



# GUIDE TO RESIDENTIAL SOLAR GENERATION & NET METERING

*Understanding the process to connect your solar array to the  
Shrewsbury Electric & Cable Operations electrical distribution system.*





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**PLEASE NOTE:** Effective 03/04/2016 all interconnect agreements submitted for net metering will be subject to future revisions of SELCO's net metering tariff. This includes revisions to the tariff that will credit the *wholesale* rate for electricity generated onto our system and or add a solar demand or additional distribution charge to the net metered customer.

# GUIDE TO RESIDENTIAL SOLAR

## What You Need to Know

Included in this guide are the documents that will help you understand the process of interconnecting your system to ours for net metering:

- Steps to take to interconnect your solar array
- Checklist to follow when applying to interconnect & net meter
- Customer questions and SELCO answers about net metering
- SELCO Policy 3.19 Residential Net Metering
- Critical forms for net metering your system
  - Interconnection Application/Agreement with Terms & Conditions
  - Certificate of Completion
- For Your Information
  - About finding a solar contractor
  - SELCO Energy Conservation Loan

## About Net Metering

Net Metering is a simple way to connect renewable energy systems (solar arrays) up to 10 Kilowatts AC in size to the electric grid to offset part or all of your electricity use and charges from SELCO. With net metering, excess energy produced by your solar system and not immediately used by your home is sent back out to our electric lines to be used by others while you receive a credit to your account. A net metered solar installation allows you to take electricity from our distribution lines at night or any time when your solar system is not meeting your needs.

When you use electricity supplied by SELCO, your available solar credit (if any) will be applied toward eligible energy charges.

The Net Metering policy enclosed in this guide was adopted by the Board of Commissioners in July, 2007 and updated most-recently in September, 2013 to include systems which are owned by the customer.

**Important: No customer can enter into a Purchase Power Agreement (PPA) with an agent or solar installer and purchase the power as it is produced. Customers must purchase the solar generation system outright and own all power produced to be eligible for net metering.**

Whether you are ready to begin or simply have specific questions about your system, contact our Electric Division at 508-841-8500 and ask to speak with the Electric Systems Manager. Completed application and signed agreement forms should be delivered to SELCO at 100 Maple Ave. Shrewsbury, MA 01545 and addressed to the Electric Systems Manager/Solar Installation or emailed to [riaccarino@shrewsburyma.gov](mailto:riaccarino@shrewsburyma.gov)

# GUIDE TO RESIDENTIAL SOLAR

## Steps to Connect a Solar Array for Net Metering

When you have found a solar contractor and decided on the system to be installed, take these steps to confirm that your system can be connected to the SELCO distribution system. If your contractor installs your system before our approval of the application, you run the risk of needing costly changes before we can allow your solar array to interconnect to our electric grid.

1. Submit the following to:

Electric System Manager/Solar Installation  
SELCO  
100 Maple Ave.  
Shrewsbury, MA 01545

Or via email at [riaccarino@shrewsburyma.gov](mailto:riaccarino@shrewsburyma.gov)

- Simplified Application/Interconnection Agreement for Net Metered Electrical Generation
  - A one-line drawing of your generation system showing that it meets our system installation requirements
  - Specifications showing the materials (panels & inverters) to be installed meeting all required codes as noted in the agreement
2. APPROVAL CONFIRMATION - You will receive notice from SELCO directly that your system layout and materials have been approved for installation. Share this information with your contractor.
  3. ELECTRICAL & BUILDING PERMITS - You (or your contractor/installer) must obtain electrical and building permits from the Town of Shrewsbury. Then installation can begin.
  4. ELECTRICAL INSPECTION - After you complete the system installation, you should call the wiring inspector at 508-841-8500 for a final inspection and sign off on your Certificate of Completion which is included with your application package. **Be sure to have the Certificate of Completion on-site during the final inspection.** Our Engineer will review the system and sign the Certificate of Completion to be kept on file at the SELCO office.
  5. CERTIFICATE OF COMPLETION & SOLAR RENEWABLE ENERGY CREDITS (SRECS) - Upon your request, we will provide a letter stating that SELCO has approved the interconnection of your system to the electric grid. This letter can be used for obtaining solar renewable energy credits. Your contractor/installer or sales agent will likely act as your agent to register for the credits and payments if applicable. SELCO does not retain the rights to SRECs nor act as an agent for customer registration of SRECs.

# GUIDE TO RESIDENTIAL SOLAR

## SELCO Checklist:

### Interconnection & Net Metering of Your Solar Array

#### APPLY FOR SELCO LOAN

- ☐ If you are planning to apply for SELCO's 0% Interest Energy Conservation Loan, you must first apply for the loan and receive approval before proceeding to the next step.

#### APPLY FOR INTERCONNECTION:

- ☐ Prepare an Interconnection Application/Agreement for Net Metering to include:
  - ☐ System sizing and inverter specification information (spec sheets)
  - ☐ Contact information for the installing contractor
  - ☐ One-line electrical diagram of the installation as proposed
  - ☐ Sign, date and mail the application and information to the Electric System Manager/Solar Installation or email the completed application and supporting documentation to [riaccarino@shrewsburyma.gov](mailto:riaccarino@shrewsburyma.gov)
- ☐ Confirm receipt of your Interconnection Application by calling 508-841-8500 and ask for the Electric System Manager or email [riaccarino@shrewsburyma.gov](mailto:riaccarino@shrewsburyma.gov).

#### THEN WAIT FOR:

- ☐ Approval to proceed - a copy of your application/agreement will be returned with the approval signature and date noted.
- ☐ Local permits as required - your contractor/installer will likely apply for all required local permits including the wiring/electrical permit and building permit.

#### INSTALL:

- ☐ Construction completed and system is ready for operation.
- ☐ Local inspections completed and passed including wiring/electrical inspection.

#### ACTIVATE:

- ☐ SELCO has been called (508-841-8500) and the inspection scheduled.
- ☐ SELCO has inspected the installation and installed a bidirectional meter (if not previously installed).
- ☐ SELCO has signed the Certificate of Completion & returned a copy to you for your records.
- ☐ System activated and generating power.

#### ONGOING RESPONSIBILITIES:

- ☐ Any planned changes to your system require that you notify SELCO at least 30 days prior to the work being performed. This includes any increase in the power rating.
- ☐ A change in ownership requires that you notify SELCO in advance and the new owner must sign an agreement for continuing operation of the system.



# GUIDE TO RESIDENTIAL SOLAR

## Important Points:

### Customer Questions About Net Metering

#### WHAT IS NET METERING?

For customers who generate their own electricity using small-scale energy systems, net metering measures both the electricity you receive from SELCO and the electricity you deliver to SELCO using your own generating equipment.

The electric meters let us track the “net” difference as you generate excess electricity and take electricity from the electric grid.

#### HOW DOES NET METERING WORK?

Basically, net metering is a special metering installation and billing arrangement between you and SELCO.

Normally, your electric meter only measures the amount of electricity that SELCO sends into your home or business. A net-metering arrangement means the meter can also measure the excess electricity your generating system produces that comes back into the SELCO system.

If your generation system makes more electricity than you need at any given time, net metering allows this electricity to run “backward” through the metering installation and out into the SELCO distribution system. We measure this and then credit you for the full value for the electricity you generate but don’t use.

Net metering can usually be accomplished using a special meter at your home or business.

#### HOW WILL I BE BILLED?

Just as we do now, we will continue to read your meter and you will receive electric bills on your normal billing schedule.

Each month you will either see a charge or a credit on your bill. Our equipment takes into account the total amount of electricity you have received from

### What SELCO Allows

SELCO offers net metering to customers who wish to generate their own electricity with solar powered electric systems of 10kW AC or less in generating capacity.

Once SELCO reviews and approves a customer-owned electric generation system, net metering allows a customer to be connected to the utility’s distribution system.

Any excess electricity generated by a customer can be credited to the customer’s account at the same rate they are charged for electricity.

PLEASE NOTE: SELCO customers wishing to install solar must:

1. Own the home where the panels will be installed.
2. Own the panels.
3. Own all power produced.

You cannot enter into panel leasing arrangements or third-party power purchase agreements within the SELCO service territory.

No third-party may retain ownership of the panels on your home or any of the power generated.

# GUIDE TO RESIDENTIAL SOLAR

SELCO as well as the total amount of electricity you have delivered to SELCO in a given billing cycle and calculates the *net* amount owed to SELCO or credited to your account by SELCO. Your system will only supply energy back to SELCO's grid when your system is producing more energy than your home is using at any given time.

If you use more energy than you generate in a given billing cycle, you would be a “net consumer,” and the net amount due would appear as a charge on the current bill.

If your system generated more power than you used in a given billing cycle, you would be a “net generator” for that billing cycle, and the difference would appear as a negative charge on the current bill and as a credit on your next bill. This credit will most-likely be used up during months of less on-site generation (e.g. in winter months).

## WHAT ARE THE BENEFITS OF NET METERING?

By generating your own electricity, you may reduce the amount of energy you use from SELCO and reduce your electricity bills. With a net metering arrangement, any excess electricity that you generate and do not use can be fed back to the utility, which will again reduce your electricity bill. Your excess electricity now offsets electricity you would otherwise have to buy at full retail prices, and this makes owning your own generating system more cost-effective.

Without net metering, one alternative would be to purchase batteries to store the excess power for later use. Having your own battery storage for electricity is very expensive, and would typically only benefit you during a period when the SELCO's power is off for some reason. We suggest serious consideration be given to this cost/benefit issue before choosing to install a battery back-up system.

Net metering allows you to get credit for the energy you generate at the retail rate.

## AM I ELIGIBLE FOR NET METERING?

In Shrewsbury, any SELCO electricity customer in good standing who generates at least some of their electricity is potentially eligible for net metering. *Solar energy* must power your generating system. Currently, other types of generating systems are not eligible for net metering. The generating system may not have a capacity greater than 10kW AC.

## WHAT ARE THE TECHNICAL REQUIREMENTS?

A net metering system used by a home owner or business must include, at the customer's own expense, all equipment necessary to meet applicable safety, power quality, and interconnection requirements established by the National Electrical Code (NEC), National Electrical Safety Code (NESC), the Institute of Electrical and Electronics Engineers (IEEE), the Underwriters Laboratories (UL), and any applicable state and local agencies.

These Interconnection Standards are listed in SELCO's Net Metering Policy in the appendix. SELCO may request a system test before you connect to the electric grid.



# GUIDE TO RESIDENTIAL SOLAR

## For Your Information:

### Solar Installation Contractors

While SELCO does not recommend installers, we can offer some tips. First, be sure whoever you hire is a licensed contractor/electrician and that they pull all required building and electrical permits from the Town of Shrewsbury. To help you select the right contractor, consider asking them the following questions:

- How many similar systems have you installed?
- Have you worked with a municipal electric utility before?
- When would you be able to perform the installation?
- How long will the project take?
- Please describe the warranty that you provide on the system.
- Have you worked with local building officials and utility representatives when installing similar systems in the past? Are there any unresolved issues with these representatives?
- Do you have a MA licensed electrician as part of the project team?
- Will you hire subcontractors to complete portions of the project? What firms will you hire and what will they do?
- What kind of training will you provide me with so that I can better operate and maintain my solar generation system?
- Will you or a partner company be able to assist me in selling the SRECs generated by my solar generation system?

Installers and vendors can help you with a more detailed site and financial assessment. In addition, they will be responsible for providing you with a turnkey service and installation. You are responsible for performing your own due diligence with regard to the experience and qualifications of a potential contractor and for making sure that they meet SELCO requirements.

### What We Can Do

SELCO offers free home energy audits and free solar site evaluations through the Home Energy Loss Prevention Service (HELPS).

If you are considering installing a solar array, call HELPS first at **1-888-333-7525** to request an audit and site evaluation.

Our energy auditor will evaluate your home for energy efficiency opportunities and will determine if your property is a prime location for solar power generation.

Customers seeking a SELCO loan are required to get an energy audit prior to applying.

# GUIDE TO RESIDENTIAL SOLAR

## For Your Information:

### SELCO Energy Conservation Loan Program

SELCO offers 0% interest energy conservation loans for owner-occupied homes or condominiums. These loans are available for installation of solar panels. Residents must contact HELPS for a free home energy audit (1-888-333-7525) and submit a loan application for pre-approval *before the start of any work.*

#### LOAN AMOUNT & TERM

Solar loans are available for a maximum of \$10,000 at zero percent (0%) interest over five (5) years. The loan payment will appear as a monthly line item on your SELCO electric bill until the total loan amount is paid off.

#### LOAN APPLICATION PROCESS

1. Customers who are contemplating applying for the 0% interest loan program must first have a free energy audit. The appointment can be scheduled by calling the HELPS program at 1-888-333-7525. SELCO Energy Conservation Loans are available only for owner-occupied homes where the resident has been a SELCO customer for a minimum of 1 year.
2. Based upon the audit recommendations and the customer's desire to make the improvements, the customer should get a cost estimate for the proposed work. If a contractor is hired, both labor and material costs are covered.
3. The Energy Conservation Loan Application (Form A) is available at the SELCO office or online at <http://selco.shrewsburyma.gov/loans>. The Application form and a copy of the Energy Audit must be submitted to SELCO.
4. SELCO will review the application and notify the customer of approval or denial of the Loan Application. In the case of the application not being approved, a reason will be given.
5. The customer then proceeds to have the approved work completed.
6. Following the project completion, the customer again calls the HELPS program for a post-installation inspection.
7. The customer will submit a Payment Application (Form B), a copy of paid receipts for the work done, and a copy of the post-installation inspection report at this time. The customer will sign and return a notarized Loan Agreement Contract (Form C). A notary public is available at the Town Clerk's office in the Shrewsbury Town Hall.
8. SELCO will process a check for payment and begin billing the customer for the amount due in equal amounts for a period of up to sixty (60) months. A one-time \$100 administrative fee will be billed along with the first loan installment.
9. To apply for a loan, download the necessary forms at <http://selco.shrewsburyma.gov/loans>

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## SELCO Solar FAQs

### WHAT IS NET METERING?

Net metering is an agreement by which a customer with solar panels is allowed to transfer surplus power produced by their panels onto the grid. That excess power is purchased by SELCO, resulting in a credit on their bill.

### DOES SELCO OFFER NET METERING?

Yes. SELCO has a residential net metering policy. However, this policy is only applicable for projects up to a certain size and is only applied to panels owned by the customer. This means projects constructed through panel leasing agreements and/or third-party power purchase agreements (PPAs) do not qualify for net metering and are not permissible under existing policy.

### DOES SELCO OFFER ANY OTHER SOLAR INCENTIVES?

SELCO customers are not eligible for state rebates through the state's Commonwealth Solar/Clean Energy Center program. However, SELCO customers are able to take advantage of any state or federal solar tax credits that might be available.

Additionally, SELCO offers a 0% interest energy conservation loan for \$10,000 for five years. Customers interested in receiving a loan need to follow the instructions for the loan program found online. When you call HELPS for an energy audit, you can request a solar site evaluation as well, SELCO provides this service for free.

### CAN SELCO RECOMMEND ANY SOLAR INSTALLERS?

No. SELCO does not recommend installers. Be sure whoever you hire is a licensed contractor/electrician and that they pull all required building and electrical permits from the Town of Shrewsbury.

### DO I HAVE TO OWN THE SOLAR PANELS?

Yes. Residential SELCO customers wishing to install solar must:

1. Own the home where the panels will be installed.
2. Own the panels.
3. Own all power produced.

You cannot enter into panel leasing arrangements or third-party power purchase agreements within the SELCO service territory. This means that you may not lease solar panels from any company that will retain ownership of the panels or the power generated.

# GUIDE TO RESIDENTIAL SOLAR

## Appendix:

### Policies & Applications

- SELCO Policy 3.19 Customer Owned Generation (Residential)
- Simplified Process Interconnection Application & Service Agreement
- Terms & Conditions for Simplified Process Interconnections
- Certificate of Completion for Simplified Process Interconnections
- SELCO Energy Conservation Loan Application



**DEPARTMENT: ELECTRIC OPERATIONS**

**POLICY #: 3.19**

**REVISION DATE: 05/01/2016**

**SUBJECT: INTERCONNECTION REQUIREMENTS FOR CUSTOMER  
OWNED NET METERED GENERATION FACILITIES**

## **POLICY**

This policy sets forth interconnection requirements, equipment specifications, and proposed metering for residential customers who may choose self-generation of electric energy using renewable energy sources including wind and solar.

SELCO sets the maximum kW of solar energy panels connected to our facilities through net metering. Maximum aggregate net meter installations connected to the SELCO electric distribution system will be 3,420 kW. The amount may be adjusted from time to time as SELCO's Electric Peak changes.

### **1. APPLICABILITY OF POLICY**

1. The net metering facility must be installed behind a retail meter at an owner-occupied single family home or duplex, or an outbuilding, such as a barn or garage, whether served by a single meter or separate meter, owned by the customer and used in connection with the customer's residence.
2. Customer generation types include photovoltaic, wind turbine units, and micro turbine (heat recovery) installations.

Traditional gasoline or natural gas fired portable or permanently mounted emergency generators are explicitly excluded from this policy.

3. Maximum peak electric output of the generating installation covered by this policy is 10kW.
4. A portion of the energy generated from the net metering facility must be consumed onsite for items other than parasitic load;
5. The customer is solely responsible for securing and complying with all local permitting processes including zoning, electrical, building inspection, and any and all other special permits that may be required.

**SUBJECT: INTERCONNECTION REQUIREMENTS FOR CUSTOMER  
OWNED NET METERED GENERATION FACILITIES**

**2. APPLICATION**

**Applications**

Application Forms – Available at SELCO office, 100 Maple Ave, Shrewsbury MA and on the SELCO website: <http://SELCO.ShrewsburyMA.gov/Solar>

1. Simplified Process Interconnection Application and Service Agreement – Form A
2. Certificate of Completion for Simplified Process Interconnections – Form B

**Application Process**

1. Read and become familiar with the Policy “Interconnection Requirements for Customer Owned Generation Facilities.”
2. Sign and return two (2) copies of the “Simplified Process Interconnection Application and Service Agreement – Form A” to SELCO’s Electric System Manager, 100 Maple Avenue, Shrewsbury, Massachusetts 01545 or via email to Ralph Iaccarino [riaccarino@shrewsburyma.gov](mailto:riaccarino@shrewsburyma.gov)
  - a. Include \$250.00 application fee.
3. SELCO will respond in writing via email or hard copy a signed copy of the Interconnection Application (Form A) which will serve as the notice to proceed.
4. Customer must apply for and pay for all applicable permit fees (e.g. electrical and building) prior to the start of any work.
5. Contact SELCO’s Wiring Inspector and request for approval of location for the required disconnect switch and relation of the service entrance and revenue meter.
6. Once the work has been completed, contact SELCO’s Wiring Inspector to request a final inspection of the Facility and sign the “Certificate of Completion – Form B.”
7. Submit the completed Certificate of Completion to SELCO’s Electric System Manager, 100 Maple Avenue, Shrewsbury, Massachusetts 01545 or via email to Ralph Iaccarino [riaccarino@shrewsburyma.gov](mailto:riaccarino@shrewsburyma.gov)
  - a. Include \$150.00 net meter installation fee.
  - b. SELCO will install the net meter and authorize operation of the system.



**SUBJECT: INTERCONNECTION REQUIREMENTS FOR CUSTOMER  
OWNED NET METERED GENERATION FACILITIES****3. GENERAL PROVISION****Notice Provisions**

If at any time, in the reasonable exercise of SELCO's judgment, operation of the facility adversely affects the quality of service to SELCO's customers or interferes with the safe and reliable operation of the Distribution System, SELCO may discontinue interconnection service to the Interconnecting Customer until the condition has been corrected. Unless an emergency exists or the risk of one is imminent, SELCO shall give Interconnecting Customer reasonable notice of its intention to discontinue service and, where practical, allow suitable time for interconnecting Customer to remedy the offending condition. SELCO's judgment with regard to discontinuance of deliveries or disconnection of facilities under this paragraph shall be made in accordance with Good Utility Practice. In the case of such discontinuance, SELCO shall immediately confer with Interconnecting Customer regarding the conditions causing such discontinuance and its recommendation concerning the timely correction thereof.

**Access and Control**

Representatives of SELCO shall, at all reasonable times, have access to the Facility to make reasonable inspections. At the Facility, such representatives shall make themselves known to the Interconnecting Customer's personnel, state the object of their visit, and conduct themselves in a manner that will not interfere with the construction or operation of the Facility. SELCO will have control such that it may open or close the circuit breaker or disconnect.

**Force Majeure**

An event of Force Majeure means any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any curtailment, order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond either party's control. A Force Majeure event does not include an act of negligence intentional wrongdoing. Neither SELCO nor the Interconnecting Customer will be considered in default as to any obligation under Interconnection Requirements if prevented from fulfilling the obligation due to an event of Force Majeure. However, a party whose performance is hindered by an event of Force Majeure shall make all reasonable efforts to perform its obligations under this Interconnection Requirements.

**SUBJECT: INTERCONNECTION REQUIREMENTS FOR CUSTOMER  
OWNED NET METERED GENERATION FACILITIES****Indemnification**

The Interconnecting Customer shall at all times indemnify, defend, and save SELCO harmless from any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demands, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from SELCO's performance of its obligations under this Interconnection Requirements on behalf of the Interconnecting Customer, except in cases of gross negligence or intentional wrongdoing by SELCO.

**4. PROTECTION REQUIREMENTS****General Requirements**

- a. If, due to the interconnection of the Facility, when combined with preexisting facilities interconnected to SELCO's system, the rating of any of SELCO's equipment or the equipment of others connected to SELCO's system will be exceeded or its control function will be adversely affected, SELCO shall have the right to require the Interconnecting Customer to pay for the purchase, installation, replacement or modification of equipment to eliminate the condition. Where such action is deemed necessary by SELCO, SELCO will, where possible, permit the Interconnecting Customer to choose among two or more options for meeting SELCO's requirements as described in this Protection Policy.
- b. The Facility shall provide a disconnect switch at the interconnection point with SELCO that can be opened for isolation. The switch shall be in a location accessible to Company personnel at all times. SELCO shall have the right to open this disconnect switch during emergency conditions and with reasonable notice to the Interconnecting Customer at other times. SELCO shall exercise such right in accordance with Good Utility Practice. The switch shall be gang operated, have a visible break when open, be rated to interrupt the maximum generator or photovoltaic output and be capable of being locked open, tagged and grounded on the SELCO side by SELCO personnel. The switch shall be code compliant and of a type generally accepted for use in this application. The switch should be located within view of the revenue meter.

**SUBJECT: INTERCONNECTION REQUIREMENTS FOR CUSTOMER  
OWNED NET METERED GENERATION FACILITIES**

**5. REQUIREMENTS FOR INVERTER-BASED INSTALLATIONS**

**Facilities**

- a.** SELCO's distribution circuits generally operate with automatic reclosing following a trip without regard to whether the Facility is keeping the circuit energized. The Interconnecting customer is responsible for protecting its equipment from being re-connected out of synchronism with SELCO's system by an automatic line enclosure operation.
- b.** The following information must be submitted by the Interconnecting Customer for review and acceptance by SELCO prior to SELCO's approving the Interconnecting Customer's request for interconnection:
- An electrical one-line diagram or sketch depicting how the inverter will be interconnected relative to the service entrance panel and the electric revenue meter. The diagram must show all devices for the system, including equipment ratings, wire sizes and a visible accessible and lockable disconnect switch ("safety switch"). The disconnect switch must be installed in a readily accessible location normally within view of the SELCO revenue meter, where utility personnel can operate the switch if required.
  - The make, model and manufacturer's specification sheet for the inverter.
- c.** For Facilities that utilize photovoltaic technology, it is required that the system be installed in compliance with IEEE Standard 929-2000, "IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems". The inverter shall meet the Underwriters Laboratories Inc. Standard UL 1741, Static Inverters and Charge Controllers for Use in Photovoltaic Power Systems". Based on the information supplied by the Interconnecting Customer, if SELCO determines the inverter is in compliance with UL 1741, the Interconnecting Customer's request for interconnection will be approved.
- d.** For Facilities that utilize wind technology or other direct current energy sources and employ inverters for production of alternating current, the inverter shall meet the Underwriters Laboratories Inc. Standard UL 1741, "Static Inverters and Charge Controllers for Use in Photovoltaic Power Systems." Based on the information supplied by the Interconnecting Customer, if SELCO determines the inverter is in compliance with UL 1741, the Interconnecting Customer's request for interconnection will be approved.

**SUBJECT: INTERCONNECTION REQUIREMENTS FOR CUSTOMER  
OWNED NET METERED GENERATION FACILITIES**

**6. METERING**

**Metering, Monitoring, and Communication**

This Section sets forth the rules, procedures, and requirements for metering, monitoring and communication between the Facility and SELCO where the interconnected facility exports power or is net metered or may otherwise be subject to ISO requirements. Interconnecting Customer will be responsible for reasonable and necessary costs incurred by SELCO for the purchase, installation, operation, maintenance, testing, repair and replacement of metering and data acquisition equipment. Interconnecting Customer's metering (and data acquisition, as required) equipment shall conform to rules and applicable operating requirements.

**Metering, Related Equipment and Billing Options**

SELCO shall furnish, read and maintain all revenue metering equipment.

The Interconnecting Customer shall furnish and maintain all meter mounting equipment such as or including:

- Meter sockets, test switches, conduits, and enclosures.
- An inter system bonding terminal shall be provided if not presently installed.
- An approved single-handle-operated manual bypass meter socket shall be provided if not presently installed.
- Provide a safety disconnect device located adjacent to SELCO's revenue meter that shall be accessible to SELCO personnel at all times. The disconnect device must be lockable by means of a padlock in the open position. SELCO may use this disconnect device to disconnect the customer's generating facility from the power system any time it deems that the safety and stability of SELCO's system may be compromised as determined by SELCO in its sole discretion. SELCO will when possible notify the customer prior to disconnecting the generating facility.
- For solar installations, SELCO requires replacing Federal Pacific electrical panels and breakers in the home or business that will connect to the solar system regardless of whether the panel is to be back-fed or a line side tap is used.
- For billing rates, please refer to SELCO residential net metering rate, NR-1, available on the SELCO website: <http://SELCO.ShrewsburyMA.gov/Rates>

**POLICY #: 3.19**

**REVISION DATE: 05/01/2016**

**SUBJECT: INTERCONNECTION REQUIREMENTS FOR CUSTOMER  
OWNED NET METERED GENERATION FACILITIES**

Except as provided below, SELCO shall own the meter and the Interconnecting Customer shall pay to SELCO a monthly charge to cover meter maintenance, incremental reading and billing costs, the allowable return on the invoice cost of the meter and the depreciation of the meter, if any. These charges, if any, are set forth in the applicable SELCO rates, as amended from time to time.

All metering equipment installed pursuant to this Policy and associated with the Facility may be routinely tested by SELCO at Interconnecting Customer's expense, in accordance with applicable Company and/or ISO-NE criteria, rules and standards. If, at any time, any metering equipment is found to be inaccurate by a margin greater than that allowed under applicable criteria, rules and standards, SELCO shall cause such metering equipment to be made accurate or replaced. The cost to repair or replace the meter shall be borne by SELCO, if SELCO owns the meter. Meter readings for the period of inaccuracy shall be adjusted so far as the same can be reasonably ascertained; provided, however, no adjustment prior to the beginning of the preceding month shall be made except by agreement of the Parties. Each Party shall comply with any reasonable request of the other concerning the sealing of meters, the presence of a representative of the other Party when the seals are broken and the tests are made, and other matters affecting the accuracy of the measurement of electricity delivered from the Facility. If either Party believes that there has been a meter failure or stoppage, it shall immediately notify the other.

The type of equipment to be installed at a Facility is:

- Net Metering – For Facilities 10 kW or less.
- Net meter – The meter register subtracts reverse (received by the utility) energy from forward (delivered to the customer) energy. The Customer will receive a credit when the received energy is greater and will be billed when the delivered energy is greater.
- Any net metering credits first will be applied to the net metering account and any surplus net metering credits remaining after six (6) months may be applied to another “linked” residential account of the same customer.

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**SELCO Simplified Process Interconnection Application  
and Service Agreement – Form A**

**Contact Information:**

Date Prepared: \_\_\_\_\_

Legal Name and address of Interconnecting Customer:

Customer Name (print): \_\_\_\_\_ Contact Person: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_ Cell: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

*Find the following information on your SELCO electric bill:*

Electric Acct # \_\_\_\_\_

Meter #: \_\_\_\_\_

**Alternative Contact Information** (e.g., system installation contractor or coordinating company, if appropriate):

Company Name: \_\_\_\_\_ Contact Person: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_ Cell: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

**Electrical Contractor Contact Information** (if appropriate):

Name: \_\_\_\_\_ Telephone: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

**Facility Information** (if appropriate):

Address of Facility: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Inverter Manufacturer: \_\_\_\_\_ Model Name and Number: \_\_\_\_\_ Quantity: \_\_\_\_\_

Nameplate Rating: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA) \_\_\_\_\_ (AC Volts) Single \_\_\_\_\_ or Three Phase \_\_\_\_\_

System Design Capacity: \_\_\_\_\_ (DC)(kW)

Maximum System Output \_\_\_\_\_ (kW AC) \_\_\_\_\_ (kVA)

Prime Mover: Photovoltaic ☐ Micro Turbine ☐ Fuel Cell ☐ Turbine ☐ Other ☐

Energy Source: Solar ☐ Wind ☐ Hydro ☐ Diesel ☐ Natural Gas ☐ Fuel Oil ☐ Other \_\_\_\_\_

IEEE 1547.1 (UL 1741) Listed? Yes \_\_\_\_\_ No \_\_\_\_\_

**Estimated Install Date:** \_\_\_\_\_

**Estimated In-Service Date:** \_\_\_\_\_

## Terms and Conditions for Simplified Process Interconnections

1. **Construction of the Facility.** The Interconnecting Customer may proceed to construct the Facility once the Approval to install the Facility has been signed by SELCO.
2. **Interconnection and Operation.** The Interconnecting Customer may operate Facility and interconnect with SELCO's system once the following has occurred:
  - 2.1. **Municipal Inspection.** Upon completing construction, the Interconnecting Customer will cause the Facility to be inspected or otherwise certified by the local electrical wiring inspector with jurisdiction.
  - 2.2. **Certificate of Completion.** The Interconnecting Customer returns the Certificate of Completion appearing as Form B to the Agreement to SELCO at address noted.
  - 2.3. **Company has completed or waived the right to inspection.**
3. **Company Right of Inspection.** Within ten (10) business days after receipt of the Certificate of Completion, SELCO may, upon reasonable notice and at a mutually convenient time, conduct an inspection of the Facility to ensure that all equipment has been appropriately installed and that all electrical connections have been made in accordance with the Interconnection Policy. SELCO has the right to disconnect the Facility in the event of improper installation or failure to return Certificate of Completion. If SELCO does not inspect in 10 days or by mutual agreement of the Parties, the Witness Test is deemed waived.
4. **Safe Operations and Maintenance.** The Interconnecting Customer shall be fully responsible to operate, maintain, and repair the Facility.
5. **Access.** SELCO shall have access to the disconnect switch of the Facility at all times.
6. **Disconnection.** SELCO may temporarily disconnect the Facility to facilitate planned or emergency SELCO work.
7. **Metering and Billing.** All Facilities approved under this Agreement qualify for net metering, as approved by the Department from time to time, and the following is necessary to implement the net metering provisions:
  - 7.1. **Interconnecting Customer Provides Meter Socket.** The Interconnecting Customer shall furnish and install, if not already in place, the necessary meter socket and wiring in accordance with accepted electrical standards.
  - 7.2. **SELCO Installs Meter.** SELCO shall furnish and install a meter capable of net metering within ten (10) business days after receipt of the Certificate of Completion (Form B) if inspection is waived, or within 10 business days after the inspection is completed, if such meter is not already in place.
8. **Indemnification.** Interconnecting Customer shall indemnify, defend and hold SELCO, its directors, officers, employees and agents (including, but not limited to, Affiliates and contractors and their employees), harmless from and against all liabilities, damages, losses, penalties, claims, demands, suits and proceedings of any nature whatsoever for personal injury (including death) or property damages to unaffiliated third parties that arise out of, or are in any manner connected with, the performance of this Agreement by that party, except to the extent that such injury or damages to unaffiliated third parties may be attributable to the negligence or willful misconduct of the party seeking indemnification.
9. **Limitation of Liability.** SELCO's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall SELCO be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever.
10. **Termination.** This Agreement may be terminated under the following conditions:
  - 10.1. **By Mutual Agreement.** The Parties agree in writing to terminate the agreement.
  - 10.2. **By Interconnecting Customer.** The Interconnecting Customer may terminate this Agreement by providing written notice to SELCO.
  - 10.3. **By SELCO.** SELCO may terminate this Agreement (1) if the Facility fails to operate for any consecutive 12 month period, or (2) in the event that the Facility impairs the operation of the electric distribution system or service to other customers or materially impairs the local circuit and the Interconnecting Customer does not cure the impairment.

**Assignment/Transfer of Ownership of the Facility.** This Agreement shall survive the transfer of ownership of the Facility to a new owner when the new owner agrees in writing to comply with the terms of this Agreement and so notifies SELCO.

11. **Interconnection Tariff.** These Terms and Conditions are pursuant to SELCO's Policy for the Interconnection of Customer-owned Generating Facilities, and as the Policy may be amended from time to time.

Interconnecting Customer

SELCO

Sign\_\_\_\_\_

Sign\_\_\_\_\_

Name \_\_\_\_\_

Name \_\_\_\_\_

Date\_\_\_\_\_

Date\_\_\_\_\_

Please note:

1. An inter system bonding terminal shall be provided if not presently installed.
2. An approved single-handle-operated manual bypass meter socket shall be provided if not presently installed.
3. For solar installations, SELCO requires replacing Federal Pacific electrical panels and breakers in the home or business that will connect to the solar system regardless of whether the panel is to be back-fed or a line side tap is used.
4. Submit photos of the grounding/bonding of the solar arrays to the structure via email to the wiring inspector: John Laverty [jlaverty@shrewsburyma.gov](mailto:jlaverty@shrewsburyma.gov)

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## Certificate of Completion for Simplified Process Interconnections – Form B

### Installation Information:

☐ Check if owner-installed

Customer (print): \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_ Cell: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Address of Facility (if different from above): \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Electrical Contractor's Name (if appropriate): \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone (Daytime): \_\_\_\_\_ (Evening): \_\_\_\_\_ Cell: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

License number: \_\_\_\_\_

Date of Approval to install Facility granted by SELCO: \_\_\_\_\_

Application ID Number: \_\_\_\_\_

### Inspection:

The system has been installed and inspected in compliance with the local Building/Electrical Code of

(City/County): \_\_\_\_\_

Signed (Local Electrical Wiring Inspector, or attach signed electrical inspection): \_\_\_\_\_

Name (printed): \_\_\_\_\_ Date: \_\_\_\_\_

I hereby certify that, to the best of my knowledge, all of the information provided in this application is true and I agree to the Terms and Conditions on the following page:

Interconnecting Customer Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_

***Please attach any documentation provided by the inverter manufacturer describing the inverter's UL 1741 listing.***

Approval to Install Facility (For Company use only)

Installation of the Facility is approved contingent upon the terms and conditions of this Agreement, and agreement to any system modifications, if required (Are system modifications required? Yes \_\_\_ No \_\_\_ To be Determined \_\_\_):

Company Signature: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Print Name: \_\_\_\_\_

Application ID number: \_\_\_N/A\_\_\_ Company waives inspection/Witness Test? Yes \_\_\_

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# SHREWSBURY ELECTRIC AND CABLE OPERATIONS

## Loan Application - Energy Conservation Loan

Form A

(See program terms and conditions on reverse)

### 1 Customer Information

- ▶ Please indicate the account number to which the SELCO Energy Conservation Loan payments will be attached.
- ▶ Note: The Credit Department will perform a check on the payment history of your account. SELCO reserves the right to decline a loan application based on past payment history

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: Shrewsbury, MA 01545

Evening Phone: \_\_\_\_\_

Day Phone: \_\_\_\_\_

SELCO Account # \_\_\_\_\_

### 2 Loan Request Information – Pre Approval

- ▶ Please indicate the amount of money requested by type of improvement on the lines below.
- ▶ Loan requests may not exceed these limits:
  - Replace Electric Heating System (with gas/oil or geothermal) \$10,000
  - Other Energy Efficiency Upgrades (insulation, windows, etc.) \$3,500
  - Other Alternative Energy (supplemental solar or wind) \$10,000
- ▶ See additional terms on reverse for specific efficiency requirements.

Heating Equipment: \$ \_\_\_\_\_

Insulation: \$ \_\_\_\_\_

Replacement  
Windows/Doors: \$ \_\_\_\_\_

Other Alternative Energy  
(Solar, Wind, etc.): \$ \_\_\_\_\_

**Total Estimate:**

\$ \_\_\_\_\_

### 3 Signature

- ▶ Upon review of this application, the customer will receive notification from SELCO.
- ▶ **Please include a copy of your HELPS Home Energy Audit with this application.**

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Please return this completed form along with all supplemental material to:**

**SELCO / Attention: Energy Conservation Loans  
100 Maple Ave.  
Shrewsbury, MA 01545**

### SELCO Energy Conservation Loan Application Process

1. Customers who are contemplating applying for the 0% interest loan program must first have a free energy audit. The appointment can be scheduled by calling the HELPS program at 1-888-333-7525.
2. Based upon the audit recommendations and the customer's desire to make the improvements, the customer should get a cost estimate for the proposed work. The customer may do the work him/her self, in this case the materials only are covered by the loan. If a contractor is hired both labor and material costs are covered.
3. The Energy Conservation Loan Application (Form A) is available at the SELCO office or online (<http://selco.shrewsbury-ma.gov/loans>). The Application form and a copy of the Energy Audit must be submitted to SELCO.
4. SELCO will review the application and notify the customer of approval or denial of the Loan Application. In the case of the application not being approved, a reason will be given.
5. The customer then proceeds to have the approved work completed.
6. Following the project completion, the customer again calls the HELPS program for a post-installation inspection.
7. The customer will submit a Payment Application (Form B), a copy of paid receipts for the work done, and a copy of the post-installation inspection report at this time. The customer will sign and return a notarized Loan Agreement Contract (Form C). A notary public is available at the Town Clerk's office in the Shrewsbury Town Hall.
8. SELCO will process a check for payment and begin billing the customer for the amount due in equal amounts for a period of up to sixty (60) months. A one-time \$100 administrative fee will be billed along with the first loan installment.

## SELCO Energy Conservation Loan – Terms and Conditions

### PROGRAM DESCRIPTION

SELCO is providing 0% interest loans for customers who chose to make energy efficiency improvements to their homes.

### ELIGIBLE PRODUCTS/IMPROVEMENTS

- ▶ Windows, doors, insulation
- ▶ Photovoltaic, wind and geothermal heat pumps
- ▶ Conversion of electric heat to gas/oil heating systems
- ▶ See web site ([www.energystar.gov](http://www.energystar.gov)) for a detailed list of qualifying products

### LOAN AMOUNTS

- ▶ Windows, Doors, Insulation – up to \$3,500
- ▶ Conversion from electric heat to gas/oil or geothermal heating systems – up to \$10,000
- ▶ Residential photovoltaic or wind – up to \$10,000
- ▶ Minimum loan amount - \$1,000
- ▶ Total loan amount cannot exceed \$10,000

### GENERAL CONDITIONS

1. Loan Applicants must be a SELCO electric customer; the account must be current with a good payment history.
2. Repayment of loan over a period of up to 60 months with equal monthly payments.
3. There is a \$100 administration fee for customers who have been approved and choose to receive a loan from SELCO. The one-time \$100 administrative fee will be billed along with the first loan installment.
4. Both a free energy audit before applying for the loan, and post-installation audit is required.
5. The loan does not apply to new construction, any work previously completed, or work currently in progress.
6. The loan program does not apply to siding, roofing, traditional on-site electric generation, or upgrades / replacements of existing gas/oil heating or water heating systems.
7. The program is for owner-occupied homes or condominiums only.
8. In the event of default or delinquent loan repayment by the customer, SELCO will initiate a municipal lien on the customer's property.

9. **NOTE:** Do not begin work until loan approval has been received from SELCO. Customer is responsible for any and all work begun prior to loan approval. SELCO does not guarantee payment until the loan process has been fully completed and a Loan Agreement Contract signed.

### ELIGIBLE EQUIPMENT

The following tables outline eligible equipment.

Electric heat replacement must be Energy Star rated and meet the following requirements:

Equipment	Rating
Gas Fired Warm Air Furnace	AFUE Rating $\geq$ 90%
Gas Fired Steam or Hot Water Boilers	AFUE Rating $\geq$ 85%
Oil Fired Warm Air Furnace	AFUE Rating $\geq$ 83%
Oil Fired Steam or Hot Water Boilers	AFUE Rating $\geq$ 85%
Geothermal Heat Pump	Energy Star Rated

Other efficiency upgrades must meet the following standards:

Equipment	Rating
Attic Insulation	Final R-Value $\geq$ R-30
Wall Insulation	Final R-Value $\geq$ R-13
Basement Insulation	Final R-Value $\geq$ R-19
Rim Joist Insulation	Final R-Value $\geq$ R-19
Heating and Hot Water Pipe Insulation	Final R-Value $\geq$ R-5
Replacement Windows, Doors and Sky Lights	Energy Star Rated & U-Factor $\leq$ .44

### ABOUT ENERGY STAR

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy.

#### **Energy Star Approved Equipment Lists**

Visit [www.energystar.gov](http://www.energystar.gov) and click "Products" for a complete list of Energy Star rated products. The list includes:

- ▶ Gas and Oil Furnaces and Boilers
- ▶ Insulation
- ▶ Windows, Doors and Sky Lights
- ▶ Geothermal Heat Pumps



**Questions? Call 508-841-8500**  
<http://selco.shrewsbury-ma.gov/loans>



