

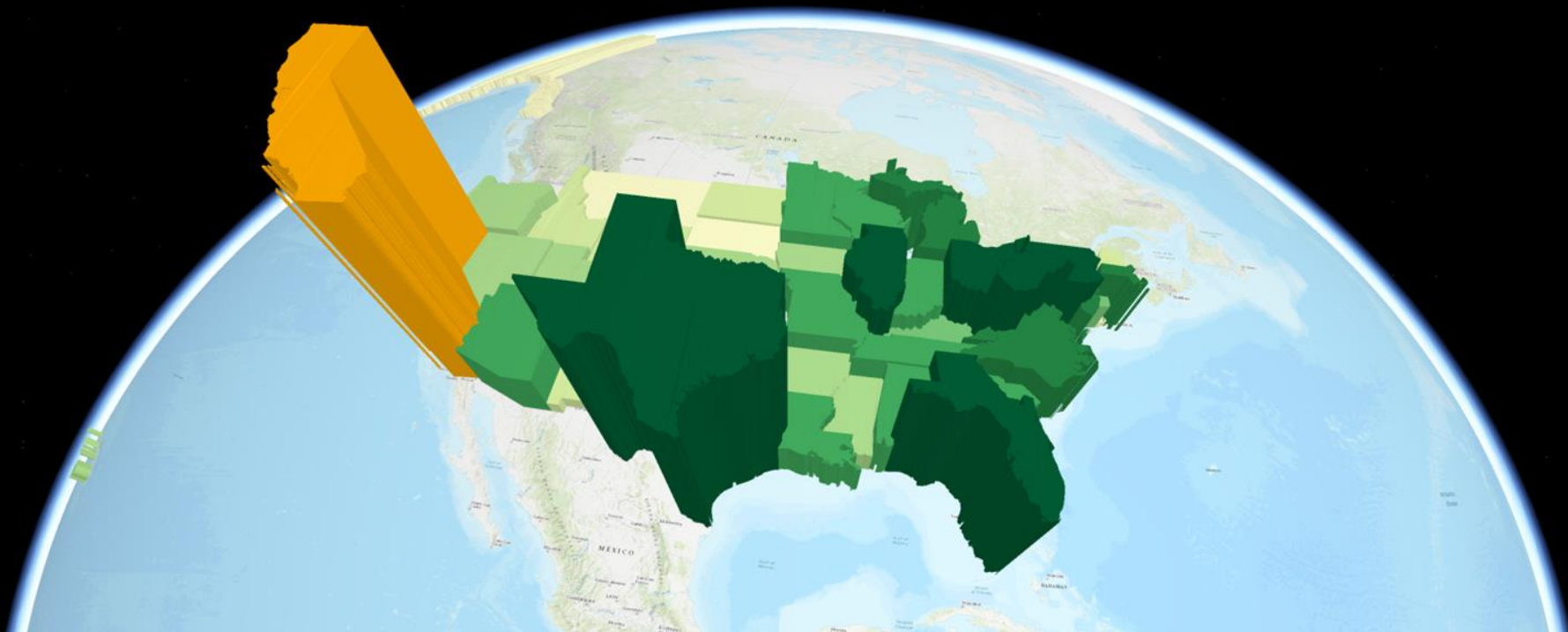


Achieving Equitable Decarbonization: Lessons from Policy and Pilot Projects

Marc Costa, The Energy Coalition

CalTF - Oakland, CA

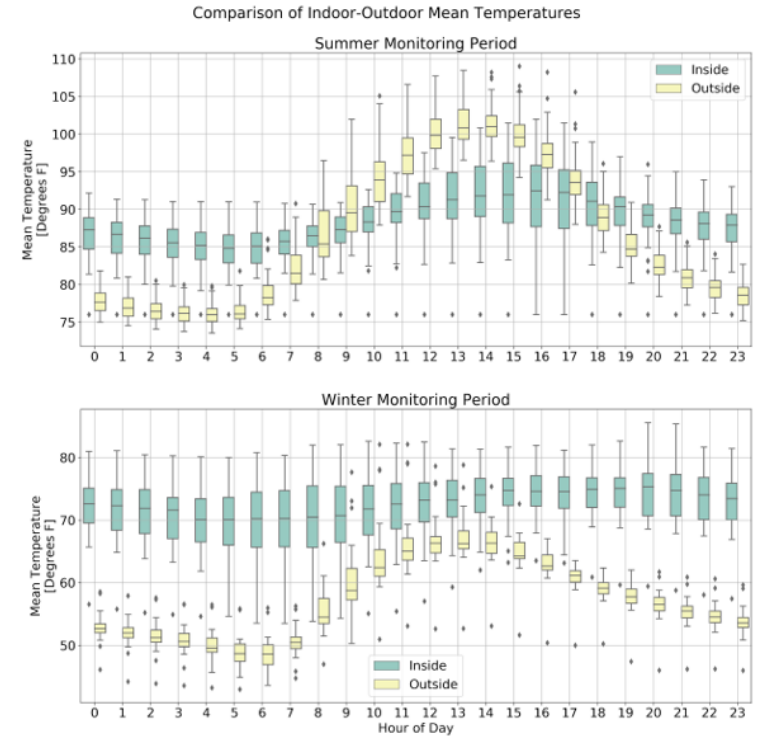
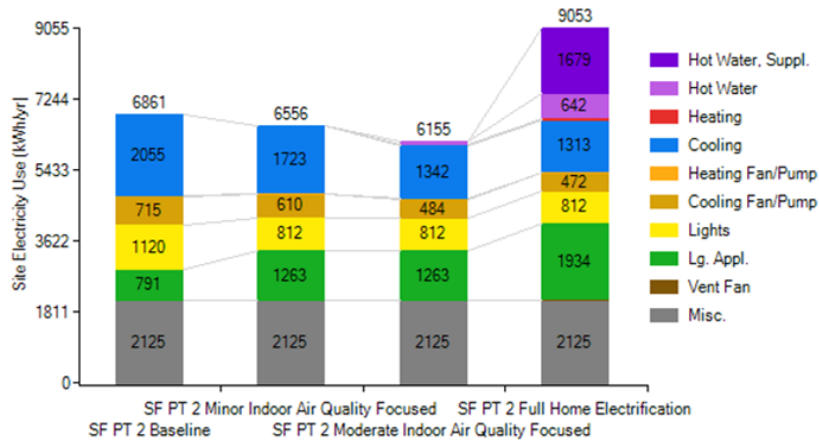
June 2023



>\$48 Billion Dollars in Total Revenue from CA Retail Electricity Sales
(U.S. Energy Information Agency, 2021)

California Homes and People Need Help

- High tolerance for thermal discomfort
- >85F inside homes



Air Quality

Community Solar

Resiliency Center

BASSETT AVOCADO HEIGHTS
advanced energy
community

Advanced Homes

Clean Commuters



Key Topics

Challenges

- AMI data role is evolving
- Device level data is only increasing, but elusive
- Program design - back to the drawing board on eligibility
- Industry data exchange specs aren't accessible
- Stranded demand flexibility

Goals

- Electrify homes and power with on-site DERs
- Harness DERs for non-wires solutions
- Create value and generate economic benefits for customers
- Better the lives of those that need it most

Data Needs for Activating DACs

People

- Income Eligibility Screening
- Own/rent
- Tech savvy
- Medical needs
- Other needs
- Preferences

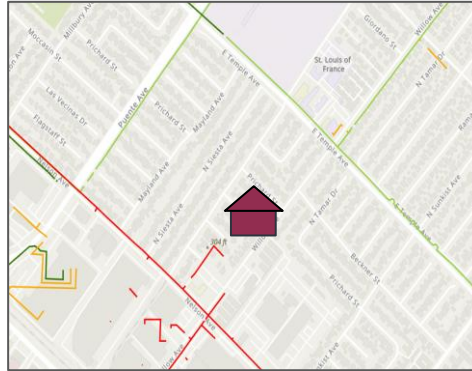
Assets

- Roof condition
- Existing HVAC
- Existing WH
- Roof condition
- Panel size
- Wifi
- Other conditions

Grid

- Line voltage
- Reliability
- Violation triggers
- Harmonics
- Interconnection capacity
- Aggregation potential

Prosumer Network - Grid Data



(1 of 1)

ICA - Circuit Segments, Non-3 Phase

Information

Segment Level
 Segment ID 49966275
 Node ID 49965105

Circuit Level
 Circuit Name Gear
 Circuit Voltage (KV) 12
 Substation Name Industry
 System Name Walnut 220/66 System
 Existing Generation (MW) 0.51
 Queued Generation (MW) 0
 Total Generation (MW) 0.51

Generation data under review

(1 of 5)

Substations

Information

Substation Name Industry
 Substation ID 457
 Substation Type D -- Distribution
 System Name Walnut 220/66 System

Existing Generation (MW) 5.69
 Queued Generation (MW) 0
 Total Generation (MW) 5.69
 Projected Load 72.8
 Penetration Level 16.74
 Maximum Remaining Generation Capacity (MW) 62.61

Note Interconnection studies in this area have identified adequate deliverability.

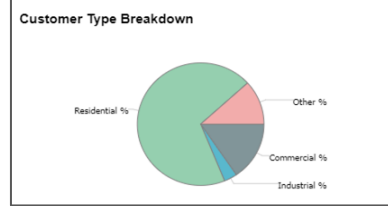
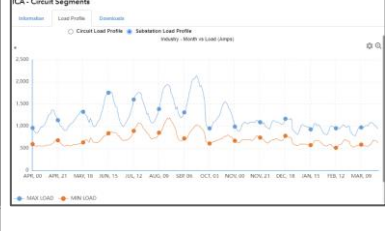
Generation data under review

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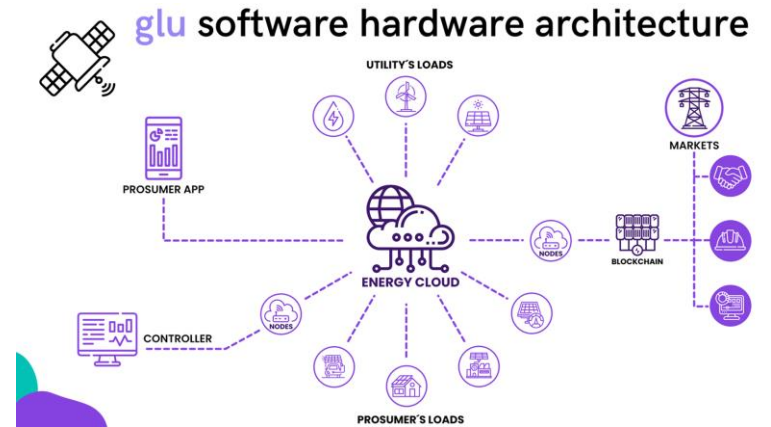
U1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Circuit Name	Node ID	Month	Hour	Load Profile Type	Uniform Generation Operational Flexibility (kW)	Uniform Generation n-Static Grid (kW)	Generatio n-Protectio n (kW)	Generatio n-Thermal State Voltage	Generatio n-Steady State Voltage Variation	Generatio n-Operatio nal	Uniform Load (kW)	Load-Thermal (kW)	Load-Steady State Voltage	Load-Voltage Variation	Solar PV Operatio nal Flexibility	Solar PV Grid (kW)	
2	GEAR	1.06E+08	11	13	MIN	Redacted	12019.18	20000	12019.18	20000	Redacted	10860.58	10860.58	20000	20000	Redacted	15853.36	
3	GEAR	1.06E+08	11	13	MIN	Redacted	12022.51	20000	12022.51	20000	Redacted	10860.82	10860.82	20000	20000	Redacted	15857.75	

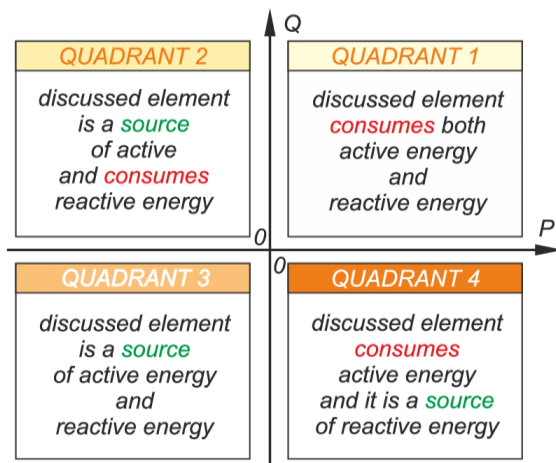


Prosumer Network - Software

- Leverage CEC MIDAS Tariff API
- Test CPUC CalFUSE price signal
- Create customer centric controls
- Tracking on Ethereum blockchain ledger
- Physics based forecasting and AI integration for optimization



Prosumer Network - Hardware Design



- Ensure grid harmonics are captured
- Ensure local control of the home assets
- Overcome wifi barriers with satellite node



Technical: Data, Modeling, and CalTF

- Reduced Order Models
- Demand flexibility gems
- OpenADR3, CTA-2045b, & IEEE 2030.5 in BEM
- BEM for VPP ops and aggregators
- Smart contracts and oracles as real time optimizers
- Better calibration at defined intervals
- More DER measures in OpenStudio
- Power conditioning and grid harmonic integration in BEM

Big Idea - Policy Solutions

- Behind the meter RPS
- BTM resources for RA, QC, LCR
- System sizing and operations
- Regulatory philosophy change to decentralized energy
- Aggregators for Cap and Trade
- Derive inherent value in the way we interact with energy via local energy markets

The Why & Impacts

- BAAEC's Workforce Development
 - 20 trainees have completed the program
 - 13 trainees have been placed in a job
- Inspiring Family Story
 - Father, son, and daughter completed Grid's Installation Basics Training certification program, sponsored by BAAEC



Presented by



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