

Install #: \_\_\_\_\_  
 Reservation #: \_\_\_\_\_

APS Diagram Review Checklist  
 Small System (< 1000 KW AC)

One-Line & Three-Line Electrical Array		YES	NO	N/A	UNK
1.0	<b>System Sizing:</b>				
1.1	Is the Main Backfed breaker (or other OCPD) sized appropriately for the inverter(s) and system voltage? (Verify OCPDs are rated $\geq 125\%$ of inverter's AC Current Output)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2	Are all other breakers (or OCPD) installed in subpanels for the Photovoltaic system sized appropriately? (Verify over-current protective devices are rated $\geq 125\%$ of inverter's $I_{OUTPUT}$ )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3	Are all of the panels (combiner panel, load subpanels, etc.) sized appropriately?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4	Sum of source breakers does not exceed 120% of SES rating per NEC and shall be positioned at the opposite (load) end from the input feeder location or main circuit location? (for load side connection).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5	For center-fed panelboards, does the bus or conductor ampere rating comply with NEC 705.12(B)(2)(3)(d)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6	If the main breaker (or other OCPD) is de-rated to meet NEC requirements, is it properly labeled/identified as de-rated in the field per APS Labeling Requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.7	Are AC conductors (from inverters to SES) sized appropriately?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.8	Is all AC equipment rated appropriately (voltage and current rating)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.9	Will the existing SES be replaced with a new SES?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.10	Does the new SES have the same rating (Ampacity) as the original SES?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.11	Is the new SES rated for AIC per ESRM 800.2?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.12	Is the new SES an All-in-One Solar Ready panel?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.0	<b>Bi-Directional &amp; Production Meters ("Photovoltaic System Meter")</b>				
2.1	Is the Photovoltaic System Meter's Voltage, Amp Rating, Form Number, and socket type correct? (Meter must be ring type socket). <i>Refer to Section 300 of the APS ESRM (<a href="http://www.aps.com/esrm">www.aps.com/esrm</a>).</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2	Is there a directional arrow on the meter to identify the load/line side of the meter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3	Is the meter socket rated appropriately for the potential fault current?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4	Is (or should) the Photovoltaic System Meter (be) CT rated (> 200 A)? If yes, add "Note: Send shop drawings to APS Metershop (submetershop@apsc.com) for approval."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5	Is the GF Production Meter Enclosure not used as a raceway for wiring to other components?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.6	Is the Production Meter labeled per APS Labeling Requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.7	Was a Production test Meter installed, proper wiring was verified, and proper meter rotation (flow of electricity) validated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.8	Is a meter cover or test meter installed and properly sealed over the Production Meter socket? <i>Note: Meter covers shall be made of fiberglass, plastic, glass and/or Plexiglas material (Cardboard isn't allowed). If test meter installed at the GF, it will be exchanged per the existing APS meter set/inspection process.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.0	<b>Photovoltaic System Utility Disconnect Switch:</b>				
3.1	Does P.V. System Utility Disconnect Switch specifications match (# poles, Amp and $V_{AC}$ rating) the list of known APS approved visible open Utility Disconnect Switches?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2	Are the fixed jaws of the P.V. System Utility Disconnect Switch on the utility (line) side of the switch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3	Is the P.V. System Utility Disconnect Switch rated appropriately for the potential fault current?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4	Is the P.V. System Utility Disconnect Switch labeled appropriately and consistently throughout the drawings (i.e. 1-Line, 3-Line, Site Plan) and abide by the APS Interconnection Requirements labeling standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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3.5	Are all poles of the Utility Disconnect Switch shown on the 3-Line diagram?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.6	Is the Utility Disconnect directly adjacent to the SES? If no, please submit justification and documentation on the chosen location of the P.V. System Utility Disconnect Switch to APS Meter Shop as well as provide a note on the drawing stating that a placard will be placed on the SES with explicit and concise instructions on the location of the P.V. System Utility Disconnect Switch.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.7	Does APS have 24 hour, easily accessible, and unrestricted access to the Utility Disconnect Switch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.8	Are the associated neutral conductor not switched?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.0	<b><u>Photovoltaic System Fused Disconnect Switch</u></b>				
4.1	Is the fuse sized appropriately to system specifications and size?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.2	Does the load side tap terminate with an OCPD at the end of the bus?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3	Are fault current calculations provided? If no, either provide fault current calculations or install a fused disconnect switch to limit the fault current to under 10kAIC.				
4.4	Are the fuse make and model provided on the drawing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.5	Are the fuses current-limiting fuses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.6	Are all poles of the Fused Disconnect Switch shown on the 3-Line diagram?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.0	<b><u>Grounding:</u></b>				
5.1	Are EGC equipment bonding jumpers shown to be terminated inside of every metallic electrical enclosure (Disconnect Switches, Meters, Panels, etc.) per NEC 250.86?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.2	Is the EGC is sized appropriately per NEC Table 250.122?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.3	Are the AC Grounding Electrode Conductors (GEC) sized appropriately per NEC Table 250.66?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.4	Are multi-level arrays, ground mounted arrays, and/or arrays on separate structures tied together via a GEC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.5	Is the neutral to ground bond established in the SES and then connected to grounding electrode from the neutral bar?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.6	Is the grounding Electrode System in compliance with NEC 690.47(C)(3)? In other words, is the GEC from the DC side of the system shown connected from inverter to the GEC of the SES or ground mounted structure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.7	Is the system designed to meet NEC 690.47(C)(3) and the combined EGC/GEC are installed in accordance with NEC 690.47(C)(3) with bonding jumpers installed per NEC 250.64(E)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.0	<b><u>Supply Side Taps and Connections:</u></b>				
6.1	Is there RMC between the SES, main load panel, and the Photovoltaic System Service Disconnect Switch branching from the tap box?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2	Does the tap conductor meet the minimum size of #2 AWG CU?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3	Is the N-G Bond reestablished in the Photovoltaic System Service Disconnect Switch?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4	Are the neutral bars in both the SES and Photovoltaic System Service Disconnect Switch connected to the grounding electrode per 2011 NEC Exhibit 250.36?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.5	Is the ground wire between the SES and Photovoltaic System Service Disconnect Switch removed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.6	Is the tap made outside the main panel and in a NEMA 3R junction box?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.7	Does the tap box provide ample spacing for all taps and conductors and complies with NEC 314.16 and 366.56?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.8	If the tap is performed in the SES, is documentation provided that states that the tap does not violate the manufacturer's warranty or UL Listing of the panel?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.9	For taps performed in the SES, is the tap kit UL listed and appropriately sized to the	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	conductors?				
6.10	For solar ready panels, is the appropriate tap model used in accordance with the panel manufacturer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.11	Is the note/label: "Warning – A generation source is connected to the supply (Utility) side of the service disconnecting means. Follow proper lockout/tagout procedures to ensure the photovoltaic system utility disconnect switch is opened prior to performing work on this device" attached to SES?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.0	<b>Load Side Taps</b>				
7.1	Is the tap made outside the main panel and in a NEMA 3R junction box?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2	Is the tap kit UL listed and appropriately sized to the conductors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3	Does the tap box provide ample spacing for all taps and conductors and complies with NEC 314.16 and 366.56?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.4	If the tap is performed in the SES, is documentation provided stating that the tap does not violate the manufacturer's warranty or UL Listing of the panel?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.5	Is the Manufacturer's approval for load side tap or UL (or other NRTL) field evaluation performed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.6	For solar ready panels, is the appropriate tap model used in accordance with the panel manufacturer?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.7	For solar ready panels, is the PV Source breaker sized according to the manufacturer's specifications?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Battery Systems and Generators</b>		YES	NO	N/A	UNK
1.0	<b>System Sizing:</b> Is the system sized according to the NEC and APS Interconnection Requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.0	<b>Battery Systems and Generators</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1	Are all CT's at the Service Entrance Section depicted or documented as split core CT's on the drawing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2	Is the transfer switch listed for UL 1008?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3	Is the switching schematic for the transfer switch depicted on the drawing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4	Is the Photovoltaic Production Meter a bidirectional meter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5	Are the directional arrows for the backup load panel meter and generator meters depicted correctly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.6	Are there disconnect switches for the backup load panel and generator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Site Plan</b>		YES	NO	N/A	UNK
1.0	<b>Elevation Profile</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.1	Are the heights for the P.V. System Utility Disconnect Switch and the Photovoltaic System Meter in accordance with the APS Interconnection Requirements and APS ESRM?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2	Are the arrangements of each PV System AC Component mirror the component arrangement on the site plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.0	<b>Diagram indicates location of:</b> SES, Utility Bi-Directional Revenue Meter, Photovoltaic System Utility Disconnect Switch, Fused Service Disconnect Switch, all Customer or third party disconnect switches, Photovoltaic System Meter, all third party meters, Inverter(s), Photovoltaic System DC Disconnect Switch, Photovoltaic Arrays, and North arrow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.0	<b>APS Access/Workspace:</b>				

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3.1	Does the Site Plan designate the following note: "Note: Utility has 24-hr unrestricted and unobstructed access to all photovoltaic system components located at service entrance."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2	Does APS have access to the Service Entrance Section (SES) showing any and all gates and/or lockboxes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3	Does APS have access to all Photovoltaic System Utility Disconnect Switches?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4	Does APS have access to all Photovoltaic System Production Meters?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5	Does the site plan contain the following note: "Note: Workspace in front of AC Electrical System Components shall be in Accordance with APS and NEC Requirements."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.6	Is there a minimum 36" by 36" clear working space in front of all PV System AC Components per APS Interconnection requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.7	In the event that an equipment room is provided to accommodate AC Photovoltaic/Wind System Components, is APS access to equipment room from the outside of building only? <i>Note: refer to Section 301.9 of the APS ESRM.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Miscellaneous		YES	NO	N/A	UNK
1.0	Is there indication on the location of loads on the 1-Line and 3-Line?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.0	Are the drawings done professionally and completely in black and white with no color?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.0	Are the drawings legible and are in accordance with APS sample drawings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.0	Are all labels and naming of each component consistent throughout each drawing and in accordance with APS Interconnection Requirements and sample drawings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.0	If an AC Combiner box is installed to accommodate multiple Static Inverters tied into one back-fed OCPD, is the combiner box labeled per APS Labeling Requirements?				
6.0	If installer has provided and installed a leasing company/3 <sup>rd</sup> Party Production Meter, is the meter properly identified and labeled " <b>Leasing Company PV [or Wind] Production Meter</b> "? <i>Note: 3<sup>rd</sup> party metering shall be installed on the generator/inverter side of APS' Production Meter.</i>				
7.0	Static Inverter(s) shall be capable of operating within Tolerable Service Voltage (Range B) as defined by ANSI C84.1-2011 (e.g. for a 120/240V System Range B is 220V – 254V)				
8.0	Equipment as required per NEC is identified and listed for the application (i.e Static Inverters listed per UL Standard 1741 & Photovoltaic Modules listed per UL Standard 1703)?				

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**Other Comments**