

Greenhouse Gas Reduction Options - Program 103

Program Overview

Program Description

The on-again, off-again progress of climate policy at international, national, and state levels has created increased uncertainty for the electricity sector. Despite strong support for climate bills in the U.S. House of Representatives and Senate in 2008–2009, a national market-based climate policy now seems unlikely in the immediate future, and there is uncertainty over the U.S. Environmental Protection Agency's (EPA's) potential approach to managing greenhouse gases (GHG) under the Clean Air Act. While some state and regional efforts to regulate GHG emissions have taken a step back, California's Global Warming Solutions Act is now coming into force, imposing a mixed approach of cap-and-trade with multiple layers of nonmarket policies, and clean energy policies at state and federal levels add another source of uncertainty. This heightened policy-based uncertainty comes at a particularly inopportune moment for the industry as it faces potentially massive environmental retrofit requirements for an aging coal fleet. In addition, while natural gas prices have collapsed from recent historic highs, the age of natural gas price volatility is not over.

Despite uncertainty about the timing and form of climate policy, few observers believe that the climate issue has been settled and that electric sector planners and investors can assume GHG emissions will no longer face potential regulation. The current pause in the federal policymaking process provides an opportunity to build a stronger understanding by the public and policymakers of the strengths and weaknesses of alternative approaches to GHG regulation (many elements of which were only cursorily examined in 2009–2010 as policies were debated), to develop the technologies needed to make reductions more cost-effective, and to develop the underpinning of regulatory systems (for example, emission offsets) that will prove critical to gaining real emission reductions and controlling costs when federal policies are introduced.

In this uncertain atmosphere, the Electric Power Research Institute's (EPRI) Greenhouse Gas Reduction Options program provides public- and private-sector decision makers with vital insights regarding the costs, availability, performance, and potential risks of GHG emission reduction and mitigation options. The program provides investment strategies for expanding these options in the future and insights on how to integrate GHG policy risk management and multipollutant compliance into corporate business strategies. This information helps electric sector companies develop coherent corporate climate strategies and provides decision makers with information to create and implement cost-effective, environmentally sound public policies in a complex and multifaceted regulatory environment.

Activities in the Greenhouse Gas Reduction Options program (P103) described here complement activities in the Global Climate Policy Costs and Benefits program (P102). P103 examines energy, environment, and climate issues from a utility-level perspective, often considering choices, implications, and actions down to the individual generating unit level. In addition, P103 research examines key details of climate policy—for example, alternative accounting procedures for GHG emissions offsets or what buyer liability might mean for a trading scheme—and has often provided a neutral forum for stakeholder discussions of key issues. P103 results are typically communicated via workshops and EPRI technical reports, with less emphasis on publishing results in peer-reviewed journals. P102 research takes a complementary view, providing critical insights into global, national, and regional climate policy choices—choices that define the context in which companies will have to make decisions. P102 provides ongoing support of modeling frameworks internally and at the Massachusetts Institute of Technology and Battelle Pacific Northwest National Laboratory in order to inform policy discussions. P102 staff are active participants in the Intergovernmental Panel on Climate Change (IPCC) and in National Academy of Science panels, and almost all of P102's results are published in peer-reviewed journals. Together, the two programs provide an integrated, consistent view of energy and climate policies and company strategies from a variety of vantage points.

Research Value

Policymakers and utility personnel need to understand the implications of climate policy implementation choices (such as program scope, use of market mechanisms, and offsets) and potential compliance costs. They need to understand how possible overlaps in regional and national policy initiatives, and in energy policies mandating renewables and energy efficiency and promoting nuclear and advanced fossil generation, complement each other or lead to unintended consequences. They also need to understand all of these forces within a broader environmental and energy regulatory context. Through its GHG reduction options research, EPRI helps the industry and the public understand the costs and risks associated with a low-carbon future; make strategic generation, delivery, and end-use technology choices; and communicate these insights to policymakers and state regulators. With this research, power companies and the public may see

- more-efficient (and thereby less expensive) policy designs due to better effectiveness of the user community in informing the policy development process;
- lower compliance costs and less risky business strategies due to better understanding of potential impacts of climate policy on power markets and incentives to add, modify, or retire generation; and
- a higher probability that cost-effective emission reduction options, such as GHG offsets, will be available to reduce compliance costs.

Approach

The program provides improved analytical approaches to support strategic decisions and consideration of generation investments and emission reduction options. It produces tools and methodologies that help companies develop least-cost approaches to achieving voluntary and mandatory GHG emissions reduction targets. The program informs the public policy process by communicating research results to the broadest possible audience through issue briefs; newsletters; congressional testimony; technical workshops; briefings for stakeholders, policymakers, researchers, and the press/media; and peer-reviewed publications. This program delivers

- a greater understanding of how climate policy will fundamentally change electric sector economics and affect power markets,
- opportunities to inform evolving climate policies by helping companies understand subtle nuances of climate policy design and their impact on utility asset owners and customers,
- key insights into robust compliance strategies, and
- increased understanding of how the implications of detailed policy design alternatives, impacts on power markets, the role of advanced low-emission technologies, and opportunities for GHG offsets can have tremendous value in forging robust corporate business and compliance strategies in a turbulent environment.

Accomplishments

Climate policy designs for achieving an environmental goal can vary in cost by trillions of dollars, and climate policy can significantly affect returns on existing capital and on new corporate investments. Sound analyses and clear communication are critical to creating effective, efficient policies and effective corporate strategies.

Program accomplishments include the following:

- Expanded the Global Climate Policy Design Forum Series to inform company, Congressional, and administration discussions on key domestic policy choices. Recent workshops have focused on emission offset policy.
- Helped companies develop and publicly communicate key elements of their corporate climate strategies.
- Developed and applied frameworks for helping companies evaluate specific generation and emissions reduction investments.
- Launched a comprehensive effort to re-evaluate the potential international and domestic supplies of GHG emission offsets.
- Examined and communicated the implications of a CO₂ price in a regional electricity market.

Current Year Activities

Program R&D for 2012 will focus on

- analyses examining GHG offset mechanisms, particularly technical challenges in their implementation, design issues affecting environmental and political feasibility, strategies for companies to acquire offsets, and estimates of their economic value;
- analyses of detailed implementation of climate policy choices, such as the interplay between market and regulatory/technology-forcing approaches to climate and energy policy;
- frameworks to incorporate long-term power market and GHG regulatory impacts into corporate business and compliance strategies;
- assessment of the ongoing climate policy experience in California, the European Union, and other countries and regions to discern key lessons for policy design and company compliance strategies; and
- frequent domestic and international climate policy workshops and policy forums.

Estimated 2012 Program Funding

\$3.0M

Program Manager

Victor Niemeyer, 650-855-2262, niemeyer@epri.com

Summary of Projects

Project Number	Project Title	Description
P103.001	Investigate GHG Offset Program Design and Economics	This project examines GHG offset mechanisms, particularly technical challenges related to their implementation, design issues affecting environmental and political feasibility, and economic value. This information will help electric utilities understand program design alternatives and tradeoffs, and communicate this understanding to policymakers and stakeholders.
P103.002	Investigate Use of Market and Nonmarket Mechanisms in Climate Policy Design	This project provides analyses of market and nonmarket mechanisms for controlling GHG emissions and meeting other clean energy goals, and the possible interactions from a combination of the two approaches. This work will improve understanding of these issues and help utilities communicate their implications to policymakers and stakeholders.
P103.003	Methods to Assess GHG Policy Impacts on Business Strategy and Compliance	This project will help electric utility decision makers understand the implications of climate and other clean energy policies, both market and nonmarket, for their companies and incorporate policy uncertainty into their business strategies, investment decisions, and compliance choices.
P103.004	Assessing the Experience of International, Regional, and State GHG Policies	This project will provide insights into experience to date with policies managing GHG emissions from the electric and energy sectors throughout the world. This perspective will help utilities be better informed participants in GHG policy debates and understand implications for their own business organization decisions.
P103.005	Communications	This project helps members communicate program results on climate policy complexities to diverse stakeholders through workshops, issue summary documents, and other communication channels.

P103.001 Investigate GHG Offset Program Design and Economics (057734)

Key Research Question

Offsets are emission reductions, sequestration, or avoidance created by projects and activities at emission sources and, in economic sectors, not covered by a GHG emissions trading program's fixed cap. By encouraging emission reductions where they can be achieved most cost-effectively, offsets can play a critical role in reducing compliance costs for regulated entities and the overall economy if a large-scale CO₂ cap-and-trade program is implemented to reduce national GHG emissions.

Offsets allow entities like electric utilities and other covered sectors in any future national GHG cap-and-trade program to substitute lower-cost GHG emissions reductions implemented outside of a U.S. GHG regulatory emissions cap for more-expensive internal emissions reductions under the domestic cap.

According to analyses by EPA, the Energy Information Administration, and the Congressional Budget Office (CBO), the potential availability of offsets is the single variable that has the greatest degree of impact on expected future CO₂ prices under the 2009 Waxman-Markey legislative proposal (HR2454/ACESA). The CBO concluded that CO₂ allowance prices can be expected to be more than three times more expensive by 2030 if no offsets are available and that "...The cost savings to the economy generated by offsets could be substantial....between 2012 and 2050 average annual savings from offsets could be about 70 percent under ACESA." [1]

Internationally, the role of offsets also is hotly debated and is a key element of emerging climate policy for the post-Kyoto period. Currently, the nature and potential role of new kinds of offsets, such as sectoral offsets and offset credits from Reduced Emissions from Deforestation and Degradation (REDD), as well as the ongoing discussions about the future role of an improved and reformed Clean Development Mechanism (CDM) program, are the center of attention in international negotiations. EPRI has a number of ongoing supplemental projects focused in these specific areas that provide valuable insights and information, which are then incorporated back into EPRI's offsets research.

The design of a large-scale, cost-effective offsets program that can maintain a high degree of environmental integrity is a challenging endeavor. A myriad of policy-related questions must be addressed, including the design of basic institutions necessary to administer a large-scale and environmentally effective offsets program. Key questions to be addressed include the following:

- What sources of offsets (domestically or internationally) may count as compliance instruments in a future CO₂ mitigation program
- What specific types of projects and programs may be allowed to generate offsets
- How will the "additionality" of a project be determined
- Will there be limits to the use of offsets for compliance purposes, and if so, how will these limits be designed
- How are offset projects approved, registered, and ultimately issued GHG offset credits
- How are offset methodologies established, and who oversees their development and implementation

These and many other pertinent questions will need to be addressed if a large-scale federal or regional offsets program is to be implemented in the near term to help contain costs in evolving regional and national CO₂ cap-and-trade programs.

It is also important to understand how climate policy design choices impact the cost and availability of GHG offsets. Inclusion of international offsets in U.S. climate policy could allow access to potentially large sources of international offsets but could also inadvertently link the U.S. carbon market to the economies of other nations. The sectoral coverage of any economywide cap-and-trade program that may evolve in the United States defines which domestic sectors are potentially eligible to generate offsets by virtue of which sectors are excluded from the cap.

^[1] Congressional Budget Office, “The Use of Offsets to Reduce Greenhouse Gases,” Economic and Budget Issue Brief, August 3, 2009, Table 1 (p. 7), and p. 8., <http://www.cbo.gov/ftpdocs/104xx/doc10497/08-03-Offsets.pdf>

Approach

This project examines GHG offset mechanisms, particularly technical challenges in their implementation, design issues affecting environmental and political feasibility, and economic value. In a future cap-and-trade GHG policy, offsets could have tremendous benefit in lowering compliance costs, but these programs are complex and the benefits highly sensitive to nuances of program design. This information will help electric companies to better understand program design alternatives, to lay the framework for workable systems, and to communicate with policymakers and stakeholders. In 2012, the project will examine how key policy design choices impact the potential benefits of offset programs, and policy dialogues will focus on the policy and institutional development needed to make offsets viable when market-based policies are enacted.

Impact

- Examines emerging experience with climate policy and offsets programs evolving across the United States and in other countries to inform new policy implementation; identifies important lessons from early trading system experiences
- Provides clear communication regarding implications of different rules and restrictions on offsets and trading
- Develops and applies models to quantify implications of different policy implementation choices
- Evaluates and analyzes different approaches to creating GHG emissions offsets and provides insights about the expected cost and potential availability of offsets
- Conducts basic research into innovative offset ideas and helps to refine methodologies for evaluating offset projects and estimating availability
- Contributes to development of protocols designed to quantify, measure, monitor, and verify GHG emissions offsets, and examines implications of different rules for crediting offset projects

How to Apply Results

Company environmental staff can use this project's information to inform their company's climate strategy, help identify and evaluate possible near-term GHG emission reduction investments, and guide development of corporate policy positions. EPRI researchers will facilitate broader use and awareness of the results by briefing key stakeholders, including policymakers, other researchers, and the public; developing materials for the trade press/media; keeping EPRI's public website current; presenting at meetings/seminars; and continuing service on various advisory panels.

2012 Products

Product Title & Description	Planned Completion Date	Product Type
Analysis of Key Greenhouse Gas Emissions Offset Issues: With inputs from program members, EPRI will examine how key policy design choices impact the potential benefits of offset programs and will organize policy dialogues that will focus on the policy and institutional development needed to make offsets viable when market-based policies are enacted.	12/31/12	Technical Update

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
<p>Analysis of Key Greenhouse Gas Emissions Offset Issues: Future deliverables will be determined annually based on evolving climate policies. Research will continue on the general range of subjects related to GHG offsets. Analytical tools will be developed and enhanced to allow quantitative analyses of emerging policy proposals.</p>	12/31/13	Technical Update

P103.002 Investigate Use of Market and Nonmarket Mechanisms in Climate Policy Design (070653)

Key Research Question

Economically efficient climate policy approaches such as global emissions trading can cost trillions of dollars less than more-prescriptive regulatory policies to achieve the same emissions levels. However, U.S. and international climate policy is at a particularly uncertain point. The end of the Kyoto framework period is rapidly approaching, and recent United Nations Climate Change Conference meetings have not developed a clear path beyond that period. At the U.S. federal level, an economywide cap-and-trade policy appears to be off the table for now; policymakers are exhibiting distrust and confusion over use of market mechanisms; a court order is forcing EPA to try to regulate CO₂ emissions through the Clean Air Act; and there is tremendous interest in encouraging the penetration of renewable generation technologies and taking other steps to incentivize lower-emitting energy sources. In addition, states are considering regulatory approaches that they view as needed complements to possible future federal market-based systems. A patchwork of market and nonmarket energy and environmental policies has the potential to be unnecessarily costly, inefficient, and ultimately, ineffective. Understanding and communicating the potential complementary and competitive interactions of overlapping policies can help avoid inefficient policies and unintended consequences.

Approach

This project provides analyses of market and nonmarket mechanisms for controlling GHG emissions and meeting other clean energy goals, and examines the possible interactions from a combination of the two approaches. This work will improve understanding of these issues and help utilities communicate their implications to policymakers and stakeholders. In 2012, the project will focus on communicating historic examples illustrating the strengths and weaknesses of market and nonmarket policy designs, with a focus on nonmarket policies currently under discussion (for example, New Source Performance Standards, Clean Energy Standard, California regulations).

Impact

- Develops and applies models to quantify implications of different market and nonmarket climate policy implementation choices
- Develops and applies models to quantify implications of clean-energy policy implementation choices and assess their interactions with climate policy alternatives
- Examines ongoing experience with climate policy across the United States and other countries to understand policy choices and their implications
- Provides clear communication regarding implications of different rules and restrictions on trading and technology-driven regulatory mandates

How to Apply Results

Company environmental staff can use the information to inform their company’s climate strategy, help identify and evaluate possible near-term GHG emission reduction investments, and guide development of corporate policy positions. EPRI researchers will facilitate broader use and awareness of the results by briefing key stakeholders, including policymakers, other researchers, and the public; developing materials for the trade press/media; keeping EPRI’s public website current; presenting at meetings/seminars; and continuing service on various advisory panels.

2012 Products

Product Title & Description	Planned Completion Date	Product Type
<p>Analysis of Market and Nonmarket Mechanisms in Climate Policy Design: With input from program advisors, results will be delivered primarily through a technical report on opportunities and challenges of using a mix of market and nonmarket mechanisms for controlling GHG emissions and meeting other clean energy goals. Insights will also be shared with program members and other stakeholders through presentations and workshops.</p>	12/31/12	Technical Update

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
<p>Analysis of Market and Nonmarket Mechanisms in Climate Policy Design: Future deliverables will be determined annually based on evolving climate policies. Research will continue on the general range of subjects in emissions trading and nonmarket policies. Analytical tools will be developed and enhanced to allow quantitative analyses of emerging policy proposals.</p>	12/31/13	Technical Update

P103.003 Methods to Assess GHG Policy Impacts on Business Strategy and Compliance (047425)

Key Research Question

Any policy seeking to reduce CO₂ emissions below historical levels will have a dramatic impact on electric power prices, cash flows to generating assets, and incentives for investments in new and existing generation. The resulting electricity market is likely to be fundamentally different from today’s, driven in particular by a large influx of nondispatchable generation. With few options to achieve substantial short-term emission reductions, and expensive, technologically or institutionally uncertain long-term options, the costs and reliability impacts could be problematic. A binding emissions cap with a substantial share of auctioned allowances could expose the electric sector to over \$100 billion per year in CO₂ costs in a market that is likely to be highly volatile. Electric utility decision makers will need new methods and analytical frameworks to navigate this sea change in their compliance and business environment.

Approach

This project will help electric utility decision makers understand the implications of climate and other clean energy policies, both market and nonmarket, for their companies and incorporate policy uncertainty into their business strategies, investment decisions, and compliance choices. In 2012, the project will focus on implications of nonmarket energy and environmental policies on utility investment and technology strategies.

Impact

- Helps companies assess climate policy risks and opportunities and develop strategies to manage both
- Assesses implications for companies of the overlap of climate policy with policies promoting renewable energy and conservation
- Provides methods for evaluating capital investments in existing generation given policy and other uncertainties
- Provides methods for comparing emission reduction investments—from on-system options to emissions offsets—on a consistent basis
- Helps companies communicate the implications of climate policy to stakeholders

How to Apply Results

Company environmental and planning staff can learn from reports, presentations, and workshops about how to consider climate policy uncertainty for planning and operational activities. Key insights may be communicated to a broader stakeholder audience in order to widen understanding of the drivers and dynamics of electric company decision making.

2012 Products

Product Title & Description	Planned Completion Date	Product Type
<p>Development of Methods to Assess GHG Policy Impacts on Business Strategy and Compliance: Project results will be delivered primarily through a technical report providing methodological insights and results concerning the impact of stringent climate and clean energy policies on power markets, and on the consistent assessment of compliance options. Insights will be shared with program members and other stakeholders through presentations and workshops.</p>	12/31/12	Technical Update

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
<p>Development of Methods to Assess GHG Policy Impacts on Business Strategy and Compliance: Future deliverables will be determined in consultation with members. Research topics will depend, in part, on whether climate legislation in the United States has been passed or is imminent. There is likely to be an ongoing need to understand new generation choices, given continuing uncertainty about climate policy, fuel prices, capital costs, and public acceptance of technology.</p>	12/31/13	Technical Update

P103.004 Assessing the Experience of International, Regional, and State GHG Policies (067509)

Key Research Question

The many international, regional, and state efforts to institute climate and clean energy policies constitute a laboratory of parallel experiments. Some of these policies are already in force, regulations are being developed for others, and some are under active consideration and may become law. What have been the magnitude and nature of the economic consequences, including relocation of industry? How have the nuances of policy designs impacted electric utilities and their customers? How have companies organized themselves to comply with policies and to identify new opportunities those policies may create? Understanding the successes and failures of these policies can help inform policy discussions of new proposals in the United States and elsewhere. Electric power companies and their customers are key stakeholders in these debates, and thus they have a

strong need to understand the efficacy and consequences of policy proposals and to effectively communicate that understanding in the policymaking process.

Approach

This project will provide insights into experience to date with policies managing GHG emissions from the electric and energy sectors throughout the world. This perspective will help utilities be better informed participants in GHG policy debates and understand implications for their own business organization decisions. In 2012, this project will likely focus on synthesizing lessons learned to date from the EU trading scheme (in terms of both policy design and company compliance strategies) and from state and regional programs in the United States.

Impact

- Helps clarify and communicate international and regional-level climate policy impacts on national and global emissions given the opportunities for relocation of economic activity and trade
- Helps assess the potential effects of climate policy on electricity markets and economic activity
- Increases capability to support electric utilities that are participating in policymaking processes

How to Apply Results

Company environmental staff can use the information to inform their company’s climate strategy, help identify and evaluate possible near-term GHG emission reduction investments, and guide development of corporate policy positions. EPRI researchers will facilitate broader use and awareness of the results by briefing key stakeholders, including policymakers, other researchers, and the public; developing materials for the trade press/media; keeping EPRI’s public website current; presenting at meetings/seminars; and continuing service on various advisory panels.

2012 Products

Product Title & Description	Planned Completion Date	Product Type
<p>Assessing the Experience of International, Regional and State GHG Policies: With input from Program Advisors, this project will synthesize lessons learned to date from the EU trading scheme (both in terms of policy design and company compliance strategies) and from state and regional programs in the US. Insights will be shared with program members and other stakeholders through presentations and workshops.</p>	12/31/12	Technical Resource

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
<p>Assessing the Experience of International, Regional and State GHG Policies: Future deliverables will be determined in consultation with members. Topics will depend, in part, on the course of climate and energy policies at state and regional levels in the U.S. and in other countries.</p>		Technical Resource

P103.005 Communications (067510)

Key Research Question

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. Much of this material is rooted in economic theory or based on implementations of climate policy in distant international venues, making it difficult to access and interpret.

Approach

This project helps members communicate program results on climate policy complexities to diverse stakeholders through workshops, issue summary documents, and other communication channels. In 2012, this project will continue to support a series of policy dialogues, webcasts for members, participation in external committees, the enhancement and maintenance of the Global Climate public website, and other communication efforts.

Impact

- Improved understanding of issues critical to the design and implementation of cost-effective climate policy
- Better understanding of how climate policy affects electric power markets and the implications for investment and operating decisions
- Better understanding of the potential opportunities and challenges for electric companies in meeting compliance goals
- Increased effectiveness in communicating the important details of climate policy design and critical tradeoffs to investors, electric company customers, policymakers, and other stakeholders

How to Apply Results

Company environmental staff can use the information to inform company climate strategy, help identify and evaluate possible near-term GHG emission reduction investments, and guide development of corporate policy positions. EPRI researchers will facilitate broader use and awareness of the results by briefing key stakeholders, including policymakers and policy researchers; developing materials for the trade press/media; keeping the program's public website current; presenting at meetings/seminars; and continuing service on various advisory panels.

2012 Products

Product Title & Description	Planned Completion Date	Product Type
Communication Activities and Materials: With input from program advisors, deliverables will be determined based on evolving climate and energy policies. Topics, modes of communication, and key audiences will depend, in part, on the status of climate negotiations, legislation, regulation, and implementation.	12/31/12	Technical Resource

Future Year Products

Product Title & Description	Planned Completion Date	Product Type
Communication Activities and Materials: Future deliverables will be determined in consultation with members. Topics, modes of communication, and key audiences will depend, in part, on the status of climate policy discussions and implementation.	12/31/13	Technical Resource

Supplemental Projects

Development of New GHG Offsets (072071)

Background, Objectives, and New Learnings

This project will facilitate development of greenhouse gas (GHG) emissions offsets associated with activities to enhance management of biomass vegetation growing on high-voltage electricity transmission system rights of way (ROW) owned or managed by electric companies.

While climate policy debates continue, analysts agree that identifying large-scale, cost-effective GHG emissions reductions opportunities is critical to containing the expected economic costs of implementing climate change mitigation programs. Managing vegetation on ROWs to maintain and increase biomass and carbon stocks is one promising opportunity to reduce emissions and create offsets. These offsets may help companies to comply with future state, regional and national GHG emission reduction policies.

Currently, many electric companies seek to comply with transmission system vegetation management regulations imposed by the North American Electricity Reliability Corporation (NERC) by removing virtually all vegetation growing on transmission system rights of way. This approach is expensive for electric companies to implement, reduces species habitat and is a source of GHG emissions.

By committing to maintain or increase the amount of biomass vegetation and associated carbon stocks growing on transmission ROWs, electric companies potentially can reduce their ROW management costs, enhance wildlife habitat, and create valuable GHG emissions offsets, while maintaining critical system reliability. This may be the case whether an electric company owns its ROWs or has long-term management easements on its ROWs.

This project builds on the experience gained in EPRI Program 103's successful efforts to demonstrate new potential offset activities (e.g., reducing nitrous oxide (N₂O) emissions in agricultural crop production), and upon extensive research in Program 51 to develop cost-effective, environmentally beneficial approaches to implementing Integrated Vegetation Management (IVM) programs on electric company transmission system rights of way.

Project Approach and Summary

This project is designed to assess the overall technical feasibility of developing GHG emissions offsets on electric company transmission ROWs by implementing enhanced IVM. To accomplish this goal, the project incorporates three key components:

1. Assess the potential to utilize existing GHG emission offsets accounting methodologies and protocols, such as those previously developed by the American Carbon Registry (ACR), the Climate Action Reserve (CAR) and the Verified Carbon Standard (VCS), to quantify the potential GHG emission offsets that may be granted to electric companies in exchange for implementing enhanced IVM approaches on their transmission system ROWs. The carbon offsets accounting protocols and methodologies in use today in the U.S. allow an owner or long-term manager of land to generate GHG emissions offsets based on a forest's ability both to emit and sequester carbon dioxide (CO₂). Offsets derived from preventing CO₂ emissions associated with tree cutting and removal of biomass vegetation are referred to as "stocking retention" or "avoided deforestation" offsets and are measured in terms of standing timber or biomass relative to a standard "baseline." Offsets derived from increasing the amount of carbon stored in trees or other living biomass as compared to an appropriate baseline are referred to as "growth" offsets and are measured in terms of annual growth of the forest and associated biomass vegetation.

2. Evaluate the potential benefits, risks and financial costs to develop a new, customized offsets accounting protocol specifically designed to be used by electric companies to create GHG offsets by implementing IVM on transmission ROWs. This effort will address several initial steps in creating a new offset protocol including: defining the types of activities that may qualify to create offsets, defining associated project “baselines,” and evaluating different approaches that may be used to assess the “additionality” of a proposed transmission ROW offsets project.
3. Utilize Geographic Information System (GIS) analysis tools to estimate the tons of offsets that could be created by implementing IVM on transmission ROWs.

If sufficient resources are available, this project may also evaluate the feasibility of developing GHG emissions offsets on *distribution* system rights of way.

Benefits

It is expensive for electric companies to manage vegetation growing on transmission ROWs. For example, a mid-sized U.S. electric company could spend as much as \$10-\$20 million annually to manage their ROWs in compliance with existing legal requirements and to avoid system outages inadvertently caused by ingrowth of trees and/or trees falling into the wire security zone. Based on the results of this project, electric companies may be able to reduce the annual and long-term cost of managing vegetation growing on their ROWs by using less expensive management approaches and by developing GHG emissions offsets that can be sold to others in the market, and/or used by the company to comply with future GHG reduction obligations.