



Electric Utility

SPECIFICATIONS

FOR

METERING

JULY 1, 2026

ROSEVILLE ELECTRIC UTILITY SPECIFICATIONS FOR METERING

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RESIDENTIAL SERVICE AND METERING REQUIREMENTS



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RESIDENTIAL SERVICE
AND METERING REQUIREMENTS

REV. DATE: REV. NO:

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RESIDENTIAL SERVICE AND METERING REQUIREMENTS

I SERVICE VOLTAGES

THE FOLLOWING TABLE OUTLINES THE RESIDENTIAL SERVICE VOLTAGES THAT ROSEVILLE ELECTRIC CAN SERVE AND THE CORRESPONDING METER SOCKET REQUIREMENTS FOR EACH. SEE PAGE 7 FOR METER CONNECTION DIAGRAMS.

TYPE OF SERVICE	NUMBER OF CLIPS	
	SELF CONTAINED METER SOCKETS ≤320 AMPS*	TRANSFORMER RATED SOCKETS >320 AMPS*
1 PHASE, 3 WIRE, 120/240 VOLT	4	6
* CONSULT UTILITY WHEN INSTALLING SERVICE <200 AMPS		

II METERING REQUIREMENTS

GENERAL:

1. EUSERC - ELECTRIC UTILITY SERVICE EQUIPMENT REQUIREMENTS COMMITTEE

EUSERC IS AN ORGANIZATION COMPRISED OF UTILITY REPRESENTATIVES FROM THE WESTERN SECTION OF THE UNITED STATES THAT WORK TO PROMOTE THE STANDARDIZATION OF ELECTRIC SERVICE REQUIREMENTS AND THE DESIGN AND ENGINEERING OF METERING AND SERVICE EQUIPMENT.

ALL METERING AND SERVICE EQUIPMENT APPROVED FOR USE IN THE AREAS SERVED BY ROSEVILLE ELECTRIC SHALL BE BUILT TO THE REQUIREMENTS DEVELOPED BY EUSERC. APPROVED METERING AND SERVICE EQUIPMENT IS AVAILABLE TO CUSTOMERS AND CONTRACTORS THROUGH ELECTRICAL WHOLESALE DISTRIBUTORS.

2. APPROVAL OF INSTALLED PANELS

ALL ELECTRIC SERVICE PANELS SHALL MEET EUSERC REQUIREMENTS. PURCHASE OR INSTALLATION OF ANY EQUIPMENT THAT DOES NOT CONFORM TO EUSERC REQUIREMENTS IS DONE AT THE DEVELOPER'S RISK. ANY ELECTRICAL SERVICE PANELS THAT DO NOT COMPLY WITH EUSERC WILL BE REQUIRED TO HAVE FIELD MODIFICATIONS COMPLETED OR BE REPLACED AT THE DEVELOPER'S EXPENSE.

3. ELECTRIC METERING DIRECTLY OUTSIDE ACCESSIBLE

ALL ELECTRIC METERS SHALL BE DIRECTLY OUTSIDE ACCESSIBLE AT **ALL** TIMES.

4. SERVICE DISCONNECTS

ALL SERVICE DISCONNECTS, (MAIN BREAKERS) SHALL BE DIRECTLY OUTSIDE ACCESSIBLE.

5. METER HEIGHTS AND CLEARANCES

SEE PAGE 5, ELECTRIC SERVICE ENTRANCE REQUIREMENTS.



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II METERING REQUIREMENTS

6. SEALING/LOCKING OF METERS AND METERING EQUIPMENT

ALL METERS AND ENCLOSURES FOR METERS, METERING EQUIPMENT, AND SERVICE ENTRANCE EQUIPMENT ON THE LINE SIDE OF THE METER WILL BE SEALED OR LOCKED BY RE. THE RE SEAL OR LOCK SHALL NOT BE BROKEN EXCEPT BY AN AUTHORIZED RE REPRESENTATIVE. THIS INCLUDES (BUT NOT LIMITED TO) UN-METERED BUSSING. ANY UNAUTHORIZED BREAKING OF THE SEAL OR LOCK WILL BE CAUSE TO INITIATE A TAMPERING/VANDALISM INVESTIGATION. CUSTOMERS ARE NOT PERMITTED TO INSTALL ANY EQUIPMENT INCLUDING BUT NOT LIMITED TO MONITORING EQUIPMENT IN ANY SEALED OR UN-METERED COMPARTMENT/S. RE WILL REMOVE AND DISCARD ANY CUSTOMER EQUIPMENT INCLUDING ANY MONITORING EQUIPMENT NOT INSTALLED BY RE THAT ARE FOUND INSIDE THE SEALED COMPARTMENTS AND THIS WILL ALSO BECOME A TAMPERING/VANDALISM INVESTIGATION.

7. LINE SIDE CONNECTION

CUSTOMER EQUIPMENT SHALL NOT BE CONNECTED OR INSTALLED ON THE UNPROTECTED LINE SIDE BUSSING OF THE ELECTRIC PANEL'S MAIN CIRCUIT BREAKER, EVEN IF THE LINE SIDE BUSSING IS UNSEALED. CUSTOMER EQUIPMENT IS ONLY ALLOWED TO BE CONNECTED OR INSTALLED ON THE LOAD SIDE OF THE MAIN BREAKER, PER APPLICABLE STANDARDS.

III SERVICES 320 AMPS AND BELOW

1. SELF-CONTAINED METERS DEFINED

A SELF-CONTAINED METER IS CAPABLE OF CARRYING THE TOTAL CURRENT AND VOLTAGE OF THE ELECTRIC SERVICE SUPPLIED TO THE CUSTOMER. THIS TYPE OF METER IS CONNECTED DIRECTLY TO THE SERVICE ENTRANCE CONDUCTORS WHEN IT IS PLUGGED INTO THE METER SOCKETS.

2. SELF-CONTAINED METER SOCKETS

SOCKETS FOR USE WITH SELF-CONTAINED METERS ARE AVAILABLE IN TWO PRE-APPROVED RATINGS. WHEN CONNECTED TO PROPERLY SIZED SERVICE ENTRANCE CONDUCTORS, THE APPROVED STANDARD-DUTY SOCKET HAS A NOMINAL CAPACITY OF 100 AMPERES, AND THE APPROVED HEAVY-DUTY SOCKETS HAVE A NOMINAL CAPACITY OF 200. FOR EXTRA HEAVY-DUTY SOCKETS RATED AT 320 AMPERES, CONTACT THE UTILITY FOR APPROVAL BEFORE INSTALLATION.

3. METER SOCKET CONNECTIONS

ALL SELF-CONTAINED METER SOCKETS SHALL BE CONNECTED TO THE SERVICE ENTRANCE CONDUCTORS BY THE CONTRACTOR. CONNECTION DIAGRAMS FOR THE VARIOUS TYPES OF SERVICES ARE SHOWN IN APPENDIX "A".

4. WIRE SIZE CAPACITY OF SELF-CONTAINED METER SOCKETS

METER SOCKETS SHALL BE EQUIPPED WITH TERMINALS OF SUFFICIENT SIZE TO PERMIT THE CONNECTION OF SERVICE ENTRANCE CONDUCTORS WITHOUT REMOVING ANY STRANDS OF WIRE.

5. METER SOCKET CLOSING DEVICES

METER SOCKETS SHALL NOT BE EQUIPPED WITH CIRCUIT CLOSING OR BY-PASS DEVICES THAT AUTOMATICALLY CLOSE WHEN THE METER IS REMOVED FROM THE SOCKET.

6. SELF-CONTAINED METER INSTALLATION

THE METER IS FURNISHED AND INSTALLED BY ROSEVILLE ELECTRIC.



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RESIDENTIAL SERVICE AND METERING REQUIREMENTS

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CUSTOMER'S RESPONSIBILITY	UTILITY'S RESPONSIBILITY
PURCHASE AND INSTALL EUSERC APPROVED ENCLOSURE	PURCHASE AND INSTALL ELECTRIC METER
*NOTE: * INDICATES UTILITY PROVIDED ITEMS AT CUSTOMER'S EXPENSE.	

IV SERVICES GREATER THAN 320 AMPS

1. TRANSFORMER RATED METERS

WHEN THE ELECTRICAL SUPPLY NEEDS OF THE CUSTOMER EXCEED THE 320 AMPERE CAPACITY OF THE SELF-CONTAINED METER AND ITS HEAVY DUTY SOCKET, CURRENT TRANSFORMERS WHICH ARE CONNECTED TO THE SERVICE ENTRANCE CONDUCTORS MUST BE USED. A TRANSFORMER RATED METER IS INSTALLED TO MEASURE THE ENERGY DELIVERED TO THE CUSTOMER. A CURRENT TRANSFORMER CAPACITY MULTIPLIER IS APPLIED TO THE BILLING REGISTER ON THE METER. THE CURRENT TRANSFORMERS AND THE METERS ARE FURNISHED AND INSTALLED BY ROSEVILLE ELECTRIC.

THE TRANSFORMER RATED METER, WHEN INSERTED INTO ITS SOCKET, IS WIRED TO THE CURRENT TRANSFORMER. THE CURRENT TRANSFORMERS ARE LOCATED IN THE ENCLOSURE BEHIND THE METER AND TEST SWITCH PANEL COVER(S).

2. TRANSFORMER RATED METER SOCKETS

AN APPROVED CURRENT TRANSFORMER (C.T.) RATED METER SOCKET AND ENCLOSURE ARE USED WITH TRANSFORMER RATED METERS. THE METER SOCKETS AND ENCLOSURES ARE FURNISHED AND INSTALLED BY THE CUSTOMER.

3. TRANSFORMER RATED METER INSTALLATION

THE CURRENT TRANSFORMERS, TEST SWITCHES, WIRING, AND METER ARE FURNISHED, INSTALLED, AND CONNECTED BY ROSEVILLE ELECTRIC.

CUSTOMER'S RESPONSIBILITY	UTILITY'S RESPONSIBILITY
PURCHASE AND INSTALL EUSERC APPROVED ENCLOSURE	PURCHASE AND INSTALL CURRENT TRANSFORMERS*
PURCHASE AND INSTALL TRANSFORMER RATED METER SOCKET(S)	PURCHASE AND INSTALL TRANSFORMER RATED METER(S)
*NOTE: * INDICATES UTILITY PROVIDED ITEMS AT CUSTOMER'S EXPENSE.	



SPEC. GROUP: SPECIFICATIONS FOR METERING

RESIDENTIAL SERVICE AND METERING REQUIREMENTS

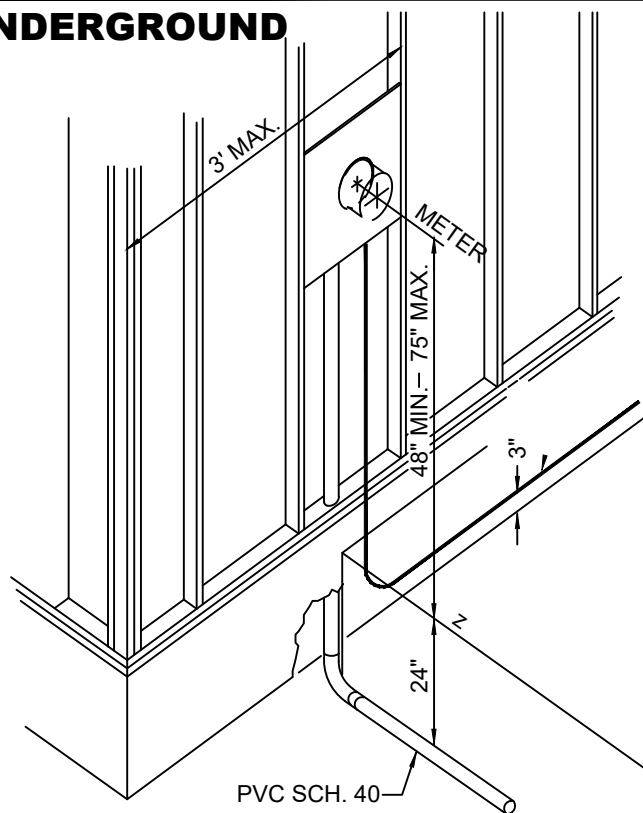
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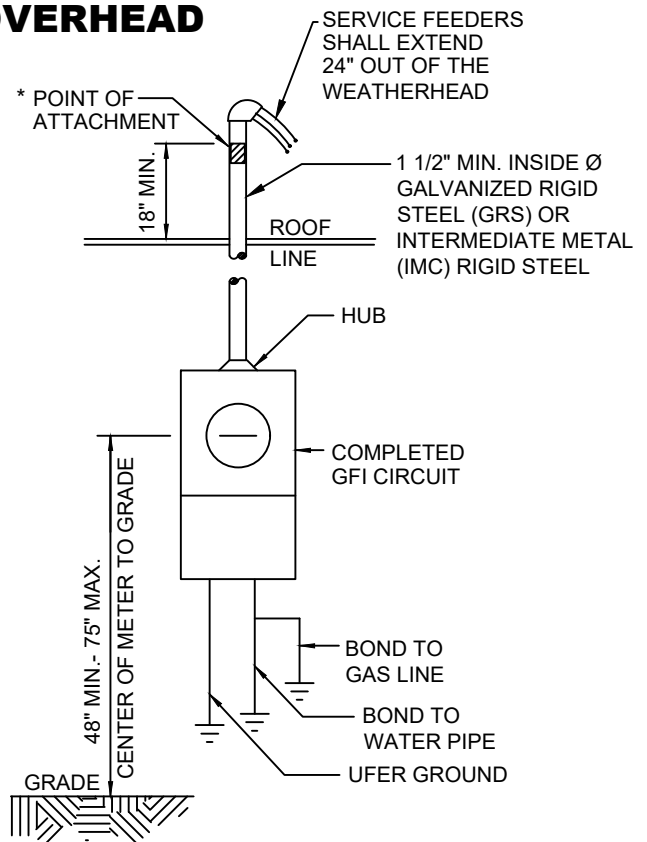
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UNDERGROUND



OVERHEAD

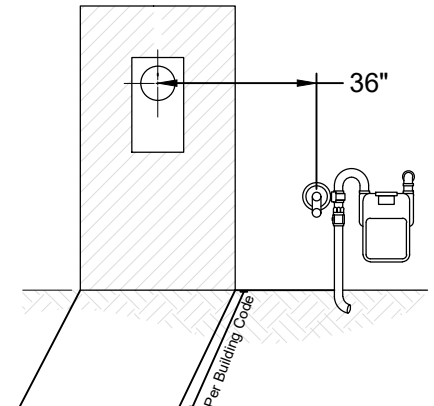


CONDUCTOR & CONDUIT SCHEULE

MAIN BREAKER	ALUMINUM RHW OR THW	COPPER RHW OR THW	COPPER GROUND	UNDERGROUND CONDUIT	OVERHEAD CONDUIT
100 AMP	3-#2	3-#4	#6	1-1/2"	1-1/2"
125 AMP	2-#1/0 & 1-#2	3-#2	#6	1-1/2"	1-1/2"
125 AMP	3-#1/0	NA	#6	1-1/2"	1-1/2"
200 AMP		3-#2/0	#4	1-1/2"	1-1/2"
200 AMP	3-#4/0		#4	2"	2"
200 AMP	2-#4/0 & 1-#2/0	2-#2/0 & 1-#2	#4	2"	2"
300 AMP	2-350MCM & 1-250MCM	**2-250MCM & 1-#4/0	#2	3" or **2"	3"
350 AMP	2-500MCM & 1-350MCM	2-350MCM & 1-250MCM	#2	3"	3"
400 AMP	NA	2-400MCM & 1-300MCM	#2	3"	3"

NOTES:

- SERVICE ENTRANCE CONDUIT AND CONDUCTOR TO BE INSTALLED BY OWNER AND MEET CURRENT BUILDING CODE.
- SERVICE SIZE NOT TO EXCEED 400AMPS.
- FOR MULTI METER APPLICATION A SEALABLE GUTTER OR MULTIMETER PANEL IS REQUIRED.
- IF WEATHER/PERISCOPE EXCEEDS 36" A SUPPORT MUST BE INSTALLED. (CABLE GUY SUPPORT IS UNACCEPTABLE)
- CONDUCTORS NOT TO EXCEED 500MCM.
- IF EXISTING PANEL IS LOCATED WITHIN 36" OF GAS METER, PANEL MAY REQUIRE RELOCATION. CONTACT CITY OF ROSEVILLE BUILDING DEPARTMENT (916)774-5333.



SPEC. GROUP: SPECIFICATIONS FOR METERING

ELECTRIC SERVICE CONDUIT AND CONDUCTOR REQUIREMENTS

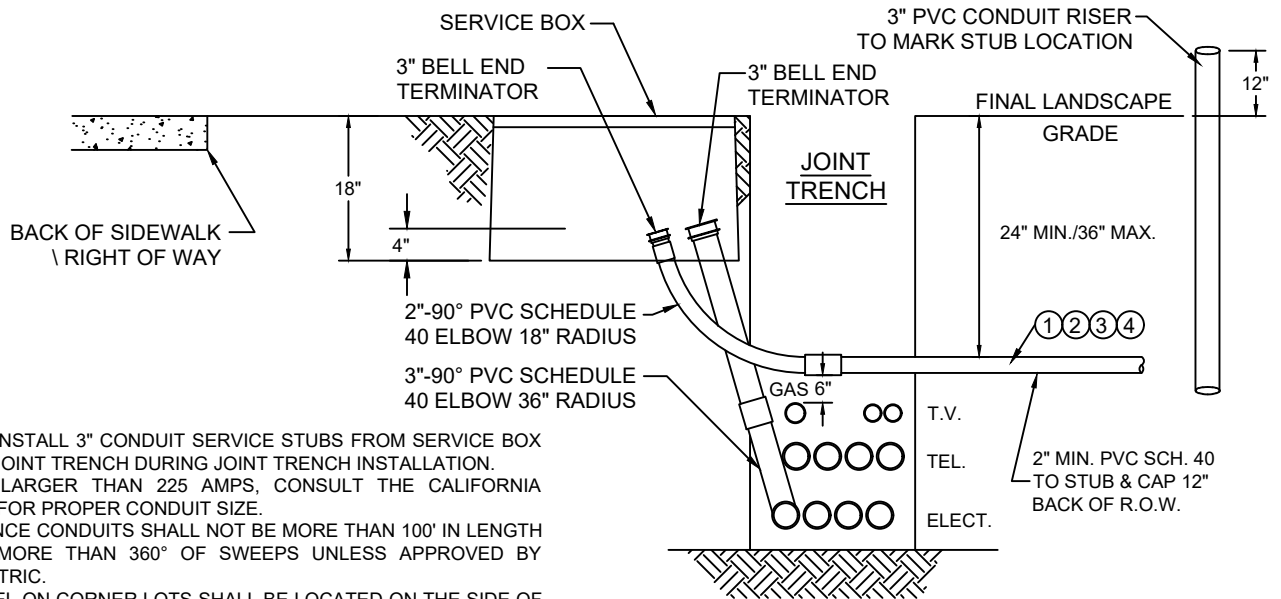
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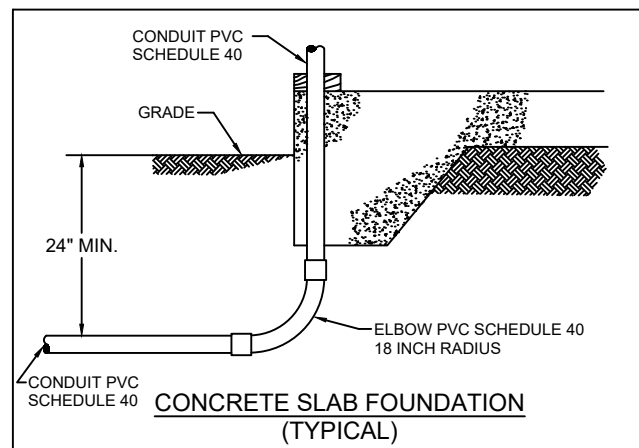
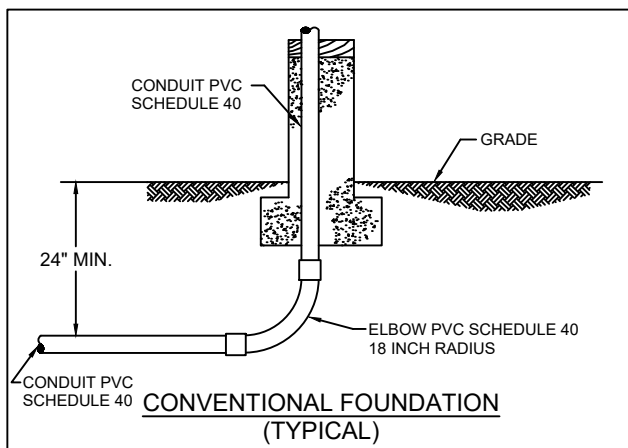
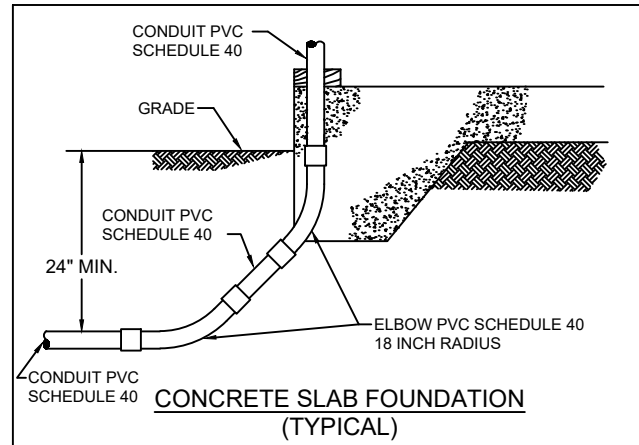
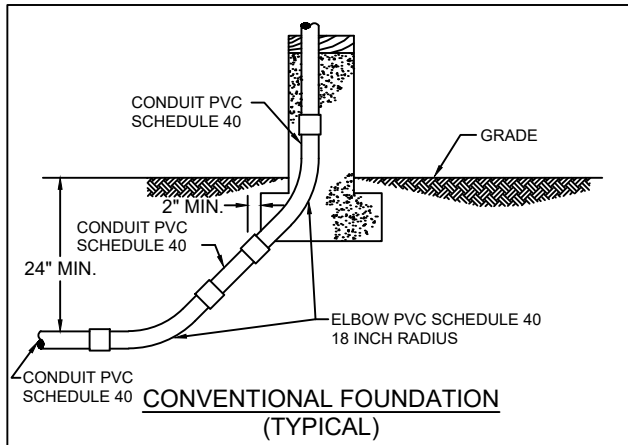
SERVICE ENTRANCE CONDUIT AT SERVICE BOX



NOTES:

- ① DEVELOPER TO INSTALL 3" CONDUIT SERVICE STUBS FROM SERVICE BOX TO 36" BACK OF JOINT TRENCH DURING JOINT TRENCH INSTALLATION.
- ② FOR SERVICES LARGER THAN 225 AMPS, CONSULT THE CALIFORNIA ELECTRIC CODE FOR PROPER CONDUIT SIZE.
- ③ SERVICE ENTRANCE CONDUITS SHALL NOT BE MORE THAN 100' IN LENGTH AND HAVE NO MORE THAN 360° OF SWEEPS UNLESS APPROVED BY ROSEVILLE ELECTRIC.
- ④ THE METER PANEL ON CORNER LOTS SHALL BE LOCATED ON THE SIDE OF THE HOUSE NEAREST THE SERVICE BOX.

SERVICE ENTRANCE CONDUIT AT HOUSE FOUNDATION



SERVICES RATED 320 AMPS OR LESS - NOTE 2

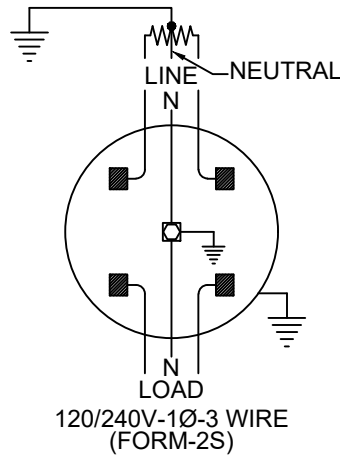


FIG. 1
4 CLIP

SERVICES RATING GREATER THAN 320 AMPS - NOTE 2

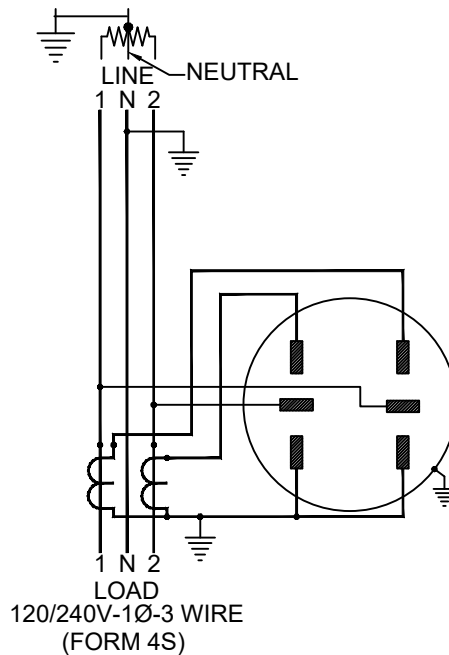


FIG. 2
6 CLIP

NOTE:

1. ALL CURRENT TRANSFORMER SERVICES WILL HAVE TEST/BYPASS (NOT SHOWN).
2. A SELF-CONTAINED 320 AMP SERVICE IS PERMITTED FOR RESIDENTIAL ONLY.
3. ALL VIEWS ARE SHOWN FROM THE FRONT.

RESIDENTIAL CUSTOMER OWNED INTERCONNECTED GENERATION REQUIREMENTS



SPEC. GROUP: SPECIFICATIONS FOR METERING

RESIDENTIAL CUSTOMER OWNED ELECTRIC
INTERCONNECTION GENERATION REQUIREMENTS

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**RESIDENTIAL CUSTOMER OWNED INTERCONNECTED GENERATION
(COIG) ELECTRIC METERING REQUIREMENTS**

I GENERAL

ALL ROSEVILLE ELECTRIC UTILITY CUSTOMER-GENERATORS INSTALLING DISTRIBUTED GENERATION (DG) SYSTEMS (SOLAR, ENERGY STORAGE, WIND, ETC.) GREATER THAN 1.0 CEC-AC KILOWATT OF INSTALLED CAPACITY IN PARALLEL WITH ROSEVILLE ELECTRIC UTILITY'S ELECTRIC SERVICE TERRITORY SHALL AT ALL TIMES COMPLY WITH ROSEVILLE ELECTRIC UTILITY'S RULE 21, CONSTRUCTION STANDARDS, AND ALL APPLICABLE LAWS, TARIFFS, ELECTRICAL CODES AND APPLICABLE REQUIREMENTS OF THE CITY OF ROSEVILLE.

UNDER NO CIRCUMSTANCE SHALL THE DG SYSTEM'S ELECTRIC PRODUCTION (KWH) BE DESIGNED EXCEED 100% OF THE CUSTOMER-GENERATOR'S MOST RECENT 12 MONTH ENERGY USE (KWH). RESIDENTS THAT ARE PROCEEDING WITH NEW RESIDENTIAL CONSTRUCTION THAT DO NOT HAVE THE PRECEDING 12 MONTHS' OF ENERGY USE MAY USE 3KWH PER SQUARE FOOT AS THE MAXIMUM ALLOWED SIZE.

1. CERTIFIED COMPONENTS OR SYSTEMS

A NATIONALLY RECOGNIZED TESTING LABORATORY MUST CERTIFY ALL FLAT PLATE SOLAR ELECTRIC MODULES AND INVERTERS. THE MODULES MUST MEET THE REQUIREMENTS OF THE UNDERWRITERS LABORATORY STANDARD 1703. THE INVERTERS MUST MEET THE REQUIREMENTS OF UL 1741. THE SOLAR ELECTRIC (PV) GENERATION SYSTEM MUST USE COMPONENTS THAT ARE LISTED ON THE CALIFORNIA ENERGY COMMISSION'S (CEC) LIST OF "ELIGIBLE EQUIPMENT", AS FOUND ON THE CEC WEBSITES, "GO SOLAR CALIFORNIA" LIST.

2. NET METERING

DISTRIBUTED GENERATION SYSTEMS INSTALLED BEFORE OCTOBER 1, 2018 ARE CONSIDERED "NET METERED" MEANING THERE WILL BE A METER THAT IS ABLE TO SPIN IN BOTH DIRECTIONS. THE SYSTEM WILL CONNECT TO A BREAKER IN THE CUSTOMER'S PANEL. FOR A ONE LINE DIAGRAM OF THE CONNECTION REFER TO PAGES 12 & 13.

3. MULTI-REGISTER METERING - ROSEVILLE SOLAR 2.0

AS OF OCTOBER 1, 2018, ALL NEW DG SYSTEMS, AND EXISTING DG SYSTEMS EXPANDING MORE THAN 10%, A ROSEVILLE SOLAR 2.0 MULTI-REGISTER REVENUE METER SHALL BE INSTALLED. THE ROSEVILLE SOLAR 2.0 METER IS CAPABLE OF MEASURING THE CUSTOMER-GENERATOR'S KWH CONSUMPTION FROM THE UTILITY'S ELECTRIC GRID, AND IN THE EVENT THE ENERGY GENERATED BY THE DG SYSTEM EXCEEDS THE ENERGY CONSUMED, THE METER WILL ALSO MEASURE THE KWH THAT ROSEVILLE ELECTRIC UTILITY

RECEIVES BACK TO THE ELECTRIC GRID FROM THE CUSTOMER-GENERATOR'S DG ENERGY SYSTEM. FOR A ONE LINE DIAGRAM OF THE CONNECTION REFER TO PAGES 12 & 13.

4. TAGGING

ALL DG SYSTEMS WILL HAVE SPECIAL TAGS REQUIRED ON THE CUSTOMER'S ELECTRIC PANEL. MARKINGS WILL ALSO BE PLACED ON ALL DC EQUIPMENT BETWEEN THE SOLAR ARRAY AND THE INVERTER, AND AC EQUIPMENT BETWEEN THE INVERTER AND UTILITY SERVICE ENTRANCE METER TO INCLUDE ALL CONDUIT, RACEWAYS, ENCLOSURES, COMBINER BOXES, JUNCTION BOXES, AND CABLE ASSEMBLIES, EVERY 10 FEET AT TURNS AND ABOVE AND/OR BELOW PENETRATIONS.

FOR TAGGING AND LABEL REQUIREMENTS REFER TO SECTION 5 AND PAGES 11 - 13.

5. BATTERY STORAGE SYSTEMS

IF USING A COMBINER/GENERATION PANEL, SIGNAGE STATING, "NO ADDITIONAL LOADS / GENERATION IS TO BE ADDED TO THIS PANEL" SHALL BE USED.

INVERTER SYSTEMS OPERATING SOLELY WITH BATTERY STORAGE WILL BE TREATED AS A "PV ONLY" SYSTEM FOR INTERCONNECTION PURPOSES.

A CRITICAL/EMERGENCY LOAD PANEL CAN BE USED IF DESIRED. SEE PAGE 13.

6. LINE SIDE TAPS

PV/BATTERY SYSTEMS SHALL NOT BE CONNECTED TO THE LINE SIDE OF A CUSTOMER MAIN BREAKER IN ANY FASHION. ALSO, SEE CITY OF ROSEVILLE MUNICIPAL CODE SECTION 16.04.410 FOR SERVICE REQUIREMENTS.



SPEC. GROUP: SPECIFICATIONS FOR METERING

**RESIDENTIAL CUSTOMER OWNED ELECTRIC
INTERCONNECTION GENERATION REQUIREMENTS**

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**RESIDENTIAL CUSTOMER OWNED INTERCONNECTIONED GENERATION
(COIG) ELECTRIC METERING REQUIREMENTS**

7. PLANS AND SPECIFICATIONS

THE CUSTOMER WILL SUBMIT TO THE CITY OF ROSEVILLE FOR REVIEW, EQUIPMENT SPECIFICATIONS AND DETAILED PLANS FOR THE PROPOSED INSTALLATION OF ALL INTERCONNECTION FACILITIES TO BE FURNISHED BY THE CUSTOMER. ROSEVILLE ELECTRIC'S REVIEW OF THE CUSTOMER'S DESIGN AND DETAILED PLANS DOES NOT CONFIRM OR ENDORSE THE CUSTOMER'S DESIGN OR THE EQUIPMENT'S SAFETY, DURABILITY, OR CAPACITY OF EQUIPMENT, NOR IS ROSEVILLE ELECTRIC'S ACCEPTANCE AN ENDORSEMENT OF ANY EQUIPMENT.

8. INTERCONNECTION FACILITIES

THE CUSTOMER WILL BE FULLY RESPONSIBLE TO FURNISH, INSTALL, OPERATE, AND MAINTAIN IN GOOD ORDER AND REPAIR, WITHOUT COST TO ROSEVILLE ELECTRIC, EQUIPMENT, AND ANY CONTROL, PROTECTIVE AND SAFETY DEVICES AS ROSEVILLE ELECTRIC MAY REQUIRE FOR INTERCONNECTED GENERATION.

9. CUSTOMER-OWNED METERING

ANY EQUIPMENT NEEDED FOR MONITORING/METERING INCLUDING CT'S, MUST BE INSTALLED ON THE LOAD SIDE OF THE CUSTOMER MAIN BREAKER.



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RESIDENTIAL CUSTOMER OWNED ELECTRIC
INTERCONNECTION GENERATION REQUIREMENTS

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REQUIRED LABELS FOR RESIDENTIAL ELECTRIC (DG) SYSTEMS

- LABELS SHALL BE MADE OF RED PLASTIC MATERIAL WITH ENGRAVED WHITE LETTERS.
- LETTERS SHALL BE A MINIMUM 3/8" IN SIZE.
- THE LABELS SHALL BE PERMANENTLY ATTACHED TO THE APPROPRIATE PANEL.
- AC & DC CONDUIT, RACEWAY, ENCLOSURES, CABLE ASSEMBLIES AND JUNCTION BOXES SHALL BE RED BACKGROUND MATERIAL WITH WHITE LETTERING MADE OF DURABLE ADHESIVE, REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT PER UL 969; TO ALERT FIRE SERVICE TO AVOID CUTTING THEM OFF.

WARNING!
DUAL POWER SUPPLY
GENERATION ELECTRIC
SYSTEM

THIS LABEL TO BE ATTACHED TO METER PANEL

CAUTION:
GENERATION ELECTRIC
CIRCUIT

THIS LABEL TO BE ATTACHED TO AC AND DC CIRCUIT EQUIPMENT



SPEC. GROUP: SPECIFICATIONS FOR METERING

REQUIRED LABELS FOR RESIDENTIAL
ELECTRIC (DG) SYSTEMS

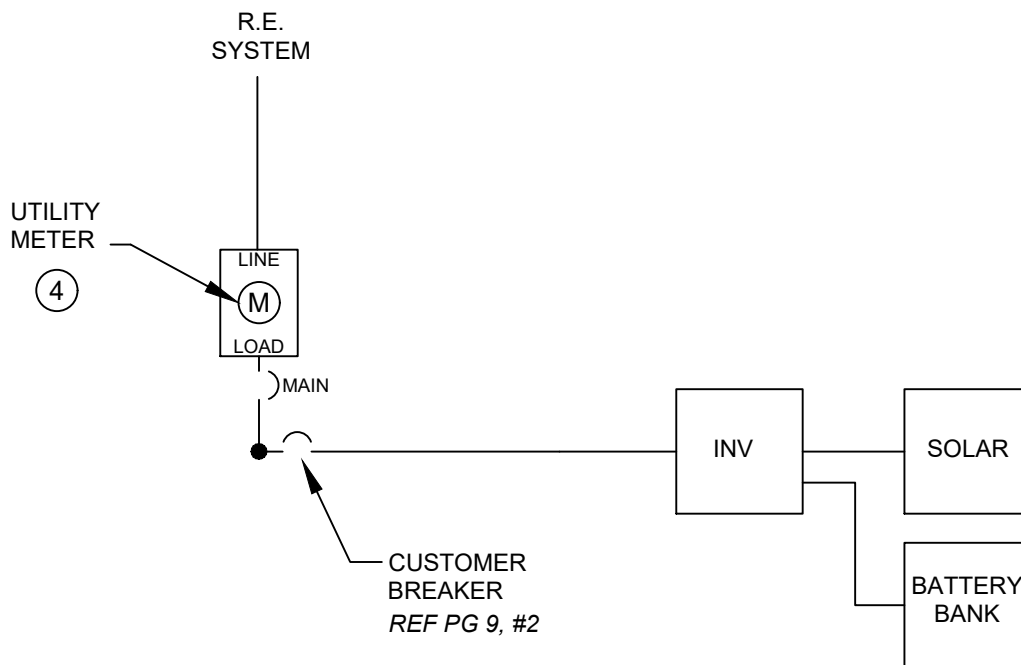
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"NET METERED" CONNECTION DIAGRAM FOR RESIDENTIAL INTERCONNECTED GENERATION SYSTEMS



NOTES:

1. SERVICE ENTRANCE CONDUCTORS TO MEET N.E.C. FOR RESIDENTIAL APPLICATIONS ALSO REFER TO ELECTRIC SERVICE ENTRANCE REQUIREMENTS ON PAGE 5.
2. ALL ELECTRICAL MUST MEET CITY OF ROSEVILLE BUILDING CODES.
3. TAG TO SAY: "WARNING! DUAL POWER SUPPLY SOLAR ELECTRIC SYSTEM".
4. FOR TAGGING LABELS REFER TO PAGE 11



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"NET METERED" CONNECTION DIAGRAM FOR
RESIDENTIAL INTERCONNECTED GENERATION SYSTEMS

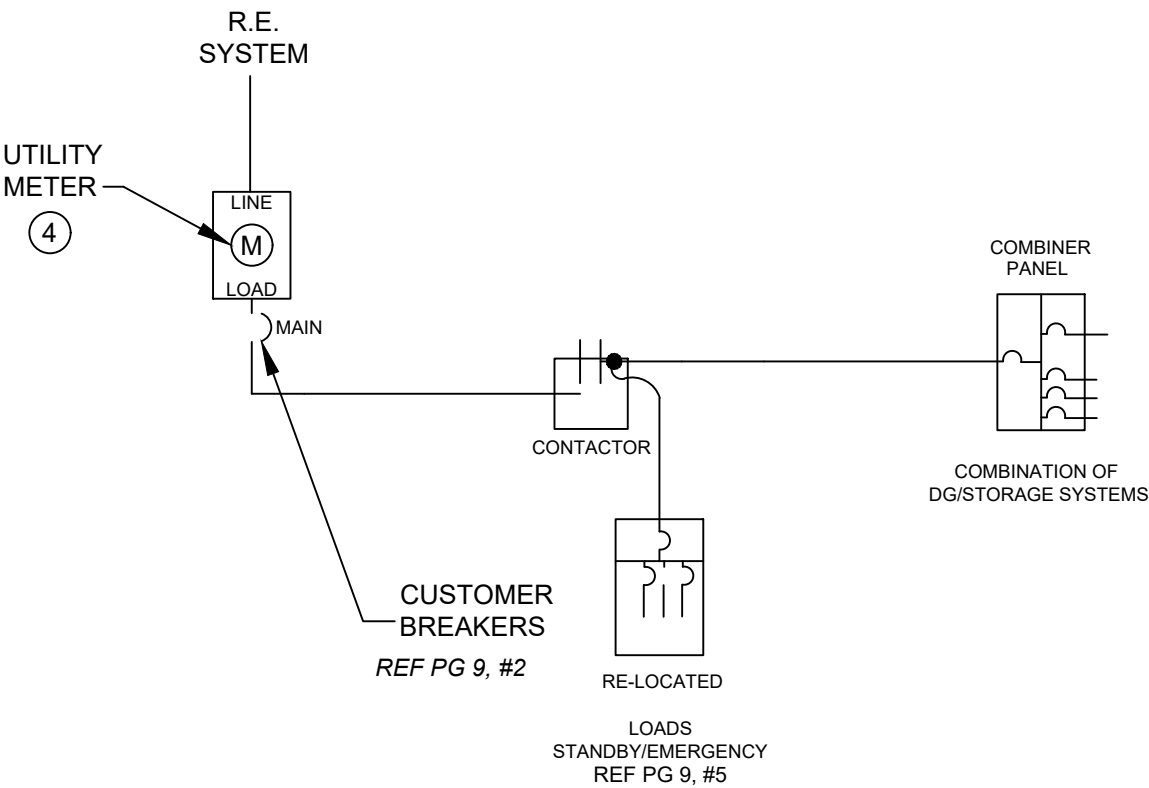
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CONNECTION DIAGRAM FOR DG SYSTEMS FOR PARTIAL/WHOLE HOME BACKUP



NOTES:

- 1. SERVICE ENTRANCE CONDUCTORS TO MEET N.E.C. FOR RESIDENTIAL APPLICATIONS ALSO REFER TO ELECTRIC SERVICE ENTRANCE REQUIREMENTS ON PAGE 5.
- 2. ALL ELECTRICAL MUST MEET CITY OF ROSEVILLE BUILDING CODES.
- 3. TAG TO SAY: "WARNING! DUAL POWER SUPPLY SOLAR ELECTRIC SYSTEM".
- 4. FOR TAGGING LABELS REFER TO PAGE 11..



SPEC. GROUP: SPECIFICATIONS FOR METERING

CONNECTION DIAGRAM FOR DG SYSTEMS
FOR PARTIAL/WHOLE HOME BACKUP

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COMMERCIAL LOW VOLTAGE SERVICE AND METERING REQUIREMENTS (0-600 VOLTS)



SPEC. GROUP: SPECIFICATIONS FOR METERING

COMMERCIAL LOW VOLTAGE SERVICE AND
METERING REQUIREMENTS (0-600 VOLTS)

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**COMMERCIAL LOW VOLTAGE SERVICE AND METERING REQUIREMENTS
(0-600 VOLTS)**

I SERVICE VOLTAGES

THE FOLLOWING TABLE OUTLINES THE SERVICE VOLTAGES THAT ROSEVILLE ELECTRIC CAN SERVE AND THE CORRESPONDING METER SOCKET REQUIREMENTS FOR EACH. SEE PAGE 7 FOR METER CONNECTION DIAGRAMS.

TYPE OF SERVICE	NUMBER OF CLIPS	
	SELF CONTAINED METER SOCKETS	TRANSFORMER RATED SOCKETS
1 PHASE, 3 WIRE, 120/240 VOLT < 201 AMPS	4	N/A
1 PHASE, 3 WIRE, 120/240 VOLT > 201AMPS	N/A	6
1 PHASE, 3 WIRE, 120/208 VOLT	5	N/A
3 PHASE, 4 WIRE, 120/208 VOLT WYE	7	13
3 PHASE, 4 WIRE, 120/240 VOLT DELTA ¹	7	13
3 PHASE, 4 WIRE, 277/480 VOLT WYE ²	7	13
NOTES: 1. NON-STANDARD VOLTAGE. CONTACT ROSEVILLE ELECTRIC FOR AVAILABILITY. 2. UNDERGROUND SERVICE FROM PAD-MOUNT TRANSFORMERS ONLY.		

FOR SERVICES GREATER THAN 480 VOLTS, CONTACT THE NEW SERVICES SECTION OF ROSEVILLE ELECTRIC FOR SPECIAL REQUIREMENTS.

II METERING REQUIREMENTS

GENERAL:

1. EUSERC - ELECTRIC UTILITY SERVICE EQUIPMENT REQUIREMENTS COMMITTEE

EUSERC IS AN ORGANIZATION COMPRISED OF UTILITY REPRESENTATIVES FROM THE WESTERN SECTION OF THE UNITED STATES THAT WORK TO PROMOTE THE STANDARDIZATION OF ELECTRIC SERVICE REQUIREMENTS AND THE DESIGN AND ENGINEERING OF METERING AND SERVICE EQUIPMENT.

ALL METERING AND SERVICE EQUIPMENT APPROVED FOR USE IN THE AREAS SERVED BY ROSEVILLE ELECTRIC SHALL BE BUILT TO THE REQUIREMENTS



SPEC. GROUP: SPECIFICATIONS FOR METERING

COMMERCIAL LOW VOLTAGE SERVICE
AND METERING REQUIREMENTS (0-600 V)

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**COMMERCIAL LOW VOLTAGE SERVICE AND METERING REQUIREMENTS
(0-600 VOLTS)**

DEVELOPED BY EUSERC. APPROVED METERING AND SERVICE EQUIPMENT IS AVAILABLE TO CUSTOMERS AND CONTRACTORS THROUGH ELECTRICAL WHOLESALE DISTRIBUTORS.

1. APPROVAL OF MANUFACTURER'S DRAWINGS

ALL ELECTRIC SERVICE PANELS SHALL MEET THE ROSEVILLE ELECTRIC APPROVED SECTIONS OF THE EUSERC REQUIREMENTS. THE LIST OF ACCEPTABLE PANELS CAN BE FOUND AT WWW.EUSERC.COM UNDER "ACCEPTABILITY PAGES" ON THE "ROSEVILLE ELECTRIC, CITY OF" PAGE. PURCHASE OR INSTALLATION OF ANY EQUIPMENT THAT DOES NOT CONFORM TO EUSERC REQUIREMENTS IS DONE AT THE DEVELOPER'S RISK. ANY ELECTRICAL SERVICE PANELS THAT DO NOT COMPLY WITH EUSERC WILL BE REQUIRED TO HAVE FIELD MODIFICATIONS COMPLETED OR BE REPLACED AT THE DEVELOPER'S EXPENSE.

ELECTRIC SERVICE PANEL DRAWINGS ARE RECOMMENDED TO BE SUBMITTED FOR REVIEW PRIOR TO PURCHASE AND INSTALLATION. THE PROJECT DEVELOPER CAN SUBMIT TWO (2) COPIES OF THE PANEL MANUFACTURER'S DRAWINGS TO ROSEVILLE ELECTRIC. ONE COPY WILL BE RETURNED TO THE SENDER WITH APPROVAL OR CORRECTIONS AS NEEDED. SEND SUBMITTALS TO:

SR. ELECTRIC METERING TECH. ROSEVILLE ELECTRIC
2090 HILLTOP CIRCLE
ROSEVILLE, CA 95747
TELEPHONE: (916) 774-5601

2. ELECTRIC METERING AND MAIN DISCONNECT DIRECTLY OUTSIDE ACCESSIBLE

ALL ELECTRIC METERS AND MAIN DISCONNECTS SHALL BE ACCESSIBLE BY THE UTILITY 24 HOURS A DAY, 7 DAYS A WEEK. FENCES, GATES, ALARMS, SECURITY GUARDS OR OTHER MEANS THAT PROHIBIT DIRECT ACCESSIBILITY ARE A VIOLATION OF THIS REQUIREMENT. METERS AND DISCONNECTS ORIGINALLY INSTALLED OUTSIDE THE FENCE SHALL NOT BE ENCLOSED BY A FENCE IN THE FUTURE. MEETING OF THIS REQUIREMENT CAN BE ACCOMPLISHED BY ONE OF THE FOLLOWING MEANS:

A. LOCATE THE METERING SERVICE PANEL ON THE OUTSIDE OF THE BUILDING. IF THE METERING SERVICE PANEL IS LOCATED BEHIND A LOCKABLE GATE, THE DEVELOPER WILL BE REQUIRED TO PROVIDE ONE (1) KEY TO THE GATE. A LOCK BOX WILL BE SUPPLIED AND INSTALLED BY ROSEVILLE ELECTRIC ON THE OUTSIDE OF THE GATE.

B. LOCATE THE METERING SERVICE PANEL INSIDE OF AN UN-ARMED ELECTRICAL SERVICE ROOM WITH AN UN-ARMED DOOR THAT OPENS DIRECTLY TO THE OUTSIDE. THE DEVELOPER WILL BE REQUIRED TO PROVIDE ONE (1) KEY TO THE DOOR FOR PLACEMENT IN A LOCK BOX. THE LOCK BOX WILL



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(0-600 VOLTS)**

BE SUPPLIED AND INSTALLED BY ROSEVILLE ELECTRIC ON THE OUTSIDE OF THE DOOR. ROSEVILLE ELECTRIC SUGGESTS THAT ANY DOOR LEADING FROM THE ELECTRICAL SERVICE ROOM TO OTHER AREAS OF THE BUILDING BE SECURED BY THE CUSTOMER. IF THIS ROOM IS LOCATED BEHIND A LOCKABLE GATE, ITEM 3A WILL APPLY.

A HARD SURFACE PATHWAY MUST BE PROVIDED TO ALL METERING EQUIPMENT. THIS CAN BE ACCOMPLISHED BY A CONCRETE OR ASPHALT PATH OR BY FIRMLY PLACED STEPPING-STONES. ALL LANDSCAPING NEAR THE PATHWAY SHALL BE DESIGNED AND INSTALLED TO NOT INHIBIT THIS PATHWAY AT MATURITY.

1. AUTOMATED METER READING PROVISIONS

ONE 3/4-INCH CONDUIT WITH A MINIMUM CAT-5 TELEPHONE CONDUCTOR SHALL BE INSTALLED FROM THE BUILDING TELEPHONE SERVICE PANEL TO THE ELECTRIC METER PANEL. THE CONDUIT AND CONDUCTOR SHALL ENTER A METERING SECTION WITHIN 2" OF THE CORNER OF THE PANEL. LEAVE 8' OF TELEPHONE CONDUCTOR AT EACH END FOR TERMINATION. FOR SPECIAL CIRCUMSTANCES, QUESTIONS OR MULTIPLE METER PANELS, CONTACT THE METERING CREW SUPERVISOR.

2. SERVICE DISCONNECTS

IN MULTI SERVICE APPLICATIONS, THERE SHALL BE ONLY 1 HANDLE TO DISCONNECT THE ENTIRE SWITCHGEAR. IN ADDITION, EACH SERVICE SHALL HAVE A DISCONNECT SWITCH. EACH INDIVIDUAL SERVICE DISCONNECT SHALL HAVE A PROVISION FOR LOCKING IN THE OPEN/OFF POSITION. THE SWITCHGEAR OR PANEL DOOR IS NOT TO BE USED AS THE SERVICE DISCONNECT LOCKING DEVICE. SERVICE DISCONNECTS THAT ARE A COMBINATION MAIN BREAKER / TRANSFER SWITCH ARE NOT ALLOWED.

IN A SINGLE SERVICE APPLICATION, 200A OR LESS, THE PANEL DOOR MAY BE USED AS THE OPEN/OFF LOCKING DEVICE AS LONG AS IT ONLY PREVENTS ACCESS TO A SINGLE SERVICE MAIN BREAKER WHILE MAINTAINING ACCESS TO DISTRIBUTION BREAKERS.

3. PANEL MARKING POLICY

A. MARKING OF ALL METERS AND DISCONNECTS SHALL BE REQUIRED AS FOLLOWS:

1. WHERE THE INSTALLATION REQUIRES MORE THAN ONE METER FOR SERVICE TO THE PREMISES, EACH METER PANEL AND SERVICE DISCONNECT IT FEEDS SHALL BE PERMANENTLY MARKED (NOT PAINTED) BY THE CUSTOMER TO PROPERLY IDENTIFY THE PORTION OF THE PREMISES BEING SERVED. THIS INCLUDES, BUT IS NOT LIMITED TO: RESIDENCES, OFFICES, RETAIL STORES, OR ANY COMBINATION OF THE ABOVE.

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**COMMERCIAL LOW VOLTAGE SERVICE AND METERING REQUIREMENTS
(0-600 VOLTS)**

1. WHEN ADDING A NEW METER TO AN EXISTING SERVICE LOCATION, ALL METERS AND SERVICE DISCONNECT(S) THEY FEED SHALL BE IDENTIFIED TO PROPERLY INDICATE THE PORTION OF THE PREMISES BEING SERVED.

2. EACH MAIN SERVICE DISCONNECT SHALL BE PERMANENTLY MARKED (NOT PAINTED) BY THE CUSTOMER TO PROPERLY IDENTIFY THE STREET ADDRESS AND THE BUILDING NUMBER (IF APPLICABLE).

3. IF THERE IS MORE THAN ONE MAIN SERVICE DISCONNECT FOR A BUILDING, EACH MAIN SERVICE DISCONNECT SHALL HAVE A TAG THAT CLEARLY REFERENCES THE LOCATION OF THE OTHER MAIN DISCONNECT(S) FOR THAT BUILDING.

B. THE IDENTIFYING MARKING FOR METERS AND DISCONNECTS SHALL BE ENGRAVED OR RAISED FROM A TAG OF PLASTIC LAMINATE, ALUMINUM, BRASS OR OTHER APPROVED NON-FERROUS METAL WITH 1/4 INCH MINIMUM LETTERS. THE IMPRESSIONS SHALL BE DEEP OR RAISED ENOUGH TO PREVENT IT FROM BEING OBSCURED BY SUBSEQUENT PAINTING OF THE SERVICE SECTIONS. THE TAG SHALL BE ATTACHED TO A NON-REMOVABLE AREA OF THE PANEL WITH A HIGH STRENGTH, EPOXY ADHESIVE, RATED WITH A DRYING TIME OF NOT LESS THAN FIVE (5) MINUTES. OTHER TYPES OF ADHESIVES WILL NOT BE ACCEPTABLE. THE TAG SHALL NOT BE ABLE TO BE REMOVED WITHOUT THE USE OF HAND TOOLS. IF THE MAIN BREAKERS ARE NOT INSTALLED DIRECTLY ADJACENT TO THE METERS, BOTH THE METER AND THE MAIN BREAKER SHALL BE IDENTIFIED WITH INDIVIDUAL LABELS.

EXAMPLE:



C. ADDITIONAL MARKINGS OR LABELING ARE REQUIRED WHEN TWO OR MORE SUITES ARE COMBINED/OCCUPIED BY ONE TENANT. AN EXAMPLE: IF SUITES 101 AND 102 WERE COMBINED BY ONE TENANT TO MAKE A SINGLE SUITE 102, THEN THE "LABELS", AS DESCRIBED BELOW, WOULD BE REQUIRED AT THE METER AND AT THE DISCONNECTS INDICATING SUITE 102 IS SERVED BY 2 METERS AND ASSOCIATED DISCONNECTS.



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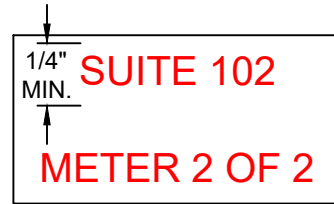
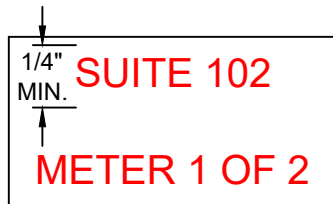
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**COMMERCIAL LOW VOLTAGE SERVICE AND METERING REQUIREMENTS
(0-600 VOLTS)**

EXAMPLE:



7. METER HEIGHTS, CLEARANCES AND WORKING SPACE

METERS SHALL BE LOCATED NOT MORE THAN 75 INCHES AND NOT LESS THAN 48 INCHES ABOVE THE GROUND OR STANDING SURFACE WHEN INSTALLED OUTDOORS. WHEN INSTALLED IN A CABINET OR INDOORS IN A METER ROOM, THE MINIMUM HEIGHT MAY BE REDUCED TO 36 INCHES. THE METER HEIGHT IS MEASURED TO THE METER AXIS (CENTERLINE).

3' OF CLEAR LEVEL WORKING SPACE SHALL BE PROVIDED FROM THE FACE OF THE METER PANEL IN ALL METER CONFIGURATIONS. IF DOORS ARE USED TO PROVIDE THE 3' WORKING SPACE CLEARANCE, THEY MUST BE ABLE TO BE SECURED IN THE OPEN POSITION.

FOR CLEARANCE AND HEIGHT DIAGRAM, SEE PAGES 24 AND 25.

I SERVICES 200 AMPS AND BELOW

1. SELF-CONTAINED METERS DEFINED

A SELF-CONTAINED METER IS CAPABLE OF CARRYING THE TOTAL CURRENT AND VOLTAGE OF THE ELECTRIC SERVICE SUPPLIED TO THE CUSTOMER. THIS TYPE OF METER IS CONNECTED DIRECTLY TO THE SERVICE ENTRANCE CONDUCTORS WHEN IT IS PLUGGED INTO THE METER SOCKETS.

2. SELF-CONTAINED METER SOCKETS

SOCKETS FOR USE WITH SELF-CONTAINED METERS ARE AVAILABLE IN TWO APPROVED RATINGS. WHEN CONNECTED TO PROPERLY SIZED SERVICE ENTRANCE CONDUCTORS, THE APPROVED STANDARD-DUTY SOCKET HAS A NOMINAL CAPACITY OF 100 AMPERES, AND THE APPROVED HEAVY-DUTY SOCKET HAS A NOMINAL CAPACITY OF 200 AMPERES.

3. METER SOCKET CONNECTIONS

ALL SELF-CONTAINED METER SOCKETS SHALL BE CONNECTED TO THE SERVICE ENTRANCE CONDUCTORS BY THE CONTRACTOR. CONNECTION DIAGRAMS FOR THE VARIOUS TYPES OF SERVICES ARE SHOWN ON PAGE 23.



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**COMMERCIAL LOW VOLTAGE SERVICE AND METERING REQUIREMENTS
(0-600 VOLTS)**

4. WIRE SIZE CAPACITY OF SELF-CONTAINED METER SOCKETS

METER SOCKETS SHALL BE EQUIPPED WITH TERMINALS OF SUFFICIENT SIZE TO PERMIT THE CONNECTION OF SERVICE ENTRANCE CONDUCTORS WITHOUT REMOVING ANY STRANDS OF WIRE.

5. METER SOCKET CLOSING DEVICES

METER SOCKETS SHALL NOT BE EQUIPPED WITH CIRCUIT CLOSING OR BY-PASS DEVICES WHICH AUTOMATICALLY CLOSE WHEN THE METER IS REMOVED FROM THE SOCKET.

6. SELF-CONTAINED METERING RESPONSIBILITIES

THE METER IS FURNISHED AND INSTALLED BY ROSEVILLE ELECTRIC.

CUSTOMER'S RESPONSIBILITY	UTILITY'S RESPONSIBILITY
PURCHASE AND INSTALL EUSERC APPROVED ENCLOSURE	PURCHASE AND INSTALL ELECTRIC METER *
PURCHASE AND INSTALL PANEL MARKINGS	APPROVE METER PANEL LOCATION
PURCHASE AND INSTALL ONE 3/4-INCH CONDUIT FOR AUTOMATED METER READING. (SEE SECTION II, ITEM 4)	PURCHASE AND INSTALL AUTOMATED METER READING, IF REQUIRED
PROVIDE ONE KEY FOR LOCK BOX, IF REQUIRED	INSTALL LOCK BOX, IF REQUIRED *
NOTE: * INDICATES UTILITY PROVIDED ITEMS AT CUSTOMER'S EXPENSE.	

I SERVICES GREATER THAN 200 AMPS

1. TRANSFORMER RATED METERS

WHEN THE ELECTRICAL SUPPLY NEEDS OF THE CUSTOMER EXCEED THE 200 AMPERE CAPACITY OF THE SELF-CONTAINED METER AND ITS HEAVY DUTY SOCKET, CURRENT TRANSFORMERS WHICH ARE CONNECTED TO THE SERVICE ENTRANCE CONDUCTORS MUST BE USED. A TRANSFORMER RATED METER IS INSTALLED TO MEASURE THE ENERGY DELIVERED TO THE CUSTOMER. A CURRENT TRANSFORMER CAPACITY MULTIPLIER IS APPLIED TO THE BILLING REGISTER ON THE METER. THE CURRENT TRANSFORMERS AND THE METERS ARE FURNISHED AND INSTALLED BY ROSEVILLE ELECTRIC



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**COMMERCIAL LOW VOLTAGE SERVICE AND METERING REQUIREMENTS
(0-600 VOLTS)**

THE TRANSFORMER RATED METER, WHEN INSERTED INTO ITS SOCKET, IS WIRED TO THE CURRENT TRANSFORMER. THE CURRENT TRANSFORMERS ARE LOCATED IN THE ENCLOSURE BEHIND THE METER AND TEST SWITCH PANEL COVER(S).

2. TRANSFORMER RATED METER SOCKETS

AN APPROVED CURRENT TRANSFORMER (C.T.) RATED METER SOCKET AND ENCLOSURE ARE USED WITH TRANSFORMER RATED METERS. THE METER SOCKETS AND ENCLOSURES ARE FURNISHED AND INSTALLED BY THE CUSTOMER.

3. DUAL METER SOCKET REQUIRED

PANELS RATED AT 1000 AMPS OR ABOVE MUST HAVE A SECOND METER BASE INSTALLED TO PROVIDE FOR REACTIVE METERING BY ROSEVILLE ELECTRIC IN ADDITION TO THE STANDARD REVENUE METERING BASE.

4. TRANSFORMER RATED METERING RESPONSIBILITIES

THE CURRENT TRANSFORMERS, TEST SWITCHES, WIRING, AND METER ARE FURNISHED, INSTALLED, AND CONNECTED BY ROSEVILLE ELECTRIC.

CUSTOMER'S RESPONSIBILITY	UTILITY'S RESPONSIBILITY
PURCHASE AND INSTALL EUSERC APPROVED ENCLOSURE	PURCHASE AND INSTALL CURRENT TRANSFORMERS *
PURCHASE AND INSTALL TRANSFORMER RATED METER SOCKET(S)	PURCHASE AND INSTALL TRANSFORMER RATED METER(S) *
PURCHASE AND INSTALL PANEL MARKINGS	PURCHASE AND INSTALL METER TEST BLOCK *
PURCHASE AND INSTALL ONE 3/4-INCH CONDUIT FOR AUTOMATED METER READING. (SEE SECTION II, ITEM 4)	PURCHASE AND INSTALL AUTOMATED METER READING, IF REQUIRED
PROVIDE ONE KEY FOR LOCK BOX, IF REQUIRED	INSTALL LOCK BOX, IF REQUIRED *
NOTE: * INDICATES UTILITY PROVIDED ITEMS AT CUSTOMER'S EXPENSE.	

V METERING FOR INDIVIDUAL SUITES AND SINGLE (MASTER) METERED BUILDINGS

EACH SUITE SHALL HAVE A 1) SINGLE ELECTRIC REVENUE METER WITH ASSOCIATED MAIN BREAKER/DISCONNECT OR 2) THE ENTIRE BUILDING CAN BE METERED WITH A SINGLE METER WITH ASSOCIATED MAIN BEAKER/DISCONNECT.

NOTE: EITHER THE WHOLE BUILDING IS METERED WITH A SINGLE METER OR THE WHOLE BUILDING HAS A MINIMUM OF 1 METER FOR EACH SUITE.

SINGLE METER CAPTURING ENERGY CONSUMPTION OF MULTIPLE SUITES SHALL NOT BE PERMITTED UNLESS THE ENTIRE BUILDING IS MASTER METERED - NO EXCEPTIONS ALLOWED.

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**COMMERCIAL LOW VOLTAGE SERVICE AND METERING REQUIREMENTS
(0-600 VOLTS)**

THE EXISTING METER INFRASTRUCTURE MAY BE USED TO METER COMBINED SUITES DURING A TENANT IMPROVEMENT PROJECT WITH THE FOLLOWING CONDITIONS:

1. DEVELOPER SHALL PROVIDE AND/OR PAY FOR ALL INFRASTRUCTURE AND METER UPGRADE CHARGES TO CHANGE AFFECTED NON-MODEM METERS TO MODEM METER.
2. OWNER OR PROPERTY MANAGER OR TENANT SHALL PAY FOR PHONE LINE INFRASTRUCTURE AND MONTHLY PHONE CHARGES FOR THE DURATION OF THE COMBINED SUITES.
3. THE PHONE LINE SHALL BE CONDITIONED WITH NO NAT AND NO LD CARRIER AND MUST ONLY BE FOR DEDICATED USE BY RE FOR "TOTALIZED" BILLING.
4. OWNER OR PROPERTY MANAGER OR TENANT SHALL PAY FOR COST TO "TOTALIZE" THE ENERGY CONSUMPTION DATA FOR THE COMBINED SUITE METERS.
5. EACH METER AND ASSOCIATED MAIN BREAKER/DISCONNECT SHALL BE LABELED USING THE FOLLOWING EXAMPLE: IF 2 SUITES (101 AND 102) ARE COMBINED TO CREATE A SINGLE SUITE 101, THEN LABELS AT THE METERS AND ASSOCIATED MAIN BREAKERS/DISCONNECTS SHALL READ: "SUITE 101 1 OF 2" AND "2 OF 2".
6. ALL ASSOCIATED MAIN BREAKER/DISCONNECTS OF A COMBINED SUITE SHALL BE ADJACENT TO EACH OTHER. (NOT SEPARATED BY OTHER BREAKERS.)



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AND METERING REQUIREMENTS (0-600 V)

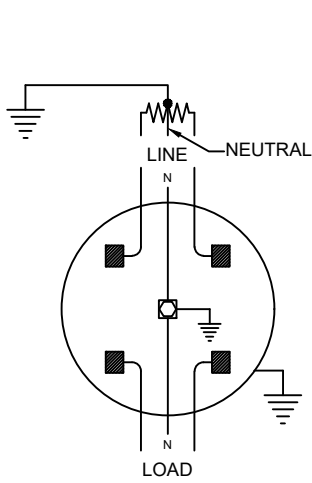
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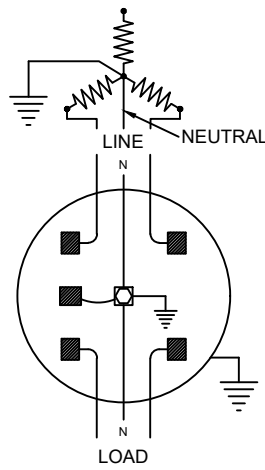
22

SERVICES RATED 200 AMPS OR LESS - NOTE 2



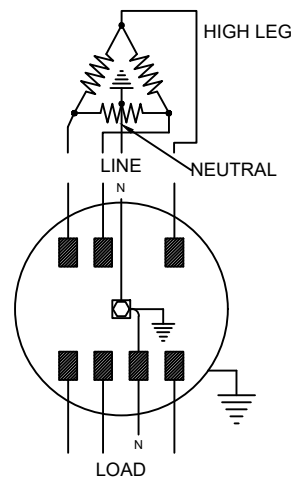
120/240V-1Ø-3 WIRE
(FORM-2S)

FIG. 1
4 CLIP



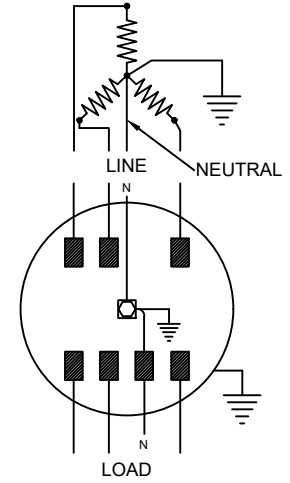
120/208V-1Ø-3 WIRE WYE
NETWORK
(FORM 12S)

FIG. 2
5 CLIP



120/240V-3Ø-4 WIRE
(FORM-15S)

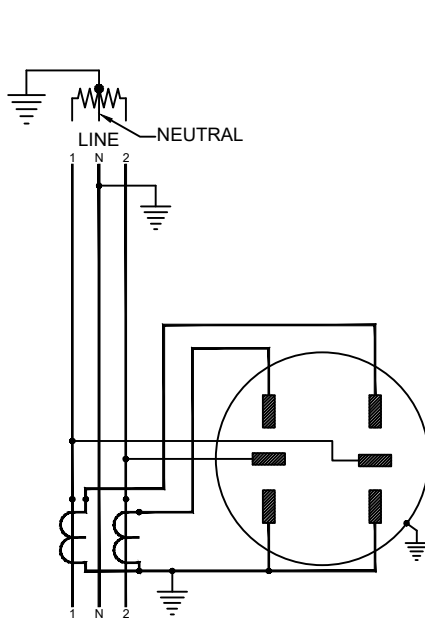
FIG. 3
7 CLIP



120/208V-3Ø-4 WIRE WYE
277/480V-3Ø-4 WIRE WYE
(FORM-14S OR 16S)

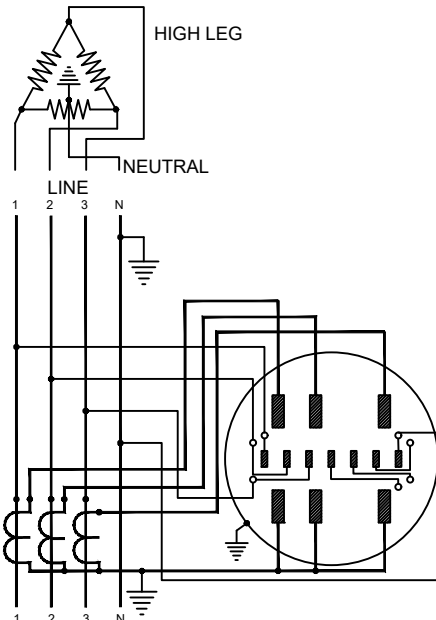
FIG. 4
7 CLIP

SERVICES RATING GREATER THAN 200 AMPS - NOTE 2



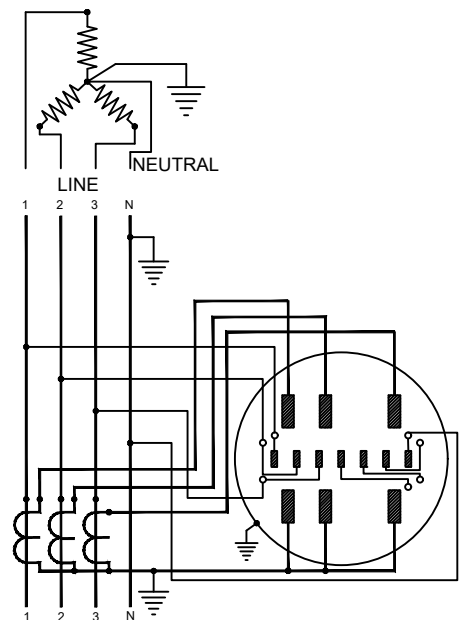
120/240V-1Ø-3 WIRE
(FORM 4S)

FIG. 5
6 CLIP



120/240V-3Ø-4 WIRE
(FORM 8S)

FIG. 6
13 CLIP

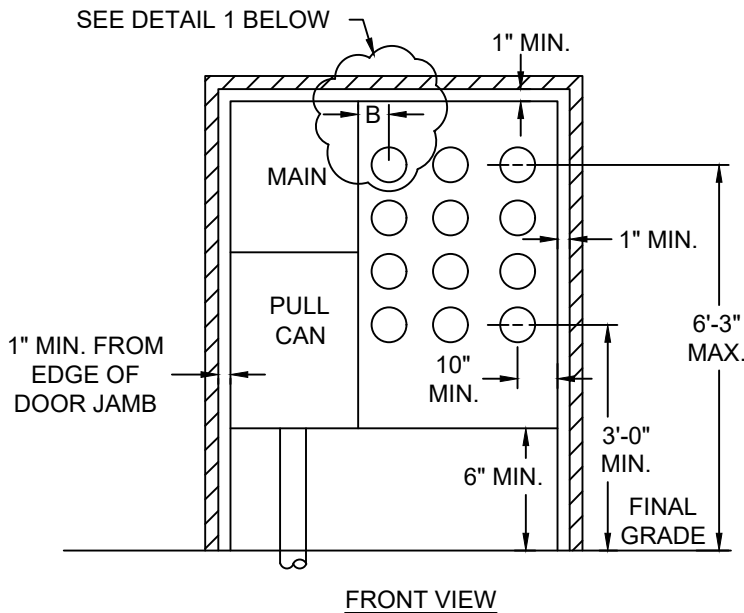
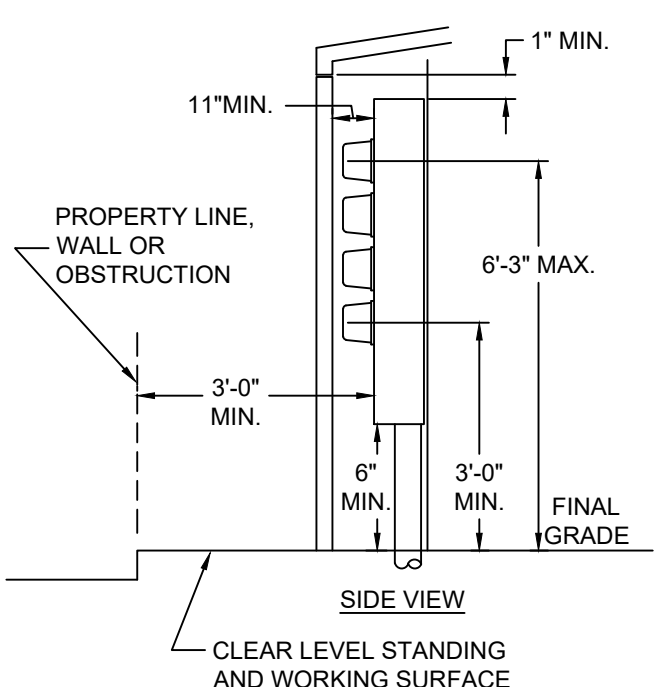


120/208V-3Ø-4 WIRE WYE
277/480V-3Ø-4 WIRE WYE
(FORM 9S)

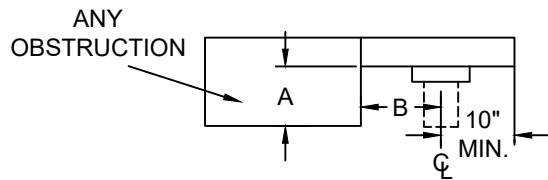
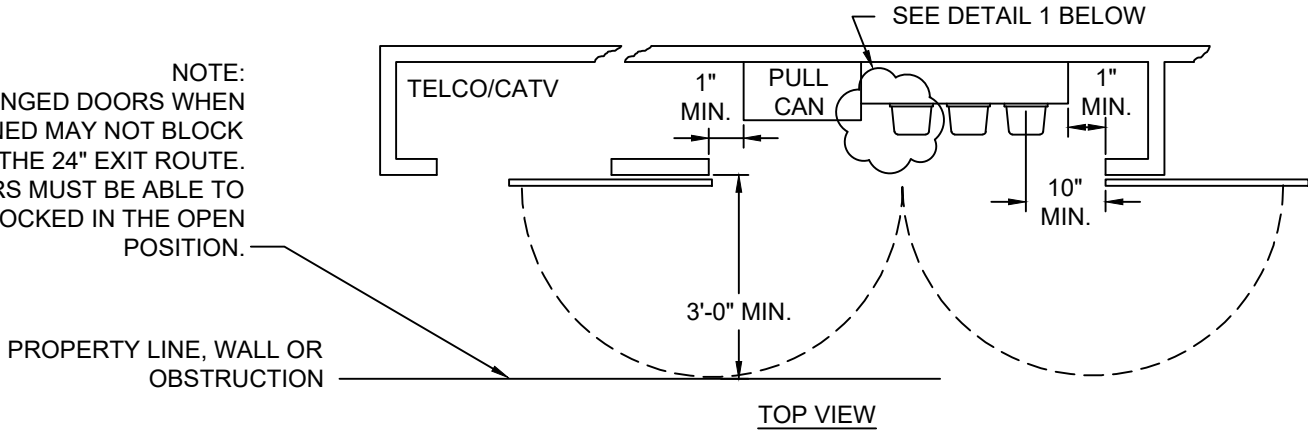
FIG. 7
13 CLIP

NOTE:

1. ALL COMMERCIAL AND CURRENT TRANSFORMER SERVICES WILL HAVE TEST/BYPASS OR TEST BLOCKS. (NOT SHOWN)
2. A SELF-CONTAINED 320 AMP SERVICE IS PERMITTED FOR RESIDENTIAL ONLY.
3. ALL VIEWS ARE SHOWN FROM THE FRONT.



NOTE:
HINGED DOORS WHEN OPENED MAY NOT BLOCK THE 24" EXIT ROUTE. DOORS MUST BE ABLE TO BE LOCKED IN THE OPEN POSITION.

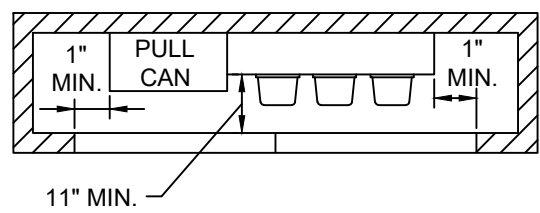


A	B
0" TO LESS THAN 2"	4-1/4" MIN.
2" TO LESS THAN 6"	6-1/4" MIN.
6" OR OVER	10" MIN.

A=DEPTH OF OBSTRUCTION EXTENDING BEYOND FACE OF PANEL

B=DISTANCE FROM SOCKET TO SIDE OBSTRUCTION

DETAIL 1



SPEC. GROUP: SPECIFICATIONS FOR METERING

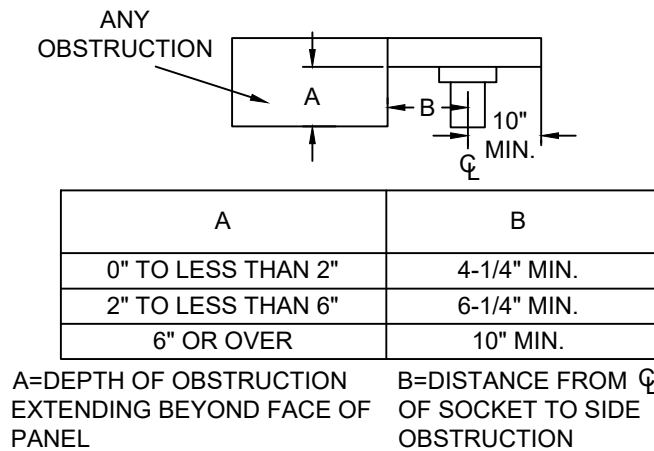
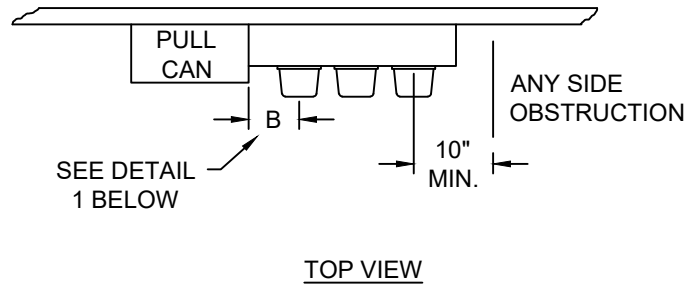
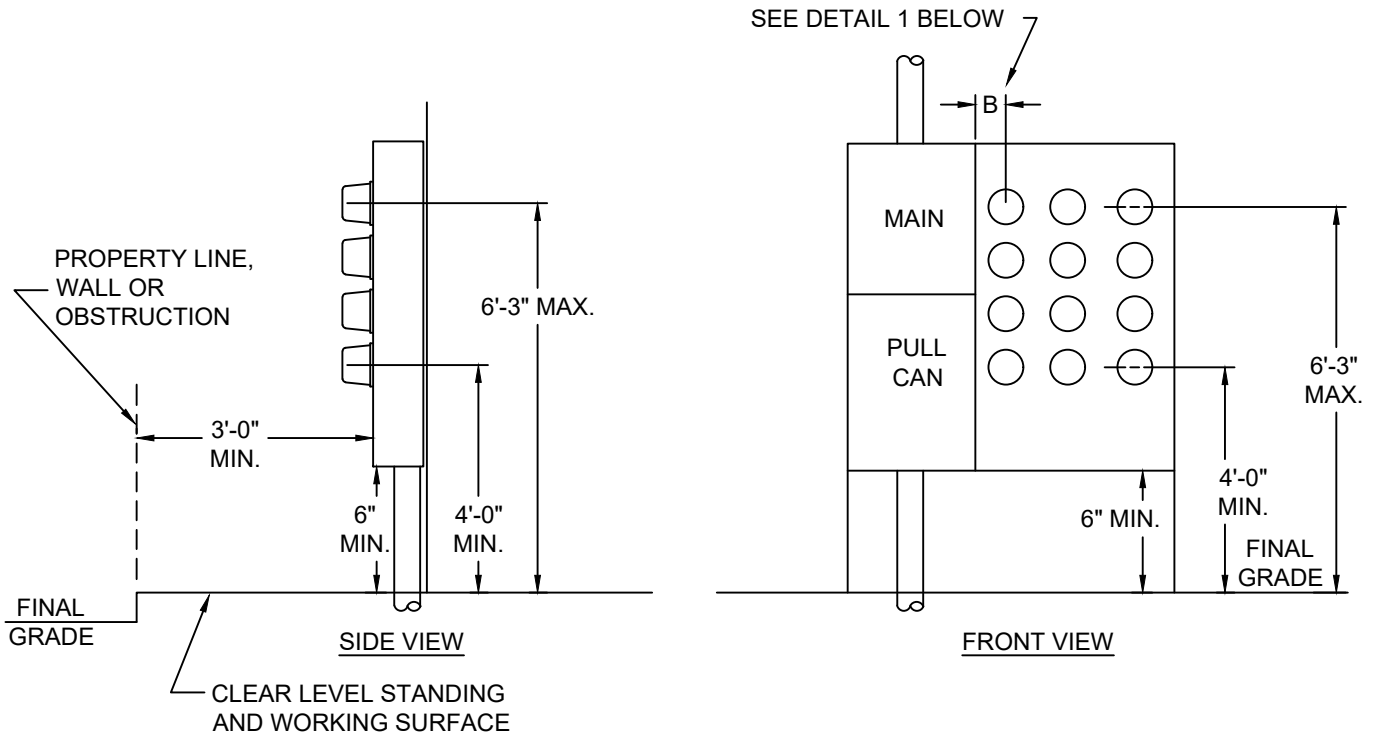
ENCLOSED ELECTRIC COMMERCIAL MULTI-METER INSTALLATIONS

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DETAIL 1

COMMERCIAL CUSTOMER OWNED INTERCONNECTED GENERATION REQUIREMENTS



SPEC. GROUP: SPECIFICATIONS FOR METERING

COMMERCIAL CUSTOMER OWNED
INTERCONNECTED GENERATION REQUIREMENTS

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ROSEVILLE ELECTRIC REQUIREMENTS FOR COMMERCIAL CUSTOMER OWNED INTERCONNECTED GENERATION (COIG)

DEFINITIONS AND ACRONYMS

• COIG	CUSTOMER OWNED INTERCONNECTED GENERATION
• IA	INTERCONNECTION AGREEMENT
• CUSTOMER-GENERATOR	THE OWNER/OPERATOR OF GENERATORS INTERCONNECTED WITH THE ELECTRIC UTILITY
• COR	CITY OF ROSEVILLE
• RE	"ROSEVILLE ELECTRIC" IS THE LOCAL PUBLIC ELECTRIC UTILITY SERVING THE COR
• BF	"BACK FEED" WHICH IS THE FLOW OF ELECTRICITY FROM THE CUSTOMER TO RE GRID
• PV	PHOTOVOLTAIC (SOLAR) WHICH IS THE USE OF SUNLIGHT TO GENERATE ELECTRICITY
• NEM	"NET METER" IS A METER THAT WILL SPIN IN BOTH DIRECTIONS AND DISPLAY A NET VALUE
• KWH-DEL	POWER DELIVERED TO THE CUSTOMER BY RE
• KWH-REC	POWER RECEIVED FROM THE CUSTOMERS COIG BY RE
• PM	"PRODUCTION METER" TO MEASURE THE TOTAL OUTPUT OF THE COIG
• MEMP	MAIN ELECTRIC METER PANEL
• AC DISCONNECT	DEDICATED AC DISCONNECT TO ONLY DISCONNECT THE COIG
• BF BREAKER	BACK FEED BREAKER IS DIRECTLY CONNECTED TO THE COIG SYSTEM AND IS A DEDICATED AC BREAKER TO ONLY INTERRUPT THE COIG
• SUB PANEL	LOAD CENTER
• COMBINER BOX	A JUNCTION BOX USED TO COMBINE MULTIPLE SOURCES OF THE CUSTOMER'S POWER PRODUCTION. NO CUSTOMER LOAD SHALL BE CONNECTED TO THE COMBINER BOX.
• ACD	DEDICATED AC DISCONNECT IS DIRECTLY CONNECTED TO THE COIG SYSTEM AND IS A DEDICATED AC BREAKER TO ONLY INTERRUPT THE COIG
• NEC	NATIONAL ELECTRIC CODE
• CEC	CALIFORNIA ELECTRIC CODE, THE CITY OF ROSEVILLE USES THE CURRENT CEC BASED ON THE APPLICABLE NEC
• IFC	INTERNATIONAL FIRE CODE



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ROSEVILLE ELECTRIC REQUIREMENTS FOR COMMERCIAL
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**ROSEVILLE ELECTRIC REQUIREMENTS FOR COMMERCIAL
CUSTOMER OWNED INTERCONNECTED GENERATION (COIG)**

I. GENERAL COIG REQUIREMENTS

1. COIG IS CUSTOMER OWNED GRID CONNECTED ELECTRIC GENERATOR(S) WHICH CAN HAVE THE POTENTIAL TO BACK FEED INTO THE RE POWER SYSTEM AND CAN ONLY RUN IN PARALLEL WITH THE UTILITY IF AN "INTERCONNECT AGREEMENT" HAS BEEN SIGNED WITH RE.
2. ALL INSTALLATIONS OF COIG SYSTEMS MUST COMPLY, AND MUST BE CONSTRUCTED TO MEET THE REQUIREMENTS, TERMS AND CONDITIONS LISTED IN THE CURRENT NATIONAL, STATE, RE RULE 21, AND RE CONSTRUCTION STANDARDS.
3. WHERE THERE IS ANY CONFLICT BETWEEN THE STANDARDS AND RULES STATED ABOVE; THE MORE STRINGENT CRITERIA SHALL APPLY.
4. ALL COIG SYSTEMS SHALL BE CONSTRUCTED, CONNECTED, AND LABELED AS STATED/SHOWN BELOW.
5. EXAMPLES OF COIG ARE (BUT NOT LIMITED TO): PV, WIND, DIESEL, GAS, PROPANE, OR BIOMASS.
6. ALL COIG SYSTEMS MUST BE CONNECTED VIA BF BREAKER(S), INSIDE THE MEMP. IF THE MEMP ONLY HAS ROOM FOR A MAIN BREAKER, THEN THE GENERATOR(S) MUST BE CONNECTED TO A BF BREAKER INSIDE A LOAD CENTER (SUB PANEL). THE AC BF BREAKER AND/OR ACD(S) MUST NOT BE CONNECTED TO ANY CUSTOMER LOAD(S). IT MUST BE DEDICATED TO THE COIG SYSTEM ONLY.
7. LINE SIDE TAPS (ANY CONNECTION BETWEEN UTILITY INCOMING CABLES AND THE CUSTOMER'S MAIN BREAKER) ARE NOT ALLOWED. CITY OF ROSEVILLE'S ROSEVILLE MUNICIPAL CODE CHAPTER 16.04.410 REQUIRES THAT THERE IS BE NO MORE THAN ONE DISCONNECT PER ELECTRICAL SERVICE.
8. BUS TAPS (TAP CONNECTIONS ADDED TO THE LOAD SIDE OF THE MAIN BREAKER) SHALL NOT COMPROMISE THE UNDERWRITERS LABORATORY (UL) CERTIFICATION OF THE EXISTING SWITCHGEAR, OR THE RATINGS AND WITHSTAND CAPABILITIES OF THE SERVICE PANEL. THE CUSTOMER AND INSTALLER ARE FULLY RESPONSIBLE FOR ANY SWITCHGEAR MODIFICATIONS AND POTENTIAL PROBLEMS, HAZARDS, OR DE-RATINGS THAT MAY OCCUR IN THE FUTURE AS A RESULT OF THE MODIFICATIONS. RE MAY REQUIRE THE CUSTOMER TO PROVIDE VERIFICATION OF UL COMPLIANCE FOR SWITCHGEAR MODIFICATIONS BY ONE OF THE FOLLOWING METHODS:
 - a. A DOCUMENT FROM THE MANUFACTURER OF THE EXISTING PANEL INDICATING THAT THE PROPOSED MODIFICATION OR CONNECTION TO THE PANEL DOES NOT COMPROMISE THE UL RATING OF THE PANEL.
 - b. A NATIONALLY RECOGNIZED TESTING LABORATORY CERTIFICATION OF THE PROPOSED MODIFICATION OR CONNECTION TO THE SWITCHGEAR'S LOAD SIDE BUS.
9. CUSTOMER SHOULD NOT LOSE ANY LOAD IF THE BF BREAKER(S) AND/OR THE ACD(S) ARE "OPENED" (TURNED OFF).
10. AC COMBINER BOXES SHALL BE DEDICATED TO COMBINING THE GENERATORS OUTPUT ONLY AND CANNOT BE USED AS A LOAD CENTER TO FEED ANY CUSTOMER LOAD(S)
11. MAXIMUM RATING (AMPS) OF THE MAIN BREAKER CANNOT EXCEED THE MAXIMUM CAPACITY OF THE ELECTRIC METER ON THE MEMP.
12. COIG PRODUCTION SHALL NOT TO EXCEED 100% OF THE CUSTOMER OF RECORDS PREVIOUS 12 MONTH KWH CONSUMPTION OR PEAK KW DEMAND USAGE.
13. ALL COMMERCIAL PANELS MUST MEET RE ACCEPTABILITY PAGES AS SHOWN AT WWW.EUSERC.COM.
14. DEVICES MEMP, BF BREAKER(S), ACD(S) AND THE PM PANEL SHALL BE INSTALLED WITHIN A MAXIMUM OF 10 FEET FROM MEMP AS CLOSE TO EACH OTHER AS POSSIBLE WITHIN THESE PARAMETERS); AND ALL DEVICES SHALL BE WITHIN DIRECT LINE OF SIGHT OF THE MEMP.
15. ALL DEVICES SHALL BE REASONABLY ACCESSIBLE AT ALL TIMES (24 HOURS A DAY, 365 DAYS YEAR) TO APPROPRIATE CITY OF ROSEVILLE PERSONNEL PER THE ROSEVILLE MUNICIPAL CODE CHAPTER 14.24.200 LETTER I.
16. ANY DEVIATION FROM THESE SPECIFICATIONS SHALL BE SUBMITTED TO ROSEVILLE ELECTRIC AND APPROVED PRIOR TO CONSTRUCTION OR INSTALLATION.
17. DISCREPANCIES BETWEEN THE DIAGRAMS AND THE ACTUAL FINAL INSTALLATION, AS BUILT, MAY BE CAUSE FOR REJECTION DURING THE FINAL TESTING, INSPECTION, AND NET METER INSTALLATION. A REJECTION MEANS MAKING THE NECESSARY CORRECTIONS, RESCHEDULING THE FINAL TESTING, INSPECTION, AND NET METER INSTALLATION, AND POSSIBLY RESULTING IN A SIGNIFICANT DELAY IN ACTIVATING THE SYSTEM.



SPEC. GROUP: SPECIFICATIONS FOR METERING

ROSEVILLE ELECTRIC REQUIREMENTS FOR COMMERCIAL
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**ROSEVILLE ELECTRIC REQUIREMENTS FOR COMMERCIAL
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II. CERTIFIED COMPONENTS OR SYSTEMS

1. ALL COMPONENTS OF THE COIG SYSTEM MUST BE CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY(S). IT IS THE RESPONSIBILITY OF THE OWNER/OPERATOR TO PROVIDE EVIDENCE OF SUCH COMPLIANCE.
2. THE INVERTERS MUST MEET THE REQUIREMENTS OF UL 1741.

III. METERING:

1. **"NET" METER (NEM):** A NEM SHALL BE INSTALLED ON ALL QUALIFYING COIG SYSTEMS. A NEM IS ABLE TO MEASURE IN BOTH DIRECTIONS AND WILL DISPLAY THE "NET" VALUE (KWH-DEL MINUS ANY KWH-REC). A NEM READ GREATER THAN THE PREVIOUS BILLING CYCLE MEANS THE CUSTOMER IS A NET CONSUMER OF ELECTRICITY FROM RE. A NEM READ LESS THAN PREVIOUS BILLING CYCLE MEANS THE CUSTOMER IS A NET GENERATOR OF ELECTRICITY AND DELIVERED MORE POWER TO RE THAN THEY CONSUMED. THE NEM METER AND NEM PANEL INFRASTRUCTURE COST IS THE RESPONSIBILITY OF THE OWNER/OPERATOR.

IV. WESTERN AREA POWER ADMINISTRATION (WAPA)

RE RECEIVES 100% OF ITS POWER TRANSMISSION SERVICE FROM WAPA. AS A RESULT, RE IS SUBJECT TO SPECIFIC REGULATIONS AND CONDITIONS PER RE'S AGREEMENTS WITH WAPA. BASED UPON THESE AGREEMENTS, ALL OWNER/OPERATOR INTERCONNECTION REQUESTS ARE SUBJECT TO THE STIPULATIONS AND REQUIREMENTS OF THESE EXISTING RE/WAPA AGREEMENTS, AND ANY FUTURE AGREEMENTS. SUCH CONDITIONS MAY INCLUDE (BUT ARE NOT LIMITED TO):

1. WAPA DESIGN AND INTERCONNECTION REVIEW OF THE OWNER/OPERATOR'S PROJECT
2. WAPA METERING STANDARDS
3. WAPA METERING TELEMETRY AND COMMUNICATION STANDARDS

AN ASSESSMENT OF WAPA OVERSIGHT WILL BE PART OF THE RE INTERCONNECTION PROCESS. IT IS HIGHLY RECOMMENDED THAT OWNER/OPERATORS PROPOSING INTERCONNECTIONS IN EXCESS OF 1 MW CONTACT RE AT THE EARLIEST POSSIBLE CONVENIENCE TO BEGIN ASSESSMENT AND DISCUSSION.

ALL SYSTEMS MAY REQUIRE AN ENGINEERING STUDY BY RE AS PER RULE 21.

V. AC DISCONNECT(S) (ACD) AND BACK FEED (BF) BREAKER(S)

THE ACD AND THE BF BREAKERS SHALL BE DEDICATED TO TURN OFF AND LOCK-OUT THE COIG SYSTEM ONLY (WITHOUT TURNING OFF ANY OTHER CUSTOMER LOADS). THE ACD DEVICE(S) INSTALLED SHALL BE A "VISIBLE OPEN" BLADE TYPE DEVICE, MEANING THAT YOU MUST BE ABLE TO SEE AN AIR GAP BETWEEN THE TRAILING EDGE OF THE MOVING CONTACT AND THE STATIONARY CONTACT TO VISUALLY VERIFY THE CONNECTION HAS BEEN BROKEN. ALL ACD DEVICES SHALL BE INDIVIDUALLY LOCKABLE IN THE OPEN/OFF POSITION AND SHALL BE "LOAD BREAK" RATED.

VI. LABELING

ALL INTERCONNECTED GENERATION SYSTEMS SHALL HAVE SPECIAL LABELS PLACED ON THE REQUIRED PANELS AND DISCONNECTS. ALL LABELING REQUIREMENTS SHALL BE BASED ON THE INDIVIDUAL TYPE OF GENERATION SYSTEMS BEING INSTALLED. EXAMPLE: A SOLAR ELECTRIC COIG SYSTEM MUST HAVE THE LABELS "SOLAR ELECTRIC".



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- ALL LABELS MUST BE MADE PER UL 969 SPECIFICATIONS WITH WHITE LETTERING ON RED BACKGROUND. LETTERS SHALL BE A MINIMUM ¼" HIGH.

NOTE: PER UL969, LABELS MUST BE MADE OF A TYPE OF MATERIAL THAT IS DURABLE, ADHESIVE, REFLECTIVE, WEATHER RESISTANT, AND IS SUITABLE FOR ITS ENVIRONMENT. ALL HAND WRITTEN ITEMS ON THE LABELS MUST BE AS DURABLE AND LONG LASTING AS THE PREPRINTED ITEMS ON THE LABELS.

COIG LABELS ARE DERIVED FROM THE FOLLOWING CODES AND STANDARDS.

THE NATIONAL ELECTRICAL CODE (NEC), "INTERCONNECTED ELECTRIC POWER PRODUCTION SOURCES" HAS EXPANDED, AND CONTAINS SOME SIGNIFICANT CHANGES TO NEC ARTICLES 690 AND 705. ALL LATEST CODES ADOPTED BY THE CITY OF ROSEVILLE SHALL APPLY INCLUDING THE INTERNATIONAL FIRE CODE (IFC). THESE CODE ARTICLES APPLY TO ANY POWER-PRODUCTION SYSTEM CONNECTED TO THE UTILITY THROUGH AN INVERTER, REGARDLESS OF THE ENERGY SOURCE - EXAMPLES INCLUDE GENERATORS, PV SYSTEMS, WIND TURBINES, AND FUEL CELLS. SOME OF THE GENERAL REQUIREMENTS ARE THAT INTERACTIVE SYSTEMS SHALL BE LABELED. IT IS THE RESPONSIBILITY OF THE OWNER/CONTRACTOR TO VERIFY ALL CODES, LISTED OR NOT, ARE THE MOST CURRENT CODES APPLICABLE.

NEC 690.10: STAND-ALONE SYSTEMS AND THEIR LABELS.

NEC 690.14.C.2. AND 690.1(C)(2) AND IFC-605: PREFER THE WORD "MAIN"

NEC 690.15 AND 705.21: IF EQUIPMENT IS ENERGIZED FROM MORE THAN ONE SOURCE, THE DISCONNECTING MEANS MUST BE GROUPED AND IDENTIFIED.

NEC 690.15.A AND 705.70: GRID TIED INVERTORS IN NON-READILY ACCESSIBLE LOCATIONS.

NEC 690.35.F: A POWER SOURCE SHALL BE LABELED AT EACH JUNCTION BOX, COMBINER BOX OR DISCONNECT, AND DEVICE WHERE ENERGIZED CIRCUITS MAY BE EXPOSED DURING SERVICE.

NEC 690.53: MUST PROVIDE SYSTEM VOLTAGES AND CURRENTS.

NEC 690.54: ALL INTERACTIVE POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTING MEANS AS THE POWER SOURCE WITH THE RATED AC OUTPUT CURRENT AND THE NOMINAL AC OPERATING VOLTAGE.

NEC 690.55: SYSTEMS EMPLOYING ENERGY STORAGE SHALL ALSO BE MARKED WITH MAXIMUM OPERATING VOLTAGES INCLUDING ANY EQUALIZATION VOLTAGE AND THE POLARITY OF THE GROUNDED CIRCUIT CONDUCTOR (NEUTRAL). PLACE THIS LABEL ON THE BATTERY SYSTEM CHARGER AC DISCONNECT.

NEC 690.64: SYSTEMS CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSS BAR OR CONDUCTOR SUPPLIED FROM MULTIPLE SOURCES SHALL BE MARKED TO INDICATE PRESENCE OF ALL SOURCES (BACK-FED).

NEC 690.64 AND 705.10 AND 705.12.D.(3)(4): EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSS BAR OR CONDUCTOR SUPPLIED FROM MULTIPLE SOURCES SHALL BE MARKED TO INDICATE THE PRESENCE OF ALL SOURCES. TYPICALLY USED ON BREAKER PANELS AND CAN BE USED ON AC DISCONNECTS WITH MULTIPLE SOURCES.

NEC 690.8 AND 705.60: CIRCUIT SIZING

NEC 690.9 AND 705.65: OVERCURRENT PROTECTION

NEC 705.80: INTERACTIVE SYSTEMS WITH ENERGY STORAGE.

NEC 705.12.D.7: LABELS MUST BE PLACED TO WARN AGAINST MOVING OR REPLACING THE OVERCURRENT DEVICES TO ANOTHER LOCATION OR CHANGING THE OVERCURRENT DEVICE SIZE AND/OR TYPE.

OTHER CODES

IFC 605.11.1.4: CAUTION LABEL TO INDICATE SOLAR CIRCUIT. FIRE DEPT. REQUIREMENT.

OSHA 1910.45 AND ANSI Z535: THE WORD "WARNING" MUST BE AT LEAST 50% TALLER AND THE REMAINDER OF THE LETTER MUST BE A MINIMUM OF 00.12" TALL ON A WARNING LABEL.

OSHA 1910.45 AND ANSI Z535: THE HEIGHT OF THE CHARACTERS MUST BE READABLE AT A SAFE DISTANCE.



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THEY ALSO RECOMMEND USE OF SAFETY ALERT SYMBOLS WHERE APPLICABLE.

UL 969: LABELS MUST BE MADE OF DURABLE, ADHESIVE, REFLECTIVE, WEATHER RESISTANT, AND SUITABLE FOR THE ENVIRONMENT TYPE MATERIAL. ALL HAND WRITTEN ITEMS ON THE LABELS MUST BE AS DURABLE AND LAST AS LONG THE LABELS WITHOUT FADING.

COR CITY OF ROSEVILLE: REQUIRES MINIMUM 1/4" HIGH LETTERING EXAMPLE: IF THE WORDS "ELECTRIC SHOCK HAZARD" WOULD BE MINIMUM 1/4" TALL, AND THE WORD "WARNING" MUST BE AT LEAST 1/2" TALL.

VII. EQUIPMENT PLACEMENT AND CONNECTION DIAGRAMS FOR MEMP, NEM, LOAD CENTER, ACD(S), PM(S)

1. FOR ALL SYSTEMS THE COIG GENERATOR WILL CONNECT TO AN AC DISCONNECT WHICH WILL CONNECT TO A PM METER PANEL AND A SECOND AC DISCONNECT BEFORE CONNECTING TO THE BF BREAKER EITHER IN THE MEMP OR THE LOAD CENTER, IF THE MEMP HAS ONLY ROOM FOR THE MAIN BREAKER.
2. ALL METERING SHALL BE DONE AT THE SERVICE VOLTAGE PROVIDED BY RE TO THE CUSTOMER. IN EXTREME CASES, RE MAY ALLOW THE PM METERING TO BE ACCOMPLISHED AT A DIFFERENT VOLTAGE LEVEL.
3. A DEDICATED IP ADDRESS AND/OR A DEDICATED PHONE LINE WILL BE REQUIRED FOR PM AND INCENTIVE BASED COIG SYSTEMS AND FOR SYSTEMS REQUIRING REAL-TIME MONITORING.
4. FOR CONNECTION DIAGRAMS, REFER TO THE PAGES BELOW.

VIII. PRIMARY VOLTAGE SERVICES (12KV OR GREATER)

PRIMARY VOLTAGE SERVICES (12KV OR GREATER) ARE TYPICALLY UTILIZED BY LARGE CUSTOMERS OR BY CUSTOMERS THAT HAVE A CAMPUS-STYLE ELECTRICAL SYSTEM. FOR THESE TYPES OF INSTALLATIONS, THE COIG IS TYPICALLY INSTALLED ON A PANEL FED BY A CUSTOMER'S STEPDOWN TRANSFORMER (SEE PAGE 7.4.13). THIS BECOMES EXTREMELY DIFFICULT TO COMPLY WITH THE "ONE SINGLE DISCONNECT AT THE POINT OF COMMON COUPLING (PCC)" REQUIREMENT. ROSEVILLE ELECTRIC'S MAIN INTENT IS TO HAVE THE ABILITY TO REMOVE THE GENERATION FROM ITS DISTRIBUTION SYSTEM SAFELY. TO THIS EXTENT, RE AND THE CUSTOMER SHALL AGREE TO USE THE CUSTOMER'S "**RACKABLE**" MAIN CIRCUIT BREAKER TO PROVIDE THE DISCONNECTING MEANS WHEN IT IS NECESSARY TO REMOVE THE GENERATION FROM RE'S DISTRIBUTION SYSTEM. THE FOLLOWING ARE THE REQUIREMENTS:

1. FACILITY SHALL HAVE A MAIN CIRCUIT BREAKER THAT CAN BE OPENED AND RACKED-OUT BY THE CUSTOMER. RE'S CLEARANCE POLICIES ALLOWS A CLEARANCE TO BE TAKEN AT A CUSTOMER'S CIRCUIT BREAKER WHEN RE CAN TAKE CONTROL OVER THAT CIRCUIT BREAKER. CONTROL BY RE WOULD BE ACCOMPLISHED BY RE WITNESSING THAT THE CIRCUIT BREAKER WAS RACKED OUT AND RE APPLYING A LOCK AND SAFETY TAG.
2. THE CUSTOMER SHALL AGREE, WHEN REQUIRED BY RE, TO DISCONNECT THE COIG BY OPENING AND RACKING OUT THE CIRCUIT BREAKER. AS A RESULT, THE CUSTOMER MAY ALSO EXPERIENCE AN OUTAGE TO THEIR FACILITY. THE CUSTOMER SHALL PROVIDE A LETTER, ON THEIR COMPANY LETTERHEAD, CONFIRMING AGREEMENT WITH THESE REQUIREMENTS.

RESTRICTIONS: FOR THE FACILITIES WHERE THE OPTION OF USING THE MAIN BREAKER FOR PURPOSE OF DISCONNECTING THE GENERATING FACILITY COIG IS NOT AVAILABLE OR UNDESIRABLE; THEREFORE, THE CUSTOMER SHALL INSTALL A SINGLE VISIBLE OPEN AND LOCKABLE DISCONNECT DEVICE AS REQUIRED BY RULE 21, AND THIS STANDARD, NEAR THE POINT OF COMMON COUPLING AND ON A SINGLE DISCONNECTING DEVICE.

THE SINGLE-LINE DIAGRAMS SHOWN ON PAGES 7.4.11 THROUGH 7.4.13 ARE TYPICAL PLACEMENT AND CONNECTIONS FOR VARIOUS TYPES AND SIZES OF THE COIG SYSTEMS APPROVED BY RE TO BE INSTALLED IN ITS TERRITORY. IF A PROPOSED SYSTEM IS NOT SHOWN IN THE TYPICAL SINGLE LINE DIAGRAM(S), CONTACT ROSEVILLE ELECTRIC FOR PRE-APPROVAL PRIOR TO SUBMITTING FOR PERMIT OR PURCHASING EQUIPMENT.



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**ROSEVILLE ELECTRIC METERING REQUIREMENTS FOR COIG SPECIFIC TO:
COMMERCIAL SOLAR ELECTRIC GENERATION**

1. GENERAL

EVERY COMMERCIAL SOLAR ELECTRIC INSTALLATION THAT WILL BE INTERCONNECTED IN PARALLEL WITH RE, MUST MEET ALL OF THE FOLLOWING REQUIREMENTS:

- a. ALL THE REQUIREMENTS AS STATED IN THE RE CONSTRUCTION STANDARDS;
- b. ALL THE REQUIREMENTS AS STATED IN THE RE RULE 21;
- c. *RE SOLAR ENERGY (PV) PROGRAM GUIDEBOOK*.
- d. TERMS AND CONDITIONS AS LISTED IN THE CURRENT STANDARDS, SUCH AS STATE AND NATIONAL STANDARDS;

ANY CONFLICT BETWEEN THE STANDARDS AND RULES STATED ABOVE SHALL BE RESOLVED BY ROSEVILLE ELECTRIC WITH THEIR INTERPRETATION OF THE STANDARDS AND RULES. WHERE THERE IS ANY CONFLICT BETWEEN THE STANDARDS AND RULES STATED ABOVE; THE MORE STRINGENT CRITERIA SHALL APPLY.

THE RE SOLAR ELECTRIC PROGRAM COORDINATOR SHALL BE CONTACTED REGARDING ALL PROPOSED SOLAR ELECTRIC PROJECTS. EARLY AND TIMELY CONTACT WITH THE RE PROGRAM COORDINATOR HELPS FACILITATE A SMOOTH INTERCONNECTION PROCESS. SOME RE DISTRIBUTION FEEDERS HAVE ACHIEVED HIGH LEVELS OF SOLAR ELECTRIC SYSTEM PENETRATION, SO EARLY CONTACT WITH THE RE SOLAR ELECTRIC PROGRAM COORDINATOR MAY ALSO PREVENT UNNECESSARY SOLAR ELECTRIC SYSTEM REDESIGNS REQUESTED BY RE OF THE APPLICANT.

THE *RE SOLAR ENERGY (PV) PROGRAM GUIDEBOOK (HANDBOOK)* CAN BE FOUND AT: WWW.ROSEVILLE.CA.US/BUSINESSSOLAR. SYSTEM RATINGS MUST BE CALCULATED THROUGH THE CALIFORNIA ENERGY COMMISSIONS' CSI STANDARD PV CALCULATOR WHICH CAN BE FOUND AT: WWW.CSI-EPBB.COM.

THIS CALCULATOR MUST BE USED TO DETERMINE THE PROPOSED SOLAR ELECTRIC SYSTEM'S AC WATT CAPACITY SIZE AND KWH GENERATION OUTPUT WHETHER OR NOT AN INCENTIVE IS REQUESTED.

ALL SYSTEMS MUST BE DESIGNED, CONSTRUCTED AND COMMISSIONED PER RE RULE 21 AND RE CONSTRUCTION STANDARDS AND SPECIFICATIONS. FAILURE TO DO SO MAY RESULT IN RE PROHIBITING PARALLEL INTERCONNECTION.

2. CERTIFIED COMPONENTS LIST FOR SYSTEMS SPECIFIC TO SOLAR ELECTRIC

A NATIONALLY RECOGNIZED TESTING LABORATORY MUST CERTIFY ALL FLAT PLATE SOLAR ELECTRIC MODULES AND INVERTERS. THE MODULES MUST MEET THE REQUIREMENTS OF THE UNDERWRITERS LABORATORY (UL) STANDARD 1703. THE INVERTERS MUST MEET THE REQUIREMENTS OF UL 1741. THE SOLAR ELECTRIC (PV) GENERATION SYSTEM MUST USE COMPONENTS THAT ARE LISTED ON THE CALIFORNIA ENERGY COMMISSION'S (CEC) LIST OF "ELIGIBLE EQUIPMENT", AS FOUND ON THE CEC'S WEBSITE, TO MEET THIS REQUIREMENT.

3. NET (NEM) AND PRODUCTION METERING (PM) SPECIFIC TO SOLAR ELECTRIC

SEE REQUIREMENTS STATED IN SECTION III ABOVE AND ATTACHED DRAWINGS.

4. UTILITY REQUIRED DEDICATED AC DISCONNECT(S) AND BACK-FEED BREAKER(S) SPECIFIC TO SOLAR ELECTRIC

- a. PV/BATTERY SYSTEMS SHALL NOT BE CONNECTED TO THE LINE SIDE OF A CUSTOMER MAIN BREAKER IN ANY FASHION.
- b. SEE REQUIREMENTS STATED IN SECTION V ABOVE AND ATTACHED DRAWINGS.



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**ROSEVILLE ELECTRIC METERING REQUIREMENTS FOR COIG SPECIFIC TO:
COMMERCIAL SOLAR ELECTRIC GENERATION**

5. LABELING SPECIFIC TO SOLAR ELECTRIC

ALL SOLAR ELECTRIC (PV) GENERATION SYSTEMS MUST HAVE SPECIAL LABELS SPECIFIC TO SOLAR ELECTRIC. SEE REQUIREMENTS STATED ABOVE AND THE LABELS SHOWN ON PAGE 7.4.14. SEE CODES LISTED IN SECTION VI ABOVE FOR ASSOCIATED LABELS AND VERBIAGE. EXAMPLES OF LABELS CAN BE FOUND AT [HTTP://WWW.HELLERMANNTYTON.US/LITERATURE.ASPX](http://www.hellermannityton.us/literature.aspx) SOLAR CAPABILITIES CATALOG; THESE EXAMPLES CAN BE ADAPTED TO ALL TYPES OF COIG.

6. INTERCONNECTION SYSTEMS

- a. RE REQUIRES THAT A SINGLE PRODUCTION METER AND ASSOCIATED DEDICATED PV BREAKER AND AC DISCONNECTS ARE REQUIRED TO MEASURE ALL POWER PRODUCED.

7. MULTI-FAMILY COIG INTERCONNECTION REQUIREMENTS

THE FOLLOWING ARE REQUIREMENTS AND REGULATIONS FOR PV SYSTEMS INSTALLED ON MULTI-FAMILY BUILDINGS:

- a. AN AC DISCONNECT IS REQUIRED FOR THE PV SYSTEM AND MUST BE WITHIN LINE OF SIGHT OF THE SERVICE MAIN CIRCUIT BREAKER.
- b. INTERCONNECTIONS UTILIZING PEDESTALS IS NOT PERMITTED.
- c. CARPORT/CANOPY PV SYSTEMS ARE ACCEPTABLE PROVIDED THEY ARE PHYSICALLY ON THE SAME PARCEL AND DO NOT CROSS PROPERTY LINES.
- d. PRODUCTION METERS FOR ROSEVILLE ELECTRIC USE FOR THESE SYSTEMS ARE NOT REQUIRED
- e. ALL PV/BATTERY SYSTEMS SHALL ALSO COMPLY WITH THE N.E.C AND CALIFORNIA BUILDING CODE.
- f. ROSEVILLE ELECTRIC DOES NOT HAVE AUTHORITY TO PROVIDE A VARIANCE TO BUILDING CODE REQUIREMENTS.
- g. VIRTUAL NET METERING IS ALLOWED ALONG WITH SIMILAR METERING SERVICES FROM THIRD PARTIES.



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WARNING!
DUAL POWER SUPPLY
SOLAR ELECTRIC SYSTEM



THIS TAG TO BE ATTACHED TO METER
PANEL & OPTIONAL LOAD CENTER

CAUTION:
SOLAR ELECTRIC CIRCUIT



THIS TAG TO BE ATTACHED TO AC
& DC CIRCUIT EQUIPMENT

ALL LABELS:

- THE LABELS SHALL BE PERMANENTLY ATTACHED TO THE APPROPRIATE PANEL.
- AC & DC CONDUIT, RACEWAY, ENCLOSURES, CABLE ASSEMBLIES AND JUNCTION BOXES SHALL BE RED BACKGROUND MATERIAL WITH WHITE LETTERING MADE OF DURABLE ADHESIVE, REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT PER UL 969; TO ALERT FIRE SERVICE TO AVOID CUTTING THEM OFF.
- LABELS SHALL LIST THE TYPE OF GENERATION INSTALLED, EXAMPLE ABOVE IS SHOWN FOR A SOLAR INSTALLATION. REFER TO TAGGING SPECIFICATION FOR MORE INFORMATION.
- OTHER LABELS REQUIRED SHALL MEET THE CEC/NEC REQUIREMENTS, SEE SECTION IV OF THIS SPECIFICATION.



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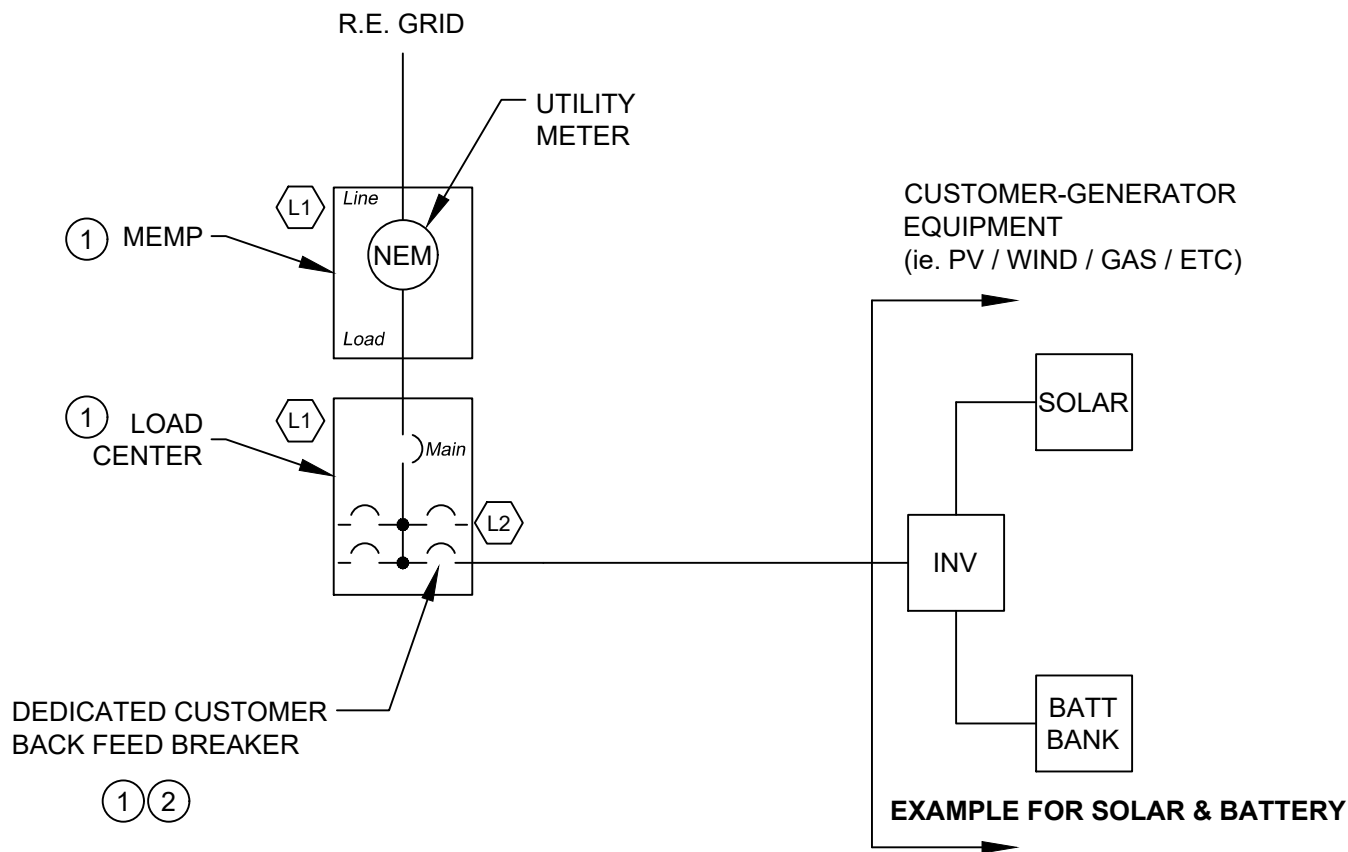
TYPICAL INTERCONNECTION SINGLE LINE
FOR COIG SYSTEMS

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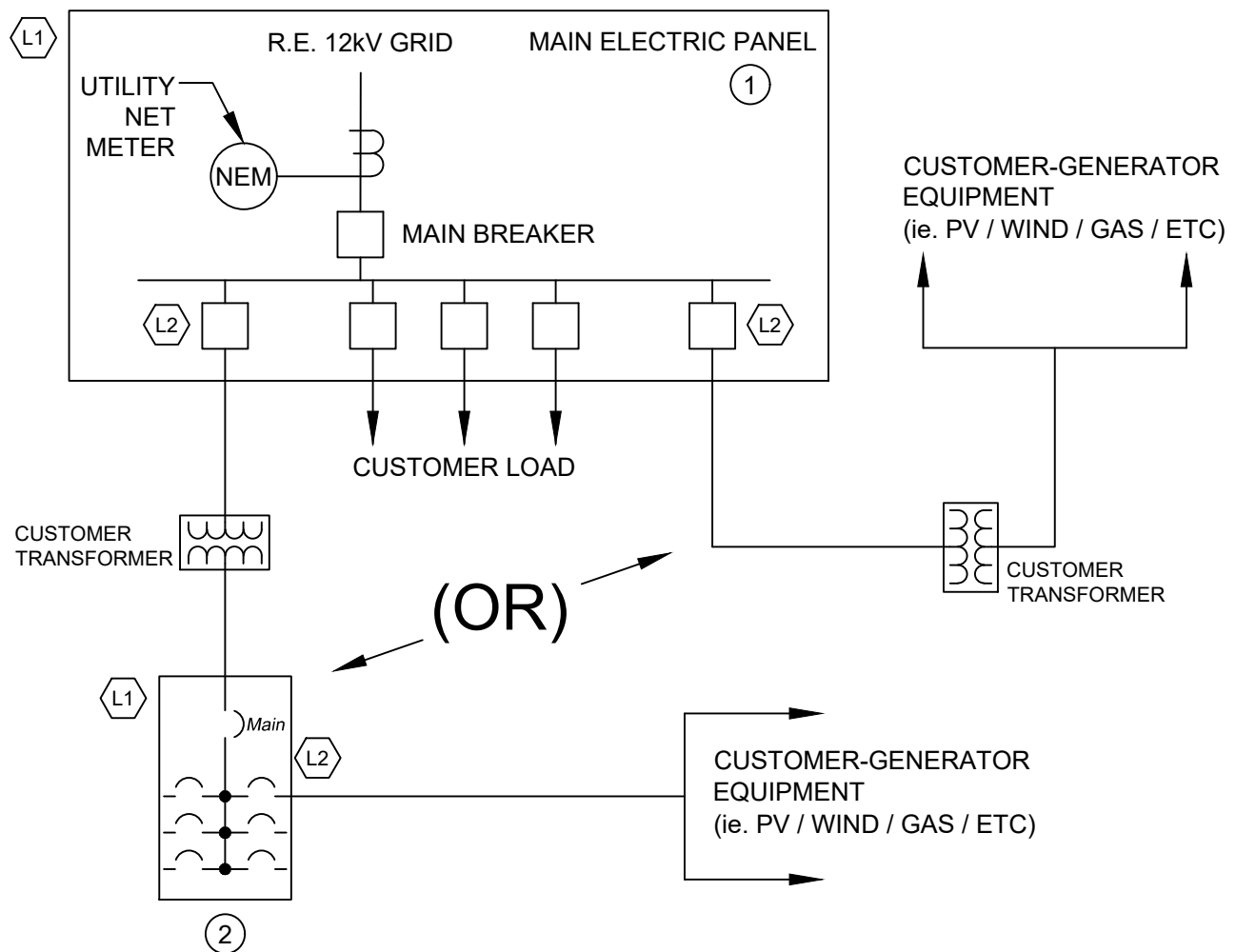
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NOTES:

1. SERVICE ENTRANCE PANELS SHALL MEET CEC/NEC AND THE CITY OF ROSEVILLE ACCEPTABILITY PAGES AS PUBLISHED BY EUSERC AT WWW.EUSERC.COM.
2. ALL ELECTRICAL MUST MEET CITY OF ROSEVILLE BUILDING AND MUNICIPAL CODES.
3. SEE PAGE 34 FOR LABEL DESIGNATIONS (L1 & L2)



NOTES:

1. SERVICE ENTRANCE PANELS SHALL MEET CEC/NEC AND THE CITY OF ROSEVILLE ACCEPTABILITY PAGES AS PUBLISHED BY EUSERC AT WWW.EUSERC.COM.
2. ALL ELECTRICAL MUST MEET CITY OF ROSEVILLE BUILDING AND MUNICIPAL CODES.
3. SEE PAGE 34 FOR LABEL DESIGNATIONS (L1 & L2)