

Chapter 12

Multi-Sector Policies and Issues

A number of issues and policies were identified by members of the Technical Work Groups as having cross-sectoral impacts or considerations. This chapter of the Climate Action Council (Council) Interim Report summarizes the environmental justice concerns and considerations raised by environmental and community-based representatives; near- and long-term workforce training requirements for a clean energy economy; marketing, education, and outreach; and a subgroup report that addressed the impacts and strategies related to the transition to electric vehicles.

Environmental Justice Considerations and Concerns Related to the Climate Action Plan Process and to Policy Options Development

The transition to a low-carbon economy and the projected consequences of climate change will have disparate impacts across the different communities (urban, suburban, and rural), sectors and demographic groups of New York State. From the very beginning of the Climate Action Plan process, the Council made assessing how any proposed climate change mitigation and adaptation policies would affect the most vulnerable New Yorkers a priority. Communities and households struggling with poverty, unemployment, health problems, political disenfranchisement and other challenges will often lack an adequate understanding of the climate-related risks they face and/or the necessary resources to adapt effectively to rapidly accelerating climate change.

To ensure that concerns and issues of importance to New York State's most vulnerable communities were adequately addressed in the process, the Council made a determined effort to reach out to and integrate input from a spectrum of community-based or focused organizations and environmental justice (EJ) groups. From the very beginning, individuals who represented these viewpoints and who could also bring to bear different regional perspectives were invited to join the Technical Work Groups that formed the backbone of the Climate Action Planning effort. Additional EJ and community-based or focused representatives were later added to each Technical Work Group to further strengthen the community perspective. Key EJ stakeholders were also asked to join the Integration Advisory Panel, a body charged with considering cross-cutting and multi-sectoral issues that emerged during the process.

In addition to this representation on the Technical Work Groups, the Council partnered with the New York State Department of Environmental Conservation's (DEC's) Office of Environmental Justice to implement an unprecedented outreach effort focused on community-based organizations and EJ stakeholders across the state. This effort included organizing two statewide videoconferences, hosting a series of EJ Coordination and Advisory teleconferences at critical points in the process, and circulating survey instruments on the proposed mitigation and adaptation policies to a wide variety of stakeholders.

The videoconferences, held in March and May, were broadcast from DEC's headquarters in Albany to the agency's regional offices in Buffalo, Syracuse, and New York City and were open to the public. The EJ Coordination and Advisory teleconferences afforded a broader group of stakeholders an opportunity to learn about the Climate Action Plan process and offer their input and advice about key issues to the EJ and community-based or focused representatives serving on the Technical Work Groups. Finally, the two surveys that were distributed across the state afforded stakeholders an opportunity to submit their views about the potential negative and positive aspects of the mitigation and adaptation policies under consideration. The results of these surveys were consolidated and distributed to the membership of the Technical Work Groups and made available to the general public online.

Holistic Approach to Environmental Justice and Climate Change Policy

In addition to the extensive outreach, coordination, and input-gathering effort described above, EJ concerns were incorporated into the analytical effort to identify and design potential policies at a fundamental level. The full description of each proposed policy (see online appendices) features a discussion of any significant EJ considerations that came out of the Technical Work Group deliberations or that were identified as a result of stakeholder input or further staff analysis. The short policy descriptions contained in the main body of the Climate Action Plan also highlight any EJ concerns under the "Special Considerations" section. The explicit integration of EJ concerns in the Climate Action Plan's deliberative and analytical processes reflects a commitment by New York State to approach these critical environmental policy areas in a holistic fashion. Accordingly, many of the proposed policies that emerged from the different Technical Work Groups have explicit or implicit benefits for EJ communities, including reductions in air pollution, additional resources for community development, and the upgrading or phasing out of aging infrastructure and facilities.

There are many examples of how the proposed Climate Action Plan policies will benefit EJ communities in each of the sectors. In policy option PSD-1, which is focused on siting power generation, the Council explicitly acknowledges the role of EJ communities and the need to take into consideration the cumulative impacts of various environmental burdens as part of the siting process, and implementation of PSD-8, which addresses Existing Fossil Fuel Plants Policies, would result in improved efficiency and the reduction of emissions in neighborhoods that host power plants. Community and EJ stakeholders strongly endorsed the smart growth principles and initiatives featured in several of the policies such as TLU-10, which called for supporting the establishment of Priority Growth Centers, or TLU-11's call for more Transit-Oriented Development. Finally, many stakeholders expressed support for the focus on workforce development and green collar jobs found in many of the policies, indicating that this was an important issue for their communities as New York begins to move to a low-carbon economy.

While many of the proposed policies have specific EJ implications, over the course of the Climate Action Plan process, several overarching concerns about the potential shift to a low-carbon economy and New York State's efforts to adapt to climate change emerged. These included the need to increase attention and devote resources to facilitating meaningful public participation and community engagement, the importance of

preserving and expanding procedural safeguards in official decision-making processes such as permitting and siting, and the application of fair share principles with respect to the distribution of burdens and amenities.

Effective Community Engagement and Public Participation

Research shows that most Americans do not feel a personal connection to climate change-related issues. They are aware of it, they may even rank it as a concern, but according to a 2008 Pew Research Center for People and the Press, they do not perceive it as a near-term priority on par with economic concerns.¹ In fact, despite increasingly forceful calls from the scientific community for urgent action, climate change has slipped to the bottom of the list of American priorities. Given the additional socioeconomic stresses they face, this dynamic is likely to be even stronger in low-income communities and communities of color.

One of the key ingredients found in communities across the world that have successfully engaged on climate change-related issues is the presence of strong and sustained local leadership.¹ Community and EJ stakeholders engaged in the Climate Action Plan process repeatedly stressed the need to incorporate adequate public awareness-raising and community engagement measures into the Climate Action Plan. They stressed that without sustained local dialogues to educate community members and build support for the various policies, the desired paradigm shift to a low-carbon economy would be much more difficult. Already, because of past difficulties, misunderstandings, and procedural missteps, many EJ leaders are wary of official decision-making and planning processes that they feel have served them poorly in the past. Explicitly acknowledging and addressing such problems and shortcomings was identified as a critical component of developing and implementing the Climate Action Plan.

Communicating effectively about climate change is a formidable challenge. Efforts to convince the public of the urgency of the problem and translate climate change-related risks into a near-term danger on par with other imminent societal and personal threats have not been successful. Community and EJ stakeholders discussed the reality that awareness-raising and public education activities around climate change often have been piecemeal and sporadic, and have lacked the kind of targeted, New York-specific context to make them as effective as possible. Given the relatively low-level of awareness and understanding of the risks and hazards associated with most climate shocks in EJ communities, stakeholders identified a need for more coordinated, statewide awareness-raising activities that include tools and guidance to help communities frame climate-related risks within a local context.

Informed and aware households and communities represent an invaluable asset to State and local authorities with respect to climate change. Community and EJ stakeholders indicated that making use of this asset fully would require consultation, participation, assessment, and planning at levels lower than municipal government. Thus, they argued that adequate resources and technical assistance devoted to community capacity building

¹ Psychology of Climate Change Communications, *Columbia University Center for Research into Environmental Decisions*. 2009.

should be an integral part of New York State's Climate Action Plan, but they pointed out that State programs have not always provided resources for this kind of effort.

For example, stakeholders repeatedly cited the expiration of the Intervenor Fund established under Article X of the Public Service Law governing the construction and operation of electric generating facilities with capacities of 80 megawatts or more as a great model mechanism for community-level capacity building. The Intervenor Fund channeled resources to localities and community-based organizations to help defray the costs of technical experts and consultants. Article X expired in 2003. While revival of this mechanism is being considered as part of the Power Supply and Delivery (PSD) Technical Work Group's efforts, it has potential applicability beyond the siting of proposed power generation facilities.

Permitting, Siting, and Environmental Impact Assessment

Community and EJ stakeholders raised concerns about the implications of some of the proposed policy approaches for hard-won procedural safeguards designed to ensure adequate access to official decision making in areas such as permitting, the siting of facilities and infrastructure, and conducting environmental impact assessments. Specifically they cited language regarding the need to "overcome barriers" as troubling. They contended that "EJ communities have long been victimized by proposals that evade zoning and siting law review" and that carving out exceptions in order to advance climate change-related goals would be strongly opposed. As an example, they pointed to a specific controversy that occurred in New York City in 2000, when the New York Power Authority (NYPA) met with determined resistance to a plan to site natural gas-fired turbines exclusively in EJ communities. A lawsuit and citywide protests ensued, resulting in a court order directing NYPA to prepare an environmental impact statement.

Implementation of many of the policies proposed for inclusion in the Climate Action Plan by the different Technical Work Groups could have implications for siting and environmental impact assessment. For example, implementation of PSD-3, which is focused on increasing development and dissemination of energy storage technologies, should take account of the implications of siting such facilities in EJ communities where power generation facilities are already clustered. Similarly, in considering PSD-9, which is focused on Technology, Research, Development, and Deployment, stakeholders cited the need to apply the precautionary principle to forestall unforeseen long-term health impacts in cases where relatively new and untested technologies were deployed in overburdened communities.

As part of the Climate Action Plan process, EJ stakeholders have emphasized the importance of assessing the cumulative risks and impacts of different types of stressors, facilities and infrastructure on the health and quality of life of communities. The term "cumulative risks and impacts" refers to a combination of factors that result in certain communities or sub-populations being more susceptible to environmental stressors of varying kinds, including being more exposed to environmental toxins, or having compromised ability to cope with and/or recover from such exposure.¹ Because of the breadth and nature of the policies proposed for the Climate Action Plan, stakeholders highlighted the potential for implementation to either increase cumulative impacts or

decrease them depending on the specific design of individual policies and the interactions among several of them in a given community. The importance of adequately analyzing the public health implications of the proposed policies was also emphasized.

Finally, timely access to information and transparency were advanced as critical issues that cut across all the policy areas. The central importance to EJ communities of processes that required formal public notice and participation procedures such as federal and State permitting was repeatedly stressed by stakeholders.

Waterfront Facilities and Public Health

Throughout the community-focused and EJ coordination and advisory dialogue, various concerns about the vulnerability of waterfront facilities, such as wastewater treatment plants, petroleum/chemical bulk storage sites, and solid waste management facilities, and the risks they represent to surrounding communities in the context of climate change were raised by the stakeholders. In particular, the medium- and long-term contamination consequences associated with coastal flooding proved a source of considerable concern.

The types of hazards associated with storm surge and other inundation events are numerous. In addition to injury and death caused by the direct contact with flood waters, such events can lead to a host of environmental health risks due to direct contamination of homes and other buildings, contamination of drinking water sources with either infectious or chemical material, and disruption of sewage systems and of solid waste collection and disposal systems. Flooding could also potentially lead to the contamination of water bodies such as reservoirs, ponds, and lakes. Typically, it is during the recovery phase in the aftermath of an inundation event that these kinds of environmental impacts become apparent.

The following critical knowledge gaps related to epidemiological risk factors and public health interventions have been identified already in the literature on the public health impacts of floods:

- The mental health impacts of flooding, especially the long-term impacts, and their principal causes, which have been inadequately researched even in high-income settings;
- The nature and magnitude of mortality risks in the period after flooding;
- Quantification of the risks of infectious and vector-borne diseases following floods;
- The effectiveness of warning systems and public health measures in reducing flood-related health burdens;
- The health-related costs of flooding that are often given little weight in decisions about specific interventions;

- Quantification of the degree to which climate and land use change will contribute to flood risk and associated health burdens in different settings.²

Specifically, stakeholders indicated a need to analyze the potential health risks associated with human exposure to toxins during and after storm surge events, particularly in areas of high-population density. They advocated for the development of maps with overlays of all industries and toxic materials associated with specific industrial processes in areas vulnerable to storm surge and coastal flooding.

Fair Share of Burdens and Benefits

Equity concerns and ethical considerations have been increasingly applied to international, national, state, and local efforts to address climate change, drawing on some of the debates originating in the environmental justice movement.³ Historically, a fundamental principle of the EJ movement is that no population should be forced to bear a disproportionate share of the environmental consequences resulting from industrial, commercial, or municipal operations or from the execution of government programs and policies.

Community and EJ stakeholders observed that achieving this ideal within the context of a transition to a low-carbon economy and climate change means more than just treating communities in an equitable manner. They pointed out that the reality that, by definition, overburdened EJ communities are not starting at the same place as more affluent, politically powerful communities and that balancing this legacy of environmental pollution and burdens in the context of climate change would require a more nuanced approach. Specifically, stakeholders argued that overburdened communities merited a greater proportion of the beneficial demonstration projects, pilot programs, and innovative policy initiatives being proposed for inclusion in the Climate Action Plan. In addition, they contended that any efforts to streamline approval processes or remove barriers to innovation or implementation must take into account existing burdens in and potential detrimental impacts on vulnerable communities.

Near- and Long-Term Workforce Training and Development Requirements for a Clean Energy Economy

The Residential, Commercial/Institutional, and Industrial (RCI) Technical Work Group identified *near-term* workforce training and development as a priority policy option within that sector during the Climate Action Plan process. However, this issue cuts across all Technical Work Groups, as each sector of our economy seeks to implement new technologies and practices for a clean energy economy and makes permanent changes in the way we, as a state, use our resources. The existence of a suitably skilled workforce is assumed in the quantification of all other policy options in this Interim Report. Specific examples of training needs that would be necessary to implement the policy options

² Ahern, Mike, Kovats, R. Sari, Wilkinson, Paul 2005. "Global Health Impacts of Floods: Epidemiologic Evidence." *Epidemiologic Reviews*. Johns Hopkins Bloomberg School of Public Health.

³ Cutter, Susan. 1995. "Race, Class and Environmental Justice." *Progress in Human Geography* 19:107-118.

identified during the Climate Action Plan process were identified for all mitigation Technical Work Groups and are incorporated into the Workforce Training and Development Policy (RCI-6). (See Chapter 6 for the policy summary. The complete Policy Options Document is available at www.nyclimatechange.us.)

Workforce training and development are primarily intended to improve productivity (quality of production output) by improving the knowledge, skills and abilities of the workforce. The Workforce Training and Development policy option examines the following *near-term* workforce development strategies and programs:

- Energy efficiency;
- Site-based clean and renewable energy resources;
- Power supply and demand;
- Smart grid technologies;
- Codes and standards;
- Agriculture, forestry, and waste;
- Transportation;
- Manufacturing and other related areas.

Opportunities to prepare and expand upon current workforce training, continuing education, credentialing, licensing, on-the-job training, recruitment and job placement efforts are identified. Initiatives will focus on the following:

- Mid-stream decision makers and building professionals in the residential, multifamily, and commercial building sectors;
- Industrial and power systems engineers and skilled technicians;
- Manufacturing engineers and technicians;
- Biorefinery, upstream, or feedstock production training related to biomass energy as well as downstream training for conversion facility personnel;
- Integrated farm management processes and systems;
- Forest management focusing on upstream workers;
- Waste reduction, recycling, and composting

Workforce training also was addressed by the Economic Development Subgroup (see the Building Block #2 section of Chapter 13: Stimulating a Clean Energy Economy in New York) but from a *long-term* perspective, focusing instead on developing strategies that identify and respond to workforce development needs as they arise and on education and training of future generations of workers that will be needed for the low-carbon economy

A skilled workforce must exist for companies to grow and locate in the State. In an innovation-based economic model, a full spectrum of skill levels is needed. A dynamic workforce development system designed to meet the needs of a low-carbon economy

must take a long view to develop the human capital needed to prepare New York and capture the benefits of a clean economy. The K–12 system must educate children in math and science more effectively, help them understand the need for environmental sustainability and alternatives to a carbon-based economy, and prepare them for entrepreneurship. The higher education system must continuously evolve to reflect the needs of the changing economy through new curricula and through the establishment of low-carbon economy-centered certifications and degree programs. Incumbent workers must have access to workforce development programs to help them continuously upgrade their skills to meet the needs of their employers. Finally, new energy service jobs, combined with proper training, would create opportunities for professionals to remain and work in New York and create pathways out of poverty, an equally important social objective.

The Economic Development Subgroup identified elements of the workforce development system necessary to evolve with the changing economy, key market barriers that must be addressed by a comprehensive workforce investment strategy over the 2050 planning horizon, and the need for public revenues for workforce development and training programs.

Outreach, Education and Capacity Building for Acceptance and Adoption of the Climate Action Plan and the Creation of a Low-Carbon Economy

Many State agencies are active participants in the Climate Action Plan process, and it is necessary that these agencies are fully committed to implementation of the Climate Action Plan, achieving the goal of 80 by 50, and the creation of a low-carbon economy. Government should not only lead by example but will be responsible for developing an implementation strategy that is effective in meeting program goals and that guides the transition to a low-carbon economy in a cost-effective, and politically and socially acceptable manner.

The full engagement of State agencies and local governments should begin with an internal outreach and education effort that promotes the Climate Action Plan and will be pivotal in the development of programs, information, and incentives. Climate change considerations should be part of routine government activities and decisions. Such an effort will help communicate that the policies designed to achieve our greenhouse gas (GHG) goals need not be burdensome but can lead to more efficient operations.

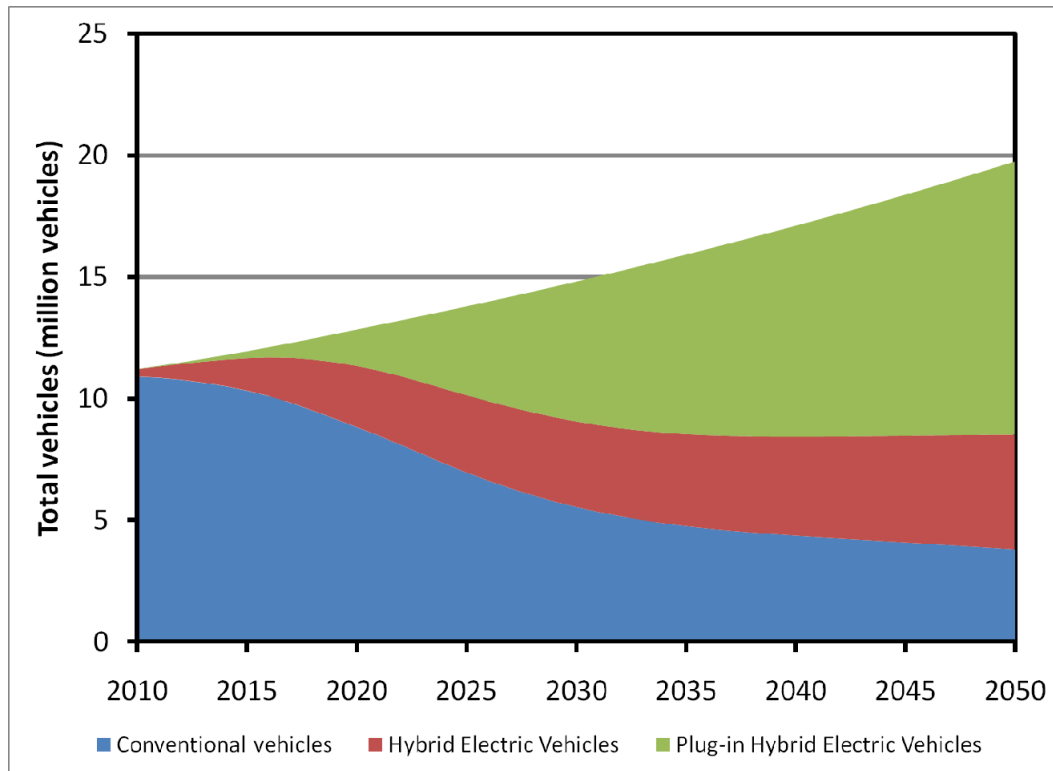
A parallel robust, well-funded, and effective external outreach, education, and awareness-raising effort should focus on the substantial economic, social, and environmental benefits the Climate Action Plan will generate. A public campaign would be based on the lessons of and responses to the government outreach and education plan. Without critical support from the public, some officials charged with implementing aspects of the Climate Action Plan may have little motivation or desire to devote capital resources and personal energy required to achieve its ambitious goals. Implementation of many of the policy options will prove more challenging without widespread support. Messaging should emphasize budget control, safety and security, health, and smart investment approaches

that account for uncertainty such as sea level rise and the consequences and costs of no action.

Summary of the Impacts and Strategies Related to the Transition to High Penetration of Electric Vehicles: Conclusions of the Electric Vehicle Subgroup

The full report of the Electric Vehicle Subgroup is attached to this Interim Report as Appendix G.

Figure 12-1 presents an estimate of market penetration developed in a recent New York plug-in hybrid electric vehicle study



Draft Report: *Grid Impact of Plug-In Hybrid Electric Vehicles*. Electric Power Research Institute. 2010. NYSERDA Agreement 10995.

At present, the transportation sector produces 39.5% of New York State's combustion-based inventory of GHG, with the gasoline-fueled light-duty vehicle sector being responsible for the vast majority of those emissions. Plug-in electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and fuel-cell vehicles (FCVs) powered by hydrogen derived from electrolysis offer the potential to displace a significant portion of this petroleum consumption by using electricity for all or portions of vehicle trips. If this electricity had a low- or near-zero-carbon intensity, the carbon footprint from this segment could be nearly eliminated. A cross-sectoral electric vehicle subgroup was established to identify the impacts to multiple economic sectors of a transition to a high

penetration of grid-powered vehicles and to establish a consensus, where possible, on a comprehensive, multisectoral strategy to achieve this penetration.

Impacts of High Penetration of Grid-Powered Vehicles on Several Economic Sectors

The members of the subgroup identified many impacts of a transition to high penetration of grid-powered vehicles on several economic sectors, as listed below:

Power Supply—Generation

- Through the mid-term (2025), the state has adequate generation capacity to accommodate the maximum (30%) anticipated penetration of EVs and PHEVs.
- Smart charging to minimize grid impacts will be necessary.
- New York's current off-peak generation mix provides PHEVs significant GHG reductions as compared to conventional vehicles; however, the grid will be required to be near carbon-free to maximize GHG reductions.

Transmission

- Through the mid-term (2025), the state's transmission grid has adequate capacity to accommodate the maximum (30%) anticipated penetration of EV and PHEVs with smart charging.

Distribution

- Near- to mid-term: local distribution (transformer) upgrades are likely to be necessary.
- Longer term: large numbers of EVs requiring quick charge may require local storage.
- Business models, policy and regulatory actions encouraging smart charging and allowing third-party sale of electricity may be necessary.

Charging Infrastructure

- Building codes addressing Level II and Level III charging in new residential and commercial garage construction will significantly reduce costs.
- Building codes that address garaging hydrogen-fueled vehicles should be part of the long-term solution.
- Policy and regulations should encourage the development of a variety of business models for charging or refueling (battery swap, etc.).

Vehicles

- PHEVs, EVs, and FCVs that have acceptable performance are a reality.
- Vehicles that derive their fuel from the electric grid are likely to become a cost-effective means of achieving carbon-free mobility.
- In the near term, incentives will likely be necessary to induce adoption. Gas may have to reach \$4/gallon and research and development (R&D) will be needed to improve

performance and reduce cost before EVs and PHEVs are economically compelling without incentives.⁴

- In the near- and mid-term, battery-powered vehicles will predominate. The advantages of fuel cell vehicles having greater range, performance, and quick-fill capacity may, when vehicle costs are reduced, lead commercial fleets initially and later private vehicles to invest in localized hydrogen infrastructure based on electrolysis from off-peak carbon-free grid power.

Identified Strategies to Facilitate Transition to High Penetration of Grid-Powered Vehicles

The members of the subgroup identified several strategies to facilitate transition to high penetration of grid-powered vehicles:

- Provide near- and long- term support of R&D for renewable technologies, methods to reduce carbon from fossil sources and vehicle-to-grid technology, battery chemistry, and innovative business models (battery leasing, battery change out, etc.). Increase R&D for energy storage technologies that can accommodate large quantities of excess power generated from renewable sources and base load nuclear power for on-demand and Level III quick-charge vehicle charging. Demonstrate technical options for vehicle charging.
- Develop technologies (energy storage, smart charging) and policies (EV electric rates) that facilitate and promote vehicle charging at times when the carbon intensity of the grid is lowest. Stationary electrical storage may be necessary to minimize negative grid impacts and allow the utilization of excess renewable electricity generated in off-peak times.
- De-carbonize the electric grid to the greatest extent possible.
- Develop, strengthen, and expand financial incentives and rate structures that will encourage low- or zero-carbon generation and off-peak, valley-filling charging. Establish an electricity rate structure with incentives for EV owners to charge during off-peak hours with highest incentives during overnight hours. Rates should encourage vehicle-charging load growth that is consistent with minimized negative impact on the grid and that provides positive economic incentives to consumers. PHEV-specific dynamic pricing may be one way to introduce dynamic pricing to consumers. Financial incentives and disincentives for desired market transformation and behavior change among consumers will be necessary to accelerate low-carbon vehicle market penetration.
- Adopt smart charging systems that recognize that grid emergencies, could mitigate the extent and severity of emergencies, Explore financial incentives for providing transmission level grid support. Techniques such as smart charging, load shifting, and stationary storage all have the potential to mitigate most of the anticipated distribution system problems for the next decade.

⁴ National Academies, *Transitions to Alternative Transportation Technologies*, 2010.

- Assess the feasibility and potential need for quick electric charge, hydrogen filling stations, and hybrid bio-PHEV infrastructure to meet the variety of duty cycles, cost constraints, and vehicle user needs. Continuous improvements in vehicle technology will be needed together with significant long-term infrastructure investment. Public policy should be technology neutral and, in the near term, focus on low-carbon vehicle incentives such as feebates for low-carbon vehicles, and tax credits and buy-downs for fueling infrastructure.
- Develop and implement financial incentives and disincentives for desired market transformation and behavior to accelerate low-carbon-vehicle market penetration. Manufacturer competition may be the most cost-effective way to reduce vehicle cost, with battery manufacturing capacity and robust demand being dominant factors. A robust market can be encouraged through incentives, adequate charging infrastructure, and education. Policy mechanisms like a low-carbon fuel standard, vehicle purchase feebates, or other carbon pricing mechanism will be needed for EVs/PHEVs to be economically competitive in the near term.
- Infrastructure investment will also be a necessary element and may require adjustments in public policy and public investment. Standardize physical interconnections (plugs, voltages, etc.) and communications protocols of infrastructure.
- Revised tariffs would allow charging infrastructure providers to resell electricity they purchase from utilities. Costs for infrastructure upgrades should not be borne by individual customers. A preferred alternative is to use revenue derived from a broader base to cover the cost of upgrades specific to the supply of electricity for plug-in vehicle charging.
- Promote the installation of advanced metering to enable consumers to benefit from favorable electric rate structures.
- Land use considerations include preferential parking, high-occupancy-vehicle lanes, and lower tolls for low-carbon vehicles.
- Support and develop awareness-raising and capacity-building efforts including consumer education programs that make use of all appropriate media such as television, newspaper, and the Internet. This effort should include public policy and financial support such as tuition assistance for educational and workforce development programs at appropriate institutions of higher learning.
- Develop standards that are compatible with smart-grid and Level III charging and building codes that require both residential and commercial new garage construction, to provide circuitry that conforms will enable lower cost market penetration and safer and more reliable service. Policy and regulations should encourage standardization of vehicle charging interfaces at the regulated utility level and with vehicle manufacturers.