Appendix A. *Research Need Categories and Uncategorized Needs.*

Operational Flexibility Potential and Value	Data, Analytics and Planning	Customer and Critical Infrastructure Resiliency	Local Distribution Impact and Optimization	Communi - cations and Layered Controls	Validation and Large Scale Demonstrations
Valuing Operation Flexibility*****	DER Impact Modeling tools*	DERs for Emergency Response and Backup Power*	DERs for Emergency Response and Backup Power*	Secure Comms. For DER*	Large Scale VGI Demonstration to Validate VGIWG use cases *
Demonstrate DER Grid Balancing Services***	VGI Data Program**	Valuing Resiliency in Microgrids*	Improving B2G Coordination	EV charging device performance standards	
DER Contribution to Bulk Flexibility*	Model EV Charging & Price Responsiveness*	Bus2Grid for Resiliency	Local DER Transaction Platform	Low cost telemetry for DER	
DER Ramping Research	Load Modification Participation Models	Enabling DER Resiliency Services	Plug-and-play Power Distribution	Enhancing Commercial Buildings monitoring and control	
Evaluate Impact of DR on Market Decisions	What does DER look like in 2045?	Risk Mitigation for High-Impact Low-Probability Events	DSO		
Fuel Shifting as a Load Shift Resource	Evaluate Use Cases for variety of Battery chemistries				
EV Load Mgmt. Program	Bottom Up Integrated Planning and Visioning				
Assess Flexibility of Coordinated Customer DER	Modeling the Socio-technological Energy Transition				

An asterix (*) represents one attendee voting this need as "most urgent" on the list.
All yellow colored cells were selected by at least one person as the most urgent Research Need.

Appendix B. *As Yet Uncategorized Research Needs*

Explore res. Grid responsive systems	Characterize costs of DR automation in new buildings	Sensors for circuit de-energizing	Real-time estimation of PV power	Thermal storage into wholesale markets	Dynamic PV modelling	PSPS Grid support fuel research	Assess second life EV batteries
Heat Pump / electrification Asset controls	Comms. Standards into hardware (V2G)	Utility owned submetes on AMI network	NEC approved HEMS to reduce building costs	PV hardware resiliency	DER performance in new construction	DER Recycling	Fencing for PV resiliency
Coordinate water heater design and controls w grid	Assess EV charging tech efficiencies	Hosting capacity expansion planning and operational controls	Storage safety standards	Battery testing protocols for grid applications	Procurement assessment platform	DER control to minimize integration costs	Systems integration for power outage line safety