

MUNICIPAL ENERGY GENERATION PROGRAM

Solar PV Basics – Community Engagement

September 2024

This document provides municipalities with information to install solar PV on their facilities, reduce permitting and tax barriers to solar PV in communities, and engage community members on the benefits of producing power.



**Municipal
Climate Change
Action Centre**

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1.0 KEY INFORMATION AND HOW TO READ THIS DOCUMENT

Municipalities have a leading role to play in supporting and guiding the development of solar PV projects with the support of community members, solar industry and electric utilities. This document is organized by key engagement tactics with examples from across Alberta, Canada, and around the world. It also shares some municipal leadership strategies that can be used to demonstrate the benefits of solar PV.

Information portals with online tools and maps — These tools provide citizens with the necessary information to assess their options for solar PV projects, learn about the permit process and incentive programs, and contact installers for quotes.

Publications — Factsheets, brochures and other hard-copy materials with key information should be readily available at municipal and community events.

Marketing — Traditional and social media should be used to attract attention to solar PV success stories, incentive programs and tools and information available to the community.

Open houses and workshops — Events help address local concerns, share solar PV truths and debunk myths. They also are great venues for building new relationships and launching new projects.

Workforce training and education — Working together with the solar industry, municipalities can help prepare their workforce for more solar PV projects with local training and education.

Programs and supporting offices — Municipalities can design their own incentive programs and make municipal staff available to support citizens and businesses in developing solar PV projects. They can also build regional partnerships with economic development organizations or rural electrification associations.

Municipal leadership strategies — Municipalities are best positioned to demonstrate the benefits of solar PV to their community as part of a community energy transition strategy. This is all part of an integrated climate change action plan that includes building local government capabilities through education and awareness.

2.0 INTRODUCTION

Municipalities have a leading role to play in supporting and guiding the development of solar PV projects to foster an environmentally and economically sustainable community. Solar energy can provide safe, clean, affordable, and local electricity to power homes, businesses, and community buildings. The municipality's role can take many forms including ensuring that permitting processes are solar-friendly and leading by example, with direct installations of solar on municipal buildings. But municipalities can go beyond these two key roles to engage with the community and harness the numerous resources that communities can provide. Municipalities can also integrate solar as part of their broader sustainability strategies and initiatives.

This document explores the leadership role of municipalities and shares community engagement tactics illustrated with examples from Alberta, elsewhere in Canada, and around the world. Not all the ideas discussed here may be applicable to every community. Nevertheless, ideas may serve as a starting point, and inspiration, for home-grown activities.

3.0 ROLE OF THE MUNICIPALITY IN SOLAR PV ENGAGEMENT

Municipalities have a variety of roles to play in supporting a market for solar PV in their communities beyond direct installation and ensuring that permitting processes are solar friendly. By successfully supporting a solar PV market, municipalities enable their citizens through capacity building and education to produce their own power; they enable economic development opportunities for solar installers and solar businesses to grow in the community; and they make progress towards achieving climate and other environmental goals.

Municipalities are uniquely capable of leading because of the close relationship they have with their citizens, and the direct responsibility they have to ensure the sustainability, health, and liveability of their jurisdictions. This role is increasingly recognized with many cities leading the way on climate change action around the world.

Individuals within the community can benefit from installing their own solar PV systems allowing them to produce low-carbon electricity and providing stable electricity prices. Solar PV owners also benefit indirectly from increased knowledge and understanding of the electricity sector, allowing them to participate more fully in the important conversations around energy that are happening across the province today.

Because of their close interaction with citizens, municipalities are on the front line of enabling the energy transition. Many have aggressive targets for climate and environmental action but have a limited amount of energy and land use under their direct control over is limited, so they must engage citizens to meet these goals.

Developing a clear vision for solar PV can create an anchor-point for collaboration with key players in a solar strategy, which may later be rolled into a broader energy transition strategy for the community. Such a strategy may include addressing energy efficiency opportunities in buildings and transportation, developing several local renewable resources, and supporting a local clean technology sector. While addressing energy efficiency is foundational to an energy transition strategy, solar PV adds visibility to these activities, which are otherwise hidden within public infrastructure, buildings, and facilities.

A lack of accessible and easy to understand information is a big barrier to solar PV project development, along with lack of capacity for action. Municipalities can build strong support for solar PV by emphasizing capacity building among key players. While a network of solar installers is needed to meet market demand, education and capacity building should first and foremost emphasize spurring interest and market demand among community members. This should include basic energy literacy and understanding of solar PV technology benefits and local opportunities.

4.0 DEMONSTRATION PROJECTS

Municipalities can educate by demonstrating different types of solar PV projects and the value of these projects on public buildings and infrastructure, showcasing innovative applications of the technology, and making them highly visible to the public. Success and lessons learned from these projects should be shared.

4.1 Town of Vulcan Solar Park

The Town of Vulcan is using innovative solar PV designs that integrate modules into public art resembling trees and other artistic forms. The project aims to inform and spark interest among community members in solar PV technology. Accompanying the project are workshops, courses and a design challenge for the local high school.¹

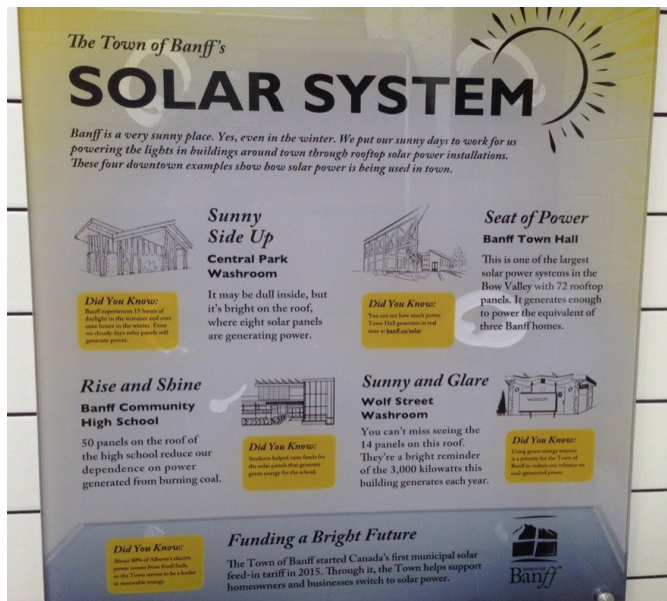


Innovative solar PV projects, or those that make a substantive contribution to the community, should also be recognized with public announcements or awards. Success stories play an important role in each of this document's engagement tactics. When solar PV is installed on public buildings, it should be accompanied by information kiosks, displays or online monitors that showcase the benefits of solar PV. Those benefits are not only local electricity production, but also economic returns, emissions reductions and the collaboration of community partners.

4.2 Town of Banff

The Town of Banff and Starland County make local solar energy production data available online and on a building display, helping visitors understand the operation and benefits of a solar PV installation. Solar PV on public washrooms (as in Banff), schools and libraries can make systems much more visible.

¹ Town of Vulcan, Kyle Greene, *Vulcan Solar Park* (2015); Green Energy Futures, "153. Vulcan builds Canada's first solar park," September 5, 2016. <http://www.greenenergyfutures.ca/episode/vulcan-solar-park>



4.3 Starland County

Starland County in Alberta has been engaging community members on solar PV technology for a long time. They started several years ago with a 10 kW demonstration project, and broadened their efforts to include a solar incentive program to help lower financial barriers. They have a website that shares many supporting materials on solar PV benefits, how to analyze a project's payback and help with funding agreements.



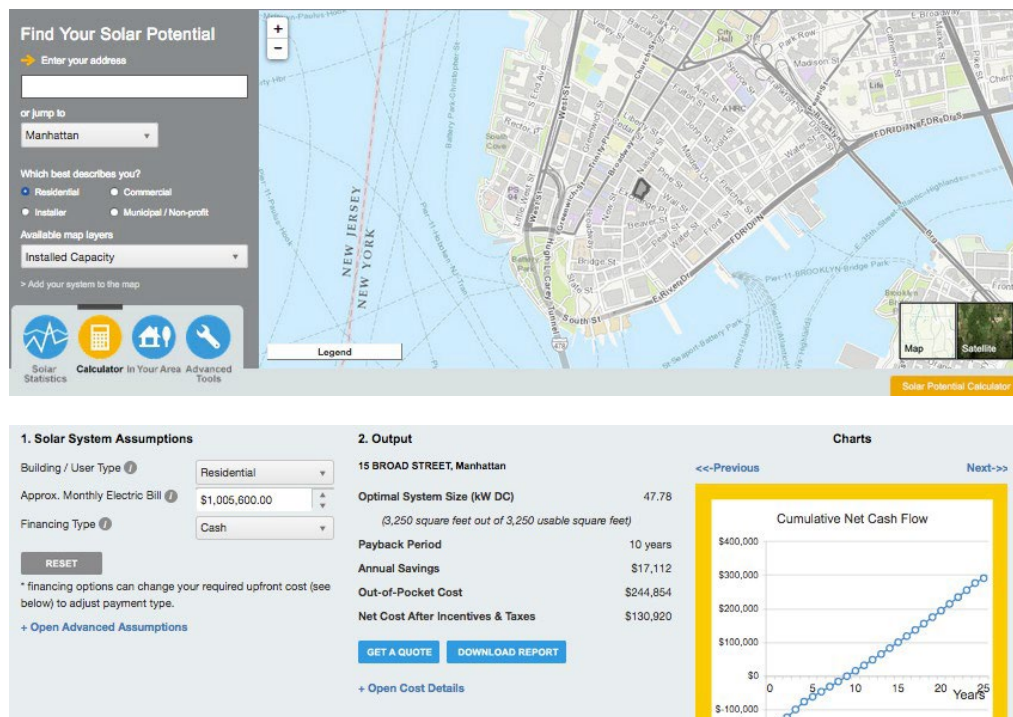
5.0 MAPS

Interactive online maps can track solar installations and help potential customers determine their local solar resources. These tools could include a scan of rooftops on the property, suggest a solar PV system size, and in some cases, allow users to refine the system, re-arrange PV modules, enter their electricity charges, and work out high-level cost and paybacks. Some mapping tools also directly connect customers with local certified, or vetted, solar PV installers.

Developing a solar map from scratch is beyond the resources of most municipalities, but other options are available using pre-built online platforms. Examples include Google Sunroof and Mapdwell that use locally sourced data to build a highly interactive map. Local governments may also choose to collaborate with each other to develop one map for several locations.

5.1 New York City Solar Map

New York City's Office of the Mayor partnered with the City University of New York and the city's Economic Development Corporation to develop an online portal centered around a solar map for the city and surrounding region.² This portal not only allows interested customers to identify solar PV project opportunities and customize and evaluate economics, it also offers a plethora of information about solar PV technology. The site even includes interactive guides³ that support customers through the permit process.

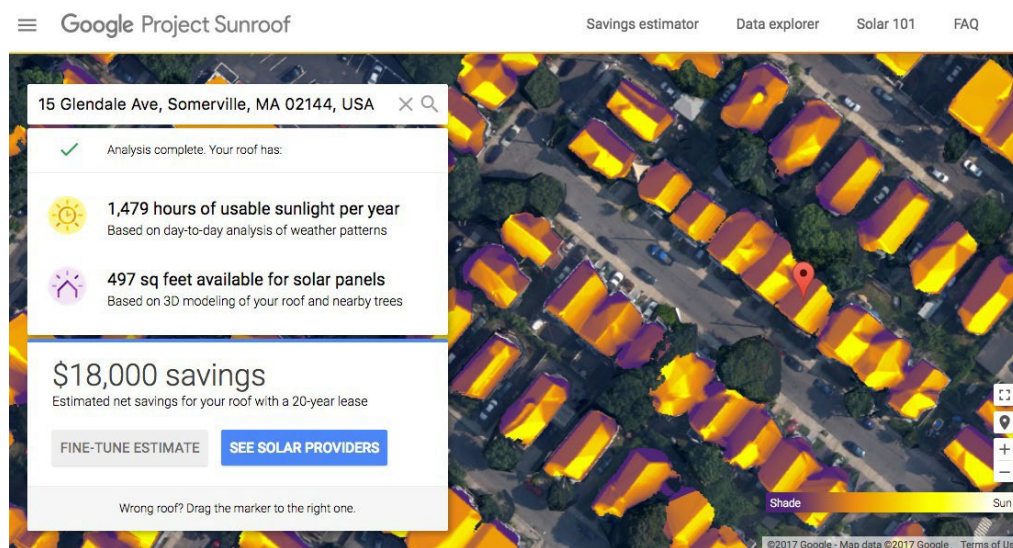


² City University of New York, "NY Solar Map." <https://nysolarmap.com/>

³ NY Solar Map, "Interactive Solar Permitting Guides." <https://nysolarmap.com/installing-solar/interactive-guides/>

5.2 Google Sunroof and Mapdwell Solar System

Google's Sunroof⁴ project, currently available only in the U.S., lets users enter their address and look up their home in Google Maps. It combines information with solar and cost data, and then allows for solar PV system customization. The project uses sophisticated models to account for shading from nearby buildings and trees, even historical clouds. Mapdwell's Solar System⁵ is another powerful tool for mapping solar, operating similarly to Google's Sunroof project.



While solar maps make it easier for citizens to identify solar potential, these tools can also be used by municipalities to assess feasibility of achieving their solar vision, identify programs based on high potential solar areas, and monitor implementation effectiveness.

6.0 CALCULATORS

6.1 Alberta Solar Calculator

In the absence of a solar map that may be difficult and costly to develop, a municipality can make a solar calculator available online to help customers estimate size, cost, and payback on a solar PV system. The Alberta Solar Calculator is an online tool developed which estimates yearly cash flow with and without a solar PV system and compares the net present value of different options over a chosen analysis period. Unlike many other solar PV calculators, this tool has been made in Alberta specifically for Alberta users and matches the province's current deregulated rate structure for residential, small commercial, and large general service customers.

The calculator is available [here](#).

⁴ Google, "About Project Sunroof." <https://www.google.com/get/sunroof/about/>

⁵ Mapdwell, "Solar System – work with the sun." <https://www.mapdwell.com/en/solar>

6.2 PVWatts

The U.S. National Renewable Energy Laboratory has built a solar calculator, PVWatts,⁶ that functions similarly to a solar map; however, the calculation does not account for local shading of adjacent buildings, trees, etc. But it is an excellent and easy-to-use tool for calculating the economics of a solar project given basic assumptions such as solar PV system cost and local electricity rates.

The screenshot shows the PVWatts Calculator interface. At the top, there's a header with the NREL logo and the text "PVWatts® Calculator". Below this is a navigation bar with "My Location" (set to "calgary, alberta"), "HELP", "FEEDBACK", and a dropdown for "ALL NREL SOLAR TOOLS". The main content area is divided into three tabs: "RESOURCE DATA", "SYSTEM INFO" (which is active), and "RESULTS". The "SYSTEM INFO" tab contains a "RESTORE DEFAULTS" button and a section titled "SYSTEM INFO" with the instruction "Modify the inputs below to run the simulation." Below this are several input fields: "DC System Size (kW)" with a value of 4, "Module Type" set to "Standard", "Array Type" set to "Fixed (open rack)", "System Losses (%)" with a value of 14, "Tilt (deg)" with a value of 20, and "Azimuth (deg)" with a value of 180. To the right of these fields is a "Draw Your System" section with a map and a "Go to PVWatts® results" button. On the left side of the "SYSTEM INFO" section, there is a "Go to resource data" button.

7.0 PUBLICATIONS

Publications such as fact sheets, brochures and guides communicate to community members basic information about solar PV, its benefits and how to navigate the municipality's permit and approvals process. They may also provide information on local programs and initiatives, such as rebates, production incentives and community project funds.

Once developed, materials can be distributed by:

- *Working closely with installers* — Share factsheets and solar guides with installers; use their input to refine content such as information on local install options, grid-connection, or cost.
- *Posting them online* — Share materials using online portals (like those above).
- *Sharing them at workshops, education events and community open houses* — Share installer literature to showcase their projects and expertise.
- *Webinars* — Offer online seminars with open invitations to the community, including homeowners, small businesses, community associations or leagues, and non-profits.

Several municipalities and regional governments have prepared guides to help property owners, renters, businesses, and community-related organizations with developing their own solar PV projects. These guides:

6. National Renewable Energy Laboratory, "PVWatts Calculator." <http://pvwatts.nrel.gov/>

1. *Outline the project development process* — Steps include first contact with renewable energy companies through contract negotiation, construction, operation and ultimately, decommissioning or replacement.
2. *Assist with ownership and financing* — Provide information to communities and solar industry on how to structure their ownership, financing, and investment in projects.
3. *Build strong relationships* — Create a positive environment for community members to engage with solar PV installers.

8.0 MARKETING

A media campaign, including electronic and traditional newsletters along with paid advertisements in local newspaper, radio and/or television, can direct community members to organized events, make use of online portals, or contact local solar installers for solar assessments and install quotes. Strong campaigns use consistent branding and have a good local presence.

Community-based approaches to marketing include partnering with local non-profit organizations, libraries and community associations or leagues. These can help build a good reputation for solar via their existing events, billboards or newsletters.

9.0 OPEN HOUSES AND WORKSHOPS

Workshops and open houses offer an opportunity to address local concerns and solar PV truths and myths and provide understanding of specific barriers for developing projects. Participating in these dialogues helps guide your strategies and develop the right programs and projects.

Events are good avenues to meet builders, residents and businesses who install solar PV; they might also target specific demographics and sectors, such as low-income housing. They are also opportune moments to recognize and award projects that use innovative designs and go above and beyond when engaging with the community.

Libraries, and community associations and leagues, are great venues and potential partners for hosting and organizing these solar PV events.

9.0 EcoSolar Home Tour, Edmonton

Solar home tours are a popular way to connect the public to system owners and installers. Alberta has a great home-grown example. For over two decades, local volunteers have created tours of Edmonton homes and businesses showcasing the latest in solar technologies and energy efficiency in action. Free to the public, this annual 1–2-day event is supported by local businesses and the City of Edmonton. The tour provides practical examples to educate homeowners on how they can install solar.⁷

⁷ the-Solar Home Tour, “Home-Tour”. <https://www.ecosolar.ca/>

10.0 WORKFORCE TRAINING AND EDUCATION AND SUPPORT

It is important to develop a community's capacity to install and maintain solar PV systems once there is sufficient demand. Easily accessible education and training programs will grow a pool of trained solar installers.

Alberta has several options for solar PV education and training (see below examples). While municipalities may wish to develop their own unique blend of content and local programs, this may not be possible for smaller municipalities. In this case, it is still useful to communicate training and education opportunities available elsewhere in the province — or, better yet, to partner with existing programs and make them available to the community.

10.1 Solar Alberta

Solar Alberta offers on demand courses and live courses throughout the year, that focus on the solar and renewable industry. The courses offer valuable opportunities for people who are actively involved or interested in solar PV and solar-related technologies to advance their skills, employability, and business offerings.⁸

10.2 Lakeland College Sustainable Energy Technology Program

The Sustainable Energy Program educates students to be leaders in the evolving renewable energy field through an understanding of renewable energy, energy principles, and environmental impact ⁹.

10.3 NAIT's Alternative Energy Technology program

The Northern Alberta Institute of Technology's Alternative Energy Technology program educates students on how to design and apply sustainable energy solutions that meet the needs of society.¹⁰ It draws a large variety of passionate students, many of whom become entrepreneurs and community leaders.



⁸ Solar Alberta, "Professional Training Courses." <https://solaralberta.ca/training-jobs/solar-alberta-training/>

⁹ Lakeland College, "Sustainable Energy Technology Diploma." <https://www.lakelandcollege.ca/programs-and-courses/environmental-sciences/sustainable-energy-technology-diploma.aspx>

¹⁰ NAIT, "Alternative Energy Technology program." http://www.nait.ca/program_home_76007.htm

To ease the permit and approval process for solar PV systems, municipal staff need a basic understanding of the technology, its benefits and costs, and its role in addressing the community's energy needs and sustainability goals. Internal workshops and specifically designed training courses will help build basic capacity among staff members.

Municipalities can help communities develop solar PV projects by establishing a local presence through supporting offices and programs. Where the following ideas are not all be feasible for smaller local governments with limited resources, these may choose to work together at a regional level.

Municipalities can also collaborate with a regional organization, e.g. rural electrification or regional economic development organizations.

1. *Free advice and expertise* — Municipalities can either provide in-house support for customers who want to install solar PV, or partner with experts to answer questions about solar and guide project development. These services, through a program or supporting office, are impartial and provide a go-to source of trusted information.
2. *Removing permit barriers* — Local incentives may include waiving permit fees, although these fees have only a small effect on overall project economics. Reducing permitting barriers by easing or removing some requirements is even more effective.
3. *Production incentives and rebates* — An incentive for local solar PV generators helps reduce the payback period of capital investments and generates more consistent revenues. The incentive may be adjusted to account for changes in the electricity rate, like the Town of Banff's Solar PV production incentive.

11.0 INTEGRATING SOLAR INTO BROADER ENERGY STRATEGIES

Solar PV can be a key part of a municipality's energy strategy as part of a broader approach to climate change action including managing government energy use and greenhouse gas emissions.

Local government can take a leadership role in addressing climate change, while also hedging cost risks through best practices in energy and emissions management. This means going beyond business-as-usual operations and proposing alternatives that reverse trends of higher energy use and costs and steadily growing environmental impact. These alternatives can help establish new priorities for local government to achieve more sustainable and efficient operations and provide insights into important decisions for years to come.

It is important to integrate solar PV demonstration projects into existing local improvement plans, including building energy efficiency retrofits and waste, water, and transit infrastructure investments. Of course, decisions to replace or retrofit assets should always account for all lifetime operations and maintenance costs. So, when facilities and buildings are due for upgrades and renovation, decisions should address how to reduce energy use and lifetime, also called 'life cycle,' costs. This includes identifying all local options for clean energy, including solar PV.

Best practices address behavioral, organizational, and technology management, all of which aim to

1. Lower cost of energy.
2. Minimize exposure to energy price volatility.
3. Increase staff productivity.
4. Strengthen government social responsibility.

Another layer of engagement that can build strong and long-term relationships with citizens uses new “smart city” approaches. These use social media and online crowdsourcing platforms to collect ideas and facilitate citizen innovation. Engaging citizens with solar PV projects in this way is one of many ways to make a smarter city and give citizens a voice in local government. “Smart” high-tech solutions can also be effectively combined with physical spaces designed to bring together key players, encouraging them to collaborate around new solutions. Players include utilities, regulators, municipal planners and policymakers, businesses, citizens and solar installers.

12 CONTACT US

Questions about the AMSP program may be directed to:
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