

DISTRUBUTED GENERATION BACKGROUND / Q&A

Q1: What is Distributed Generation?

Distributed generation (DG) is electric generation that is "distributed around" the electric utility's distribution system. DG is usually powered by solar, wind, landfill gas, diesel fueled engines, natural gas fueled micro-turbines, etc. DG refers to an electrical generating facility located on Customer's premise (on-site), which may be operated in parallel with the utility, of ten (10) megawatts (MW) or less and connected at a voltage less than or equal to sixty (60) kilovolts (kV). Customers inquiring about distributed generation generally fall into four basic categories:

1. **Small power production** facilities (solar, wind, waste or geothermal) which are usually classified as "qualifying facilities",
2. **Backup power** which can be synchronized with the utility upon restoration from utility outages (closed transition),
3. **Generation for self-service** of customer's own load through parallel operation with the utility and peak shaving of demand,
4. **Generation that is for exporting** (landfill gas, large wind farms, etc.).

Q2: What are the "drivers" for City of Brenham to develop DG guidelines?

1. The PUCT, in their Substantive Rules have required "Electric Service Providers" to develop and implement Distributed Generation (DG) technical requirement and interconnection rules. While the City of Brenham does not fall under PUCT regulations for DG, it is clear that it is the intent of Public Utility Regulatory Act (PURA), PUCT and other legislative signals from the State of Texas, that Public Power utilities should establish technical requirements that will promote the safe and reliable parallel operation of on-site distributed generation resources.
2. The City of Brenham has recently received some calls and inquiries regarding the interconnection of small renewable generation systems. The City needs to have clear rules and regulations in order to provide good customer information and service.

For these reasons, it is prudent business practice for the City of Brenham to develop and implement the technical guidelines and procedures along with the rate and billing policies related to the interconnection of distributed generation on the City of Brenham electric distribution system.

Q3: Is there a model or source of DG technical guidelines for Cities and other utilities to use?

The PUCT has created regulations concerning distributed generation along with a DG Manual with technical guidelines. The main substantive rules that apply to DG:

1. Substantive Rule §25.211 Interconnection of On-Site Distributed Generation (DG),
2. Substantive Rule §25.212 Technical Requirements for Interconnection of On-site Distributed Generation (DG).

In addition to the PUCT rules and DG Manual, many Public Power utilities have developed or amended their tariffs, developed policies, guidelines and forms. There are many similarities with these recently developed materials, but there are also some unique aspects and differences between

the documents. Some of this is a result of different utility types (Cities vs. City-owned entities and Electric Cooperatives).

Q4: What do these PUCT Substantive Rules say about Interconnection and Parallel Operation Requirements?

1. Customers requesting interconnection and parallel operation of DG must complete an Application for Interconnection.
2. The distribution utility (City of Brenham) will perform necessary pre-interconnection studies, which may include a service study, coordination study, and utility system impact study, as needed.
3. In instances where such studies are deemed necessary, the scope of such studies shall be based on the characteristics of the particular distributed generation facility to be interconnected and the City of Brenham's distribution system at the specific proposed location. City of Brenham shall charge fees for Pre-Interconnection Studies pursuant to the applicable rate schedule contained in the City of Brenham's tariffs.

Q5: What is the typical or standard process for customers and utilities in Texas, regarding customers that plan to interconnect DG and operate these systems in parallel to the distribution utility system?

1. **Customer submits application for interconnection:** Information should include a One Line Diagram showing the relationship of the distributed generation (DG) unit tied into the electrical panel and the meter location.
2. **Review of application by utility:** Received applications and generation specifications. If additional information is required, utility will contact the customer.
3. **Approval for construction/interconnection:** After the application has been accepted and is deemed in compliance, the customer will be notified of the approval of the connection design for construction.
4. **Field inspection for final tagging and approval:** A field inspection will be required to ensure that the installation is built as planned prior to actual synchronization with the distribution system (grid).
5. **An interconnection agreement** will be prepared, which must be signed by the customer prior to energizing the system.

Q6: What approach should the City of Brenham use regarding establishing DG policies and guidelines?

The City of Brenham should take the following steps to implement comprehensive DG policies and guidelines:

1. **Implement a DG ordinance** that covers the policies, requirements and rate/pricing issues related to DG interconnection and parallel operation of DG systems.
 2. **Develop DG Rate Rider(s) to establish the pricing and related policies in the City of Brenham rate tariff.**
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3. **Develop the DG application form and DG agreement** and the overall process description for City of Brenham and customers to use in this process.
4. **Prepare a DG summary and DG FAQ information brochure (and website information)** to help communicate the City's DG policies, procedures and guidelines to the City's customers.

Q7: Will the same policies and guidelines apply to all sizes of DG systems?

The City of Brenham DG Ordinance and DG Guidelines will have consistent policies and requirements for all DG systems. However, DG systems under 20 kW, that have the appropriate and required UL, IEE and other applicable certifications, will be able to qualify as "pre-certified" systems. DG systems larger than 20 kW may require a "DG Study" to determine the interconnection and operational requirements. There will be different "Riders" developed for systems under 20 kW and for systems larger than 20 kW.

Q8: Will the City of Brenham require any safety devices on DG systems? Will this ensure safety for the City's distribution line workers?

Yes. All DG systems will have a visible and accessible disconnect switch, the switch must be able to be secured in an open position by the City of Brenham utility personnel. The City of Brenham has the right to lock the switch open for various reasons which are detailed in the DG Ordinance and DG Guidelines.

Q9: Will DG systems feedback power into the City of Brenham's distribution system during "power outages". Will this create a safety hazard for the City of Brenham personnel?

The customer shall provide approved protective equipment necessary to immediately, completely and automatically disconnect the customer's electrical generation equipment from the COB electrical system in the event of a fault on the customer's system, a fault on the COB system or loss of source on the COB system. Such protective equipment shall conform to the criteria specified in UL 1741 and IEEE 1547.

Q10: Will the City of Brenham implement a "net metering" rate? What rate will the City of Brenham use for any "excess" generation that flows to the City of Brenham's distribution system?

There are two scenarios that can occur each month on an account with a DG system:

1. Scenario 1: the DG system's monthly output is less than the energy consumed / purchased from the City of Brenham. In this case, any energy output from the DG system is simply "netted", or in other words, the meter is allowed to spin forwards and backwards and thus, in effect, the consumer pays for the "net energy" consumed (and the monthly customer / availability charge).
 2. Scenario 2: the meter "spins backward" more than it "spins forward", and there is a negative net usage (or more power flowed to the City of Brenham's distribution system than was consumed at the customer's premise), the City of Brenham will pay an amount equal to the "avoided generation cost" which will be set annually based on actual generation rates / price from the City of Brenham's generation supplier(s). The customer also pays for the monthly customer / availability charge.
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