

August 27, 2010

Northeast States for Coordinated Air Use Management (NESCAUM)  
89 South Street, Suite 602  
Boston, MA 02111

**RE: Low Carbon Fuel Standard Coalition Comments on NESCAUM's Part 2 Draft Data and Assumptions for the Economic Analysis of a Northeast/Mid-Atlantic Low Carbon Fuel Standard**

This letter provides the Low Carbon Fuel Standard Coalition's<sup>1</sup> (LCFS Coalition) comments on NESCAUM's Draft Data and Assumptions, Part 2 for the economic impact analysis of implementing a LCFS in the Northeast and Mid-Atlantic States (LCFS States).

The LCFS Coalition is a collection of utilities and electric generators that are stakeholders to the development of a regional LCFS. Members of the LCFS Coalition have been active in shaping state and regional greenhouse gas policy for a number of years and are interested in working with the LCFS States to develop a regional program that achieves cost-effective emission reductions and drives investment in innovative technologies and low carbon fuels in a responsible manner.

The LCFS Coalition commends the LCFS States for establishing open lines of communication and information exchange and providing stakeholders with multiple opportunities to assist in the development of the economic analysis. The LCFS Coalition filed comments on Part 1 of the Draft Data and Assumptions and while we appreciate your responsiveness to a number of our suggestions, there continue to be a number of areas where we feel the data/assumptions and resulting analysis could be improved.

**General Comments on Scenarios and Sensitivity Analysis**

The scenarios are designed largely to minimize the costs of the dominant compliance fuel and use higher cost estimates for the other two fuels (e.g. costs for electricity, electric vehicles and infrastructure are low in the EV Future scenario, while the costs of biofuels and natural gas vehicles are relatively high). We understand that this has been done for sensitivity purposes. It is not clear to us, however, how running these three scenarios can be used to conduct sensitivity analysis on the individual technology paths. For example, will running these scenarios enable policy makers and stakeholders to draw clear conclusions about what the EV Future costs and benefits would look like if the costs were on the high end instead of the low end, or if they were in the middle? This should be clarified in the final document.

**Electricity**

*Electricity Prices and Consumption*

We agree with the use of the Energy Information Administration's Annual Energy Outlook (AEO) for projecting Reference Case electricity prices. While the AEO

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<sup>1</sup> The LCFS Coalition members participating in this comment letter are Dominion Energy New England, National Grid, and Northeast Utilities.

incorporates most current energy policies, including compliance with renewable portfolio standards, NESCAUM should ensure that the AEO captures all policies that are assumed under the Reference Case for the LCFS analysis.

*Charging Behavior*

The LCFS Coalition appreciates that Part II includes specific assumptions surrounding PEV charging behavior. We support establishing multiple charging profiles to reflect the impact of charging behavior on electricity demand. The two behavior patterns presented in Part II, “optimal” (90% off-peak/10% on-peak) and “less-than-optimal” (50% off-peak/50% on-peak), reflect reasonable data points for modeling purposes. NESCAUM should define “off-peak” in order to determine infrastructure costs. If “off-peak” includes hours prior to 11 p.m., charging could coincide with high residential loads and would likely require transformer upgrades. If costs are occurring late in the night or the early morning, NESCAUM should specify how PEV owners will charge during these hours and whether it will require new metering to automate charging.

*Carbon Intensity of Electricity*

The LCFS Coalition appreciates that NESCAUM has decided to use the average grid CI when calculating the impact of PEV charging under the EV Future scenario. However, we still support using separate grid averages for each region to provide a more accurate view of the impacts, as discussed in our previous comments. The LCFS Coalition understands that using the PJM marginal fuel type for the CI of electricity in modeling the Biofuels and CNG Futures will reflect the worst case for PEVs. We question, however, the assumption that imports will have roughly the same CI as in region sources – our initial analysis indicates that imported electricity, particularly to ISO-NE and to a lesser extent NYISO, should be cleaner.

Additionally, it should be noted that the “optimal” charging pattern may result in a CI that is somewhat different from the grid average. Given the weighting toward off-peak charging, the CI is likely to be closer to the CI of the baseload fuel mix. Depending on the generation profile of the grid, the appropriate CI for additional electricity consumption may be higher or lower than the grid average. While the LCFS Coalition understands that the depth of this economic analysis may be somewhat limited, the final analysis should include some qualitative discussion of these issues. For example, the CI of off-peak electricity is likely to be lower than the average in ISO New England and the New York ISO, since these regions rely heavily on hydroelectric and nuclear power for baseload electricity. In PJM, which is more coal reliant, the opposite is likely true.

The LCFS Coalition also requests clarification on the calculation of the CIs that will be used for the modeling. Table 10A includes the Reference Case CIs cited in the NESCAUM Power Point presentation, but there is no explanation of how or where these are calculated. The 2014 Reference Case CI for electricity matches with the number from Table 10B listed as “Optimal Charging.” However, the 2023 CI in Table 10B is higher than the 2017 to 2029 Reference Case CI.

*Energy Economy Ratio for Electric Vehicles*

The LCFS Coalition maintains that NESCAUM should model the effects of at least two energy economy ratios (EER) on projected program costs. As stated in previous comments, the LCFS Coalition believes that the EER for PEVs may be substantially higher than 3.0. Using 3.0 as a conservative value for this economic analysis is acceptable, but we urge NESCAUM to conduct a sensitivity analysis around the EER for the EV Future scenario. Varying the total CI of electricity is unlikely to capture the full impact of higher EERs, unless wide, unrealistic CI ranges are employed.

If NESCAUM is unable to include a full sensitivity analysis around the EER given the time constraints imposed on this modeling effort, the LCFS Coalition strongly recommends that the final analysis contain at least a brief assessment of the potential impacts of higher EERs. NESCAUM could estimate the effect of different EER values and provide ranges around the estimate.

*Infrastructure and Vehicle Costs*

After the release of Part I of the Draft Data and Assumptions, the LCFS Coalition submitted detailed suggestions regarding the cost assumptions for PEV charging infrastructure. We appreciate that NESCAUM altered these assumptions somewhat, and we are willing to defer to the other sources listed in the Draft Data and Assumptions. However, we request clarification regarding the assumption that charging in the EV Future scenario will rely on Level 2 and Level 3 chargers. First, Level 3 chargers do not appear to be defined and no costs are provided. Second, while it is possible that most PEV owners would upgrade their in-home charging systems to Level 2, assuming that all PEVs would be served by these more expensive systems may unintentionally raise the costs associated with the EV Future scenario. It is also inconsistent with the general assumption that electricity related costs are minimized in the EV Future scenario.

The LCFS Coalition appreciates that NESCAUM has added costs associated with distribution system improvements to the analysis. The final Data and Assumptions should include a scalar indicating how many PEVs trigger the installation of a new 50 kVA transformer. These costs should be attributed proportionally to states based on the distribution of PEVs.

An incremental cost of \$5,000 for a PEV over a conventional vehicle represents a reasonable assumption for the potential average over the 10-year period. Some of the first commercial PEVs are expected to sell at a considerably higher premium; for example, the Nissan LEAF is expected to sell for approximately \$25,000 after accounting for federal tax credits, as compared to \$15,000 - \$17,000 for conventional cars in the same class. These incremental costs may decline rapidly as production increases. Assuming zero incremental cost for PEVs under the EV Future appears low, even for a “best case” scenario and NESCAUM should explain how a zero cost differential could be achieved.

NESCAUM should also clarify how the vehicle costs will be used in the modeling. In the stakeholder call on the REMI model, NESCAUM indicated that vehicle costs would

not be included in the model and they are not currently included in the costs for Households on Slide 97.

### **Natural Gas**

On natural gas, we have three comments. The first concerns the incremental costs of natural gas vehicles and mirrors the comment for electric vehicles – NESCAUM should clarify how they will be used in the REMI model.

Second, the assumptions about CNG fueling stations (Slide 47) appear to use the wrong capacity for the fueling station. In order to supply 75-100 heavy duty vehicles or 220 passenger vehicles, a much larger capacity is needed. We suggest that NESCAUM use the 100 scfm standard design for fast-fill stations. The costs of these facilities are in line with the costs in the Data and Assumptions, but the capacity of the stations is two to three times bigger.

Finally, there are substantially different incremental costs for heavy-duty and light-duty CNG vehicles, but the data and assumptions do not indicate the mix between the two that will be used. As we've commented before, CNG may be better suited for high fuel use vehicles (heavy and medium duty commercial vehicles) and the model should reflect this.

### **Additional Comments**

#### *Heating Oil*

The LCFS Coalition requests additional details regarding the heating oil sensitivity case for the Biofuels Fuel scenario. We remain concerned about the potential effect of a LCFS on supplies of unblended fuels for use in commercial and industrial boilers, emergency engines and auxiliary boilers. The LCFS States have indicated that they are unlikely to include heating oil as a regulated fuel in regional program, at least at the outset. Instead, heating oil will be modeled as an opt-in fuel. However, we are concerned that this modeling will be done without including fuel switching (e.g., from heating oil to natural gas) as an option for generating credits. Failure to include fuel switching is inconsistent with the fuel-neutral goals of a LCFS and sends the wrong signals to residential consumers. If fuel-switching is not included because it would be difficult to model, NESCAUM should make this clear with a statement that fuel-switching would have been included but for the difficulties of modeling its effects.

We appreciate this opportunity to comment on the second draft of Data and Assumptions for the Economic Analysis and we look forward to working with the LCFS States and the other stakeholders as the LCFS process moves forward.

Sincerely,

/s/

T.J. Roskelley  
M.J. Bradley & Associates LLC  
on behalf of the LCFS Coalition