JOINT ENVIRONMENTAL STAKEHOLDER COMMENTS REGARDING DRAFT PRELIMINARY ASSUMPTIONS FOR ECONOMIC ANALYSIS, LOW CARBON FUEL STANDARD FOR THE NORTHEAST AND MID-ATLANTIC STATES

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The Conservation Law Foundation (CLF), Environment America, ENE (Environment Northeast), Natural Resources Defense Council (NRDC), Citizens for Pennsylvania's Future (PennFuture), Environmental Entrepreneurs (E2), Union of Concerned Scientists, VPIRG, and Ceres are pleased to submit these comments regarding the draft preliminary assumptions for economic analysis prepared by the Northeast States for Coordinated Air Use Management (NESCAUM) in connection with the development of a Low Carbon Fuel Standard (LCFS) in the Northeast and mid-Atlantic states. We recognize that a regional LCFS is an essential component of the region's strategy to address the urgent dual imperatives of energy independence and global warming. Accordingly, we urge NESCAUM to conduct the economic analysis of the Northeast/Mid-Atlantic LCFS in a manner that fully takes into account the direct and indirect economic benefits of reducing the region's dependence on imported oil while spurring the development of new cleaner energy alternatives, including alternative fuels that can be developed and produced within the region.

We commend the continued leadership of the eleven states – Connecticut, Delaware, Maine, Maryland, Massachusetts, Pennsylvania, New Hampshire, New Jersey, New York, Rhode Island and Vermont – that have committed to develop the final framework for a regional LCFS by early 2011, consistent with the Memorandum of Understanding that was signed among the Governors on December 30, 2009. NESCAUM's April 2010 preliminary assumptions, taken together with the considerations outlined below, should provide a strong and reasonable basis for economic analysis to guide design of the regional LCFS program so as to maximize economic and environmental benefits.

Background Regarding the Joint Environmental Stakeholders:

CLF: Founded in 1966, Conservation Law Foundation is a nonprofit, member-supported organization that works to solve the environmental problems threatening the people, natural resources and communities of New England. CLF's advocates use law, economics and science to design and implement strategies that conserve natural resources, protect public health, and promote vital communities in our region. In the face of the threat of global warming, CLF and its members have a significant interest in the deployment of low carbon fuels and other solutions that reduce GHG emissions while increasing energy security and reliability. CLF has a principal place of business at 62 Summer Street, Boston, Massachusetts.

ENE: ENE (Environment Northeast) is a non-profit organization at the forefront of efforts to combat global warming and promote clean energy and clean air solutions in New England and Eastern Canada. ENE researches, develops and advocates innovative policies that tackle the region's environmental challenges while promoting sustainable economies. With a longstanding interest in reducing pollution from the transportation sector, ENE has been in the forefront of efforts to reduce global warming emissions including from the transportation sector, and has worked successfully to reduce emissions of criteria pollutants from diesel engines. ENE is headquartered in Maine and has offices in Boston, MA, Hartford, CT, Providence, RI and Charlottetown, PEI Canada.

Environment America: Environment America is a federation of state-based, citizen-funded environmental advocacy organizations in 28 states, including most of the Northeast and Mid-Atlantic States. It combines independent research, practical ideas and tough-minded advocacy to overcome the

opposition of powerful special interests and win real results for the environment. Environment America draws on 30 years of success in tackling environmental problems. The Environment America federation's state organizations have been strong advocates for a range of environmental solutions, including policies to shift the nation's energy priorities and reduce the pollution that causes global warming. It has a strong interest in ensuring that this region plays a key role in helping the nation wean itself off of oil while reducing global warming emissions.

NRDC: The Natural Resources Defense Council is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has 1.3 million members and online activists, some 335,000 of whom live in the eleven Northeast and Mid-Atlantic states proposing an LCFS. NRDC is headquartered at 40 West 20th Street, New York, New York but also serves its members from offices in Washington, Chicago, Los Angeles, San Francisco and Beijing. At the top of the list of organizational and member priorities are curbing global warming and creating the clean energy future. To these ends, NRDC has worked for nearly three decades to reduce emissions and energy use from transportation and encourage the transition to cleaner vehicles and fuels.

PennFuture: Citizens for Pennsylvania's Future (PennFuture) was created in 1998 with funding from the Pew Charitable Trusts and the Heinz Endowments to work on environmental issues that affect Pennsylvania. PennFuture has offices in Pittsburgh, Harrisburg, Philadelphia, Wilkes-Barre and West Chester and a staff that includes attorneys, media professionals, government relation experts, outreach professionals and administrative support. PennFuture works to create a just future where nature, communities and the economy thrive. We enforce environmental laws and advocate for the transformation of public policy, public opinion and the marketplace to restore and protect the environment and safeguard public health. PennFuture advances effective solutions for the problems of air and water pollution, sprawl and global warming; mobilizes citizens; crafts compelling communications; and provides legal services and policy analysis.

UCS: The Union of Concerned Scientists is the leading science-based nonprofit working for a healthy environment and a safer world. UCS combines independent scientific research and citizen action to develop innovative, practical solutions and to secure responsible changes in government policy, corporate practices, and consumer choices. UCS is based in Cambridge Massachusetts and has tens of thousands of members and activists in the Northeast and Mid-Atlantic States.

Ceres: Ceres is a national network of investors, environmental organizations and other public interest groups working with companies and investors to address sustainability challenges such as global climate change. Our mission is Integrating sustainability into capital markets for the health of the planet and its people. Ceres is based in Boston, MA.

Environmental Entrepreneurs (E2): E2 is a national community of nearly 900 prominent business leaders who believe in protecting the environment while building economic prosperity. As a group of individual entrepreneurs, investors and professionals, we collectively manage over $20 billion of venture capital and private equity; have started well over 1200 businesses that in turn have created over 400,000

jobs. E2 members are typically notable and successful business leaders from a variety of professions such as real estate development, hotel and tourism, finance and venture capital, as well as many leaders of New England's burgeoning Cleantech sector.

Recommended Considerations for Modifying NESCAUM's Preliminary Assumptions for the Economic Analysis of the Northeast/Mid-Atlantic LCFS Program:

The following comments discuss some of the key considerations that should be taken into account as part of NESCAUM's economic analysis of an LCFS for the Northeast and mid-Atlantic states, including the importance of (1) fully estimating the potential beneficial impacts of the LCFS on the regional economy; (2) identifying appropriate carbon intensity values for fuel pathways; (3) analyzing the economic impact of the LCFS over a sufficient timeframe to capture the full range of costs and benefits; (4) modifying the policy scenarios to reflect the impact of LCFS on the carbon intensity of petroleum products, better anticipate technological developments, and balance the level of technological adoption; (5) taking into account existing state greenhouse gas reduction mandates; (6) considering different heating fuels scenarios; and (7) improving assumptions around the social cost of carbon.

1. <u>The analysis should fully consider projected macroeconomic impacts of the LCFS, including beneficial impacts on regional economic activity and employment.</u>

   A critical underpinning to the proposed economic analysis of the LCFS is the use of a multi-state policy forecasting model by Regional Economic Models, Inc. (REMI). This model will project macroeconomic impacts of the LCFS in comparison to a scenario where no program exists. Although the primary purpose of the LCFS is to reduce greenhouse gas emissions from the region's transportation sector, it also will have a significant influence on regional economic activity. As decision makers throughout the region continue to develop the LCFS, they will look to this analysis in order to better understand the costs and benefits of the program. With that in mind, NESCAUM should ensure that the economic analysis of the macroeconomic impacts is robust and sufficiently detailed.

   We therefore recommend that the analysis disaggregate the total macroeconomic impacts to show the changes in gross state product (GSP) and employment resulting from the direct and indirect economic impacts of the LCFS. It is reasonable to anticipate that the direct impacts of the LCFS will include attracting and starting clean alternative fuels companies (increasing states' GSP) and an associated increase in employment, for example. The other impacts of the LCFS are less clear. If fuel prices fall under the LCFS,[1] consumers will spend less money on fuel and spend the savings in the wider economy, resulting in an additional increase in GSP and employment. Breaking out the changes in GSP and employment resulting from the different impacts of the LCFS will be important for the program's ultimate design. Specifically, the analysis should delineate the following impacts:

   - Percent of GSP increase (decrease) resulting from growth (decline) in regional fuel production;

[1] Such a scenario would be consistent with the projected impacts of the LCFS program adopted by California in 2009. The California Air Resources Board estimates that its 10% carbon intensity reduction mandate over ten years is projected to have economic impacts ranging from zero to a savings of $0.08 per gallon. Source: California Air Resources Board. California Low Carbon Fuel Standard: Final Statement of Reasons, December 2009.

- Percent of GSP increase (decrease) resulting from lower (higher) fuel prices;
- Percent of employment increase (decrease) resulting from growth (decline) in regional fuel production and/or the manufacture of vehicles and component parts needed to use low-carbon fuels; and,
- Percent of employment increase (decrease) resulting from fuel savings (added costs) spent in the wider economy.

2. <u>The range of carbon intensity values used in the economic analysis should reflect the current state of technology.</u>

   The preliminary assumptions for the LCFS economic analysis propose a range of carbon intensity values for different biofuels pathways. NESCAUM has proposed using the United States EPA Renewable Fuel Standard 2022 values for the low end of the range and the California Air Resources Board (CARB) 2010 values for the high end. In considering the carbon intensity values from these two agencies, it is important to note the differences between them. The most important difference is that EPA's 2022 carbon intensity values are based on a forecast of improved crop yields and technological innovations anticipated in 2022 while CARB's 2010 values are based on the technologies and production processes that exist today. Conferring theoretical 2022 carbon intensity values on today's biofuels is problematic because it would cause some of those fuels to appear to have *lower* carbon intensity than today's fuel mix when in fact currently those fuels have *higher* carbon intensity than gasoline. If EPA's 2022 values are used in the economic analysis, the pool of available fuels that are less carbon intensive than gasoline would appear larger than it actually is. Thus, the results of the analysis would indicate that the cost of meeting the carbon intensity standard is lower than it actually would be.

   To avoid this problem, the range of carbon intensity values used in the economic analysis should reflect the current or anticipated state of technology for the time period being evaluated. Fortunately, EPA has recently published supplemental carbon intensity values for 2012 that are based on existing production pathways and technologies. We recommend that in estimating the cost of complying with the LCFS in 2012, NESCAUM use CARB's 2010 carbon intensity values (modeled to be specific to the northeast and mid-Atlantic states), EPA's 2012 carbon intensity values, or a range that incorporates both. In order to estimate the economic impacts of complying with the LCFS in the future, NESCAUM should use values for all fuels that reflect reasonably anticipated reductions in lifecycle carbon intensity. For example, states' and generators' compliance with Renewable Portfolio Standards (RPS) and the Regional Greenhouse Gas Initiative (RGGI) can be expected to lower the future lifecycle greenhouse gas emissions from plug-in hybrids (PHEVs) or battery-electric vehicles (BEVs). Likewise, EPA's 2022 carbon intensity values may be used to estimate the cost of meeting the standard in its last years, although NESCAUM should provide commentary regarding the probability that the forecasted technological improvements actually will be realized in 2022.

   Of course, it is imperative that the carbon intensity values relied upon as part of the economic analysis fully take into account indirect Land Use Change (ILUC) impacts of biofuels. As discussed in our comments filed on November 10, 2009 and as acknowledged by the December 30, 2009 MOU signed by the governors, the ILUC values are essential to proper accounting for lifecycle greenhouse gas (GHG) emissions. Accordingly, the economic analysis should, at a minimum, take into account carbon intensity values that include at least a reasonable approximation of actual ILUC impacts – e.g., as calculated by CARB.

In addition, although we recognize that analysis of shale gas carbon intensity is still underway (led by Lifecycle Associates), we question NESCAUM's suggestion that shale gas – which is expected to play an increasingly significant role in meeting the region's energy needs in the next decade and beyond – is likely to have substantially the same carbon intensity value as "traditional" natural gas. The hydraulic fracturing process used to extract gas from deep shale formations consumes tremendous volumes of water, which is often hauled to well sites by truck over considerable distances. The water is then injected into the wells at high pressure. After fracturing, this water flows back out of the well having been contaminated with dissolved solids. Although well operators are developing ways to pre-treat and recycle flow back water, before the water may be discharged it must be treated to remove those solids, typically using an energy-intensive evaporation-crystallization process that can be performed at centralized treatment facilities, again requiring the water to be transported over considerable distance by truck. In contrast, "traditional" natural gas wells consume relatively small volumes of water during the production phase and produce water that is low in dissolved solids and can often be discharged directly onto land. Shale gas wells in the region are also typically deeper than "traditional" gas wells, and thus require more energy to drill. The carbon intensity valuation for shale gas should take all of these distinctions (with respect to energy inputs and associated GHG emissions) into account.

3. <u>The economic impacts of the LCFS should be analyzed over a time period sufficient to capture all of the costs and benefits to all parties.</u>

NESCAUM has proposed three possible policy scenarios to comply with the LCFS. In the first policy scenario, biofuels are the dominant fuel used to meet the standard. Electricity dominates in the second scenario, and compressed natural gas dominates in the third. The upfront costs of each scenario will differ, although all will require large up front investments made by individuals, businesses, and governments, particularly when different vehicles or different infrastructure are required. For example, for electricity to become a viable transportation fuel, consumers will need to purchase plug-in hybrid or battery-electric vehicles and will need access to charging stations. A future characterized by widespread biofuels use may need fewer changes in vehicles because the fuel could either be used in conventional vehicles (e.g. biodiesel) or in vehicles that have undergone modest changes (e.g. E85 flex-fuel vehicles), but significant investments in research, development, and production infrastructure are still needed to make low-carbon biofuels widely available.

The economic benefits from these up front investments would accrue over time as the region's consumption of petroleum products falls. As a result, the economic impact of the LCFS should be analyzed over a time period sufficient to capture the up front costs and also the full stream of benefits. The obvious example is electric vehicles. While the upfront incremental cost of a plug-in hybrid or battery-electric vehicle is likely to be substantial ($5,000 to $20,000), electricity is less expensive than gasoline on a per mile basis. Even so, the "payback" period on the purchase of a $35,000 plug-in hybrid (as compared to a small or medium-sized conventional sedan) might range from 7 to 11 years, depending on the price of gasoline. These vehicles are likely to begin wide-scale deployment after 2015 as new models become available in large numbers. If, for example, the full costs of these vehicles are assumed to be incurred before 2020 but the benefits of fuel savings are only calculated up to or during 2020 (with disregard to the ongoing benefits that will accrue after that time), then the full economic value of the electric transportation will not be realized and the LCFS compliance cost would appear to be inflated.

Given the anticipated front-loaded costs that are likely to be incurred under all of the policy scenarios – as well as the concomitant benefits that will endure to varying degrees beyond the proposed ten-year program time window that is expected to underpin this economic analysis – we recommend that NESCAUM evaluate the economic impacts of the LCFS to at least 2035 (for a 2020 LCFS reduction target) or over the life of vehicles needed to use low carbon fuels, such as electricity.[2]

4. The policy scenarios should be restructured to (a) include the impact of the LCFS on the carbon intensity of oil products delivered to the Northeast; (b) reflect a more realistic vision of technological development and (c) add at least one new scenario that balances the development of all three considered alternative technologies.

   An accurate assessment of the economic impacts of the LCFS depends upon including *all* of the significant impacts of the LCFS on the fuel supply of the Northeast. The economic analysis is intended to look at how an LCFS will drive the integration of alternative fuels – electricity, natural gas, or biofuels – into the region's fuel supply. However, the proposed policy scenarios should also address another key potential impact of the LCFS: the degree to which the LCFS will affect the carbon intensity of petroleum feedstocks used in the Northeast.

   The current draft methodology for the analysis assumes that the carbon intensity of petroleum fuels in the Northeast is a given that is unaffected by the LCFS. In the Reference Case A scenario, carbon intensity remains constant. In the Reference Case B scenario, which reflects a future of higher oil prices and greater oil scarcity, the carbon intensity of gasoline is projected to increase significantly. However, the policy scenarios, as proposed, appear to keep the carbon intensity of petroleum fuels constant. Depending on the structure of the policy, the adoption of a regional LCFS reasonably can be anticipated to discourage the use of high-carbon intensity petroleum feedstocks in the Northeast. The California LCFS, for example, includes provisions to ensure that the higher carbon intensity values of crude oil from high-carbon sources are factored into compliance with the LCFS.

   Should a similar policy design be adopted in the Northeast, the effect likely would be to encourage those entities subject to compliance with the LCFS to obtain gasoline and diesel from lower-carbon feedstocks wherever possible. As a result, the assumption that the baseline carbon intensity of the gasoline or diesel supply will be unaffected by the LCFS appears to be inconsistent with NESCAUM's assumptions of the effect of the California LCFS on fuel distribution as set out in Slide 24.

[2] In a similar vein, the economic analysis should take into account the fact that some fuels are anticipated to have significant potential to meet smaller, short-term emission reduction mandates at lower cost but have little or no potential to make a meaningful contribution to the far deeper greenhouse gas emission reductions that must be made by 2050. Taking this key consideration into account should foster better decision-making with respect to significant investments in major infrastructure – i.e., avoiding investment in infrastructure that is likely to become obsolete quickly and thereby elevate the costs of reaching more enduring solutions. In this context, it is reasonable to assume that reducing greenhouse gas emissions at least 80% below 1990 levels by 2050 (consistent with scientific consensus) will be accomplished in the transportation context through some combination of (a) reductions in the carbon intensity of fuels, (b) reductions in vehicle miles traveled (VMT), and (c) continued improvements in vehicle efficiency.

In its treatment of low-carbon intensity biofuels required under the federal Renewable Fuels Standard (RFS), NESCAUM assumes, in the reference case, that lower-carbon biofuels will be sent to California with no overall increase in the national supply of those fuels (or, presumably, the cost of compliance). For each of its policy scenarios, NESCAUM should consider making a similar assumption with regard to the distribution of high-carbon intensity versus low-carbon intensity petroleum feedstocks – specifically, assuming that low-carbon intensity petroleum feedstocks would flow disproportionately to the Northeast and California (as compared to the rest of the United States) as a result of LCFS policies.

The Joint Environmental Stakeholders support the proposed focus on analyzing a 10 percent carbon intensity reduction requirement as a key component of the proposed policy scenarios. Such a requirement would be comparable to the LCFS adopted by California and represents a modest technology-forcing mandate that reasonably could be anticipated to spur development of alternative/lower-carbon fuels to supply the Northeast/mid-Atlantic region. However, we are concerned that the three policy scenarios ("biofuels future," "CNG future," "electric future") all presume that one – and only one – fuel significantly benefits from technological innovation at a time. In addition, each scenario assumes that the "best case" scenario for the preferred fuel is balanced by a "worst case" scenario for the others. Finally, the "non-preferred" fuels in each scenario are still assumed to make a significant (40%) contribution to the achievement of the standard, even though they are assumed to be more costly, more polluting, require more expensive infrastructure, and/or be less available than the "preferred" fuel.

We understand and appreciate NESCAUM's desire not to "pick winners" or to commit to specific projections of the cost, availability, or carbon intensity of various fuels. Analytically, however, the scenario structure described above raises some concerns. Presumably, if one fuel is assumed to be expensive, highly polluting, unavailable, and require high capital expenditures, it will make up far less than 2 percent of the regional mix – particularly if better compliance options exist simultaneously. The end result of this scenario design will likely be to minimize the economic benefits of the policy in all three scenarios by "weighing down" the program with compliance options that are assumed to be costly and ineffective.

We do not propose that NESCAUM abandon the basic structure of the scenarios. We do, however, propose two suggested changes:

- First, we propose that the cost, carbon intensity, etc., of the "non-preferred" fuels in each scenario be assumed to be the mid-range – rather than the high end – of the values NESCAUM has identified. There is no reason, for example, why a future in which natural gas is assumed to be clean and inexpensive must coincide with one in which biofuels are assumed to be polluting and expensive. We believe that including mid-range values for non-preferred fuels will provide a more realistic view of the impacts of the program.

- Second, we propose the addition of a fourth scenario that would represent a true boundary scenario for the economic impacts of an LCFS. That scenario should reflect a "best case" scenario for all three fuels that assumes simultaneous technological progress and equal distribution of compliance obligations across the fuels. Such a scenario would avoid any perception of picking winners and provide an upper bound for the benefits the region could receive under an LCFS.

5. Consideration of Existing Policies Should Include State Greenhouse Gas Reduction Mandates.

NESCAUM's preliminary assumptions appropriately reflect that the economic analysis will take a range of existing state, regional and federal policies into account, and specifically indicates that full compliance will be assumed in connection with state RPS/RES programs, RGGI, CAFE, etc. However, in this context, it is striking that no mention is made of the comprehensive statutory greenhouse gas reduction mandates that have been adopted by a number of states in the region, including Massachusetts, Connecticut, New Jersey and Maryland:

- **New Jersey**: mandate to reduce GHG emissions to 1990 levels by 2020 and 80% below 2006 levels by 2050; The Global Warming Response Act (N.J. Stat. § 26:2C-37) (July 2007);

- **Massachusetts**: mandate to reduce GHG emissions 10 to 25% below 1990 levels by 2020 and 80% below 1990 levels by 2050; Global Warming Solutions Act (M.G.L. Chapter 21N) (August 2008);

- **Connecticut**: mandate to reduce GHG emissions 10% below 1990 levels by 2020 and 80% below 2001 levels by 2050; Global Warming Solutions (Conn. Gen. Stat. § 22a-200a) (June 2008);

- **Maryland**: mandate to reduce GHG emissions 25% below 2006 levels by 2020; Greenhouse Gas Emissions Reduction Act (Md. Environment Code Ann. § 2-1201) (May 2009).

These state GHG reduction mandates call for significant emissions reductions across all sectors, including transportation, electricity generation and buildings/heating. A regional LCFS is likely to promote the abilities of these states to achieve the mandates by fostering the deployment of lower carbon fuels that will compete based on their carbon reduction potential and price – thereby offering greater opportunities to meet the GHG reduction mandates through cost-effective solutions. Moreover, to the extent there are costs associated with investment in infrastructure for deploying lower carbon fuels pursuant to a regional LCFS, it is reasonable to assume that at least some of those costs would be incurred anyway, even in the absence of an LCFS program, pursuant to the state GHG reduction mandates. Thus, if the economic analysis should fail to take these existing policies into account, the results likely will overstate the incremental costs and understate the economic benefits of the regional LCFS. This omission should be corrected.

6. NESCAUM's Economic Analysis Should Model a 10% Carbon Intensity Reduction for Heating Fuels.

From the outset, the Northeast/mid-Atlantic LCFS program has contemplated the inclusion of heating fuels in the program. This makes sense for a variety of reasons, including that the Northeast region has a significant penetration of relatively high carbon heating fuels and because there is a real risk that a transportation-only LCFS would trigger carbon intensity shifting (or "shuffling") of fuels out of the region's transportation fuels market and into its heating fuel market. Yet the preliminary assumptions for NESCAUM's economic analysis only address heating oil as part of a sensitivity analysis (slide 54) where heating oil would face a 0% reduction

target[3] and be assumed to generate credits that can be purchased by regulated entities. This approach reflects a substantial lost opportunity to include heating fuels in the regional LCFS program and explore the economic impacts of casting a broader net in reducing the carbon intensity of petroleum fuels in the region. With respect to the heating fuels sector, we believe that NESCAUM should use this economic analysis to explore a broad set of scenarios in order help the states inform their ultimate policy choices. We therefore urge NESCAUM to model a 10% reduction requirement for heating oil/fuels, comparable to the modeling that is planned for transportation fuels.

7. The identified low-end value for the social cost of carbon (SCC) is too low, with an associated 3% discount rate that is too high.

In order to fully calculate and appreciate the economic benefits that a regional LCFS program would bring by reducing GHG emissions, it is very important that the economic analysis correctly account for the social cost of carbon (SCC). NESCAUM's preliminary assumptions include a proposed low-end SCC of $21.40 per ton (2010 value prorated for 2012) at a discount rate of 3%, and a proposed high end SCC value of $85 per ton based on the *Stern Review*. Slides 72-73. Instead, we strongly recommend that NESCAUM revisit at least the low-end estimate. The analysis by the interagency task force makes several methodological errors that inappropriately set an erroneous minimum value. NRDC commented on the SCC methodology during the rulemaking process for the joint EPA/NHTSA Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for MY2012-2016. We attach those comments here, as they are still relevant to the use of the Interagency SCC values and many of the issues raised, and recommendations, have not been addressed or only insufficiently addressed.

NRDC made three overarching arguments: First, the SCC estimates are systematically biased downward, in large part because they do not adequately reflect the most critical issue in climate change: non-zero probabilities of extremely high and potentially catastrophic damages. Potential damages excluded from SCC models are listed in Table 1 of the attached comments and span a wide range of areas including foreign affairs, ecosystems and species, public health and agriculture. Second, the agencies' presentation of SCC estimates inadequately communicates the models' limitations with respect to being able to quantify damages. The use of values with a 95th percentile begin to address this concern and stronger consideration of the 95th and even higher percentile values is warranted. The Interagency Working Group evaluated 99th percentile values which increase the SCC dramatically, far above even $85/ton.[4] Third, the discount rates of 3% and 5% are too high, resulting in valuing the current generation more than future generations and under-estimating the SCC. With these concerns in mind, NRDC argued that EPA use a minimum value of at least $56/ton, far above the Interagency value that NESCAUM has initially chosen to rely on.

We look forward to the opportunity to discuss NESCAUM's choice of SCC values further at a future date.

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[3] Presumably this is intended to reflect maintenance of the *status quo* for heating oil carbon intensity – i.e., 0% reduction as well as 0% increase.

[4] See Appendix of Interagency Working Group on Social Cost of Carbon, "Social Cost of Carbon For Regulatory Impact Analysis under Executive Order 12866" as part of DOE Small Electric Motor efficiency rulemaking at http://www1.eere.energy.gov/buildings/appliance_standards/commercial/sem_finalrule_tsd.html.

Conclusion

CLF, ENE, Environment America, NRDC, PennFuture, Ceres, E2, UCS, and VPIRG appreciate the opportunity to provide these comments. Again, we applaud the leadership of the Northeast and mid-Atlantic states in putting our region on a path to low carbon fuels. We appreciate the open and transparent public stakeholder process through which the Northeast/mid-Atlantic LCFS program is being developed, and encourage NESCAUM and the states to continue to maintain this approach as the economic analysis and associated program framework progress. We also encourage NESCAUM to take the foregoing considerations into account in order to best ensure the development of a robust, meaningful economic analysis that will guide decisions on key program design elements in order to maximize the environmental and economic benefits of a regional LCFS.