Welcome to the 2018 Solar Installer Training

- **Goal**: To provide installers and developers with the information necessary to complete Xcel Energy’s solar applications in a timely manner with little to no errors or delays.

- Achieving the above goal will aid in meeting or exceeding our mutual customer’s expectations, in terms of interconnection timelines, resulting in an overall increase in customer satisfaction.
What Can I Learn From This Training?

• **New installers:** Familiarize yourselves with the basics of the solar application process and find answers to common questions

• **Current installers:** Continue your education and learn about best practices

• **Customers:** Learn more about the solar application process and receive answers to common questions
Involved Parties

- On-Site Solar Team (Colorado)
  - Renewable Choice Team Lead
  - Program and Trade Relations Manager
  - Marketing Assistants

- Internal Team Players
  - Customer Service/Energy Experts
  - Builders Call Line
  - Metering and Area Engineering
  - Field Metering
  - Billing

- External Industry Team Players
  - Installer
  - Developers
  - Local inspectors
  - Home builders
Process Updates in 2018: What's New?

- **Communication Expectations:**
  - Salesforce Application Notes – to be used for questions regarding active applications only
  - SolarProgram@xcelenergy.com Inbox – questions related to Cancelled or Completed applications, general inquiries, or customer questions
  - Xcel Energy Solar Hotline (303.571.7652) – Only call for urgent requests

- **Battery submission process defined**
  - New "Program Type" for standalone or retrofit battery applications in Application Portal
  - Example “CO-2018 Battery Small (.05-25kW) Customer Owned”

- **New Homes Estimator Table updated** to evaluate 120% rule by comparing the ‘120% of usage’ column to the ‘System PV Watts’ estimate in solar application

- **Field metering notices:**
  - When a Meter Corrections or No Access (out) notices are left at the premise – please call the number listed on the notice to reschedule the meter technician to set the solar meters

- **Meter Aggregation requirements**
- **Replacement solar system process**
Application Process
Application Process

1. **Registration**: Login  
   ([slides 8,9])
2. **Start**: Programs, Batteries, New Construction, EVs, Rates  
   ([slides 10-29])
3. **Contacts**  
   ([slide 30])
4. **System Details**: 120% Rule, Proof of SF  
   ([slides 31-41])
5. **Documents & Payments**: Online Payments, Designs, Metering  
   ([slides 42-48])
6. **Engineering Review**  
   ([slides 49,50])
7. **Final Information**: Proof of Insurance, Final Electrical Inspection, Solar Bank Election form  
   ([slides 51-57])
8. **Meter Installation**: Orders, Timeframes, Corrections, Permission to Operate  
   ([slides 58-62])
9. **Other**: Meter Aggregation, Extensions, Assignment of Contract, System Removals, Replacements, Manuals, Data Requests  
   ([slides 63-74])
Step 1: Registration

The Solar*Rewards Program Website allows customers and installers/developers to create, access and edit Solar*Rewards opportunities. Each participating entity will create an account with a unique username and password to access the site. Once logged in, you can create a new Solar*Rewards opportunity that will follow a step-by-step application process.

Login
- Username
- Password
- e.g. xxxxxx@xcelenergysolarrewards.com
- Forgot Your Username?

Sign Up
- Don’t have a Solar*Rewards account? To register for online access to the Solar*Rewards Program Website, you will need some basic information regarding your Xcel Energy account (if you are a customer) or business details (if you are an installer/developer). After you register you will receive an email with your login credentials to complete the process.

- Register Now
- Forgot Your Password?
Usernames and Passwords

Please be sure to register under your respective company name, if applicable

- Usernames will always end in @xcelenergysolarrewards.com
- Forgot Your Username?
  Email solarprogram@xcelenergy.com
- Password? Select “Forgot Your Password?” and an email will be sent to reset your password
  - Email will not be sent unless the username is correct
- Once logged in, you can create new applications at any time (as long as capacity is available)
Step 2: Start

Fields displaying adjacent red bar are required

- Program State
- Program Type
- Xcel Energy Applicant Account Number
- Xcel Energy Applicant Premise Number
- Premise Address
- DG Fuel Type (Solar PV, Battery etc.)
- Estimated Array Capacity (kW)
- DG Generator Type
- Optional Fields:
  - New construction
  - Existing PV System
  - Government Entity
  - Rental Property
  - Electric Vehicle Charged at Premise

Call Customer Service if you need to confirm the account/premise numbers: 1-800-895-4999
Account Numbers

“How do I enter the customer’s account number? I’m entering the 10-digit number and it’s not working”

- Must be permanent account and premise numbers
- Only enter the numbers in between the dashes of the account number
- Do not enter any leading zeroes
- Having a recent copy of the customer’s bill on hand when applying for a solar application is highly advised
- Need help? Click the question mark next to the “Applicant Account Number” field
Program Type

• Choose your program type:
  – Solar*Rewards (incentivized program)
  – DG Net Metering (non-incentivized program)
  – Battery
  – Peak Demand Pricing

• Determine the system size:
  – Small (.05-25kW), Medium (25.01-500kW), or Large (>500kW)

• Select either Customer Owned or Third Party Owned:
  – A Third-Party Owned system is owned by a third party installer/developer; in most cases, a customer has entered into a lease agreement with the developer for the system
  – A Customer-Owned system is fully owned by customer (please note Rental Property if applicable)

<table>
<thead>
<tr>
<th>DG Net Metering Products</th>
<th>Solar*Rewards Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO - 2018 DG Large (&gt;500kW) Customer Owned</td>
<td>CO - 2018 Solar*Rewards Medium Customer Owned</td>
</tr>
<tr>
<td>CO - 2018 DG Large (&gt;500kW) Third Party</td>
<td>CO - 2018 Solar*Rewards Medium Third Party Developer</td>
</tr>
<tr>
<td>CO - 2018 DG Medium (25.01-500kW) Customer Owned</td>
<td>CO - 2018 Solar*Rewards Option A Small Customer Owned</td>
</tr>
<tr>
<td>CO - 2018 DG Medium (25.01-500kW) Third Party</td>
<td>CO - 2018 Solar*Rewards Option A Small Third Party Developer</td>
</tr>
</tbody>
</table>
Program Type Cont…

- The user will ONLY be able to enter the system size (kW) applicable to the Program Type selection
  - For example, if the small program type is selected you cannot create an application for 30 kW since the small program maximum size is 25 kW
  - If the system was registered within the wrong program, please go to the Application Summary tab and click on ‘Cancel Application’ as soon as possible, then re-apply for the appropriate program offering
Special Circumstances

- Please make sure you are selecting a box if a special circumstance exists
- Checking the applied box(es) will trigger certain events to occur
Time of Use Rate (Residential Only)

- Under Time of Use Pricing, the customer will receive credits for production based on when the energy was generated and the associated rate during that time.
- Check the “TOU Rate?” checkbox if the customer wishes to be switched to the Time of Use rate.
- Customer is switched to the TOU rate once solar meters are installed.
- Checking the box will also trigger a customer survey to be sent out in the Documents & Payments tab.

Learn more about new Residential Pricing Plans at xcelenergy.com/residentialrates.
Rental Properties

“How do I enter customer information if a tenant is living in the customer’s home?”

• Be sure to check the applicable box for Rental Property - this will require the Tenant and Landlord Release Form to be signed in the Documents & Payments tab of the application

• If the tenant pays the electric bill, then the account number and premise number entered should be the tenants, However, the customer name, contact email, and phone listed should be the actual landlords, not the tenant’s

• If the landlord pays the electric bill, then all customer information should be the landlords
Electric Vehicles

“How will the energy usage be calculated if the customer has an electric vehicle?”

- Submit copy of vehicle registration showing address corresponding with PV install address
  - Will accept the EV proof of purchase
- 120% Rule Calculation
  - < 4 months of consumption history with EV: Add 250 kWh per month (3,000 kWh total per year) to consumption history
  - >/= 4 months of consumption history with EV: Calculate based on customer’s average annual consumption with an EV. No exceptions
New Construction

“We have permanent account and premise numbers, but they are under the builder’s name. Can I start a solar application?”

• Yes, an application can begin under builder’s name, as long as the site has permanent account and premise numbers

• After solar meters are installed and the new customer’s name is on the electric account, SolarProgram can initiate an Assignment of Contract
Existing PV System

• If there is an existing PV system at the premise, must check the box noting Existing PV System on the Systems Details page

• Must also enter in the Existing DG Size (AC kW) so that our engineers know what the total aggregate solar capacity is at the premise

CT Cabinet Needed
Battery Backup
Pre-Existing Generator?
Service Voltage 120/240 1ph
Existing DG Size (AC kW) 2.200

*This information is checked during Engineering Review and can cause delays if the information isn’t provided upfront
Existing PV System Cont…

“A customer wants to add an additional PV system to their already existing system. Do I need to disclose the pre-existing system on the application or on the system designs?”

• The Study Fee will be calculated based on the total AC kW system size; =SUM of Existing DG Size field + Total System Power Rating field
• If combined kW of systems is greater than 10 kW, a signed SGIA and study fee of $1,000 is required
• The aggregate of the existing and additional system sizes cannot exceed 120% of the customer’s annual electricity usage
• Existing system and interconnection point must show on the site plan and line diagram
• A second production meter may or may not be installed. Email SolarProgram@xcelenergy.com to find out
CT Cabinet Needed

“How do I submit a new solar application that needs a CT (Current Transformer) Cabinet?

- Single-phase and three-phase services where the total connected load is in excess of, or anticipated to be in excess of, 320 amps shall use instrument transformer (CT) metering.

- Check “CT Cabinet Needed” checkbox in the System Details tab
- Installer will be notified to coordinate with a Metering Engineer for CT delivery on-site prior to the solar meters being installed.
Battery Storage

“How do I submit a new solar application with a battery?

- Check “Battery Backup” checkbox on the System Details tab.
“How do I submit a standalone or retrofit battery application?

- On the Start tab choose a “Battery” Program Type
- Then choose “Battery” as the DG Fuel Type
Battery Storage Cont...

“What information do you need to know about the battery?

- Complete all required fields in the Battery Details section

<table>
<thead>
<tr>
<th>Battery Details</th>
<th>AC, Net Metered, Non-Export 2C</th>
<th>Continuous kW Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous kW Rating</td>
<td></td>
<td>kWh Rating</td>
</tr>
<tr>
<td>Battery Chemistry</td>
<td></td>
<td>AC or DC Coupled</td>
</tr>
<tr>
<td>Charge Controller Make/Model</td>
<td></td>
<td>Controller/Communications Peripherals</td>
</tr>
<tr>
<td>Location of Storage Equipment</td>
<td></td>
<td>Power Factor Range</td>
</tr>
<tr>
<td>Power Factor Setting</td>
<td></td>
<td>Transfer Switch Make/Model</td>
</tr>
<tr>
<td>Charge Rate kW (maximum continuous)</td>
<td></td>
<td>Charge Rate kW (Recovery Charge Rate)</td>
</tr>
<tr>
<td>Protected Load Panel</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Is Critical Load Behind the Production Meter</td>
<td>--None--</td>
<td></td>
</tr>
<tr>
<td>Size of Protected Load Panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of Protected Load Panel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“What else is needed to submit an application with a battery?”

- Every application with battery must submit a completed Declaration.
- Declaration forms are available for download from the Solar Developer Resources webpage and from the Document for Download section of the application:
  - Declaration 1A and 2A
  - Declaration 1B and 1C
  - Declaration 2B and 2C
  - Declaration 3A and 3B
- Declarations provide the upfront information needed by the engineers to expedite the review process.
Battery Storage Cont...

“What information do you need to know about the battery?

• Upload a completed Declaration for the battery configuration followed in addition to the Line Diagram and Site Plan

• Battery design must be shown on the Line Diagram for consideration
Battery Storage Cont…

“What are the acceptable storage configurations for batteries?”

• Three Storage Guidance documents included in the 2017-2019 Global Settlement Agreement detail the acceptable configurations and are downloadable from the Solar Developer Resources webpage

  Storage Guidance 1 (Non-Renewable) (PDF)
  Storage Guidance 2 (Renewable, Utility-side of Production Meter) (PDF)
  Storage Guidance 3 (Renewable, PV-side of Production Meter) (PDF)

• There are eight approved configurations:

  AC, Standby Energy Storage 1A
  AC, Non-Net Metered, Non-Export 1B
  AC, Non-Net Metered, Non-Export W/Gen 1C
  AC, Net Metered, Standby Energy Storage 2A
  AC, Net Metered, 100% Renewable Export 2B
  AC, Net Metered, Non-Export 2C
  DC, Net Metered, 100% Renewable Export 3A
  DC, Net Metered, 100% Renewable Export 3B
“What is required to approve an application with a battery?”

- Exhibit D of the Interconnection Agreement lists the Operating Requirements for Energy Storage Systems

**Applicable if Energy Storage Systems Are Involved:**

Three energy storage guidance Documents address configurations and requirements related to the terms of CO PUC Proceeding No. 15AL-0048. Energy storage interconnections are allowed as addressed in these energy storage guidance documents. The interconnection principles illustrated also apply to large interconnections, as permitted in the filed tariffs. In the event of a conflict between this Operating Agreement and energy storage guidance documents, the energy storage guidance documents shall rule. Energy storage system interconnections not included in this proceeding must be documented and be in accordance with the Engineering Study and applicable tariffs.

Nothing under energy storage guidance documents shall be construed to limit the export of actual onsite renewable self-generation that is net metered in compliance with the approved tariffs.

- Area Engineer will populate Exhibit D when necessary and will be signed by the installer confirming the operation of the battery
SPVTOU Rate

“What if my customer is interested in the SPVTOU rate?

- Select “Interested in SPVTOU” checkbox in System Details tab
- SolarProgram will confirm if customer meets qualification criteria listed in Schedule SPVTOU of the Electric Tariff Rate Book - The 'Availability' portion of Sheet No. 49A apply to BOTH Section A service and Section B service
### Step 3: Contacts

<table>
<thead>
<tr>
<th>Customer Contact</th>
<th>Installer Contact</th>
<th>Developer Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Name</td>
<td>Installer Company</td>
<td>Developer Company</td>
</tr>
<tr>
<td>Customer Phone</td>
<td>Installer Address</td>
<td>Developer Address</td>
</tr>
<tr>
<td>Customer Email</td>
<td>Installer City</td>
<td>Developer City</td>
</tr>
<tr>
<td>Customer Email Confirmation</td>
<td>Installer State</td>
<td>Developer State</td>
</tr>
<tr>
<td></td>
<td>Installer Zip</td>
<td>Developer Zip</td>
</tr>
<tr>
<td></td>
<td>Installer Email</td>
<td>Developer Email</td>
</tr>
<tr>
<td></td>
<td>Installer Email Confirmation</td>
<td>Developer Email Confirmation</td>
</tr>
</tbody>
</table>

- Customer Contact must match the customer listed on Xcel Energy account (as shown on the customer’s bill)
- Installer Contact lists the system installer company
- Developer Contact can be the same or different as the Installer Contact
- Important to verify email addresses before continuing as all system generated emails and documents are sent throughout the process
Step 4: System Details

- Populate all required fields, then click “Save”
- Select correct array type from drop-down menu
  - Fixed describes a ground mount
  - Fixed-Roof Mounted represents rooftop installation
- Add arrays/inverter hardware
Array(s) and Inverter(s)

“I can’t find the array and inverter I want to use when I try to enter my system details. Can I still use them?”

• We accept all UL certified equipment

<table>
<thead>
<tr>
<th>Action</th>
<th>Asset #</th>
<th>Type</th>
<th>Hardware</th>
<th># of Panels</th>
<th>Array Capacity (kW)</th>
<th>Array PV Watts</th>
<th># of Inverters</th>
<th>Power Rating (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA-0120711</td>
<td>Array</td>
<td>SunPower - SER-235P</td>
<td>20</td>
<td>4.700</td>
<td>6.678</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA-0120712</td>
<td>Array</td>
<td>Suntech Power - PLUTO240-Wde</td>
<td>11</td>
<td>2.640</td>
<td>3.751</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA-0120716</td>
<td>Inverter</td>
<td>SolarEdge Technologies - SE 10000A-US (240V)</td>
<td>1</td>
<td>10.0100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Equipment not listed in Application Portal? Send a screenshot from http://www.gosolarcalifornia.ca.gov/ to SolarProgram@xcelenergy.com like the one below. We will add the equipment in the order the email is received

<table>
<thead>
<tr>
<th>Manufacturer Name</th>
<th>Inverter Model number</th>
<th>Description</th>
<th>Power Rating (Watts)</th>
<th>Weighted Efficiency</th>
<th>Approved Built-in Meter</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABB</td>
<td>MICRO-0.25-I-OUTD-US-208</td>
<td>250W Utility Interactive Inverter</td>
<td>250</td>
<td>96</td>
<td>Yes</td>
<td>NA</td>
</tr>
</tbody>
</table>

*Work with Go Solar California to add equipment to their site if it is not yet listed before we can add it to our site.
Power Factor Requirement

• Requirement is based on section 3.3 of the 2-1-17 revised Interconnection Guidelines
• Requires systems have the ability to operate between -0.90 and +0.90
• This PF requirement is part of achieving higher hosting capacities and reducing voltage flicker
• Operating Requirement: Exhibit D language in the Interconnection Agreement

The Generation Facility shall operate at a specified fixed Power Factor:

The specified Power Factor as a condition of interconnection: 98%; Absorbing VARs

This Power Factor is specified at the: Point of Common Coupling

The power factor may be changed from time to time by mutual agreement. A temporary power factor may be specified by Public Service Company of Colorado d/b/a Xcel Energy as a condition of operation in lieu of disconnecting when the distribution system is in a contingency configuration.

The system owner is responsible to operate and maintain all equipment per manufacturer specifications and guidelines.
Power Factor Requirement Cont…

- Applications over 25kW may require a Level II engineering review
- Solar Installer should provide upfront notification (before starting applications) to SolarProgram@xcelenergy.com if a new housing development includes more than 10 homes or 100 kW on a distribution feeder

SAFETY, INTERFERENCE AND INTERCONNECTION GUIDELINES FOR COGENERATORS, SMALL POWER PRODUCERS AND CUSTOMER-OWNED GENERATION (Section3.3)

120% Rule Requirement

• State Statue: PV systems can be sized to produce up to 120% of the customer’s average annual electric usage. This is a state statue set forth by the State of Colorado - all participants are required to adhere to it

• Colorado Code of Regulations: Rule 3664. Net Metering


(a) Except as provided in paragraph 3664(i), all investor owned QRU’s shall allow the customer’s retail electricity consumption to be offset by the electricity generated from retail renewable distributed generation, provided that the generating capacity of the customer’s facility meets the following two criteria:

(I) the retail renewable distributed generation shall be sized to supply no more than 120 percent of the customer’s average annual electricity consumption at that site, where the site includes all contiguous property owned or leased by the consumer, without regard to interruptions in contiguity caused by easements, public thoroughfares, transportation rights-of-way, or utility rights-of-way; and

(II) the rated capacity of the retail renewable distributed generation does not exceed the customer’s service entrance capacity.
120% Rule Requirement Cont…

“The application says I am failing the 120% Rule. What do I do?”

- You will receive a system generated email notification about the failure.
- Check the “Application Notes” on the Application Summary tab for any notes left by the Solar Team.
- All new construction applications will initially fail since additional documentation must be evaluated to bypass the rule.
- All existing structures/remodels will be evaluated based on 120% of the customer’s annual electric usage history as long as they have 4+ months of usage.
  - If they do not have 4+ months of usage, the application will be evaluated based on livable square footage of the home or HERS Report/Energy Load Analysis.
Obtaining Customer Usage Data

“How can I obtain my customers’ usage data to evaluate system size?”

Usage is private customer information, we cannot provide the usage numbers without the customer’s consent. Three ways to obtain the information are:

1. Customer signs data consent form

   CONSENT TO DISCLOSE UTILITY CUSTOMER DATA

   All requested information must be provided for the consent to be valid. This form may be available in other languages. To obtain a copy in another language, please contact inquire@xcelenergy.com. Para obtener una copia de este formulario en español, por favor contacte a su proveedor de servicios públicos.

   Utility Name and Contact: Xcel Energy Correspondence Department

   Physical and Mailing Address: P.O. Box 8, Eau Claire, WI, 54702

   Phone: 1-800-895-4999 Email: datarequest@xcelenergy.com Fax: 1-866-208-8732

   For additional information, including the utility’s privacy policy, visit xcelenergy.com.

2. In Customers’ Xcel Energy MyAccount portal: Pull up usage data and send it to Installer

3. Set Up a Delegate in MyAccount – download guide from Solar Developer Resources webpage under Forms How to Set Up a Delegate in MyAccount PDF
Proof of Square Footage

“When do I need to upload Proof of Square Footage?”

• Proof of Square Footage is required for all premises with less than 4 months of electric usage history for the current customer

• New Construction/Remodel
  • Proof of square footage must be from the County Assessor Office or builder’s blueprints (Redfin.com, Realtor.com, Zillow etc. will not be accepted)
  • Can only include conditioned/heated/finished areas
  • Must show the address where PV system is going to be installed
  • A HERS Report or Energy Load Analysis is acceptable for additions or large remodels over 4,000 sf with a System PV Watts estimation greater than 14,946 kWh
Colorado New Homes Estimator Table

- If new construction, the home size and associated 120% usage number from the table below will be compared against System PV Watts from the solar application to evaluate the 120% Rule.
- The System PV Watts estimate is generated automatically from the System Details entered in the solar application by the application owner.
- The System PV Watts number must be **below** the 120% consumption number to pass the 120% validation.

<table>
<thead>
<tr>
<th>Home Size (square feet)</th>
<th>Annual kWh usage</th>
<th>120% of usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 500 square feet</td>
<td>3,199</td>
<td>3,839</td>
</tr>
<tr>
<td>501 - 1000 square feet</td>
<td>4,548</td>
<td>5,457</td>
</tr>
<tr>
<td>1001 - 1500 square feet</td>
<td>6,071</td>
<td>7,285</td>
</tr>
<tr>
<td>1501 - 2000 square feet</td>
<td>7,333</td>
<td>8,799</td>
</tr>
<tr>
<td>2001 - 2500 square feet</td>
<td>8,433</td>
<td>10,120</td>
</tr>
<tr>
<td>2501 - 3000 square feet</td>
<td>9,092</td>
<td>10,910</td>
</tr>
<tr>
<td>3001 - 3500 square feet</td>
<td>10,000</td>
<td>12,000</td>
</tr>
<tr>
<td>3501 - 4000 square feet</td>
<td>10,907</td>
<td>13,089</td>
</tr>
<tr>
<td>4001 or more square feet</td>
<td>12,455</td>
<td>14,946</td>
</tr>
</tbody>
</table>

* Table helps to easily evaluate the max system production for applications that will be evaluated based on square footage
“When do I need to submit an energy model/load analysis?”

• For new construction projects over 4,000 sf with a System PV Watts estimation greater or equal to 14,946 kWh will require an energy load analysis stamped by a Professional Engineer (PE)
  – Must show a monthly or annual snapshot of the total estimated kWh usage (kWh cannot be converted Btu)
  – Must list the premise address for the PV installation
• For residential projects, a HERS (Home Energy Rating System) report can provide the estimated annual kWh usage to justify PV system size
System Size Changes, +/- 10%

“I need to change my system size. Is this allowed?”

- Solar*Rewards applications can adjust the system size by +/-10% from the Estimated Array Capacity field
  - Once the application is sent to Engineering Review the system size cannot change. No exceptions

- Non-Solar*Rewards (DG) applications can change by any percentage before Engineering Review (120% rule must still pass)
- System changes after engineering rejections due to over-load of transformer capacity can be given an exception

### Array and Inverter Details

<table>
<thead>
<tr>
<th># of Panels</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Inverters</td>
<td>10</td>
</tr>
</tbody>
</table>

**Estimated Array Capacity (kW)**: 3.960

<table>
<thead>
<tr>
<th>NamePlate Capacity (kW)</th>
<th>3.600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total System Power kW Rating</td>
<td>3.200</td>
</tr>
<tr>
<td>System PV Watts</td>
<td>5,347</td>
</tr>
</tbody>
</table>
Step 5: Documents & Payments

- Pay by Check (~7-days): send Application Deposit/Study Fee Form and check to: Xcel Energy DG, PO Box 59, Minneapolis, MN 55440-0059
- Pay Online (24-hours):

  • Fee invoice(s) will not be available on the Wells Fargo payment site until the following day from when applicant arrives at 'Documents and Payments' stage. Please be sure to wait 24 hours to submit payment.
  • Payments will post to the applicable application OID the day after payment is made to Wells Fargo (another 24 hours).
  • Please enter Primary Authorization Code [REDACTED] and Secondary Authorization Code [REDACTED] to complete online payment with Wells Fargo.
  • Primary and Secondary codes are unique to your account. Once an account is set-up, you can use the same codes for each application as needed.
  • Credit card payment will not be accepted.

- Application Deposit must be postmarked within 7 business days from the application Created Date (Solar*Rewards applications only)
Online Payment – Login/Enroll

- Click **Pay Fee Online**

- Login or enroll

  *Don’t have a Login ID?*

  Enroll today to set up your secure user name and password, view and pay bills, and see your account status and payment history.

  ![Enroll Button]

- Enter **Primary Authorization Code** and **Secondary Authorization Code** as displayed on the Documents & Payments page
Online Payment – Login/Enroll Cont…

- Enter the “Pay My Bills” section of the site
- Click on “Add a Payment Method”
- Complete the bank account information and agree to the ACH debit authorization, then click “Add”
- Click “Continue to Payment”
- Click “By checking this box…” to agree with the Terms and Conditions
- Click “Make Payment”
- Click “Log Out”
- Credit cards are not accepted
Online Payment – Pay My Bills

• Select all the invoices you want to pay on the “Pay My Bills” screen and pay all at once
• Payment confirmations are sent from Wells Fargo and posted in the solar application OID the next day whenever the payment was made after 7pm CST
• Need Help?
  Contact Wells Fargo E-Bill Express Support EBillExpress@wellsfargo.com
  or
  1-877-562-3840
“What additional documentation should I submit for systems 10 kW and larger?”

• All systems 10 kW and over require a $1,000 Study Fee
  – If the aggregate kW of an Existing PV and new application for PV
    and/or battery at the same premise is 10 kW or over will require
    $1000 Study Fee
• All systems 10 kW and over require a Small Generation Interconnection
  Agreement Form (SGIA) download from Solar Developer webpage
• Review performed by Xcel Energy metering and area engineers
• PE stamped Energy Model/Load Analysis (if applicable)
• CT cabinet checkbox (if applicable)
Site Plan, Line Diagram

- Upload a Site Plan and Line Diagram
- Upload SGIA (if applicable)
- Tenant Release Form (if applicable)
Metering Requirements

• Metering requirements are listed in the DG Interconnection Guidelines starting on page 27
• Required Disconnect Labeling is shown on page 46
• Brass tags are a solar installers responsibility to install. If there is an apartment number or it is a 2\textsuperscript{nd} PV meter, it has to be noted on the tag. Tags can be brass, aluminum or stainless steel and MUST BE permanently attached to the meter socket

![Image of a meter label]

- MAIN SERVICE METER
  LOCATED 60’ ON
  WEST SIDE OF HOME

- PV PRODUCTION METER
  LOCATED 60’ EAST
  ON DETACHED GARAGE

• The production meter shall be located within ten (10) feet of the existing billing meter. If this cannot be accomplished, additional labeling at each meter directing personnel to the other meter location is required. Production meter locations will be addressed during the engineering review; exception requests are not necessary. Approval from the local Electric Meter Shop may also be required.
Step 6: Engineering Review

- Application to this point must be reflective of the end product, changes are prohibited during engineering review
  - Changes desired after engineering approval will require an exception and second study fee or new application to be created
  - Engineers have 10-business days to review applications once submitted

**We highly recommend that systems are installed after engineering approval to ensure the system complies with interconnection standards and system upgrades are not needed.**
• If approved by Engineering, application will move on to Final Documentation
• If a rejection occurs, installer will receive an email with further instructions
• For 10 kW and over reviews, wait until both engineers reply to re-submit for approval (if applicable)
Step 7: Final Information

- Final Application Details must be populated and saved before final documents can be uploaded
- Upload Proof of Insurance, Final Electric Inspection, NABCEP form
“What does the Proof of Insurance need to include?”

- Effective policy dates (insurance must be currently active)
- Premise address (required if customer-owned system)
- Appropriate liability (personal or business general liability insurance) coverage: (based on AC NamePlate Capacity kW)
  - No less than $300,000 per occurrence for systems 10kW and under
  - No less than $1,000,000 per occurrence for systems 10.01kW – 500kW
  - No less than $2,000,000 per occurrence for systems greater than 500kW
  - For systems over 500 kW, must include Public Service as an additional insured on the policy
- Such General Liability insurance shall include coverage against claims for damages resulting from (i) bodily injury, including wrongful death; and (ii) property damage arising out of the Customer’s ownership and/or operating of the Generation System under this Agreement.
Final Electrical Inspection

“What does the Final Electrical Inspection need to include?”

• The premise address
• The name of the inspection agency (ex. City of Denver)
• The type of inspection (Final Electrical)
• The outcome of the inspection (Pass/Fail)
• The date of the inspection
• The inspector’s name and signature (electronic signature or initials are accepted)
NABCEP Form

“What type of NABCEP certification is required?

• State regulation notes the following:

(a) (I) (A) The performance of all photovoltaic electrical work, the installation of photovoltaic modules, and the installation of photovoltaic module mounting equipment is subject to on-site supervision by a certified photovoltaic energy practitioner, as designated by the North American board of certified energy practitioners (NABCEP), or a licensed master electrician, licensed journeyman electrician, or licensed residential wireman, as defined in section 12-23-101, C.R.S.

*NABCEP Form only required for Solar*Rewards applications
• Click “Retrieve Documents” button once the final information and documents have been uploaded

Documents to Sign

Click “Retrieve Documents” below to populate and send the final documents requiring your signature. Documents will be sent to the various signer email addresses defined on the contacts tab.

• Once “Retrieve Documents” has been selected, no changes can be made to the application
  – Please be sure the owner’s name is listed on the agreement if tenant is present
Documents are fully signed when green checkmark shows next to the document.

Solar*Rewards applications have 3 documents to sign electronically:

- Interconnection Agreement Customer Owned
- REC Contract Small Customer Owned 2014
- Reservation Letter Customer Owned

Non-Solar*Rewards (DG) applications have 2 documents to sign electronically:

- 2017_Small.Medium_CustomerOwned_InterconAgreement
- DG Reservation Letter
Reservation Letter/Solar Bank Election

Customer must choose either Rollover or Cash Out for any excess generation from the customer’s net-metered PV system:

*Download “Solar Net Metering and Billing FAQ (PDF)” from website*

**Continuous Rollover:**

- Excess generation kWh is converted into a dollar credit, which will carry forward month to month. The dollar value is labeled as Rollover Bank Dollar Credit under the Electricity Charges Detail section of the customer’s bill
- Cannot cash out Dollar Credit balance if you move or stop service
- Dollar values cannot be transferred between Xcel Energy accounts or to a new homeowner if a customer moves

**Wave Decision (Cash Out):**

- Credits rolled over month-to-month and held in the Solar Bank
- Default to a year-end payout - Solar Bank is cashed out at the end of the year at the average hourly incremental cost of electricity (AHIC) from the previous 12 months. 2017 AHIC rate = 1.583 cents/kWh
- Can still make a one-time choice to move to Continuous Rollover at any time during the life of the contract
Step 8: Meter Installation

Restricted Meter Access

“If the customer has restricted access to the meters, what do I do?”

- Check “Restricted Access to Meter Area” checkbox
- Add an Application Note on the Application Summary tab detailing the restricted access (dogs, locked gate etc.)
- Didn’t check the box? Email SolarProgram@xcelenergy.com if an appointment for meter installation needs to be made
“How do I know when the meters are ordered?

- The Production Meter Order Date on the Application Summary tab will populate when meters are ordered.

- Once meters are installed, the Production and Net Meter Install Dates and Numbers will populate in Meter Order Details.

- The general service meter will be replaced with a Net Meter, and a PV Production Meter will be added for any new solar interconnection.
Meter Installation Timeframe

• Please allow **20- business days** from the meter order date for the PV Production and Net Meters to be installed

• For any corrections or access issues, the meter technician will leave a notice at the premise

• You must call the number listed on the notice to reschedule a meter technician to come back out to install the meters

• Please do not contact the solar team to reschedule a meter install

> Customer Notice left when meter technician could not access the meter location
Meter Installation Timeframe Cont…

- Customer Notice left by meter technician when corrections are needed before meters can be installed
“How do I know when my Installer can energize my solar system?

Once meters have been installed, a door hanger will be provided and Permission to Operate (PTO) email will be sent to the customer after meters have been installed.
Meter Aggregation

- Meter Aggregation is an option. The customer/installer will need to show us how they comply with the criteria listed in the Colorado Code of Regulations, Net Metering Information, Rule 3664 (Go to page 130) - https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=7359
  - The main Meter Aggregation Requirements are below, all of which are on the customer/installer to prove and for the Solar Team to verify:
    - The system needs to have been interconnected on or after 1/14/2012 to be eligible for aggregation as that’s when the rule change took effect
    - Same customer
    - Same rate class
    - Same or Contiguous property
- Meter Aggregation can be applied to:
  - 120% rule evaluation for solar system sizing
  - Application of excess generation kWh credits in a water falling manner to other meters
- Send meter aggregation requests to SolarProgram@xcelenergy.com and attach a completed meter aggregation letter (downloadable from Solar Developer Resources webpage under Forms) prior to starting the solar application so that the requirements can be verified first. Then the solar application can be created under the designated meter account and premise number and the 120% rule can be evaluated accordingly
- Meter aggregation can be requested after solar is installed
Multi-Tenant Solar Metering

Building Ownership

- For situations where a building is owned/controlled by a single owner, the owner has the ability to dictate where the solar can be sited at or on their facility without regard to individually metered tenant spaces.
- This assumes that their solar installation proposal is accepted by the authority having jurisdiction (AHJ) who regulates the construction process for both the local jurisdiction building/electrical codes as well as the applicable fire code.
- Every situation will be subject to Xcel Energy provisions as they relate to participation in Solar*Rewards programs, Colorado Code of Regulations, and tariffs.
Multi-Tenant Solar Metering Cont…

If more than 10 individual systems or 100kW in aggregate is applied for:

• Give notice to XE Solar Team that multiple applications will be in close proximity to one another (SolarRewards@xcelenergy.com)
• Additional study fee may be required (may be looked at in aggregate)
• Increased likelihood that system upgrades could be required

Examples of this situation could include planned residential solar developments, multifamily apartment complex, shopping center or mall, small commercial building with tenants, or one owner with multiple buildings.
Extension Requests

• If you anticipate needing an extension for your project, please complete the Solar* Rewards Extension Request Form (PDF) at least 2 weeks prior to the project expiration date. Downloadable from the Solar Developer webpage under Forms.

Solar*Rewards Application Extension Request Form

An Applicant or Installer must complete this form in order to request a one-time extension of 60 calendar days for a Solar* Rewards application. Please submit completed form via email to solarprogram@xcelenergy.com.

Application Details:
Application OID-
App Creation Date-
Customer Name-
PV Install Address-
Assignment of Contract (AOC)

“I’m moving. What do I need to do with my solar agreements?”

• For Solar*Rewards systems: If you sell your home after the application process is complete, you may transfer the Contracts/Agreements to the new owner with an Assignment of Contract. The owner would assume responsibility for the terms of the contract.
• For Non-Solar*Rewards (DG) systems: The new homeowner needs to sign a new Interconnection Agreement with Xcel Energy to receive the benefits of the net-metered rate.
• View the Assignment of Contract webpage for the detailed process.
System Removals

- In the event that a system needs to be removed or relocated, please notify us by emailing solarprogram@xcelenergy.com
- The Net and PV Production meters will be removed from the premise and the general service meter replaced
- If a system is going to be offline for more than 90 days, notify SolarProgram in writing so that the system does not automatically get flagged for non-production and have a meter removal order logged

*please never remove the NET or PV production meters as they are Xcel Energy property
System Replacement

• In the event that a PV system needs to be replaced, the following steps must be taken:

1. Notify solarprogram@xcelenergy.com with the following information: New site plan and line diagram for the replacement system showing the exact or close to the same NamePlate kW DC system size as the original installation. Show what equipment is new and what is not new on the designs.

2. Solar Team sends the replacement system designs to an engineer to confirm it is a 1 for 1 match to the original system (10% threshold on system size permitted)

3. System replacements must still pass the 120% rule check based on current usage (solar production + net consumption = usage)

4. Once approved, Installer sends Solar Team the final electrical inspection and owner proof of insurance after system has been installed

5. Solar Team will upload approved designs to original solar application and order new meters, if needed.

6. There are no review fees unless a new application is created
DG Manual Updates 2.1.2017

• The DG Manual has been updated to include changes and clarifications as interconnection review practices have evolved

Revised Installation Standards

• The Xcel Energy Standard for Electric Installation and Use was revised on 8/15/17
  – Please make sure that all documents submitted include the correct revision date and section numbers
• Exception Form for requesting exceptions to the “Xcel Energy Standard For Electric Installation and Use”
Stagnant Applications

- Only for Non-Solar*Rewards (DG) applications, please submit the study fee within 60 days of creating an application.
- If no action or progress has been taken on an application in 90 days, an email communication or application note will be sent prior to cancelling the application.

<table>
<thead>
<tr>
<th>Application Notes</th>
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- Be sure to cancel any applications that were entered incorrectly before creating a new one.
Pre-Application Data Requests

• If you want to check on reliability issues of distributed generation (DG) installations you can complete a **Pre-Application Data Request**. Steps are as follows:
  – Sign NDA prior to receiving **Pre-Application Data Report**
  – Provide map of anticipated Point of Interconnection
  – $300 payment per Interconnection Address (wire or check)
• Xcel Energy will provide a Pre-Application Data Report of the findings within 15 business days of the receipt of the completed request form and payment of all fees

*see Pre-Application Data Request form for all general details*
Solar*Rewards in 2018 & 2019

• Small Solar*Rewards Program
  – The Small Solar*Rewards program will continue to offer 2 MW of capacity per month with a $0.005 per kWh REC incentive

• Medium Solar*Rewards Program
  – The Medium Solar*Rewards program will continue to offer 6 MW of capacity per quarter with the following REC incentives:

<table>
<thead>
<tr>
<th>Year</th>
<th>REC Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>$0.0425</td>
</tr>
<tr>
<td>2019</td>
<td>$0.0375</td>
</tr>
</tbody>
</table>

• Large Solar*Rewards Program
  – The Large Solar*Rewards program will also be offered in 2018 and 2019 through a competitive bid process with the following capacity targets per year:
    • 10 MW in 2018
    • 14 MW in 2019
  – Bidders will be evaluated on price per MWh and feasibility of project
Solar*Rewards Program
Maximum Capacity Limitation

Two or more projects tied to the same permanent account and premise number under the same Solar*Rewards program offering are in totality one system, and the aggregate of all solar capacity (kW) at that premise cannot exceed the S*R program’s maximum capacity size limit. i.e. 25 kW for Small, 500 kW for Medium

In situations where the most recent application is over the program maximum capacity size limit within a Solar*Rewards program type, options are the following:

1. Apply for the next larger program type; or
2. Apply under the DG Net Metering option
Additional Resources

On-Site Solar Frequently Asked Questions
Application Deposit Form (PDF)
Study Fee Form (PDF)
Solar Bank Election Form (PDF)
Application Process for Customers
Battery Configuration Selection Tool (PDF)
Solar*Rewards Community Developer Resources
Thank You!

Thank you for reading the 2018 Solar Installer Training

Still have questions? We are here to help!

Email: SolarProgram@xcelenergy.com
Solar Hotline: 303.571.7652 (9am-3pm M-F)