

Solar Photovoltaic (PV) Proposal



EXPERT CONSULTATION AND PROJECT DEVELOPMENT

Prepared for:

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About Solarcor Energy Inc.

Solarcor Energy is a Western Canadian solar power solutions provider operating in Saskatchewan and Alberta. Founded in 2015 by Nick Mintoft, P.Eng., our team of sales representatives, solar installers and project managers are complimented by expert electrical contractors, helical pile installation contractors, electrical engineer contractors and civil engineer contractors.

The corporate office is located at 715 55th Avenue SW Calgary, AB. T2V 0G4. The Saskatchewan administrative office and equipment warehouse is located at Aberdeen Saskatchewan.

Solarcor Energy has sales representatives in Saskatoon, Regina, Medicine Hat, Calgary, Red Deer, Edmonton and Grande Prairie. Our project managers are in Calgary and Red Deer. Solarcor has electrical contractor partnerships throughout Saskatchewan and Alberta.

Solarcor Energy is a full-service solar power systems provider. Our service includes custom design, permitting, professional installation and commissioning. With hundreds of kilowatts of solar installed in Alberta and Saskatchewan, we pride ourselves on delivering high quality products and solutions for customers looking to reduce their greenhouse gas emissions and earn a return on investment.

Request for Proposal Information

RFP/Owner:	RFP presented to: Site owners:
Phone:	(306)
Email:	
Site Address:	Primary Site: Address:

Project Basics

The proposed bifacial ground mount solar power installation is intended to provide optimum system benefits by maximizing the solar power production to offset annual facility electricity costs and maximize any federal/provincial solar incentives (if applicable). The proposed system utilizes industry leading Fronius inverters for best in class efficiency and Canadian Solar BiHiKu Bifacial premium panels.

Proposed Size:	224 X 445-watt Canadian Solar CS3W-445 BiHiKu Panels = 99.68 kW
Application:	SaskPower Solar Program Residential/Commercial <100kW Agriculture Clean Technology Program (ACT) – 50% - 60% funding. Canadian Agricultural Partnership Program (CAP) – Irrigation Environmental Efficiencies Program – 30% up to \$50,000 Climate Action Incentive Fund (CAIF) – Small and Medium Size Enterprise stream (SME) – TBD
Type of System:	G-Series (trademarked ground mount system, grid connected) • 2 – Fronius Symo 22.7-3-M 480V 3 Phase Inverters • 224 – 445W Canadian Solar CS3W-445 BiHiKu Panels
Mounting:	G-Series • 8 – Opsun Sunground 4X7-28 Landscape -45 Degree Optimized Bifacial racking systems • 28 – Almita (15'X5.5") helical piles

Primary Site Evaluation

A site evaluation of the facility and information provided determined that the property's electrical service is a 3-phase SaskPower metered service. The annual electricity usage totals approximately 122,760 kilowatt-hours at the SaskPower seasonal irrigation rate of \$0.07078/kWh for a total annual cost of electricity of approximately \$8,688.95. There is a basic seasonal charge of \$480.28 for the SaskPower irrigation service.

The irrigation pump is assumed to operate on 24 hour cycles with irregular and weather dependent frequency from the start of the irrigation season in late May to early July. In early July irrigation pump usage is assumed to operate on a continuous 24 hours 7 days a week basis through to the first week of August. It is assumed that the irrigation pump will be operated for several 24 hour cycles in the fall. The following chart illustrates an estimate of electricity usage and electricity costs based on the SaskPower irrigation rate:

SaskPower Irrigation Service			
2021	Estimate kilowatt-hour Usage	\$ 0.07078	Cost/Month
January	0	0	\$ -
February	0	0	\$ -
March	0	0	\$ -
April	0	0	\$ -
May	7162	7162	\$ 506.93
June	33923	33923	\$ 2,401.07
July	58559	58559	\$ 4,144.81
August	13222	13222	\$ 935.85
September	9445	9445	\$ 668.52
October	0	0	\$ -
November	0	0	\$ -
December	0	0	\$ -
Annual Total	122311		\$ 8,657.17

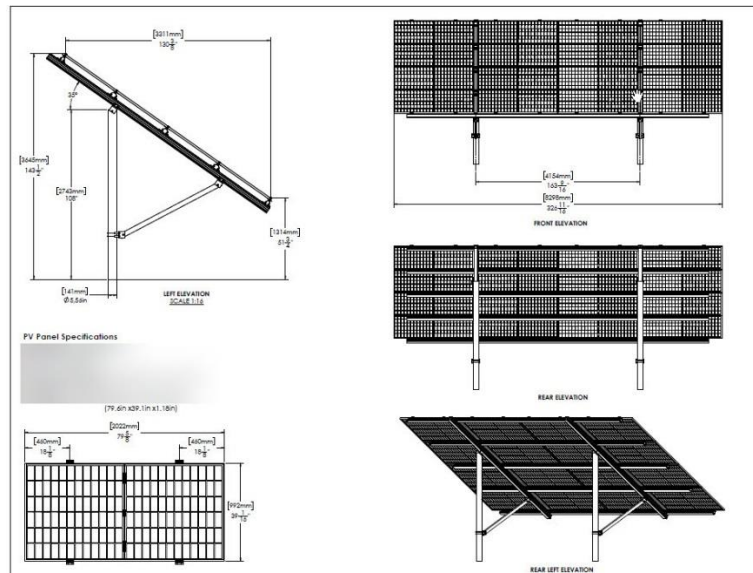
A consultation with SaskPower determined that seasonal irrigation services are ineligible for the SaskPower net metering program for solar photovoltaic. To be eligible for the net metering program the irrigation service will need to be switched to a standard farm service. The SaskPower farm service has a basic monthly fee of \$34.97. The SaskPower electricity rates for farm service are \$0.12658/kWh for the first 16,000 kilowatt-hours per month with the balance for the month charged at \$0.05488/kWh. The following chart illustrates an estimate of the electricity usage and electricity costs based on switching the irrigation pump to a standard SaskPower farm service:

SaskPower Farm Service - First 16,000 kWh/month @ \$0.12658 - Balance kWh/month @ \$0.05488						
2021	Estimate kilowatt-hour Usage	\$0.12658	\$0.05488	Cost/Month at the Retail Farm Rate	Cost/Month at the Wholesale Farm Rate	Total Cost/Month
January	0	0	0	\$ -	\$ -	\$ -
February	0	0	0	\$ -	\$ -	\$ -
March	0	0	0	\$ -	\$ -	\$ -
April	0	0	0	\$ -	\$ -	\$ -
May	7162	7162	0	\$ 906.57	\$ -	\$ 906.57
June	33923	16000	17923	\$ 2,025.28	\$ 983.61	\$ 3,008.89
July	58559	16000	42559	\$ 2,025.28	\$ 2,335.64	\$ 4,360.92
August	13222	13222	0	\$ 1,673.64	\$ -	\$ 1,673.64
September	9445	9445	0	\$ 1,195.55	\$ -	\$ 1,195.55
October	0	0	0	\$ -	\$ -	\$ -
November	0	0	0	\$ -	\$ -	\$ -
December	0	0	0	\$ -	\$ -	\$ -
Annual Total	122311					\$ 11,145.57

Preliminary Design

The primary installation area is in the open space East of the pumping station. The system can be built in 2 rows of 4 arrays of 28 panels for a total of 224 panels. Each array will be anchored to the ground with helical piles. The inverters will be installed on a pedestal near the center of every two arrays. An electrical cable will be trenched from the inverters to a combiner panel and then to the meter area. The solar array will then be interconnected to the site electrical infrastructure at the service splitter. A bi-directional meter will be installed by SaskPower to complete the net metering system.

Bifacial panels are designed to produce solar electricity from the front side and back side of the panel. The Opsun Sunground optimized bifacial racking is a specialized racking system that limits any racking structure on the back side of the panels to reduce any shading factors that would decrease the back-side production of the panels. The combination of the bifacial panel and bifacial racking system will increase production by up to 30%. Please see example below:



Project Details

Objectives

The overall business objective within this project is to create value for the customer by delivering the best solar system by choosing the best cutting-edge equipment and using the expertise of Solarcor trained technicians to install it. This will be achieved by offsetting the facility's power consumption utilizing SaskPower Solar Program. The solar array will also promote environmental stewardship.

The specific objective of this project is to build a solar array that utilizes recyclable equipment in the most environmentally friendly way possible. The array's solar electrical production will then be used locally at the site providing electricity directly to the facility electrical systems. If not required locally, power will be exported to the utility grid using a bi-directional meter to measure the electricity exported to the grid. Credits for exported electricity will be calculated at \$.075/kWh. Credits will then be consumed when the facility uses utility electricity for example at night or during the winter when the solar array is not producing enough for the local demand. The export electricity rate will be adjusted after the end of 2021. SaskPower has indicated that the export rate is based on SaskPower's average cost of electricity and is anticipated to increase by 5% per year.

Business Drivers

In order to meet the objectives and business requirements listed above, Solarcor will focus on the following drivers:

- Full commitment to provide a fully functional solar array which meets applicable regulations.
- Maximize capital cost efficiency by using experienced local suppliers, designers and installers.
- Minimize duration of the project schedule without impacting capital cost efficiency.
- Design and construct a safe, reliable, operable, and fit for purpose solar array.

Assumptions

The following assumptions were utilized in order to generate the proposal:

❖ Electrical

- SaskPower approve interconnection for residential/commercial entity
- Grid-tie is possible at the location without any major modifications given existing electrical services.

❖ Surface

- An environmental assessment would not be required to install the solar array.
- All ground preparations are completed prior to installation.

General Notes:

- The equipment selections proposed are subject to availability.
- Any ground preparations are outside of the scope and pricing of this proposal.

- Any facility electrical service area alterations and/or upgrades are outside of the scope of this proposal.
- Any SaskPower service upgrades for interconnection are outside of the scope of this proposal.
- All shade factors and the impact shade factors may have on the performance of the system are outside of the scope of this proposal.

Constraints

The following constraints have been identified during preliminary scoping:

- ❖ Electrical
 - Solar components will not be Area Class approved.
 - All solar system components must be well outside any type of Area Class (generally 3m from any well head, pump shack, chemical tank/pump and 7.5m from any storage tank without a dike).
- ❖ Weather
 - Work cannot be performed during lightning storms due to hazards with metal equipment.

Risks

Solarcor has identified the following risks:

- ❖ Regulatory:
 - Interconnect for residential/commercial entity subject to SaskPower approval
 - Potential delays associated with approval process
- ❖ Construction:
 - Unsuitable soil conditions for piling.
 - Inclement weather or soil conditions prevent construction.
 - Work may be delayed due to adverse weather conditions and resume when safe.
 - Dangers with working with DC power.
- ❖ Price
 - Cost of metals may increase with the American metal tariffs.

Product and Procurement Details

About the Supplier

Our suppliers are Canada's largest distributors to commercial clients. We are confident in their products and, because of our design criteria, have a strong history of over-delivering. Their products have been built to withstand the Canadian environment and have proven reliability.

Our core distributor's commitment to excellence and partnerships with top solar equipment manufacturers is what sets them apart from others in the industry. They refuse to compromise on design or manufacturing quality. In short, they have a solid reputation for delivering high quality, state-of-the-art solar equipment for around the world and within Canada.

Solar Equipment

Product quality and trust in the longevity of the manufacturer are of upmost importance to our selection process. We use module manufacturers with proven track records and the best variety of module selection, without comprising quality. Companies with diverse revenue streams ensure the best chance of a successful warranty claim in the next 30 years. Canadian Solar BiHiKu is the most likely equipment manufacturer for this project. Details on their 30-year production warranty can be found online at: <https://www.canadiansolar.com/bihiku/>

Inverter Selection

The inverter selection is based on years of industry data and what we believe will yield the most reliable and cost effective solution for the project. Fronius Symo commercial 3-phase Inverters are well suited for this commercial project because of their efficiency, cost and proven reliability. This inverter comes with an upgraded 20-year warranty. The monitoring platform provides industry leading system performance monitoring including immediate fault detection and alerts at the inverter level. The monitoring platform can be accessed through an on-line portal that provides accessibility for PC and mobile devices. For more information regarding Fronius inverters and monitoring platform follow links below:

<https://www.fronius.com/en/solar-energy/installers-partners/technical-data/all-products/inverters/fronius-symo-advanced/symo-advanced-22-7-3-480>

Racking Selection

The Opsun Sunground Bifacial racking packages have proven to be reliable and cost effective. Details on the standard 20-year product warranty offered by Opsun Sunground on their racking equipment can be found here:

<https://opsun.com/en/bifacial/ground-mount/sunground-bifacial/>

Storage Selection

This project will not have any storage capabilities.

Project Summary and Pricing

System Size (kW)	99.68
Property's Electricity Consumption (kWh)	122,760
Anticipated Annual Power Production in kWh	148,274
Total Cost	\$ 243,761.97
Incentive - CAP @ 30% (Max \$50,000)	\$ 50,000.00
Incentive - ACT @ 60% (Max Stacking to 75%)	\$ 133,000.00
Incentive - Federal Tax Savings for Business	\$ 7,899.06
Cost After Incentives Before Taxes	\$ 52,862.91
Cost /Watt (after incentives before taxes)	\$ 0.53

Project Scope

1. The price offer above includes:
 - a. System design.
 - b. Required permitting
 - c. System component supply (PV Modules, Inverters, Mounting Structure, DC & AC cables, power monitoring system, and the needed accessories).
 - d. Transportation to site.
 - e. System installation including (AC, DC Sides).
 - f. System Grounding for the DC and AC sides.
 - g. Construction site supervision
 - h. System commissioning & debugging.
 - i. Training of operational staff of the client. (if needed)
 - j. Providing operation manuals and technical documents.
 - k. 5-year workmanship warranty

2. The price offer above does **NOT** include:
 - a. Custom duties and/or VAT
 - b. Operation and maintenance services.
 - c. Insurance and any legal safety requirements.

- d. Structural upgrades (if required)
- e. Facility electrical service area alterations and/or upgrades
- f. Perimeter fencing

Economic Benefits

The proposed 99.68 kW bifacial ground mount solar power system for the facility will provide economic benefits by creating immediate savings by reducing operating costs, diminishing the impact of rising utility rates, creating long-term savings, providing a low risk investment, increase property value and decreasing the impact of carbon taxation. The following is a report of the economic benefits, compiled from trusted sources, with quantifiable metrics, based on the following factors:

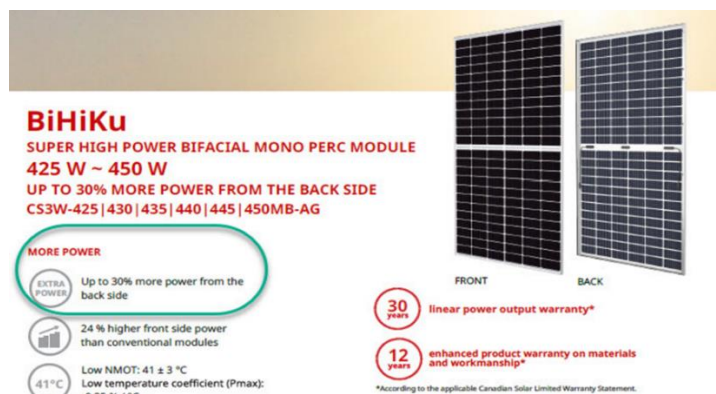
- **SaskPower Solar Program Creates Savings**
- **Evidence Based Production Profiles**
- **Solar Electricity Reduces Operating Costs**
- **30-Year Performance Warranty**
- **30-years of Power as a One-Time Purchase Locks in the Cost Per kWh – Creating a Levelized Cost of Solar**
- **Utility Electricity Rates Increase Over Time**
- **Average Annual Rate Increase is 5.4% - Based on 5-year History**
- **Investing in Solar PV Creates Long-Term Savings**
- **Solar PV is a Low Risk Investment**
- **Property Values will Increase after Solar PV System Installation**
- **Solar PV Production - will Not be Carbon Taxed**

Please Note: The following financial profiles have been calculated based on the manufacturer performance warranty of 30-years to illustrate the **minimum anticipated performance** of the system. Solar power systems are expected to continue to **produce power for 40 years or more**.

SaskPower Solar Program Creates Savings: : The SaskPower solar program provides customers an opportunity to interconnect a solar power system to the utility grid creating a micro generation system that provides solar electricity to the local facilities offsetting utility supplied electricity. When solar electricity production exceeds the local demand, solar electricity is exported to the utility grid. A bi-directional meter measures solar electricity moving onto the utility grid and adds a credit to the billing at \$.075/kWh (current export rate till end of 2021). The credit can then be consumed when the solar power system is not producing enough to meet the facility demand, for example at night or during the winter.

Evidence Based Production Profiles: The National Renewable Energy Laboratory (NREL) provides an industry standard production profile service through the PVWatts website: <https://pvwatts.nrel.gov/pvwatts.php> The projected production of the front side of the solar panels in the first year is 128,936 kWh. The Canadian Solar bifacial panels produce solar electricity from the back side of the panel. Based on the panel data sheet the back side of the panel can increase production by up to 30%. **Solarcor Energy has calculated the back side of the panel production increase at a**

conservative 15% creating a total anticipated annual production of 148,274 kWh. For more information on the Canadian Solar bifacial panel please see information below:



Solar Electricity Reduces Operating Costs: Producing 148,276 kWh in the first year will offset the cost of a utility purchase of 122,760 kWh, equalling \$11,146. An Analysis of the PVWatts production data and the facility power usage determined that approximately 34% of the annual solar electricity production will be used locally creating a savings of \$.0682/kWh (blended rate – see note below) and approximately 76% of the solar electricity production will be exported to the utility grid creating a savings of \$.075/kWh (current SaskPower export rate). The average savings has been calculated to be a blended rate of \$.0734/kWh. The anticipated savings in the first year is \$10,884. (please see charts on the next page)

Please note: An analysis of the estimated hourly electricity usage of the facility and solar electricity production per hour determined that of the 34% solar electricity production that will offset local demand, 75% of that electricity will offset electrical consumption at the SaskPower farm wholesale rate of \$0.05488 and approximately 25% will offset electrical consumption at the SaskPower farm retail rate of \$0.12658. Therefore, the average savings for solar electricity production offsetting local demand is calculated at a blended rate of \$.0682/kWh.

Please note: the anticipated first year savings is based on switching the irrigation pump to the SaskPower standard farm service. To understand the actual first year savings a further calculation will be required comparing current irrigation electricity annual costs to the annual electricity costs of operating the irrigation pump with the farm service minus the solar PV system savings. This calculation is illustrated on pages 17 and 18.

PVWatts® Calculator NREL

My Location: **Saskatchewan** [» Change Location](#) English Español HELP FEEDBACK ALL NREL SOLAR TOOLS

RESOURCE DATA **SYSTEM INFO** RESULTS

SYSTEM INFO RESTORE DEFAULTS

Modify the inputs below to run the simulation.

DC System Size (kW): i

Module Type: i

Array Type: i

System Losses (%): i [Data Calculator](#)

Tilt (deg): i

Azimuth (deg): i

[+ Advanced Parameters](#)

RETAIL ELECTRICITY RATE

To automatically download an average annual retail electricity rate for your location, choose a rate type (residential or commercial). You can change the rate to use a different value by typing a different number.

Rate Type: i

Rate (\$/kWh): i

Draw Your System

Click below to customize your system on a map. (optional)

[Go to resource data](#) [Go to PVWatts results](#)

PVWatts® Calculator NREL

My Location: **Saskatchewan** [» Change Location](#) English Español HELP FEEDBACK ALL NREL SOLAR TOOLS

RESOURCE DATA **SYSTEM INFO** **RESULTS**

RESULTS Print Results **128,936 kWh/Year***

Month	Solar Radiation (kWh / m ² / day)	AC Energy (kWh)	Value (\$)
January	2.16	6,021	442
February	3.05	7,189	528
March	4.44	11,314	830
April	5.58	13,335	979
May	5.74	13,964	1,025
June	5.78	13,194	968
July	6.69	14,996	1,101
August	6.03	13,839	1,016
September	5.41	12,589	924
October	4.02	9,948	730
November	2.75	7,017	515
December	1.99	5,528	406
Annual	4.47	128,934	\$ 9,464

Bifacial Production Increase Calculation $128,934 + 15\% = 148,274$ $\$9,464 + 15\% = \$10,884$

User Comments

Bifacial Production Increase Calculation

Performance Warranty

30-Year Performance Warranty: The proposed system design uses Canadian Solar 445W bifacial panels. The manufacturer warranty information provides details regarding the 30-year performance warranty of the panels. See below:

THIRTY (30) YEAR LIMITED PERFORMANCE WARRANTY

CSI Solar warrants that for a period of thirty years the Products will maintain a level of performance as set forth below:

Actual power output of the Products when illuminated on the front side at Standard Testing Conditions:

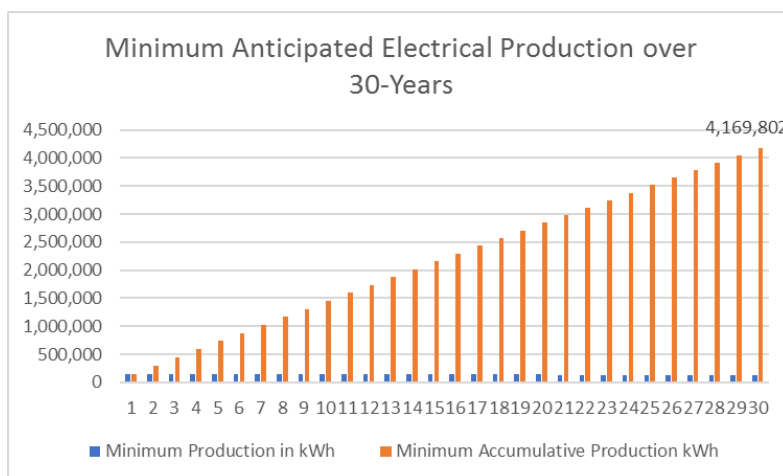
- During the first year, CSI Solar warrants the actual power output of the Products will be no less than 98% of the labeled power output.
- From year 2 to year 30, the actual annual power decline will be no more than 0.45%; by the end of year 30, the actual power output will be no less than 84.95% of the labeled power output.

Actual power output of the Products when illuminated on the rear side at Standard Testing Conditions:

- CSI Solar warrants the actual power output of the Products at Standard Testing Conditions will be no less than the power bifaciality of the respective product, as specified in the applicable datasheet, multiplied by the warranted "actual power output of the module when illuminated on the front side at Standard Testing Condition" as defined in the paragraph above.

30-Year Performance Details

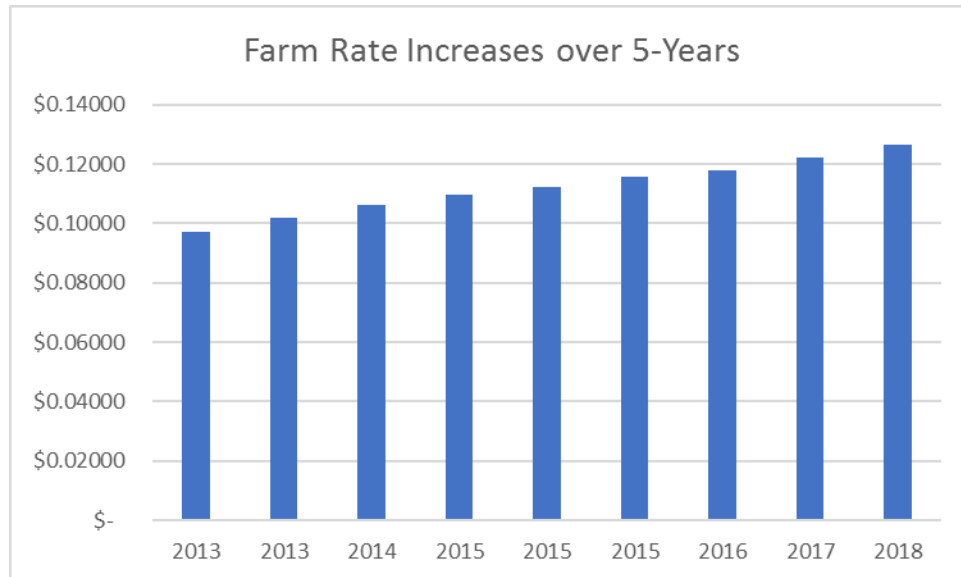
Based on the performance warranty and the PVWatts production profile the following graph creates an illustration of production performance over the 30-year warranty period. Using 148,274 kWh as the year one production and calculating a maximum of 0.45% panel degradation over the 30-year warranty period, the system will produce at a **minimum** 4,169,802 kWh over 30-years.



Levelized Cost of Solar

30 years of Solar Electricity as a One-Time Purchase Locks in the Maximum Cost Per kWh: Purchasing a grid-tied net metering solar PV system is comparable to making a one-time purchase of the next thirty years of electricity. The cost per kilowatt-hour can be calculated by dividing the cost of the system \$52,862.91 by the minimum accumulative production over thirty years: 4,196,802 kWh **creating a levelized cost of solar electricity of no more than \$.01268/kWh.**

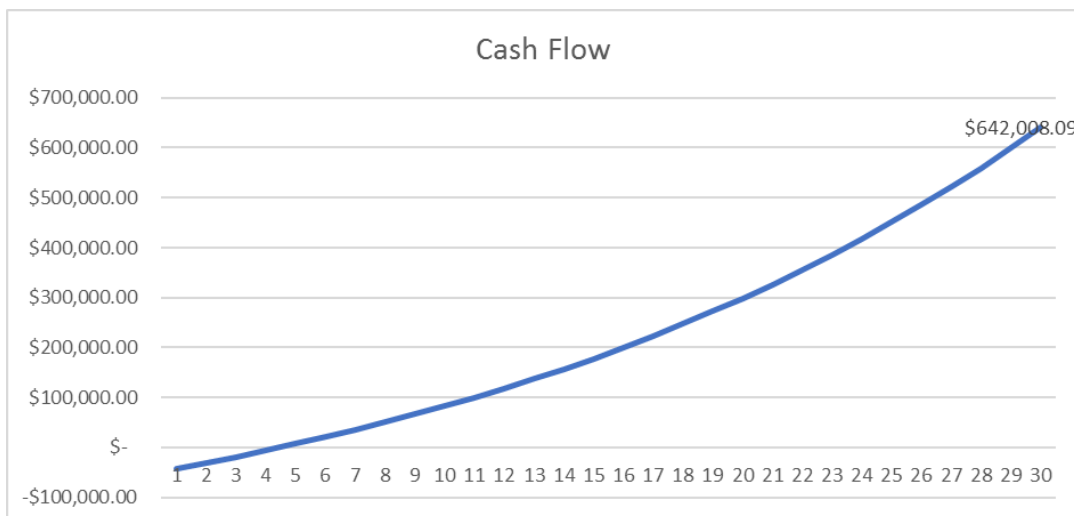
Farm Electricity Rates Increase Over Time: Mapping out SaskPower Farm rate changes from 2013 to 2018 creates a 5-year history of increasing costs for electricity. (see chart below)



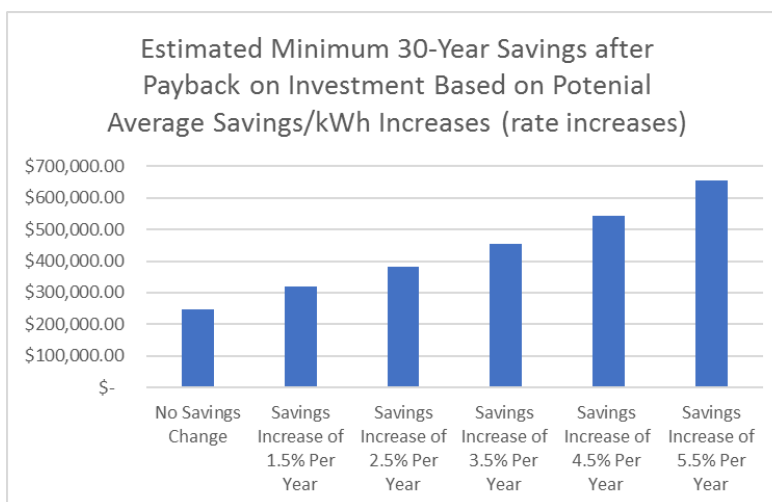
Average Annual Rate Increase is 5.4% - Based on 5-Year History: An analysis of the electricity rate increases from 2013 to 2018 determined that the average annual rate increase is ~5.4% per year.

Savings Profile

Investing In Solar PV Creates Long-Term Savings: Calculating the cost of the system at \$-52,862.91 and adding in the anticipated annual savings based on the minimum performance of the system over 30 years and assuming the average savings per kilowatt hour will increase by 5.4% per year, the following chart illustrates cash flow and savings over time. Based on all the current data the minimum savings over 30-years is anticipated to be \$694,871. Payback on investment is anticipated to be at year 4.



Solar PV is a Low Risk Investment: The following chart illustrates six scenarios of the minimum savings after payback on investment over the next 30-years based on various potential annual savings per kilowatt hour increases (rate increases and/or export rate increases).



Please note: Savings Profile is based on switching the irrigation pump to the SaskPower standard farm service. To understand the actual savings a further calculation will be required comparing current irrigation electricity annual costs to the annual electricity costs of operating the irrigation pump with the farm service minus the solar PV system savings. This calculation is illustrated on pages 17 and 18.

Property Value Increase:

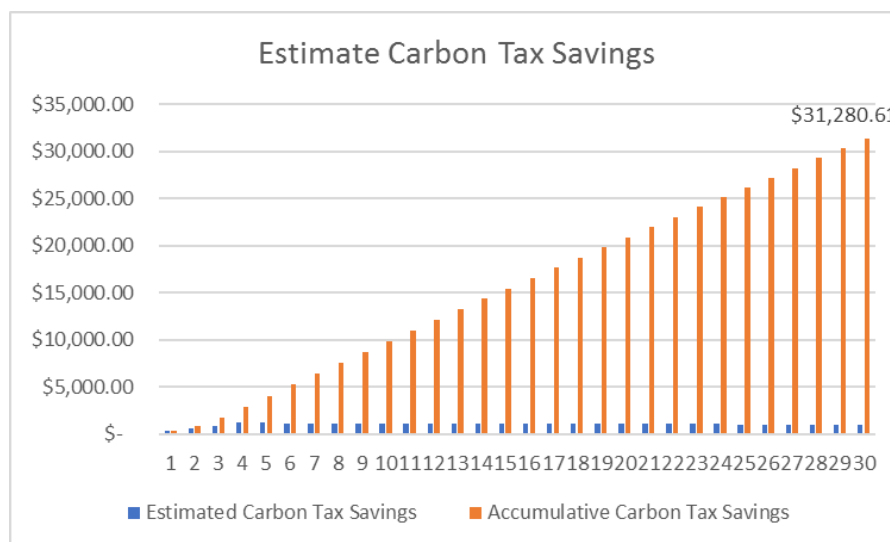
Property Values will Increase after Solar Power System Installation: Consultations with commercial property appraisers in Saskatchewan determined that there have not been enough property sales with solar PV systems to adequately quantify property value increases within the local real estate market. Research in more established solar PV markets like California determined that property values would increase from \$3.50/Watt up to \$6.25/Watt depending on location and age of the system. Solarcor uses a conservative estimate by creating an average of the range described in the California study: \$4.88/Watt. It is estimated that the in the short-term the property value increase for the property based on the completed installation of the proposed 99.68 kW system would be $\$4.88 \times 99,680\text{W} = \$486,438$.

Carbon Tax:

Net Metering Solar PV Production - will Not be Carbon Taxed: As of April 2019 SaskPower, has been charging a carbon tax per kilowatt-hour on all SaskPower customer billing. Based on the information provided on the Saskatchewan Government website the estimated impact of the carbon tax for 2019 will be the equivalent of a 2.7% rate increase. The carbon tax started at \$20 per tonne of emissions over the federal thresholds in 2019 and rises by \$10 a year to \$50 per tonne in 2022. Information from SaskPower regarding the carbon tax and how it would be applied to net metering customer billing determined that only the balance of electricity billed after credits are consumed would be taxed. <https://www.saskatchewan.ca/government/news-and-media/2019/march/04/federal-carbon-tax>

<https://www.saskpower.com/federalcarbontax>

Over the next 30-year the minimum production of the system of 4,169,802 kWh would not be taxed. Based on the information the estimated carbon tax savings over the next 30 years is approximately \$31,281. The following chart provides an illustration of the estimated carbon tax savings based on the information available for 2019 to 2022, from 2023 on it is assumed that there will be no additional increases to the price of carbon. (see chart below)



Comparing Current Irrigation Service to Switching to Farm Service with Solar PV

SaskPower Irrigation Service Vs SaskPower Farm Service Vs SaskPower Farm Service with Solar PV

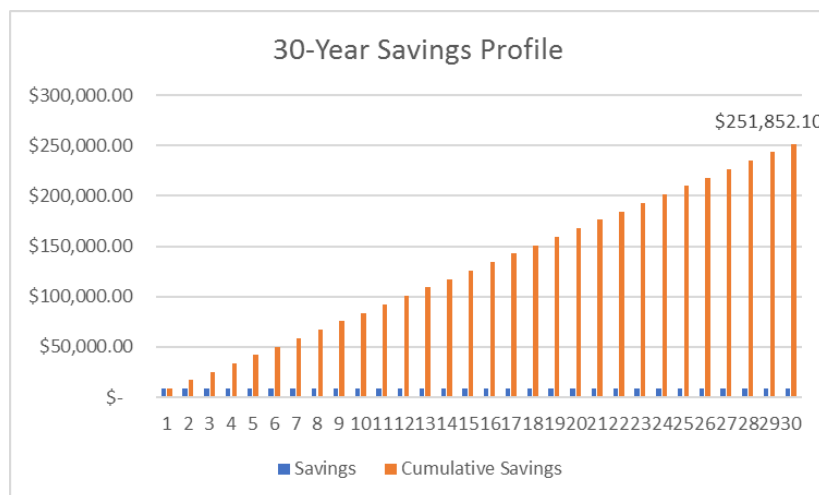
The proposed solar PV system requires a SaskPower service change from a seasonal irrigation service to a standard farm service. The following chart illustrates the electricity costs related to the following three operational scenarios:

1. SaskPower irrigation service
2. SaskPower farm service
3. SaskPower farm service with net metering solar PV system

Irrigation Service Costs - Farm Service Costs - Farm Service Costs with Net Metering Solar PV Savings				
Pump 1 - SW-08-21-17				
Month	Irrigation Service Costs	Farm Service Costs	Savings with Solar PV	Farm Service Costs with Solar PV Savings
January	\$ -	\$ -	\$ 508.23	-\$ 508.23
February	\$ -	\$ -	\$ 606.81	-\$ 606.81
March	\$ -	\$ -	\$ 955.03	-\$ 955.03
April	\$ -	\$ -	\$ 1,125.64	-\$ 1,125.64
May	\$ 506.93	\$ 906.57	\$ 1,178.69	-\$ 272.13
June	\$ 2,401.07	\$ 3,008.89	\$ 1,113.74	\$ 1,895.15
July	\$ 4,144.81	\$ 4,360.92	\$ 1,265.79	\$ 3,095.12
August	\$ 935.85	\$ 1,673.64	\$ 1,168.18	\$ 505.46
September	\$ 668.52	\$ 1,195.55	\$ 1,062.68	\$ 132.87
October	\$ -	\$ -	\$ 839.70	-\$ 839.70
November	\$ -	\$ -	\$ 592.33	-\$ 592.33
December	\$ -	\$ -	\$ 466.65	-\$ 466.65
Annual Total	\$ 8,657.17	\$ 11,145.57	\$ 10,883.47	\$ 262.10

Based on the calculations in the chart above operating the pump on SaskPower irrigation service will cost approximately \$8,657 annually. Switching to the farm service will increase annual operating costs by \$2,488 to \$11,146, however the savings from the solar PV system will offset the costs by \$10,883 bringing the annual operating costs down to \$262. The proposed solar PV project is anticipated to create an annual savings of \$8,395.07.

Assuming that the annual cost of electricity for the SaskPower Irrigation service, the SaskPower farm service and the savings from the solar PV system will increase on average at the same rate per year, then the annual savings from the proposed system will remain constant each year. The following chart illustrates a 30-year savings profile for the proposed solar PV project. Based on all the current data the minimum savings over 30-years is anticipated to be \$251,852.10. Payback on investment is anticipated to be at year 6.



Economic Benefits Summary

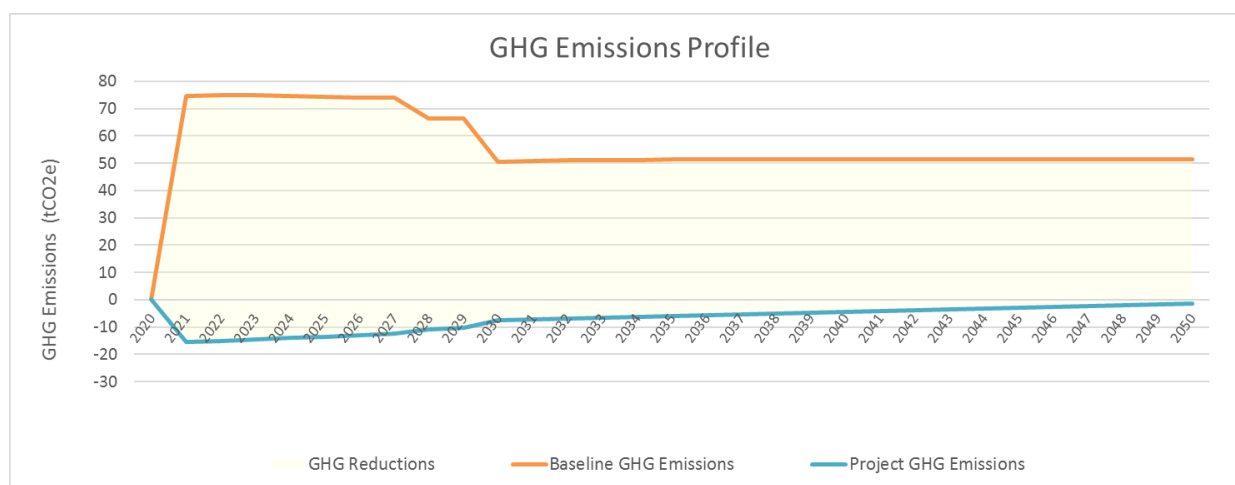
148,274	Solar Power Production in First Year (kWh)
\$ 8,395.07	First Year Savings by Reducing Operating Costs
Year-6	Anticipated Payback on Investment
4,169,802	Minimum Production over 30-Years (kWh)
\$ 251,852.10	Savings Over 30-Years
\$ 0.0127	Levelized Cost of Solar Electricity per kWh
\$ 486,438	Estimate Property Value Increase
\$ 31,280.61	Carbon Tax Savings Over 30-Years

Environmental Benefits

Greenhouse Gas Emissions Reduction

The Low Carbon Economy Fund – Partnership GHG Workbook provide a federal government resource to determine GHG emissions reduction for solar projects in Saskatchewan. The following is the results created when inputting information based on the proposed system:

Organisation:	-		
Proposal Title:	- Solar Photovoltaic Project		
Total estimated annual domestic GHG reductions in tonnes (CO ₂ e) in 2030	58	t CO ₂ e (in 2030)	
Total estimated lifetime domestic GHG reductions in tonnes (CO ₂ e) over the lifetime of the impact	1,947	t CO ₂ e (total)	
Project lifetime (in years)	30	Years	



Solarcor Energy's Commitment to Environmental Stewardship

One of Solarcor's core values is our commitment to environmental stewardship. Solarcor has implemented several industry leading environmental initiatives:

1. Commitment to recycle end-of-life solar panels. Solarcor will remove and recycle solar panels from our customers installations when the panels have reached their end-of-life stage. This service would be provided free of charge in conjunction with the purchase of the next set of solar panels for the system.
2. Commitment to recycling and ethical disposal of all materials related to the process of installing our solar power systems. This would include materials like packaging, pallets, unused aluminum racking and electrical wiring.
3. Commitment to reducing our carbon footprint. Solarcor achieves this goal in several ways:
 - a. We use GreenGeeks, a webhosting and email service provider. GreenGeeks is powered completely by renewable energy.
 - b. Solarcor strives to stream-line material delivery to site and our on-site installation process to operate as efficiently as possible. This reduces the number of trips to site, reducing the amount of fuel required to complete an installation.

Solar Incentives

Agricultural Clean Technology Program

As part of the Government of Canada's strengthened climate plan, [A Healthy Environment and a Healthy Economy](#), the new ACT program aims to create an enabling environment for the development and adoption of clean technology that will help drive the changes required to achieve a low-carbon economy and promote sustainable growth in Canada's agriculture and agri-food sector. The program is divided into 2 streams:

Adoption Stream

Supports adoption of commercially available clean technologies and processes with a priority given to those that show evidence of reducing greenhouse gas (GHG) emissions, and other environmental co-benefits

Program funding for the Adoption Stream is up to \$100 million over 5 years, with projects ending March 31, 2026.

Funding up to 50% of eligible costs. Also funding stacking available up to 75% of eligible costs.

The program may provide a more favourable cost-share ratio (60:40) where the majority of the business (more than 50%) is owned or led by one or more under-represented groups. Under-represented groups include:

- Women
- Youth, aged 35 or under

- Indigenous groups
- Visible minorities
- Persons with disabilities

<https://agriculture.canada.ca/en/agricultural-programs-and-services/agricultural-clean-technology-program-adoption-stream/applicant-guide#a1.4>

Canadian Agricultural Partnership Program

Irrigation Environmental Efficiencies Program: The Irrigation Environmental Efficiency Program supports improved energy and water efficiencies in irrigation systems. Each eligible applicant can receive up to 30 per cent of eligible costs, to a maximum program payment of \$50,000.

<https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/canadian-agricultural-partnership-cap/environmental-sustainability-and-climate-change/irrigation-program/irrigation-environmental-efficiency-program>

Climate Action Incentive Fund – Small and Medium Sized Enterprises Stream (SME):

Federal Government Solar Incentive for Saskatchewan Businesses. First application intake ended November of 2019. Based on information from the recent federal government announcement, Economic and Fiscal Update the federal government will be providing up to 200 million in carbon tax revenues back to support small businesses in 2022-23. Solarcor Energy is anticipating a second intake into the CAIF-SME in the spring of 2022.

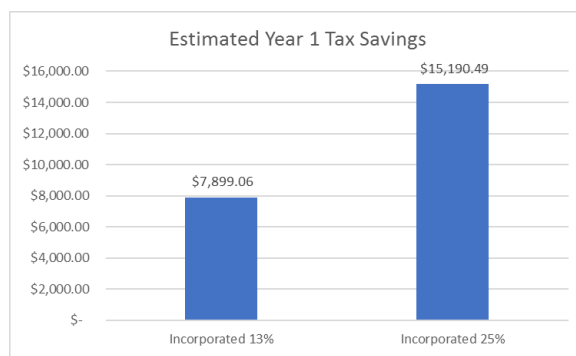
- Eligible Recipients
 - Small sized incorporated businesses (1-99 employees)
 - Medium sized incorporated businesses (100-499 employees)
- Eligible Rebate Amount
 - Up to 25% of project's total eligible costs
 - No less than \$20,000 and no more than \$250,000 – (minimum solar project size would be \$80,000)
- Businesses can submit up to 5 applications

<https://www.canada.ca/en/environment-climate-change/services/climate-change/carbon-pollution-pricing-proceeds-programming/climate-action-incentive-fund/small-medium-enterprises-project-stream.html>

Federal Tax Incentives

Federal Tax Incentives for Businesses – Write off 100% of the capital costs in year one: Federal Tax incentives under class 43.2 provides accelerated depreciation of capital costs for businesses investing in “green energy” projects. Businesses can write off 100% of the capital costs in year one.

<https://www.nrcan.gc.ca/energy/funding/5147> A consultation with a tax professional is recommended to determine the potential tax savings as they relate to our business. The following is an example of the potential tax savings for the proposed system:



Warranty

Solarcor will commit to warranty our workmanship for a period of 5 years and we agree to repair or replace PV equipment components that fail in materials or workmanship in that time.

Project Schedule

The proposed project will be installed in the 2022-2023 installation season. It is recommended to proceed with next steps immediately to provide the best opportunity for approval of the all applications.

Next Steps

Solarcor Energy has identified the following next steps in priority sequence:

1. Proceed with project development including front-end design and feasibility study:
 - a. Mechanical design
 - b. Electrical Design – determines any electrical upgrades (if any)
2. Funding Applications:
 - a. Agriculture Clean Technology Program (ACT)
 - b. Canadian Agricultural Partnership Program (CAP) – Irrigation Environmental Efficiencies Program
 - c. Climate Action Incentive Fund (CAIF) – Small and Medium Size Enterprise Stream (SME) – TBD

Upon receiving ACT and CAP funding Solarcor Energy recommends proceeding with the following next steps:

3. SaskPower net metering application
4. Municipal building permit

The front-end design and feasibility study are an important pre-application step to determine if there are any potential upgrades that would increase the cost of the project. This step will ensure that all project costs are submitted into the funding application, mitigating any cost overruns in the project phase. Solarcor has been identified that project funding applications that demonstrate a high level of project readiness will score higher on the funding application review.