GENERATOR INTERCONNECTION APPLICATION
For All Projects with Aggregate Generator Output
Less Than or Equal to 550 Kw
Also Serves as Application for Distributed Generation Program

ELECTRIC UTILITY CONTACT INFORMATION	FOR OFFICE USE ONLY
Consumers Energy Interconnection Coordinator 1945 West Parnall Road (Room P12-235) Jackson, MI 49201 517-788-1432 Interconnection E-mail: customer.generation@cmsenergy.com	Application Number Date and Time Application Received Application Processing Track What type of POI Interconnection is this?

CUSTOMER / ACCOUNT INFORMATION Electric Utility Customer Information (As shown on utility bill)	
Name or Entity on Electric Account	Customer Mailing Address (Street, City, State, and Zip Code)
Customer Phone Number	Customer E-mail Address
Name of Project (Level 3 only)	**What Level are you applying for?**
Electric Service Account(s) #	Electric Service Meter Number(s)
Note: If multiple meters on site for interconnection, please list all account and meter numbers with a ";" between each.	
Are you applying for the Distributed Generation Program? (**Note**: Marking "no" means "interconnection only":	**Are you applying for the Simple Renewable Program?**
Including the applied for generation, are there any other generators onsite that are currently apart of a Customer Generation program? Programs include: EARP, Legacy Net Metering, DG, Interconnection Only or a Power Purchase Agreement.	
Are you interested in selling Renewable Energy Credits? (Optional) Yes No	**Do you have another Electric Supplier that is not Consumers Energy?**
Does this project involve renovation to an existing structure or new construction?	**Rate Type: residential, commercial, or industrial**
Does the site have electric service?	
Notes: 1. Account/meter not required for new construction where a permanent meter has not been installed. 2. You must apply to both the Distribution Utility and your Alternate Energy Provider (if applicable) for Distributed Generation 3. If you are applying for Distributed Generation, you may also apply online at https://consumersenergy.powerclerk.com	

SYSTEM INSTALLER/ DEVELOPER INFORMATION Project Developer/Single Point of Contact	
Name and Title	Phone Number
Company Name and Address	
E-Mail Address	

LICENSED CONTRACTOR INFORMATION
Name, Company
Address
Phone Number

E-Mail Address
Professional Engineer or Licensed Electrician Name, Number and expiration date

EXISTING GENERATION ON SITE	
Other than electrically isolated backup generation, are there any existing generators on site? 2. Are you modifying or adding capacity to an existing system?) 1. Existing systems onsite (YN) 2. Are you modifying or adding capacity to an existing system	What program is the existing generation enrolled in?
System Type (Solar, Wind, Anaerobic Digester, Diesel, Other etc.)	Other System Type:
Existing Generator(s) Aggregate Nameplate Capacity kW	Is the proposed new technology different than the existing technology type?

GENERATION SYSTEM SITE INFORMATION	
Physical Site Service Address (If Not Billing Address). Include City and Zip Code Approximate GIS Location (Latitude, Longitude):	
Physical Site Township	Physical Site County
Annual Site Requirements Without Generation in kWh kWh/year	Peak Annual Site Demand in kW (only for Industrial customers billed on Demand Rates) kW
Describe the project type. (Base load, Peaking, Intermittent):	
Attached Site Plan Page #	Attached Electrical One-Line Drawing Page #
Level 1 and 2 do not need to show any proof of insurance. (Attach) Level 3 Applicant's Proof of General Liability Insurance for a minimum of $1,000,000. Per MSPC rule – Applicant must maintain a minimum of $1,000,000 General Liability Insurance for Level 3 ONLY.	
Level 1 and 2 proof of site control may be demonstrated by the site owner's signature and contact information on the application. Level 3 site control may be demonstrated by providing documents (must be attached): - Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing and operating a DER. - An enforceable option to purchase or acquire a leasehold site - A legally binding agreement transferring a present real property right to specified real property along with the right to construct and operate a DER on the specified real property for a period not less than 5 years.	

GENERATION SYSTEM MANUFACTURER INFORMATION	
System Type (Solar, Wind, Anaerobic Digester, Diesel, etc.)	Generator Type (Inverter, Induction, Synchronous)
Total Generator(s) Nameplate AC Rating	Expected Annual Output in Kilowatt Hours kWh/year
Generator A.C. Operating Voltage	Wiring Configuration (Single Phase, Two Phase, Three Phase)
Export Capacity (kW):	If power limited, list protective method (reverse power relay, min-import relay, UL PCS Certification, Load Offset):
If load offset, list the verifiable minimum load:	If Wind Turbine, what is the kW Rating?

BATTERY STORAGE INFORMATION	
Will a stored energy system be onsite (Battery):	Will there be more than one make and model battery type used in the design? If yes, how many? :
Total Battery Max Output Rating (kW): (All Batteries)	Total Number of All Batteries on site:
Aggregate Storage Capacity (All Batteries) : (kWh) *(Note on Calculation: Sum of (Battery 1 Capacity (kWh) x # of Battery 1 Onsite) + (Battery 2 Capacity (kWh) x # of Battery 2 Onsite)*	
Battery 1 Chemistry Type: Lead Acid, Lithium Ion, Lithium Iron Phosphate or Other: Other:	
Battery 1 Information ***Include Battery Spec Sheet in Application***	**Battery 2 Information** ***Include Battery Spec Sheet in Application***
Is Battery 1 AC or DC coupled:	Is the Battery 2 AC or DC coupled:
Battery 1 manufacturer:	Battery 2 manufacturer:
Battery 1 Model Name:	Battery 2 Model Name:
# of Battery 1 style onsite:	# of Battery 2 Style onsite:
Battery 1 Capacity (kWh) per battery cabinet Make/Model 1:	Storage Capacity of Battery 2(kWh):
Maximum Continuous Output Rating (kW) per battery cabinet Make/Model 1:	Maximum Continuous Output Rating (kW) per battery cabinet Make/Model 2:

METER SOCKET DETAIL INFORMATION (Level 2 and 3 only)	
Electrician's Name:	Electrician's phone number:
Electric phase: Single, Two or Three:	
How many wires (2 or 3) for the Single Phase configuration:	How many wires (2 or 3) for the Two Phase configuration:
How many wires (3 or 4) for the Three Phase configuration:	What is the wire gauge leaving the panel going into the meter socket:
Single or Parallel conductor going in?	Wire size coming out of the meter socket (level 2 and 3 generator Meter info):
Is the service to the site Overhead (OH) or Underground (UG):	Single or Parallel conductor coming out?
Generator AC Operating Voltage (120/240, 240/480, 120/208 three phase or 480* (*with Consumers Energy approval only):	
What is the GPS Location of the Generation Meter?	
Meter socket pickup location is based on the nearest Consumers Energy Service Center to the project. Consideration may be taken if your requested pickup location is different than assignment. **METER SOCKET RETRIEVAL WILL NOT BE AVAILABLE UNTIL APPROVAL HAS BEEN GRANTED FOR CONSTRUCTION.**	
Meter Socket requested pick up location:	Meter socket requested pick up date:

ISOLATING TRANSFORMER(S) BETWEEN GENERATOR(S) AND UTILITY	
Are there any isolating transformer(s) between the generator(s) and utility:	
Transformer Model Number	Transformer Manufacturer
What is the rated kV of each winding? (Numerical Valus only)? (Rated kV and connection (delta, wye, wye-gnd) of each winding)	What is the kVA of each winding? (Numerical Values only)
What type of Connection does this winding have?	
What is the basic lightning impulse insulation Level (BIL) of each winding?	What are the fixed taps available for each winding?
What is the positive/negative range for any load tap changing (LTC) windings?	What is the %Z impedance on transformer self cooled rating
Percent Excitation current at rated kV	Load Loss Watts at full load or X/R ratio Full Load or X/R ratio

ATTACHMENTS

All applications require an attached Site Plan and Electrical One-Line Drawing

- See Attached Sample for Example Site Plan
- See Attached Sample for Example Inverter Generator Electrical One-Line Drawing
- See Attached Sample for Example Synchronous Generator Electrical One-Line Drawing
- See Attached Sample for Example Induction Generator Electrical One-Line Drawing
- For Levels 2 and 3, the One-Line Drawing must be signed and sealed by a licensed professional engineer, licensed in the State of Michigan or by an electrical contractor licensed by the State of Michigan with the electrical contractor's license number noted on the diagram.

Level 3 Applicant's Proof of General Liability Insurance for a minimum of $1,000,000 for Level 3 Page #

Level 3 Attached Site Control may be demonstrated by providing documents (must be attached): Page #

- Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing and operating a Distributed Energy Resource (DER).
- An enforceable option to purchase or acquire a leasehold site.
- A legally binding agreement transferring a present real property right to specified real property along with the right to construct and operate a DER on the specified real property for a period not less than 5 years.

Microinverter Policy

Once the project has been approved for construction, pictures of installed equipment must be submitted on forms. Microinverter picture submissions should include one of the following:

1. Pictures of all uninstalled microinverters at the physical location including unique identifiers such as a serial number. Pictures that are not taken at the physical location will result in return for correction.
2. A Manufacturer System Summary Report may be provided in lieu of pictures providing it has the following identifiers:
    - Physical site location of the installed equipment.
    - Unique serial or manufacturer number(s) of installed equipment.
    - Equipment numbers should not be the same as other installs.

Date report was generated.

INVERTER GENERATOR - BASED SYSTEMS				
Will there be more than one type of inverter used in the design:		Number of Unique Inverters by Make/Model:		Total Inverters:
Count of Inverters by Type (up to 7 may be displayed)	**Manufacturer & Model (Name/Number)**	**Inverter Power Rating (kW)**	**Power Factor**	**Output Voltage**

Total Generator(s) Nameplate AC Rating kWac:	Total Generator(s) Nameplate DC Rating, where applicable kWdc:	Does the project intend to inject/flowback into the grid? What is the Export Capacity of the project? kWac:
Is this inverter(s) certified?	Is the Inverter tested to IEEE 1547.1?	Will the inverter(s) be power limited?
Are microinverters being installed on-site?		

SYNCHRONOUS AND INDUCTION GENERATOR - BASED SYSTEMS

The following information on these system components shall appear on the Electrical One-Line Drawing:

- **Breakers – Rating, location and normal operating status (open or closed)**
- **Buses – Operating voltage**
- **Capacitors – Size of bank in kVAR**
- **Circuit Switchers – Rating, location and normal operating status (open or closed)**
- **Current Transformers – Overall ratio and connected ratio**
- **Fuses – Normal operating status, rating (Amps) and type**
- **Generators – Capacity rating (kVA), location, type and method of grounding**
- **Grounding Resistors – Size (Ohms) and current (Amps)**
- **Isolating Transformers – Capacity rating (kVA), location, impedance, voltage ratings, primary and secondary connections, and method of grounding**
- **Potential Transformers – Ratio and connection**
- **Reactors – Ohms per phase**
- **Relays – Types, quantity, IEEE device numbers, and operator lines indicating the device initiated by the relays**
- **Switches – Location and normal operating status (open or closed), type, and rating**
- **Tagging Point – Location and identification**

SYNCHRONOUS GENERATORS		
GENERATOR INFORMATION		
Generator Nameplate Voltage	Generator Nameplate Watts or Volt-Amperes	
Generator Nameplate Power Factor (pf)	RPM	
Manufacturer	Model Name	Model Number

TECHNICAL INFORMATION	
Stator Resistance in ohms	
Negative Sequence Reactance in ohms	
Zero Sequence Reactance in ohms	
Neutral Grounding Resistor in ohms (If Applicable)	
Direct Axis Transient Reactance (unsaturated) in ohms	
Direct Axis Transient Reactance (saturated) in ohms	
Direct Axis Sub-Transient Reactance (unsaturated) in ohms	
Direct Axis Sub-Transient Reactance (saturated) in ohms	
Direct Axis Reactance (Unsaturated)	
Direct Axis Reactance (Saturated)	
Quadrature Axis Transient Reactance (Unsaturated)	
Quadrature Axis Transient Reactance (unsaturated) in ohms	
Leakage Reactance	
Direct Axis Transient Open Circuit Time Constant	
Quadrature Axis Transient Open Circuit Time Constant	
Direct Axis Sub-Transient Open Circuit Time Constant	
Quadrature Axis Sub-Transient Open Circuit Time Constant	
Short Circuit Current Contribution From Generator at the Point of Common Coupling	
Rotating Inertia of Overall Combination Generator, Prime Mover, Couplers and Gear Drives	
Station Power Load When Generator is Off-Line, Watts, pf	
Station Power Load During Start-Up, Watts, pf	
Station Power Load During Operation, Watts, pf	

INDUCTION GENERATORS		
GENERATOR INFORMATION		
Generator Nameplate Voltage	Generator Nameplate Watts or Volt-Amperes	
Generator Nameplate Power Factor (pf)	RPM	
Manufacturer	Model Name	Model Number

TECHNICAL INFORMATION	
Minimum and Maximum Acceptable Terminal Voltage	
Synchronous Rotational Speed	
Rotation Speed at Rated Power	
Slip at Rated Power	
Minimum and Maximum Acceptable Terminal Voltage	
Motoring Power (kW)	
Neutral Grounding Resistor in ohms (If Applicable)	
I2 2t or K (Heating Time Constant)	
Rotor Resistance in ohms	
Stator Resistance in ohms	
Stator Reactance in ohms	
Rotor Reactance in ohms	
Magnetizing Reactance	
Short Circuit Reactance	
Exciting Current	
Temperature Rise	
Frame Size	
Design Letter	
Reactive Power Required in Vars (No Load)	
Reactive Power Required in Vars (Full Load)	
Short Circuit Current Contribution from Generator at the Point of Common Coupling	
Rotating Inertia, H in Per Unit on kVA Base, of Overall Combination Generator, Prime Mover, Couplers and Gear Drives	
Station Power Load When Generator is Off-Line, Watts, pf	
Station Power Load During Start-Up, Watts, pf	
Station Power Load During Operation, Watts, pf	
Rotating Inertia, H in Per Unit on kVA Base, of Overall Combination Generator, Prime Mover, Couplers and Gear Drives	
Station Power Load During Operation, Watts, pf	
Station Power Load During Start-Up, Watts, pf	
Station Power Load when Generator is Off-Line, Watts, pf	

CUSTOMER AND PROJECT DEVELOPER/CONTRACTOR SIGNATURES AND FEES

Non-Export Application Only

$100 + $1/kWac (certified) $100 +$2 / kWac (non-certified) OR

Combined Interconnection Application and Distributed Generation

$50 (Levels 1 - 3) OR

Combined Interconnection Application and Simple Renewable Program

$150 (Levels 1 – 2) OR

Interconnection Application Only (No Distributed Generation or Simple Renewable Program)

$100 + $1/kWac (certified) $100 +$2 / kWac (non-certified)

Check # Money Order #

Please send a check for the fee payable to ***Consumers Energy*** along with the signed and completed application to:

Consumers Energy
Interconnection Coordinator
1945 West Parnall Road (Room 12-235)
Jackson, MI 49201

Request invoice to pay electronically: send email to customer.generation@cmsenergy.com

To the best of my knowledge, all the information provided in this application form is complete and correct.

- I understand Consumers Energy is not obligated to begin reviewing my application until payment and completed application including attachments has been received:
- I understand that by providing an email for a system installer or designer, they will be copied on all communications related to this application including my eligibility regarding a satisfactory payment history.:
- I declare under the penalty of perjury, to the best of my knowledge, all the information provided in this application form is complete and correct:
- I understand that along with testing the system via Commissioning Test Report, pictures of installed equipment must be provided:

This application is being submitted by Customer Developer/Installer

Signature: Date

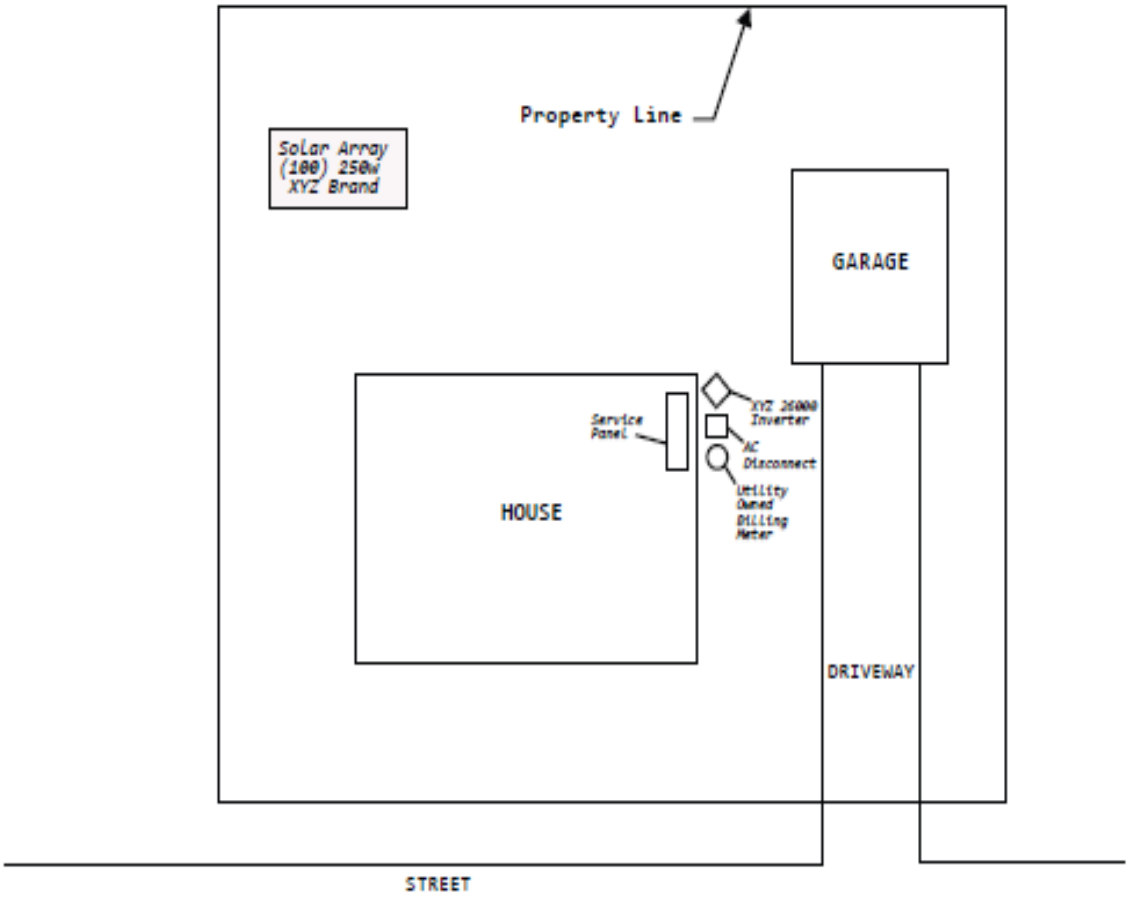
Project Developer/Installer Signature (if applicable): Date

Note: Refer to the applicable "Consumers Energy Company Generator Interconnection Requirements" for a detailed explanation of the Interconnection Process, Fees, Timelines, and Technical Requirements.

SAMPLE SITE PLAN – PROVIDED FOR REFERENCE ONLY
Can be a separate document

Level 1 Site Plan

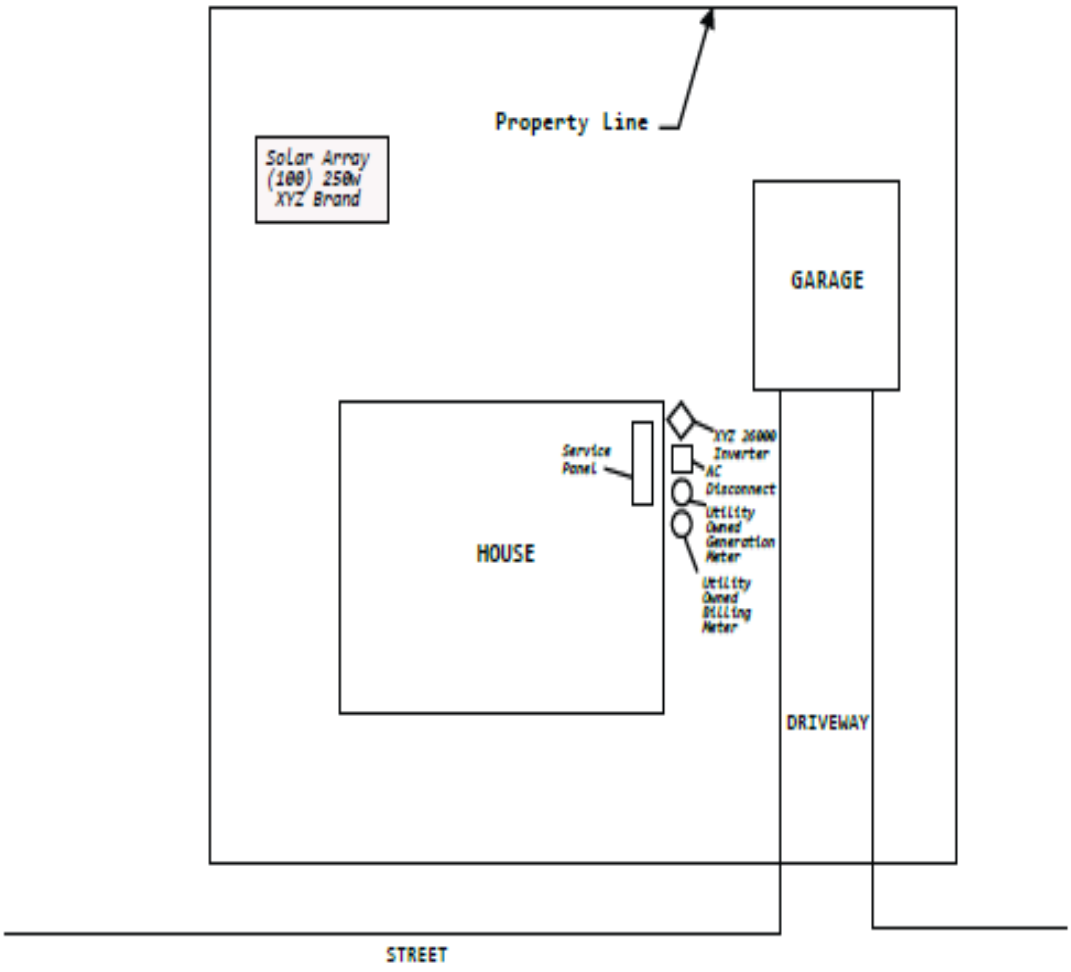
John Doe
4321 Apple Dr
Jackson, MI 48118



Level 2 & 3 Site Plan

John Doe
4321 Apple Dr
Jackson, MI 48118

Electrical Contractor
Bob Smith
License #: 123456
Bob Smith



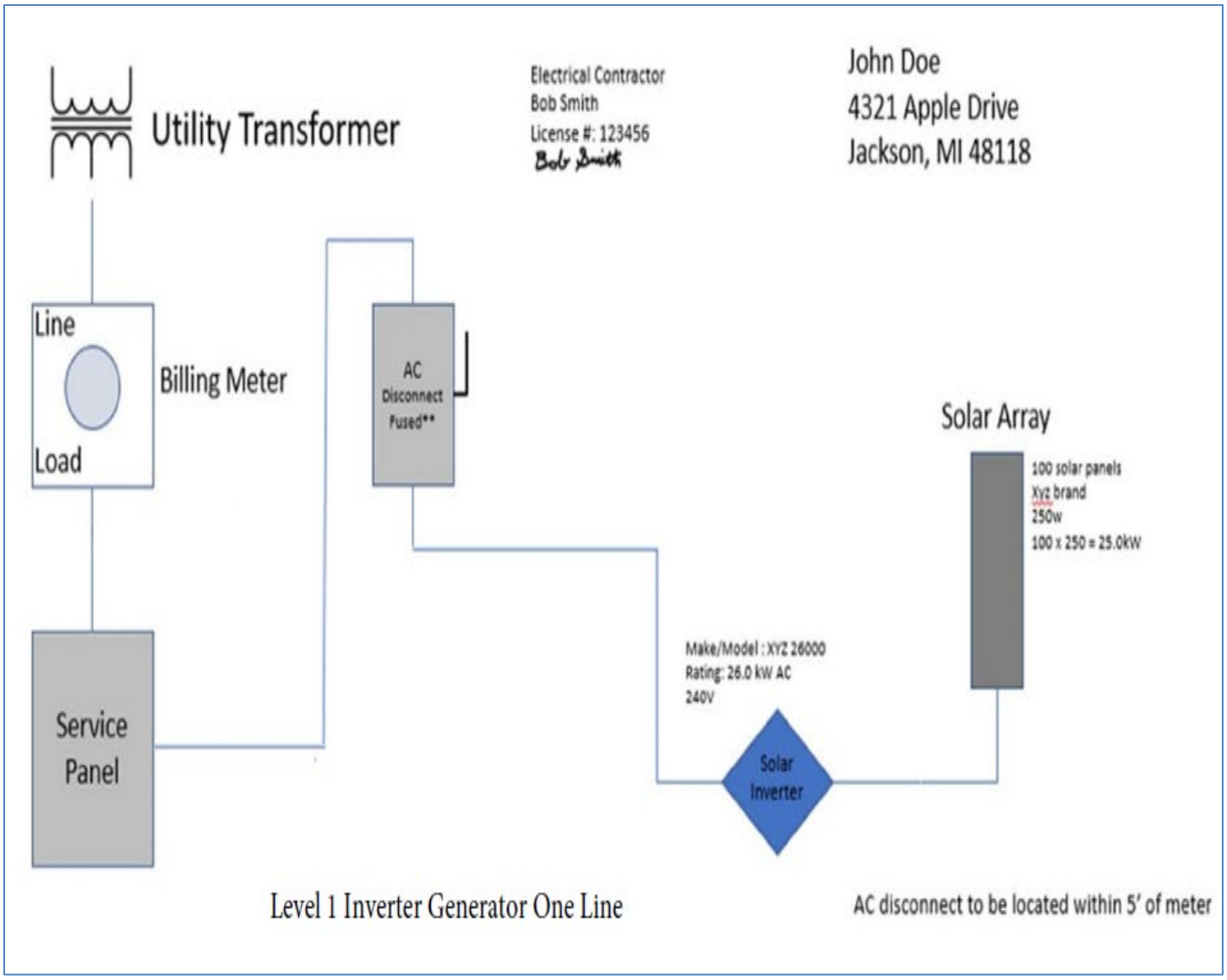
Weblink to State of Michigan / Plats:

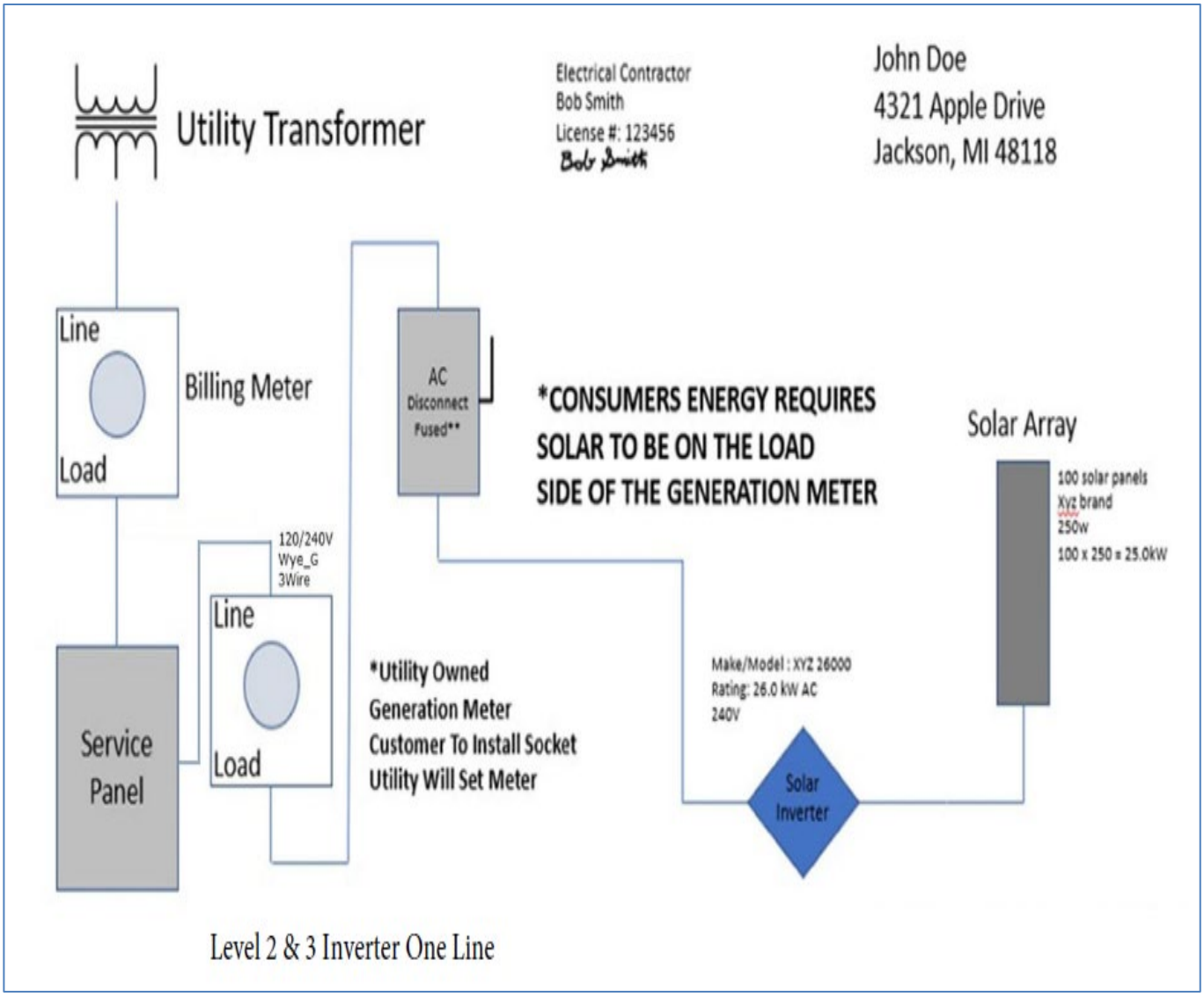
http://www.cis.state.mi.us/platmaps/sr_subs.asp

Note: Legible hand drawn site plans are acceptable. Level 3 should be not hand-drawn.

SAMPLE ELECTRICAL ONE-LINE DRAWING – PROVIDED FOR REFERENCE ONLY
Can be separate document

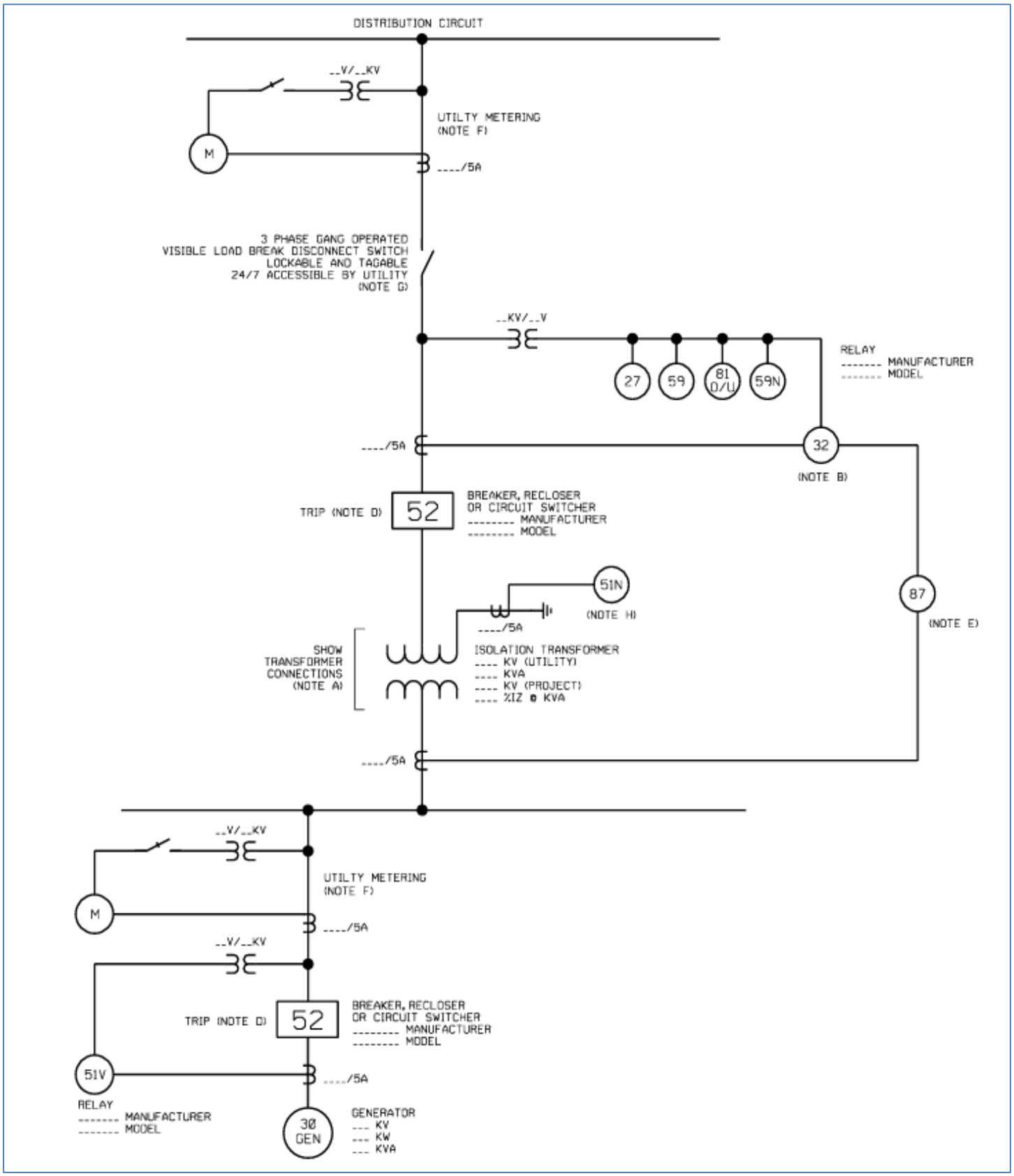
INVERTER GENERATOR
PE Stamp required for levels 2 & 3
Level 2 can have a Licensed Contractor stamp instead of PE Stamp





Note: Legible Hand Drawn One-Line is Acceptable

SAMPLE ELECTRICAL ONE-LINE DRAWING – PROVIDED FOR REFERENCE ONLY
TYPICAL ISOLATION AND FAULT PROTECTION FOR SYNCHRONOUS GENERATOR



LEGEND

27 Undervoltage
32 Reverse Power (Not Required for Flow-Back)
51N Neutral overcurrent (required for grounded secondary)
59 Overvoltage
59N Zero sequence overvoltage (assuming ungrounded secondary on power transformer)
81o/u Over/Underfrequency

NOTES

A) See technical requirements for permissible transformer connections. Transformer connections proposed shall be shown on the one-line diagram by the Applicant. Transformer connections and primary grounding to be approved by Utility.

B) The 27, 59, 59N, and 81O/U relays shall be connected to VTs located at the point of common coupling, unless otherwise approved by Consumers Energy. VTs connected to the Project side of transformers without zero sequence continuity (e.g. ungrounded wye or delta winding connections) on a grounded distribution system is not allowed.

C) Any additional equipment necessary to protect the Project is the sole responsibility of the Applicant to determine, design, and apply.

D) Tripping of an approved interrupting device between the point of common coupling and distributed energy resource is acceptable, depending on if the Applicant wants to serve its own isolated load after loss of Utility service.

E) Transformers 15 MVA (self-cooled rating) or larger shall be equipped with differential (87) relaying.

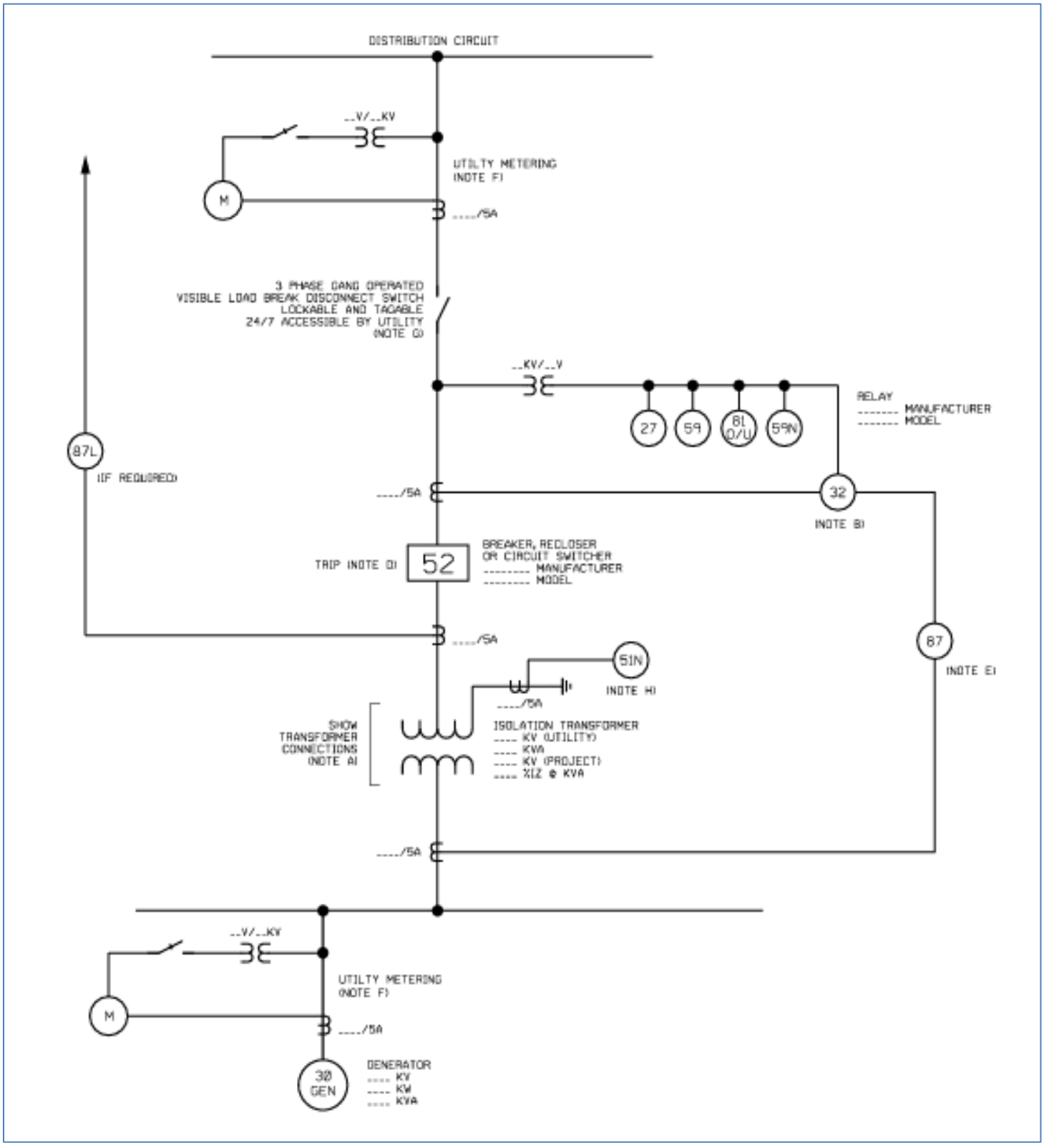
F) Utility metering equipment will be supplied by the utility.

G) The isolation device is to be located on the utility side of the metering CTs and VTs when connected to the high voltage distribution system.

H) The 51N relay is required for isolation transformers with a Delta (Project) and Grounded Wye (Utility) winding connections. Refer to Note A for permissible transformer connections.

SAMPLE ELECTRICAL ONE-LINE DRAWING – PROVIDED FOR REFERENCE ONLY
TYPICAL ISOLATION AND FAULT PROTECTION FOR INDUCTION GENERATOR

PE Stamp required for levels 2 & 3
Level 2 can have a Licensed Contractor stamp instead of PE Stamp



LEGEND

27 Undervoltage
32 Reverse Power (Not Required for Flow-Back)
51N Neutral overcurrent (required for grounded secondary)
59 Overvoltage
59N Zero sequence overvoltage (assuming ungrounded secondary on power transformer)
81o/u Over/Underfrequency

NOTES

A) See technical requirements for permissible connection configurations and protection. Transformer connections proposed shall be shown on the one-line drawing by the Applicant. Transformer connection and secondary grounding to be approved by Utility.

B) The 27, 59, 59N, and 81O/U relays shall be connected to VTs located at the point of common coupling, unless otherwise approved by Consumers Energy. VTs connected to the Project side of transformers without zero sequence continuity (e.g. ungrounded wye or delta winding connections) on a grounded distribution system is not allowed.

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