

# DISTRIBUTED GENERATION OUTLINE OF MENU OF SERVICES

## I. FROM UTILITY TO CUSTOMER

### A. INTERCONNECT SERVICES

1. Engineering/Design Studies
2. Utility System Upgrades
3. Testing
4. Operating Services (Optional)

### B. SUPPLY SERVICES

1. Backup Services
2. Supplemental Service
3. Residual Retail Service
4. Economic Dispatch Service

### C. DELIVERY SERVICES

1. Transmission Service
2. Distribution Service
3. Indirect Services
4. Ancillary Services

## II. FROM CUSTOMER TO UTILITY

A. Energy and capacity, firm and non-firm

B. Transmission credit

C. Distribution credit

D. Diversity credit for generation, transmission, and distribution

E. Physical assurance credit

F. Distribution/transmission line loss credit

G. Credit on services provided to the customer taking third party (unbundled) service:

1. Reactive Supply and Voltage control
2. Regulation and frequency response
3. Operating reserve
4. Black start service

## DISTRIBUTED GENERATION DETAIL MENU OF SERVICES

### I. FROM UTILITY TO CUSTOMER

#### A. INTERCONNECT SERVICES

1. Engineering/Design Studies
  - a) Customer System – Professional engineering services done under contract for customer to determine equipment necessary for interconnect to utility system.
  - b) Customer System – Review of interconnect design and specifications to ensure compliance with the interconnection standards.  
Utility System – Engineering study to determine potential impact of DG on utility system.
2. Utility System Upgrades
  - a) Metering
  - b) Transformer Capacity
  - c) Service Capacity
  - d) Distribution Primary Line Capacity and Associated Equipment
  - e) Protective/Coordination System Changes
  - f) Monitoring
  - g) Transmission Line Capacity and Associated Equipment
3. Testing
  - a) Functional Test – Field testing individual protective systems. A functional test is a complete test of the entire protective system including the CT's and PT's, protective relay and the breaker. This test ensures that the entire protective relaying system was wired and installed correctly and is “functional” so if you inject current into the relay and the breaker trips, at the expected level of current, then the system functions correctly.
  - b) Commissioning Test – Field testing entire installation. The Commissioning test involves running the generation control system through it paces (“A test drive”). While the Functional test checks out the protective elements, this test confirms that the generation control system is working correctly. On a larger and more complex system the Commissioning test will involve a very complex set of test steps to confirm that all of the independent control systems are working together properly. One may introduce reasonable failures into the system, to then prove that the control system properly responds to the failure and operates or shuts down the generation as necessary.  
Periodic Interconnection Test – Periodically the protective system must be functionally tested to ensure that the equipment remains in compliance with the interconnection standards.
  - c) Operating Services (Optional)
    - (1) Generator Periodic Run Testing
    - (2) Technical Support
    - (3) Maintenance agreement - Utility
    - (4) Maintenance agreement - 3rd party
    - (5) Monitoring

#### B. SUPPLY SERVICES

1. Backup Services

2. Scheduled Maintenance – Energy or energy and capacity reserved by the customer or supplied by the utility during scheduled maintenance of the customer’s non-utility source of electric energy supply.
3. Unscheduled Outages – Energy or energy and capacity reserved by the customer or supplied by the utility during unscheduled outages of the customer’s non-utility source of electric energy supply.
4. Supplemental Service – Energy or energy and capacity reserved by the customer or supplied by the utility to supplement the variable output characteristics of the customer’s non-utility source of electric energy supply. This is intended to provide energy or energy and capacity to complete the customer’s energy production needs during normal operation and is not intended to be the energy or energy and capacity that is needed by the customer’s non-utility source of electric energy supply during full or partial scheduled or unscheduled outage periods.
5. Residual Retail Service – Capacity and energy reserved by the customer or supplied by the utility to a customer site that is above the capability of the customer’s non-utility source of electric energy supply.
6. Economic Dispatch Service – Capacity and energy reserved by the customer or supplied by the utility to the customer’s non-utility source of electric energy supply operating in an economic dispatch mode.

C. DELIVERY SERVICES

1. Transmission Service – Reservation and delivery of capacity and energy on either a firm or non-firm basis over Transmission Providers’s Transmission System.
2. Distribution Service – Reservation and delivery of capacity and energy on either a firm or non-firm basis over Company’s Distribution System.
3. Indirect Services – Allocated support services or expenses including operation and maintenance, customer accounts, customer service and information, administrative and general, depreciation, interest and taxes.
4. Ancillary Services – Those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of Transmission Provider’s Transmission System in accordance with Good Utility Practice. (Note: Includes only FERC recognized ancillary services.)
  - a) Scheduling, System Control and Dispatch Service – Service required to schedule the movement of power through, out of, within, or into a Control Area.
  - b) Reactive Supply and Voltage Control from Generation Sources Service – Service required to maintain transmission voltages on Transmission Provider’s transmission facilities within acceptable limits. Generation facilities (in the Control Area where Transmission Provider’s transmission facilities are located) are operated to produce (or absorb) reactive power. Thus, Reactive Supply and Voltage Control from Generation Sources Service must be provided for each transaction on Transmission Provider’s transmission facilities. The amount of Reactive Supply and Voltage Control from Generation Sources Service that must be supplied with respect to Customer’s transaction will be determined based on the reactive power support necessary to maintain transmission voltages within limits that are generally accepted in the region and consistently adhered to by Transmission Provider.
  - c) Regulation and Frequency Response Service – Service necessary to provide for the continuous balancing of resources (generation and interchange) with load and for maintaining scheduled Interconnection frequency at sixty cycles per second (60 Hz). Regulation and

Frequency Response Service is accomplished by committing on-line generation whose output is raised or lowered (predominantly through the use of automatic generating control equipment) as necessary to follow the moment-by-moment changes in load.

- d) Generator Imbalance Service – Service provided when a difference occurs between the scheduled and the actual delivery of energy over a single hour by a generator into a Control Area.
- e) Operating Reserve – Spinning Reserve – Service needed to serve load immediately in the event of a system contingency. Spinning Reserve Service may be provided by generating units that are on-line and loaded at less than maximum output.
- f) Operating Reserve – Supplemental Reserve Service – Service needed to serve load in the event of a system contingency; however, it is not available immediately to serve load but rather within a short period of time. Supplemental Reserve Service may be provided by generating units that are on-line but unloaded, by quick-start generation or by interruptible load.

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