

MN DG Rate Group, Docket No. E999/CI-01-1023

DISTRIBUTED GENERATION

**MENU OF SERVICES
FROM CUSTOMER TO UTILITY**

The DG rates should be designed to encourage customers to install distributed generation in a way that maximizes benefits, minimizes problems and costs and promotes an efficient use of resources. The benefits that DG provides to customer and society must not be ignored in establishing the overall DG rates for Minnesota customers.

DG has many benefits to Minnesota Customers:

There is little dispute that DG has the potential to provide significant benefits to electric customers in Minnesota. These benefits have been recognized by the Legislature in its enactment of Sec. 216B.1611 and by the Commission in several regulatory orders. In its order approving NSP's Dispersed Generation Plan, the Commission said that "dispersed generation" or distributed generation's "potential for improving system reliability, reducing transmission and distribution losses, and nurturing new technologies cannot be overlooked."¹

Some of these benefits are summarized below.

- Customer Choice
- Improved Reliability
- Reduced Capacity Shortfalls
- Improved Power Quality
- Environmental Benefits
- Foster development of new technologies
- Higher Efficiency
- Lower Overall Energy Bills
- DG allows electric utilities to Avoid Costs:
 - Reduce Line Losses
 - Minimize Distribution and Transmission System Investments
 - Minimize Distribution and Transmission System Constraint
 - Increased Generation Diversity
 - Reduce Need to Build New Generation

Additional DG Benefits:

- DG typically offers greater flexibility in accelerating completion of a project with a valuable outcome.

¹ Docket E-002/RP-91-682 In the Matter of the Petition of Northern States Power Company for Approval of its 1991 Resource Plan, Order Approving Dispersed Generation Plan, page 2, Issued April 5, 1993.

- DG allows capacity expansion decisions to become more routine and hence lower in transactions costs and overheads.
- Smaller, shorter lead time, more modular units tend to offer cheaper and more flexible options to planners.
- DG has a modular capability where most of the costs can be recovered if the project does not proceed.
- DG physical portability will typically achieve a higher expected value than an otherwise comparable non-portable resource if circumstances change.

Because DG will be beneficial to Minnesota electric customers, credits would be fair and reasonable to provide DG operators.

Here are some of the credits that would apply appropriately to DG facilities:

- Generation Credit: Energy and capacity, firm and non-firm

Credit for not having to add generation capacity. We see five potential options to assign value to generation:

- 1. Demand Charge Unbundled: Unbundling the Demand Charge into generation, transmission, and distribution, and provide capacity credit for the generation portion.*
- 2. Plant Build Proxy: Credits based on cost to add new Peaking and baseload plant in MAPP.*
- 3. Market related value (market bids)*
- 4. Reduce System reserves requirements*
- 5. Environmental (emission credits, societal value)*

- Transmission credit:

Utilities will provide credits to DG customers for use of freed up or avoided transmission capacity. Value should be based on FERC approved rates.

- Distribution credit:

Distribution should be viewed as two distinct parts:

- 1. Local Distribution: Including wires, equipment, and connections of individual site to the utility system. We believe some of these are fixed costs where credits may be minimal.*

2. *Bulk Distribution: Includes terminals, substations, and other equipment used to move power into the distribution grid. We believe that DG installations relieve the load capacity at that level and should result in a credit to DG operator.*

- Distribution/transmission line loss credit

DG relieves utilities of having to supply the additional generation capacity associated with line losses to serve the DG customer. Energy and Capacity are lost during the generation, transmission and distribution of electricity to customers. DG is generation that is closer to where electricity is being used. Therefore, DG eliminates line losses that occur during transmission and distribution of electricity. A credit for line loss avoided should be given to DG customers. Ideally the credit should be based on the actual line loss savings realized by a DG project.

- Diversity credit for generation, transmission, and distribution

Diversity levels represent a statistical assumption that a certain percentage of standby load will be utilizing transmission and distribution service at a particular time. Reliable distributed generation will place less demand on the system. As additional distributed generation units are located on the transmission and distribution system, the diversity of these units will lead to a lower amount of additional standby capacity needed to serve standby loads. A diversity factor adjustment based on system wide averages should be reflected in rates.

- Physical assurance credit:

Physical Assurance is the application of devices that interrupt DG customer's grid load instantaneously when an unscheduled stoppage occurs to the DG system. DG customer agrees to provide physical control to remove load if its DG system is not operating. The utility does not need to build either facilities related or peak demand related distribution infrastructure to serve that customer, thus avoiding fixed standby distribution costs. The concept is somewhat similar to controllable and firm demand establishment under electric utilities' existing peak interruptible tariffs.

If a customer is willing to provide physical assurance to the utility, that customer should not have to pay for any facilities or peak demand related costs associated with distribution service and should have the ability to opt out of standby services entirely or elect to take maintenance or interruptible services. In this scenario, customer should be able to enter into a contract to specify the capacity for which it will provide physical assurance not requiring elected services.

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

- Reactive Supply and Voltage control:
Supply of reactive current increases voltage regulation and reduces system losses.

- Regulation and frequency response:
Service necessary to provide for the continuous balancing of resources (generation and interchange) with load and for maintaining schedule interconnection frequency at 60 Hz.

- Operating reserve:
Operating Reserve – Spinning: This service may be provided by generation units that are on-line and loaded at less than maximum output, ready to serve additional demand which can be fully applied in ten minutes.

Operating Reserve – Supplemental: This service may be provided by generating units that are on-line but unloaded which can be fully applied 10 minutes, by quick-start generation capable of serving demand within 10 minutes, or by interruptible load that can be removed within 10 minutes.

- Black start service:
DG can be used to re-energize the transmission system following a system-wide blackout.

Options to consider - Promoting DG in Minnesota²:

- Allow customers using onsite generation to pay no fixed standby charges if they sign a contract providing the utility with physical assurance of no load imposition on electric system. Should be applicable for both capacity additions and for existing load.
- Provide option of Interruptible Standby Services if a customer offers physical assurance.
- Provide time of use standby rates that provide appropriate price signals for DG customers to operate their generation in a manner consistent with demand peaks in the local distribution system.
- Provide option of usage sensitive standby charge.
- Provide diversity credits for generation, transmission and distribution.
- Reflect diversity of numerous small DG facilities in the standby reservation charges.
- Minimize the contract capacity ratchets. (i.e. one time penalty instead of ongoing charges).
- Allow intra-site wheeling without penalty.

² Sec. 216B.1611 provides that its purpose is “to promote the use of distributed resources in order to provide electric system benefits”

- Expand net metering beyond the current 40 kW limit.
- Because DG is a socially beneficial method of producing electric power (i.e. environmental benefits, higher efficiency), Minnesota should adopt regulatory policies that both remove current barriers and provide incentives for DG.

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