

APPENDIX A

INTERCONNECTION APPLICATION INSTRUCTIONS

The chart below shows the appropriate interconnection application to be completed for the GF installation.

| | | |
|-------------------------------------|---|--|
| Non-Residential Applications | Behind the Meter smaller than 1 kW | <p>No APS application is required.</p> <p>Customer must still follow all code and local permitting requirements.</p> |
| | Behind the Meter 1 kW or larger | <p>Use the appropriate application (Appendix B or C) in the pages that follow.</p> |
| | Wholesale Generation | <p>Do not use the application in the pages that follow. Instead, find the application via the following:</p> <ol style="list-style-type: none"> 1. For FERC interconnections, use the application located at APS' Oasis Website: http://www.oatioasis.com/azps/index.html 2. For Non-FERC interconnections, use the Study Agreement accessed through the Wholesale/Non-FERC Interconnection Section at: http://www.aps.com/dg |
| Residential Applications | Systems less than 1 kW | <p>No APS application is required.</p> <p>Customer must still follow all code and local permitting requirements.</p> |
| | Participating in APS Renewable Energy Incentive Program | <p>Do not use the applications in the pages that follow.</p> <p>Use the application located at http://www.aps.com/GoSolar</p> |
| | Not participating in the APS Renewable Energy Incentive Program | <p>Use the appropriate application (Appendix B or C) in the pages that follow.</p> |
| | Previously participated in the APS Incentive Program and are relocating the system to a different location | <p>Use the appropriate application (Appendix B or C) in the pages that follow.</p> |

APPENDIX A: INTERCONNECTION APPLICATION INSTRUCTIONS (cont'd)

All Applicants must do the following:

- 1) Complete the appropriate Interconnection Application for: Appendix B for Static Inverter applications or Appendix C for Rotating Machinery applications. Be sure to provide all required Supplementary Information contained in the relevant Appendix.
- 2) Provide a copy of the AHJ permit.
- 3) If the AHJ, as a matter of policy, does not review and approve and grant permits for Generating Facilities, then provide a duly signed copy of APS' Letter-in-Lieu of Electrical Clearance for the GF. Call or email APS for the form.
- 4) Forward all required items above to APS via the contact information below

Once received, APS will review the documentation to determine if the design appears to be in conformance with APS' requirements. APS reserves the right to require diagrams submitted to APS to be stamped by a Professional Engineer (Electrical) registered in the State of Arizona.

APS notification that the system design appears to be in conformance with APS' Interconnection Requirements does not represent APS' approval of system's design, nor is it an assurance that the system complies with all applicable electric codes, laws, regulations and requirements applicable to its installation and operation. APS requires re-submittal of approved Interconnection drawings if they are revised prior to the in-service date.

Note that the APS Interconnection Inspection is in addition to, not in lieu of, an AHJ inspection.

If general liability insurance is required per Section 5, then proof of insurance must be provided to APS prior to the date of interconnected operation in accordance with Section 5.

It is important that system not be interconnected or operated in parallel with APS' grid until APS has inspected the system and issues written notification that the system is in compliance with APS' requirements.

If you have any questions please call 602-371-6160 for assistance.

Please submit all documentation electronically in .pdf format to: Commercial-Renewables@aps.com

Include Customer name in subject line of email.

APPENDIX B

INTERCONNECTION APPLICATION FOR STATIC INVERTERS ONLY

| | |
|--|--------------------|
| | <i>For APS Use</i> |
| APS Reservation # (if applicable) | |
| APS Installation # | |

CUSTOMER OF RECORD INFORMATION

APS Customer Account Holders Name(s): _____

Customer Contact Person's Name: _____

Telephone (day): _____ E-mail: _____

Generating Facility Address: _____

Customer Contact Mailing Address: _____

APS Account Number: _____ APS Meter #: _____

Is there an existing Generator interconnected behind this meter? (Yes or No): _____

If Yes, please explain if this is a system expansion or a new independent system: _____

SITE INFORMATION

If the Property is owned by a person or entity other than the Customer of Record, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

PHOTOVOLTAIC SYSTEM INFORMATION - complete only for photovoltaic systems

A PV Module Manufacturer: _____ Model #: _____ # of Modules _____

B Utility Disconnect Switch Manufacturer: _____ Model #: _____

C If one or more dedicated (analog) metering phone line(s) are required by the applicable APS incentive program or rate schedule, verify that any such phone line will be a Tele-metering Data Circuit (VG36, Class B, Type 3, Full Duplex, Data Circuit with sealing current, 1200 Baud), and shall be capable of accepting Pass Modem Tones.

(Yes or No): _____ If No, explain: _____

APPENDIX B: INTERCONNECTION APPLICATION FOR STATIC INVERTERS (cont'd)

STATIC INVERTER INFORMATION

- A. Manufacturer: _____ Model #: _____
- B. Inverter nameplate continuous AC power output rating [kW] _____
No. of Units: _____ Total System Nameplate AC rating [kW]: _____
- C. Tested and Certified to UL1741? (Yes or No): _____
If No, explain: _____
- D. Energy Source (photovoltaic, thermal solar, wind, etc.): _____
- E. Prime Mover for Thermal Solar (concentrating dish, solar trough, with Sterling Engine, etc): _____

PROPOSED OPERATION

- A Specify whether the inverter will be programmed to operate in parallel with the utility or in backup ("battery charger") mode only:
_____ Parallel mode
_____ Backup mode
- B If the inverter will operate in parallel with the utility, specify which one of the following options you desire (refer to Section 10):
_____ Net metering in accordance with the EPR-6 rate
_____ Partial Requirements Service under the SCS rate (Solar, > 100 kW)
_____ Partial Requirements Service under the E-56 rate (Non Solar, > 100 kW)
_____ Sell excess energy to APS in accordance with the EPR-2 rate (\leq 100kW)
_____ None of the above. Specify: _____
- C Provide the anticipated project in-service date: _____
- D Is an electrical permit and/or inspection required by the Authority Having Jurisdiction?
(Yes or No): _____ If No, explain: _____

APPENDIX B: INTERCONNECTION APPLICATION FOR STATIC INVERTERS (cont'd)

E Is access by APS personnel to the Utility Disconnect Switch, electric service entrance, and any utility-required inverter metering in any way restricted or impeded (e.g. fences, locks, gates, walls, animals, etc.)?

(Yes or No):_____ If Yes, explain:_____

F If the GF aggregate generation nominal nameplate AC rating is 1MW or greater, and the GF is not installed in a Behind the Meter application is documentation (including FERC Form 556) confirming the GF has achieved QF status included with this Interconnection Application?

(Yes or No):_____ If No, explain:_____

G If the GF aggregate generation nominal nameplate AC rating is 1 MW or greater, and the GF is installed in a Behind the Meter application,

APPENDIX B: INTERCONNECTION APPLICATION FOR STATIC INVERTERS (cont'd)

IMPORTANT NOTE:

APS requires disclosure about the transaction that the Customer is undertaking with the installation of the interconnected GF on its premises. Will customer own and operate the GF; or is it hosting a third party-owned GF on its property; or does it plan to lease the GF to another party that will operate it; or does it plan to transfer ownership to a financial institution that will own it and lease it back to the Customer; or contract with a third-party operator that will conduct operation and maintenance of the GF, including the interconnection with the APS system? This disclosure is necessary because it is APS' policy to identify each party, other than the Customer, that may control or have the right to control the GF and its interconnection with the APS grid, in order that they sign a required acknowledgement that obligates them to comply with the terms and conditions of the Interconnection Agreement.

Please provide a reasonably detailed explanation of the transaction you are contemplating by answering the questions below, so that the required adjustments can be made in the Interconnection Agreement and its Appendices. Add an additional sheet if necessary to explain the details of your transaction.

SYSTEM OWNER

If the GF is owned by a person or entity, including Customer's grantee or lessee, other than the Customer, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

SYSTEM LESSEE

If the GF is not owned by the Customer, but is instead leased, identify the lessee and the lessor:

Lessee:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

Lessor:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

APPENDIX B: INTERCONNECTION APPLICATION FOR STATIC INVERTERS (cont'd)

SYSTEM OPERATOR

If the GF is to be operated and/or maintained by a person or entity other than the Customer, including the System Owner or Lessee, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

PROPERTY OWNER

If the Customer does not own the property upon which the GF is located, please complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

LANDLORD

If the Customer is a tenant upon which the GF is located, please complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

INTERCONNECTION PROCESS PRIMARY CONTACT INFORMATION

If the Primary Contact for coordinating the interconnection process is a person or entity other than the Customer, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

INSTALLER INFORMATION

If the installer is not the Primary Contact for the interconnection process, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

APPENDIX B: INTERCONNECTION APPLICATION FOR STATIC INVERTERS (cont'd)

SYSTEM DESIGN OR ENGINEERING FIRM INFORMATION

If the system is being designed by an entity or person other than the installer, please complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

CUSTOMER CERTIFICATION

This Application is complete and accurate to the best of my knowledge, and as the APS Customer of Record, I hereby grant APS permission to coordinate the interconnection process with the person or entity specified above, if completed.

Name: _____

Signature: _____ Date: _____

APPENDIX B: INTERCONNECTION APPLICATION FOR STATIC INVERTERS (cont'd)

SUPPLEMENTARY INFORMATION

Diagrams specified below shall be AHJ approved plans for non-residential Static Inverter based systems with an aggregate generator nominal AC nameplate rating of less than 1 MW and interconnecting at less than 12 kV, and to be submitted in pdf format for all projects. APS will not accept any copyrighted, proprietary or confidential drawings. These must be site specific regarding the information requested below, without extraneous information. All diagrams are to be professionally drawn, using only black print on white paper; and are not to be in color or shaded. Free hand drawn, and faxed diagrams will not be accepted by APS. All diagrams must include the project name and street address and include any updated diagram revision numbers and dates.

APS has prepared a set of sample diagrams that indicate the general layout, the level of detail, the necessary information, and the quality of the diagrams that will be required by APS for typical inverter-based systems. These diagrams are located at: www.aps.com/dg

Standard industry accepted electrical symbols shall be used on the diagrams, and the required size for all drawings is 11"x17".

(a) Electrical One-Line Diagram: Note (1)

Diagram(s) must show all generation sources (e.g. photovoltaic panels, wind generator, etc.) and any associated DC electrical components, inverter(s), any combiner panels, metering, Utility Disconnect Switch, as well as the electric service entrance. In addition, the utility meter, connection points of facility loads, and all other associated electrical components must be shown including any required dedicated metering phone lines, transfer trip communication path(s) along with the associated relaying and trip circuits, and any APS required Remote Terminal Unit (RTU) with associated communication channels and trip/block close/close permissive circuitry. The electrical ratings of the wire and equipment including all backfed breakers or fuses and any subpanels, including any required dedicated metering phone lines must be indicated.

(b) Electrical Three-Line Diagram: Note (2)

Diagram(s) must show detailed phase wiring of all electrical equipment as specified in the Electrical One-Line Diagram, as well as all neutral, equipment ground and grounding electrode equipment (G.E.C.) conductors and connections.

(c) Plant Location Diagram: Note (3)

Diagram must show major cross streets and location of facility. Include a North arrow.

(d) Site Plan:

Diagram must clearly show the major GF equipment individual components and their locations, including the electric service entrance section and utility meter, location of the inverter(s), Utility Disconnect Switch and any lock-boxes, etc. Include building structure location and any walls, fences and gates etc, to clearly indicate unobstructed access to APS equipment, including any required special metering and the Utility Disconnect Switch. Include a North arrow.

Note 1: An Electrical One-Line Diagram is not required for inverter-based residential systems other than a battery backup based system.

Note 2: An Electrical Three-Line Diagram is required for residential inverter-based systems that meet any of the following criteria:

- (a) The AC nominal nameplate output rating of the inverter(s) is greater than 10 kW.**
- (b) The system consists of more than one inverter.**
- (c) The system backfeeds a breaker located in subpanel rather than one located in the SES.**
- (d) The system is connected as a supply side tap.**
- (e) The installation is an expansion or addition to an existing system operating in parallel with APS' system.**
- (f) The installation is a battery backup type inverter system.**
- (g)**

Note 3: A Plant Location Diagram will not be required for residential systems.

Note 4: A Site Plan is required for residential systems.

APPENDIX C

INTERCONNECTION APPLICATION FOR ROTATING MACHINERY ONLY

| | |
|--|--------------------|
| APS Reservation # (if applicable) | <i>For APS Use</i> |
| APS Installation # | |

CUSTOMER OF RECORD INFORMATION

APS Customer Account Holders Name(s): _____

Customer Contact Person's Name: _____

Telephone (day): _____ E-mail: _____

Generating Facility Address: _____

Customer Contact Mailing Address: _____

APS Account Number: _____ APS Meter #: _____

Is there an existing Generator interconnected behind this meter? (Yes or No): _____

If Yes, please explain if this is a system expansion or a new independent system: _____

SITE INFORMATION

If the Property is owned by a person or entity other than the Customer of Record, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

APPENDIX C: INTERCONNECTION APPLICATION FOR ROTATING MACHINERY (cont'd)

GENERATOR INFORMATION

A. Manufacturer: _____ Model #: _____

B. Generator Type (Synchronous, Induction): _____

C. Generator Nameplate Rating:

Voltage: _____ Single or Three Phases: _____

Power Factor: _____ Continuous Power kW: _____

No. of Units: _____ Total System kW: _____

D. Generator Electrical Characteristics (on the machine base, for above 50 kW):

Synchronous Reactance (X_d): _____

Transient Reactance (X'_d): _____

Subtransient Reactance (X''_d): _____

Stator Resistance (R_a): _____

Zero Sequence Reactance (X_0): _____

Zero Sequence Resistance (R_0): _____

Negative Sequence Reactance (X_2): _____

Negative Sequence Resistance (R_2): _____

E. Generator Neutral Grounding (for above 300 kW):

Specify whether the generator neutral will be solidly grounded or grounded through a neutral resistor:

If grounded through a neutral resistor, specify the resistance: _____

PRIME MOVER

A. Manufacturer: _____ Model #: _____

B. Fuel Source (Natural Gas, Landfill Gas, etc.): _____

C. Is useful heat recovered from the prime mover (Yes or No): _____

D. Will the installation be certified as a Qualifying Facility (QF) (Yes or No): _____

APPENDIX C: INTERCONNECTION APPLICATION FOR ROTATING MACHINERY (cont'd)

INTERFACE EQUIPMENT AND PROTECTIVE RELAY INFORMATION

(Complete all applicable items; attach a separate sheet if necessary).

A. Synchronizer for Synchronous Generator:

Manufacturer: _____ Model #: _____

Automatic or Manual Synchronizer: _____

B. Manufacturer's name and model number for each protective device (Refer to section 8):

C. Proposed settings (trip setpoint and time) for each protective device (Refer to section 8):

APPENDIX C: INTERCONNECTION APPLICATION FOR ROTATING MACHINERY (cont'd)

PROPOSED OPERATION

A. (1) Specify the mode in which the Generator will operate:

- Continuous Parallel
- Smooth Parallel Transition (normally 5-15 seconds)
- Momentary Parallel Transition (normally <10 cycles)

(2) If the Generator will operate in continuous parallel with the utility, specify which one of the following options you desire:

- Net metering in accordance with the EPR-6 rate
- Partial Requirements Service under the SCS rate (Solar, > 100 kW)
- Partial Requirements Service under the E-56 rate (Non Solar, > 100 kW)
- Sell excess energy to APS in accordance with the EPR-2 rate (\leq 100kW)
- None of the above. Specify: _____

B. Provide the anticipated project in-service date: _____

C. Is an electrical permit and/or inspection required by the Authority Having Jurisdiction?

(Yes or No): _____ If No, explain: _____

D. Is access by APS personnel to the Utility Disconnect Switch, electric service entrance, and any utility-required generation metering in any way restricted or impeded (fences, locks, gates, walls, animals, etc.)?

(Yes or No): _____ If Yes, explain: _____

E. If the GF (other than Backup Generation) aggregate generation nominal nameplate AC rating is 1 MW or greater, is documentation (including FERC Form 556) confirming the GF has achieved QF status included with this Interconnection Application?

(Yes or No): _____ If No, explain: _____

APPENDIX C: INTERCONNECTION APPLICATION FOR ROTATING MACHINERY (cont'd)

IMPORTANT NOTE:

APS requires disclosure about the transaction that the Customer is undertaking with the installation of the interconnected GF on its premises. Will customer own and operate the GF; or is it hosting a third party-owned GF on its property; or does it plan to lease the GF to another party that will operate it; or does it plan to transfer ownership to a financial institution that will own it and lease it back to the Customer; or contract with a third-party operator that will conduct operation and maintenance of the GF, including the interconnection with the APS system? This disclosure is necessary because it is APS' policy to identify each party, other than the Customer, that may control or have the right to control the GF and its interconnection with the APS grid, in order that they sign a required acknowledgement that obligates them to comply with the terms and conditions of the Interconnection Agreement.

Please provide a reasonably detailed explanation of the transaction you are contemplating by answering the questions below, so that the required adjustments can be made in the Interconnection Agreement and its Appendices. Add an additional sheet if necessary to explain the details of your transaction.

SYSTEM OWNER

If the GF is owned by a person or entity, including Customer's grantee or lessee, other than the Customer, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

SYSTEM LESSEE

If the GF is not owned by the Customer, but is instead leased, identify the lessee and the lessor:

Lessee:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

Lessor:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

APPENDIX C: INTERCONNECTION APPLICATION FOR ROTATING MACHINERY (cont'd)

SYSTEM OPERATOR

If the GF is to be operated and/or maintained by a person or entity other than the Customer, including the System Owner or Lessee, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

PROPERTY OWNER

If the Customer does not own the property upon which the GF is located, please complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

LANDLORD

If the Customer is a tenant upon which the GF is located, please complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

INTERCONNECTION PROCESS CONTACT INFORMATION

If the primary contact for interconnection process is to be coordinated by someone other than the Customer, complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

INSTALLER INFORMATION

If the installer is not the primary contact for interconnection process, complete the following:

INTERCONNECTION REQUIREMENTS FOR DISTRIBUTED GENERATION Revised 11-2011

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

APPENDIX C: INTERCONNECTION APPLICATION FOR ROTATING MACHINERY (cont'd)

SYSTEM DESIGN OR ENGINEERING FIRM INFORMATION

If the system is being designed by an entity or person other than the installer, please complete the following:

Name: _____ Company: _____

Mailing Address: _____

Phone: _____ E-mail: _____

CUSTOMER CERTIFICATION

This Application is complete and accurate to the best of my knowledge, and I hereby grant APS permission to coordinate the interconnection process with the person or entity specified above, if completed.

APS Customer Name: _____

Signature: _____ Date: _____

APPENDIX C: INTERCONNECTION APPLICATION FOR ROTATING MACHINERY (cont'd)

SUPPLEMENTARY INFORMATION

Diagrams and information specified below are to be specifically prepared for APS' use, and to be submitted in pdf format for all rotating machinery based projects. APS will not accept any copyrighted, proprietary, confidential or "construction" drawings. These must be site specific regarding the information requested below, without extraneous information. All diagrams are to be professionally drawn, using only black print on white paper, and our not to be color or shaded. Free hand drawn, photocopies and faxed diagrams will not be accepted by APS. All diagrams must include the project name and street address as well as updated diagram revision numbers and dates.

Standard industry accepted electrical symbols shall be used on the diagrams. The required size for all drawings is 11"x17".

(a) Electrical One-Line Diagram:

Diagram(s) must show generators and all major associated electrical components including protective relaying and associated trip paths, any interlocks and control functions, as well as the electric service entrance, utility meter, connection points of facility loads, any transformers, generator metering, and Utility Disconnect Switch including any required dedicated metering phone lines, transfer trip communication path(s) along with the associated relaying and trip circuits, and any APS required Remote Terminal Unit (RTU) with associated communication channels and trip/block close/close permissive circuitry. Any interlocks or permissive functions and / or control paths shall be clearly indicated on the drawing (e.g. as dashed lines). The electrical ratings of the equipment shall be shown.

(b) AC & DC Control Schematics:

Diagram(s) must show the detailed phase wiring of all electrical equipment as specified above for the Electrical One-Line Diagram, including protective relaying, associated instrument transformers, breaker control circuitry, and additional control schemes. Include control power source and all associated AC and DC connections.

(c) Plant Location Diagram:

Diagram must show major cross streets and location of facility. Include a North arrow.

(d) Site Plan:

Diagram must clearly show the individual major GF equipment components and their locations, including the electric service entrance section and utility meter, location of generator(s), interface equipment, Utility Disconnect Switch and location of any lock-boxes, etc. Include building structure location and any walls, fences and gates etc, to clearly indicate unobstructed access to APS equipment including any required special metering and the Utility Disconnect Switch. Include a North arrow.

(e) Relay Setting Sheet(s):

Setting sheet(s) for the APS-required minimum protective relay functions must show the trip setpoints and times. Settings may be provided after the initial APS review, once the final system configuration has been determined.

(f) Sequence of Operations:

Following a preliminary review of the Interconnection Application and associated diagrams, APS may, in certain instances, require the Customer to further submit a description of any sequence of operations or other operational controls of a particular system or control scheme.