Checklist and Reference Guide for Distributed Energy Resource Interconnections to the Ameren Illinois System

All interconnections require a Distributed Energy Resource Interconnection Application.

- Applications can be created and submitted through our PowerClerk portal.
- You can find application documents, policy documents, DER Bulletins (check these for emergent info about DER), and more at the bottom of this page: Information for Developers of Renewable Energy

☐ **Read the AIC DER Interconnection Policy Public Facing Guide** for details about the application process

☐ **Read the Electric Service Manual** for details related to installation requirements and metering equipment, **specifically Section 1500** - *Customer DER Less Than 1000 V in Parallel with the Ameren Illinois Company Distribution System* (starts on **page 261** of the service manual .pdf document; note that other sections do still apply).

- The developer / applicant is responsible for designing and constructing the energy installation in conformance with the requirements of the Authority Having Jurisdiction, Ameren Electric Service Manual, National Electrical Code, National Electric Safety Code, and any other applicable codes. Please reference the Warranties and Disclaimer Section of the Ameren Service Manual.

☐ **Fill out all applicable fields on the Interconnection Application in PowerClerk.**

- If you have any questions about the requested information, please contact the Ameren Illinois Company Distributed Energy Resources at RenewablesIllinois@ameren.com for assistance.
- Enter the ten-digit account number from your Ameren Illinois Company electric bill
- Elect an Annual Period Anniversary Month for the Net Metering Application. For example:
    - Solar photovoltaic installations, April is typically selected.
    - Wind turbine installations, October is typically selected.

☐ **Complete either of the following tariff applications in PowerClerk:**

- Qualifying Facilities Application Form
- Net Metering Application Form

☐ **Inverter Technical Specifications** (if applicable) – When submitting the Interconnection Application, include a copy of the technical specifications, label or "cut sheet" identifying the inverter manufacturer and model number and certification by a nationally recognized testing laboratory as being UL1741 / IEEE1547 compliant.

References	Description
IEEE 1547-2003 & IEEE 1547a	SMART Inverters connected to the Company's system shall be rated as IEEE 1547 compliant with the allowance of smart capabilities extended by IEEE 1547a, and when applicable shall comply with the upcoming IEEE 1547 full revision and with final conformance test procedures contained in IEEE standard 1547.1, which is not expected to be published until Q3 or Q4 of 2019.
UL 1741	SMART inverters connected to the Company's system shall be rated as UL 1741 safety compliant
UL 1741 SA	SMART Inverters connected to the Company's system shall pass UL 1741 SA[1] as Grid Support Utility Interactive Inverter
California Rule 21	SMART Inverters connected to the Company's system shall be compliant with California Rule 21 Phase 1 functions (Section Hh. of the Rule 21)

☐ **Verification of Communications Requirements**

- Protocol Requirements: If not included on the Inverter Spec Sheet, include documentation from the manufacturer or appropriate certifying organization that the inverter installed supports one of the three protocols defined on page 3
- Transport Layer Requirements: If not included on the Inverter Spec Sheet, include documentation from the manufacturer that the inverter installed supports the TCP/IP transport/network layer functionality
- Physical Layer Requirements: If not included on the Inverter Spec Sheet, include a picture of the Ethernet or RS 485 Serial Port on the installed Inverter

Protocol	Transport	Physical Interface/Layer
IEEE 1815 (DNP3)/ SunSpec Modbus/ IEEE 2030.5 (Sep 2.0)	TCP/IP	Ethernet/ RS 485

☐ **One-Line Diagram**

- Required with every installation; they should be clearly legible and give a general overview of the entire electric system – not only the DER system.
- **<u>At minimum</u>** they shall show the following:
  - Customer name and address
  - Total system AC kW and DC kW ratings
  - All protection devices
  - All service panels
  - Utility meter (or the location of metering instruments for instrument-rated services) labeled with the meter number if available
  - DER point of interconnection (clearly identifying line or load side of the main overcurrent protection device)
  - Any inverter/s labeled with their AC kW output rating

    - Any DC source (solar panels)
    - Any combiner panels
    - DER system main disconnect (which should be lockable & utility accessible).
- All disconnects, protection devices, and service panels should have their size indicated (ampacity).
- Any other existing DER systems connected to the same service as the proposed system should also be shown and clearly labeled as an "existing system".
- Any DER system that incorporates an energy storage system (ESS) must include details regarding how the ESS is connected to the system and the location of the ESS disconnect (also lockable & utility accessible). All ESS should be labeled with their total system kWh capacity and kW output ratings.
- **NOTE:** these are general requirements for Level 1 (<25kW) and small Level 2 (<200kW) BTM projects. For more detailed requirements for larger projects (anything >200kW and any remote located generation), please reference these documents:
    - One-Line / Site Plan Requirements – Behind the Meter 200kW and Greater
    - One-Line / Site Plan Requirements – Remotely Located Generation

☐ **Proof of liability insurance** – insurance coverage of the structure to which the distributed generation installation is attached (Ameren Illinois is not listed as a beneficiary)

- The proof of insurance requested is a Certificate of Insurance, typically a one- or two-page document available on request from your insurance agent.
- Some agencies can print them from their office; others must be requested by the agent from the home office of the insurer.

☐ **Certificate of Completion** - Once your installation is complete and inspected by any municipal, county or other governmental authority-claiming jurisdiction over the installation; you must complete a Certificate of Completion and return it to your Ameren Illinois Company representative along with a copy of any inspection documentation provided by the inspecting authority. If your installation is not in a jurisdiction requiring inspection, you must still complete and return the Certificate of Completion to Ameren Illinois.

☐ **Distributed Generation Installer Certification** – An Installer Certification is required by every customer installing parallel generation

☐ **Illinois Distributed Energy Rebate Application**

☐ **For all Non-Residential customers installing parallel generation, please print and complete a W-9 form.**

If Level 2, 3, or 4, then the Standard Distributed Energy Resource Interconnection Agreement is also needed. Ameren Illinois personnel will provide this document during the process.

If you do not have access to the internet, you can print, complete and mail your application to:

Ameren Illinois Distributed Energy Resources

10 Richard Mark Way – Mail Code 910

Collinsville, IL 62234

☐ **AC Safety Disconnect** - Customer's lockable AC generation source disconnect shall comply with the following requirements:

a. One of the following types:
    1. Manual operable switch of circuit breaker
    2. Load-break rated pull-out-switch
b. Simultaneously disconnect all ungrounded conductors of the circuit
c. Located outdoors where readily accessible
d. Enclosures with doors or hinged covers that are readily accessible to unqualified persons and have exposed live parts when the enclosure is opened must be secured in a manner that requires a tool to open the enclosure or must be lockable.
e. Disconnect mechanism must be padlock-able in the open (OFF) position.
f. Plainly indicate whether in the open (OFF) or closed (ON) position
g. Have ratings sufficient for the maximum circuit current, available fault current, and voltage that is available at the terminals
h. Be marked with a warning when the line and load terminals are capable of being energized in the open position.
i. The lockable AC generation source disconnect switch must be within reach, with a maximum mounting height with the handle no higher than 6'7" above grade when in the "UP" or ON position.
j. When the lockable AC generation source disconnect is a knife-blade safety switch (fused or non-fused), the conductors coming from the DER system must terminate on the bottom lugs of this disconnect. Utility supply will terminate on the top lugs of this disconnect.
k. When the lockable AC generation source disconnect is a Circuit Breaker, the utility supply shall terminate at the ON side lugs of the breaker. The conductors coming from the DER system shall terminate at the OFF side lugs of the breaker.
l. Some installations may require an outdoor lockable remote actuator for rapid shut down / E-stop functionality.

☐ **Meter Socket** – Per the Ameren Service Manual sect 200.01 – rewire policy: any work or wiring changes at the service will prompt the need to upgrade to the latest service requirements, including but not limited to having a lever bypass socket.

☐ Signage

1. A placard must be either attached to the AC Generation Source Safety Disconnect or located next to the disconnect.
    a. This must state: "**LOCKABLE AC GENERATION SOURCE DISCONNECT**".
    b. The LOCKABLE DISCONNECT placard cannot be adhered to other electrical enclosures that do not contain the LOCKABLE DISCONNECT.
    c. The placard must be permanently adhered to a flat uniform surface and cannot overlap uneven surfaces, such as siding.
    d. When attaching directly to electrical enclosures, placards must be adhered with permanent adhesive, **not** screws or rivets.
2. Placard Physical Requirements
    a. Placard must be red and a minimum of 5" x 7" in size.
    b. Placard must be two-ply or three-ply, non-conductive, plastic engraved plates that are weatherproof and UV resistant.
    c. Lettering should be white with a minimum of 3/8" in height
3. If the Lockable AC Generation Source Safety Disconnect is located more than 10' away from your meter or is not visible while standing at the meter, even if it is within 10', a second sign would be required at the meter.
    a. That signage must say, "CAUTION: MULTIPLE SOURCES OF POWER – Lockable AC Generation Source Disconnect Available for Isolation from Utility" and additional verbiage to explain the exact location of the disconnect – or often an aerial site map is used that depicts power sources and disconnect locations. Other requirements for the plaque(s) remain the same as outlined above.
    b. If a site map placard needs to be installed, it should be located at the meter base and each grouping of energy source disconnecting means [e.g., LOCKABLE DISCONNECT(s) and MAIN SERVICE DISCONNECT(s)].
        i. When applicable, Rapid Shutdown Switches / Buttons and/or Emergency Shutdown Switches / Buttons should be shown on the site map placard (rooftop solar requires rapid shutdown to lower the DC voltage inside the boundary of the array).