

102 Global Climate Policy Costs and Benefits

Program Overview

Program Description

This program provides local, state, national, and international policymakers with crucial information for making economically and environmentally sound global climate policy decisions. The program focuses on estimating the economic costs of climate policy proposals, identifying policy principles for reducing these costs, and on comparing these potential costs with the potential benefits of lower greenhouse gas concentrations. The program examines in-depth the role of technology advances in limiting policy costs.

Industry Needs and Issues Addressed

- International and domestic climate policies may cost the global economy trillions of dollars.
- Cost-effective implementation and technology advances can substantially reduce the cost of achieving environmental objectives.
- Scientific, economic, and technological concerns of the electricity sector must be addressed in the policy debate.
- Research results are critical to informing stakeholder discussions over proposed national and international policies.

Impact

- Provides members and other stakeholders with crucial information for environmentally effective and economically efficient global climate policy decisions
- Analyzes impacts of climate policy proposals on national and international economies
- Provides an integrated assessment of the potential costs and benefits of climate change management proposals
- Illuminates the role of technology in achieving climate policy goals, with specific emphasis on the electricity sector

Key Accomplishments

- The Intergovernmental Panel on Climate Change and the U.S. Secretary of Energy highlight Electric Power Research Institute (EPRI) research on the importance of climate policy flexibility.
- The U.S. Climate Change Science Program uses three EPRI-supported models for scenario analysis.
- EPRI research on the value of technology development informs research and development investment decisions.
- The California government uses EPRI research to provide insights into cost-effective implementation of state climate policies.
- EPRI experts are active on key national and international climate panels.

Current Year Objectives

- Analysis of the costs of specific proposed climate policies at the national and international level for use in policy negotiations
- Integrated assessment of potential costs and benefits of alternative climate change management proposals
- Examination of the role of technology and electrification in achieving climate policy goals

Industry Involvement

- Estimated 2009 funding: \$5.0M

Program Technical Lead

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Summary of Projects

Project Number	Project Title	Value
P102.001	Climate Policy Design, Implementation, and Costs	This project improves understanding of what constitutes cost-effective climate policy. Research includes analysis of the elements of policy design and implementation, as well as estimates of the economic costs at various levels of achieving greenhouse gas (GHG) emission reductions specified in prominent climate change policy proposals. This work also illustrates the role of the electric power sector under various policy alternatives.
P102.002	Integrated Assessment of Costs and Benefits of Climate Change Management Proposals	This project uses information developed about the costs and benefits (damages avoided) of proposed climate change proposals to objectively facilitate economically and environmentally sound policies. The frameworks developed for this integration will be continuously refined and updated with new methods and information, taking into account changes in knowledge about the future character of the energy and economic system, climate-relevant physical processes, and new proposals in the evolving debate.
P102.003	The Role of Technology in Managing Climate Change	Technology is the key to the transition to a low carbon future. An effective technology policy that speeds development and demonstration of technological advance can dramatically reduce the cost of meeting any prescribed emissions reduction goal. Using EPRI-sponsored models, this project will examine the role of technological advance in managing the costs of climate change policy compliance. In particular, this research highlights the opportunity for decarbonization of the economy through electrification.
P102.004	Communications	This project provides communication of the major insights from EPRI climate policy research to key stakeholders in member companies, policymakers, and the research community.

Project Descriptions

P102.001 Climate Policy Design, Implementation, and Costs (SP0294)

Issue

Estimates of the economic costs of reducing greenhouse gas (GHG) emissions at both the national and international levels are needed for global climate change policy negotiations. Insights are needed into the importance of policy design and the role of the electric power sector under various policy alternatives.

Description

Comprehensive analyses of the cost of achieving GHG emission reductions specified in prominent climate change proposals will be developed. Research into cost-effective reductions will be undertaken to understand the role of carbon and noncarbon greenhouse gases as well as carbon sinks in an overall least-cost emission reduction portfolio. Analyses at the national and international levels will be conducted that will examine the effect of such policies on carbon intensity, unemployment, industrial migration, personal income, and other factors of interest to policymakers. The information, methods, and tools provided in this project represent key inputs for integrated assessment of the potential costs and benefits of climate change management proposals, helping to lay the foundation for sound policymaking.

Value

- Essential elements of cost-effective policy measures provide members, the public, and policy-makers with important insights on proposed national and international policies.
- Economic and technological concerns of the electric sector are addressed in policy debates, ensuring a substantial “seat at the table” for members.
- Participants gain vital knowledge and insights that facilitate strategic planning and enhance risk management activities within their organizations.

How to Apply Results

The main strategy for applying project results will be to inform the public policy process by communicating with the broadest possible audience. Equally important vehicles to ensure that member environmental staff, media/federal relations staff, and executives stay current on the research results include EPRI “Climate Briefs” and newsletters; attendance at EPRI advisory meetings and its annual Climate Seminar; up-to-date web content; briefings for stakeholders, including policymakers, researchers, and press/media; and peer-reviewed papers submitted to prestigious journals. Only through these means can members understand the constantly evolving key policy issues and position themselves at the leading edge of knowledge.

2009 Products

Product Title & Description	Planned Completion Date	Product Type
<p>Assessment of the Near-Term Costs of Domestic GHG Emission Reduction Proposals: Federal policy proposals for GHG reductions are gaining political support. The range of proposals includes hybrid schemes composed of cap-and-trade programs along with energy efficiency, corporate average fuel economy (CAFE) standards, and other regulatory measures. Technology R&D investment policies are among the most crucial elements of these proposals. Key policy features and their implications for cost-effective climate management will be analyzed and communicated to members and policymakers.</p>	12/31/2009	Peer Literature
<p>Examination of Post-Kyoto Proposals: Phase 2 of the U.N. Framework Convention on Climate Change (UNFCCC) is scheduled to begin in 2013. The UNFCCC is beginning to entertain follow-on targets and timetables. At the same time, other major emitting countries are developing emission reduction proposals on their own. It is important to understand the implications of these proposals for the U.S. economy and its competitors, in terms of both economic and environmental impacts.</p>	12/31/2009	Peer Literature

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
Assessment of the Near-Term Costs of Domestic GHG Emission Reduction Proposals: Future-year deliverables increasingly will focus on the details of broad climate policy implementation, examining the importance of issues such as sectoral coverage, point of regulation, and use of revenues from permit auctions.	2010	Peer Literature
Examination of Post-Kyoto Proposals	2010	Peer Literature

P102.002 Integrated Assessment of Costs and Benefits of Climate Change Management Proposals (057737)

Issue

Integrating economic policy cost information with estimates of market and nonmarket impacts is the central problem addressed by this project. The costs and environmental benefits of U.S. and international proposals for managing greenhouse gases (GHGs) need to be evaluated using a consistent and comprehensive approach so that stakeholders use objective information to arrive at economically and environmentally sound policy decisions.

Description

The environmental and economic implications of various proposed climate change policies will be evaluated using integrated assessment frameworks based on the latest results from economic, scientific, and technological research. This project will combine economic assessment with policy-relevant information about the key processes controlling the earth's carbon cycle and climate, including the attendant uncertainties, as well as the responses of human systems and natural ecosystems. The resulting integrated assessments will be continuously refined and updated with new methods and information, taking into account changes in knowledge about climate-relevant emissions and processes as well as new proposals in the evolving policy debate.

Value

- Develops state-of-the-art, consistent, comprehensive frameworks for complex climate policy evaluations
- Integrates credible and objective information on costs and benefits of climate change policies
- Creates teams of experts able to quickly examine new information crucial to the policy debate in a manner available nowhere else by supporting continuous refinement of frameworks and policy assessments

How to Apply Results

The main strategy for applying project results will be to inform the public policy process by communicating with the broadest possible audience. Equally important vehicles to ensure that member environmental staff, media/federal relations staff, and executives stay current on the research results include EPRI "Climate Briefs" and newsletters; attendance at EPRI advisory meetings and its annual Climate Seminar; up-to-date web content; briefings for stakeholders, including policymakers, researchers, and press/media; and peer-reviewed papers submitted to prestigious journals. Only through these means can members understand the constantly evolving key policy issues and position themselves at the leading edge of knowledge.

2009 Products

Product Title & Description	Planned Completion Date	Product Type
<p>Enhanced and Updated Frameworks for Integrated Assessment of Policy Proposals: Improvements to integrated assessment frameworks will be implemented by including the latest scientific and economic developments detailed in the literature, including the Intergovernmental Panel on Climate Change <i>Fourth Assessment Report</i>. These frameworks will be used to analyze the long-term climate stabilization scenarios on an ongoing basis, incorporating the latest insights in climate science, impacts, economics, and technology.</p>	12/31/2009	Peer Literature
<p>Assessments of the Costs and Benefits of Emerging Policy Proposals: The international climate regime will continue to be fragmented. The potential costs and benefits of various emerging international climate policy proposals will be analyzed, with particular emphasis on domestic impacts. Updated assessments will incorporate evolving scientific and technological information.</p>	12/31/2009	Peer Literature

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
<p>Enhanced and Updated Frameworks for Integrated Assessment of Policy Proposals: Future-year deliverables will improve the integration of ecosystems with the atmospheric-ocean models and will incorporate the latest scientific understanding of other key climate processes. Both improved analytical techniques and new integrated assessments will be provided.</p>	2010	Peer Literature
<p>Assessments of the Costs and Benefits of Policy Proposals</p>	2010	Peer Literature

P102.003 The Role of Technology in Managing Climate Change (067506)

Issue

Technology is the key to making the transition to a low carbon economy, both domestically and globally. An effective technology policy that speeds development and demonstration of technological advance can dramatically reduce the cost of meeting any future greenhouse gas reduction goal. Research is needed into the value of the availability, timing, and interactions of new climate-friendly technologies.

Description

Using EPRI-sponsored models, the role of technology development in managing the costs of climate change policy compliance will be examined. Analysis will focus on individual electric sector technologies, including nuclear, carbon capture and sequestration (CCS), renewables, and end-use technologies. The value of advances in these technologies under various policy scenarios will be calculated, with emphasis on how electricity competes with fossil fuels at the end use and on the role of electricity in decarbonizing other sectors of the economy. In addition, research will analyze what constitutes a prudent portfolio in the face of uncertain technology availability and costs, public acceptance, and future greenhouse gas limits.

Value

- Quantifies the value of technology under various climate policy scenarios
- Provides insights into technology advances and deployment
- Informs policymakers about ways to encourage technology innovation

How to Apply Results

The main strategy for applying project results will be to inform the public policy process by communicating with the broadest possible audience. Equally important vehicles to ensure that member environmental staff, media/federal relations staff, and executives stay current on the research results include EPRI “Climate Briefs” and newsletters; attendance at EPRI advisory meetings and its annual Climate Seminar; up-to-date web content; briefings for stakeholders, including policymakers, researchers, and press/media; and peer-reviewed papers submitted to prestigious journals. Only through these means can members understand the constantly evolving key policy issues and position themselves at the leading edge of knowledge.

2009 Products

Product Title & Description	Planned Completion Date	Product Type
<p>Technology Implications for Near-Term Emissions Constraints Options for emissions reductions over the next decade are limited. Sizeable reductions will require heavy reliance on fuel switching, supply- and demand-side energy system efficiency improvements, and price-induced conservation. This project will examine the interaction between near-term policy goals and alternative scenarios for the timing and availability of new technology, focusing on economic and environmental consequences.</p>	12/31/2009	Peer Literature
<p>Analysis of the Sensitivity of Policy Cost to Timing and Characteristics of New Technologies: While certain emerging low carbon technologies may be very valuable if successful, they face substantial technological and economic hurdles. This project will explore the sensitivity of climate policy costs to the availability and characteristics of specific technologies.</p>	12/31/2009	Peer Literature
<p>Examining the Competitiveness of Electricity at the End Use: Electricity has the potential to compete cost-effectively in many end-use markets, e.g., transportation, space conditioning, and industrial processes. This project will examine the potential role of electrification in decarbonizing the U.S. and global economies.</p>	12/31/2009	Peer Literature

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
Developing Robust Technology Portfolios: This project will explore the interaction of individual technologies available for meeting future needs. The goal will be to develop a robust investment mix in the face of technological, economic, and geopolitical uncertainty. The project will also examine the implications of alternative technological development paths for the way energy is provided in the future.	2010	Peer Literature
Analysis of the Sensitivity of Policy Cost to Timing and Characteristics of New Technologies	2011	Peer Literature

P102.004 Communications (067507)

Issue

Effective communication of climate policy research results helps to inform stakeholder decisions. Climate policy is one of the most significant national and global environmental issues ever contemplated in terms of costs and implications for society. It is critical that decisionmakers have the best available information at their disposal.

Description

EPRI climate research produces numerous insights for policymaking at a variety of levels. It is essential that these insights be effectively communicated to various stakeholder groups if the results are to help inform relevant policy discussions. Various activities undertaken by EPRI staff include ongoing communication of past and current research results through participation in international and domestic committees, workshops, and seminars; through presentations, briefings, and testimony; and through publication of "Climate Briefs," "Quick News," and papers in the peer-reviewed literature.

Value

- Improved understanding of critical design and implementation issues of cost-effective climate policy
- Improved understanding of the value of technology in managing the costs of climate policy
- Improved understanding of the results of integrated assessment of climate policy costs and benefits

How to Apply Results

Company environmental staff can use project information to inform company climate strategy, help identify and evaluate key investments in climate technology, and guide development of corporate policy positions. EPRI will facilitate broader use and awareness of the results by briefing key stakeholders, including policymakers and policy researchers; developing written materials for distribution; keeping the public web page current; presenting at meetings and seminars; and continuing service on various advisory panels.

2009 Products

Product Title & Description	Planned Completion Date	Product Type
Communication Activities and Materials: Deliverables will include papers, research summaries, webcasts, the program web site, briefings, and presentations, supplementing EPRI reports and peer-reviewed literature created by other projects in the Program.	12/31/2009	Technical Resource

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
Communications Activities and Materials: Deliverables will include papers, research summaries, webcasts, the program web site, briefings, and presentations, supplementing EPRI reports and peer-reviewed literature created by other projects in the Program.	2010	Technical Resource
