Electricity Advisory Committee

MEMORANDUM

TO: **Honorable Steven Chu, Secretary**
Honorable Patricia Hoffman, Assistant Secretary for Electricity Delivery and Energy Reliability

FROM: **Electricity Advisory Committee**
Richard Cowart, Chair

DATE: **April 8, 2011**

RE: **Policy Questions on Energy Storage Technologies**

Introduction

The Electricity Advisory Committee (EAC) submits to the U.S. Department of Energy (DOE) a set of policy questions for consideration to maintain the momentum for investment and deployment of energy storage technologies.

The following are Policy Questions for DOE's consideration that the EAC believes are important and need to be addressed.

1. **Assistance in shouldering some of the costs and risks associated with storage research and/or demonstration projects**, whether they are large-scale generation-side efforts or smaller projects in conjunction with utility customers on the distribution side (see more on the latter below). The ARRA "stimulus" projects provided for a number of significant demonstration projects around the use of energy storage. However, it is not at all clear that momentum for many of these technologies and applications will continue absent a permanent policy with respect to tax credits for investments in storage facilities and for R&D, as well as some level of continued R&D funding.

2. **Related to the point above, it would desirable to have DOE policy or program help that is directed specifically to the customer utility distribution side** (e.g., the distribution utility should be the focus of the investment effort. Such efforts would aim the storage solution at the utility side of the meter, but potentially with benefits to both the utility's distribution system and high voltage grids). Unlike investments in storage by wholesale market participants, any investor owned utility investments in distribution level storage require state commission approval. Such

was forthcoming under the aegis of obtaining ARRA funding, but going forward a better understanding of the costs and benefits of storage on the distribution system are required to get rate recovery approval for these investments. Regulators need information and guidance in assessing these projects as a rapidly evolving set of technologies continues to develop.

3. **Policy assistance from DOE on the classification and treatment of storage resources**. Since the beginning of the electric industry, regulators and industry have categorized products and services as generation, transmission or distribution. Indeed, how a product or service is regulated may depend on where it is placed within these three categories. Storage could qualify under any of these categories. As is true with other emerging products, its place in the regulatory regime and the ability to obtain regulatory cost recovery for it, may be hindered by the need to classify it as generation, transmission or distribution. It would be useful if the DOE could identify where regulatory "gaps" or "overlaps" between federal and state regulatory regimes are creating an impediment to the development and financing of storage. The technology and its applications are evolving rapidly and it is premature to establish rigid categorizations today which can act as barriers to adoption and innovation. This could help inform the policy discussion and lead to improved coordination between DOE, FERC and NARUC in this area.

   A new asset class for storage assets, at least in some applications, may be a logical and desirable construct for regulatory and other purposes. DOE can assist in the development of this concept and its use.

4. **Better define the products that storage provides**. Define and map the operational and economic characteristics of various storage technologies: Storage is a resource that has valuable operational and economic characteristics. Wholesale market design in the organized wholesale markets continues to evolve and become more refined in the various ISO/RTO and FERC proceedings. It would be useful to define the operational and economic characteristics of various storage technologies and then map those characteristics to the various wholesale markets products and services as presently defined, and as contemplated in future products/services. This will allow for better informed discussions in those proceedings about the potential (from both a technical performance and economic perspective) of storage to meet the reliability needs as specified in the wholesale markets and could assist in improving the coordination between the DOE and FERC on how best to formulate policies in this area.

   Thermal storage is another area of great potential value. New thermal storage technologies associated uniquely with new generation systems or developed as adjuncts to HVAC systems, for instance, bear monitoring and further investigation as to their potential and demonstrated value. Thermal storage that is associated with existing technologies and infrastructure, such as domestic hot water heaters, commercial refrigeration systems, building HVAC and advanced controls, and others all often fall under various energy efficiency standards and initiatives. When a narrow view of energy efficiency as an objective has the unintended consequence

of reducing or eliminating the possible uses of these thermal storage assets in a broader, system level sense, a more holistic appraisal is required. A current example is the proposed limitation on domestic how water heaters to 45 gallon sizes. This would make it more difficult to use these as energy storage systems via hot water heater control as is frequently done today and which has considerable potential for renewables integration.

Renewable integration may lead to greater variability in the use of gas fired generation by system operators. This is part of a trend towards a "just in time" energy system that must adapt to Variable Energy Resources and storage – electric, mechanical, thermal, and physical gas storage all have roles to play. Consideration must be given to the incorporation and development of gas storage in analysis and planning of future portfolios and storage applications.

Going forward, the development of better Cost Benefit Analysis tools for incorporating storage in systems planning is desirable at all levels – generation, transmission, distribution, and end use. Tools that are developed need to be informed on an ongoing basis about lessons learned and new technologies developed from ongoing ARRA and ARPA-E projects.

These four recommendations were unanimously approved by the Electricity Advisory Committee at its meeting on March 10, 2011.