ALBERTA INNOVATES

CLEAN RESOURCES

CLEAN TECHNOLOGY

RENEWABLE AND ALTERNATIVE ENERGY

Improved Electrical Demand Forecasting Techniques in the Presence of Behind the Meter Distributed Solar Generation

This project will develop an innovative electricity demand forecasting tool to accurately predict the load on the electricity grid. This tool will incorporate weather data and small-scale solar energy generation that is used to support on-site electricity needs. This is known as Behind the Meter Solar (BTMS). BTMS generation offsets consumers' electricity demand and impacts the electricity system's load. Since BTMS generation is not continuously measured, a technology gap exists in accurately forecasting the electrical demand of the grid. The electrical demand forecasting tool developed in this project will have improved accuracy compared to the current industry standards and will be incorporated into Arcus Power's existing commercial platform.

FUNDING DETAILS

RECIPIENT:
Arcus Power Corp

PARTNERS:
The University of Calgary

TOTAL BUDGET:
$351,614

AI FUNDING:
$158,557

PROJECT DATES:
JUL 2020 - JAN 2022

PROJECT TRL:
Start: 4
End: 9

APPLICATION

Arcus Power provides large power users with software that forecasts periods of peak electricity demand, supporting demand response strategies to reduce electricity costs. The model developed in this project will improve Arcus Power's existing forecast, expand potential customers to include municipalities, utilities, and independent system operators, and improve the efficient operation of small-scale solar energy generation within the electricity system.

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PROJECT GOALS

- To develop a scalable and accurate real-time estimate of the small-scale solar energy generation within a region.
- To quantify how much the accuracy of demand forecasting is improved by incorporating better regional weather data into the model.
- To develop an improved electricity demand forecast which incorporates weather data relevant to high load regions and estimates of solar panel generation, in order to attract new customers.

BENEFITS TO ALBERTA

- Economic growth and job creation in an Alberta-based clean tech company contributes to diversifying Alberta's economy.
- Improved demand response behaviours for commercial and industrial facilities results in a more efficient grid by reducing operating costs, delaying and/or avoiding of capital expenses, reducing power outages, enhancing maintenance schedules and better long term grid planning.
- Improved electricity demand forecasting enables the effective adoption of Alberta's growing distributed energy resources and renewable electricity sources.

2 Publications

3 Students Trained

2-5 Project Jobs

20-30 Future Jobs

2 Patents

4 New Products/Services

Project Enables GHGs Reductions

Future Enabler of GHG Reductions

CURRENT STATUS

AUG 2020

Arcus kicked off its *Improved Electrical Demand Forecasting Techniques in the Presence of Behind the Meter Distributed Solar Generation* project in July 2020. Together with its partner, the University of Calgary, Arcus is currently sourcing equipment and on-boarding its student researchers.