Residential, Commercial, Industrial (RCI)
Policy Catalog – Supplement

The Residential, Commercial, Industrial Sectors include emissions reduction opportunities related to improving the efficiency of energy use, using lower GHG energy sources, and enhancing waste management practices.

RCI-1 ENERGY EFFICIENCY PROGRAMS, FUNDS, AND GOALS

1.1: Demand Side Management (DSM) Programs and Energy Efficiency Requirements for Electricity, Natural Gas, and Other Fuels

DSM programs seek to reduce the demand for energy and may be run by electric utilities or others. They may be based upon mandates on energy suppliers to implement programs, or voluntary programs with a dedicated funding mechanism such as a "system benefits charge". Traditionally, utilities' rates, revenues, and profits are tied to consumption, such that higher consumption yields higher profits. Many DSM and energy efficiency programs for electricity, natural gas and other fuels seek decoupling of rates and revenues to break this dependency.

1.2: Energy Efficiency Funds

Energy efficiency funds promote renewable energy, advanced clean energy technologies, and energy conservation and efficiency by providing a reliable source of funding toward these goals. Utility customers pay a fee (sometimes called a public benefits or systems benefits charge) based on their energy usage. These funds are then paid to a third party to provide energy efficiency programs and incentives such as energy audits, replacement of old/inefficient appliances or equipment, and rebates for new equipment and efficiency measures.

1.3: Energy Efficiency Requirements

States can create programs that require or promote efficiency improvements in utilities' and other industries' equipment (boilers, compressors, etc.) to reduce energy consumption and create energy savings. States can also promote partnerships for increased energy efficiency; examples include US EPA's and DOE's EnergyStar™ Buildings and the Massachusetts Energy Efficiency Partnership (http://www.maeep.org/mission.cfm).

1.4: Regional/State Market Transformation Alliance

Market transformation programs are designed to change consumer (residential, commercial, and industrial) demand to favor the purchase and/or adoption of cost-effective energy efficient equipment and practices by altering incentives or implementing regulations. The goal is to have efficient technologies and practices demanded by the public, chosen by builders and manufacturers, and provided by retailers and contractors – with sufficient supplies of technologies and practitioners available to meet the increased demand. Such programs are generally not run by utilities, but by alliances or partnerships between government agencies, retailers, manufacturers, and non-governmental organizations. Programs can be statewide or regional.

RCI-2 APPLIANCE STANDARDS

2.1: State Appliance Standards and RCI-2.2: Support for Federal-Level Appliance Efficiency Standards

Appliance efficiency standards focus on moving technological advances into base appliance models, making the most efficient models the standard and creating economies of scale. If adopted on a state level, this policy option can involve standards for appliances not covered by federal standards, or it can require more stringent standards than required by federal rules.

RCI-3 BUILDINGS

3.1 & 3.4: Improved Building Codes & Training of Building Code and Other Officials in Energy Code Enforcement

New buildings and retrofits of existing buildings can offer significant opportunities for increased energy efficiency if the materials, expertise, building codes, and economic incentives are in place. Energy efficiency can be integrated into design elements to reduce HVAC energy use, and passive solar designs can be used to replace electric or fossil fuel heating, hot water, and lighting needs. This option requires updating codes to keep pace with new designs and technologies; training both building trade professionals and inspectors; and monitoring, testing and compliance.

3.2: Promotion and Incentives for Improved Design and Construction

This policy sets targets and provides incentives to induce the owners and developers of new and existing buildings to improve use efficiency of energy and other resources (e.g., water, materials). Targets can be raised periodically as technology improves.

3.3: Education and Outreach for Building Professionals

Targeted education, outreach, and licensing requirements for professionals in a variety of building-related trades is a necessary element of many building code programs. States can mandate Boards of Licensing to cover improved building codes and energy performance requirements in their exams for building professionals. Other options include training for architects, builders, and local inspectors on new codes; for builders and contractors on HVAC sizing and installation; and for managers of commercial buildings and industrial facilities. An example is the building operator training and certification program developed in the Pacific Northwest.

3.5: Building Commissioning and Recommissioning Including Energy Tracking and Benchmarking

Recommissioning and Commissioning is the process of improving building operation and maintenance – meeting operational needs while using less energy. These often focus on mechanical equipment, lighting, and related controls. The goal is to identify and fix problems, reducing energy waste, and thereby obtaining cost savings for the owner. As a common obstacle

for efficient operations is the unavailability of tracking and benchmarking data for building operators, making these data available can be an essential element of this approach.

3.6: Energy Management Training/Training of Building Operators

Energy Management Training provides administrative and technical training for energy managers, school officials, building operators, and others responsible for energy-efficient facility operation. This may include training on availability and operation of energy efficient technologies, on financial incentives and revisions in building code requirements, on tracking and benchmarking, or other related topics.

3.7: Increased Use of Blended Cement

Cement kilns are among the most energy intensive and CO_2 emitting facilities in the US. This option sets up programs that increase the use of blended cements – substituting fly ash or other materials called "pozzolans" for clinker (the product of cement kilns), reducing CO_2 emissions. Use of biomass and other alternative fuels for this application can also reduce emissions.

3.8: Reduction of Emissions from Diesel Engines Used in New Construction Developments

Many diesel engines used on construction sites are highly inefficient and lack adequate pollution controls, leading to excessive CO_2 emissions as well as other pollutants such as fine particulates ("black carbon"). Standards of incentives promoting more efficient and cleaner technology could help to remedy this.

RCI-4 EDUCATION AND OUTREACH

4.1: Consumer Education Programs and RCI-4.2: Introduce in School Curriculum

Proactive public education and outreach activities targeting education and outreach activities to specific audiences can boost support for and adoption of energy efficiency. Public education and outreach efforts should integrate with and build upon existing outreach efforts involving climate change and related environmental issues in the state. Integrated education and outreach initiatives can be a crucial factor for success in many other policy options considered.

RCI-5 PRICING AND PURCHASING

5.1: Green Power Purchasing

This option comprises a variety of strategies to increase the production and delivery of low-GHG power sources. States can set goals or provide incentives for green power purchases to apply to all non-federal government public buildings, and can promote voluntary purchasing through information, promotional materials, and/or incentive programs. The Public Utilities Commission (PUC) could encourage utilities to develop green power tariff structures and to report power sources and emissions data in consumer bills.

5.2: Bulk Purchasing Programs for Energy Efficiency or Other Equipment (Public or Private Sector)

States can initiate bulk purchasing for programs to replace refrigerators, lighting fixtures and bulbs, or other appliances or to weatherized homes. The EnergyStar bulk purchasing tool – developed by the US DOE, HUD and EPA – facilitates the comparison shop for energy-efficient products.

5.3 & 5.4: Rate Design (Including Time-of-Use Rates, Increasing Block Rates, and Seasonal-Use Rates)

The state regulatory commissions can adopt rate designs, coupled with sophisticated interval metering technology, to charge higher prices during peak usage hours. As peak hours generally have less efficient resources "on the margin", diverting demand to other hours can provide a net emissions benefit. Providing consumers with price and time information will allow them to make choices impacting CO_2 emission and their cost of electricity.

RCI-6 TECHNOLOGY-SPECIFIC POLICIES

6.1: Incentives for Renewable Energy Appliances (solar roofs, water heaters, etc.)

Electricity generation sited at residences and commercial and industrial facilities, and powered by renewable energy sources (typically solar but also wind and hydro), displaces fossil-fueled generation and avoids electricity transmission and distribution losses. Increasing the use of renewable energy within homes, businesses, and institutions can be achieved through a combination of regulatory changes and financial incentives.

6.2: Clean Combined Heat and Power

Combined heat and power (CHP) systems take advantage of the "wasted" heat given off by power production and industrial processes, providing that heat to nearby customers. By using both that heat and by avoiding electrical transmission and distribution losses CHP saves energy and reduces GHG emission. Implementation of CHP systems can be encouraged through regulatory changes and/or incentive programs.

6.4: Appliance Recycling/Pick-Up Programs

Facilitating appliance recycling and disposal reduces emissions associated with improper disposal of discarded appliances.

6.5: White Roofs, Rooftop Gardens, and Landscaping (including shade tree programs)

High summer roof temperatures increase the need for more electricity for air conditioning, as well as producing black carbon from updrafts. Programs to reduce roof temperatures can include education and awareness campaigns, changes to state buildings, building code changes, and financial incentives.

6.6: Focus on Specific End-Use Technologies

Specific technologies targeted can include window AC units, lighting, water heating, networked PC management, power supplies, motors, pumps, boilers, etc. Consumer products programs may include incentives, retailer training, education, marketing and promotion, etc.

RCI-7 NON-ENERGY EMISSIONS (HFCS, PFCS, SF_6, CO_2, PROCESS EMISSIONS)

7.1: Participation in Voluntary Industry-Government Partnerships

The state can work with industry to facilitate and encourage voluntary emissions reductions.

7.2: Process Changes/Optimization

Generally targeted toward industrial consumers, process changes that increase efficiency of energy use can be encouraged through industry-government partnerships, education and awareness, energy pricing plans, or other incentive programs.

7.3: Leak Reduction/Capture, Recovery and Recycling of Process Gases

Many process gases can be potent GHGs if released to the atmosphere. Such releases can be reduced through process improvements that include recycling, recovery, and leak prevention. The state can provide information, mandates, revolving loan funds, etc. to facilitate and expedite this process.

7.4: Use of Alternative Gases (e.g. other HFCs, hydrocarbon coolants/refrigerants, etc.)

States can reduce potent HFC emissions by mandating or providing incentives for substitution of HFCs with lower- Global Warming Potential (GWP) refrigerants, including lower-GWP type HFCs, carbon dioxide, and hydrocarbons (HCs – propane or isobutene/propane blend). The state could also "lead by example" by implementing such improvements in relevant state facilities.

RCI-8 GHG EMISSIONS-SPECIFIC GOALS AND POLICIES

8.1: Support for Switching to Less Intensive Fuels

The state can offer financial or other incentives to RCI entities to switch from high-carbon fuels such as coal and oil to biofuels or lower-carbon natural gas.

8.2: Participation in Regional (or National) Industry Emissions Cap-and-Trade Programs

Although greenhouse gas cap-and-trade programs have generally been used in the power generating sector (e.g., the Northeast States' Regional Greenhouse Gas Initiative (RGGI): http://www.rggi.org/) they can also be used to set specific limits on industrial GHGs to let the market find the most efficient approaches to reducing emissions.

Important considerations with respect to cap-and-trade programs include the sources and sectors to which they apply; the level and timing of the cap; how allowances would be distributed (allocated or auctioned); what if any offsets would be allowed; and over what region the program would be implemented (e.g., nationally, regionally, etc.).

8.3: Voluntary Emissions Targets

States and/or municipalities can work with industrial and other large users of energy (and/or of users of process gases that are greenhouse gases) encouraging these users to set voluntary emissions reduction targets and approaches to achieving these targets.

RCI-9 OTHER

9.1: Government Agency Requirements and Goals (including procurement) – Focus on Operations

States can improve their own buildings and facilities requiring energy efficiency as a criterion in procurement of equipment and systems and in operations. Energy audits of State and other government buildings could support this policy by helping to target, prioritize, and publicize investments in efficiency. States would need to establish the infrastructure for implementation such as advanced metering, bookkeeping systems, staff, etc.

States can also engage in bulk purchase of appliances and equipment with higher-than-standard energy efficiency for public facilities and require integrated efficiency design in new construction.

9.2: Focus on Specific Market Segments

Examples might include existing homes (weatherization), new construction, apartments, low income areas and public housing, educational facilities, etc.

9.3: Reinvestment Fund

States can establish a revolving low-interest loan fund for energy efficiency investments.

9.4: Municipal Energy Management

Information, technologies and funding could be made available for improvements in energy management at the municipal level.

9.5: Focus on Small and Medium Enterprises

Education and outreach, as well as targeted funding mechanisms, could be made available for small and medium sized enterprises to encourage both energy efficiency and jobs creation.

9.6: Industrial Ecology/Byproduct Synergy

9.7: Industrial Audits

This policy option includes providing commercial and industrial-sector technical assistance (energy audits) to identify and recommend options for reducing fossil energy and electricity use, and for reducing non-energy emissions of GHGs. A combination of incentives, expert advice, information, and funding to facilitate implementation of the recommended options could be included to encourage facility operators to follow up on audit recommendations.