Residential Market Advisory Group

• The RMAG’s mission is to bring together residential market actors to envision the next generation of residential clean energy solutions and to facilitate deployment of strategies that stimulate market growth, deliver customer value, and enable achievement of New York State’s energy policy goals.

• It provides a forum for the residential market that advances collaboration among stakeholders and enables the market to provide input to NYSERDA.
Agenda

1:00-1:45
• Presentation by Copper Labs
  - Enhancing home improvements with wireless real-time electric and natural gas monitoring.

1:45-2:30
• Presentation by HubControls
  - Learn how the HubController® Automatic Energy Management System takes the pain out of decarbonizing the heating and cooling of family homes.
Audience Participation

At any time, type in a question to “All Panelists” using the Chat Feature.

During Q&A, you can “Raise Your Hand” to be unmuted and ask your question.
Wireless Real-Time Energy Management

Eric VanOrden
eric@copperlabs.com
copperlabs.com/demo-video
Constant challenges to provide safe, reliable, affordable and clean energy.
If you can’t measure it, you can’t manage it.

Real-time meter data is the key to engaging consumers, stabilizing the grid and orchestrating distributed energy resources.

Copper has unique access to this data.
Residential demand response capacity will more than triple in the next decade with increasing distributed energy resources

Global Residential Demand Response Capacity:

13.8 GW  ➡️  47.4 GW

2019  2028

North American Distributed Energy Resources:

46% of capacity from residential DER
28% of capacity from EV charging

Source: Guidehouse Insights
Real-time grid edge intelligence is required to manage an increasingly distributed and decarbonized grid. 

Traditional, centralized power grids were built to manage one-way power flow. 

Decarbonization and decentralization are disrupting the utility industry. 

Distributed, two-way grids require real-time energy management and control.
Copper is the only solution that delivers real-time electric, gas and water meter data, with or without smart meters.

Only With Copper:

Utility Data Access: 30-second interval
Consumer Data Access: 30-second interval
Customer Engagement: targeted, real-time
Grid Edge Intelligence: real-time voltage and frequency
Built for Consumers

Copper was designed to be set up by a consumer in less than 5 minutes.

Distributed as energy audit leave-behinds, direct installs, marketplaces, new construction, and more.
Guidehouse is working with Copper Labs to provide electric and natural gas data from multiple utilities to help regulators and stakeholders understand load profiles for capacity planning, model the impact of electrification, identify the amount of energy usage by major appliances, and more.

National Grid selected Copper to reduce peak demand through customer engagement and targeted notifications, while also using interval data to measure & verify smart t-stat program savings.
Real-time electric & natural gas meter data for demand management and more
Wireless Real-Time Energy Management

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Great job reducing energy consumption during this peak period. Are there other major appliances that you can control to reduce energy before 11am?

Your community typically consumes 28 therms between 9:00-11:00am on days like Tuesday, December 1, 2020.
Your energy consumption was higher, by approximately 55%, compared to the same day last week.

Gas demand peaked at more than 0.5 ccf/h.

Peak Demand
Your natural gas demand peaked at more than 0.5 ccf/h this morning.

Usage
Your energy consumption was higher, by approximately 55%, compared to the same day last week.

Great job reducing energy consumption during this peak period. Are there other major appliances that you can control to reduce energy before 11am?

Peak Usage Day - Conserve natural gas energy between 9:00-11:00am this morning. This will help decrease demand to help serve you and your neighbors with space and water heating throughout the remainder of the day.

Your community typically consumes 28 therms between 9:00-11:00am on days like Tuesday, December 1, 2020.
The HubController®
Automatic Energy Management System
World Problem: The Energy Transition & Consumer Inertia

The energy transition includes decarbonizing heating, a sector the World Economic Forum says accounts for more than 40% of global carbon emissions, with 13% coming from direct residential heating alone.

The big challenge and problem for decarbonizing heating is consumer inertia.

• Consumers find it difficult to understand the complexities of home heating.
• They don’t immediately see the benefits from the energy transition.
• Their residential energy bills are steadily increasing.
New York Problem: Residential Energy Reduction Targets v Actual Energy Use

Big Energy Reduction Targets

185 TBtu end-use savings in buildings and industrial sector below forecasted energy use in 2025 by 2025

Big Heating and Cooling Energy Use:

✔ HVAC consumes 40% of the energy used by residential and commercial buildings

Responsible for:

✔ 25% of the total energy used in NYS
✔ 36% of the GHG emissions in NYS

 Cooling requirement for buildings
✔ the primary contributor to peak electric system demand (>32 GW) and average base-load system demand (<18 GW).
Part Smart Thermostat: Great Smart Control functionality for US Homes

Controls scheduling and temperature for all HVAC systems

- Furnace (w/fan)
- A/C & Fan
- Air Handler
- Humidifier
- Dehumidifier
- Heat Pump

Uses Wi-Fi & Bluetooth

+ Customizable Screen  
so we can customize it for Partners marketing/messages

+ Over the air “OTA” Upgrades  
so we can add new features at any time

+ IHD Functionality  
so we can display information to the customer in real time

Eliminating Energy Waste in the Home
Part Smart Meter: Anonymized Real-Time Energy Use Data

- 175,200 home energy use Data Points are collected by the HubController® each year

*We can tell you if...*

- your home is poorly insulated...
- you could do with upgrading your heating system...
- your partner will leave because you keep changing the temperature...
Automatic Energy Reduction Tech

Automatically reduces energy use by a proven* 34.7%

+ Duty cycle
  7.3%

+ Smart temp. control
  25.3%

+ Schedule shaving
  2.1%

= Total Savings of 34.7%

Duty cycle
13 min on - 2.5 min off

Smart temp. control
8 min on - 8 min off

Schedule shaving
3 min + 5% scheduled event
Residential Carbon Reduction

Ulster University verified report on Irish Market Impact

✓ 3-year study

✓ 14.1 MMBTU average reductions per home per year

✓ 0.96 MTCO$_2$ average savings per home per year

Irish Market Use Case: 11,000+ HubController® installations

98,474 MMBTU Residential Heat Energy Savings to date and growing

11,000+ Homes

6,242 Metric Tons of Carbon savings to date and growing

Eliminating Energy Waste in the Home
How it works...

1. Qualified installers connect the Hub Controller smart thermostat to customer home HVAC systems

2. Our Happy Hub Controller customers save money on their utility bills and gain smart control of their heating and cooling systems

3. This Produces...
   - Energy/ carbon reductions
   - Data-driven identification of home energy deficiencies
   - Promotion of further energy efficiency measures

4. HVAC installer partners and other portfolio managers implement additional energy efficiency measures

5. Single Family Home benefits...
   - Reduce their energy bills
   - Further savings from data-driven energy efficiency upgrades
   - Gain smart control of their heating and cooling systems

6. Utility benefits...
   - Low cost per Therm & kWh energy efficiency measure for mandated heating decarbonization targets
   - Reduced operations costs through gas and electric peak load reduction
   - Existing customer revenue protection through better service

Eliminating Energy Waste in the Home
Next Steps... New York State HubController® Demonstration Project

NYSERDA Nextgen HVAC Innovation Grant

✓ $500k partial funding

Objectives:

✓ Install 500+ HubControllers® in New York single family homes

✓ Independently Measure & Verify the HubController® induced residential energy and carbon savings over 1 year

✓ Build partnerships with all stakeholders...
Demo Project Partnerships...

✓ Housing Authorities, Social Housing Agencies

✓ Municipalities, Energy Smart Communities

✓ Utilities

✓ Retrofit & HVAC Contractors

Investment Partnerships...

✓ Investors interested in
  ▪ Carbon Trading
  ▪ Residential Energy
  ▪ Retrofitting
Thank You

Ollie Hynes, CEO
ollie@thehubcontroller.com
Residential Market Advisory Group
Save the Dates!

• **Annual Residential Market Advisory Group Meeting with Breakout Session Topics**
  • Virtual
  • November 4, 8-10, 15

• **The Clean Energy for Homes Conference**
  • Presented by the Building Performance Association and hosted by NYSERDA
  • February 9 – 10 in Saratoga Springs, NY
Interested in Presenting?

• Email resmarket@nyserda.ny.gov to present at a future RMAG Membership Showcase

• Visit www.building-performance.org/ for information on the 2022 conferences.
Thank you!