

NARUC/NASEO MICROGRIDS STATE WORKING GROUP

Webinar: Microgrids for LMI Communities

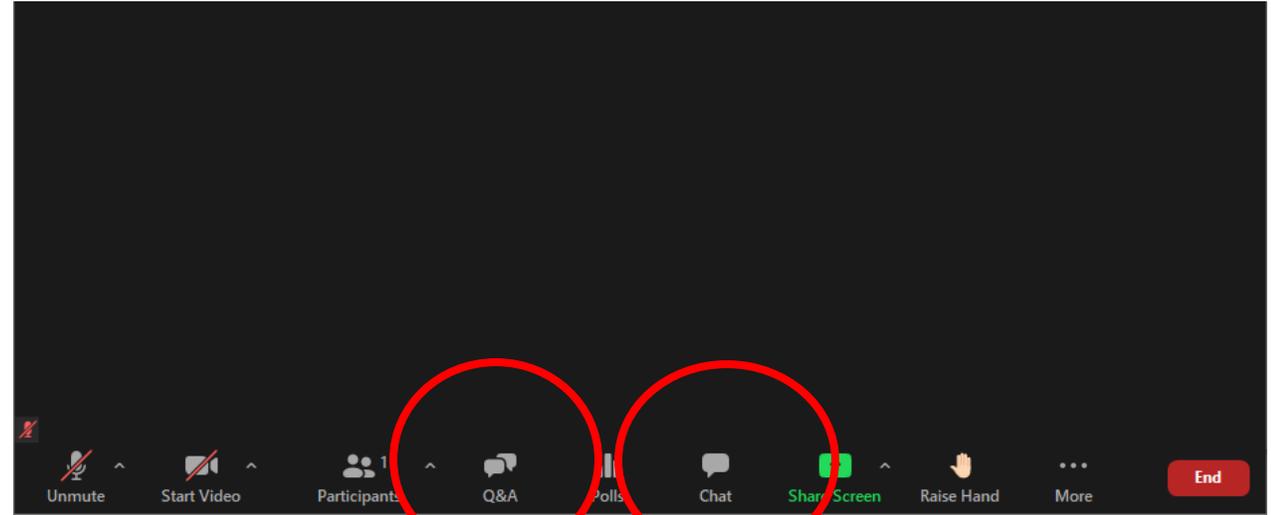
June 24, 2021



QUESTIONS

To submit questions

1. Type a question into the Q&A box
2. Type a question into the chat box.



1

2



AGENDA

- Welcome and Introductions
 - Moderator: **Commissioner Mary Throne**, Wyoming Public Service Commission
- Speakers
 - **Brandon Bowser**, Energy Resilience Program Manager, Maryland Energy Administration
 - **Stephanie Prange Proestel**, Deputy Director, Housing Initiative Partnership
 - **Sequoia Cross**, COO, SimpliPhi Power
- Q&A
- Microgrid Working Group Meeting (Members Only)



Brandon Bowser

Energy Resilience Program Manager, Maryland
Energy Administration



Supporting Clean & Resilient Energy Innovation: Fairmount Heights Microgrid



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Administration

WHAT IS MEA?

MARYLAND'S

State Energy Office

Custodian of the Strategic Energy
Investment Fund (SEIF)

Focused on:

Clean energy

Energy affordability

Reliability

Resiliency

Clean Energy Economy & Workforce

& more.....

Implements policy, programs,
education & outreach



Fairmount Heights Microgrid

- Block of **6** to-be-constructed homes
- Will incorporate a **grid-interactive microgrid**
- Solar PV arrays on each home, paired with individual front-of-the-meter “BlockBox” storage and controller devices
- Shared central battery bank allows energy to be **shared between homes**
- Ability to island during grid outages and help reduce grid stress during high demand days
- Offered **exclusively to low-to-moderate income (LMI) Marylanders**
- Project is a **collaborative effort** between Housing Initiative Partnership (HIP), PEPCO, and Emera Technologies



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MEA Support via Two Grants

Initially received **\$78,680** grant for feasibility analysis, planning, and design through MEA's inaugural **Resilient Maryland** program

Resilient Maryland analysis paved the way for full system design, producing an innovative system with replicability and scalability potential

Unique front-of-the-meter configuration allowed project to advance to implementation

MEA provided a custom **\$200,000** award to help offset equipment and installation costs



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Maryland's Holistic Approach to Energy Resiliency:

Resilient Maryland

MEA's grantees, applicants, and the energy industry stakeholders and influencers we have worked and partnered with note that surmounting the initial planning & design hurdle is typically the "make or break" point.

Organizational decision-makers and capital providers need proof of concept through vetted designs and modeled performance, savings, and ROI to provide buy-in

This step can be costly to adopters, who often don't have adequate access to the capital necessary to complete this phase. Provides grants for DER system feasibility analysis, engineering, and design to help get projects to "shovel-ready"

Resilient Maryland Program Structure

Four Areas of Interest (AOIs)

AOI 1: Community/Campus Microgrid Planning (Up to \$100,000 per Project)

AOI 2: Resilient Facility Power System Planning (Up to \$25,000 per Project)

AOI 3: Advanced CHP Planning & Design (Up to \$10,000 per Project)

AOI 4: Resiliency Hub Planning & Design (Up to \$10,000 per Project)

Grantees will use funds to complete a set of final project deliverables

Detailed Feasibility Report

Preliminary Engineering & Designs

20-Year Pro Forma Financial Model

Greenhouse Gas Reduction Report

Implementation Barriers Report



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FY20: 13 unique projects

FY21: 8 unique projects awarded

Applicants demographic: critical infrastructure, government, low-to-moderate income (LMI) communities, agricultural entities and food producers, regional planning organizations, and others

21 total awards across two (2) fiscal years represent over \$1.5 million in State investment

Grantees will be prepped for equipment procurement and system installation

Lessons Learned - replicable and scalable DER system models + insights into common project barriers



Understanding Consumer Energy Behaviors

Fairmount Heights Microgrid will provide opportunities to learn about consumers' behaviors when presented with energy availability information

Microgrid homeowners will have option to be notified of grid outages via an app and access energy storage capacity info via an online portal

Will also be given optional annual surveys that allow them to note whether or not they were notified of outages and how they modified their behaviors, if at all



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**Want to Learn More?
Reach out any time!**

Brandon Bowser

**Energy Resilience Program Manager
MEA**

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MEDIA INQUIRIES:

contact kaymie.owen@maryland.gov
443-694-3651 directly for quotes.

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Stephanie Prange Proestel

Deputy Director, Housing Initiative Partnership





Housing Initiative Partnership

Zero Energy Ready Homes Microgrid

MISSION

Housing Initiative Partnership, Inc. (HIP) is an **innovative**, green nonprofit developer and counseling agency based in Prince George's County, Maryland dedicated to **revitalizing** neighborhoods.

HIP creates housing and economic **security** for low- and moderate-income households and provides services that improve the quality of life in the **communities** we serve.

Multifamily Properties

- **Newton Green Senior Apartments**
 - 77 Units affordable senior living
 - HIP provides services
- **Renaissance Square Artists' Housing**
 - 44 Units affordable artist housing
- **HIP's Artists' Housing**
 - 12 Units affordable artist housing
 - Managed by HIP

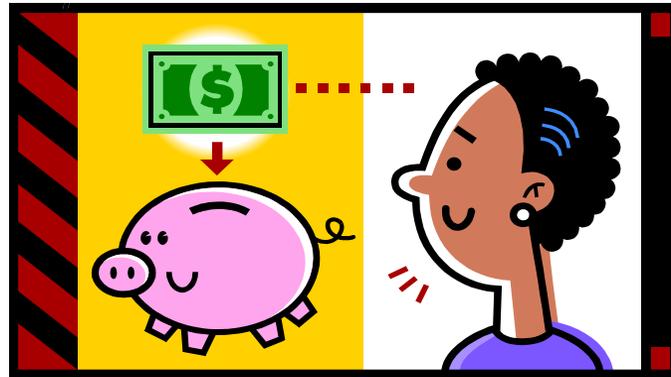


HIP HOMES: Palmer Park Meadows



HUD-Certified Housing Counseling

- Homebuyer Education
- Foreclosure Counseling
- Rental Counseling
- Financial Capability Coaching



MICROGRID PROJECT LOCATION



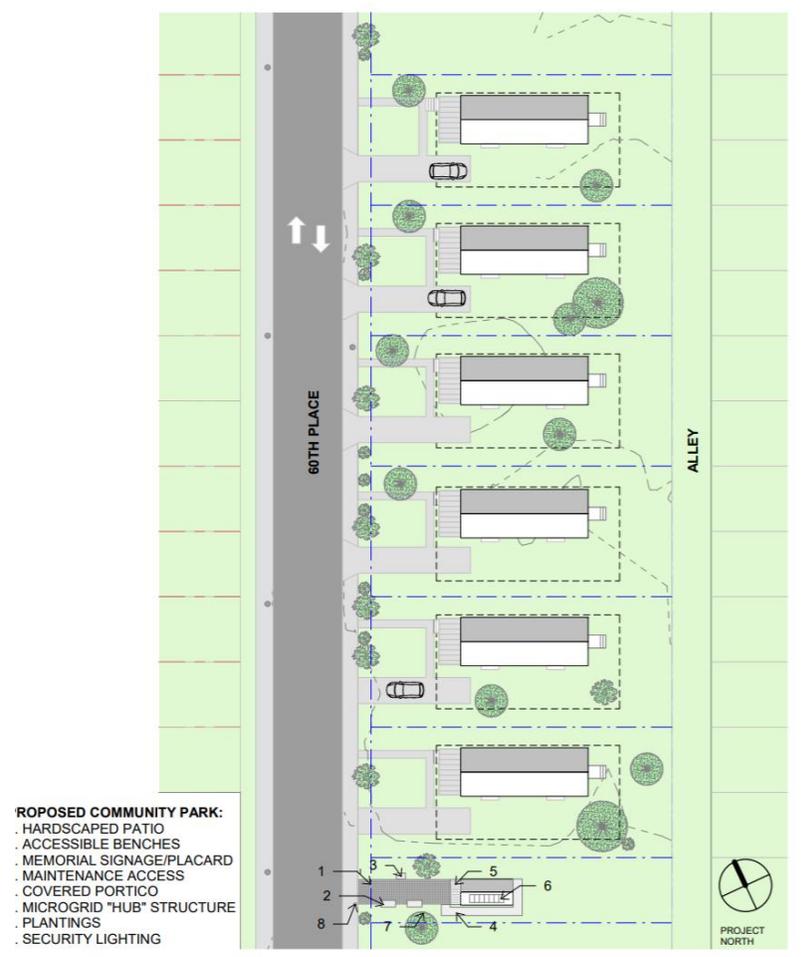
60TH PLACE



MICROGRID TEAM

- Developer—HIP
- Architect— Peabody + Fine Architects
- Funder—Maryland Energy Administration
- Utility— Potomac Electric Power Company (PEPCO)
- Microgrid Developer— Emera Technologies

60TH PLACE



60TH PLACE

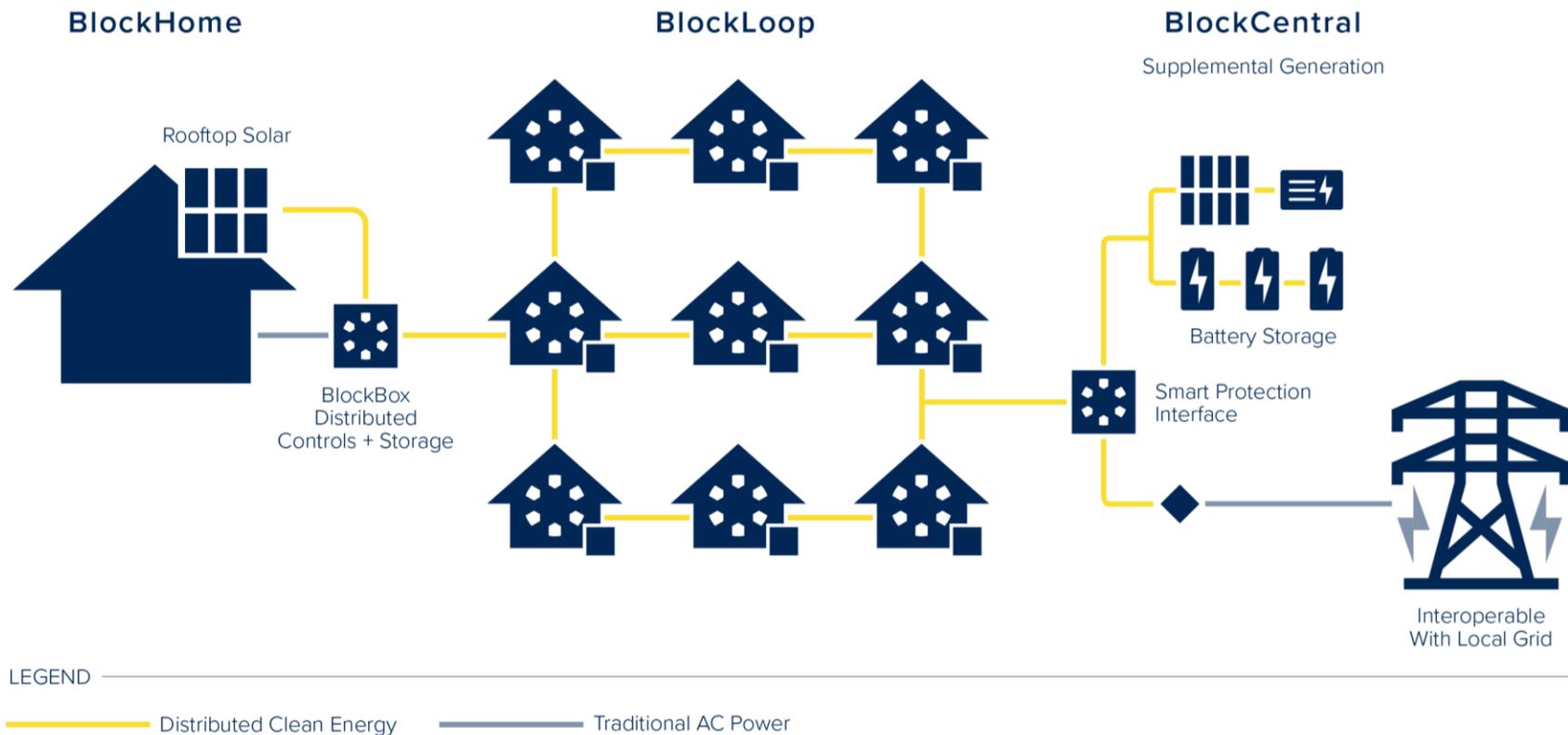


STREET-FACING ELEVATION



Introducing BlockEnergy by Emera Technologies, a modular “plug-and-play” community energy solution with high levels of renewables and superior reliability.

Communities can now have their own local renewable energy system designed for their needs. Create energy locally, store it locally and distribute it locally on a data-rich digital platform. Cleaner energy with advanced resilience for your communities.



Housing Initiative Partnership, Inc





Housing Initiative Partnership, Inc



PEABODY
ARCHITECTS

Housing Initiative Partnership

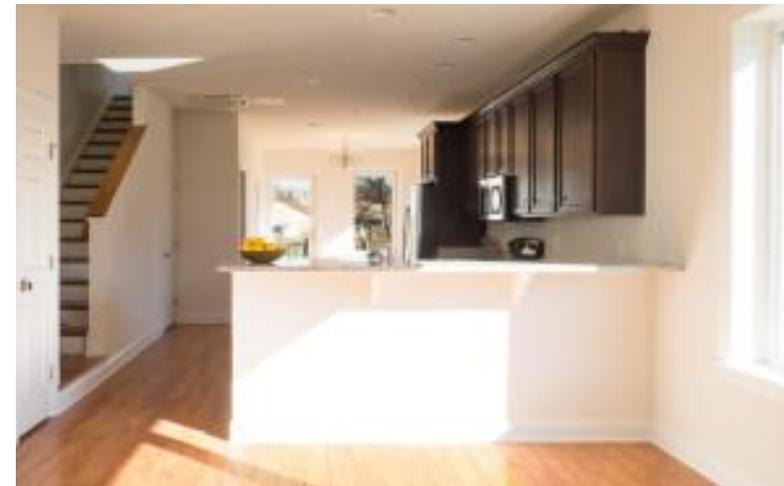


Housing Initiative Partnership, Inc



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Housing Initiative Partnership, Inc

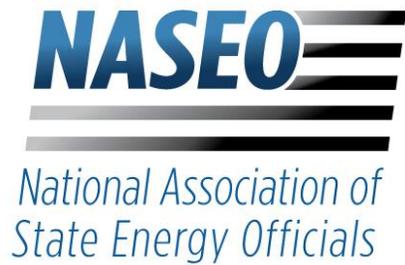


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Sequoya Cross

COO, SimpliPhi Power





Power. On Your Terms.™

Serving Diverse Communities
Needs With Microgrids

6/16/2021

Sequoia Cross, Chief Operating Officer

A Timeline of Continued Innovation, Growth & Success



2010

Founding of OES Energy

Leveraging a decade of IP based on lithium ion innovation + successful deployments in the film & broadcast industry.

OES founded to scale proprietary technology and manufacturing, providing superior residential and commercial solutions to key global markets on/off grid.

OES only utilizing LFP Lithium Ion chemistry due to its safety profile and robust performance.

2011-12

Residential, Military + Emergency Response

OES LFP batteries subjected to rigorous testing by the Department of Defense, Aberdeen Proving Grounds.

OES introduces first residential market battery, Genny mobile solutions for emergency response and military spec energy storage systems for lead acid/diesel replacement on FOB.

Successful microgrid deployments in Iraq and Afghanistan with the DoD.

2013-14

Product Line Expansion

PowerBank battery-based generator on wheels expands mobile energy product offerings and rapid deployments of robust long duration and high-power integrated systems.

Expand diverse solutions for military, emergency response and commercial customers across global markets.

Introduce new PHI battery models for scaling on/off grid systems.

2015-16

Relaunch as SimpliPhi Power

OES reincorporated and rebranded as SimpliPhi Power. Marine Corps tests at Camp Lejeune find SimpliPhi batteries outperform other LI batteries by >62%.

Introduces turnkey fully integrated AccESS for residential/ commercial on/off grid to seamlessly optimize grid, generators and renewable energy.

High performance, long life and low LCOE.

2017-20

Ramping Up Manufacturing

HQ relocated to 25K sq ft manufacturing and R&D facility.

Sales focus transitions to high volume Distributors world-wide. High voltage commercial solutions introduced with dynamic scalable platform for C&I markets. >100 MWh of products shipped to date in >40 countries to >7,500 customers.

AmpliPHI with proprietary BMS and closed loop communications. VPP and enhanced connectivity.

SimpliPhi Energy Storage Solutions

Access to Safe, Reliable, Affordable and Sustainable Power – On and Off Grid

Safe

- Non-toxic, non-hazardous
- Cobalt-free chemistry
- No risk of thermal runaway with fire propagation
- UL certified (1642, 1973, 9540A)
- UN DOT Certified (3480, 38.3)
- Prohibit child labor in supply chain

Proven

- Over a decade of experience & growth
- Deployed in more than 40 countries
- Over 120 MWh installed worldwide
- Tested & validated by the U.S. Army and Marine Corps
- Business model demonstrates social impact and profitability can co-exist
- Special permission by FAA to airship globally

Simple

- Integrates & optimizes any generation source – grid, solar, wind, generator – on or off grid
- Stores energy for critical back up power
- Maximizes resilience & energy security
- Creates savings on utility bills with TOU, peak shaving & demand charge management



EXPEDITIONARY SERIES



BATTERY MODULES



INTEGRATED SYSTEMS



HIGH VOLTAGE SOLUTIONS



The Problem

Limited Access to Safe, Reliable, Affordable and Sustainable Power

Escalating Energy Costs



US residential electricity prices have risen by 15% in the last 10 years – a trend that is expected to continue.¹ Utilities are using TOU rates and Surge Pricing.



Electricity prices expected to increase as we phase out fossil fuels, integrate resilience, and overall demand increases.

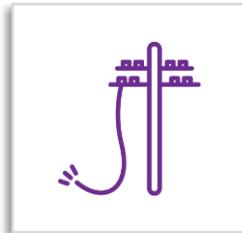


The cost range for diesel-generated power in remote and island communities varies from \$0.50 to over \$1 per kilowatt-hour (kWh).³

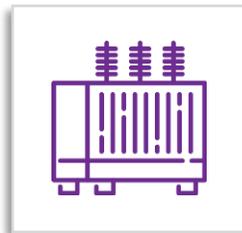
Failing Infrastructure



2010 through 2019 marked the costliest decade on record, with economic damage due to severe weather reaching \$2.98 trillion globally.¹



Since 2003, the average annual number of weather-related power outages doubled in the US resulting in billions in financial losses.²

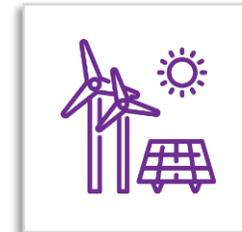


The US electrical grid is aging with 70% of transmission lines and power transformers that are 25 years or older.³

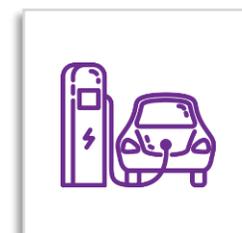
Decarbonization



In the US, over 150 cities, 13 states, and 7 utilities have 100% clean energy goals without a clear path to meet them.¹



Wind farms and solar plants across the globe are causing severe fluctuations in electricity prices and power outages due to their intermittency.³



Economic growth, rising population and electrification of major industries means that renewables alone can't keep up with worldwide energy demand.

1. US Energy Information Administration 2019
2. "European power prices set to jump 30% by 2025: S&P Global" Reuters (Nov 2019).
3. [Community-Scale Isolated Power Systems](#) (April 2019).

1. ["Weather, Climate & Catastrophe Insight: 2019 Annual Report."](#)
2. [Climate Central](#)
3. [Energy Information Administration, July 2018](#)

1. [Sierra Club 2019](#)
2. ["Sometimes, a Greener Grid Means a 40,000% Spike in Power Prices"](#) Bloomberg (Aug 2019)
3. [IEA World Energy Outlook 2019](#)



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Collaborative Effort
Between Resilient Energy
and Communities

Maycroft: Affordable Housing Resiliency Center



The Challenge:

Providing affordable housing and community services in a rapidly growing city, the Maycroft in Washington, DC reserves all its apartments for people who earn significantly less income than the area's average. It also features a Teen Drop-In Center, Family Resource Center, early childhood education program, and a no-cost healthy food market.

As a hub of community life and resources, the affordability and equity of the project were important factors in project development. Ensuring that the project could not only pencil out, but that benefits could be shared amongst stakeholder communities was essential.

Stakeholders: Jubilee Housing, Community Programs, New Partners Community Solar, Local Utility (Pepco)

Maycroft: Affordable Housing Resiliency Center



The Solution:

SimpliPhi worked with local partners to install 56kWh of resilient energy storage paired with 70kWh of solar PV (part of a city-wide community solar project).

Maycroft is one of the first resiliency centers in Washington DC that can provide power for 3 consecutive days during a grid outage for essential resources and communications.

The Outcome:

- Creates an emergency hub for residents, community
- Generates solar credits as part of community solar program
- Saves residents \$40-50 monthly on utilities
- Helps ensure operations of vital community programs



Ludlow Taylor School: Building Community Value



The Challenge:

Ludlow-Taylor is an elementary school in a rapidly changing neighborhood with rising housing prices. With the installation of solar panels in 2019, the school was ready to enjoy clean energy savings - but then COVID struck.

School was suspended, and along with it energy consumption onsite was significantly reduced which erased anticipated economic savings. Without intervention, the solar could end up costing the school system money due to NEM regulations.

Stakeholders: DC Public Schools, Ludlow-Taylor Community & Students, New Partners Solar, Local Utility (Pepco)

Ludlow Taylor School: Building Community Value



The Solution:

Retrofitted PHI HV (high voltage) energy storage, DC now has its first energy resilient school combining solar+storage.

The battery system captures excess solar to use on-site and realize planned savings by shifting solar availability to the evening, instead of net metering without financial compensation.

The Outcome:

- Provides grid stability and resilience to local community
- Stores excess solar generation that cannot be sold to the utility
- Provides power to nearby low-income households

How to Bring Resilient Energy to LMI Communities



LMI Microgrid Challenges

- **Communities are under-resourced.**
 - LMI communities are often under funded and overlooked by local authorities.
- **Energy consumption is already limited.**
 - Many project strategies focus on offsetting usage or modulating load. LMI communities have more limited consumption (on average) due to self-curtailment and lifestyle energy intensity.
- **Resilience is under-valued.**
 - Writ large and specifically, there is no clear \$/kWh value of resilience. We know its valuable, but hard to monetize. However, at the community level they are more economically vulnerable to resilience loses.
- **Partnerships are critical.**
 - Collaborating with community leaders, local utility, government officials, local installers creates a network of stakeholders focused on the same outcome: cost savings through resilient energy.
- **Plan for the future.**
 - More cost-effective when creating LMI projects to think to future needs and ensuring community value long-term (or else end up like Ludlow-Taylor, retrofitting). Utilities need to open up markets and distributed assets to create resilience and long-term benefit for many communities
- **Focus on impact.**
 - Measuring success in an LMI microgrid goes beyond cost savings. Giving communities control, security, an equitable voice, and opportunity to thrive are all valuable.

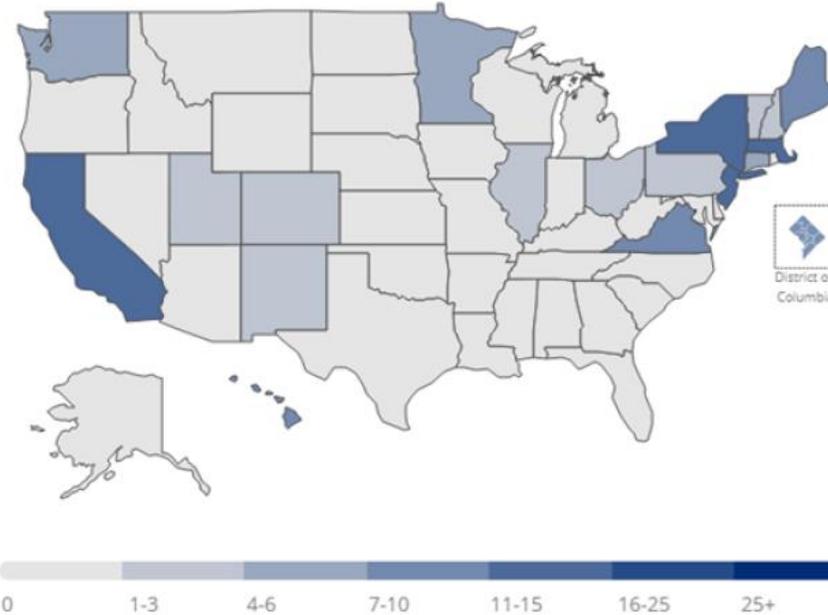
LMI Microgrid Opportunities

Policy Hurdles for LMI Microgrids

Microgrid Policy Challenges

- **Lack of Microgrid (or ESS) Tariffs**
 - There is no clear pathway to monetization of the grid benefits that microgrids provide.
- **Standby Charges & Fees**
 - Many utilities are/have implemented standby charges and other punitive fees on microgrids and related DER equipment to discourage deployment.
- **Value of Resilience**
 - The literal 'Million Dollar Question' – what is localized resilience worth, and how should it be compensated?
- **Microgrid Classification**
 - A problem for DERs writ large – sometimes 'generation', sometimes not.
 - Microgrid operators are NOT utilities

Figure 1: Microgrid Legislative Activity by State: 2015-2020



Source: Smart Electric Power Alliance, 2020.

State Microgrid Policy Proceedings of Note:

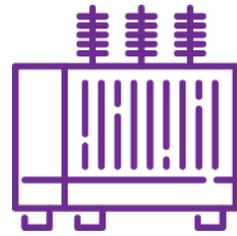
- California Resiliency & Microgrids Proceedings [\[Link\]](#)
 - Working its way through CPUC and the ISO's
 - Built from SB 1339 (2018) to 'further develop policies related to microgrids'
- Hawai'i PUC 2018-0163 [\[Link\]](#)
 - Done in two phases – emergency operation & non-emergency
 - Phase 2 focuses on tariffs and payment for microgrid services to the grid.
- Maine's L.D. 13
 - Clarifies microgrid operators are not utilities
 - Directs regulators to approve <25MW microgrids in public interest
 - Requires microgrids to meet state's RPS targets

SimpliPhi Power Energy Storage Systems



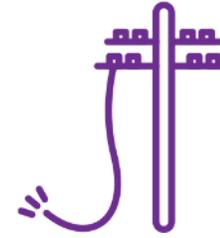
Accelerating the Energy Transition

Leveraging renewables by decoupling supply and demand on grid and off and reducing atmospheric CO2 & GHG emissions behind climate change.



Reimagining the Power Grid

Supporting new and emerging energy markets that blur the line between in-front-of and behind-the-meter, aligning the interests of the utility and customers.



Building a More Resilient Energy Future

Creating a more resilient power infrastructure using distributed customer-sited assets along the entire distribution grid for individuals, businesses and whole communities.



Delivering Economic Value

Eliminating economic losses due to power outages and reducing daily energy costs through demand charge management, peak shaving and time of use utility charges.

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Thank You

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QUESTIONS & ANSWERS



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