



Basalt Vista Case Study

A net-zero microgrid affordable housing community in Basalt, Colorado.

Overview

Customer: Cooperative Utility

End User: Residential

Location: Basalt, CO

Highlights:

- Multi-site aggregated DER system
- Behind the meter deployment
- PCC at 0 under normal operation
- 100% renewable under normal operation

Key Drivers



Economic
Optimization



Grid
Services



Resiliency

About Us

Heila Technologies is an MIT-born company dedicated to simplifying the integration and operation of distributed energy resources (DERs) through the commercialization of its **Heila EDGE®** platform – an end-to-end solution that combines advances in edge computing technology and game theory principles with state-of-the-art hardware and software to help integrate, commission, and autonomously operate even the most complex microgrids.

The **Heila EDGE** platform opens the energy ecosystem to innovation and community action. The platform enables developers to grow microgrids from the ground up and system designers and developers to easily connect DERs and create self-organizing, self-regulating microgrids capable of meeting all the electrical demands of neighborhoods, commercial buildings, industrial sites, and even large communities.

Site Background

Through Holy Cross Energy (HCE), a co-op electrical utility in Colorado, the Basalt Vista project is a study into the future of affordable net-zero communities. The site will eventually be 27 all-electric homes built for the community's teachers and county workers to live in. Each house will be built with distributed energy resources (solar panels, batteries, smart devices, electric vehicle chargers) that work together across buildings.

Challenge

- The Basalt Vista Affordable Housing Project is designed to address the lack of inexpensive housing in the community, specifically for the community's teachers and other essential workforce members. The site needed to forecast and manage grid imports and exports cost-effectively to reduce each house's energy costs as much as possible.
- HCE aims to use as much clean energy as possible, currently covering around 44% of their grid's energy supply with renewables. With Basalt Vista's all-electric houses, HCE would need the proper tools to proactively manage various distributed energy resources and smooth peak loads at each individual house.
- The rural town of Basalt, Colorado – alongside other communities in the area – has been facing severe natural challenges, including the 2018 Lake Christine wildfire, which nearly burned HCE's transmission lines overlooking Basalt. With the potential for a power outage during peak season, HCE decided that the site needed to be able to anticipate both planned and unplanned disruptions to the electricity grid.



Solution

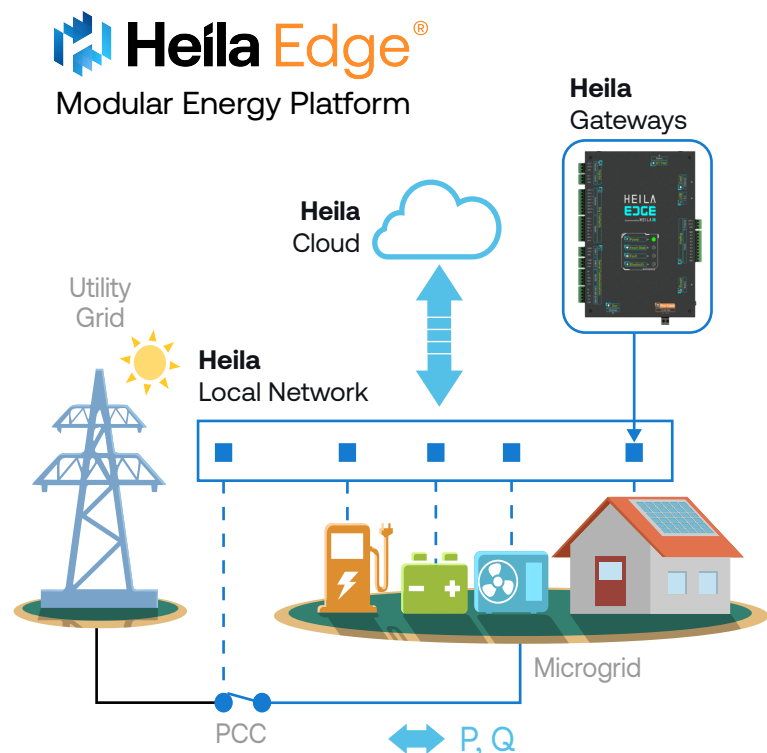
Heila and other partners have created a living laboratory where each Basalt Vista home acts as a key component in a decentralized power plant. Each home has a high-performance building envelope, battery storage, roof-mounted PV solar panels, and an EV charging station in the garage, and will soon be capable of grid autonomy during power outages. Controlled and optimized by the **Heila EDGE**® platform, the system can aggregate community resources and optimize energy transactions to serve both the community and the larger electrical grid.

- The **Heila EDGE** platform controls and optimizes DERs efficiently, ultimately lowering energy costs for the end-users. During operation, each **Heila EDGE** node controller in the platform will forecast local load and generation based on historical trends and external inputs, keeping the amount of energy imported from the grid as low as possible.
- With smart-controls and battery storage, the system supports the grid during peak load times. The microgrid acts as a reservoir, exporting power back to the grid during peak demand times and importing off-peak energy for storage.
- Upon completion, Basalt Vista will be able to prepare for various weather events by charging batteries ahead of time and disconnecting each house from the grid. The microgrid will be able to island and re-synchronize in planned and unplanned cases, using one or more assets such as batteries as the grid-forming agents.

Results

With no natural gas line in the community, this is the first all-electric Net-Zero community in rural Colorado. To date, the project has received recognition as a finalist in the 2020 SEPA Power Players Award as well as the Solar Builder Magazine's Solar Project of the Year Award.

- With all energy produced on-site, energy costs for Basalt Vista Affordable Housing Partnership residents can be kept as low as possible. The community will provide home-ownership opportunities for teachers and other families in the local workforce who need houses that are affordable to own and maintain.
- The community's net-zero microgrid imports and exports real power through the point of common coupling (PCC) to support the grid and/or optimize revenue as well as providing frequency support and virtual inertia to the external grid.
- With islanding abilities, each home will be completely resilient and adaptable to the grid, facing no risk of power outages during extreme weather events.



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