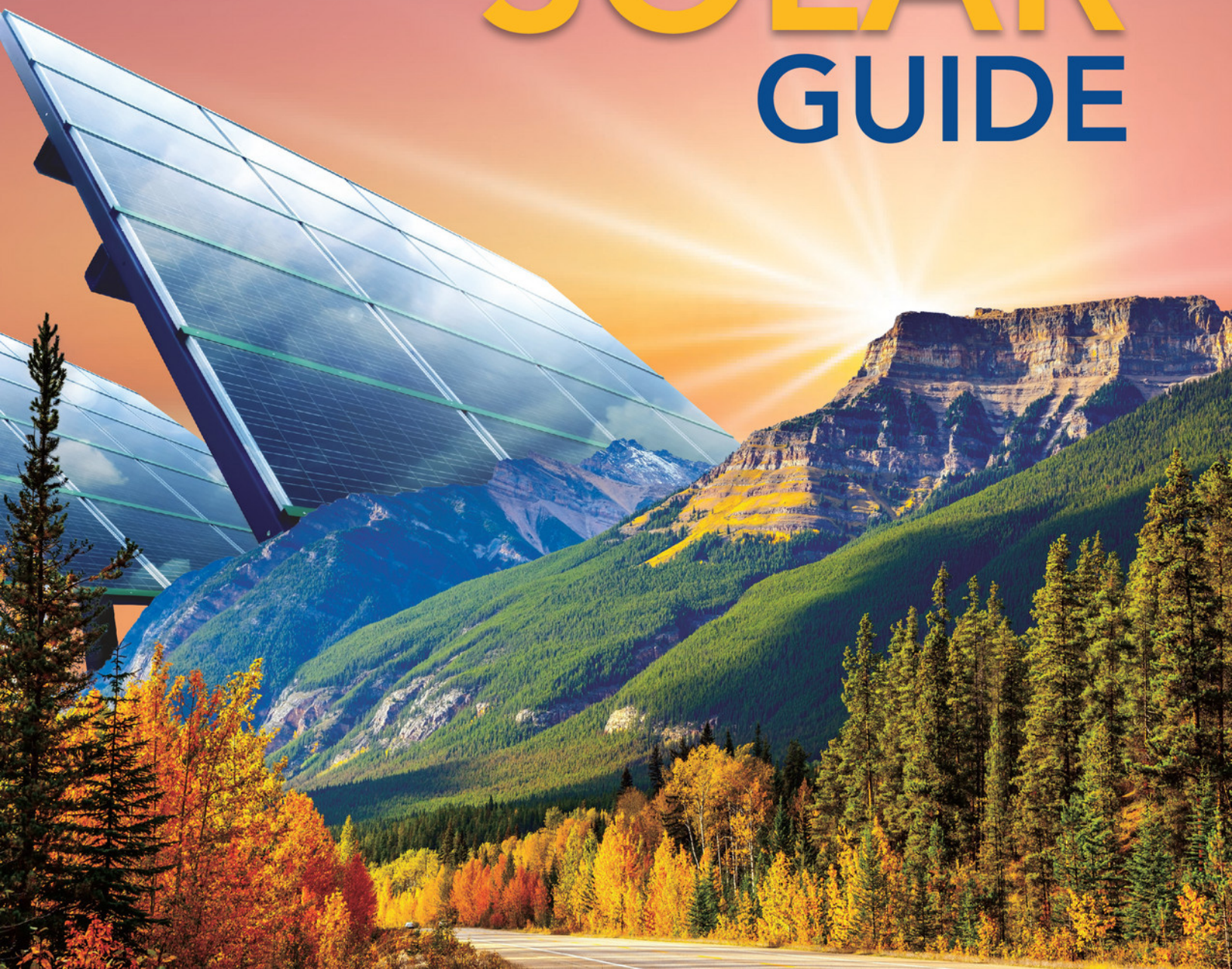
CanSIA
L'ASSOCIATION DES INDUSTRIES SOLAIRES DU CANADA | CANADIAN SOLAR INDUSTRIES ASSOCIATION

Energy Efficiency Alberta

ALBERTA SOLAR GO GUIDE



Energy Efficiency Alberta

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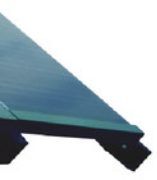

WHO WE ARE

About CanSIA

The Canadian Solar Industries Association (CanSIA) is a national trade association that has advocated on behalf of the solar energy industry in Canada since 1992. We proudly represent manufacturers, installers, developers, builders, owners, engineers, consultants, and a variety of other companies and stakeholders who want to see solar energy grow in Canada. On behalf of our members, CanSIA promotes the unique economic, environmental and technological benefits of solar energy in Canada. We believe that our role as an industry association is not only to represent our members on issues of the day, but to position the industry for sustainable growth for years to come.

About Energy Efficiency Alberta

Energy Efficiency Alberta is a new Government of Alberta agency dedicated to helping the province save energy. Their mandate is to:

- Raise awareness among energy consumers of energy use and the associated economic and environmental consequences;
- Promote, design and deliver programs and carry out other activities related to energy efficiency, energy conservation and the development of micro-generation and small scale energy systems in Alberta, and;
- Promote the development of an energy efficiency services industry in Alberta.

ALBERTA'S ABUNDANT SOLAR ENERGY RESOURCE

Alberta is home not only to Canada's most abundant non-renewable resources, but also to some of Canada's best renewable resources – especially solar energy.

Here are some facts that every Albertan should know:

- Alberta's annual solar energy resource is almost one million-billion kilowatt hours (1,000,000,000,000,000 kWh).
- Okotoks has a greater solar energy resource during months July to October than Miami (Florida) despite being 4,000 km further north.
- Edmonton's annual solar energy resource is more than 20% greater than Manchester (UK) despite both cities being at a latitude of 53.5°N.

By the end of 2018, the amount of solar electricity generation in Alberta will have surpassed 50,000 kilowatts (kW), enough to meet the average annual electricity needs of almost 100,000 Albertan households. As the cost of solar electricity continues to rapidly decline, and as more of Alberta's households, businesses and communities look to go solar, the contribution of solar energy to the province's annual energy needs is expected to increase significantly.

This guide was created by the Canadian Solar Industries Association in partnership with Energy Efficiency Alberta to help you, the consumer, make an informed decision on going solar. It will guide you through how solar technologies work, how to select the right solar installer, which solar programs are available, and more. Be sure to visit our website (cansia.ca/gosolar) for more consumer information, as well as Energy Efficiency Alberta's website for more information on their programs (efficiencyalberta.ca).

HOW DOES SOLAR ENERGY TECHNOLOGY WORK?

All solar systems capture the free energy of the sun and turn it into products we can use in our homes, either as electricity or heat.

Solar Photovoltaics

The most commonly seen solar technology is photovoltaics (PV). PV systems use panels lined with silicon cells that can convert sunlight directly into electricity. You will likely have seen these flat crystalline panels on rooftops, or even in fields where they convert sunlight into power all year long. PV panels produce direct current (DC) power, which needs to be converted to an alternating current (AC) power, the type of current commonly used in our homes. This is done through the use of inverters—devices that change the incoming DC current to outgoing AC current suitable for our devices, lighting and other electrical applications.

This AC power output can either be directly connected to your home's electrical system or the power can be sent to your utilities' electricity system via the wires attached to your home (or both).

Solar-Plus-Storage

Some PV systems can also have a storage component—usually batteries. As the sun shines during the day, your system takes what is needed to power the home and uses the rest to charge your battery. Once the sun has set, that energy can be discharged, providing electricity around-the-clock.

Because grid-connected Albertans export excess solar power directly to the grid and receive a credit on their electricity bill—often bringing it down to zero—solar-plus-storage options may not be necessary for many small PV systems. However, if you're hoping to rely on the grid as little as possible (or possibly go off-grid entirely), these battery systems may be for you.

Like other solar components, these storage batteries are rapidly improving and falling in cost, but you'll need to talk to your installer about whether this option makes sense for you.

Solar Heating

Solar Heating (commonly known as Solar Thermal) is another form of solar energy technology that uses the warmth of the sun for space and water heating.

Solar water heating systems directly transfer the sun's energy to your home's hot water supply, even in winter. There are two common types of water heating panels: flat plate and evacuated tube. In both cases, heat from the sun is captured in a fluid and used to help heat (or pre-heat) the hot water you use, for washing dishes, or running a bath, for example.

There are also solar air heating systems that use the warmth of the sun to heat air that will circulate through a home or building. This often takes the form of a hollow outer wall structure that allows warmed air to flow up the inside of the wall and into the building.

GENERATING YOUR OWN SOLAR ELECTRICITY IN ALBERTA

Alberta Micro-Generation Regulation

As is the case throughout the rest of Canada, electricity consumers in Alberta can generate enough electricity from renewable energy sources (including solar energy) to meet their own needs on an annual basis. This can be referred to as "net-metering" or "net-billing". Net-metering and net-billing differ in the approach that is used to settle the customer's consumption and generation on their bill.

In net-metering: either a charge is applied or a credit is received based on whether total consumption is larger or smaller (respectively) than their total generation at the end of a billing period.

In net-billing: a charge is applied for all electricity consumed and a credit received for all electricity generated at the end of each billing period.

Alberta's Micro-Generation Regulation is a "net-billing" approach. Since 2009, this Regulation has given rise to almost 2,400 solar electricity generators who are today credited at their retail rate for all of the electricity that they generate. The electricity that they generate is first consumed in the home or business which it serves and, at times that supply exceeds demand, is exported to the grid and consumed by neighbours.

Micro-Generation in Alberta is classified into two categories based on size: less than 150 kW or between 150kW and 5,000 kW. For example, a typical home may require 5 kW, while a commercial building 50 – 250 kW and an industrial facility up to 5,000 kW.

For further information, visit:
www.auc.ab.ca/pages/micro-generation

INVESTING IN SUNSHINE

There are several options available for installing a solar PV system at your home, such as buying or leasing. Similar to leasing a car, some solar companies, such as ENMAX will lease you a solar system. However, just like a car lease, it is important to read the fine print. How long will the lease last? What are the buyout options at the end of the lease? How do the monthly payments stack up versus the revenue (savings) you expect to generate with the solar system? What if you decide to sell your house and need to break the lease?

You may want a lawyer or financial advisor to review any lease documents before you sign. If you don't have enough funds in the bank to pay for a solar system, it is also worth considering other financing options like home equity lines of credit. Some banks even now offer special "eco energy loan" programs, including TD Renewable Financing, ATB Financial's Solar Financing, and the Scotia EcoEnergy Financing programs. Just be sure to factor in application fees, interest, and monthly fees into your full cost picture.

There are several incentive programs currently offered in Alberta to support solar micro-generators. See the next section for further information.

GETTING STARTED

How much solar electricity could I produce?

The answer to this question will depend on your unobstructed roof area, any obstructions (such as trees, chimneys, walls) that could shade some of the panels, as well as the orientation and pitch of your roof (determining which direction will the panels face). A professional assessment, including measuring of solar irradiance (how much sunlight falls on your roof), is required to get a good handle on your potential system production.

Take into account that solar production can fluctuate from year to year—some years are sunnier; some years have more snow than others. Your installer should be able to offer some averaging factors for this. Planning for the future can also impact your plans. Is that sapling going to be branching over your solar panels in a decade? Are the neighbours planning an addition that will shade your roof? It's always a good idea to have a conversation with your neighbour about your plans before getting started.

Similarly, think about your potential electricity usage. Are you thinking about adding an electric vehicle or switching to an electric heating system? You may decide you want a larger system under these circumstances. Or are you switching to LED lighting and taking other steps to reduce your electricity usage? In that case, you might be able to downsize.

A solar system can easily produce power for 20 years or more, so you really need to think ahead to design a system that fits for the long term.

Choosing a solar PV installer

Deciding if a solar system is right for you takes a trained eye. How much roof area is available? What is your sun exposure? How much electricity do you use and when do you use it? What are your electrical connections like? Are you looking only at electricity or are you considering solar heating or cooling as well?

The best way to answer these questions is to talk to a qualified solar installer. We strongly recommend seeking out a company that is a member of the Canadian Solar Industries Association (CanSIA) because our members are bound by our Solar Business Code of Ethics. This means you will have someone to turn to if there are any issues with your installation that cannot be resolved through your contractor. You can find a list of our members at CanSIA.ca/gosolar. Choosing a member of CanSIA or the Solar Energy Society of Alberta (SESA), is also a necessity in order to receive the incentives for the Alberta Residential and Commercial Solar Program.

How to find a qualified solar PV installer

Start by talking to your neighbours to let them know what you are considering doing and take note if they raise any concerns. A CanSIA member can help you to address those concerns and to also check municipal regulations or homeowners' association bylaws, which may restrict how a system could be installed and outlines which permits are required.

It is important to check if the company has experience in dealing with local utilities and understands

provincial program rules. You will need to ensure that all applications and permits will be properly dealt with before you start an installation. If they are not a solar specialist, ask them about their experience in successfully completing solar projects—from permits to final connection.

Be sure that you fully understand what warranty coverage your system will have and who will be responsible for honouring that warranty (e.g., manufacturer or installer). Also ensure that any subcontractors the installer may use have the proper qualifications and the insurance needed to properly complete the work. Remember, all electrical work must be inspected and additional inspections may be required for building safety, so it needs to be done right. Ask if their employees or contractors have any specialized solar training. Like any big purchase, be sure to get multiple quotes and don't hesitate to ask any questions about experience, components and work plans.

When you are ready to contact solar PV installers, be sure to ask for references and chat with their customers to find out what others think of the company's performance. Web reviews on Facebook or reviews in the SESA directory can also be a great way to find the right solar PV installer for you, but keep in mind that there can often be two very different stories for any review.

What are the proper qualifications for solar PV installer?

In order to be deemed a qualified solar PV installer in Alberta, installers must be certified electricians, or registered as an apprentice working under the supervision of a certified electrician. Additional training opportunities specific to solar installation are also available for electricians looking to strengthen their knowledge. Many organizations offer journeyman electricians training in solar installation such as the Northern Alberta Institute of Technology (NAIT), the Southern Alberta Institute of Technology (SAIT), the North American Board of Certified Energy Practitioners (NABCEP), and more.

What happens next?

Once you have chosen a solar PV installer, they will contact your electricity wire services provider (WSP), who owns and operates your local distribution system—or the "grid". The WSP may require permits, a site plan, and electrical diagrams. The WSP is also responsible for installing the bi-directional meter that will measure how much electricity you contribute to your grid.

Once you receive approval via a signed interconnection agreement from the WSP, you can move forward with installation using certified electrical contractors. When the system is fully built —but has not yet been turned on— your solar PV installer will apply for a final electrical inspection. With that finished, your WSP will install a bi-directional meter and you can begin producing energy!

Be sure to check out the SESA website for a list of wire service providers.

Pricing it out

Once you have selected a solar PV installer, reviewed the project plan, added in any additional costs and arrived at a good understanding of expected power output over the system's expected lifetime, you can see how the numbers add up. What your system will "earn" will depend largely on what you pay for power from the grid. Essentially, under net metering plans, your system revenue will take the form of a micro-generation credit on your utility bill throughout the lifespan of your solar PV system.

You'll need to factor in the possibility of how rising utility power costs may provide you with additional savings as you offset costs that are higher in future than today. Your solar PV installer may be able to assist you with these calculations.

Make sure you get a written quote that covers all aspects of the system's components and installation, which clarifies any costs you will be responsible for on top of the solar PV installer's quote.

Here are some potential additional costs you should discuss with your solar PV installer:

- Costs of stamped engineering drawings (if required) and any required building permits
- Maintenance costs and warranty support
- Application costs for incentives or net metering programs and the cost of assistance with such applications
- Any additional components or materials not included in the package price
- Monitoring equipment or any subscription fees to services that let you view your system's output in real time

As well, you should consider issues such as:

- The cost of temporarily removing and reinstalling the system if your roof needs to be repaired or replaced.
- Always check age and condition of your roof before starting an installation.
- Talk to your home insurance providers, as well as your city/county regarding any potential property taxes implications.

Understanding the full cost picture can help you feel a lot more comfortable with your purchase.

What if something goes wrong?

CanSIA Members are dedicated to providing quality products and customer service and endeavor to ensure their customers are satisfied. If your solar system is not working as expected, there are installation issues or other problems, the first step is to call back your installer and try to work with them to resolve the issue. This is why it is important to take the time to select a reputable and experienced solar PV installer from the get-go. Look at the remedies available to you under your contract or warranty if you are not satisfied with the solar PV installer's response.

However, if a dispute continues and you have used a CanSIA Member company, you can also take advantage of our Complaint Resolution and Disciplinary Process if you believe a company has violated the Solar Business Code of Conduct. We're here to help you shine!

FINANCIAL INCENTIVES

Residential & Commercial Solar Incentives

There are several programs currently available to support Albertans in becoming micro-generators of solar electricity. For homeowners, businesses, and non-profits, there's Energy Efficiency Alberta's Residential and Commercial Solar Program.

Eligibility to the Program

- Compliance with the Micro-generation Regulation (e.g. it must be gird-connected) and designed to yield at least 70% of the power that an optimal system in that location would.
- All components of the solar system must be new and cannot have been used previously in an energized solar array.
- A qualified installer must design and install the system (i.e. no "DIY") and system components meet either Canadian Standards Association (CSA), Underwriters Laboratory (UL) or equivalent requirements.
- The modules must come with a minimum warranty for 20-year power performance and 10-years on manufacturing.
- Inverters and/or micro-inverters must come with a minimum warranty for 10-years on manufacturing.

Financial Incentives

- For eligible projects, Energy Efficiency Alberta provides an incentive of $0.75 per watt. For residential systems, the maximum payment is $10,000 or 30% of eligible system costs—whichever is less. For commercial or non-profit systems, the maximum incentive is the lesser of $500,000, or 25% of eligible systems.

Eligible Expenses

Eligible expenses include the following:

- Expenses from purchasing the PV equipment, such as solar PV modules, racking, fittings, etc.,
- Expenses incurred from design, development, modelling, engineering, and construction,
- Expenses from obtaining mandatory electrical permits and grid-connection approvals,
- Expenses incurred by completing required electrical and building inspections,
- Expenses from transmission and distribution system upgrades required to connect to the grid.

However, you cannot include taxes, operation and maintenance expenses, battery storage units, or the costs of completing the program application.

After the project is completed, additional information will be required, including the signed interconnection agreement from your Wire Services Provider, the itemized invoice, the signed incentive claim form and several photos so program administrators can validate the details of your solar PV system. Once approved, expect to see funds in your bank account within 5 to 10 business days.

Visit: **www.efficiencyalberta.ca/solar** for further program details.

ON-FARM SOLAR PHOTOVOLTAICS

In February 2018, the Alberta Agriculture and Forestry department announced new On-Farm Solar PV funding, which helps farmers across the province minimize their carbon footprint and turn our vast solar resources into energy—while helping reduce owners' operating costs. If your property is a farm, serves as irrigation, dries grain, or any other equivalent use, you may be eligible for this program.

By helping you install a solar PV system at your farm, the department wants to help you learn about clean energy—and hopes to inspire you to learn more about sustainable practices and energy efficiency.

For more information, visit:
www.agriculture.alberta.ca

Eligibility to the Program

Eligibility for the On-Farm Solar PV program is straightforward: as long as your system was constructed after April 15, 2017, tied to the grid, and falls under Alberta's Micro-generation Regulations (see above), you should be able to participate and receive funding.

Financial reimbursement does require a few more stipulations. All solar modules must be positioned to optimize sunshine and minimize shading, and a manufacturers' warranty is required for solar modules, racking elements, inverters, and microinverters. All racking equipment must be manufactured by a qualified commercial company.

Financial Incentives

Assuming your system is eligible for cost-sharing under Alberta's On-Farm Solar PV program, the Alberta Agriculture and Forestry department provides a generous incentives. Like the Residential and Commercial Solar Program, they reimburse $0.75 per watt for systems up to 100 kilowatts, and they will cost-share up to 35% of eligible expenses. Between 100 and 150 kilowatts, the department will pay $0.56 per watt up to a maximum of 27% of the project's cost.

Eligible Expenses

There are certain eligible expenses that can reported by the applicant such as:

- Costs to obtain an electrical permit and electrical design
- Costs of solar PV equipment
- Installation fees for installing solar PV racking, as well as fees for wiring and installing modules, inverters, and/or micro-inverters

How to Get Started

Before beginning construction or submitting your On-Farm Solar PV program application to the Alberta Agriculture and Forestry department, make sure to obtain written verification of your site ID from your wire service provider. This is the formal way your property is identified as a farm or other agricultural-related enterprise, and the department will need to validate the number before proceeding with payments.

You will also need to work with your wire service provider to create a micro-generation interconnection and operating agreement, which is needed to establish a meter under the Micro-generation Regulation.

The program also requires a quote from the solar PV installer you intended to hire for installation and an electricity bill for one month's electricity.

ALBERTA INDIGENOUS SOLAR PROGRAM (AISP)

The Alberta Indigenous Solar Program provides grants to Indigenous communities and organizations to help them install solar PV systems. These solar projects aim to promote Indigenous climate leadership, the reduction of greenhouse gases, and a lower-carbon economy. Providing Indigenous communities with funding and renewable energy information helps develop sustainable energy infrastructure that directly benefits the community—and our shared world.

For more information, visit:
indigenous.alberta.ca

Eligibility to the Program

To be eligible for the AISP grant, projects must first be compliant with Alberta Micro-generation Regulation, as described above—with one major exception: this program also accepts off-grid systems. Systems must be between 2 kilowatts and one megawatt in size.

The system's total cost must be less than $3.25 per watt—although the program will consider waiving this requirement on a case-by-case basis. These installations also must be new and completed within one year of signing the grant application, and all solar PV installers must be members of the Solar Energy Society of Alberta (SESA).

First Nation communities, Métis settlements, the Métis Nation of Alberta, and the Aseniwuche Winewak Nation are all eligible for AISP, as are Indigenous-led organizations and community-owned businesses located within Alberta.

Funding is not available if the projects are located on privately-owned buildings or land, placed on temporary structures, or funded through other government grant programs or privately through utilities' solar leasing programs.

Financial Incentives

The AISP will fund up to 80% of eligible solar PV expenses—up to $200,000 for each project. For the remaining 20%, the AISP encourages applicants to work with other nongovernmental funding programs to cover the full project costs.

How to Get Started

In order to receive funding through the AISP, you will need to submit an application through indigenous.alberta.ca. This application will require:

- A demonstration of support for the PV installation, such as a letter from the Indigenous organization's Board of Directors
- Full technical details of the project, including a description of where the PV system will be installed, the rated capacity, and the cost per watt
- A description of the project which includes a complete budget, anticipated start and end dates, and a quote from the hired contractors.

Once the project is complete, awardees will be expected to complete a final report on the project. This will help other future projects and will help assess the success of the AISP.

ALBERTA MUNICIPAL SOLAR PROGRAM (ASMP)

The Municipal Climate Change Action Centre's (MCCAC) Alberta Municipal Solar Program (AMSP) is designed to provide financial assistance to municipalities in Alberta who install grid-connected solar PV systems on municipal-owned buildings or land and complete public engagement for the project. Any municipality, as defined in the Municipal Government Act is eligible to participate, as well as any organizations that are community-related, such as not-for-profits are also eligible to participate in AMSP provided they are located on municipally owned land or using municipally owned facilities.

For more information, visit:
www.mccac.ca

Eligible Projects

To be eligible for the program, all projects must be compliant with Micro-Generation Regulation, and must be grid-connected. The project must also yield greater than 2 kilowatts and must have been completed and energized after February 5, 2016. All new projects must be completed within 8 months of signing the funding agreement.

Financial Incentives

The MCCAC's incentive rates per watt vary depending on the total installed capacity. For installations 10 killowatts and under, they will pay a rate of $0.90/watt. For installations between 10 kilowatts and 150 kilowatts, a total of $0.75/watt is paid. For installations between 150 kilowatts and 2 megawatts, $0.60/watt is paid, and finally, installations between 2 and 5 megawatts, will earn $0.55/watt.

Some expenses associated with the installation can also be used to calculate the incentive value, such as:

- Costs to obtain an electrical permit, design, and inspection
- Costs associated with obtaining grid-connected approvals, and any building development permits
- Costs incurred from the energy modelling, engineering, and construction of the project,
- Costs of solar PV equipment such as solar PV modules, racking, inverters, etc.

Installation fees for installing solar PV racking, as well as fees for wiring and installing modules, inverters, and/or micro-inverters

How to Get Started

To begin with, municipalities must submit the AMSP Expression of Interest (EOI). Note that multiple solar PV systems can be included in one EOI. Once completed and submitted, the MCCAC will review the information and contact the municipality to provide information on the next stages of the application.

The next step is to submit a formal AMSP application, which is available online at www.mccac.ca/programs/AMSP. This application is far more detailed than the EOI, and requires a detailed description of:

- Costs to obtain an electrical permit, design, and inspection
- Where the solar PV system will be installed and what type of mounting will be used
- the solar PV array tilt angle (in degrees from horizontal), as well as the azimuth angle
- The make and model of the solar PV modules, racking and inverter
- The rated capacity (watts DC) as well as the calculated energy yield of each solar PV array

The application will also need information on the total sum of the rated installed capacity of all solar PV systems in the project, as well as a list of total costs of eligible expenses. You will also need to provide the estimated date of completion, along with a list of all the contractors involved with the design, procurement and installation of all solar PV systems in the project. Finally, you will need to include the following documents:

- A copy of the Generation Project Notice and supporting documentation submitted to the WSP
- A copy of the contract between the municipality and the project's main contractor
- A quote of the anticipated total eligible expenses if it is not already available in the contract

- A copy of a structural engineering assessment for all building-mounted solar PV systems showing that the building is capable of supporting a solar PV system.

Once the main application is submitted and approved, a funding agreement between MCCAC and the municipality will be signed. When the project has reached completion, the municipality must submit a Project Completion Statement before funding reimbursement is sent.

For more detailed information on the Alberta Municipalities Solar Program, please read the AMSP guidebook available on the MCCAC website.

Other Solar Programs

Some municipalities have their own solar programs for residents. The Town of Banff, for example, offers a Solar Photovoltaic (PV) Production Incentive, which is an up-front incentive program with funding based on the size of the solar PV system. Both home and business owners are eligible to apply for this program. The City of Medicine Hat also offers a solar incentive program for its residents as a part of their HAT Smart Solar Electric Incentive program. This program is available to all those who receive a residential electric bill from the City of Medicine Hat.

For both of these programs, residents of these municipalities are eligible to apply for Energy Efficiency Alberta's provincial solar incentive program previously listed in this guide.

CONCLUSION: NOW IS THE TIME TO GO SOLAR!

Alberta is committed to helping create a renewable, sustainable world. By enabling Albertans to take advantage of the province's vast solar resources, we can help decrease our reliance on fossil fuels and ensure that our children can enjoy hundreds of sunny days per year, just like us.

While installing your own solar PV system may seem like a difficult and expensive proposition, there are a number of programs designed to help minimize the cost. With support and funding from your provincial or municipal government, it has never been easier to take a step towards energy independence, a lower electricity bill, and a cleaner future.

But don't just stop at your property's border. Talk with your neighbours and your friends about how they can help contribute to Alberta's clean energy future. Together, we can achieve a brighter tomorrow.

Final Checklist & Questions to Ask

- Have you or your solar PV installer discussed the solar system with your local or provincial utility and received all required approvals?
- Have you checked provincial electricity rates and understand the rules for banking credits?
- Have you checked references and qualifications for the solar PV installer you have chosen?
- How long has your solar PV installer been in business? Will they be around if something needs fixing in the future?
- Do you have a copy of warranty materials?
- Have you checked your roof condition and are you satisfied that it will hold up for the next 20 years?
- How will the solar PV installer be accessing your roof and do you need to make any special arrangements to allow access?
- Are there any roof, structural, or electrical conditions you need to address before proceeding with installation?
- Have you and your installer assessed and addressed any potential shading issues, now or in the future, that may affect power production?
- Have you and/or your solar PV installer calculated average annual power output in kilowatt-hours for your system? This will give you a sense of how large your electricity savings will be.
- Is your system sized appropriately for your average annual electricity consumption level?
- Have you factored in any financing costs (including leasing costs) in calculating your system costs and savings?
- Who will take care of any necessary building or electrical inspections?
- Who will apply for provincial incentives (if available) and what are the rules for accessing these?
- Do you need to inform your insurance company about this new addition to your home?

GLOSSARY OF TERMS

Direct Current (DC): *electricity with a constant positive polarity, the same type of power produced by a common household battery.*

Alternating Current (AC): *electricity with an alternating polarity, the most commonly used type of power in our homes.*

Kilowatt (kW): *a measure of how much energy is being produced. Calculated by multiplying the voltage and current values of a system.*

Kilowatt peak (kWp): *used to describe the energy output capability of a solar electric system under ideal solar energy conditions (e.g., during peak times during the middle of the day).*

Kilowatt hour (kWh): *the amount of power delivered over a period of one hour*

Voltage / Volts (V): *the "pressure" created by electrons flowing through a system – the greater the pressure, the more power can be transported in an electrical wire.*

Ampere / Amps (A): *the measure of how much electrical energy is flowing in an electrical conducting wire.*

Inverter(s): *devices that convert the direct current (DC) electricity generated by the panels into alternating current (AC) for use in your home or for export to the grid*

Modules: *individual solar panels that convert sunlight to electricity. Your system will likely be made up of multiple modules.*

Net metering: *an agreement where the local utility company credits you for the surplus power produced by your solar system that is not consumed in your home.*

Grid tie: *a system that is connected to the electrical network. This connection type allows excess power to be sent offsite in return for payments/credits from your utility company.*

Off grid: *solar generation that is not connected to the electricity distribution system; often associated with remote cabins / properties and is typically a seasonal option or requires batteries and/or a generator.*

NOTES

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