



**WATER AND  
POWER**

# Confirmation of Electric Service

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## **COMMERCIAL**

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It is required that all new or revised solar photovoltaic (PV) plans are reviewed by BWP prior to issuing a Confirmation of Electric Service. Please e-mail a full set of solar PV plans to the appropriate BWP Electric Service Planner, either Residential or Commercial. Include the address in the subject line of the e-mail for tracking purposes, and provide the customer's contact name and phone number. The BWP Planner will schedule a site visit on a week day, between the hours of 8:00 and 12:00 pm, as soon as their schedule permits. During this window of time, please provide access to the backyard, with any dogs put away. The BWP Planner will review the plans, draft a Confirmation of Electric Service, forward the plans to the BWP's Marketing Department to review the sizing of the system, and return any necessary correction requests to the applicant.

Upon approval of the sizing of the system and approval of any necessary revisions, the BWP Planner will e-mail a copy of the Confirmation of Electric Service to the applicant, so that a permit can be pulled from the Burbank City's Building Division, located at 150 N Third Street, Burbank CA 91502. The process from submission of solar PV plans to BWP's release of a Confirmation of Electric Service typically takes on average of 4-7 business days; but can be delayed by correction requests and revision re-submittals.

All meter installations must conform to the National Electrical Code (NEC), City of Burbank building codes, BWP Rules and Regulations, and Electric Utility Service Equipment Requirements Committee (EUSERC). In addition, all service equipment installed must be UL approved.

For all solar installations in the City of Burbank the customer/contractor must supply an appropriate solar performance meter socket. Ring-less sockets are not acceptable. The solar performance meter socket and the AC disconnect shall be wired between the output of the inverter and the service entrance revenue (net) meter. **Separate, detached structures with PV arrays installed must have a disconnecting means. This disconnecting means must be installed on the detached structure, readily accessible at ground level, and properly sized with regard to voltage configuration, and current capacity.** Please see the sample solar single line drawing attached below.

AC and/or DC disconnects that are built into the inverter are not an acceptable alternative to the required external disconnects. All AC and DC disconnects shall be lever actuated, and lockable in the open position.

The solar circuit breaker must be capable of breaking the load from over-current in either direction (bi-directional). No line-side or load side taps will be allowed.

# REQUIREMENTS FOR SOLAR PLANS

**Site Plan:** Provide a fully dimensioned site plan showing property lines, all structures, and the arrangement and locations of major equipment including: the main electrical service, performance meter socket, AC and DC disconnect(s), inverter(s), combiner boxes, etc. The site plan should show the placement of the arrays; and the route of the wiring connecting different elements of the system.

**Roof Plan:** Provide a roof plan showing the location of the photovoltaic panels, and any pertinent information.

**Attachment Details:** Provide details to show how the photovoltaic panels will be secured to the roof.

**Equipment Layout:** Provide a diagram to show where the photovoltaic system equipment is to be placed on the building structure(s), the height dimensions of the equipment from the ground floor, the clearance dimensions in front of the equipment, and the clearance dimensions from any pertinent obstructions such as: windows and doors, landings, gates and walls, gas meter/lines, crawl spaces, corners, etc. (Examples include: showing performance meter height requirement at a minimum of 48 in. and a maximum of 75 in. to the center of the new meter. Show a minimum of 36 in. of clearance from the edge of the new performance meter socket to the nearest gas line. Show a minimum of 4 in. of clearance between all solar photovoltaic equipment and to any obstructions.)

**Electrical Single Line Diagram:** Provide a complete electrical single line diagram to include: PV panels and any associated DC electrical components, inverter(s), any combiner boxes, load centers, DC and AC disconnect(s), performance meter socket, utility (net) meter, main disconnect rating of the electric service entrance panel, conductor size and type, conduit and breaker sizing, over-current protection location and ratings, grounding electrode type and location, point of interconnection to the existing service panel, and any other associated electrical components. Please see the sample solar single line drawing attached below.

**Electrical Calculations:** Provide electrical calculations for all pertinent solar photovoltaic equipment.

**Engineering Calculations:** Engineering calculations may be required on some photovoltaic systems to show that the existing roof is strong enough to support the added weight of the system.

**Signage Specifications:** Provide example labeling for photovoltaic system components as described below.

**FOLLOW BWP's SOLAR PHOTOVOLTAIC LABELING REQUIREMENTS CAREFULLY. FAILURE TO DO SO WILL PREVENT SOLAR INTERCONNECTION AND INSTALLATION OF THE NET METER. For labeling questions please contact BWP's Test Shop at (818) 238-3585.**

All National Electrical Code, BWP, and Fire Department required labeling will be made of sunlight and weather resistant material. Labeling on disconnects, inverters and service panels will be made of an engraved, plastic material and be permanently attached to its respective device. All labeling shall be red background with white lettering. Unless otherwise specified, the lettering should be 3/8" high, all capital letters, Arial or similar font, non-bold. All labeling shall be attached directly to those pieces of equipment. Labeling for circuit breakers shall be placed directly next to the circuit breaker. Minimize labeling to only what is required. See the Burbank Fire Department Photovoltaic Installation Guidelines for labeling requirements on conduits, raceways, enclosures, cable assemblies, and junction boxes.

The following labels are required where indicated:

- AC disconnects shall be labeled: "AC PHOTOVOLTAIC DISCONNECT".
- DC disconnects shall be labeled: "DC PHOTOVOLTAIC DISCONNECT".

- Where DC disconnects are not located near the electrical service, a label stating: "DC DISCONNECT IS LOCATED" and/or post a diagram showing and describing the location of the DC disconnect near the service entrance as required by BWP or City inspectors.
- On the service entrance, a label stating:

"PV SYSTEM WARNING – ELECTRIC SHOCK. THIS EQUIPMENT SUPPLIED FROM MORE THAN ONE SOURCE. TERMINALS MAY BE ENERGIZED IN THE OPEN POSITION".

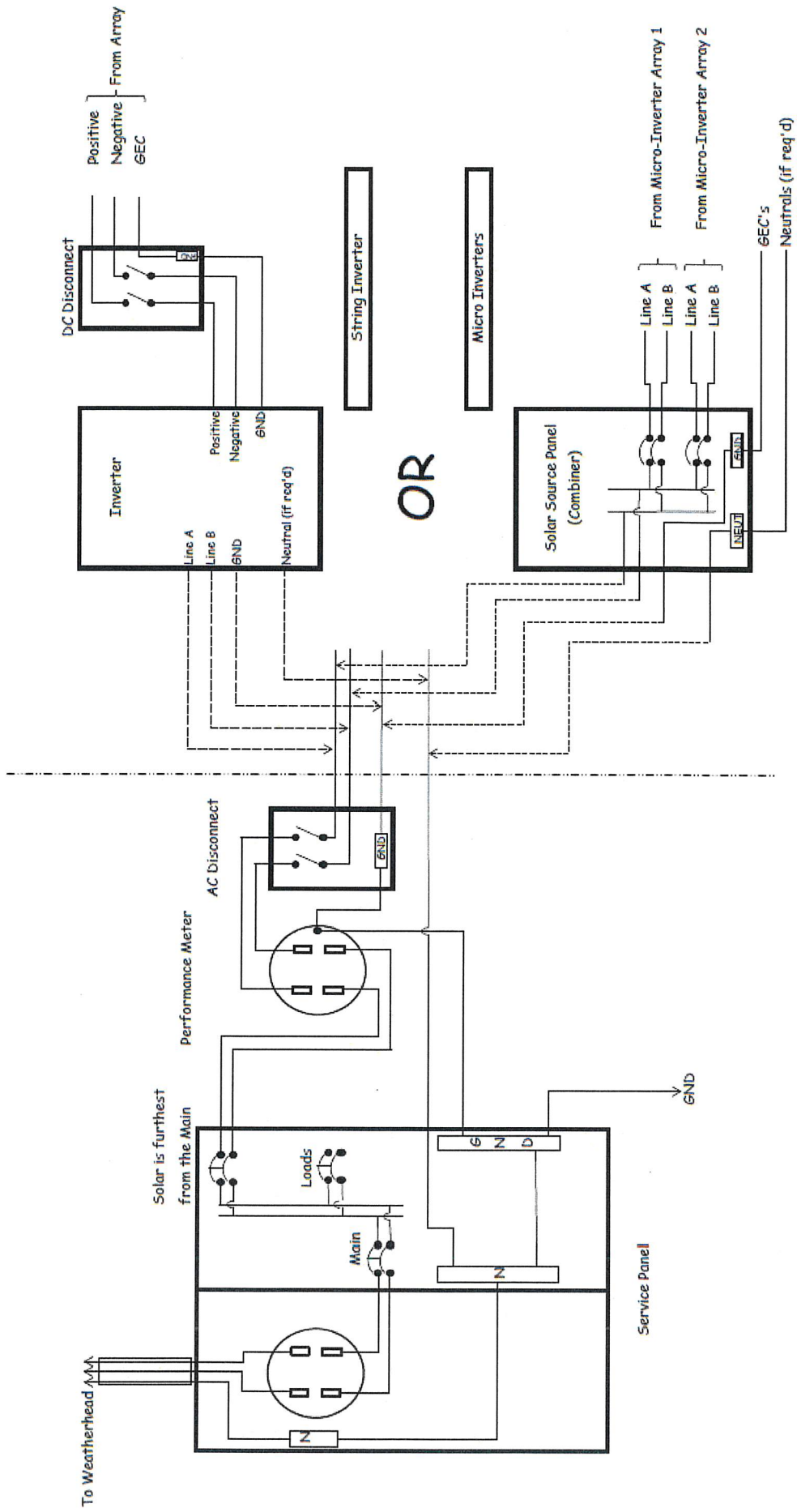
- At the service entrance and the inverter, if not located at the same location, a label that provides the location and description of the service disconnecting means and the photovoltaic system disconnecting means.
- The circuit breaker(s) in the service entrance panel that connects to the solar photovoltaic system shall be labeled "PHOTOVOLTAIC SYSTEM - DO NOT RELOCATE THIS BREAKER" Plaque to be sized to facilitate placement immediately adjacent to the PV breaker with minimum 1/4" horizontal lettering.

If there are paralleled inverters then a load center is required between the inverter and the AC disconnect and shall be labeled, "SOLAR SOURCE ONLY. NO OTHER LOADS IN THIS PANEL."

**Product Specifications:** Provide specifications for inverters, solar panels, disconnect boxes, and solar panel anchorage systems.

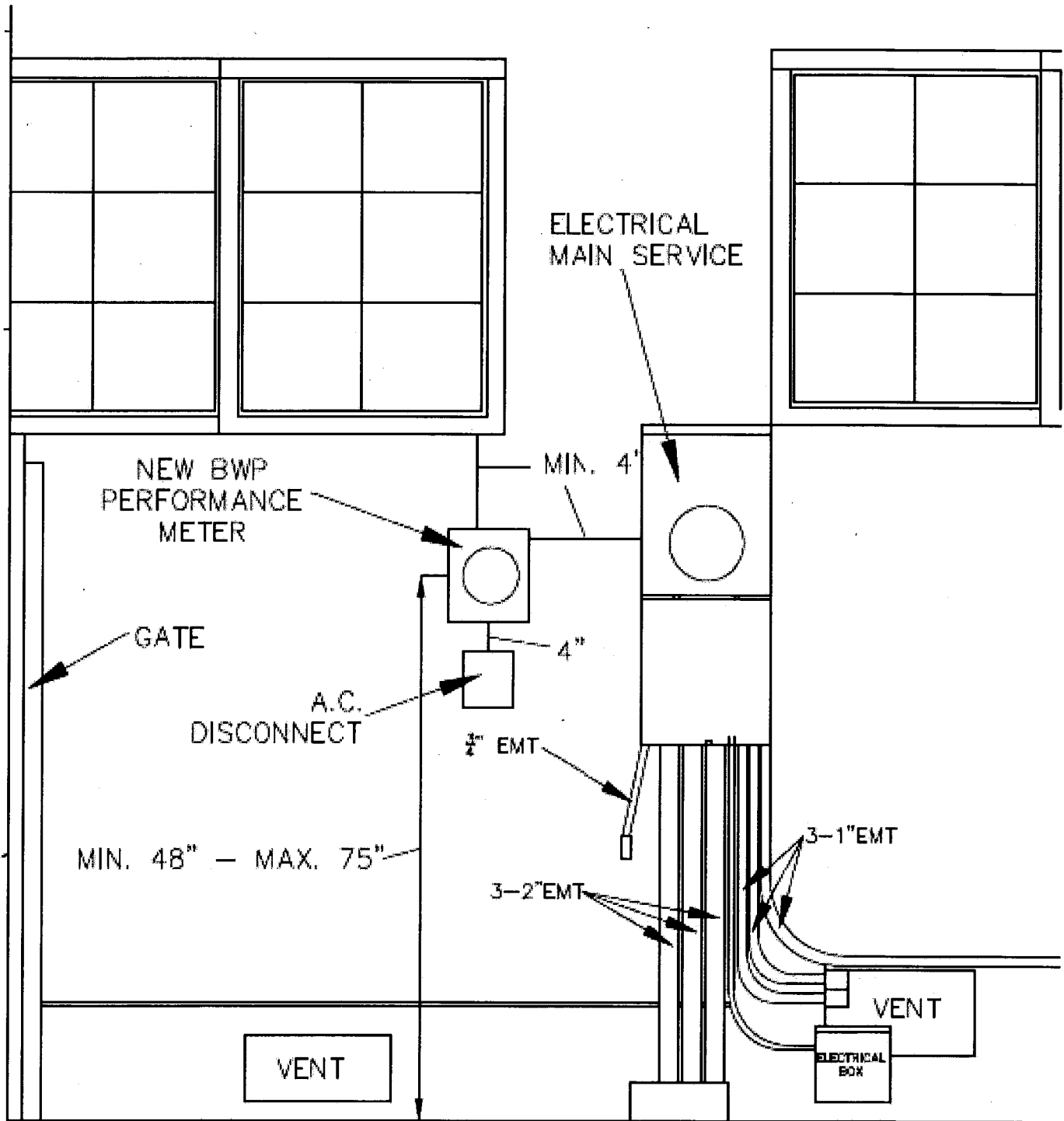
# Sample Solar Photovoltaic Electric Single Line Diagram

## BURBANK WATER AND POWER



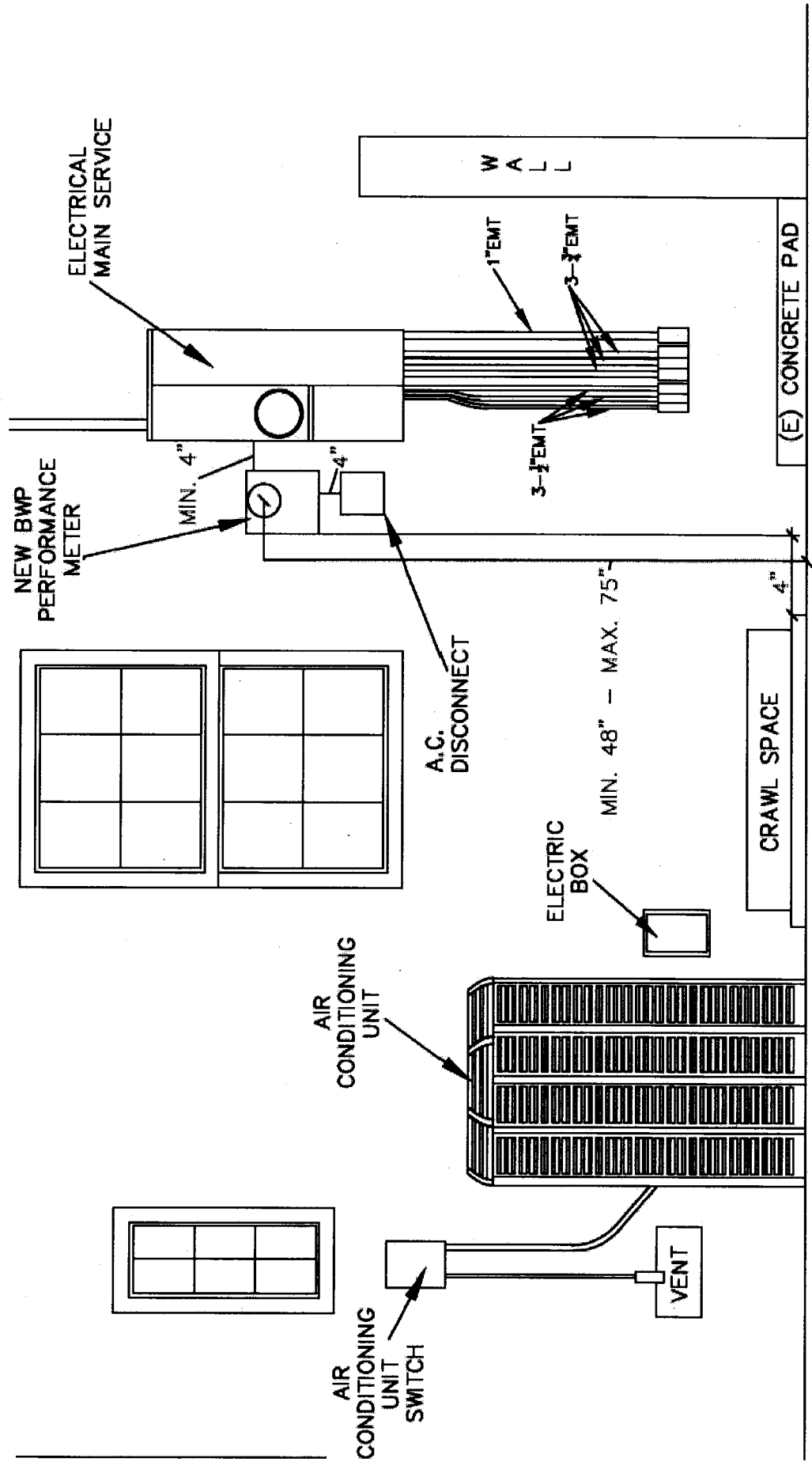
# Sample Equipment Elevation Layout (Required)

SAMPLE 1



# Sample Equipment Elevation Layout (Required)

SAMPLE 2

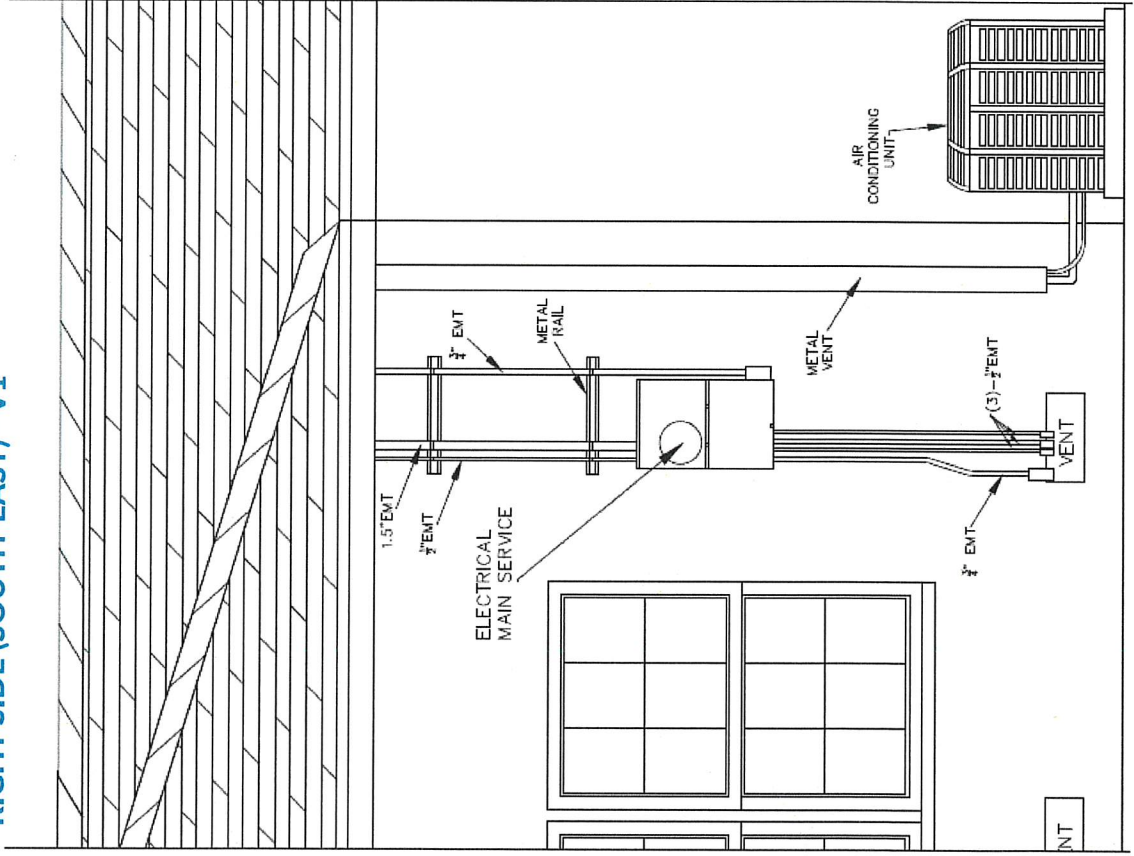




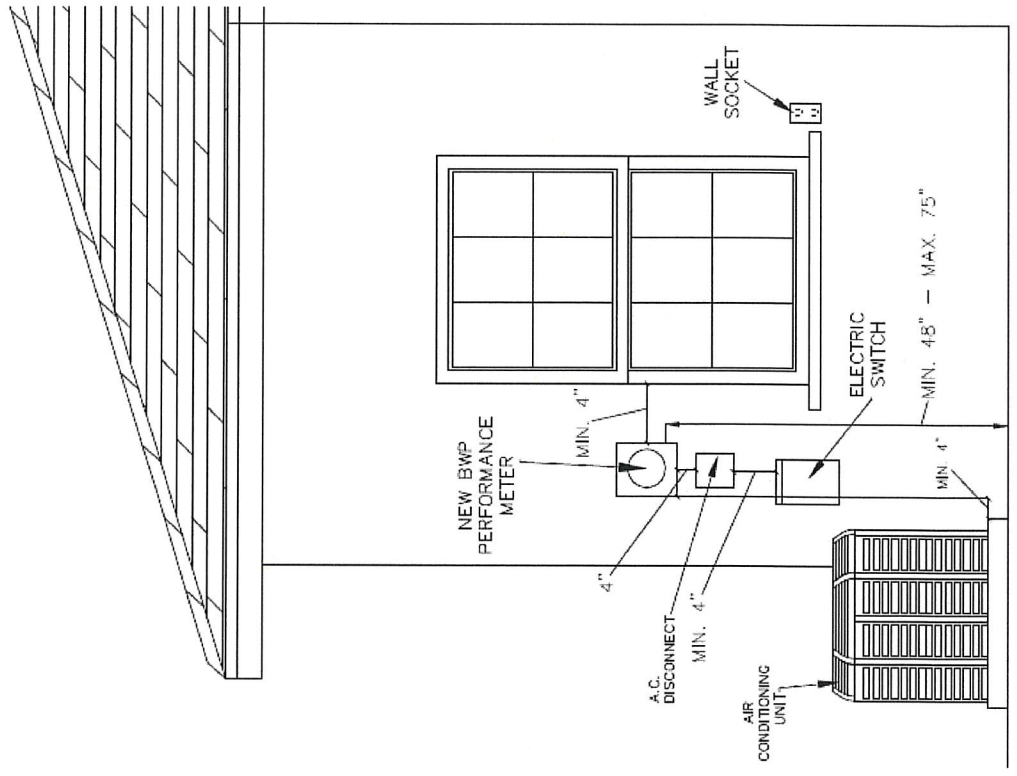
# Sample Equipment Elevation Layout (Required)

SAMPLE 3

RIGHT SIDE (SOUTH-EAST) - V1



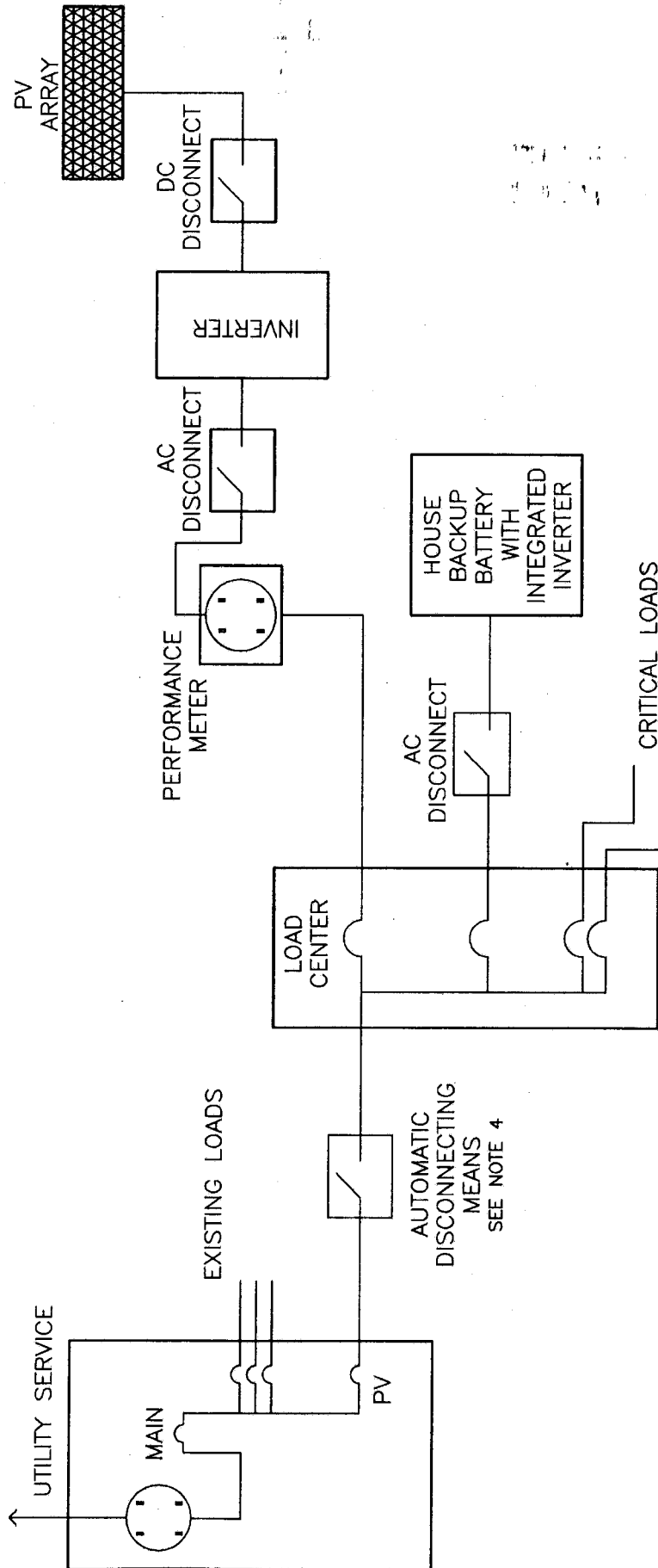
REAR (NORTH-EAST) - V1





**NOTES:**

1. ALL INSTALLATIONS REQUIRE PRE-APPROVAL BY BWP. TO OBTAIN PRE-APPROVAL SUBMIT A SINGLE LINE DIAGRAM ALONG WITH A FULL SET OF PLANS TO BWP.
2. ALL DISCONNECTS MUST BE LOCKABLE IN THE OPEN POSITION WITH VISIBLE OPEN, HAVE NO ADDITIONAL ATTACHMENTS, EXTERIOR ACCESSIBLE AND OPERABLE FROM THE GROUND, AND SAFELY ACCESSIBLE TO BWP PERSONNEL AT ALL TIMES.
3. BWP REQUIRES SEPARATE AC DISCONNECTS FOR EACH ENERGY STORAGE SYSTEM.
4. BWP ENGINEERING APPROVED AUTOMATIC DISCONNECTING MEANS IS REQUIRED FOR SYSTEMS THAT CAN OPERATE AS AN INTENTIONAL ISLAND. AUTOMATIC DISCONNECTING MEANS SHALL COMPLY WITH APPLICABLE UL AND NEMA STANDARDS.



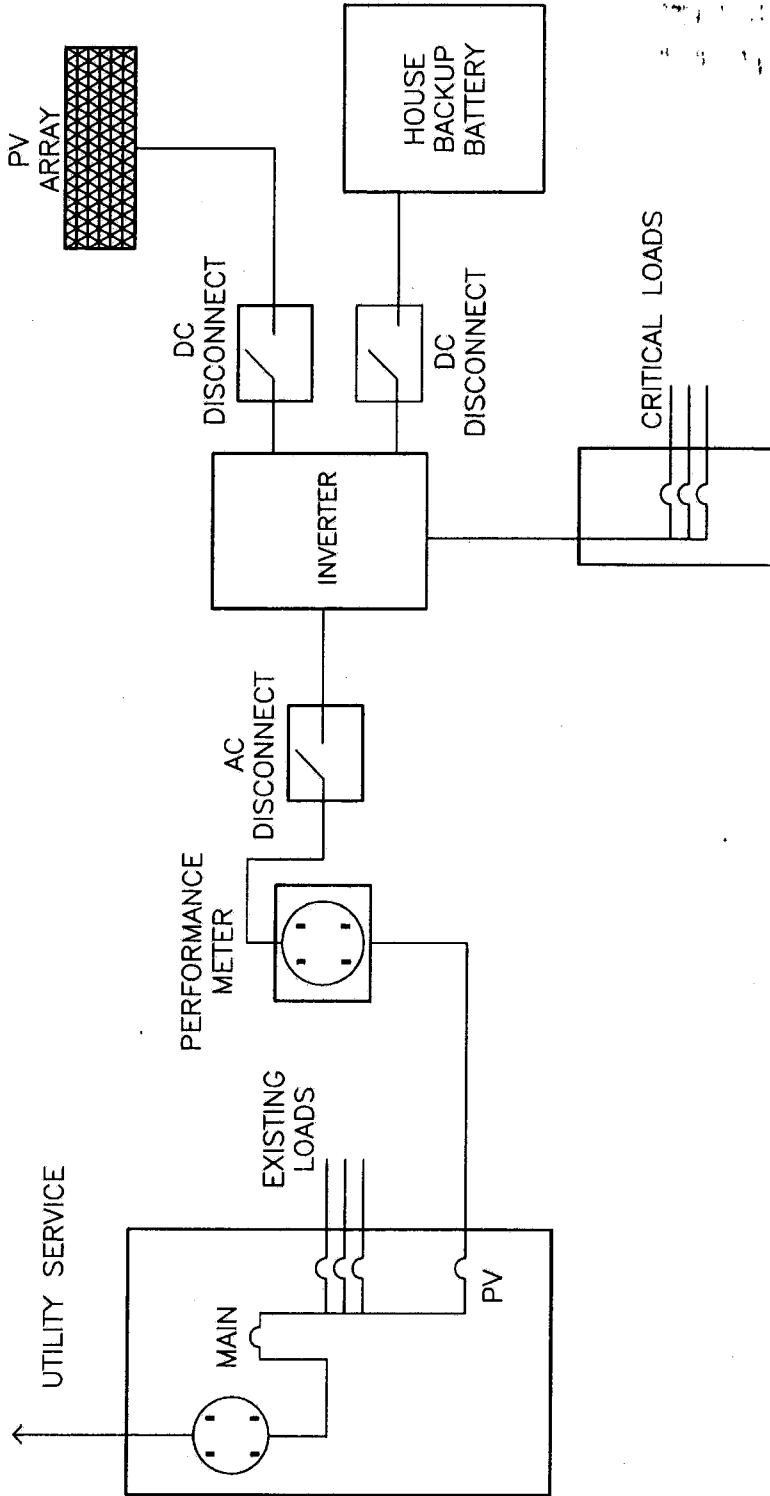
ELECTRICAL SERVICES DIVISION		DRAWING No. S-812A	
SINGLE LINE DIAGRAM FOR SOLAR PV WITH AC CONNECTED BATTERY		DATE 7/19/18	DATE 9/12/17
MT	BY	CHECK	APP'VD
SA	PS		
REVISIONS		CHECK	VOA
SCALE	NONE		
DRAWN	SK	APP'VD	RS





**NOTES:**

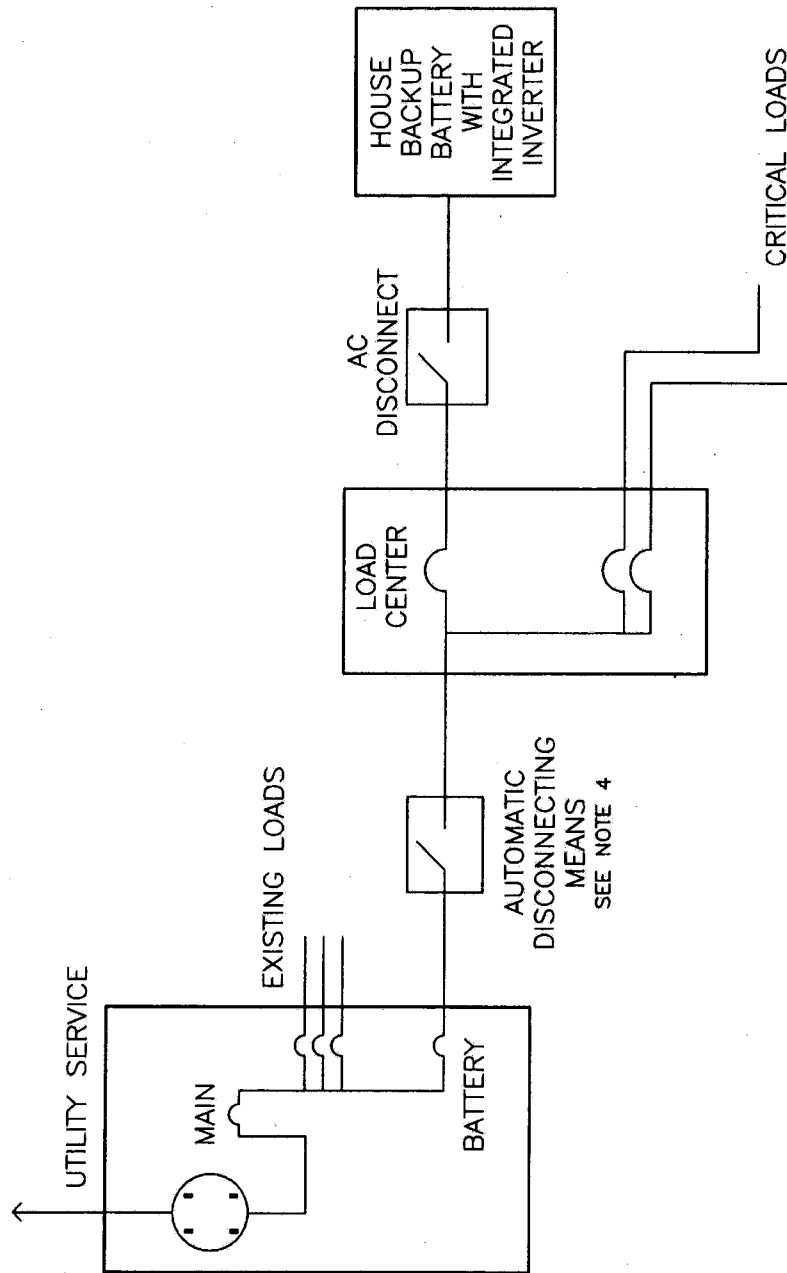
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ELECTRICAL SERVICES DIVISION	
SINGLE LINE DIAGRAM FOR SOLAR PV WITH DC CONNECTED BATTERY	
DRAWN No.	DRAWING No.
A	S-813A
MODIFIED NOTES, ADD AT'S REQUIREMENT	7/19/18
REVISIONS	DATE
BY	CHECK
APP'V'D	RS
SCALE	CHECK VOA
NONE	DATE 9/12/17
SK	RS



- NOTES:**
1. ALL INSTALLATIONS REQUIRE PRE-APPROVAL BY BWP. TO OBTAIN PRE-APPROVAL SUBMIT A SINGLE LINE DIAGRAM ALONG WITH A FULL SET OF PLANS TO BWP.
  2. ALL DISCONNECTS MUST BE LOCKABLE IN THE OPEN POSITION WITH VISIBLE OPEN, HAVE NO ADDITIONAL ATTACHMENTS, EXTERIOR ACCESSIBLE AND OPERABLE FROM THE GROUND, AND SAFELY ACCESSIBLE TO BWP PERSONNEL AT ALL TIMES.
  3. BWP REQUIRES SEPARATE AC DISCONNECTS FOR EACH ENERGY STORAGE SYSTEM.
  4. BWP ENGINEERING APPROVED AUTOMATIC DISCONNECTING MEANS IS REQUIRED FOR SYSTEMS THAT CAN OPERATE AS AN INTENTIONAL ISLAND. AUTOMATIC DISCONNECTING MEANS SHALL COMPLY WITH APPLICABLE UL AND NEMA STANDARDS.



ELECTRICAL SERVICES DIVISION		DRAWING No.	
SINGLE LINE DIAGRAM		S-819	
AC CONNECTED BATTERY SYSTEMS ONLY			
NO.	REVISIONS	DATE	DATE
		7/19/18	7/19/18
MT	BY	CHECK	APP'VD
SCALE	NONE	CHECK	VOA
APP'VD			
DATE	7/19/18		