SOLAR INSTALLER TRAINING

FOR XCEL ENERGY COLORADO

July 2021

Application Process Table of Contents

WELCOME TO THE 2021 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: Understand the solar application process and get answers to common questions.

Current installers: Continue your education and learn about best practices.

Customers: Learn more about the solar application process and get answers to common questions.

Involved Parties

On-Site Solar Team (Colorado)

- Renewable Choice Team Lead
- Program and Trade Relations Manager
- Marketing Assistants/Coordinators

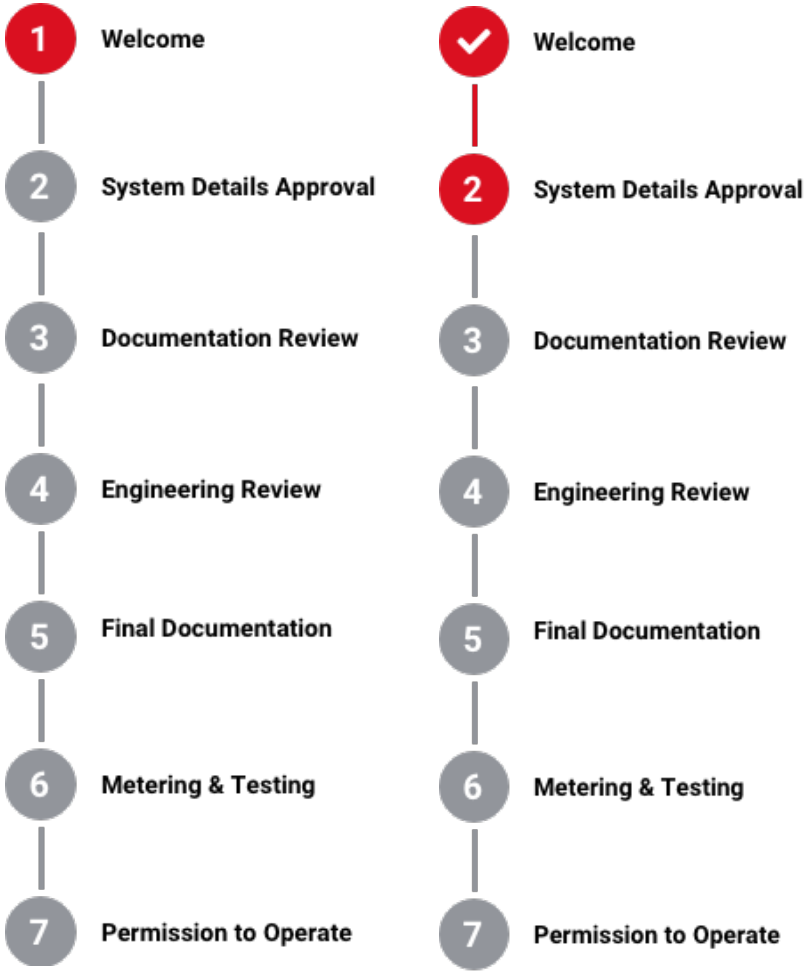
Internal Team Players

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

External Industry Team Players

- Installer
- Developers
- Local inspectors
- Home builders

Customer Communications



We communicate with customers via email at 7 key points in the application process, during each of the stages illustrated in the graphic to the left.

A check mark signifies a completed stage. The current application stage is then highlighted in red.

Please refer Customers to the Application Process webpage for a review of the process steps and associated timelines.

Download "Solar Net Metering and Billing Info Sheet (PDF)"

Eligibility

Customer Eligibility Requirements for Interconnection

- Must be an Xcel Energy residential or business electricity customer.
- Must have an active and valid account number and premise number.
- The customer's name on the application must match the name on the Xcel Energy account/bill.
- All equipment must be UL 1741 certified and listed within the Solar Equipment Lists on the California Energy Commission website.
- Must meet minimum general liability insurance policy requirements for each occurrence based on the Gross AC Nameplate Rating of the Generation System:
  - $300,000 for 10 kW or less
  - $1,000,000 for greater than 10 kW up to and including 500 kW
  - $2,000,000 for greater than 500 kW up to and including 2 MW
- Systems must be sized such that the expected kWh generation (PV Watts estimate), when combined with other distributed generation resources serving the service address, does not exceed 120% of historical consumption (i.e., the previous 12-months at the time of application submission).

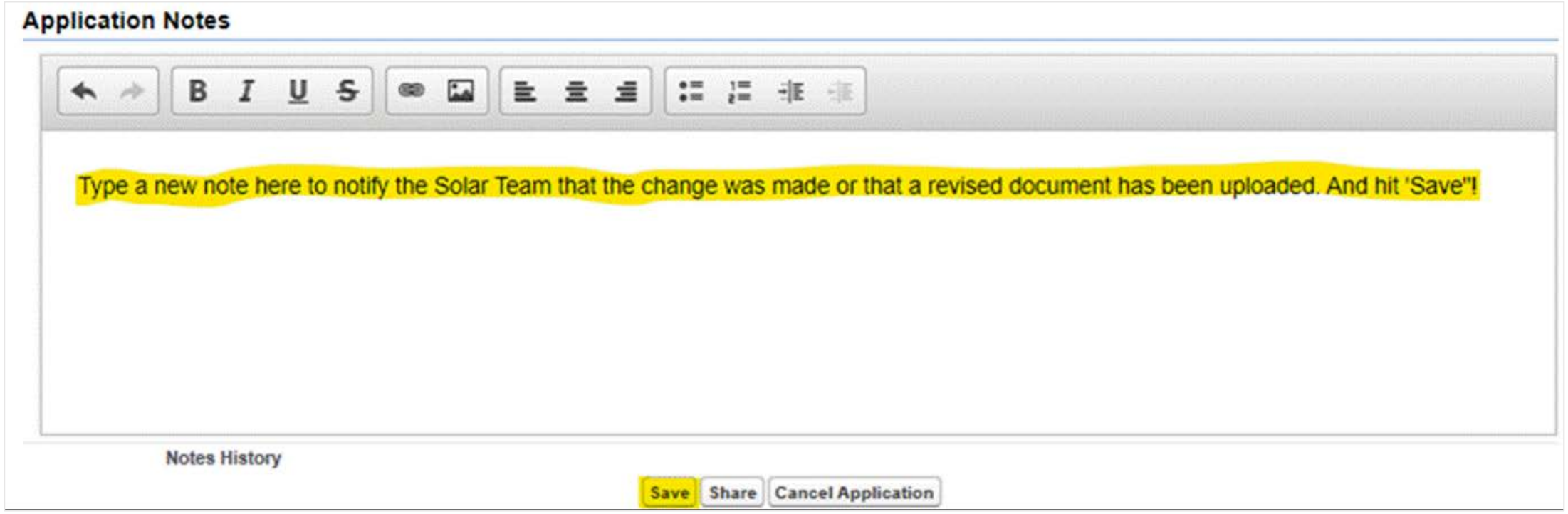
Communication Expectations

Ways to communicate with the Colorado On-Site Solar Team

1. Salesforce Application Notes – This is the primary way to communicate with the team, about **active applications only**.
2. SolarProgram@xcelenergy.com Inbox – Email questions related to Cancelled or Completed applications, equipment requests, general inquiries, and customer questions.
3. Xcel Energy CO Solar Hotline 303.571.SOLAR (7652) – The Hotline is monitored from 9AM – 3PM MT. **Urgent requests only please.**

Communication Expectations
Application Notes

Please remember to leave a **new** application note whenever a change to the application was made and/or revised document uploaded. Application Notes send a notification to our team to review your application again. We reviews application notes daily.



Process Updates in 2021

1. As of June 8, 2020, the Public Utilities Commission required the company to cease mandating production meters on systems 10 kW DC and less. An updated REC Purchase Contract notates the changes to unmetered systems.
2. The residential Time of Use (TOU) rate pilot ended on December 31, 2020. Currently Time of Use Pricing is only available to customers with an existing bridge meter or a smart meter. Smart meters will be deployed beginning in summer of 2021. Smart meters cannot be requested in advance. A customer that already has a bridge or smart meter may enroll in Time of Use Pricing by emailing inquire@xcelenergy.com or calling the Customer Service Center at 800-895-4999. To learn more visit Pricing Plans FAQ | Xcel Energy and Smart Meter Installation (xcelenergy.com)
3. New look and feel of our website, visit Renewable Energy (xcelenergy.com), Solar Developer Resources, Interconnection

Solar Interconnection Options
Net Energy Metering (NEM) or Solar*Rewards

Net Energy Metering (NEM)	Solar*Rewards
Net Energy Metering (NEM) is a service element that can offset the Customer's electric consumption by selling back the excess electricity generated from the solar system using a single net meter. • A net meter is a bidirectional meter that measures the flow of electric energy in both directions. • All solar customers receive NEM benefits. • When the system produces more energy than is needed, the extra energy is added to our grid. Any excess is held in the Customer's virtual bank to be applied against future electric bills. Selling back excess generation is subject to Rules and Regulations on file with the local utility commission or regulatory body.	Solar*Rewards is a production-based incentive program. Participating customers receive NEM benefits as well. Monthly or annual payments are made to the owner of the solar system in exchange for Renewable Energy Credits (RECs) for the energy produced by the solar system. • Incentive payments are based on how many kWh the solar system produces or expected to produce each month. • Systems with a production meter have incentives paid based on actual production as captured in the PV PROD account. • Systems without a production meter (10kW DC and less), are paid annually based on the kWh estimate from the NREL PV Watts value listed in the solar application.

Solar Interconnection Options
Solar Bank Election: Rollover or Waive

The solar customer connected to the net billing account (whoever is paying for electricity) will choose Continuous Rollover Credits or Waive Decision. This decision applies to any excess kWh generation from the solar system pushed back through the net meter to the grid.

Solar Bank Election Options

If no option is chosen below, your account will automatically be set to B) Waive Decision.

☐ **A. Continuous Rollover Credits**

Any excess generation from your net metered PV system will be multiplied by the prevailing total energy rate (base energy rate plus riders assessed on a per kWh basis) for the same time period that the Excess Energy was generated, to determine a dollar credit. This credit will then be used to offset charges from your current bill period, except for Service and Facilities charge, and any remaining excess credit will roll over month-to-month, held in a Rollover Bank. These credits can be used anytime you have electric energy charges related to your net metered service. However, you cannot cash out your Rollover Bank, and no credit will be given if you move or stop service. Credits cannot be transferred between Xcel Energy accounts or to a new homeowner if a customer moves.*

☐ **B. Waive Decision**

You choose to waive the decision until a later date. By waiving your decision, you will default to a year end payout. Any excess generation from your net metered PV system will be rolled over month-to-month and held in a Solar Bank. Xcel Energy will cash out your Solar Bank at the end of the year, and send you a check for the excess energy. We buy this excess energy at a rate of the average hourly incremental cost of electricity (AHIC) from the previous 12 months. By choosing to waive your decision, you can still make a one-time choice to move to Continuous Rollover Credits at any time during the life of your contract. For more details, visit **xcelenergy.com/Solar**.

Historic AHIC amounts:

2020: 1.115¢ **2019:** 1.205¢ **2018:** 1.503¢ **2017:** 1.583¢ **2016:** 1.355¢ **2015:** 1.765¢

AC vs DC System Sizes

What factors in the application are determined by AC or DC system sizes?

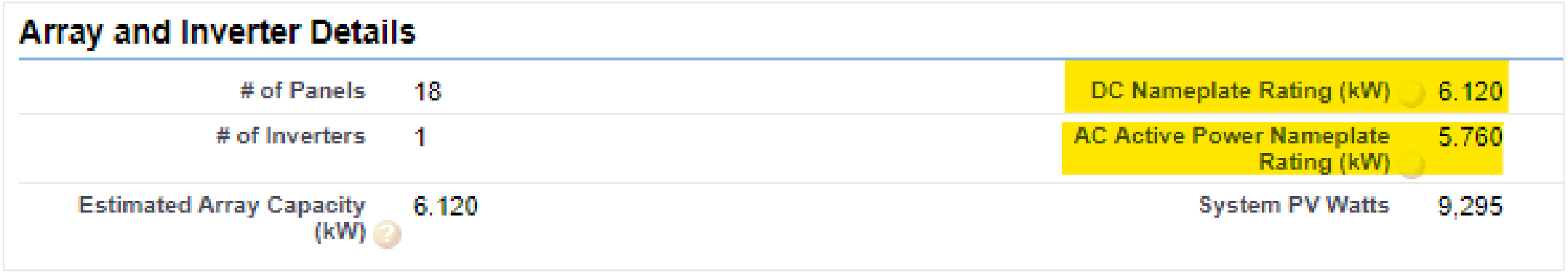
AC Active Power Nameplate Rating (kW)	DC Nameplate Rating (kW)

• Study Fee Amount
  • $100 for systems <=10kW
  • $1,000 for systems >10 kW-250 kW
  • $2,000 for systems >250 kW-2 MW
• SGIA Requirement
  • Required for systems >10 kW
• Insurance Requirement
  • Personal Liability coverage must be at least $300,000 for systems <10 kW and at least $1,000,000 for systems >10 kW
	• Program Type
	  • Eligibility for the Small (0.5 kW – 25 kW), Medium (25.01 kW – 500 kW), and Large (500.01 kW and greater up to 120% of customer's annual load)
	• Site Plan & Line Diagram DC system size must match application to proceed to Engineering Review

DC vs AC System Sizes

The DC Nameplate Rating (kW) and AC Active Power Nameplate Rating (kW) automatically populate based on array and inverter (System Details) entered in the application.

You can see this information in the Array and Inverter Details section of the Application Summary page of the application.



Array and Inverter Details

# of Panels	18	DC Nameplate Rating (kW)	6.120
# of Inverters	1	AC Active Power Nameplate Rating (kW)	5.760
Estimated Array Capacity (kW)	6.120	System PV Watts	9,295

APPLICATION PROCESS

Application Process & Timeline

Step 1

- **Start & Contacts:** Solar Installer begins application in the portal and enters contact information, including customer name, phone number, email address, and Xcel Energy account and premise numbers. Key information about the project is also entered.

Step 2

- **System Details Approval:** The Solar Team evaluates information provided by the solar installer to determine if the system passes the 120% Rule (cannot size the solar system more than 120% of the customers annual load), within **3 business days**.

Step 3

- **Documents & Payments:** After receiving the required application fees, the Solar Team will review the Site Plan and Line Diagram within **2 business days**. Once approved, your system information is sent to our engineers for Engineering Review.

Step 4

- **Engineering Review:** Our engineers review the submitted system Site Plan and Line Diagram, within **10 business days for systems under 10kW DC and 15 business days for systems 10kW DC and larger**. Further studies may be required that add additional time and cost to the review. Xcel Energy highly recommends that the system is not installed until the application has passed all engineering screens.

Step 5

- **Final Documentation:** Proof of insurance, final electrical inspection, and NABCEP form (Solar*Rewards applications only) are uploaded to the application portal. Solar Agreements are sent for signature. Once the Solar Agreements have been signed by all parties, the Solar Team will review the final documents and Solar Agreements within **3 business days**.

Step 6

- **Metering & Testing:** The Solar Team will request your meter(s) if the final documents and Solar Agreements meet program requirements. A meter technician will attempt to install the meter within **20 business days** of the Solar Team initiating your meter request.

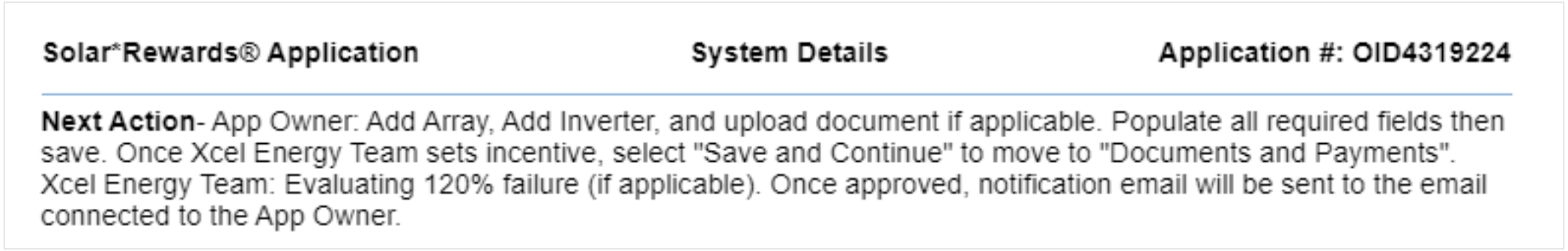
Step 7

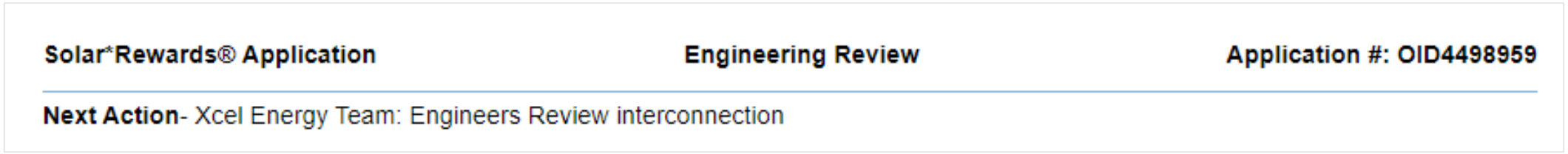
- **Permission to Operate:** The meter technician will leave a door hanger, indicating the appropriate meters have been installed and giving the customer permission to operate (PTO). Within a few days of completed meter installation, the customer and installer will also receive an automated email from the application portal, granting PTO of the solar system.

Application Status
Next Action

Next Action information is listed at the top of the application. It provides information about who (App Owner or Xcel Energy Team) needs to take the next action on the application and a brief description of what action is required.

See examples below:





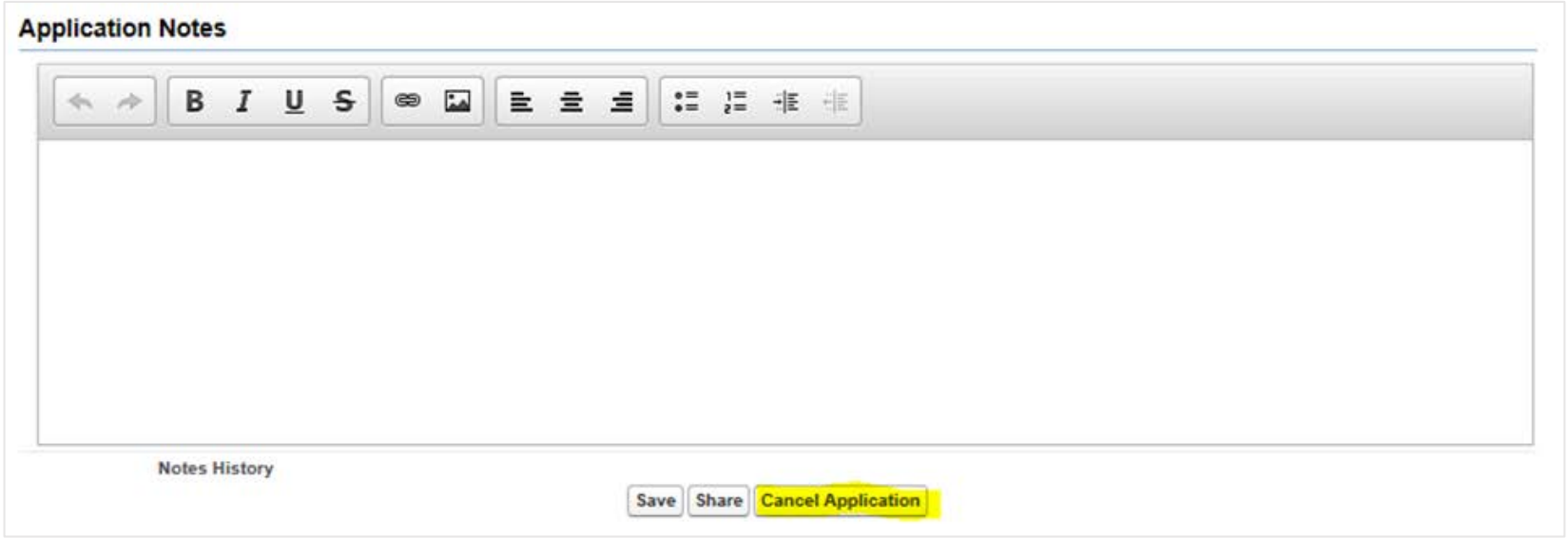
Application Status
Canceling an Application: Portal Autocancel Function

- The autocancel function only applies to DG Small, DG Medium, and DG Large NEM applications that have not paid the Study Fee. The purpose of the auto cancellation feature is to limit the number of applications that have been abandoned or stagnant for over 3 months.
- After 80-days of inactivity where the application has not moved stages, a warning email will be sent to the **Application Owner** to complete the next action steps to move the application forward in the next 10-days.
- After 90-days of inactivity the application will be auto cancelled, and an email will be sent to the **Application Owner and the Customer**.

This feature does **not apply to Solar*Rewards applications** that have specified timelines according the RE Plan. Small = 12 months, Medium = 18 months, Large = 18 months.

Application Status
Canceling an Application: Application Owner

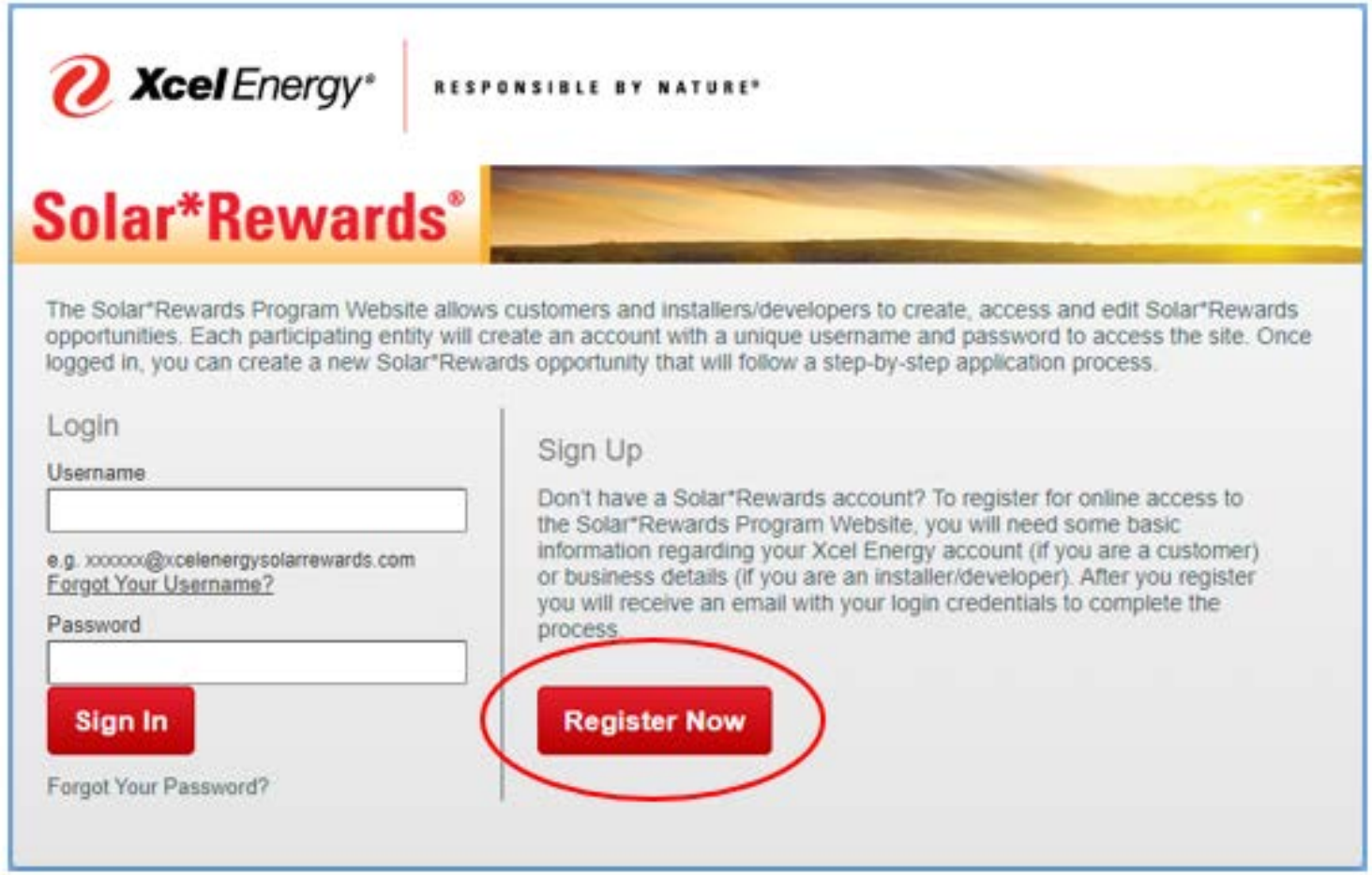
- If information was entered incorrectly and a new application is needed, please cancel the old application, by clicking the “cancel application” button.
- Please cancel the application if it is a duplicate or if the project is not going to move forward.



Step 1: Start
Log In & Registration

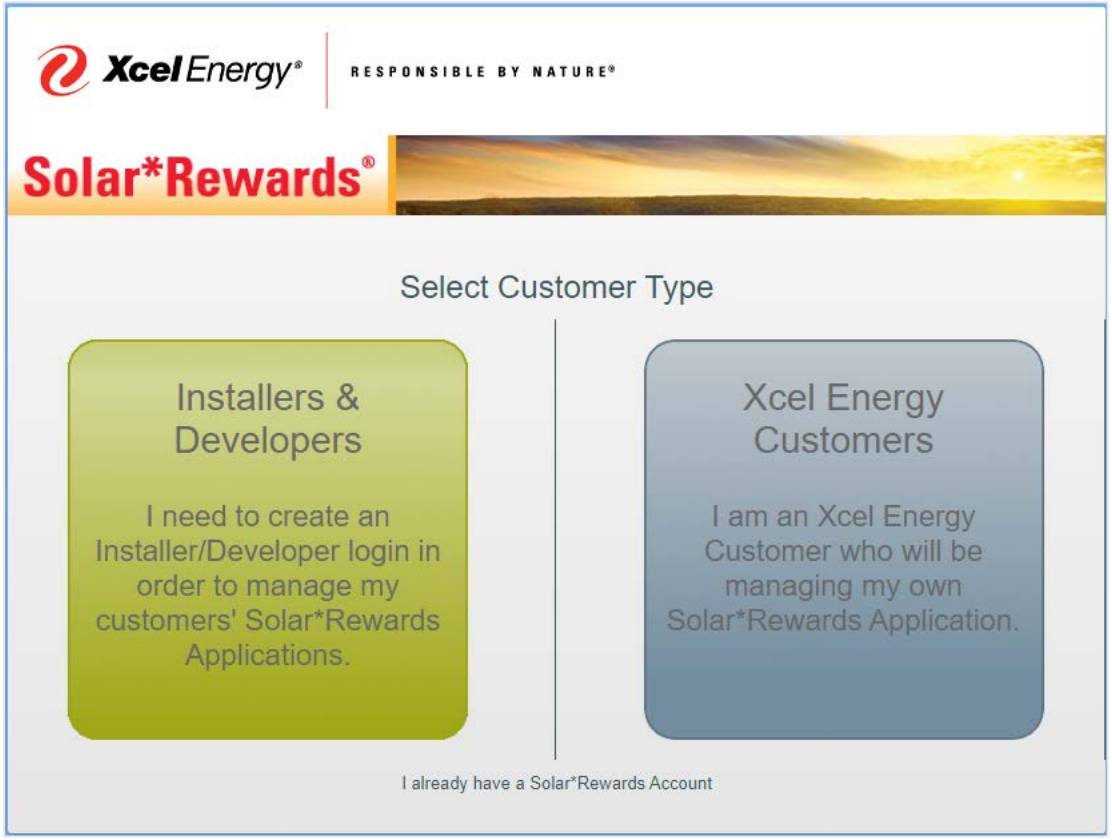
Application Portal

- If you already have a login, please use it sign in. Usernames will always end in: @xcelenergysolarrewards.com
- If you do not yet have a login, please click the “Register Now” button.



Step 1: Start
Registration

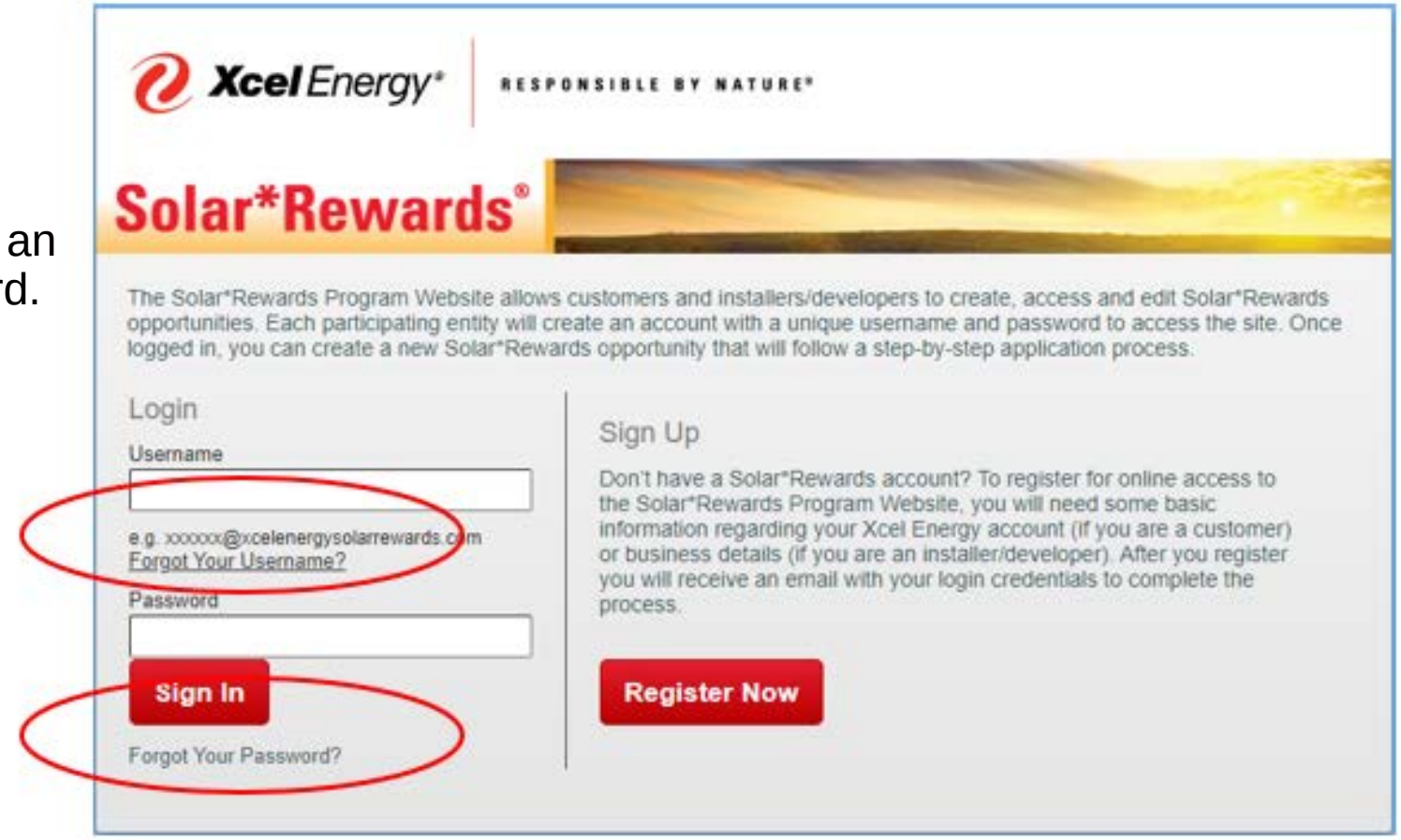
- Select the appropriate customer type, fill in the required information, and click “Register.”
- Please be sure to register under your respective company name, if applicable.
- You will only need to register once. Please take note of your username and password.
- Usernames will always end in @***xcelenergysolarrewards.com***



Step 1: Start
Registration

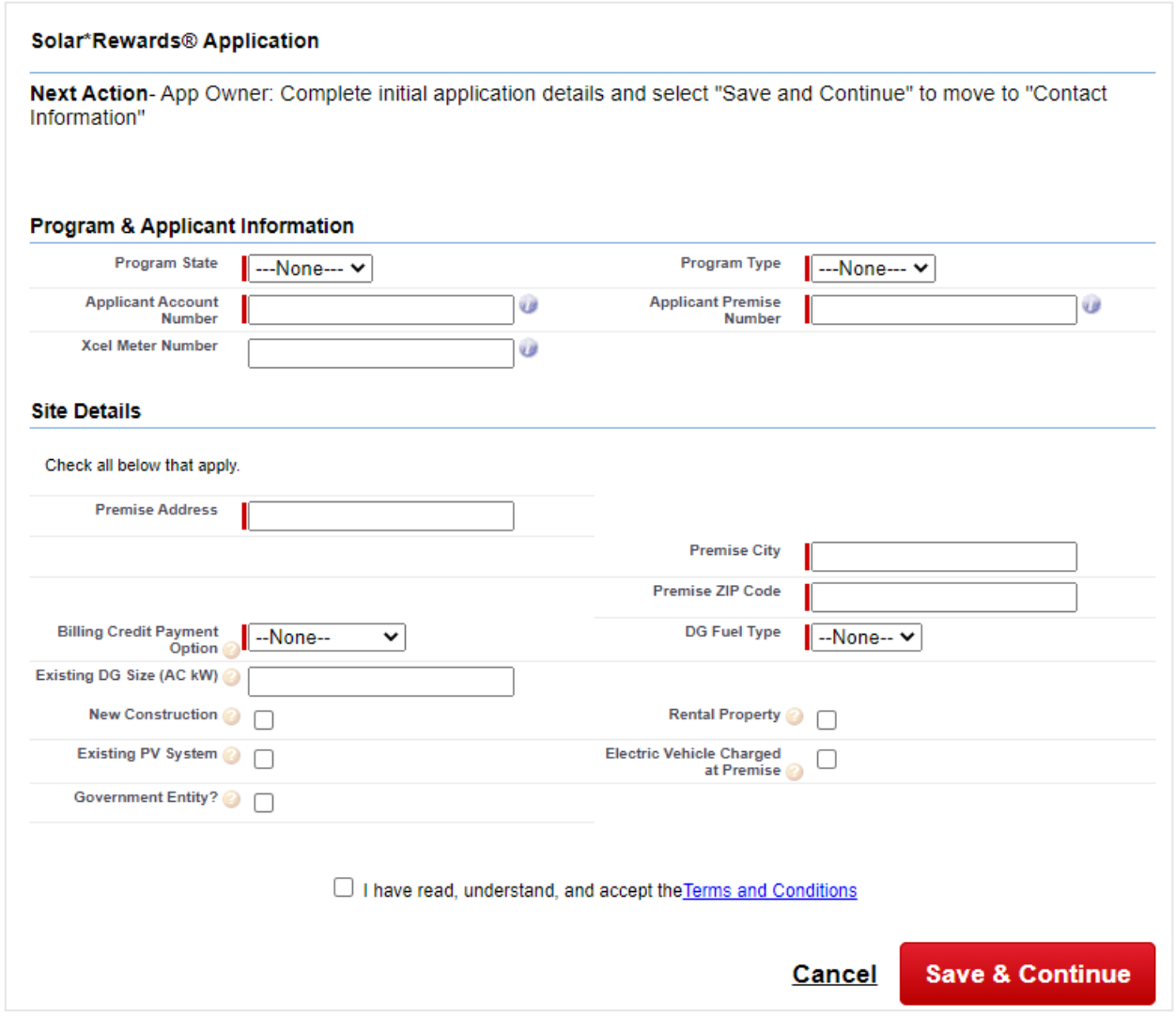
- Forgot Your Username?
  - ➢ Email solarprogram@xcelenergy.com

- Forgot Your 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.



Step 1: Start

Fields displaying adjacent red bar are required.



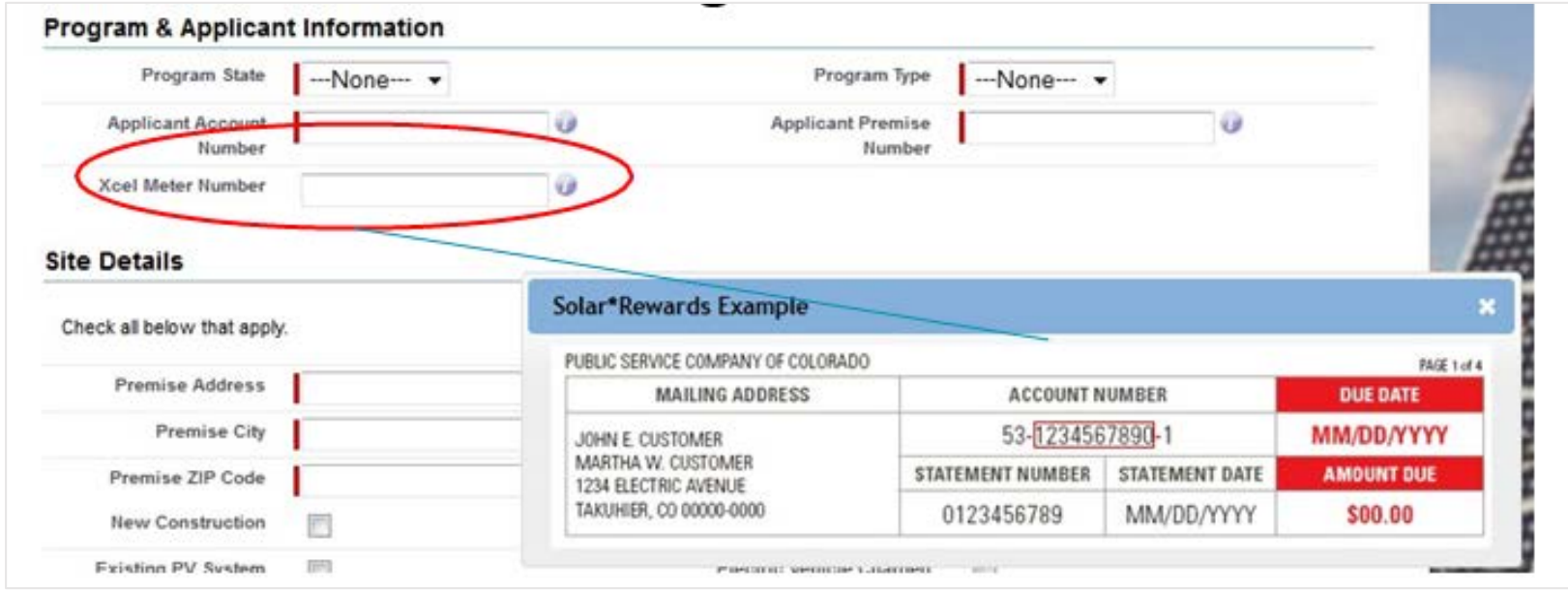
- Program State
- Program Type
- Xcel Energy Applicant Account Number
- Xcel Energy Applicant Premise Number
- Premise Address
- DG Fuel Type (Solar PV, Battery etc.)
- Estimated Array Capacity (kW)
- DG Generator Type
- Optional Fields:
  - New construction
  - Existing PV System
  - Government Entity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

The customer can call Customer Service to confirm the account/premise numbers: 1-800-895-4999

Step 1: Start
Account Number

“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.



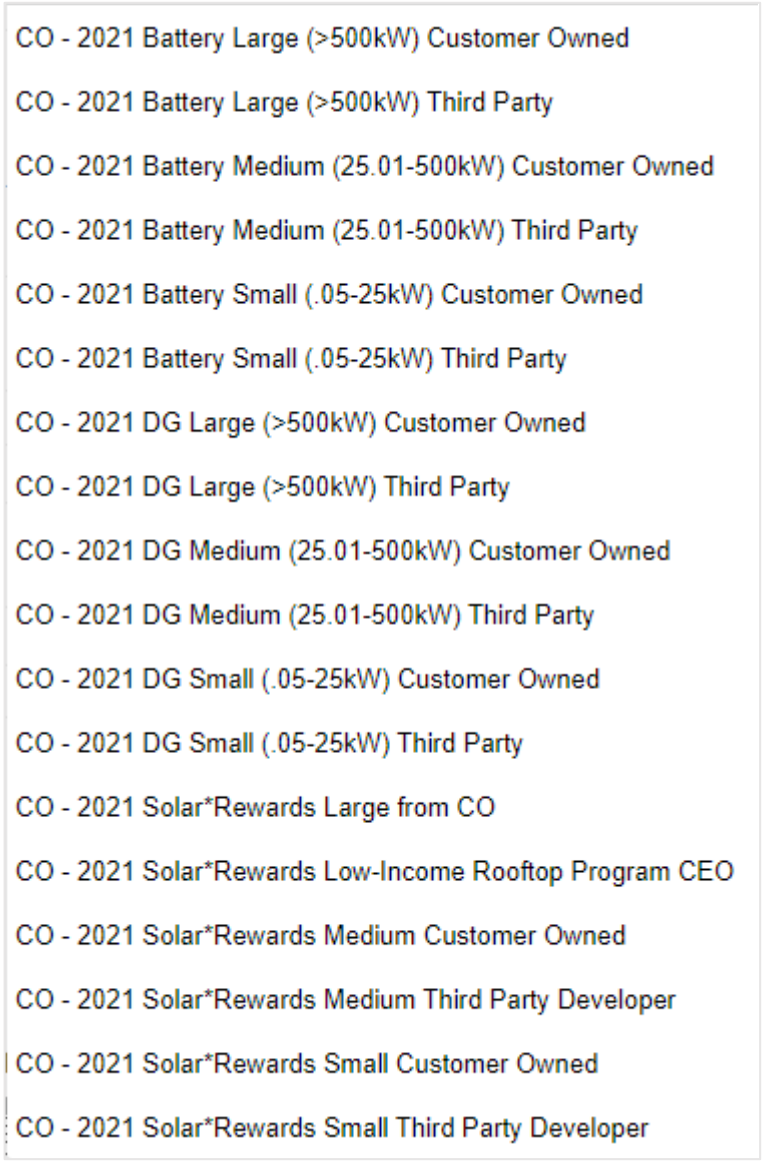
Step 1: Start
Program Type

- Choose your program type:
  - Solar*Rewards (incentivized program)
  - Distributed Generation (DG) Net Energy Metering only (NEM) (non-incentivized program)
  - Battery

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

- 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.

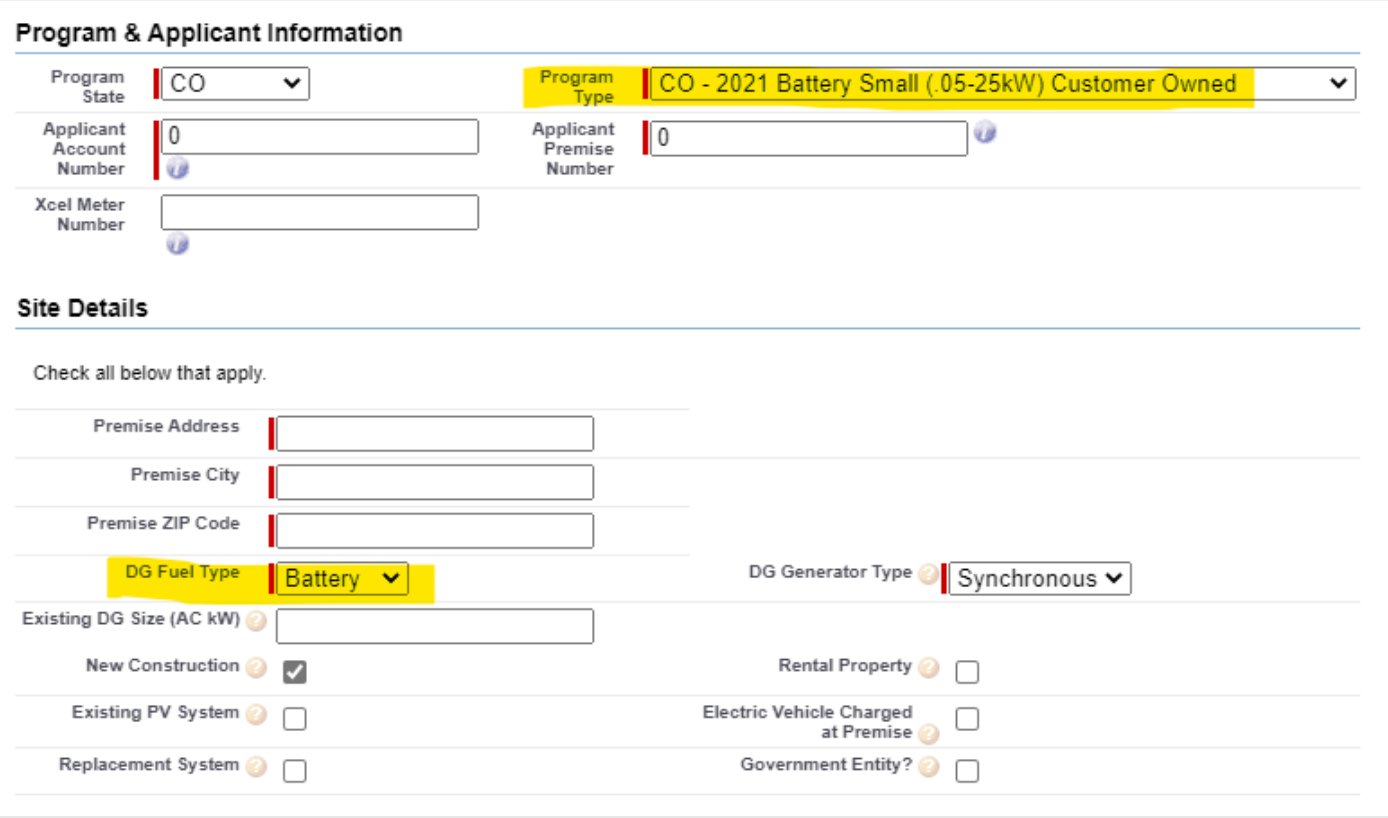
- Select either Customer Owned or Third Party Owned:
  - A Third-Party Owned system is owned by a third-party installer/developer; in most cases, a customer has entered into a lease agreement with the developer for the system.
  - A Customer-Owned system is fully owned by customer (please note Rental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



Step 1: Start
Program Type: Battery Only Application

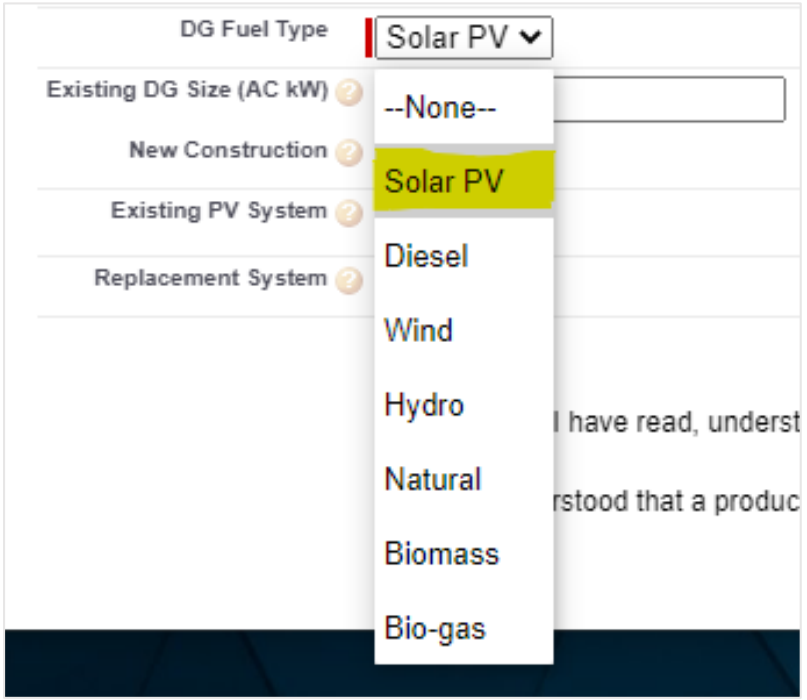
“How do I submit a standalone or retrofit battery application?

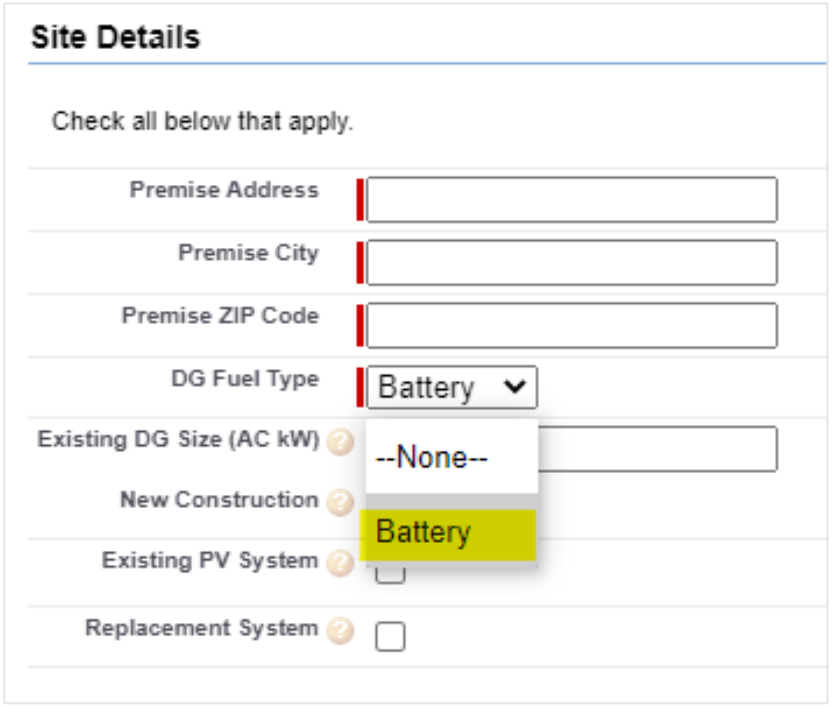
- On the Start tab choose a “Battery” Program Type.
- Then choose “Battery” as the DG Fuel Type.



Step 1: Start
DG Fuel Type

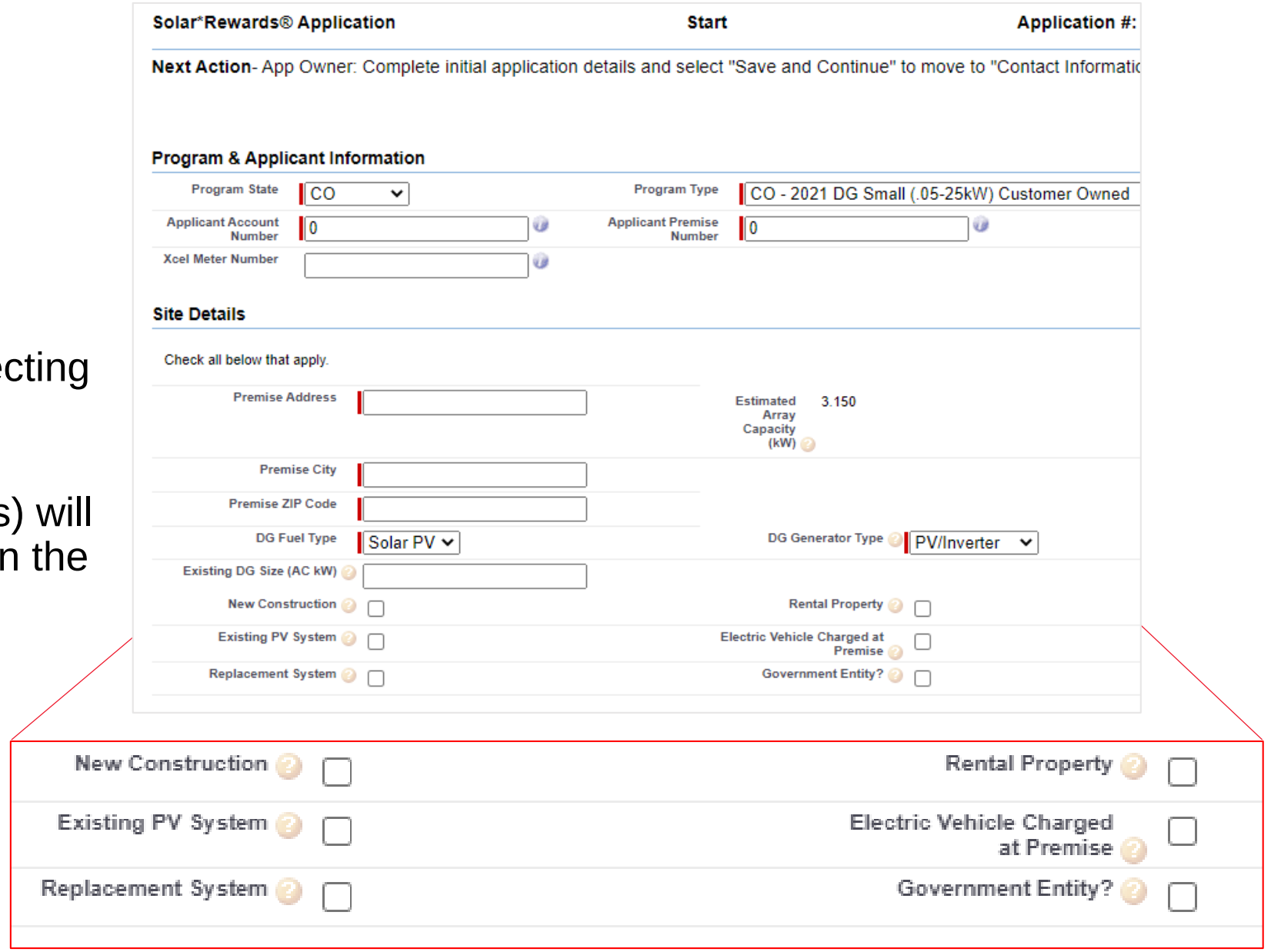
- Please select “Solar PV” as the DG fuel type for solar system interconnection request.
- If it is a battery addition to existing solar, then please select the battery fuel type.





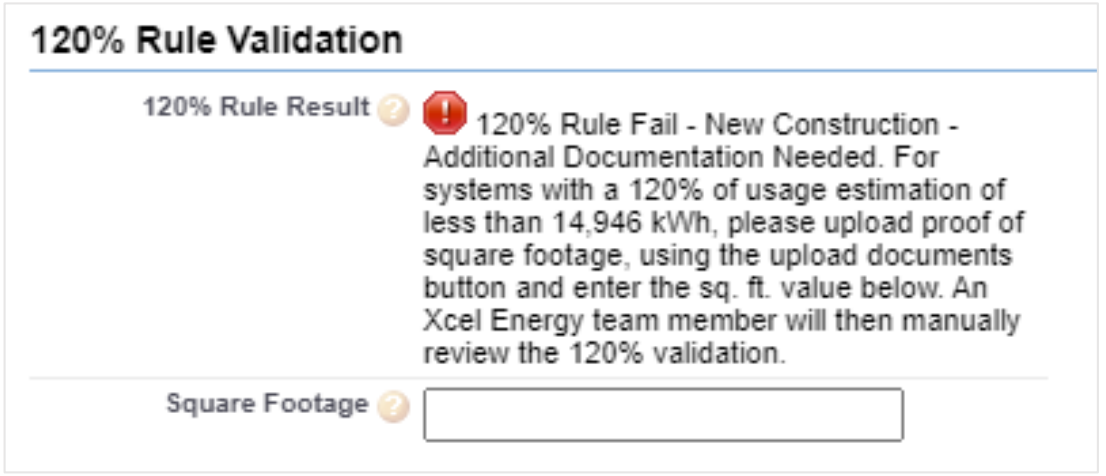
Step 1: Start
Special Circumstances

- Please make sure you are selecting a box if a special circumstance exists.
- Checking the applicable box(es) will trigger certain events to occur in the application process.



Step 1: Start
Special Circumstances: New Construction

- Please only check the “new construction” box if the home is new construction.
- True new construction refers to a brand-new permanent premise being established in our billing system. It does not refer to a premise that has prior consumption history associated, where the billing meter has been removed for construction.
- Temporary services currently cannot be used to start an interconnection request in our portal.
- Checking the New Construction box is important for the 120% rule evaluation. The application will automatically “fail” the 120% and the Solar Team will manually review the uploaded proof of square footage document, HERS report, or Energy Load Analysis.
- Proof of square footage must be from the county assessor’s office or builder’s plans (real estate websites not accepted).



Step 1: Start
Special Circumstances: New Construction

How can I request permanent premise and account numbers from the Builders Call Line (BCL)?

In the case of true new construction, the General Contractor or Customer can request the permanent premise and account number to be created in the billing system regardless of the construction schedule.
Please follow the process below:

New Construction Permanent Premise and Account Creation
A permanent premise and account number is required to start a solar application. The person or company currently listed on the Xcel Energy account can request these numbers by completing a FastApp Application online. When filling out the form, check the “Solar” checkbox which will send an automated email listing the Premise number – typically within three business days. Then call Customer Service at 1-800-895-4999 to obtain the Account number (Account numbers are considered confidential information and cannot be sent via email). These numbers should be provided to the solar installer to start the interconnection request in the Xcel Energy Application Portal. If there is no active meter onsite, the solar installer may need to wait a day or two for the BCL FastApp application to get into the portal so the permanent premise and account numbers are accepted.

Note: this process will only work if it is a true new construction project that has never had a premise established with Xcel Energy. If it is an existing premise, then an active meter will need to be set in order to start the application in the portal. However, in these cases the Solar Team can review the 120% rule via email in order to give the green light on the system size. Send the location, proposed kW DC system size, and estimated annual load for the property to SolarProgram@xcelenergy.com and the Solar Team can perform the 120% rule evaluation for you.

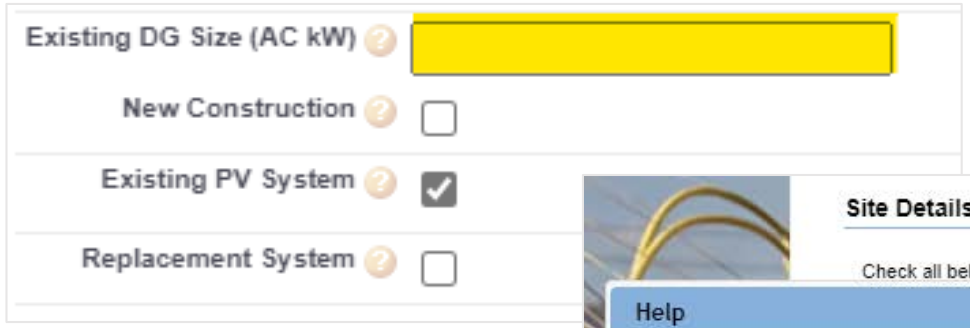
Step 1: Start
Special Circumstances: New Construction

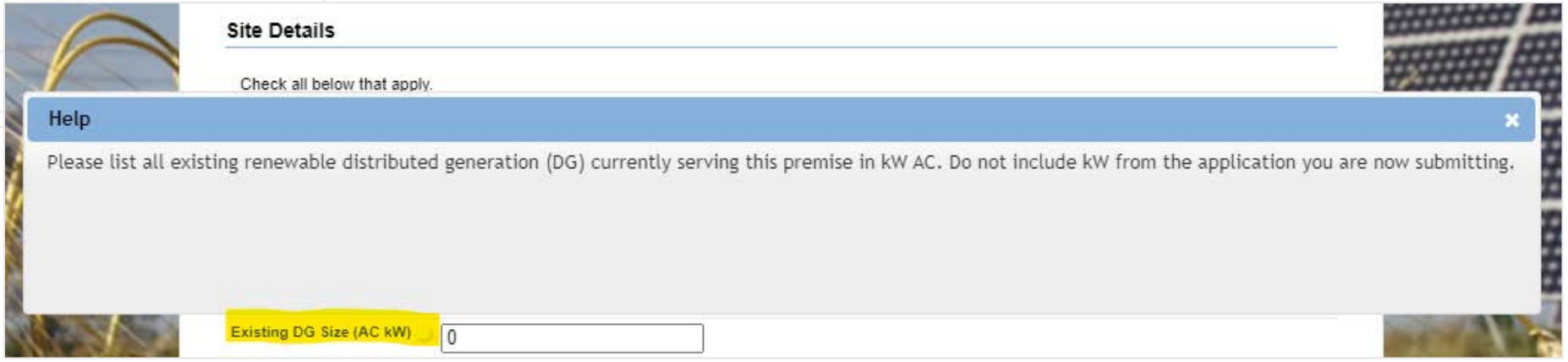
“We have permanent account and premise numbers, but they are under the builder’s name. Can I start a solar application?”

- Yes, an application can begin under builder’s name, as long as the site has permanent premise and account numbers.
- After solar meters are installed and the new customer’s name is on the electric account, Solar Team can initiate an Assignment of Contract.

Step 1: Start
Special Circumstances: Existing PV System

- If there is currently a solar system at the premise, and a system addition is going to be installed please check the “Existing PV System” checkbox AND enter the “Existing DG Size (kW AC)” field, so that our engineers know the total aggregate solar capacity at the premise.
- Existing System information is checked during engineering review. Significant delays may result if this information is not provided upfront.





Step 1: Start
Special Circumstances: Existing PV System

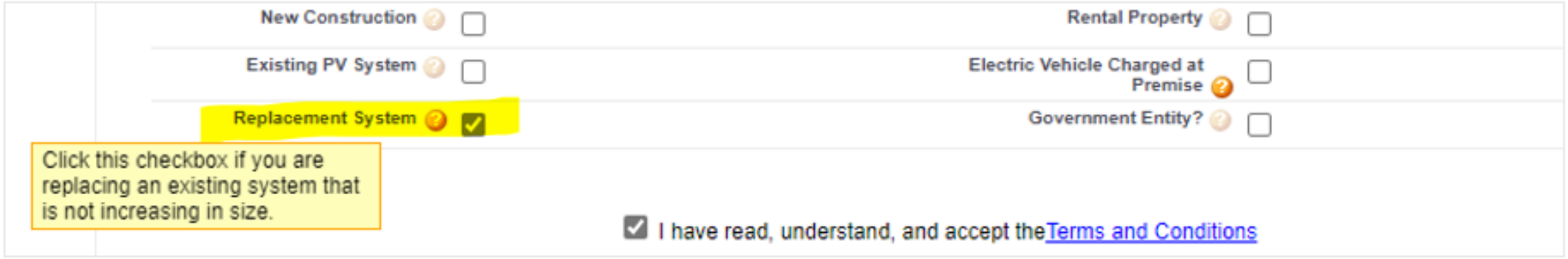
- The Study Fee will be calculated based on the total kW AC system size;

  SUM of Existing DG Size field + Total System Power Rating field = Total kW AC system size
- If combined total kW is greater than 10 kW, a signed SGIA and study fee of $1,000 is required.
- The additional system sizes cannot exceed the current 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 need to be installed. View slide 105 for additional guidance.

Step 1: Start
Special Circumstances: Replacement System

Please check the “Replacement System” box only if the entire existing system is going to be replaced, and the system size is not increasing more than 10%.

Site Plan and Line Diagram must state that the system is a replacement. View slide 104 for additional information.



Step 1: Start
Special Circumstances: 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.

IMPORTANT!

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

- If the landlord pays the electric bill, then all customer information should be the landlords.

Step 1: Start
Special Circumstances: Electric Vehicle

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

- Submit copy of vehicle registration showing address corresponding with solar install address.
  - EV proof of purchase is also acceptable for the 120% Rule evaluation. However, a proof of deposit is not acceptable.

- < 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.

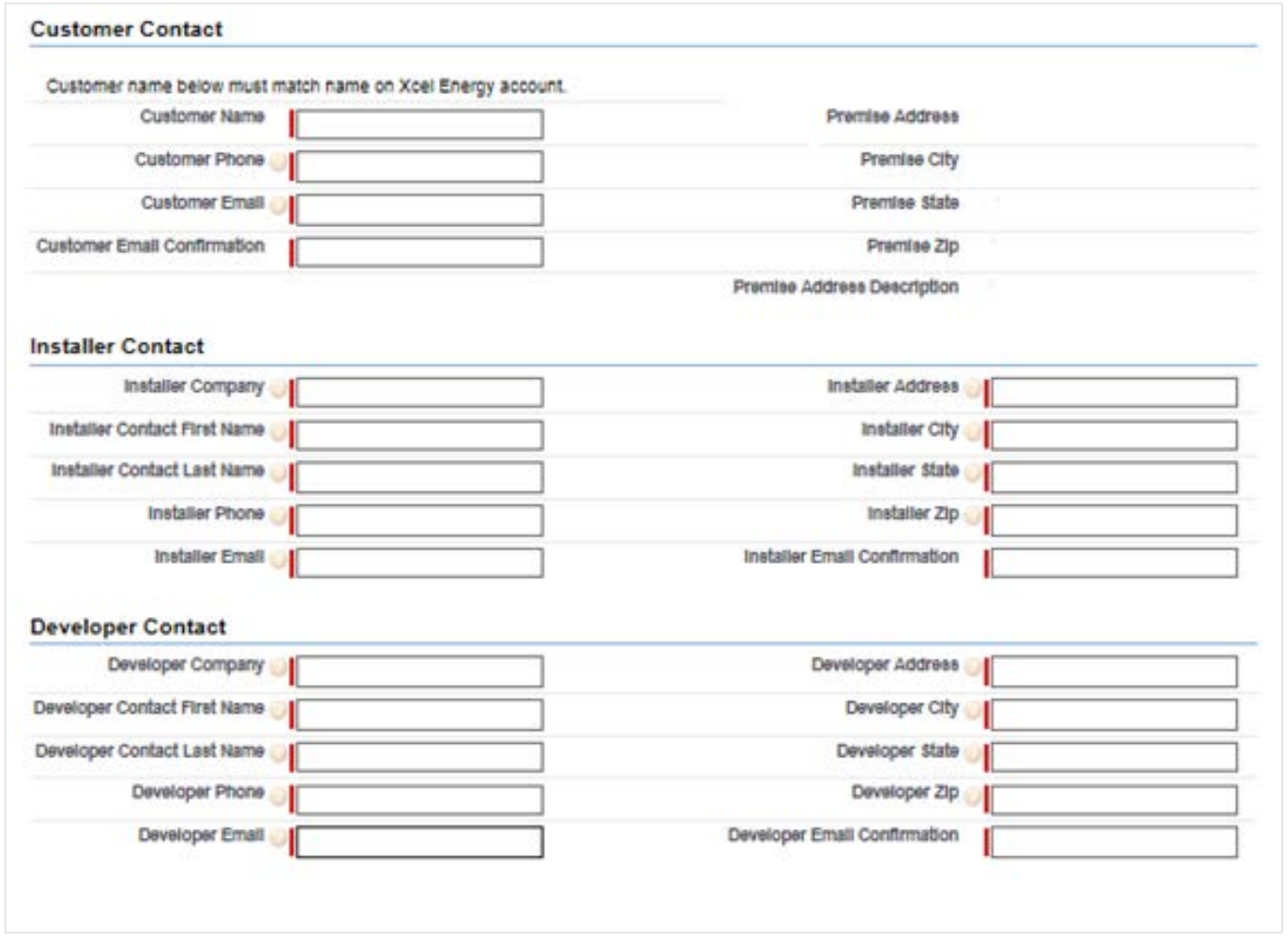
- This EV kWh adder cannot be used for an EV charger installation only.

Step 1: Start
Contacts

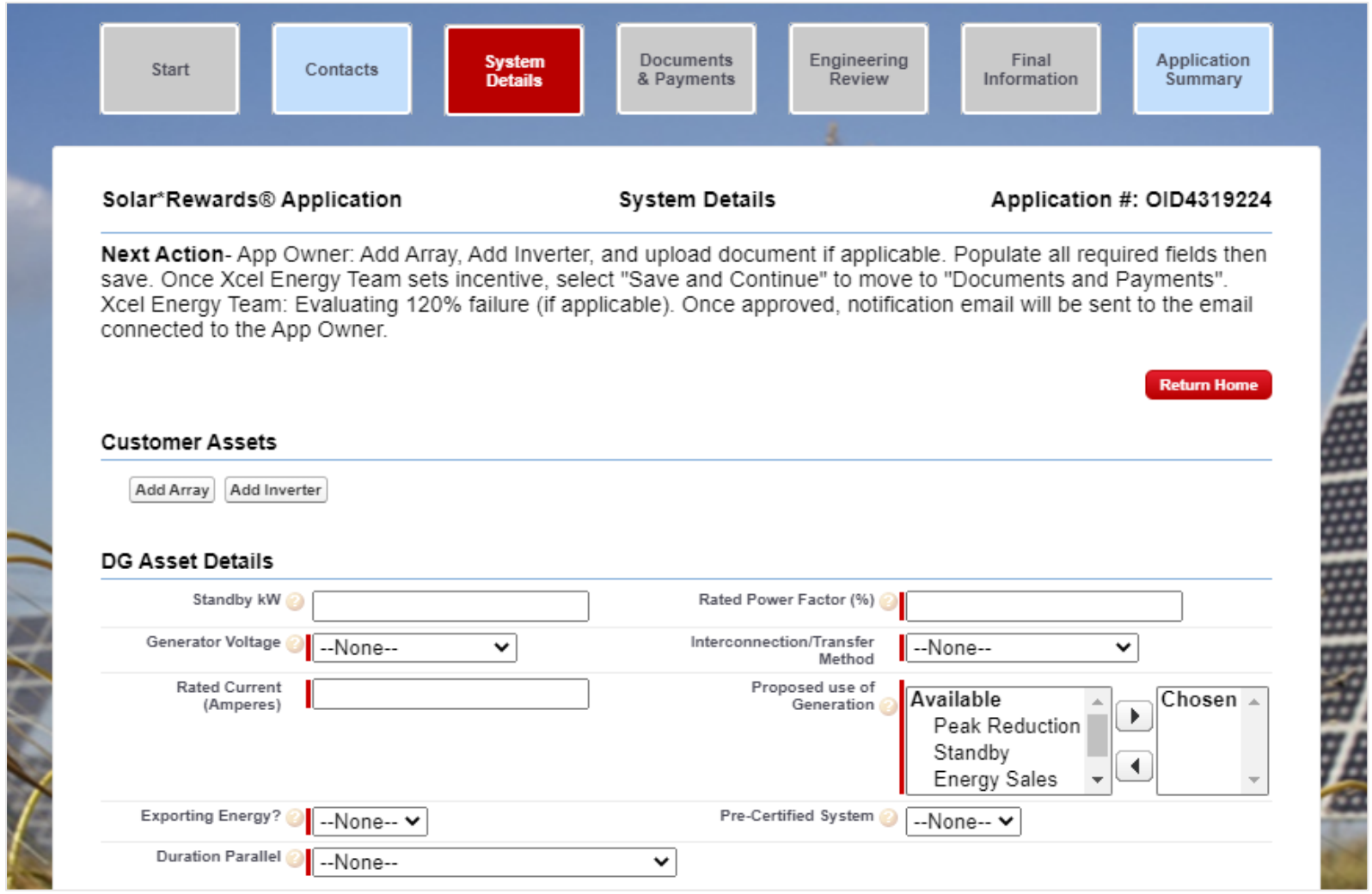
- Customer Contact must match the customer listed on Xcel Energy account (as shown on the customer's bill).
- Installer Contact lists the system installer company.
- Developer Contact can be the same or different as the Installer Contact.
- The Customer Contact and Installer Contact email must be different.

IMPORTANT!

Please verify email addresses before continuing as all system generated communications and documents are sent via email throughout the application process.



Step 2: System Details



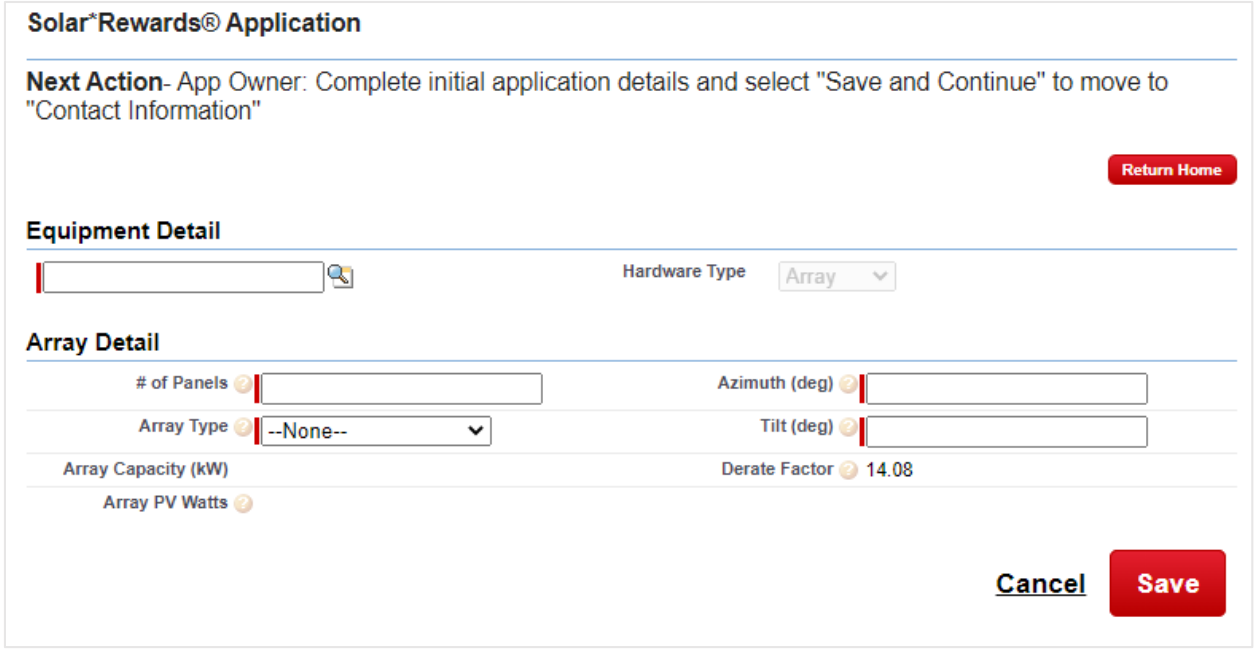
- Click the “Add Array” and “Add Inverter” buttons to add array and inverter information.
- Populate all other required fields, then click “Save.”

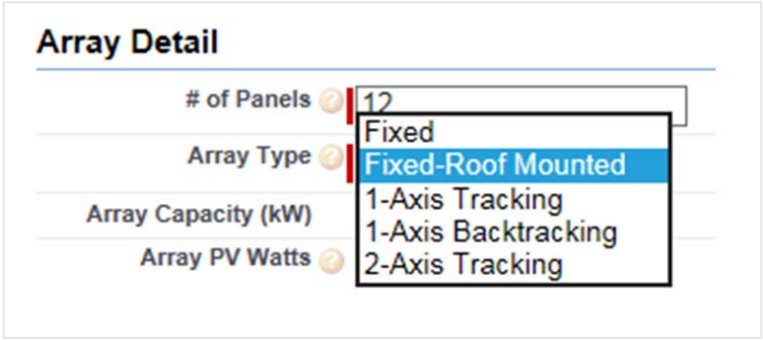
Step 2: System Details

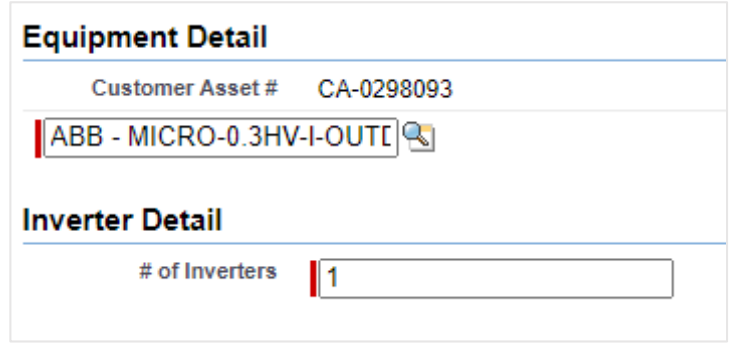
- Search for the exact equipment that will be used in the installation.

- Select array type from drop-down menu:
  - Fixed describes a ground mount.
  - Fixed-Roof Mounted represents rooftop installation.

- In addition to the location and system size, the azimuth, tilt, and array type are sent to the PV Watts calculator, which is used to evaluate the 120% rule.







Step 2: System Details
Adding New Equipment

“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 1741 certified equipment.
- Equipment not listed in Application Portal? Send a screenshot from Solar Equipment Lists | California Energy Commission to SolarProgram@xcelenergy.com like the one below. We will add the equipment in the order the email is received. Sample screenshot below:

Manufacturer	Model Number	Description	Safety Certification	Nameplate Pmax	PTC
				(W)	
Ablytek	6MN6A270	270 W Monocrystalline Module	UL 1703	270	242.1

- If the equipment is not listed on the California Energy Commission’s Solar Equipment List, please follow the directions on their website to request that equipment be added to the list.

Step 2: System Details
120% Rule Requirement

- State Statue: Solar 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

3664. Net Metering.

(a) Except as provided in paragraph 3664(i), all investor owned QRUs 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.

Step 2: System Details
120% Rule Requirement: Properly Sizing a System

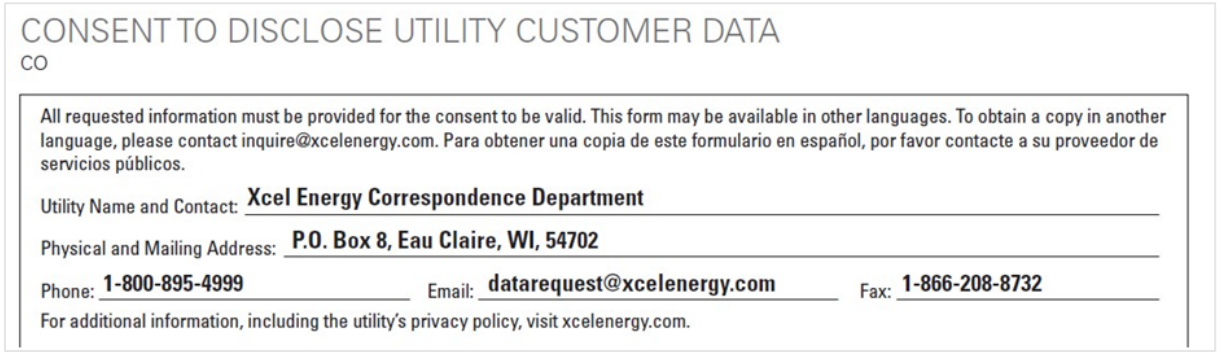
“How can I obtain my customers’ usage data to evaluate system size?”

Usage is private customer information. Xcel Energy cannot provide the usage information without the customer’s consent. The Solar Team is not authorized to provide a customer’s consumption data to any solar installer, even if the customer is also on the phone.

Three ways to obtain usage information are:

1. The customer can provide their usage history to the installer, from the MyAccount portal.

2. A data consent form, signed by the customer.



CONSENT TO DISCLOSE UTILITY CUSTOMER DATA

CO

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

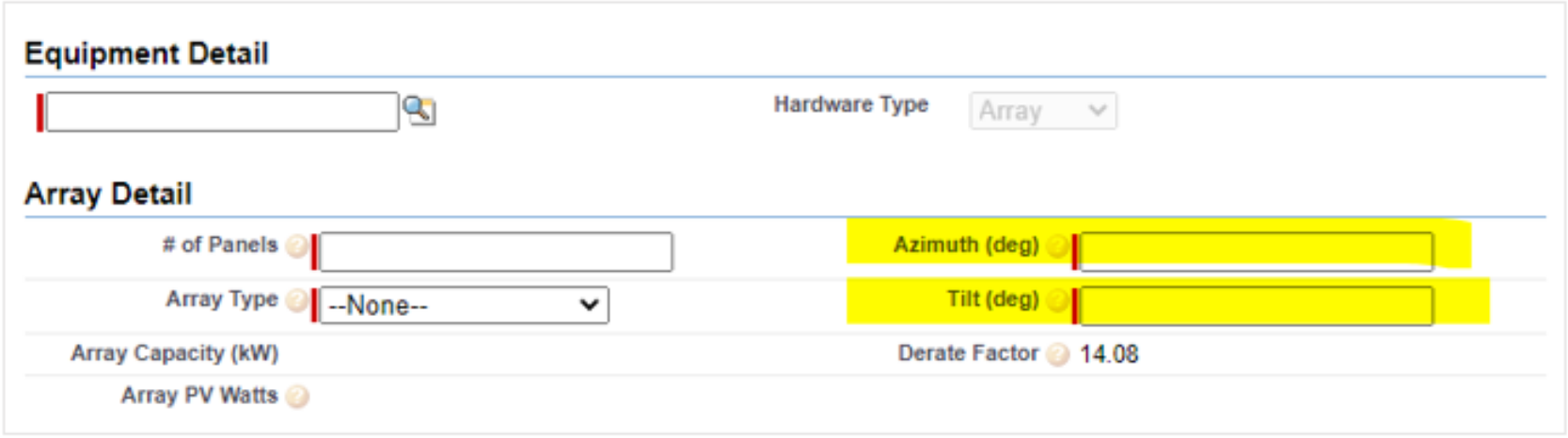
For additional information, including the utility’s privacy policy, visit xcelenergy.com.

3. Set Up a Delegate in MyAccount – How to Set Up a Delegate in MyAccount PDF.

Step 2: System Details
120% Rule Requirement

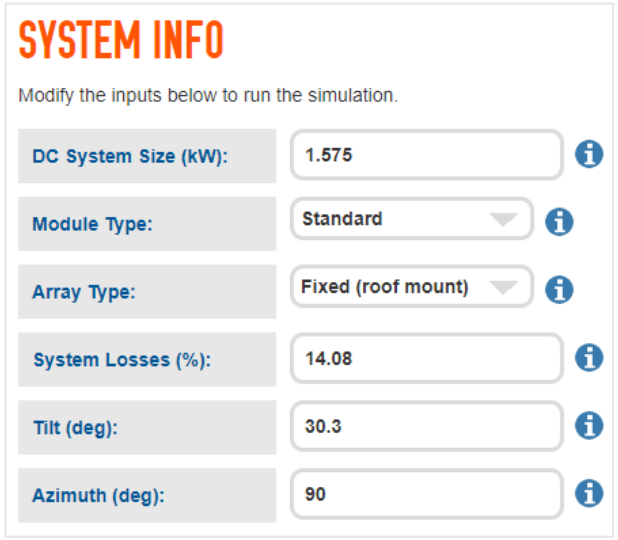
- The 120% Rule is evaluated utilizing the National Renewable Energy Laboratory (NREL) PVWatts tool. You can explore the PV Watts tool here: PVWatts Calculator (nrel.gov).

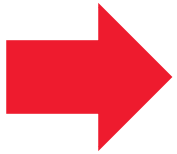
- PV Watts inputs factored into the 120% rule evaluation:
  - Azimuth (the degrees from true north from which the solar system is facing) and the tilt of the system from horizontal.
  - Latitude and longitude based off the application address.
  - System losses at a pre-set percentage of 14.08%.
  - Default setting of 3% shading.

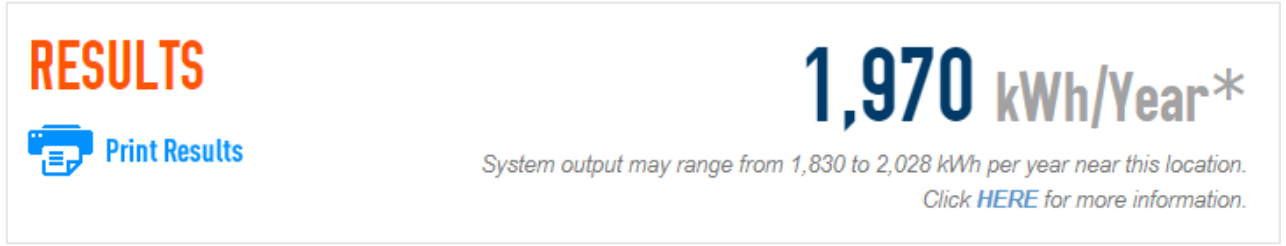


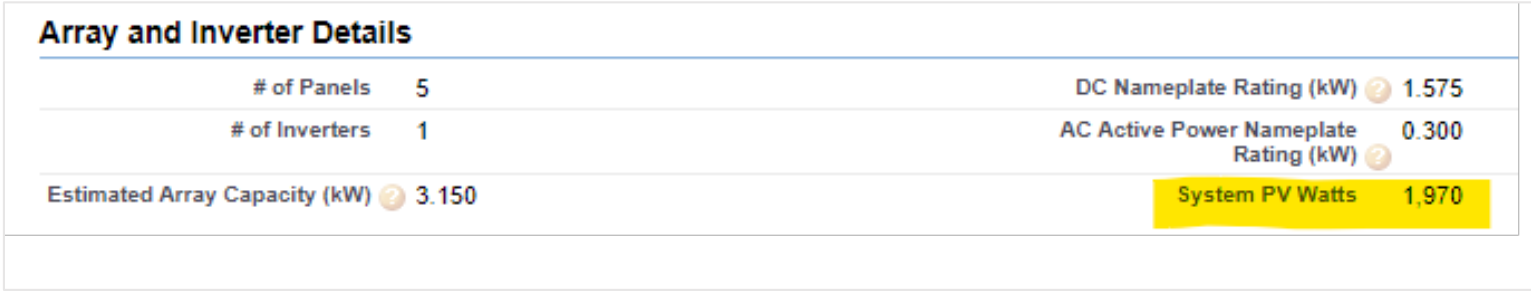
Step 2: System Details
120% Rule Requirement

The PV Watts Value is populated automatically in the application by the NREL PV Watts calculator, using the system information from the application.









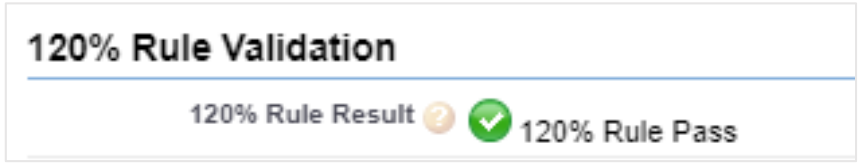
Step 2: System Details
120% Rule Notices

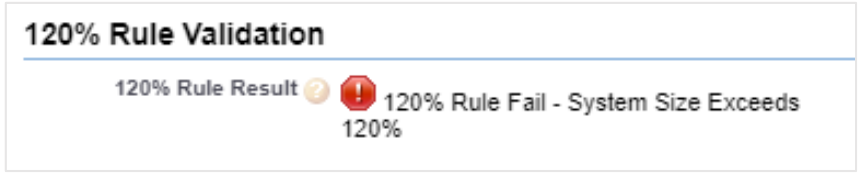
There are three primary 120% rule notices:

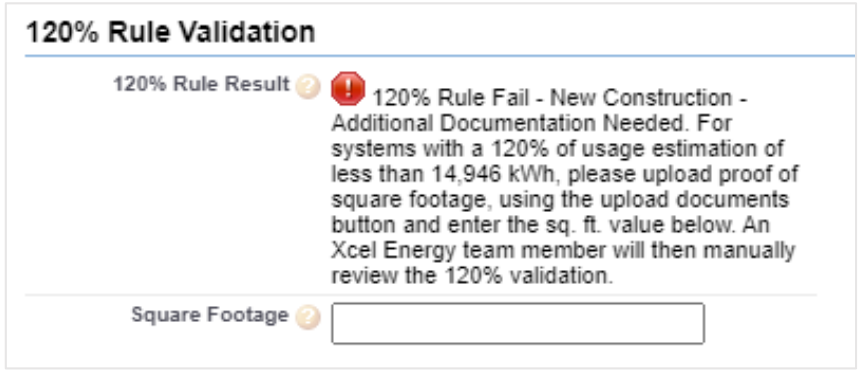
1. 120% Rule Pass
   No additional information is needed, proceed to next stage.

2. 120% Rule Fail – System Size Exceeds 120%
   This notice indicates that the system is oversized based on the customer's usage history. The system size will be manually reviewed by the Solar Team. Likely the system size will need to be downsized or addition information provided to comply with the 120% Rule.

3. 120% Rule Fail – Additional Documentation Needed
   The application was marked as "new construction," or the customer does not have 4 months of usage history. Please upload proof of square footage/HERS report/Energy Load Analysis, and/or Residential Adder Table if applicable.







Step 2: System Details
120% Rule Failures

“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 actual Customer electric usage history if they have 4+ months of usage.
  - If there is not 4+ months of usage, the application will be evaluated based on the livable square footage of the home or HERS Report/Energy Load Analysis.
  - If there is less than 12-months but at least than 4-months of usage history, then the average of those months is used, (average x 12 x 1.2) to extrapolate a full year.

Step 2: System Details
120% Rule: Proof of Square Footage

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

Proof of Square Footage can be provided 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 (real estate websites will not be accepted).
  - Only conditioned/heated/finished areas will be included in the square footage number.

IMPORTANT!

All documents must show the address where the solar system is going to be located.

Step 2: System Details
120% Rule: Proof of Square Footage

- If new construction, the home size and associated 120% of 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 number must be below the 120% consumption number listed on the Colorado New Homes Estimator Table to pass the 120% validation.

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

Table helps to easily evaluate the maximum system kWh production for applications based on square footage.

Step 2: System Details
120% Rule: HERS Report/Energy Load Analysis

“When do I need to submit an HERS Report or Energy Load Analysis?

- For residential projects, a (Home Energy Rating System) HERS Report can be provided for a premise with less than 4-months of electric usage history.
  - Provide Fuel Summary page.
  - Report must show a monthly or annual snapshot of the total estimated kWh usage (kWh cannot be converted Btu).
  - Report must also show the HERS Rater ID.

- For new construction projects over 4,000 sf with a System PV Watts estimation greater or equal to 14,946 kWh shall provide an energy load analysis.
  - Must show a monthly or annual snapshot of the total estimated kWh usage (kWh cannot be converted Btu).
  - Analysis must be performed and stamped by a Professional Engineer (PE).
  - Consider using the Xcel Energy Commercial Energy Load Analysis Tool (slide 51)

IMPORTANT!

All documents must show the address where the solar system is going to be located.

Step 2: System Details
120% Rule: Residential kWh Adder Table

In situations where the customer's current consumption history is not reflective of what the future load will be, the tool can be used to calculate a pre-determined kWh value for additional electric equipment in a residential home. The kWh value is then added to the customer's current consumption or baseline load to evaluate the 120% Rule.

- The Residential kWh Adder Table is downloadable from the Program Info section of the Solar Developer Resources Page. Instructions to use the tool are provide on the first tab of the spreadsheet.
- Once the Quantity, Type, and Energy Star fields are populated the Annual kWh value will auto populate. The total Annual kWh column is calculated at the top of the tool and used to evaluate the 120% Rule.
- The proof of purchase for the appliance, which includes the date of purchase, shall be uploaded to the application once obtained.

Traditional Elec Appliances				
Appliance	Quantity	Type	ENERGY STAR	Annual kWh
Dishwasher	1	Compact	ENERGY STAR	203
Clothes Washer		Front Load	ENERGY STAR	0
Clothes Dryer		N/A	Conventional	0
Refrigerator		Refrigerator-freezer or refrigerator only (manual or partial-auto defrost)	ENERGY STAR	0
Compact Refrigerator		Compact refrigerator or compact refrigerator-freezer (manual defrost)	Conventional	0
Freezer		Chest	ENERGY STAR	0
Dehumidifer		N/A	ENERGY STAR	0
			Total kWh for Electric Apps	203

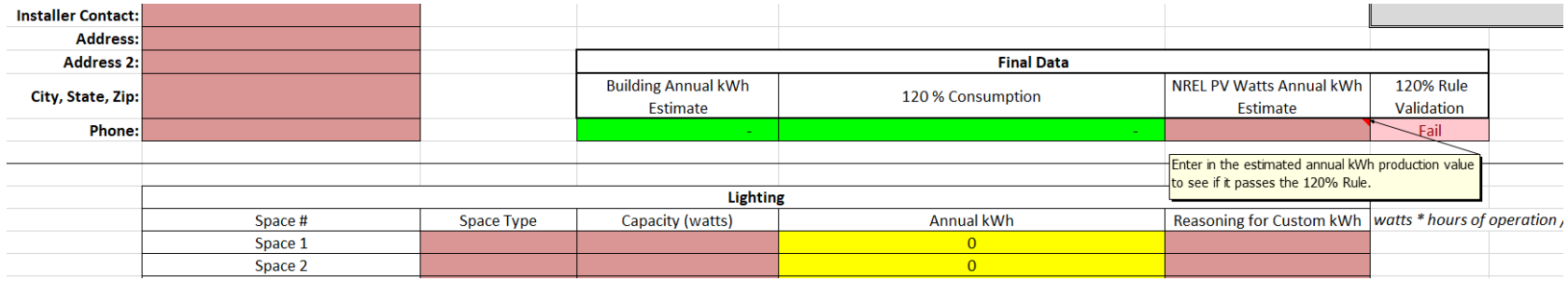
Step 2: System Details
120% Rule Requirement: Commercial Energy Load Analysis Tool (R)

- The Commercial Energy Load Analysis Tool is downloadable from the Program Info section of the Solar Developer Resources Page. Instructions to use the tool are provide on the first tab of the spreadsheet.

- This tool can be used in place of a Professional Engineer (PE) load analysis report but must still be completed by the PE and stamped. Sections include Lighting, Space Heating, Domestic Hot Water, Cooling, and Electric Vehicles (if applicable).

- This tool can be used for new construction applications or if there is less than 4 months of usage history available for the premise. It is intended for whole building assessments for commercial applications or large homes (4,000 + SF).

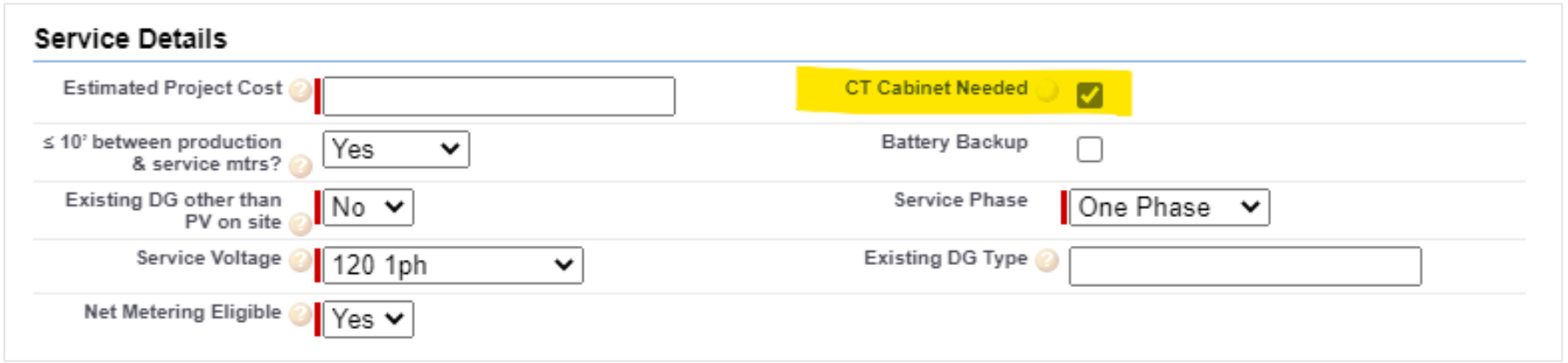
- The analysis should only consider permanent loads (expected to be in use for 20-years or more) and should not include items like TVs, computers, gaming systems etc. The tool assumes a 5% of overall kWh usage for plug loads.



Step 2: System Details
Special Circumstances: 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. Please allow 3-weeks for CT delivery.

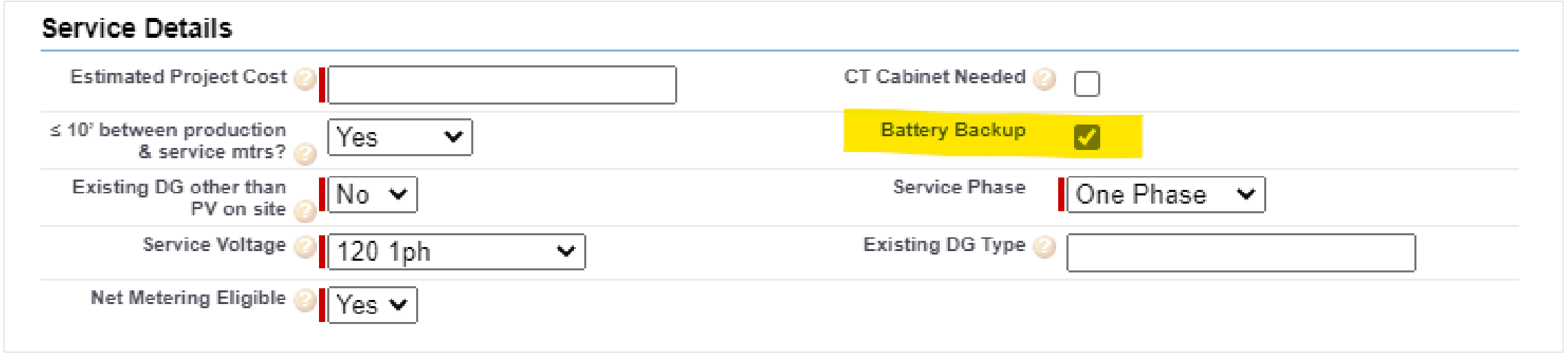


Please provide at least three (3) weeks' notice to coordinate the delivery and to allow the field meter shops time to integrate into their work schedules. The CT Cabinet or Compartment shall be installed so that the meter shop can review the equipment and determine the location of the meter housing. Please take this into consideration when requesting the CT delivery.

Step 2: System Details
Special Circumstances: Battery Backup

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

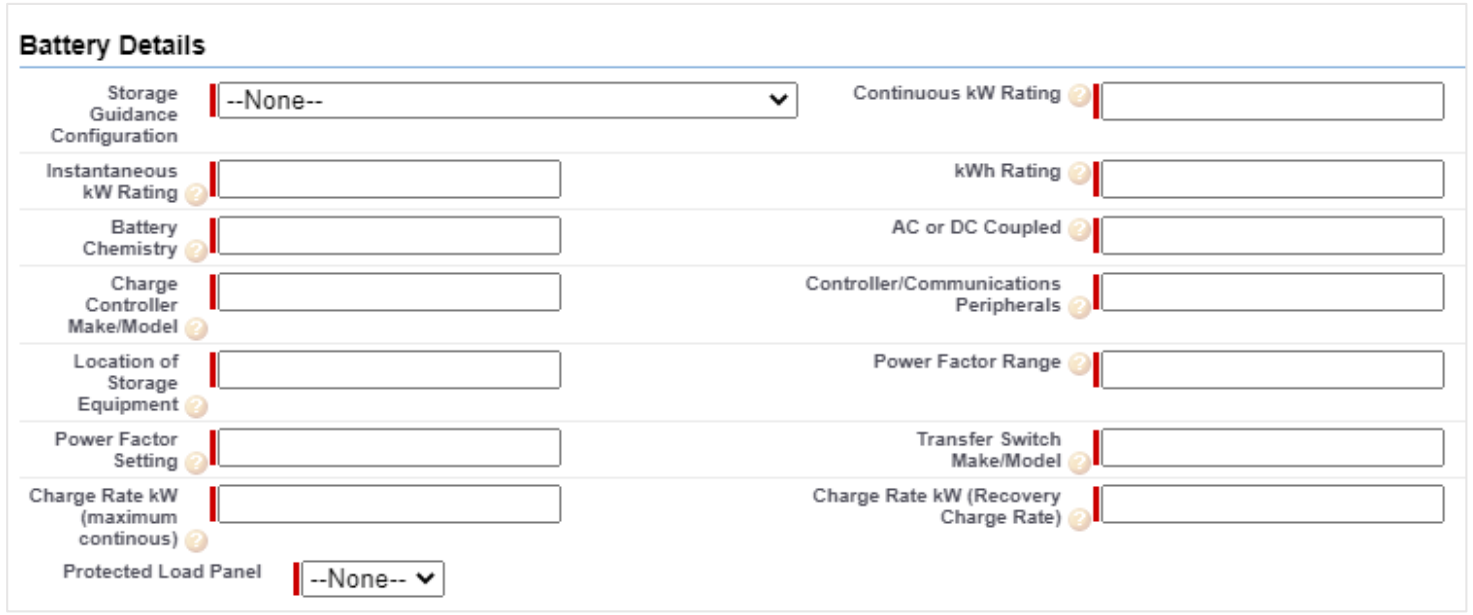
Check “Battery Backup” checkbox on the System Details tab.

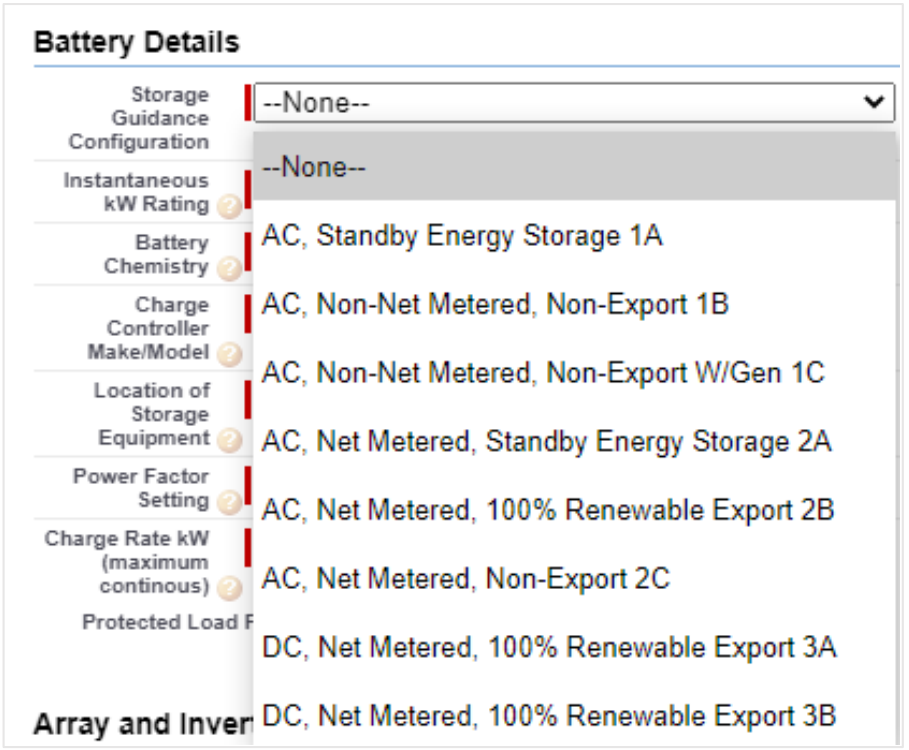


Step 2: System Details
Special Circumstances: Battery Backup

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

Complete all required fields in the Battery Details section.

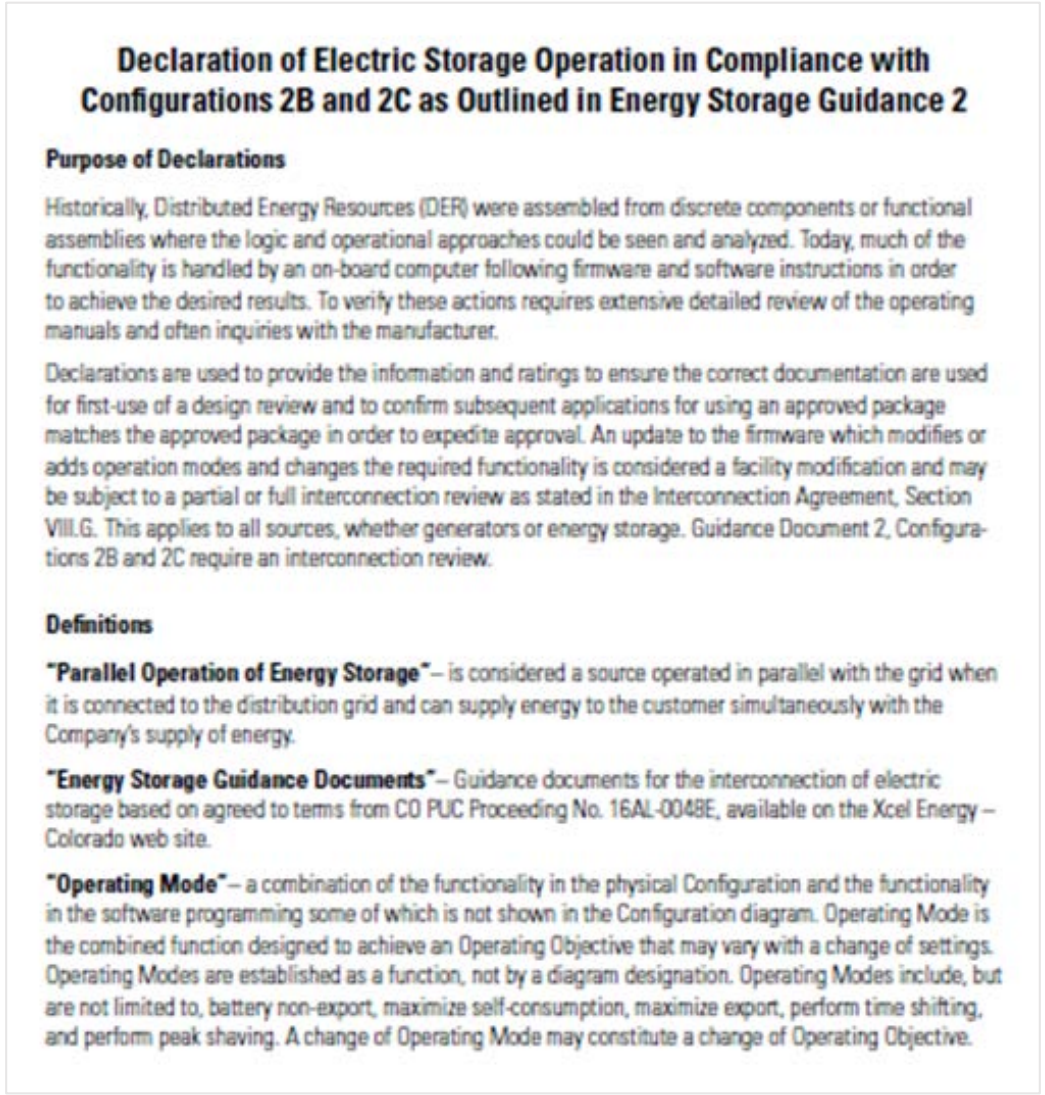




Step 2: System Details
Special Circumstances: Battery Backup

“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.



Declaration of Electric Storage Operation in Compliance with Configurations 2B and 2C as Outlined in Energy Storage Guidance 2

Purpose of Declarations

Historically, Distributed Energy Resources (DER) were assembled from discrete components or functional assemblies where the logic and operational approaches could be seen and analyzed. Today, much of the functionality is handled by an on-board computer following firmware and software instructions in order to achieve the desired results. To verify these actions requires extensive detailed review of the operating manuals and often inquiries with the manufacturer.

Declarations are used to provide the information and ratings to ensure the correct documentation are used for first-use of a design review and to confirm subsequent applications for using an approved package matches the approved package in order to expedite approval. An update to the firmware which modifies or adds operation modes and changes the required functionality is considered a facility modification and may be subject to a partial or full interconnection review as stated in the Interconnection Agreement, Section VIII.G. This applies to all sources, whether generators or energy storage. Guidance Document 2, Configurations 2B and 2C require an interconnection review.

Definitions

"Parallel Operation of Energy Storage" – is considered a source operated in parallel with the grid when it is connected to the distribution grid and can supply energy to the customer simultaneously with the Company's supply of energy.

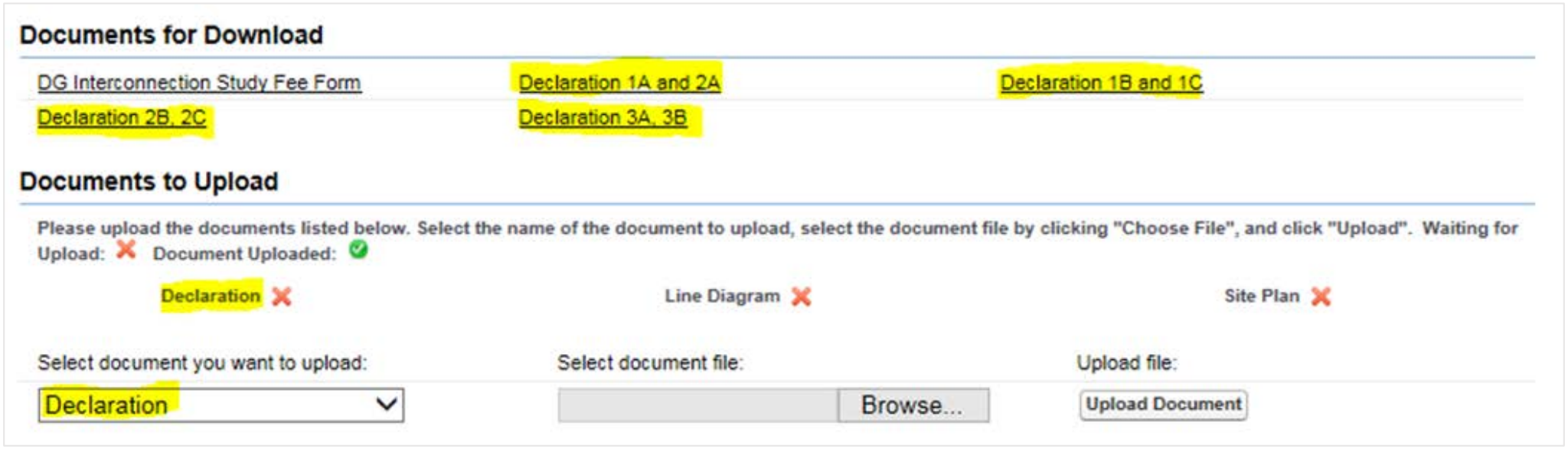
"Energy Storage Guidance Documents" – Guidance documents for the interconnection of electric storage based on agreed to terms from CO PUC Proceeding No. 16AL-0048E, available on the Xcel Energy – Colorado web site.

"Operating Mode" – a combination of the functionality in the physical Configuration and the functionality in the software programming some of which is not shown in the Configuration diagram. Operating Mode is the combined function designed to achieve an Operating Objective that may vary with a change of settings. Operating Modes are established as a function, not by a diagram designation. Operating Modes include, but are not limited to, battery non-export, maximize self-consumption, maximize export, perform time shifting, and perform peak shaving. A change of Operating Mode may constitute a change of Operating Objective.

Step 2: System Details
Special Circumstances: Battery Backup

“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.



Step 2: System Details
Special Circumstances: Battery Backup

“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

Step 2: System Details
Special Circumstances: Battery Backup

“What is required to approve an application with a battery?”

- Exhibit D of the Interconnection Agreement lists the Operating Requirements for Energy Storage Systems.
- Area Engineer will populate Exhibit D when necessary and will be signed by the installer confirming the operation of the battery.

Applicable If Energy Storage Systems Are Involved:

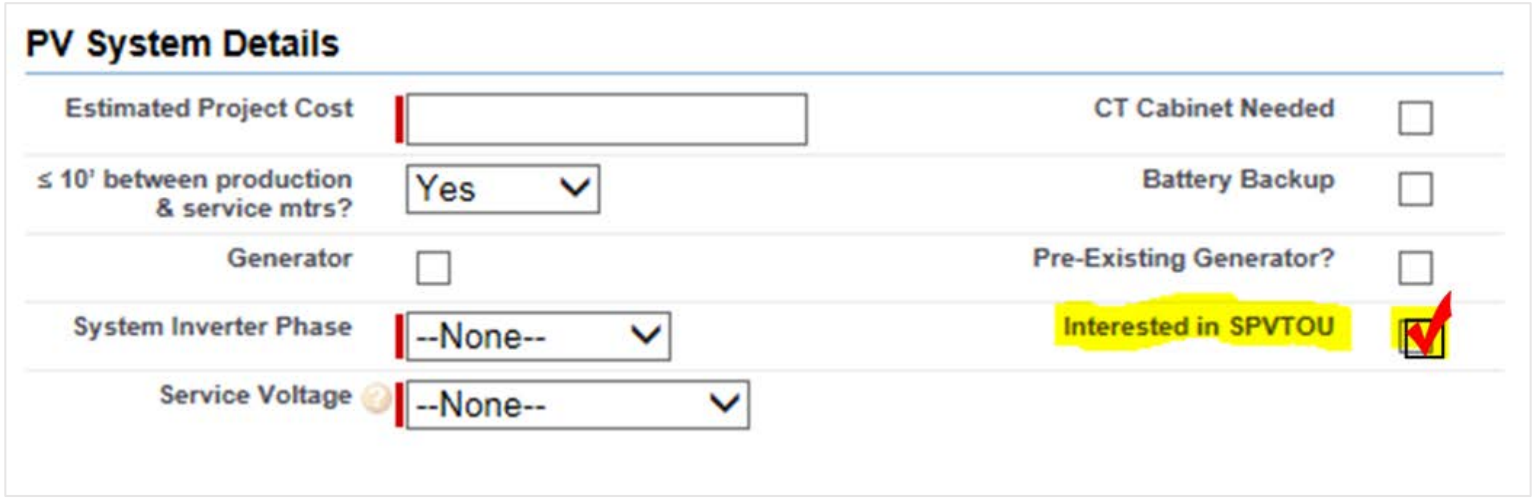
Three energy storage guidance Documents address configurations and requirements related to the terms of CO PUC Proceeding No. 15AL-0048. Energy storage interconnections are allowed as addressed in these energy storage guidance documents. The interconnection principles illustrated also apply to large 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.

Step 2: System Details
Special Circumstances: SPVTOU

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

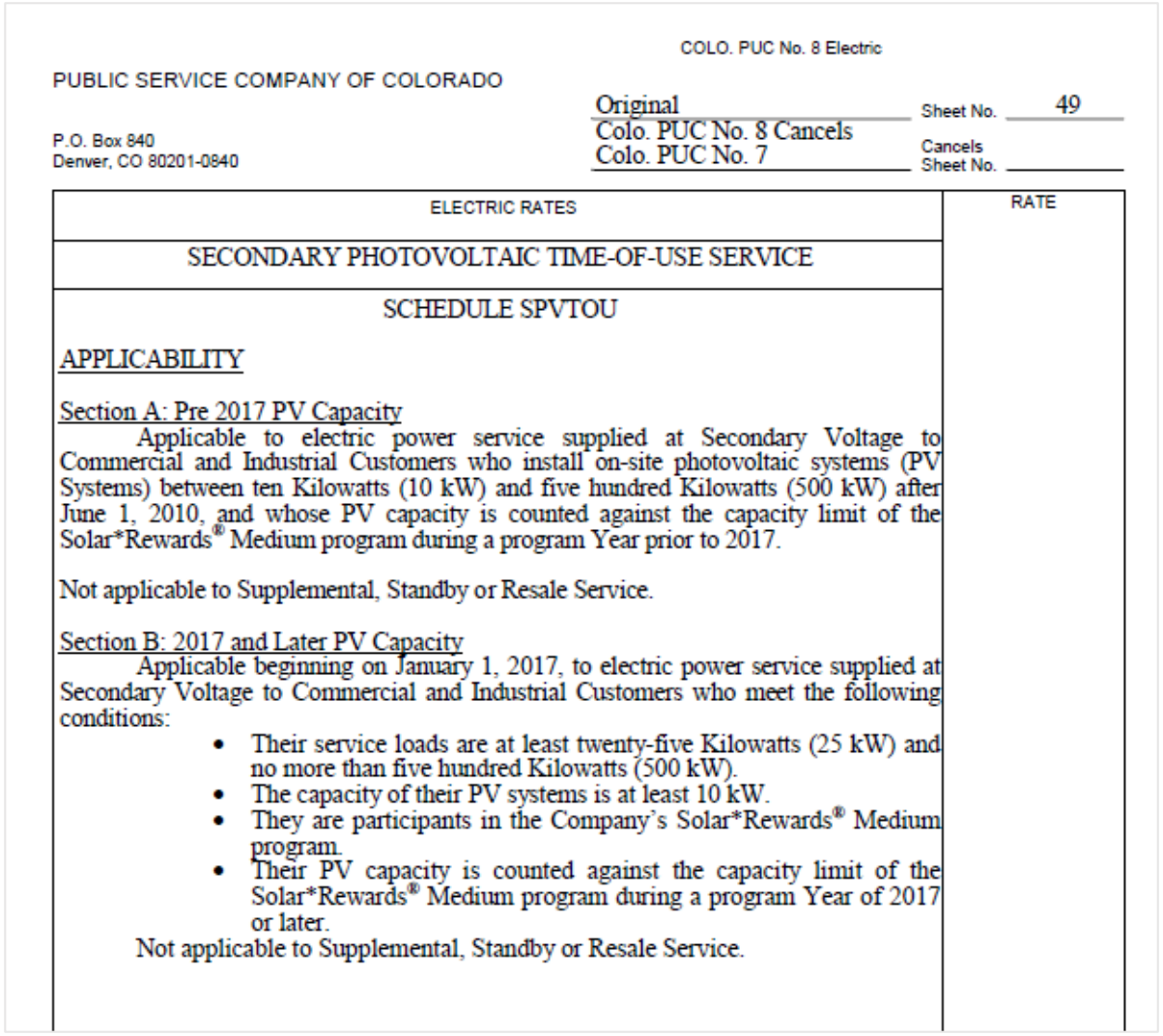
- Currently, the SPVTOU rate is only available for Solar*Rewards Medium (25.01 kW – 500 kW) applicants.
- If the box appears in the application, select “interested in SPVTOU” checkbox in system details tab.
- The Solar Team will confirm if customer meets qualification criteria listed in schedule SPVTOU of the electric tariff rate book - the 'availability' portion of sheet no. 49A apply to BOTH section A service and section B service.



Step 2: System Details
Special Circumstances: SPVTOU

<u>Each premise</u> must qualify independently for SPVTOU B by meeting the following: (1) participate in the Company's Solar*Rewards Medium program beginning January 1, 2017 or later; (2) PV system must have a capacity of at least 10 kW; (3) has a minimum "average" load factor for the 12 months previous to the installation of their on-site solar of 30%; and (4) a minimum of one month in the most recent 12 month history must have a service load of at least 25kW and no more than 500kW (Annual Demand kW) and the 12-month average must be between 25kW and 500 kW of demand.

*A load profile meter is necessary before being able to be billed on the SPVTOU Rate



COLO. PUC No. 8 Electric

PUBLIC SERVICE COMPANY OF COLORADO

P.O. Box 840
Denver, CO 80201-0840

Original Sheet No. 49
Colo. PUC No. 8 Cancels
Colo. PUC No. 7 Cancels Sheet No.

ELECTRIC RATES	RATE

SECONDARY PHOTOVOLTAIC TIME-OF-USE SERVICE

SCHEDULE SPVTOU

APPLICABILITY

Section A: Pre 2017 PV Capacity

Applicable to electric power service supplied at Secondary Voltage to Commercial and Industrial Customers who install on-site photovoltaic systems (PV Systems) between ten Kilowatts (10 kW) and five hundred Kilowatts (500 kW) after June 1, 2010, and whose PV capacity is counted against the capacity limit of the Solar*Rewards® Medium program during a program Year prior to 2017.

Not applicable to Supplemental, Standby or Resale Service.

Section B: 2017 and Later PV Capacity

Applicable beginning on January 1, 2017, to electric power service supplied at Secondary Voltage to Commercial and Industrial Customers who meet the following conditions:

- Their service loads are at least twenty-five Kilowatts (25 kW) and no more than five hundred Kilowatts (500 kW).
- The capacity of their PV systems is at least 10 kW.
- They are participants in the Company's Solar*Rewards® Medium program.
- Their PV capacity is counted against the capacity limit of the Solar*Rewards® Medium program during a program Year of 2017 or later.

Not applicable to Supplemental, Standby or Resale Service.

Step 2: System Details
Special Circumstances: Power Factor Requirement

- Requirement is based on section 3.3 of the 2-1-17 revised Interconnection Guidelines.
- Requires systems to 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.

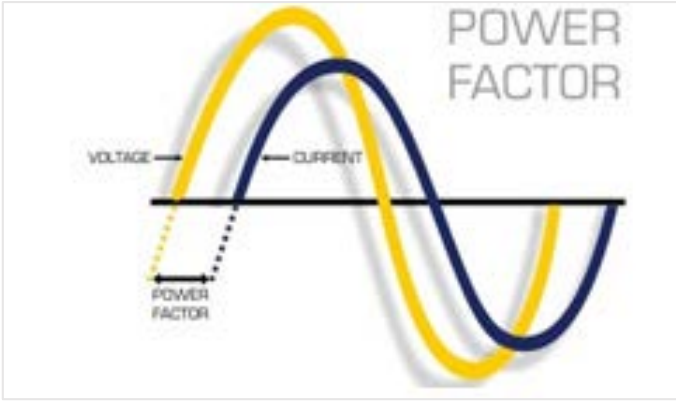
The Generation Facility shall operate at a specified fixed Power Factor:

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.

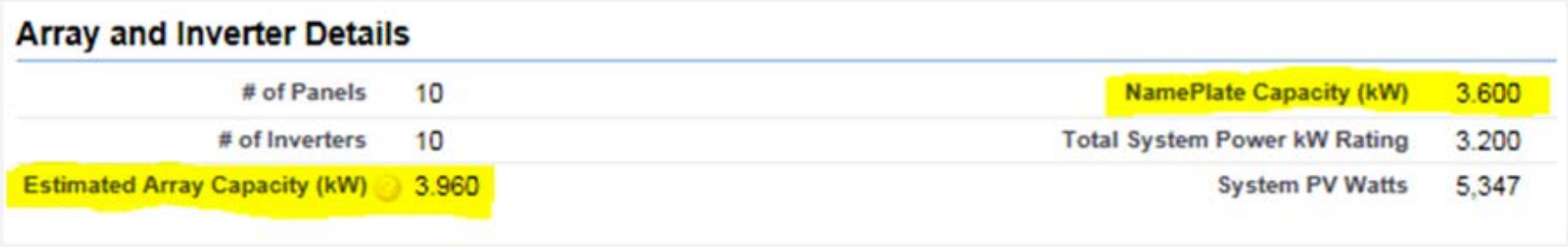
The system owner is responsible to operate and maintain all equipment per manufacturer specifications and guidelines.



Step 2: System Details
System Size Changes +/- 10%

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

- Solar*Rewards applications can adjust the system size by +/-10%.
- Net Metering applications can change by any percentage before Engineering Review.
- Any system size change must still pass the120% Rule.
- Once the application is sent to Engineering Review the system size cannot change.
- System size changes are allowed after an engineering rejection due to over-load of transformer capacity or other hosting capacity issue.



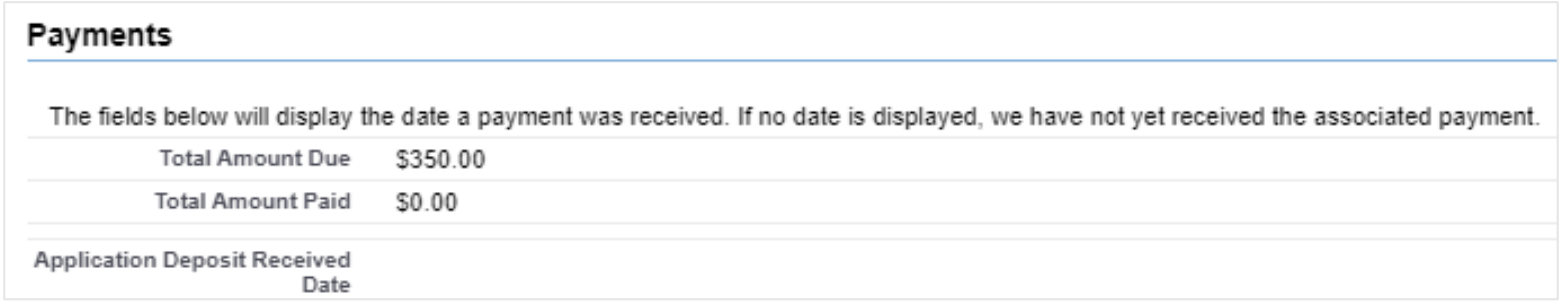
Array and Inverter Details

# of Panels	10	NamePlate Capacity (kW)	3.600
# of Inverters	10	Total System Power kW Rating	3.200
Estimated Array Capacity (kW)	3.960	System PV Watts	5,347

Step 3: Documents and Payments

Upload the required documents and pay the applicable application fees:

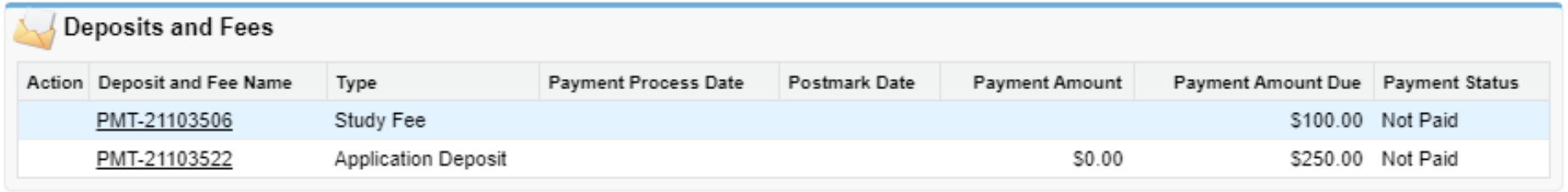
- Site Plan and Line Diagram
- Study Fee
  - The Study Fee covers Level 1 & Level II engineering reviews. All applications are required to pay the initial Study Fee.
- Application Deposit (Solar*Rewards only)
  - The Application Deposit is a $250 deposit for Solar*Rewards Small program and $1,500 for Solar*Rewards Medium program, that is refunded if the application is completed within the specified program timeline: 12-months for Small, and 18 months for Medium.



Payments

The fields below will display the date a payment was received. If no date is displayed, we have not yet received the associated payment.

Total Amount Due	$350.00
Total Amount Paid	$0.00
Application Deposit Received Date	

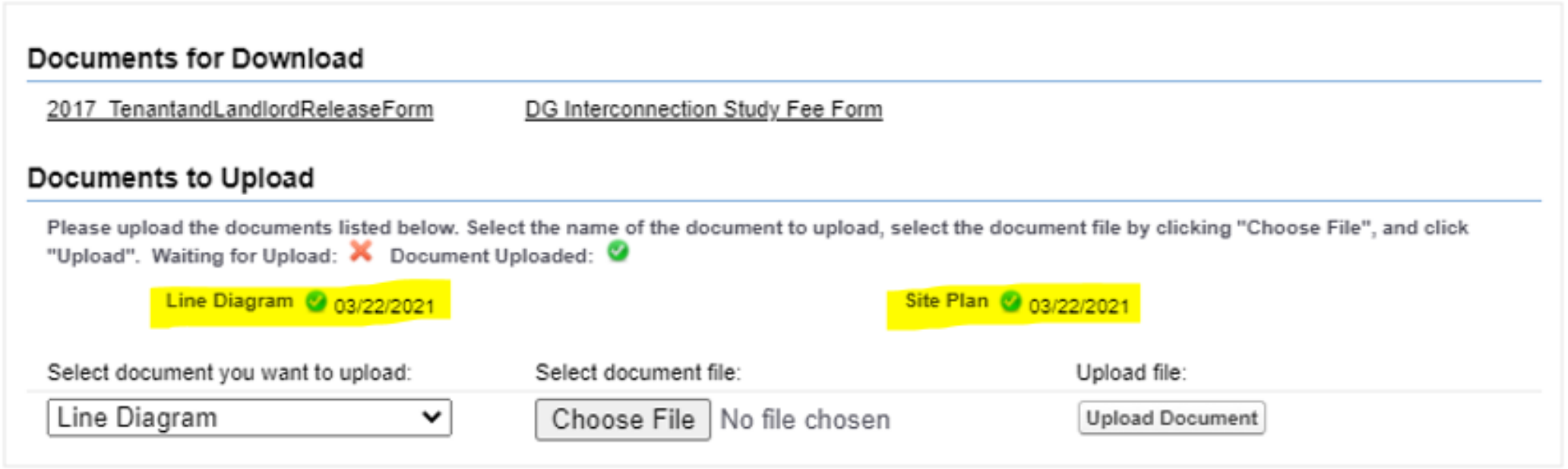


Deposits and Fees

Action	Deposit and Fee Name	Type	Payment Process Date	Postmark Date	Payment Amount	Payment Amount Due	Payment Status
	PMT-21103506	Study Fee				$100.00	Not Paid
	PMT-21103522	Application Deposit			$0.00	$250.00	Not Paid

Step 3: Documents and Payments
Upload Required Documents

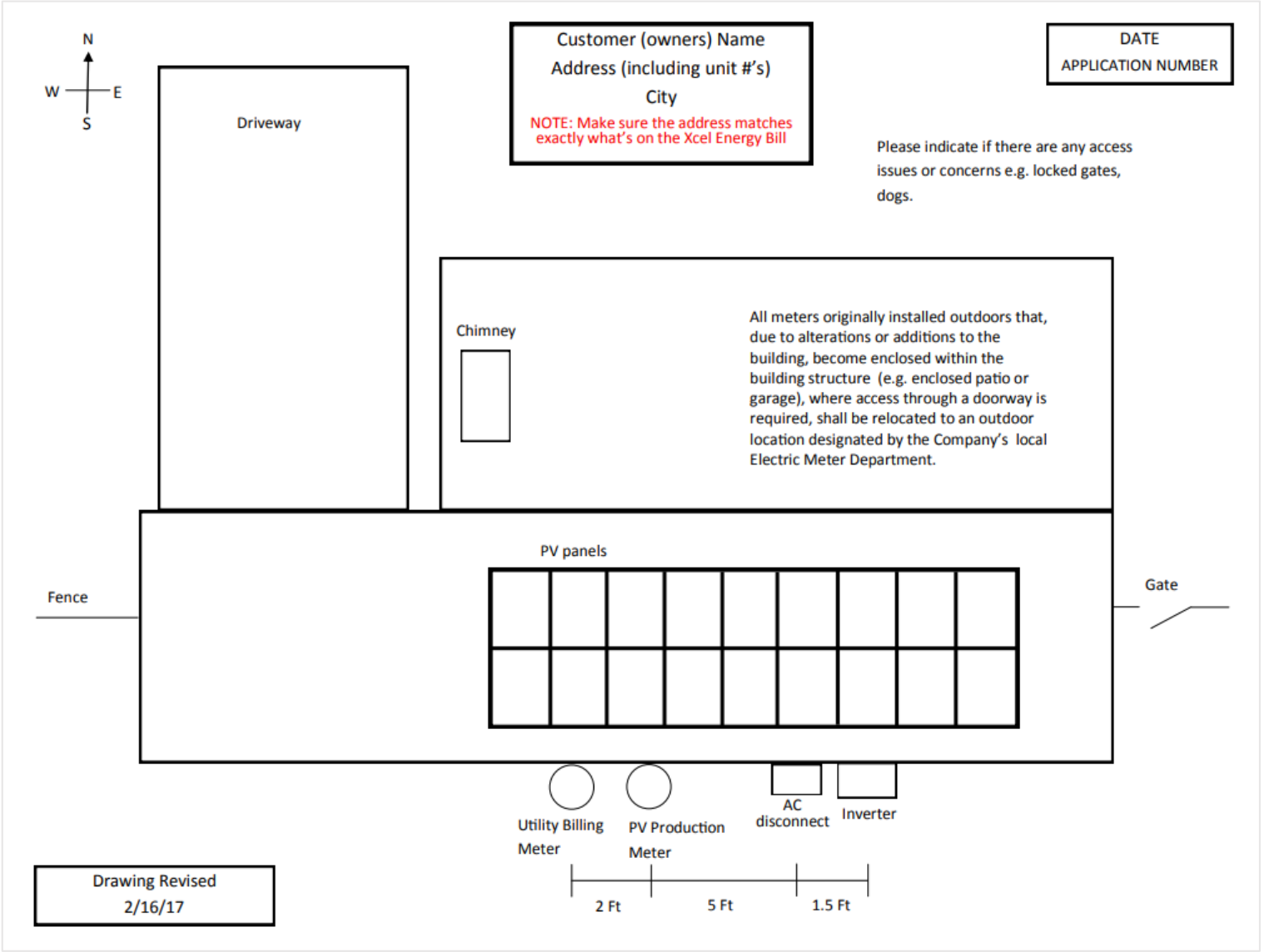
- Site Plan and Line Diagram
- Small Generator Interconnection Application SGIA (if applicable)
- Tenant Release Form (if applicable)
- When the documents have been successfully uploaded, you will see a green checkmark.



Step 3: Documents and Payments
Upload Required Documents: Example Site Plan

The Public Utilities Commission (PUC) decision effective June 8, 2020, systems 10 kWdc and less are not required to have a production meter.

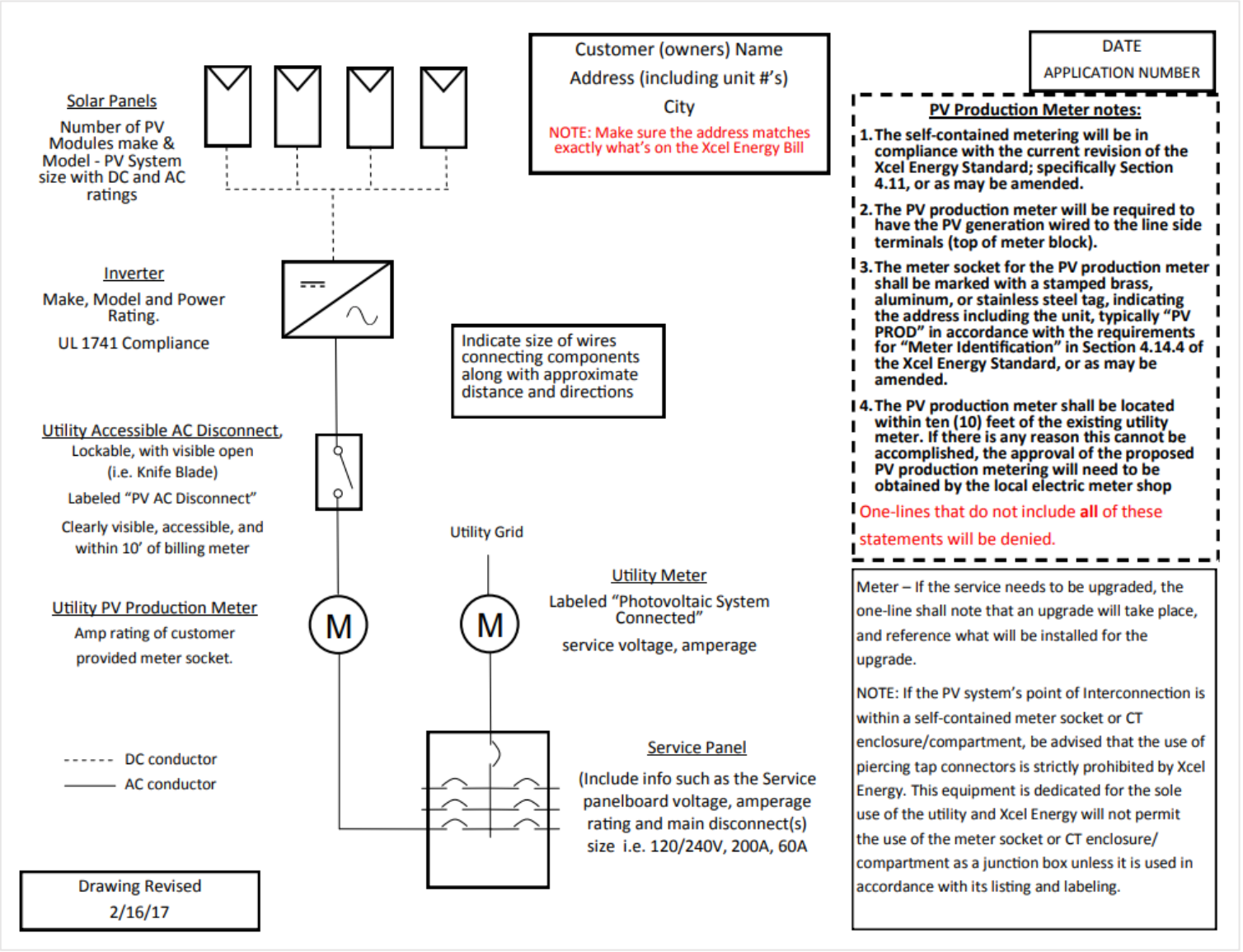
Site Plans for systems 10kWdc and less that include a production meter will be rejected in the Review stage.



Step 3: Documents and Payments
Upload Required Documents: Example Line Diagram >10kWdc

The Public Utilities Commission (PUC) decision effective June 8, 2020, systems 10 kWdc and less are not required to have a production meter.

Line Diagrams for systems 10kWdc and less that include a production meter will be rejected in the Review stage.



Step 3: Documents and Payments
Application Fees: Systems 10 kW and Over

“What additional documentation should I submit for systems 10 kW and larger?”

- All systems over 10kW AC require a $1,000 Study Fee.
  - Note: If the aggregate system size of the “Existing DG Size (kW AC)” field plus the “AC Active Power Nameplate Rating (kW)” of the new application are greater than 10kW AC will require a $1000 Study Fee.
- All systems over 10 kW AC require a Small Generation Interconnection Agreement Form (SGIA).
- Systems over 250 kW AC will require a $2000 Study Fee.

Interconnection Study Fee Amount:

PV systems <= 10 kW: $100

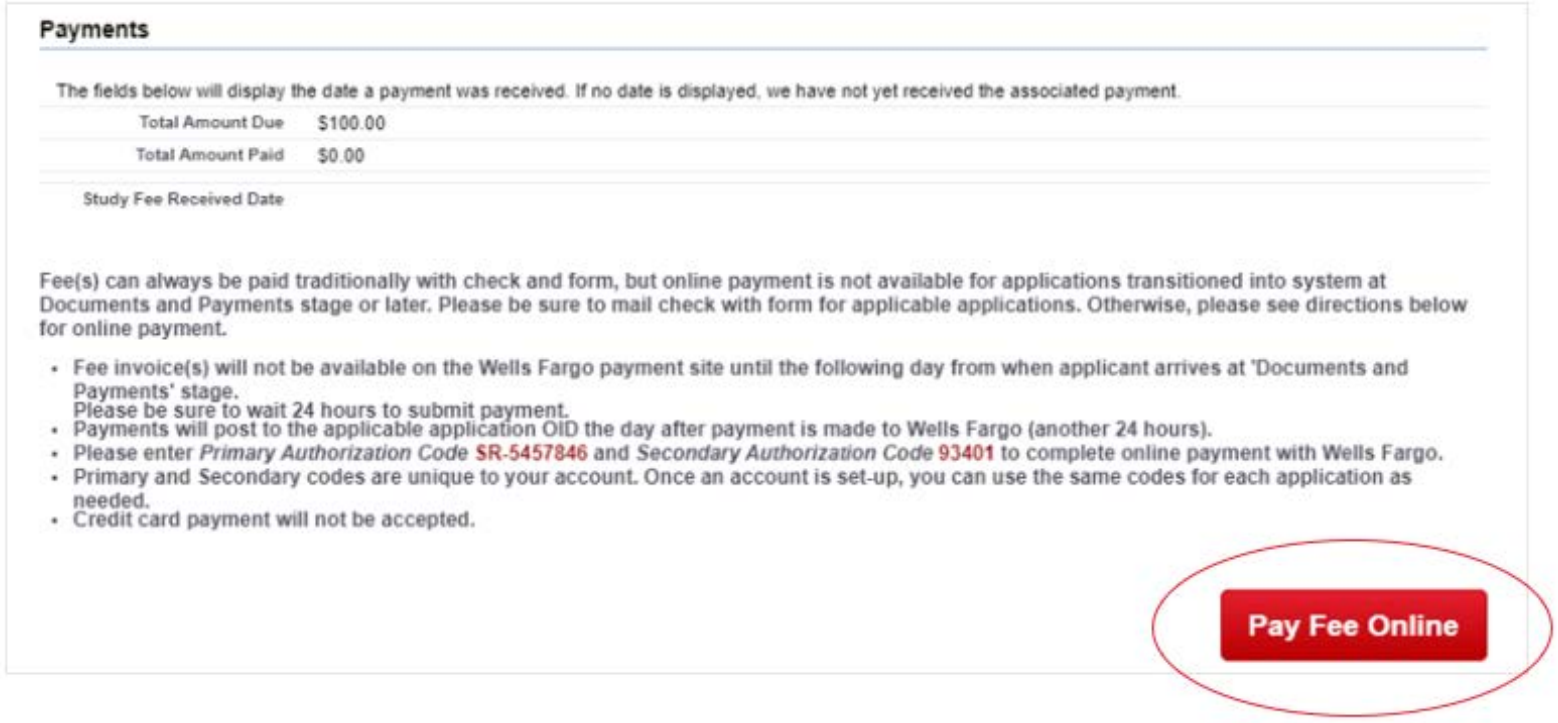
PV systems >10-250 kW: $1,000

PV systems >250 kW-2 MW: $2,000

Step 3: Documents and Payments
Payment Methods

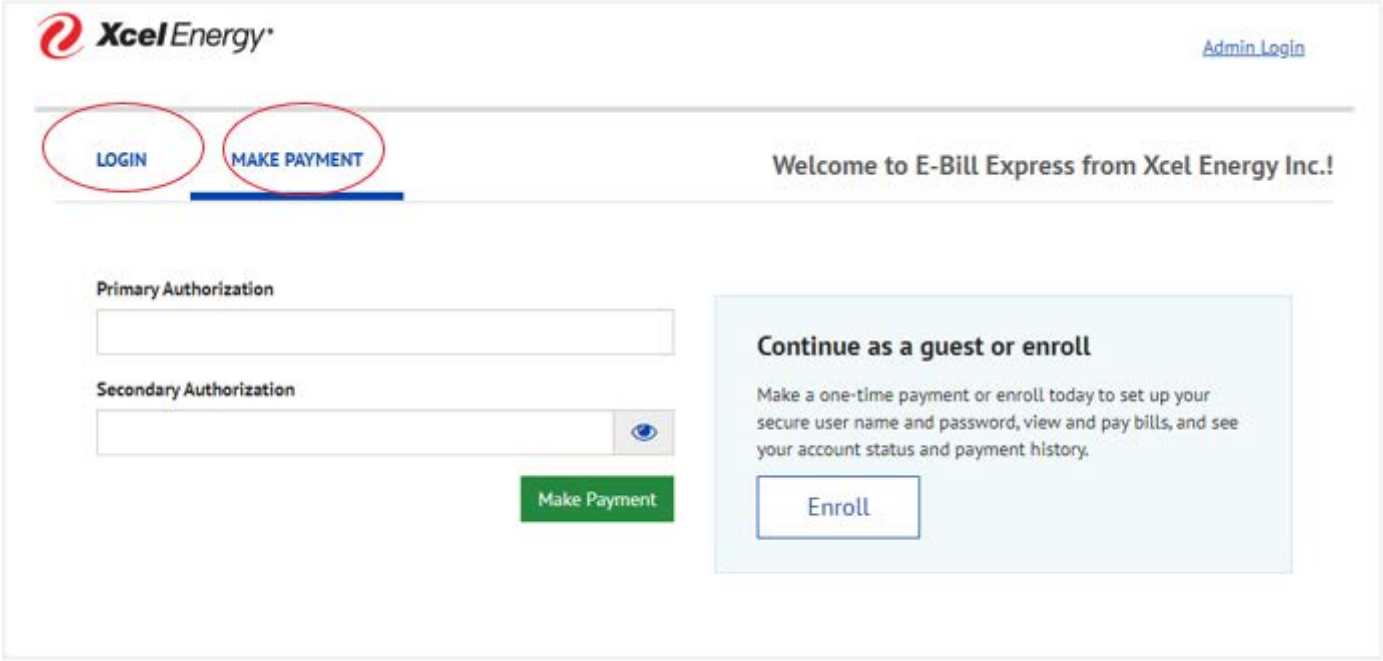
- Pay Online via the secure Wells Fargo Payment Portal (24 hours for processing)

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

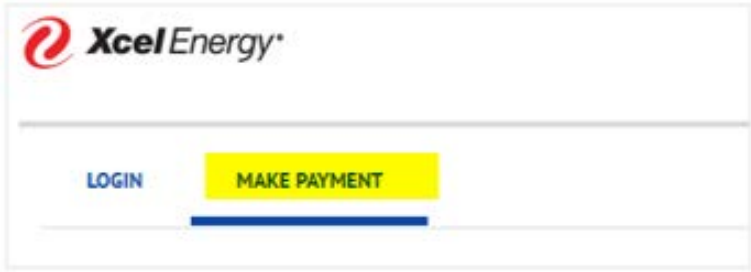


Step 3: Documents and Payments
Payment Methods: Paying Online

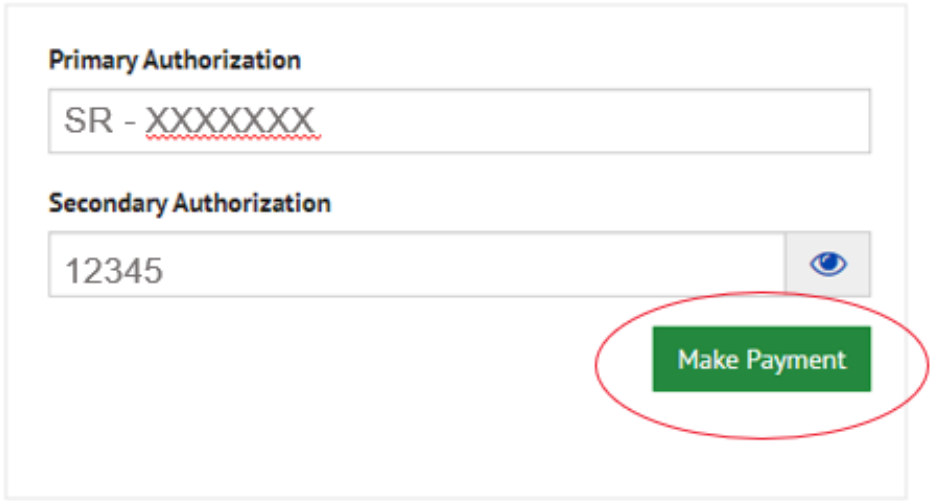
- It takes 24 hours for fee invoices to generate in the Wells Fargo Payment Portal, after moving to the Documents and Payment stage. **Please wait 24 hours to pay fees.**
- Payments online can be made in two ways:
  - Make Payment (one-time payment)
  - Login (must Enroll) – enrolling in ACH payments allows multiple invoices to be paid at once.



Step 3: Documents and Payments
Paying Online: One-Time Payment



- Click “Pay Fee Online” in the application portal.
- Select “Make Payment” in the Wells Fargo portal.
- Enter the Primary Authorization and Secondary Authorization codes: find the codes on the Document & Payments stage in the application.
- Click “Make Payment.”

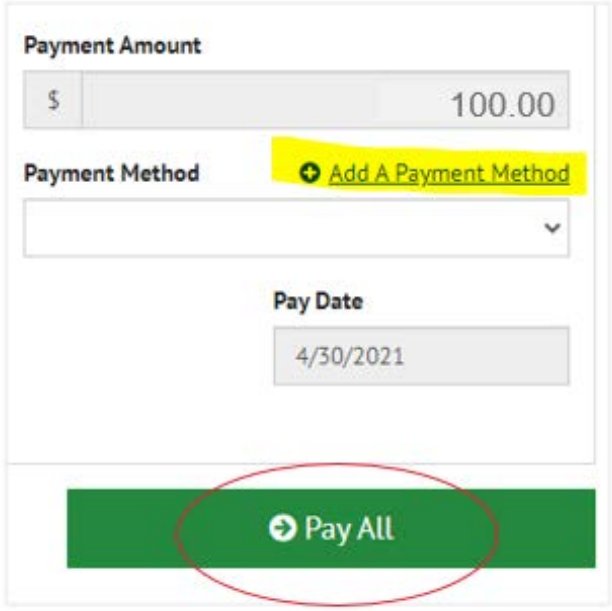


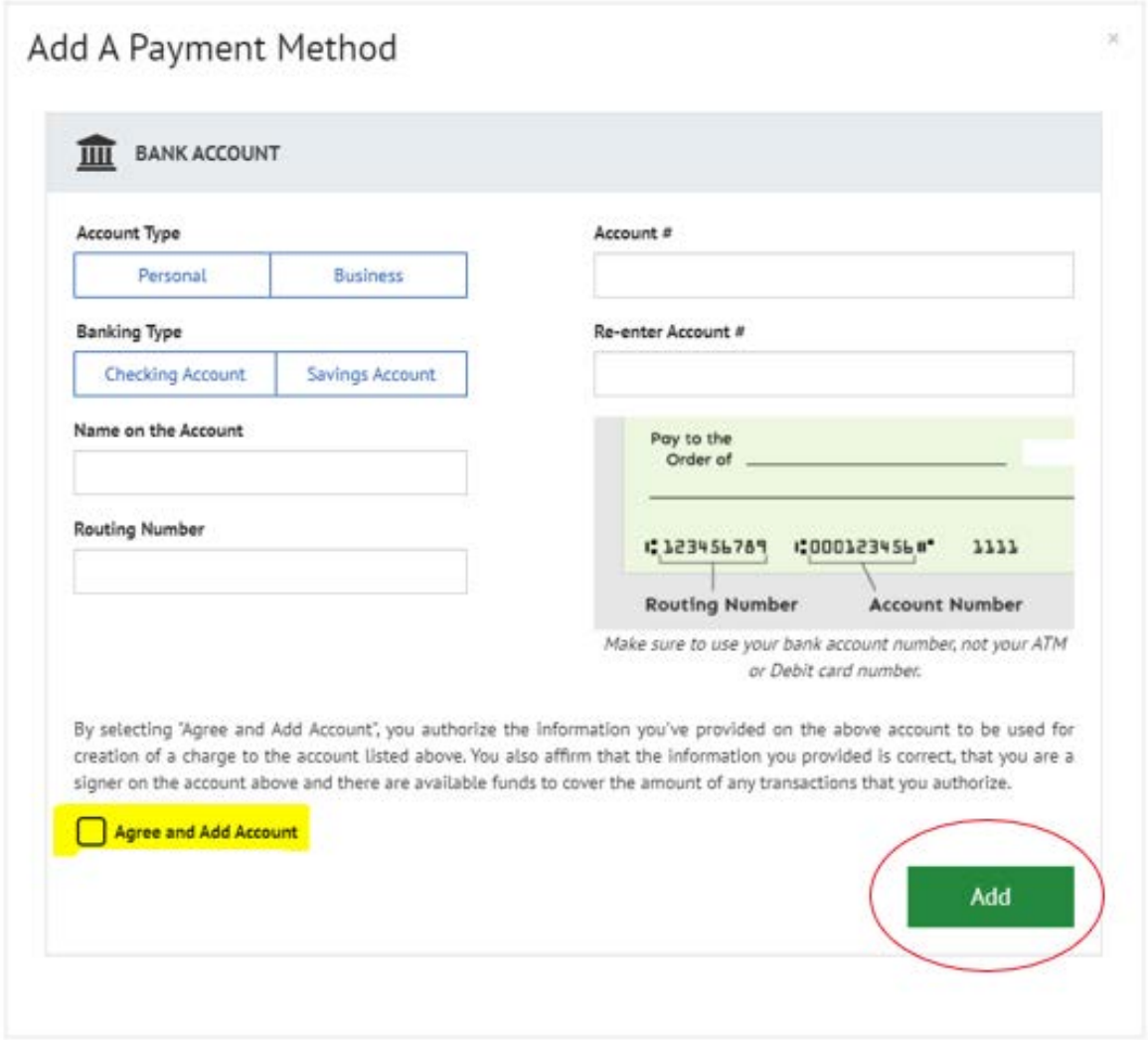
Fee(s) can always be paid traditionally with check and form, but online payment is not available for applications transitioned into system at Documents and Payments stage or later. Please be sure to mail check with form for applicable applications. Otherwise, please see directions below for online payment.

- 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* SR-10692258 and *Secondary Authorization Code* 0014O00002H6wg0 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.

Step 3: Documents and Payments
Paying Online: One-Time Payment

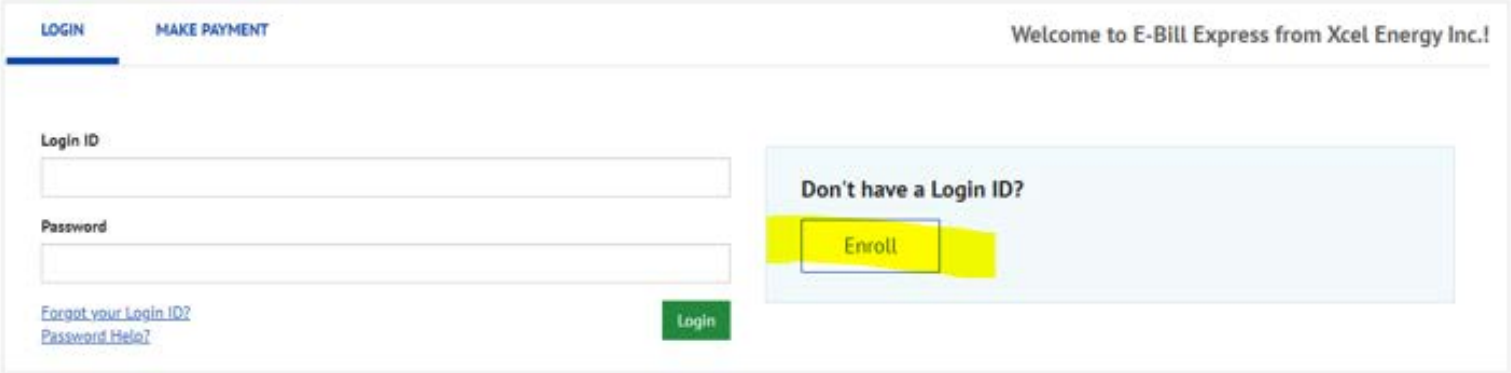
- Click “Add a Payment Method.”
- Enter payment information and click “Add.”
- Click “Pay All.”



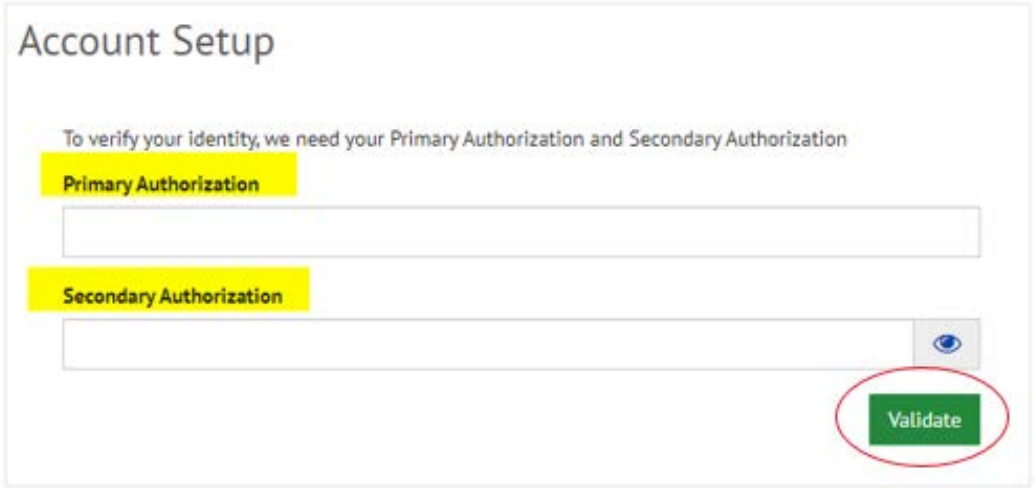


Step 3: Documents and Payments
Paying Online: Enrolled Payment

- If you are not yet enrolled in ACH payments, click “Enroll.”

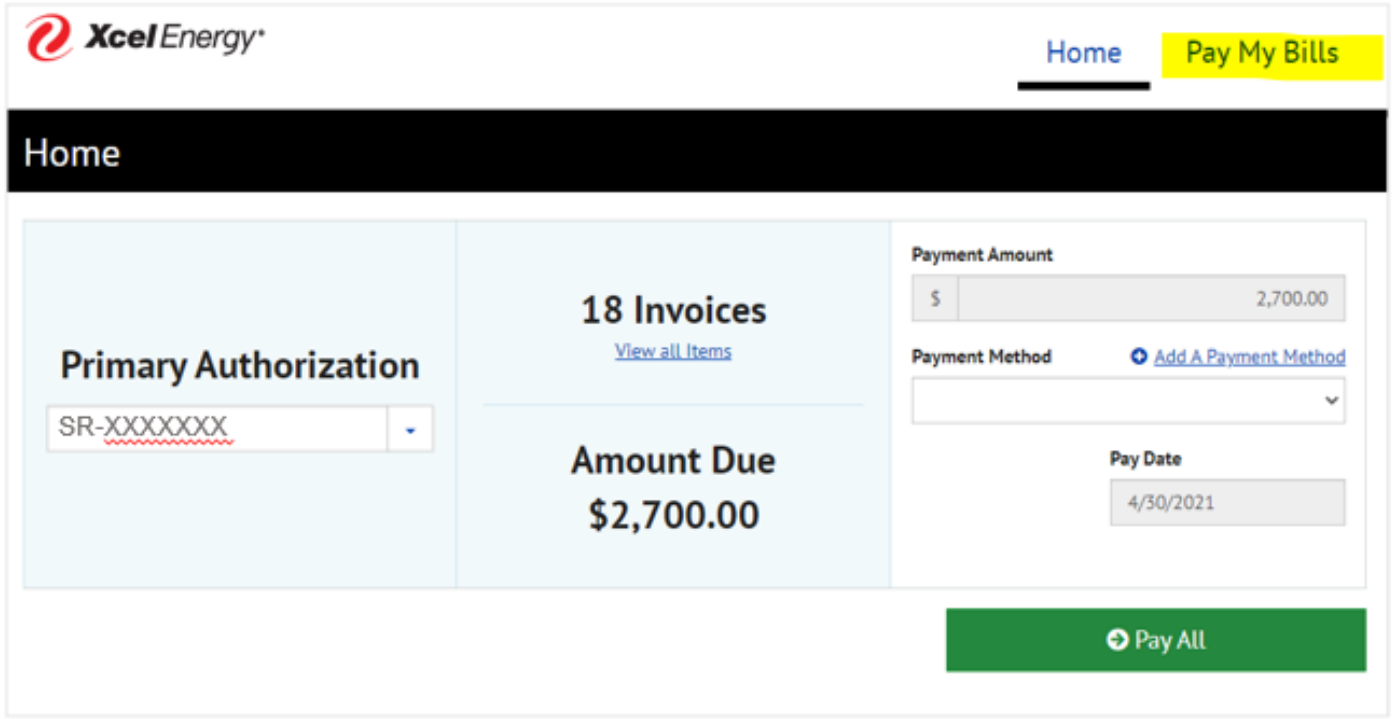


- Enter the Primary and Secondary Authorization codes from the application and click “Validate.”



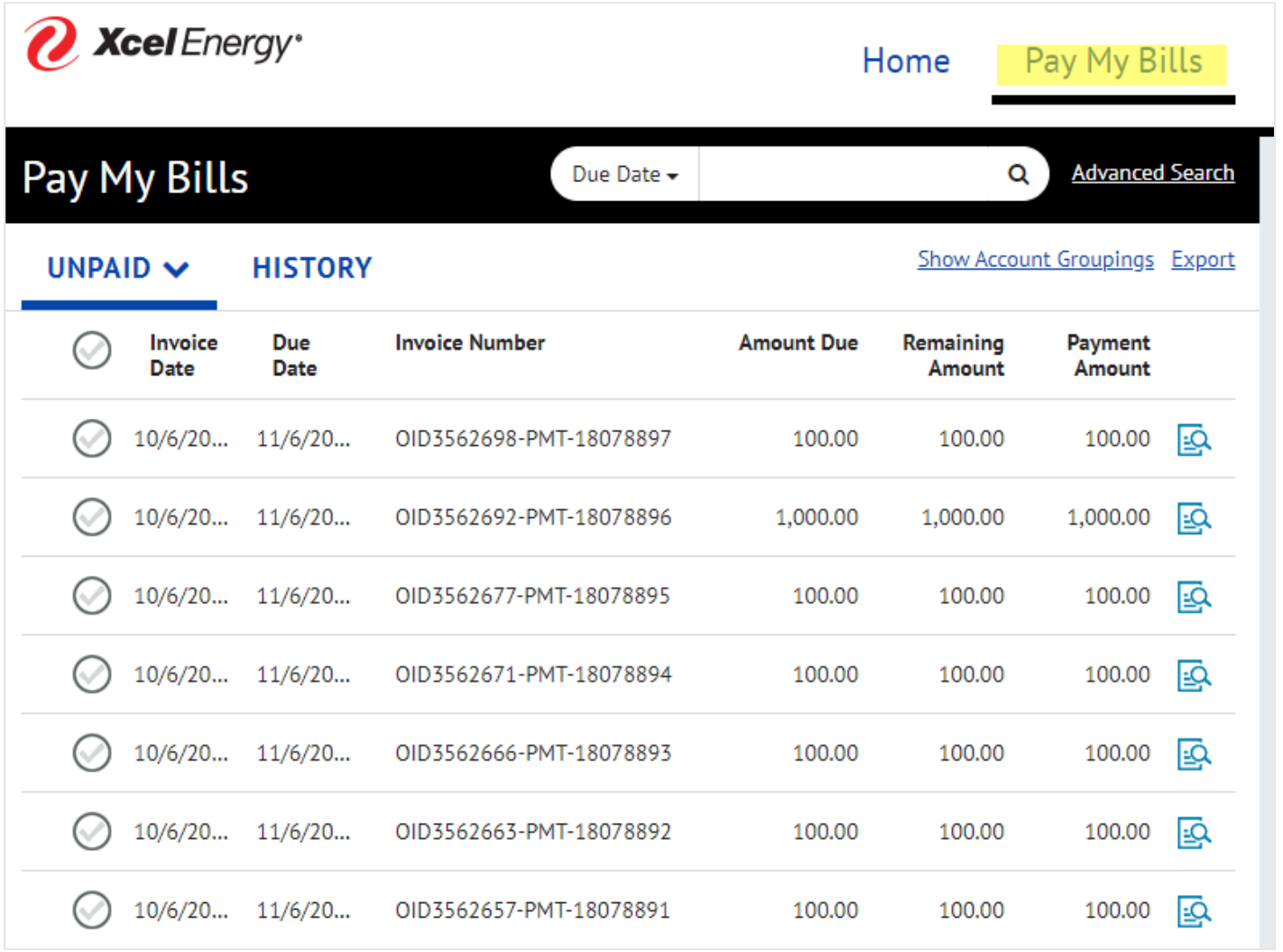
Step 3: Documents and Payments
Paying Online: Enrolled Payment

- Enter the “Pay My Bills” section of the site.



Step 3: Documents and Payments
Paying Online: 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 the next day after 7pm CST.
- Need Help? Contact Wells Fargo E-Bill Express Support at EBillExpress@wellsfar go.com or 1-877-562-3840.



Step 4: Engineering Review

- Applications to this point must be reflective of the end project. Hitting “Submit for Approval” by the App Owner confirms that the application details are final.
- System size changes are allowed after an engineering rejection due to over-load of transformer capacity or other hosting capacity issue.
- Once submitted, metering engineers review all applications within 10-business days and area engineers review application 10kWdc and larger within 15-business days. The same review timeline applies to engineering re-reviews.
- If a supplemental review is needed, the application will be rejected by the area engineer with a rejection comment that a supplemental screening is required, and results should be provide within 30-business days.
- Moving to a System Impact Study will require an additional study fee and timeline.

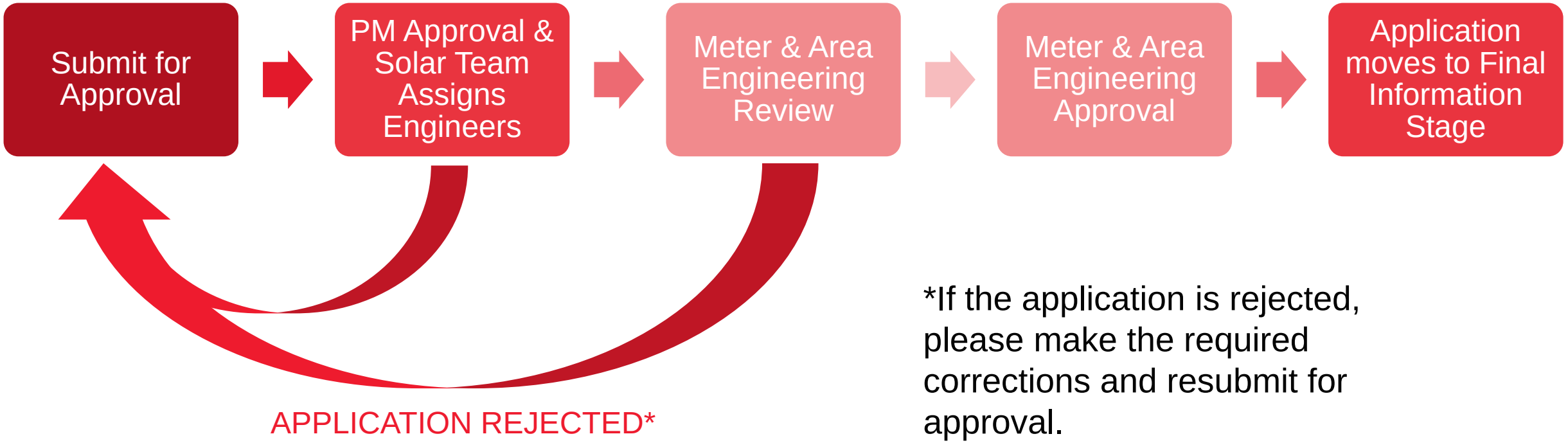
We highly recommend that systems are installed after engineering approval to ensure the system complies with interconnection standards and system upgrades are not needed.

Step 4: Engineering Review

- Should you need to make any changes following Engineering Approval, a re-review and second study fee may be required. Some cases will require an exception or new application may need to be created.
- The Guidelines for Engineering Re-Review can be found on the Solar Developer Resources webpage and are also listed below.

DESCRIPTION OF CHANGE	RE-REVIEW REQUIRED?	NOTES
Module increase - no change to one-line	Yes	Re-review required for distribution check.
Interconnection method change (Change to line side tap)	Yes	Re-review required for metering compliance.
Interconnection method change (line side tap to breaker back feed)	Yes	This will change the design to a breaker back feed. Re-review required of revised one-line.
Layout change- changes in the equipment layout associated with the approved one-line	Yes	Changes to the production meter and the disconnect location. Re-review required for revised equipment location.
New subpanel	Yes	If this is only a change of an existing sub-panel, then no re-review is required unless altering the layout in the process. If this is an additional sub-panel that was not included in the original design, then a re-review is required.
Module model change - system size remain or decrease	No	Updated system details and engineering documentation reflecting the change required.
Main Panel Upgrade after approval	No	Would require a service upgrade application through BCL if main panel changes require an upgrade to the meter socket or our service to the customer, no re-review required.
Module decrease - no change to one-line	No	Updated system details and engineering documentation reflecting the change required.
Changed from supply side tap to meter lug adapter	No	If the existing meter housing is horn by-pass that adding a lug would alter the metering then meter housing upgraded to lever by-pass required.
Conduit schedule wire change and main panel rating change	No	No re-review required.
Layout change - change in panel orientation	No	Updated system details and engineering documentation reflecting the change required.

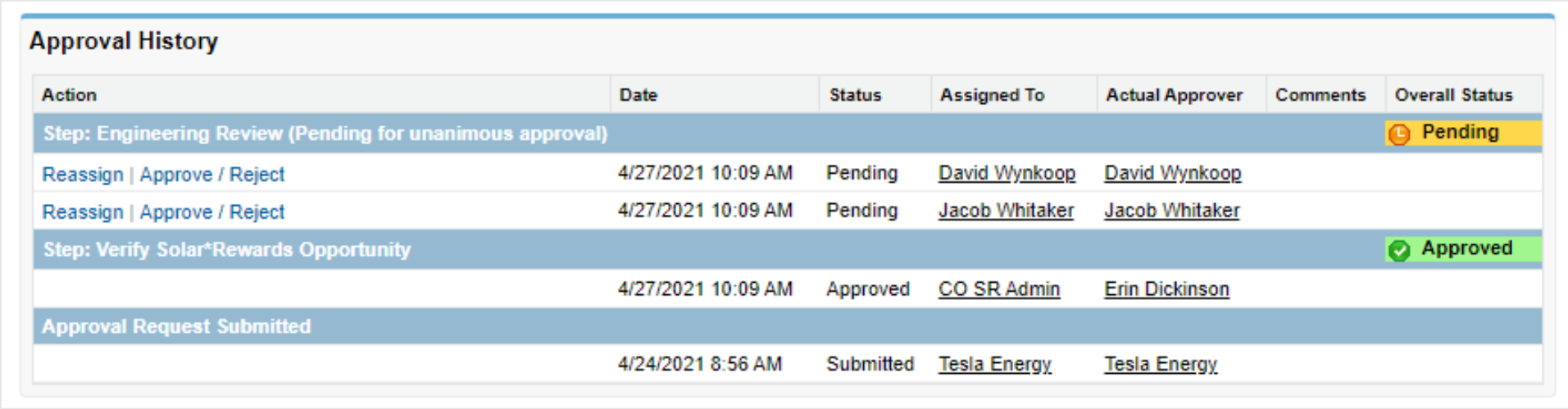
Step 4: Engineering Review



*If the application is rejected, please make the required corrections and resubmit for approval.

Step 4: Engineering Review
CO SR Admin Approval

- After required fees have been paid and the application has been submitted for approval, the Solar Team will review the Site Plan and Line Diagram within 2 business days. Once approved, the application is sent to our engineers for Engineering Review.
- In the image below, the application has been approved by the CO SR Admin (Solar Team) and assigned to the metering and area engineers for review. Systems under 10 kW DC are reviewed by the metering engineer. Systems 10 kW DC and larger and/or with a battery are reviewed by the metering and area engineers.

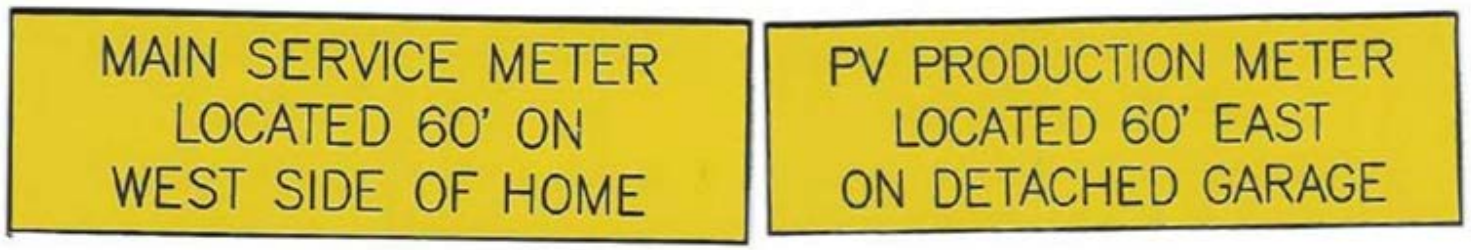


Approval History

Action	Date	Status	Assigned To	Actual Approver	Comments	Overall Status
Step: Engineering Review (Pending for unanimous approval)						Pending
Reassign | Approve / Reject	4/27/2021 10:09 AM	Pending	David Wynkoop	David Wynkoop		
Reassign | Approve / Reject	4/27/2021 10:09 AM	Pending	Jacob Whitaker	Jacob Whitaker		
Step: Verify Solar*Rewards Opportunity						Approved
	4/27/2021 10:09 AM	Approved	CO SR Admin	Erin Dickinson		
Approval Request Submitted						
	4/24/2021 8:56 AM	Submitted	Tesla Energy	Tesla Energy		

Step 4: Engineering Review
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 2nd production meter, it must be noted on the tag. Tags can be brass, aluminum or stainless steel and MUST BE permanently attached to the meter socket.



- 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 metering engineering review.
- Exceptions on meter locations must be approved by the local Electric Meter Shop.

Step 4: Engineering Review
Metering Requirements

Metering Engineering Reviews Performed by Xcel Energy

Systems 10 kW DC and less are not required to have a production meter.

- For systems 10.0 KW DC or less with a breaker back feed from the customer's panel, Xcel Energy will not be enforcing any requirements for any associated AC disconnect means. Any requirements will be based on NEC and the local code authority.

- For systems 10.0 KW DC or less that are supply side connection (POI is between the load side of the meter and the main disconnect), Xcel Energy will enforce per Section 2.13.5 item #6 of the Standard for Electric Installation and Use that the customers' equipment has a mechanical means to disconnect and isolate equipment from the load-side terminals of the self-contained electric meter socket or instrument transformers (CTs and VTs). This would include load/generation of the customer's PV system. The local code authority would typically dictate the type of disconnecting means required based on the Colorado State Statutes that mandates the version of the NEC all jurisdictions are to follow.

Step 4: Engineering Review
Metering Requirements

- For systems over 10 KW DC, the PV production meter is required, and utility accessible/lockable AC disconnects with visible open is enforced under sections 8.3.2 and 8.3.3 of the Standard for Electric Installation and Use. The requirement is to have one utility accessible/lockable AC disconnect with visible open in the PV circuit located adjacent to the production meter. The PV production meter and AC disconnect are to be located within 10 feet of the main billing meter.

- If an AC Disconnect is installed, does it need to be within 10 feet? For 10kW DC and under, there is no Xcel Energy requirements for distance so follow the mandates by the local AHJ. We will only validate if a disconnecting means is installed for systems with the POI being a line side tap.

Step 4: Engineering Review
Engineering Approval

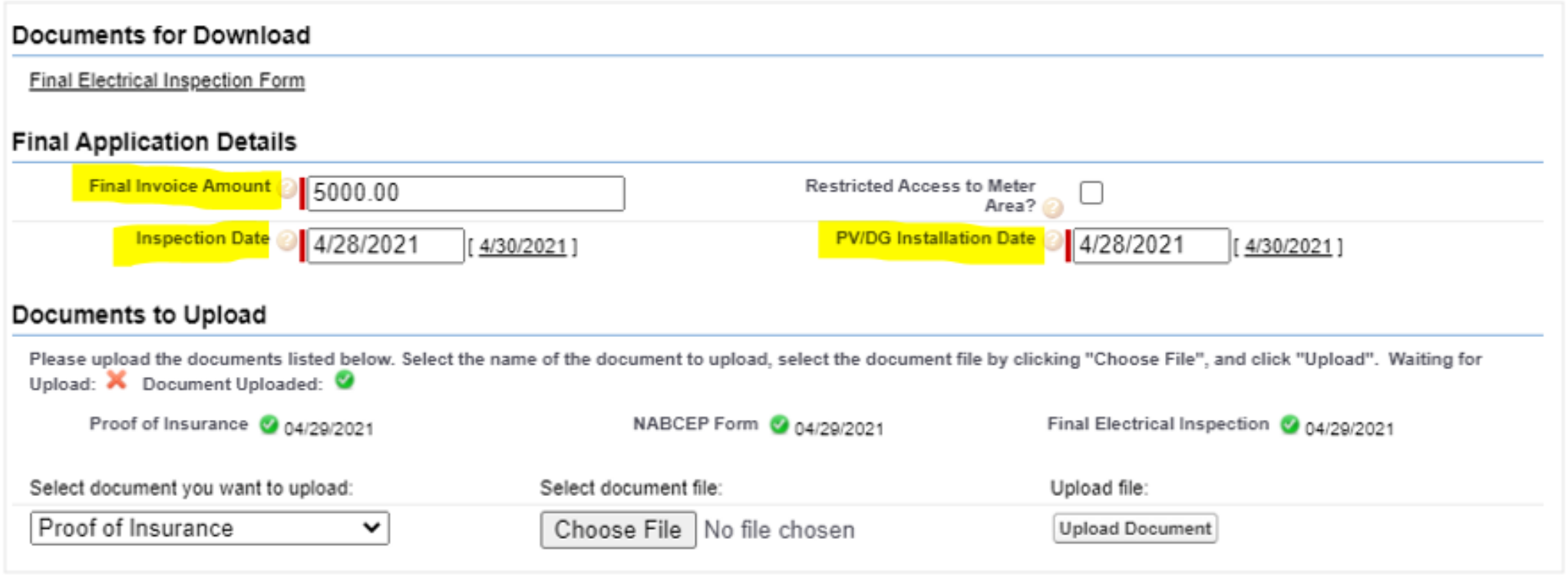
- If approved by Engineering, application will automatically move to the Final Documentation stage.
- If a rejection occurs, the installer will receive an email with further instructions. After corrections are completed, please resubmit for approval.
- For systems 10 kW DC and larger, wait until both engineers reply before re-submitting for approval (if applicable).

Approval History

Action	Date	Status	Assigned To	Actual Approver	Comments	Overall Status
Step: Engineering Review						Approved
	3/10/2021 11:41 AM	Approved	Tom Malone	Tom Malone	Approved for non-metering requirements.	
	3/9/2021 4:08 PM	Approved	David Wynkoop	David Wynkoop	This application is conditionally approved from a metering perspective based on the submitted documents. All metering will need to be in compliance with all Xcel Energy Installation Standards before the net/PV production meters will be installed. The PV production metering shall be energized from the customer's service in order for our production meter to be installed. Xcel Energy will not turn your PV system on once the meter(s) are set.	
Step: Verify Solar*Rewards Opportunity						Approved
	3/9/2021 2:10 PM	Approved	CO SR Admin	Perrick Soderstrom		
Approval Request Submitted						
	3/9/2021 7:27 AM	Submitted	Tesla Energy	Tesla Energy		

Step 5: Final Documents

- Final Application Details must be populated and saved before final documents can be uploaded.
- Upload Proof of Insurance, Final Electric Inspection, NABCEP form (Solar*Rewards only).



Step 5: Final Documents
NABCEP

“What type of NABCEP certification is required?

- State regulation notes the following:

https://leg.colorado.gov/agencies/office-legislative-legal- services/2014-crs-titles-download

> (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 is only required for Solar*Rewards applications.

Step 5: Final Documents
Proof of Insurance

The insurance requirements are stated in the Interconnection Agreement.

- Effective policy dates (insurance must be currently active).
- Premise address (required if customer-owned system).
- Appropriate liability (personal or business general liability insurance) coverage:
  - No less than $300,000 per occurrence for systems 10kW AC and under
  - No less than $1,000,000 per occurrence for systems 10.01kW – 500kW AC
  - No less than $2,000,000 per occurrence for systems greater than 500kW AC
  - 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.

Step 5: Final Documents
Proof of Insurance – Interconnection Agreement, Section XI

XI. INSURANCE

A) At a minimum, in connection with the Customer's performance of its duties and obligations under this Agreement, the Customer shall maintain, during the term of the Agreement, general liability insurance, written by an insurer with an A.M. Best rating of at least A-VII or a Standard & Poor's rating of at least A, with a combined single limit of not less than

1) Two million dollars ($2,000,000) or greater, as mutually agreed to by the Parties, for each occurrence if the Gross AC Nameplate Rating of the Generation System is greater than 2 MW.

2) Two million dollars ($2,000,000) for each occurrence if the Gross AC Nameplate Rating of the Generation System is greater than 500 kW up to and including 2 MW.

3) One million dollars ($1,000,000) for each occurrence if the Gross AC Nameplate Rating of the Generation System is greater than 10 kW up to and including 500 kW.

4) Three hundred thousand dollars ($300,000) for each occurrence if the Gross AC Nameplate Rating of the Generation System is 10 kW or less.

5) 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.

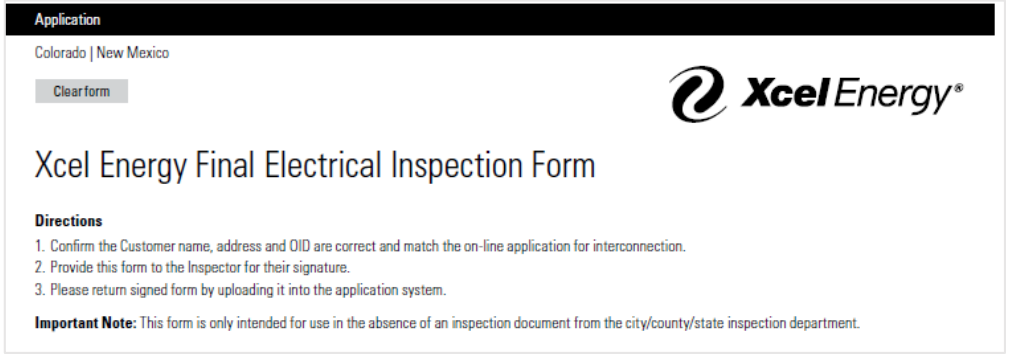
B) For a Generation System over 500 kW, the general liability insurance required by Section XI.A shall, by endorsement to the policy or policies: (a) include Public Service as an additional insured; and (b) provide that Public Service shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium for such insurance.

Step 5: Final Documents
Final Electrical Inspection

The Final Electrical Inspection document must 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 (Indication of Pass/Fail).
- The date of the inspection.
- The inspector's name and/or signature (electronic signature or initials are accepted).

If the city/county does not provide an electrical inspection form that meets these requirements, the Xcel Energy Final Electrical Inspection Form can be used in its place.



Application

Colorado | New Mexico

Clear form

Xcel Energy®

Xcel Energy Final Electrical Inspection Form

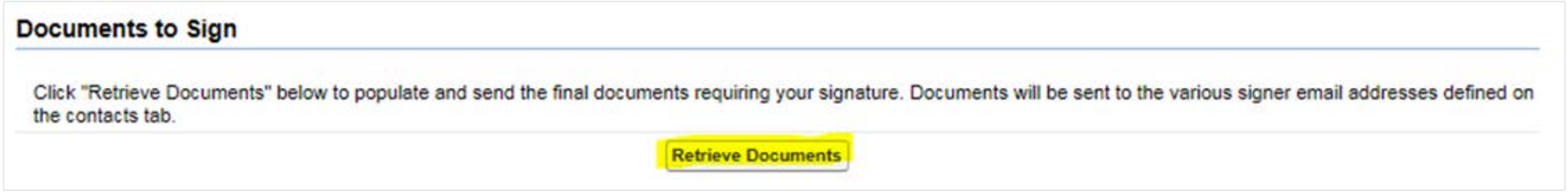
Directions

1. Confirm the Customer name, address and OID are correct and match the on-line application for interconnection.
2. Provide this form to the Inspector for their signature.
3. Please return signed form by uploading it into the application system.

Important Note: This form is only intended for use in the absence of an inspection document from the city/county/state inspection department.

Step 5: Final Documents
Solar Agreements

- Click “Retrieve Documents” button once the final information fields have been uploaded to send the solar agreements out for electronic signature.
- Please be sure the correct system owner’s name is shown on the agreements. The names listed in the Contacts stage are brought into the solar agreements and invited to sign.
- Customer signatures must be the Xcel Energy Primary Account Holder.
- Once “Retrieve Documents” is clicked, the customer and installer/developer will receive an email from Sertifi.net.
  - If solar agreements need to be re-sent or update the email address that the documents are sent to, call or email the Solar Team.
  - If you have many applications and want the ability to re-send documents or update emails yourself, the Solar Team can establish an admin access to do so through Sertifi directly.



Step 5: Final Documents
Solar Agreements

- Documents are fully signed when green checkmark shows next to the document.
- Solar*Rewards applications have 3 documents to sign electronically:

Documents to Sign

Status	Name		Date Signed	Signed Link
Signed	2020_Customer-Owned_InterconnectionAgreement.	✔	3/9/2021 9:51 AM	https://www.sertifi.com/xcelenergy/passthrough....
Signed	2020_Customer-Owned_REC.Contract	✔	3/9/2021 9:50 AM	https://www.sertifi.com/xcelenergy/passthrough....
Signed	2020_Solar-Bank-Election-Form	✔	3/9/2021 9:50 AM	https://www.sertifi.com/xcelenergy/passthrough....

- DG NEM only applications have 2 documents to sign electronically:

Documents to Sign

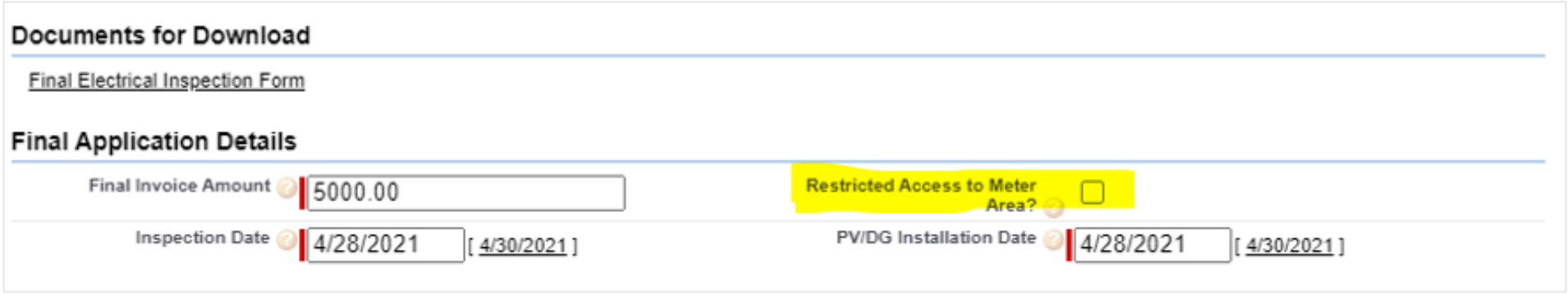
Status	Name		Date Signed	Signed Link
Signed	2020_Customer-Owned_InterconnectionAgreement.	✔	4/27/2021 5:22 PM	https://www.sertifi.com/xcelenergy/passthrough....
Signed	2020_Solar-Bank-Election-Form	✔	4/27/2021 5:22 PM	https://www.sertifi.com/xcelenergy/passthrough....

Step 5: Final Documents
Special Circumstances: Restricted Access to Meter Area

Please ensure there is nothing blocking access to the customers meter, including locked gates, pets or lawn furniture. If the meter technician cannot safely access the meter location, please leave an application note requesting an appointment and the reason for the appointment. Requests without a reason will be ignored.

If there is restricted access to the meter:

- 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.



Step 5: Final Documents
Final Documentation Review

- Once all the required final documents have been uploaded and solar agreements have been signed by all parties, the signed documents will be emailed to all signers.
- Solar Team will review the information.
- If the final information meets the program requirements, then the Solar Team will request the solar meter(s).
- If the final information does not meet all the program requirements, then the Solar Team will leave an application note indicating what needs to be updated. Please leave a new application note after updated information has been uploaded.
- Common examples of application notes requesting corrections:
  - Insurance policy does not include the personal/general liability coverage required by the program. Please upload the insurance policy with the appropriate liability coverage ($300,000 for systems 10kW and under, $1,000,000 for systems 10.01kW – 500kW).
  - The proof of insurance document has expired. Please upload a current document and leave a new application note when complete.
  - The documents were signed by another party, please notify [NAME] to sign and click “Retrieve Documents" to re-sign.
  - The Final Electrical Inspection document does not list the project’s premise address.
  - The Final Electrical Inspection is not clearly noted as passing/finaled etc.

Step 6: Metering & Testing
Meter Request

- The general service meter will be replaced with a Net Bi-directional Meter, and a PV Production Meter will be added for systems larger than 10 kW DC.
- The applicable Meter Order Dates will populate in the application. Please allow **20-business days** from the meter order date for the meter(s) to be installed.
- For systems 10 kW DC and less without a production meter, the Production Meter Install Date and Production Meter Number will automatically populate with placeholders.

- After the meter install, the Install Dates will populate (typically within a week).

Step 6: Metering & Testing
Corrections Needed

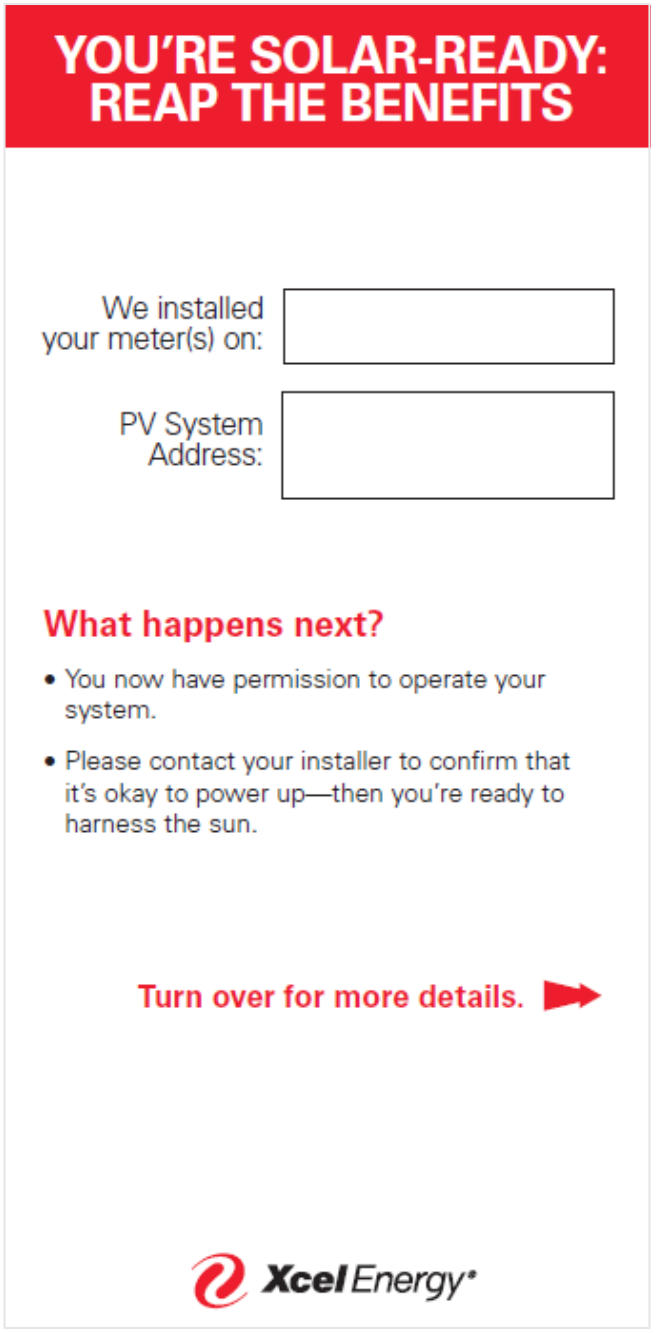
For any corrections or access issues, the meter technician will leave a customer notice at the premise.

- On the notice will be an explanation of what needs correcting before the meter(s) can be installed.
- Once corrections are completed, call the number listed on the notice to reschedule a meter technician to come back out to install the meters.
- If unable to reach someone at the listed phone number within 24 hours, call 800.422.0782 then choose option 1, option 1.
- Please do not contact the Solar Team to reschedule a meter install.

Step 7: Permission to Operate

The solar system has Permission to Operate (PTO) once the necessary meters have been installed.

- A door hanger will be left at the premise, providing permission to operate the system.
- A permission to operate email will also be sent to the customer and solar installer once the meter orders and solar application are completed in our system.



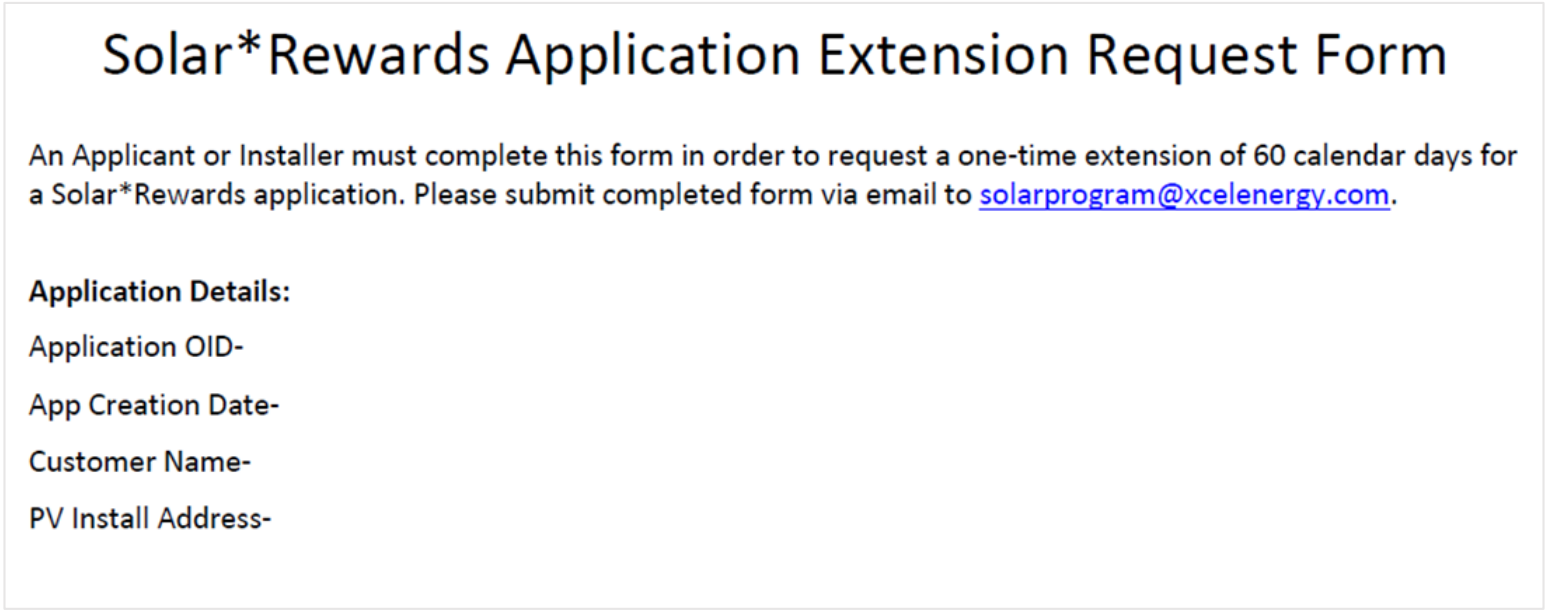
APPENDIX

Extension Requests, Meter Aggregation, Assignment of Contract, System Removals, System Replacements & Expansions, Pre-Application Data Requests, Solar*Rewards Program Capacity Limitations, Interconnection Standards, Additional Resources

Extension Requests

Extension are only necessary for Solar*Rewards applications. Solar*Rewards Small applications have 12-months to complete, and Solar*Rewards Medium applications have 18-months to complete from the Created Date.

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. Also 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-

Meter Aggregation
Requirements

- Meter Aggregation is an option. The customer/installer will need to illustrate compliance 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. It is the customer/installer's responsibility to comply with the requirements, and the Solar Team will verify compliance. Requirements are as follows:
  - 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 listed on all Xcel Energy accounts.
  - Same rate class/type.
  - 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

Meter Aggregation
Request Process

- The solar application shall be created under the designated meter account and premise number for where the solar will tie into, and the 120% rule can be evaluated accordingly.
- Submit the request by uploading the Meter Aggregation Request Letter to the application, once the application has failed the 120% rule, and leave a new application note.
- If meter aggregation approval is needed before starting an application, then send a completed Meter Aggregation Request Letter to SolarProgram@xcelenergy.com .
- Meter aggregation can be requested after solar installation.
- Building owners/landlords may not switch residential accounts into the building owners/landlords name for the purpose of meter aggregation.

Assignment of Contract

For Solar*Rewards systems: If a new homeowner moves into a home with a solar system, an Assignment of Contract is required to transfer the REC Purchase Contract and Interconnection Agreement into the new homeowner's name. The new owner would assume responsibility for the terms of the contract.

For contracts signed in June 2020, the previous homeowner's signature is not required on the Assignment of Contract to transfer the REC Purchase Contract to the new homeowner. For contracts signed prior to June 2020, the Assignment of Contract requires both the previous and new homeowner's signatures.

For DG Net Energy Metering (non Solar*Rewards) systems: The new homeowner will need to sign an Interconnection Agreement with Xcel Energy to receive the benefits of the net-metered rate.

All new homeowners may choose a new Solar Bank Election by filling out the form and sending along with either of the processes listed above.

View the Assignment of Contract webpage for further information.

System Removals

- In the event that a system needs to be removed or relocated, please notify us by emailing solarprogram@xcelenergy.com.
- The Net bi-directional will be replaced with a general billing service meter and the PV Production meter will be removed from the premise.
- If a system is going to be offline for more than 90-days for construction purposes (i.e. roof replacement), notify the Solar Team so that the account does not automatically get flagged for non-production and have a meter removal order logged.

IMPORTANT!

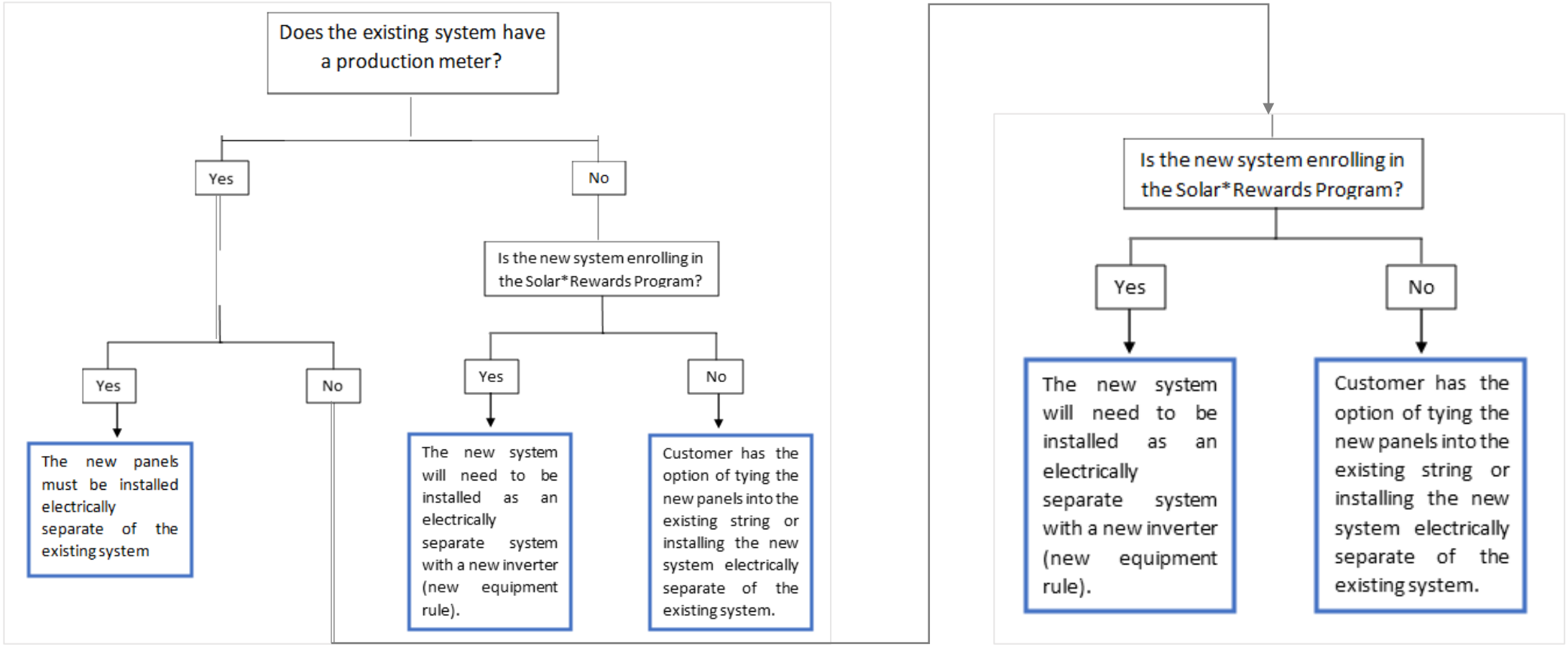
Please never remove the NET or PV production meters as they are Xcel Energy property.

System Replacements

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

- Start a new solar application and check the “replacement system” checkbox on the Start tab.
- Upload new site plan and line diagram for the replacement system that is within 10% of the original NamePlate Capacity kW DC. Show what equipment is new and what is not new on the designs.
- System replacements must still pass the 120% rule check based on current usage (solar production + net consumption = usage). The application will automatically “fail” the 120% rule and will be manually reviewed by the Solar Team.
- A new final electrical inspection and owner proof of insurance after system has been re-installed is required.
- If new meters are required they will be requested in the new solar application and installed.

System Expansions



Pre-Application Data Requests

If you want to check on reliability issues of distributed generation (DG) installations you can download a Pre-Application Data Request from the Community Solar Garden Developer Resources webpage under Sample Documents and Forms. Steps are as follows:

- Sign NDA.
- Provide map of anticipated Point of Interconnection.
- $300 payment per Interconnection Address (wire or check).

Xcel Energy will provide a Pre-Application Data Report (example downloadable from CSG Developer webpage) 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.

Project(s) Information

Project 1
Address (or Cross Streets and City): _____
Generator Type: _____ Size: _____
Number of Phases: _____ Stand-alone generator?: _____
Cost: $0.00

Substation

Substation Name: _____ Xcel Owned Transmission? _____
Substation Transformer: _____ Existing Generation (MW)*: _____
Total Queued Generation
Transformer Rating (MVA): _____ (MW)*: _____
Transformer Daytime Min
Loading (MVA): _____ Feeder distance from site to
LTC or Regulator: Regulator _____ Substation (feet): _____

*Generation assumed to be in MW AC

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 Solar*Rewards 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:
  - Apply for the next larger program type; or
  - Apply under the DG Net Metering only option.

Interconnection Requirements DG Manual

CO DER Interconnection Documents: Production Meter Change

The following documents were updated based on making changes to remove the PV production meter requirement for distributed generation systems 10kWdc or less (p.29) and address the disconnect switch (p.19). The updated documents have been placed on the Xcel Energy – Solar Developer Resources webpage and the Interconnection webpage.

- Interconnection Requirements (DG Manual) – Updated August 6, 2020
- Storage Guidance 2 (Renewable, Utility-side of Production Meter) (PDF)
- Storage Guidance 3 (Renewable, PV-side of Production Meter) (PDF)
- Declaration 2B and 2C
- Declaration 3A and 3B

Installation Standards

The Xcel Energy Standard for Electric Installation and Use (Blue Book) was revised on 11/15/18

- Please make sure that all documents submitted include the correct revision date and section numbers

Exception Form , on pages 6 and 7, for requesting exceptions to the “Xcel Energy Standard For Electric Installation and Use.”

Large Quantity of Applications

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

- Give notice to 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.

Additional Resources

- Sample documents, forms, and solar agreements can be found on the On-site Solar Developer Resources Page.
- Solar*Rewards Program Page
  - The Solar*Rewards page provides the current incentive standard offers.
- Net Energy Metering Program Page
- On-Site Solar Developer Resources
- How to Interconnect
- Assignment of Contract
- Smart Meter Installation
- Colorado Residential Time of Use Rate

Thank you!

Thank you for reading the 2021 Solar Installer Training

Still have questions? We are here to help!

Email: SolarProgram@xcelenergy.com

Solar Hotline: 303.571.7652 (9am-3pm M-F)