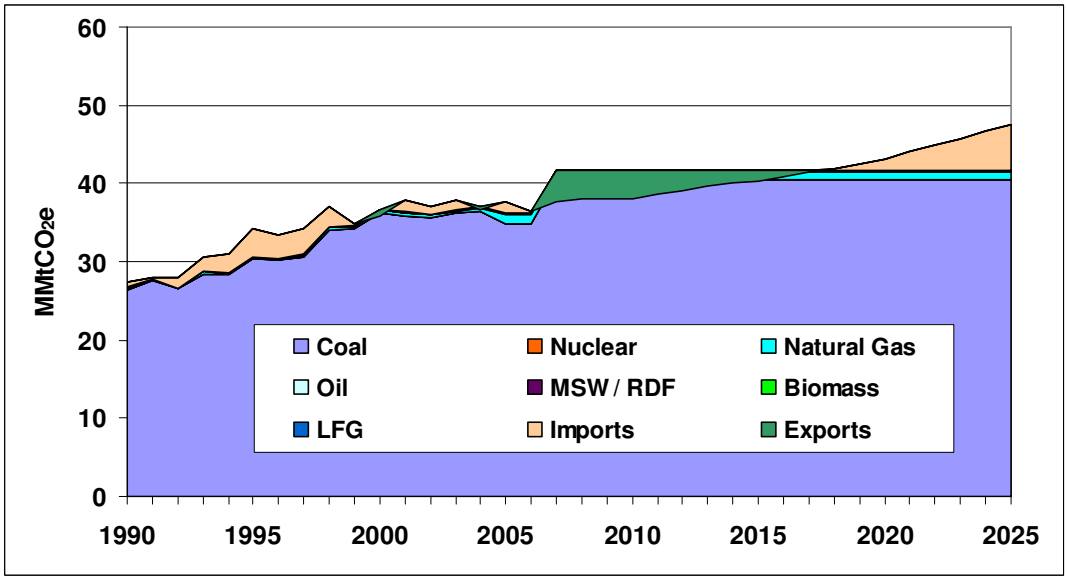
Chapter 4
Clean and Renewable Energy

Overview of Greenhouse Gas Emissions

The energy supply (ES) sector is by far the largest contributor to Iowa's greenhouse gas (GHG) emissions. The 2005 emissions associated with Iowa electricity consumption are estimated at 37.6 million metric tons of carbon dioxide equivalent ($MMtCO_2e$), which is nearly double the next-largest sector of residential, commercial, and industrial (RCI) fuel use. Iowa's GHG emissions from the ES sector are due to the state's reliance on coal as a source of electricity generation. Emissions from the sector are expected to grow by approximately 10 $MMtCO_2e$ through 2025 as demand for electricity increases. This represents approximately 35% of the projected increase in statewide GHG emissions over the period. Iowa Climate Change Advisory Council (ICCAC) stakeholders in the Clean and Renewable Energy (CRE) Subcommittee submitted electricity load growth forecasts that average 1.9% over the 2005–2025 period. However, GHG emissions grow by only 1% per year due to increases in electricity generation from wind resources.

Iowa is expected to be a large importer of electricity in the later years of planning period under the reference case. Figure 4-1 shows the breakdown of GHG emissions on a consumption basis through 2025 by fuel type. Sectoral emissions on a production accounting basis are lower in 2025 than in the reference case (41.8 $MMtCO_2e$), due to the imported power that is excluded from this inventory method. However, under the two sensitivity cases forecasted, energy production 2025 emissions are estimated at 45.44 $MMtCO_2e$ for the Sutherland scenario, and 50.09 $MMtCO_2e$ for the Elk Run scenario (not shown).

Figure 4-1. Historical and projected GHG emissions from Iowa power plants: 1990–2025



Source: Figure A5. Final Iowa Greenhouse Gas Inventory and Reference Case Projections 1990_2025. http://www.iaclimatechange.us/Inventory_Forecast_Report.cfm.

$MMtCO_2e$ = million metric tons of carbon dioxide equivalent; LFG = landfill gas; MSW = municipal solid waste; RDF = refuse-derived fuel.

Key Challenges and Opportunities

There are significant opportunities to reduce GHG emissions growth associated with energy production and supply in Iowa, such as promoting distributed renewable generation, combined heat and power applications, investing in technology research and development (R&D) in the state, and diminishing the carbon intensity of electrical generation through greater use of renewable energy and nuclear power. There are also significant opportunities to reduce GHG emissions through policies addressing electricity consumption, and these can often provide cost savings as well as GHG mitigation benefits. In Chapter 3, Energy Efficiency and Conservation (EEC), interested readers can find the 14 policy options that the ICCAC has presented for the residential, commercial, and industrial sectors to improve the efficiency of electricity consumption.

The ICCAC is presenting several policies to increase the efficiency of electricity generation within the ES sector. These include expanding combined heat and power (CHP) production for commercial, industrial, and biofuels processors (CRE-12) and distributed generation (CRE-11), which includes some small CHP applications.

Iowa has some of the largest renewable energy resource supplies in the country in the form of wind and biomass energy. The ICCAC presents options for promoting the development of these resources through a number of policies designed to address the various barriers to realizing the potential for renewable resources. Implementation of renewable resources can be encouraged through feed-in tariffs; direct financial support for biomass and other resources; renewable electricity targets; and performance standards that reduce the CO_2 intensity of generation resources over time. Smaller, distributed resources can be specifically targeted through actions to reduce financial, permitting, and interconnection barriers. Technology R&D can encourage market acceptance of a variety of technologies by lowering the cost or improving the performance of renewable generation, and by encouraging collaboration between R&D, government, academic, and commercial sectors. R&D activities also produce employment and economic development benefits in the state.

Overview of Policy Options and Estimated Impacts

The ICCAC presents a set of 13 policies for the ES sector that offer the potential for significant GHG emission reductions in Iowa. Eight of these have been quantified to estimate the potential for avoided GHG emissions. Figure 4-2 shows the percentage of potential GHG reductions from five CRE policy options with reductions that don't overlap with other options. If implemented together, the quantified policy options could lead to:

- Emission reductions of 48 million metric tons of carbon dioxide equivalent ($MMtCO_2e$) per year by 2020, and 233 $MMtCO_2e$ cumulative savings from 2008 through 2020.
- Net costs of almost $6.0 billion through 2020 on a net present value basis.[1] The weighted-average cost of these policies is approximately $25/$MMtCO_2e$.

[1] The net cost savings, shown in constant 2005 dollars, are based on fuel expenditures; operations, maintenance, and administrative costs; and amortized, incremental equipment costs. All net present value analyses here use a 5% real discount rate.

- The rate impacts of the policy options vary depending on the scale of the policy. A few of the options have negligible or modest potential impacts on ratepayers. Others, like CRE-2, which incentivizes the development of the majority of the estimated renewable electricity supplies in the state, could raise generation costs by up to $26 per megawatt hour (MWh). However, given that 50% of retail electricity sales could come from renewables sources under this policy, it is likely that the electricity generated by this type of policy would be sold to parties outside the state which could instead be a source of revenue to Iowa.

Six of these policies were approved unanimously by the ICCAC, five with a super majority, and two with majority support. Table 4-1 shows the GHG reductions, costs, and levels of support for the 13 policy options.

One of the options increases the human capital component of energy production and consumption by enhancing education about the effects of climate change and giving workers the skills necessary for a green-collar economy. Many of the options focus on economic incentives to make clean sources of electricity competitive with more carbon intensive sources (CRE-2, CRE-8, CRE-11, CRE-12, CRE-13). Other options require producers to deploy more climate-friendly generation resources (CRE-5). One option levies a fee based on the carbon content of generation in order to fund energy efficiency and renewable sources of energy (CRE-4). The most complex option (CRE-3) links Iowa's GHG reductions efforts with the cap and trade program being developed by the Midwestern Governors Association (MGA). Getting clean electricity to the end user is a challenge, given the status of existing transmission and distribution (T&D) assets and that renewable resources are often sited far from demand centers. This is an issue even for the wind resources that are assumed to be built in the reference case for the Iowa Inventory and Forecast. CRE-9 incentivizes upgrading of the T&D system in order to get clean energy to the market. Two of the options incentivize the production of electricity at the point of the end user (CRE-11, CRE-12).

The totals reported at the bottom of Table 4-1 take into account overlaps in the expected emissions reductions and costs among some of the policies within the ES sector, as well as between policies in the ES, RCI, and agricultural, forestry, and waste management (AFW) sectors. Care was taken in the determination of benefits from each of the sectors to ensure that the combined calculated impact of the policies would not double count benefits that overlap.

CRE-2 (Renewable Technologies Initiative)—This option encompasses the estimated supply curve for renewable electricity through 2020. It is likely that the electricity generated by the new renewable energy sources that are developed pursuant to CRE-2 will be purchased by the large power producers that are required to comply with the clean energy targets of CRE-5. Therefore, the reductions of CRE-5 are subtracted from CRE-2.

CRE-8 (Renewables Targets)—The renewables targets under this option are similar, but less aggressive than what is forecasted to occur under CRE-5. Similar generation mixes are expected under either approach. The reductions from this option are eliminated through the overlap analysis.

CRE-13 (Pricing Strategies)—This option promotes the use of net metering and feed-in tariffs to deploy clean energy technologies at the point of customer use. For renewables, there is very little overlap with other CRE policy options because the other options promote the deployment of

large-scale renewable energy projects, like wind farms and co-firing biomass in pulverized coal boilers, while this option sites small-scale renewables. However, the CHP element of this option could overlap with CRE-12 (Combined Heat and Power) for industrial or commercial customers who might site microturbines or other CHP technologies at the point of use. For this reason, the electricity generation and associated carbon dioxide (CO_2) reductions from this option are reduced by 50%.

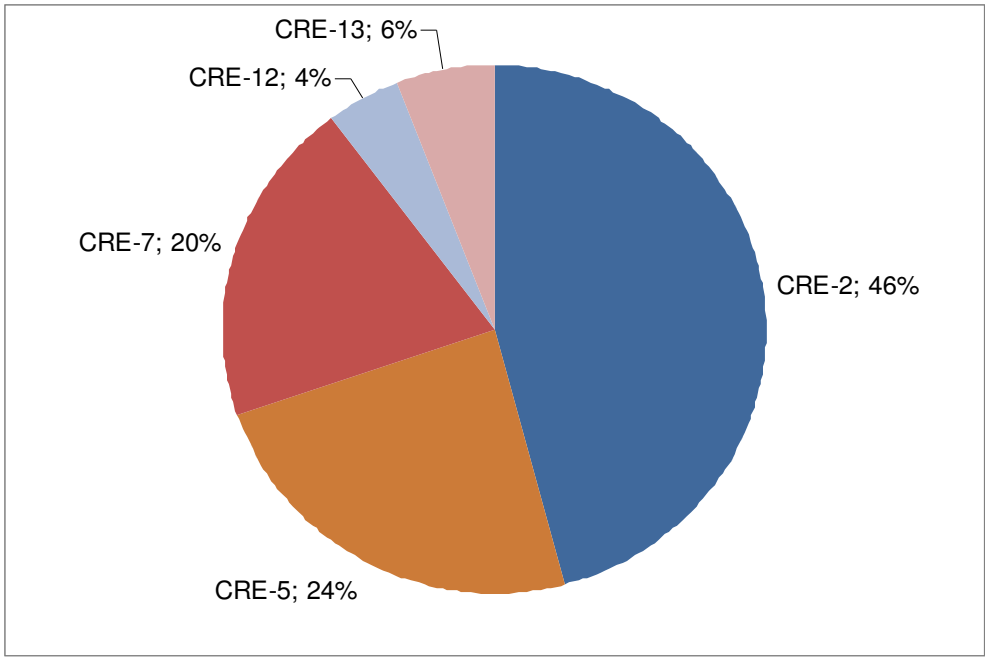
CRE policy options also overlap with other sectors. CRE-4 (Decarbonization Fund) levies a fee based on the greenhouse gas emissions from electric generation to transition to a new, non-emitting and low emitting sources of electricity by funding specified activities such as low income weatherization, energy efficiency, research and development and renewable sources of energy . The renewables and energy efficiency deployment from this option are assumed to overlap with other CRE and EEC options.

CRE-2 also overlaps with policy options AFW-3 and AFW-9. The reductions from the AFW sectors are assumed to completely overlap with CRE-2, and are subsumed under the CRE option.

The electricity energy efficiency investments from the suite of EEC policy options reduce electricity demand and thus make it possible to meet renewable energy mandates more cost-effectively. For example, under EEC-12, electricity demand in 2020 is reduced by almost 5,000 gigawatt-hours (GWh) versus the reference case. CRE-8b assumes a 20% renewables target by 2020, which is 4% more renewable energy sources (as a percentage of retail sales) than is forecasted under the reference case. Therefore, the implementation of EEC-12 would require 200 GWh fewer of renewable resources to meet the renewables target. Using the renewable energy cost assumptions for CRE-8b, the reduced spending on renewables that cost more than reference case generation in 2020 would result in savings of $0.3 million in that year.

Finally, an additional feedback is that certain CRE policies will have the effect of reducing the GHG emissions associated with energy production, so that EEC policies that target electricity use will have a reduced impact on overall emissions. However, this impact is small and has not been reflected in the analysis beyond the avoided CO_2 methodology that assumes in the later years of the program that 21% new renewables are avoided by implementing the EEC options. (The CRE methodology does not include avoided renewables, because doing so would contradict the goals of the CRE options.) See Annex A in the CRE Appendix for a discussion of the avoided CO_2 methodology.

Figure 4-2. Percentage of avoided greenhouse gas emissions by CRE policy: 2008–2020



* These are the reductions from the policy options, *net of overlaps between options*.

Table 4-1. Summary list of policy options

No.	Policy Options	GHG Reductions ($MMtCO_2e$) 2012	2020	Total 2009–2020	Net Present Value 2009–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Change in Generation Cost in 2020 $/MWh*	Level of Support
CRE-1	Education	*Not quantified*						Unanimous
CRE-2	Technology Initiatives, Including Renewables	4.7	33.4	192.6	$5,653	$29.4	$25.7	Super Majority (3 objections)
CRE-3	MGA Cap and Trade, Including Offsets To Promote Renewables	*Not quantified*						Majority (5 objections)
CRE-4	Decarbonization Fund	2.2	11.4	74.1	$316	$4.3	$3.1	Super Majority (2 objections)
CRE-5	Performance Standards (50% Reduction by 2050)	4.9	11.4	95.4	$2,650.6	$27.8	$7.3	Super Majority (3 objections, 1 abstention)
CRE-6	Voluntary GHG Commitments	*Not Quantified*						Unanimous
CRE-7	Policies Related to Nuclear Power	0.0	9.7	9.7	$268	$27.6	$4.5	Majority (5 objections)
CRE-8	Support for Grid-Based Renewable Energy & Development (MGA Target of 20% of retail sales by 2020)	0.0	2.3	4.3	$93.4	$21.8	$1.5	Unanimous
CRE-9	Transmission System Upgrading	*Not quantified*						Unanimous
CRE-10	R&D for Emerging Technologies and Corresponding Incentives	*Not quantified*						Unanimous
CRE-11	Distributed Generation/Co-Generation	0.0	0.1	0.5	$14	$29.1	$0.1	Super Majority (1 objection)
CRE-12	Combined Heat and Power	0.3	2.1	13.6	–$564.3	–$41.4	$0.0	Unanimous
CRE-13	Pricing Strategies To Promote Renewable Energy and/or CHP	1.2	5.6	35	$1,128	$32.1	$4.7	Super Majority (3 objections)
	Sector Total After Adjusting for Overlaps	**6**	**48**	**233**	**$5,921**	**$25**		
	Reductions From Recent Actions	**0.0**	**0.0**	**0.0**	**$0.0**	**$0.0**		
	Sector Total Plus Recent Actions	**6**	**48**	**233**	**$5,921**	**$25**		

CO_2 = carbon dioxide; $MMtCO_2e$ = million metric tons of carbon dioxide equivalent; $/tCO_2e$ = dollars per metric ton of carbon dioxide equivalent; $/MWh = dollars per megawatt-hour; MGA = Midwestern Governors Association; GHG = greenhouse gas; per year; R&D = research and development; CHP = combined heat and power.

* Represents the change in the cost of generation in $/MWh in the Policy case from the No-Policy case to meet Iowa's electricity demand or for exports. This is one measure of the possible rate impacts to customers from the policies.

Negative values in the Net Present Value and the Cost-Effectiveness columns represent net cost savings.

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

The options offered here present a balanced portfolio of policies to significantly reduce GHG emissions associated with electricity supply in Iowa. Iowa's considerable natural endowments of wind and biomass resources, coupled with its low population density, positions Iowa as a leader in the region and the nation to deploy clean energy. The state can benefit from developing and selling these resources to trading partners who don't have Iowa's resources or have moved more slowly. For Iowa to capture these economic advantages, the suite of policy options offered here needs to be authorized and implemented in a timely, consistent, and thorough manner.

Clean and Renewable Energy Policy Descriptions

CRE-1. Education

By unanimous approval, the ICCAC presents a policy option directed at education and outreach for the purposes of nurturing public consciousness of climate change issues, as well as providing technical skills training for employment in positions that directly support GHG emission reduction activities. Broad awareness engages citizens of all ages to take direct action to reduce GHG emissions through personal and public means. It also builds grass-root support for government, industrial, and civil society actions with regard to GHG emission reduction programs, policies, or goals. Technical instruction and training of citizens will provide the number of skilled employees needed to fill critical jobs in the new and growing industries that will provide emission reductions and clean energy.

Beginning in the 2010 academic year, the goals of this policy option focus on developing, implementing, and executing a statewide climate change control awareness education and job-training program that: provides a platform that, along with imparting knowledge; encourages a bias for action on the part of all Iowans; provides a specified environmental education curriculum to primary, secondary, and post-secondary audiences within the state; provides continuous public exposure through a variety of communications channels to educate and enhance the awareness of Iowans about environmental issues; provides technical job training in support of the growing need by Iowa's renewable energy industries for skilled workers; and develops statewide environmental literacy. The policy is implemented by elementary and secondary school districts, municipal governments, the three Regents state universities, Iowa community colleges, and community partners/associations.

CRE-2. Technology Initiatives, Including Renewables

By a majority approval, the ICCAC presents a policy option that deals with the implementation of CRE technologies that are currently commercially available. Iowa can undertake initiatives focused on developing, promoting, and/or implementing one or more specific technologies that show promise for reducing GHG emissions. This policy would support providing state government and other private and public parties with resources and incentives for analysis, targeted R&D, market development, and adoption of GHG-reducing technologies that are not covered by other CRE policies.

CRE-2 has specific goals for annual increases of renewable electric production in Iowa subject to maximum feasible supply constraints: landfill gas-to-energy projects—9,000 megawatt-hours (MWh), municipal waste—65,500 MWh, wind energy—2.6 million MWh, biomass cofiring of agricultural residues—3,600 MWh, biomass from energy crops—760,000 MWh, and repowering hydropower facilities—112,000 MWh.

CRE-3. Midwest Governors Cap and Trade, Including Offsets To Promote Renewables

By a majority vote, the ICCAC presents a policy option for Iowa's participation in the Midwest Governors Cap and Trade program. A cap-and-trade system is a constructed market-based compliance mechanism in which GHG emissions are limited to a specified amount (i.e., the cap), and entities subject to the cap can buy and sell (i.e., trade) emission allowances. In theory, a properly designed cap-and-trade system of sufficient market size can lower the cost of compliance of meeting the emissions cap to all entities involved. This is possible because participants with a lower cost of compliance can reduce emissions below their allocation and sell their additional allowances to a participant with a cost of compliance that is otherwise higher than the market allowance price. The goals of this policy are assumed to be those adopted by the MGA cap-and-trade program. The ICCAC should revisit what action to take on this option once the MGA cap levels and model rule have been developed. The policy would start in concert with other MGA actions. The larger the scope of a cap-and-trade program, the more likely the odds of lowering the cost of compliance for all participants. Thus, a federal cap-and-trade program is recommended as the first choice. A regional cap-and-trade program, such as the MGA Accord, is the second-best choice and is also the minimum size recommended for a cap-and-trade program. A state-level program is not likely to be a cost-effective option; therefore, it is not recommended.

CRE-4. Decarbonization Fund

By a super majority vote, the ICCAC presents a policy option for the adoption of a fee on each ton of CO_2 emissions produced by the electricity supply sector to transition to a new, non-emitting and low-emitting sources of electricity. The most important policy aspect of a decarbonization fee is that the revenue generation potential of even a small fee, feeding into a targeted decarbonization fund, can be significant. Given this, the monies derived from a decarbonization fee can provide a strong incentive toward GHG emission reductions. Thus, the most effective decarbonization fee design would include both the front-end variables (i.e., the covered GHGs, the amount levied per ton of emissions) and the back-end variables (i.e., where revenue is housed, how revenue is utilized). To help mitigate the potential impacts on the economy, the decarbonization fee should be phased in and capped at a reasonable rate, allowing for long-term planning by consumers. Therefore, as a starting point for the analysis, it is recommended that the decarbonization fee for electric generation begin at $1/metric ton (t) of CO_2 in 2010, and increase by $1/year until a cap of $10/t$CO_2$ is obtained in 2019. The funding in 2019 is estimated at $320 million. This funding could only be used for energy efficiency, renewable energy development, R&D, and low-income weatherization assistance programs and initiatives.

CRE-5. Performance Standards

By a supermajority vote, the ICCAC presents a policy option for generation performance standard (GPS) to be applied to the electricity supply sector. A GPS is an emissions rate hurdle that must be met for compliance by sources supplying electricity to consumers in Iowa. A GPS can be applied to new generation or can include the system-wide emissions rate of an entity's

generating fleet. The ICCAC presents two GPS targets for policymakers to choose from: either 5(a) which is the less aggressive option targeting a 50% reduction in CO_2 intensity per MWh from 2005 emission levels by 2050, or the more aggressive 5(b) option targeting a 90% reduction goal from 2005 emissions levels by 2050.

CRE-6. Voluntary GHG Standards

By a unanimous vote, the ICCAC presents a policy option for adopting standards to recognize voluntary GHG reductions by entities in the state. The standard provides an incentive for companies that are voluntarily addressing global climate change through proactive and innovative measures, including setting targets for GHG emission reductions, implementing innovative energy supply and demand solutions, improving waste management practices, participating in emissions trading, and investing in carbon sequestration opportunities and research. The goals for an Iowa voluntary GHG program include: encouraging Iowa businesses and citizens to voluntarily begin reducing GHG emissions immediately, without waiting for mandatory Iowa or national GHG reduction program measures; obtaining voluntary commitments from each of Iowa's investor-owned utilities to reduce GHG emissions by at least 6% below the baseline year 2005 emissions by 2010; and obtaining similar commitments from 25% of Iowa's GHG-emitting private businesses. Also, the voluntary standards should provide rate-regulated utilities assurance of cost recovery for voluntary GHG reduction measures that are previewed and approved as prudent and reasonable by the Iowa Utilities Board.

CRE-7. Policies Related to Nuclear Power

By a majority vote, the ICCAC presents a policy option that, if deemed necessary, would build one new 1200-megawatt nuclear power plant in Iowa by January 1, 2020. It is currently estimated that it would take approximately 10–12 years to design, permit, and construct a new nuclear power plant. Therefore, steps should be taken today if Iowa chooses to employ nuclear power as part of a balanced and diversified energy portfolio that achieves Iowa's long-term carbon emission reduction goals. The focus of this particular option is to determine the economic feasibility of nuclear power in a carbon-constrained environment, and to define specific state legislative and regulatory actions to facilitate licensing, financing, and construction of a new nuclear power plant in Iowa. There are considerable uncertainties about the cost characteristics of new nuclear power. The latest numbers for nuclear power, based on an average of data prepared by Progress Energy Florida and Florida Power and Light, estimate the total levelized unit cost of nuclear power is $100/MWh ($2006 dollars) generated.[2] This is nearly double the $52/MWh used in the quantification for CRE-7 in Iowa.

[2] Assumes a useful life (and life for calculation of annualized capital costs) of 40 years, a capacity factor of 91%, an average installed capital cost of $7,091/kW, $79/kW−yr fixed O&M costs, $3.1/MWh variable O&M costs, $15/MWh fuel costs, and a 8.5%/yr weighted-average cost of capital. See: http://www.flclimatechange.us/ewebeditpro/items/O12F19875.pdf.

CRE-8. Support for Grid-Based Renewable Energy and Development

By a unanimous vote, the ICCAC presents a policy option for financial incentives to encourage investment in renewable energy resources by businesses and individuals who sell power commercially. The policies help overcome financial barriers and increase incentives for renewable energy development. Institutional barriers—such as low market prices, the inability of the market to assign values to the public benefits of renewables and the social costs of fossil fuel technologies, high transaction costs relative to smaller project sizes, and high financing costs because of lender unfamiliarity and perceived risk—can be overcome through a suite of financial and regulatory incentives for renewable energy development. These policies and incentives can include direct subsidies for buying or selling renewable generation equipment, tax credits or exemptions for buying or selling renewable generation equipment, government-sponsored or -facilitated loan programs for buying renewable generation equipment, tax credits, or direct subsidies for each kilowatt-hour (kWh) generated or sold from renewable generation facilities.

This option includes two different pathways for promoting renewable energy development. CRE-8a (More aggressive case) increases grid-based renewable electric production in Iowa by 400,000 MWh (400 GWh) of generation in the first year and growing by 1% of retail MWh sales each year thereafter. This policy adds an average of 521 GWh of new renewable resources per year over 2012–2020, and results in incremental renewables generation equal to 3.7% of retail sales by 2015, and 8.2% of retail sales by 2020. Including assumed reference case renewables deployment, CRE-8a results in approximately 24.2% of renewables as a percentage of retail sales by 2020, and 32.2% by 2030. CRE-8b (Less aggressive case) reflects the MGA renewable energy goal, which is a goal for the Midwest region equivalent to 10% of retail MWh sales by 2015, 20% by 2020, and 30% by 2030. CRE-8b results in new renewables generation equal to 4% of retail sales by 2020, and additional increments equal to 1% of retail sales each year thereafter. Including assumed reference case renewables deployment, CRE-8b results in the MGA target of 20% of renewables as a percentage of retail sales by 2020, and 30% by 2030.

CRE-9. Transmission System Upgrading

By a unanimous vote, the ICCAC presents a policy option to upgrade Iowa's transmission system. The policy's goals are to research how implementing modern grid technologies would enable a more efficient and intelligent transmission system; identify specific legislative and regulatory actions that would be needed to support long-term, cost-effective alternatives that increase transmission system capabilities; and commission a study that would identify areas in Iowa's transmission system where upgrading and/or expanding transmission would enable the state's wind resources to be developed for Iowa users and for potential exports to other states.

CRE-10. Research and Development (R&D) for Emerging Technologies and Corresponding Incentives

By a unanimous vote, the ICCAC presents a policy option for supporting R&D of emerging technologies to develop demonstration projects and eventual commercialization of reasonable-cost generation technologies with low or zero GHG emissions. Technology areas often cited as

requiring such reasonable-cost developments are CO_2 capture and storage (e.g., in deep saline aquifers or coal seams) for fossil fuel facilities, and large-scale baseload renewable energy or technologies that can transform intermittent renewables into baseload generation (e.g., batteries, compressed air storage). A small fee per kWh of electricity could generate significant funding for R&D and commercialization. By 2010, the policy would begin to implement the R&D funding mechanisms.

CRE-11. Distributed Generation/Co-Generation

By a super majority vote, the ICCAC presents a policy option focusing on encouraging investment in small-scale distributed generation (DG) through incentives or subsidies and the prevention of barriers for both utility and consumer investment, with a goal of deploying 7500 MWh per year of new distributed renewable generation by 2010 and continuing each year thereafter. DG can be encouraged by ensuring access to the grid under uniform technical and contractual terms for interconnection that are based on best practices, so that owners know in advance the requirements for parallel interconnection and manufacturers can design standard packages to meet technical requirements. Changes that generally facilitate the integration of customer-owned DG with the grid could encourage the adoption of specific renewable energy and high-efficiency technologies, including solar photovoltaic systems, fuel cells, and microturbines. Uniform requirements for emissions, land use, and building codes should be established that are based on the technology of electricity generation, so that manufacturers can design suitable units and owners of distributed generators are not restricted in their siting and operating decisions relative to other new sources of generation.

CRE-12. Combined Heat and Power (CHP)

By a unanimous vote, the ICCAC presents a policy option to promote CHP technology, which recovers waste heat from energy production for productive use. The key to implementing CHP systems is to provide adequate incentives for the development of infrastructure to capture and utilize the waste heat. Such incentives could come in many forms, such as recruiting suitable end users to the area, tax credits, grants, zoning, and offset credits for avoided emissions. Studies indicate substantial opportunities for electricity generation at commercial and industrial facilities in the state. In addition, Iowa's leadership as a biofuels producer is a significant source of CHP electricity, where the waste heat from electricity generation can be used to refine biofuel feedstocks.

CRE-13. Pricing Strategies To Promote Renewable Energy and/or CHP

By a super majority vote, the ICCAC offers this policy option focusing on creating pricing and metering strategies that can encourage consumers to implement CHP, renewable energy, and overall reductions in GHG emissions. Pricing strategies, such as feed-in tariffs, provide minimum utility purchase rates for DG. Net metering is a policy that allows owners of DG (generating units on the customer side of the meter, often limited to some maximum kW level) to generate excess electricity and effectively sell it back to the utility by "turning the meter backward." Implementation of pricing strategies, such as feed-in tariffs, must be considered in

light of existing rules, such as the Federal Energy Regulatory Commission's avoided cost standard. The goal of this option is to achieve a 10% shift to renewable energy sources, as a percentage of retail sales, through implementation of various pricing strategies. The policy begins with a 1% shift achieved in 2010, and continues with linear growth through 2019.