To: Massachusetts Clean Cities, Maine Clean Communities, and Vermont Clean Cities

From: ICF International

Date: June 2014

Subject: Maine, Massachusetts, and Vermont Planning Organizations Barriers to Alternative Fuel and Advanced Vehicle Deployment

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As part of a U.S. Department of Energy (DOE) grant, Clean Cities coalitions in Maine, Massachusetts, Vermont, New Hampshire, and Rhode Island are executing a series of projects aimed at "Removing Barriers, Implementing Policies, and Advancing Alternative Fuels Markets in New England." One aspect of this project involves education and outreach to metropolitan planning organizations (MPOs) in Maine, Massachusetts, and Vermont specifically. Following a literature review of MPO and regional planning commission (RPC) planning documents, ICF International (ICF) conducted a series of interviews to determine barriers to the effective implementation of alternative fuel and advanced vehicle projects by MPOs and RPCs in the region.

Methodology

ICF worked with Clean Cities coordinators from each coalition to identify MPOs and RPCs best suited for an interview based on their previous involvement with Clean Cities and alternative fuel projects. ICF conducted a series of interviews with representatives from four key MPOs and RPCs representing all three states. These interviews included:

Organization	Representative(s)	Date
Bangor Area Comprehensive Transportation System (BACTS)	Don Cooper	February 28, 2014
Eastern Maine Development Corporation (EMDC)	Dorathy Martel & Vicky Rusbult	March 4, 2014
Chittenden County Regional Planning Commission (CCRPC)	Michelle Boomhower	April 29, 2014
Boston Region MPO	Anne McGahan & Scott Peterson	May 13, 2014

Based on the previously completed *Maine, Massachusetts, and Vermont Planning Organization Transportation Plan Literature Review*, barriers to alternative fuel deployment include lack of funding, dwindling fuel tax revenues (compounded by perceived inequities in the taxation of alternative fuels, particularly in Massachusetts and Vermont), state highway fund limitations due to increased costs and

revenues, inflation of construction costs, and reduced federal flexibility and funding. Based on these previously identified barriers, ICF aimed to further explore specific barriers for each MPO and RPC. Sample interview questions included:

- What are the current challenges facing your organization, both related to alternative fuels and not?
- What do you see as the largest barriers to AFV deployment in your area?
- What tools or resources would help you overcome these barriers?
- Have you been involved with any AFV projects in your area?
- If there were any opportunities for alternative fuels in your area, where do you think they would be best suited?
- What is the process by which you select, prioritize, and fund projects in your area? Do any of the criteria include sustainability and petroleum reduction specifically?

ICF also referenced the planning documents published by each MPO or RPC as appropriate when discussing the potential for AFV projects.

Barriers

Based on these interviews, ICF was able to explore the following key barriers, some of which are specific to individual organizations and others span the region:

Primary Barriers:

- **Lack of funding:** All of the planning organizations identified a lack of funding as a barrier. In Maine and Vermont, the MPOs receive only small amounts of U.S. Department of Transportation (DOT) funding because they are located in attainment zones for ozone, carbon monoxide, and particulate matter as defined by the U.S. Environmental Protection Agency. More pressing projects often take priority over alternative fuels. Even in Massachusetts, where many MPOs are not in attainment, very little DOT funding is provided to MPOs; most stays within the state agency. In addition, aging infrastructure such as streets and intersections are given funding priority over vehicle projects, even if there is interest in alternative fuels. Planning organizations also noted that there is a lack of available tax credits that effectively serve the customers.
    - Identified by: BACTS, EMDC, CCRPC, and Boston Region MPO
- **Alternative fuel vehicle, fuel, infrastructure, and maintenance facility costs:** The upfront cost of purchasing alternative fuel buses, electric vehicles, and other AFVs is prohibitive. Even if planning organizations realize that the return on investment would be significant, they cannot overcome this initial cost. In addition, many fleet maintenance facilities are very old and would require extensive investments in order to make them capable of repairing AFVs, specifically natural gas vehicles. In the Northeast, it is not possible to service the vehicles outside during the winter months.
    - Identified by: BACTS, CCRPC

Secondary Barriers:

- **AFV availability:** In some cases, area fleets have considered the idea of replacing existing vehicles with AFVs (e.g., propane medium-duty buses), but cannot identify a manufacturer or aftermarket conversion with the appropriate specifications.
    - Identified by: BACTS

- **Myths regarding AFVs:** Planning organizations noted that it is difficult to overcome some of the historic issues and myths associated with AFVs. For instance, cold weather operation and fuel quality have been issues in the past.
    - Identified by: BACTS
- **Lower than average income levels and lack of densely populated areas:** Rate of adoption is slow due to lower than average income levels in rural areas, making it difficult for consumers to pay the incremental cost associated with AFVs without incentives. In addition, AFV bus routes are not always practical in less populated areas, particularly when fueling infrastructure is not already available.
    - Identified by: EMDC
- **Lack of infrastructure:** In many areas of the region, including Maine, Vermont, and Western Massachusetts, there is a lack of alternative fuel infrastructure. This contributes to overall range anxiety for AFV drivers.
    - Identified by: EMDC
- **Coordination and timing with partners:** Timing and partner coordination play a large role in the pace of adoption of alternative fuel infrastructure. Specifically, for electric vehicle supply equipment (EVSE), it is important to get the support of developers before plans for new parking lots are finalized. Planning organizations should be engaged at the community level to identify developers that would consider adding EVSE to their projects. Timing is also critical when it comes to receiving grant funding. Projects and partners must be well-established in advance of solicitations.
    - Identified by: CCRPC

While tax revenues were identified as a major barrier in the literature review, the organizations ICF interviewed did not believe that lack of tax revenue from alternative fuels was an issue at the present time. In particular, in Maine, all alternative fuels except for electricity are taxed on the basis of their energy content. Even in the other two states, tax revenues would only become a significant barrier if AFV adoption becomes more widespread.

Opportunities for Addressing Barriers

While each region has identified unique barriers, it is clear that there are several recurring themes throughout Maine, Massachusetts, and Vermont. Based on these interviews, ICF recommends the following actions to address these barriers:

- **Education for consumers, fleets, and state representatives who allocate funding.** Particularly in more rural areas, the success of AFVs depends on adoption by both consumers and fleets, and this adoption will need to be supported at the state level, where funding is allocated. By demonstrating the economic and environmental benefits to residents and fleets, and educating them on available incentives and tools, the rate of vehicle adoption and infrastructure development is likely to increase. Similarly, by educating state representatives on the importance of alternative fuels and advanced vehicles, these projects may receive a higher priority. While projects that address aging infrastructure are more likely to be funded, it may be possible to incorporate alternative fuels into these priority projects. For instance, natural gas buses may be purchased to replace an aging transit fleet, particularly if stakeholders understand the long-term economic benefit.
- **Tools and resources for MPOs and RPCs.** During the interviews, planning organization representatives requested information on return on investment for alternative fuel projects, cold weather operation of AFVs, vehicle availability, and the overall benefits of infrastructure

development (e.g., EVSE). Many of these tools are already available from Clean Cities and the Alternative Fuels Data Center. ICF will keep these needs in mind when developing the electronic toolkit for MPOs and RPCs. In particular, fact sheets or brief reference documents on each of these items would help these organizations make a case for alternative fuel vehicle and infrastructure projects.

- **Enlisting the help of policy makers and grant organizations for funding.** Informing policy makers on the economic and environmental benefits of alternative fuels and advanced vehicles is another way to address lack of funding. By stressing the importance of tax credits and other incentives, it may be possible to create additional funding opportunities for alternative fuel projects. Policy makers should also be informed about regulatory mechanisms to overcome challenges associated with AFVs. For instance, in Vermont, state agencies recently released a report on options for user fees for AFVs using fuels that are not currently taxed. In addition, a few planning organizations mentioned opportunities to partner with grantmaking organizations to fund alternative fuel projects.
- **Coordination with Clean Cities coalitions.** While all of the organization representatives interviewed were familiar with their local Clean Cities coalition, there are still opportunities for collaboration. For instance, coordinators can assist in bringing together relevant stakeholders and fleets to create the demand for an alternative fuel station in an area where it may not have been feasible for one fleet. In addition, coordinators can provide the connection to the local utility for expanded natural gas station development. Coalitions can also provide ongoing education opportunities.

ICF will use these barriers and potential solutions in the next phase of this effort, which involves outreach to MPOs and RPCs, as well as an electronic toolkit for Maine, Massachusetts, and Vermont MPOs and RPCs.