



Climate Change

A PLAN TO BRIDGE THE TECHNOLOGY GAP

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*40 Million Owners: Keeping the Lights On
and Rates Low in a Changing Environment*



Climate Change—A Plan to Bridge the Technology Gap

Electric cooperatives are actively engaged in the congressional debate over how to reduce emissions of carbon dioxide and other greenhouse gases to address climate change concerns. A number of bills encompassing a wide variety of approaches have been introduced already in the House and Senate. Some bills apply only to electric utilities while others are economy-wide. The timelines and reduction requirements vary as do many other details, including costs and their impact on the economy. Each of these details will have significant effects on electric cooperative member-consumers.

As Congress debates the details of a carbon-control program, cooperatives are actively investigating what options will be available to allow us to comply with whatever program Congress eventually adopts. No “silver bullet” technology exists that will magically solve the issue of climate change. In fact, a wide array of new technological advances will be required if the nation is going to constrain CO₂ emissions without serious negative economic implications.

COAL MUST REMAIN IN ELECTRICITY MIX AS CARBON EMISSIONS ARE ADDRESSED

NRECA members have a significant interest in developing cost-effective options to mitigate carbon emissions. Electric cooperatives generate half of their power needs; more than two-thirds of this power is generated from coal. Cooperatives serve some of the poorest areas of the country (nearly 400 co-ops have service territories with poverty levels above the national average), and most cooperatives’ rates are higher than the rates of their neighboring investor-owned utilities. Furthermore, many co-op service territories are growing more rapidly, with a composite growth rate twice those of other utilities.

Current technologies provide only limited options to cooperatives in the effort to reduce carbon emissions. The primary option currently available to co-ops would be to switch from low-cost, domestic coal to much higher priced (and increasingly imported) natural gas. New technologies that improve efficiency, avoid carbon emissions, or capture and sequester emissions will all be required to accomplish any reductions mandated by legislation. Yet, despite any advances brought about by new technologies and substantial increases in power generated from nuclear and renewables, coal must continue to be factored into the electricity mix to meet growing electricity demand. At present, coal accounts for approximately 51 percent of the nation’s overall electric production. The amount of coal-based generation is expected to increase to a 54 percent share in 2030. Electricity demand, according to the U.S. Department of Energy’s Energy Information Administration (EIA), is expected to increase by 40 percent.

EPRI PLAN OF ACTION TO REDUCE CARBON EMISSIONS

The Electric Power Research Institute (EPRI), which provides technological research to the electric utility sector, comprises the world’s most preeminent engineers. EPRI undertook a technical analysis of the potential for significant CO₂ emissions from the U.S. electric power sector. Using EIA’s Annual Energy Outlook 2007 as a base case for carbon emissions over the next 25 years, EPRI calculated the CO₂ reductions that would result from reasonable but aggressive deployment programs in seven specific areas. These seven areas:

1. Energy Efficiency & Conservation

EIA projects electricity demand will grow 1.5 percent per year. EPRI believes it will be technologically feasible to reduce that to 1.1 percent per year, with substantial efficiency improvements in housing, appliances, and other electricity uses.

2. Renewable Energy

Technology improvements will be necessary for nearly all forms of renewables—solar, wind, geothermal, landfill methane, etc.—to substantially increase electricity production from these sources. Additionally, investments will need to be made to build the transmission lines necessary to bring renewables from where they exist (largely in rural areas) to where the energy is needed.

3. Nuclear Power

While the EIA projects a modest growth for nuclear power between now and 2030, EPRI's analysis shows that it could be technically feasible to develop an additional 50 nuclear power plants over that time. But that will require increasing public acceptance of nuclear and addressing the spent fuel issue in addition to building the first new nuclear plant in over a generation.

4. Advanced Coal Combustion

Technological advances have improved our use of coal over the past three decades. EIA estimates plants built between 2020 and 2030 will have efficiency rates of about 40 percent but EPRI believes we could reach the mid-40 percent range by 2020 and nearly 50 percent by 2030, if we can develop the materials needed to withstand the heat and pressure to build ultra super-critical plants.

5. Carbon Capture and Sequestration

There is no current commercially-available method to capture carbon dioxide from power plants, but research into chilled ammonia and amine processes is underway and must be accelerated. Further, significant questions remain over available geologic formations to store CO₂, liability concerns, and other issues before widespread sequestration will become a reality.

6. Plug-in Hybrid Electric Vehicles

Plug-in hybrid vehicles may allow commuters to travel moderate distances using only electricity and no gasoline with enough advances in the battery technologies needed to bring these vehicles into the market in a significant, cost-effective way.

7. Distributed Generation

EPRI's experts believe that opportunities exist for increasing the use of distributed generation technologies, including waste heat-to-energy projects that can provide electricity with reduced or no carbon emissions.

The EPRI analysis lays out a plan of action but makes clear that no single “silver bullet” exists to reduce CO₂ emissions from the power sector—and that a broad range of responses is required. Additionally, these developments will require a substantial commitment of resources from taxpayers and ratepayers alike. EPRI has not yet completed an analysis of the economic costs of developing and deploying these technologies, but preliminary results are clear: it will cost much less to invest in developing new technologies than to attempt to reduce emissions with existing technologies.

ECONOMY-WIDE PARTICIPATION NEEDED

The EPRI analysis relates specifically and solely to the electric utility sector of the economy. In addition to the electric utility sector, advances in the transportation, industrial, commercial and other sectors of the economy will be required. NRECA strongly believes that any plan must cover the entire economy, not simply the utility sector.

NRECA Urges Members of Congress, to:

- Give electric cooperatives the technological tools needed to meet new carbon standards by providing significant, long-term, dedicated funding for research and development in any climate change legislation that is enacted.
- Provide not-for-profit electric cooperatives equitable incentives to deploy technologies such as advanced clean coal technologies; carbon capture and sequestration; advanced nuclear.
- Support climate change legislation that covers emissions from all sectors of the U.S. economy, not just electricity generation.

