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## Brief Descriptions of Catalog Items Cross-Cutting Issues Technical Work Group

*This document provides brief descriptions of the policy options contained in the corresponding Technical Work Group (TWG) Catalog of State GHG Reduction Policy Actions. The catalog and these brief descriptions will be developed more fully during the climate planning process in Kentucky.*

### **CCI-1. Greenhouse Gas Inventories and Forecasts**

Greenhouse gas (GHG) emission inventories and forecasts (I&Fs) are essential for understanding the magnitude of all emission sources and sinks (both anthropogenic and natural), the relative contribution of various types of emission sources and sinks to total emissions, and the factors that affect trends over time. I&Fs help inform state leaders and the public on statewide trends and opportunities for mitigating emissions or enhancing sinks; they are also useful for verifying GHG reductions associated with the implementation of action plan initiatives. Responsibility for preparing GHG inventories and sinks often resides with the environmental agency, which typically has the expertise needed to systematically compile information on GHG sources and sinks using established methods and data sources. I&F efforts should be ongoing over time, reflecting improvements to the accuracy and completeness of data collected. Selected local governments in Kentucky are conducting inventory functions as well.

### **CCI-2. Greenhouse Gas Reporting**

GHG reporting reflects the measurement and reporting of GHG emissions at a statewide, sector, or subsector level to support tracking and management of emissions. GHG reporting can help sources identify emission reduction opportunities and reduce risks associated with possible future GHG mandates by moving up the learning curve. Tracking and reporting GHG emissions can also help in the construction of periodic state GHG inventories. GHG reporting is typically a precursor for sources to participate in GHG reduction programs, to find opportunities for recognition, to participate in a GHG emission reduction registry, and to secure “baseline protection” (i.e., credit for early reductions). Further, collaboration with other states in the development of a GHG reporting program could influence the development of GHG reporting practices throughout the region and nation and build consistency and reciprocity with other state or regional GHG reporting programs. Although GHG reporting is commonly voluntary, some states now require certain sources to report their annual GHG emissions and new federal reporting requirements are being proposed.

### **CCI-3. Greenhouse Gas Registry**

A GHG registry enables uniform measurement and recording of GHG emission reductions in a central repository. Typically, a registry also includes transaction ledger capability in order to support tracking, management, and ownership of emission reductions. Registries can help encourage sources to undertake GHG reduction efforts, enable potential recognition for such actions, provide baseline protection, and support the crediting of GHG mitigation actions. A registry can also provide a mechanism for regional, multistate, and cross-border cooperation.

Examples of existing registries include *The Climate Registry* (<http://www.theclimateresistry.org/>) and the Chicago Climate Exchange (<http://www.chicagoclimatex.com/>).

### **CCI-4. Public Education and Outreach**

Public education and outreach is the foundation for the long-term success of all policy initiatives. Education and outreach can support GHG emission reduction programs, policies, and goals at many levels and among different audiences:

- Conducting outreach to government employees is an effective way to lead climate actions by example, and could include actively educating government employees through targeted events or outreach coordinators, or recognizing climate action within the government with special acknowledgment.
- Education and outreach to policymakers, including legislators, regulators, the executive branch, and agencies, is an important way to support implementation of climate actions. Regularly educating policymakers on the science of climate change and progress toward state goals is important for promoting acceptance and implementation of proposed policies.
- Public education and outreach is vital to fostering a broad awareness of climate change issues and effects among a state's citizens (e.g., co-benefits, such as clean air and public health).
- Promoting continuous action on the issue of climate change and supporting GHG emission reduction programs, policies, and goals require educating future generations of citizens. Conducting outreach to these future generations involves integrating climate change into educational curricula, post-secondary degree programs, and professional licensing programs.
- Providing education and outreach to community leaders and community-based organizations—such as leaders of institutions and municipalities, service clubs, social and affinity groups, and nongovernmental organizations—can help support GHG emission reduction programs, policies, and goals by expanding involvement and participation within civic society. Education and outreach to this audience may involve identifying and leveraging climate-related organizations, engaging with specific associations, or acknowledging individual community leaders who are acting effectively on climate change issues.
- Targeting specific industry sectors with education and outreach materials can help support the GHG emission reductions policies, programs, and goals that emerge from the MAC process.

Having an awareness of climate change impacts, state climate goals, and emerging science and technology options could help with the support and implementation of specific programs and policies.

- In Kentucky, education efforts targeting carbon capture, transport, and geological storage are important.

#### **CCI-5. Adaptation and Vulnerability**

Because of the atmospheric build-up of long-lived GHGs that already has occurred, states will experience the effects of climate change for years to come, even if immediate action is taken to reduce future GHG emissions. Thus, it is essential that the state develop a strategy to manage and adapt to the projected impacts of ongoing climate change, particularly where the state is most vulnerable.

In addition to impacts on natural ecosystems and public health, the Commonwealth is concerned about impacts to the Kentucky economy from the imposition of federal carbon constraints. Options are included to assess this vulnerability and to develop strategies to respond to such requirements.

#### **CCI-6. Statewide GHG Emission Reduction, Energy Intensity, and Energy Efficiency Goals or Targets**

Some states have established GHG reduction goals or targets. In these cases, the comprehensive, stakeholder-based climate action planning process typically serves to identify and quantify policies and measures by which these goals can be achieved. In states that have not specified goals or targets prior to the planning process, the establishment of goals or targets is often considered in concert with the state after the initial quantification results for other policy options become available.

In Kentucky, this option is being expanded to include consideration of goals and targets related to energy efficiency and intensity, as well as GHG emission reductions.

#### **CCI-7. State, Local, and Tribal Government GHG Emission Reduction, Energy Intensity, and Energy Efficiency Activities (Lead by Example)**

In terms of GHG emissions, states are not only political jurisdictions that can provide incentives to, or impose regulatory requirements on, sources and citizens in order to reduce pollution. They are also significant emitters, by virtue of state-owned buildings, fleets, and various emitting activities. States can reinforce the importance of reducing GHGs, promote others to act in this direction, and often demonstrate the economic upside of doing so by applying and implementing the policies within state agencies.

For example, states can purchase low-emission vehicles for their fleets, utilize biofuels in their vehicles, construct and/or retrofit their buildings to be more energy efficient, purchase green or renewable electricity, or apply pollution prevention principles to GHG emission reductions. States

can also commit to initiatives or actions focused on GHG reductions, such as The Climate Registry (<http://www.theclimateregistry.org/>) and the Chicago Climate Exchange (<http://www.chicagoclimatex.com/>). Some states have also elected to require recipients of state-funded projects to reduce the carbon footprint of their projects through “climate-neutral bonding” requirements (meaning that there is no net increase in GHG emissions within the bond-issuing agency’s geographical jurisdiction after the project becomes operational). In comments on environmental studies (environmental impact assessments and environmental impact statements) that some states have prepared for federal projects, the states have included a request for consideration of the projects’ GHG impacts.

The relationship between local government jurisdictions and the state government echoes in many ways the federal relationship between states and the federal government. It may therefore be appropriate to enable, assist, and otherwise encourage local governments to pursue comprehensive, multi-sector climate action plans within their jurisdictions. Analogous to the state effort, local climate planning initiatives could involve local stakeholders, identify and address local mitigation opportunities, establish local emission inventories and/or forecasts, set local GHG reduction goals or targets, consider local climate impacts and possible adaptation responses, develop long-term sustainability plans, etc. The state should encourage local governments in such efforts and contribute technical and other assistance to the extent possible.

In Kentucky, this option is being expanded to include consideration of goals and targets related to energy efficiency and intensity, as well as GHG emission reductions.

Additionally, formation of coalitions with other coal-producing states is being examined as a mechanism to pool resources in responding to federal requirements.

#### **CCI-8. Local GHG Reduction, Energy Intensity, and Energy Efficiency Actions**

This policy option would encourage local governments, regional associations, and communities to develop their own set of climate change plans and climate-responsive actions; implement a statewide program to encourage and structure individual voluntary actions to reduce GHG emissions; support a monitoring or feedback mechanism that can provide support and encouragement to local efforts; and establish proactive public–private partnerships to expand capacity through investment and philanthropic capital for reducing GHG emissions and supporting development of the new energy economy.

#### **CCI-9. Financial Policies**

Some of the GHG reduction policy options may require new or additional state funds to implement them. This set of policy options can be used to formulate alternative funding mechanisms to utilize for such implementation. Additionally, a number of financial policy options could be considered for design and implementation in order to stimulate a market around reducing GHG emissions. These

are typically covered in the Energy Supply Technical Work Group (TWG) or in a Market-Based Policies TWG.

**Tax and cap policies** (typically considered as carbon taxes and cap-and-trade programs, respectively) can be among the most economically effective means to reduce GHG emissions. By internalizing costs that are currently not assessed (i.e., are “externalized”), such policies create financial incentives for entities to reduce their emissions—reducing emissions reduces costs. Two examples follow:

- A carbon tax would be relatively simple to implement and would apply to all sectors. Utilities would pay the tax on the basis of their emissions and would pass the cost on to consumers in their monthly electric bill. Individuals would pay the tax when they put gas in their vehicles. A carbon tax would also encourage efficiency improvement in all sectors. A carbon tax does not necessarily mean a net increase in the cost of living, because revenues could be “recycled” to lower other currently assessed taxes.
- Cap-and-trade programs typically establish an upper limit on emissions (the “cap”), usually lower than current emissions, which creates the drive for reductions. Also established under these programs are “allowances” or “rights to emit,” which are allocated or auctioned to covered sources. Sources need to match their emissions to the amount of allowances that they hold, but can trade allowances freely among themselves. The result is that sources that find it least expensive to reduce emissions “overcomply” (i.e., have more allowances than they need) and can sell allowances to sources that find it compliance to be more expensive. This dynamic encourages sources to pioneer innovative ways to make reductions, so they will need fewer allowances and may even be able to profit by selling allowances. The broader the universe of sources (e.g., types of sources covered, geographical regions covered), the more likely it is that cost differences will be found, thereby reducing the overall cost of the program.

**Carbon credit systems** can encourage development of carbon markets (and offset techniques). The state could purchase carbon credits associated with its own activities, function as a purveyor of credits to others, act as a certification entity for others’ carbon exchanges, or participate in a regional credit system. The Cross-Cutting Issues TWG may want to recommend that a “Market Advisory Group” of experts be formed to provide guidance to the state on the design of market-based compliance programs to manage GHG emissions. Note that California formed a MAC to help develop a GHG cap-and-trade system in the state. The California MAC has formulated a set of guiding principles and has developed an initial set of recommendations for a California cap-and-trade program.

**Allocation of resources** under existing state programs and initiatives can be targeted to achieving state climate goals. However, it is likely that additional resources may also be needed to implement new recommendations. Therefore, the state and others will need to consider seeking and stimulating additional funding and investment in climate solutions identified in the state plan.

**Regional market approaches** can offer broader and more streamlined market opportunities to reduce GHG emissions in collaboration with partner states or other organizations. Regional and multistate organizations have formed in several parts of the country to reduce GHG emissions.

Examples of regional market approaches are the Northeast and Mid-Atlantic States Regional Greenhouse Gas Initiative (<http://www.rggi.org/>), the Midwestern Governors Accord (<http://www.midwesterngovernors.org/govenergynov.htm>), and the Western Climate Initiative (<http://www.westernclimateinitiative.org/Index.cfm>).

#### **CCI-10. Climate-Related Investment and Business-to-Business Engagement**

The intent of this option is to encourage and facilitate the involvement of funding and investment sources, business interests, and entrepreneurs in pursuing business opportunities associated with GHG reductions and global warming solutions as quickly and as significantly as possible. The creation of a clearinghouse-like entity may make it possible to match technology developers and other climate solution entrepreneurs with necessary financing more effectively and expeditiously. As a result, a state's ability to identify and secure early business opportunities associated with climate change may be enhanced, increasing its global competitive advantage and job creation within the state.

Potential funding sources include philanthropic organizations, high-net-worth individuals, or others interested in supporting innovative, environmentally effective market solutions. Recognizing that fortunes are likely to be made in the "new energy economy," for-profit investors, pension funds, mutual funds, and/or venture capitalists may be looking to fund similar business opportunities. Although technology entrepreneurs are often cited as offering potential global warming solutions, equally progressive solutions may lie in the fields of law, accounting, marketing, production, or government relations. The objective of this policy option is to leverage a state's specific talents for climate change solutions into securing the business opportunities and market advantages that well-supported early-bird efforts are likely to reap in a carbon-constrained world.

Successful state GHG reduction efforts are highly dependent on active participation of the business community, particularly in the energy, agriculture, transportation, real estate/building development, and manufacturing sectors. In order to facilitate a strategic approach that has an optimal impact, a statewide proactive business organization could be formed to address climate opportunities and risks.

#### **CCI-11. Dedicate Greater Public Investment in Climate Data and Analysis**

To ensure cost-effective investment of resources, it is essential to have accurate and current data and information about GHG emissions and impacts and also state-of-the-art computer modeling capabilities. High-quality data and accurate predictive capabilities are key elements in being able to plan strategically and track progress over time in reducing GHG emissions. It is also important to integrate the efforts of multiple entities gathering GHG data, so that monitoring and data collection

resources are effectively utilized. One example might be formation of a state climate data and analysis center that could develop objective, state-specific information regarding climate data and analysis, assess options and directions, identify trends, develop or improve computer modeling, and provide other climate-related information to government, business, and the public.