

EG4 12kPV System Wiring Diagrams - v2.1

Overview of EG4 12kPV Use Cases

EG4 12kPV with GridBOSS

- 1. 12kPV with GridBOSS - Basic Architecture**
- 2. 12kPV with Grid BOSS and Whole or Partial Home Backup**
 - 2a. 12kPV with Grid BOSS and Whole or Partial Home Backup (with Notes)**
- 3. 12kPV with Grid BOSS: Options for Utility Lockable Disconnect(s) and Meter Requirements**

EG4 12kPV without GridBOSS

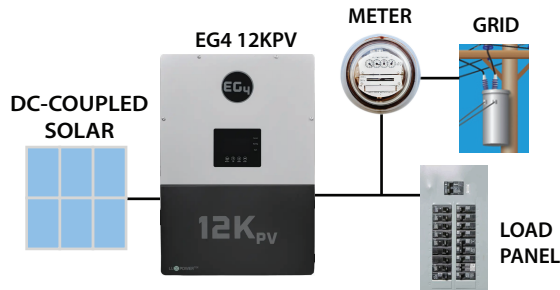
- 4. EG4 12kPV with Back-Fed Breaker - No Backup - Self Consumption and NEM/TOU only**
- 5. 12kPV with Backfed Breaker, BusBar PCS and Partial Home Backup**
 - 5a. 12kPV with Backfed Breaker, BusBar PCS and Partial Home Backup (with Notes)**
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 - 6a. 12kPV with Supply Side Tap and Partial Home Backup (with Notes))**
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- 9. 12kPV Off-Grid**

Overview of EG4 12kPV Use Cases (See Corresponding Drawing #)

WITHOUT GRIDBOSS

Grid-Tie Only (No Batteries)

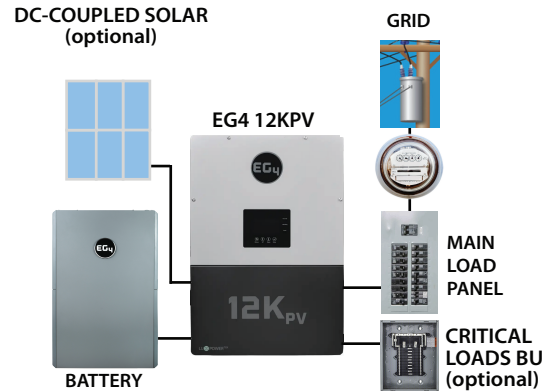
Drawing #3 (without battery)



- Maximize Solar Offset
- Low Initial Cost - Simple
- No Storage or add later
- No Solar when Grid down

Optimize or Minimize NEM No or Critical Loads Backup

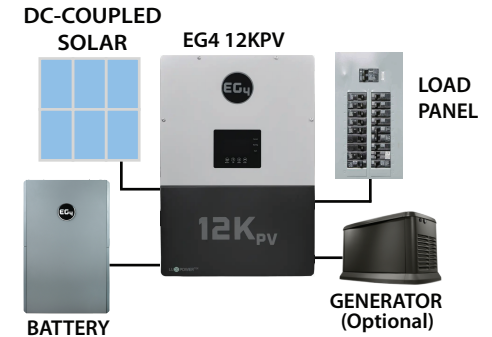
Drawings #4 & 5



- Minimize Buy & Sell with unfavorable NEM Policy
- Buy Low, Sell High with favorable NEM or TOU Policy
- TOU Capable with or without Solar or Backup Loads

Off-Grid

Drawing #9



- Remote - No Grid or Seldom Use Grid
- Grid too Expensive
- Add Grid Backup Later
- Energy Autonomy

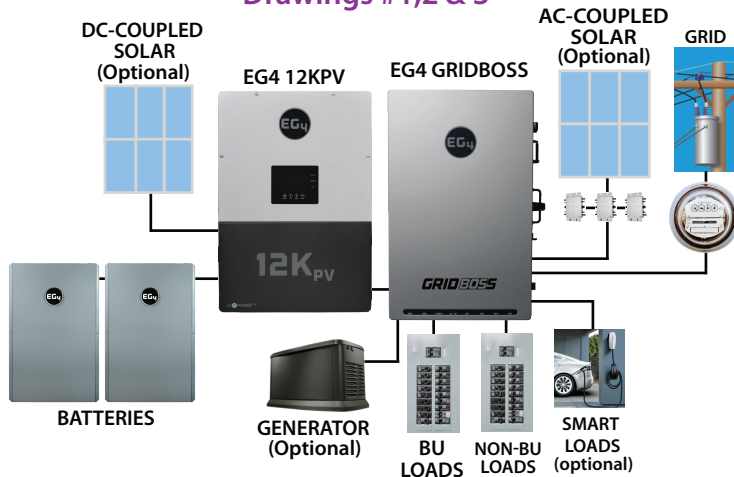
Note: If no utility grid is present or planned then the EG4 6000XP or 12000XP may better serve this purpose.

WITH GRIDBOSS

Optimize or Minimize NEM

Partial Home or Limited Whole Home Backup

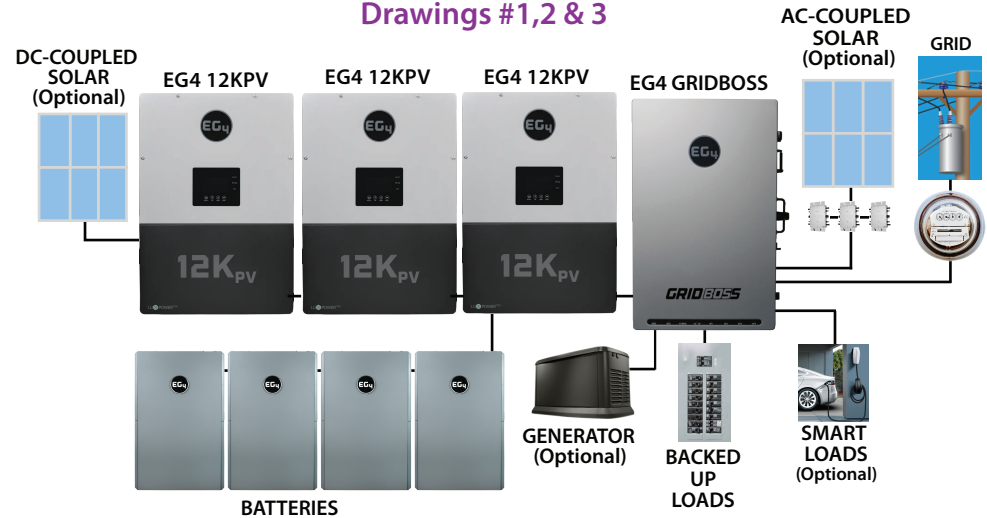
Drawings #1,2 & 3



- Utilize Smart Loads to enable Whole Home BU for 1 inverter systems.
- Easily Integrate existing AC Coupled systems and/or Generators.
- Add DC Solar to existing AC Coupled Solar to achieve high Solar Offset.

Optimize or Minimize NEM - Whole Home Backup Off-Grid Capable for Extended Outages

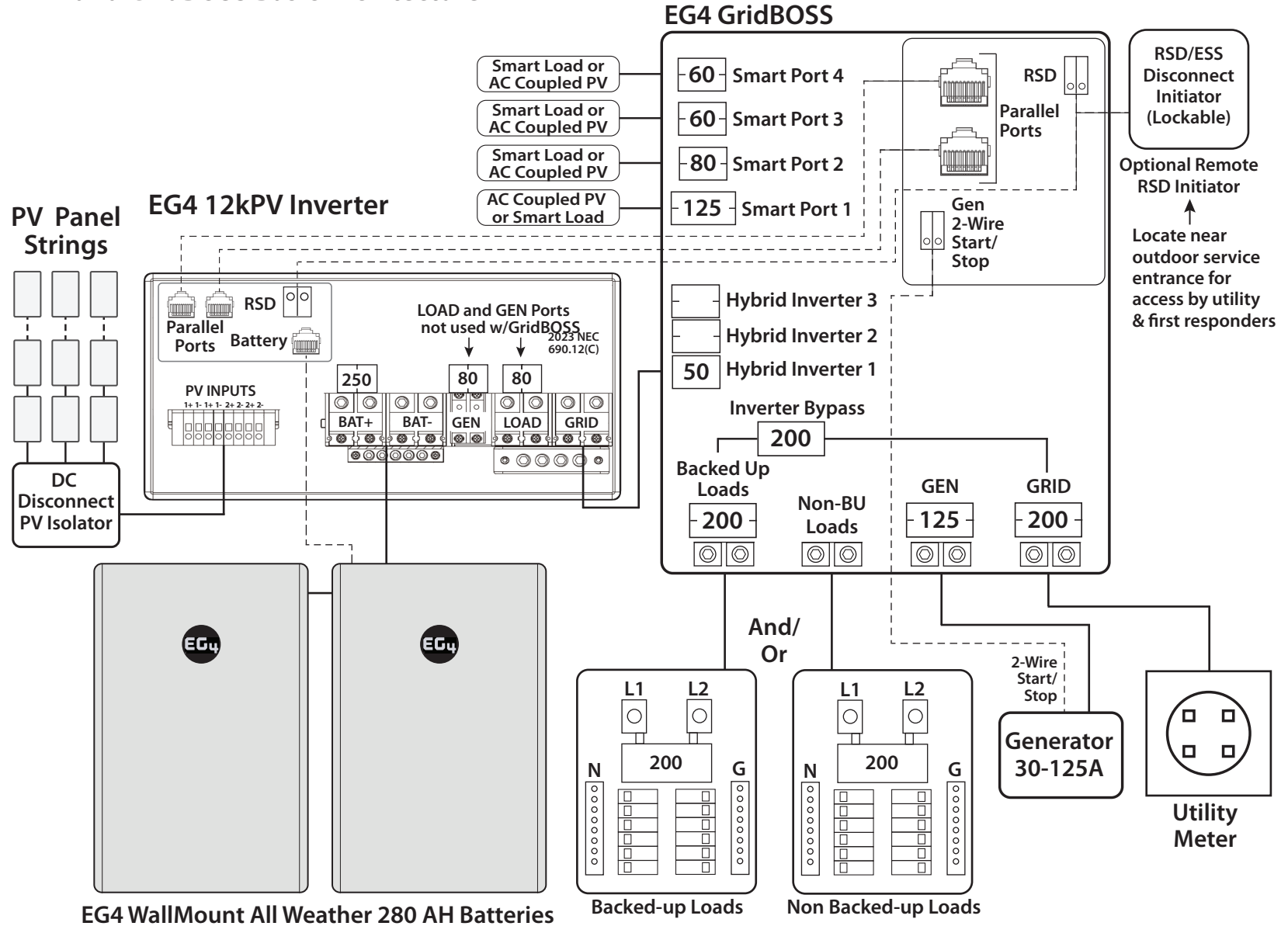
Drawings #1,2 & 3



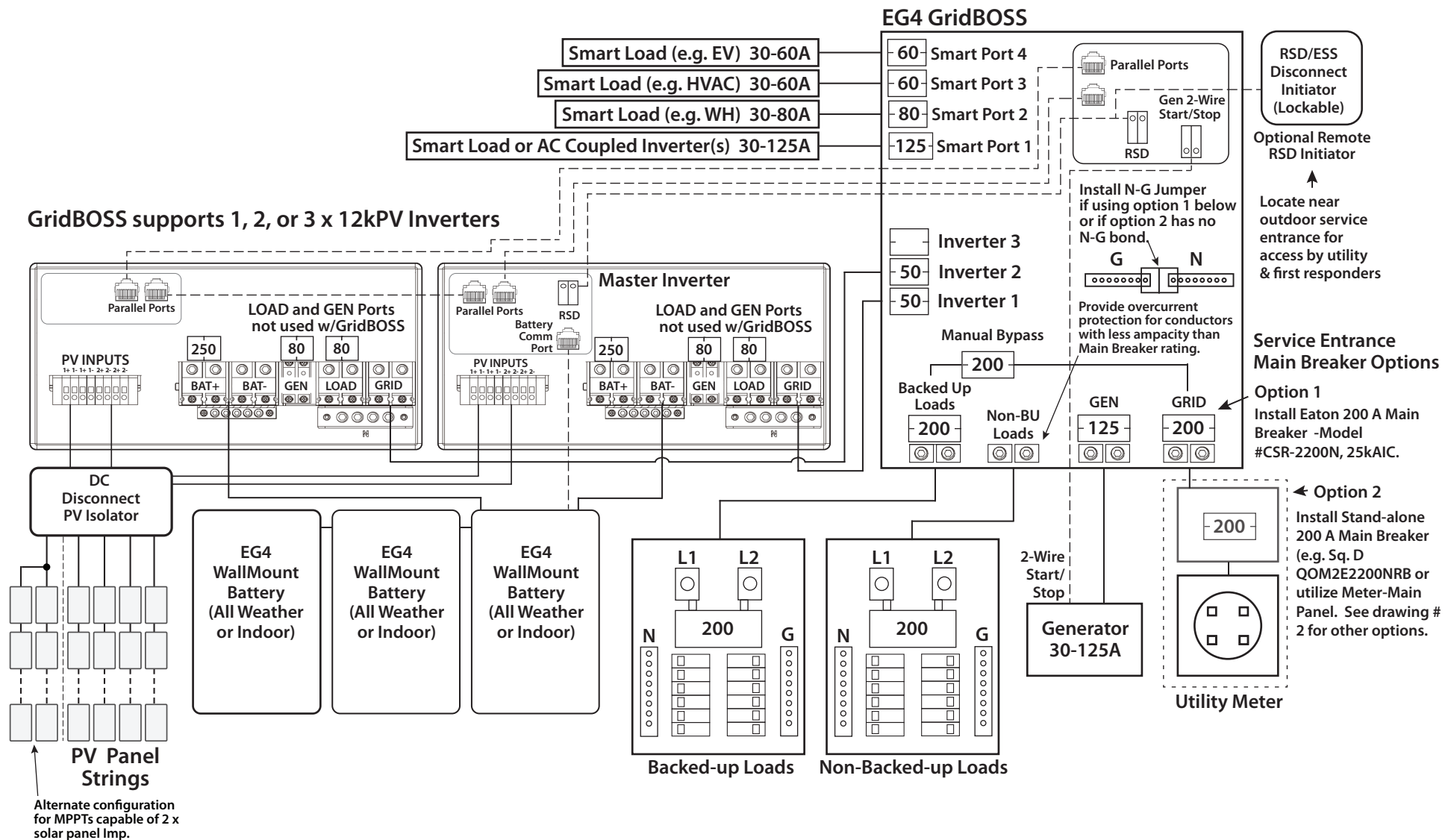
- Utilize Smart Loads to manage battery backup during long outages.
- 3 Inverter systems meets full power needs of 90% of U.S. homes, = 125 A Service.
- Provide DC Solar with or without AC Solar to meet full energy needs on or off-grid.

EG4 12kPV with GridBOSS

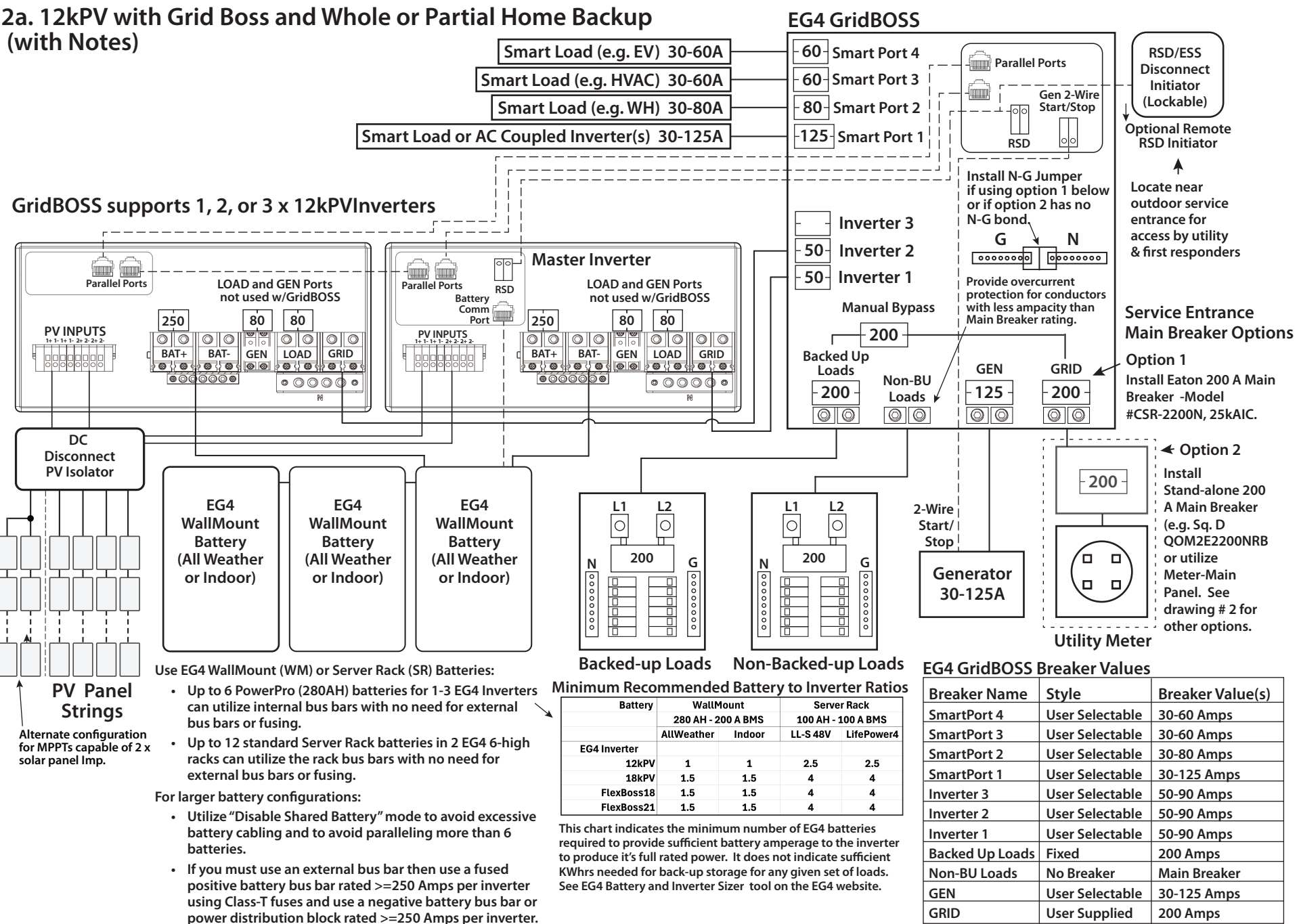
1. EG4 12kPV and GridBOSS Basic Architecture



2. 12kPV with Grid Boss and Whole or Partial Home Backup



2a. 12kPV with Grid Boss and Whole or Partial Home Backup (with Notes)

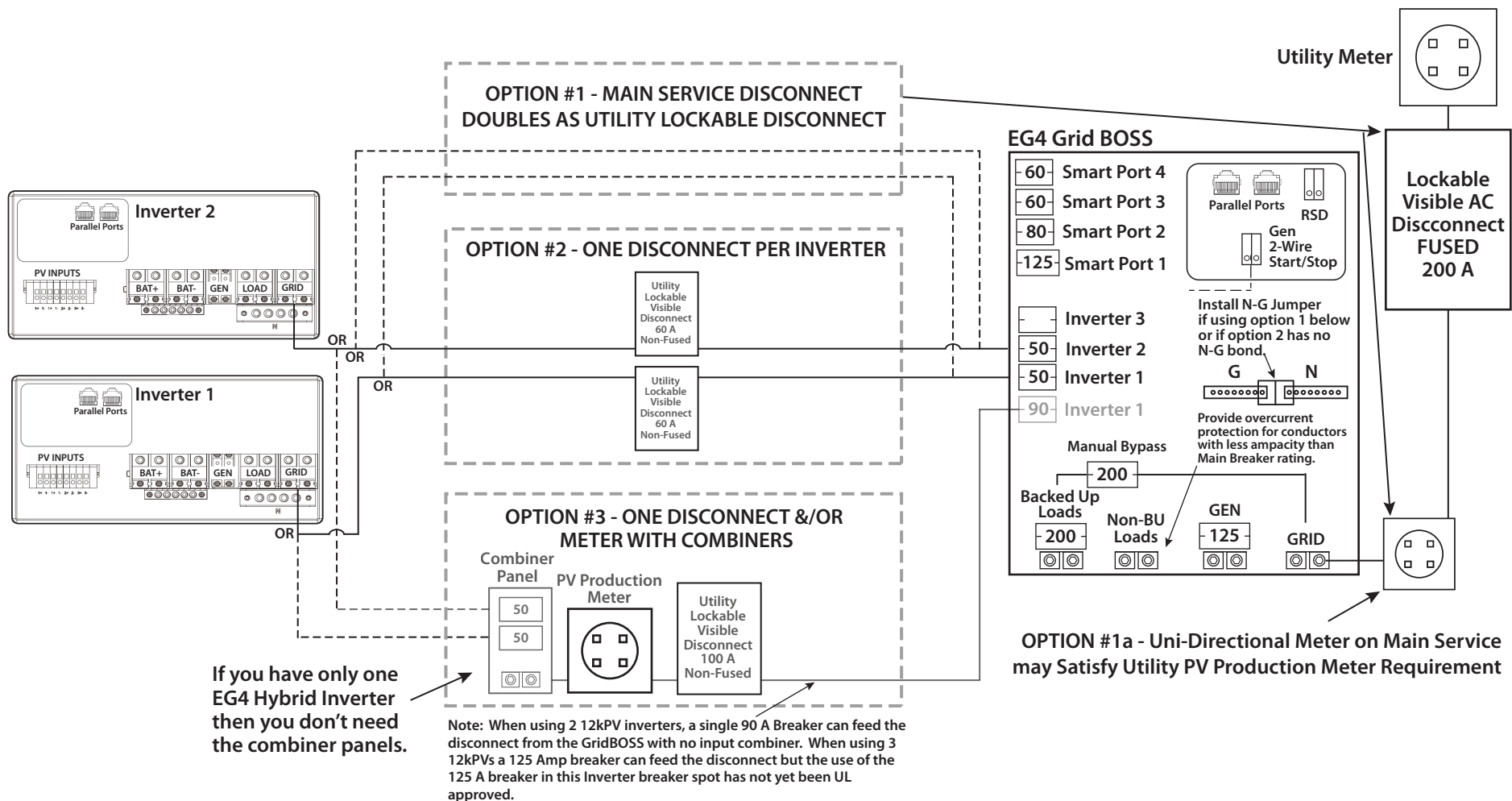


3. 12kPV with GridBOSS: Options for Utility Lockable Disconnect(s) and Meter Requirements

Some Utilities will approve using the Inverter (1,2 & 3) Breakers in the GridBOSS as the Utility PV System Disconnect(s). The GridBOSS door is lockable. In this case you can connect the Inverter's GRID ports directly to the Hybrid Inverter Breakers.

Other Utilities require Lockable, Visible Knife-Switch Type Disconnects- if your utility requires this then you have these 3 options below.

If your utility requires a dedicated PV Production meter you have two options - either Option #1a or Option #3 below:

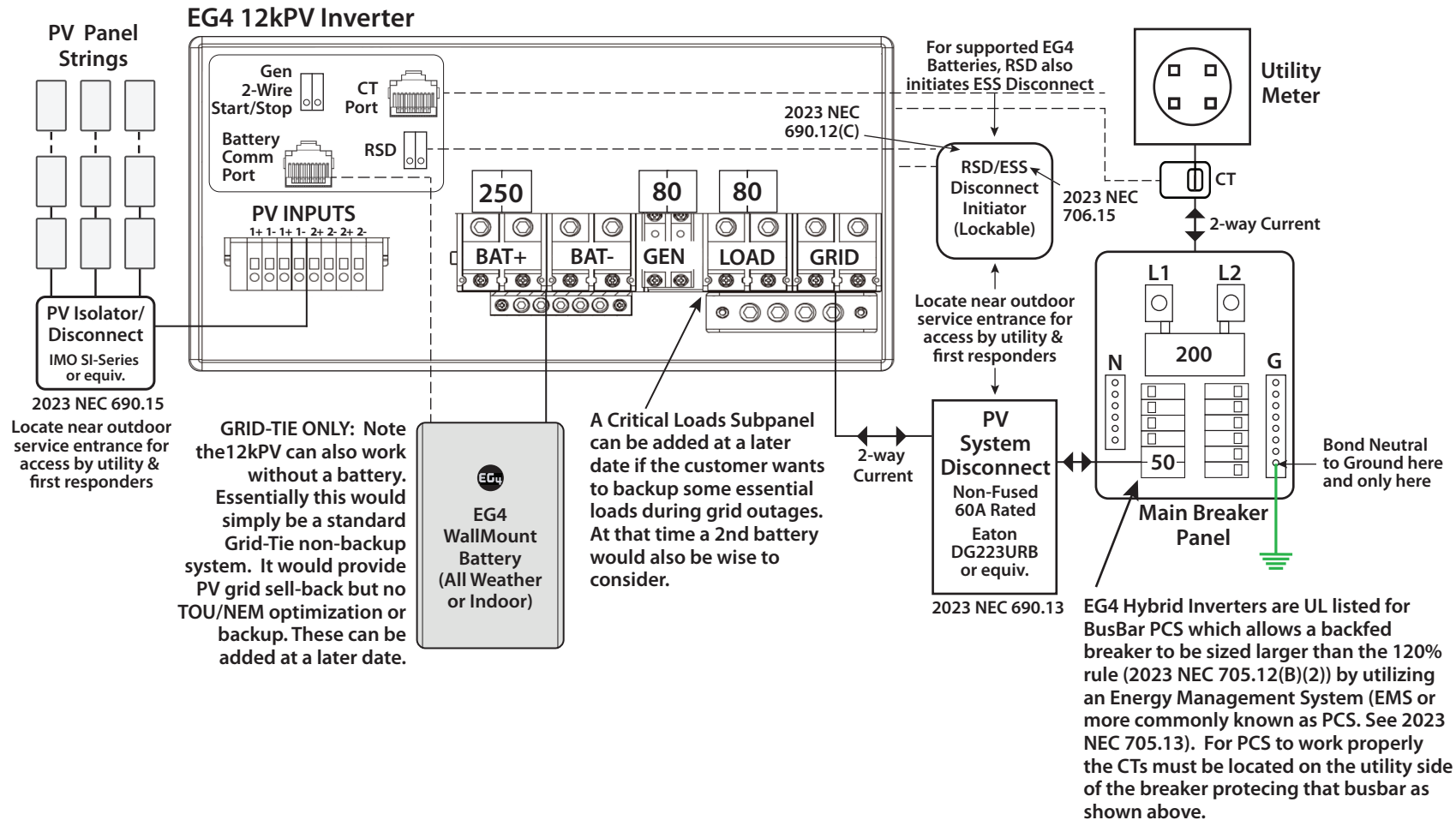


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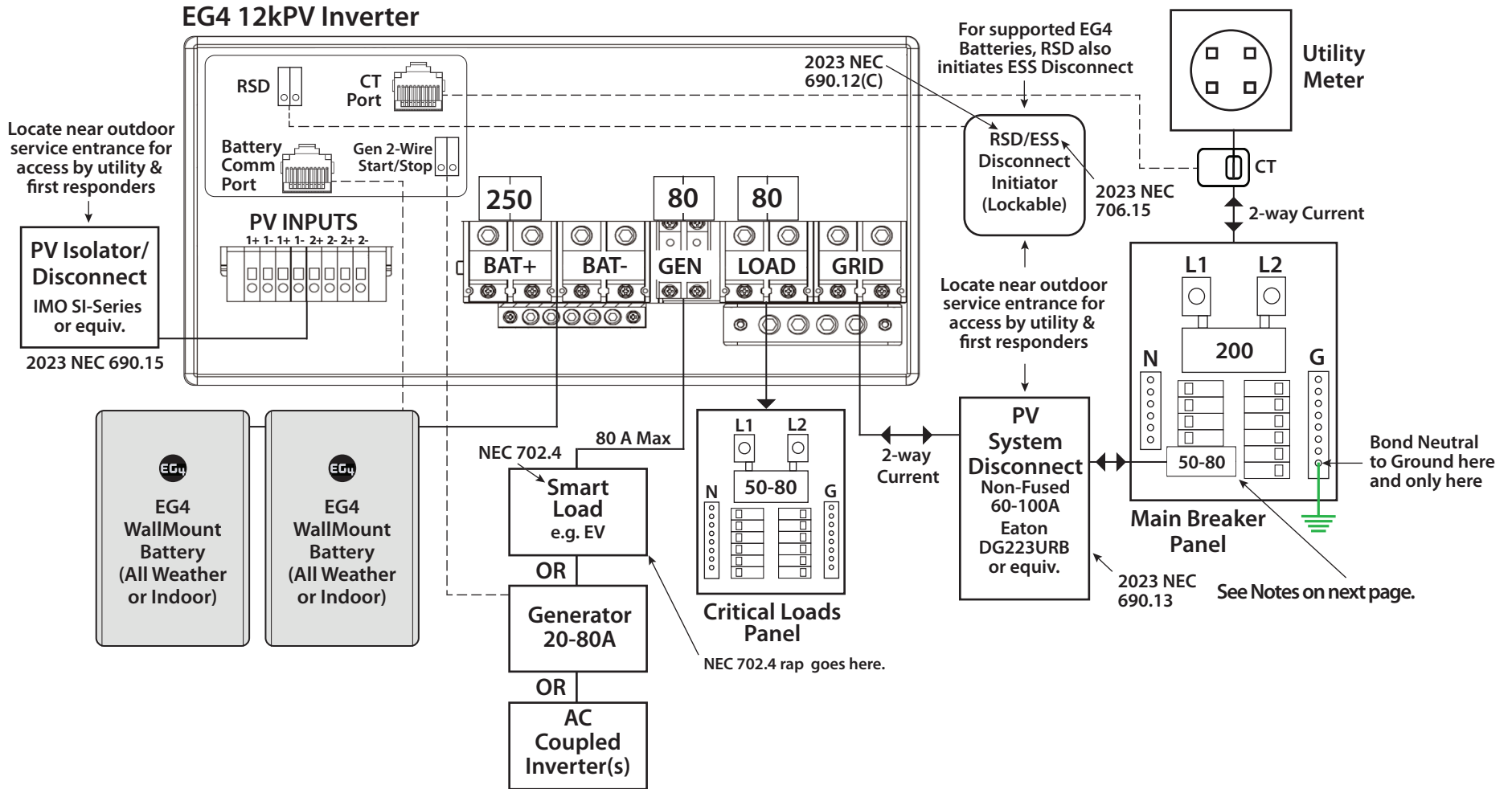
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4. EG4 12kPV with Back-Fed Breaker - No Backup - Self Consumption and NEM/TOU only

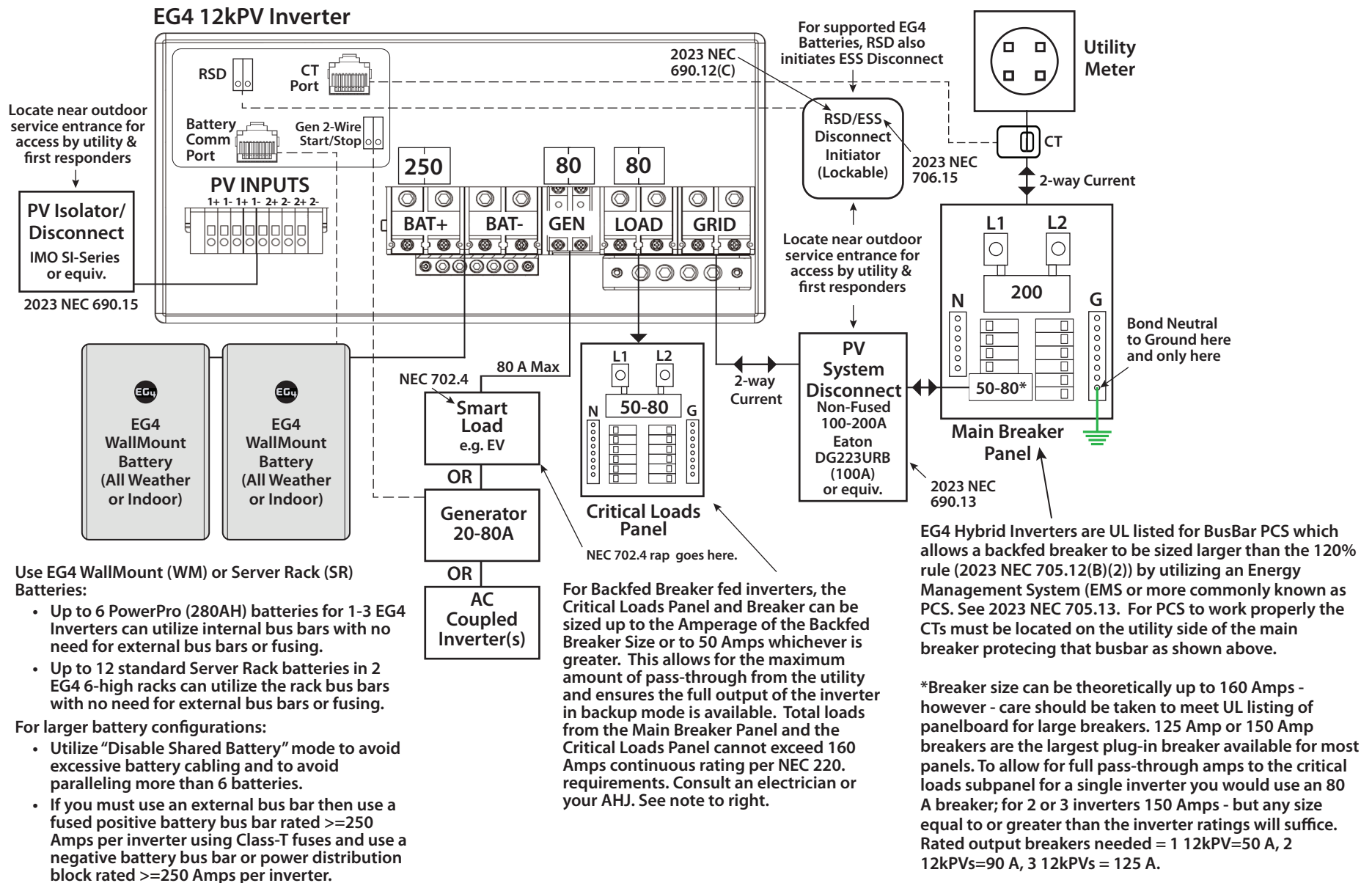
This system has no backed-up loads. It will simply serve to optimizing NEM/TOU economics by maximizing self-consumption of available solar and battery power of the loads in the Main Breaker Panel by providing battery cycling - applying daytime PV to nighttime loads or optimal TOU times. There will be no backup upon a grid outage in this system as it is wired below. See next page for system with backed-up loads panel. The number of batteries in this system is determined by how many kWhs needs to be cycled on a daily basis.



5. 12kPV with Backfed Breaker, BusBar PCS and Partial Home Backup

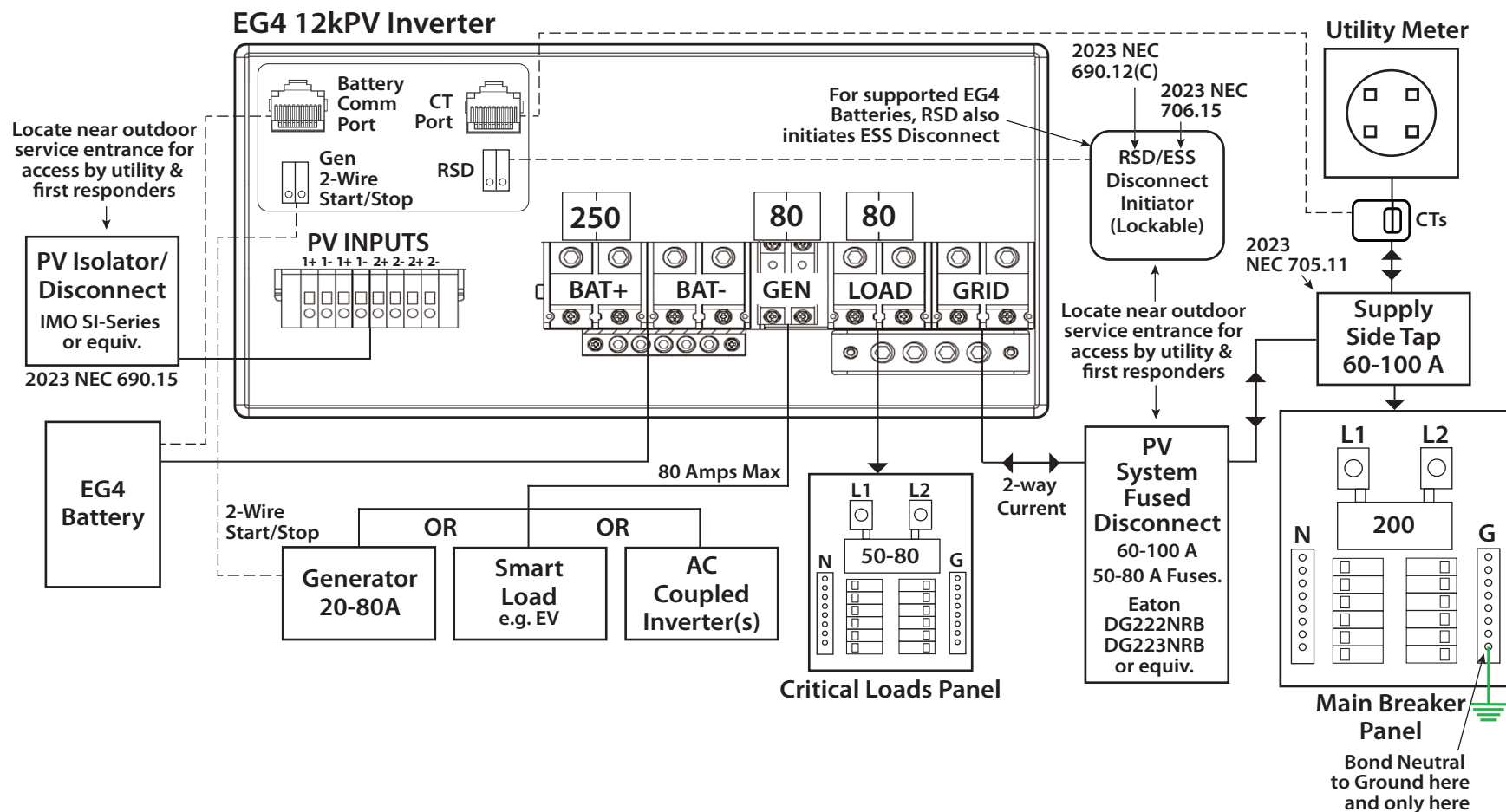


5a. 12kPV with Backfed Breaker, BusBar PCS and Partial Home Backup



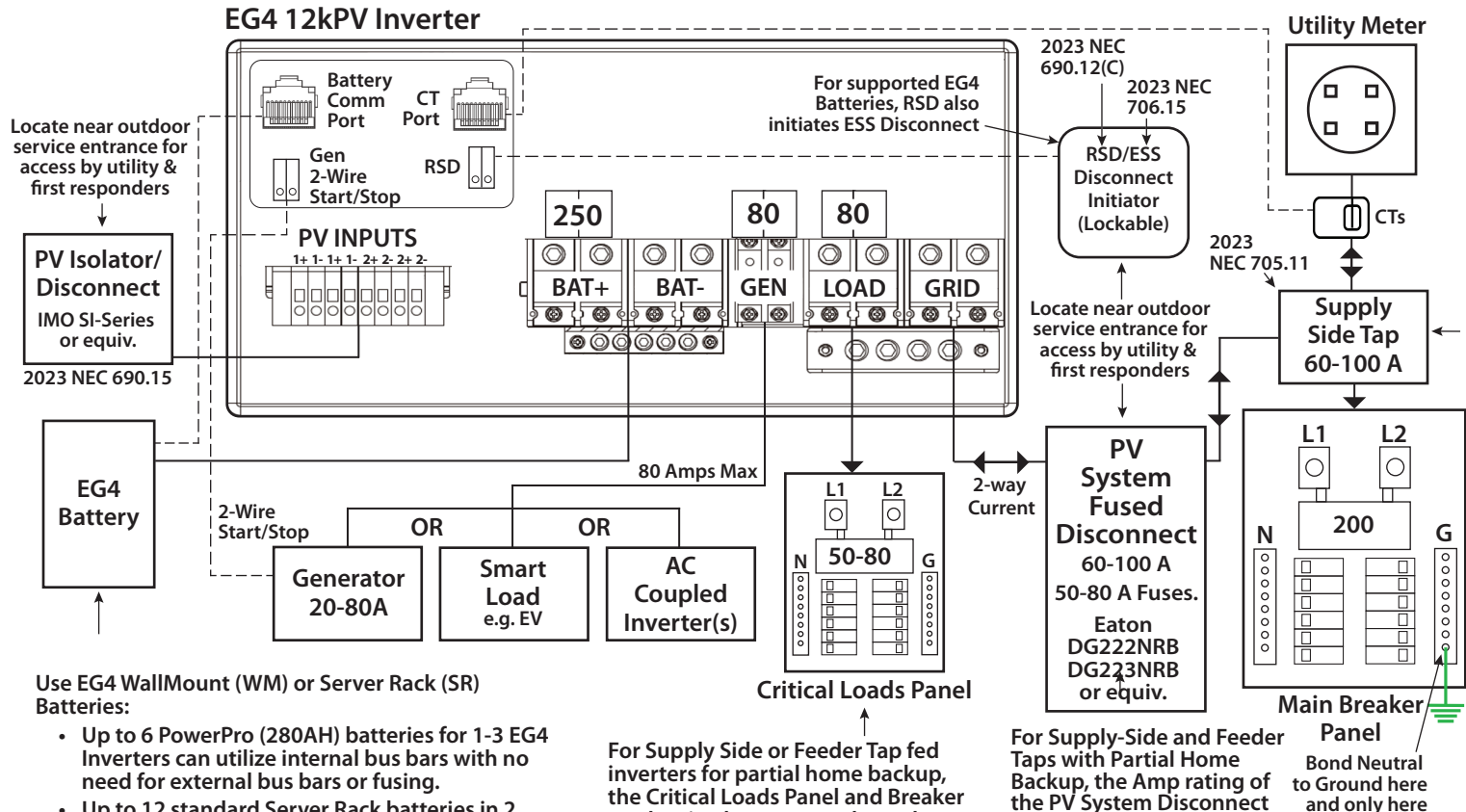
6. 12kPV with Supply Side Tap and Partial Home Backup

Note that while a Supply Side Tap is a viable option to interconnect a 12kPV system with the utility we highly recommend you consider using an EG4 GridBOSS. It will be less expensive, will take up less wall space and provide superior features including Load Management which is now required by code for ESS backup systems. The GridBOSS will also allow for easy installation of multiple inverters and provide a super easy upgrade path if adding inverters later. See drawings #1 and #2.



6a. 12kPV with Supply Side Tap and Partial Home Backup with Notes

Note that while a Supply Side Tap is a viable option to interconnect a 12kPV system with the utility we highly recommend you consider using an EG4 GridBOSS. It will be less expensive, will take up less wall space and provide superior features including Load Management which is now required by code for ESS backup systems. See drawings #1 and #2.



SUPPLY SIDE TAPS -if you want to exceed the amperage of the largest backed breaker that is available for your main panel then a SST may be a quick and easy alternative depending on the configuration of your existing service entrance equipment.

Supply Side Taps allow you to feed the full pass-through capability of the inverter to either your critical loads subpanel or to a transfer switch back to the Main Breaker Panel. Since the 12kPV has a 200 A pass-through rating you can achieve whole panel or whole home backup.

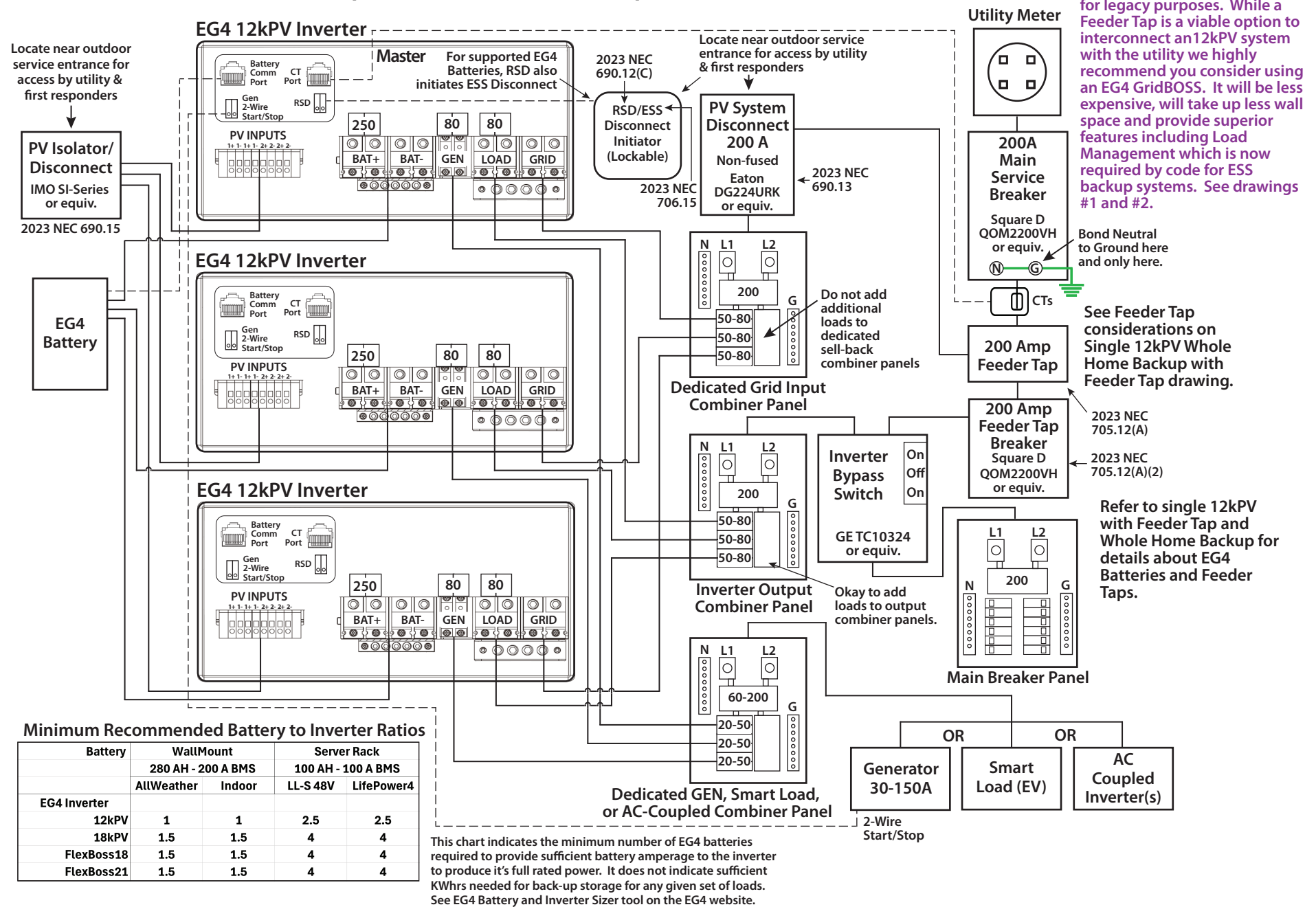
Caution: A Supply Side Tap will essentially add loads to your Service Entrance since each 12kPV adds 50 A to the total house loads with its battery charger. With this increased load there is the very real danger of overloading the Service Entrance conductors if the home is already using the full capacity of a 200 A Service. Do this only under advisement of your electrician and/or Electrical Inspector. Alternatively use a Feeder Tap to mitigate this risk. Feeder taps locate this extra load on the load side of the Main Breaker - thus protecting all Service Entrance Conductors. (See Feeder Tap Diagram).

Supply Side Taps should be installed by a professional electrician. IlSCO KUP-L-Taps are recommended, but the installer must adhere strictly to installation instructions with proper torque applied (as measured with a torque wrench). Alternatively, a Polaris or Burnby Insulated MultiTap Connector can be used, but these need to be torqued twice - once upon installation and once 24 hours later. Refer to 2023 NEC Code 705.11 and 705.12.

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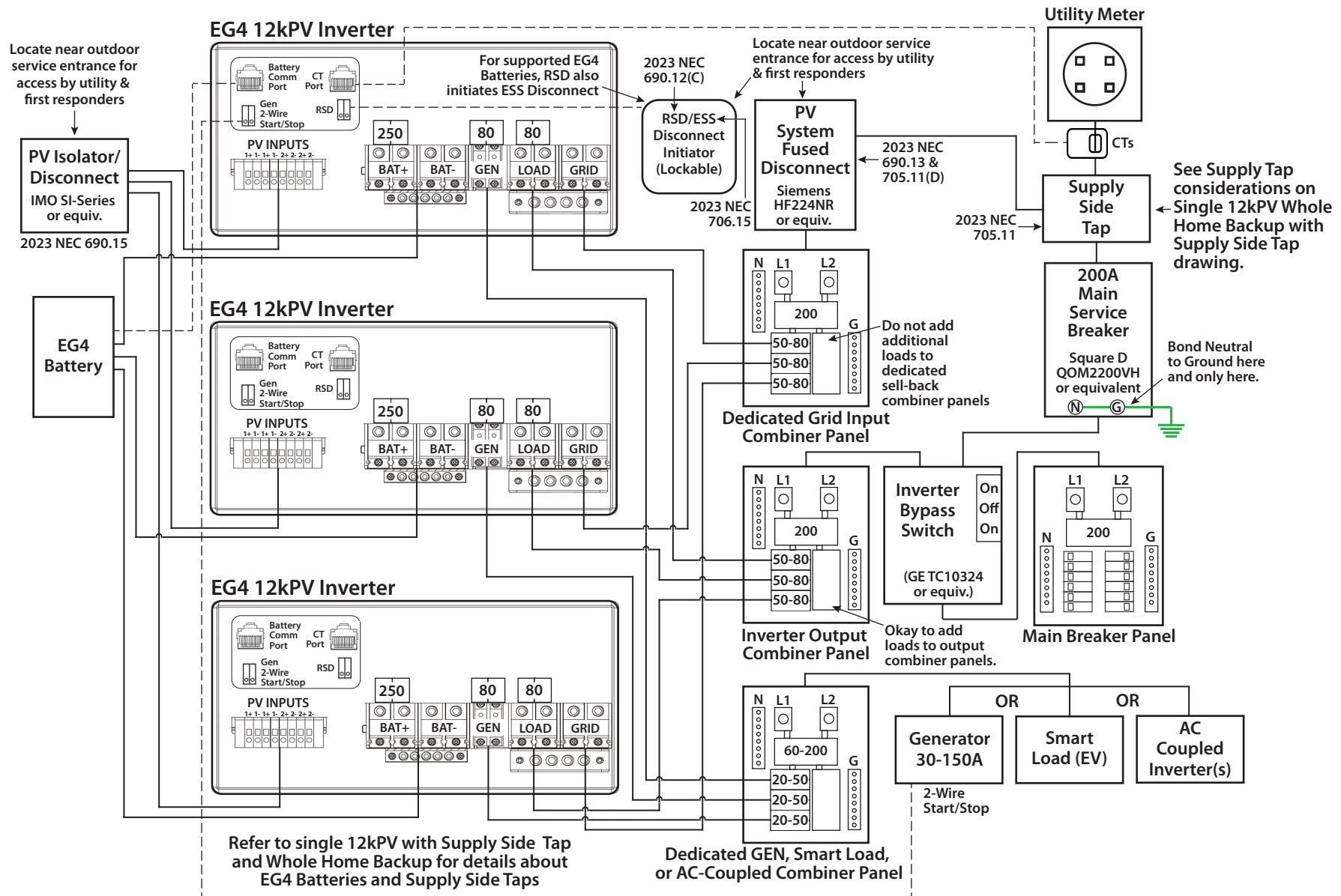
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7. Three 12kPVs with Feeder Tap and Whole Home Backup

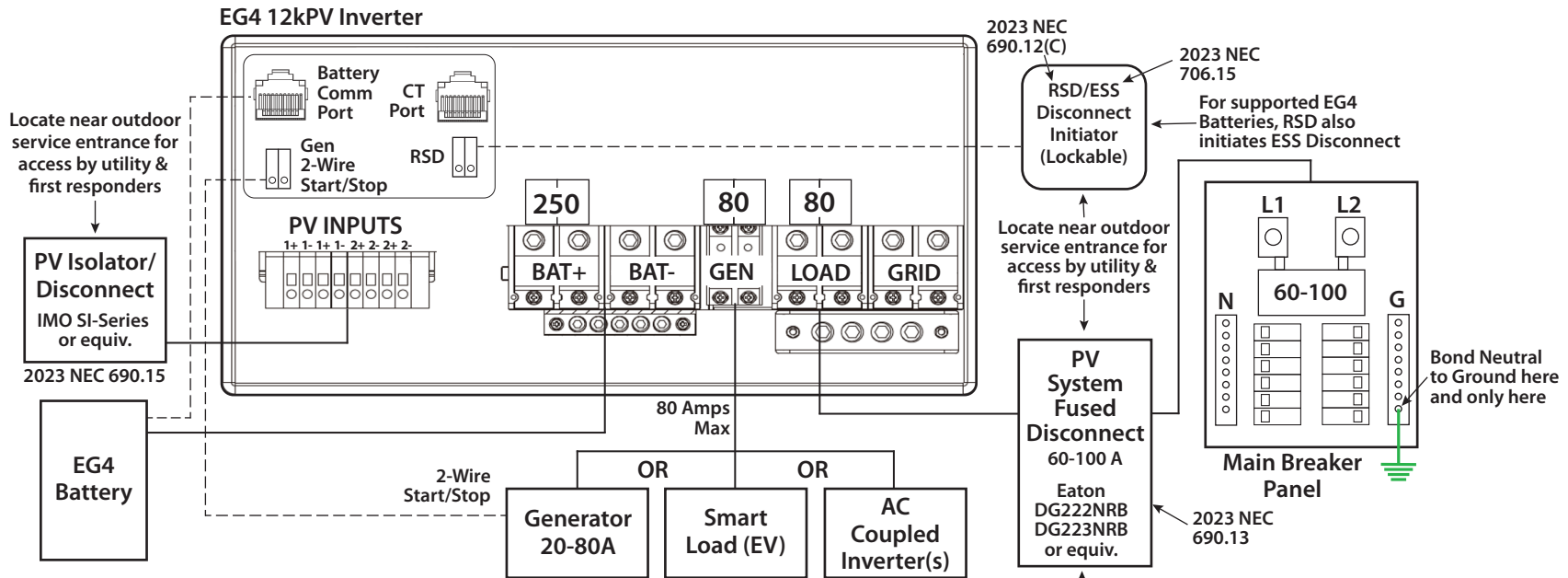


8. 3 12kPVs with Supply Side Tap and Whole Home Backup

Note: This drawing is provided for legacy purposes. While a Supply Side Tap is a viable option to interconnect a 12kPV system with the utility we highly recommend you consider using an EG4 GridBOSS. It will be less expensive, will take up less wall space and provide superior features including Load Management which is now required by code for ESS backup systems. The GridBOSS will also allow for easy installation of multiple inverters and provide a super easy upgrade path if adding inverters later. It will also provide ease of wiring backed up loads vs non-backed up loads for Whole Home Backup. See drawings #1 and #2.



9. 12kPV Off-Grid



The inverter can accept BOTH DC-COUPLED AND AC-COUPLED SOLAR at the same time.
 The AC COUPLED SOLAR CAN BE UP TO 21.6kW (AC) or 80 Amps of AC output.
 The DC COUPLED MPPT CHANNELS CAN HANDLE UP TO 12kW of PV input (DC) with a maximum recommended Array size of 15 KWs. Maximum battery charging rate is 8 KWs per Inverter.

Dual and Triple Inverters can handle larger off-grid systems. Combine as per the corresponding on-grid drawings.

Minimum Recommended Battery to Inverter Ratios

Battery	WallMount		Server Rack	
	280 AH - 200 A BMS		100 AH - 100 A BMS	
	AllWeather	Indoor	LL-S 48V	LifePower4
EG4 Inverter				
12kPV	1	1	2.5	2.5
18kPV	1.5	1.5	4	4
FlexBoss18	1.5	1.5	4	4
FlexBoss21	1.5	1.5	4	4

This chart indicates the minimum number of EG4 batteries required to provide sufficient battery amperage to the inverter to produce it's full rated power. It does not indicate sufficient KWhrs needed for back-up storage for any given set of loads. See EG4 Battery and Inverter Sizer tool on the EG4 website.