ALBERTA INNOVATES

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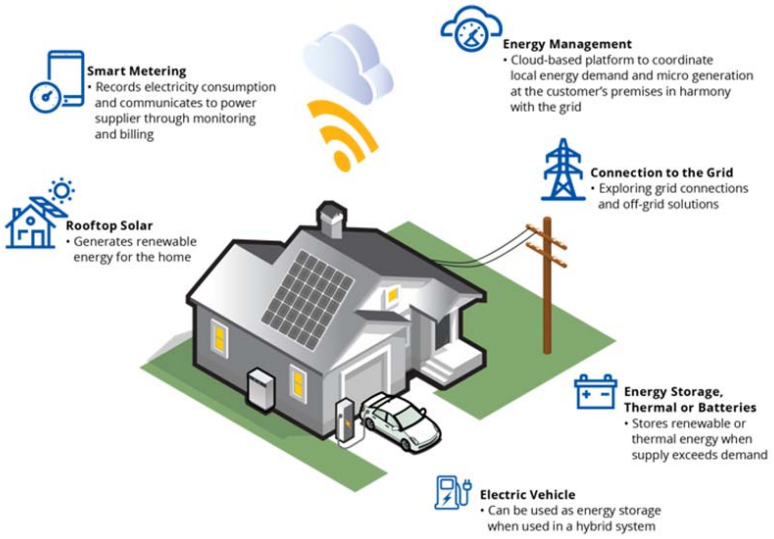
RENEWABLE AND ALTERNATIVE ENERGY

ATCO Home of the Future – Smart Renewable Home and Energy Ecosystem

The purpose of the Home of the Future project is to validate the cost-benefit of a non-wire alternative (NWA) software solution for the utility that leverages sensors prevalent in the grid, Internet of things (IoT) and data analytics. The solution manages and orchestrates electric demand of DERs at the neighbourhood level, such as EV chargers, electric water heater tanks or other energy intensive equipment "behind-the-meter" that end-users are adopting. The goal of the energy orchestration is to assess and optimize the business impact compared to traditional capital infrastructure upgrades required to integrate such DERs onto the electricity grid.



FUNDING DETAILS

RECIPIENT:
ATCO

PARTNERS:
SAIT
Lethbridge Electric Utility

TOTAL BUDGET:
$819,160

AI FUNDING:
$335,800

PROJECT DATES:
Mar 2018 - Dec 2019

PROJECT TRL:
Start: 4-5
End: 7

APPLICATION

Through the customer discovery and validation process, it was determined that the most economical version of the Home of the Future is a cloud-based platform, that distribution companies can use to have visibility and control of home loads that may offer cost savings for the distribution company, energy retailer and the home owner. Other potential customers include technology vendors, home builders, energy retailers and home owners. Our go-to-market strategy is to partner with new entrants in the energy industry, such as third-party aggregation platforms, which can assist with communication management and interoperability.

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PROJECT GOALS

- Understand the impact of EVs and large loads on residential distribution grid assets.
- Provide residential homeowners with awareness of their home electricity demands and develop situational awareness of energy consumption within the home as well as at the aggregated utility level.
- Develop an automated decision-making platform to control residential loads to minimize their impact on distribution grid assets and reduce peak demand.
- Integrate control systems that better manage the implementation of grid-intensive activities that customers wish to add to their homes to ensure maximum grid performance for all.
- Enable a new way for utilities to communicate with homeowners and the grid to improve energy security and grid stability.
- Establish the Utility of the Future by evolving the role of the utilities.

BENEFITS TO ALBERTA

- Reduction of residential electric load demand, reducing CO_2 emissions from the residential housing sector and associated electricity generation.
- Improve energy security and supply, which represents an effective climate-change adaption feature.
- Mitigating distribution electricity rate increases and capital investments deferral by utilities resulting in lower electricity bills for customers.
- Enhance energy literacy.
- Create jobs, smart buildings, energy efficiency and energy management systems deployments.
- Reduce electrical bills in jurisdictions that have implemented a residential demand charge rate when a peak load is exceeded, such as within the Lethbridge Electric Utility region.
- Empower residential customers with more choice for electricity control and flexible energy management options.

1 New Product/Service

1 Patent

Indirect Project GHGs

10-100 kT/yr Future GHGs Reduced

2 Students Trained

1-10 Project Jobs

11-100 Future Jobs

CURRENT STATUS

DEC 2019

The Home of the Future project is now complete. The Final Public Report will be available on Alberta Innovates' website after December 2021.