

# **Northeast and Mid-Atlantic States Regional Low Carbon Fuel Standard Stakeholder Meeting<sup>1</sup>**

**Federal Reserve Bank, Boston, October 22, 2009**

**Facilitator: Dr. Jonathan Raab, Raab Associates, Ltd. (and MIT)**

85 people attended the Boston LCFS meeting which started at 9:30 and ended around 5:00. See Appendix 1 for the agenda and Appendix 2 for the attendees.

## **Welcome**

*Commissioner Laurie Burt, MA Department of Environmental Protection (DEP)* welcomed the participants to the meeting. She described the LCFS effort thus far, beginning with the Commissioners' Letter of Intent in 2008, continuing with various meetings for the different stakeholder sectors, up to the importance of growing the RGGI process to include transportation. It is important for this region to tackle transportation emissions because it is a significant source of GHGS- 30%. Also a fairly unique aspect of our region –the fact that we use the same fuel for home heating as we use for transportation –compels us to explore including heating fuels in our regional LCFS. The Northeast, with its strong knowledge-based economy, is poised to take advantage of the potential for jobs creation with such an initiative. Commissioner Burt lauded the market-based approach of the LCFS, and thought that it would be a good model for national action as well.

## **Overview of LCFS Program Goals, Structure & Process**

*Nancy Seidman, Deputy Commissioner, Massachusetts DEP*, delivered remarks on the key issues to analyze when considering an LCFS. She compared California's experience with creating such a standard and what the Northeast and Mid-Atlantic region would likely face in going through a similar process, adding that administrative complexity would be greater. Also, the questions of which parties would be regulated, what the scope would be, and what the level of stringency would be will be pivotal issues going forward. Referring to the NESCAUM report of July 2009 and working groups discussions since summer 2009, Ms. Seidman emphasized that the states were actively involved in analysis, but that no decisions had yet been made, and continuing stakeholder input would be very important to the process. The goal of the process is to produce a short MOU among the Governors this year to develop a policy framework for an LCFS probably by the end of next year.

*Matt Solomon, NESCAUM*, presented the goals of an LCFS program that would be appropriate to the fuels characteristics of the region. He emphasized that the program would not be a cap on transportation emissions, but a measure of lifecycle carbon intensity of different fuels. He delineated some of the similarities and differences with the CA program and discussed some of

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<sup>1</sup> Note: Powerpoints used by presenters can be found using the following link  
<http://www.nescaum.org/documents/northeast-and-mid-atlantic-states-regional-low-carbon-fuel-standard-stakeholder-meeting-newark/>

the issues unique to this region, such as high penetration of heating oil use. The LCFS does not ban any fuel or pick winners, but requires displacement of conventional fuels.

**Michelle Manion**, also from **NESCAUM**, continued the presentation describing future potential benefits of an LCFS policy in the region, including lessening its vulnerability to volatile fossil fuels prices. She then detailed feedstocks that could be used as resources in the region, like Municipal Solid Waste (MSW), woody biomass, and agricultural residues. She presented potential reductions in carbon intensity (CI) from the use of such resources, as well as the adoption of electric vehicles such as plug-in hybrid vehicles (PHEVs).

Mr. Solomon then concluded with comments on the potential for changing the grid resource mix, consequences of relying on electricity from different sources as part of an LCF, and the complex issue of allocating carbon credits generated through PHEVs and similar energy storage options.

### **Question and Answers (Q&A)**

Q: Is the benefit of domestic production of LCF being taken into account when comparing it with other fuels being imported from outside the region/ country?

A. The states are analyzing all fuels and acknowledge it is better to obtain fuel closer to the source of need rather than overseas

Q. RFS Phase 2 is only a small part of the goal to be achieved; what about the biomethane potential from natural gas (NG) plants?

A. No fuel pathway is being ruled out, and the CA 'lookup table' being a living document is a good model for adding information as it becomes available/ feasible.

Q. Wastewater treatment facilities which use CHP may have an economic incentive from ESCOs, so has this been counted as additional when it is not?

A. The panel acknowledged that there may have been over-counting since a lot is already being done.

Q. Will the stakeholders be allowed to listen in on monthly/ weekly state and NESCAUM planning calls?

A. No, they are a place for agency-to-agency 'musing' and not public forums.

Q. Including indirect land use change (iLUC) seems reasonable; what similar type of indirect analysis will be done for other (baseline) fuels?

A. The states and NESCAUM will not be doing much original research, but using CARB and EPA research for their analysis.

Q. Do the states anticipate answering the question of heating oil inclusion by the time of the Governors' MOU?

A. Probably not by the time of the MOU, but, the topic will most likely be referred to as an issue for further investigation.

Q. How will changes in lifecycle cost analysis (LCA) be handled?

A. CA's approach is to conduct periodic reviews, which sounds like a reasonable way to balance stability for the regulated parties and the need for up-to-date information.

Q. Considering the fact that no fuel pathway is easy to navigate, and this makes it difficult for biofuels companies to commit, are the states considering making the process easier?

A. Have not gotten into that level of detail yet.

Q. What are the primary factors for determining whether heating oil is included?

A. It is a mix of many concerns.

Q. What do you envision the MOU including?

A. The states wish to lay out what they aim to accomplish in 2010, including a framework for the program, a model rule, issues to be investigated/ under discussion, and perhaps some estimated deadlines.

Q. What is the timeline for after the MOU, through a model rule, to implementation?

A. A rough estimate is that it would take at least another 12 months after an MOU to get to a model rule, because of all the work and input possible. After a model rule, most states will have to take it back to their legislatures, which could take an additional 9 months to 2 years.

Q. How will the additional complexities involved in who possesses credits for EV/ PHEVs be considered?

A. This is a big question, as it hinges on many permutations. The utilities are the closest to retail-level, but they have a questionable role in the process. There is also the possibility of 3<sup>rd</sup>-parties generating electricity and acting as middlemen between consumers (EV owners) and the utility, e.g. 3<sup>rd</sup> party charging stations, and battery swap model ("Project Better Place" model). In addition, Smart Grid is not in place, making accounting difficult.

Q. With the uncertainty of meeting different potential mandates, are the states considering blending of mandated products?

A. A multiple year compliance period is possible; we have considered the CA example of a compliance curve.

## **Stakeholder Panel #1: Transportation Fuels**

**Christine Kirby, MassDEP introduced John Howe, Al Manatto (liquid fuels), Watson Collins, Ellen Shapiro (elec) Todd Campbell (nat gas)**

**Mr. Howe, Verenum**, presented on cellulosic ethanol production from a variety of biomass feedstocks. He provided an overview of his company's high productivity biomass (ethanol) project in SW Louisiana, discussing volume of area needed, yield per acre, and most efficient use of the resource. He noted that an LCFS may add complexity that will make it hard to finance the first-generation of facilities and he cautioned against an EPA ruling that would take rangeland off the table for biomass crops.

**Mr. Manatto, API**, opposes an LCFS in the region due to the duplication the policy would create with RFS Phase 2. He warned against policies that could promote fuel “shuffling”, and called an LCFS in effect an EV/PHEV standard. However, if the LCFS goes forward, he stated the issues most important to consider include technology obligations, periodic updating of calculations, adequate compliance time, and waiver provisions. He also criticized the NESCAFF report for not considering iLUC and impacts on air, water, and biodiversity concerns.

**Mr. Collins, Northeast Utilities**, explained some of the detail involved in comparing efficiencies of fuels in transportation (electricity & other fuels). He raised a number of factors in relation to future planning including vehicle availability and consumer acceptance (and within consumer adoption, gas prices and battery costs), paying for public charging infrastructure, dealing with potential cross sector cost shifts, planning for additional utility infrastructure (charging outlets), and figuring out who will own the EV credits: vehicle owner, automaker, electric generator, T&D utility, charging infrastructure providers, or others. He questioned the clarity of the policy objective in an LCFS, and recommended socializing across all electric customers if the goal is to clean up the transportation sector.

**Ms. Shapiro, Association of International Automobile Manufacturers**, opened with projections about improving fuel efficiency, diesel, and EV futures. She presented the GHG dilemma in the transportation sector as dependent on vehicles, consumers, and fuels, and requiring a national, economy-wide approach to GHG reductions. She promoted liquid fuels compatible with existing infrastructure, such as ethanol (E-85), and agreed that the market-based aspects of LCFS were positive. She was skeptical about EV market penetration.

**Mr. Campbell, Clean Energy Fuels**, commended the regional policy efforts as a potential national policy driver. He recounted the picture of expanding products and markets for natural gas in transportation, especially outside the US. He also discussed the availability of landfill methane. He emphasized availability of NG as a major resource in the US, and the urgency to adopt an LCFS.

### **Q&A**

Q. Please comment on the advisability of an LCFS in NE.

A. Mr. Howe responded that there were many hurdles for quick technology adoption. Also, iLUC measurement needs discussion at the same time as other issues, not in a silo. He objected to CARB’s approach to biofuels, arguing that it should examine not just iLUC, but all “market-mediated effects.”

Mr. Collins said that there is great potential for an LCFS, but it needs to be clear on its policy objectives.

Mr. Manatto clarified that Chevron and BP are against LCFS in NE, but for it in CA.

Q. What about federal and state assistance for E85?

A. Ms. Shapiro acknowledged that fuel needs to be priced competitively at retail level, which federal agencies can help by adjusting taxes. Also, ethanol blend tax credit should be rechanneled toward E85 infrastructure, instead of rewarding blenders.

Mr. Howe said that the number one step in advancing LCFS is promoting E85 (highest blend level supported by science, and relatively cheap conversion), then perhaps biobutanol (but its carbon benefits are doubtful). He discussed differences in infrastructure requirements for ethanol and gasoline/diesel. He referred to Brazil as an example of providing the choice. Mr. Manatto mentioned limitations to an individual gas station owner of upgrading options to provide multiple fuels. Mr. Campbell mentioned that NG and electricity infrastructure already built-out. Mr. Howe responded that ethanol, because of its BTU content, could work but would need higher compression vehicles (like engines from the 1960s).

Q. Is Ford the only supporter of B20 (biodiesel) blend? Does ethanol suffer from underground pipelines?

A. Ms. Shapiro said biodiesel can degrade over time; its standard for quality was only determined by ASHRAE last year.. Chrysler also had a B20 vehicle for military applications. More investigation is necessary. Biodiesel's issue is feedstock competition (meaning it is expensive to produce), and the next important step is giving warranty for upward of B5 blend.

A. Mr. Manatto said even if ethanol was cheaper to use, existing pipelines run the wrong way (production centers of oil and gas to loads are different from ethanol). Also, there are restrictions on use of jet fuel pipelines as prescribed by FAA requirements.

Q. With the market entry of ultra high carbon fuels like tar sands, what are your concerns about environment?.

A. Mr. Manatto said he considers tar sands a secure, friendly import that we should not let go to China.

Mr. Campbell commented that not using tar sands in the Northeast may generate higher carbon emissions by forcing transport to more distant markets.

Mr. Manatto responded that the oil industry is aggressively investing in renewable hydrocarbon fuels (e.g., landfill methane)

Q. What are the comparative costs of various fuels from crude state to usable in vehicles?

A. Mr. Manatto gave a rough breakdown of gasoline price (60% crude price, 20% refinery costs, 5-10% earned income goes to oil industry).

Grain-based ethanol → price falls as oil price rises

Cellulosic based → feedstock cost less, capital cost and final cost is more

LNG: 20x less than commodity price of oil, which influences end price

Q. With a RGGI in place what's the grid impact of electric vehicles?

A. Mr. Collins responded that there is 1-2% increase in electricity retail sales for every 5% increase in penetration of vehicles

## **SH Panel #2: Heating Fuels**

**Richard Sweetser, Eric Slifka (oil heat), Shelby Neal (bio heat), Charlie Niebling (wood), Wilson Rickerson (solar), Steve Leahy (NG)**

**Mr. Sweetster, NEFI**, supports lowering the CO<sub>2</sub>e content of oil heating. It is necessary to keep several factors in mind when designing such a policy, including keeping lifecycle emissions data current, accounting for appliance efficiency differences; monitoring air pollutant consequences of fuel switching; and comparing infrastructure costs to homeowner and/or society. The liquid fuels industry plans to use ultra low sulfur in appliances, as well as B5. He pointed out that atmospheric combustion is much easier than vehicle internal combustion to improve, and there is still much room for efficiency improvement. Finally, he recommended more research into ethylbutyl levulinate.

**Mr. Slifka, Global Petroleum**, outlined some limitations to biofuels: bulk storage (heated, insulated tanks, controls for leaks) and distribution (although pipelines have been locally successful). Rough economic analysis shows an LCFS would give surplus from consumers to producers; increasing food and biofuel prices. Regional implementation would be less effective than a national version.

**Shelby Neal, National Biodiesel Board**, provided background on bioheat. Biodiesel is a mix of soybean oil, animal fats, yellow cooking grease, other (about 20%) and conventional heating oil. As fuel, its efficiency and quality has improved over the last 10 years. He recommended including a heating oil category (including bioheat) in LCFS. He thought CA has done a pretty good job, especially its market oriented approach, which he argued is better than the setting market penetration thresholds under RFS2. Biodiesel is available, feedstocks are available (soy is the most significant fuel), but the cost of it is not predictable.

**Mr. Niebling, NE Wood Pellet**, portrayed heating oil demand in NE as an outflow of wealth to other parts of the world. Pellets and wood chips can meet at least 10% of this demand (5 billion gal #2 heating oil annually) through both new wood and forest/ agriculture/ urban residual (including clean construction and demolition sources). Better bulk delivery of wood pellets is in the future. Some challenges include scale of technology, few incentives, regulatory barriers, price sensitivity to fossil fuel prices, variability of fuel manufacturing competency, and the capital investment of delivery infrastructure. He endorsed an LCFS that includes heating oil, and bringing biomass heat into line with other low-carbon fuels. Finally, he advocated a “systems benefit charge” (reverse tax on fossil fuels) proportional to the CI of the fuel, saying that even a very modest one can generate revenue for fuel switching.

**Mr. Rickerson, Meister Consultants Group**, noted Germany’s actual growth of renewable energy exceeded expectations due to policy drivers. He advocated including heating oil in an LCFS to make it as comprehensive as possible. He mentioned that the US way of attacking targets is weak and un-inclusive, and that solar water heating is a missed opportunity, noting that the US is way behind other countries. He also advocated for broad-based solar planning and strategy development.

**Mr. Leahy, NE Natural Gas Association**, referenced NESCAFF’s point about the importance of producing energy resources domestically, and highlighted that natural gas exists in NE. He supported bringing in the PUCs early to this process. He also pointed out many new supply and delivery points for the delivery of natural gas in the area, which make for room for growth in NG heating, ending with a discussion of the Marcellus Shale area.

## Q&A

Q. What concerns do the panelists have about complexity and cost of including heating oil?

A. Mr. Sweetster responded that if we consider all fuels, it's ok; but with B10 as replacement to heating oil #2, with iLUC, and for multi-state NE region, there is a lot of complexity.

A. Mr. Slifka said that the issue is being efficient in implementing LCFS.

Q. What is the solar integrated potential in NE?

A. Studies have only explored SWH and CO2 displacement, but National Grid has some info. The stationary liquid fuels market is 3-4 years away from solar heat pump.

Q. Cost issues of trying to do everything at once:

A. Mr. Rickerson said that if the policy objective is climate protection, it has been proven cheaper to layer on many different fuel incentive programs at once .

Q. How would very high carbon fuels be addressed if heating fuel is not included in LCFS?

A. There is an argument that somebody will use those high-carbon fuels, so why not the closest buyer to reduce transportation emissions?

A. From the states' perspective, one of the policy objectives is promoting national policy (e.g. RGGI and national policy debate). The argument above is true in the short run, but hopefully will be superceded by a national standard.

## **Stakeholder Panel #3: Sustainability**

**Sue Reid (Conservation Law Foundation), Brook Coleman (New Fuels Alliance), Brian Woods (VT DEP)**

**Mr. Coleman, New Fuels Alliance**, supports an LCFS, but is opposed to CA's approach. He had 2 recommendations: 1) stay within scope of program (performance-based standard for fuel, not indirect impacts such as water, forest, etc). The added complexity undercuts the goals of the program (Example of AB 32 in CA: the sustainability clauses piled on created too much friction; it didn't pass). 2) Don't stick to the CA script: "be balanced." Asymmetric carbon accounting creates unbalanced results. (e.g. We shouldn't evaluate only one fuel pathway for petroleum (different suppliers) and dozens of fuel pathways for corn ethanol). The point of an LCFS is supply chain accountability.

**Ms. Reid, CLF**, supports LCFS: it would increase fuel efficiency, decrease vehicles miles traveled (VMT), and provide less-CI fuels. CA's experience will be beneficial to us. Basic principles should be to include full fuel lifecycle emissions (including both direct and indirect factors), and other sustainability concerns as well (water, air, ecosystems and forest effects).

## Q&A

Q. The questioner objected to the comparison on Ms. Reid's slides as not comparing apples to apples on sustainability.

A. Ms. Reid replied that the NRDC study referred to wide variety of fuels for comparison, to which Mr. Coleman interjected that indirect cost calculations that he had

used did not include the cost of the Iraq war, merely that for pipeline protection, substantial in itself (\$200 bil/yr).

Q. How do we move forward with mixed messages of 1) dealing with biofuels emissions is ok if consistent and 2) biofuel future is inherently uncertain and hard to regulate.

A. Mr. Coleman said to 1) regulate based on attributional life cycle analysis (LCA) (for biofuels, including LUC), and 2) to amend uncertainty, gather data, and improve analysis. CA's approach, in contrast applies science asymmetrically; it hasn't calculated the indirect effects of petroleum production.

Q. What about the underestimation of NG as a resource?

A. Mr. Coleman responded that there is plenty of NG, just like plenty of corn, but representation in its goals of market penetration are not realistic (e.g. Searchinger).

Q. If gasoline's direct CI is 95.86 (Mr. Coleman says it's more like 110), what is its indirect CI?

A. Ms. Reid said that the CARB direct CI number is being used as baseline. They did not adopt the Searchinger number, but went with a more conservative figure. Ranges of CIs are important to provide producers an incentive to switch.

Q. What is the long-run land use change of managed forest?

A. Ms. Reid responded that it depends if biomass is used for electricity or biofuel,.

A. Mr. Coleman replied that the model doesn't take that into account.

## Opportunities for Comment

- **Marla Benyshek, ConocoPhillips**, supports national LCFS but not a regional LCFS, and is part of USCAP. She pointed out that CAP "Blueprint" was released earlier this year, which included required fuel lifecycle assessment. She thought that EPA should promulgate performance standards. Congress's RFS should cease to apply when LCFS starts. CAP has significant concerns with state/ regional efforts. Fuel 'shuffling' is a major concern. CA's table of CI values- fuel programs should be at the federal level for this reason. But if states are doing it anyway, NESCAUM should consider complexities.
- **Carol Lee Rawn, Investor Network on Climate Risk, CERES**, strongly supports LCFS because 1) need to move aggressively to get to climate stabilization. In the transport sector, it is not enough to reduce VMTs, and given volume of heating oil, it should be included, 2) a well-designed LCFS will be critical in transition to a clean-energy economy, to avoid price spikes, and to give a price signal, and 3) tar sands development is a bad alternative.
- **Emily Stone, Green Century Capital Management**, said shareholder activism was used to deter tar sands development in recent years. Oil sands projects are ultra capital-intensive and very vulnerable to fluctuating market prices. Oil sands are a risky decision for investors. Beyond the need to prepare the economy for low-carbon future, they also send the wrong signal to the world.

- **Jeremy McDiarmid, Environment Northeast**, expressed firm support for LCFS. An MOU is desired by the end of the year. An LCFS makes sense from a market perspective: it sends clear market signals, creates a tech-neutral platform (according to CI), puts pressure on high carbon fuels to get cleaner, and encourages regional solutions. He appreciates the process of stakeholder input points, and points to the letter to the NE Governors submitted on behalf of 41 organizations urging an LCFS.
- **Berl Hartman, E2 (Environmental Engineers)**, said that environmental merit for an LCFS was obvious, but economic merit should be appreciated too. Her examples included the CA refrigerator standards becoming national, as well as SO<sub>x</sub> and NO<sub>x</sub> regulation. She was tired of hearing others are leading this field, and wants NE to lead. She highlighted how Edison invented the electric light more than thirty years before general electrification started, and it was resisted by the powerful kerosene industry. Reducing price volatility is as important as addressing costs. Ms. Hartman also talked of the economic benefits of LCFS, spurring innovation, pushing costs down, creating a new market, new fuels, and reduced volatility of fossil fuel market. These benefits of an LCFS could also translate into a driver for NE economy because of advanced biofuel and advanced battery experience.
- **Jesse Reich, Baystate Fuels** spoke of MA being the first state to implement a biofuels mandate, and that if the LCFS undoes mandate progress, it would be bad. Also, using B20 in Northeast for heat is a good use of Midwestern B20 that gels too much. There is a pretty good match between biofuel supply and heating oil used in NE. The cellulosic ethanol breakthrough will be incredible, so when it comes, we need to be prepared.
- **Simon Bird, AgriFresh** commented that allowing use of software tools other than GREET to generate values for new fuel pathways would be beneficial.
- **Michael Whatley, Consumer Energy Alliance**, had 3 comments: 1) the cost and logistics of LCFS need careful consideration (e.g. if ethanol is the main compliance option, and E-10 the most common form, will we have to increase car capability to more flex-fuel vehicles.) 2) compare federal programs underway -- CAFÉ and RFS2 with LCFS (latter is lower in goals, higher in costs). 3) LCFS weakens energy security without lessening Mexican or Canadian heavy oil. Rather, it shifts sales from US to other markets. 4) more efficient mechanisms include R&D&D, tax incentives, and infrastructure development.
- **Sandy Taft, National Grid** said we need to move quickly on GHGs in the transport sector and push at the national level. It is helpful to see opposite sides sitting at same table and hearing healthy discussion. He was concerned about impacts on electricity customers with competition for, natural gas for electricity and for vehicles. The MA DPU should be brought into the conversation as early as possible, for infrastructure development analysis.

## **Wrap-up**

- Summaries of the stakeholder meetings to be prepared and posted.
- Presentations to be posted on NESCAUM website
- Comments taken until Nov 10 at [lcfs@nescaum.org](mailto:lcfs@nescaum.org)
- Hoping to get something out and signed to governors before holidays in December.

## Appendix 1: Boston LCFS Agenda

### Northeast and Mid-Atlantic States Regional Low Carbon Fuel Standard Stakeholder Meeting

October 22, 2009  
Federal Reserve Bank, Boston, MA\*

#### AGENDA

8:45 am **Registration and Light Refreshments**

9:30 am **Welcome** – *Laurie Burt, Commissioner, MassDEP*

9:40 am **Meeting Goals and Groundrules** – *Jonathan Raab, Facilitator*

9:50 am **Overview of LCFS Program Goals, Structure & Process** –  
*Nancy Seidman, Massachusetts DEP*  
*Michelle Manion and Matt Solomon, NESCAUM*

11:00 am **Clarifying Questions from Stakeholders** – *Jonathan Raab*

11:30 am **Lunch** (*on your own*)

12:30 pm **Transportation Fuels** – *Stakeholder Panel #1*

- What are the technical and economic prospects for lower-carbon fuels and in what timeframe?

Introduction: *Christine Kirby, MassDEP*

Liquid Fuel: *John Howe, Verenum*  
*Al Manatto, American Petroleum Institute*

Electricity: *Watson Collins, Northeast Utilities*  
*Ellen Shapiro, Alliance of Automobile Manufacturers*

Natural Gas: *Todd R. Campbell, Clean Energy Fuels*

2:00 pm **Break**

2:15 pm **Heating Fuels** – Stakeholder Panel #2

- What are the prospects and timeline for low-carbon fuels for space heating?
- Should space heating fuels be included in a regional LCFS?
- How might non-liquid fuels be treated?

Introduction: *Becky Ohler, New Hampshire DES*

Oil Heat: *Richard Sweetser, New England Fuel Institute*  
*Eric Slifka, Global Petroleum*

Bio Heat: *Shelby Neal, National Biodiesel Board*

Wood: *Charlie Niebling, NE Wood Pellet*

Solar: *Wilson Rickerson, Meister Consultants Group*

Natural Gas: *Steve Leahy, Northeast Natural Gas Association*

3:30 pm **Sustainability of Low Carbon Fuels** – Stakeholders Panel #3

- What are the potential land, water, and air implications of expanding the use of low carbon fuels?

Introduction: *Brian Woods, Vermont DE*

*Brooke Coleman, New Fuels Alliance*

*Sue Reid, CLF*

*Tim Volk, SUNY Albany*

4:15 pm **Opportunity for Additional Stakeholder Input**

4:55 pm **Wrap-up & Next Steps** – *Nancy Seidman, MassDEP & Jonathan Raab*

5:00 pm **Adjourn**

*The Federal Reserve Bank is located at 600 Atlantic Avenue, Boston, MA, 02210. For directions and parking options see <http://www.bos.frb.org/about/directions.htm>.*

Additional comments to the states can be submitted in writing by November 10<sup>th</sup>  
[lcfs@nescaum.org](mailto:lcfs@nescaum.org)

## Appendix 2: Attendees Boston LCFS Meeting (October 22, 2009)

<b>Last Name</b>	<b>First Name</b>	<b>Organization</b>
Aeschliman	Lea	The Energy Foundation
Alpern	Shelly	Trillium Asset Management
Anthony	Abigail	Environment Northeast
Benyshek	Marla	ConocoPhillips
Berk	Rachelle	Consulate General of Canada
Bird	Simon	AgRefresh
Blasé	Kurt E.	
Breslow	Marc	MA EOEPA
Burnham	Neal	Consulate General of Canada
Burt	Laurie	MassDEP
Campbell	Todd R.	Clean Energy
Cartney	Debby	MASSPOWER
Carver	Elizabeth	NESCAUM
Cleary	Joe	Fulcrum BioEnergy
Coleman	Brooke	New Fuels Alliance
Collins	Watson	Northeast Utilities
Colman	Jesse	NESCAUM
Colman	Jim	MassDEP
Cooper	Coralie	NESCAUM
Cutting	Peter	Worcester Energy Barnraisers
Dodge	Steve	MA Petroleum Council- API
Ferrante	Michael	Massachusetts Oilheat Council
Firicano	Laura J.	World Energy
Fitzgerald	Michael	NH DES Air Resources Division
Fontaine	Joseph T.	NH DEP
Foster	Christopher	Robinson & Cole LLP
Guveyan	Steven	CT Petroleum Council/ API
Hamel	Paula A.	Dominion Energy New England
Hartman	Berl	Environmental Entrepreneurs
Howe	John B.	Verenium Corporation
Johnson	Jeremy	Agrivida, Inc.
Kaen	Naida	NH House of Representatives
King	Kerry-Jane	New York Power Authority
Kirby	Christine	
Konary	Shawn	Mirant
Leahy	Steve	Northeast Gas Association
Leduc	Jay	Irving Oil
Lewis	Jonathan	Clean Air Task Force
Lowell	Elizabeth	Harvest
Manion	Michelle	NESCAUM
Mannato	Al	API
Marin	Arthur	NESCAUM
Mas	Carl	NYSERDA
McCarthy	Elizabeth A.D.	New England Fuel Institute (NEFI)
McDiarmid	Jeremy C.	Environment Northeast

Morris	Catherine	Keystone
Nace	Paul	Biofine Technology
Neal	Shelby	National Biodiesel Board
Niebling	Charlie	New England Wood Pellet LLC
Nordstrom	Jessica	Senate Committee on Global Warming & Climate Change
Ohler	Rebecca E.	NH Dept. of Environmental Services
Pinard	Margaret	Keystone
Quinn	John	MA Petroleum Council- API
Raab	Jonathan	Raab Associates
Rawn	Carol Lee	CERES
Rebolledo	Dolores	Granite State Clean Cities Coalition
Reich	Jesse	Baystate Fuels
Reid	Susan M.	Conservation Law Foundation
Reilly	Allison	NESCAUM
Rivo	Susan	Raab Associates
Roskelley	T.J.	M.J. Bradley and Associates
Ruddock	Robert	Smith & Ruddock
Russel	Stephen B.	MA DOER
Sanregret	Tristan	Alberta Office in Washington, DC
Schuyler	Andrew	New Fuels Alliance
Seidman	Nancy	
Shapiro	Ellen	Auto Alliance
Sherman	Adam	Biomass Energy Resource Center (BERC)
Slifka	Eric	Global Petroleum
Solomon	Matt	NESCAUM
Space	William	MassDEP
Stevenson	Frank	Office of Air Resources, RIDEM
Stone	Emily	Green Century Capital Management, Inc.
Strabbing	Patty	Chrysler Group, LLC
Strimling	Jon	WoodPellets.com
Sweet	Shane	New England Fuel Institute
Sweetster	Richard	Exergy Partners Corp.
Szady	Michael	World Energy
Taft	Sandy	National Grid
Therriault	Jim	Sprague Energy
Tyler	Solean	CLF
Whatley	Michael	Consumer Energy Alliance
Wojnar	Zywia	Pace Energy and Climate Center, Pace Law School
Woods	Brian	
Westerman	Gary	Dept. of Environmental Protection