
INDIGENOUS COMMUNITY SOLAR

There are two pathways to renewable energy projects in British Columbia (BC): Producing electricity and selling it to BC Hydro as an Independent Power Producer (IPP) (Fig.1) or self-generating electricity for individual use - f.ex. with rooftop solar, under the net metering program. A third way, corresponding better to the conditions and aspirations of the Indigenous peoples, would consist of **Community Energy** initiatives.

The following note explains the concept, the rationale and the potential scenarios.

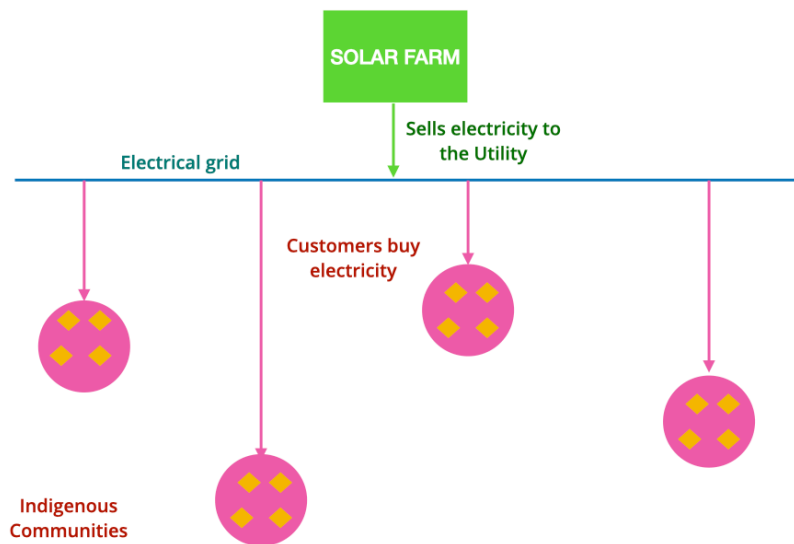


Fig. 1: Traditional IPP Process

What is Community Energy?

Community energy refers to energy initiatives owned, controlled, or driven by a group within a specific community. These initiatives can take many forms, such as renewable energy projects, energy efficiency programs, or energy cooperatives. The goal of community energy is often to reduce the community's reliance on fossil fuels ¹ and provide a source of clean, local energy that can benefit the community economically, environmentally, and socially. Community energy projects can be developed by various stakeholders, including local governments, not-for-profit organizations, and individual members of the community.

Community energy can be a crucial enabler of a just and inclusive energy transition. Not only can community energy create local socio-economic value, but it also allows

¹ GHG emissions from heating with oil, natural gas or propane. Reduction through electrification.

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communities to achieve greater autonomy through direct control over financial and energy resources on the road to energy democracy. ²

Community energy initiatives are sometimes referred to as shared solar or solar gardens. They are often associated with social programs and the concepts of energy equity, household energy affordability, energy justice, energy democracy, energy burden, and support for low-income communities.

Community energy in the USA exceeds 3,400 installations with a total capacity of over 7.8 GW³. Their capacity has grown by about 121% year over year since 2010; in other words, capacity has more than doubled on average year over year. About 1.8 GW came online in 2020 alone.

Current Situation in BC

Bc Hydro offers a net metering service, available to residential and general service customers, allowing them to connect a renewable electricity generating unit to:

- Power their home or business;
- Save on their electricity bills by offsetting their electricity consumption and;
- Rely on power supply from BC Hydro's grid when needed.

As of January 2025, there are approximately 10,000 net metering customers with a total connected generation capacity of approximately 55 MW. The large majority (93%) is residential, and most installations (98%) are solar.

According to BC Hydro ⁴, the average residential net metering customer uses significantly more electricity than standard residential customers. Net metering typically coexists with high electrification (such as heat pumps and electric vehicles).

Net metering (**NEM**) is for individual customers. Community energy is for a group of customers and needs an accounting mechanism known as Virtual Net Metering (**VNM**) ⁵ to operate. While BC Hydro already offers NEM service, it has not implemented VNM yet.

² IRENA - Community Energy Toolkit. <https://www.irena.org/publications/2021/Nov/Community-Energy-Toolkit-Best-practices-for-broadening-the-ownership-of-renewables>

³ NREL - <https://data.nrel.gov/submissions/244>

⁴ BC Hydro Net Metering rate workshop. <https://www.bchydro.com/toolbar/about/strategies-plans-regulatory/workshops-feedback.html>

⁵ See Appendix A

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Why Community Solar?

Community solar arrangements allow customers to enjoy the advantages of solar energy without having to install their own solar energy system. Community solar projects may provide an alternative to rooftop PV systems for customers who:

- Have insufficient solar resources or roof conditions to support a rooftop PV system (due to shading, roof size, roof structure, orientation, or other factors).
- Do not own their homes or buildings.
- Are unable or unwilling to install an on-site solar PV system for financial or other reasons.

Indigenous households often find themselves in those situations and cannot access solar energy individually and without additional support.

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Community solar meets Indigenous aspirations for energy sovereignty, self-determination, resilience and energy security. It can help address local social challenges, including energy poverty, support for elders, and assistance for low-income and vulnerable community members, such as single mothers. Additionally, it empowers Indigenous communities by enhancing financial autonomy and enabling direct control over their energy resources.

Installing a rooftop PV solar for net metering is predominantly accessible to customers with the resources to do so. Up-front investment, permitting and contracting, electrical wiring and inspection, and equipment installation present significant challenges for individuals with less capacity or knowledge to install solar on their homes, which is generally the case in Indigenous communities.

The actual NEM program is arguably neither democratic nor equitable. It discriminates between privileged homeowners who have the resources to install rooftop solar and members of the Indigenous communities who generally do not have that capacity. VNM is better suited to Indigenous communities, allowing them to participate in locally generated electricity without installing their own rooftop PV solar system.

Net metering enrolment statistics indicate a correlation between rooftop solar and electrification. According to the BC Government ⁶, there are 100,000 Electric Vehicles registered in BC and 200,000 heat pumps installed. Arguably, not many are in Indigenous communities. Implementing Virtual Net Metering for First Nations will facilitate increased electrification in Indigenous communities, giving them access to the benefits of solar energy without the burden associated with individual rooftop installations.

⁶ "Clean power to electrify B.C.'s future" <https://news.gov.bc.ca/releases/2023EMLI0036-000941>

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Community solar can take two forms:

- A. Solar Park: A large solar installation shared by all communities.
- B. Solar Garden: Smaller local installation in each community.

Scenario A: Solar Park

Under this scenario, several bands and communities share a large-scale solar project with enough capacity to supply the annual electricity needs of members of the communities. The system is connected to the Utility, and the electricity generated goes straight into the grid, not in return for cash as with an IPP system, but for energy credits to be redistributed among the Utility's customers in the communities under a VNM arrangement. (Fig. 2) To be operational, the project needs the current BC Hydro net metering program to be

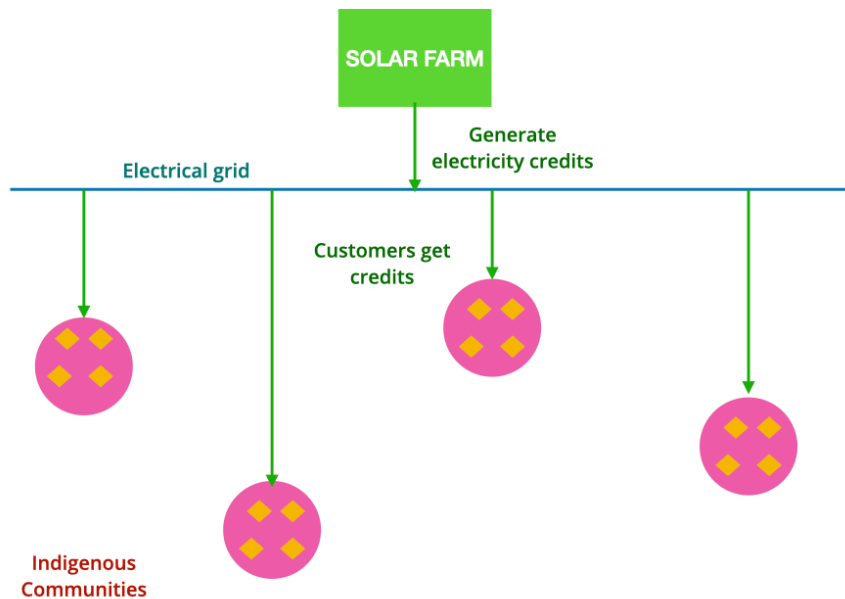


Fig. 2: Solar Park with VNM

extended to virtual net metering. It also needs a mechanism to manage the energy credits and payments between TNG and the communities.

Preliminary analysis shows that this process could bring energy cost savings to the Communities in the range of 30% to 48% in the first years and up to 90% when the cost of the solar plant is fully amortized.

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Scenario B: Solar Garden

Under this scenario, each band or community develops its own mini solar park (or solar garden) with enough capacity to serve its local electricity needs. The installation is connected directly to the BC Hydro grid. This setup would require a VNM arrangement similar to Scenario A.

(Fig. 3)

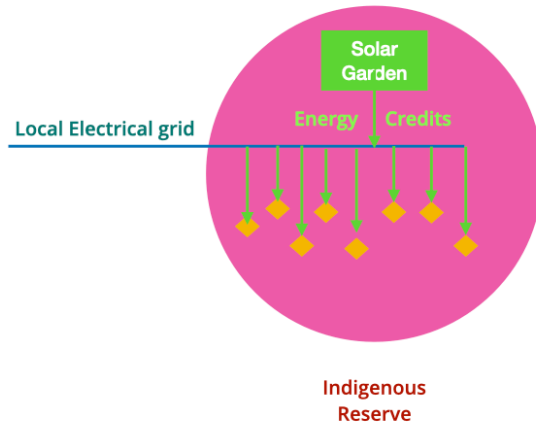


Fig. 3: Solar Garden with VNM.

While installing many smaller solar systems could arguably be more expensive than developing a single large solar park, connecting small generators to the local low-voltage line is straightforward and inexpensive. On the other hand, connecting a large-scale solar park to the high-voltage BC Hydro grid is complex and expensive. Therefore, the cost of many smaller solar gardens could be similar to those of a large-scale solar park.

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Key Points

1. Community energy promotes equitable and inclusive access to renewable energy. For First Nations, it offers local socio-economic benefits, greater autonomy, and direct control over financial and energy resources. It can also help reduce energy costs for low-income community members.
2. Community solar initiatives for Indigenous Communities can take two forms:
 - a) Solar Park
 - A shared large-scale solar installation with the capacity to meet the electricity usage of BC Hydro's customers in several communities.
 - The electricity generated is fed directly to the grid, not for cash but as energy credits to be redistributed among utility customers in the communities under a VNM arrangement.
 - b) Solar Garden
 - A smaller-scale solar facility located within each Reserve, designed to meet the community's energy needs.
 - The electricity generated is fed directly to the grid, serving a more localized area than a Solar Park.
3. To enable community solar, BC Hydro's existing Net Energy Metering (NEM) program must be expanded to support VNM.

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APPENDIX A: NET METERING VS VIRTUAL NET METERING

Net metering and virtual net metering are both mechanisms used in the context of renewable energy systems, particularly solar energy, but they differ in their approach and application.

Here's a breakdown of the differences between the two:

Net Metering (NEM)

Net metering is a billing arrangement that allows residential and commercial solar panel owners to receive credits for the excess electricity they generate and feed back into the grid. The basic concept is that when solar panels produce more electricity than is consumed on-site, the surplus is sent to the grid. This excess electricity is subtracted from the owner's future electricity bills, effectively allowing them to "bank" the credits and use them during periods when their solar panels aren't generating enough electricity, such as at night or during cloudy days.

NEM typically applies to individual solar panel installations and requires a two-way meter (net meter) that can measure both the electricity imported from the grid and the surplus electricity exported to the grid. It provides a financial incentive for solar panel owners, as they can offset their electricity costs and potentially even earn revenue by selling excess electricity back to the utility company.

Virtual Net Metering (VNM)

Virtual net metering, also known as community net metering or shared solar, is a concept that allows multiple energy consumers to benefit from a single solar installation located elsewhere. It enables individuals or organizations who are unable to install solar panels on their own property, such as renters or those with shaded roofs, to still access the advantages of solar energy.

Under VNM, a solar installation is established in a specific location, often a shared facility or a larger solar farm. The electricity generated by this central installation is allocated to multiple participants or subscribers connected to the project. Each participant receives a portion of the electricity generated through credits, which are deducted from their individual electricity bills.

VNM allows the credits generated from the shared solar installation to be applied to the electricity bills of subscribers who may be geographically separated from the solar project. This arrangement promotes access to renewable energy for a wider range of individuals or organizations who cannot directly install solar panels on their premises.

In Summary:

Net metering primarily focuses on offsetting the electricity costs of individual solar panel owners by allowing them to feed excess electricity back into the grid and receive credits for

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it. Virtual net metering, on the other hand, allows multiple participants to benefit from a shared solar installation, irrespective of their physical proximity to the project site.