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Meeting #3 Summary
Governor's Commission on Global Warming

Little Rock, Arkansas
February 7, 2008

Attendees:

GCGW: Aubra Anthony, Nick Brown, Rep. Joan Cash, Steve Cousins, Dr. Jerry Farris, Rob Fisher, Dr. Richard Ford, Miles Goggans, Dr. Art Hobson, Kevan Inboden, Chris Ladner, Dr. Robert McAfee, Dr. Elizabeth Martin, Bill Reed, Pearlie Reed, Dr. Cindy Sagers, Jeffrey Short, Gary Voigt, Rep. Kathy Webb

Advisory Body: Richard Bell, Lawrence Bengal, John Bethel, Jenny Ahlen (for Maria Haley), Nancy Ledbetter, Lynn Malbrough, Teresa Marks, John Shannon, Michael Borengasser (for Randy Young)

Governor's Office: Marc Harrison, Kathryn Hazelett, Jillian Hicks

Arkansas Bureau of Legislative Research: Gina Mercer, Carol Stapleton

Center for Climate Strategies: Tom Peterson, Ken Colburn, Randy Strait, Donna Boysen, Joan O'Callaghan

Others: See Attachment for Members of the Public Who Attended GCGW Meeting #3.

Background Documents: (*all posted at www.arclimatechange.us*)

1. Notice and Agenda
2. PowerPoint Presentation
3. Memo on the GCGW Process
4. Catalog of State Climate Actions
5. Descriptions of State Actions and Policy Options

Discussion and Conclusions:

1. Welcome and Introductions

The Governor's Commission on Global Warming (GCGW) co-chair Pearlie Reed opened the meeting, asking commission members and the Center for Climate Strategies (CCS) representatives to introduce themselves. Co-chair Kathy Webb noted that Andrew Parker couldn't attend the GCGW meeting because he was assisting the Governor in northern Arkansas in response to the recent tornado.

2. Meeting Purpose and Goals

Tom Peterson of CCS pointed out that the agenda for this meeting was to orient commission members to the stepwise process they will follow, and the preliminary analytical work and documents that will support that process. While this meeting focuses on briefing materials and organizational information, future GCGW meetings will be oriented toward discussions and decisions.

3. CCS Analytical Approach

Mr. Peterson reported that CCS has been working with Arkansas state agencies to obtain state-specific data for preparing the draft greenhouse gas (GHG) emission inventory and forecast (I&F) for review by the GCGW and the Technical Work Groups (TWGs). The estimates presented at today's meeting are preliminary and will be revised as we identify and incorporate state-specific data for Arkansas.

The I&F covers the years 1990–2025. The inventory presents historic emissions for 1990–2005, the years for which activity data are available, while the forecast of future emissions covers 2006–2025. For the forecast (projection) approach, the reference case assumes no major changes from today—"business-as-usual"—and uses trends from various data sources (e.g., historical rends in emissions, state population and employment forecasts, and regional modeling forecasts prepared by the Energy Information Administration (EIA)) to forecast growth in emissions out to 2025. The draft inventory and forecast being prepared for the GCGW represents a "planning" inventory; it is not meant to be a compliance (bottom-up) inventory or to support modeling. This planning inventory provides the GCGW and the TWGs with an understanding of the relative contribution of emission sources and sinks to total emissions for Arkansas and provides an indication of the historic and possible future trends in emissions by sector.

CCS follows the standard methodologies and guidelines used by the U.S. Environmental Protection Agency (EPA), Intergovernmental Panel on Climate Change (IPCC), and United Nations Framework Convention on Climate Change (UNFCCC) along with state and regional data, where available, to prepare the I&F. The I&F includes the six major GHGs and the major sources of GHG emissions.

Emissions for all pollutants are expressed in terms of carbon dioxide-equivalents (CO_2e) reflecting the 100-year global warming potential (GWP) of each pollutant relative to the reference gas, CO_2, that has a 100-year GWP of 1. The IPCC publishes the 100-year GWPs for each pollutant. Per IPCC and US EPA guidance, the GWPs published in the IPCC's Second Assessment Report are used for preparing GHG emissions inventories. The GWP factor for each pollutant is multiplied by the pollutant's mass emissions to convert to a CO_2e basis. Emissions from GHG sources are called gross emissions. Net emissions represent gross emissions minus estimates of carbon "sinks" (which absorb carbon, such as forests).

We evaluate emissions associated with the generation of electricity from both a production (emissions associated with in-state generation) and consumption (emissions associated with in-state generation and net exports of electricity) standpoint. The draft estimates indicate that Arkansas was a slight net exporter of electricity in the early to mid 1990's but has become a

net importer of electricity since then and the preliminary forecast suggests that Arkansas will continue to be a net importer of electricity under a business-as-usual case. We look at emissions on a production and a consumption basis for this sector because data are readily available to estimate consumption-based emissions and to assist with informing the stakeholder process. The major fuels used to produce electricity in Arkansas are coal, followed by nuclear, natural gas, and then renewables (hydroelectric, biomass).

In reviewing the inventory, Strait noted that Arkansas' gross GHG emissions by sector for the year 2000 match national sector shares reasonably closely, with the exception of the agricultural sector where Arkansas' emissions are about twice (i.e., 6% higher) the national average due to the large agricultural industry in the state. The large share of emissions from rice cultivation is unique to Arkansas and some southern states. Direct use of fuels (natural gas, oil, coal, and wood) for water and space heating by the residential and commercial sectors are slightly lower (about 3%) than the national average. Transportation emissions were about 1% higher than the national average in 2000, and emissions from electricity generation (consumption basis) were about 2% higher than the national average in 2000. The industrial non-fuel use sector accounts for emissions associated with manufacturing processes; as well as leaks of sulfur hexafluoride (SF_6) from transformers used in electricity transmission and distributions systems; and substitutes for ozone depleting substances used in air conditioners, refrigeration systems, and fire extinguishers.

Considering the pollutants from all emissions sources together, CO_2 is the greatest source of GHG emissions in Arkansas accounting for about 80% of emissions from all pollutants, followed by methane (10%), nitrous oxide (8%), and the halogenated solvents. This is the same pattern that CCS has observed in many other states.

On a per capita basis, Arkansas emitted about 30 metric tons (t) of gross CO_2e in 2005, greater than the national average of about 24 tCO_2e. Per capita GHG emissions in Arkansas ranged from about 27 to 31 metric tons (t) of gross CO_2e from 1990 to 2000, and declined to about 30 tCO_2e by 2005 as emissions from the electricity sector leveled off. Arkansas' per capita emissions are higher than the national average which ranged from about 25 tCO_2e from 1990 to 2000, and then declined to about 24.5 tCO_2e by 2005. In both Arkansas and the nation as a whole, economic growth exceeded emissions growth throughout the 1990–2005 period. From 1990 to 2005, emissions per unit of gross product dropped by 26% nationally, and by 23% in Arkansas.

A GCGW member requested that CCS express the projections for GHG emissions per capita to reflect population growth in Arkansas over the 1990–2025 period, noting that emissions per capita could be flat.

From 1990 to 2025, Arkansas' emissions are project to increase by about 73% (gross emissions, consumption basis), which represents an annual average increase of about 1.6% over this 35-year period. The principal sources of Arkansas's GHG emissions in 2005 are electricity use (including electricity imports) and transportation, accounting for 33% and 27% of Arkansas's gross GHG emissions, respectively. The use of fossil fuels—natural gas, oil products, coal, and wood—in the residential, commercial, and industrial (RCI) sectors

accounts for another 18% of the state's emissions in 2005, followed by the agriculture sector at 14%.

Strait then reviewed the area graphs for each sector and responded to questions. A GCGW member how emissions are leaked to the atmosphere during the transmission and distribution of natural gas. Strait replied that natural gas consisting of mostly methane leaks from flanges, joints, and compressor stations. Most states have upgraded their pipelines using non-corrosive materials, so these emissions are projected to decrease over time.

Peterson provided an overview of the approach to estimating carbon sinks associated with the forest and agriculture sectors. He noted that CCS will be scrubbing the numbers it is using for the forestry sector, which is different from other sectors because forests absorb CO_2 emissions. Most of the inventory data are based on data from USDA's Forest Service. A member asked whether the agriculture and forestry numbers take into account the likely effects of the recently proposed amendments to the US Farm Bill that's being debated in Congress. Peterson responded that CCS typically doesn't include in its calculations proposed actions that aren't actually planned, but will estimate the impacts of the bill if it passes. Strait added that CCS intends to build into the baseline recent actions Arkansas has taken to reduce GHG emissions and will include that information in its forecasts of GHG emissions. However, the emission reductions associated with recent actions will be shown in graphs as "wedges" relative to the business-as-usual forecast to show the emission reductions for each of the actions.

4. Recent Actions in Arkansas that Reduces GHG Emissions

Randy Strait briefly reviewed the following recent actions Arkansas has taken to reduce its GHG emissions:

- Emerging Technology Development Act of 1999
- Renewable Energy Resources Act of 2007
- Renewable Energy Development Act of 2001
- State-Owned Vehicle Purchasing Act of 2005
- Alternative Fuels Development Act of 2007
- Alternative Fuels Development Program
- Renewable Fuels Production
- High-Efficiency Lighting Act of 2007
- LEED/Green Globes Certification for State Buildings
- Waste Management Recycling Goals
- Solid Waste Management and Recycling Fund

The Arkansas Department of Environmental Quality's headquarters is a green building, and the agency has added hybrid vehicles to its fleet.

The Arkansas Economic Development Commission (AEDC) plans to focus on three "clean, green, and sustainable" sectors: renewable energy—alternative fuels; alternative energy—wind power; and green or sustainable building materials.

Strait noted that other state agencies may be providing additional information on actions they have taken to reduce GHG emissions. He noted that CCS has incorporated this information into the catalogs.

5. Review of State and National Climate Actions

At the national level, on April 2, 2007, the US Supreme Court issued a decision that requires the US Environmental Protection Agency (EPA) to include GHG emissions from mobile sources in its implementation of the 1990 Amendments to the Clean Air Act. The federal Energy Independence and Security Act of 2007 (enacted in December 2007) contains requirements for new corporate average fuel economy (CAFE) standards, new energy efficiency standards for light bulbs (incandescent phase-out) and appliances, and a renewable fuels standard, among other things. There is also a new federal mandatory GHG reporting requirement (in the Omnibus Budget Reconciliation Act).

Ken Colburn of CCS noted that two additional actions will have an impact on Arkansas. The federal 'Futuregen' clean-coal pilot plant scheduled to be built in Illinois was not funded in the President's budget. Also, the Energy Bill prohibits the federal government from purchasing fuels dirtier than conventional fuels; thus, it prohibits tar sands in derived fuels and coal-to-liquid generation.

Mr. Colburn added that Arkansas is far from alone in its efforts to reduce GHG emissions. Arizona, Colorado, Minnesota, Montana, New Mexico, and Vermont recently completed the multisector stakeholder process, and Florida, Iowa, Maryland, Michigan, and South Carolina are underway and will be completed this year. Some states are undertaking the process independently, but most have enlisted CCS's support. Significant regional GHG reduction efforts are underway as well, in the Northeast, the Midwest, and the West.

States are using various strategies to meet their GHG reduction goals. Some of them have negative costs because they involve energy-efficient measures that save money, while other strategies result in positive costs or break even. The regional Western Climate Initiative set emission reduction goals of 15% below 2005 levels by 2020 and 80% below 2005 by 2025. The Minnesota Climate Change Advisory Group recently completed its Action Plan process and, through the combination of existing actions and the Group's policy recommendations, Minnesota believes it can achieve the aggressive GHG reduction targets that it set for itself in state law.

Mr. Colburn presented an economy-wide cost (supply) curve for the 12 states CCS has analyzed to date, showing negative costs initially and positive costs farther out in the process. He added that McKinsey's recent work on energy intensity yields essentially the same curve and range of results. There is significant potential for reducing GHG emissions if the nation as a whole reduces emissions as aggressively as the actions some states are planning to undertake.

6. Review of the GCGW Process

Tom Peterson explained that the GCGW and the TWGs will look at all the information being presented at the GCGW meetings. The GCGW members will be asked to agree on TWG-recommended changes to make the information more accurate and/or to propose better sources of information. The role of the GCGW will be to advise and provide guidance to the TWGs. CCS will facilitate and provide technical support for the meetings and phone conferences.

Pearlie Reed asked if there were any objections to the proposed schedule for all future GCGW meetings; no objections were noted. The GCGW members had difficulty squeezing in the proposed two TWG teleconferences between the third and fourth full committee meetings. The members decided to have only one teleconference instead, as follows:

- *Agriculture, Forestry, and Waste Management TWG*—2/20, 1:00–2:30 a.m.
- *Energy Supply and Demand TWG*—2/21, 8:30–10:00 a.m.
- *Residential, Commercial, and Industrial TWG*—2/20, 10:00–11:30 a.m.
- *Transportation and Land Use TWG*—2/19, 10:00–11:30 a.m.
- *Cross-Cutting Issues TWG*—2/20—3:00–4:30 p.m.

Mr. Peterson explained that the TWGs are broken out by thematic areas of policy mitigation options, which are mapped out in great detail in policy option catalogs. Briefly, the TWGs and their focus areas are as follows:

- *Agriculture, Forestry, and Waste Management*—Land protection, forest restoration, sustainable forest management, bioenergy, etc.
- *Energy Supply and Demand*—Heat and power generation; locus for cap-and-trade or carbon tax policy;
- *Residential, Commercial, and Industrial*—Energy efficiency and conservation, industrial processes, waste management;
- *Transportation and Land Use*—Vehicle efficiency, alternative fuels, and demand-reduction programs; and
- *Cross-Cutting Issues*—Reporting, registries, lead by example, public education, goals. Ken Colburn explained that cross-cutting issues are related to policy options that cut across the above four sectors. None of the policy recommendations under this category is quantified, to avoid double counting.

Regarding the design of the recommended policies, the GCGW and TWGs will need to be as explicit as possible about the timing, goals, coverage, and implementation methods of the policies. CCS's policy option template will help the GCGW map out the recommendations. Transparency is important regarding the data sources and quantification methods used for the economic analysis, along with the underlying key assumptions and uncertainties.

The GCGW and TWGs have a variety of choices in how they develop their policy options. For example, they can consider all GHGs, not just CO_2; emissions from all sectors, not just

the sector of their immediate focus; whether to implement the recommendations as a single state or in a regional, multistate effort; short-and long-term actions; and key externalities (co-benefits, etc.). They also have choices as to applying decision criteria as they see fit, such as how much pollution needs to be reduced, the costs of or savings from the GHG emission reductions, the externalities that come along for the ride, and the technical, economic, political, etc., feasibility issues that effective policy options need to address.

As a stepwise process, attendance at each meeting is important. By the same token, CCS recognizes that 100% meeting attendance isn't always possible. Votes will be taken based on the members present at meetings, and no proxies will be permitted. The TWGs will make recommendations to GCGW members, who will ask for clarifications as needed, suggest revisions, etc. The voting process will seek, but not mandate, consensus. Final decisions will be based on three levels of support: unanimous consent (no objections), super majority (five or fewer objections), or majority (less than half object). As objections are noted, CCS will ask for clarity on the technical basis for the objection and for the objector to propose a timely, constructive alternative to address the particular issue at stake. As needed, alternatives will then be developed by the GCGW and/or TWGs to address barriers to consensus.

For each TWG meeting, the first order of business will be to review and approve the summary of actions taken at each previous GCGW meeting. All the information will appear on the Web site at http://www.arclimatechange.us/, which will serve as a living library of GCGW activities and decision.

The first assignment for the TWGs is to expand the catalog of potential state actions to include key actions Arkansas has taken, and to send suggestions for additional actions to the CCS facilitators assigned to those TWGs (as noted on the GCGW Web site). Once the TWGs prioritize the options for initial analysis, they'll be asked to craft straw policy design proposals that include details on the timing, goals, and coverage of those options. The GCGW and TWGs will write the options along the way, filling out details as decisions are reached. Once the GCGW approves a policy option, it will become a final policy recommendation, and will be included in the GCGW Final Report as part of the appendix for that TWG. The Final Report will be a compilation of decisions and supporting analyses that have taken place throughout the stakeholder process.

7. Agenda, Time, and Date for Next GCGW Meeting

The fourth GCGW meeting is schedule to take place on February 28, 2008, from 10:00 a.m. to 4:00 p.m., in Room 171 of the State Capitol building.

8. Public Input and Announcements

Dr. Joe Bates, Deputy Director of Health of the Arkansas Department of Health, spoke as an individual, not representing the collective views of the Department of Health. He expressed his concerns about emissions from coal-fired electricity generation plants in the state. Death rates from lung cancer, stroke, heart disease are higher in areas where these plants are located, and mercury disseminated into the atmosphere, to the ground, to the water, and to the fish we eat can lead to brain damage. Young children cannot achieve their full intellectual

capacity, because their mothers' breast milk is contaminated. Although Arkansas is a small player in the global scheme, it can do much more to improve its environment and the health of its citizens.

Attachment

Members of the Public Attending Arkansas GCGW Meeting #3
Little Rock, Arkansas
February 7, 2008

Name	Company
Mark Allison	
Dr. Joe Bates	Arkansas Department of Health
Chris Benson	Arkansas Energy Office, Arkansas Economic Development Council
Larry Durens	
Charlie Frago	Arkansas Democrat-Gazette
Peter L. Gess	
Rep. Steve Harrelson	Arkansas House of Representatives
John Harriman	Mitchell Williams
Kathryn Hazelett	Governor's Office
Stanley Hill	Arkansas Farm Bureau
Rep. Jim House	Arkansas House of Representatives
J.D. Lowery	University of Arkansas at Little Rock
Rep. Allen Maxwell	Arkansas House of Representatives
Paul Means	Entergy Arkansas
Brett Miracle	Arkansas Public Policy Panel
Dina Nash	Sierra Club
Stoney Rawlins	University of Arkansas at Fayetteville
Grace Ellen Rice	Attorney General's Office
Ethan Schwartz	Global Strategy Group
Courtney Sheppard	Government Solutions
Ken Smith	Audubon Arkansas
Randy Thurman	Arkansas Environmental Federation
Debra Wolfe	Arkansas Pharmacists Association