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

Summary List of Pending Priority Policy Options for Analysis

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-1	Improved Building Codes	*Not Yet Quantified*					Pending
RCI-2	Utility and Non-Utility DSM for Electricity and Natural Gas	*Not Yet Quantified*					Pending
RCI-3	Reduced Energy Use in State-Owned Buildings: Government "Lead by Example"	*Not Yet Quantified*					Pending
RCI-4	Promotion and Incentives for Improved Building Design and Construction	*Not Yet Quantified*					Pending
RCI-5	Consumer Education for Consumers and Industry Trades, Professions	*Not Quantifiable*					Pending
RCI-6	Incentives and Funds To Promote Renewable Energy and Energy Efficiency	*Not Yet Quantified*					Pending
RCI-7	Green Power Purchasing for Consumers	*Not Yet Quantified*					Pending
RCI-8	Nonresidential Energy Efficiency	*Not Yet Quantified*					Pending
RCI-9	Support for Energy-Efficient Communities, Including Smart Growth	*Not Yet Quantified*					Pending
RCI-10	Energy-Savings Sales Tax	*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. Improved Building Codes

Policy Description

This policy option enforces existing building codes and strengthens/streamlines the building codes process to increase energy efficiency (reduce energy consumption) for residential, commercial, and industrial buildings.

According to the US Department of Energy, almost half of U.S. greenhouse gas (GHG) emissions are associated with the construction and operation of buildings. 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, amending state and/or local building codes to include minimum energy efficiency requirements and periodically updating energy efficiency codes could provide long-term GHG savings.

Also, the state can make improvements in codes that are not limited to heating, ventilation, and air conditioning (HVAC) systems, including daylighting design to reduce lighting needs, electric lighting design, building envelope design, and integrated building design strategies.

In Arkansas residential structures account for 60% of building energy use, with commercial structures accounting for the remaining 40%. Emphasis on improving and enforcing residential codes holds a large potential for reducing GHG emissions.

Manufactured (mobile) homes account for approximately 27% of residential structures in Arkansas. Mobile homes and temporary dwellings (hunting camps, boat houses) are exempt from compliance with the Arkansas Energy Code and fall under U.S. Department of Housing and Urban Development (HUD) regulation. These homes are factory made and can more easily implement efficiency improvements. ENERGY STAR has a program for energy-efficient manufactured homes.

Policy Design

Goals:

- Expand education about and enforcement of existing building codes (nonquantifiable).
- Improve energy standards for manufactured (mobile) homes by 30%.
- Follow national codes without amendments in Arkansas, or at least update Arkansas code in concert with the timing of the national code.
- Achieve a 10% improvement in energy efficiency through educational programs for building inspectors and other building industry professionals to ensure that the new codes are implemented and enforced.

Timing:

- Expand education and enforcement efforts for existing code requirements immediately.
- Require better standards for new mobile homes by the end of 2009.
- Align with code review cycles and streamline the Arkansas review process by the end of 2009.
- Coordinate education and enforcement initiatives with new code review cycles.

Implementing Parties: Homeowners, building owners, builders, contractors, developers (new construction and existing buildings).

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

- Arkansas Energy Code:
  - Residential, 2003 International Energy Conservation Code (IECC), with Arkansas Supplements and Amendments to the 2003 IECC.
  - Commercial, 2003 IECC (including ASHRAE/IESNA [American Society of Heating, Refrigerating and Air-Conditioning Engineers/Illuminating Engineering Society of North America] 90.1-**2**001), with Arkansas supplements and amendments to the 2003 IECC.
  - No set code review cycle.
  - Last effective date, October 1, 2004.
- HUD Code for Manufactured Homes.
- HUD 1976 Federal Manufactured Home Construction and Safety Standards Acts, commonly known as the "HUD Code."

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-1	Improved Building Codes	*Not Yet Quantified*					Pending

Data Sources

A) Energy Consumption By Sector *(billions of Btu)*

Historical energy consumption in the state, by sector, is from the U.S. DOE Energy Information Administration (EIA) State Energy Data available at http://www.eia.doe.gov/emeu/states/_seds.html. To calculate future projected energy consumption, growth factors were applied to the historical 2005 data to calculate projections through 2030. The growth factors are based on a combination of two parameters. One accounts for growth within the RCI sectors, with growth factors for residential based on projected population growth. Population figures are from the University of Arkansas Center for Business and Economic Research Population Projections for 1990 to 2004 (http://cber.uark.edu/default.asp?show=population), and the Time Series Extrapolations for 2005 to 2030 (http://www.aiea.ualr.edu/research/demographic/population/default.html). Growth in the commercial sector is based on non-manufacturing employment growth projections, and industrial growth based on manufacturing employment. Employment projections were taken from the Arkansas Department of Workforce Services long term industry employment projections, http://www.discoverarkansas.net/?PageID=156, with estimated 2004 employment and 2014 projected employment figures for the manufacturing and non-manufacturing sectors. The other factor is growth in electricity sales, which was calculated based on historical retail sales from 1990 to 2005 obtained from the EIA state electricity profile, in GWh, available from Table 8 at: http://www.eia.doe.gov/cneaf/electricity/st_profiles/arkansas.html.

B) Baseline Power Station Electricity Generation *(GWh)* **and Fuel Use** (*BBtu*)

Gross generation for 2005 was obtained from the EIA database (EIA-906/920) on fuel stocks at all electric power sector generating facilities, broken down by fuel type. Data for later years was projected from the 2005 figure based on projections of growth in generation for the the Southwest Power Pool (SPP) region and the Southeastern Reliability Council (SERC) region were used. Arkansas was assumed to be partly (85%) located in the SERC region and partly (15%) located in the SPP region. The projected regional consumption and generation data are from the EIA Annual Energy Outlook (AEO) and can be accessed by downloading the "Electric Generation & Renewable Resource" file at http://www.eia.doe.gov/oiaf/aeo/supplement/index.html. On-site usage was subtracted from all generation figures. CCS bases its analysis only on *consumption-based* generation, meaning that the only electricity sources on which the analysis is based are those used to deliver electricity to consumers *in state*; therefore the generation of electricity that is either exported or imported is not counted.

C) Costs Associated with Electricity Generation

The costs in the U.S. to produce electricity using different types of technologies are from the AEO 2007, which used the EIA National Energy Modeling System. Capital costs and fixed and variable operations and maintenance costs are from Table 39 in the "Electricity Market Module available at: http://www.eia.doe.gov/oiaf/archive/aeo07/assumption/index.html. Prices for delivered fuel (in 2005$/MMBtu) are provided in the EIA Supplemental Tables to the Annual Energy Outlook 2007 by region, with projections through 2030. (Download "Consumption & Prices by Sector & Census Division" at:

http://www.eia.doe.gov/oiaf/aeo/supplement/; fuel prices by region begin with Table 11.) Transmission costs are added to the total as a constant $80/kW.

- **Quantification Methods**

  A) Heat Rates *(Btu/kWh)*

  Heat rates indicate how much fuel is used (Btu) to generate a given amount of electricity (kWh), and they vary greatly depending on the type of power stations and the fuel used. Heat rates are used to convert figures for electricity into figures for fuel use so the fuel use can be converted into GHG emissions using GHG emission factors. Heat rates for 2005 for each type of generation and fuel were calculated from 2005 fuel use (in BBtu) divided by 2005 generation (GWh). Projections for 2006 and beyond are based on annual combustion efficiency growth rates for the MAPP region. Combustion efficiency for a given year is calculated for each fuel type as the fuel use (in quadrillion Btu) divided by the electricity generated (in billion kWh), and the combustion efficiency growth rate applied to this value is based on the change in combustion efficiency from the previous year.

  B) GHG Emissions Associated with End-Use Consumption (by Sector)

  Historical CO_2 data by sector (and further broken down by fuel type) was calculated by two EPA State Greenhouse Gas Inventory Tool (SIT) software modules: the Fossil Fuel Combustion Module and—for emissions from industrial sources—the SIT module for industry. Methane (CH_4) and nitrous oxide (N_2O) emissions were calculated by the Stationary Combustion Module and—for emissions from industrial sources—the SIT module for industry.

  Projected emissions through 2030 were based on the 2005 data with growth factors compounded from year to year as discussed above in "Data Sources" for energy consumption.

  C) GHG Emissions Associated with Electricity Generation From Different Technologies and Fuels

  The projected data for each GHG was calculated for each fuel and generation type (e.g., non-lignite coal in a steam plant) as a direct product of the projected generation data (in GWh) described above in (B). Metric tonnes of CO_2 are calculated from generation as:

  tonnes CO2 = GWh * (Btu/kWh) * (tonnes CO2/MBtu) * (% of that fuel in the fuel mix)

  where (Btu/kWh) is the heat rate and (tonnes CO2/MBtu) is the CO_2 emission factor. Similarly for CH_4 and N_2O, which are then converted to CO_2 equivalents [CO_2(e)] using global warming potentials (GWPs) of 21 for CH_4 and 310 for N_2O. The emission factor used for each GHG were the same as those used in the EPA State Greenhouse Gas Inventory Tool (SIT) software modules.

- **Key Assumptions:** [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-2. Utility and Non-Utility DSM for Electricity and Natural Gas

Policy Description

Demand-side management (DSM) is a policy approach that requires actions that influence both the quantity and the patterns of energy consumed by end users. This option focuses on increasing investment in electricity and natural gas DSM programs. The goals may be accomplished through programs run by utilities or others, energy efficiency funds, and/or energy efficiency goals. These strategies are typically termed DSM activities, and may be designed to work in tandem with other strategies that can also encourage efficiency gains.

The utility regulatory framework is 50–80 years old and effectively discourages utilities from promoting energy efficiency. For DSM to be effective, changes are needed to that regulatory framework.

Natural gas utilities have experienced declines in the sales of natural gas to consumers over the last 10 years. Because of this trend, it is not necessary to impose a state goal for utilizing DSM programs to reduce consumption of natural gas.

There are currently no regulatory requirements for municipally owned electric systems and electric cooperatives to offer energy efficiency programs to their customers. These "member-owned" electric utilities represent approximately 40% of the electric customers in Arkansas. Because they are member-owned, they should be allowed to make their own decisions about DSM programs and not be subject to a state-imposed goal.

Municipal electric systems and electric cooperatives should support and encourage DSM programs.

Policy Design

Goals: Implement energy efficiency programs to reduce growth in electric peak demand by 10% per year by 2010 and by 20% per year by 2014.

Timing: see above.

Implementing Parties: All electric utilities (public and private), municipal electric systems, electric cooperatives, regulators, and customers (all sectors). All natural gas utilities (public and private) and customers (all sectors), industrial facilities, large commercial facilities, and regulators.

Other: TBD

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

Current Arkansas Public Service Commission (APSC) regulations require that investor-owned electric and natural gas utilities offer DSM programs. In late 2007, several small-scale programs were implemented; however, data are not yet available to measure their effectiveness. The size and scope of these programs will have to be increased to achieve meaningful goals. The current regulatory framework was established early in the 20th century to encourage investor-owned utilities to make capital investments in power plants and in transmission and distribution infrastructure. The financial incentives of that framework favor capital investment and growth in sales. DSM programs to reduce consumption of electricity and natural gas are contrary to the design of this framework. This is a barrier to significant investment by investor-owned utilities in DSM programs. The current APSC regulations do not address this barrier.

A number of other states have taken steps to remove this barrier, and there are several models for so doing. A policy recommendation of the Governor's Commission on Global Warming (GCGW) is that the Arkansas legislature remove this barrier by establishing a regulatory framework that makes investment in DSM programs financially equal with other investments by investor-owned utilities.

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-2	Utility and Non-Utility DSM for Electricity and Natural Gas	*Not Yet Quantified*					Pending

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-3. Reduced Energy Use in State-Owned Buildings: Government "Lead by Example"

Policy Description

Government-led, or "lead by example," initiatives help state and local governments achieve substantial energy cost savings, while promoting the adoption of clean energy technologies for significant GHC emission reductions in new and existing state and local government buildings. The proposed policy provides energy efficiency targets that are much higher than code standards. This option sets energy efficiency goals for the existing government building stock, as well as for new construction and major renovations.

Policy Design

Goals: Set a state goal to reduce by 2020, from a 2009 baseline, a minimum of 25% of electricity consumed by state and local facilities, schools, and universities. Implement energy efficiency programs to reduce energy use, adjusted for growth, by 20% per year by 2015 and by 25% per year by 2020.

Timing: Beginning in 2010.

Implementing Parties: State government agencies, local governments, schools, and universities.

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-3	Reduced Energy Use in State-Owned Buildings: Government "Lead by Example"	*Not Yet Quantified*					Pending

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-4. Promotion and Incentives for Improved Building Performance

Policy Description

Almost half of all GHG emissions in the United States are associated with residential, commercial, and industrial buildings and the energy associated with building materials. Improving the energy efficiency design and construction of buildings will have an immediate and on-going impact on GHG reduction.

This policy provides incentives and targets to induce the owners and developers of new and existing buildings to improve the efficiency with which energy and other resources are used in those buildings, along with provisions for raising targets periodically and providing resources to building industry professionals to help achieve the desired building performance. This policy can include elements to encourage the improvement and review of energy use goals over time, and to encourage flexibility in contracting arrangements to encourage integrated energy- and resource-efficient design, construction, and renovation. Incentive mechanisms could include low-cost loans for investments in energy efficiency, tax credits, and feebates.

Policy Design

Goals:

State funded buildings will required to meet LEED Silver Certification standards for energy efficiency, whether new construction or retrofits.

Set a statewide goal that by ___ a minimum of _____% of energy consumed by state and government buildings will come from renewable in-state energy sources. This policy will allow the state to "lead by design" and will create an established market for green power generators. A program to audit energy use will be created, with a goal of at least 15% of all buildings being audited annually. State and local governments will b required to submit energy plans to the state on an annual basis.

GHG emissions (largely CO2) will be reduced largely through avoided electricity production and on site fuel-combustion.

Low cost loans or incentives will be offered to consumers for weatherization programs, including weather stripping and insulation improvements.

Consider going beyond existing certification programs, providing energy consumption performance (energy intensity) that is 15% better than the regional average for each building type, or define goals as the higher levels of the Leadership in Energy and Environmental Design Green Building Rating System™ (LEED) (e.g., silver), higher levels of Built Green (4-Star, 5-Star), or similarly stringent third-party-verified green building certifications in other systems of standards. 15% of building stock will be audited annually.

Timing: Develop legislation in 2009; make incentive measures available in 2010; begin compliance in 2011.

Implementing Parties: All builders, building material suppliers, recycled building material sellers, and home improvement stores. The aforementioned should be considered for both private and pubic construction projects.

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

A baseline guide will be created for all buildings and their attributes, including floor design, levels of insulation, and historic energy consumption. This will serve as the baseline guide for the "carbon footprint" for state buildings sp progress can be measured.

Relevant implementation mechanisms may include:

- Audits of energy performance and operations by state and other government buildings;
- Implementation of design features to reduce energy use within state-funded buildings, through incorporation of proven planning guides and regulations;
- Financial and technical assistance for implementation of energy-saving programs in existing buildings, and a requirement that all state-owned buildings implement an energy management program;
- Low-cost loans for improving energy efficiencies in residential buildings, including a weatherization program;
- A retained savings policy, whereby agencies could retain funds saved by improving energy efficiency to additional energy efficiency investments. Low-interest loans to fund energy efficiency retrofits for commercial and industrial buildings; and
- Tax credits for energy-efficient building for residential, commercial, and industrial buildings.

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-4	Promotion and Incentives for Improved Building Design and Construction	*Not Yet Quantified*					Pending

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-5. Education for Consumers, Industry Trades, and Professions

Policy Description

Education under this option falls under two broad categories:

- Consumer awareness education on how they can reduce GHGs and
- Technical education for builders and contractors on the specific methods they can incorporate to reduce GHG emissions at every stage of the construction plan.

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 citizens. Such awareness is necessary to engage citizens in actions to reduce GHG emissions in their personal and professional lives.

This option also addresses education and outreach programs for building professionals to encourage incorporation of energy efficiency and GHG emission reduction considerations, such as programs to train builders and contractors.

Education and training should also be made available to builders and contractors and others for retrofitting existing buildings.

Policy Design

Goals: Not quantifiable. Develop consumer and technical/professional education courses and outreach programs for GHG emission reductions to increase the number of professionals trained in energy efficiency.

Timing: By 2010, put the education/training option in place and begin outreach programs.

Implementing Parties: Consumers, retailers, manufacturers, technicians, and professionals in building and related trades, code enforcement agencies, K-12 public schools, community colleges, universities, Department of Education.

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-6. Incentives and Funds To Promote Renewable Energy and Energy Efficiency

Policy Description

This option refers to financial mechanisms for energy efficiency that could increase program participation and investment by providing incentives to a variety of customer classes to improve the energy performance of buildings, equipment, and residences. These incentives could be targeted at residential customers, small businesses, and low-income consumers, as well as to other customer classes, including larger businesses and the industrial sector. A public benefits charge (sometimes call systems benefits charge) is a fee attributed to utility customers based on their use of energy in a given time period. With deregulation in many states, the utility commissions often lost the ability to require electric utilities to implement efficiency programs. 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, or can support implementation of a revolving loan payment, establishment of a micro loan program, and tax incentives. Energy audits should be included to aid in needs assessment and tracking progress toward improvement.

Policy Design

Goals: Offer 1,000 green loans for energy efficiency improvements to low-income residents. Expand energy audit programs by 10% for all sectors and increase annually until 100% saturation is achieved.

Timing: Provide 1,000 green loans between 2010 and 2012 to achieve 50% reduction in energy consumption at low-income residences. Expand energy audit programs.

Implementing Parties: Commercial and industrial energy users in the private and public sectors (including those responsible for mixed-use projects), public agencies, utilities, building design and construction professionals, and lenders.

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-6	Incentives and Funds To Promote Renewable Energy and Energy Efficiency	*Not Yet Quantified*					Pending

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-7. Green Power Purchasing for Consumers

Policy Description

Green power purchasing refers to a variety of consumer-driven strategies to increase the production and delivery of low-GHG power sources, beyond levels achieved through renewable portfolio standards and other mandatory programs. These sources include solar, wind, geothermal, biogas, biomass, and low-impact hydroelectric. Green power purchasing programs provide consumers with information about alternative green sources of energy they can select, rather than the traditional, more carbon-intensive sources.

Policy Design

Goals: Consumer participation in green power purchasing programs equal to 25% of electric facilities supply in AR by 2020. Develop a mechanism that strongly encourages utilities purchasing this power to encourage green power development in Arkansas. Implement programs to provide consumers the option to purchase green power.

Timing: Consumers participate in green power purchasing programs beginning in 2010.

Implementing Parties: State facilities, electric utilities, renewable energy producers, electricity consumers, and buyers of energy-using appliances and equipment.

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-7	Green Power Purchasing for Consumers	*Not Yet Quantified*					Pending

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-8. Nonresidential Energy Efficiency

Policy Description

This policy option removes regulatory impediments and modifies utility rates to remove financial barriers to combined heat and power (CHP). CHP refers to any system that simultaneously or sequentially generates electric energy and utilizes the thermal energy that is normally wasted. The recovered thermal energy can be used for industrial process steam, space and water heating, air conditioning, water cooling, product drying, or nearly any other thermal energy need in the commercial and industrial sector. The end result is significantly increased efficiency over generating electric and thermal energy separately. In fact, many CHP systems are capable of an overall efficiency of over 80%—double that of conventional systems. Another significant advantage is the reduced transmission and distribution losses associated with centralized power generation.

Industrial and commercial facilities served by 480-volt, three-phase power from a utility typically use dry-type transformers to distribute power internally at lower voltages, such as for lighting and plug power. Efficient transformers are able to produce lower losses throughout the period of use. When combined with incentives, the electricity saved by such energy-efficient transformers typically has a 3-year payback period.

Policy Design

Goals: Install additional CHP and waste heat recovery technical potential on 25% of new boiler installations of a minimum size rating consistent with a reasonable payout in the state. Encourage efficient transformers where options for improved energy efficiency are available.

Timing: 2010.

Implementing Parties: APSC.

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-8	Nonresidential Energy Efficiency	*Not Yet Quantified*					Pending

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-9. Support for Energy-Efficient Communities, Including Smart Growth

Policy Description

Smart Growth dictates on how the State will invest its money in community development either by regulating local land-use decisions or by providing incentives to influence those decisions. Existing building and zoning codes often work against Smart Growth development. In the context of greenhouse gas emissions, Smart Growth policies can serve to revitalize and reuse commercial sites and will help preserve critical natural resources and farmland.

Improved community planning aims to create communities that are, among other attributes, livable, designed for reduced use of energy both within homes and businesses and in the transport sector, and have a reduced environmental impact relative to typical developments. Variants on the smart growth concept exist, but many call for clustering living units with easy access (often walking distance) to shops, schools, and entertainment and recreational facilities, incorporating elements of energy-efficient design and renewable energy in buildings, sharing energy facilities between buildings (for example, district heating systems), and preserving open spaces.

These two concepts—significantly improved building energy performance and improved community planning—offer significant synergies for Arkansas. This policy suggests a combination of incentives and targets to induce the owners and developers of buildings and the communities in which they are located to produce and operate buildings and communities that produce markedly lower GHG emissions than existing buildings and communities.

Policy Design

Goals:

By 2009, the State will provide resources for local jurisdictions to examine and rewrite their outdated state and local codes to accommodate for 'Smart Growth' initiatives in community planning and development. Implementing Smart Growth policies are expected to reduce (per unit) energy consumption, GHC emissions, infrastructure costs, and new construction by 30 percent by 2030.

- Design all new buildings, developments, and major renovations to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 50% of the regional average for that building type. At a minimum, renovate an equal amount of existing building area annually to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 50% of the regional average for that building type.
- Increase the fossil fuel reduction standard for all new buildings to:
    - 60% in 2010
    - 70% in 2015
    - 80% in 2020
    - 90% in 2025

- Carbon neutral buildings in 2030 (using no fossil fuel GHG-emitting energy to operate). Implementing innovative sustainable design strategies, generating on-site renewable power and/or purchasing renewable energy and/or certified renewable energy credits may accomplish these targets.
- Identify the link between GHG reductions and land-use planning decisions, as well as the reduction potential and targets for Arkansas.
- Create incentives to encourage smart growth by meeting Built Green Community certification or LEED-ND (LEED for Neighborhood Development) gold level, with minimum energy and location criteria. Encourage compact and transit-oriented mixed-use development within urban growth areas that results in reduced vehicle miles traveled and GHG emissions and encourages walking and biking.
- Improve planning to reduce sprawl modeled after the "California Communities Climate Action Plan."
- Implement executive, legislative, and administrative changes to enhance integrated design of communities, energy systems, and transport systems.
- Promote consideration of location as part of a building's GHG footprint.
- Support growth of local agricultural food production and community-supported agriculture programs. Require that a percentage of all state-funded food be sourced within 100 miles of the user.
- Limit sprawl by enabling transfer of development rights.

Timing: see above.

Implementing Parties: TBD – [as approved by the TWG]

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-9	Support for Energy-Efficient Communities, Including Smart Growth	*Not Yet Quantified*					Pending

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

RCI-10. Energy-Savings Sales Tax

Policy Description

This option refers to a sales tax exemption for energy-efficient products, such as compact fluorescent light bulbs; geothermal heat pumps; highly efficient (>14.4 SEER [seasonal energy efficiency ratio]) heat pump systems (auxiliary heat may be supplied by electricity or natural gas); and Energy Star-certified water heaters, refrigerators and freezers, clothes washers and dryers, and dishwashers. Establishing a market signal that rewards lower-carbon purchase decision making provides consumers with an incentive to improve their energy efficiency and reduce their adverse impacts on climate.

Policy Design

Goals: Implement a sales tax exemption on target products identified above: compact fluorescent light bulbs; geothermal heat pumps; highly efficient heat pump systems; and Energy Star-certified water heaters, refrigerators and freezers, clothes washers and dryers, and dishwashers.

Timing: Implement sales tax exemption by 2010.

Implementing Parties: Retail business and consumers.

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
RCI-10	Energy-Savings Sales Tax	*Not Yet Quantified*					Pending

Data Sources: see RCI-1

Quantification Methods: see RCI-1

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]