

Integration of Alternative Fuel Vehicles in State Energy Assurance Planning

National Association of State Energy Officials
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Introduction and Key Findings

State energy assurance planning supports a robust, secure, and reliable energy infrastructure that is also resilient—able to restore services rapidly in the event of a disaster. State and local energy assurance planners work with energy providers and stakeholders from other jurisdictions, government agencies, businesses, and related organizations, to reduce consequences, assure public safety, and provide for rapid recovery in the wake of an energy supply disruption. In the longer term, energy assurance planners are looking to mitigate risk and vulnerabilities to critical energy infrastructure. In a move that underscores the importance of mitigating the risks of future fuel shortages, Secretary of Energy Ernest Moniz recently announced a decision by the U.S. Department of Energy (DOE) to establish regional gasoline reserve facilities in New York and New England.

With the continued growth of the alternative fuel vehicle (AFV) market and increasing coordination between state energy offices and local Clean Cities stakeholders, there is an opportunity to further enhance, augment, and update state energy assurance plans and promote short- and long-term energy resiliency via increased deployment of AFVs in times of emergency. With support from DOE's Clean Cities program, NASEO is leading a project to engage energy offices, Clean Cities Coalitions, and other stakeholders to increase the degree to which AFVs and charging infrastructure are incorporated in state energy assurance planning. Based on initial conversations with energy office directors and staff and a literature review, the following findings characterize the extent to which energy assurance planners currently incorporate AFVs into their work:

- Of the existing energy assurance plans that do address the role of AFVs, they only do so *in a limited way*. Almost across the board, there is an opportunity to incorporate more discussion of the benefits of AFVs in energy assurance planning and stronger recommendations for realizing these benefits.
- Lack of data can be a barrier to more fully incorporating AFVs in energy assurance plans. Planners need both qualitative and quantitative data about the vehicle and infrastructure market in their state (and potentially in surrounding states), to optimize the use and coordination of AFVs in the event of an emergency.
- To access needed data, energy assurance planners should engage state and local stakeholders.
- There is also a need to share more specific examples of how AFVs can be used to respond to shortages of petroleum products and ensure that essential public service needs can be met.

Linking AFVs to Energy Assurance Planning

If properly aligned, state energy assurance planning and wider-scale AFV and infrastructure deployment can have a mutually beneficial relationship. As weather-related disasters have become more frequent and disruptive to state and regional energy supplies, the role of alternative fuels in responding to and

mitigating the impacts of gasoline and diesel fuel shortages are growing in importance. The experience of Long Island, New York and Atlantic City, New Jersey¹ in the wake of Superstorm Sandy reinforced the value of using AFVs in emergencies, as they contributed to the recovery, debris removal, and evacuation efforts in those cities. In such cases, state and local efforts to increase market penetration of AFVs have a positive effect on energy assurance, as they diversify fleets and enable response teams to tap into alternatively fueled vehicle fleets to perform critical services without further exacerbating or being stalled in the event of a petroleum shortage. Such efforts may include, for instance, state vehicle fleet acquisition directives, multi-state memoranda of understanding and procurement strategies that leverage multiple states' purchasing, or incentives for private fleets and customers².

Conversely, energy assurance planning that incorporates and highlights the benefits of AFVs can have a positive impact on AFV market penetration. In many states, comprehensive energy planning and energy assurance planning enable states to "lead by example," promoting the state's procurement of proven, cost effective technologies that address their economic development, cost-effectiveness, energy reliability, and environmental goals. Especially in times of emergency, the successful coordination and deployment of these vehicles can spur private business and individual investment in AFVs by underscoring their reliability and life-cycle cost savings in comparison to conventionally fueled vehicles.

Despite these opportunities, linkages between energy assurance planning and AFVs remain limited. Our review of state energy assurance plans indicates that while a majority of the states plans make reference to AFVs, there is a significant opportunity to more fully integrate and define the role of AFVs in these plans. For an overview of how today's energy assurance plans treat AFVs, please see the attached fact sheet.

Challenges and Needs

Energy assurance planners rely on stakeholder engagement and data to inform the development of state energy assurance plans. To optimize the use and coordination of AFVs in the event of an emergency, therefore, both qualitative and quantitative data about the vehicle and infrastructure market in their state (and potentially in surrounding states) is a necessity. To access needed data points, energy assurance planners should engage state and local stakeholders and inform their work using specific examples of how AFVs can be used to respond to shortages of petroleum products and ensure that essential public service needs can be met.

While data needs may vary on a state-by-state basis, NASEO has identified a number of key data elements that should support the integration of AFVs into energy assurance planning. These data elements, as well as known data sources, are represented on the following page in Table 1 and Table 2, respectively.

¹ View *MotorWeek's* coverage of the role natural gas minibuses played in Atlantic City's recovery after Hurricane Sandy at <https://www.youtube.com/watch?v=fV4S-7sPge0>.

² NASEO's Transportation committee has explored many of these strategies: <http://naseo.org/committee-transportation>.

Table 1: Key Data Elements for Integrating AFVs in Energy Assurance Planning

Data Point	Description/Rationale	Potential Data Sources
<i>Number and location of AFVs</i>	Data points capture the size and location of state-owned, municipally-owned, or privately-owned fleets that emergency responders may be able to use to assist in evacuation, debris removal, or other response/recovery efforts.	1. State and municipal agencies that manage AFV fleets
<i>Ownership/management of AFVs</i>		2. Local Clean Cities Coalitions
<i>Fuel source of AFVs</i>	Data points capture the alternative fuel source of AFVs that may be deployed in the event of an energy emergency, in addition to their typical uses and capabilities (in terms of range, efficiency, fueling needs, and ability to carry cargo).	1. State, local, and private fleet managers
<i>Typical uses and capabilities of AFVs</i>		2. NREL TransAtlas
<i>Fueling/charging locations and fuel storage</i>	Data points pinpoint locations of AFV fueling and charging stations and other critical infrastructure.	1. AFDC 2. NREL TransAtlas 3. DHS OneView GIS
<i>Cost of AFVs</i>	Data points support decision making and identify lifecycle costs and benefits of state, local, or private purchase of AFVs and/or fleet conversions.	1. AFDC 2. Clean Cities Coalitions
<i>Partners and stakeholders</i>	Data point enables energy assurance planners to engage other state and local agencies (such as departments of transportation or highway administration) and groups (such as businesses and Clean Cities Coalitions) in the energy assurance planning process.	3. State and local energy offices 4. Clean Cities Coalitions 5. AFDC

Table 2: Known Data Sources

Data Source	Description	Accessibility	Website
<i>Alternative Fuels Data Center (AFDC)</i>	AFDC datasets include AFV fueling and charging locations by state, boundaries and population coverage of Clean Cities Coalitions, truck stop electrification facilities, and efficiency/savings estimates of AFVs by type.	Publicly available	http://www.afdc.energy.gov/
<i>National Renewable Energy Laboratory (NREL) TransAtlas</i>	The TransAtlas mapping tool uses Google Maps and customized queries to display the locations of existing and planned alternative fueling stations, concentrations of different vehicle types, alternative fuel production facilities, roads and political boundaries	Publicly available	http://maps.nrel.gov/transatlas
<i>Department of Homeland Security (DHS) OneView GIS System</i>	OneView is a geospatial visualization tool operated by DHS and designed for the use of homeland security partners in protecting the nation's critical infrastructure and key resources.	Limited access by those that have been authorized to access The Homeland Security Information Network (HSIN)	https://gii.dhs.gov/oneview

Next Steps

NASEO is working with State Energy Offices, Clean Cities Coalitions, and other public and private stakeholders to support a better integration of AFVs and charging/fueling infrastructure in state energy assurance planning processes. The goal of this work is to develop a template for AFVs and AFV infrastructure data collection that can be used by State Energy Offices, energy emergency planners, local governments, and Clean Cities Coordinators to feed critical AFV data into a state’s energy assurance response plans. For more information on this initiative, please contact Sandy Fazeli, Program Manager, at sfazeli@naseo.org or 703-299-8800.