101 Tremont Street
Suite 401
Boston, MA 02108
(617) 742-0054
fax: (617) 542-0054
www.env-ne.org

Rockport, ME
Boston, MA
Providence, RI
Hartford, CT
Ottawa, ON
Canada

July 24, 2013

VIA E-MAIL

Mark D. Marini, Secretary
Department of Public Utilities
One South Station, 5th Floor
Boston, MA 02110

Re: D.P.U. 12-76, Investigation by the Department of Public Utilities on its own Motion into the Modernization of the Electric Grid*, Report to the Department of Public Utilities from the Steering Committee*

Dear Secretary Marini:

Enclosed for filing with the Department of Public Utilities in D.P.U. 12-76 please find the Comments of ENE (Environment Northeast) regarding the *Report to the Department of Public Utilities from the Steering Committee* in the Massachusetts Electric Grid Modernization Stakeholder Working Group Process, submitted July 2, 2013.

Thank you for the opportunity to submit these comments. Please contact me with any questions.

Sincerely,

/s/ Abigail W. Anthony

Abigail W. Anthony, PhD
Director, Utility and Grid Modernization Initiative
401-276-0600
aanthony@env-ne.org

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

Investigation by the Department of Public Utilities on its own Motion into Modernization of the Electric Grid	D.P.U. 12-76

COMMENTS OF ENE (ENVIRONMENT NORTHEAST)

ENE appreciates the opportunity to provide comments to the Department of Public Utilities ("DPU" or "Department") on the Report to the Department of Public Utilities from the Steering Committee ("Report"). As an organization that addresses large-scale environmental problems that threaten regional ecosystems, human health, and the management of natural resources, ENE applauds the Department's initiative to address grid modernization, which has the potential to support increased energy efficiency savings, clean distributed energy resources, and innovative technologies and strategies in Massachusetts.

ENE believes that D.P.U. 12-76 is appropriately focused on enhancing reliability of electric service, reducing electricity costs, and empowering customers to adopt new electricity technologies and better manage their use of electricity. To successfully achieve these objectives, the Department must carefully craft a set of policies that guide utility planning and investment decision-making. Through this lens, ENE respectfully offers the following comments.

I. Recommendations to Advance Grid Modernization

As explained in more detail below, the following represent ENE's recommendations regarding critical actions to advance the Department's grid modernization efforts.

- The Department should adopt rules that send the right economic signals to utilities and stakeholders to encourage grid modernization investments (including geographically targeted

distributed generation, storage, energy efficiency, and demand response) that can address system peaks, reduce investments in distribution and transmission infrastructure, and meet other grid needs identified by system planners.

- The Department should define and adopt a framework for analyzing the costs and benefits of grid modernization investments. The foundation of the framework should be a proven cost-effectiveness test, such as the Total Resource Cost Test or Societal Cost Test, and modified through the incorporation of qualitative benefits and additional financial perspectives.
- The Department should establish and appoint diverse stakeholder interests to a Grid Modernization Advisory Council to institutionalize the process of stakeholder participation and input.
- The Department should commence a proceeding to examine the regulatory issues affecting electric vehicle deployment, including the role of electric vehicles in supporting the distribution system. The Department should seek to provide clear regulatory guidance in order to facilitate and prepare for large-scale electric vehicle adoption in a manner that maximizes system and ratepayer benefits.
- The Department should commence a proceeding to examine the role that advanced metering infrastructure, dynamic pricing, and pro-active consumer engagement can play in: (1) increasing the value and deployment of clean distributed generation and energy technologies in order to reduce transmission and distribution expenditure; (2) driving deep and persistent energy efficiency savings; (3) supporting and promoting high-efficiency electric heating technologies and electric vehicles in a manner that increases grid stability; (4) complementing and supporting the Commonwealth's net metering policies for renewable generation; and, (5) increasing participation in existing energy efficiency and clean energy programs among hard-to-reach consumer sectors.

II. Grid Modernization is Essential to Achieving Deep Reductions in Greenhouse Gas Emissions from the Electric, Transportation, and Heating Sectors.

In order to meet the climate and energy challenges currently facing the Commonwealth, the energy system will have to undergo a transformation. Recent studies and ENE analysis show that powering our heating and transportation sectors with electricity can deliver significant reductions in greenhouse gas emissions.[1] Electrification will enable greater use of clean renewable energy resources, accelerate energy efficiency, and dramatically reduce our dependence on petroleum and other fossil fuels. The challenge is to construct a fully integrated, flexible, low carbon energy network for the Commonwealth. A smart and flexible electric system, run by utility companies with new business models, will be characterized by widespread clean distributed generation, deep energy efficiency, and emerging grid resources, such as energy storage. The precise sources of power and grid resources are evolving and the Department is well positioned to create a regulatory framework that removes barriers and provides the right incentives to advance clean energy resources.

The infrastructure investments that Massachusetts makes now will greatly impact the Commonwealth's ability to achieve its energy and climate goals. New England states are on track to invest billions of dollars in long-lived energy infrastructure in the coming years (paid for by ratepayers) that will not prepare the state for a clean energy future. These capital investments will be in the form of electric transmission lines, natural gas pipelines, distribution network expansions, and other large projects that will lock us into a largely fossil fuel-based energy system. Alternatively, the Commonwealth can make investments in clean distributed energy

[1] ENE, 2012. Massachusetts Home Heating Facts. The annual greenhouse gas emissions from heating an average (inadequate insulation) Massachusetts home with an electric heat pump are 3.72 tons of CO_{2e} , versus 7.05 tons of CO_{2e} if heating with oil. Full report available from: http://www.env-ne.org/public/resources/pdf/ENE_Massachusetts_Heating_Facts.pdf. ENE, 2013. ENE ClimateVision 2020. Annual greenhouse gas emissions from a Nissan Leaf are 60% lower than annual emissions from a comparable conventional vehicle. See: Greenhouse gas emissions for conventional vs. electric vehicles. http://www.eneclimatevision.org/looking-forward/cleaning-energy-supplies

resources and grid modernization technologies and strategies that both meet our energy and delivery needs today and create a grid that will support increasing levels of clean and renewable resources. Many of these investments will have immediate economic and environmental benefits while simultaneously positioning the Commonwealth to quickly reap the benefits of breakthroughs in clean generation and delivery technology that dramatically lower the costs of our energy system.

Regional expenditure on transmission infrastructure is planned to exceed $11 billion between 2002 and 2017, of which approximately $5 billion will be paid by Massachusetts ratepayers.[2] However, recent activity at the Independent System Operator of New England (ISO-NE) confirms that Massachusetts' investments in distributed generation, clean energy resources, and energy efficiency can help maintain grid reliability, avoid expensive transmission infrastructure, and save ratepayers money. Specifically, ISO-NE recently announced that state-level investments in energy efficiency have deferred the need to construct $416 million in transmission upgrades previously thought to be necessary.[5] In addition, ISO-NE acknowledged the growing presence of small-scale distributed generation and will study its ability to reduce system peaks and limit the need to construct new transmission.[3] A recent report from Synapse Energy Economics on behalf of ENE and a coalition of public interest organizations finds that 1,000 megawatts of distributed generation currently exists in the region and an additional 3,000

[2] Regional System Plan Transmission Projects, June 2013 Update, Presentation to the Planning Advisory Committee, June 19, 2013, slide 11 available at http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2013/jun192013/a5_rsp13_project_list_update.zip.

[5] See ENE, Energy Efficiency & Electric System Planning - ISO New England Update (March 2012), available at http://www.env-ne.org/public/resources/pdf/ENE_ISO-NE_EEUpdate_033012_Final.pdf; NH/VT 2022 Needs Assessment and Discussion of Alternatives for Central Vermont/Connecticut River Corridor, Presentation to Planning Advisory Committee (June 19, 2013)).

[3] Update on Solar PV and Other DG in New England, Presentation to Planning Advisory Committee, June 19, 2013, available at http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2013/jun192013/a7_solar_dg_update.pdf;

megawatts is projected by 2021.[4] This growing resource is important for its ability to reduce or eliminate the need for new transmission and distribution infrastructure. The Department's leadership in setting regulatory expectations, providing clarity for grid modernization planning and investments, and incorporating new approaches and analyses into grid planning will help reduce the Commonwealth's escalating expenditure on regional transmission infrastructure. A new utility business model and regulatory framework that supports and promotes grid modernization investments in clean, distributed generation, energy storage, energy efficiency, and new technologies will improve grid reliability, reduce expenditure on transmission and distribution infrastructure, and contribute to achieving the Commonwealth's clean energy and climate goals.

III. A Grid Modernization Advisory Council Will Facilitate Stakeholder Engagement and Expedite Regulatory Review.

ENE encourages the Department to establish a Grid Modernization Advisory Council (GMAC) to institutionalize the stakeholder engagement started in the current investigation. The GMAC will ensure that diverse stakeholder interests - including business, technology, engineering, utility, consumer, and environmental – continue to be represented as Massachusetts advances the goals and objectives of grid modernization.

This recommendation is based on the success of energy efficiency stakeholder councils in Massachusetts, Connecticut, and Rhode Island. The three southern New England states are among the leading energy efficiency jurisdictions in North America. Of the many commonalities among these states, the presence of a central stakeholder body focused on energy efficiency policy and planning stands out as an important factor in their accomplishments. These councils demonstrate that a collaborative, multi-stakeholder council can foster a climate of efficiency

[4] Synapse Energy Economics, Inc., Forecasting Distributed Generation Resources in New England: Distributed Generation Must Be Properly Accounted for in Regional System Planning (June 7 2013), available at http://www.synapse-energy.com/Downloads/SynapseReport.2013-06.E4-Group.DG-in-New-England.11-052.pdf

program success and cooperation. Efficiency council success is premised on using a fact-based approach to decision making. Importantly, stakeholder councils act as a focal point in state energy planning for efficiency and related demand side policy implementation. Among the most important of the positive outcomes of the stakeholder council approach is a shift in the nature of decision-making from an adversarial process to collaboration. Rather than expend effort on contentious litigated proceedings between utilities, intervener groups, and public agencies, a stakeholder council can bring all stakeholders into the discussion before policies and program details progress to the point where there is little flexibility to address concerns, and then seek solutions that better satisfy multiple objectives.

A properly designed GMAC can serve as the primary forum for stakeholder input into utility grid modernization planning, ensure that utility plans and investments advance the goals of grid modernization (as defined by the Department), and can help resolve issues before utility plans and proposals come before the Department. The Department would retain all of its regulatory roles, and the GMAC can provide recommendations to the Department at key decision points, including regarding issues such as cost benefit analysis, utility plans and proposed investments, comparison of alternative investments or strategies, and evaluation. Use of the GMAC can facilitate the Department's review process to encourage timely grid modernization progress and limit lengthy, contested regulatory proceedings.

IV. The MA DPU Should Take Decisive Actions to Remove Barriers to Plug-in Electric Vehicle Deployment

Plug-in electric vehicles (PEVs) have tremendous potential to reduce Massachusetts' expenditure on imported gasoline and diesel, and to advance the Commonwealth's clean energy and climate goals. ENE strongly recommends that the Department set clear guidance for utilities, PEV owners, and other market participants, and facilitate and promote the integration of PEVs as part of the broader effort to develop and maintain a clean, affordable, and reliable electric system.

Increasing the use of electricity for transportation through the large-scale adoption of PEVs would reduce expenditure on imported gasoline and diesel, boost economic activity by keeping more of our energy dollars in state, diversify our transportation fuel networks, reduce greenhouse gas pollution, and reduce criteria air pollutants. Already in New England, PEVs can reduce vehicle emissions by over 60% when compared to a comparable conventional vehicle.[5] As the renewable energy capacity of the regional energy mix increases, the environmental and climate benefits of PEVs increases as well. PEVs also deliver individual cost savings and greater economic benefits. At current electricity and gas prices, a PEV's fuel costs are 65% less per mile than a conventional medium sedan.[6] In 2011, Massachusetts' expenditure on imported gasoline and diesel was over $3.1 billion. Of that total, approximately $2.3 billion left the state as payments to fossil fuel producers.[7] Widespread adoption of PEVs will reduce our transportation fuel expenditure and reduce this transfer of wealth out of the state.

ENE strongly recommends that the Department commence a separate proceeding to focus on the regulatory issues affecting the use of PEVs in Massachusetts. In its investigation, the Department should seek recommendations and provide guidance on the following issues:

- Establishing guiding principles to inform Department decision-making for plug-in electric vehicle issues.
- Establishing a schedule for forecasting loads as PEVs are integrated into the system, including the impact of PEV charging on electric demand and transmission and distribution facilities during periods of peak demand. This process should result in an understanding of

[5] ENE, 2013. ENE ClimateVision 2020. Greenhouse gas emissions for conventional vs. electric vehicles. See: http://www.eneclimatevision.org/looking-forward/cleaning-energy-supplies
[6] ENE analysis of Bureau of Transportation Statistics, U.S. EPA, and U.S. DOE data. Chart of analysis available at: http://www.uri.edu/cels/ceoc/ec/documents/Anthony_TakeChargeII.pdf
[7] ENE analysis of EIA, American Petroleum Institute, and National Association of Convenience Stores data. Chart of analysis available at: http://www.uri.edu/cels/ceoc/ec/documents/Anthony_TakeChargeII.pdf

the infrastructure and energy costs associated with PEVs. There is also a need to explore the interaction between PEV infrastructure needs and other grid modernization efforts.

- Establishing reporting and analysis requirements for utilities over time.
- Identifying rate-setting mechanisms, including time-variable rate design for residential customers, to encourage PEV owners to maximize vehicle charging during periods of lower impact on the grid in order to minimize costly investments in distribution infrastructure.
- Exploring the implications of allowing for the purchase of stored energy back from electric vehicle owners (vehicle-to-grid) and changes to rates and standards that would optimize use of PEVs to support grid functioning.
- Developing procedures for accelerated utility review and service upgrades related to PEVs.
- Defining regulatory treatment for non-utility, third-party transportation electricity providers.
- Establishing requirements for consumer education for PEV owners concerning vehicle charging costs, residential charging infrastructure installation, protecting the reliability of the distribution system, and other challenges that new PEV owners may face.
- Exploring issues concerning the ownership of charging infrastructure, including appropriate policies for infrastructure cost recovery, competition and market forces.

We urge the Department to devote serious consideration to commencing a separate proceeding to focus on reducing barriers to PEV adoption, analyzing the impact of PEVs on the distribution system and ratepayers, and defining the key role utilities and others play in realizing economic and environmental benefits of PEVs.

V. Transparent Cost Benefit Analysis Should Be A Significant Factor in the Department's Grid Modernization Decision-Making

ENE recommends that a key outcome of the Department's investigation be the adoption of a cost-benefit framework for grid modernization investments and guidance for conducting analysis. In particular, ENE recommends that the Department adopt an analytical cost benefit

model with input from the Grid Modernization Advisory Committee and utilities. We also recommend that selection or approval of grid modernization investments be informed by an evaluation of costs and benefits, among other factors as determined by the DPU. The framework recommended by ENE can be summarized as follows:

- Apply existing cost benefit analysis frameworks used to evaluate the cost-effectiveness of energy efficiency investments in Massachusetts and throughout the region. These frameworks, including the Total Resource Cost test and Societal Cost Test, can be modified to address issues unique to grid modernization investments, such as the inclusion of the costs and benefits of energy storage. Uncertainty should be addressed through the use of sensitivity analyses. The use of a proven and credible cost benefit framework is necessary to assure stakeholders, ratepayers, and policymakers that cost-effective ratepayer investments are being made.
- Costs and benefits should be quantified to the extent possible. Where it is not possible to quantify benefits, a qualitative assessment of benefits may be included in a variety of ways. ENE suggests a qualitative description and weighting of different factors.
- Additional financial analyses may support the cost benefit framework. Alternatives may include the determination of deferred investment savings from grid modernization investments through the use of net present value of the deferred revenue requirement analysis or the net present value of alternative investment proposals.[8,9]
- A cost-benefit assessment of grid modernization investments and approaches should include identification, analysis, and discussion of other investments or approaches (both "non-wires alternatives" or grid modernization and "traditional" investments, if any) that reasonably might achieve similar or better results. To the extent those expected benefits can

[8] Rhode Island Public Utilities Commission, Docket 4202, Standards for System Reliability Procurement. July, 2011.
[9] European Commission Joint Research Center, Guidelines for conducting a cost-benefit analysis of smart grid projects. 2012.

be achieved through other investments, the cost benefit analysis should identify the incremental costs and benefits of the non-wires or grid modernization proposal.[10]

The Department should consider the cost benefit analysis in addition to other factors in the decision-making process, such as public policy objectives, potential for synergies that meet multiple objectives, ability to meet identified system needs, anticipated reliability of the investments, operational complexity and flexibility, implementation issues, customer impacts, and other relevant decision-making factors.

VI. **Conclusion**

ENE greatly appreciates the opportunity to submit these comments on the Steering Committee Report. ENE applauds the Department's initiative to address grid modernization, which has the potential to help Massachusetts' meet the climate and energy challenges we currently face. ENE looks forward to continued collaboration with the Department and in its efforts to construct a fully integrated, flexible, low carbon energy network for the Commonwealth.

Thank you for your consideration of these comments.

Respectfully submitted,
ENE

By: _____
Abigail W. Anthony, PhD
Director, ENE Utility and Grid Modernization Initiative

cc: Service List

[10] It may be instructive for the Department to review the Rhode Island System Reliability Procurement Standards establishing requirements and guidelines for incorporating "non-wires alternatives" into the utility's distribution system planning processes. See: http://www.ripuc.org/eventsactions/docket/4202-NGrid-Ord20419(7-25-11).pdf