

SMART Metering and Wiring Installation Guidelines

*published June 2021
diagrams dated 05/19/2021*

Note: This version supersedes previous versions of these guidelines

Interconnection Process

Remaining the Same

- Requests for meters are made to the DG Interconnections team
- Eversource will install and support all Revenue and Production meters
- Eversource will provide a PTO upon successful connection

Changes for the SMART Program

- Requirement page (5) was split in two and the Interconnecting Customer/Contractor (IC) responsibility to turn on the disconnect switch when the PTO is issued was outlined and highlighted.
- DG will ask for your SMART Application ID (#SMAES_XXXXX) upfront
 - This requires the submittal of a SMART Application via the SMART PowerClerk on-line portal prior to contacting the DG Interconnections team
- For Behind the Meter Installations (BTM)
 - Customer will be charged the cost for furnishing and installing the BTM solar production meter while submitting the SMART Application
 - Note: for larger, complex systems additional charges still apply from ES engineering, i.e., CTs, PTs, etc.
 - Will require customer-installed wiring, and installation of a socket for the solar production meter
 - Must be adequately accessible, proximate to existing utility revenue meter (see ‘Meter Location Policy for Solar Projects’)
 - Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.

Interconnection Process

Changes for the SMART Program (continued)

- For Standalone Installations
 - For standalone AC-coupled solar plus storage systems, production meters are required each for the solar and battery.
 - Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART's project segmentation rules and if applicable, net metering's single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, set of meter(s), and disconnect switch(es).

Meter Configurations

Service Type		Project size	Meter Type
120/240V Single Phase	3-wire	Under 60KW	Form 2S Scalar
120/208V Single Phase	3-wire	Under 60KW	Form 12S Scalar
120/208V Three Phase	4-wire	Under 60KW	Form 16S Scalar
277/480V Three Phase	4-wire	Under 60KW	Form 16S Scalar
120/240V Single Phase	3-wire	Over 60KW	Form 2S Interval
120/208V Single Phase	3-wire	Over 60KW	Form 12S Interval
120/208V Three Phase	4-wire	Over 60KW	Form 16S Interval
277/480V Three Phase	4-wire	Over 60KW	Form 16S Interval
IT Rated Single Phase (secondary CTs)		Over 320A	Form 4S Interval
IT Rated Three Phase (secondary CTs/PTs)		Over 320A	Form 9S Interval
IT Rated Single Phase (primary CTs)		Over 320A	Form 4S Interval
IT Rated Three Phase (primary CTs/PTs)		Over 320A	Form 9S Interval

General Meter Installation Guidelines

1. It is the responsibility of the Interconnecting Customer/Contractor (IC) to adhere to all applicable codes, standards and requirements including Eversource meter installation requirements as described in the Information and Requirements (I&R) publication, applicable Eversource Construction Standards, Eversource's Interconnection Tariff, the National Electrical Code (NEC), and State and Municipal building requirements.
2. **It is also the responsibility of the IC to ensure all disconnecting devices are turned on upon receipt of the official final PTO approval.** During Eversource's testing, the system will be energized briefly. **Eversource Metering Personnel will leave the disconnect switch for the production meter in the condition we found it** (energized or not energized).
3. See the appropriate I&R publication for either EMA or WMA for the IC responsibilities for procuring and installing the appropriate meter socket and any associated instrument transformer (IT) enclosure (if required).
4. Eversource will install the meter for all services. If required, Eversource will also provide all instrument transformers for any new IT-rated installation and make all secondary wiring connections to the meter.
5. Any primary metering, if required, will be coordinated with Eversource.
6. To ensure proper meter installation, each meter socket and its disconnect switch shall be clearly and uniquely identified and marked/placarded (e.g., "SOLAR PRODUCTION") prior to the start of any service work. If there is more than one solar system on site, the contractor shall clearly identify and mark each meter and disconnect (e.g., with its SMAES# and/or Array Name/Location such as "Rooftop Solar" or "Canopy Solar") to ensure that they can be distinguished from each other.




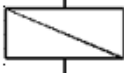




General Meter Installation Guidelines (con't)

7. The wiring diagrams within this document represent standard conceptual designs for commonly used service installations. Wiring configurations outside the norms shown within this document will require additional time for Eversource review and approval.
8. The IC is responsible for obtaining all approvals from the Authority Having Jurisdiction as soon as the work is completed.
9. Where the existing PCC meter is inside, the IC will upgrade their service connection to change it to an outside location.
10. All metering maintained by Eversource will be required to be accessible to Utility personnel at all times.
- 11. All self-contained meter sockets will be wired such as the top (line) side is toward the Utility feed and the bottom (Load) side is toward the solar generation and/or battery storage.**
12. For any IT –rated services, all transformer polarity marks will be wired pointing toward the Utility feed.
13. Please reference the Eversource I&R book for approved equipment.
14. Eversource reserves the right to amend this document from time to time, as necessary.

Metering Diagrams

Metering Notes:

- **BTM: Behind the Meter installation option**
- **DER: Distributed Energy Resource**
- **DG: Distributed Generator/Solar Array**
- **ESS: Energy Storage System**
- **EPS: Electric Power System**
- **IC: Interconnecting Customer/Contractor**
- **PCC: Point of Common Coupling**
- **PoC: Point of Connection**
- **PTO: Permission to Operate**
- **SPAKey: SMART Application ID# (SMAES_XXXXX)**

	Transformer
	Main or AC Disconnect Switch
	Utility or Production Meter
	Inverter
	PV Array or ESS Battery Storage
	Metering Current Transformers
	Utility Recloser or GOAB
	PV and/or ESS Battery Breaker

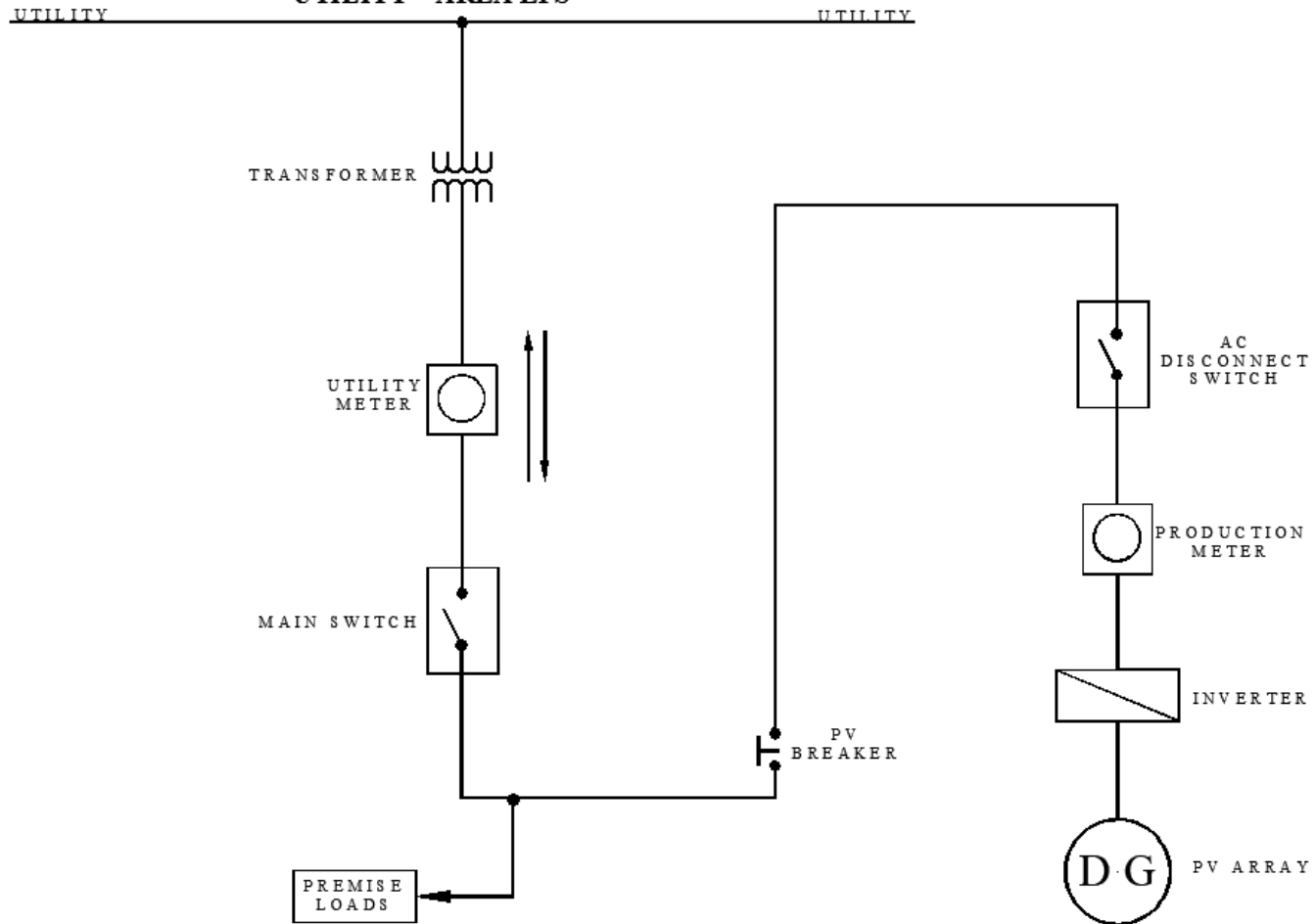
1a. BTM <60kW, No ESS

This diagram is representative of a standard design.



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Residential / Commercial DG Customer
Behind the Meter MA SMART <60 kW
Without ESS System
UTILITY – AREA EPS



Note 1 – PoC

- All interconnection points are required to be located behind the utility revenue meter
- >>> No connections are to be made within the utility revenue meter socket or in utility transformer compartment. <<<

Note 2 – Utility Revenue Meter

- If the utility revenue meter is located inside customer’s facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer’s facility near both the SMART production meter and the utility disconnect switch.
- For 3-phase circuit, meter would be located behind main switch (load side).

Note 3 – Utility SMART Production Meter

- Utility feed for the SMART production meter, the socket is required to be wired top side utility, bottom side inverter.

Note 4 – Utility AC Disconnect Switches

- The main switch is required to be located on the ground level within vicinity of the utility revenue meter where our utility personnel will have 24 / 7 access to it.
- The utility AC emergency disconnect switch is required to be located ahead of the SMART production meter where utility personnel will be able to isolate the metering circuit.

Special Notes:

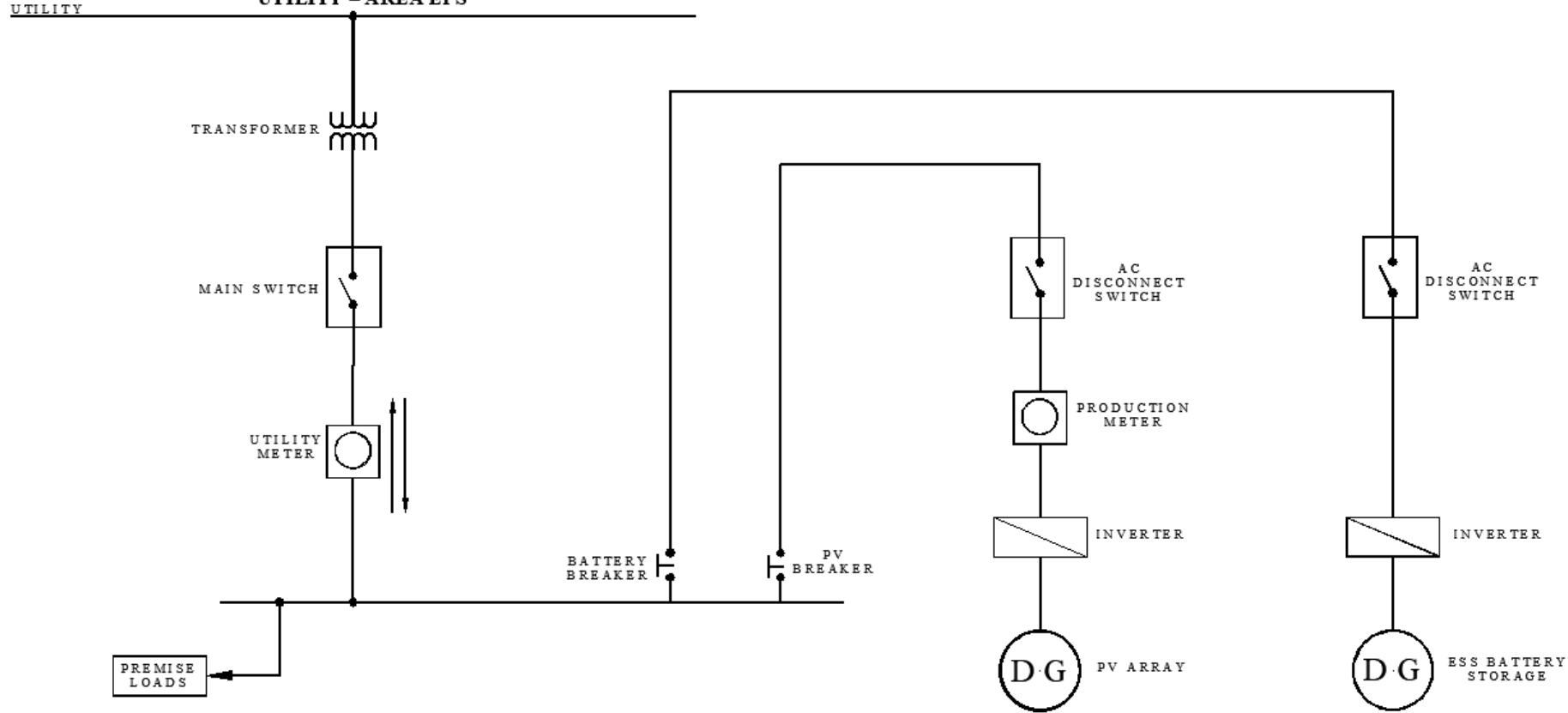
- All meters and switches are required to be grouped and fully accessible to utility personnel.
- Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.

EVERSOURCE ENERGY	
MA SMART METERING DRAWINGS	REV. 1
ENGINEER: GREGORY M. PIVIN	05/19/21

1b. BTM <60kW, with AC-coupled ESS

This diagram is representative of a standard design.

Residential / Commercial DG Customer
Behind the Meter MA SMART <60 kW
With AC-coupled ESS System
UTILITY - AREA EPS



Note 1 – PoC

- All interconnection points are required to be located behind the utility revenue meter
- >>> No connections are to be made within the utility revenue meter socket or in utility transformer compartment. <<<

Note 2 – Utility Revenue Meter

- If the utility revenue meter is located inside customer’s facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer’s facility near both the SMART production meter and the utility disconnect switch.

Note 3 – Utility SMART Production Meter

- Utility feed for the SMART production meter, the socket is required to be wired top side utility, bottom side inverter.

Note 4 – Utility AC Disconnect Switches

- The main switch is required to be located on the ground level within vicinity of the utility revenue meter where our utility personnel will have 24 / 7 access to it.
- The utility AC emergency disconnect switch is required to be located ahead of the SMART production meter where utility personnel will be able to isolate the metering circuit.

Special Notes:

- All meters and switches are required to be grouped and fully accessible to utility personnel.
- Interconnecting customer is responsible for any metering needed for the battery to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
- Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.

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MA SMART METERING DRAWINGS	REV. 1
ENGINEER GREGORY M. PIVIN	05/19/21

1c. BTM <60kW, with DC-coupled ESS

This diagram is representative of a standard design.



Note 1 – PoC

- All interconnection points are required to be located behind the utility revenue meter
- >>> No connections are to be made within the utility revenue meter socket or in utility transformer compartment. <<<

Note 2 – Utility Revenue Meter

- If the utility revenue meter is located inside customer’s facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer’s facility near both the SMART production meter and the utility disconnect switch.
- For 3-phase circuit, meter would be located behind main switch (load side).

Note 3 – Utility SMART Production Meter

- Utility feed for the SMART production meter, the socket is required to be wired top side utility, bottom side inverter.

Note 4 – Utility AC Disconnect Switches

- The main switch is required to be located on the ground level within vicinity of the utility revenue meter where our utility personnel will have 24 / 7 access to it.
- The utility AC emergency disconnect switch is required to be located ahead of the SMART production meter where utility personnel will be able to isolate the metering circuit.

Note 5 – Inverter

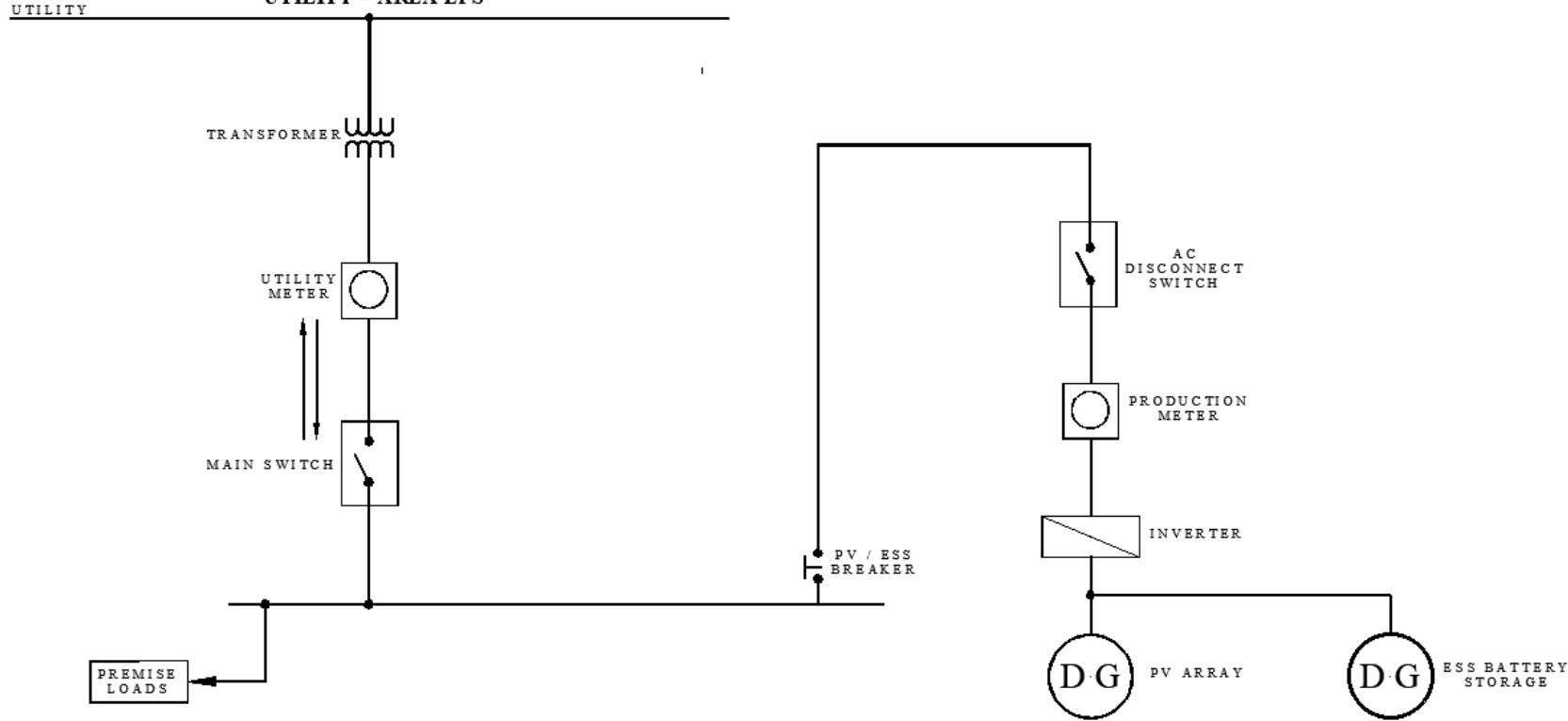
- Additional outputs of the inverter may need separate metering.

Special Notes:

- All meters and switches are required to be grouped and fully accessible to utility personnel.
- Interconnecting customer is responsible for any metering needed behind the single inverter to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
- Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.
- System shall be equipped and configured so that the battery cannot be charged from the electric grid. If a back-up or critical load subpanel is to be installed behind the Utility SMART production meter, it shall be equipped and configured so that it is normally energized by a separate connection to the main panel, thereby bypassing the production meter and inverter, and using an Automated Transfer Switch, normally disconnected to the solar array and/or battery. At times when the electric grid becomes deenergized (e.g., power outage), the switch would engage allowing the subpanel to be energized by the solar array and/or battery. Except for the parasitic load utilized to operate the coupled solar and storage system, there shall be no load connected behind the Utility SMART production meter.

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Residential / Commercial DG Customer
Behind the Meter MA SMART <60 kW
With DC- coupled ESS System
UTILITY – AREA EPS



EVERSOURCE ENERGY	
MA SMART METERING DRAWINGS	REV. 1
ENGINEER GREGORY M. PIVIN	05/19/21

2a. BTM >60kW to 500kW, no ESS

This diagram is representative of a standard design.

Note 1 – Utility Revenue and SMART Production Meters

- If the utility revenue meter is located inside customer’s facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer’s facility near both the SMART production meter and the utility disconnect switch.
- Meters will have bi-directional interval recording capabilities.
- Must have a cellular connection at meter location.
- Secondary metering CTs/VTs may be required.

Note 2 – Switches

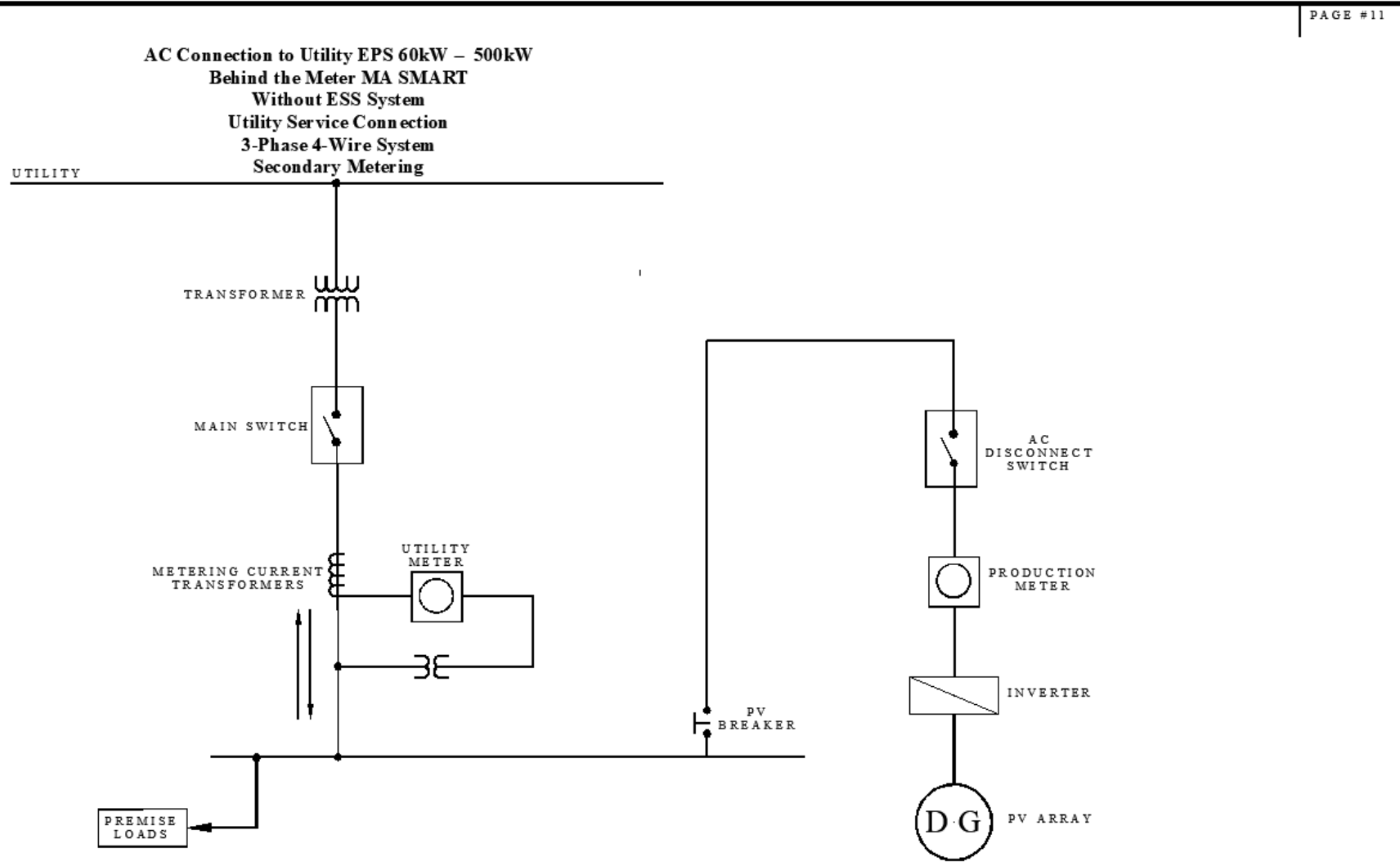
- The utility main and AC emergency disconnect switches shall be located within the vicinity of the meters and fully accessible to utility personnel.

Note 3 – Metering Current Transformers

- Production meter current transformers polarity markings required to be pointed towards utility.

Special Notes:

- All meters and switches are required to be grouped and fully accessible to utility personnel.
- Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.

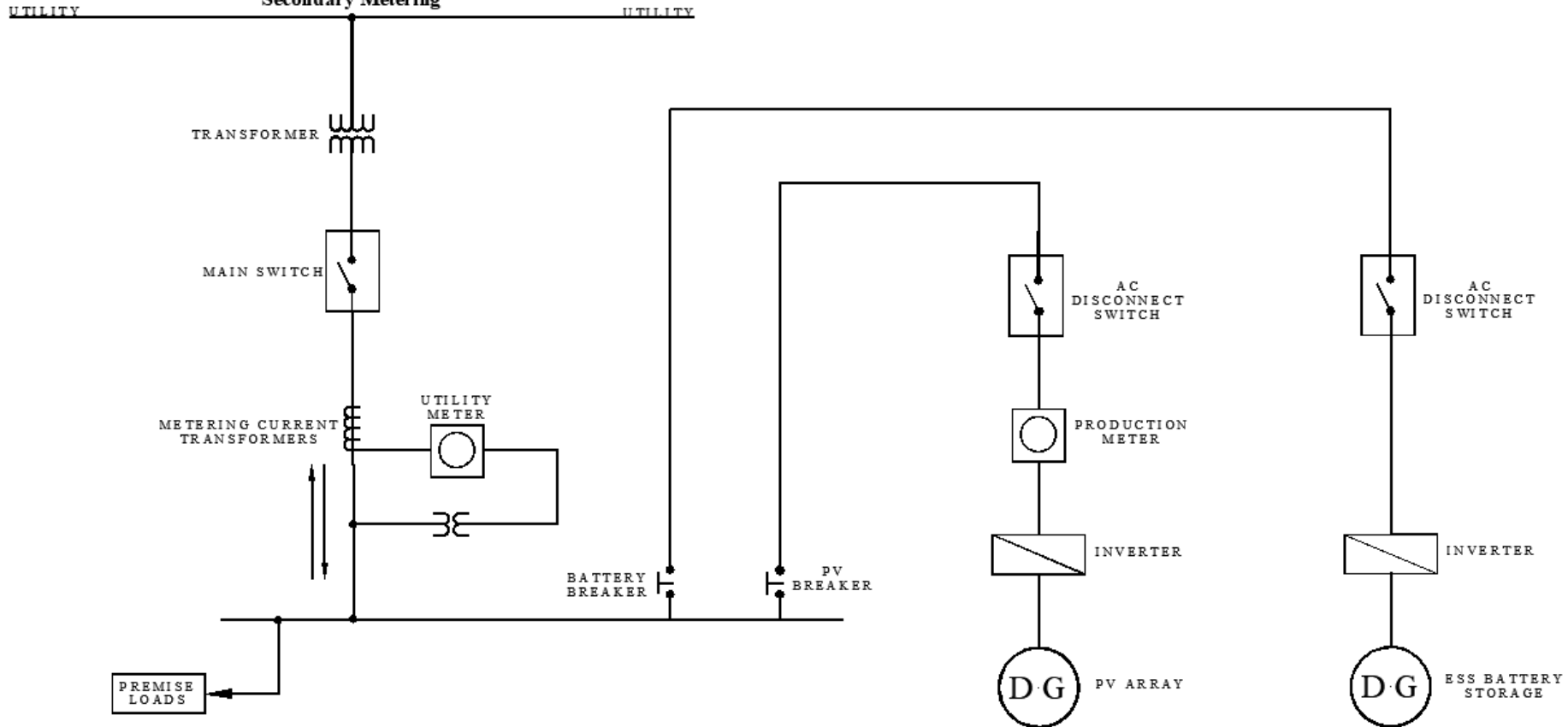


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MA SMART METERING DRAWINGS	REV. 1
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2b. BTM >60kW to 500kW, with AC-coupled ESS

AC Connection to Utility EPS 60kW – 500kW
 Behind the Meter MA SMART
 With AC-coupled ESS System
 Utility Service Connection
 3-Phase 4-Wire System
 Secondary Metering



This diagram is representative of a standard design

- Note 1 – Utility Revenue and SMART Production Meters**
- If the utility revenue meter is located inside customer’s facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer’s facility near both the SMART production meter and the utility disconnect switch.
 - Meters will have bi-directional interval recording capabilities.
 - Must have a cellular connection at meter location.
 - Secondary metering CTs/VTs may be required.

- Note 2 – Switches**
- The utility main and AC emergency disconnect switches shall be located within the vicinity of the meters and fully accessible to utility personnel.

- Note 3 – Metering Current Transformers**
- Production meter current transformers polarity markings required to be pointed towards utility.

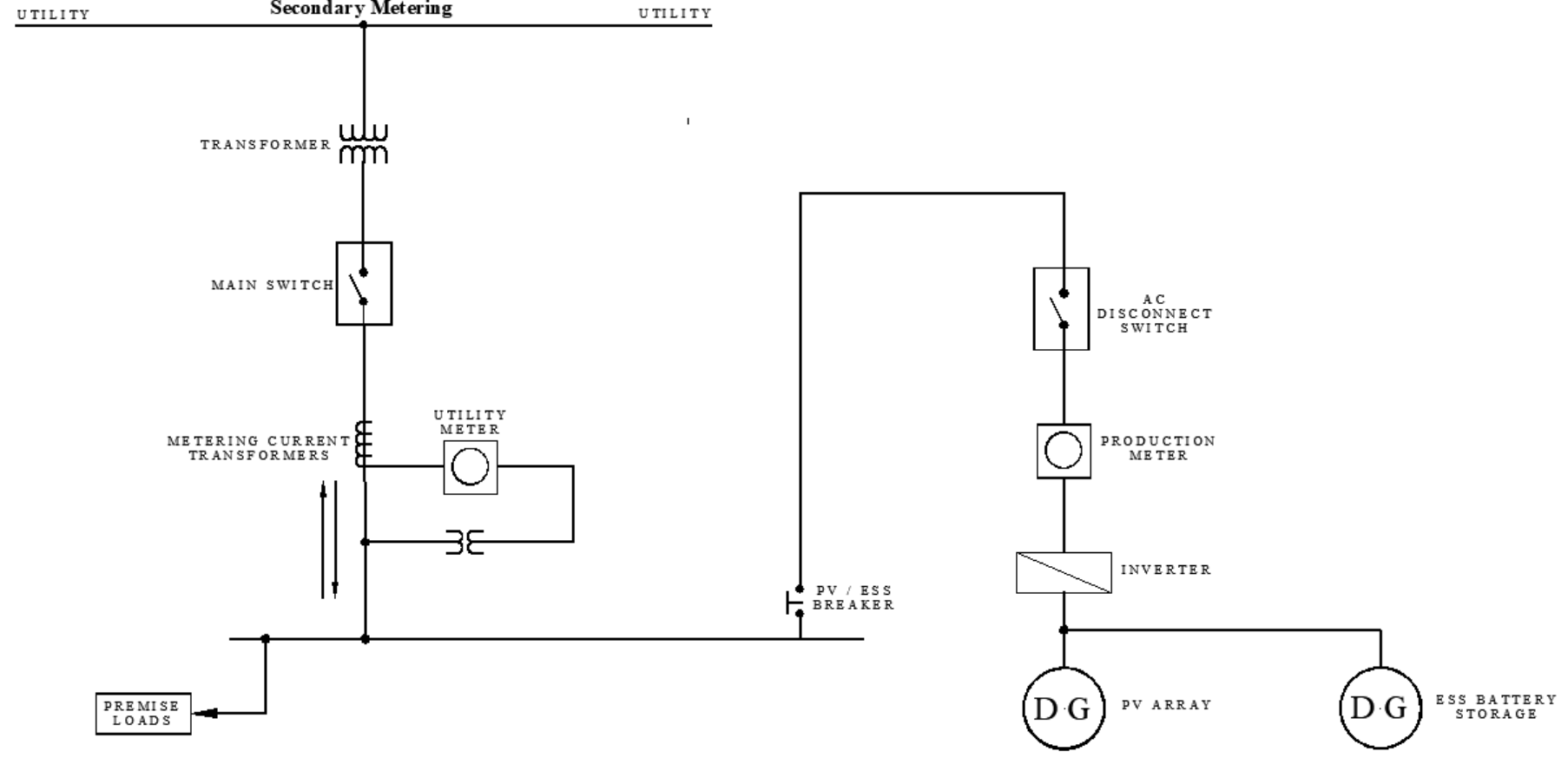
- Special Notes:**
- All meters and switches are required to be grouped and fully accessible to utility personnel.
 - Interconnecting customer is responsible for any metering needed for the battery to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
 - Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.

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MA SMART METERING DRAWINGS	REV. 1
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2c. BTM >60kW to 500kW, with DC-coupled ESS

AC Connection to Utility EPS 60kW – 500kW
 Behind the Meter Ma SMART
 With DC-coupled ESS System
 Utility Service Connection
 3-Phase 4-Wire System
 Secondary Metering

This diagram is representative of a standard design



- Note 1 – Utility Revenue and SMART Production Meters
- If the utility revenue meter is located inside customer’s facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer’s facility near both the SMART production meter and the utility disconnect switch.
 - Meters will have bi-directional interval recording capabilities.
 - Must have a cellular connection at meter location.
 - Secondary metering CTs/VTs may be required.

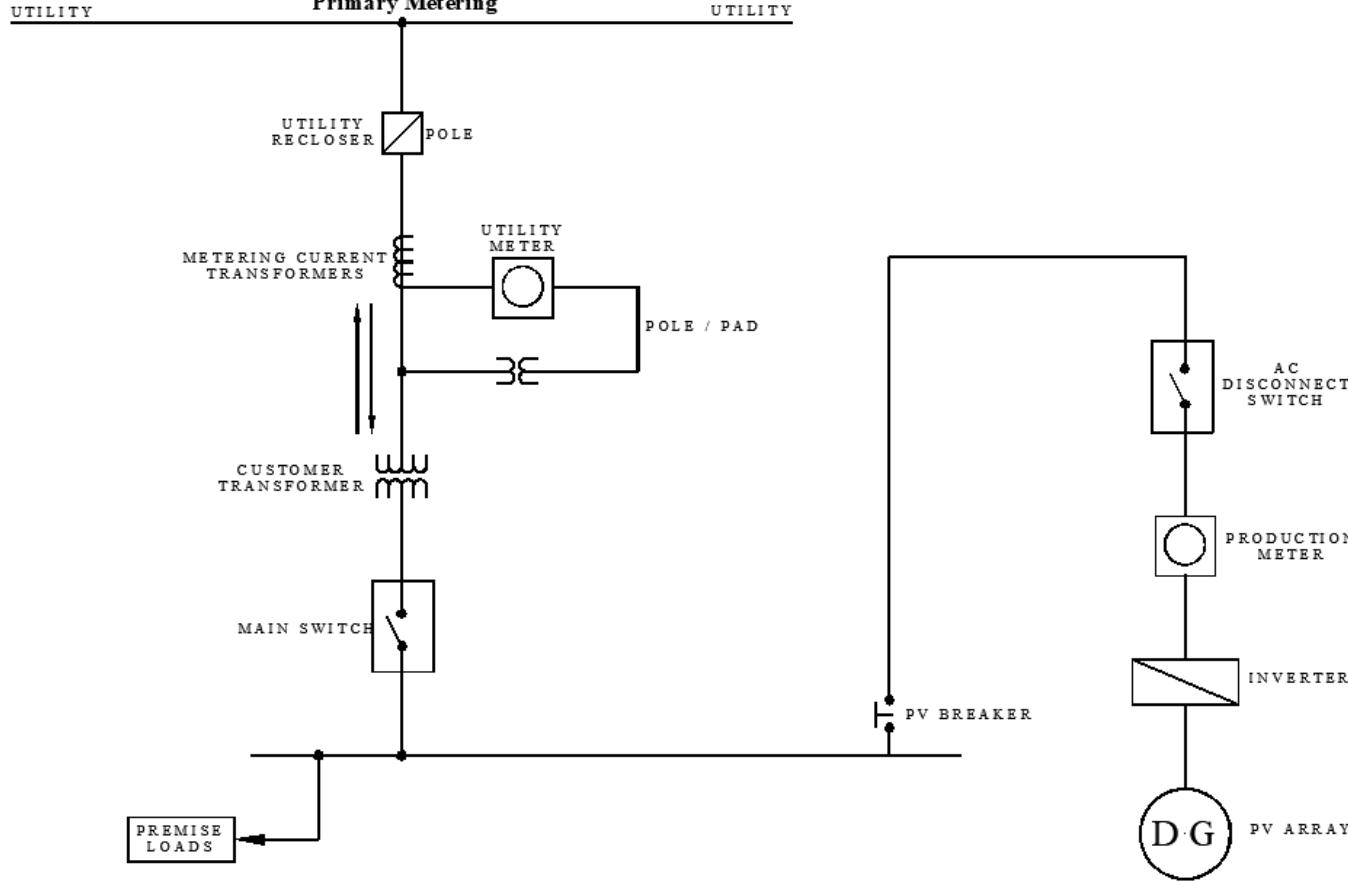
- Note 2 – Switches
- The utility main and AC emergency disconnect switches shall be located within the vicinity of the meters and fully accessible to utility personnel.

- Note 3 - Inverter
- Additional outputs of the inverter may need separate metering.

- Special Notes:
- All meters and switches are required to be grouped and fully accessible to utility personnel.
 - Interconnecting customer is responsible for any metering needed behind the single inverter to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
 - Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.
 - System shall be equipped and configured so that the battery cannot be charged from the electric grid. If a back-up or critical load subpanel is to be installed behind the Utility SMART production meter, it shall be equipped and configured so that it is normally energized by a separate connection to the main panel, thereby bypassing the production meter and inverter, and using an Automated Transfer Switch, normally disconnected to the solar array and/or battery. At times when the electric grid becomes deenergized (e.g., power outage), the switch would engage allowing the subpanel to be energized by the solar array and/or battery. Except for the parasitic load utilized to operate the coupled solar and storage system, there shall be no load connected behind the Utility SMART production meter. 13

3a. BTM >500kW, no ESS

AC Connection to Utility EPS 500kW and Greater
Behind the Meter MA SMART
Without ESS System
Utility Service Connection
3-Phase 4-Wire System
Primary Metering



This diagram is representative of a standard design..

Note 1 – Utility Revenue and SMART Production Meters

- If the utility revenue meter is located inside customer’s facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer’s facility near both the SMART production meter and the utility disconnect switch.
- Meters will have bi-directional interval recording capabilities.
- Must have a cellular connection at meter location.

Note 2 – Utility AC Disconnect Switch

- The utility AC emergency disconnect switch shall be located within the vicinity of the meter and fully accessible to utility personnel.

Note 3 – Metering Current Transformers

- Polarity Mark of metering transformers is to be toward the Utility feed.
- 3-phase 4-wire WYE metering connection.

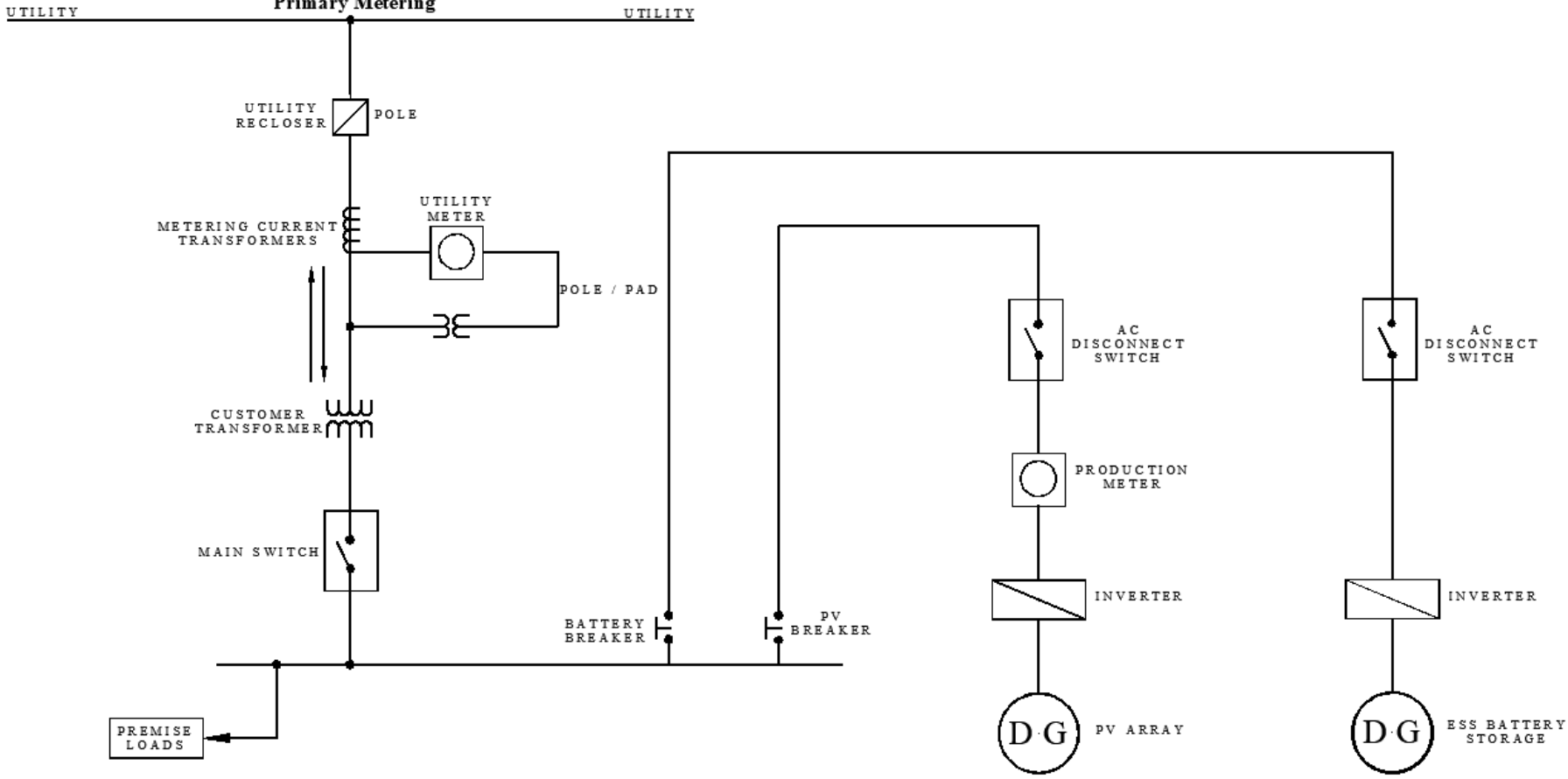
Special Notes:

- All meters and switches are required to be grouped and fully accessible to utility personnel.
- Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.

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MA SMART METERING DRAWINGS	REV. 1
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3b. BTM >500kW, with AC-coupled ESS

AC Connection to Utility EPS 500kW and Greater
Behind the Meter MA SMART
With AC-coupled ESS System
UTILITY SERVICE Connection
3-Phase 4-Wire System
Primary Metering



This diagram is representative of a standard design.

- Note 1 – Utility Revenue and SMART Production Meters**
- If the utility revenue meter is located inside customer’s facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer’s facility near both the SMART production meter and the utility disconnect switch.
 - Meters will have bi-directional interval recording capabilities.
 - Must have a cellular connection at meter location.

- Note 2 – Utility AC Disconnect Switch**
- The utility AC emergency disconnect switch shall be located within the vicinity of the meter and fully accessible to utility personnel.

- Note 3 – Metering Current Transformers**
- Polarity Mark of metering transformers is to be toward the Utility feed.
 - 3-phase 4-wire WYE metering connection.

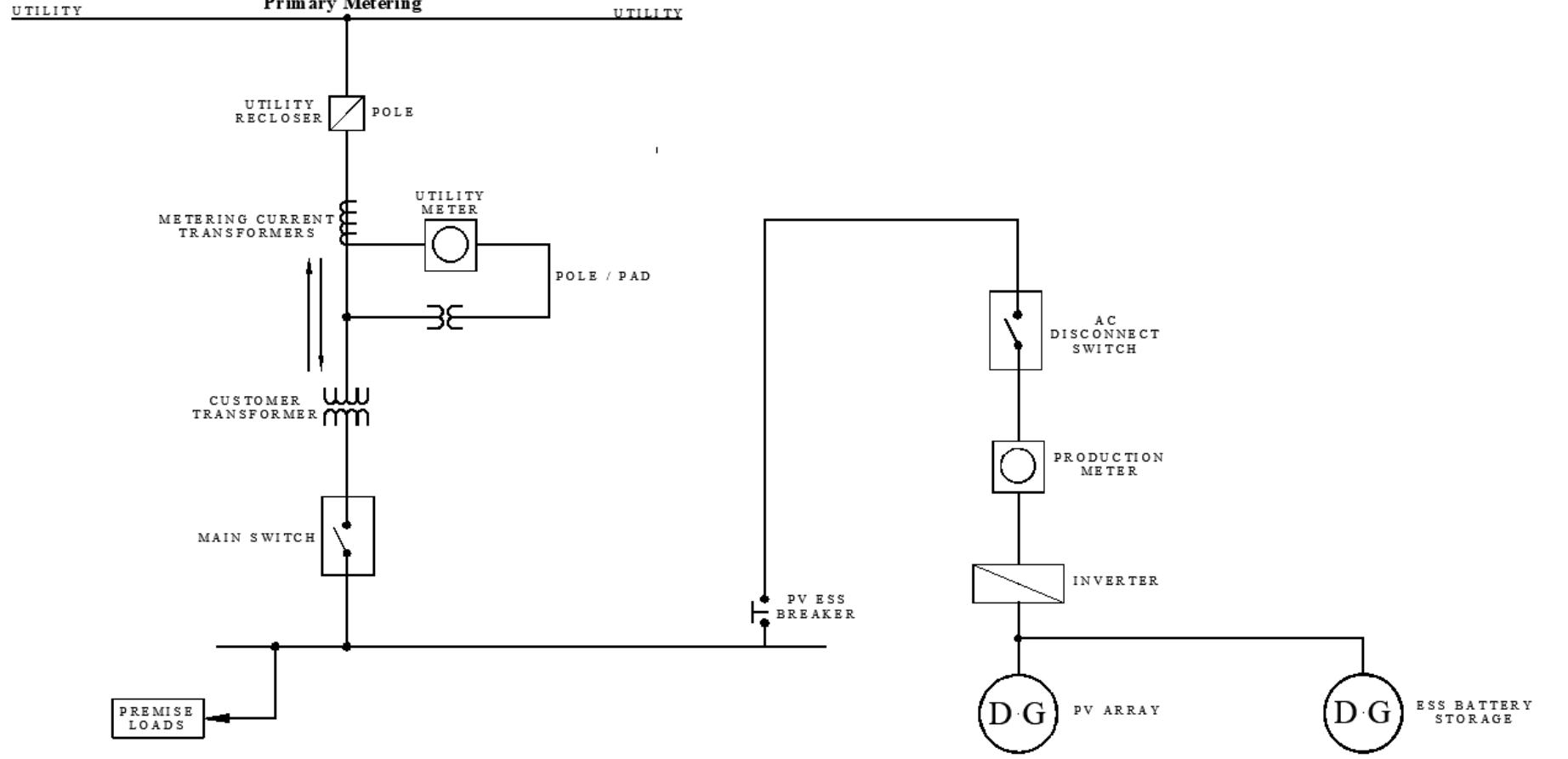
- Special Notes:**
- All meters and switches are required to be grouped and fully accessible to utility personnel.
 - Interconnecting customer is responsible for any metering needed for the battery to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
 - Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.

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MA SMART METERING DRAWINGS	REV. 1
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3c. BTM >500kW, with DC-coupled ESS

**AC Connection to Utility EPS 500kW and Greater
Behind the Meter MA SMART
With DC-coupled ESS System
UTILITY SERVICE Connection
3-Phase 4-Wire System
Primary Metering**

This diagram is representative of a standard design



- Note 1 – Utility Revenue and SMART Production Meters**
- If the utility revenue meter is located inside customer's facility, the interconnecting customer will be required to upgrade and have the meter relocated outside the customer's facility near both the SMART production meter and the utility disconnect switch.
 - Meters will have bi-directional interval recording capabilities.
 - Must have a cellular connection at meter location.
- Note 2 – Utility AC Disconnect Switch**
- The utility AC emergency disconnect switch shall be located within the vicinity of the meter and fully accessible to utility personnel.
- Note 3 – Metering Current Transformers**
- Polarity Mark of metering transformers is to be toward the Utility feed.
 - 3-phase 4-wire WYE metering connection.
- Note 4 - Inverter**
- Additional outputs of the inverter may need separate metering.
- Special Notes:**
- All meters and switches are required to be grouped and fully accessible to utility personnel.
 - Interconnecting customer is responsible for any metering needed behind the single inverter to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
 - Multiple or add-on SMART systems behind the same or another utility revenue meter must comply with SMART's project segmentation rules and if applicable, net metering's single parcel rule. Each SMART system requires its own SMART application, SMART production meter, and utility AC emergency disconnect switch.
 - System shall be equipped and configured so that the battery cannot be charged from the electric grid. If a back-up or critical load subpanel is to be installed behind the Utility SMART production meter, it shall be equipped and configured so that it is normally energized by a separate connection to the main panel, thereby bypassing the production meter and inverter, and using an Automated Transfer Switch, normally disconnected to the solar array and/or battery. At times when the electric grid becomes deenergized (e.g., power outage), the switch would engage allowing the subpanel to be energized by the solar array and/or battery. Except for the parasitic load utilized to operate the coupled solar and storage system, there shall be no load connected behind the Utility SMART production meter.

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Stand-Alone Wiring Diagrams

4a. Stand Alone <60kW, no ESS

Commercial DG Customer
Stand Alone MA SMART <60 kW
Without ESS System
UTILITY – AREA EPS

UTILITY

UTILITY

TRANSFORMER

MAIN SWITCH

UTILITY METER

PV BREAKER

AC DISCONNECT SWITCH

INVERTER

D.G PV ARRAY

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MA SMART METERING DRAWINGS	REV 1
ENGINEER: GREGORY M. PIVIN	05/19/21

This diagram is representative of a standard design.

Note 1

- Follow utility, I & R book
- All 277v/480 or instrument rated services must be cold sequenced.

Note 2 – Utility Revenue/SMART Production Meter

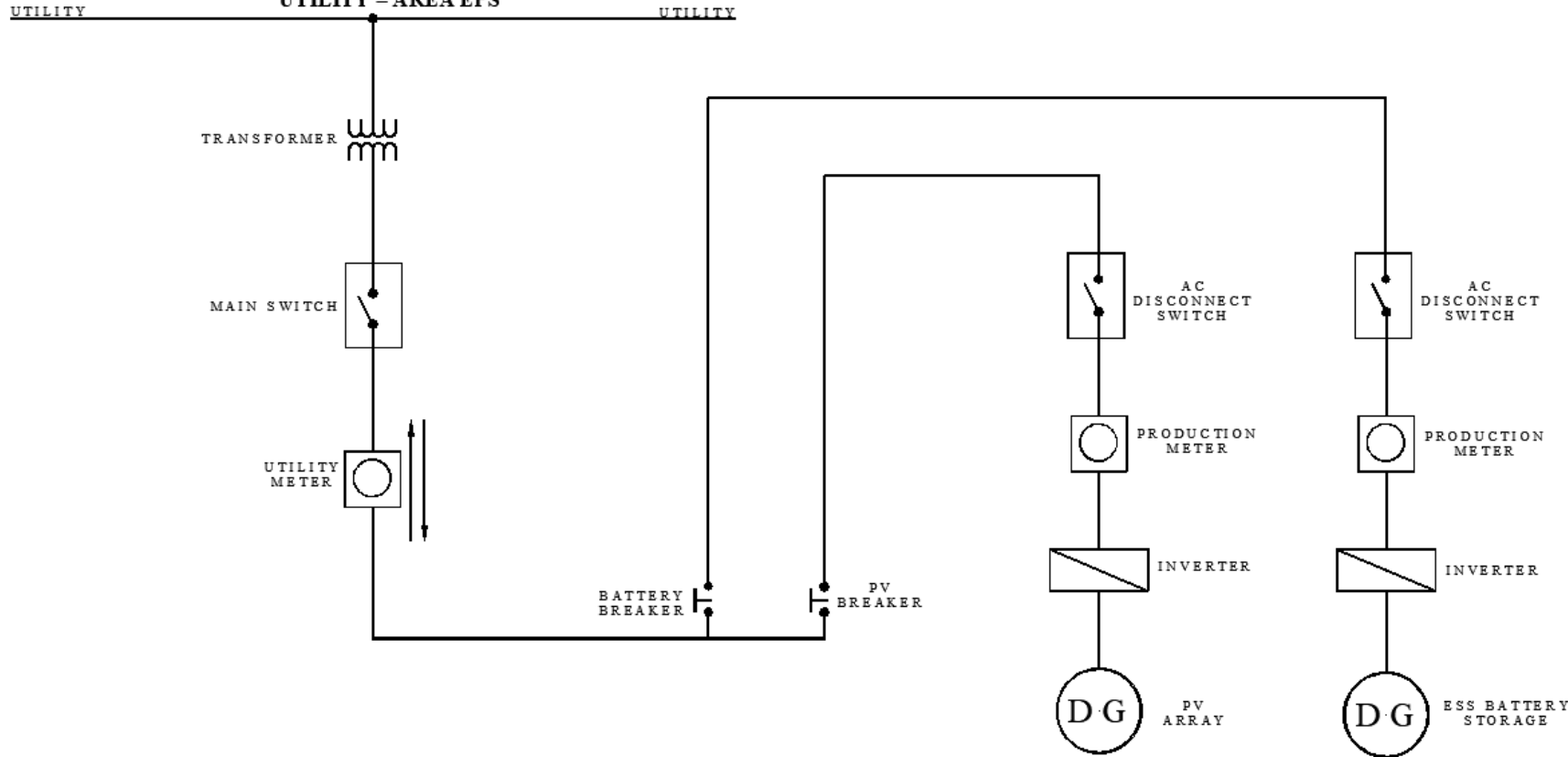
- Follow I&R metering requirements for Cold/Hot sequence metering.
- Meter must be fully accessible to utility personnel.
- For single-phase circuit, meter would be located in front of the main switch (line side).
- The utility main switch shall be located within the vicinity of the meter and fully accessible to utility personnel.

Special Notes:

- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART's project segmentation rules and if applicable, net metering's single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, Utility Revenue / SMART production meter, and disconnect switches.

4b. Stand Alone <60kW, with AC-coupled ESS

Commercial DG Customer
Stand Alone MA SMART <60 kW
With AC-coupled ESS System
UTILITY - AREA EPS



This diagram is representative of a standard design.

Note 1

- Follow utility, I & R book
- All 277v/480 or instrument rated services must be cold sequenced.

Note 2 – Utility Revenue and SMART Production Meters

- Follow I&R metering requirements for Cold/Hot sequence metering.
- Secondary metering CTs/VTs may be required.
- Meters must be fully accessible to utility personnel.
- For single-phase circuit, meter would be located in front of the main switch (line side).
- The utility main and AC emergency disconnect switches shall be located within the vicinity of the meters and fully accessible to utility personnel.

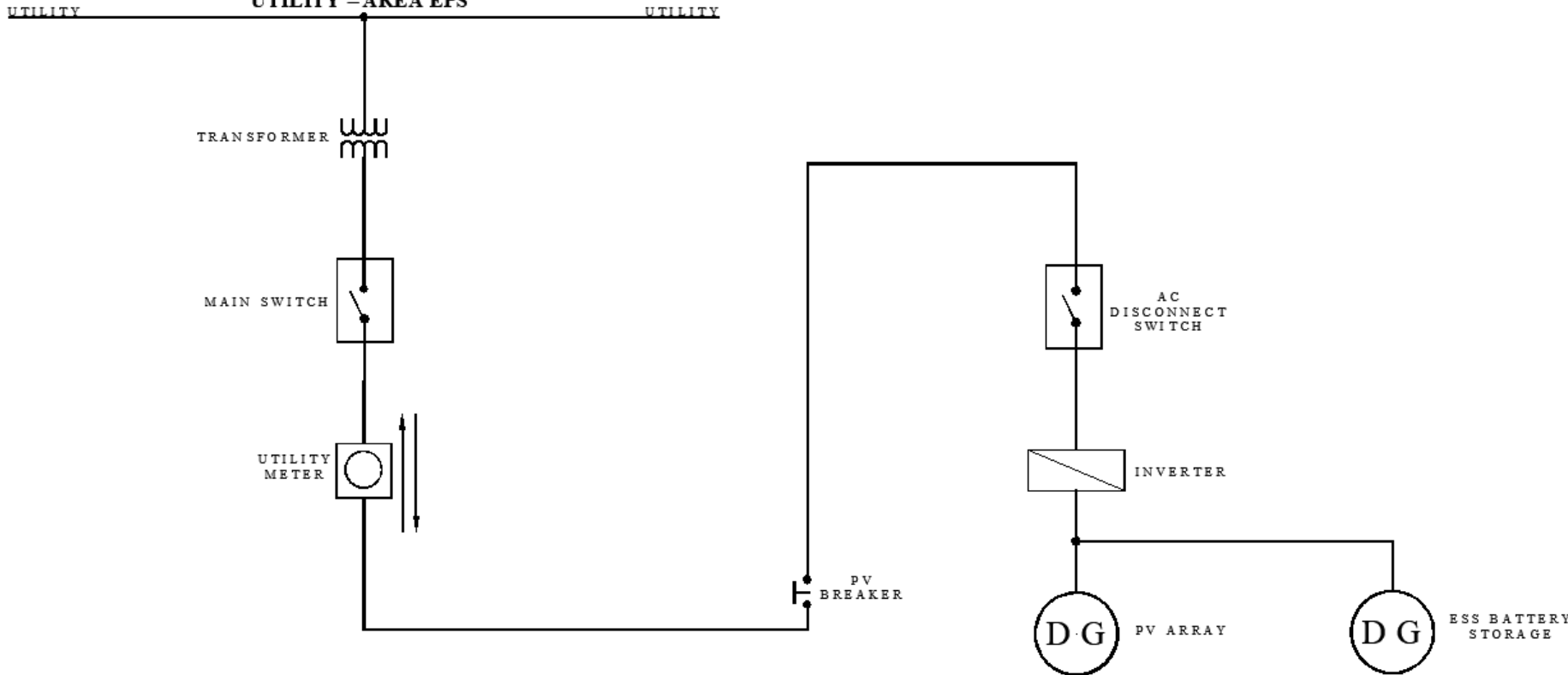
Special Notes:

- All meters and switches are required to be grouped and fully accessible to utility personnel.
- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART's project segmentation rules and if applicable, net metering's single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, set of Utility Revenue and SMART production meters, and disconnect switches.

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4c. Stand Alone <60kW, with DC-coupled ESS

Commercial DG Customer
Stand Alone MA SMART <60 kW
With DC-coupled ESS System
UTILITY – AREA EPS



This diagram is representative of a standard design.

Note 1

- Follow utility, I & R book
- All 277v/480 or instrument rated services must be cold sequenced.

Note 2 – Utility Revenue and SMART Production Meters

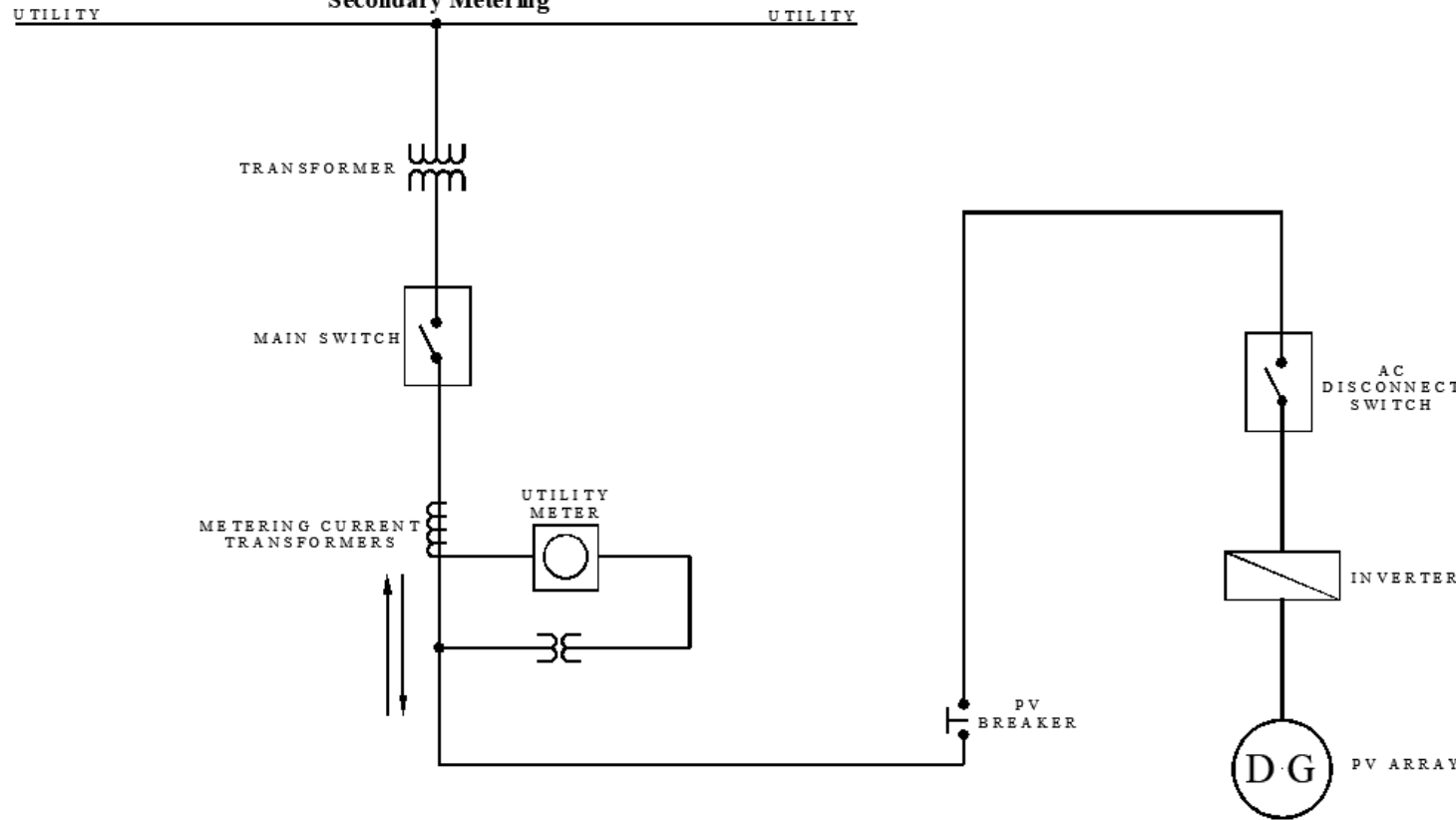
- Follow I&R metering requirements for Cold/Hot sequence metering.
- Secondary metering CTs/VTs may be required.
- Meters must be fully accessible to utility personnel.
- For single-phase circuit, meter would be located in front of the main switch (line side).
- The utility main switch shall be located within the vicinity of the meter and fully accessible to utility personnel.

Special Notes:

- Interconnecting customer is responsible for any metering needed behind the single inverter to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, Utility Revenue / SMART production meter, and disconnect switch.

5a. Stand Alone >60kW to 500kW, no ESS

AC Connection to Utility EPS 60kW – 500kW
Stand Alone MA SMART
Without ESS System
Utility Service Connection
3-Phase 4-Wire System
Secondary Metering



This diagram is representative of a standard design.

Note 1

- Follow utility, I & R book
- All 277v/480 or instrument rated services must be cold sequenced.

Note2 – Utility Revenue/SMART Production Meter

- Meter will have bi-directional interval recording capabilities.
- Must have a cellular connection at meter location.
- Secondary metering CTs/VTs may be required.
- Follow I&R metering requirements for Cold/Hot sequence metering.
- Meter must be fully accessible to utility personnel.
- The utility main switch shall be located within the vicinity of the meter and fully accessible to utility personnel.

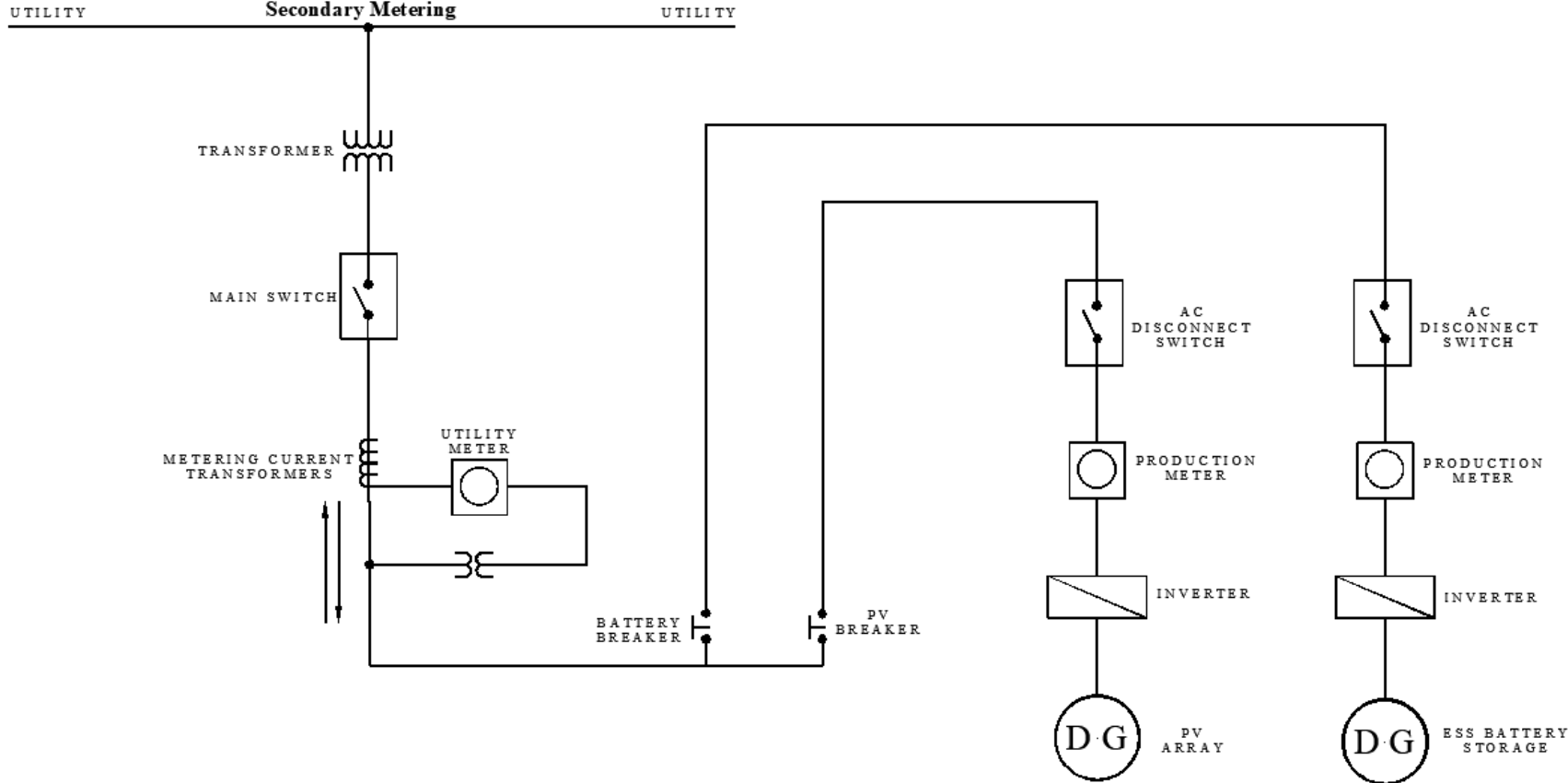
Special Notes:

- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, Utility Revenue / SMART production meter, and disconnect switches.

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5b. Stand Alone >60kW to 500kW, with AC-coupled ESS

AC Connection to Utility EPS 60kW – 500kW
 Stand Alone MA SMART
 With AC-coupled ESS System
 Utility Service Connection
 3-Phase 4-Wire System
 Secondary Metering



This diagram is representative of a standard design.

Note 1

- Follow utility, I & R book
- All 277v/480 or instrument rated services must be cold sequenced.

Note 2 – Utility Revenue and SMART Production Meters

- Meters will have bi-directional interval recording capabilities.
- Must have a cellular connection at meter location.
- Secondary metering CTs/VTs may be required.
- Follow I&R metering requirements for Cold/Hot sequence metering.
- Meters must be fully accessible to utility personnel.
- The utility main and AC emergency disconnect switches shall be located within the vicinity of the meters and fully accessible to utility personnel.

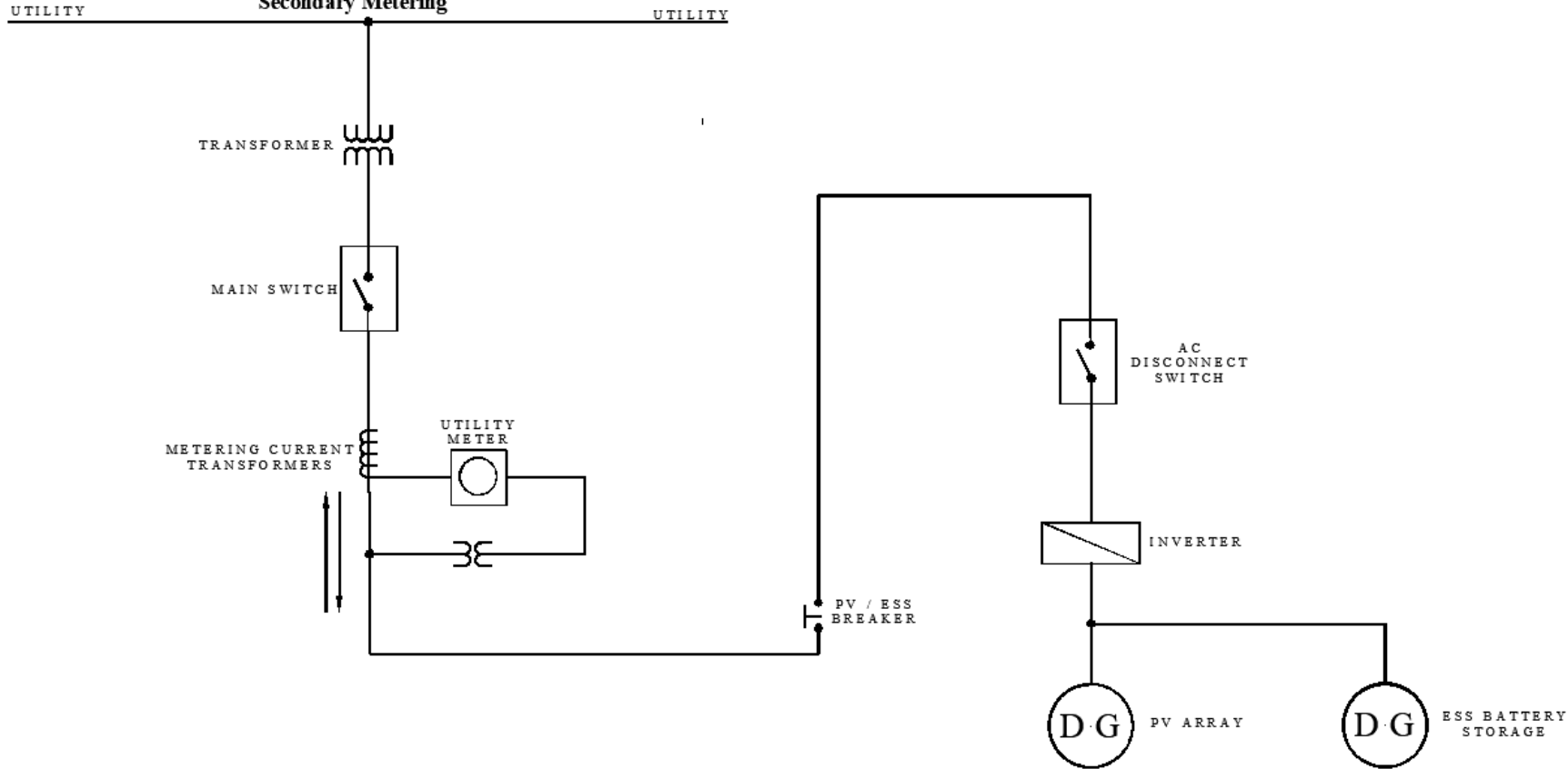
Special Notes:

- All meters and switches are required to be grouped and fully accessible to utility personnel.
- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, set of Utility Revenue and SMART production meters, and disconnect switches.

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5c. Stand Alone >60kW to 500kW, with DC-coupled ESS

AC Connection to Utility EPS 60kW – 500kW
 Stand Alone MA SMART
 With DC-coupled ESS System
 Utility Service Connection
 3-Phase 4-Wire System
 Secondary Metering



This diagram is representative of a standard design.

Note 1

- Follow utility, I & R book
- All 277v/480 or instrument rated services must be cold sequenced.

Note 2 – Utility Revenue/SMART Production Meter

- Meter will have bi-directional interval recording capabilities.
- Must have a cellular connection at meter location.
- Secondary metering CTs/VTs may be required.
- Follow I&R metering requirements for Cold/Hot sequence metering.
- Meter must be fully accessible to utility personnel.
- The utility main switch shall be located within the vicinity of the meter and fully accessible to utility personnel.

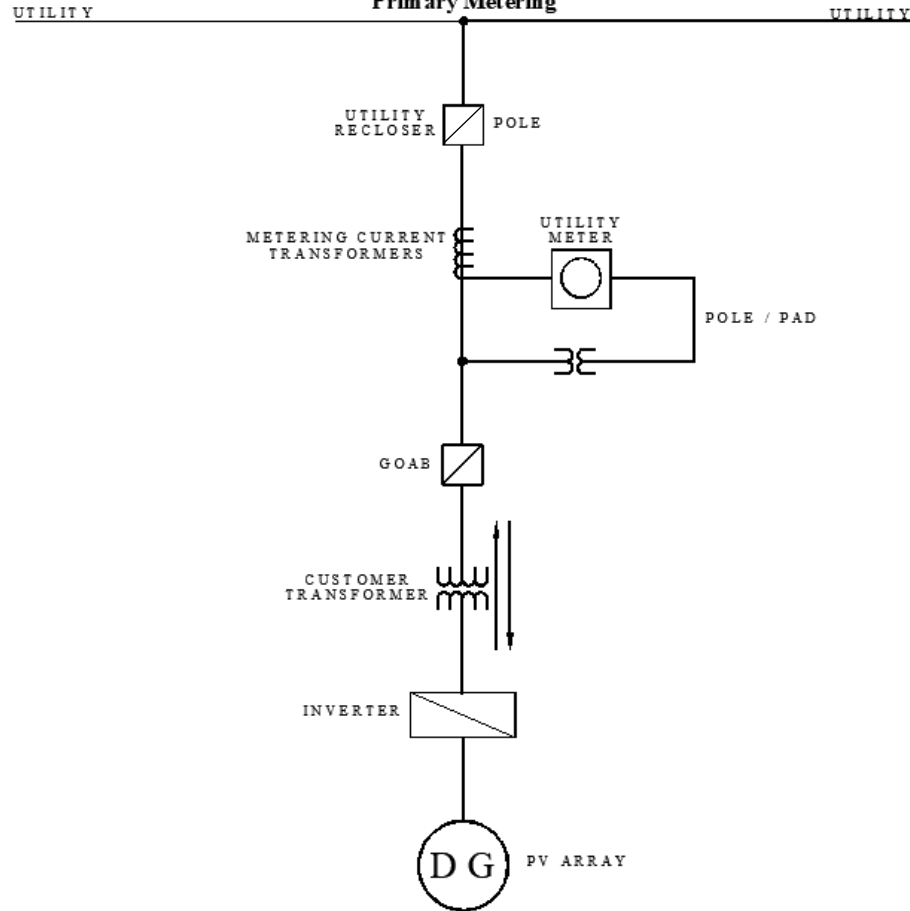
Special Notes:

- Interconnecting customer is responsible for any metering needed behind the single inverter to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, Utility Revenue / SMART production meter, and disconnect switches.

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6a. Stand Alone >500kW, no ESS

AC Connection to Utility EPS 500kW and Greater
Stand Alone MA SMART
Without ESS System
Utility Service Connection
3-Phase 4-Wire System
Primary Metering



This diagram is representative of a standard design.

Note 1 – Utility Revenue/SMART Production Meter

- Meter will have bi-directional interval recording capabilities.
- Must have a cellular connection at meter location.
- Follow I&R metering requirements for Cold/Hot sequence metering.
- Meter must be fully accessible to utility personnel.

Note 2 – Metering Current Transformers

- Polarity Mark of metering transformers is to be toward the Utility Feed

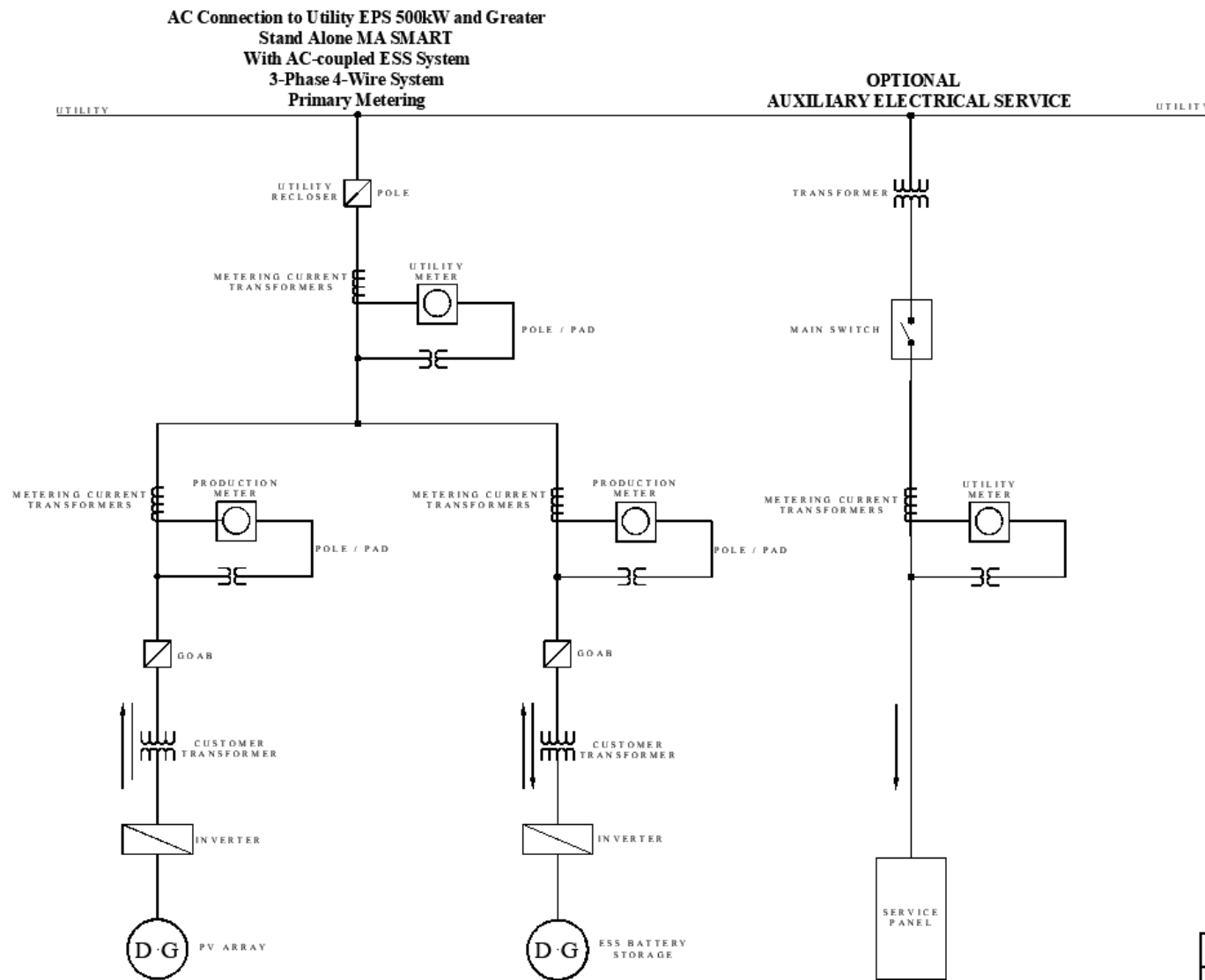
Special Notes:

- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART's project segmentation rules and if applicable, net metering's single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, Utility Revenue / SMART production meter, and disconnect switches.

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6b. Stand Alone >500kW, with AC-coupled ESS

This diagram is representative of a standard design.



Note 1 – Utility Revenue and SMART Production Meters

- Meters will have bi-directional interval recording capabilities.
- Must have a cellular connection at meter location.
- Follow I&R metering requirements for Cold/Hot sequence metering.
- Meters must be fully accessible to utility personnel.

Note 2 – Metering Current Transformers

- Polarity Mark of metering transformers is to be toward the Utility Feed

Special Notes:

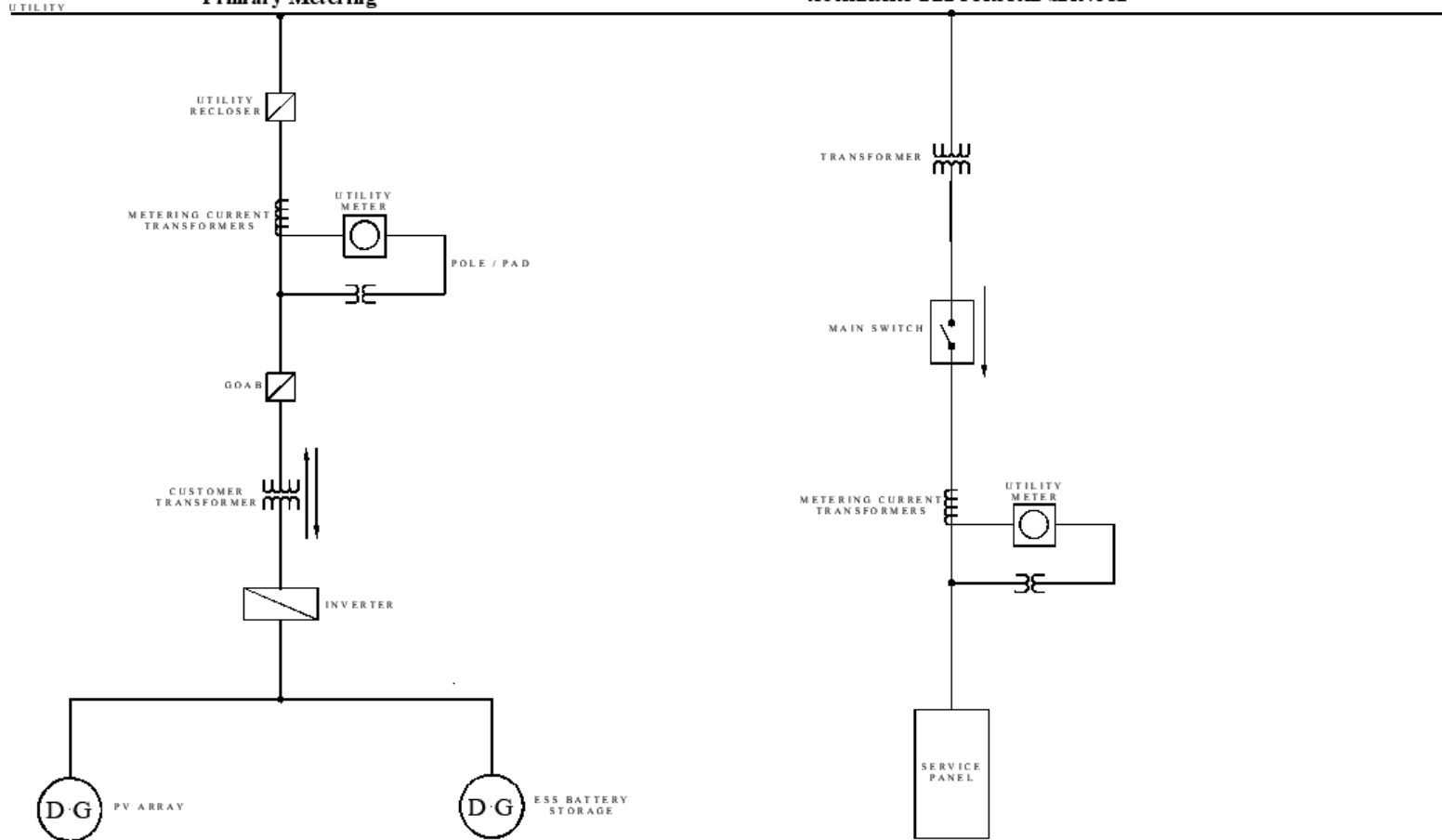
- All meters and switches are required to be grouped and fully accessible to utility personnel.
- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, set of Utility Revenue and SMART production meters, and disconnect switches.

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6c. Stand Alone >500kW, with DC-coupled ESS

AC Connection to Utility EPS 500kW and Greater
 Stand Alone Ma SMART
 With DC-coupled ESS System
 Utility Service Connection
 3-Phase 4-Wire System
 Primary Metering

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This diagram is representative of a standard design.

Note 1 – Utility Revenue/SMART Production Meter

- Meter will have bi-directional interval recording capabilities.
- Must have a cellular connection at meter location.
- Follow I&R metering requirements for Cold/Hot sequence metering.
- Meter must be fully accessible to utility personnel.

Note 2 – Metering Current Transformers

- Polarity Mark of metering transformers is to be toward the Utility Feed

Special Notes:

- Interconnecting customer is responsible for any metering needed behind the single inverter to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
- Multiple SMART standalone systems on the same or contiguous parcels must comply with SMART’s project segmentation rules and if applicable, net metering’s single parcel rule. Each SMART system requires its own interconnection service agreement, SMART application, Utility Revenue / SMART production meter, and disconnect switches.

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ENGINEER: GREGORY M. FIVIN	05/19/21

Summary of changes from previous edition

Change Slide Description

1. 1B, 2B, 3B For BTM AC-coupled systems, Interconnecting customer is responsible for any metering needed for the battery to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements. Added AC disconnect switch for battery.
2. 1C, 2C, 3C For BTM DC-coupled systems, restrictions and equipment and configuration requirements for load behind the SMART production meter and single inverter. Interconnecting customer is responsible for any metering needed behind the single inverter to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
3. 3A, 3B, 3C For BTM systems > 500 kW, added utility recloser and requirement that all meters and switches be grouped and fully accessible to utility personnel.
4. 4A and 4C Added AC disconnect switch in front of inverter
5. 4B, 5B, 6B For Standalone AC-coupled systems, SMART production meter required for battery. Added AC disconnect switch or GOAB for battery. All meters and switches are required to be grouped and fully accessible to utility personnel.
6. 4C, 5C, 6C For Standalone DC-coupled systems, Interconnecting customer is responsible for any metering needed behind the single inverter to comply with any applicable SMART storage, ISO-NE, or other operating and reporting requirements.
7. 6A, 6B, 6C For Standalone systems > 500 kW, added utility recloser, GOAB, and customer transformer.
8. 6B and 6C For Standalone systems > 500 kW with storage, added configuration and requirements for Optional Auxiliary Electrical Service.
9. All For systems < 500 kW, added transformer in front of revenue meter. For systems > 60 to 500 kW, added metering current transformers. Administrative and metering requirements for multiple or add-on SMART systems.