

AWARD

Remote/Indigenous Solar Project | JAZZ Solar Solutions in partnership with Lac Des Mille Lacs First Nation

NOMINEE

JAZZ Solar Solutions in partnership with Lac Des Mille Lacs First Nation

CONTACT:

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NOMINATED BY:

Self-Nominated

Summary:

Set out a brief synopsis of the initiative (i.e. project, technology, service). This summary may be used during the event promotion.

The initiative is LDML Community Solar microGrid. Lac Des Mille Lacs (LDML) is an off-grid Ontario First Nations community located northwest of Thunder Bay. The Lac Des Mille Lacs microGrid project displaces 24/7 diesel generation with an solar/battery/thermal energy system, using diesel generation as backup only. Propane consumption is also reduced. Propane fired thermal loads in the Community Cultural complex are supplemented with electricity supplied by the solar/battery system at times of excess solar resource.

Description:

Please provide as much detail as you can to describe the initiative. Simply provide a description of the project, technology, service, etc. being considered. Do not address here how it was done or what it achieved.

The system design includes 93kW DC of Ground-mounted Solar PV, 72kW AC inverter output, and 300kWh of nano-carbon battery storage. The architecture is DC coupled. Propane thermal loads in the Community Cultural complex are supplemented with electricity supplied by the solar/battery system at times of excess solar resource. The propane fired thermal loads are hydronic space heating and domestic hot water. Instantaneous electric heaters pre-heat input water to these systems. The instantaneous heaters are only energized at times on excess solar resource. LDML microGrid has been operational earlier this year, and the Community has yet to use any diesel since.

1. Innovative Approach:

25/100 points

Please describe which kind of innovation and creative approach that was used to achieve outstanding results. In what way has the initiative pushed the envelope of current norms, traditional results and standard approaches?

The LDML microGrid system architecture is based on a conventional off-grid, DC-coupled, with automatically dispatched diesel generation for backup and/or battery recharge at times of poor solar resource. What is unusual about the system, is the size of the system and approach to balance electrical and thermal loads with multiple generation sources. Financing was very innovative as it is 33% by Canada, 33% by Ontario and 33% by LDMLFN. We understand by speaking with others in the solar industry that this is the largest DC coupled off-grid system in operation in Ontario. The battery technology used is lead/acid nano-carbon which is a superior technology for this application to conventional flooded lead/acid. The propane thermal assist is innovative. It further displaces fossil fuel consumption and adds to the storage capacity of the system by storing solar production as thermal energy. JAZZ Solar is working with the Community to scale the microGrid into a Internet-of-Energy application with autonomous control of distributed generation and loads.

2. Economic Benefit:

25/100 points

Highlight the benefits, with a sense of financial benefit, cost savings, emission reductions or other directly attributable benefits of the initiative. Did this initiative deliver or exceed anticipated value, results and returns? If you include confidential and commercially sensitive information, it will be treated as such. Please ensure you note the following - do not publicize.

The LDML microGrid system is estimated to save the community over \$1,500,000 in fossil fuel consumption over 30 years, and eliminates diesel and propane consumption combined. It is a model for all remote/diesel communities in Canada. LDML was cut over to the solar/battery system from diesel generation in July 2017. There have been no power interruptions and no diesel consumed since.

3. Engagement:

25/100 points

In what way(s) did the nominee undergo meaningful stakeholder/customer engagement and how has it been incorporated into the design and execution of the initiative? Highlight the manner in which the initiative was communicated to promote the importance and benefits of solar energy while achieving business and stakeholder/client objectives. Demonstrate how the proponent listened to its audience and acted on the advice.

The LDML Community microGrid project was identified and recommended in Lac des Mille Lacs' Community Energy Plan conducted by JAZZ Solar Solutions. The plan was developed through funding from the IESO's ACEP (Aboriginal Community Energy Plan) program. Development of this plan included consultation with community leadership and community membership. The community ACEP project champion coordinated Community Engagement. Information was provided to the community residents and leadership about the project and its intended results. Community members have were asked to provide their concerns about energy usage and their ideas about conservation and energy reduction. The Community Leadership provided guidance and direction with the energy plan. The Community Leadership has passed a Band Council

Resolution endorsing the ACEP and the microGrid project. The infrastructure building audits that were completed as part of the ACEP included interview/input from operational staff regarding energy use, operational practices, occupancy and observed energy related problems.

4. Corporate and Sustainable Responsibility:

25/100 points

Describe the environmentally conscientious approach during the design and execution of the initiative. Give concrete examples of how your initiative has benefited the environment (ex: saved X amount of CO2 emissions, reduced X amount of GHG, etc.) Explain the ways and manners by which this initiative was undertaken with the intent of demonstrating true corporate responsibility.

The most significant sustainability impact of this project is the displacement of existing diesel generation with a clean solar energy. The existing diesel generator ran 24/7, regardless of electrical load. The existing generator was also significantly oversized for the typical community base load. Diesel generation at this scale has a typical best-case efficiency in the 30% to 35% range at near full load. Efficiencies drop at lower loads (which is typical at LDML). The result was that less than 30% of the energy content of the burned diesel was actually consumed as electricity for community loads. The propane displacement achieved by this project will also result in environmental benefits. The estimated CO2 reduction for this project is over 1600 tonnes over the 30 year life of the microGrid. Aside from CO2 reduction, the Corporate and Sustainable Responsibility priority of the project relate to safety and aesthetics. The project is located in a spectacular natural setting adjacent to Lac des Mille Lacs. An 8 foot natural wood fence was constructed around the ground mounted solar array to improve the visual impact the project and to protect children and wildlife from potential electrical hazards.

PHOTOS

Continued on next page



