

# Interconnection Seminar

March 13, 2019  
Eversource Energy  
Hadley, MA

# Co-Hosts

EVERSOURCE

nationalgrid



Mass ACA



# Logistics & Agenda

- Facilities
  - Emergency exits
  - Restrooms
- Introductions
- Safety Moment
- Agenda
  - **Overview of Expedited/ Standard Interconnection Process**
    - **Everything Starts With The Application – *Four Key Documents***
  - **ISO NE Requirements**
  - **Smart Program**
  - **Smart Program Metering**
- **Questions/ Discussion**

# Interconnection Contacts

- Eversource Energy – Western MA DG
  - Carl Nowiszewski:
    - Email: [carl.nowiszewski@eversource.com](mailto:carl.nowiszewski@eversource.com)
  
  - Matthew Secovich:
    - Email: [matthew.secovich@eversource.com](mailto:matthew.secovich@eversource.com)
  
  - Renata Gamache:
    - Email: [renata.gamache@eversource.com](mailto:renata.gamache@eversource.com)
    - General Email: [wmdg@eversource.com](mailto:wmdg@eversource.com)
  
- SMART
  - Email: [SMART@eversource.com](mailto:SMART@eversource.com)
  - Toll Free Number- 844-726-7573

# Safety Moment

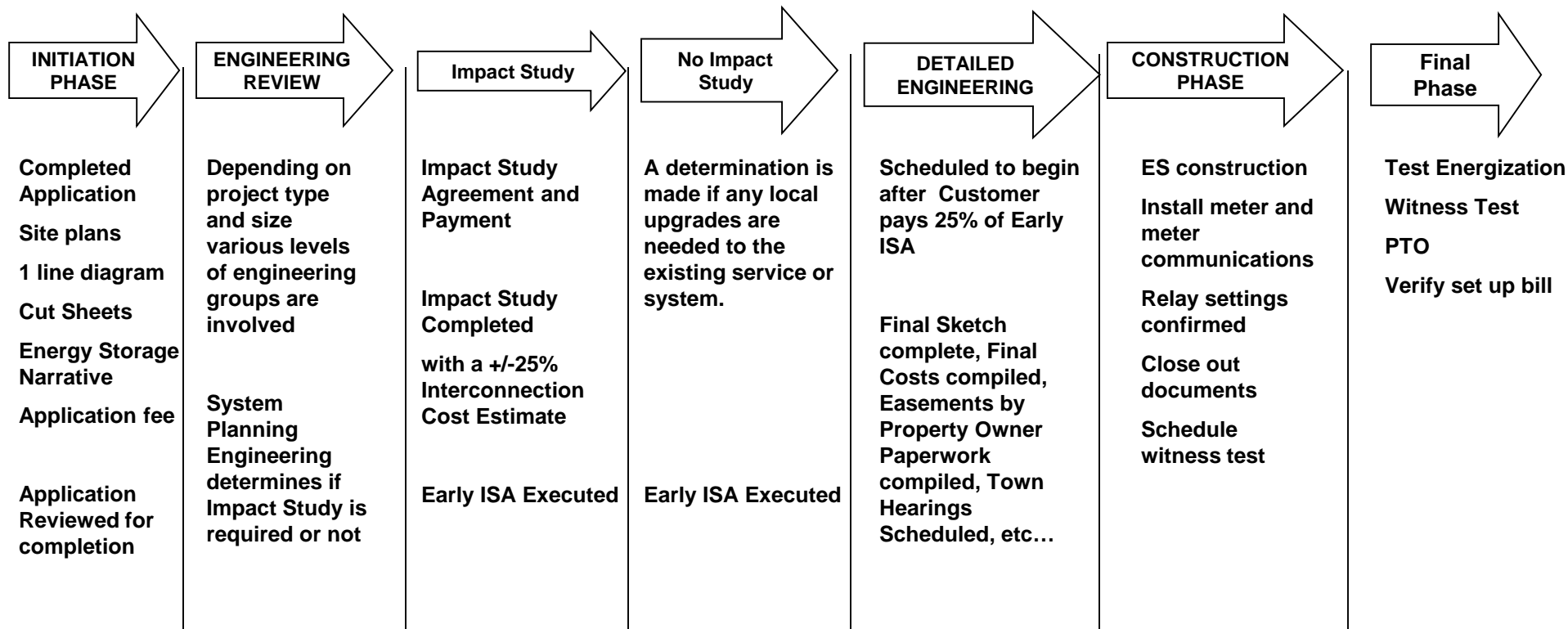
- Arc Flash & Arc Blast Discussion & Video
- An **arc flash** (also called a **flashover**) is the light and heat produced as part of an **arc fault**, a type of electrical explosion or discharge that results from a low-impedance connection through air to ground or another voltage phase in an electrical system.
- Arc flash is distinctly different from the **arc blast**, which is the supersonic shockwave produced when the uncontrolled arc vaporizes the metal conductors. Both are part of the same arc fault, and are often referred to as simply an arc flash, but from a safety standpoint they are often treated separately.
- <https://www.youtube.com/watch?v=6hpE5LYj-CY>

# Eversource Energy Seminars

March 13, 2019	Hadley (Expedited/Standard)
May 15, 2019	Westwood (Expedited/Standard)
June 19, 2019	Hadley (Simplified)
August 21, 2019	Hadley (Expedited/Standard)
September 11, 2019	Westwood (Simplified)
November 6, 2019	Hadley (Simplified)
December 11, 2019	Westwood (Expedited/Standard)

# EXPEDITED/STANDARD PROCESS

(single phase >15kw and three phase >25kw)-All Technologies



# Everything starts with application

## FOUR KEY DOCUMENTS

### 1. Exhibit C – Expedited/Standard Process Interconnection Application

#### Key Exhibit C Information Required

- Legal name and address of Interconnecting Customer
  - Phone Number and Email
- If Customer is not the Interconnection Customer
  - Name, email, phone number & mailing address
- If Landowner is not the Interconnection Customer nor Customer
  - Name, email, phone number & mailing address
- Site Control (Y/N) - You have obtained an enforceable right to use a parcel
- Is the project a “Standalone” or “Behind the meter”?
  - If “behind the meter”
    - » account #?
    - » meter #?



# Everything starts with application

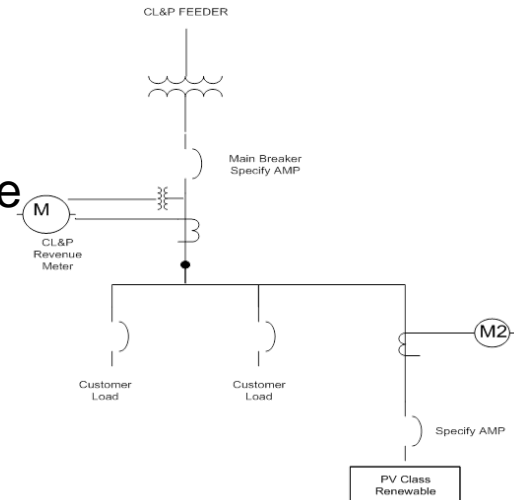
## Key Exhibit C Information Required Continue

- System Design Capacity
  - Max kW
  - DC-STC rating (kWdc)
- Type Of Generating Unit
  - Synchronous, Induction, Inverter?
    - » Manufacturer and Model
- Energy Source
  - Solar, Wind, Hydro, Diesel, Natural Gas, Fuel Oil?
- Generating Type
  - Manufacturer, Model Name, Number & Quantity
  - Single or Three Phase?
  - AC Rating
    - » kW, kVA & AC Volts
- **Signed** Application by the interconnection Customer

# Everything starts with application

## 2. One Line

- DOES need to be stamped by a MA PE.
- Well documented electric service
- Point of Common Coupling with Interconnecting Device
- Size of main breaker
- External disconnect switch
- Generator breaker & size
- Generator connection point
- kW rating matches application (name plate)
- Interconnecting Customer transformer configuration (if applicable) and impedance must match application.
- Location of revenue meter, instrument transformers and protection – Metering Sequence
- Title block with Customer name, address, date, drawing number and revision number
- Inverter settings in table form
- Definitive relay settings in table form, relay(s), PT's and CT's



# Everything starts with application

## 3. Site Plan

- Must show property/lot lines, street names
- Interconnecting Pole Numbers
- Must show revenue meter location and location of inverter(s) and/or generators
- Must show production meter if Net Metered
- Does not need to be PE Stamped
- Must be a plan form view i.e. vertical
- **NOT “bird’s eye”, isometric, 3/4 view, google maps**
- Title block with Customer name, address, date, drawing number and revision number

## 4. Cut Sheet

- If inverter based must be UL 1741 - SA

# ISO-NE Notification

- Proposed Plan Applications (PPA):
  - 0 – 1.000 MW cumulative increase\* - no form required
  - 1.001 - 4.999 MW cumulative increase\* - notification form required to go to **Reliability Committee**.
    - Submitted after Impact Study is completed.
    - Transmission Owner submits PPA if generator is not a NEPOOL participant.
    - If generator is NEPOOL participant, Transmission Owner must review PPA first.
  - > 4.999 MW cumulative increase\* - PPA and studies required to go to ISO-NE and be approved by the **Reliability Committee**.
    - After Impact Study completed, determine if any Substation / Transmission upgrades required.
    - Transmission Owner need to agree if transmission study will/will not be required.
    - Transmission Owner submits PPA if generator is not a NEPOOL participant.
    - If generator is NEPOOL participant, Transmission Owner must review PPA first.
    - A stability model will likely be required.
- Refer to Planning Procedure 5-1

\* NOTE = new generation or cumulative increase from last approved PPA, also aggregate generation on parcels in same vicinity

# Solar Massachusetts Renewable Target Program (SMART)

Solar Incentive Program  
(Formerly Solar Renewable Energy Credits,  
SREC)

March 13, 2019

# SMART Program Overview


- Support an additional 1.6 Giga-Watts of Solar Power for Massachusetts to the existing 2.2 Giga-Watts
- Estimated to save ratepayers \$4.7B over all programs
- Will enable Solar to provide 10% of the states electrical demand
- Provides incentives to various sizes & configurations:
  - 10-Year incentive guarantee: Small <25 kW
  - 20-Year incentive guarantee: Large >25 kW – 5 MW
  - First in the US to provide incentives to systems with storage systems
- Supported by all Electric Distribution Companies (EDCs) in Massachusetts



*“The SMART program is designed to encourage appropriate siting of solar projects by incentivizing projects on rooftops, parking lots, and landfills” - Energy and Environmental Affairs Secretary Matthew Beaton.*

# SMART – The Roles


Solar Program Administrator (SPA)  
Statewide



**Web Portal**  
Hosted By



Solar Incentive Services (SIS)  
Eversource only



Compute monthly incentive payments  
Issue Customer checks or ACH



Approves all  
Applications &  
Claims

SMART Program Team  
**EVERSOURCE**

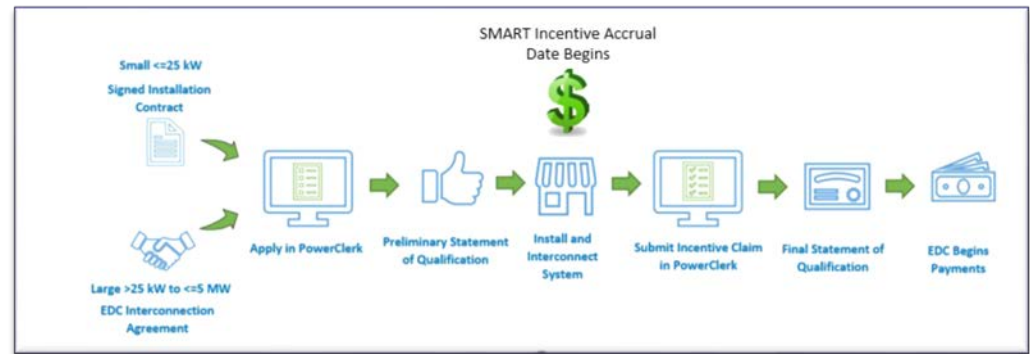
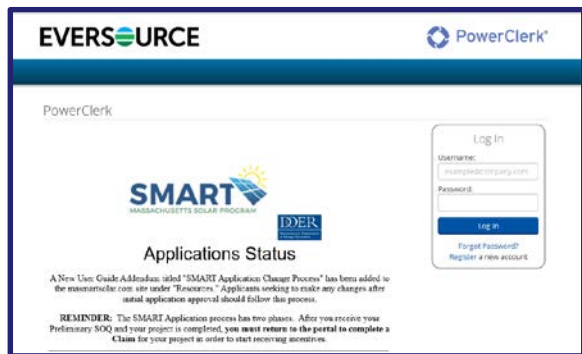
Provides Customer support  
Tracks all Applications  
Coordinates Meter Installations  
Compiles monthly meter data  
Validates incentive payments  
Prepares regulatory filings

## The Team

Paul Newton – Program Manager  
Grace Burek – Solar Specialist  
Julia Snodgrass – Solar Specialist  
Annie Liu – Solar Specialist  
Amaekiye Apreala – Solar Specialist

# SMART – How to Apply

- Applications for SMART are managed by CLEAResult – a 3<sup>rd</sup> party contracted by the State of Massachusetts
- CLEAResult manages 3 web portals (one for each EDC) to accept applications

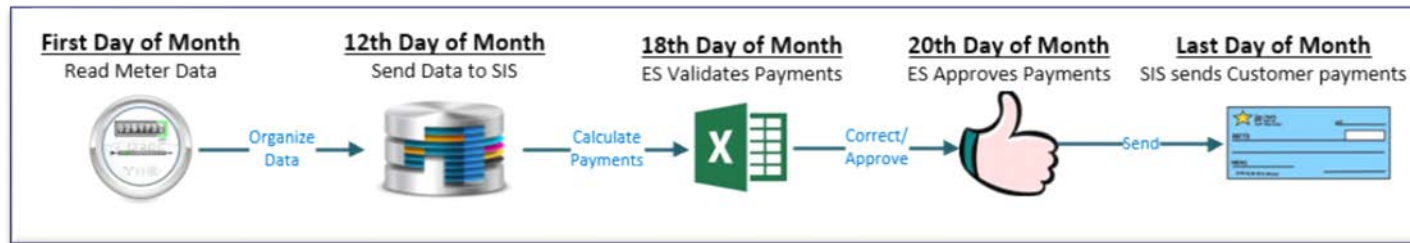


- CLEAResult validates each application & assists applicants with troubleshooting concerns
- When an application is Approved by the DOER, the Customer is issued a Preliminary Statement of Qualification
  - The SMART Production Meter needs to be installed at this point to begin accruing incentive dollars
- Applicants must then file a Claim to receive the Final Statement of Qualification from the DOER
  - The Final SQ approves payments to be made to the Customer.



# SMART – How to Get Paid

- Meter set date determines when customers begin accruing dollars from solar generation
- If the DOER has provided the Claim Final SQ then Eversource is authorized to release the accrued payment



- Meter data available on the first of every calendar month is compiled, and validated then delivered to the SIS
- A series of controls are established to verify Customer accounts, kWh, and computed incentive payments
- Customers will receive checks or ACH the first week of the following month after the data extract
- Customer may also receive Net Metering credits or Alternative On-Bill Credits (If a Standalone facility)

# SMART Operations - Current Volume as of 3/12/19

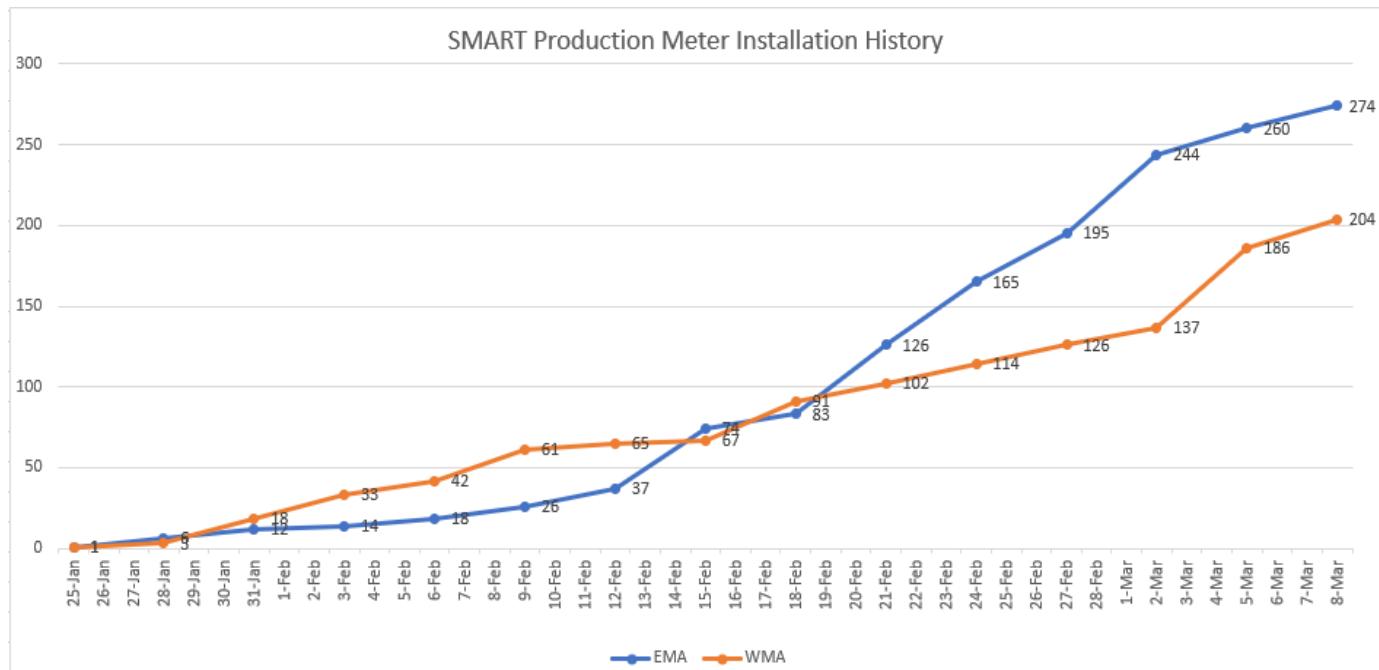
(Application through Meter Installations and Claims)

## Key Points

- Approximately 1400 applications in approved status statewide
- One project –located in EMA-has received Final SOQ from the DOER
- 534 Applications Approved in WMA-1,209 applications in various stages of the process
- 208 Meter installations completed in WMA

# SMART Meter Installations - Volume as of 3/08/19

- The below chart shows only the SMART Production Meter installation progress. There are an additional ~300 NET meters installed statewide since 1/25/19.



# SMART – Questions & Support

- **Eversource SMART Team**
  - Direct line: 844-726-7573
  - SMART@eversource.com
  
- **CLEARResult** (MA SMART Solar Program Administrator) – For all general inquiries
  - SMART Program related inquiries
  - [MA.SMART@CLEARResult.com](mailto:MA.SMART@CLEARResult.com)
  - 888.989.7752
  
- **DG Interconnections**
  - Western MA: [wmdg@eversource.com](mailto:wmdg@eversource.com)
  - Eastern MA: [emdg@eversource.com](mailto:emdg@eversource.com)
  
- **Meter technical questions**
  - Meter configuration & meter technical questions
    - Eastern MA – Paul Murphy (paul.murphy@eversource.com)
    - Western MA - Greg Pivin (greg.pivin@eversource.com)



# Ma SMART Program

## Metering Review

March 2019



# Ma SMART Program

## Metering Review

### Topics:

- \* Meter Socket wiring
- \* Emergency disconnect position – Cold

### Sequenced

- \* What types of meter sockets to use
- \* IT (instrumented transformer) Rates Services
  - a. What the contractor provides
  - b. What Eversource provides
  - c. Labeling

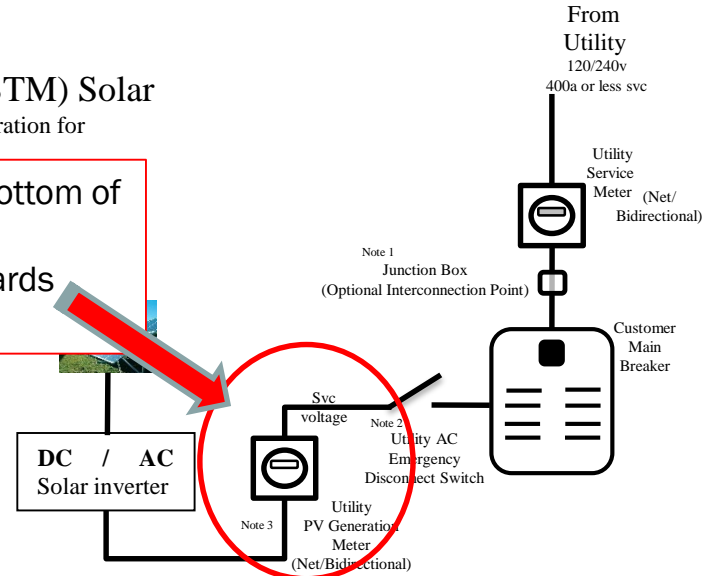
March 2019

# Meter Wiring

## Scenario – Behind the Meter (BTM) Solar

Description: typical solar meter wiring configuration for residential and small commercial customers

Generation connected to the bottom of the meter Socket  
 Top of the Meter Socket is towards the Utility



Solar Prod Meter  
 (Utility PV Generation Meter)

< 60KW = Scalar meter

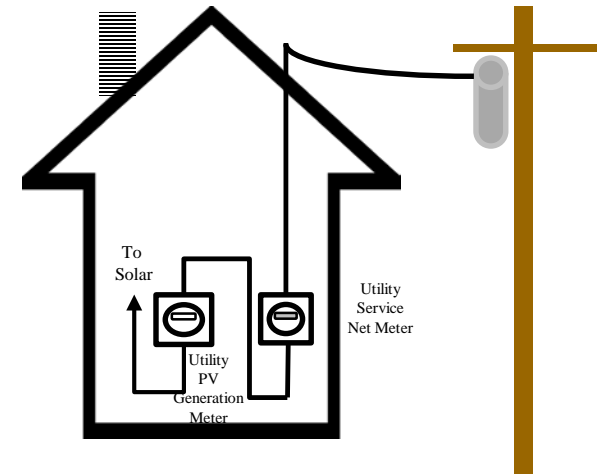
(Monthly consumption)

> 60KW = Interval Recording meter

Note 1: Optional acceptable interconnection point ahead of the main breaker, but behind the revenue meter.  
 No connections are to be made within the revenue meter socket.

Note 2: Customer provided Emergency Disconnect Switch must be Located next to the Eversource Revenue meter and plainly marked.

Note 3: : Utility PV Generation and the Utility Storage meters must be wired with Utility feed to the top of the Meter socket; Solar panels to the bottom of the meter socket

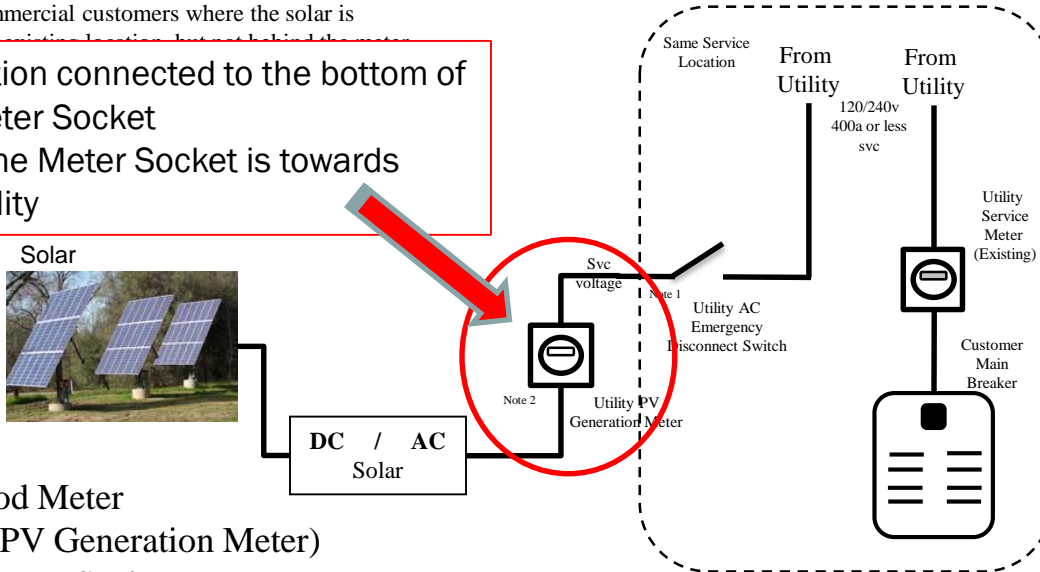


# Meter Wiring

## Scenario – Standalone Meter at Existing Service location

Description: typical meter wiring configuration for residential and small commercial customers where the solar is installed at the same service location as the existing utility meter.

Generation connected to the bottom of the meter Socket  
Top of the Meter Socket is towards the Utility

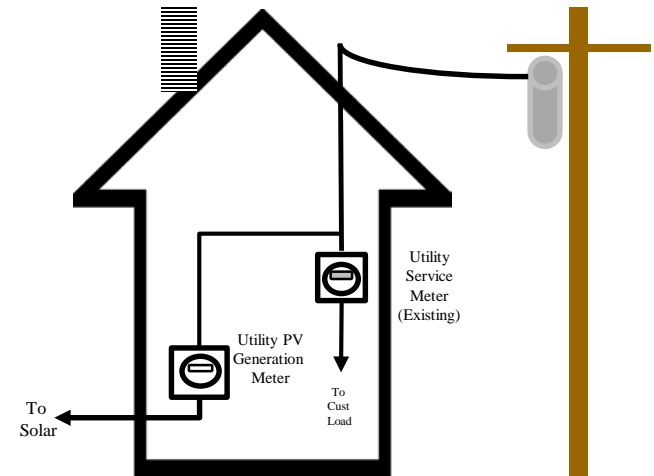


Solar Prod Meter  
(Utility PV Generation Meter)  
< 60KW = Scalar meter  
(Monthly consumption)

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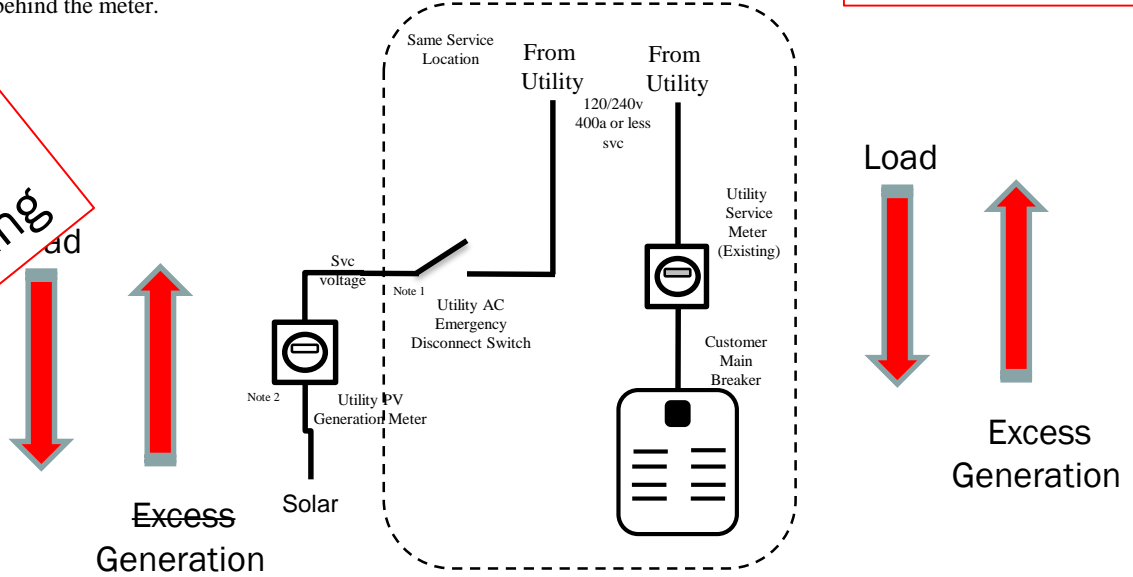
Meter Wiring

Scenario – Standalone Meter at Existing Service location

Description: typical meter wiring configuration for residential and small commercial customers where the solar is installed at an existing location but not behind the meter.

WHY ??

Yes the meter WILL SPIN BACKWARDS When generating



Trying to maintain consistency in the direction of load and generation for both the Revenue and Production Meters

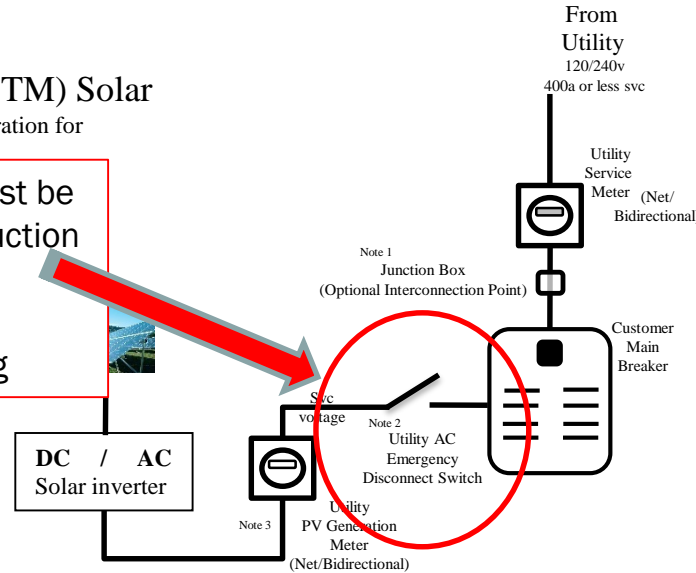
# Cold Sequence

## Scenario – Behind the Meter (BTM) Solar

Description: typical solar meter wiring configuration for residential and small commercial customers

The Emergency Disconnect must be on the Utility side of the Production meter socket.

This is Cold Sequence metering



## Solar Prod Meter (Utility PV Generation Meter)

< 60KW = Scalar meter

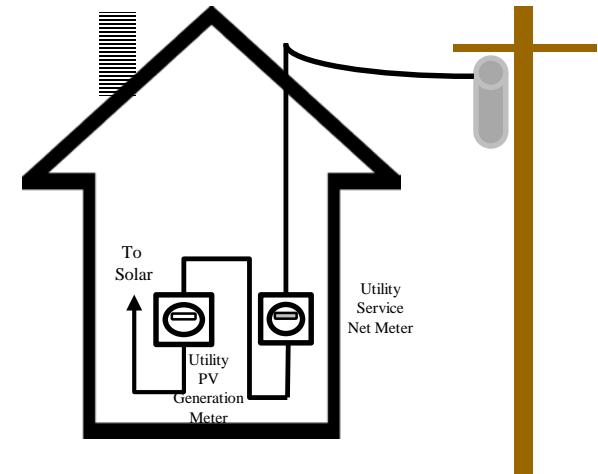
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Note 1: Optional acceptable interconnection point ahead of the main breaker, but behind the revenue meter. No connections are to be made within the revenue meter socket.

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## What type of metering socket to use?

- Consult the WMA I&R book for approved meter sockets.
- Link to WMA I&R book:  
<https://www.eversource.com/content/docs/default-source/wma--pdfs/info-requirements-wma.pdf>
- Using a meter socket listed in the I&R book will **AVOID DELAYS**
- All Stand-alone scenarios are considered as new services and **MUST** follow all I&R requirements.



## Instrument Transformer (IT) Rated Services:

### What does the Installation Contractor Provide?

- ✓ Diagrams – 1-line and 3-line diagrams
- ✓ Approved IT cabinet
- ✓ Approved Meter Socket w/Test Switch
- ✓ Emergency disconnect

### What does the Eversource Provide?

- ✓ Necessary Current Transformers
- ✓ Any necessary Voltage Transformers
- ✓ Meter

Provide all diagrams and equipment spec sheets to Eversource for review.

All service voltages at or above 277/480v will require voltage transformers.

Secondary CTs will be either 600:5 bar types or 2000:5 window types.

Any services above 4000 A will be primary metered.

Eversource will install all CTs and VTs and wire the secondary side to the test switch.

## IT Rated Services:

### What type of equipment do I use?

- Consult the WMA I&R book for approved meter sockets AND IT rated transformer enclosures.
- As with self-contained services, all IT metering must be Cold Sequenced.
- Label Label Label.  
Clearly mark the Emergency Breaker, all IT cabinets and Meter sockets. The more we know when we go out to wiring the equipment, the fewer delays you will encounter.



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