RTO West Presentation: Preserving and Encouraging Customer Generation Resources

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RTO West Issue Presented

- How will RTO service costs be assessed to an integrated customer generation and load operation; *i.e.*, a customer load served by “behind-the-meter” Customer Generation?

RTO West Resolution

- RTO West service costs will be assessed based on the customer's ***net*** withdrawals or injections of power to the grid measured at the point of interconnection and the customer's site boundary meter. The cost of all RTO West services including metering, scheduling, acquisition of reserves and ancillary services shall be on a net (as opposed to gross) basis for load served by customer generation.

Background Review

- What is Customer Generation?
- What is “behind-the-meter” load?
- What is net metering as opposed to gross metering?
- How is Customer Generation distinguished from Merchant and Utility Generation?
- What is an RTO “system” grid in relation to a Customer Generation and load operation?

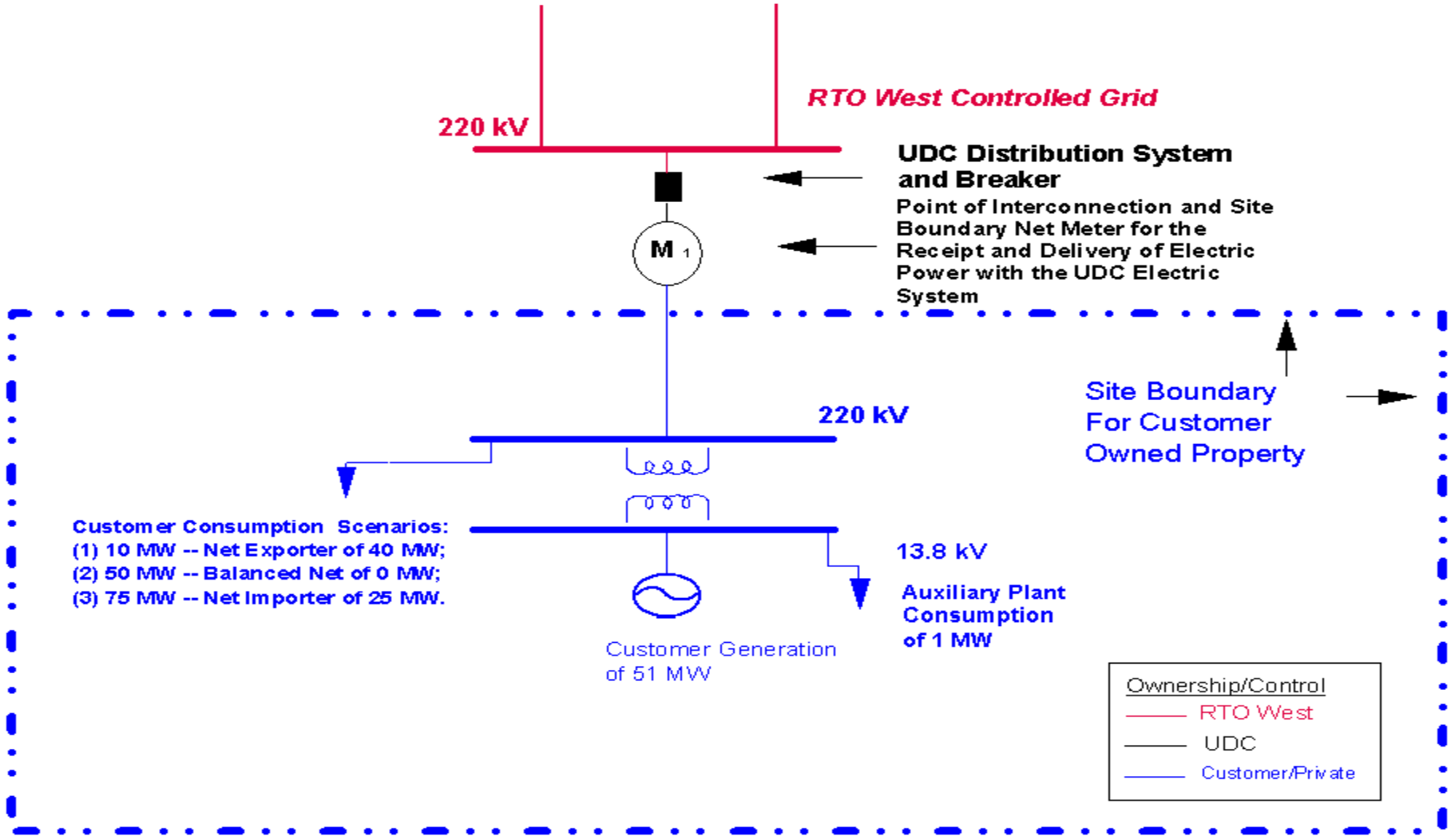
What is Customer Generation?

- Renewable power, cogeneration, fuel cells or any other type of generation that is constructed and operated wholly or in part to serve retail end-use customer load over privately funded, or dedicated utility delivery facilities; or if cogeneration, constructed or operated wholly or in part to serve thermal demands of an end-use customer.

What Is “Behind-The-Meter” Load?

- Load of an ***end-use customer*** served by Customer Generation behind or before the point of interconnection or customer site boundary meter. (*See next diagram.*)

Customer Generation/Integrated Load Diagram



Net and Gross Metering

- “Gross” and “net” metering are two different approaches to measuring the generation produced and the energy consumed at an integrated generation and load operation; for example, a cogeneration and industrial process site.

Net

- “Net” load is that portion of customer load served by utility/RTO West resources – net importer.
- “Net” generation is power exported to the grid in excess of the generation required to serve on-site load – net exporter.
- “Net” load or generation is measured at the boundary of the customer site.

Gross

- “Gross” load is the total consumption by an end-use facility, including load served by customer generation and grid resources.
- “Gross” generation is total generation, whether serving on-site load or exported to the grid.
- “Gross” generation is metered at the point of generation; “gross” load is measured at the point of consumption.

Why Should RTO West Implement a Net Customer Generation Policy?

Customer Generation Differs from Merchant and Utility Generation

- Customer Generation is not designed to serve the electric grid; rather it is integrated for customer needs and demands, *e.g.*, thermal requirements.
- Customer Generation reduces customer load on the grid as opposed to system generation that is scheduled to serve grid demand.
- Integrated Customer Load and Generation secures retail jurisdictional standby service for maintenance, backup and outage events.

Cogeneration Differs from Utility and Merchant Generation

- Essentially a cogeneration operation is a steam or thermal plant that produces reliable electrical supply as a byproduct of its customer host operation.
- Accordingly, these operations operate on a must-take basis in order to assure that the fuel use efficiency, environmental and operational benefits of these unique projects can be fully secured.
- Unlike a utility or merchant power plant, a cogeneration facility does not cycle its power generation for the sake of power production; rather, the facility operates to produce thermal energy first and electricity second.

Customer Generation Differs from Utility Systems

- An end-use customer load served by Customer Generation is not:
  - A utility or a public entity with the obligation to serve.
  - A utility system that generally has multiple interconnections to an RTO grid.
  - A utility grid with interconnections and wires dedicated to public use.
  - A utility with electric generation serving a utility system's electric demand.

RTO "System" Grid

- NERC defines a system grid as -- *The combination of generation, transmission, or distribution components comprising* <u>*an electric utility or group of utilities*</u>.
- Note that a non-utility, integrated customer load served by Customer Generation is <u>***not***</u> included in this definition. A customer generator is not part of the system grid regardless of its location within a control area.

Other Reasons Supporting a Net Customer Generation Policy

- Currently most WECC control areas use ***net*** telemetry and revenue metering for Customer Generation, merchant and utility generating facilities.
- These control areas operate reliably as no pattern of repeated sanctions nor significant reliability incidents have resulted from the use of ***net*** metering.
- PURPA requires the encouragement of cogeneration and self-generation.
- FERC Order 69 does not allow BTM loads to be treated any differently than loads being served via other retail tariffs.

Other Reasons Supporting a Net Customer Generation Policy – *continued*

- Use of Net telemetry reflects the true amount of MWs being injected, or withdrawn, from a utility's transmission and/or distribution grid.
- Use of Net telemetry results in non-discriminatory treatment of: generator auxiliary load, BTM load, and other retail standby load.
- Use of Net metering is consistent with existing state tariffs.

Other Reasons Supporting a Net Customer Generation Policy – *continued*

- Smaller BTM generators add reliability value to the system.
- Net metering encourages self-generation and distributed generation which is endorsed by many States and FERC.
- Continued use of net metering will avoid the costly installation of gross metering and telemetry equipment.

Customer Generators Enhance System Reliability

- A system of 50 smaller generators of 200 MW each is significantly more reliable than a similar size system of 20 larger generators of 500 MW each.
- Example (probability of losing 1,000 MW)
  - Five – 200 MW units @ 5% F.O.R.= 3.12×10^{-5}
  - Two – 500 MW units @ 5% F.O.R. = 2.5×10^{-3}

Customer Generators Enhance System Reliability *continued*

- The smaller unit system is 100 times less likely to lose 1,000 MW of capacity simultaneously.
- There is virtually no chance that all, or significant levels of, BTM generation will fail simultaneously.
- The reliability and online time from customer generation resources has been demonstrated – standby class service loads for energy are very small.

Why is a Gross Customer Generation Policy Flawed for RTO West?

Arguments Against the Resolution are Flawed

- The potential charges to load served by Customer Generation are excessive and unreasonable.
- Customer Generation is not generation "on the system" subject to Grid control except for that portion of any net surplus power the customer chooses to export to the Grid.
- Gross customer load served by Customer Generation is not a “Firm Load Obligation” of RTO West.
- Standby service load is properly reflective of RTO West’s Firm Load Obligation.

Potential RTO Charges to BTM Gross Load

- **Scheduling Costs** – between a customer's own load and generation.
- **Transmission Access Charge** – for the transmission of a customer's own generation to the customer's load.
- **Grid Management Charge** – reflecting use of the system even when there is no load placed on the grid.
- **Ancillary Services** – reserves for load not on the system.
- **Imbalance** – for deliveries of the customer's own generation.
- **Metering and Telemetry** – behind the site boundary meter.

Flaws with a Gross Approach

- Assessing reserve requirements on a gross basis assumes simultaneous outage of all "behind-the-meter" Customer Generation.
  - Violates PURPA.
  - Fails to recognize actual operations.
  - Excessive acquisition of market-priced reserve resources.
- Unlawfully treats customer-owned generation differently than utility or merchant station load or other end-use customers.

Flaws with a Gross Approach *continued*

CFR Section 292.305 requires:

- Rates for QFs to be just and reasonable and in the public interest; and shall not discriminate against any QF in comparison to rates for sales to other customers served by the electric utility.
- Rates based on accurate data and consistent systemwide costing principles.
- That upon request of a qualifying facility, each electric utility shall provide: i) Supplementary power; ii) Back-up power; iii) Maintenance power; and iv) Interruptible power.

Flaws with a Gross Approach *continued*

- CFR Section 292.305(c) provides that –
  - Rates for sales of Back-up and Maintenance power shall not be based upon an assumption (unless supported by factual data) that forced outages or other reductions in electric output by all QFs on an electric utility's system will occur simultaneously, or during the system peak, or both.

Flaws with a Gross Approach *continued*

- Utility and merchant plant station load is currently netted in the WECC. This load can be significant and becomes system load when a generator fails.
- An industrial customer with a 100 MW process that is idle places the same "potential" load on the system as a customer with 100 MW load and 100 MW behind the meter generation. Neither is currently receiving service from the grid.

Flaws with a Gross Approach *continued*

- Treating all generator auxiliary load, as well as BTM load, as firm load:
  - Would dramatically and unreasonably raise firm load by as much as 5,000 MW in the WECC (SCE assessment).
  - There is no chance that the system would ever be required to serve all this load simultaneously.
  - If auxiliary load is included as firm, conceptually all residential and distribution BTM load must be included.
- This increased load will raise costs to grid load customers without any significant improvement in reliability.

How Should RTO West Implement a Net Customer Generation Policy?

Implementing the Resolution

- Clearly define Tariff provisions regarding Customer Generation, Firm Load Obligations, Control Area Grid responsibilities and jurisdiction, Grid System and other relevant provisions.
- Assure that net treatment of load served by Customer Generation is reflected in the Tariff.

Implementing the Resolution – *continued*

- The RTO West Tariff should adopt the following terms and definitions.
- Note that these terms reflect accepted electric industry definitions.

Properly Defining the Term "Load Responsibility" for RTO West

- The load that must be used to calculate MORC reserves should be the load that is "reasonably likely to occur."
- Load responsibility may not reasonably consider the possibility that all non-coincident load will occur simultaneously.
- System generation and resulting reserve requirements shall be based upon reasonable forecasts of system load, including standby service customer loads, measured at the point of interconnection with the system grid.

Customer Generation

- Renewable power, cogeneration, fuel cells or any other type of generation that is constructed and operated wholly or in part to serve retail end-use customer load over privately funded or dedicated utility delivery facilities; or if cogeneration, constructed or operated wholly or in part to serve thermal demands of an end-use customer.

Behind The Meter

- “Behind-the-meter” load means electricity consumption served by Customer Generation through privately owned or utility dedicated facilities.
- “Behind-the-meter” load does not withdraw energy from the RTO West controlled transmission grid. Service is registered at the customer’s “site boundary meter.”

Load and System

- **Load** - The amount of electric power delivered or required at any specific point or points on a system.
- **System** - The combination of generation, transmission, or distribution components comprising an electric utility or group of utilities. The system does not include facilities that serve customer behind-the-meter load from Customer Generation.

Net Load

- Net load is customer load not otherwise served by customer generation that is served by utility/RTO West resources.
- Net load is measured at the boundary of the customer's site.

Load Responsibility

- A control area's firm load demand plus those firm sales minus those firm purchases for which reserve capacity is provided by the supplier.
- Load responsibility does not consider the possibility that all non-coincident load will occur simultaneously.
- Load responsibility includes the full diversity of the standby service class of customers to the extent of the net load of that class.

Qualifying Facility

- A Qualifying Facility (QF) cogeneration operation produces electrical energy and steam or other forms of useful energy, which are used for industrial, commercial, heating or cooling purposes.

  (16 USC § 796 (18)(A).)

RTO West Controlled Grid

- The system of utility transmission lines and associated facilities of participating transmission owners that have been placed under the RTO's operational control.
- The grid does not include private facilities or utility dedicated facilities for the service of behind the meter load by Customer Generation.

Control Area

- An area comprised of an electric system or systems, bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other control areas, and contributing to frequency regulation of the interconnection.

What are the Implications and Benefits of a Net Customer Generation Policy for RTO West?

Implications of Net Treatment for RTO West Operations

- Loads that do not withdraw power from the grid will not be allocated RTO costs.
- Loads that do not withdraw power from the grid will not be treated as “firm load responsibilities.”
- Existing net load contracts from cogeneration facilities will be honored.
- Customer generation resources will be encouraged and limit disconnection from the grid.

Implications of Net Treatment for RTO West Operations – *continued*

- Encourage needed new customer generation installations.
- Enhance the reliability of the grid with diversification of customer generation resources.
- Serve load pockets and relieve transmission constraints.
- Lawfully recognize the diversity requirements of federal law for the standby class of customer load.

Implications of Net Treatment for RTO West Operations – *continued*

- Eliminate the punitive treatment of gross metering –
  - Unlawfully assuming simultaneous outages of customer generation.
  - Requiring metering of all load and generation points "behind the meter" of the customer's site boundary.
  - Excessive procurement of reserves for non-grid customer load served by customer generation.
- Recognize net metering practices of western utilities with customer generation resources, *e.g.*, Puget, Sierra, Nevada Power, SCE, PG&E, SDG&E.