Policy Framework for Grid Investments in Economic Recovery

WORKING DRAFT

GridWise Alliance developed the following framework for new federal investments in grid modernization in conjunction with our Policy Council, a group of member companies including utilities, grid equipment manufacturers and vendors that provides a focal point for Alliance members to engage in ongoing policy efforts. Guiding principles for the investments recommended in this framework are:

- Funding should flow through existing agency programs with well-established rules and procedures to deliver investments quickly into the economy.
- Funding should result in the large-scale deployment of technologies critical to modernizing the grid.
- The importance of grid modernization to meet ambitious state climate goals, build resilience, and secure the grid against malicious attacks and severe weather has grown since the 2009 Recovery Act, and therefore the scale of new federal investments in a stimulus package must be larger.
- State energy offices can effectively distribute federal funds and deliver locally appropriate outcomes, often without requiring cost share.
- The different business models of investor-owned and public power utilities require multiple funding mechanisms to achieve similar outcomes.
- There are broad and long-standing coalitions advocating for storage, electric vehicles, renewable energy generation, energy efficiency incentives in a stimulus package, and GridWise Alliance will support those proposals, rather than developing our own.
- Broadband policy proposals should be been linked to grid modernization, both to eliminate the digital divide that prevents some consumers from taking advantage of the services of a modern grid and to leverage utility communication networks that are critical for grid modernization.

08/26/20

Recommendations for Grid Investments for Economic Recovery
WORKING DOCUMENT

1. **Utility communications and broadband**
   Utilities' investments in operational communications network could be leveraged to provide middle mile broadband through an expanded fiber network and last mile wifi on poles. The Chattanooga utility EPB leveraged a $111.7 million ARRA Smart Grid grant to build a $222 million fiber optic communications network that enables the city's smart grid and provides high speed broadband access to all customers. A new study suggests that EPB's fiber optics has helped generate at least 2,800 new jobs and added $865.3 million to the local economy by cutting power outages, improving Internet links and attracting businesses to the "Gig City."[1]

   - **$2 billion for Rural Utility Services for rural co-operatives**
   - **$1 billion for DOE OE Smart Grid Matching Grant Program for Investor Owned Utilities (IOUs) and Public Power**

2. **Deployment of technologies to enhance grid flexibility**
   The integration of variable renewables increases the need for system flexibility as the grid transitions from controllable generation and variable load to more variable generation and the need and potential for controllable load.[2] Grid technologies like controls, sensors and storage can provide flexibility by improving visibility of the system for grid operators, helping to quickly rebalance the system with autonomous controls, and facilitating the aggregation of distributed energy resources to serve as assets to grid operations. These technologies help integrate utility-scale and distributed renewables, can relieve transmission constraints and reduce the need for peak generation. These flexibility technologies also build resilience by providing back up power, automatically rerouting power around damaged lines, and self-healing grid damage.

   - **$5 billion for DOE OE Smart Grid Matching Grant Program**
   - **$5 billion to DOE Power Marketing Administrations, with a portion being used for grant programs to preference customers to modernize their interconnections and distributions systems**

3. **Deployment of technologies to enhance grid integration of buildings and vehicles**

   Building-to-Grid Integration
   Buildings consume large amounts of energy for heating, cooling, lighting and other functions, but they can also be a significant asset to the grid through load shifting, demand response, and aggregation of distributed generation. Greater optimization of the significant energy demand and supply functions that buildings offer—on an automated basis—has far reaching electricity policy and regulatory implications. The benefits include lower costs, enhanced resilience,

[1] https://www.timesfreepress.com/news/business/aroundregion/story/2015/sep/15/study-finds-epb-fiber-optics-generates-over-865-million-benefits-chattanooga/325235/
[2] https://www.energy.gov/policy/initiatives/quadrennial-energy-review-qer/quadrennial-energy-review-second-installment

reduced peak loads, enhanced energy efficiency and better integration of distributed energy resources.[3]

- **$1 billion to DOE OE Smart Grid Matching Grant Program for reaching 100% deployment of smart meters (could also be used for smart inverters)**
- **$3 billion to DOE Federal Energy Management Systems for procurement and installation of grid-integrated Energy Management Systems for federal buildings**
- **$3 billion for DOE State Energy Program for procurement and installation of grid-integrated Energy Management Systems for state and local government buildings**
- **$1 billion to DOE Energy Efficiency and Conservation Block Grants program for states to establish or continue rebate program for smart appliances with capability for demand response**

Vehicle-to-Grid Integration:
Electric vehicles (EV) will reduce carbon emissions from the transportation sector if powered with clean electricity. Plug-in EV batteries can be an asset to the grid, charging when clean energy is in excess capacity or when electricity prices are low (at night), and discharging to the grid when demand is high. A modern grid that is well equipped to handle the additional electric transportation load and reap the benefits from the intersection of the transportation and electric power industries, could enrich the customer experience for vehicle owners, and contribute to an enhanced grid with real environmental benefits for all customers.[4] Broad adoption will require a smarter, more flexible grid (see #2 above).

Need Info on DOE Vehicle Integration budget line

4. **Cybersecurity Technology and Workforce**

The current cybersecurity workforce shortage in the United States alone is projected to be 498,480.[5]

- **$500 million to DOE Cybersecurity for Energy Delivery Systems (CEDS) for cybersecurity workforce development**
- **$500 million to DOE CEDS for cyber assessments and cyber threat monitoring for small and medium utilities**
- **$1 billion to DOE CESER and USDA RUS for cybersecurity technology deployment**

5. **Mission Critical Infrastructure: MUSH and Defense**
   - **$1 billion to Department of Defense and DOE Federal Energy Management Program for microgrids for mission critical infrastructure**

6. **Workforce Development (OE Smart Grid)**
   - **$400 million to DOE Office of Electricity for workforce training for digital, high tech grid jobs with $100 million to DOE Office of Economic Impact and Diversity**
   - Immediate expansion of on-line programs for utility workers and related career paths during COVID-19 mandatory stay-at-home period and beyond

[3] https://naseo.org/data/sites/1/documents/publications/v3-Final-Updated-GEB-Doc-10-30.pdf https://www.energy.gov/sites/prod/files/2017/06/f34/Challenges_and_Opportunities_of_Grid_Modernization_and_Electric_Transportation.pdf

[5] https://www.cpomagazine.com/cyber-security/cybersecurity-workforce-shortage-continues-to-grow/