Community Virtual Power Plant

Judy Min and Nancy Min

ECOLONG

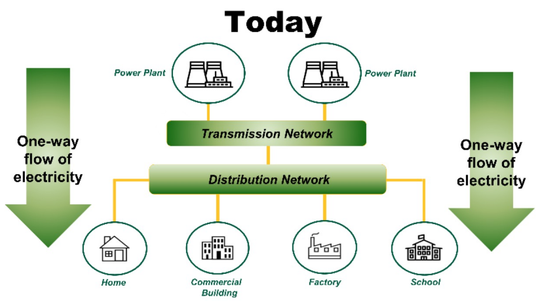
Founded in 2015, our mission is to ***build interconnected and resilient communities.*** To achieve this, we are supported by our network of R&D and community partners.

Lets keep in touch!

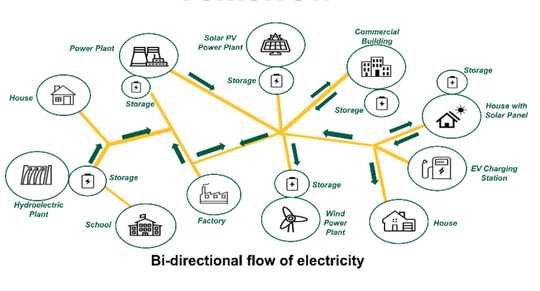
THE GRID IS CHANGING

CHALLENGES

- Global climate change is driving a decarbonized future energy system
- Distributed Energy Resources (DERs) are variable and intermittent
- The modern grid is smart and vulnerable to cybersecurity attacks



Adapted from NYISO



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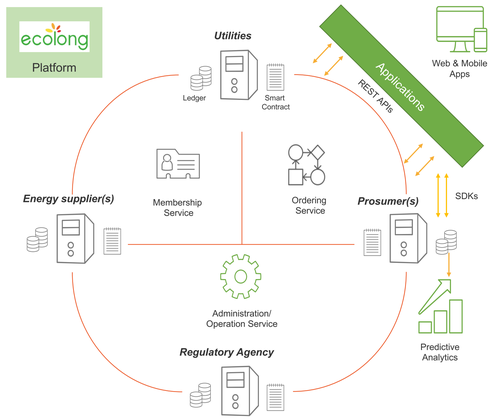
OPPORTUNITIES

- Integration of DERs into the grid/market for demand and supply flexibility and ultimately providing grid resilience
- FERC Order 2222 allows small-scale DERs to participate in the regional wholesale markets through aggregation of resources
- Weather and load forecasting, energy storage, and demand management are some primary resources to address these opportunities

ECOLONG'S SOLUTION



Peer to Peer Transactive Energy Platform

Our Peer to Peer transactive energy platform, uses blockchain technology and transactive energy control techniques to monitor and control building loads and DERs to unlock grid-interactive efficient buildings at scale.

- Consumers, DER asset owners, and utilities directly communicate with each other, trade energy services, and optimize DER assets, building loads, and transaction costs.
- Predict energy load and generation over short and medium time periods and improve grid reliability and flexibility through demand response and ancillary services.

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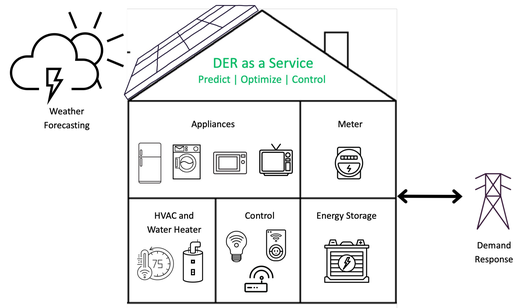
Distributed Energy Resources (DER) as a Service (DaaS)

DaaS, is a secure residential energy management system that:

- Intelligently controls the energy in residential buildings all while maintaining occupancy comfort
- Aggregates controllable loads and DERs to participate in grid services



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5G-enabled Blockchain Framework for IoT/DER

We are building a novel 5G-enabled blockchain software ecosystem augmented by machine learning to improve data collection and communications that link wireless edge devices (sensors) to advanced high-performance computing and data centers.

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Award winning AI/ML building optimization

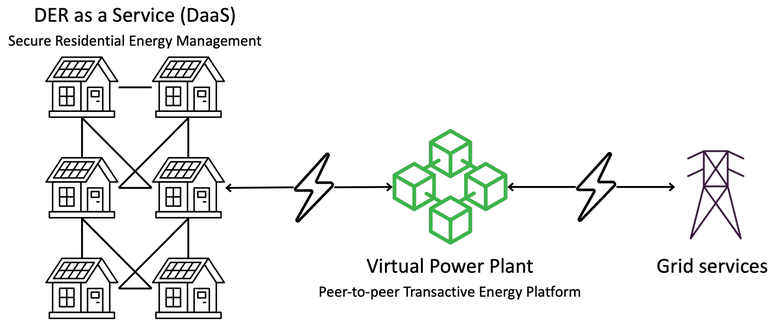
We partner with leading AI/ML scientists to enhance our load and generation optimization.

- Our AI/ML algorithms won first place at NYSERDA's Real Time Energy Management (RTEM) Hackathon, which had over 300 participants from all over the world.

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

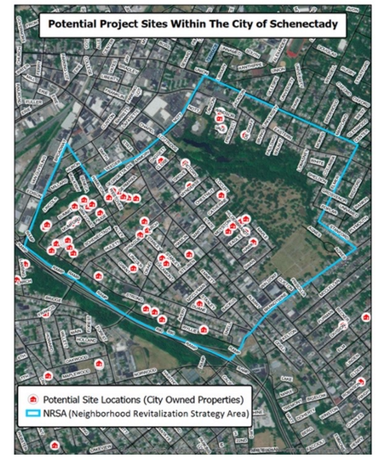
Community Virtual Power Plant

The Community Virtual Power Plant couples our DaaS and P2P platform, creating virtual power plants to enable equitable access to clean energy and grid services for marginalized communities. Virtual power plants aggregate and optimize energy production and usage to reduce energy use, bills, and its associated carbon emissions.



PILOT AND DEMONSTRATION

Schenectady Community Virtual Power Plant



Pictured is an example neighborhood on which we will demonstrate the virtual power plant.

This project is a partnership between the City of Schenectady and ecoLong to transform the way community participants interact with the grid by optimizing energy usage to reduce their energy use and bills as well as cut carbon emission. The project goals are:

- ***Retrofit*** low- and moderate-income (LMI) residential buildings with energy efficiency upgrades and on-site clean energy generation, such as solar photovoltaics (PV) and battery energy storage systems.
- ***Deploy*** technology to manage and optimize building loads and DERs within these buildings for energy use reductions and demand and generation flexibility, using ecoLong's blockchain based transactive energy and secure residential energy management system.
- ***Replicate*** the project on an ongoing basis in the City of Schenectady, across New York state, and beyond.

ACKNOWLEDGEMENTS

Thank you to our partners and funders for the support.

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