Report of the Illinois Climate Change Advisory Group

Submitted to
Governor Rod R. Blagojevich

Executive Summary

IS GRAPHICS 2008

Cover Photos: (top, left to right) methane power generation at central Illinois landfill; Chicago expressway; central Illinois wind energy farm (bottom, left to right) methane digester at dairy farm in northern Illinois; power plant in central Illinois; compact fluorescent bulbs on sale in Illinois hardware store.

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Background

On October 5, 2006, Governor Blagojevich launched his Global Warming Initiative by signing an Executive Order that created the Illinois Climate Change Advisory Group (ICCAG). The Advisory Group was chaired by Doug Scott, Director of the Illinois Environmental Protection Agency (Illinois EPA), and included 39 other members representing local government; labor unions; public transit; scientists; environmental, consumers, and faith-based groups; and the following industries: agriculture, utilities, power generators, auto manufacturing, farm and construction equipment, oil, insurance, and waste management. Three Vice Chairs were also appointed to help guide the process: Michael Carrigan, AFL-CIO; Arthur Gibson, Baxter Healthcare; and Howard Learner, Environmental Law and Policy Center.

The Governor charged the ICCAG with recommending state-level strategies to meet his statewide greenhouse gas (GHG) reduction goals, which are similar to goals set by other states and those proposed in Congress:

- 1990 levels by 2020
- 60 percent below 1990 levels by 2050

Scientists believe that greenhouse gas reductions of this magnitude are needed to avoid significant consequences due to climate change.

Key Findings

ICCAG members voted on 24 strategies to reduce greenhouse gas emissions in Illinois. ICF International (ICFI), a global energy and environmental consulting firm, was retained to model the emissions and economic impacts of different policy scenarios. ICFI's modeling found that implementing the 24 strategies voted on by ICCAG members would meet the Governor's goal for reducing greenhouse gas emissions to 1990 levels by 2020.

In addition, ICFI's modeling found that executing all 24 strategies to reduce greenhouse gases would benefit the Illinois economy compared to taking no action to address climate change. According to ICFI, these economic benefits include cutting average electricity costs by more than 3 billion dollars per year in 2020 as well as boosting the gross state product and personal disposable income by billions of dollars while creating tens of thousands of new jobs.

At its July 10th meeting, ICCAG members voted to support nineteen strategies with no dissent and at least one abstention. At the September 6th meeting, a majority of voting ICCAG members voted to support an additional five strategies with eight to ten members dissenting and several members abstaining. These strategies are listed below:

Nineteen Strategies Supported by ICCAG Members with No Dissent	
Brief Description of Strategy	**Subgroup**
Implement smart growth initiatives and expansion of mass transit	Transport
Incentives for fuel efficient vehicles	Transport
Low-carbon fuels standard	Transport
Fuel efficiency and/or low carbon fuel requirements for all government vehicles	Transport
Passenger and freight rail upgrades	Transport
Small renewable distributed generation: rules, legislation, incentives	Power/Energy
Energy efficiency standards for appliances and equipment	Power/Energy
Establish residential and commercial energy efficiency construction codes beyond international standards; includes government buildings.	Power/Energy
Phase-in of energy efficiency standards for light bulbs	Power/Energy
Energy conservation and efficiency programs for existing state facilities	Power/Energy
Enhanced renewable portfolio standard of 25 percent by 2025	Power/Energy
Enhanced energy efficiency: 2 percent demand reduction by 2015. No revenue cap.	Power/Energy
Programs to encourage forest management, reforestation, tree- and grass-planting	Commercial, Industrial, Agriculture (CIA)
Energy efficiency incentives, assistance and standards for commercial/industrial generators and boilers	CIA
Expand use of no-till farming	CIA
Encourage methane capture from coal mines, landfills, livestock farms and wastewater treatment plants.	CIA
Increase traditional recycling diversion rate with municipal goals and by stimulating demand for recycled materials	CIA
Land use development offset requirement	CIA
Encourage or require reductions in emissions of high GWP gases (N2O, HFCs, PFCs, SF6)	CIA

Five Strategies Supported by a Majority of Voting ICCAG Members	
Brief Description of Strategy	**Subgroup**
GHG emissions standards for automobiles	Transport
CO2 emissions performance standards for electricity generation or purchases electricity (new generation only)	Power/Energy
Carbon capture & storage (from the outset) portfolio standard of 5 percent. Utilities must buy if available.	Power/Energy
20 percent carbon offset requirements for new fossil fuel power plants	Cap and Trade
Cap-and-trade program for power generators and relatively large industrial sources; preference to link with other states	Cap and Trade

The vote tallies for the five strategies supported by a majority of voting ICCAG are as follows:

- Cap and trade program
  In favor: 21 Opposed: 10 Abstaining: 3
- Require GHG Emissions Standards for Cars
  In favor: 20 Opposed: 8 Abstaining: 5
- 20 percent carbon offset requirement for new fossil fuel power plants
  In favor: 19 Opposed: 8 Abstaining: 3
- Adopt a carbon capture and storage portfolio standard
  In favor: 20 Opposed: 8 Abstaining: 2
- CO2 emission performance standards for electricity generation and purchased electricity (new generation only)
  In favor: 20 Opposed: 8 Abstaining: 2

Potential economic impacts were discussed extensively by the ICCAG, and ICFI modeling indicated macro-level economic benefits from implementing the 24 strategies compared to taking no additional steps to reduce GHG emissions. However, some members voted against these five strategies largely due to concerns about potential negative economic and employment impacts in specific sectors (i.e., conventional coal-fired electric generation); these dissenting members also argued that these strategies should only be implemented at the national level.

Description of the ICCAG Process

The ICCAG process was designed to be transparent, inclusive, and collaborative. ICCAG meetings and conference calls were open to other stakeholders and the general public, and anyone who participated was given the opportunity to raise questions, concerns, and other issues. All major decisions regarding policy proposals were vetted through ICCAG subgroups and the full ICCAG. All information prepared in support of the process, and any written comments from members and non-members, were posted on the web at *www.ilclimatechange.org.*

ICFI was retained to model the emissions and economic impacts of different policy scenarios. ICFI is a global energy and environmental consulting firm based in Washington, D.C., with a staff of over 1,500 consultants in 20 offices. The firm's clients include the Canadian government, the US federal and state governments, the EU, and several oil and gas producing nations.

The World Resources Institute (WRI) was retained to assist in the facilitation of ICCAG meetings and to provide technical expertise. WRI is a Washington D.C.-based environmental research and policy organization, and their climate change experience includes co-authoring the standard for measuring and reporting GHG that is used by companies throughout the world. They have provided similar assistance to northeastern states, western states, and Wisconsin. WRI prepared an inventory of Illinois GHG emissions (1990-2003) and projections for future emissions through 2020 to help guide the ICCAG's development and assessment of policy options to meet the Governor's goal. A variety of other background documents were also prepared throughout the process to better inform ICCAG members.

WRI developed an initial list of 88 policy options for reducing GHG emissions that was narrowed down by ICCAG members to 25 through an anonymous, on-line voting process. These

25 policy options were assigned to four subgroups to formulate policy proposals that could be modeled for their emissions and economic effects. A fifth subgroup was created to oversee the modeling process. The subgroups were chaired by the ICCAG chair and vice chairs:

1. Power and Energy: Chair, Howard Learner, Environmental Law and Policy Center
2. Transportation: Chair, Michael Carrigan, AFL-CIO
3. Cap and Trade: Chair, Doug Scott, Illinois EPA
4. Commercial, Industrial, and Agricultural: Chair, Arthur Gibson, Baxter Healthcare
5. Modeling: Chair, Doug Scott, Illinois EPA

Illinois EPA and other state agencies such as the Illinois Department of Commerce and Economic Opportunity (DCEO) helped staff the ICCAG process.

Illinois Climate Change Advisory Group Timeline			
Event	**Location**	**Date**	**Subjects**
Meeting 1	Chicago	February 22, 2007	• Review ICCAG's mission • Process overview; ground rules • IL GHG inventory and forecast • Overview of Gov.'s energy plan • Introduction of policy options • Discussion of modeling strategy
Meeting 2	Chicago & Springfield via video conference	April 3, 2007	• Updates to IL GHG inventory and forecast • Results of policy option voting • Formation of subgroups and tasks • Update on selection of modeling contractor
Meeting 3	Chicago & Springfield via video conference	May 23, 2007	• Presentation on the Energy 2020 model by ICF International • Subgroup recommendations for policies to be modeled • Discussion and action on subgroup recommendations • Modeling assumptions and the Modeling Subgroup's role
Meeting 4	Chicago & Springfield via video conference	July 10, 2007	• Review of modeling results and input by the Modeling Subgroup • Reference Case modeling results • Preliminary Policy Scenario modeling results • Discussion of modeled policies • 19 strategies supported by ICCAG members with no dissent
Meeting 5	Chicago & Springfield via video conference	September 6, 2007	• Emissions inventory update • Review of Final Reference Case modeling results • Review of Final Policy Scenario modeling results

			• Majority of voting ICCAG members supported five additional strategies

The subgroups were allowed to add or delete policy options under their consideration as long as ICCAG members agreed. After many conference calls and hours of discussions that were open to the public, the subgroups recommended 24 policy proposals for modeling. Of the 24 proposals, four were new proposals not in the top 25 list. Two proposals from the top 25 list were not recommended, and six from this list were combined into three proposals.

Among the 24 proposals was a market-based "cap and trade" program to reduce GHG emissions from fossil fuel power plants and other relatively large emitters. Under a cap and trade program, the total pool of emissions are initially limited, or capped, to a set amount that shrinks over time, and sources that stay below their allotted emissions can sell emissions "allowances," or allotments, to sources that exceed their allowable limits.

ICFI developed a detailed forecast of emissions and economic trends under "business as usual" conditions through 2020, which is called the reference case. It assumes a continuation of current economic trends and the associated GHG emissions and reflects, to the extent possible, recently enacted policies and new projects that could affect GHG emissions trends. The reference case serves as a point of comparison in analyzing the GHG reductions from strategies included in the proposed policy scenarios.

Because no single strategy alone can achieve the Governor's goals, ICFI modeled the emissions and economic effects of four policy packages (scenarios) recommended by the Modeling Subgroup:

Scenario #1. All 24 strategies except for cap and trade.
Scenario #2. All the strategies including an Illinois-only cap and trade program.
Scenario #3. All the strategies including cap and trade with a link to the Northeast States' Regional Greenhouse Gas Initiative (RGGI) cap and trade program.
Scenario #4. The same as #2, but with an assumption of high oil and gas prices.

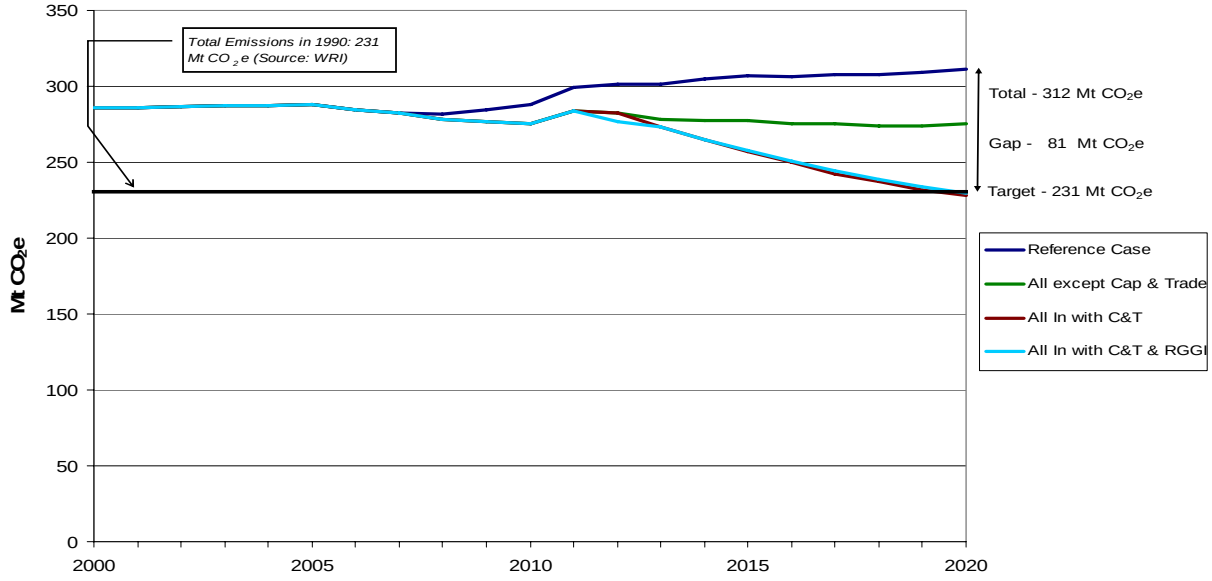
By 2020, Illinois GHG emissions are projected to be 81 million metric tons above 1990 levels.

ICFI projects that Illinois GHG emissions will grow to 312 million metric tons of CO_2 equivalents* (Mt CO_2e) by 2020 under the business as usual scenario. In order to meet the Governor's goal of reducing greenhouse gas emissions to 1990 levels (231 Mt CO_2e) by 2020, emissions in 2020 would need to be 81 Mt CO_2e less (312 minus 231) than what ICFI projects for the business as usual scenario. Current annual GHG emissions in Illinois are about 276 Mt CO_2e, or 45 Mt CO_2e, above 1990 levels.

* CO_2 equivalent provides a standardized unit of measurement to represent various greenhouse gases that have different global warming potentials relative to the global warming potential of carbon dioxide, the most prevalent greenhouse gas.

Figure 1 shows the emission trajectories for the reference case and Scenarios #1, #2 and #3 compared to the goal of achieving 1990 levels by 2020.

Figure 1. Illinois GHG Emissions: Reference Case and Three Policy Scenarios**



** Includes reductions achieved inside Illinois (including purchased offsets that are allowed under the cap and trade proposals) plus allowances purchased outside Illinois for compliance in state. Does not include modeled direct emissions reductions outside Illinois that would be difficult to verify.

The modeling results (see footnote** above) indicate that Scenario #1 is not a viable option because it achieves less than half of the reductions needed to meet the Governor's 2020 reduction goal of 231 Mt CO_2e in 2020; Scenario #2 meets the goal with 2020 emissions of 227 Mt CO_2e. Scenario #3 also meets the goal, with 2020 emissions of 229 Mt CO_2e if emissions allowances purchased from sources in the RGGI states count.

ICFI's modeling found that implementing the policy scenarios to reduce greenhouse gases would reduce electricity costs and increase employment, gross state product and personal disposable income compared to the business as usual reference case of not implementing new polices to reduce greenhouse gases. For policy Scenario #3, the computer modeling showed the following economic impacts:

- Average electricity costs decline for residential, industrial and commercial customers, with total savings across all sectors of approximately $1.1 billion in 2010, $2.6 billion in 2015, and $3.2 billion in 2020.
- 61,000 additional jobs per year in 2020.
- Annual gross state product $7.5 billion higher in 2020.
- Assuming that 85 percent of emissions allowances are auctioned, the cap and trade program would likely generate hundreds of millions of dollars per year.

The positive economic outcomes are largely due to policies that would replace imports of coal, oil and natural gas with in-state investments in renewable energy and energy efficiency measures. Dollars that would otherwise be exported to out-of-state companies are instead

invested in Illinois. Although electricity rates would increase modestly due to compliance costs for fossil fuel electric power plants, the amount of the rate increases is reduced over time. In addition, the rate increases are more than offset by the energy efficiency measures that would reduce overall energy costs through energy savings for homes and businesses as noted above.

The modeling process benefited from oversight by the Modeling Subgroup and significant input from ICCAG members and non-members. The ICFI modeling team responded verbally and in writing to numerous questions and comments, and they often revised their analyses in response to this input. However, some ICCAG participants felt the modeling process was inadequate and/or disagreed with some modeling assumptions and/or results.

Because the ICCAG process was open and responsive to members and non-members alike, the process was revised on numerous occasions in response to suggestions. However, certain process decisions made by Illinois EPA and its advisors, such as the decision to exclude federal policy recommendations, were questioned.

The ICCAG membership represented diverse interests and perspectives, and the process was infused with a spirit of achieving a common goal—the Governor's emissions reduction goals for the state of Illinois. Chairman Scott indicated that additional stakeholder input would be sought if the Governor directs agencies to design and implement any of these strategies. In addition, given the long-term nature of the climate change challenge, the chair is recommending to the Governor that the ICCAG continue to meet periodically.

Key Developments Since the ICCAG Made Its Recommendations

Since the ICCAG voted on its recommendations, a number of important actions have been taken at the state, regional, and federal levels to mitigate GHG emissions. Some of these actions overlap with particular ICCAG recommendations. At the state level, the Illinois Power Agency Act (IPAA) of 2007 was signed into law by Governor Blagojevich in August of last year. The IPAA includes two provisions that are similar to two ICCAG recommendations:

(1) Renewable Portfolio Standard: Beginning in 2008, electric utilities must supply renewable energy for 2 percent of the electricity they provide customers, increasing to 25 percent by 2025. The requirements only apply to electricity supplied to residential and small commercial customers. The renewable energy requirement is scaled back if electricity rates increase more than 0.5 percent per year or 2 percent total. The ICCAG recommendation, which was approved with no dissent does not include spending caps and applies to all electricity customers.
(2) Energy Efficiency Portfolio Standard: Beginning in 2008, electric utilities must achieve a 0.2 percent energy use reduction through investments in energy saving programs, increasing to 2.0 percent by 2015. The reduction goals are scaled back if electricity rates increase more than 0.5 percent per year or 2 percent total. The ICCAG recommendation has the same energy reduction goals but with no spending caps, and the goals also apply to natural gas utilities. This recommendation was approved with no dissent.

At the regional level, Governor Blagojevich signed the Midwestern Greenhouse Gas Reduction Accord (the "Accord") in November 2007 along with the governors of Iowa, Kansas, Michigan, Minnesota, and Wisconsin, and the Premier of Manitoba. The Accord states that the participating states will develop (1) regional greenhouse reduction goals by the summer of 2008 and (2) a model rule for a multi-sector, market-based cap and trade program by November 2008. The Accord will largely implement the cap and trade program recommendation approved by a majority of the voting ICCAG members. The recommendation calls for links to other states, preferably nearby states, because that would create a more efficient, less costly program and would minimize the extent to which emissions "leak" from Illinois to other states rather than being eliminated.

In December 2007, the federal Energy Independence and Security Act (EISA) of 2007 was signed into law. The EISA includes four provisions that are similar to four ICCAG recommendations:

(1) Energy efficiency standards for light bulbs. The new EISA standards are virtually identical to the ICCAG recommendation that was approved without dissent, although the ICCAG approved mercury content standards that are not included in EISA.
(2) Energy efficiency standards for appliances and equipment. The new EISA standards are very similar to the ICCAG recommendation that was approved with no dissent.
(3) Increased Corporate Average Fuel Efficiency requirements will be phased in, starting in 2010. More fuel efficient vehicles emit fewer GHG emissions because they consume less fuel. A majority of voting ICCAG members recommended that Illinois adopt and implement state-level GHG emissions limits for passenger vehicles based on the California vehicle emissions standards. Under the federal Clean Air Act, California is allowed to adopt more stringent vehicle emissions requirements with approval from the U.S. Environmental Protection Agency (USEPA), and states must choose either the California standards or the

federal standards established by USEPA. Eleven other states have chosen the California standards. California has more stringent vehicle emissions standards for non-methane organic gases (NMOGs, similar to volatile organic compounds or VOCs), nitrogen oxides (NOx), particulate matter (PM), carbon monoxide (CO), and hazardous air pollutants.

Neither California nor U.S. EPA currently regulates GHGs from motor vehicles, but California had asked for U.S. EPA's approval to do so. U.S. EPA denied that request late last year. California and other states, including Illinois, have challenged U.S. EPA's decision in court. Compared to the new CAFE standards in the EISA, the California standards would reduce global warming gases and improve fuel economy three to four years faster and approximately 13.1 percent more in the year 2020. (Based on data from: *California Air Resources Board Addendum to February 25 Technical Assessment, May 8, 2008: Comparison of Greenhouse Gas Reductions for the United States and Canada under ARB GHG Regulations and Proposed Federal 2011-2015 Model Year Fuel Economy Standards.)*

(4) Under EISA, lifecycle carbon emissions for new renewable fuels production facilities must be 20 percent below a baseline level. The ICCAG recommended, with no dissent, a broader "Low Carbon Fuels Standard" that would require transportation fuel producers, importers, refiners and blenders to ensure that all transportation fuels sold in Illinois have lifecycle carbon emissions that are 10 percent less than current levels by 2020.