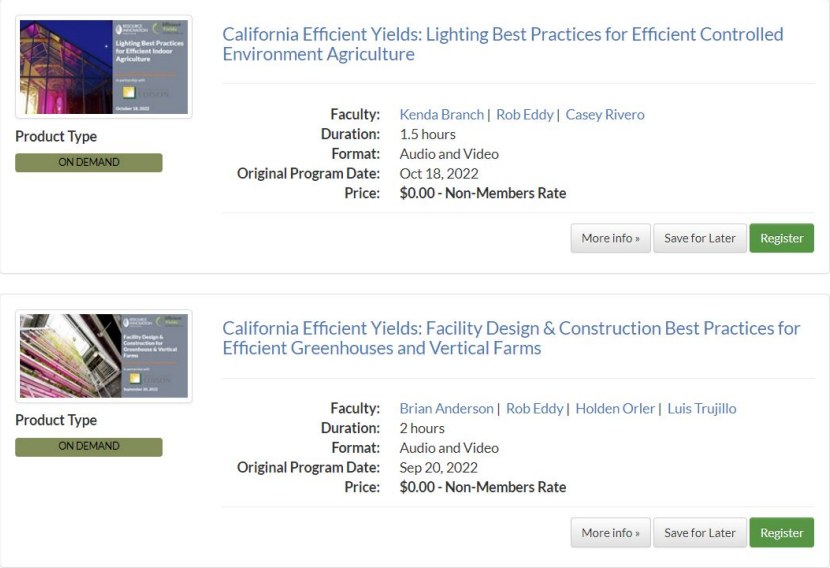
Access Your California Virtual Classroom

Continue Learning Online

Free guidance on efficient cultivation

All live workshops are available for on-demand viewing!

- Recordings of live workshops
- Tip clips
- Downloadable resources
- PG&E and state program tools



Create an account at resourceinnovation.org/California

Register for Upcoming Workshops

Upcoming PG&E Workshops:

May 9 | Code Breaker: Controlled Environment Horticulture (CEH)

2022 Energy Code

July 11 | California Efficient Yields PG&E Workshop 6: Efficient HVAC

+ Dehumidification Strategies for Craft Cultivation Operations

POLL ALERT!

What role do you play in the cultivation space?

Discuss Results

SECTION 02

WHY CASE STUDIES

POLL ALERT!

Which of these information sources are you LEAST likely to use?

- Academic journals
- Vendor sales brochures or website
- Trade show demo/discussion
- Industry magazine
- Conference speakers

California Cannabis Space

License Types

- Specialty cottage
- Specialty
- Small
- Medium
- Large
- Nursery
- Processor

Lighting Types

- Tier 1 – Up to 6 watts per sq. ft.
- Tier 2 – 6 to 25 watts per sq. ft.

Market Size

$4 billion legal market
$8 billion illicit market

Environment

- Indoor
- Greenhouse / Mixed Light
- Outdoor

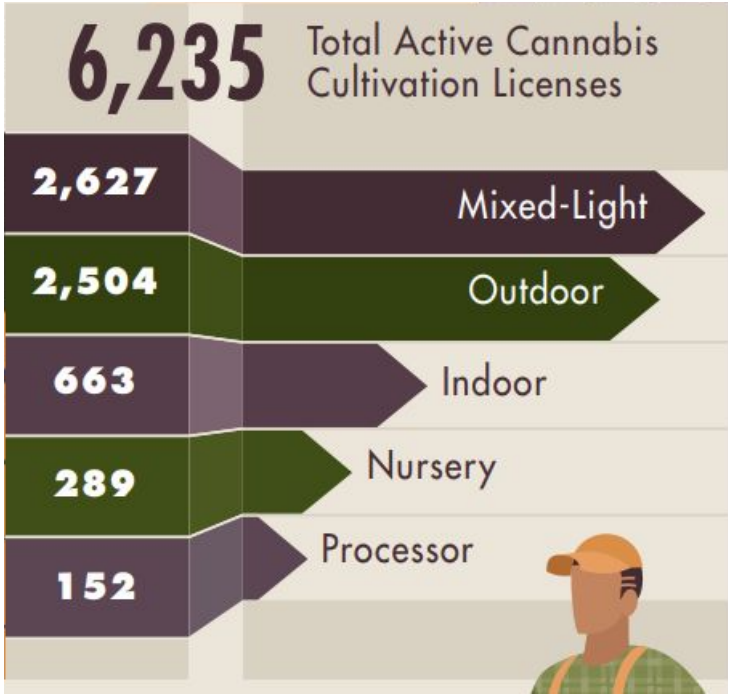


Image credit: CDFA 2020. License info: Cannabis.CA.gov

Water Energy Nexus

Water consumption means energy consumption

Water consumption means fertilizer consumption

Energy & fertilizer mean operating cost

Water and energy systems are interdependent.

Water is used in all phases of energy production. Energy is required to extract, pump and deliver water for use by humans, and to treat waste-water so it can be safely returned to the environment.

How we use water for energy

Electricity Generation
Nearly half of all water withdrawn in the U.S. keeps power plants cool enough to function safely & efficiently.

Oil & Gas
Water is used for hydraulic fracturing, enhanced oil recovery and other fossil fuel production processes.

Renewables
Essential for hydropower, water is also used for concentrated solar power, for geothermal energy and to produce bioenergy.

How we use energy for water

Pumping
We use energy to pump water from aquifers for agriculture and to transport to treatment facilities and consumers.

Water Treatment
Energy is needed to desalinate water and treat wastewater before it's returned to the environment.

Heating & Cooling
Energy and water work together to keep buildings and equipment at safe, comfortable temperatures.

Delivery
We use energy to distribute and heat water for cooking, showering, cleaning and drinking.

U.S. Dept of Energy

POLL ALERT!

Which of these information sources are you LEAST likely to use?

Discuss Results

SECTION 03

CASE STUDY: GREENHOUSE

POLL ALERT!

In your opinion, what project is the MOST challenging?

A. Building new greenhouse

B. Retrofitting 20-year old greenhouse

C. Building new indoor farm

D. Retrofitting 40-year old warehouse

Case Study Background

- **Company:** Hydroclonix LLC
- **Brand Name:** Hemp House Farms
- **Location:** Cheshire, CT
- **Traditional crop:** Flowers and Lettuce
- **New Crop:** Hemp Flower
- **Project Date:** June 2019
- **Project Size:** 65,000 ft2 of production (1.5 acre)
- **Local Utility:** Eversource
- **Goal:** HPS to LED Retrofit
- **Case Study Link:** https://www.youtube.com/watch?v=Le9bDgQiUbM

Photo Credit:

Product Information

- Gen 1.1 Toplight Compact LED
- Spectrum: Deep Red, White, Medium Blue
- 520 watts per fixture
- Efficacy: 3.4 umol/joule
- IP66 wet rating
- Dimmable
- Passively Cooled
- Internal Driver
- DLC listed
- Direct replacement for 1000w HPS

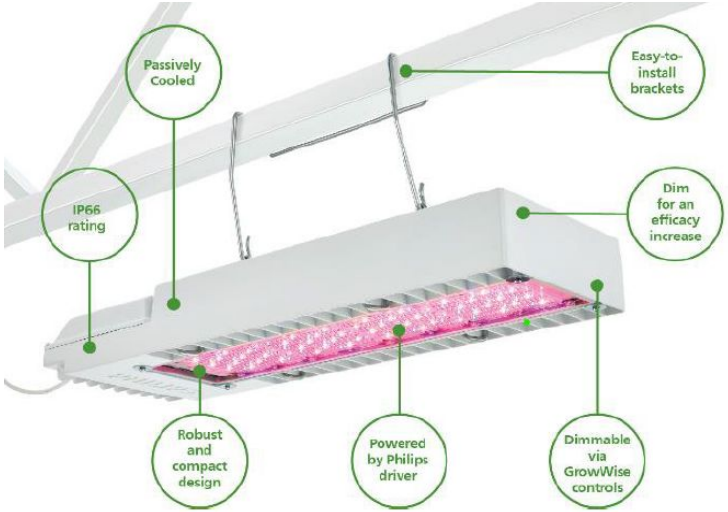


Photo Credit:

Light Plan Creation

- Light Plan Intake Form
- Plant Specialist Recommendation
  - Spectrum
  - Daily Light Integral (DLI)
- Application Engineer Light Plan Creation
  - HPS Baseline
  - LED Solution
- Target PPFD
- Uniformity
- Submit Light Plan and Product Specs to Utility Company

Photo Credit:

Results: Rebate Information

- Retrofit: HPS to LED
- HPS 1000w Units (Existing): 2,296
- Run time (hours/year): Vegetative Phase: 6000 hours; Flower Phase: 4000 hours
- Total HPS KWH/year: 9,494,000
- LED Units (Replacement): 2,296
- Run time (hours/year): Vegetative Phase: 6000 hours; Flower Phase: 4000 hours
- Total LED KWH/year: 4,691,942
- Energy Savings from HPS to LED: **4,802,058 KWH/year**
- Rebate per KWH saved: 20 cents
- Total Rebate: 4,802,058 KWH x 0.20 cents = **$960,411.60**
- Reportedly the largest horticulture rebate in Connecticut to date.

Photo Credit:

Takeaways

- Work with your local utility company on rebate programs available
- Research LED Products
- DLC Listed
- Efficiency of Product
- Warranty
- Failure Rate of Product
- Light Plan Creation
- Installation Costs
- Third party rebate companies

Photo Credit:

POLL ALERT!

In your opinion, what project is the MOST challenging?

Discuss Results

SECTION 04

CASE STUDY: INDOOR

Knowledge Check!

Which of these statements is TRUE?

A. Dimming an LED light improves its electrical efficiency

B. Dimming an LED reduces electrical use

C. BOTH are true

D. NEITHER are true

Tier 1 Cultivation - Fitchburg, MA

- Indoor, small scale craft cultivators, owner operator
- Converted basement of c. 1895 brick mill building
- Phase 1 of 3
- Designed in 2019, opened 4/2022
- 1 Veg / Mom space - 400 CSF
- Single level, soil / synganic
- 2 Flower Rooms - 720 CSF each
- Total canopy 1840CSF
- Low Cost buildout

Photo Credit:

Facility Energy Snapshot

- All electric
- Energy pricing approx. $0.25 / kWh
- Flower Rooms ‘flip’ scheduled
- Average peak demand ~100kW
- Average monthly electric usage ~ 53000 kWh

Photo Credit:

Cultivation Equipment: Flower Rooms

- 720 CSF per flower room
- 5 plant rows of 9 lights
- 45 630W LED lights / 1100 PPFD @ canopy
- 4 x 5 ton split system AC units
- 2 x Anden 315 dehumidifers
- Wall oscillating fans
- All equipment on ~ 60kW
-

Photo Credit:

Project Goals - Retro Commissioning

- **Target:** Highest quality in MA market averaging 50-100% above avg. wholesale price per lb
- Decrease cultivation microclimates caused by HVAC system
- Tune control system for better performance amongst 6 pieces of HVAC gear in each room
- Increase g/kWh productivity

Photo Credit:

Data Driven Facility Tuning

Photo Credit:

Cultivation Energy Usage Breakdown

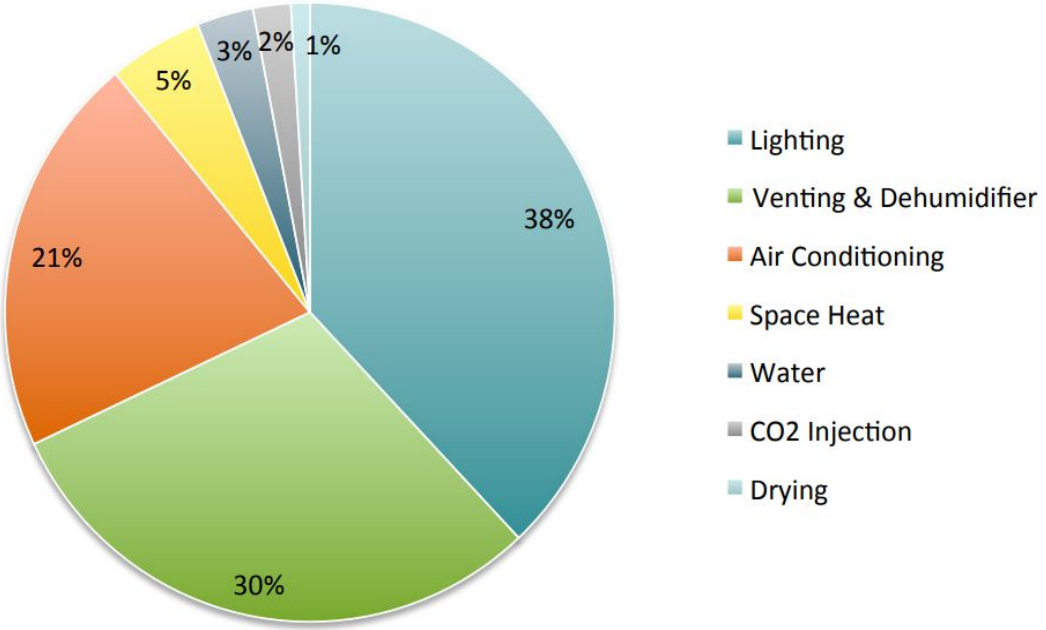


Figure 3: Proportion of Energy Consumption by End Use for Indoor Marijuana Cultivation

Study Credit: Evergreen Economics 2016, SDG&E Cannabis Agriculture Energy Demand Study

Initial Findings

- Poor air circulation in room
- Inconsistent climate causing plant growth issues & yield loss
- HVAC equipment (4 air handlers, 2 dehumidifiers) not staged and all turning on and off simultaneously
- Plants on first run grown too large further restricting airflow
- All of these issues significantly impacting g/ kWh KPI as well decreasing quality
-

Photo Credit:

Initial Findings

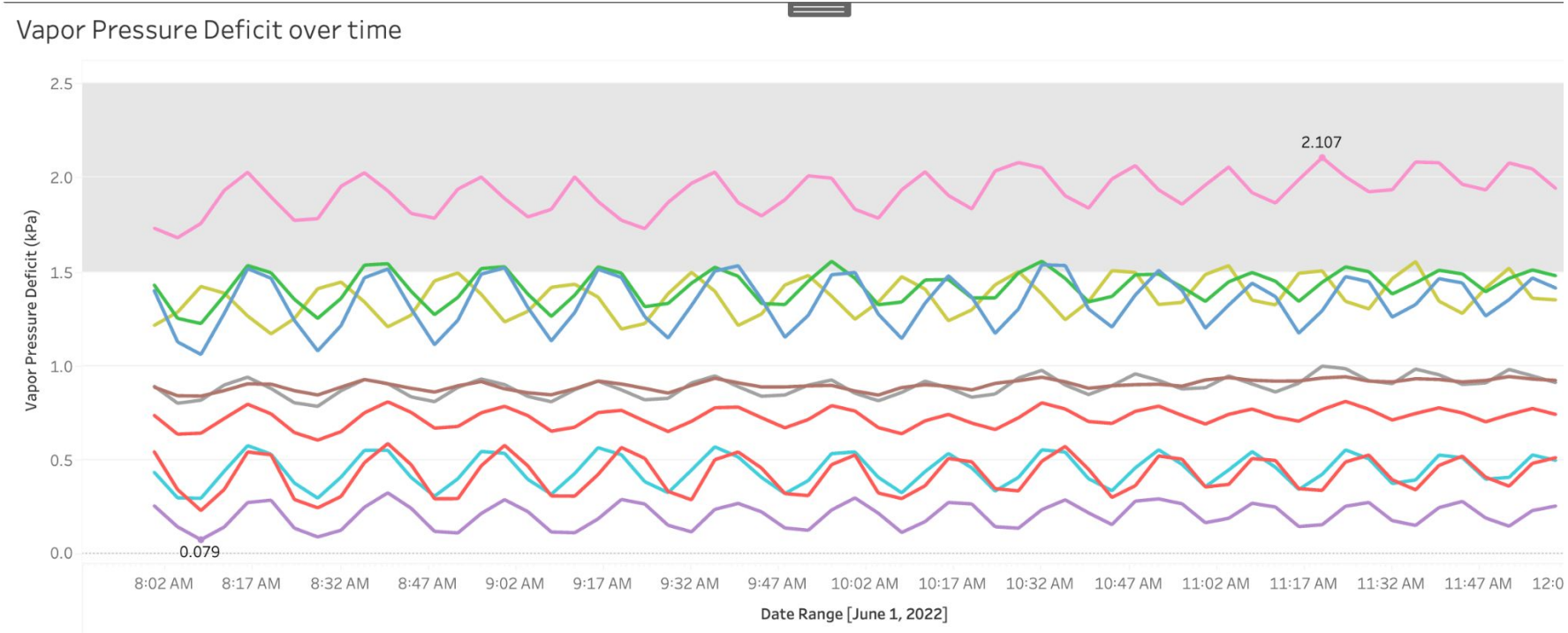


Photo Credit:

Intervention: add Sub-Canopy Airflow

- Place plastic perforated ducts under canopy
- Increased efficiency - sub canopy air distribution more uniform and efficient than wall oscillating fans
- Reduced room microclimates - healthier and more consistent plants
- Allowed HVAC system to run much more efficiently

Undercanopy Airflow ducting

Photo Credit:

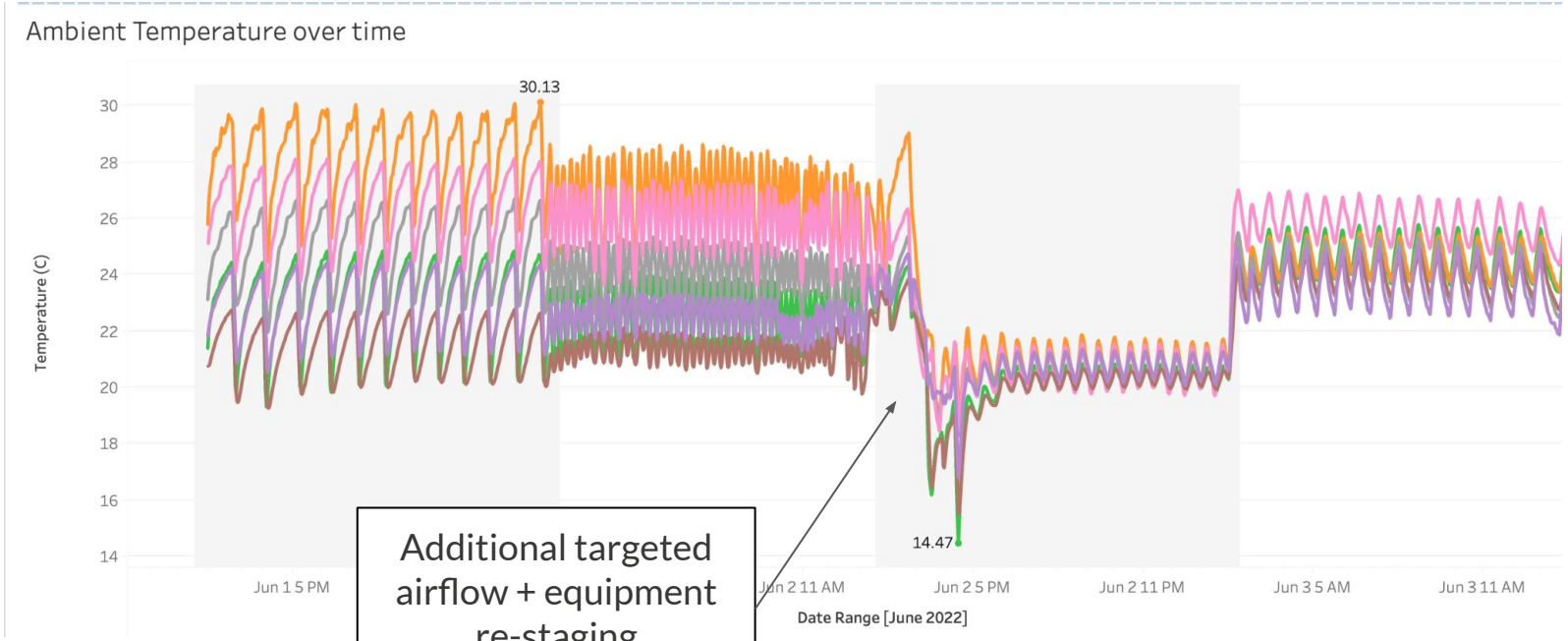
Intervention: Controls Tuning

- Control System staged to allow HVAC units and DH's to come one at a time
- Controls sensors placed to more average room positions to better
- Reduced energy use
- Better climate stability, uniformity
- Plant health improved immediately
-

Simple control systems can be tuned too!

Photo Credit:

Retro Commissioning Results



Additional targeted airflow + equipment re-staging

Photo Credit:

Retro Commissioning Results

- 40% increase in g/kWh (and climbing)
- Product consistently demanding double of average MA wholesale price in 2023
- 90% reduction in crop loss due to total yeast/mold failures (and falling)
-

Photo Credit:

Low-Cost + High Return Efficiency Opportunities

- Sub-optimal plant scheduling / planning
- Test plant stock for HPLV and common pathogens
- CO2 dosing equipment calibration challenges
- pH meter calibration challenges
- Gradual equipment failure / undersizing
- Rooms that never empty of plants
- Poor Placement and/or 'Solar' heating of temp / humidity monitors
- Insufficient sub-canopy airflow
- Dehumidifiers and AC's 'fighting' - control system misconfiguration
- Clogged filters or insufficient filtration

Photo Credit:

Knowledge Check!

Which of these statements is TRUE?

A. ~~Dimming an LED light improves its electrical efficiency~~

~~B. Dimming an LED reduces electrical use~~

C. BOTH are true

~~D. NEITHER are true~~

RESOURCE INNOVATION INSTITUTE

SECTION 04

TRACKING PERFORMANCE & NEW TECHNOLOGY

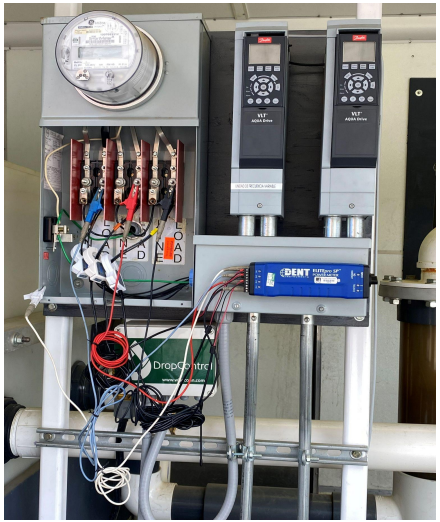
Knowledge Check!
[INSERT QUESTION HERE BASED ON MIKE'S CASE STUDY]

- …
- …
- …
- …

Measuring Energy Usage

Most plant growth facilities have only a single energy meter, measuring use of the entire property

- Sub-metering possible
- Power loggers, current transducers
- Plug load logger
- Electrical flow meters ("snapshot")
- Lighting and PAR sensors (indirect measure)



PG&E Tool Lending Library has and amazing set of measuring devices!!

Measuring Water Usage

Most plant growth facilities have only a single water meter, measuring use of the entire property

- Sub-metering possible
- Ultrasonic portable units (PG&E Lending Library)
- Flow meters built into fertilizer injection equipment
- In-line flow meters tracked by climate controller

Photo Credit: PG&E and Kwipped

Measuring Water Usage

Developing & Tracking Efficiency KPIs

Key Performance Indicators for CEA

Quantify performance of CEA facilities using specialized key performance indicators for:

- Efficiency (kBtu/ft2 canopy)
- Productivity (kBtu/lb harvest)

Understand how system operation affects facility lighting, HVAC, and energy KPIs

- kWh/day → annual facility energy use

Observe changes in canopy productivity

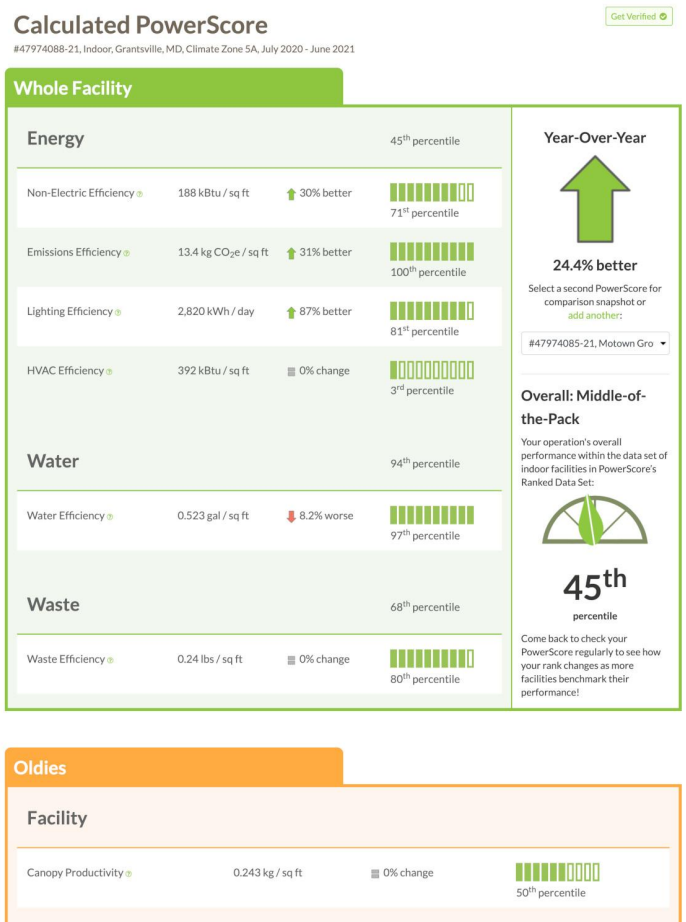


Figure credit: RII, PowerScore

Document Baselines

Benchmark your production environments to create baselines for resource efficiency:

- Energy
- Water
- Emissions

Track month over month; year over year

Track improvement following change in equipment or cultivation protocol

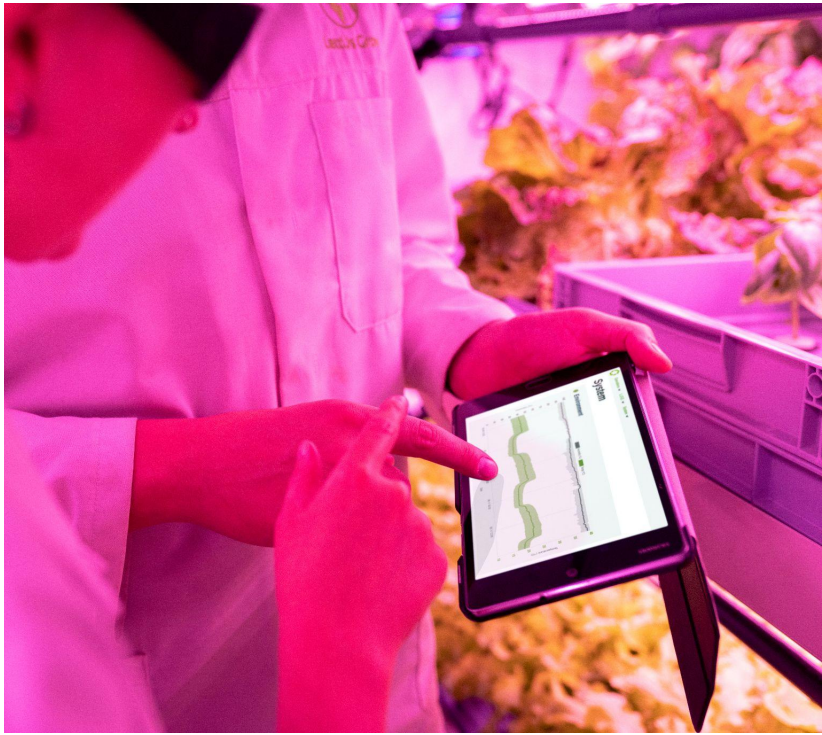
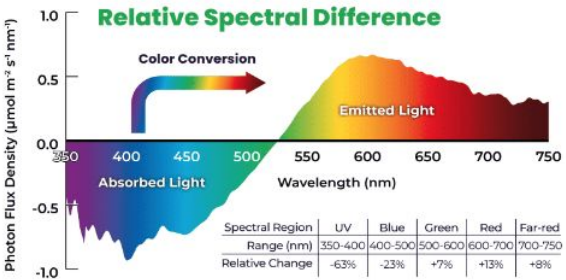


Figure credit: Rhode Island Department of Environmental Management

New Technology On the Horizon

In research or early implementation phase in U.S.



- Quantum dot films
- Spectrum-shifting films
- Light diffusing curtains
- Smart-lighting software with historical weather data embedded in algorithm
- Plant balances principles of climate control
- Thermal imaging
- AI & ML climate control

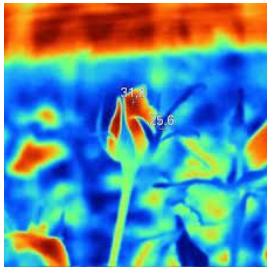


Photo Credit: ReduSystems

Photo Credit: Ubigrow

Knowledge Check!
[INSERT QUESTION HERE]

- …
- …
- …
- …

SECTION 04

UTILITY & STATE PROGRAMS

What is AESAP

TRC's **Agriculture Energy Savings Action Plan (AESAP)** offers incentives and financing for energy-saving projects involving the retrofit or installation of energy consuming equipment.

CEA Rebate and Incentives for:

- Grow lighting and controls
- Greenhouse heat curtains and IR film
- Boiler, pipe insulation, heat recovery
- Irrigation upgrades and more!

AESAP:

- Provides rebates and incentives on energy efficient equipment upgrades
- Offers technical assistance and incentives for more complex projects
- Provides Integrated Demand Side Management support and services
- Provides services at no cost to customer

www.AgEnergySavings.com

Connect@AgEnergySavings.com | 1-833-987-7283

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AESAP Rebate Process

AESAP
AGRICULTURE ENERGY SAVINGS ACTION PLAN

1. Equipment Purchase

You purchase the equipment, making sure it complies with all requirements (TRC can help)

2. Submit Application

You send AESAP documentation with, a paid invoice, install and operational date

3. Application Review

Program team reviews and completes the paperwork

4. Signature Stage

Paperwork will be sent to you for final signature

5. Rebate Issuing

Rebate check will be issued and sent to you

Customer defined

1-2 months
upon application submission

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TRC

AESAP Custom Incentive Process

AESAP
AGRICULTURE ENERGY SAVINGS ACTION PLAN

1. Assessment

AESAP meets with you for a no-cost energy audit or to discuss opportunities. AESAP will review the preliminary analysis with you prepare necessary reports

2. Application

You sign the program participation agreement and AESAP submits required paperwork to PG&E for review and approval

3. Installation

You install project based on approved parameters

4. Verification

AESAP verifies project completion and submits final report

5. Incentive Issuing

Final paperwork is processed, and incentive is delivered

3+ months — **Customer defined** — **2+ months**

Timeline varies based on several factors, including scope of project, project complexity or installation timeline. CPUC selected projects will require additional review time

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TRC

On-Bill Financing

On-Bill Financing helps eligible customers pay for energy-efficiency retrofit projects with **0% interest and zero penalty loans**.

- Loans range between $5,000 and $4,000,000 per premise
- Loan periods of up to 120 months
- Loan repayment amount will be in line with the monthly energy savings from the upgrade
- Energy bill shouldn't increase due to equipment investment
- Once loan is paid off, savings on your bill will be realized

GoGreen Financing

Administered by the State of California and supported by the state's investor-owned utilities, the Small Business Financing (SBF) program offers financing with attractive terms for energy-efficiency improvements to existing businesses. Participating finance companies offer quick approval with monthly payments to meet your budget.

- $100,000 up to $5 million, competitive interest rates, terms up to 10 years
- Up to 30% of financed amount can be for non-energy upgrades
- For Small Businesses with 1) 100 or fewer employees or 2) Annual revenues less than $15 million or 3) Meet SBA size requirements

Visit GoGreenFinancing.com to learn more.

Contact Us

We're here to help your business

Name *(Required)*

First

Last

Email *(Required)*

Phone *(Required)*

Business Name

Facility Address

Street Address

PG&E Market Access Program

High Incentives for Energy Saving and Load Shift Projects Installed by March 31, 2023

www.aesc-inc.com/map

Market Access Program (MAP) Overview

- **What is MAP?**
  - A pay-for-performance EE program delivered by enrolled MAP Aggregators

- **Key Advantages of MAP**
  - Very high project incentives; No cost caps
  - Bonus incentives for savings during Summer 4-9pm peak period
  - Fast project approval (<1 week)
  - Broad measure eligibility

- **Site Eligibility**
  - Commercial/light industrial sites (indoor ag is eligible)
  - At least 12 months utility baseline usage
  - Site must be screened and meet other data-related screening criteria

- **Program Status**
  - AESC has remaining budget available
  - We will continue to take project reservations until program incentive budget is used up, expected in the next 4-6 weeks.

- **Timeline**
  - **Remember: Projects must installed by March 31, 2024**

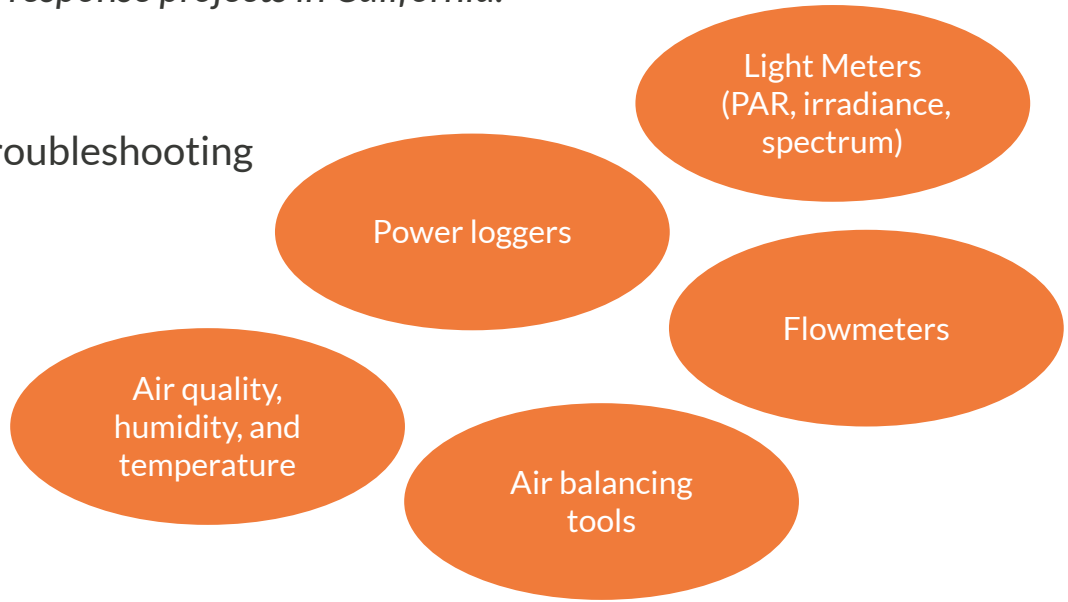
- **To Learn More:**
  - Learn more about MAP, screen potential project sites, identify an aggregator
  - Contact Tyrra Adams, AESC Project Manager, 760-889-8664 tadams@aesc-inc.com

www.aesc-inc.com/map

Energy Measurement Tool Lending Libraries

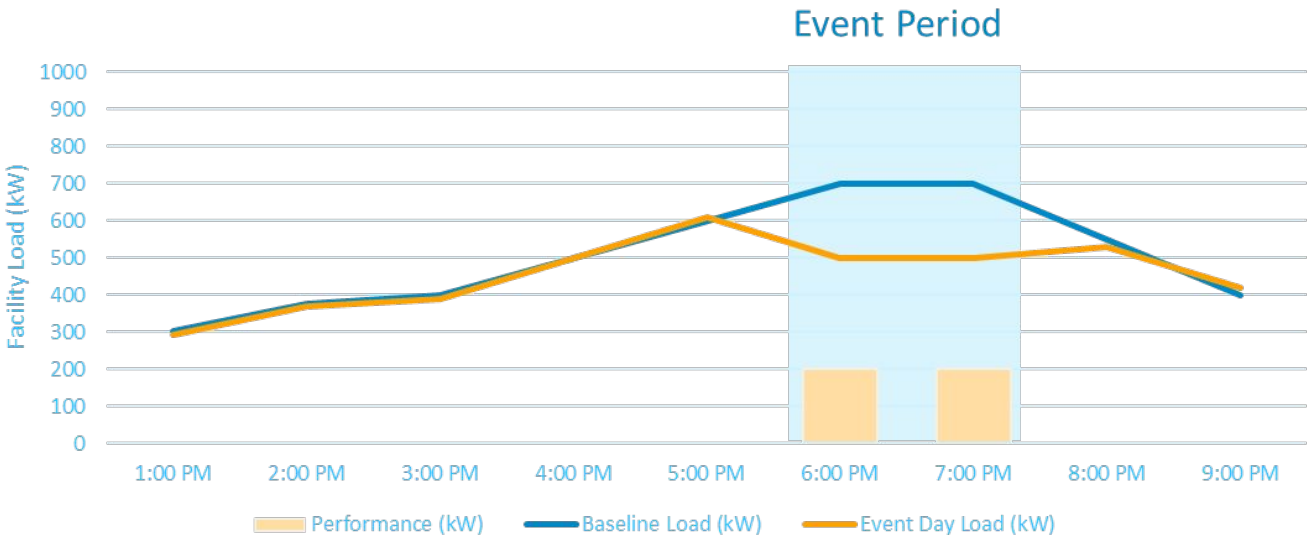
Wide selection of energy and building measurement tools to customers and professionals working on energy efficiency, demand reduction and demand response projects in California.

- FREE tool lending programs
- Assistance in tool selection and troubleshooting
- PG&E: pge.com/tools
- SCE: sce.myturn.com/library



WHAT IS DEMAND RESPONSE?

DR programs provide incentives to customers for reducing electric usage during grid, heat, and other emergency events.



WHY DEMAND RESPONSE

Maintain system reliability

Prevent power interruptions during grid emergencies

Lower environmental impact

Financial Incentives for Participation

DEMAND RESPONSE PROGRAMS

Participation Programs

- Emergency Load Reduction Program (ELRP)
- Peak Day Pricing (PDP)
- Capacity Bidding Program (CBP)
- Base Interruptible Program (BIP)

Enabling Program

- Automated Demand Response (ADR)

EMERGENCY LOAD REDUCTION

Program Summary

- Emergency program to reduce grid stress with a primary goal of avoiding rotating outages
- Backup Generators allowed only with emergency order, except in DAC where they are never allowed
- A small reward with no risk

EMERGENCY LOAD REDUCTION

Eligibility

- Eligible customers include commercial, industrial and ag customers with bundled, CCA, and DA services
- Must be able to shed or shift at least 1kW or more
- Dual participation with BIP, CBP
- Prohibited resources are not allowed for ELRP without an emergency order

Incentive Payments

- Incentive rate is $2 per kWh, adjusted to a weather normalized baseline
- Customers receive quarterly incentive checks from third party implementer, Olivine

Penalties

- NONE

Event Limits

- May through October, 7 days a week, between 4 and 9 PM, 1 to 5 hours per event
- May be called on consecutive days, but not more than 60 hours a year

PEAK DAY PRICING

Program Summary

- PDP is a demand response-based rider rate plan
- Demand or energy credits during summer months
- Energy charges during events
- Events are typically called during the hottest summer days but may be called year-round
- Customers receive bill stabilization for the first year

PEAK DAY PRICING

Eligibility

- Eligible customers include commercial, industrial and ag customers with bundled, CCA, and DA services and most NEM.
- No dual enrollment.

Incentives

- Customers receive monthly demand or energy credits during the Summer months, June through September
- Large customers select a Capacity Reservation Level, where PDP credits and charges are applied above the CRL during events

Penalties

- Energy charges are significantly higher during PDP events

Event Limits

- Year round, 7 days a week, 9 to 15 times during the year, between 4 and 9 PM

CAPACITY BIDDING PROGRAM

Program Summary

- CBP is a DR program that offers incentives to third party aggregators and their customers for standing by to reduce load and for actual energy load reductions
- Aggregators nominate capacity each month for their enrolled customers
- CBP has three program options which determine bid prices and program options: Prescribed, Elect, Elect +

CAPACITY BIDDING PROGRAM

Eligibility

- Eligible customers include commercial, industrial and ag customers with bundled, CCA, and DA services and most NEM
- Dual participation with ELRP, OBMC, and no third party DRP
- Prohibited resources are not allowed for CBP, even with emergency order

Incentives

- Capacity incentives are paid each month and vary based on capacity price set, nominated capacity, baseline, etc.
- Energy incentives are paid for event curtailment

Penalties

- Aggregators are penalized if they fail to deliver their committed load reductions

Event Limits for Prescribed Option

- Event notifications come on a day-ahead basis
- Event duration between 1 and 6 hours
- Events are capped at 6 per month or 30 hours per month
- Elect Option and Elect + Option have more limits

BASE INTERRUPTIBLE PROGRAM

Program Summary

- 24/7/365 day-of load reduction program
- 30-minute notice to reduce load to or below the Firm Service Level
- High monthly incentive based on potential load reduction
- High penalty for noncompliance, including mandatory retest

BASE INTERRUPTIBLE PROGRAM

Eligibility

- Eligible customers include commercial, industrial and ag customers with bundled, CCA, and DA services
- Must have at least one month of 100kW or higher peak demand
- Dual participation with ELRP
- Prohibited resources are not allowed for BIP, even with emergency order

Incentive Payments

- Customers receive monthly incentives based on their Potential Load Reduction

Penalties

- $6.00 per kW excess energy charges
- May require retest

Event Limits

- Year round
- Maximum of 6 hours per event, 1 event per day, 10 events per month, 180 hours per year
- Can discontinue participation or raise FSL in November only

AUTOMATED DEMAND RESPONSE

Program Summary

- Incentives to offset the cost of controls to support DR program participation
- Additionally, increase energy and cost savings through automated control technologies
- Projects receiving incentives must commit to participate in an eligible DR program for three years

AUTOMATED DEMAND RESPONSE

Eligibility

- Eligible customers include commercial, industrial and ag customers with bundled, CCA, and DA services
- Eligible Programs: CBP, PDP, and Demand Response Auction Mechanism (DRAM)

Incentive Payments

- $200 per kW of load shed potential
- 60% of incentive is paid at completion of equipment install and 40% after verification of participation in a full DR season

Penalties

- NONE

Event Limits

- Must remain in DR program for at least three years

What is the Self Generation Incentive Program?

SGIP is the statewide CPUC ratepayer funded program across multiple California utilities. **The program is designed to offset a portion of the cost to install behind-the-meter technologies that offset customer load.**

Program goals

1. **Environmental:** Reduction of greenhouse gas and criteria air pollutants; facilitate the integration of renewables
2. **Grid Support:** Reduce/shift peak demand, improve efficiency and reliability of the T&D system, lower grid infrastructure costs, provide ancillary services, ensure DER reliability
3. **Market Transformation:** Support technologies that have the potential to thrive in future years without rebates

Current technologies

Energy storage (AES or batteries), thermal and mechanical storage, wind, fuel cells, internal combustion engines, microturbine, pressure reduction turbine, linear generator.

SGIP Program Now

	Large Scale Storage	Generation
Maximum Incentive Level	$0.25/Wh	$2.00/W Additional $2.50/W for backup to grid
	Commercial customers not eligible for Equity or Equity Resiliency budget categories	**100% renewable fuel requirement**

An energy storage/battery system has the following main functions/benefits:

Storage/backup power procures electricity from the grid or solar panels to be stored and used later. When shutoffs occur, a battery can provide power for several hours to multiple days, depending on battery size, critical energy needs and (if paired with solar panels) weather conditions.

Rate arbitrage battery can be discharged during peak hours to reduce bill

GHG reduction charging and discharging at specific times, including from solar, batteries can reduce greenhouse gases.

SGIP Project Process – high level

Customer reaches battery storage developers and works with one to complete the online application with required documents and submit through **selfgenca.com**.

- Reach out to developer for their experience and qualifications
- Developer consults with customer for system size, technology proposed and other customer-specific aspects

PG&E reviews documents, communicates to developer about application and/or issues a confirmed reservation.

Developer installs battery storage, updates electrical system and panel if necessary.

PG&E interconnects the battery to the grid, site inspection to verify system eligibility.

Developer submits Incentive Claim Form to PG&E and interacts with the program.

SGIP incentive payment is completed.

Tips for Selecting a Contractor

1

Obtain at least 3 bids from different storage contractors

2

Compare the following when you are evaluating bids:

- System cost and upfront cost, if any
- Amount of energy the battery can provide
- How long the battery can power your equipment
- Warranty (10+ years is required through SGIP)
- Current business license for provider

3

Look up the storage provider on the Better Business Bureau

Useful Resources

SGIP for small and medium businesses:
PG&E's Self-Generation Incentive Program for Businesses (pge.com)

Link to list of developers:
https://www.selfgenca.com/documents/developer/approved

Register to get solar contractor quotes:
https://www.energysage.com/

Self-Generation Incentive Program requirements/restrictions/process
Program Handbook 2023
SGIP | Resources (selfgenca.com)

Statewide program metrics
Incentive-level tracker
SGIP | (selfgenca.com)

SGIP Database Site, Energy Solutions:
SGIP | (selfgenca.com)

Public Email Address: selfgen@pge.com
Telephone: (415) 973-6436

Upcoming Classes

Basics of Photovoltaic (PV) and Energy Storage Systems for Grid Tied Applications
May 8, 2023

Solar PV, Energy Storage, and Microgrid Technologies with a Commercial Focus
May 31, 2023

Photovoltaic (PV) and Energy Storage Systems (ESS) Site Analysis and Installation
June 5, 2023

Explore our classes and register: www.pge.com/energyclasses

Generator/Battery Rebate Program Backup Power Transfer Meter Program

Generator/ Battery Rebate Program

This program offers eligible customers a $300 rebate with the purchase of a qualifying portable generator or battery to prepare for power outages. An additional $200 rebate (or $500 total) is available to eligible residential customers who are also on PG&E's California Alternate Rates for Energy (CARE)/Family Electric Rate Assistance Program (FERA) Programs.

Program Eligibility Requirements (must satisfy all to qualify):

- Must have an active residential or business PG&E account
- Must be located in a Tier 2 or 3 High Fire-Threat District and/or be served by an Enhanced Power Safety Setting-protected circuit
- Product must be in the Qualified Products List

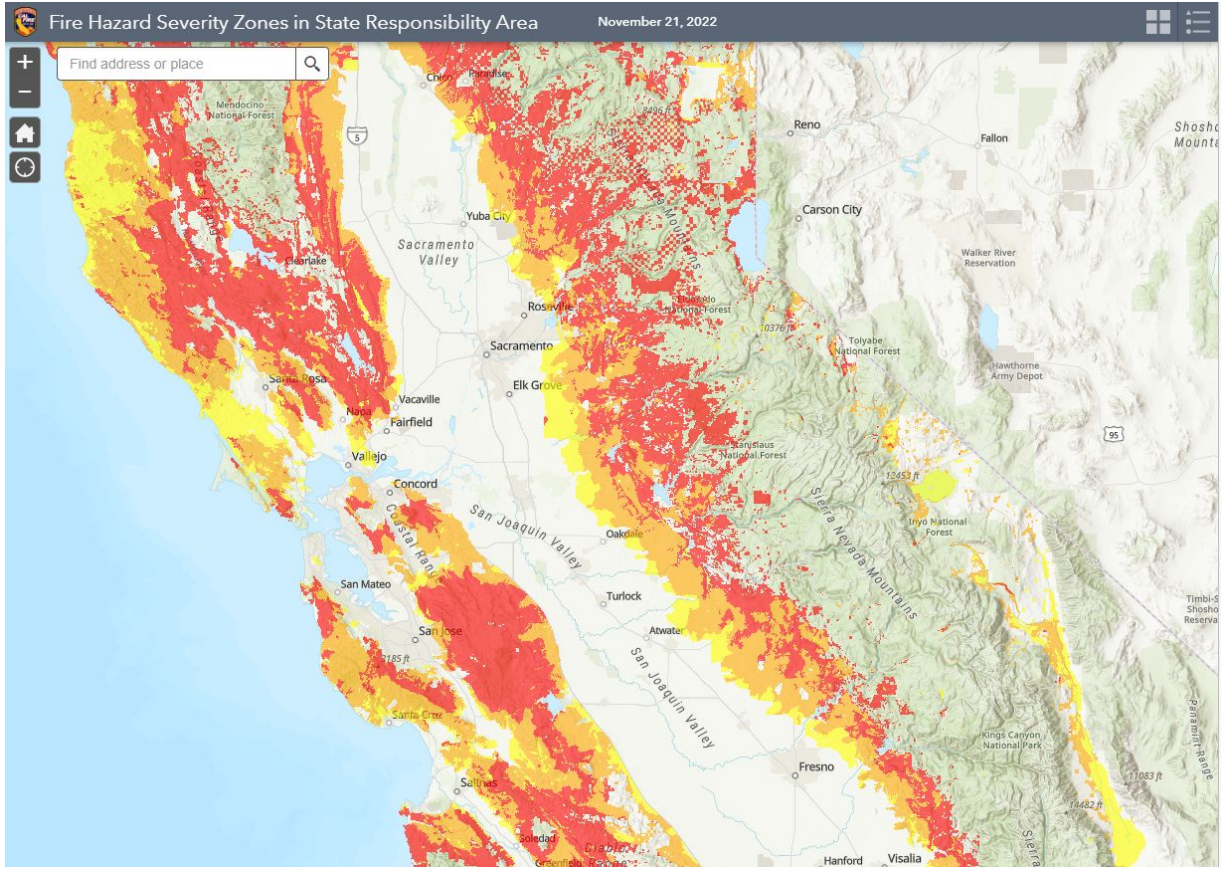
Apply to the Rebate Program at:

pge.com/backuppower

To find out if you are in a high fire threat district: **Fire Hazard Severity Zones in State Responsibility Area (arcgis.com)**

To find out if you are on an EPSS circuit email **GeneratorBatteryRebateProgram@pge.com**

Fire Hazard Severity Zones



Backup Power Transfer Meter Program

This program is available to PG&E customers who are located in a Tier 2 or 3 High Fire Threat District and/or served by an Enhanced Powerline Safety Setting. Customers located in these areas must have a compatible generator.

How it Works:
This PG&E patented device allows customers to safely power their facility or house using a generator. It lets customers predetermine which appliances or rooms to power during an outage. When the utility power is off the Backup Power Transfer Meter switches to the generator, then automatically switches back to the utility power when it becomes available.

What it Does:
The Backup Power Transfer Meter eliminates the need for multiple extension cords by using your electrical panel to let you determine which rooms to power. In most cases, this meter takes the place of a separate transfer switch.

For more information:

pge.com/backuppowe

New Service Installation or Upgrade

- ✔ Submit and track your application at www.yourprojects-pge.com
- ✔ Design your project in accordance with PG&E Greenbook www.pge.com/greenbook
- ✔ Call Customer Service to determine best billing rate 1-800-743-5000
- ✔ Questions? Call Building and Renovation Service Center at 1-877-743-7782

Statewide Programs for Producers

California Energy Design Assistance (CEDA)

- Statewide Program serving PG&E, SCE, SoCal Gas, SDGE
  - Program participants receive the following complimentary services:
    - Comprehensive Whole Building Energy Analysis
    - Assistance identifying and evaluating energy-saving measures
    - Analysis of energy costs and paybacks
    - Incentives for New Construction and Major Renovations projects
  - CEDA Pathways: Mixed Fuels or All-Electric
    - Mixed Fuels for customers who want the option of both gas and electricity
    - All-Electric program option offers higher incentives if customers do not install gas service
  - Learn more: CaliforniaEDA.com

California Department of Tax and Fee Administration (CDTFA)

- Cannabis producers qualify for some Equipment Exemptions under agricultural programs
- Learn more: cdtfa.ca.gov/industry/cannabis.htm

Panel Q & A

CONTACT US

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Topical Areas

- ~~Efficiency recommendations by CEA facility type~~
- ~~Energy-Water Nexus~~
- ~~Measuring water and energy usage~~
- ~~Energy Monitoring Tool Lending Programs~~
- ~~Developing and tracking efficiency KPIs~~
- ~~Prioritizing and planning projects~~ -Covered in question 1 of Q&A
- ~~Case studies of successful efficiency improvements~~
- ~~Maximizing incentives through effective utility-producer engagement~~
- ~~New technology on the horizon~~