Submitted on Behalf of:

Acadia Center
Appalachian Mountain Club
Berkshire Environmental Action Team (BEAT)
Better Future Project
Clean Water Action
Climate X Change
Conservation Law Foundation
E2 (Environmental Entrepreneurs)
Environment Massachusetts
Environmental League of Massachusetts
Low-Income Weatherization and Fuel Assistance (Low-Income Network)
Mass Energy Consumers Alliance
Montague Resident
Mothers Out Front
Mount Grace Land Conservation Trust
Nashoba Conservation Trust
National Wildlife Federation
NHpipelineawareness.org
No Fracked Gas in Mass
Stop the Pipeline
StopNED

November 4, 2014

Massachusetts Department of Energy Resources (DOER)
Submitted Electronically to lowdemandstudy@state.ma.us

Re: Low Demand Analysis Stakeholder Comments

The undersigned represent environmental groups, business coalitions, low-income advocates, consumer advocacy organizations, citizen groups, and individuals. We thank you for the opportunity to actively participate in this process, to ask questions, and to provide comment in response to the presentation given by Synapse on October 30th. We urge you to consider the following as you proceed with your feasibility design and modeling.

Process Clarifications/Requests

1. Provide MW equivalent on ALL calculations provided in the final report (including supply curves), as this is what resonates most with legislators and other stakeholders.
2. Include in analysis thorough examination of solutions with potential to reduce capacity constraint between now and 2020 (e.g., air source heat pumps, CHP, more LNG, market reforms, commercial PACE program in CT, etc.).
3. To the extent possible, we ask that you share in advance the base case output(s) prior to the next stakeholder meeting.

Content Clarifications

1. **Assumptions:**
   a. Avoided Costs of Energy Efficiency
   Avoided costs for energy efficiency resource in the feasibility study are limited to (1) avoided energy, capacity, and T&D from the AESC 2013 base case; (2) avoided costs of GWSA compliance (DPU 14-86). However, the analysis should capture all other non-energy benefits starting with those already accounted for by the Department of Public Utilities. In addition, the AESC 2013 did not adequately monetize the impacts of winter prices spikes. The feasibility study should backcast to determine what the additional avoided costs of energy supply would have been had the winter price spikes been accounted for. The Rhode Island Public Utilities Commission estimated that AESC 2013 understated these costs by $200 million over a three-year period for Rhode Island alone. We would also like to see health benefits accounted for, which the DPU does not currently recognize but that are becoming increasingly easier to calculate. If the study excludes health benefits, we ask that the exclusion will be listed in the caveats.

   b. Potential for Energy Efficiency
   We believe that the currently modeled limit on energy and demand savings is arbitrary and insufficient given the great potential for avoiding costs. Given that Massachusetts energy efficiency programs have greatly expanded since 2009 without causing per unit costs to rise or BCRs to fall, we see the current amount of efficiency in the supply curve to be arbitrarily limited. We also know that the potential studies that could elucidate the availability of low-cost energy efficiency, specifically the amount of EE that would be allowable under the economic threshold,

are unavailable. We recommend modeling the energy demand savings associated with energy savings that would start at a significantly higher percentage of sales than in the base case. Although the following numbers are also not sufficient enough to capture all that is cost effective, at a minimum we recommend extrapolating from the CECP numbers for 2018: 2.9% reduction in annual electric sales due to efficiency measures installed during that year, 1.9% from natural gas efficiency, and an annual growth rate of 5% for efficiency savings related to fuel oil. Until more detailed potential studies are developed, this approach offers an appropriate means of reflecting the potential for greater efficiency savings in electricity and natural gas end use. Note also that the principal source for low-income energy efficiency projections actually combines residential and low-income energy efficiency without specifically addressing low-income.

c. High Natural Gas Prices/Price Volatility

The high natural gas price scenario should be utilized to evaluate consumer risk under a plausible scenario where a combination of forces causes gas prices to increase to the highest credible levels. Without evaluating such a scenario the study will fail to address the core challenge related to making long-lived investments in energy infrastructure; namely, how to support investments that create the greatest benefits and lowest costs across a range of future circumstances. The Energy Information Administration recently conducted analysis to evaluate how increased natural gas exports would impact prices in various scenarios related to availability of natural gas resources, economic growth levels, and electric sector gas consumption. This is particularly important as EIA's gas price forecasts in the 2014 AEO inadequately reflect the risk of increased natural gas exports driving a near-term price increase. EIA's base case assumes that the US becomes a net exporter in 2018, and net exports increase to approximately 5bcf by 2030.[1] However, the high gas price scenarios layered over this base case focus on high economic growth and low recoverability of oil and gas resources, and do not specifically evaluate the price impact of accelerated exports. Due to increasing political support for exports to support geopolitical objectives and the accelerated pace of approval for liquefied natural gas (LNG) export terminals, market-watchers have recently begun to assume a more rapid rate of increase in exports.[2] The most appropriate assumption for the high gas price scenario can be found in EIA's October 2014 *Effect of Increased Natural Gas Exports on Domestic Energy Markets*.[3] Of the scenarios explored in this analysis, the rapid increase in exports to a high level (20bcf/d by 2025), layered onto the low oil and gas resource case, is the scenario that best reflects the risk that gas production is more expensive than assumed, and that higher international market prices nonetheless drive a significant increase in exports. According to EIA, high exports and low recoverability leads to average natural gas prices of $9/Mcf in the Northeast over the study period of 2015-2040,[4] which 13% higher than EIA's base projection under the low oil and gas resource case.

d. Incremental Canadian Transmission Sensitivity

We support modeling a sensitivity to consider energy imports from Canada, but recommend that the assumptions related to such imports be modified to reflect the characteristics of

[1] See: http://www.eia.gov/forecasts/aeo/mt_naturalgas.cfm
[2] See: http://www.eenews.net/energywire/stories/1060006051/search?keyword=LNG+wall+street
[3] An update of a January, 2012 report with the same name, referenced in October 20th joint environmental comments. The updated EIA report is available at: http://www.eia.gov/analysis/requests/fe/pdf/lng.pdf
[4] Ibid, p. 32.

proposed projects that would carry wind in addition to hydroelectricity. Filling a large-scale transmission line with wind, and backstopping wind with hydroelectricity would enable cost-effective transportation of wind from Eastern Canada and northern New England, while providing firm supply to replace retiring in-region electric generation. A wind-hydro mix would likely have a higher annual capacity factor than the 67% assumed for both lines in the draft sensitivity. Given that developers are proposing projects to transport a mix of wind and hydro,[5] we believe the study would be remiss if it did not evaluate such an approach. In fact, analysis of two transmission projects provides a valuable opportunity to evaluate both types of imports by simply assuming that one line carries 30% wind generation and 70% imports from Canada. Additionally, we believe that it may be inappropriately conservative to assume that a second transmission line could not be brought online until 2022. Unless there is a concrete basis for this assumption, we recommend that the completion dates for transmission be based on developer projections, as will likely be the case for gas pipeline capacity.

e. Thermal Biomass

In the October 30th stakeholder meeting Synapse described an adjustment of the biomass thermal potential based on its apparent size. However, no additional explanation was provided, and we are concerned that the analysis may be undervaluing an important resource arbitrarily. If credible analyses have determined certain level of biomass thermal opportunity we recommend that findings of those analyses be incorporated in full. Without an explanation regarding the discounting of biomass thermal potential, an important resource for the Commonwealth to pursue could be unnecessarily set aside.

2. Study Limitations: Methane Emissions

During the stakeholder meeting, we heard Dr. Stanton say that methane leakage would not be counted per direction of DOER because of limited time to analyze this question properly given the wide range of possibilities. As supporters of the Global Warming Solutions Act, we do not understand why the Commonwealth would carefully analyze its many energy options and to put a price on C02 up the stack without also putting a price on CH4 sent into the air.

We suggest a simplified approach that would be similar to approaches used in other parts of this Low Demand Analysis. That would be to utilize a conservative percent leakage as recently published in a report for US DOE.[6] In that report, the authors estimate a 1.2-1.6 percent methane leakage rate, conservatively, for Marcellus shale gas. (Please note this is a conservative estimate. We suggest a more appropriate rate would be 3-6%, but recognize that even higher estimates may be considered, too.[7]) It would seem reasonable to multiply the middle of that range, or 1.4% times the amount of natural gas that would be piped into Massachusetts to determine the quantity of leaked methane. Then multiply that number by 86[8] to derive a number that would be the number of tons of carbon dioxide equivalent.

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[5] For example the Emera-National Grid Northeast Energy Link,

[6] http://energy.gov/sites/prod/files/2014/05/f16/Life%20Cycle%20GHG%20Perspective%20Report.pdf.

[7] See "A Bridge Too Far" page 7 for citations of rates between 1-9% including Harvard/NOAA. http://www.betterfutureproject.org/wp-content/uploads/2014/06/A-Bridge-Too-Far-Final.compressed.pdf

[8] IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

With respect to this issue of methane leakage, it is possible that new federal and state regulations will reduce the percent leakage from the unproven number that it is today. But that will come at a cost that is not built into the Base Case.

Next Steps/Final Report

1. **Score all 8 scenarios based on compliance with GWSA**
   We understand the purpose of this project is to consider solutions to MA energy demand in the near and long term and that these solutions will help DOER balance GHG emissions, economic costs and benefits, and system reliability. We also know that final report is not intended to offer policy recommendations. However, as groups committed to seeing MA meet the GWSA-mandated GHG emission reductions, we ask that as you model and then report each scenario, you make clear which scenarios ensure compliance with GWSA. This should be clearly indicated in the body of the report and not relegated to a footnote or endnote.

2. **Clearly flag ALL study limitations, as well as underlying assumptions in report, but also make note of "proposal for further inquiry" or "options for further inquiry."**
   We recognize that this low-demand scenario analysis is a situation model, not an optimization model. And for this reason, we also understand that certain analysis, for example factoring into the analysis of life-cycle accounting for methane emissions, is beyond the current scope of work. However, in addition to including in the final report a description of study limitations, we also urge the Administration to assign a follow on study that would model the clean energy future required to comply with GWSA. Assumptions that need explanation include the assumed costs of hydro and the assumed 100% availability of non-firm hydro at the peak hour.

Thank you again for providing this opportunity. We look forward to ongoing collaboration and engagement.

For specific questions or additional information please contact Eugenia Gibbons: eugenia@massenergy.org, 617-524-3950 x 141.

Sincerely,

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