CALFLEXHUB SYMPOSIUM
SEPTEMBER 24 | 8am-6pm PT

ORLY HASDIM

ANN OLIVO

BRUCE NORDMAN

STEVEN LANZISERA

COMMUNICATION, CONTROL AND INTEROPERABILITY IN SMALL BUILDINGS

Orly Hasdim, Utility Relations, Universal Devices;

Ann Olivo, Marketing and Product Vice Chair, Matter WG (Silicon Labs);

Bruce Nordman, Energy Policy Research Scientist Engineer, Berkeley Lab;

**Steven Lanzisera**, VP of Engineering, Renew Home

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STATE OF CALIFORNIA ENERGY COMMISSION

MOMENTUM

2024

Steven Lanzisera
VP Engineering

Renew Home

- Renew provides cloud-based, whole home energy services in millions of homes in the US

- Users care about cost savings, but most **don't** want to deeply engage or understand to capture savings

- Focus on savings, comfort, and convenience

- Dynamic pricing can work with the user journey if we make it easy, accessible, and impactful

Peak Time
74
Indoor 72

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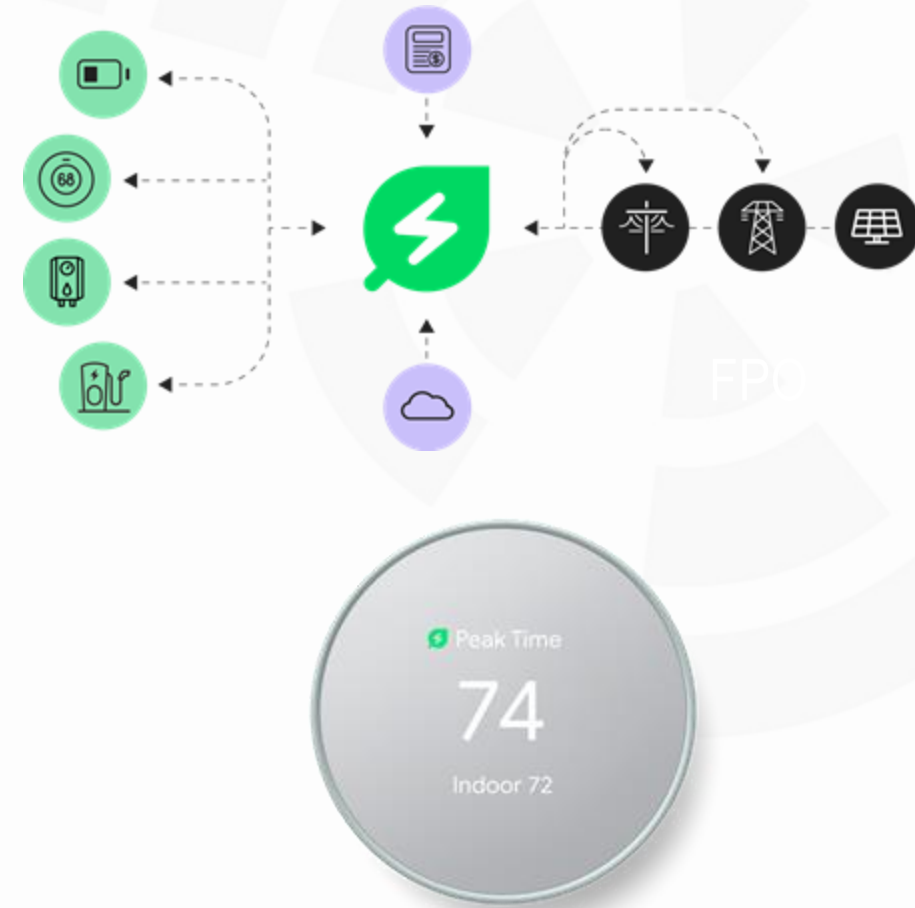
Orly Hasidim
VP Operations

UNIVERSAL DEVICES

Demand Flexibility Open Source Platform

Enables seamless **communication between all devices**, regardless of manufacturer or communication standard

Users can install **plugins**—similar to apps on Android or iOS—allowing devices to work together

Protocol-agnostic - eliminates the need for compatibility constraints, fostering innovation and adaptability in a developer-friendly ecosystem

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Ann Olivo

Vice Chair, Matter Marketing & Product Sub Group

- **Silicon Labs**
  - Purpose-built wireless connectivity for the Internet of Things
  - Hardware, software, development tools, and ecosystem support
- **Connectivity Standards Association**
  - Hosts the Matter standard, as well as Zigbee, Product Security, and Aliro
  - 725+ member companies, with 9,000+ individuals participating from 48 countries

Matter Timeline

Oct 2022

Matter 1.0 Spec Launch

Devices: Door Locks, Motion & Contact Sensors, Lighting, Light Bulbs, Smart Plugs, Smart Hubs & Bridges, Thermostats, Wireless Access Points, Blinds & Shades, Garage Door Openers, Smart TVs

Features: Matter Casting, Multi-Admin Control

May 2023

Matter 1.1 Spec Launch

Features: New developer and certification tools, under-the-hood performance and core improvements

Open: Interoperability Lab opens in Portland, OR, USA

Oct 2023

Matter 1.2 Spec Launch

Devices: Refrigerators, Dishwashers, Laundry Washers, Robotic Vacuums, Smoke & Carbon Monoxide alarms, Room Air Conditioners, Air Quality Sensors, Air Purifiers, Fans, Latch & Bolt Door Locks

Features: New naming, semantic, and interoperability features

May 2024

Matter 1.3 Spec Launch

Devices: EV Charging, Water Management (Leak & Freeze Detectors, Rain Sensors, Controllable Water Valves), Laundry Dryers, Microwave Ovens, Cooktops, Extractor Hoods
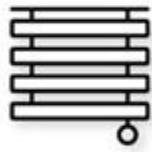
Features: Energy management (Reporting & Monitoring), Enhanced Entertainment and Smart Home Management via Matter Casting-enabled Media Players and Smart TVs

Devices Supported by Matter
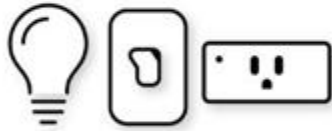

HVAC Control
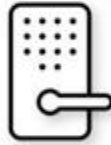
Window Coverings and Shades

Safety and Security

Energy Management

Lighting and Electrical

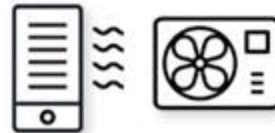**Door Locks**

Media Devices

EV Chargers

Controllers and Bridges

Appliances

Air Quality

Water Management

Growing Trends Around Energy Management

78% of US adults concerned about home energy costs, **70%** taking an active approach to being more energy efficient.

July 2024, CNET Consumer Energy Survey

Smart energy devices led online search categories, **50%** of all smart home searches feature "smart energy".

Samsung Smart Home Buyers Index (UK), June 2024

52% of consumers motivated to adopt smart home technologies for environmental benefits, such as reduced carbon footprints.

December 2023, Deloitte Connected Consumer Survey

66% of consumers want to actively reduce energy usage

July 2024, Parks Associates' report

40% of Gen Z buyers in the UK say they want next or first property to be a smart home.

Samsung Smart Home Buyers Index (UK), June 2024

71% of UK consumers prioritize energy efficiency when considering a smart home, **6.5%** willing to pay more.

Samsung Smart Home Buyers Index (UK), June 2024

79% of consumers using smart home technology reported saving money on energy bills is a primary motivation.

2023 survey by the Smart Energy Consumer Collaborative

Energy Savings #1 use case among US consumers for smart home devices.

July 2024, Parks Associates' report

44% of smart home adopters interested in features that help them monitor and reduce energy consumption to lessen environmental impact and save money.

December 2023, Deloitte Connected Consumer Survey

81% say device compatibility is a key determining factor to purchasing.
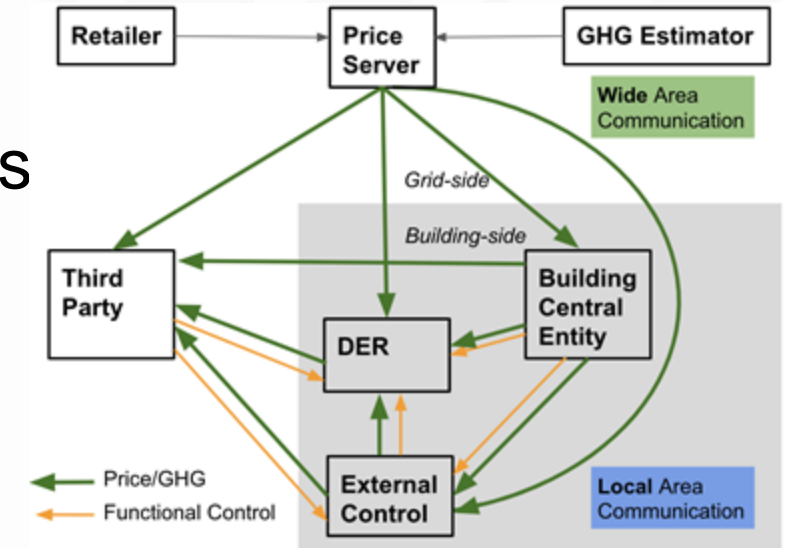
Samsung Smart Home Buyers Index (UK), June 2024

71% say energy efficiency is key consideration factor when considering a smart home and **56%** say it will save them money.

Samsung Smart Home Buyers Index (UK), June 2024

Bruce Nordman, LBNL *(Moderator)*

CalFlexHub Task Lead for Communications

❖System architecture; communication protocols
❖What entities exist &
 who talks with *whom* about *what*
❖Everything between price server and flexible
 load (or battery or EV)

➢ Australia is shifting from:

DER - Distributed Energy Resource - to
CER - Customer Energy Resource

CFH System Architecture

❖ Applies to all building (customer types)

❖ One of four devices in lower half translates from price to functional control

❖ OpenADR 3.0 can implement all green arrows (price)

❖ Matter can implement all arrows inside the customer site

Prices and Tariffs

Highly Dynamic Price

❖ Intervals between hourly and 5-minute

❖ Set no farther in advance than the day before

❖ Different every day

(can be guaranteed once announced or a 'best effort' forecast)

Standard tariff 'features'

❖ Price forecast at least 24 hours

❖ Optional different export price

non-financial

❖ Marginal GHG forecast

❖ Occasional emergency alerts

*Also coordinate capacity between customer and distribution system

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Countries where HDP retail prices exist today

- United States
- United Kingdom
- Denmark
- Norway
- Sweden
- Finland
- Latvia

- Lithuania
- Estonia
- Germany
- Netherlands
- Belgium
- Austria
- Czechia

- Spain
- Australia
- New Zealand
- Singapore
- Japan

PANEL DISCUSSION

Thank you!

Contact: bnordman@lbl.gov