



Unlocking Private Sector Financing for Alternative Fuel Vehicles (AFVs) and Fueling Infrastructure



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National Association of State Energy Officials (NASEO)
June 19, 2014*
Project ID: TI038

This presentation does not contain any proprietary, confidential, or otherwise restricted information.
**All data contained in this presentation is current as of April 2014, unless otherwise noted.*

Timeline *(as of April 2014)*

Start: February 2013
End: January 2015
Complete: 14 months (58%)
5 major deliverables (36%)

Budget *(as of March 2014)*

Total Funding:	\$536,000 (\$0 match)
Funding Received in FY13:	\$118,792
Funding for FY14:	\$67,819
Spent to Date:	35% (\$186,611)

Barriers/Needs Addressed

1. Consumer reluctance to purchase new technologies
2. Experience with new fuels and vehicle technologies
3. Opportunity to leverage state fleets, funds, and planning and policy development role with private sector investment
4. Need for increased coordination between State Energy Offices and Clean Cities stakeholders

Partners

1. Vermont Energy Investment Corporation (VEIC)
2. Center for Climate and Energy Solutions (C2ES)
3. Transportation Energy Partners (TEP)
4. New York State Energy Research and Development Authority (NYSERDA)
5. Colorado Energy Office (CEO)





Relevance

Project Objectives

- Stimulate private sector investment and involvement in AFVs and associated infrastructure projects, leveraging investments made by the public sector.
- Develop innovative vehicle and infrastructure financing models to make AFVs more accessible to consumers and public and private fleet operators.
- Enable utilities, policy-makers, and regulators to fund AFV and infrastructure incentives and investments with ratepayer dollars.
- Assist states in developing energy plans that support private sector investments in AFVs and associated infrastructure.

Vehicle Technologies Office Goals/Priorities

- Achieve petroleum reduction of at least 2.5 billion gallons/year by 2020 through voluntary adoption of AFVs and infrastructure.
- Promote replacement of petroleum motor fuels with replacement fuels to the maximum extent practicable.
- Offer technical and problem solving assistance to address market barriers.



Milestones

Table of non-Project Management/Reporting Milestones and Deliverables

T	Milestone or Deliverable	Status
Policy Initiatives	Utility Integrated Resource Plan Review	Completed 09/13
	Transportation Efficiency Technical Reference Manual	Expected 05/14
	Assessment of AFV Data Needs in State Energy Assurance Planning	Expected 08/14
	Template/Resources/Training for Using AFVs in Energy Assurance	Expected 08/14
	Guidance for Incorporating AFVs in Comprehensive Energy Plans	Expected 01/15
Barrier Reduction	Launch of AFV Financing Advisory Committee	Completed 07/13
	Barriers to Financing AFVs Report	Completed 12/13
	Case Studies of Financing Models	Expected 07/14
	Innovative Business Models	Expected 09/14
	Strategic Plans for Implementation	Expected 11/14
Training	Project Updates to Clean Cities Coalitions via Panel Sessions at 2013 and 2014 Energy Independence Summit hosted by TEP	Completed 03/13 and 03/14
	Two Regional Trainings	Expected 12/14
Outreach	Launch NASEO Transportation Committee	Completed 05/13
	Elevation of best practices, programs, strategies and news via committee, webpage, email and newsletter of NASEO and partner organizations	Ongoing



Approach to Deployment: Key Tasks

Task 1: Project Management and Administration (NASEO)

- Manage project planning and execution activities, including development of a detailed spend plan, execution of contracts or memoranda of understanding with project partners, and administrative tasks associated with government cost monitoring and reporting.

Task 2: Policy Initiatives (NASEO and VEIC)

- Enable state policy-makers, regulators, and utility decision-makers to support AFV and infrastructure deployment through energy assurance planning, comprehensive energy planning, utility load forecasting, and transportation efficiency quantification.

Task 3: Barrier Reduction Initiatives (C2ES)

- Engage Clean Cities stakeholders to enable greater private sector interest, innovation, commitment, and implementation related to financing AFV and infrastructure.

Task 4: Safety and Training Initiatives (TEP)

- Provide training and information designed to increase understanding of innovative financing opportunities, recommendations, and solutions for AFVs and infrastructure.

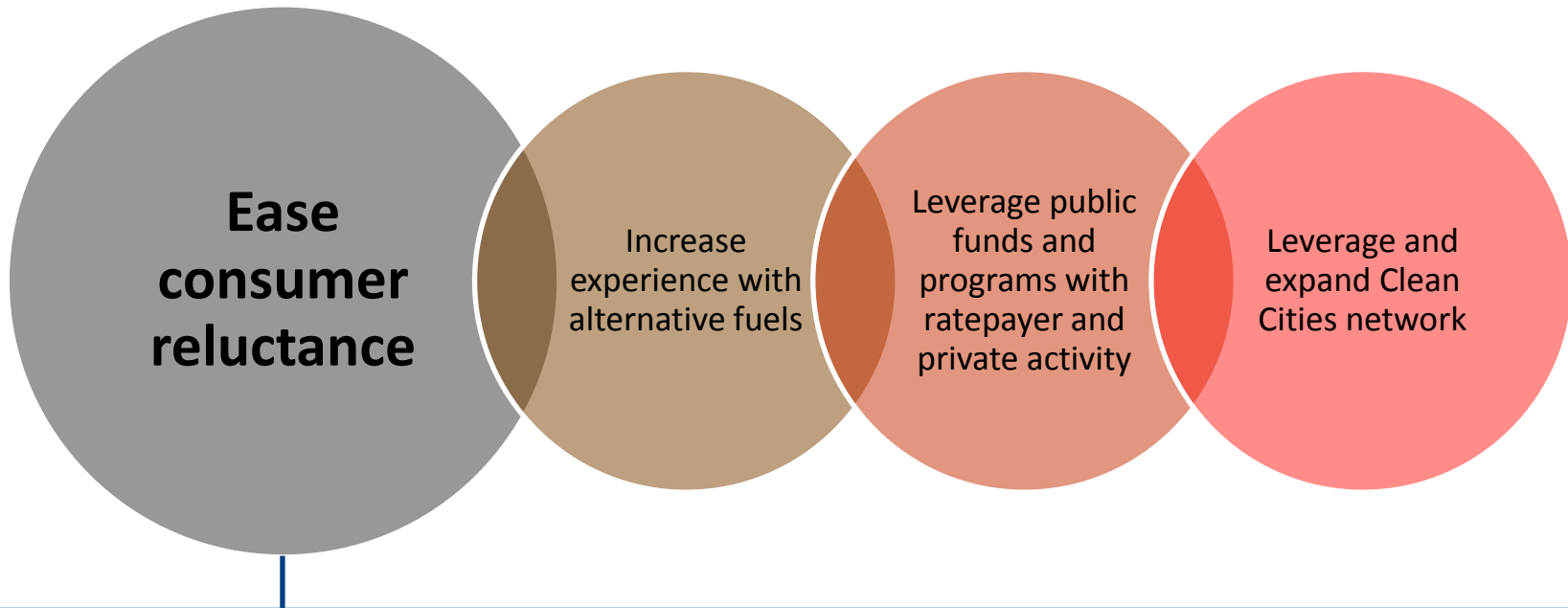
Task 5: Market Development and Outreach (NASEO)

- Provide information, communication, and outreach designed to inform Clean Cities and state energy stakeholders on project status, opportunities, and findings.

+ Approach to Deployment

Mitigate key deployment barriers to increase financial leverage and policy and planning support for vehicle and infrastructure projects

Barrier Mitigation Strategies



Approach: Identify barriers and innovative financing arrangements that protect consumers, expand eligible customer base, reduce cost of capital for projects, and/or de-risk AFV and infrastructure investments for public and private lenders.

Related milestones and status:

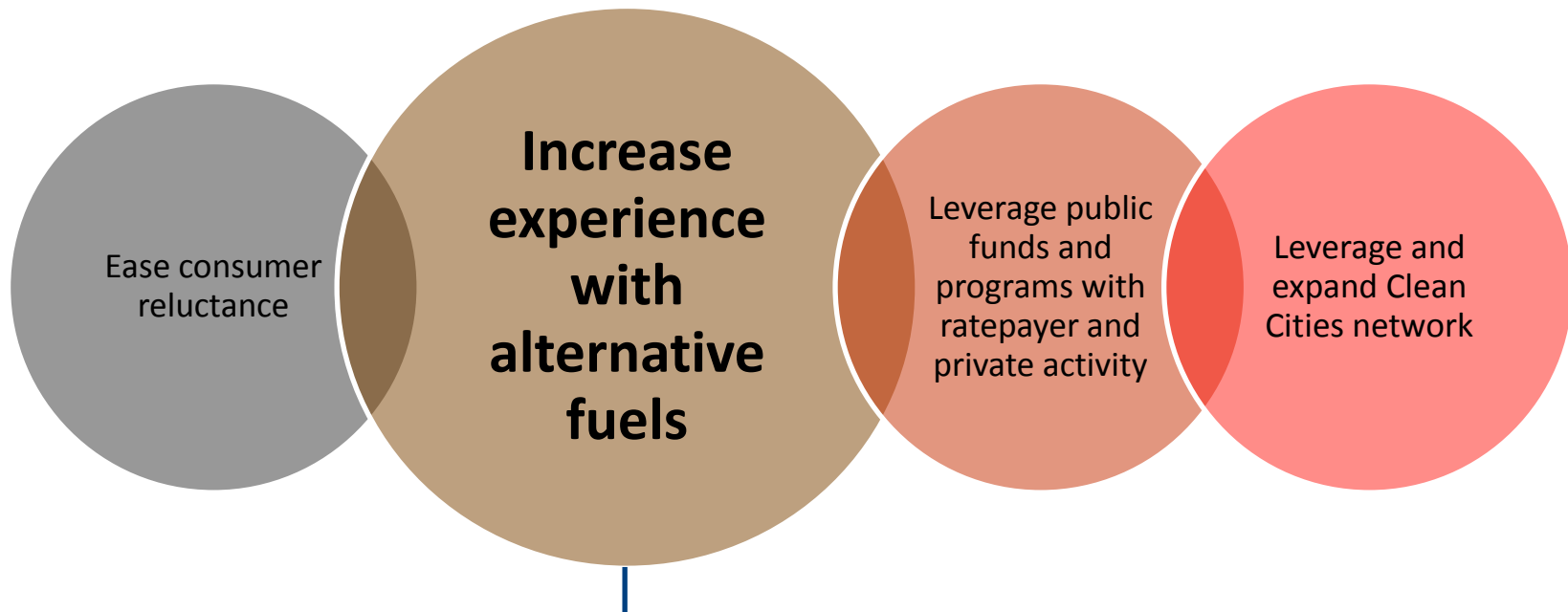
- "Alternative Fuel Vehicle and Fueling Infrastructure Deployment Barriers and the Potential Role of Private Sector Financial Solutions" (completed December 2013, available at www.naseo.org/publications)
- Case Studies on Energy Service Company (ESCO) model and Green Bank Financing (in development, expected July 2014)



Approach to Deployment

Mitigate key deployment barriers to increase financial leverage and policy and planning support for vehicle and infrastructure projects

Barrier Mitigation Strategies



Approach: Establish network of State Energy Offices, Clean Cities Coalitions, and partners to elevate best practices in AFV and infrastructure deployment. Develop guidance to spur incorporation of AFVs into major state policy and planning channels.

Related milestones and status:

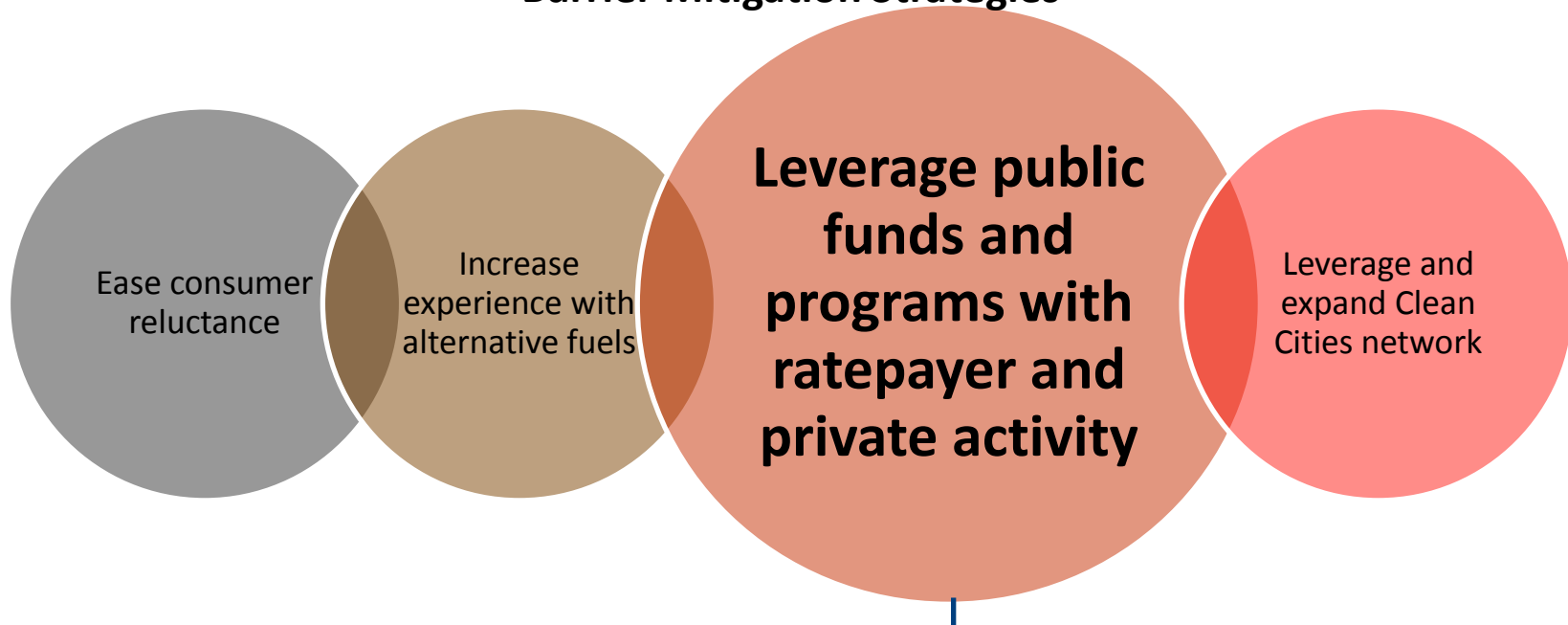
- Launch of Transportation Committee (**completed May 2013**), ongoing coordination with Clean Cities, energy planners
- Memorandum and Training on the Role of AFVs in Energy Assurance and Reliability (**in development, expected August 2014**)
- Report: Guidance for Incorporating AFVs in Comprehensive Energy Planning (**expected January 2015, to be informed by other project deliverables**)



Approach to Deployment

Mitigate key deployment barriers to increase financial leverage and policy and planning support for vehicle and infrastructure projects

Barrier Mitigation Strategies



Approach: Develop tools and strategies to increase involvement, implementation of AFV/fueling projects by the private sector.

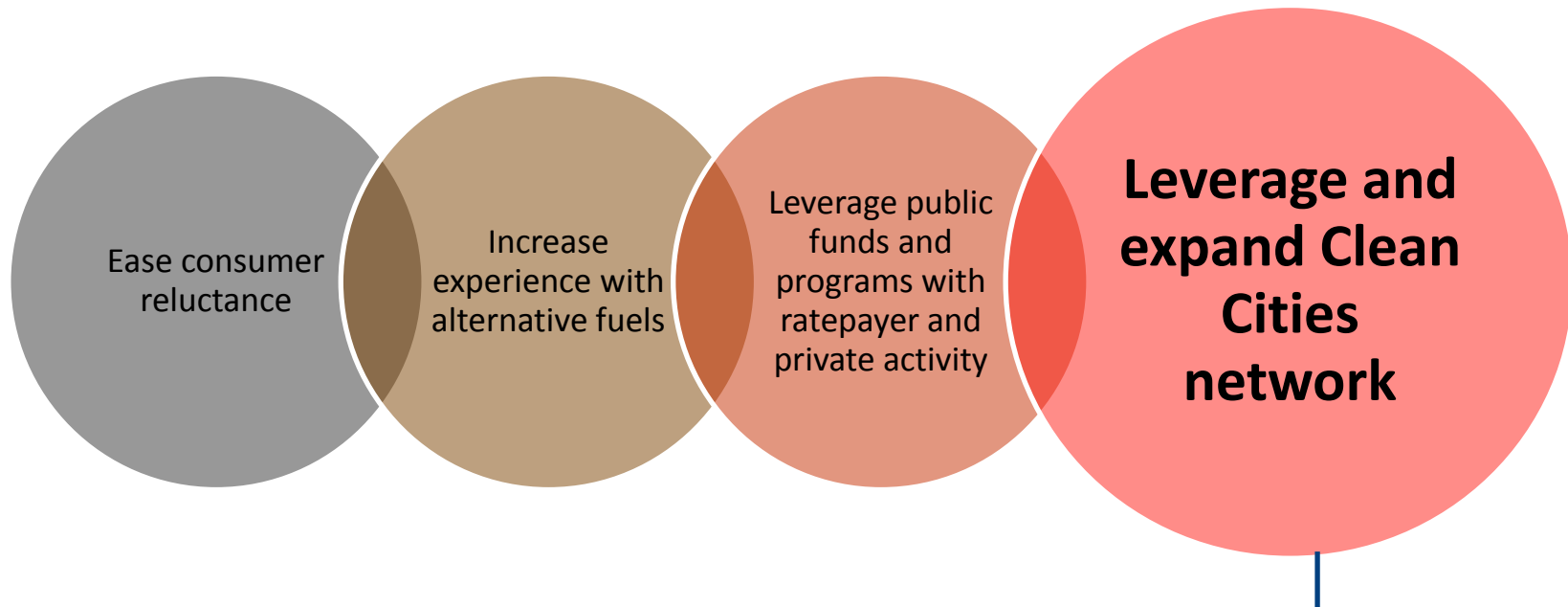
Related milestones and status:

- Report: “*Review of Utility Integrated Resource Plans and Electric Vehicle Load Forecasting*” (**completed September 2013**)
- Transportation Efficiency Technical Reference Manual (**in development, expected May 2014**)
- Launch of AFV Financing Advisory Committee (**completed July 2013**)
- Partnership with Harvard Business School (**underway**) to quantify and develop Innovative Business Models for AFV investment (**in development, expected September 2014**)
- Collaboration with Advisory Committee members to implement business models (**not yet begun, expected November 2014**)

+ Approach to Deployment

Mitigate key deployment barriers to increase financial leverage and policy and planning support for vehicle and infrastructure projects

Barrier Mitigation Strategies



Approach: Disseminate information and collect input, feedback, and participation from Clean Cities coordinators on project approach and deliverables, and facilitate introductions between Clean Cities coordinators and Energy Office directors/staff as appropriate.

Related milestones and status:

- Project-oriented panel presentations on innovative financing and investment at 2014 and 2014 Energy Independence Summits, tailored to Clean Cities attendees (**completed March 2013 and March 2014**)
- Regional training workshops for Clean Cities Coalitions, Energy Offices, and other regional stakeholders on project deliverables (**not yet begun, expected December 2014**)

+ Accomplishments and Progress: Transportation Committee

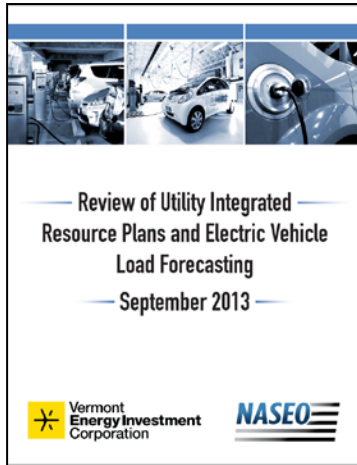
Lead: NASEO; **Task:** Market Development and Outreach; **Status:** Active

- Co-chaired by Ruth Horton, Senior Advisor, NYSERDA (top) and Maria Redmond, Senior Analyst, Wisconsin Energy Office
- Leads NASEO's efforts to accelerate the use of domestic resources, reduce reliance on imported oil, and improve air quality in the transportation sector by supporting states and their partners in transportation-energy business development, environmental protection, and energy reliability
- Forum promotes peer-to-peer learning on best practices and models, elevation of priorities and key issue areas, and discussion around challenges, opportunities, and needs of state energy offices and their partners
- Topics covered include:
 - Role of Clean Cities Coalitions and coordination with energy offices;
 - State outreach and education campaigns;
 - Multi-state MOUs leveraging purchasing power of public fleets;
 - EV-ready codes for the built environment; and
 - Project and news updates
 - Cluster-based analyses to guide policymaker investment decisions, among others.
- Participation from Clean Cities Coalitions in DC, MD, VA, WI, NY, and CA
- Description and resources at <http://naseo.org/committee-transportation>

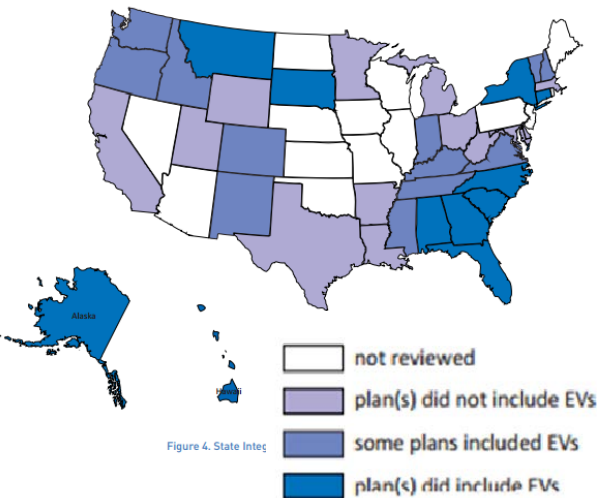


+ Accomplishments and Progress: Scan of Integrated Resource Plans

Lead: VEIC; Task: Policy Initiatives; Status: Completed



- Review of 31 utilities' Integrated Resource Plans analyzes how utility planners and regulators are accounting for the impacts of electric vehicles (EVs) on the grid
- Major findings:
 - 19/31 utilities incorporate EVs into their plans
 - Projected load ranges from less than 1% to 5%
 - Most states predicted to have high levels of EV penetration include EVs; additional modeling or analysis is limited
 - Time of use (TOU) rates are most commonly referenced mechanism
- Recommendations:
 - Track deployment through coordination with transportation partners (DOTs, Energy Offices, Clean Cities, and EVSE installers)
 - Project EV penetration rates, additional demand, and peak load effects
 - Determine spatially explicit infrastructure needs.
 - Consider how utility efficiency programs can reduce projected demand resulting from EVs
 - Consider the services that EVs can provide as a grid resource through vehicle-to-grid technology and interoperability



Download at <http://naseo.org/data/sites/1/documents/publications/NASEO-Review-of-Utility-Integrated-Resource-Plans-and-Electric-Vehicle-Load-Forecasting.pdf>

+ Accomplishments and Progress: Technical Reference Manual

Lead: VEIC; Task: Policy Initiatives; Status: Draft being finalized

Technical Reference Manuals (TRMs) characterize energy savings, environmental benefits, and financial costs of efficiency measures to measure cost-effectiveness and inform program and policy development.

- Why a Transportation TRM?
 - Electrification of transportation underscores need to apply utility planning practices, assess measures, support optimal deployment of electric vehicles and charging stations
 - Optimizes decision-making for a variety of end-users:
 - Utilities: may use TRM to assess cost-benefit ratio of measures, minimize grid impacts of vehicle deployment
 - Utility Commissions: may use TRM for regulatory decision-making and least-cost planning
 - State Energy Offices: may use TRM to guide policy development and the establishment of financing, incentive programs for fleet conversions and/or infrastructure projects
- Development of Transportation TRM has been inspired/informed by:
 - NASEO Transportation Committee discussions, one-on-ones with members
 - Findings and trends from IRP Scan
 - States that include transportation in their statutory definition of energy
- TRM examines gains between (1) conventional versus electric vehicles and (2) level 1 versus level 2 charging stations

Factors in TRM Analysis:

Prices of gasoline, diesel, electricity
 Avoided electricity costs
 Gasoline GHG emissions/gallon
 Electricity GHG emissions /kWh
 Societal cost of GHG emissions /ton
 Health cost of vehicle emissions
 Health cost of electricity generation
 Annual vehicle miles traveled
 Cost of Level 1 EVSE
 Cost of Level 2 EVSE
 Cost of 'Smart' Comml Level 2 EVSE
 Cost of DC Fast Charging station

+ Accomplishments and Progress: Energy Security Planning Data Template

Lead: NASEO; Task: Policy Initiatives; Status: In development

- User-friendly, plug-and-play data template for Clean Cities and other transportation partners to use for data collection; ensures data is shared with the Energy Office and incorporated into states' energy assurance and energy security plans
- Subtasks/products that will inform the development and dissemination of the template:
 - Facilitated discussions with energy offices through NASEO regional meetings, Transportation Committee and Energy Security Committee calls, and joint Transportation-Energy Security webinars
 - Memo identifying key data sources, experts, and data points (number, location, management of AFVs; typical uses, capabilities; fueling, charging, storage locations; etc.) necessary for energy security plans
 - Targeted training to Clean Cities coordinators and energy office staff on how to use the template and the role of AFVs as a means to meet critical needs during a petroleum shortage

+ Accomplishments and Progress: Financing Advisory Committee

Lead: C2ES; Task: Barrier Reduction; Status: Active



Members provide expertise on research and project deliverables; help disseminate lessons; assist in piloting new business models. The AFV Advisory Group serves in an advisory capacity only and does not explicitly endorse any project content.

+ Accomplishments and Progress: Financing Barriers, Case Studies and Business Models

Lead: C2ES; Task: Barrier Reduction; Status: In progress

- December 2013 report, “*Alternative Fuel Vehicle and Fueling Infrastructure Deployment Barriers and the Potential Role of Private Sector Financial Solutions,*” analyzes the state of the AFV market, barriers to widespread AFV deployment, and potential innovative finance options to overcome barriers
 - Major barriers include high upfront costs, low demand, information failures, legal/regulatory hurdles, liquidity risk
- Barriers research is currently informing the development of case studies:
 - Applying the Energy Services Company (ESCO) Model for AFVs
 - Increasing Liquidity, Standardization, and Diversification through Green Banks
- Through partnership with the Harvard Business School, project team will apply customized quantitative analytics to the case studies to develop innovative business models and work with Advisory Committee members to create strategic plans for implementation

+ Accomplishments and Progress: Training for Clean Cities Stakeholders

Lead: TEP; Task: Training; Status: In progress



ENERGY INDEPENDENCE SUMMIT: MARCH 30-APRIL 2, 2014

- Completed: Outreach to TEP Network
 - Presentations delivered to Transportation Energy Partners members and attendees of 2013 and 2014 Energy Independence Summits
 - Panel sessions focused on project approach and innovative financing and investment models to support
 - Recap, sponsors, and photos available at <http://www.transportationenergypartners.org/events>
- Planning Underway: Regional Training Workshops
 - Planning for two regional training workshops, which will convene Clean Cities Coalitions, State Energy Office staff, and other stakeholders
 - Training workshops will rely on critical handoff, taking place when all project deliverables and activities have been developed

+ Accomplishments and Progress: Guidance for Comprehensive Energy Plans

Lead: NASEO; Task: Policy Initiatives; Status: Not yet begun

- NASEO will use project deliverables and findings to develop guidance that elevates the role of AFVs and infrastructure in comprehensive energy planning, with a focus on policy and program recommendations that leverage private sector involvement
- Deliverable will leverage NASEO's extensive body of knowledge, history of tracking comprehensive energy plans, and track record of providing guidance and assistance to states on energy planning (see sidebar)

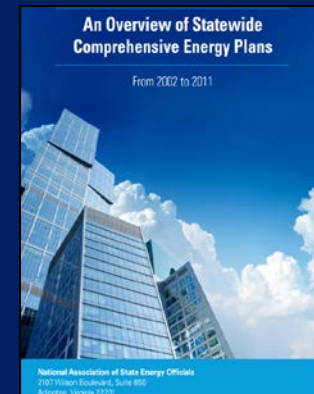
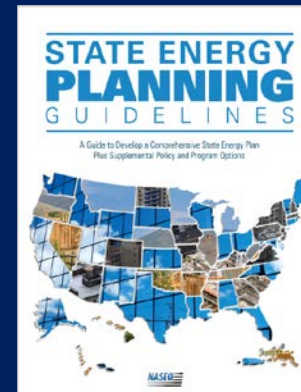
About Comprehensive Energy Plans:

Plans provide an assessment of current and future energy supply and demand; examine existing energy policies; and identify emerging energy challenges and opportunities.

At least 38 have operational energy plans in place; 22 of these are currently undergoing updates or revisions.

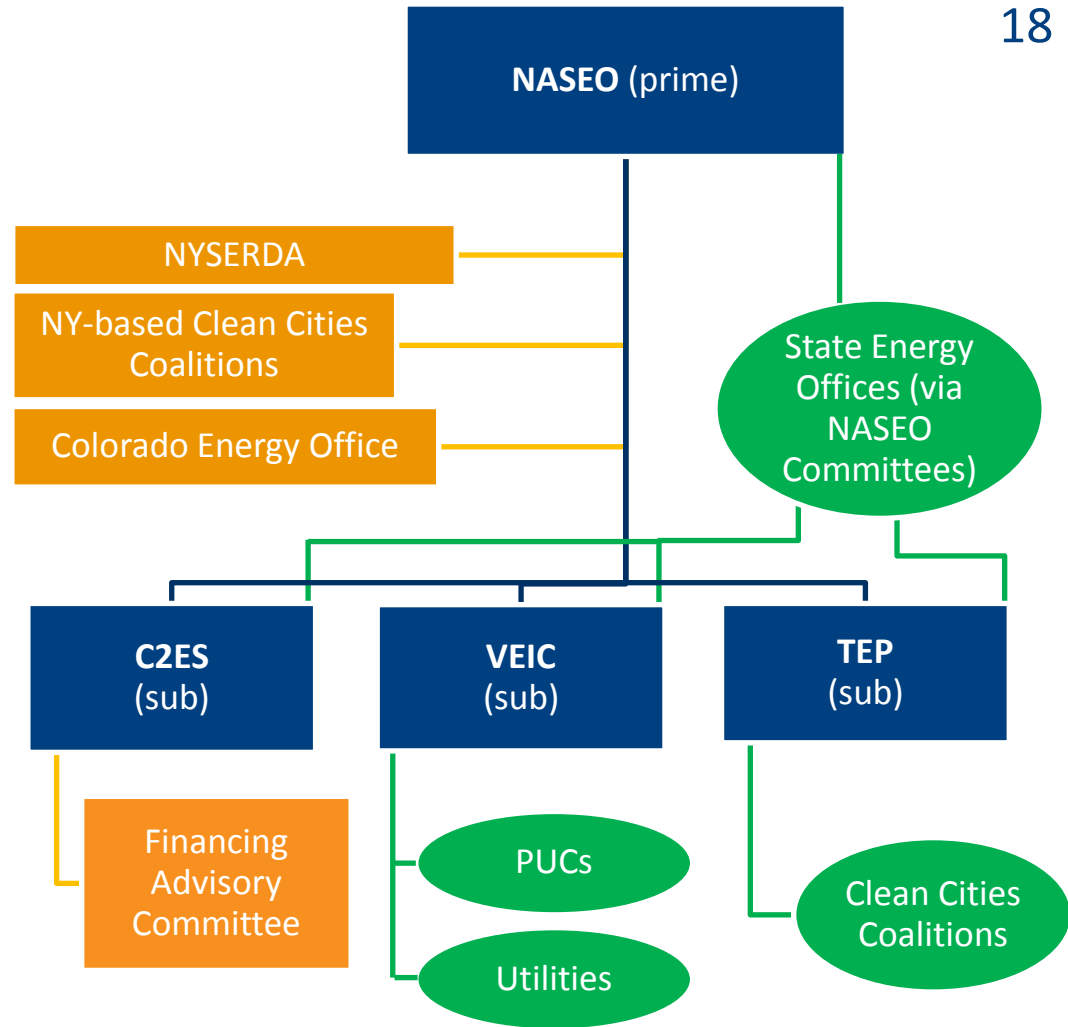
A majority of existing plans identify transportation as a priority sector, but only seven encourage the growth of AFV infrastructure through financial incentives or streamlined permitting.




More information on energy planning is available through NASEO's website (www.naseo.org) and publications.





Collaboration and Coordination with Project Partners and Stakeholders



-  Primary Partners
-  Advisory Role
-  Targeted Outreach



Alternative Fuel Market Expansion Potential

- **Remaining Project Activities and Team Leads**
 - C2ES: Finalization of TRM, financing case studies, business models, strategic plans for implementation, and energy assurance-AFV data template.
 - TEP: Delivery of Clean Cities stakeholder regional training workshops
 - NASEO: Development of guidance for comprehensive energy planning

- **Market Expansion Impacts and Opportunities**
 - Enabling private sector companies to easily implement the innovative financing mechanisms identified and scoped by the NASEO Team.
 - Enabling state and utility decision makers to more accurately assess the costs and benefits of investments of transportation efficiency measures
 - Supporting comprehensive energy to promote private sector investment in AFVs and infrastructure, to be disseminated to all 56 state and territory energy offices.
 - Raising awareness of the need for private sector investment and creating opportunities for public and private sector collaboration to achieve greater AFV and infrastructure deployment.
 - Building highly informed network of state energy officials and Clean Cities Coalitions who understand the barriers and multiple solutions to unlocking private sector investment.

- **Potential Future Work Directions**
 - State and utility adoption of Transportation TRM
 - Increased coordination with emerging state green banks and representative organizations (i.e. NASEO, Coalition for Green Capital) to promote low-cost financing for AFV projects and drive consumer demand
 - Technical assistance for state implementation of energy security and comprehensive energy planning guidance



Summary

Key takeaways concerning project objectives, approaches, and expected market outcomes.

Objectives	<ul style="list-style-type: none">• Stimulate private sector investment and involvement in AFVs and associated infrastructure projects, leveraging public investments• Develop innovative vehicle and infrastructure financing models to make AFVs more accessible to consumers and public and private fleet operators.• Enable utilities, policy-makers, and regulators to fund AFV and infrastructure incentives and investments with ratepayer dollars.• Assist states in developing energy plans that support private sector investments in AFVs and associated infrastructure.
Approaches	<ul style="list-style-type: none">• Identify barriers and innovative financing arrangements that protect consumers, expand eligible customer base, reduce cost of capital to borrow money for projects, and/or de-risk AFV and infrastructure investments for public and private lenders.• Establish network of State Energy Offices, Clean Cities Coalitions, and partners to elevate best practices in AFV and infrastructure deployment. Develop guidance to spur incorporation of AFVs into major state policy and planning channels.• Develop tools and strategies to increase involvement and implementation of AFV and fueling projects by the private sector.• Disseminate information and collect input, feedback, and participation from Clean Cities coordinators on project approach and deliverables, and facilitate introductions between Clean Cities coordinators and Energy Office directors/staff.
Outcomes	<ul style="list-style-type: none">• Suite of resources, tools, and partnerships resulting from this project is readying the AFV market for increased vehicle deployment and infrastructure project implementation.• By addressing private sector financing barriers and state and regulatory policy and program channels, project is building frameworks that enable informed, cost-effective, and optimal deployment of AFVs.