SOLAR 4ALL

HARNESSING THE POWER OF

SOLAR ENERGY

IN ALBERTA

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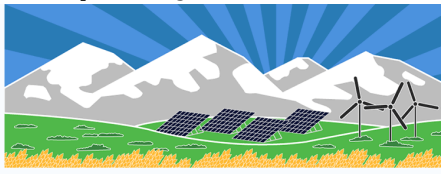
ALBERTA GEN
GREEN ECONOMY NETWORK



A New Opportunity for Renewable Energy in Alberta

As the provincial government moves to phase-out coal and introduce more renewables onto Alberta's grid, we have a unique opportunity to change not just how our power is generated, but also how it is owned and distributed. Large and small scale solar PV renewables owned and operated by individuals, small businesses and by communities provide such an opportunity and should serve an important role in meeting the province's energy needs.

Why Do We Need to Make Room for Solar?

Solar PV offers distinct benefits that need to be considered alongside cost in the development of a robust and durable renewable energy strategy:

1. **Alberta has high natural potential for solar.** Calgary is the sunniest major city in Canada. A solar PV system located there will produce approximately the same amount of energy annually as that same system in Miami, Florida. Edmonton is the third sunniest major city in the country. A PV system in Edmonton produces about the same amount as a system in Rio de Janeiro, Brazil.[i]
2. **Suitability across Alberta.** Alberta's best wind resources sites are concentrated in a few areas generally away from urban centre. In contrast the whole province, in both urban and rural areas, has high potential for solar installations. Alberta is much sunnier than Germany, a country with over 1.5 million panel installations.[ii] This means most Alberta have natural access to solar - communities and individuals could benefit from an on-site or nearby solar installation.
3. **Visible in communities.** Solar tends to be highly visible in communities. The more contact people have with renewable energy, the more likely they are to approve of it, want it, and want to learn more about it.[iii] Having our electricity sources right in our yards or in our communities provides educational opportunities for young and old alike.
4. **Enables individuals and businesses to participate in the ownership of the energy resource.** Solar power creates the opportunity for individuals, neighbourhoods, First Nations/Métis communities, schools, farmer's associations, municipal districts and other organizations to lower their power bills, or even make income. Self-produced power provides price stability for participants. It is also a vehicle for unrealized investment demand for renewable energy. It may lead to more local jobs. Ownership is also not only about economic opportunity but also about democracy and choice. An emergent guiding principle in the energy transition is that citizen involvement in energy production is it's a social good.
5. **Grid integrity and source complementarity.** Alberta's grid needs a diversity of energy and storage sources, especially as the ratio of renewables on the grid increases.

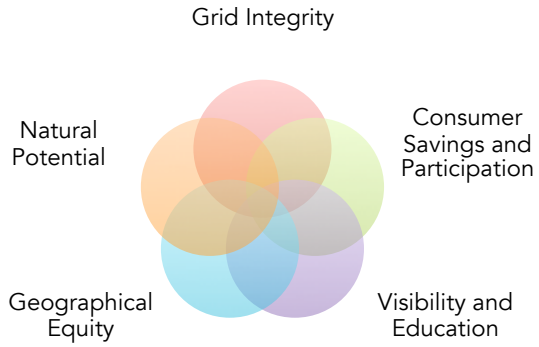
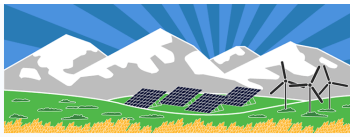


Fig. 1. Benefits of Solar PV for Alberta.



What Needs to Happen to Make Room for Solar?

Currently, there is no legal restriction preventing an Alberta homeowner from installing solar on their property. Provisions within Alberta's *Micro-Generation Regulation* lay out the conditions under which homeowners can install a solar PV system. However, the regulation does not allow the home/building owner to produce more than they consume (in kilowatt hours) per year. So, just because there is no legal prohibition to a homeowner placing a PV system on their roof does not mean that there are not barriers in place that prevent many Albertans from powering their homes and communities with solar.

The main barriers Albertans face in procuring their electricity from self-produced solar PV are:

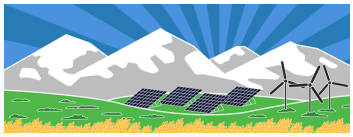
a) access to the market and electricity grid
b) capacity and start-up support
c) access to low-cost project financing and better project economics

For example, many homeowners who would otherwise go solar cannot jump the hurdle of upfront financing. Others – such as renters, condo-owners, or homeowners with unsuitable roofs – are currently unable to easily participate in solar power production. As a result, the current model – where power production is left to the open market – is really only open to those with the most capital. Such a model not only limits the number of solar producers, but it fails to consider the multiple benefits a community ownership model of solar generation provides.

This means there is room for Government to **better enable solar by offering better access, capacity, and financing** to Albertans who face barriers.

Access to the market and electricity grid

1. **Enable any project that can safely connect to be connected.** The current *Micro-Generation Regulation* restricts the size of an individual (non-utility) power generation to 1 MW. This not only restricts individuals, but also presents a barrier to individuals or organizations wishing to pool their resources and build a community-scale installation. The government appears to be considering raising this to 5 MW. The Canadian Solar Industry Association has recommended that there be no size cap, as long as the project can be demonstrated to be safely connected. The bigger the project, the cheaper it will be for all ratepayers (that's all of us).
2. **Prioritize dedicated support for community-owned and shared solar ownership models.** Many energy consumers through no fault of their own, are unable to put solar on their roof and in turn, fully participate in the clean energy transition. These customer segments include: renters, low- to moderate-income households, apartment dwellers and people who live in shaded or heritage listed buildings. Fortunately, there are community-owned renewable energy ("CORE") models where ownership and/or decision making involves local individuals and stakeholders, and where project benefits accrue to local individuals and stakeholders. The most common models in Canada are: cooperatives, MUSH (municipalities, universities, schools, hospitals) sector projects, not-for-profit entities, virtual net metering, community solar gardens, and community investment funds. These models should be prioritized over an open market bid system to ensure maximum participation and diverse ownership.



3. **Introduce Virtual Net Metering.** Virtual net metering (VNM) allows energy produced by a renewable generating facility to be credited to individual tenants and/or common utility accounts. It enables many of the community-owned models above to work smoothly. Here a couple of examples. It would allow a condominium board to credit individual condo owners' power bills for a shared system on the condo building roof. It would allow community residents to share the savings from an offsite "solar farm" located near their community, like the community solar garden in Nelson, BC. It would allow an agency that provides social housing to install a system on a dwelling roof, and pass the savings onto individual units. Furthermore, VNM allows residential and small commercial solar electricity generators to "export" electricity they produce to the wider grid in a way that realizes its true value.

> ***"… if policies continue to make solar more attainable, the market for solar has barely been tapped."***
> **- Derrick Jackson, Union of Concerned Scientists[iv]**

Capacity and start-up support

1. **Streamline permitting processes.** Currently, permitting for the electrical, building and development aspects of solar PV installation are inconsistent, and in many Alberta counties and municipalities, the costs are onerous, which can add significant costs to a system. Germany has simple and free permitting for solar PV systems. This makes installation go more smoothly and quickly, and keeps costs down.
2. **Provide information and capacity-building.** Accessible market and regulation information, and capacity to navigate the complete PV development process are key barriers to both community-scale solar, as well as for many homeowners and business owners. The Government can ensure that those wishing to invest in solar have the resources they need. This doesn't mean government funding – that is subject to cycles of boom and bust. Instead, the focus needs to be building the capacity to succeed, by offering information and services, like online tools, guidebooks, workshops, and hotlines.

Project financing and economics

1. **Offer Loan Guarantees.** Ease small-scale and community-scale barriers in accessing low-cost debt. This can be achieved through Community Investment Funds (CIFs) (like on Nova Scotia), or through state-insured loans.
2. **Offer investment or tax relief.** Other tools include investment and tax relief, and enabling legal structures to allow local ownership models (e.g. non-profits or cooperatives) to be eligible for any tax or rate incentives. The Government of Alberta has been working with Alberta's major municipalities on their Charter status, which would enable these municipalities to offer property-assessed clean energy (PACE) to homeowners. PACE enables cities to offer no upfront cost solar installations or home energy retrofits to homeowners, which are then repaid over an assigned term (5-25 years) on their annual property tax bill.
3. **Implement an open or directed feed-in tariff.** Feed-in tariffs (FIT) are one of the best pricing mechanisms to speed solar energy

growth. A well-designed FIT can provide the stable price signal small- and community-sized producers might need for their project, while making sure the price signal is responsive to changing economics.

Considerations for Large-Scale Solar

Even large- and utility-scale projects present options for involving all Albertans. Policies can prioritize and incentivize projects that are owned, either fully or partially, by communities, co-operatives, municipalities, farmer associations, First Nations or Métis communities. One such policy could be requiring at least 50% of Alberta's renewable projects to have a community or First Nation partner. Another is a "Standing Offer Program" that would provide a streamlined approach for a broad range of large commercial and community solar electricity generators to receive long-term power purchase agreements for all of the electricity that they generate.

[i] SkyFire Energy. 2014. URL: http://www.skyfireenergy.com/canada-versus-the-world/

[ii] Fraunhofer Institute, 2015. Recent Facts about Photovoltaics in Germany. URL: https://www.ise.fraunhofer.de/en/publications/veroeffentlichungen-pdf-dateien-en/studien-und-konzeptpapiere/recent-facts-about-photovoltaics-in-germany.pdf

[iii] http://www.vox.com/2016/5/4/11590396/solar-power-contagious-maps

[iv] http://blog.ucsusa.org/derrick-jackson/powering-up-solar-energy-for-all