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 $)	Cost-Effective-ness ($\$/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 Yet Quantified*					Pending
RCI-6	Incentives and Funds To Promote 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 U,S, 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]

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."

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

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.

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]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

RCI-4. Promotion and Incentives for Improved Building Performance

Policy Description

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: 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]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

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]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

RCI-6. Incentives and Funds To Promote 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 [x] number of green loans by [date]. Expand [x] % of energy audit programs by [date].

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]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

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: Electric facilities purchase green power to cover 25% of their power needs 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 by 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]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

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. Require efficient transformers where options for improved energy efficiency are available.

Timing: 2010.

Implementing Parties: APSC.

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

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

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

Policy Description

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:

- 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: Implementation year of [x, y, z] for each goal [as approved by the TWG]

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

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

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

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.

Timing: Implement sales tax exemption by 2010.

Implementing Parties: Retail business and consumers.

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

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]