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RECOVERY ACT SMART GRID PROGRAMS

Smart Grid Assets and Functions

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Smart Grid Assets and Functions

Assets	Functions														
	Smart Grid													Other	
	Fault Current Limiting	Wide Area Monitoring, Visualization, and Control	Dynamic Capability Rating	Power Flow Control	Adaptive Protection	Automated Feeder and Line Switching	Automated Islanding and Reconnection	Automated Voltage and VAR Control	Diagnosis & Notification of Equipment Condition	Enhanced Fault Protection	Real-Time Load Measurement & Management	Real-time Load Transfer	Customer Electricity Use Optimization	Storing Electricity for Later Use	Distributed Production of Electricity
Smart Grid															
Advanced Interrupting Switch										●					
AMI/Smart Meters								●			●		●		
Controllable/regulating Inverter							●	●							
Customer EMS/Display/Portal													●		
Distribution Automation					●	●	●	●				●			
Distribution Management System			●		●	●	●	●			●	●			
Enhanced Fault Detection Technology										●					
Equipment Health Sensor			●						●						
FACTS Device				●											
Fault Current Limiter	●														
Loading Monitor			●						●			●			
Microgrid Controller							●								
Phase Angle Regulating Transformer				●											
Phasor Measurement Technology		●	●	●	●		●	●		●					
Smart Appliances and Equipment (Customer)													●		
Software - Advanced Analysis/Visualization		●	●												
Two-way Communications (high bandwidth)		●			●	●	●	●			●	●			
Vehicle to Grid Charging Station													●		
Very Low Impedance (High Temperature Superconducing) cables				●											
Other															
Distributed Generator (diesel, PV, wind)															●
Electricity Storage device (e.g., battery, flywheel, PEV etc)														●	

Smart Grid Assets and Functions

Benefits			Functions															
			Smart Grid													Other		
			Fault Current Limiting	Wide Area Monitoring, Visualization, and Control	Dynamic Capability Rating	Power Flow Control	Adaptive Protection	Automated Feeder and Line Switching	Automated Islanding and Reconnection	Automated Voltage and VAR Control	Diagnosis & Notification of Equipment Condition	Enhanced Fault Protection	Real-Time Load measurement & Management	Real-time Load Transfer	Customer Electricity Use Optimization	Storing Electricity for Later Use	Distributed Production of Electricity
Economic	Market Revenue	Energy Revenue														●	
		Capacity Revenue														●	
		Ancillary Service Revenue														●	
	Improved Asset Utilization	Optimized Generator Operation		●												●	●
		Deferred Generation Capacity Investments													●	●	●
		Reduced Ancillary Service Cost		●						●			●		●	●	●
		Reduced Congestion Cost		●	●	●									●	●	●
	T&D Capital Savings	Deferred Transmission Capacity Investments	●	●	●	●									●	●	●
		Deferred Distribution Capacity Investments			●								●	●	●	●	●
		Reduced Equipment Failures	●		●						●	●					
	T&D O&M Savings	Reduced T&D Equipment Maintenance Cost									●						
		Reduced T&D Operations Cost						●		●							
		Reduced Meter Reading Cost											●				
	Theft Reduction	Reduced Electricity Theft											●				
	Energy Efficiency	Reduced Electricity Losses				●				●			●	●	●	●	●
	Electricity Cost Savings	Reduced Electricity Cost													●	●	●
Reliability	Power Interruptions	Reduced Sustained Outages					●	●	●		●	●	●			●	●
		Reduced Major Outages		●					●				●	●			
		Reduced Restoration Cost					●	●	●		●	●	●				
	Power Quality	Reduced Momentary Outages										●				●	
		Reduced Sags and Swells										●				●	
Environmental	Air Emissions	Reduced CO_2 Emissions				●		●		●	●		●	●	●	●	●
		Reduced SO_x, NO_x, and PM-10 Emissions				●		●		●	●		●	●	●	●	●
Security	Energy Security	Reduced Oil Usage (not monetized)						●			●		●				
		Reduced Wide-scale Blackouts		●	●												