

CLEAN RESOURCES

CLEAN TECHNOLOGY

RENEWABLE & ALTERNATIVE ENERGY – GRID MODERNIZATION

FUNDING DETAILS

Demonstration of DC Secondary Distribution Technology in Residential Areas

With the increasing adoption of electric vehicles, electric utility companies need to invest billions in civil work to upgrade the residential distribution grid. The purpose of the project is to demonstrate a direct current (DC) distribution solution that would increase the power capacity in residential areas without replacing the underground lines. The solution is expected to reduce capacity upgrading cost by up to 70% while improving power quality and demand side management. In partnership with FortisAlberta and ENMAX, the solution will be demonstrated in FortisAlberta's Employee Development Center. FortisAlberta is the lead sponsor on behalf of the Alberta Smart Grid Consortium, which consists of Alberta Innovates, Alberta Energy and Alberta Distribution Facility Owners (DFOs).



RECIPIENT:
**Electronic Grid
Systems**



PARTNERS:
**FortisAlberta,
ENMAX, University
of Alberta**



TOTAL BUDGET:
\$775,000



AI FUNDING:
\$200,000



PROJECT DATES:
**DEC 2021 -
JUN 2023**



PROJECT TRL:
**Start: 4
End: 8**

APPLICATION

The primary target market is Canadian and US utility companies, who own and operate electricity distribution grids in residential areas. The DC distribution solution is expected to reduce heavy civil work by adding power converters between houses and transformer, and thereby significantly reduce the cost of upgrades. As project partners, FortisAlberta and ENMAX will have the first opportunity to deploy this solution within one of their service areas.

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PROJECT GOALS

The primary objective of this project is to pilot the DC distribution upgrade solution in an actual operational environment. Additional objectives include:

- Prototype, validate and develop the product to be ready for implementation;
- Demonstrate performance of the DC distribution solution at the FortisAlberta Employee Development Centre;
- Validate the performance of the communication-free charging demand control function during demonstration operations; and
- Develop a comprehensive installation and commissioning plan for implementation in real residential areas.

BENEFITS TO ALBERTA

Successful technology implementation or use of generated knowledge could result in:

- New jobs in engineering fields in Alberta to support the deployment of this DC distribution solution;
- New jobs in manufacturing of components required for deployment of this DC distribution solution;
- Potential cost savings in the order of billions of dollars for upgrading Alberta's electric grid infrastructure;
- Revenue generation from North American sales and attraction of new investment;
- Reduced cost of residential solar photovoltaic and battery installations for residential customers; and
- Improved power quality for residential customers.



1 Publication



2-4 Project Jobs



11-100 Future
Jobs



1 New
Product/Service



3 Patents

CURRENT STATUS

OCT 2022

The prototypes for field testing have been developed and tested at full power in the lab. Field test site has been prepared. The prototypes are ready for installation and field testing.