

COMMUNITY POWER

VIRTUAL NET METERING: CLEAN POWER FOR ALL PEOPLE

Canadians love solar energy. According to the Renewable Energy Alliance of Ontario, some 80 percent of Ontarians said “yes” to surveys when asked if they’d like to see the province generate more solar power.

But, not all of those survey respondents can participate in the solar marketplace. The U.S. Department of Energy’s National Renewable Energy Lab determined that only 22 percent to 27 percent of residential rooftop area in the US is suitable for an on-site photovoltaic (PV) system due to shading, structural strength and other factors.

Renters, who make up about one third of the housing market in Canada (according to the last National Household Survey conducted by Statistics Canada), can’t install solar without a landlord’s approval. Permission may be an issue for many condo owners too. Meanwhile, many single-family homeowners simply can’t afford the price of solar PV.

For local distribution companies (LDCs) that want to offer customers a way to participate in the green energy economy, community solar installations with virtual net metering are an affordable and scalable solution. Such programs can help consumers go green and cut energy costs while reducing customer defection for LDCs. That will help LDCs maintain revenue to support vital electric infrastructure as we transition toward our clean energy future.



VIRTUAL NET METERING 101

Virtual net metering goes hand in hand with community solar energy, which is one way that those who have financial or structural impediments to private PV systems can still get sun-based electricity.

With community solar, customers join a community co-operative that builds a single solar facility to supply each member with a portion of his or her electrical needs. These customers “own” a few panels of the installation’s PV array or a percentage of the system’s generation.

Virtual net metering is a method of bill crediting for that

shared solar energy. Through it, customers receive credit on their bills that reflect the energy the PV system generates and pushes back onto the grid. For billing purposes, it’s as though the customer’s electricity meter is running backwards.

Customers don’t necessarily use the energy produced by a shared solar array. They may simply be helping to support green energy overall because they allow more solar to come onto the grid. In a way, such customers are using “virtual” solar and getting economic benefit from it. Their gain comes in the form of discounted electricity bills, which have been reduced by the application of credits that reflect the production of the shared solar installation.

SOLAR GARDEN GROWTH

Community solar systems sometimes are called solar farms or solar gardens and in the U.S. and they’re showing up all over the country. GTM Research, a cleantech industry analysis firm, forecasts that 410 megawatts (MW) of community solar will be installed in the U.S. during 2017. In 2010, there was only 1 MW installed. By 2019, analysts expect the country to have some 500 MW of community solar in service.

These numbers are all the more surprising when you consider that such installations only exist in 25 states, according to the Solar Energy Industry Association. A dozen of those states have enacted legislation to encourage community solar, and consumer response has been enthusiastic.

Colorado is one such state. Initially, Colorado launched pilot programs in 2010. The program “was so popular

among Coloradoans, shares in the facilities sold out in as little as 30 minutes after they were announced,” notes the SharedRenewables.org website, a research center for energy policy. In 2015, Colorado passed further legislation designed to incent more “solar gardens” that consumers can buy into.

Similarly, Minnesota required that its largest utility, Xcel Energy, offer community solar options to consumers. California mandates virtual net metering for multi-tenant buildings and all tenants must have the opportunity to buy into the shared renewable generation.

Massachusetts, another state with shared renewable legislation, backs virtual net metering and through it, allows customers to transfer the net metering credits that lower bills to another customer who has the same utility and resides in the same utility service territory. “The program has been extremely popular,” notes the SharedRenewables.org website.

BENEFITS OF VIRTUAL NET METERING FOR UTILITIES

As noted earlier, community solar installations allow LDCs to give consumers something they want – green power – and keeps those consumers as customers. Such installations incent customers to stay with their LDC because they create lower bills without the expense of private rooftop solar systems. Because the community solar only serves a portion of the customer’s load, it continues to leverage the LDC’s distribution system and avoid stranded assets. The program enables new business models for LDCs, which helps increase competitiveness. Other benefits include:

✔ Cost-effectiveness

A study conducted by economists at The Brattle Group in 2015 found that larger scale PV was significantly more cost effective than residential-scale systems. Researchers concluded that the generation cost of energy from larger ground-mounted PV sites was roughly half the cost per kWh of the output from an equivalent portfolio of individual 5kW residential-scale systems. Researchers attributed economies of scale and greater solar output due to optimized panel orientation for the cost difference between rooftop and residential PV.

✔ Cleaner clean energy

The rooftop-versus-grid-PV study conducted in 2015 by The Brattle Group also found that higher capacity PV sites avoided approximately 50 percent more carbon emissions than an equivalent amount of residential-scale solar PV.

✔ Optimal siting opportunities

When the New York Public Service Commission (NY PSC) approved a statewide shared renewables program in July 2015, it specified that the first phase of this program, which lasted from October 19, 2015 through April 30, 2016, limited projects to specific goals. One of those goals was supporting the grid itself.

How? With community solar and virtual net metering, power providers can site projects where capacity is available, where supply will relieve grid strain and where infrastructure costs could be deferred or avoided by the addition of the distributed generation assets. Virtual net metering provides a non-wires alternative to capacity constraints and reliability issues.

✔ Opportunities for greater grid coordination

Along with helping the grid of today, community solar has the potential to help the grid of the future. Specifically, distributed generation allows utilities to start using a network orchestrator approach to business. Through such a business model, companies leverage a network of assets that create value. Examples include Uber and AirBnB. Using a fully integrated network orchestrator (FINO) approach, utilities can aggregate and orchestrate distributed generation as dispatchable capacity that can be bid into energy markets.

BENEFITS OF VIRTUAL NET METERING TO CONSUMERS

Inclusion is the name of the game with community solar and virtual net metering. These solutions offer an opportunity for people who otherwise wouldn’t be able to choose solar energy, a chance to go green. These includes renters who can’t install solar, those who can’t afford the investment and people with rooftops that do not support such technology. Along with opening up solar opportunities, virtual net metering delivers:

✔ Cost savings and price protection

Virtual net metering lowers electricity bills by letting

people defray costs with their share of the community solar installation. It also protects consumers against rising electricity rates by keeping a portion of their hydro bills – the consumption part – down.

✔ More affordable solar energy

As noted earlier, economies of scale make community solar a more cost-effective option than rooftop solar. In addition, such programs give consumers solar energy without the hassles and expense of maintaining a solar installation themselves.

BENEFITS TO THE PROVINCE

According to Canada’s National Energy Board, solar power is still a small portion of the country’s electricity supply. In 2016, Canada’s 2100 MW of installed capacity generated 3 TWh, and that represented only 0.5 percent of the country’s generation. More than 98 percent of Canada’s solar power is located in Ontario, largely because the provincial feed-in tariff incented its development.

However, that tariff has become less over time, and new approaches can re-invigorate the solar industry. Community solar with virtual net metering is one such approach. Other benefits include:

✔ Conservation impact

Virtual net metering can be correlated with time-of-use rates to ensure that the electricity generated from the solar facility

is directly credited to participant bills to reflect time-of-use consumption. This allows members of the community solar co-operative to take advantage of the peaking nature of solar production and realize significant reductions to their electricity bills, particularly during on-peak and mid-peak hours of the day. In this way, virtual net metering supports the Government of Ontario’s priorities of putting conservation first because program participants are incentivized to reduce electricity consumption.

✔ More net-zero buildings

It’s difficult for multi-resident buildings and many existing structures to meet their own energy needs on-site. Virtual net metering aligns with the Government of Ontario’s climate-change reduction goals by enabling the development of net-zero energy communities.



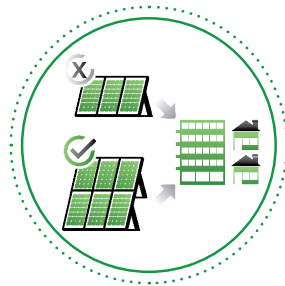
SMART DEPLOYMENT STARTS WITH A PILOT

Pilots are an essential learning tool for the Ministry of Energy. They allow for a limited and controlled implementation that identifies issues and presents a way to test solutions before trying to deploy a program at scale. Among the things Ontario can learn with a pilot are:



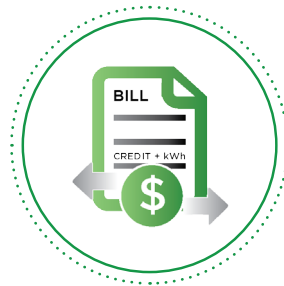
Clarification of Regulatory Requirements

Pilots can be implemented quickly and lessons can be applied immediately to the regulatory process. A pilot will minimize the need for additional regulatory changes after the implementation of virtual net metering across the province, which will allow such programs to grow without disruption from market uncertainty.



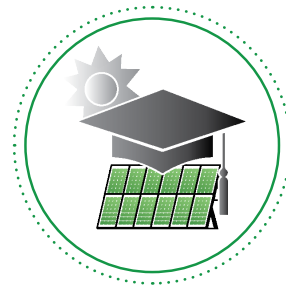
Opportunities to Test Market Models

With a pilot, the province can build and test how different models and terms appeal to consumers and LDCs. The pilot also allows for a controlled cost discovery to ensure optimal return on investments once virtual net metering programs go into effect.



Identification of Billing and Settlement Issues

A pilot allows Ontario to determine how virtual net metering credits will transfer from a generation meter to a customer's account. It offers a way to test different billing mechanisms and understand their impacts on legacy billing applications and processes. It also allows the Province to determine how to apply time-of-use rates and whether upgrades will be necessary to advanced metering infrastructure already in place.



Effective Education

A pilot program can be launched with one supportive LDC, but the lessons can guide programs for any LDC that follows the virtual net metering path going forward. In addition, a pilot will help LDCs identify what educational efforts they'll need to make with consumers to gain buy-in and understanding. Insight is the aim of any pilot. A virtual net metering pilot will inform regulators, LDCs and their customers alike.

ABOUT SPARK POWER CORP.

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