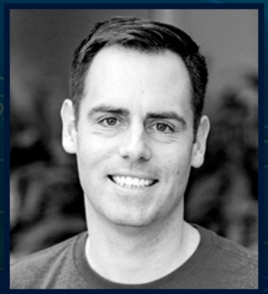
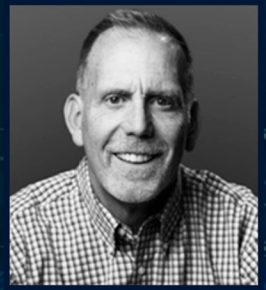
CALFLEXHUB SYMPOSIUM

NOVEMBER 3 | 8am-4pm PT



JOHN ANDERSON



DOUG POFFINBARGER

CHRISTOPHER FREEMAN

JEFF GLEESON

JOHN POWERS

BUILDING A LOAD FLEXIBILITY INDUSTRY

SPEAKERS: John Anderson, Director, Market Innovation, OhmConnect; **Doug Poffinbarger,** Director, Commercial Operations, Nostromo; **Christopher Freeman,** Senior Manager, Smart Products & Grid Ecosystem, Rheem; **Jeff Gleeson,** Lead, Nest Energy Services, Google; **John Powers,** CEO, Elexity

2023

CalFlexHub

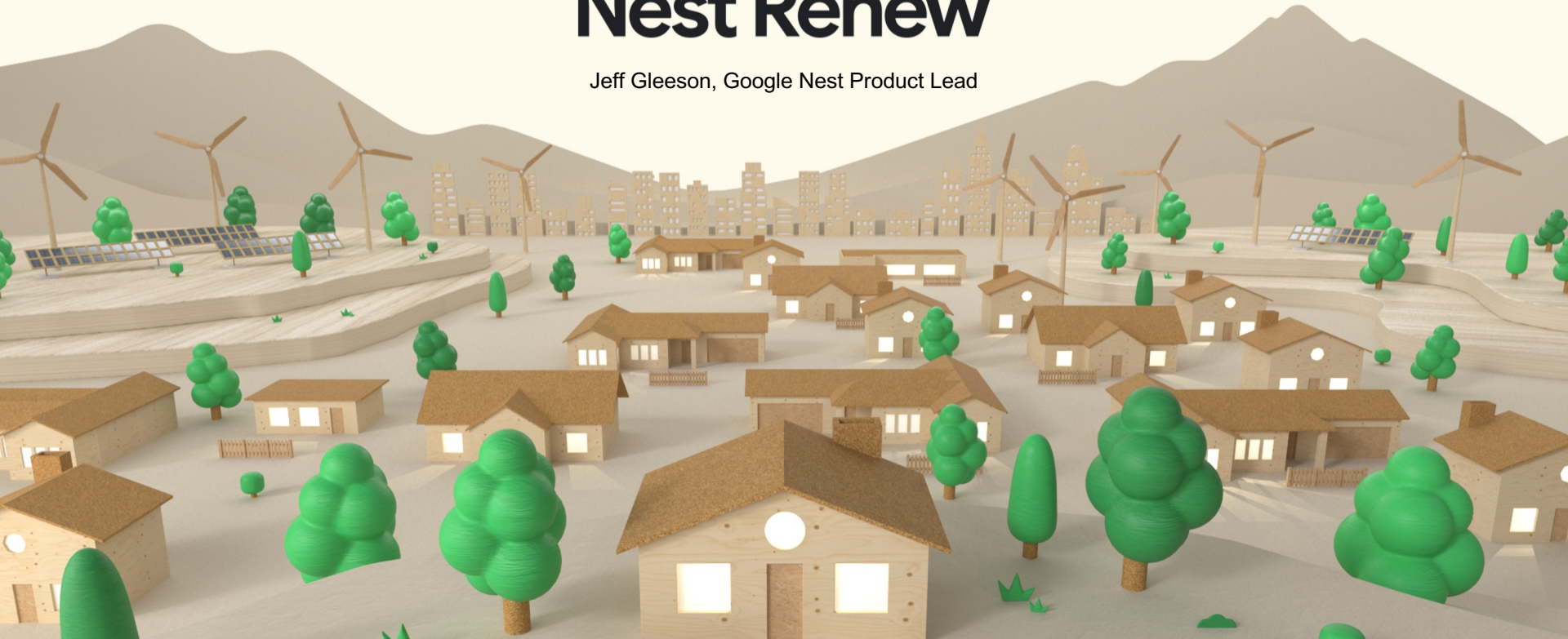
BERKELEY LAB

STATE OF CALIFORNIA ENERGY COMMISSION

MOMENTUM

Nest Renew

Jeff Gleeson, Google Nest Product Lead

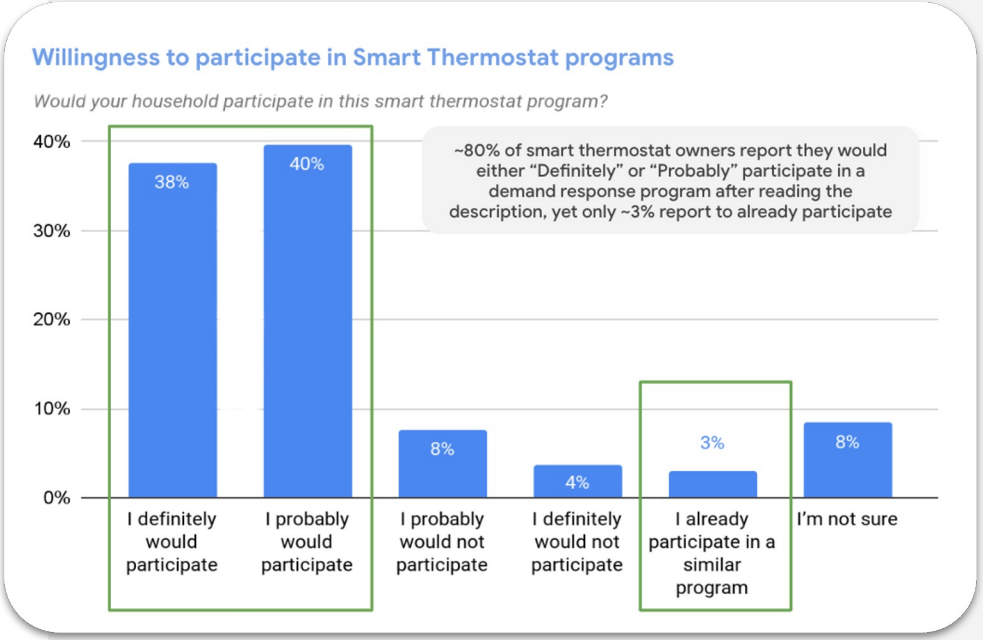


10 years ago, we called VPPs “DR,” and we had a few pilot programs.

Working with partners across the industry we’ve helped to show that smart thermostat customers can help to provide a valuable peak resource.

And we know that customers want to participate in these programs to save money, help the environment, and be part of their community.

But participation still lags because the programs can be hard to find and sign up for.



Virtual Power Plants will be a huge asset to an increasingly dynamic and clean energy grid.

But they'll only work if customers are interested in participating.

With Nest Renew, we've learned that when you make it easy to join, and participate without being uncomfortable, the impact can really start to add up.

110M hours of micro energy shifting since launch in 2022, and still counting.

What scale might we reach with VPPs if we make it simple for customers to enroll, participate, and earn rewards?

Thank you

Rheem is a leading HVAC & water heater manufacturer globally and has invested in becoming a complete home comfort company

America's #1 Water Heating brand

Largest and only U.S. manufacturer of HVAC systems & water heaters

Strong legacy of product innovation and technology

Heavily invested in sustainability; 19M mt of CO_2e emissions avoided since 2019

5M+ systems and appliances installed in the U.S. every year

Rheem

Eemax · INTERGAS · RUUD · Richmond · FRIEDRICH · Solahart · HTPG

Rheem is enhancing its electric tanked water heater product line to support grid connectivity and demand response

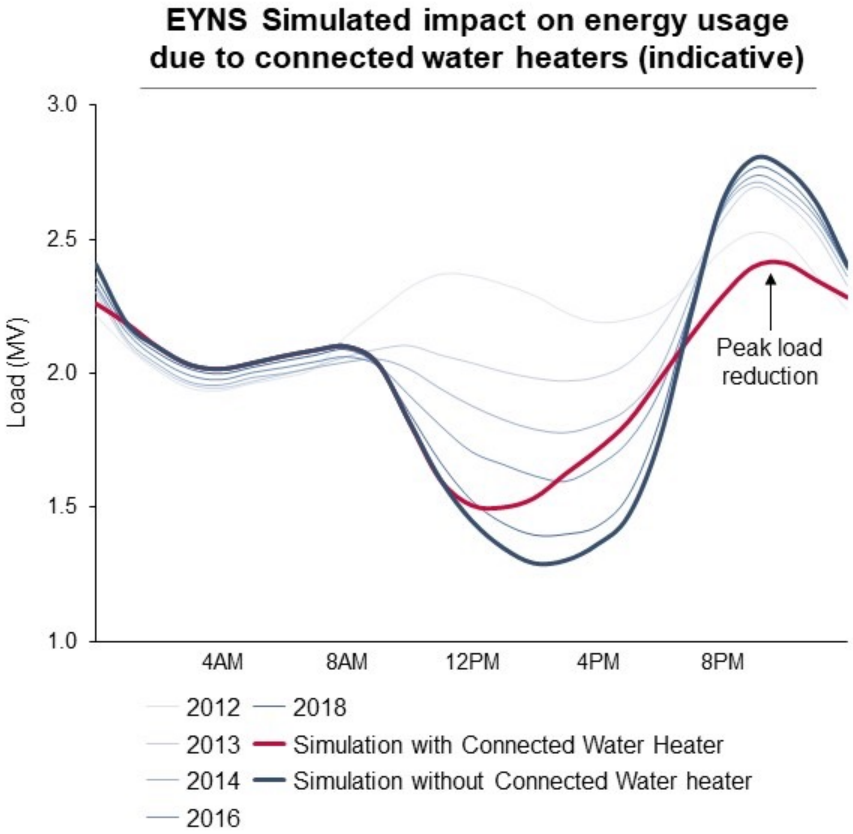
All future electric tank product features

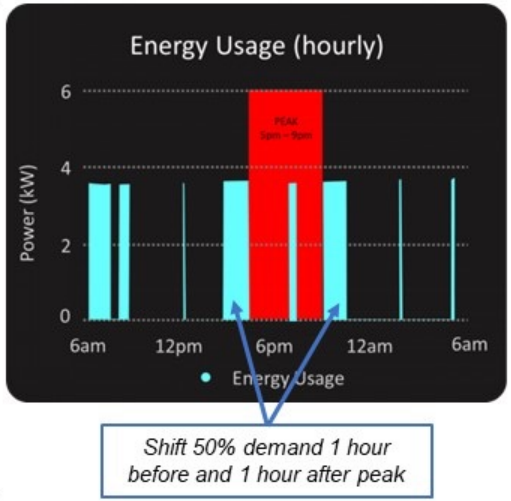
Electronic Controls
Control water heater through Homeowner & Contractor Apps, Portals, and API's

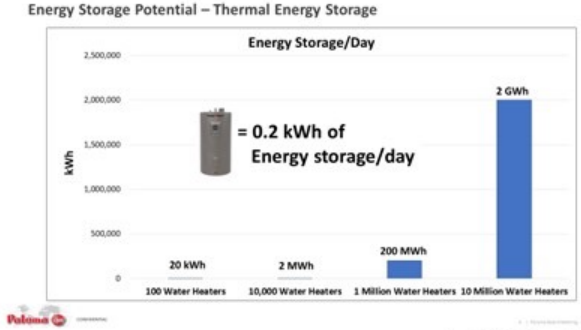
Grid Connectivity
Connect water heater through Wi-Fi, LTE, CTA-2045 and / or OpenADR capabilities

Energy Storage
Enable load-shifting through built-in mixing valve

Rheem Energy Solutions







The Beverly Hilton - 1.2MWh - Commissioned Sep 23

- Water based - Completely Safe
- ~1950s iconic building
- Retrofitted through a 3ft doorway
- Daily operation
- Operation doesn't impact the building

120 Buildings, Energy as Service
$280M - DOE backed

NEWS

US Department of Energy negotiating US$176 million loan with thermal storage startup Nostromo

Energy Storage NEWS

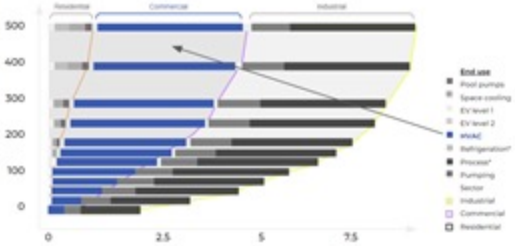
NOSTROMO

Space Cooling accounts for 1/2 the load during peak

Commercial A/C (HVAC) alone accounts for **> 1/3 of the total potential** of load shift with **behind the meter** energy storage, and almost **the entire potential in the commercial** sector

LBNL shift study - 3 GW potential for Commercial HVAC

California, 2030



C&I not building storage

Promote environmental justice

Power consumption

Storage

Max VPP capacity - Harness all assets

Assets that customers buy

- Participating in programs / markets is an incremental benefit
- Dynamic pricing could be a great driver

Assets for grid participation

- Provide everyday baseload
- Require predictable income for financing and bankability
- Reliable, measurable in real time, predictable

1. Opportunity

- C&I not participating in storage
- No interconnection / No environmental permits
- In <2 years, 100s of MWs can be built in parallel

2. Potential

- Harnessing this asset class
- Daily participation for renewable integration
- Dispatchable, Visible, Measureable, Reliable

3. Existing programs not supporting

- Traditional shed DR does not fit daily storage dispatch nor benefits from it
- Dynamic pricing is not predictable (bankable / contractible)

4. A new program that enables C&I storage

- Pay for verified (daily) shifting
- Verification / Reporting through submetering
- Operate it according to grid needs (as a VPP)
- Payments reflect avoided cost of capacity and market energy

If we build a shift program, they will come!

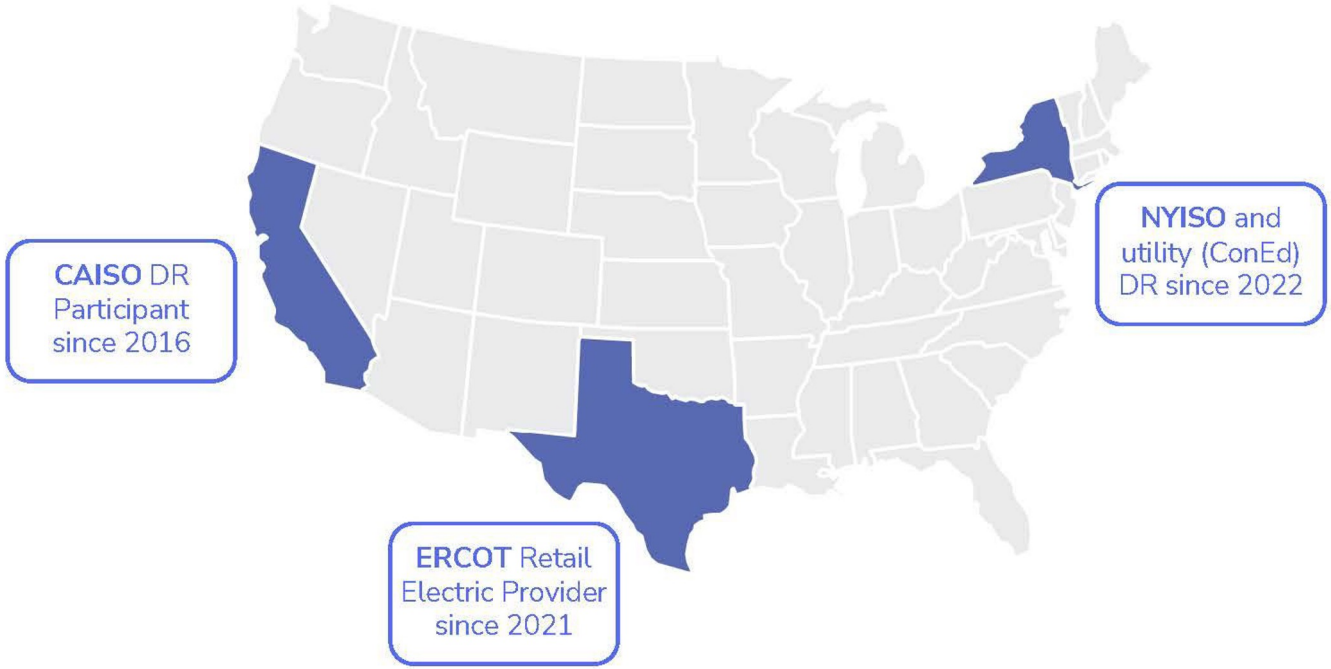
OhmConnect

Save energy. Save money.

OhmConnect exists to improve the lives of people and the health of the planet by reimagining the way we (collectively) use energy. By rewarding consumers for managing their energy use, OhmConnect battles climate change by reducing the need for fossil-fueled power and stabilizing the electric power grid.

OhmConnect's growth story: follow the smart meters!

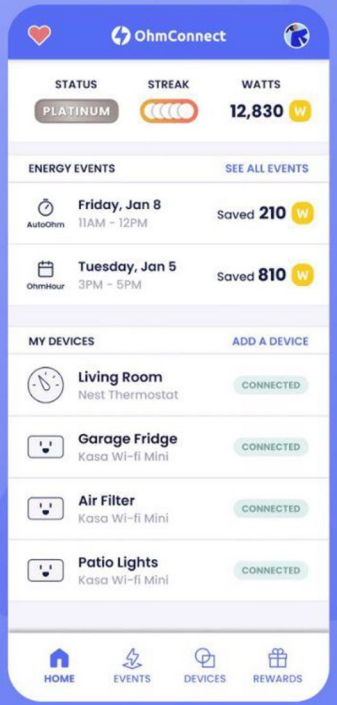
Interval meter data lets OhmConnect calculate users' load reductions during grid events.



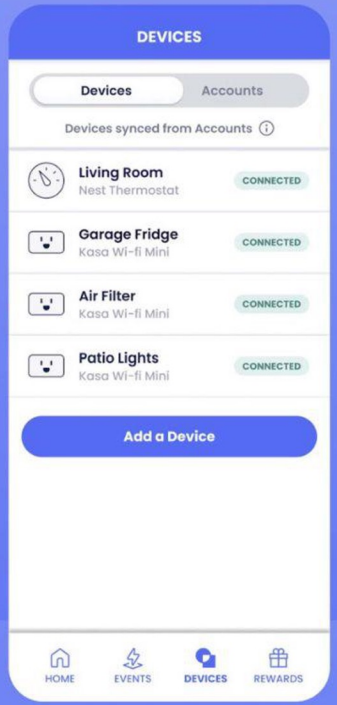
Users are engaged quickly with instant benefits

Gamified platform rewards energy savings at peak times; smart devices make saving energy automatic and effortless.

Home

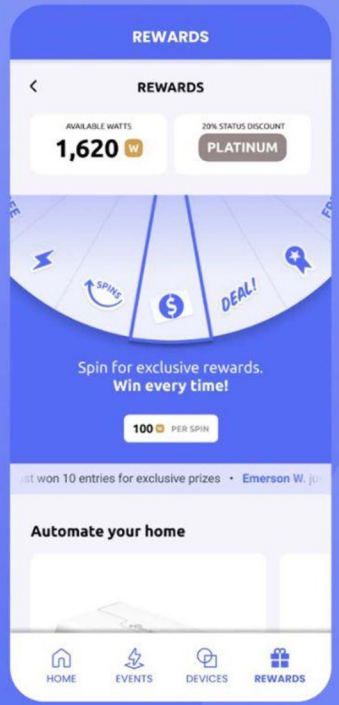


Devices

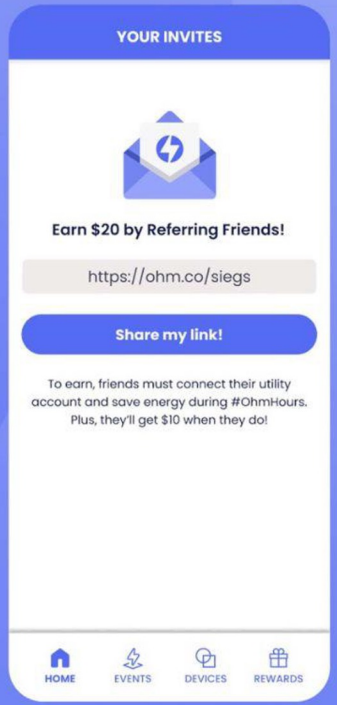


Events

Rewards



Referrals



Platform designed for DR can enable price-responsive demand

Households that are "smart" – in terms of energy literacy and automation – stand to save on dynamic rates.

Three key features of a future with ubiquitous price-responsive demand:

Rate options provide households with compelling incentives to enable and engage in load shift and/or shed.

Low up-front costs for adopting technology that automates shifting of household loads.

Regulatory environment allows – indeed, *encourages* – third parties to offer households innovative services that maximize the value of their (technology-enabled) price-responsive demand.