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Residential, Commercial, and Industrial (RCI) Technical Work Group

Summary List of Pending Priority Policy Options for Analysis

Policy No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total (2010–2025)			
RCI-1	Utility Demand-Side Management Programs	*Not Yet Quantified*					Pending
RCI-2	Improve Building Codes for Energy Efficiency and Support Training for Their Successful Implementation	*Not Yet Quantified*					Pending
RCI-3	Consumer Education	*Not Yet Quantified*					Pending
RCI-4	Reduced-Cost or Free Residential Energy Audits	*Not Yet Quantified*					Pending
RCI-5	Promote and Develop Incentives for Energy-Efficient Private-Sector Building Design and Construction	*Not Yet Quantified*					Pending
RCI-6	Develop Incentives to Promote Implementation of Customer-Sited Renewable Energy Systems Through Effective Net Metering and Other Means	*Not Yet Quantified*					Pending
RCI-7	Develop Financial and Funding Mechanisms to Support Energy Efficiency Improvements in the RCI Sectors	*Not Yet Quantified*					Pending
RCI-8	Incentives and Targets for Retrofit of Existing Residential, Commercial, and Industrial Buildings	*Not Yet Quantified*					Pending
RCI-9	Provide Reduced-Cost Energy Audits and Integrated Lean Manufacturing and Energy Technical Assistance for Industrial and Commercial Sectors	*Not Yet Quantified*					Pending
RCI-10	Require or Encourage New State Government Buildings to Have a Small Greenhouse Gas Emissions Footprint, and Encourage Existing Government Buildings to Improve Energy Efficiency	*Not Yet Quantified*					Pending
RCI-11	Green Power Purchasing by Customers	*Not Yet Quantified*					Pending

GHG = greenhouse gas; $MMtCO_2e$ = million metric tons of carbon dioxide equivalent; $/tCO_2e$ = dollars per metric ton of carbon dioxide equivalent.

Note: The numbering used to denote the above pending priority policy options is for reference purposes only; it does not reflect prioritization among these important draft policy options.

RCI-1. Utility Demand-Side Management Programs

Policy Description

Utility demand-side management (DSM) programs (including those administered by municipal utilities and cooperatives) provide energy supply resources that produce cost-effective, firm, long-term energy savings. Utilities have long-standing relationships with all customer classes, and are uniquely positioned with an effective avenue for regularly and consistently reaching them. Utilities also have an intimate daily awareness of the specific need for and access to the various means available to acquire needed supply resources. A policy to encourage and incentivize utilities to increase investments in DSM programs designed to reduce the demand for electricity, natural gas, propane, and oil is critical to cost-effectively achieving the desired statewide reductions by 2020. DSM programs should be designed to work in tandem with other strategies adopted by the Kansas Energy and Environmental Policy Advisory Group (KEEP).

To implement expanded DSM programs and meet the desired energy savings goals, a number of policy and administrative mechanisms should be considered. Existing statutes should be revised to enable utility investments in energy efficiency at the levels recommended, to consider as potentially eligible programs that are cost-effective (i.e., based on an evaluation of the five economic tests), taking into account the valuation of carbon dioxide (CO_2) emissions. Policy and administrative mechanisms that might be applied include regulator-verified savings targets, public benefit charges, portfolio standards, integrated resource planning, performance-based incentives, decoupling of rates and revenues, and appropriate rate treatment.

DSM program examples include, but should not be limited to, the following:

- Provide subsidized energy audits for homeowners, businesses, and industries, with the subsidy amount tied to the measures implemented.
- Provide incentives for specific technologies, potentially including, but not limited to, lighting, water heating, plug-in loads, networked personal computer management, power supplies, motors, pumps, boilers, customer-side transformers, water use reduction, and ground-source heat pumps.
- Provide control, sensing, or communicating devices (e.g., programmable controllable thermostats, in-home displays), systems (e.g., on-line energy management, on-line calculators), and other unique DSM programs to encourage and enable customers to more effectively manage their energy consumption and reduce demand.
- Provide increased information (e.g., comparative usage) to help customers understand their energy use. Near-real-time information would enhance potential results.
- Provide low-cost financing or payback mechanisms for homeowners, businesses, and industries to use to fund energy efficiency improvements. Customer financing should be provided by companies independent of the utility in order to shield ratepayers from potential loan defaults.

- Integrate consumer education campaigns to support optimum market penetration of all DSM programs.

Policy Design

Goals:

- Reduce _# or %_ megawatts (MW) (electricity demand) by 2012, _# or %_ by 2015, _# or %_ by 2018, and _# or %_ by 2020.
- Reduce _# or %_ megawatt-hours (MWh) (electricity consumption) by 2012, _# or %_ by 2015, _# or %_ by 2018, and _# or %_ by 2020..
- Require utilities to invest _%_ of their annual revenue in energy efficiency programs.

Timing: Recognizing the length of the regulatory review and approval process, new programs could be market-ready by the end of 2010, pending internal funding constraints.

Parties Involved: Regulatory agencies; utilities; other city, county, or state agencies; industry associations; other customer advocacy groups; environmental groups.

Other: None identified.

RCI-2. Improve Building Codes for Energy Efficiency and Support Training for Their Successful Implementation

Policy Description

Building energy codes specify minimum energy efficiency requirements for new buildings or for existing buildings undergoing a major renovation. Given the long lifetime of most buildings, adopting nationally recognized energy codes that specify minimum energy efficiency requirements and are periodically updated, by county, could provide long-term greenhouse gas (GHG) savings from commercial, residential, institutional, industrial, and government facilities. Implementation of building energy codes, particularly when much of the building occurs outside of urban centers, can require additional resources.

Potential measures supporting this option can include consumer education, improved enforcement of building codes, training for builders and contractors, and development of a clearinghouse for information on building energy performance, and providing access to software tools to calculate the impact of energy efficiency and solar and wind technologies on energy performance. Building codes could also be supported by such models as the U.S. Environmental Protection Agency's (EPA's) ENERGY STAR Building Design Guidance, which is a strategic approach for improving energy performance in the building design process.

Areas to be included for implementation of the policy include:

- Improve building codes for energy efficiency.
- Train building code and other officials in energy code enforcement.
- Train and educate builders and contractors (e.g., heating, ventilation, and air conditioning [HVAC] sizing, duct sealing).
- Require energy management training and training of building operators.
- Require or encourage high-efficiency equipment in new construction and retrofits.
- Encourage “beyond minimum energy code” construction, such as ENERGY STAR.
- Provide software access for building owners to calculate the energy performance of their building.

Policy Design

Goals:

- Adopt and enforce the 2009 International Energy Conservation Code (IECC) and the most recent American Society of Heating, Refrigeration, and Air-Conditioning (ASHRAE) Standard 90.1 to reduce energy consumption in residential and commercial buildings.
- Create incentives to exceed these goals by a minimum of 15%.
- Educate residential, commercial, and industrial building owners about energy efficiency and the environmental impacts of how they operate their buildings.

- Train building code officials, building owners and operators, and the construction industry on Energy Code compliance.
- Increase the use of high-efficiency equipment in new construction and retrofits.

Timing:

- Adopt energy codes by 2009 (pending training to allow proper enforcement).
- Establish educational training by __date__.
- Require/encourage use of high-efficiency equipment by __date__.

Parties Involved: Kansas Energy Office (KEO, a division of the Kansas Corporation Commission [KCC]), builders, and contractors.

Other: None identified.

RCI-3. Consumer Education

Policy Description

The ultimate effectiveness of emission reduction activities in many cases depends on providing information and education to consumers regarding the energy and GHG emission implications of consumer choices. Public education and outreach is vital to fostering a broad awareness of climate change issues and effects (including co-benefits, such as clean air and public health) among the state's residents. Such awareness is necessary to engage residents in actions to reduce GHG emissions in their personal and professional lives. Public education and outreach efforts should integrate with and build upon existing outreach efforts involving climate change and related issues in the state. Ultimately, public education and outreach will be the foundation for the long-term success of all of the mitigation actions proposed by the KEEP, as well as those that may evolve in the future.

In regulated sectors, utilities are uniquely positioned to reach consumers. Utilities have access to employee energy consumption patterns and cost-effective means to communicate with all consumers, not just those who have the money and the inclination to subscribe to or purchase energy efficiency resources.

Young people merit special mention. A substantial portion of home energy use is consumed by youths. Youths also weigh product characteristics and options when making purchasing decisions. Behavior change is a key objective of energy efficiency education, and this is more easily accomplished at younger ages. In addition, young people will become future homeowners and heads of households, managing energy use in their own homes. Education can help them make and require better energy choices as they take on those roles. As with adult consumers, public education and outreach efforts should integrate with and build upon existing outreach efforts involving climate change and related issues in Kansas.

"Green-raising" efforts represent a specific door-to-door education campaign approach for increasing awareness of energy efficiency and money-saving opportunities among households. The development of accessible materials, videos, and other educational information can support these efforts. Support for program management and coordination activities can also help to ensure that outreach efforts are effectively planned and implemented. Potential elements of a consumer education program include:

- Coordinating with new or existing incentive programs.
- Creating school programs for kindergarten through high school that are designed to fit state education requirements for lesson planning.
- Targeting specific population segments with education on energy efficiency and conservation, such as low-income residents, university students, or those who attend community or spiritual meetings, or working with existing programs that target particular segments of the population, such as Interfaith Power & Light, which works with houses of worship to address climate change (http://www.theregenerationproject.org/).

- Creating specific outreach materials, such as public service announcements, brochures, newspaper advertisements, or billboards.
- Providing weatherization programs that involve community volunteers for distribution and installation of kits that educate both the recipient and the volunteer work force about energy-saving measures.

Policy Design

Goals:

- Reduce _# or %_ MW (electricity demand) by 2012, _# or %_ by 2015, _# or %_ by 2018, and _# or %_ by 2020.
- Reduce _# or %_ MWh (electricity consumption) by 2012, _# or %_ by 2015, _# or %_ by 2018, and _# or %_ by 2020.
- Utilities invest _x%_ of their annual revenue in energy efficiency programs.

Timing: As noted above.

Parties Involved: Regulatory agencies; utilities; city, county, or state government agencies; customer advocacy groups; social service agencies and organizations; schools; environmental organizations.

Other: None identified.

RCI-4. Reduced-Cost or Free Residential Energy Audits

Policy Description

This option includes providing residential-sector energy 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, expertise, and information to implement recommended options could be included in the policy to encourage residential customers to follow up on audit recommendations. For example, tying the free or reduced-cost audit to implementing some of the auditor's recommendations could encourage residents to make recommended changes. These audits can include diagnostic testing and analysis specific to each individual home. The results provided to the homeowner can include the total energy use, energy cost savings and payback on investment costs, and the reductions in emissions due to implementation of the recommendations made during the audit. The program should include a follow-up mechanism by which those who receive services are contacted after receiving the results to answer any questions pertaining to the implementation of the suggestions.
There should be a pre-audit contract that the homeowner signs that will allow government agencies to use energy-saving information that is obtained, and the contract should provide consent for the state (or contracted auditing agency) to distribute the homeowner's contact information to certified contractors who may provide the services needed to implement the recommendations from the audit. Homeowners should also be provided with information to access the EPA ENERGY STAR program.

An alternative, or supplemental, approach to residential energy audits and retrofits is the concept of "green raisings," akin to traditional community barn-raising efforts. "Green raising" refers to a community drive to increase home energy efficiency in multiple houses, using "neighbor power" to educate and prepare homeowners, culminating in a neighborhood workday and celebration. These initiatives typically identify and train neighborhood volunteers to contact residences in the neighborhood to ask for their interest in a home energy audit and to invite them to participate in a green-raising event. Volunteers distribute free information, including a home energy efficiency menu, and link households up with a professional energy audit, energy-efficient products and ideas, and loan and rebate opportunities. A green-raising event may include a mobile "store" of energy-efficient products (weatherization kits, compact fluorescent light bulbs (CFLs), light-emitting-diode (LED) lighting, smart power strips, etc.) that have been pre-ordered or that can be purchased; audit and insulation demonstrations; a team of volunteers available to go door-to-door to assist interested residents with installation of CFLs, weatherization kits, or other energy-saving items; and food and entertainment. Green-raising initiatives typically require modest resources, primarily to cover material costs and potentially a paid coordinator position. Green raisings are being piloted in several Kansas communities, including Kansas City and Mission, Kansas.

Policy Design

Goals:

- Administer an increasing number of audits per year.

- Set an initial target of 2,500 physical residential audits a year, increasing by 2,500 each year for 5 years, and then leveling off at 12,500 audits per year.
- Perform 10 times as many online audits each year as physical audits.
- Track implementation of audit suggestions and set a target of 50% implementation rate. Attempt to increase implementation rates on an annual basis, which will require a thorough review of current and possible methods. There should be a target cost of the program in terms of energy units saved per dollar spent to operate the program, to justify continuation of the program.

Timing: The program will be fully implemented within 5 years. The program costs versus the savings in energy and emissions should be evaluated on an annual basis. If the program is not producing verifiable reductions in energy consumption, it should not be continued.

Parties Involved: Utilities, state agencies, third parties (universities, nonprofit organizations, private consulting companies, engineering and technical services companies), regulators.

Other: None identified.

RCI-5. Promote and Develop Incentives for Energy-Efficient Private-Sector Building Design and Construction

Policy Description

This policy encourages the improvement and review of energy use goals over time, and flexibility in contracting arrangements to promote integrated energy- and resource-efficient design and construction. To implement this policy, both new and existing building retrofits should be included with a focus on the following areas:

- Encourage building commissioning and recommissioning, including energy tracking and benchmarking.
- Provide incentives in the form of tax credits, DSM program support, financing incentives (such as "green mortgages"), or other inducements for retrofit of existing residential and commercial buildings.
- Encourage the use of alternative and local building materials and practices.
- Require or encourage energy efficiency standards and practices for data centers and other facilities that use large quantities of energy.

Potential supporting measures for this option include training and certification of building professionals, consumer and primary/secondary education, performance contracting/shared savings arrangements, and setting up a clearinghouse for information on and access to software tools to calculate the impacts of energy efficiency and solar technologies for buildings.

Policy Design

Goals:

- Reduce electricity demand and consumption levels, using 2009 as baseline year:
  - 12% by 2012
  - 15% by 2015
  - 20% by 2020
- Reduce natural gas usage levels, using 2009 as baseline year:
  - 12% by 2012
  - 15% by 2015
  - 20% by 2020
- Use IECC building codes as minimum standards to be followed in new construction.

Timing: Recognizing the length of the regulatory review and approval process, new programs could be market-ready by the end of 2010 (assuming adequate funding is made available).

Parties Involved: Regulatory agencies, utilities, other state agencies, industry associations, other customer advocacy groups, environmental groups.

Other: None identified.

RCI-6. Develop Incentives to Promote Implementation of Customer-Sited Renewable Energy Systems Through Effective Net Metering and Other Means

Note: Consensus has not yet been reached on the text for this policy option.

Revised by Bill Wentz 3 April 09 www.william.wentz@cox.net ph 316-755-2924

Suggested edits from David Springe in blue.

This draft ignores the issue of subsidization that typically occurs in the way net metering policy is structured. Because the payment back to net-metered customers for excess energy is usually higher than the utility's avoided cost and typically is at full retail rates, the utility will be under-recovering the allowed revenue requirements it needs to recover for investments it has prudently made. To keep the utility shareholders from bearing the cost of public policy, regulators will have to raise the rates for all other customers to make up the deficiency in cost recovery.

This "subsidization" from one set of customers to another is typically recognized as a tolerable consequence of net metering if the total number of net-metered customers is limited to the small number of customers who can afford to install this type of system. As costs for systems, such as photovoltaic (PV) solar go down and customer adoption goes up, it will be necessary to revisit the structure of the policy.

Policy Description

This policy option involves the consideration and adoption by state regulatory authorities of rate designs, that appropriately account for the fixed cost of providing service to every customer on the system coupled with the necessary metering technology, that promote reduction in GHG emissions by encouraging consumers to install distributed generation systems—especially those based on renewable energy sources—and combined heat (and/or cooling) and power systems that offer the opportunity to improve the overall efficiency of fuel use. To encourage the implementation of customer-sited renewable energy systems, equitable policies that take into consideration the cost impact on all customers in the utility system are essential. This policy should focus on the following areas:

- Develop and implement improved net metering, ~~to accelerate the cost recovery time for customer-sited, customer-funded systems.~~
- Develop equitable rate deigns that recognize the fixed-cost nature of utility service and ensure appropriate fixed-cost recovery from each customer.
- Continue rules related to the interconnection of consumer-sited power sources to the electricity grid to ensure that they offer equitable treatment of potential distributed generation hosts, while providing adequate safeguards for the public and for power sector workers.

Distributed electricity generation sited at residences and commercial and industrial facilities, and powered by renewable energy sources (typically solar, but also wind, small hydroelectric power sources, or biomass or biomass-derived fuels), displaces fossil-fueled generation and avoids

electricity transmission and distribution (T&D) losses, thus reducing GHG emissions. This policy should enable consumers to switch from using fossil fuels to renewable sources in such applications as water, process, and space heating, as well as to supply new energy services using fuels that produce low or zero GHG emissions.

Increasing the use of renewable energy applications in homes, businesses, and institutions in Kansas can be achieved through a combination of regulatory changes and financial incentives. Potential elements of this option include:

- Solar roofs (roofing materials with built-in solar PV cells, or solar PV panels erected on roofs).
- Solar water-heating and space-heating systems.
- Wind-power systems, particularly for rural areas.
- Biomass-fired generation, space-, or water-heating systems.
- Programs targeted at specific customer sectors (residential, commercial, industrial), or specific markets within sectors.
- Tax credits, and/or utility or other incentives to lower the first cost of distributed energy systems to users.

Net metering has several forms. The simplest and most easily implemented form of net metering is *single-meter net metering*. It allows the customer to deliver excess generation from its small generator to the utility through the standard meter, which runs both forward or backward during the billing period. The customer is charged only for the net amount of energy taken from the utility during the period, which provides a financial benefit at the utility's retail rate for all energy generated in excess of the customer's usage (i.e., the displaced utility kilowatt-hours (kWhs), plus credit on future bills for energy beyond the customer's usage delivered to the grid). This customer's excess energy goes directly into the utility grid, reducing fossil fuel consumption and emissions, and reducing long-distance transmission requirements. In enacting this policy, it is recognized that, in order to provide the financial incentives for net-metered customers receiving the full retail rate for energy supplied back to the grid, all other customers of the utility will be subsidizing the net-metered customer and will be paying higher rates in order to keep the utility whole on the recovery of allowed costs.

Variations on the basic form of net metering often include limiting the value of grid energy offset by customer generation to the value of grid energy offset by customer generation during the billing period, or annually (no carryover). Billing methods usually are combined with a separate charge to maintain the customer's contribution for fixed utility costs, such as base and reserve capacity, distribution, and any transmission related costs.

Dual-meter net metering has been offered in Kansas for a number of years, with return to consumer-generated energy based on a rate considerably lower than retail. This system requires the small-generator owner to invest in a second meter to separately account for energy used from the utility and the energy supplied back to the utility, an additional expense. Participation in this program has been very limited because of the added expense and the low potential return to users. Recently, the KCC revised the net metering policy to base the credit for energy supplied to

the utility on a higher formula (see below), but the revised rate is still significantly lower than the retail rate.

Single-meter net metering involves no hardware cost to implement and no change in billing procedures, and can be expected to result in much greater participation by consumers because of the additional subsidy provided by other net-metering customers on the utility system. When participation becomes significant, jobs will be created in Kansas to support sales, installation, and servicing of consumer-based generating systems. Equally important is the potential for high technology job creation for the development, design, and manufacture of customer-sited renewable energy systems. Kansas has a large, highly capable work force, with virtually all the technical skills required for developing a new major industry in this emerging arena.

Supporting measures for this option would include training/certification of installers/contractors, development of refined interconnection standards, and creation/support of markets for biomass fuels.

Policy Design

Goals:

- Increase opportunity for utility consumers in Kansas to implement customer-sited renewable installations by adopting more favorable net-metering and/or similar policies.
- Develop and implement a single-meter net-metering policy by 2011.
- Allow utilities and other electric providers to credit customer-sited renewable energy toward achieving up to 20% of the utility's state or federal green power requirements specified in the state's renewable portfolio standards.
- Achieve 0.1% of statewide utility capacity through net-metered distributed generation sources by 2012, 1% capacity by 2013, and increasing linearly thereafter to achieve 10% capacity by 2020.

Timing: See above.

Parties Involved: KCC, Kansas Wind Working Group, Kansas Chamber of Commerce, utilities.

Other: None identified.

RCI-7. Develop Financial and Funding Mechanisms to Support Energy Efficiency Improvements in the RCI Sectors

Policy Descriptions

Several options for financial and funding mechanisms can be considered for supporting energy efficiency improvements in the RCI sectors.

A public benefits charge (sometimes called a systems benefits charge) can be attributed to utility customers based on their use of energy in a given time period. The fee is typically determined independent of the actual costs of the utility, but the funds derived from the charge are dedicated to a utility's or third-party administrator's energy efficiency programming budget. With deregulation in many states, the utility commissions often lost the ability to require efficiency programs of the electric utilities. The result in many states was the development of the public benefits charge, which is a non-bypassable charge on electric bills. The funds collected are then provided to a third party to provide energy efficiency programming. Statutory changes are likely to be necessary to allow the collection of a public benefits charge and the creation of a third-party administrator.

The KCC has determined that a utility may recover its energy efficiency costs through a rider on the utility bill (Docket No. 08-GIMX-441-GIV). Once the utility has begun to implement programs and incur costs, those costs can be recovered through a volumetric charge. The rider will be adjusted annually to reflect the recovery of past expenses and adjust for new expenses.

To encourage consumers to implement energy efficiency measures with or without the assistance of a utility or third-party administrator, a revolving, low-interest loan program could be utilized. This option refers to revolving low-interest loan fund(s) for energy efficiency investments in distribution service areas that are not covered by existing utility programs. Currently, the KEO is developing a program incorporating a low-interest revolving-loan program using funds available to it through the American Recovery and Reinvestment Act (ARRA). The KanSave program builds on the existing Kansas Energy Efficiency Program, a loan program with limited funding sponsored by the Kansas Housing Resources Corporation. The recovery funds allocated to the KEO will be utilized to buy down the interest rate on loans for energy efficiency improvements. The KanSave program will require the residential or small commercial energy user to have an energy audit conducted and to implement the cost-effective efficiency measures recommended through the audit. To be cost-effective, the savings in energy should equal the monthly loan payment, which will also provide the lender with greater comfort in extending the loan.

Tax credits could also be incorporated into an energy efficiency funding mechanism. Income tax credits can be provided for the investment in energy efficiency improvements in industrial or commercial facilities. These tax credits could also be grouped with other tax incentives, such as property tax exemptions.

Special consideration may be given to incentives that promote combined heat and power (CHP) systems, which reduce fossil fuel use and GHG emissions, both through their improved

efficiency relative to separate heat and power technologies, and through avoiding T&D losses associated with moving power from central power stations located far from where the electricity is used. Potential elements of this option include:

- Promotion of the use of gas-fired CHP systems.
- Promotion of the use of biomass-fired CHP systems.
- Creation/expansion of markets for, and incentives designed to promote implementation of, CHP units in capacities suitable for residential, commercial, and industrial users.
- Provision of tax benefits, attractive financing arrangements, and other incentives to promote CHP technologies.

Potential supporting measures for this option include training/certification of installers/contractors, net metering and other pricing arrangements, establishment of clear and consistent interconnection standards, and creation/support of markets for biomass fuels.

Policy Design

Goals: [TBD]

Timing: [TBD]

Parties Involved: Utilities, Kansas legislature, KCC, Kansas Department of Revenue, Kansas State Treasurer, banks, ARRA funds.

Other: None identified.

RCI-8. Incentives and Targets for Retrofit of Existing Residential, Commercial, and Industrial Buildings

Policy Description

This policy provides incentives and targets to induce the owners of (1) existing homes, and (2) existing commercial, institutional, and industrial buildings and facilities to improve the efficiency of the use of energy and other resources in these buildings, along with provisions for raising targets periodically. This policy can include elements to encourage improvements (e.g., renovation) and the review of energy use goals over time and to target renovated and/or existing buildings. Incentives could be financial incentives, such as tax credits, financing incentives, or cost sharing; personal or company recognition programs; or DSM programs or program support similar to those cited in RCI-1.

Policy Design

Goals:

- Reduce energy consumption and CO_2 emissions in residential buildings by _# or %_ million metric tons of carbon dioxide equivalent ($MMtCO_2e$).
- Reduce energy consumption and CO_2 emissions in commercial and industrial buildings by _# or %_ $MMtCO_2e$.

Timing: Have incentives in place by 2010; energy savings and CO_2 reductions would begin immediately.

Parties Involved: State of Kansas—tax credits and other incentives; cities and counties—tax credits and other incentives; utilities—DSM incentives.

Other: None identified.

RCI-9. Provide Reduced-Cost Energy Audits and Integrated Lean Manufacturing and Energy Technical Assistance for Industrial and Commercial Sectors

Policy Description

This option includes providing commercial- and industrial-sector energy technical assistance (e.g., energy audits) to identify and recommend options for reducing fossil energy and electricity use, and for reducing non-energy emissions of GHGs. A mechanism to trigger reduced-cost audits could be molded around the amount of return on investment that is calculated from energy savings that would result from implemented audit suggestions or process modifications. For instance, if the company's calculated energy savings (2-year return on investment) exceeded the initial cost of the audit, the company would be required to pay the cost of the audit. If the calculated energy savings did not cover the initial costs of the audit, then the company would only be required to pay 20% of the audit costs.

Technical assistance could focus on energy efficiency opportunities related to lighting, HVAC, process heating and cooling, compressed air, and motors and drives, among other end uses. A combination of incentives, expertise, and information to implement recommended options could be included in the policy to encourage the operators of industrial-sector facilities to follow up on audit recommendations. Audits could also include diagnostic testing and analysis specific to each individual industry. The audit should identify key efficiency measures, such as process heat changes, motor efficiency improvements, boiler efficiency provisions, compressed air system measures, as well as lighting and building envelope efficiency improvements. The audits could identify opportunities for capture and use of process heat, as well as for implementation of CHP.

Evaluation of alternative utility rate structures and load control opportunities could be included as well. The results provided to the businesses could include the total energy use, the energy cost savings and payback on investment costs, and the reductions in emissions due to implementation of the recommendations made during the audit. The program should include a follow-up mechanism by which those who receive services are contacted after receiving the results to answer any questions pertaining to the implementation of the suggestions. There should be a pre-audit contract that the business signs that will allow government agencies to use energy-saving information that is obtained, and the contract should provide consent for the state (or contracted auditing agency) to distribute the business's contact information to certified contractors who may provide the services needed to implement the recommendations from the audit (which should help to increase the implementation rate and stimulate business growth). The industry should also be provided with information to access the EPA ENERGY STAR program.

There is increasing recognition that "Lean" manufacturing[1] improvement approaches, being widely adopted by businesses across the nation and in Kansas, can substantially improve energy efficiency when energy use is explicitly considered in the context of Lean methods. Lean manufacturing, based on the Toyota Production System, refers to a collection of business process improvement methods that are designed to identify and eliminate non-value-added activity. EPA has prepared a toolkit for improving energy efficiency through Lean manufacturing (http://www.epa.gov/lean/energytoolkit/index.htm). Several states, including California, Maine, and Washington, have launched Lean & Energy Use Reduction technical assistance initiatives that involve partnerships between the state, National Institute of Standards and Technology Manufacturing Extension Partnership Lean service providers, other Lean Six Sigma service providers, and environmental agencies' technical assistance providers.

Industry advancements in process efficiency (Lean manufacturing) will result in reduced energy use and emissions. These programs and strategies should be incorporated with energy audit programs also being considered. Industry-specific engineering firms and nonprofit organizations, such as the Mid-America Manufacturing Technology Center, can supplement the audit process and provide industry-specific process guidance.

The Small Business Administration identified 70,700 small business employer firms in Kansas in 2006, and a total of 246,900 small businesses within the state.

In April 2009, the Kansas Department of Health and Environment reported that there were 294 facilities currently working under a Class I Operating Permit, and 641 facilities working under a Class II Operating Permit.

Policy Design

Goals:

- Initially administer 100 industrial audits, and 1,000 commercial business audits a year. Track implementation of audit suggestions and set a target 50% implementation rate. Attempt to increase implementation rates annually, which will require a thorough review of current and possible methods. Set a target cost of the program in terms of energy units saved per dollar spent to operate the program, to justify continuation of the program.
- Administer an increasing number of audits per year, increasing by the base target every year over a 5-year period. This is the same formula as used in RCI-4 for residential audits.
- Perform 10 times as many online audits each year as physical audits.

Timing: The program should have an initial time frame of 3–5 years. The program costs versus the savings in energy and emissions should be evaluated annually. If the program is not producing verifiable reductions in energy consumption, it should not be continued.

[1] Lean manufacturing refers to a collection of business process improvement methods that focus on the identification and elimination of non-value-added activity in manufacturing and administrative processes. Lean methods, such as Kaizen rapid improvement events, value stream mapping, and 5S, are based on the Toyota Production System and are being widely used in the manufacturing and service sectors. Increasingly, Lean manufacturing approaches are being integrated with Six Sigma methods, a collection of statistical analysis tools and other methods that are used to identify and reduce variation in processes.

Parties Involved: Utilities, state agencies, third parties (universities, nonprofit organizations, private consulting companies, engineering and technical services companies), regulators.

Other: None identified.

RCI-10. Require or Encourage New State Government Buildings to Have a Small Greenhouse Gas Emissions Footprint, and Encourage Existing Government Buildings to Improve Energy Efficiency

Policy Description

Recognizing that governments should "lead by example," this option includes improved design and construction standards for government-owned institutional buildings. It provides targets to improve the energy efficiency of existing state and local government buildings, including both new construction (NC) and existing buildings (EB). The proposed targets are higher than minimum code standards and significantly improve building energy performance and efficiency as well as reduce a building's carbon footprint. Elements of this policy include:

- Require new government buildings or government buildings undergoing major renovations to comply with the Leadership in Energy and Environmental Design (LEED-NC and LEED-EB) Silver certification requirements and to attain a minimum of 3 Energy and Atmosphere (EA) Credit 1 points. For more information on LEED, see: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222.
- Require high energy efficiency be a criterion in the procurement of energy-using equipment and systems, and in the improvement in operation of buildings and other facilities. Require state bulk purchase of appliances and equipment with higher-than-standard energy efficiency for public facilities.
- Require audits of energy performance and operations of state and other government buildings. Use audit results to target and prioritize investments in improving government building energy efficiency. Improve and review efficiency goals over time, and develop flexibility in contracting arrangements to encourage integrated energy-efficient design and construction.
- Establish "retained savings" policies, whereby government agencies can retain funds saved by reducing energy bills and apply them to further energy efficiency/renewable energy investments or other uses.
- Join the ENERGY STAR for State Government Program and take the ENERGY STAR Challenge to reduce overall energy use by the state government, with a focus on energy use in state-owned buildings.

Supporting measures for this option include training and certification of building-sector professionals and performance contracting/shared savings, as well as surveys of government energy and water use, and energy benchmarking, measurement, and tracking programs for municipal and state buildings.

Carbon-neutral building technology is a rapidly developing but fairly new strategy. It requires a sophisticated integrated design approach that evaluates buildings based on both their initial embodied energy and also ongoing embodied energy and looks at a full life-cycle approach over the lifespan of the facility. The state should require this approach on its facilities much as they currently require life-cycle costing in its evaluations. Using LEED 3.0 will greatly assist in the

evaluation process. Effectively using this approach will ultimately require the end users to adapt to new building technologies in order to optimize efficiency and GHG reduction.

Policy Design

Goals:

- Using Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007 as a baseline, require new construction to exceed the baseline by 14% in 2010, 20% in 2015, 26% in 2020, and 34% in 2025. Require major renovation projects to exceed the baseline by 10% in 2010, 16% in 2015, 22% in 2020, and 30% in 2025.
- Adopt LEED 3.0 as a standard for all public buildings, and require a minimum of LEED Silver certification for all new construction.
- Require that a minimum of 2 EA Credit 1 points be attained on all projects. In 2015 upgrade this to LEED Silver and a minimum of 5 EA Credit 1 points. Using LEED Silver as a baseline will not only result in having the greatest energy use reduction, but will also reduce the ongoing operational cost of the facility (through reduced energy cost) over its lifetime and will significantly reduce the building's carbon footprint.

Timing: Beginning in 2010 and as indicated with incremental steps every 5 years. Target benefits/gains should be set up on an incremental basis. All new construction should meet the highest target numbers, and renovations should be evaluated on a case-by case-basis. At a minimum, whenever a major renovation is being undertaken, energy efficiency improvements should be a requirement of the project in order to meet the desired GHG reduction.

Parties Involved:

- All state government facilities—state offices, service and maintenance facilities, state higher education facilities, community colleges, school districts.
- Other potential parties/partners—county and city government facilities.

Other: None identified.

RCI-11. Green Power Purchasing by Customers

Policy Description

Green power purchases are voluntary commitments by residential, commercial, and industrial electricity customers to support green energy programs. Green energy purchases will accelerate the growth of clean energy sources, at zero expense to government. With approximately one million residential and thousands of commercial and industrial electric utility customers in Kansas, green energy purchases represent an opportunity to have substantial impact, with the customer bearing the incremental cost for providing the service, which could be higher than the cost of traditional least-cost electric resources. Environmental groups and environmentally conscious businesses can be expected to provide a great deal of free marketing for such a program. The costs of implementing voluntary green energy tariff programs are only the bookkeeping and billing expenses. Green power in Kansas is typically regarded to be from renewable resources, which are defined in Kansas Statutes Annotated 79-201. Renewable resources currently include generation from wind, solar, PV, biomass, hydropower, geothermal, and landfill gas.

The KCC is responsible for approving suitable tariffs to encourage the voluntary purchase of green power. An example is the Zephyr Energy Program, offered jointly by the Bonneville Environmental Foundation and Bowersock Mills and Power Company. This program sells the renewable energy credits associated with the hydropower facility. The KCC should encourage other utilities to develop similar voluntary programs.

A “Renewable Energy Program Rider” was recently approved by the KCC for Westar Energy customers. In its present form, the program is stated to provide for “reducing charges for all customers.” The voluntary energy tariff funds generated by this program are evidently not restricted specifically to purchasing green energy, and as such, do not fit the normal criteria for green energy.

Typical green power programs allow customers to opt for modest energy blocks, typically 100 kWh, so it is not necessary to purchase 100% green energy to participate in the program. Since many participants may choose to initially offset only a portion of their energy use, targets can be based on the number of customers participating, rather than the total green energy purchased. Since green energy purchases are on a kWh basis, it is easy to quantify the emission reductions. Customers who participate in the program may choose to gradually increase their voluntary commitment over a period of years, up to 100% of their energy use.

The funds collected from consumers for green energy should be allocated for the development of additional renewable resources, transparent as to their use, and consistent with overall environmental goals.

KCC, with input from consumers, utilities and environmental groups, should foster expanded green power purchase opportunities in Kansas. Initial steps would be to evaluate successful green power programs in other states, and the consumer participation and effectiveness of those programs.

Policy Design

Goals: The goal of this initiative is to reduce emissions through the development of voluntary green power purchase programs. Specific targets include achieving participation by 0.1% of utility customers (approximately 1,000 total) by 2010, and reaching a goal of 10% of customers (approximately 100,000 total) participating by 2020. Actual green MWh produced through this program and emission reductions should be documented, in addition to the number of customers participating.

Timing: As noted above.

Parties Involved: Consumers, all electric utilities operating within Kansas, KCC, the Kansas Wind Working Group, and environmental groups.

Other: None identified.