



Smart Grid Committee Update

October 15, 2020



Initiatives

State/Federal Coordination

Big Data

Advanced Grid

Smart Grid Annual Assessment

Resiliency

State/Federal Coordination

- ◆ Conducting Interview to gauge industry appetite for convening forum(s) that drive state/federal coordination on key topics (10/31)
- ◆ Completed EAC discussion to get additional ideas on topics to consider and areas that might drive success on such an effort (10/14)
- ◆ Goal is to complete recommendation based on feedback by the end of the year

Interview Questions

- ◆ Which state/federal boundary issues are most impactful to your organization/constituents? Why?
- ◆ Do you believe that it could be valuable to convene forums to help drive on or more states toward agreeing to principles as it relates to these topics and their impacts/interaction at the wholesale/retail levels?
- ◆ Do you know of any efforts that are currently driving toward formalizing coordination/consistency on any of the three topics (or other topics)?
- ◆ Would your organization be open to participating in such a forum?
- ◆ What might success look like if an entity undertook coordination of such an effort?



“Big Data”

- ◆ Vendor Capabilities
- ◆ Phasor Measurement Units
- ◆ DOE Sensors
- ◆ Utility Perspective
- ◆ Work Product
 - ◆ Recommendations to DOE

Advanced Grid

- ◆ DOE performs an analysis (based on your spreadsheet approach), i.e., it includes doing the following:
- ◆ Determining the essential functional requirements (from your spreadsheet) and describing needed grid capabilities/systems and associated \$ under the following scenarios:

- ◆ Traditional grid (i.e., power flows from central generators to customers)
- ◆ Distributed grid (scenario A): electric utility owns assets and oversees sensing, control, coordination.
- ◆ Distributed grid (scenario B): shared responsibility of grid ownership between utility and customer/3rd-party (including microgrids) with a need to understand systems required for sensing, control, and coordination.
- ◆ Scenario 3 but includes T/D coordination.

Services Provided	Service Description	Provided by "Utility" Via			Customer Option to Provide if disconnected from Grid	Consequences if not provided for
		Distribution	Transmission	Generation		
System Design, Operation, and Maintenance						
Generation Services						
Energy and capacity	Having sufficient resources available energy needs, all hours of all days			G	Solar, Fuel Cells, Storage (multiple technologies likely required)	Power outages
Load generation balance	System to match the real time energy needs with a resource			G	Advanced Control system	Power surges, outages
Provide for future growth	Having resources and facilities available and adequately sized should load at this location increase by any amount	D	T	G	Add more panels, batteries, and inverters, however ability to match resources with demand will be limited	Ability to meet loads will be limited to existing capability
Frequency regulation	Maintain system frequency at 60Hz (required by electronic components)			G	Advanced Control system	Damaged appliances & electronics
A/C & motor startup	Provide extra capacity when A/C's and other motors first start	D	T	G	Smart Inverter + Oversized system	A/C and motors may stall out, damaging the unit and causing power outages
Voltage Regulation Services						
VAr support	Provide stored energy to support the grid after significant outages	D	T	G	Smart Inverter + Oversized system	Power outages, dimming lights, damaged appliances & electronics
Voltage regulation	Keep voltage in a specified bandwidth	D	T	G	Smart Inverter	Damaged appliances & electronics & lighting
Power Quality	Mitigate voltage spikes and harmonics	D			Advanced Control system + Storage	Flickering lights, damaged appliances & electronics
Reliability Services						
Outage scheduling	Schedule system maintenance and provide alternate service options during maintenance	D	T	G	Second Inverter + oversized system + multiple feeders	Without a second, standby system, customer has no electricity until new parts are delivered and installed. Potentially weeks or months.
Redundancy	Provide multiple sources of energy	D	T	G		
Component failure	Immediately replace/repair equipment from stock on hand in case of failure	D	T	G		
Equipment replacement	Proactively replace aging equipment	D	T	G		
Outage restoration	Restore service after an outage	D	T			
Resiliency Services						



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Services

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Resiliency?

◇ How should we tackle this?