

Collected submissions from LBNL and CalETC:

- Energy Storage
  - Develop and validate safety standards for new energy storage chemistries (LBNL)
- Smart Inverters
- DERs as NWAs
  - Examine hardware resiliency of solar PV arrays in extreme weather (LBNL)
  - High fidelity matching platform for local distributed energy transactions (LBNL)
  - Plug-and-play power distribution: PV, storage, and loads (LBNL)
  - New tools capable to provide quantitative information to utilities and regulators to help them avoid the “Utility Death Spiral” and use the rate design process to influence adoption of DERs’ (LBNL)
- DR Management systems
  - Need to develop representative reduced order models of inverters for dynamic PV modeling and increased DER adoption scenarios (LBNL)
  - High fidelity, low cost sensors for selective deenergization of circuits (LBNL)
- Building Decarbonization
  - Simplifying and improving DER coordination protocols between the grid and buildings, and within buildings (LBNL)
  - Small DC microgrid (including PV) for critical residential loads (LBNL)
- Energy Flexible Load assets
  - Develop and integrate methods to account for high-impact, low probability events into utility DER infrastructure planning. (LBNL)
  - Research into gathering a greater granularity of data for smart building systems for commercial buildings (LBNL)
  - Integrating smart home systems (Alexa, Google Home) into residential demand response programs (LBNL)
  - Quantify and compare energy performance of different classes of office lighting regimes that provide light for vision and circadian stimulus (LBNL)
- Wildlife Risk Mitigation and Resilience
- EV Integration
  - Valuation assessment of the needs and net values of different types and use cases of Vehicle Grid Integration (CalETC)
  - Demonstration of benefits and feasibility of EV-to-Grid communications systems (CalETC)
  - Collect and Catalogue VGI informations, tools, programs and methods (CalETC)
  - Initiatives that harmonize existing VGI datasets (CalETC)
  - Modeling of EV charging behavior for distribution grid stability and cybersecurity (LBNL)
- Distribution Grid Communications
  - Realtime estimation of total PV power on a circuit (LBNL)
  - Modeling of DER price-response as the fundamental coordination between the grid and DER, including locational prices (LBNL)
  - Development of communication protocols for managing local capacity constraints in the face of high levels of EV charging (LBNL)