REVISED FAULT CURRENT CALCULATIONS

The Sample Drawing is for illustration purposes only and is not to be used for design or construction. This drawing and its availability for end use is not implied. The intent is to only illustrate typical minimum information required at time of application to APS. Additional information may be required.

**Sample Supply Side Connection One-Line Diagram**

**Notes:**
- All equipment shall be installed and labeled in accordance with the NEC and all applicable requirements of the serving electrical utility company and of the local authority having jurisdiction.
- CT rated & bidirectional utility meter is installed by utility company as required.
- Label "Photovoltaic System Utility Disconnect Switch". Switch cover to be locked at all times. Switch to be visible and accessible per utility requirements and conform to NEC 705.22, and is rated for the available fault current.
- Label "Photovoltaic Array DC Disconnect Device #1 of 6" per NEC 690.14(C)(2). Label with operating current, operating voltage, maximum system voltage, and short circuit current per NEC 690.53. Switch to be locked per NEC 690.7(D).
- Provide warning sign per NEC 690.17 reading "Warning: Electric Shock Hazard. Do not Touch Terminals". Terminals on both line and load sides may be energized in the off position.
- Metallic conduit shall be used within building per NEC 690.31(E).
- Label "Dedicated Photovoltaic System Combiner Panel" and "Do not add loads to this panel".
- Gcc installed as required by manufacturer instructions and NEC 690.47.
- Irreversible connection per NEC 250.44(C)(1).
- Customer to provide a dedicated phone line to the Photovoltaic System meter. Connect into the APS provided telephone interface module which will be located within two feet of the meter. Note: Only required for applicable APS rates and incentive programs.
- A dedicated phone line may be required at the bi-directional meter as well.
- DC Combines Box, Label "Warning: Do not open fuses under load." A placard or directory is installed at the service entrance with explicit directions to the location of the Photovoltaic System Utility disconnect switch as required by APS.
- A permanent placard or directory is installed per NEC 705.10.
- Supply side connection is installed per NEC 230.92(D), 240.4(B)(1), 225.12, APS ERM, and APS interconnection requirements. Label, "Photovoltaic System Service Disconnect Switch," switch cover to be locked at all times.
- Supply side connection is installed with the APS interconnection application. 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."
- Equipment shall be tested, listed and marked to withstand the available short circuit current.

**Sample Supply Side Connection One-Line Diagram**

**Utility Grid:** 277/480V, 3 Phase, 4 Wire

**Load Center:** 1600A, 2000V

**Electrical Service Entrance and Load Center:**
- 277/480V, 3 Phase, 1600 AMP BUS (85,000 AIC)

**CT Rated Bidiirectional Utility Meter:**
- 1600A

**Existing Loads (Typical):**
- 3-Pole, 200A, 600VDC
- 3-Pole, 400A, 600VAC

**Photovoltaic System Service Disconnect Switch:**
- [Specify Make and Model #]
- 3-Pole, 400A, 600VAC
- 350A, 600VAC Fuses (R1-Type)
- Isc=29,487 AIC
- Source: Cooper Bussmann SPD Manual, Rev 2010

**Photovoltaic System Utility Disconnect Switch:**
- [Specify Make and Model #]
- 3-Pole, 400A, 600VAC
- Isc=29,487 AIC
- F1: Avail = 30,973 AIC
- F2: Avail = 28,137 AIC
- F3: Avail = 29,487 AIC
- F4: Avail = 26,906 AIC
- *Source: Cooper Bussmann SPD Manual, Rev 2010*

**Photovoltaic System Meter:**
- [Specify Make and Model #]
- 277/480V, 400A, Form 9S (42,000 AIC)

**Note:** System designed in accordance with NEC Art 110 & 110.10.

**Fault Calc.:**
- I fault = 29,487 AIC
- F1: I = 29,487 AIC
- F2: I = 28,137 AIC
- F3: I = 29,487 AIC
- F4: I = 26,906 AIC

**Note:** Only required for applicable APS rates and incentive programs.
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PV STRING #1
14 MODULES IN SERIES
(TYPICAL OF 66 STRINGS)
SEE Dwg SSC THREE-LINE

PHOTOVOLTAIC MODULE SPECIFICATIONS

[SPECIFY MAKE & MODEL]
230 WATTS
Voc=37.0 VDC, Isc=8.18 AMPS
Vmp=35.0 VDC, Imp=7.66 AMPS

ONE PHOTOVOLTAIC STRING

3,220 WATTS
14 MODULES IN SERIES PER STRING
Voc=518 VDC, Isc=8.18 AMPS
Vmp=420 VDC, Imp=7.66 AMPS
(TYPICAL OF 66 STRINGS)

COMPLETE PHOTOVOLTAIC ARRAY

212,520 WATTS
14 MODULES IN SERIES
Voc=518 VDC, Isc=8.39 AMPS
Vmp=420 VDC, Imp=7.66 AMPS
(TYPICAL OF 66 STRINGS)

NOTES:

1. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC AND ALL APPLICABLE
   REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

2. GROUND WIRE MUST BE CONTINUOUS AND INSTALLED TO ALLOW FOR PANEL REMOVAL WITHOUT
   DISRUPTING CONTINUITY. ALL MODULE GROUND CONNECTIONS SHALL BE MADE IN ACCORDANCE
   WITH NEC 690-4 (C).

3. FOLLOW MANUFACTURERS SUGGESTED INSTALLATION PRACTICES AND WIRING SPECIFICATIONS.

4. WIRES SHALL BE RATED AND LABELED "SUNLIGHT RESISTANT" WHERE EXPOSED TO AMBIENT
   CONDITIONS.
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NOTE: UTILITY HAS 24-HR UNRESTRICTED ACCESS TO THE PHOTOVOLTAIC SYSTEM METER AND PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH THROUGH THE SECURITY GATE.

NOTE: WORKSPACE IN FRONT OF AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH APS AND NEC REQUIREMENTS.

ACCESS CODE: 12345#