

GENERATOR INTERCONNECTION APPLICATION
FOR ALL PROJECTS WITH AGGREGATE GENERATOR OUTPUT OF
MORE THAN 2 MW

Required Documentation for all Project Types

- | | |
|---|-----------|
| 1. Customer's Proof of General Liability Insurance for a minimum of \$1,000,000
(Per MPSC Order in Case No. U-15787 - Customer must maintain a minimum of \$1,000,00 General Liability Insurance.) | Page # -- |
| 2. Attached Site Plan: | Page # -- |
| 3. Attached Electrical One-Line Drawing:
(Per MPSC Order in Case No. U-15787, the one-line diagram must be signed and sealed by a licensed professional engineer, licensed in the State of Michigan) | Page # -- |
| 4. Attached Electrical Three-Line Drawing: | Page # -- |
| 5. Attached Specification for Equipment | Page # -- |
| 6. Applicable Technical Appendix (A-C) | |

Note: The following information on these system components shall appear on the preliminary Detail One-Line. See Sample One-Line diagram in Appendix D-F

- 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, connected ratio
- Fuses - normal operating status, rating (Amps), type
- Generators - Capacity rating (kVA), location, type, method of grounding
- Grounding Resistors - Size (ohms), current (Amps)
- Isolating transformers - Capacity rating (kVA), location, impedance, voltage ratings, primary and secondary connections and method of grounding
- Potential Transformers - Ratio, connection
- Reactors - Ohms/phase
- Relays - Types, quantity, IEEE device number, operator lines indicating the device initiated by the relays.
- Switches - Location and normal operating status (open or closed), type, rating
- Tagging Point - Location, identification

Customer and Contractor Signature and Fees

o Attached \$500 Interconnection Application Fee (Check # / Money Order #)
(Sign and Return complete Application with Application Fee to Electric Utility Contact)

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

Customer Signature

Contractor Signature (if applicable)

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APPENDIX A

Synchronous Generators

Generator Information

- a. Generator Nameplate Voltage
- b. Generator Nameplate Watts or Volt-Amperes
- c. Generator Nameplate Power Factor (pf)
- d. RPM

a.
b.
c.
d.

Technical Information

- e. Minimum and Maximum Acceptable Terminal Voltage
- f. Direct axis reactance (saturated)
- g. Direct axis reactance (unsaturated)
- h. Quadrature axis reactance (unsaturated)
- i. Direct axis transient reactance (saturated)
- j. Direct axis transient reactance (unsaturated)
- k. Quadrature axis transient reactance (unsaturated)
- l. Direct axis sub-transient reactance (saturated)
- m. Direct axis sub-transient reactance (unsaturated)
- n. Leakage Reactance
- o. Direct axis transient open circuit time constant
- p. Quadrature axis transient open circuit time constant
- q. Direct axis subtransient open circuit time constant
- r. Quadrature axis subtransient open circuit time constant
- s. Open Circuit saturation curve
- t. Reactive Capability Curve showing overexcited and underexcited limits (Reactive Information if non-synchronous)
- u. Excitation System Block Diagram with values for gains and time constants (Laplace transforms)
- v. Short Circuit Current contribution from generator at the Point of Common Coupling
- w. Rotating inertia of overall combination generator, prime mover, couplers and gear drives
- x. Station Power load when generator is off-line, Watts, pf
- y. Station Power load during start-up, Watts, pf
- z. Station Power load during operation, Watts, pf

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APPENDIX B

Induction Generators

Generator Information

- a. Generator Nameplate Voltage
- b. Generator Nameplate Watts or Volt-Amperes
- c. Generator Nameplate Power Factor (pf)
- d. RPM

a.
b.
c.
d.

Technical Information

- e. Synchronous Rotational Speed
- f. Rotation Speed at Rated Power
- g. Slip at Rated Power
- h. Minimum and Maximum Acceptable Terminal Voltage
- i. Motoring Power (kW)
- j. Neutral Grounding Resistor (If Applicable)
- k. I_2^2t or K (Heating Time Constant)
- l. Rotor Resistance
- m. Stator Resistance
- n. Stator Reactance
- o. Rotor Reactance
- p. Magnetizing Reactance
- q. Short Circuit Reactance
- r. Exciting Current
- s. Temperature Rise
- t. Frame Size
- u. Design Letter
- v. Reactive Power Required in Vars (No Load)
- w. Reactive Power Required in Vars (Full Load)
- x. Short Circuit Current contribution from generator at the Point of Common Coupling
- y. Rotating inertia, H in Per Unit on kVA Base, of overall combination generator, prime mover, couplers and gear drives
- z. Station Power load when generator is off-line, Watts, pf
- aa. Station Power load during start-up, Watts, pf
- bb. Station Power load during operation, Watts, pf

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v.
w.
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aa.
bb.

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APPENDIX C

Inverter Generators

Generator Information

- a. Generator Nameplate Voltage
- b. Generator Nameplate Watts or Volt-Amperes
- c. Generator Nameplate Power Factor (pf)
- d. RPM

a.
b.
c.
d.

Technical Information

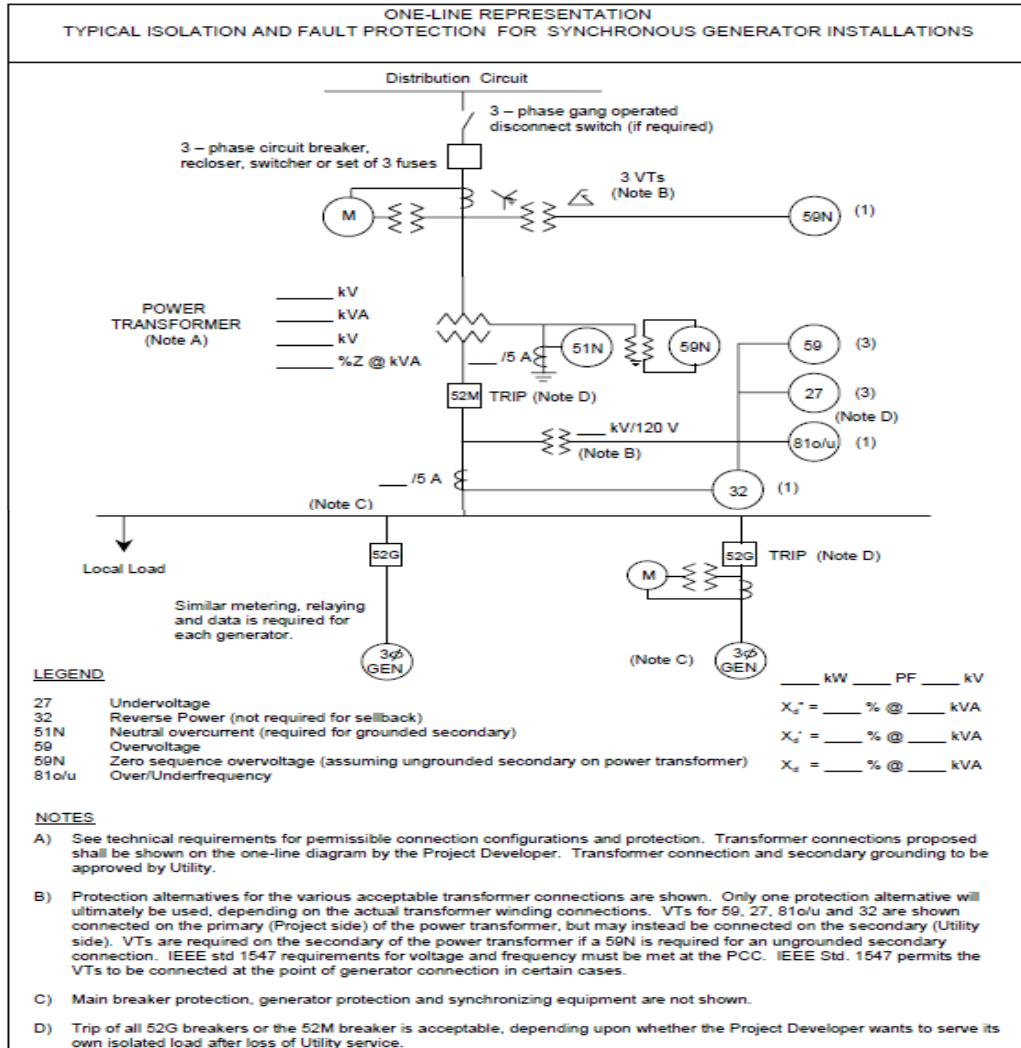
- e. Generator Nameplate Voltage
- f. Generator Nameplate Watts or Volt-Amperes
- g. Generator Nameplate Power Factor (pf)
- h. Minimum and Maximum Acceptable Terminal Voltage
- i. Reactive Capability Curve showing overexcited and underexcited limits (Reactive Information if non-synchronous)
- j. Short Circuit Current contribution from generator at the Point of Common Coupling
- k. Station Power load when generator is off-line, Watts, pf
- l. Station Power load during start-up, Watts, pf
- m. Station Power load during operation, Watts, pf

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APPENDIX D

Synchronous Generators



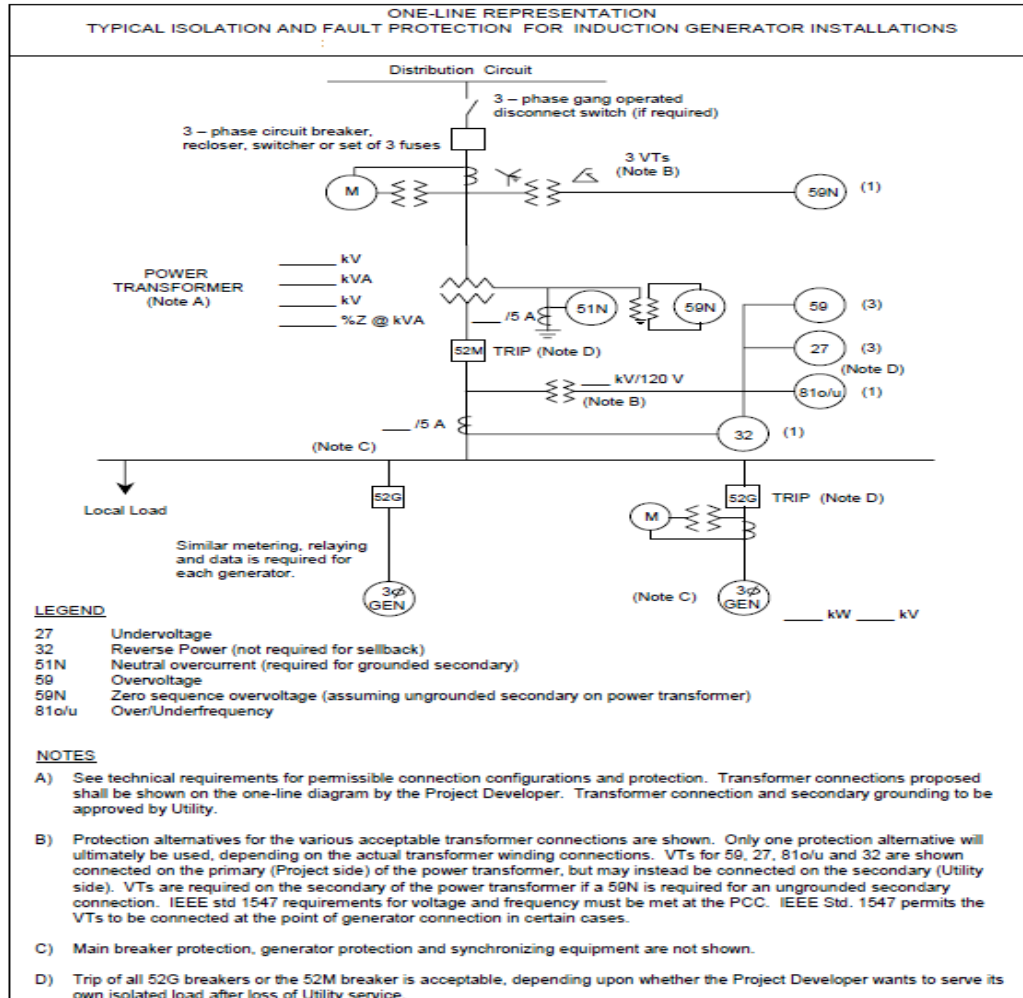
One - Line Diagram

Name of the Professional Engineer _____
 PE License Number _____
 Address _____
 Signature _____

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APPENDIX E

Induction Generators



One - Line Diagram

Name of the Professional Engineer _____

PE License Number _____

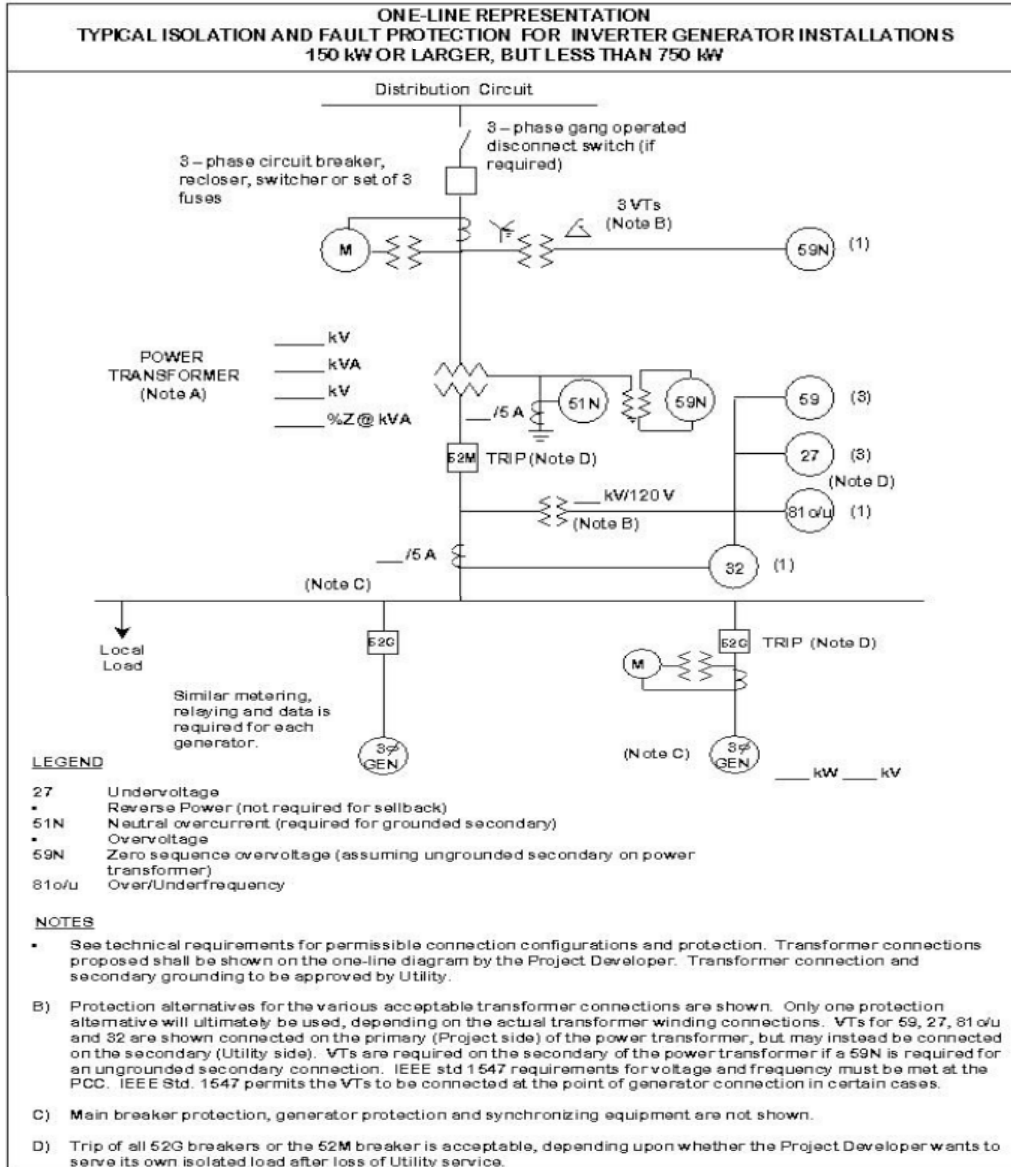
Address _____

Signature _____

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APPENDIX F

Inverter Generators



One - Line Diagram

Name of the Professional Engineer _____
 PE License Number _____
 Address _____
 Signature _____