2013 Mid-Year Meeting & Conference

October 23-24, 2013

Renaissance Hotel ■ 999 Ninth Street, NW ■ Washington, D.C.
The Energy Bar Association is committed to the goals of fostering an inclusive and diverse membership and increasing diversity across all levels of the Association, so as to reflect the diversity of the energy industry and the Nation as a whole. Attorneys, non-attorney professionals in the energy field and law students are welcome to join our ranks regardless of race, creed, color, gender, ethnic origin, religion, sexual preference, age, or physical disability and are encouraged to become active participants in the Association’s activities.

These program materials are presented with the understanding that the speakers, including panel members and other participants, and the CLE program do not render any legal, accounting or other professional service. Due to the rapidly changing nature of the law, information contained in these program materials may become outdated. As a result, any individual using these program materials and the information presented during the program must always research original sources of authority to ensure accuracy when dealing with specific clients’ legal matters.
October 23, 2013

Dear Colleagues and Friends:

On behalf of the Board of Directors and Staff of the Energy Bar Association, I welcome you to the 2013 Mid-Year Meeting & Conference. The Mid-Year Meeting & Conference will focus on the evolution of our industries, including the legal issues that are developing as a result. EBA is honored to feature several distinguished speakers and guests, and we greatly appreciate each of your contributions to the success of our programs. The Mid-Year Meeting & Conference will also include the presentation of the Association’s State Regulatory Practitioner Award and announcement of the recipient of the Paul E. Nordstrom Award. Our congratulations to both awardees.

Over the past year, the EBA Board has continued with implementation of the 2013-2015 Strategic Plan which includes specific goals to further our objectives with regard to educational programming, networking opportunities, information resources and membership growth. The Mid-Year Meeting is one example of our Strategic Plan implementation. In addition to the high-quality programs we strive to provide at both the national and chapter levels, the Association has focused also on the networking opportunities that our members cite as a key benefit to EBA membership. To that end, we hope that you plan to attend our first-ever networking luncheon during the Mid-Year Meeting on October 24. The luncheon will offer an opportunity to reacquaint with existing friends and also make new connections, without the time constraints of our program breaks!

We have also undertaken initiatives to improve upon information technology and other services to the membership. In addition to our weekly EBA E-News, the EBA website has been redesigned to provide improved communication with the membership. In the coming months, we will update and enhance the content of the website so that it serves as a key source of current information to our membership. The Association also now has an EBA Book Club, with membership and discussion available both online and through quarterly meetings of the Book Club. I encourage each of you to participate in these initiatives. Information is available on the EBA website, www.eba-net.org.

The seven regional Chapters and twenty subject-matter Committees of the EBA have played a key role in the Association’s success in its mission to promote the professional excellence and ethical integrity of its members in the practice, administration, and development of energy laws, regulations and policies. Our members have played a key role as well by responding to our call for topics for the Mid-Year Meeting, participating in the Committees and programs, and providing feedback on how the Association might better serve your needs. We greatly appreciate your participation and welcome your input. For those who are not members, we encourage you to consider membership in the EBA so that you can enjoy the full benefits of membership.

Finally, we have appreciated the achievements of the Charitable Foundation of the EBA and the Foundation of the Energy Law Journal. Their contributions are yet another testament to our dedication to the membership, the legal community, and the community at-large.

Thank you for attending the Mid-Year Meeting. We hope that the programs and networking opportunities provide you with an exceptional experience. We look forward to seeing you at our further programs.

Sincerely,

Adrienne E. Clair
EBA President
What was once unconventional now drives the energy sector. The Energy Bar Association’s 2013 Mid-Year Meeting & Conference will provide two full days of discussions focused on the legal issues that are encouraging or responding to this evolution. The first morning will focus on the Obama Administration’s efforts to develop its Climate Action Plan to regulate greenhouse gas emissions and explore the geopolitical implications of new energy discoveries across the Globe by unconventional energy players. The second day will kick off with a panel of former FERC Chairs providing advice for the next generation of industry leaders based on the changing landscape, followed by the increasingly controversial issue of how state regulatory agencies should address the growth of distributed generation and its impact on traditional rate recovery mechanisms for electric utilities, plus how the increase in formerly unconventional natural gas production technologies has led to increased U.S. natural gas production and changing flow patterns, thereby impacting the nations natural gas pipeline rate structures. Breakout sessions will focus on some of the legal issues having the largest impact on the energy sector today, including Order No. 1000's transmission planning requirements, the integration of intermittent resources, development of new natural gas pipeline infrastructure to serve increased demand and to bring new production sites to market, and the challenges utilities face to protect customer data from an increase in cyber security threats. The conference also includes numerous networking and social events. We look forward to seeing you!

EBA Conference Schedule of Events

Wednesday, October 23, 2013

8:00 am Registration—Open all day

8:30 am Welcome and Overview
Adrienne E. Clair, EBA President,
Stinson Morrison Hecker LLP

8:45 am Keynote Address
Phil Sharp, President, Resources for the Future

9:15 – 10:30 am General Session I: President Obama’s Climate Action Plan

In June 2013, the Obama Administration released its Climate Action Plan, which, among other things, the plan directs EPA to reissue proposed carbon pollution standards for new power plants by September 2013 and for existing power plants by June 1, 2014. The standards for existing power plants, which will take the form of guidelines for the states, raise a number of questions. What form will the guidelines take? Will it take the form of emissions rates or an auction, cap and trade? What role will the existing programs in California and the Regional Greenhouse Gas Initiative play? What steps should utilities take before EPA issues its proposal in anticipation of it?

Moderator: Jonas Monast, Director, Climate and Energy Program, Duke University’s Nicholas Institute for Environmental Policy Solutions

Panelists:
Amy Trojecki, Director, Environmental & Fuels Policy, Exelon Corporation
Mark C. McCullough, Executive Vice President – Generation, American Electric Power
Brian Turner, Deputy Executive Director for Policy and External Relations, California Public Utilities Commission

Joe Goffman, Senior Counsel, Office of Air and Radiation, U.S. Environmental Protection Agency

10:30 – 10:45 am Networking Break

10:45 am – 12:15 pm General Session II: The Geopolitical Implications of Energy Discoveries in Unexpected Places by Unexpected Players

US shale gas has shaken the international market and reinvigorated manufacturing; the discovery of vast resources in Israel and Cyprus will turn these countries into exporters and eliminate Israel’s dependence on Egyptian imports; Energy Information Association (EIA) projections in September will show that the US will produce more oil than it imports, while an EIA commissioned report puts recoverable oil from U.S. tight formations at 24 BBLs—enough for decades. What if we aren’t hostage to OPEC and other countries anymore? What if LNG breaks Russia’s stranglehold on Europe? Technology like seismic tools and horizontal drilling have enormous geopolitical consequences. While the U.S. may not fully wean itself from imports soon, these unlikely discoveries can dramatically change alliances and political leverage. This panel will explore these implications for the US and global energy scene.

Moderator: Keith Johnson, Wall Street Journal

Panelists:
The Honorable Adam Sieminski, Administrator, U.S. Energy Information Administration
David Pumphrey, Co-Director and Senior Fellow, Energy and National Security Program, Center for Strategic & International Studies
Scott Moore, VP of Marketing, Anadarko
12:30-2:00pm Luncheon with Guest Speaker
Matthew Wald, The New York Times

Matthew Wald, long-time energy correspondent for the New York Times, may address several topics of interest to EBA members, including the need for changes to the structure of the electric transmission system, new technologies, and where our country stands with regard to nuclear power.

2:00 pm CONCURRENT SESSIONS I

Session A: Revisiting Variable Energy Resources Integration

FERC issued its first Notice of Inquiry on integration of Variable Energy Resources (VER) in 2010. This panel will explore what we have learned about reliability and economic impacts of VER integration and some of the practical challenges transmission operators and resource owners are facing. How much are the changes required by FERC’s final rule on Integration of Variable Energy Resources likely to help? What additional tariff changes should transmission operators pursue? Panelists will discuss how system operators have to deal with both reliability and economics issues in a way “traditional” practices did not, and some of the surprising lessons learned through real-world experiences.

Moderator: N. Beth Emery, Partner, Husch Blackwell LLP
Panelists:
Sandi A. Snodgrass, Partner, Holland & Hart LLP
Jeff Wright, Director, Office of Energy Projects, Federal Energy Regulatory Commission
Sharon Buccino, Director, Land and Wildlife Program, Natural Resources Defense Council
Patrick Hester, Associate General Counsel, Spectra Energy Corp.

3:30 - 3:45pm Networking Break

3:45-5:00 pm CONCURRENT SESSIONS II

Session A: Financing New Electric Generation and Transmission Infrastructure – Key Issues for Today’s Market

The financing of new energy infrastructure is a growing challenge, particular on the debt side. Some believe that capacity payments in today’s RTOs do not provide a sufficient signal to incentivize new generation when needed, and that energy price signals that could do so are either too fleeting or being masked until it’s too late. Do markets need tweaking to support getting projects financed (if so, how), or do we need to return to a PPA auction or traditional model? Is there middle ground? In electric transmission, FERC incentives are harder to come by and the days of ROEs in the teens appear to be a memory. Even though they were given the right to
compete under the ROFR provisions of Order 1000, and encouraged to develop transmission to access renewables, how can merchant transmission developers finance their projects? What are the best examples of recent generation and transmission financings? Finally, what about financial institutions – is there a checklist or minimum set of conditions they seek in order for a project to find favor with their credit committees these days?

Moderator: Jacob (Jay) Worenklein, Partner, Akin Gump Strauss Hauer & Feld, LLP

Panelists:
Clark Bruno, Senior Vice President, Anbaric Transmission
Steve Schleimer, VP, Government and Regulatory Affairs, Calpine Corp.
Stuart Murray, Director-Infrastructure & Energy Finance, Citigroup
Steve Herman, Managing Director, Energy Capital Partners

Session B: Big Data and Cyber Security Concerns – Industry Best Practices

A discussion about how to develop cyber security best practices in the energy industry that will also work with best practices across industries. Learn about considerations for managing large data systems, confidential information and the risks employees pose to your company’s data security. This panel will provide you with crucial information as companies and industries deemed part of the United States’ critical infrastructure prepare to meet more stringent cybersecurity regulatory requirements.

Moderator: Amy S. Mushahwar, Of Counsel, Ballard Spahr

Panelists:
Russ Mundy, Principal Networking Scientist, Sparta, Inc. A Parsons Company
Christopher Gleyer, Technical Director, MANDIANT
Jeffrey M. Taylor, Associate General Counsel, Pepco Holdings, Inc.

5:30 - 8:00 pm Special Event*: Charitable Foundation of EBA Gala and Silent Auction

*This event is open to all and requires a separate registration fee. See details on page 3.

Thursday, October 24, 2013

8:00 am Registration—Open all day

8:30 am Welcome and Overview
Adrienne E. Clair, EBA President, Stinson Morrison Hecker LLP

9:15 am General Session I: Former Federal Energy Regulatory Commission Chair Panel

Former FERC Chairs discuss their experiences, including insights into relationships with the White House, the Hill, and stakeholders, as well as managing the Commission itself.

Moderator: Nora Mead Brownell, Founding Partner, Espy Energy Solutions, LLC
Panelists:
Joseph T. Kelliher, Executive Vice President, Federal Regulatory Affairs for NextEra Energy Inc.
James J. Hoecker, Partner, Husch Blackwell, LLP
Elizabeth A. (“Betsy”) Moler, Retired

10:30 – 10:45 am Coffee Break

10:45 am - 12:15 pm General Session II: Distributed Resources and Challenges to the Electric Utility Model

Improved technologies for micro grids, smart grids, rooftop solar, CHP, energy storage, and expanded demand management and efficiency are penetrating the power sector. In the process, they can compete with electric utilities and affect their planning by changing energy demand, lowering utility revenues and profits, and changing the flows of power at the distribution level. To what extent do state regulators need to consider changes to the regulatory compact and rate structures to accommodate these changes? Should state regulatory policies change to further encourage such technologies, or do policies need to protect the financial viability of the providers of last resort? How can utilities adapt to these potential threats? Is there an “if you can’t beat ‘em, join ‘em” approach?

Moderator: Chuck Hornbrook, Vice President, ICF International

5:30 to 8:00 p.m. Renaissance Hotel, 999 9th St., N.W., Washington, D.C.

The Charitable Foundation of the Energy Bar Association Invites you to its
Eleventh Annual Fundraising Gala Fall Fête

October 23, 2013 5:30 to 8:00 p.m.

Featuring Live Music, Hors d’oeuvres, Open Bar and Silent Auction

The CFEBA Annual Fundraising Gala is the primary fundraising event for CFEBA. All money raised through the Gala & Silent Auction is used by CFEBA to fund a wide variety of energy-related and general charitable activities, as well as other community service projects targeting energy efficiency techniques. Since its formation in 2002, the CFEBA has awarded over $1.25 million to worthy organizations in furtherance of the CFEBA’s charitable mission. Please attend, invite your colleagues, and consider a monetary contribution or donating an item to the silent auction.

Registration*: $100 per person/Private Member $50 per person/Government

*Please note: If your company/firm is a sponsor of the Gala, the sponsor receives complimentary tickets. For information call 202-223-5625.

Renaissance Hotel, 999 9th St., N.W., Washington, D.C.

*This event is open to all and requires a separate registration fee. See details on page 3.
**Panelists:**
*Bob Curry,* Managing Director, Curry Energy  
*David Shuford,* Vice President - Policy & Business Evaluation, Alternative Energy Solutions, Dominion Resources Services, Inc.  
*Will Agate,* Senior Vice President, Navy Yard Management & Development, Philadelphia Industrial Development Corp (PIDC)

**12:15 -1:45 p.m. Networking Luncheon: “Trending Topics in Energy Law”**

*Announcement of the Paul E. Nordstrom Award recipient.*

We listened to your feedback. This first-ever networking luncheon will allow more time for networking and interaction between conference attendees. Foster old relationships and build new ones with your tablemates while participating in a facilitated discussion regarding trending topics in energy law. Table facilitators will be introduced and each table will have a list of topics and questions to draw from, but feel free to go off topic and bring your own ideas and questions to share with the group. Enjoy!

**1:45-2:45 pm General Session III: Ethical Pitfalls for Attorneys Appearing Before State Regulators**

The ABA Model Rules of Professional Conduct, as they are implemented in each state, reveal a multitude of ethical issues that confront attorneys in their representation of energy companies. Add in the regulatory compliance challenges faced by the industry, and it is obvious that attorneys need to be aware of a multitude of rules, regulations and policies that constantly affect their ethical representation of their clients. How should an attorney handle the investigation of their company’s products and consumer advertising? How should an attorney ethically handle multiple simultaneous investigations? The panelists will share their experiences representing energy companies before State Commissions, State Attorneys General, Inspectors General. The panelist will discuss how to avoid ethical pitfalls during these investigations and the policies and plans that your clients should have in place before the state regulators come knocking.

**Moderator:** *Paula N. Johnson,* Senior Attorney - Regulatory, Alliant Energy Corporate Services, Inc.  
**Panelists:**  
*Joan Sullivan,* Partner, Harris Beach, PLLC  
*Wendy Tatro,* Corporate Counsel, Ameren  
*Richard J. Johnson/Dan Lipschultz,* Moss & Barnett

**2:45 – 4:00 PM Concurrent Sessions I**

**Session A: Gas Pipeline Rates Issues**

The influx in new infrastructure and nationwide availability of natural gas from unconventional sources near end-use markets has changed the flow of gas on the interstate natural gas pipeline system and, in some cases, has placed considerable downward pressure on transportation rates. How are these dynamics shaping natural gas rate making today? Learn from a panel of industry participants and regulators as they discuss their perspectives on the latest trends in pipeline ratemaking.

**Moderator:** *A. Gregory Junge,* Partner, Van Ness Feldman, LLP  
**Panelists:**  
*John A. Roscher,* Director, Rates & Tariffs, TransCanada U.S. Pipelines  
*Leonard Crook,* Vice President, ICF International  
*Janice Radel,* Energy Industry Analyst, Office of Administration Litigation, Federal Energy Regulatory Commission  
*Geoffrey B. Inge,* President, KTM

**Session B: A PURPA Renaissance?**

This panel will provide a high-level overview of the history and goals of Public Utility Regulatory Policies Act (PURPA) and of the rights and obligations it establishes for developers and “host” utilities. It will cover recent developments in the area of PURPA enforcement. Also, the panelists will discuss ways in which utilities can partner with their customers to leverage their customers’ capital and interest in distributed generation for the benefit of the entire system. Is PURPA experiencing a resurgence? Can projects rely on PURPA to get built? How is PURPA working in the new market environment? This panel will address these and other questions with a view toward stimulating thinking about how PURPA fits into an energy landscape that is vastly different from one that sparked PURPA’s passage back in 1978.

**Moderator:** *Donna M. Attanasio,* Senior Advisor for Energy Law Programs, The George Washington University Law School  
**Panelists:**  
*Carolyn Elefant,* Law Offices of Carolyn Elefant PLLC  
*Robert S. Mudge,* Principal, The Brattle Group  
*Carrie Simpson,* Manager, Real-Time Markets, Southwest Power Pool  
*Holly Rachel Smith,* Assistant General Counsel, National Association of Regulatory Utility Commissioners

**4:00 – 4:15pm Networking Break**

**4:15 – 5:15 PM Concurrent Sessions II**


Many state statutes and regulations emulate the U.S. Constitution 5th Amendment’s prohibition on the taking of private property for public use without just compensation. Traditionally, states have granted eminent domain rights to incumbent utilities servicing in-state consumers and intrastate pipelines transporting energy commodities such as oil and gas. New infrastructure projects, however, are turning the “public use” concept on its head. State public utility commissions are being asked to evaluate siting requests from non-traditional merchant transmission lines that will not serve load in the state, but further national renewable energy interests. In the pipeline world, the shale gas boom has resulted in a number of natural gas liquids and crude oil pipeline projects that may not meet the state’s “public use” definition. Hear from practitioners that are working to get these projects built, the legal hurdles they face, a state regulator’s perspective, and a scholarly perspective on the state of the law.
Session B: Order No. 1000 Update

Initial regional compliance filings had just been made when this topic was addressed at the 2012 EBA Mid-Year Meeting. Since then, FERC has issued numerous orders on those filings, responsive filings were made, interregional filings were made in July 2013, and petitions for review of Order No. 1000 continue before the D.C. Circuit Court of Appeals. Panelists will offer their perspectives on the current state of law and regulation on transmission planning and cost allocation under Order 1000, including: (1) elimination of contractual right of first refusal (ROFR) rights (or failure to do so); (2) continued assertion that the Mobile-Sierra doctrine precludes the FERC from imposing various Order No. 1000 requirements, and disagreement among the Commissioners on Mobile-Sierra protection; (3) questions about what constitutes a planning region for purposes of planning/cost allocation in areas where there is no organized market; (4) implications of pending rehearing requests and DC Circuit litigation; (5) the role of the states in determining project selection and cost allocation for solutions to transmission needs driven by Public Policy Requirements and (6) interregional cost allocation filings.

Moderator: Robin M. Nuschler, Sole Proprietor

Panelists:
The Honorable Edward S. Finley, Jr., Chairman, North Carolina Utilities Commission
Pauline Foley, Assistant General Counsel, PJM Interconnection, LLC
John Lucas, General Manager, Transmission Policy & Services, Southern Company Transmission
Dr. Terry S. Harvill, Vice President, ITC Grid Development

Registration Fees & Information

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Registration Fees & Information

Panelists:
Mercy Carrasco, Assistant General Counsel, Boardwalk Pipeline Partners, LP
The Honorable Tom Wright, Commissioner, Kansas Corporation Commission
Peter J. Byrne, Professor, Georgetown University Law Center
Cary Kottler, General Counsel, Clean Line Energy Partners

5:30 pm Conference Concludes

Please submit your evaluation and CLE attendance forms.
2014

Western Chapter Annual Meeting
San Francisco, CA
February 20-21, 2014

Mid-West Chapter Annual Meeting
St. Louis, MO
March 10-11, 2014

2014 EBA Annual Meeting & Conference
Renaissance Washington
Washington, D.C.
April 8-9, 2014

2014 EBA Mid-Year Meeting & Conference
Renaissance Washington
*November 4-5, 2014
*tentative date

For information on EBA, regional programs, activities and publications, visit our online calendar at:
http://www.eba-net.org/calendar or call 202/223-5625
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- Energy Bar Association
- DC Bar
- MDV-SEIA
- GW Law
- WCEEE
- National Association of Regulatory Utility Commissioners
EBA Invites You to Get Involved!

A great way to get involved and set direction for the Energy Bar Association is to get involved in a committee.

What are the benefits of joining a committee?

- Keep up on the latest developments within a substantive area of interest
- Help shape programs of interest to you and your colleagues
- Share with, and learn from, colleagues with different points of view
- Meet and network with EBA members
- Committee membership is open only to EBA members. Get involved today!

2013-2014 EBA COMMITTEES

- ALTERNATIVE DISPUTE RESOLUTION
- COMPETITION & ANTITRUST
- COMPLIANCE & ENFORCEMENT
- DEMAND-SIDE RESOURCES & SMART GRID
- ELECTRICITY REGULATION
- ENVIRONMENTAL REGULATION
- FERC PRACTICE & ADMINISTRATIVE LAW JUDGES
- FINANCE & TRANSACTIONS
- INTERNATIONAL ENERGY LAW & TRANSACTIONS
- JUDICIAL REVIEW
- LEGISLATION
- NATURAL GAS REGULATION
- NUCLEAR REGULATION
- OIL & LIQUIDS PIPELINE REGULATION
- POWER GENERATION & MARKETING
- PROFESSIONAL DEVELOPMENT, EDUCATION & ETHICS
- PROGRAMS & MEETINGS
- RENEWABLE ENERGY
- STATE COMMISSION PRACTICE & REGULATION
- SYSTEM RELIABILITY & PLANNING
- YOUNG LAWYERS

For committee contact information visit: http://www.eba-net.org/get-involved/eba-committees
or call EBA at 202.223.5625
General Session I: President Obama’s Climate Action Plan

EBA’s Mid-Year Meeting & Conference
October 23-23, 2013
THE PRESIDENT’S CLIMATE ACTION PLAN

Executive Office of the President

June 2013
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PRESIDENT OBAMA’S CLIMATE ACTION PLAN

“We, the people, still believe that our obligations as Americans are not just to ourselves, but to all posterity. We will respond to the threat of climate change, knowing that the failure to do so would betray our children and future generations. Some may still deny the overwhelming judgment of science, but none can avoid the devastating impact of raging fires and crippling drought and more powerful storms.

The path towards sustainable energy sources will be long and sometimes difficult. But America cannot resist this transition, we must lead it. We cannot cede to other nations the technology that will power new jobs and new industries, we must claim its promise. That’s how we will maintain our economic vitality and our national treasure -- our forests and waterways, our croplands and snow-capped peaks. That is how we will preserve our planet, commanded to our care by God. That’s what will lend meaning to the creed our fathers once declared.”

-- President Obama, Second Inaugural Address, January 2013

THE CASE FOR ACTION

While no single step can reverse the effects of climate change, we have a moral obligation to future generations to leave them a planet that is not polluted and damaged. Through steady, responsible action to cut carbon pollution, we can protect our children’s health and begin to slow the effects of climate change so that we leave behind a cleaner, more stable environment.

In 2009, President Obama made a pledge that by 2020, America would reduce its greenhouse gas emissions in the range of 17 percent below 2005 levels if all other major economies agreed to limit their emissions as well. Today, the President remains firmly committed to that goal and to building on the progress of his first term to help put us and the world on a sustainable long-term trajectory. Thanks in part to the Administration’s success in doubling America’s use of wind, solar, and geothermal energy and in establishing the toughest fuel economy standards in our history, we are creating new jobs, building new industries, and reducing dangerous carbon pollution which contributes to climate change. In fact, last year, carbon emissions from the energy sector fell to the lowest level in two decades. At the same time, while there is more work to do, we are more energy secure than at any time in recent history. In 2012, America’s net oil imports fell to the lowest level in 20 years and we have become the world’s leading producer of natural gas – the cleanest-burning fossil fuel.

While this progress is encouraging, climate change is no longer a distant threat – we are already feeling its impacts across the country and the world. Last year was the warmest year ever in the contiguous United States and about one-third of all Americans experienced 10 days or more of 100-degree heat. The 12 hottest years on record have all come in the last 15 years. Asthma rates have doubled in the past 30 years and our children will suffer more asthma attacks as air pollution gets worse. And increasing floods, heat waves, and droughts have put farmers out of business, which is already raising food prices dramatically.

These changes come with far-reaching consequences and real economic costs. Last year alone, there were 11 different weather and climate disaster events with estimated losses exceeding $1 billion each across the United States. Taken together, these 11 events resulted in over $110 billion in estimated damages, which would make it the second-costliest year on record.
In short, America stands at a critical juncture. Today, President Obama is putting forward a broad-based plan to cut the carbon pollution that causes climate change and affects public health. Cutting carbon pollution will help spark business innovation to modernize our power plants, resulting in cleaner forms of American-made energy that will create good jobs and cut our dependence on foreign oil. Combined with the Administration’s other actions to increase the efficiency of our cars and household appliances, the President’s plan will reduce the amount of energy consumed by American families, cutting down on their gas and utility bills. The plan, which consists of a wide variety of executive actions, has three key pillars:

1) **Cut Carbon Pollution in America:** In 2012, U.S. carbon emissions fell to the lowest level in two decades even as the economy continued to grow. To build on this progress, the Obama Administration is putting in place tough new rules to cut carbon pollution – just like we have for other toxins like mercury and arsenic – so we protect the health of our children and move our economy toward American-made clean energy sources that will create good jobs and lower home energy bills.

2) **Prepare the United States for the Impacts of Climate Change:** Even as we take new steps to reduce carbon pollution, we must also prepare for the impacts of a changing climate that are already being felt across the country. Moving forward, the Obama Administration will help state and local governments strengthen our roads, bridges, and shorelines so we can better protect people’s homes, businesses and way of life from severe weather.

3) **Lead International Efforts to Combat Global Climate Change and Prepare for its Impacts:** Just as no country is immune from the impacts of climate change, no country can meet this challenge alone. That is why it is imperative for the United States to couple action at home with leadership internationally. America must help forge a truly global solution to this global challenge by galvanizing international action to significantly reduce emissions (particularly among the major emitting countries), prepare for climate impacts, and drive progress through the international negotiations.

Climate change represents one of our greatest challenges of our time, but it is a challenge uniquely suited to America’s strengths. Our scientists will design new fuels, and our farmers will grow them. Our engineers to devise new sources of energy, our workers will build them, and our businesses will sell them. All of us will need to do our part. If we embrace this challenge, we will not just create new jobs and new industries and keep America on the cutting edge; we will save lives, protect and preserve our treasured natural resources, cities, and coastlines for future generations.

What follows is a blueprint for steady, responsible national and international action to slow the effects of climate change so we leave a cleaner, more stable environment for future generations. It highlights progress already set in motion by the Obama Administration to advance these goals and sets forth new steps to achieve them.
CUT CARBON POLLUTION IN AMERICA

In 2009, President Obama made a commitment to reduce U.S. greenhouse gas emissions in the range of 17 percent below 2005 levels by 2020. The President remains firmly committed to achieving that goal. While there is more work to do, the Obama Administration has already made significant progress by doubling generation of electricity from wind, solar, and geothermal, and by establishing historic new fuel economy standards. Building on these achievements, this document outlines additional steps the Administration will take – in partnership with states, local communities, and the private sector – to continue on a path to meeting the President’s 2020 goal.

I. Deploying Clean Energy

Cutting Carbon Pollution from Power Plants: Power plants are the largest concentrated source of emissions in the United States, together accounting for roughly one-third of all domestic greenhouse gas emissions. We have already set limits for arsenic, mercury, and lead, but there is no federal rule to prevent power plants from releasing as much carbon pollution as they want. Many states, local governments, and companies have taken steps to move to cleaner electricity sources. More than 35 states have renewable energy targets in place, and more than 25 have set energy efficiency targets.

Despite this progress at the state level, there are no federal standards in place to reduce carbon pollution from power plants. In April 2012, as part of a continued effort to modernize our electric power sector, the Obama Administration proposed a carbon pollution standard for new power plants. The Environmental Protection Agency’s proposal reflects and reinforces the ongoing trend towards cleaner technologies, with natural gas increasing its share of electricity generation in recent years, principally through market forces and renewables deployment growing rapidly to account for roughly half of new generation capacity installed in 2012.

With abundant clean energy solutions available, and building on the leadership of states and local governments, we can make continued progress in reducing power plant pollution to improve public health and the environment while supplying the reliable, affordable power needed for economic growth. By doing so, we will continue to drive American leadership in clean energy technologies, such as efficient natural gas, nuclear, renewables, and clean coal technology.

To accomplish these goals, President Obama is issuing a Presidential Memorandum directing the Environmental Protection Agency to work expeditiously to complete carbon pollution standards for both new and existing power plants. This work will build on the successful first-term effort to develop greenhouse gas and fuel economy standards for cars and trucks. In developing the standards, the President has asked the Environmental Protection Agency to build on state leadership, provide flexibility, and take advantage of a wide range of energy sources and technologies including many actions in this plan.

Promoting American Leadership in Renewable Energy: During the President’s first term, the United States more than doubled generation of electricity from wind, solar, and geothermal sources. To ensure America’s continued leadership position in clean energy, President Obama has set a goal to double renewable electricity generation once again by 2020. In order to meet
this ambitious target, the Administration is announcing a number of new efforts in the following key areas:

- **Accelerating Clean Energy Permitting:** In 2012 the President set a goal to issue permits for 10 gigawatts of renewables on public lands by the end of the year. The Department of the Interior achieved this goal ahead of schedule and the President has directed it to permit an additional 10 gigawatts by 2020. Since 2009, the Department of Interior has approved 25 utility-scale solar facilities, nine wind farms, and 11 geothermal plants, which will provide enough electricity to power 4.4 million homes and support an estimated 17,000 jobs. The Administration is also taking steps to encourage the development of hydroelectric power at existing dams. To develop and demonstrate improved permitting procedures for such projects, the Administration will designate the Red Rock Hydroelectric Plant on the Des Moines River in Iowa to participate in its Infrastructure Permitting Dashboard for high-priority projects. Also, the Department of Defense – the single largest consumer of energy in the United States – is committed to deploying 3 gigawatts of renewable energy on military installations, including solar, wind, biomass, and geothermal, by 2025. In addition, federal agencies are setting a new goal of reaching 100 megawatts of installed renewable capacity across the federally subsidized housing stock by 2020. This effort will include conducting a survey of current projects in order to track progress and facilitate the sharing of best practices.

- **Expanding and Modernizing the Electric Grid:** Upgrading the country’s electric grid is critical to our efforts to make electricity more reliable, save consumers money on their energy bills, and promote clean energy sources. To advance these important goals, President Obama signed a Presidential Memorandum this month that directs federal agencies to streamline the siting, permitting and review process for transmission projects across federal, state, and tribal governments.

**Unlocking Long-Term Investment in Clean Energy Innovation:** The Fiscal Year 2014 Budget continues the President’s commitment to keeping the United States at the forefront of clean energy research, development, and deployment by increasing funding for clean energy technology across all agencies by 30 percent, to approximately $7.9 billion. This includes investment in a range of energy technologies, from advanced biofuels and emerging nuclear technologies – including small modular reactors – to clean coal. To continue America’s leadership in clean energy innovation, the Administration will also take the following steps:

- **Spurring Investment in Advanced Fossil Energy Projects:** In the coming weeks, the Department of Energy will issue a Federal Register Notice announcing a draft of a solicitation that would make up to $8 billion in (self-pay) loan guarantee authority available for a wide array of advanced fossil energy projects under its Section 1703 loan guarantee program. This solicitation is designed to support investments in innovative technologies that can cost-effectively meet financial and policy goals, including the avoidance, reduction, or sequestration of anthropogenic emissions of greenhouse gases. The proposed solicitation will cover a broad range of advanced fossil energy projects. Reflecting the Department’s commitment to continuous improvement in program management, it will take comment on the draft solicitation, with a plan to issue a final solicitation by the fall of 2013.

- **Instituting a Federal Quadrennial Energy Review:** Innovation and new sources of domestic energy supply are transforming the nation’s energy marketplace, creating economic
opportunities at the same time they raise environmental challenges. To ensure that federal energy policy meets our economic, environmental, and security goals in this changing landscape, the Administration will conduct a Quadrennial Energy Review which will be led by the White House Domestic Policy Council and Office of Science and Technology Policy, supported by a Secretariat established at the Department of Energy, and involving the robust engagement of federal agencies and outside stakeholders. This first-ever review will focus on infrastructure challenges, and will identify the threats, risks, and opportunities for U.S. energy and climate security, enabling the federal government to translate policy goals into a set of analytically based, clearly articulated, sequenced and integrated actions, and proposed investments over a four-year planning horizon.

II. Building a 21st-Century Transportation Sector

Increasing Fuel Economy Standards: Heavy-duty vehicles are currently the second largest source of greenhouse gas emissions within the transportation sector. In 2011, the Obama Administration finalized the first-ever fuel economy standards for Model Year 2014-2018 for heavy-duty trucks, buses, and vans. These standards will reduce greenhouse gas emissions by approximately 270 million metric tons and save 530 million barrels of oil. During the President’s second term, the Administration will once again partner with industry leaders and other key stakeholders to develop post-2018 fuel economy standards for heavy-duty vehicles to further reduce fuel consumption through the application of advanced cost-effective technologies and continue efforts to improve the efficiency of moving goods across the United States.

The Obama Administration has already established the toughest fuel economy standards for passenger vehicles in U.S. history. These standards require an average performance equivalent of 54.5 miles per gallon by 2025, which will save the average driver more than $8,000 in fuel costs over the lifetime of the vehicle and eliminate six billion metric tons of carbon pollution – more than the United States emits in an entire year.

Developing and Deploying Advanced Transportation Technologies: Biofuels have an important role to play in increasing our energy security, fostering rural economic development, and reducing greenhouse gas emissions from the transportation sector. That is why the Administration supports the Renewable Fuels Standard, and is investing in research and development to help bring next-generation biofuels on line. For example, the United States Navy and Departments of Energy and Agriculture are working with the private sector to accelerate the development of cost-competitive advanced biofuels for use by the military and commercial sectors. More broadly, the Administration will continue to leverage partnerships between the private and public sectors to deploy cleaner fuels, including advanced batteries and fuel cell technologies, in every transportation mode. The Department of Energy’s eGallon informs drivers about electric car operating costs in their state – the national average is only $1.14 per gallon of gasoline equivalent, showing the promise for consumer pocketbooks of electric-powered vehicles. In addition, in the coming months, the Department of Transportation will work with other agencies to further explore strategies for integrating alternative fuel vessels into the U.S. flag fleet. Further, the Administration will continue to work with states, cities and towns through the Department of Transportation, the Department of Housing and Urban Development, and the Environmental Protection Agency to improve transportation options, and lower transportation costs while protecting the environment in communities nationwide.
III. Cutting Energy Waste in Homes, Businesses, and Factories

Reducing Energy Bills for American Families and Businesses: Energy efficiency is one of the clearest and most cost-effective opportunities to save families money, make our businesses more competitive, and reduce greenhouse gas emissions. In the President’s first term, the Department of Energy and the Department of Housing and Urban Development completed efficiency upgrades in more than one million homes, saving many families more than $400 on their heating and cooling bills in the first year alone. The Administration will take a range of new steps geared towards achieving President Obama’s goal of doubling energy productivity by 2030 relative to 2010 levels:

- Establishing a New Goal for Energy Efficiency Standards: In President Obama’s first term, the Department of Energy established new minimum efficiency standards for dishwashers, refrigerators, and many other products. Through 2030, these standards will cut consumers’ electricity bills by hundreds of billions of dollars and save enough electricity to power more than 85 million homes for two years. To build on this success, the Administration is setting a new goal: Efficiency standards for appliances and federal buildings set in the first and second terms combined will reduce carbon pollution by at least 3 billion metric tons cumulatively by 2030 – equivalent to nearly one-half of the carbon pollution from the entire U.S. energy sector for one year – while continuing to cut families’ energy bills.

- Reducing Barriers to Investment in Energy Efficiency: Energy efficiency upgrades bring significant cost savings, but upfront costs act as a barrier to more widespread investment. In response, the Administration is committing to a number of new executive actions. As soon as this fall, the Department of Agriculture’s Rural Utilities Service will finalize a proposed update to its Energy Efficiency and Conservation Loan Program to provide up to $250 million for rural utilities to finance efficiency investments by businesses and homeowners across rural America. The Department is also streamlining its Rural Energy for America program to provide grants and loan guarantees directly to agricultural producers and rural small businesses for energy efficiency and renewable energy systems.

In addition, the Department of Housing and Urban Development’s efforts include a $23 million Multifamily Energy Innovation Fund designed to enable affordable housing providers, technology firms, academic institutions, and philanthropic organizations to test new approaches to deliver cost-effective residential energy. In order to advance ongoing efforts and bring stakeholders together, the Federal Housing Administration will convene representatives of the lending community and other key stakeholders for a mortgage roundtable in July to identify options for factoring energy efficiency into the mortgage underwriting and appraisal process upon sale or refinancing of new or existing homes.

- Expanding the President’s Better Buildings Challenge: The Better Buildings Challenge, focused on helping American commercial and industrial buildings become at least 20 percent more energy efficient by 2020, is already showing results. More than 120 diverse organizations, representing over 2 billion square feet are on track to meet the 2020 goal: cutting energy use by an average 2.5 percent annually, equivalent to about $58 million in energy savings per year. To continue this success, the Administration will expand the program to multifamily housing – partnering both with private and affordable
building owners and public housing agencies to cut energy waste. In addition, the Administration is launching the Better Buildings Accelerators, a new track that will support and encourage adoption of State and local policies to cut energy waste, building on the momentum of ongoing efforts at that level.

IV. Reducing Other Greenhouse Gas Emissions

Curbing Emissions of Hydrofluorocarbons: Hydrofluorocarbons (HFCs), which are primarily used for refrigeration and air conditioning, are potent greenhouse gases. In the United States, emissions of HFCs are expected to nearly triple by 2030, and double from current levels of 1.5 percent of greenhouse gas emissions to 3 percent by 2020.

To reduce emissions of HFCs, the United States can and will lead both through international diplomacy as well as domestic actions. In fact, the Administration has already acted by including a flexible and powerful incentive in the fuel economy and carbon pollution standards for cars and trucks to encourage automakers to reduce HFC leakage and transition away from the most potent HFCs in vehicle air conditioning systems. Moving forward, the Environmental Protection Agency will use its authority through the Significant New Alternatives Policy Program to encourage private sector investment in low-emissions technology by identifying and approving climate-friendly chemicals while prohibiting certain uses of the most harmful chemical alternatives. In addition, the President has directed his Administration to purchase cleaner alternatives to HFCs whenever feasible and transition over time to equipment that uses safer and more sustainable alternatives.

Reducing Methane Emissions: Curbing emissions of methane is critical to our overall effort to address global climate change. Methane currently accounts for roughly 9 percent of domestic greenhouse gas emissions and has a global warming potential that is more than 20 times greater than carbon dioxide. Notably, since 1990, methane emissions in the United States have decreased by 8 percent. This has occurred in part through partnerships with industry, both at home and abroad, in which we have demonstrated that we have the technology to deliver emissions reductions that benefit both our economy and the environment. To achieve additional progress, the Administration will:

- Developing an Interagency Methane Strategy: The Environmental Protection Agency and the Departments of Agriculture, Energy, Interior, Labor, and Transportation will develop a comprehensive, interagency methane strategy. The group will focus on assessing current emissions data, addressing data gaps, identifying technologies and best practices for reducing emissions, and identifying existing authorities and incentive-based opportunities to reduce methane emissions.

- Pursuing a Collaborative Approach to Reducing Emissions: Across the economy, there are multiple sectors in which methane emissions can be reduced, from coal mines and landfills to agriculture and oil and gas development. For example, in the agricultural sector, over the last three years, the Environmental Protection Agency and the Department of Agriculture have worked with the dairy industry to increase the adoption of methane digesters through loans, incentives, and other assistance. In addition, when it comes to the oil and gas sector, investments to build and upgrade gas pipelines will not only put more Americans to work, but also reduce emissions and enhance economic productivity. For example, as part of the Administration’s effort to improve federal
permitting for infrastructure projects, the interagency Bakken Federal Executive Group is working with industry, as well as state and tribal agencies, to advance the production of oil and gas in the Bakken while helping to reduce venting and flaring. Moving forward, as part of the effort to develop an interagency methane strategy, the Obama Administration will work collaboratively with state governments, as well as the private sector, to reduce emissions across multiple sectors, improve air quality, and achieve public health and economic benefits.

Preserving the Role of Forests in Mitigating Climate Change: America’s forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. In the face of a changing climate and increased risk of wildfire, drought, and pests, the capacity of our forests to absorb carbon is diminishing. Pressures to develop forest lands for urban or agricultural uses also contribute to the decline of forest carbon sequestration. Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere while also improving soil and water quality, reducing wildfire risk, and otherwise managing forests to be more resilient in the fact of climate change. The Administration is working to identify new approaches to protect and restore our forests, as well as other critical landscapes including grasslands and wetlands, in the face of a changing climate.

V. Leading at the Federal Level

Leading in Clean Energy: President Obama believes that the federal government must be a leader in clean energy and energy efficiency. Under the Obama Administration, federal agencies have reduced greenhouse gas emissions by more than 15 percent – the equivalent of permanently taking 1.5 million cars off the road. To build on this record, the Administration is establishing a new goal: The federal government will consume 20 percent of its electricity from renewable sources by 2020 – more than double the current goal of 7.5 percent. In addition, the federal government will continue to pursue greater energy efficiency that reduces greenhouse gas emissions and saves taxpayer dollars.

Federal Government Leadership in Energy Efficiency: On December 2, 2011, President Obama signed a memorandum entitled “Implementation of Energy Savings Projects and Performance-Based Contracting for Energy Savings,” challenging federal agencies, in support of the Better Buildings Challenge, to enter into $2 billion worth of performance-based contracts within two years. Performance contracts drive economic development, utilize private sector innovation, and increase efficiency at minimum costs to the taxpayer, while also providing long-term savings in energy costs. Federal agencies have committed to a pipeline of nearly $2.3 billion from over 300 reported projects. In coming months, the Administration will take a number of actions to strengthen efforts to promote energy efficiency, including through performance contracting. For example, in order to increase access to capital markets for investments in energy efficiency, the Administration will initiate a partnership with the private sector to work towards a standardized contract to finance federal investments in energy efficiency. Going forward, agencies will also work together to synchronize building codes – leveraging those policies to improve the efficiency of federally owned and supported building stock. Finally, the Administration will leverage the “Green Button” standard – which aggregates energy data in a secure, easy to use format – within federal facilities to increase their ability to manage energy consumption, reduce greenhouse gas emissions, and meet sustainability goals.
As we act to curb the greenhouse gas pollution that is driving climate change, we must also prepare for the impacts that are too late to avoid. Across America, states, cities, and communities are taking steps to protect themselves by updating building codes, adjusting the way they manage natural resources, investing in more resilient infrastructure, and planning for rapid recovery from damages that nonetheless occur. The federal government has an important role to play in supporting community-based preparedness and resilience efforts, establishing policies that promote preparedness, protecting critical infrastructure and public resources, supporting science and research germane to preparedness and resilience, and ensuring that federal operations and facilities continue to protect and serve citizens in a changing climate.

The Obama Administration has been working to strengthen America’s climate resilience since its earliest days. Shortly after coming into office, President Obama established an Interagency Climate Change Adaptation Task Force and, in October 2009, the President signed an Executive Order directing it to recommend ways federal policies and programs can better prepare the Nation for change. In May 2010, the Task Force hosted the first National Climate Adaptation Summit, convening local and regional stakeholders and decision-makers to identify challenges and opportunities for collaborative action.

In February 2013, federal agencies released Climate Change Adaptation Plans for the first time, outlining strategies to protect their operations, missions, and programs from the effects of climate change. The Department of Transportation, for example, is developing guidance for incorporating climate change and extreme weather event considerations into coastal highway projects, and the Department of Homeland Security is evaluating the challenges of changing conditions in the Arctic and along our Nation’s borders. Agencies have also partnered with communities through targeted grant and technical-assistance programs—for example, the Environmental Protection Agency is working with low-lying communities in North Carolina to assess the vulnerability of infrastructure investments to sea level rise and identify solutions to reduce risks. And the Administration has continued, through the U.S. Global Change Research Program, to support science and monitoring to expand our understanding of climate change and its impacts.

Going forward, the Administration will expand these efforts into three major, interrelated initiatives to better prepare America for the impacts of climate change:

I. **Building Stronger and Safer Communities and Infrastructure**

By necessity, many states, cities, and communities are already planning and preparing for the impacts of climate change. Hospitals must build capacity to serve patients during more frequent heat waves, and urban planners must plan for the severe storms that infrastructure will need to withstand. Promoting on-the-ground planning and resilient infrastructure will be at the core of our work to strengthen America’s communities. Specific actions will include:

**Directing Agencies to Support Climate-Resilient Investment:** The President will direct federal agencies to identify and remove barriers to making climate-resilient investments; identify and remove counterproductive policies that increase vulnerabilities; and encourage and support smarter, more resilient investments, including through agency grants, technical assistance, and other programs, in sectors from transportation and water management to conservation and
disaster relief. Agencies will also be directed to ensure that climate risk-management considerations are fully integrated into federal infrastructure and natural resource management planning. To begin meeting this challenge, the Environmental Protection Agency is committing to integrate considerations of climate change impacts and adaptive measures into major programs, including its Clean Water and Drinking Water State Revolving Funds and grants for brownfields cleanup, and the Department of Housing and Urban Development is already requiring grant recipients in the Hurricane Sandy–affected region to take sea-level rise into account.

**Establishing a State, Local, and Tribal Leaders Task Force on Climate Preparedness:** To help agencies meet the above directive and to enhance local efforts to protect communities, the President will establish a short-term task force of state, local, and tribal officials to advise on key actions the federal government can take to better support local preparedness and resilience-building efforts. The task force will provide recommendations on removing barriers to resilient investments, modernizing grant and loan programs to better support local efforts, and developing information and tools to better serve communities.

**Supporting Communities as they Prepare for Climate Impacts:** Federal agencies will continue to provide targeted support and assistance to help communities prepare for climate-change impacts. For example, throughout 2013, the Department of Transportation’s Federal Highway Administration is working with 19 state and regional partners and other federal agencies to test approaches for assessing local transportation infrastructure vulnerability to climate change and extreme weather and for improving resilience. The Administration will continue to assist tribal communities on preparedness through the Bureau of Indian Affairs, including through pilot projects and by supporting participation in federal initiatives that assess climate change vulnerabilities and develop regional solutions. Through annual federal agency “Environmental Justice Progress Reports,” the Administration will continue to identify innovative ways to help our most vulnerable communities prepare for and recover from the impacts of climate change. The importance of critical infrastructure independence was brought home in the Sandy response. The Federal Emergency Management Agency and the Department of Energy are working with the private sector to address simultaneous restoration of electricity and fuels supply.

**Boosting the Resilience of Buildings and Infrastructure:** The National Institute of Standards and Technology will convene a panel on disaster-resilience standards to develop a comprehensive, community-based resilience framework and provide guidelines for consistently safe buildings and infrastructure – products that can inform the development of private-sector standards and codes. In addition, building on federal agencies’ “Climate Change Adaptation Plans,” the Administration will continue efforts to increase the resilience of federal facilities and infrastructure. The Department of Defense, for example, is assessing the relative vulnerability of its coastal facilities to climate change. In addition, the President’s FY 2014 Budget proposes $200 million through the Transportation Leadership Awards program for Climate Ready Infrastructure in communities that build enhanced preparedness into their planning efforts, and that have proposed or are ready to break ground on infrastructure projects, including transit and rail, to improve resilience.

**Rebuilding and Learning from Hurricane Sandy:** In August 2013, President Obama’s Hurricane Sandy Rebuilding Task Force will deliver to the President a rebuilding strategy to be implemented in Sandy-affected regions and establishing precedents that can be followed
elsewhere. The Task Force and federal agencies are also piloting new ways to support resilience in the Sandy-affected region; the Task Force, for example, is hosting a regional “Rebuilding by Design” competition to generate innovative solutions to enhance resilience. In the transportation sector, the Department of Transportation’s Federal Transit Administration (FTA) is dedicating $5.7 billion to four of the area’s most impacted transit agencies, of which $1.3 billion will be allocated to locally prioritized projects to make transit systems more resilient to future disasters. FTA will also develop a competitive process for additional funding to identify and support larger, stand-alone resilience projects in the impacted region. To build coastal resiliency, the Department of the Interior will launch a $100 million competitive grant program to foster partnerships and promote resilient natural systems while enhancing green spaces and wildlife habitat near urban populations. An additional $250 million will be allocated to support projects for coastal restoration and resilience across the region. Finally, with partners, the U.S. Army Corps of Engineers is conducting a $20 million study to identify strategies to reduce the vulnerability of Sandy-affected coastal communities to future large-scale flood and storm events, and the National Oceanic and Atmospheric Administration will strengthen long-term coastal observations and provide technical assistance to coastal communities.

II. Protecting our Economy and Natural Resources

Climate change is affecting nearly every aspect of our society, from agriculture and tourism to the health and safety of our citizens and natural resources. To help protect critical sectors, while also targeting hazards that cut across sectors and regions, the Administration will mount a set of sector- and hazard-specific efforts to protect our country’s vital assets, to include:

**Identifying Vulnerabilities of Key Sectors to Climate Change:** The Department of Energy will soon release an assessment of climate-change impacts on the energy sector, including power-plant disruptions due to drought and the disruption of fuel supplies during severe storms, as well as potential opportunities to make our energy infrastructure more resilient to these risks. In 2013, the Department of Agriculture and Department of the Interior released several studies outlining the challenges a changing climate poses for America’s agricultural enterprise, forests, water supply, wildlife, and public lands. This year and next, federal agencies will report on the impacts of climate change on other key sectors and strategies to address them, with priority efforts focusing on health, transportation, food supplies, oceans, and coastal communities.

**Promoting Resilience in the Health Sector:** The Department of Health and Human Services will launch an effort to create sustainable and resilient hospitals in the face of climate change. Through a public-private partnership with the healthcare industry, it will identify best practices and provide guidance on affordable measures to ensure that our medical system is resilient to climate impacts. It will also collaborate with partner agencies to share best practices among federal health facilities. And, building on lessons from pilot projects underway in 16 states, it will help train public-health professionals and community leaders to prepare their communities for the health consequences of climate change, including through effective communication of health risks and resilience measures.

**Promoting Insurance Leadership for Climate Safety:** Recognizing the critical role that the private sector plays in insuring assets and enabling rapid recovery after disasters, the Administration will convene representatives from the insurance industry and other stakeholders to explore best practices for private and public insurers to manage their own processes and
investments to account for climate change risks and incentivize policy holders to take steps to reduce their exposure to these risks.

**Conserving Land and Water Resources:** America’s ecosystems are critical to our nation’s economy and the lives and health of our citizens. These natural resources can also help ameliorate the impacts of climate change, if they are properly protected. The Administration has invested significantly in conserving relevant ecosystems, including working with Gulf State partners after the Deepwater Horizon spill to enhance barrier islands and marshes that protect communities from severe storms. The Administration is also implementing climate-adaptation strategies that promote resilience in fish and wildlife populations, forests and other plant communities, freshwater resources, and the ocean. Building on these efforts, the President is also directing federal agencies to identify and evaluate additional approaches to improve our natural defenses against extreme weather, protect biodiversity and conserve natural resources in the face of a changing climate, and manage our public lands and natural systems to store more carbon.

**Maintaining Agricultural Sustainability:** Building on the existing network of federal climate-science research and action centers, the Department of Agriculture is creating seven new Regional Climate Hubs to deliver tailored, science-based knowledge to farmers, ranchers, and forest landowners. These hubs will work with universities and other partners, including the Department of the Interior and the National Oceanic and Atmospheric Administration, to support climate resilience. Its Natural Resources Conservation Service and the Department of the Interior’s Bureau of Reclamation are also providing grants and technical support to agricultural water users for more water-efficient practices in the face of drought and long-term climate change.

**Managing Drought:** Leveraging the work of the National Disaster Recovery Framework for drought, the Administration will launch a cross-agency National Drought Resilience Partnership as a “front door” for communities seeking help to prepare for future droughts and reduce drought impacts. By linking information (monitoring, forecasts, outlooks, and early warnings) with drought preparedness and longer-term resilience strategies in critical sectors, this effort will help communities manage drought-related risks.

**Reducing Wildfire Risks:** With tribes, states, and local governments as partners, the Administration has worked to make landscapes more resistant to wildfires, which are exacerbated by heat and drought conditions resulting from climate change. Federal agencies will expand and prioritize forest and rangeland restoration efforts in order to make natural areas and communities less vulnerable to catastrophic fire. The Department of the Interior and Department of Agriculture, for example, are launching a Western Watershed Enhancement Partnership – a pilot effort in five western states to reduce wildfire risk by removing extra brush and other flammable vegetation around critical areas such as water reservoirs.

**Preparing for Future Floods:** To ensure that projects funded with taxpayer dollars last as long as intended, federal agencies will update their flood-risk reduction standards for federally funded projects to reflect a consistent approach that accounts for sea-level rise and other factors affecting flood risks. This effort will incorporate the most recent science on expected rates of sea-level rise (which vary by region) and build on work done by the Hurricane Sandy Rebuilding Task Force, which announced in April 2013 that all federally funded Sandy-related rebuilding projects must meet a consistent flood risk reduction standard that takes into account increased risk from extreme weather events, sea-level rise, and other impacts of climate change.
III. Using Sound Science to Manage Climate Impacts

Scientific data and insights are essential to help government officials, communities, and businesses better understand and manage the risks associated with climate change. The Administration will continue to lead in advancing the science of climate measurement and adaptation and the development of tools for climate-relevant decision-making by focusing on increasing the availability, accessibility, and utility of relevant scientific tools and information. Specific actions will include:

**Developing Actionable Climate Science:** The President’s Fiscal Year 2014 Budget provides more than $2.7 billion, largely through the 13-agency U.S. Global Change Research Program, to increase understanding of climate-change impacts, establish a public-private partnership to explore risk and catastrophe modeling, and develop the information and tools needed by decision-makers to respond to both long-term climate change impacts and near-term effects of extreme weather.

**Assessing Climate-Change Impacts in the United States:** In the spring of 2014, the Obama Administration will release the third U.S. National Climate Assessment, highlighting new advances in our understanding of climate-change impacts across all regions of the United States and on critical sectors of the economy, including transportation, energy, agriculture, and ecosystems and biodiversity. For the first time, the National Climate Assessment will focus not only on dissemination of scientific information but also on translating scientific insights into practical, usable knowledge that can help decision-makers anticipate and prepare for specific climate-change impacts.

**Launching a Climate Data Initiative:** Consistent with the President’s May 2013 Executive Order on Open Data – and recognizing that freely available open government data can fuel entrepreneurship, innovation, scientific discovery, and public benefits – the Administration is launching a Climate Data Initiative to leverage extensive federal climate-relevant data to stimulate innovation and private-sector entrepreneurship in support of national climate-change preparedness.

**Providing a Toolkit for Climate Resilience:** Federal agencies will create a virtual climate-resilience toolkit that centralizes access to data-driven resilience tools, services, and best practices, including those developed through the Climate Data Initiative. The toolkit will provide easy access to existing resources as well as new tools, including: interactive sea-level rise maps and a sea-level-rise calculator to aid post-Sandy rebuilding in New York and New Jersey, new NOAA storm surge models and interactive maps from the National Oceanic and Atmospheric Administration that provide risk information by combining tidal data, projected sea levels and storm wave heights, a web-based tool that will allow developers to integrate NASA climate imagery into websites and mobile apps, access to the U.S. Geological Survey’s “visualization tool” to assess the amount of carbon absorbed by landscapes, and a Stormwater Calculator and Climate Assessment Tool developed to help local governments assess stormwater-control measures under different precipitation and temperature scenarios.
LEAD INTERNATIONAL EFFORTS TO ADDRESS GLOBAL CLIMATE CHANGE

The Obama Administration is working to build on the actions that it is taking domestically to achieve significant global greenhouse gas emission reductions and enhance climate preparedness through major international initiatives focused on spurring concrete action, including bilateral initiatives with China, India, and other major emitting countries. These initiatives not only serve to support the efforts of the United States and others to achieve our goals for 2020, but also will help us move beyond those and bend the post-2020 global emissions trajectory further. As a key part of this effort, we are also working intensively to forge global responses to climate change through a number of important international negotiations, including the United Nations Framework Convention on Climate Change.

I. Working with Other Countries to Take Action to Address Climate Change

Enhancing Multilateral Engagement with Major Economies: In 2009, President Obama launched the Major Economies Forum on Energy and Climate, a high-level forum that brings together 17 countries that account for approximately 75 percent of global greenhouse gas emissions, in order to support the international climate negotiations and spur cooperative action to combat climate change. The Forum has been successful on both fronts – having contributed significantly to progress in the broader negotiations while also launching the Clean Energy Ministerial to catalyze the development and deployment of clean energy and efficiency solutions. We are proposing that the Forum build on these efforts by launching a major initiative this year focused on further accelerating efficiency gains in the buildings sector, which accounts for approximately one-third of global carbon pollutions from the energy sector.

Expanding Bilateral Cooperation with Major Emerging Economies: From the outset, the Obama Administration has sought to intensify bilateral climate cooperation with key major emerging economies, through initiatives like the U.S.-China Clean Energy Research Center, the U.S.-India Partnership to Advance Clean Energy, and the Strategic Energy Dialogue with Brazil.

We will be building on these successes and finding new areas for cooperation in the second term, and we are already making progress: Just this month, President Obama and President Xi Jinping of China reached an historic agreement at their first summit to work to use the expertise and institutions of the Montreal Protocol to phase down the consumption and production of HFCs, a highly potent greenhouse gas. The impact of phasing out HFCs by 2050 would be equivalent to the elimination of two years’ worth of greenhouse gas emissions from all sources.

Combatting Short-Lived Climate Pollutants: Pollutants such as methane, black carbon, and many HFCs are relatively short-lived in the atmosphere, but have more potent greenhouse effects than carbon dioxide. In February 2012, the United States launched the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollution, which has grown to include more than 30 country partners and other key partners such as the World Bank and the U.N. Environment Programme. Major efforts include reducing methane and black carbon from waste and landfills. We are also leading through the Global Methane Initiative, which works with 42 partner countries and an extensive network of over 1,100 private sector participants to reduce methane emissions.
**Reducing Emissions from Deforestation and Forest Degradation:** Greenhouse gas emissions from deforestation, agriculture, and other land use constitute approximately one-third of global emissions. In some developing countries, as much as 80 percent of these emissions come from the land sector. To meet this challenge, the Obama Administration is working with partner countries to put in place the systems and institutions necessary to significantly reduce global land-use-related emissions, creating new models for rural development that generate climate benefits, while conserving biodiversity, protecting watersheds, and improving livelihoods.

In 2012 alone, the U.S. Agency for International Development’s bilateral and regional forestry programs contributed to reducing more than 140 million tons of carbon dioxide emissions, including through support for multilateral initiatives such as the Forest Investment Program and the Forest Carbon Partnership Facility. In Indonesia, the Millennium Challenge Corporation is funding a five-year “Green Prosperity” program that supports environmentally sustainable, low carbon economic development in select districts.

The Obama Administration is also working to address agriculture-driven deforestation through initiatives such as the Tropical Forest Alliance 2020, which brings together governments, the private sector, and civil society to reduce tropical deforestation related to key agricultural commodities, which we will build upon.

**Expanding Clean Energy Use and Cut Energy Waste:** Roughly 84 percent of current carbon dioxide emissions are energy-related and about 65 percent of all greenhouse gas emissions can be attributed to energy supply and energy use. The Obama Administration has promoted the expansion of renewable, clean, and efficient energy sources and technologies worldwide through:

- Financing and regulatory support for renewable and clean energy projects
- Actions to promote fuel switching from oil and coal to natural gas or renewables
- Support for the safe and secure use of nuclear power
- Cooperation on clean coal technologies
- Programs to improve and disseminate energy efficient technologies

In the past three years we have reached agreements with more than 20 countries around the world, including Mexico, South Africa, and Indonesia, to support low emission development strategies that help countries to identify the best ways to reduce greenhouse gas emissions while growing their economies. Among the many initiatives that we have launched are:

- The U.S. Africa Clean Energy Finance Initiative, which aligns grant-based assistance with project planning expertise from the U.S. Trade and Development Agency and financing and risk mitigation tools from the U.S. Overseas Private Investment Corporation to unlock up to $1 billion in clean energy financing.

- The U.S.-Asia Pacific Comprehensive Energy Partnership, which has identified $6 billion in U.S. export credit and government financing to promote clean energy development in the Asia-Pacific region.

Looking ahead, we will target these and other resources towards greater penetration of renewables in the global energy mix on both a small and large scale, including through our
participation in the Sustainable Energy for All Initiative and accelerating the commercialization of renewable mini-grids. These efforts include:

- **Natural Gas.** Burning natural gas is about one-half as carbon-intensive as coal, which can make it a critical “bridge fuel” for many countries as the world transitions to even cleaner sources of energy. Toward that end, the Obama Administration is partnering with states and private companies to exchange lessons learned with our international partners on responsible development of natural gas resources. We have launched the Unconventional Gas Technical Engagement Program to share best practices on issues such as water management, methane emissions, air quality, permitting, contracting, and pricing to help increase global gas supplies and facilitate development of the associated infrastructure that brings them to market. Going forward, we will promote fuel-switching from coal to gas for electricity production and encourage the development of a global market for gas. Since heavy-duty vehicles are expected to account for 40 percent of increased oil use through 2030, we will encourage the adoption of heavy duty natural gas vehicles as well.

- **Nuclear Power.** The United States will continue to promote the safe and secure use of nuclear power worldwide through a variety of bilateral and multilateral engagements. For example, the U.S. Nuclear Regulatory Commission advises international partners on safety and regulatory best practices, and the Department of Energy works with international partners on research and development, nuclear waste and storage, training, regulations, quality control, and comprehensive fuel leasing options. Going forward, we will expand these efforts to promote nuclear energy generation consistent with maximizing safety and nonproliferation goals.

- **Clean Coal.** The United States works with China, India, and other countries that currently rely heavily on coal for power generation to advance the development and deployment of clean coal technologies. In addition, the U.S. leads the Carbon Sequestration Leadership Forum, which engages 23 other countries and economies on carbon capture and sequestration technologies. Going forward, we will continue to use these bilateral and multilateral efforts to promote clean coal technologies.

- **Energy Efficiency.** The Obama Administration has aggressively promoted energy efficiency through the Clean Energy Ministerial and key bilateral programs. The cost-effective opportunities are enormous: The Ministerial’s Super-Efficient Equipment and Appliance Deployment Initiative and its Global Superior Energy Performance Partnership are helping to accelerate the global adoption of standards and practices that would cut energy waste equivalent to more than 650 mid-size power plants by 2030. We will work to expand these efforts focusing on several critical areas, including: improving building efficiency, reducing energy consumption at water and wastewater treatment facilities, and expanding global appliance standards.

**Negotiating Global Free Trade in Environmental Goods and Services:** The U.S. will work with trading partners to launch negotiations at the World Trade Organization towards global free trade in environmental goods, including clean energy technologies such as solar, wind, hydro and geothermal. The U.S. will build on the consensus it recently forged among the 21 Asia-Pacific Economic Cooperation (APEC) economies in this area. In 2011, APEC economies agreed to reduce tariffs to 5 percent or less by 2015 on a negotiated list of 54 environmental goods. The
APEC list will serve as a foundation for a global agreement in the WTO, with participating countries expanding the scope by adding products of interest. Over the next year, we will work towards securing participation of countries which account for 90 percent of global trade in environmental goods, representing roughly $481 billion in annual environmental goods trade. We will also work in the Trade in Services Agreement negotiations towards achieving free trade in environmental services.

**Phasing Out Subsidies that Encourage Wasteful Consumption of Fossil Fuels:** The International Energy Agency estimates that the phase-out of fossil fuel subsidies – which amount to more than $500 billion annually – would lead to a 10 percent reduction in greenhouse gas emissions below business as usual by 2050. At the 2009 G-20 meeting in Pittsburgh, the United States successfully advocated for a commitment to phase out these subsidies, and we have since won similar commitments in other fora such as APEC. President Obama is calling for the elimination of U.S. fossil fuel tax subsidies in his Fiscal Year (FY) 2014 budget, and we will continue to collaborate with partners around the world toward this goal.

**Leading Global Sector Public Financing Towards Cleaner Energy:** Under this Administration, the United States has successfully mobilized billions of dollars for clean energy investments in developing countries, helping to accelerate their transition to a green, low-carbon economy. Building on these successes, the President calls for an end to U.S. government support for public financing of new coal plants overseas, except for (a) the most efficient coal technology available in the world’s poorest countries in cases where no other economically feasible alternative exists, or (b) facilities deploying carbon capture and sequestration technologies. As part of this new commitment, we will work actively to secure the agreement of other countries and the multilateral development banks to adopt similar policies as soon as possible.

**Strengthening Global Resilience to Climate Change:** Failing to prepare adequately for the impacts of climate change that can no longer be avoided will put millions of people at risk, jeopardizing important development gains, and increasing the security risks that stem from climate change. That is why the Obama Administration has made historic investments in bolstering the capacity of countries to respond to climate-change risks. Going forward, we will continue to:

- Strengthen government and local community planning and response capacities, such as by increasing water storage and water use efficiency to cope with the increased variability in water supply
- Develop innovative financial risk management tools such as index insurance to help smallholder farmers and pastoralists manage risk associated with changing rainfall patterns and drought
- Distribute drought-resistant seeds and promote management practices that increase farmers' ability to cope with climate impacts.

**Mobilizing Climate Finance:** International climate finance is an important tool in our efforts to promote low-emissions, climate-resilient development. We have fulfilled our joint developed country commitment from the Copenhagen Accord to provide approximately $30 billion of climate assistance to developing countries over FY 2010-FY 2012. The United States contributed approximately $7.5 billion to this effort over the three year period. Going forward, we will seek
to build on this progress as well as focus our efforts on combining our public resources with smart policies to mobilize much larger flows of private investment in low-emissions and climate resilient infrastructure.

II. Leading Efforts to Address Climate Change through International Negotiations

The United States has made historic progress in the international climate negotiations during the past four years. At the Copenhagen Conference of the United Nations Framework Convention on Climate Change (UNFCCC) in 2009, President Obama and other world leaders agreed for the first time that all major countries, whether developed or developing, would implement targets or actions to limit greenhouse emissions, and do so under a new regime of international transparency. And in 2011, at the year-end climate meeting in Durban, we achieved another breakthrough: Countries agreed to negotiate a new agreement by the end of 2015 that would have equal legal force and be applicable to all countries in the period after 2020. This was an important step beyond the previous legal agreement, the Kyoto Protocol, whose core obligations applied to developed countries, not to China, India, Brazil or other emerging countries. The 2015 climate conference is slated to play a critical role in defining a post-2020 trajectory. We will be seeking an agreement that is ambitious, inclusive and flexible. It needs to be ambitious to meet the scale of the challenge facing us. It needs to be inclusive because there is no way to meet that challenge unless all countries step up and play their part. And it needs to be flexible because there are many differently situated parties with their own needs and imperatives, and those differences will have to be accommodated in smart, practical ways.

At the same time as we work toward this outcome in the UNFCCC context, we are making progress in a variety of other important negotiations as well. At the Montreal Protocol, we are leading efforts in support of an amendment that would phase down HFCs; at the International Maritime Organization, we have agreed to and are now implementing the first-ever sector-wide, internationally applicable energy efficiency standards; and at the International Civil Aviation Organization, we have ambitious aspirational emissions and energy efficiency targets and are working towards agreement to develop a comprehensive global approach.
Regulating Greenhouse Gas Emissions From Existing Sources: Section III(d) and State Equivalency

by Jonas Monast, Tim Profeta, Brooks Rainey Pearson, and John Doyle

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On December 23, 2010, the U.S. Environmental Protection Agency (EPA) entered into a settlement agreement requiring new source performance standards (NSPS) covering greenhouse gas (GHG) emissions from fossil fuel-fired electricity-generating units and petroleum refineries.1 Together, these two categories of sources account for close to 40% of total U.S. GHG emissions.2 Typically, an NSPS rulemaking process applies only to new sources or existing sources undergoing major modifications. In situations where a pollutant covered by an NSPS is not also regulated as a criteria pollutant under the national ambient air quality standards (NAAQS) program or as a hazardous air pollutant (HAP), however, the Clean Air Act (CAA)3 also requires states to develop performance standards for existing sources, subject to EPA’s guidance and approval. Because GHGs are not regulated as criteria pollutants or HAPs, the existing source performance standard requirements under §111(d) of the Act will apply to the current GHG NSPS rulemaking.

Regulating GHGs under §111(d) is significant, for a number of reasons. First, the language of §111(d) is broad, suggesting that EPA and states have discretion regarding its implementation. Second, the majority of NSPS regulations apply to pollutants also covered under §§108-110 (NAAQS) or §112 (HAPs) of the Act. As a result, there is little precedent to guide the Agency as it develops guidance for the states. Third, unlike NSPSs, §111(d) does not require a uniform national standard, potentially allowing states to develop tailored plans for the existing sources within their borders. Fourth, there are significantly more existing power plants and refineries than there are new or modified sources within these categories. For example, in 2009, there were 594 existing coal-fired power plants in the United States,4 but only 11 new coal-fired power plants became operational in 2010, and that reflected a 25-year high.5

Numerous states have one or more programs in place to limit GHG emissions, including renewable portfolio standards, energy-efficiency programs, and GHG markets. Some stakeholders, including state policymakers, electric utilities, and environmental groups, have suggested that the rules governing the existing source performance standards should allow states the flexibility to utilize existing GHG programs for compliance with the requirements.6 If these programs do indeed achieve equivalent reductions in emissions, allowing states to submit existing programs as their §111(d) plan would avoid forcing covered entities to comply with multiple regulatory regimes with little to no additional environmental benefits. Allowing states to demonstrate the equivalency of existing programs could also help the Agency meet its stated goal of implementing standards that address the environmental harm in a cost-effective manner.7 The impacts of climate change will

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7. Press Release, EPA to Set Modest Pace for Greenhouse Gas Standards/Agency Stresses Flexibility and Public Input in Developing Cost-Effective and Protective GHG Standards for Largest Emitters (Dec. 23, 2010),
differ across the country, as will the costs and opportunities for GHG emission reductions, justifying the possibility that different policy approaches could constitute the “best” system in different states. By allowing states to demonstrate that existing programs are equivalent to EPA’s rate-based standard, EPA could free states to act as laboratories for innovation, exploring different reduction strategies and potentially identifying more cost-effective strategies. On December 9, 2011, the Nicholas Institute for Environmental Policy Solutions convened a broad range of stakeholders representing numerous viewpoints to explore issues surrounding §111(d), including options for states to demonstrate that existing GHG policies are equivalent to the §111(d) requirements. This Article builds upon the discussion during the December 9 workshop and considers some of the major challenges associated with categories of potentially “equivalent” state programs.

Although setting the standard and deciding what level of detail to include in the guidance to the states is an important part of the §111(d) rulemaking, the goal of this Article is not to predict how the Agency will act or to offer an opinion as to how the Agency should act. Rather, the goal is to examine the options available for states to demonstrate that existing GHG policies are equivalent to the §111(d) requirements, and the challenges that may face the states and the Agency regarding equivalency.

I. Section 111(d) Overview

Section 111 of the CAA regulates sources of pollutants by setting standards of performance that reflect the emission reductions achievable through the application of “adequately demonstrated” cost-effective technology. It is not necessary that a covered source adopt a specific technology, as long as it achieves the required emission limitation. Section 111 performance standards apply to categories of sources, e.g., coal-fired boilers or refineries, that the Administrator determines emit a regulated pollutant(s) at a level that will “cause, or contribute significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” Over 75 categories of sources currently meet these criteria.

EPA typically promulgates standards of performance for new facilities and existing facilities that undergo major modifications within a source category. These NSPSs are governed by §111(b) of the Act. In limited instances, §111(d) also requires existing facilities within a category to comply with performance standards. Section 111(d) states that standards of performance must be established for:

any existing sources for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from a source category which is regulated under section 7412 of this title but (ii) to which a standard of performance would apply if such existing source were a new source.

In other words, performance standards are required for existing sources if two criteria are met: (1) a category of sources is determined to require NSPS; and (2) the regulated pollutant is neither a HAP nor a criteria pollutant regulated under §108 of the Act. Section 111(d) grants a more significant role to the states in the development and implementation of standards of performance than does §111(b). Under §111(d), EPA establishes “emissions guidelines” for states to use in drafting a state plan that establishes “standards of performance” for existing sources, subject to Agency approval. This cooperative federal-state process is “similar to that provided by section 110” of the Act, which outlines the NAAQS program.

A. Standards of Performance

Section 111 of the CAA defines standard of performance as a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.

The statute does not define the phrase “best system of emission reduction,” but the Agency typically sets NSPSs as a “numerical emissions limit, expressed as a performance level (i.e., a rate-based standard).” The Agency has previously determined that averaging emissions across

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8. New State Ice Co. v. Liebmann, 285 U.S. 262, 311 (1932). (In his dissenting opinion, Justice Louis Brandeis said: “It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.”)
14. Id.
facilities or an emission trading system can also qualify as a “best system.”

For new or modified sources (NSPs), the Administrator identifies the potential emission limits achievable from existing emission-reduction systems and assesses each limit based on costs and benefits to determine the best system of emission reduction. The performance standard is then set to reflect the rate of emissions that would occur after the application of that technology. Once an NSP is set for a category of sources, every new source or existing source undergoing major modifications that falls within that category must meet the performance standard.

The Act requires a different process for developing existing source standards. Section 111(d) calls for the Administrator to specify a procedure for states to submit a plan to the Agency that establishes standards of performance for existing sources. EPA’s implementing regulations governing §111(d) rulemakings have interpreted the procedure to be a three-step process. First, EPA identifies potential emission limits achievable from existing emission-reduction systems for a category of sources. Next, EPA assesses each limit based on costs and benefits to determine “an emission guideline that reflects the best system of emission reduction.” The Agency publishes that emission guideline as part of a broader guidance document. Finally, states submit to EPA their state plans incorporating the emission guideline as the performance standard and detail how the state will implement and enforce the standard.

B. State Plans

According to the regulations governing §111(d) rulemakings, EPA issues an emission guideline that sets a floor for the state standard. Thus, it is EPA and not the states making the initial determination about the “degree of emissions limitation” that is achievable, though this is tempered by the fact that a state retains the authority to apply a more stringent standard if it wishes, or a less-stringent standard for specific facilities if it can justify the deviation. Important for purposes of seeking equivalency, states have the discretion to determine the best way to achieve the emission limitation.

The Act provides that states shall submit plans following a procedure “similar to that provided by §110.” Section 110 outlines the implementation process for the Act’s NAAQS, which regulate concentration of pollutants in the air, rather than the sources of pollution. Under §110, EPA sets the standard (concentration of a given pollutant), and the states determine how to meet the standard. The approach in §110 utilizes a cooperative federalist model whereby EPA uses its expertise to determine what the NAAQS should be, and the states are delegated the authority to determine how the NAAQS will be achieved. States are charged with submitting a state implementation plan (SIP) to EPA, which is then approved or disapproved based on whether the plan will achieve the standard, and not the means of achieving the standard. Section 110 is often cited for the flexible compliance mechanisms and experimentation it allows states. For example, the section explicitly allows for the use of “economic incentives such as fees, marketable permits, and auctions of emissions rights.” The opportunity to use these tools allows states to act as laboratories of innovation and to learn from one another’s successes and failures.

C. Best System of Emission Reduction

Of the performance standards that have been established under §111(d) for existing sources, all but two are expressed as a rate-based standard that is met on a facility-by-facility basis. Two significant exceptions include the emission guidelines for Large Municipal Waste Combustors (LMWCs) and the Clean Air Mercury Rule (CAMR), which, though it was eventually struck down on grounds unrelated to the §111(d) interpretation, contained an emission guideline for mercury emitted by existing power plants. EPA’s emission guidelines in these two cases include a rate-based standard, but also explicitly give states the option to adopt a plan allowing facilities to trade emissions.

Considering the cumulative emissions from a regulated category of sources when determining whether a state’s plan complies with an EPA §111(d) emission guideline would allow states the flexibility to select alternative means of compliance as the best system of emission reduction, provided the program does indeed achieve emission reductions equivalent to a facility-by-facility approach. Flexibility under §111(d), however, is largely untested in court. Petitioners in the CAMR litigation argued that emissions reductions sufficient to meet the emission guideline must occur continuously at every source in order to meet the

18. 40 C.F.R. §60.22.
20. 40 C.F.R. §60.22(b)(3).
22. 40 C.F.R. §60.24(a)(3).
23. 40 C.F.R. §60.24(f).
26. See e.g., FRANZ LITZ ET AL., WORLD RESOURCES INSTITUTE, WHAT’S AHEAD FOR POWER PLANTS AND INDUSTRY? USING THE CLEAN AIR ACT TO REDUCE GHGS, BUILDING ON REGIONAL PROGRAMS (Feb. 2011) (“Title IV of the Clean Air Act and section 110(a)(2)(A) contain express provisions for flexible market-based mechanisms.”).
statutory definition of standard of performance.29 As stated above, the court did not reach this question.30

The forthcoming §111(d) GHG standards for power plants have renewed interest in this broader interpretation of “standard of performance” and “best system.” If EPA allows states to focus on the cumulative emissions reductions required by the emission guideline, then states can put forth existing GHG emission-reduction programs that achieve equivalent reductions as the best system of emission reduction.

II. State Programs and Equivalence

There are numerous GHG emission-reduction programs currently in place at the state level. Some states have expressed interest in a flexible §111(d) program that allows existing state programs to qualify as the §111(d) program.31 EPA could define the parameters of acceptable existing programs in the rulemaking, including the acceptable time frame and design of such programs. The Agency could also choose to remain silent on the issue and make a determination on a case-by-case basis as states submit implementation plans.

A. Existing State Programs

State programs addressing GHG emissions fall into five general categories: (1) renewable portfolio standards (RPSs) or end-use efficiency programs; (2) averaging the rate-based standard across the facility, source category, state, or region; (3) planned retirement of coal-fired power plants; (4) utility-only GHG markets; and (5) GHG markets that include source categories beyond the power sector. These options are not mutually exclusive and could operate together. For example, some states participate in a utility-only GHG market and also have an RPS. The following subsections describe each approach, including the challenges presented in the §111(d) context.

I. RPS/End-Use Energy Efficiency

Twenty-nine states and the District of Columbia currently have RPSs or energy-efficiency programs, and an additional eight states have voluntary goals. State programs differ widely on a number of variables that will influence the amount of GHG emission reductions that result. Similar to planned facility retirements and utility-only markets (described below), RPSs and efficiency programs may result in an overall decrease in aggregate emissions from power plants, but they will not affect the emission rate for a facility. A typical rate-based standard applies whenever the plant is operating and does not take into account overall emissions.

With EPA’s current NSPS/§111(d) rulemaking applying to fossil fuel-fired power plants, both renewable electricity generation and energy-efficiency programs fall outside of the source categories. If reductions must occur within the regulated source category, it is not clear whether these activities can qualify as equivalent programs under §111(d). Demand-side energy-efficiency programs and renewable energy generation may fit within the §111 framework, however, because both reduce the utilization of power plants, which is a traditional compliance mechanism under §111. According to this reasoning, emission reductions are occurring within the source category, because of changes in generation at the power plant.

Including RPSs or end-use efficiency programs in state §111(d) plans would first require interpreting the phrase “best system of emission reduction” to permit covered entities to reduce their emissions by relying on actions outside the source categories. Next, the states would need to convert the baseline rate-based standard to a relevant metric, e.g., tons of GHGs, then compare the metric to the projected GHG reductions resulting from the RPS/end-use program using reliable modeling methods. Projecting emissions reductions is complicated by the fact that it is difficult to know whether an efficiency program is leading to reductions in energy demand or if, instead, demand has slowed due to economic or other factors. Likewise, it is difficult to know whether renewable generation is actually replacing existing generation, or if it is instead meeting new demand, in which case it would not be reducing emissions from existing facilities. Assuming this difficulty can be overcome and emission reductions can be accurately predicted, a “mass-based” standard could be established. The potential to use such a metric will be discussed in further detail below.

2. Averaging the Emission-Rate Standard Across Sources

States applying the rate-based standard provided by EPA may wish to utilize averaging. Averaging would allow each source to comply if the average rate of emission across all sources were equivalent to the rate that would be achieved by a source-by-source requirement. Such a flexible approach may lower the cost of the program by creating improvements beyond the standard at sources where abatements are less expensive to make up for underperformance at other sources, thereby lowering the overall cost of emission reductions in the system. Averaging could also reduce the administrative burden on affected sources, and potentially state and EPA regulators, depending on the scale. For example, allowing companies to average across all of their individual units within a state (as opposed to compliance


30. For a discussion of EPA’s response, see Jonas Monast et al., Duke University Nicholas Institute for Environmental Policy Solutions, Avoiding the Glorious Mist: A Sensible Approach to Climate Change and the Clean Air Act (Oct. 2010) (citing Final Brief of Respondent U.S. EPA in New Jersey v. EPA, 517 F.3d 574, 38 ELR 20046 (D.C. Cir. 2008)).

on a unit-by-unit scale) could permit more streamlined reporting requirements.

EPA has allowed an averaging approach in meeting §111(d) standards in the past. States may allow limited averaging under EPA's §111(d) guidelines for nitrogen oxide (NO\textsubscript{x}) emissions from large municipal waste combustors.\textsuperscript{32} The guidelines set a rate-based standard, limiting the NO\textsubscript{x} concentration level that may be emitted from municipal waste combustors, but allow for averaging of emissions from all designated facilities at a single plant.\textsuperscript{33}

One issue that arises with an averaging approach is determining how broadly to apply the “bubble” under which averaging occurs—facilitywide, companywide, statewide, or across a region. Also, assuming EPA's NSPS rule covers more than one source category, i.e., coal-fired boilers and natural gas turbines, a state could conceivably propose averaging across all sources covered by the rule.

3. Planned Retirement of Coal-Fired Power Plants

In 2010, Colorado enacted the Clean Air, Clean Jobs Act. This law requires significant reductions in nitrous oxide (N\textsubscript{2}O) emissions “to meet reasonably foreseeable federal ‘Clean Air Act’ requirements to reduce emissions from coal-fired power plants.”\textsuperscript{34} The law required the state's major electric utility to submit a plan to the Colorado Public Utility Commission outlining how it will retire or retrofit 900 megawatts (MW) of coal-fired generation and replace it with generation that achieves emission rates equivalent to or less than a combined-cycle natural gas generating unit.\textsuperscript{35} Although the remaining facilities may not meet EPA's rate-based standard, Colorado could argue that it has achieved a greater level of emissions reductions through retirements than would have been achieved by applying the performance standard to all facilities.

Depending on the state plan, retirements may not present an issue under §111(d). If the state implements a source-specific emission-rate standard, the standard would apply to any new or existing plants making up for the lost generation. Addressing plant retirements with a plan that would be judged by the total mass of emissions can be more challenging. It may be necessary to account for retirements if EPA determines that the budgets must reflect the equivalent emission reductions as a rate-based standard over the lifetime of the program. A state could accomplish this either by periodically updating the emission budget or by including remaining useful life projections into the emission budget at the outset.

4. Utility-Only GHG Market

The Regional Greenhouse Gas Initiative (RGGI) is a utility-only market system designed to reduce cumulative carbon dioxide (CO\textsubscript{2}) emissions from power plants in participating states by 2018. Started in 2009, the program creates a regionwide cap on emissions from power plants, and allows covered entities to buy and sell allowances to comply with the emission cap. Nine states are currently participating in the RGGI.

The RGGI states developed a memorandum of understanding and a model rule to create the market system. Each state then implemented its own laws to enact the RGGI, and each state contracts with a third party—RGGI, Inc.—to conduct and monitor allowance auctions, and to manage the allowance tracking system.

Market-based systems present a number of issues in the §111(d) context:

- Assuming EPA issues a rate-based emission standard applicable to individual plants, the states would have to convert the standard to a relevant metric for assessing the state program's equivalence to the federal standard.
- Section 111(d), like the NSPS program, applies to specific source categories (in this instance, fossil fuel-fired power plants).\textsuperscript{36} Under the RGGI, the emission reductions may occur through end-use energy-efficiency programs or through electricity generation from renewable resources—both outside of the defined §111(d) categories. While this may reduce plant operation (and therefore emissions), a typical rate-based standard applies whenever the plant is operating and does not take into account overall emissions.
- Multistate programs, such as the RGGI, where overall emissions in one state may increase even though cumulative, regionwide emissions may decline, may present monitoring and enforcement challenges for EPA.
- If the state aggregates the rate-based standard to create a statewide emission metric, it would likely be necessary to review the program periodically to ensure that the state plan remains at least as stringent as a baseline rate-based standard.
- Plant retirements under a traditional, plant-specific, rate-based emission standard do not affect other

\textsuperscript{32} See Emission Guidelines for Municipal Waste Combustor Metals, Acid Gases, Organics, and Nitrogen Oxides, 40 C.F.R. §60.33(b(d).

\textsuperscript{33} 40 C.F.R. §60.32(b defining “designated facility” as a “municipal waste combustor unit with a combustion capacity greater than 250 tons per day of municipal solid waste for which construction was commenced on or before September 20, 1994.”)

\textsuperscript{34} Clean Air, Clean Jobs Act, COLO. REV. STAT. ANN. §40-3.2-201-210 (West 2010).

\textsuperscript{35} Id.

\textsuperscript{36} The settlement agreement under which EPA is operating only requires it to issue standards of performance for “electricity steam generating units (EGUs) subject to 40 C.F.R. part 60, Subpart DA”—that is, steam EGUs with a heat input rate over 73 MW. The settlement has a narrow scope because the lawsuit from which it arose had a narrow scope: the plaintiffs in the case sued on a 2006 rule that only included standards for Subpart DA. Although the settlement agreement only compels standards of performance for steam EGUs, it does not prevent EPA from issuing standards for other source categories. See Boiler GHG Settlement, Dec. 21, 2010, available at http://www.epa.gov/airquality/pdfs/boilerpdfsettlement.pdf.
facilities. In contrast, under a market system, a plant retirement may result in more allowances available to other facilities, thereby reducing compliance costs for the remaining covered entities. Depending on the type of facility retiring, there may be a significant reduction in GHG emissions in the short term. The prospect of excess allowances in the market, along with the expectation of lower allowance prices, may provide an incentive to retire older facilities. On the other hand, if the excess allowances were allowed to remain in circulation for the lifetime of the program, it may provide a disincentive for the remaining facilities to seek additional reductions.

- The RGGI program allows companies to purchase offsets (emission reductions occurring outside the covered sector) in limited circumstances. It is not clear that offsets are permissible under §111(d), as they do not reduce emissions from any regulated source category.37

5. Market System That Extends Beyond the Power Sector (e.g., California)

California is in the process of implementing a market system for GHGs that will cover multiple sectors of the economy, including the electric power sector. In contrast to the RGGI, which only covers the electric utility sector, the California system will cover utilities as well as major industrial facilities and refineries. Like the RGGI, demonstrating equivalency with the new GHG existing source performance standard would first require converting a rate-based emission standard into a mass-based emission metric.

In addition to the challenges regarding §111(d) and the RGGI described above, the California system presents additional issues to consider:

- Section 111 of the CAA (NSPS and existing source performance standards) applies to specific categories of sources. California’s program may lead to emission reductions outside the NSPS/§111(d) category.

- In addition to domestic offsets, the California system will also allow international offsets. As stated above, it is not clear that any type of offset credit is permissible under the structure of §111.

B. Demonstrating Equivalence and Ensuring Accountability

As discussed above, past EPA actions suggest that the “best system” need not be a static rate-based emission standard applied to individual units.38 This interpretation leaves room for the states to demonstrate that their suite of relevant programs is acceptable under the statute if it is projected to achieve equal or greater aggregate emission reductions than required by EPA guidelines. States will benefit from this flexibility, even if the performance standard put forth by EPA is written as an emission rate that applies to individual facilities or units. EPA’s §111(d)/§129 emission guidelines for municipal waste combustors, for example, allow for state plans to include emission limits in “alternative formats” to those put forth by the Agency, if the limits are “at least as protective” as those specified in the guidelines.39

Assuming that the Agency identifies a “rate-based” standard for new sources, i.e., an emissions/British thermal unit standard for all fossil fuel boilers, it would then apply the same rate-based approach to the existing fleet of sources through its guidelines, although it will likely adjust the standard to reflect the relative cost of abatement due to the age, size, and fuel type of existing sources.40 A state could then produce a plan that simply applies the adjusted rate-based standards for existing sources to the state’s fleet. Some states, however, have expressed a desire to pursue other GHG reduction strategies instead of a rate-based approach, believing that such policies will lead to a more efficient path of emission reductions, and hence constitute a better “system of emission reduction” under the statute.41 Thus, to ensure that the experiments conducted in the state laboratories perform in a manner that is equivalent to EPA-determined rate-based standard, the Agency could provide a mechanism for converting the standard into a metric appropriate for evaluation.

A heterogeneous approach amongst the states is consistent with the U.S. Supreme Court’s recent evaluation of the §111(d) program, which observed: “The Act envisions extensive cooperation between federal and state authorities, generally permitting each state to take the first cut at determining how best to achieve EPA emission standards within its domain.”42


38. See Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units (Clean Air Mercury Rule), 70 Fed. Reg. 28606 (July 18, 2005); Emission Guidelines for Municipal Waste Combustor Metals, Acid Gases, Organics, and Nitrogen Oxides, 40 C.F.R. §60.3(b)(d).


40. Because EPA has not indicated how it will define the performance standard for existing sources, this Article assumes, without taking a position, that the Agency’s §111(d) guidance will include a rate-based standard.


I. Converting Rate-Based Standards to Metrics for State Programs

The first step in assessing a state program’s equivalence to the requirements of §111(d) is developing criteria for the comparison. Such an assessment begins with the “emission guidelines” produced by EPA, creating binding requirements that states must address when developing plans to regulate existing sources of GHGs.\(^43\) The guidelines must reflect the emission reduction available through the application of the best demonstrated technology (as determined by Agency in its §111(b) rulemaking for new sources), but the statute and regulations also recognize that existing sources may not be able to achieve the same level of emission control at reasonable cost as new sources.\(^44\)

Programs to lower demand, programs to increase electricity generation from non- or low-emitting sources, programs to negotiate shutdowns of older plants, and state and regional GHG emission trading programs all work to reduce the cumulative emissions created by sources within the state, rather than the emission rate of individual sources. None of these programs guarantee actual rate improvements, but all are designed to ensure improvements in cumulative emissions at a lower overall cost than a rate-based program.

Thus, if the Agency decides to allow such cumulative emission-targeted programs to go forward, it would need to create a metric that measures the program based on the mass of GHGs emitted, rather than the emission rate. EPA has recent experience with this approach. To prevent allocation under the Cross-State Air Pollution Rule (CSAPR) from exceeding the terms of utility consent decrees that included maximum emission rates, the Agency converted the unit-level emission rates to a mass-based value.\(^45\) The formula for a mass-based metric should sum the expected emissions from the affected sources within the state if they were to emit GHGs at the target rates. This calculation should consider the capacity factor for each plant in the state, as the percentage of time each plant is operating, and thereby emitting GHGs, dictates the expectations regarding the fleet’s average rate or its cumulative emissions.

There are two general options for determining baseline operation for each facility: historical operation; and emission projection modeling. The states can look back to a five-year period preceding the rulemaking process to determine the historical baseline. The Agency has used this approach in other rules, such as the CSAPR.\(^46\) In this instance, the state would evaluate the operating time for each plant in its borders for the years 2006 to 2010. To control for abnormalities in the five-year period due to economic or natural fluctuations, the state would not use the data from each plant’s highest year and lowest year of utilization. The average of the remaining three years will then become the expected operating time for that plant for the determination of an expected average rate or expected cumulative state emissions.

Under the emission-projection modeling approach, capacity-factor determinations would need to include the projected impacts of new and upcoming air quality regulations, such as the CSAPR, the Toxics Rule, and potentially coal ash and cooling tower regulations. These rules may have a significant impact on fossil fuel power generation independently of GHG regulation, and basing the mass-based metric upon continued operation of these facilities at current levels could project higher GHG emissions than would occur under rate-based standards.

Emission-projection modeling also accounts for future energy demand. Energy demand is inherently uncertain, however, and is affected by variables over which policymakers may have little or no control, including the strength of the economy, the price of natural resources, and the weather. Although emission-projection modeling attempts to account for these uncertainties when forecasting future emissions levels, with this approach, states will rely on emission levels that are based, at least in part, on unknowable future scenarios. Another concern is that emission-projection modeling proved to be problematic with the CSAPR. In that case, modeling updates, including lower natural gas prices and reduced demand, resulted in significantly lower NO\(_x\) emission levels in the final rule than were anticipated in the proposed rule.\(^47\)

2. Demonstrating Equivalency With the Rate-Based Standard

Once a state has determined an emission standard, it must then demonstrate how its programs would achieve the mass-based reductions deemed equivalent to the rate-based standard. The statute specifies that states, in developing implementation plans, follow a procedure similar to that used to establish SIPs for NAAQS under §110 of the Act.\(^48\) The regulations pertaining to §110 allow for equivalency if “the resulting emission limit is quantifiable, accountable, enforceable, and based upon replicable procedures, is equivalent to the SIP limit”\(^49\).

EPA’s regulations governing the NAAQS SIP process require states to demonstrate the adequacy of their plans using modeling.\(^50\) Using the emission-projection modeling approach described above, the state would determine the


\(^44\) 40 C.F.R. §60.24.


\(^46\) 76 Fed. Reg. 48308 (Aug. 8, 2011). On December 30, 2011, the U.S. Court of Appeals for the District of Columbia (D.C.) Circuit granted a stay of the CSAPR pending completion of the court’s review of the rule’s validity. Though the Court did not explain its decision, petitioners’ arguments against the legal validity of the CSAPR includes a claim that EPA impermissibly bypassed state authorities by imposing federal implementation plans and challenges the accuracy of the state emission budgets.


\(^48\) 42 U.S.C. §7411(d)(1).

\(^49\) 57 Fed. Reg. 13567-68.

\(^50\) 40 C.F.R. §51, app. W.
quantity of emissions under the policy scenario depicted in its state plan, and would compare that to the emissions allowed by the standard to determine the adequacy of the policy scenario as an equivalent plan. EPA maintains a database of emissions-projection models, several of which can project future GHG emissions for the purpose of evaluating whether state programs achieve emission reductions equivalent to those that would occur under a facility-specific, rate-based standard.\textsuperscript{51}

In the past, EPA has identified modeling software for the states to use in the §111(d) guidance documents to the states. For example, in the emission guidelines for municipal solid waste landfills, EPA specified that the states must estimate landfill emissions either using EPA’s “Landfills Air Emissions Estimation Model” or using an alternative model if approved by EPA.\textsuperscript{52} EPA could provide similar guidance for the GHG §111(d) Guidance, identifying models or other options for demonstrating prospectively that a state plan will achieve results equivalent to a rate-based standard. In the case of RPS and end-user efficiency programs, EPA could also provide guidance on how to account for out-of-sector reductions in meeting the mass-based goal.

3. Ensuring Accountability

The Agency’s general §111(d) regulations require that each state plan include a compliance schedule for achieving the emission standard, as well as requirements for owners and operators to report emission information to the state, and for periodic inspection and testing of facilities.\textsuperscript{53} The states must then submit annual reports to EPA that include information on achievement of the standard, enforcement actions initiated, and a list of facilities that have ceased operations.\textsuperscript{54}

Section 111(d) requires that state plans provide for the enforcement of the standard\textsuperscript{55} and further grants EPA the authority to enforce a state plan under §§113 and 114 of the Act.\textsuperscript{56} Because §§113 and 114 address enforcement for both §§110 and 111 of the Act, regulations pertaining to §110 regarding the accountability and enforceability of equivalent programs are also instructive in understanding the requirements of §111(d) equivalent programs. As noted above, equivalent programs under §110 must be both “enforceable” and “accountable.” The Agency explains both requirements:

> Measures are enforceable when they . . . specify clear, unambiguous, and measurable requirements . . . [Accountability] means, for example, that source-specific limits should be permanent and must reflect the assumptions used in the SIP demonstrations. It also means that the SIP must contain means to track emission changes at sources and provide for corrective action if emission reductions are not achieved according to the plan.\textsuperscript{57}

If a state fails to submit a plan, or if the submitted plan is not satisfactory, EPA has the same authority to prescribe a federal implementation plan (FIP) as it does for the §110 NAAQS program.\textsuperscript{58} Under the §110 FIP process, EPA may prescribe an FIP if it “disapproves a State implementation plan submission in whole or in part, unless the State corrects the deficiency, and the Administrator approves the plan or plan revision, before the Administrator promulgates such Federal implementation plan.”\textsuperscript{59} Furthermore, if EPA approves a state plan and the state subsequently fails to comply with the emission standard set forth in the state plan, EPA has the authority under §113 of the Act to take enforcement action.\textsuperscript{60}

The NAAQS nonattainment plan provisions in §172 of the Act could provide a model for building in progress checks and contingency measures for novel approaches to emission reduction. Section 172(c)(2) requires plans to provide for “reasonable further progress” provisions requiring states to check in more frequently with the Agency to ensure progress toward the standard.\textsuperscript{61} Section 172(c)(9) requires state plans to include backstop measures that will take effect automatically if the state fails to attain the standard.\textsuperscript{62} Although §172 is not directly applicable to §111, it could provide a model for the Agency to help ensure the success of state programs, and to help states avoid being subject to an FIP.

If states opt for the rate-based standard provided by EPA, compliance and enforcement will be straightforward. States or EPA could initiate enforcement actions against facilities that do not meet the required standard, and EPA could initiate enforcement actions against states that do not comply with their state plan. As discussed below, if EPA approves an alternative state plan under §111(d), enforcement may become more complicated. For example, it is unclear how enforcement would occur in the case of interstate trading programs where each individual state has a requirement to the federal government under the statute or, in the case of RPS and end-user efficiency programs, where emission reductions may occur outside of the covered sector but the operations at the power plants remain unchanged.

C. Interstate Cooperation

If EPA allows states to pursue alternative §111(d) programs, the Agency may face questions regarding interstate coop-
eration. While interstate issues could theoretically apply to multiple options, including RPs and averaging, they currently arise in the context of the RGGI carbon market. Nine states are currently participating in the RGGI system. California may also address GHG emissions with interstate cooperation through the Western Climate Initiative (WCI)—a coalition of states and Canadian provinces working collectively on climate policy. Three of the jurisdictions (California, British Columbia, and Quebec) plan to initiate a market system in 2013, and Manitoba and Ontario plan to join once the program begins.\(^{63}\)

Interstate cooperation is not new under the CAA. For example, the NO\(_x\) SIP Call, the CSAPR, the Clean Air Interstate Rule (the CSAPR’s predecessor), and the CAMR all provide for some degree of interstate cooperation. Although a federal circuit court overturned the CAMR on grounds unrelated to the trading program, the rule included a §111(d) trading program, and thus presents a useful model. In that rule, EPA set the emission limit by identifying the covered sources within a state, determining the emission rate appropriate for each source, converting the emission rate to a mass-based limit (tons of mercury), and aggregating that limit statewide. The rule explicitly allowed interstate trading. EPA set the state budgets, designed a model rule that ensured “accurate, certain, and consistent quantification of emissions,”\(^{64}\) and monitored compliance.

In contrast to the CAMR, EPA does not currently have a role in the existing RGGI program. The RGGI states agreed on the structure for the program, and each state adopted its own independent legislation to create the program, which allows for interstate cooperation. RGGI, Inc., oversees the auctions and overall system compliance with the cap, as well as the emission tracking system.

EPA will have to determine whether it must be directly involved in the operation of an interstate market and how to determine and monitor compliance. There are two general options available, assuming (a) the Agency determines that interstate cooperation is permissible under the Act, and (b) the Agency does not provide a model rule allowing for interstate cooperation:

1. Allow states to create their own agreements and governance structures, and submit the program to EPA as part of the state plan. This option would be similar to the RGGI process of creating a common memorandum of understanding, but with each state adopting its own implementing legislation.

2. Allow states to request that the Agency play a direct role in allowance allocation and monitoring, as it would have under the CAMR.

Under either approach, EPA would retain its ability to initiate enforcement actions against entities that do not comply pursuant to §113 of the CAA. Nonetheless, interstate trading may still present enforcement challenges. For example, noncompliance by an entity in one state may affect compliance in cooperating states. In such a circumstance, the Agency and the states would have to determine how to enforce noncompliance. EPA could address this concern by allowing compliance on a regional basis, rather than a state-by-state basis. The Ozone Transport Commission (OTC) could provide a model for this approach. The OTC is a regional entity that assists northeastern states in meeting NAAQS for ground-level ozone by reducing NO\(_x\) emissions regionwide through a regional trading program.

D. Addressing Plant Retirements

Economic factors, new environmental regulations, and projections of sustained low natural gas prices will likely lead to the retirement of numerous coal-fired power plants in the coming years.\(^{65}\) If retirements occur in a state that implements a traditional rate-based emission standard, any new plant or existing plant replacing retired generation would presumably comply with the NSPS for new sources.

Depending on the time line for implementing the §111(d) rules, some planned retirements of coal-fired power plants may occur after the rules go into effect. The CAA requires EPA to allow states to “take into consideration, among other factors, the remaining useful life of the existing source” when setting the performance standards. States seeking to implement a facility-specific performance standard can invoke the “remaining useful life” provision in its state plan to try to justify an exclusion or less stringent standard for a facility that will shut down soon after the rule goes into effect.\(^{66}\) According to EPA’s §111(d) implementing regulations:

Unless otherwise specified in the applicable subpart on a case-by-case basis for particular designated facilities or classes of facilities, States may provide for the application of less stringent emissions standards or longer compliance schedules . . . provided that the State demonstrates with respect to each such facility (or class of facilities):

1. Unreasonable cost of control resulting from plant age, location, location or basic process design;

2. Physical impossibility of installing necessary control equipment; or

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63. International cooperation provides additional challenges under the CAA. It is not likely that emission reductions taking place in another country could count as the best system of emission reduction under the statutory language of the CAA. In addition, state regulators and EPA would have limited ability to directly monitor emissions and to pursue enforcement actions.

64. Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units (Clean Air Mercury Rule), 70 Fed. Reg. 28606 (July 18, 2005).


66. See 40 C.F.R. §60.24(f).
(3) Other factors specific to the facility (or class of facilities) that make application of a less stringent standard or final compliance time significantly more reasonable.

If a natural gas facility replaces a coal facility, significant GHG reductions may result. Some states may wish to include emissions from plants that will soon retire when they develop their §111(d) plans. States using a mass-based emission-reduction program, for example, could incentivize (or not discourage) retiring older coal units by allowing companies to continue receiving allocations for a period of time after retirement. This approach could potentially ease compliance obligations for the remaining facilities, as the reduction in overall emissions would result in more allowances available to other covered entities. Another approach to incentive incentivize retirements in a mass-based state program could reduce allowances at a specified time based on projections about when a facility will reach its “remaining useful life.” Companies could continue operating the facilities, but there would be a smaller pool of allowances in the system, presumably driving up costs of compliance.

While the retirement may result in overall GHG reductions, which is the underlying goal of a GHG NSPS/§111(d) program, the emission budget (based on the conversion from the rate-based standard to the state- or regionwide emission limit) would be higher than a budget created by aggregating the emissions from the remaining sources. To ensure that the state program remains equivalent to EPA’s rate-based standard over the lifetime of the program, it will be necessary to account for plant retirements.

E. Revising the Standard

Any state program that does not apply a plant-by-plant, rate-based standard will need to include a mechanism for ensuring that the program achieves the same level of emission reductions over time as those called for in EPA’s §111(d) guidance. Revising the state emission standards is not a cut-and-dried issue under §111(d), however. While §111(b) requires EPA to “review and, if appropriate, revise” the NSPS at least every eight years, §111(d) is silent regard-

ing whether EPA can require states to update their plans. EPA’s advanced notice of proposed rulemaking sought comment on “its authority and the advisability of such periodic updating with respect to” regulation of GHGs under §111(d).67

EPA could address this legal uncertainty by indicating that a state program must include a mechanism for reducing an emission cap to account for retirements in order to qualify as a “best system.” The state plan could create a schedule for reviewing the standard periodically (similar to the “at least every eight years” provision in §111(b)) and adjusting it to reflect technological advances and changes in the fleet. Such an approach would need to balance the goals of (a) ensuring the program achieves the appropriate level of emission reductions over time, and (b) providing sufficient regulatory certainty to allow cost-effective business planning.

III. Conclusion

The regulation of existing sources of GHG emissions under §111(d) of the CAA will be the broadest application to date of this little-used section of the Act. Due to the limited precedent regarding §111(d) and the breadth of the statutory language, there are several potential regulatory approaches available to the Agency in setting the standard, and to the states in determining its implementation. One issue that has garnered much analysis in the academic and policy arena is the potential for states to demonstrate that existing GHG policies are equivalent to the §111(d) requirements. While many stakeholders agree that the rules governing the existing source performance standards should allow states the flexibility to utilize existing GHG programs for compliance with the requirements, there are differing opinions on how the Agency and the states should address the challenges presented by each category of existing state programs and the legality of each approach. In this Article we have examined the options available for meeting the challenges that may face the states and the Agency regarding equivalency. It will fall to the Agency to decide how to address these challenges.

EPA FACT SHEET: Reducing Carbon Pollution From Power Plants
Moving Forward On the Climate Action Plan

“In July, I launched a Climate Action Plan aimed at cutting harmful carbon pollution and preparing the United States for the impacts of climate change. Today, we build on that progress by proposing common-sense standards that will begin to put an end to the limitless release of carbon pollution from our power plants, creating cleaner air and a healthier environment for our children and for future generations. By building on the leadership of states and cities that are moving to cleaner energy sources, and many power companies that are already working to modernize their plants, we can spur innovation and investment to help create new jobs and new industries, and be better stewards of the world we leave to our children.”

- President Barack Obama

On Sept. 20, 2013, the U.S. Environmental Protection Agency (EPA) announced its first steps under President Obama’s Climate Action Plan to reduce carbon pollution from power plants. Power plants are the largest stationary source of carbon pollution in the United States: about one third of all greenhouse gas pollution in the U.S. comes from the generation of electricity by power plants.

In the Clean Air Act, Congress recognized that the opportunity to build emissions controls into a source’s design is greater for new sources than for existing sources, so it laid out different approaches to set the two types of standards. Today EPA is proposing carbon pollution standards for power plants built in the future and is kicking off the process of engagement with states, stakeholders, and the public to establish carbon pollution standards for currently operating power plants.

The proposed standards for new power plants are the first uniform national limits on the amount of carbon pollution that future power plants will be allowed to emit. The proposed standards are in line with investments in clean energy technologies that are already being made in the power sector. The proposal ensures that the nation will continue to rely on a diverse mix of energy sources, including efficient natural gas, advanced coal technology, nuclear power, and renewable energy like wind and solar.

Standards for currently operating plants are set through a federal-state partnership that includes federal guidelines and state plans to set and implement performance standards. Reflecting the significant differences between currently operating sources and those not yet built, the standards that will be developed for currently operating sources are expected to be different from, and less stringent than, the standards proposed today for future sources. Over the coming months, EPA will be engaging with states and a diverse set of partners, including the power sector, environmental groups, and the public, to identify innovative, pragmatic approaches that build on the leadership that many states have already shown to cut carbon pollution from the power sector.
POWER PLANT CARBON POLLUTION IMPACTS PUBLIC HEALTH AND THE ENVIRONMENT

- Carbon pollution stays in the atmosphere and contributes to climate change, which is one of the most significant public health challenges of our time.

- Unchecked carbon pollution leads to long-lasting changes in our climate, such as rising global temperatures; rising sea level; changes in weather and precipitation patterns; and changes in ecosystems, habitats and species diversity.

- Public health risks include more heat waves and drought; worsening smog (also called ground-level ozone pollution); increasing the intensity of extreme events, like hurricanes, extreme precipitation and flooding; and increasing the range of ticks and mosquitoes, which can spread disease such as Lyme disease and West Nile virus.

- Our most vulnerable citizens, including children, older adults, people with heart or lung disease and people living in poverty are most at risk from the impacts of climate change.

NEW PLANTS WILL USE CLEAN TECHNOLOGIES

- This proposal will protect public health and address climate change while ensuring reliable, affordable, and clean power for American businesses and families.

- This standard ensures that power companies investing in new fossil fuel-fired power plants – which often operate for more than 40 years – will use technologies that limit emissions of harmful carbon pollution.

- This new proposal sets standards for different types of new power plants while maintaining a similar level of environmental protection. It reflects recent trends in the electric power sector and additional information, including the more than 2.5 million comments submitted by the public on the April 2012 proposal.

- The proposed standards will put national limits on the amount of carbon pollution that new power plants, built in the future, are allowed to emit. The standards will minimize carbon pollution by guaranteeing reliance on advanced technologies like efficient natural gas units and efficient coal units implementing partial carbon capture and storage (CCS).

- EPA’s rule reflects an ongoing trend in the power sector—a shift toward cleaner power plants that take advantage of modern technologies that will become the next generation of power plants. EPA’s rule ensures this progress continues.

- Because these standards are in line with current industry investment patterns, these standards are not expected to have notable costs and are not projected to impact electricity prices or reliability.

- U.S. Department of Energy, EPA and industry projections indicate that new power plants
that are built over the next decade or more would be expected to meet these standards even in the absence of the rule.

SEPARATE STANDARDS FOR COAL AND NATURAL GAS

- EPA is proposing to set separate standards for certain natural gas-fired stationary combustion turbines and for fossil fuel-fired utility boilers and integrated gasification combined cycle (IGCC) units. All standards are in pounds of CO$_2$ per megawatt-hour (lb CO$_2$/MWh gross).

- EPA is proposing two limits for fossil fuel-fired utility boilers and IGCC units, depending on the compliance period that best suits the unit. These limits require capture of only a portion of the CO$_2$ from the new unit. These proposed limits are:
  - 1,100 lb CO$_2$/MWh gross over a 12-operating month period, or
  - 1,000-1,050 lb CO$_2$/MWh gross over an 84-operating month (7-year) period

- EPA is proposing two standards for natural gas-fired stationary combustion units, depending on size. The proposed limits are based on the performance of modern natural gas combined cycle (NGCC) units. These proposed limits are:
  - 1,000 lb CO$_2$/MWh gross for larger units (> 850 mmBtu/hr)
  - 1,100 lb CO$_2$/MWh gross for smaller units (≤ 850 mmBtu/hr)

HOW TO COMMENT

- EPA will accept comment on this new proposal for 60 days after publication in the Federal Register.

- Comments submitted in response to the April 2012 proposed rule will not be associated with this new proposal. Commenters who submitted public comments concerning any aspect of the previous proposal will need to consider the applicability of those comments to this current proposal and submit them again, even if the comments are exactly or substantively the same as those previously submitted.

- Comments on the proposed standard should be identified by Docket ID No. EPA-HQ-OAR-2013-0495. All comments may be submitted by one of the following methods:
  - www.regulations.gov: Follow the on-line instructions for submitting comments.
  - E-mail: Comments may be sent by electronic mail (e-mail) to a-and-r-Docket@epa.gov.
  - Fax: Fax your comments to: 202-566-9744.
  - Mail: Send your comments to: Air and Radiation Docket and Information Center, Environmental Protection Agency, Mail Code: 2822T, 1200 Pennsylvania Ave., NW, Washington, DC, 20460.
- Hand Delivery or Courier: Deliver your comments to: EPA Docket Center, Room 3334, 1301 Constitution Ave., NW, Washington, DC, 20460. Such deliveries are only accepted during the Docket’s normal hours of operation, and special arrangements should be made for deliveries of boxed information.

- EPA will hold a public hearing on this proposal. The date, time, and location of the public hearing will be available soon. This information will be published in the Federal Register and also listed on [http://www2.epa.gov/carbon-pollution-standards](http://www2.epa.gov/carbon-pollution-standards).
SETTLEMENT AGREEMENT

This Settlement Agreement is made by and between the following groups of Petitioners:

(1) the States of New York, California, Connecticut, Delaware, Maine, New Mexico, Oregon, Rhode Island, Vermont, and Washington, the Commonwealth of Massachusetts, the District of Columbia, and the City of New York (collectively “State Petitioners”); and (2) Natural Resources Defense Council (NRDC), Sierra Club, and Environmental Defense Fund (EDF) (collectively “Environmental Petitioners”), and Respondent, the U.S. Environmental Protection Agency (“EPA”) (collectively “the Parties”).


WHEREAS, the Final Rule included amendments to the standards of performance for electric utility steam generating units subject to 40 C.F.R. part 60, subpart Da (“EGUs”);

WHEREAS, in connection with this Final Rule, EPA declined to establish standards of performance for greenhouse gas (“GHG”) emissions;

WHEREAS, State and Environmental Petitioners filed petitions for judicial review of the Final Rule under the Clean Air Act (“CAA”) Section 111, 42 U.S.C. § 7411, contending, inter alia, that the Final Rule was required to include standards of performance for GHG emissions from EGUs;

WHEREAS, the portions of State and Environmental Petitioners’ petitions for review of the Final Rule that related to GHG emissions were severed from other petitions for review of the Final Rule, and were formerly pending before the United States Court of Appeals for the District
of Columbia Circuit (the “Court”) under the caption *State of New York, et al. v. EPA*, No. 06-1322;

WHEREAS, following the Supreme Court’s decision in *Massachusetts v. EPA*, 549 U.S. 497 (2007), EPA requested remand of the Final Rule to EPA for further consideration of the issues related to GHG emissions in light of that decision;

WHEREAS, the Court remanded the Final Rule to EPA for further proceedings on GHG emissions in light of *Massachusetts v. EPA*, by its Order of September 24, 2007 (the “Remand Order”);

WHEREAS, as of the date of this Settlement Agreement, EPA has not taken any publicly noticed action to respond to the Remand Order;

WHEREAS, the State Petitioners submitted letters to EPA dated June 16, 2008 and August 4, 2009 inquiring as to the status of EPA’s action on the remand and stating their position that EPA had a legal obligation to act promptly to comply with the requirements of Section 111, and Environmental Petitioners submitted a letter to EPA on August 20, 2010 seeking commitments to rulemaking on GHG emissions from EGUs as a means of avoiding further litigation;

WHEREAS, EGUs are, collectively, the largest source category of GHG emissions in the United States, according to a recent EPA analysis. See 74 Fed. Reg. 56,260, 56,363 (Oct. 30, 2009);

WHEREAS, EPA’s initial evaluation of available GHG control strategies indicates that there are cost-effective control strategies for reducing GHGs from EGUs;

WHEREAS, EPA believes it would be appropriate for it to concurrently propose performance standards for GHG emissions from new and modified EGUs under CAA section
111(b), 42 U.S.C. § 7411(b), and emissions guidelines for GHG emissions from existing affected EGUs pursuant to CAA section 111(d), 42 U.S.C. § 7411(d), and 40 C.F.R. § 60.22;

WHEREAS, the Parties wish to enter into this Settlement Agreement to resolve the State and Environmental Petitioners' request for performance standards and emission guidelines for GHG emissions under CAA sections 111(b) and 111(d) and to avoid further litigation on this issue, without any admission or adjudications of fact or law;

NOW THEREFORE, the Parties, intending to be bound by this Settlement Agreement, hereby stipulate and agree as follows:

1. EPA will sign by July 26, 2011, and will transmit to the Office of the Federal Register within five business days, a proposed rule under section 111(b) that includes standards of performance for GHGs for new and modified EGUs that are subject to 40 C.F.R. part 60, subpart Da. EPA shall provide the State and Environmental Petitioners a copy of the proposed rule within five business days of signature.

2. EPA will also sign by July 26, 2011, and will transmit to the Office of the Federal Register within five business days, a proposed rule under section 111(d) that includes emissions guidelines for GHGs from existing EGUs that would have been subject to 40 C.F.R. part 60, subpart Da if they were new sources. EPA shall provide the State and Environmental Petitioners a copy of the proposed rule within five business days of signature.

3. After considering any public comments received concerning the proposed rule described in Paragraph 1, EPA will sign no later than May 26, 2012, and will transmit to the Office of the Federal Register within five business days, a final rule that takes final action with respect to the proposed rule described in Paragraph 1. EPA shall provide the
Environmental and State Petitioners with a copy of its final action within five business days of signature.

4. If EPA finalizes standards of performance for GHGs pursuant to Paragraph 3, then based on consideration of the public comments received concerning the proposed rule described in Paragraph 2, EPA will sign no later than May 26, 2012, and will transmit to the Office of the Federal Register within five business days, a final rule that takes final action with respect to the proposed rule describe in Paragraph 2. EPA shall provide the State and Environmental Petitioners with a copy of its final action within five business days of signature.

5. EPA agrees that it will make staff available by telephone at least every 60 days to update State and Environmental Petitioners on EPA’s progress in completing the actions described in Paragraphs (1) through (4). In addition, EPA will provide State and Environmental Petitioners with a status letter every 60 days, which shall include an affirmative statement of whether EPA believes it will timely complete all actions described in Paragraphs 1 through 4.

6. Upon EPA’s fulfillment of each of the obligations stated in Paragraphs 1 through 4 above, this Settlement Agreement shall constitute a full and final release of any claims that State and Environmental Petitioners may have under any provision of law to compel EPA to respond to the Court’s Remand Order with respect to GHG emissions from EGUs.

7. State and Environmental Petitioners shall not file any motion or petition seeking to compel EPA action in response to the Remand Order with respect to GHG emissions from EGUs unless EPA has first failed to meet an obligation stated in Paragraphs 1
through 4 above. If EPA fails to meet such an obligation, or if an EPA status letter described in Paragraph 5 does not affirm that EPA believes it will timely complete all actions described in Paragraphs 1 through 4, or if EPA fails to send a status letter as described in Paragraph 5 and does not promptly cure that failure upon receiving notice, State and Environmental Petitioners’ sole remedy shall be to file an appropriate motion or petition with the Court or other civil action seeking to compel EPA to take action responding to the Remand Order. In that event, all Parties reserve any claims or defenses they may have in such an action, and the dates stated in Paragraphs 1 through 4 shall be construed to represent only the parties’ attempt to compromise claims in litigation, and not to represent agreement that any particular schedule for further agency action is reasonable or otherwise required by law. State and Environmental Petitioners reserve all rights under the law to file petitions for review of final agency actions under this Settlement Agreement, pursuant to section 307(b), 42 U.S.C. § 7607(b).

8. This Settlement Agreement constitutes the sole and entire understanding of EPA and the Environmental and State Petitioners and no statement, promise or inducement made by any Party to this Settlement Agreement, or any agent of such Parties, that is not set forth in this Settlement Agreement shall be valid or binding.

9. Except as expressly provided in this Settlement Agreement, none of the Parties waives or relinquishes any legal rights, claims or defenses it may have. State and Environmental Petitioners reserve the right to seek attorneys’ fees and costs relating to this litigation, and EPA reserves any defenses it may have relating to such claims.

10. The provisions of this Settlement Agreement can be modified at any time by written mutual consent of the Parties.
11. Except as expressly provided herein, nothing in the terms of this Settlement Agreement shall be construed to limit or modify the discretion accorded EPA by the CAA or by general principles of administrative law.

12. The commitments by EPA in this Settlement Agreement are subject to the availability of appropriated funds. No provision of this Settlement Agreement shall be interpreted as or constitute a commitment or requirement that EPA obligate, expend or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. 1341, or any other applicable appropriations law or regulation, or otherwise take any action in contravention of those laws or regulations.

13. Nothing in the terms of this Settlement Agreement shall be construed to limit EPA’s authority to alter, amend or revise any final rule EPA may issue pursuant to Paragraphs 3 or 4, or to promulgate superseding regulations.

14. The Parties agree and acknowledge that before this Settlement Agreement is final, EPA must provide notice in the Federal Register and an opportunity for public comment pursuant to CAA Section 113(g), 42 U.S.C. 7413(g). After this Settlement Agreement has undergone an opportunity for notice and comment, the Administrator and/or the Attorney General, as appropriate, shall promptly consider any such written comments in determining whether to withdraw or withhold her/his consent to the Settlement Agreement, in accordance with section 113(g) of the CAA. Within 30 days of the close of the public comment period, EPA shall provide written notice to State and Environmental Petitioners of any decision to withdraw or withhold consent or shall provide written notice of finality. This Settlement Agreement shall become final on the
date that EPA provides written notice of such finality to the State and Environmental Petitioners.

15. The undersigned representatives of each Party certify that they are fully authorized by the Party that they represent to bind that respective Party to the terms of this Settlement Agreement. This Settlement Agreement will be deemed to be executed when it has been signed by the representatives of the Parties set forth below, subject to final approvals pursuant to Paragraph 14.

DATE: 12/21/10

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Revisiting Variable Energy Resources Integration
EBA’s Mid-Year Meeting & Conference
October 23-23, 2013
VER Integration in the Northeast

Tim Daniels, Principal
Hudson Energy Development, LLC
tdaniels@hudsonenergydev.com
New York Overview

• Peak demand ~33,700 MW
• 30% RPS by 2015 (created through regulation)
• Wind generation 1,800 MW
  – Passed 1,000 MW in 2008/2009
• Solar 200-300 MW (mostly behind the meter)
• Wind located in northern part of state far from load
• Uncertainty around offshore wind and Canadian hydro
New York VER Integration

- Cuomo’s Energy Highway Initiative (2012)
- NYISO wind generation study (2010)
  - Grid can accommodate up to 8,000 MW
- Wind forecasting implemented (2008)
- Flexible energy market bidding rules
- Wind and solar included in capacity market
- Solar forecasting under development
- Growing frequency regulation market:
  - AES 20 MW battery project in Johnson City
  - Beacon Power 20 MW flywheel project in Stephentown
New York VER Challenges

• Most renewables built under 10-year, fixed price, REC-only contracts. Risk is all on developer.

• Upcoming Long Island Power Authority renewable solicitations. Some contracts may include some risk sharing.

• Biggest integration issue is moving power to load centers – policy driven transmission projects
New England Overview

- Peak demand ~28,000 MW
- 750 MW of wind (another 850 MW to be added for MA and CT PPAs)
- 200-300 MW of solar
- RPS of ~20% by 2021 across New England
- Wind located mostly in Maine far from load centers in MA-CT-RI
- Uncertainty around offshore wind, Canadian hydro and MA solar expansion
New England VER Integration

• New England wind integration study (2010)
  – ~$1B in upgrades for each 1,000 MW of incremental wind
• Wind forecasting has not been fully implemented
• VERs included in Forward Capacity Market
• Changes to energy market to provide greater flexibility (implementation in late 2014)
• Planning and operations processes under review
New England VER Challenges

• State mandated PPAs in MA, CT, RI allocate most risks to developers

• Risk sharing provisions in bilateral REC and/or energy contracts with competitive retail and wholesale LSEs is unknown

• Continued uncertainty about upgrade requirements and timing of interconnection studies

• Frequency of curtailments unknown - likely to continue for a few more years. Particularly damaging to resources utilizing the PTC.
Evolution of Wind Generation in an Energy Market

John Dumas
Director of Wholesale Market Operations

Energy Bar Association
October 23, 2013
ERCOT Capacity and Energy by Fuel Type

**2012 Generation Capacity**
- Coal: 23%
- Natural Gas: 57%
- Wind: 13%
- Nuclear: 6%
- Hydro, Biomass, Solar and Storage: 1%

**Energy Use 2012**
- Coal: 33.8%
- Natural Gas: 44.6%
- Nuclear: 11.8%
- Wind: 9.2%
- Hydro, Biomass, Solar, Other: 0.6%
Wind Generation – August 2013

- Texas is #1 in the U.S. in wind capacity.
- If Texas were a separate country, we’d be #6 in the world.

The data presented here is based upon the latest registration data provided to ERCOT by the resource owners and can change without notice. Any capacity changes will be reflected in current and subsequent years’ totals. Scheduling delays will also be reflected in the planned projects as that information is received.

This chart reflects planned units in the calendar year of submission rather than installations by peak of year shown.
## Texas Competitive Model

<table>
<thead>
<tr>
<th>Generation</th>
<th>T&amp;D (“Wires”)</th>
<th>Retailers</th>
<th>End Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive Production</td>
<td>Regulated Open Access</td>
<td>REP</td>
<td>REP</td>
</tr>
</tbody>
</table>

- **REP**: Representative Entity Provider
- **End Users**: Customers
Current Records – September 13, 2013

Peak Demand Record: 68,305 megawatts
- 68,305 megawatts (MW), August 3, 2011
  - 4 percent increase over 2010 previous record – 65,776 MW

Weekend Record
- 65,159 MW, Sunday, August 28, 2011
  - 5 percent increase over 2010 previous record – 62,320 MW

Winter Peak Record
- 57,315 MW (February 10, 2011)
  - 3 percent increase over 2010 previous record – 55,878 MW

Wind Record
- A new wind record of 9674 MW occurred on May 02, 2013 at 4:30 pm
  - Non-Coastal Wind = 8,116 MW
  - Coastal Wind = 1,558 MW
  - Wind was supplying 28.05% of the 34,493 MW load

Summer 2013
- Monthly Peak Demands
  - 64,418 MW on June 27th
  - 64,814 MW on July 31st
  - 67,245 MW on August 7th
Energy Prices

• WGRs will be dispatched economically and will be moved to resolve transmission congestion and/or capacity issues

• An increasing amount of generation capacity being offered in at very low prices will tend to decrease the overall system energy prices
  – Graph shows clear relationship between wind output and real-time prices
  – WGRs very rarely set the price, however this can happen more frequently as more wind is installed in the market

• Analysis was done using 15 months of Nodal Market operation
• This same pattern was observed regardless of time of day or season of the year
ERCOT Wind Power Forecasting

• ERCOT Large Ramp Alert System (ELRAS)

180 minute probability

~35% chance of wind output dropping by 2000 MW between 10 AM and 1 PM

• Wind Power Forecast
  • STWPF – Red line
  • WGRPP – Green Line

Aggregate Power Output Forecast
Forecast Created 2012-03-01 9:09:36 CST
Wind Generation Impact on Non-Spin Reserve Service

- Wind Forecast error will impact 30 minute fast responding reserve requirements
  - The chart on the right indicates a difference of 1500 MW between the forecasted wind output and actual wind output.
  - Non-spin is procured to cover wind forecast error and load forecast error.
Nodal 5 minute Dispatch Manages System Volatility

- Frequency deviations due to large system excursions were more severe in Zonal versus the Nodal Market Design
- The Nodal Real-time Market design has resulted in more stable frequency control
- The Graphs illustrate an observed 2000 MW drop in wind under both designs:
  - Under the Zonal design the frequency fluctuated ± 0.08 Hz
  - Under the Nodal design the frequency fluctuated ± 0.04 Hz
2013 Energy Bar Association
Session A: Revisiting VER Integration

Clyde Loutan - Senior Advisor, Renewable Energy Integration (CAISO)

October 23, 2013

Renaissance Hotel, 999 Ninth Street, NW, Washington D.C.
The efforts of the ISO to integrate high levels of VERs to manage the Bulk Power System

- ISO’s unique operating challenges
- VERs build out to meet 33% RPS by 2020
- ISO 2010 FERC Filing for VERs interconnection requirements
- NERC/ISO recommended characteristics VER should provide
- The ISO’s plans for integrating renewables
- Partners to reliable integrate high levels of renewables
California ISO by the numbers

- **58,698** MW of power plant capacity
- **50,270** MW record peak demand (July 24, 2006)
- **26,500** market transactions per day
- **25,627** circuit-miles of transmission lines
- **30 million** people served
- **309 million** megawatts of electricity delivered annually
California energy and environmental policies drive renewable integration and transmission needs

- Greenhouse gas reductions to 1990 levels by 2020
  - Limits on availability of air emission credits for replacement generation
- 33% of load served by renewable generation by 2020
- Possibly 12,000 MW of distributed generation by 2020
- Less predictable load patterns – rooftop solar, electric vehicles, and smart grid
- Ban on use of once-through cooling in coastal power plants
33% RPS --- Cumulative expected VERs build-out through 2020

33% RPS --- Variable Resources Expected Build-out Through 2020

IOU Data through 2017 and RPS Calculator beyond 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Solar Thermal</th>
<th>Solar PV</th>
<th>Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>419</td>
<td>1,345</td>
<td>5,800</td>
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<tr>
<td>2013</td>
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<td>7,877</td>
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<tr>
<td>2020</td>
<td>1,917</td>
<td>8,872</td>
<td>7,934</td>
</tr>
</tbody>
</table>
Summary of grid operations to manage a more complex grid

- Increased requirements for regulation up and down
- Need to manage increased intra-hour flexibility and multiple daily ramps
  - Need to manage approximately 3,000 MW of intra-hour load-following
  - Need to manage approximately 13,000 MW of continuous up-ramp within a 3 hour time period (almost double current up-ramps)
- Non-dispatchable resources serving load varies between 12,000 MW to 14,000 MW based on maximum capability of resources
- Increased frequency of over-generation conditions
- Need to comply with a frequency response obligation following a disturbance (Compliance with BAL-003-1)
- Impact of DER resources on the BES is still not fully understood
On July 2, 2010, the ISO filed with FERC to revise its large asynchronous generating interconnection requirements

The tariff amendments specify requirements for:

1. **Reactive Power Design and Operation Criteria** – Requires all asynchronous generators to be able to operate between .95 lead and .95 lag at the POI. **Rejected**

2. **Voltage Regulation and Reactive Power Control Requirements** – Requires asynchronous generation facility to automatically regulate scheduled voltage at the POI. **Rejected**

3. **Frequency and Low Voltage Ride Through** – The proposal requires all large asynchronous generators to remain on-line for a maximum of 9 cycles for deviations in voltage or frequency. **Accepted**

4. **Generator Active Power Management** – **Rejected**

Note: Currently reactive support is only required from asynchronous generators if the host BA proves through technical studies on a case by case basis that it’s needed.
NERC/ISO have identified four characteristics of conventional generation that VERs should also provide:

- Capability to provide reactive power support;
- Capability to increase or reduce energy output automatically, in response to system frequency;
- Ability to limit power production as needed for the promotion of reliability; and
- Capability to provide inertial response.

In addition, NERC would:

- Evaluate the impact of reduced fault current on planning standards
- Consider VERs as part of data collection and sharing requirements
Flexible resources would be dispatched to the net (red) load demand curve.

Load, Wind & Solar Profiles --- Base Scenario
January 2020

Net Load = Load - Wind - Solar
Non-summer months --- Net load pattern changes significantly starting in 2014

CAISO Net Load --- 2012 through 2020

MW

Potential Over-generation

Significant Ramps

Non-flexible supply creates dispatch issues and potential over-generation conditions

Potential Over-generation Conditions
Base Load Scenario

- CAISO Net Load 2020
- Regulation Down
- Load Following Down
- Minimum Dispatchable Thermal & Hydro Resources
- Small Hydro (RPS)
- Imports (JOU & Dynamic Schedules)
- Geothermal
- Nuclear
- Gas (QFs)
- Qualifying Facilities (QFs)

Oth QFs, Gas QFs, Nuclear, Geothermal, Imports, S_Hydro, CCGT & Hydro, LF Down, Reg. Down, Net Load

IOU – Jointly Owned Units
Meeting the operational challenges beyond 20% RPS

- **Generation**
  - Wider Operating Range (lower Pmin)
  - Dispatchable Wind/Solar
  - Dispatchable Quick Start

- **Storage**
  - Voltage Support
  - Regulation
  - Fast Ramping
  - Frequency Response
  - Over Generation Mitigation
  - Load Shift

- **Demand Response**
  - Peak Load Reduction
Mid-Kansas•Sunflower
In the Heart of (SPP) Wind Country

Noman L. Williams
VP Transmission Policy
Background

- Sunflower and Mid-Kansas are
  - Operating G&Ts and Southwest Power Pool TOs
  - Owned by six distribution cooperative members
  - Operated by Sunflower employees
  - With substantial resources
    - Over 2200 miles of SPP transmission lines and 76 substations
    - 1205 MW of coal- and gas-fired generation
  - Serving through Members and other wholesale customers over 146,000 meters in 34 counties in western Kansas
  - Representative of many G&Ts that must integrate substantial wind resources on rural systems
Sunflower and Mid-Kansas Statistics

- **Single Balancing Authority Area (SECI)**
  - Peak load – 1,156 MW (June 27, 2012)
  - Owned generation
    - Installed – 980 MW coal and gas
    - Adding 110 MW fast response gas reciprocating engine project in spring of 2014 to support area regulation
  - Wind purchases – 280 MW (nameplate)

- **Total wind installed in SECI footprint** – approximately 1,653 MW (nameplate)
  - Over 900 MW of new wind added in last year within the SECI BAA
60-70 GW of *potential* wind in SPP

**In SPP**
*8390 MW in operation*
9000 MW in active study or IA pending
10,500 MW with signed IAs

**In Sunflower-Mid-Kansas Area**
*1653 MW in operation*
2357 MW active study or IA pending
1349 MW with signed IAs

Data from SPP – Charles Hendrix and Katherine Prewitt
SPP System Constraints – the Perfect Storm

- Unexpected activities (e.g., NERC alert inspections and EPA rule unit modifications) created unplanned system constraints
  - De-rates of facilities
  - Outages required for remediation changed system
  - Multiple utilities completing inspections and remediation activities simultaneously

- Impact of planned transmission activities constrained system
  - Outages to support SPP planned projects
  - Outages for interconnections and transmission service, delivery point transfer

- Large amount of new wind generation added over past year
  - Adds to loading on already constrained transmission facilities
  - Pseudo-ties help with balancing, but not physics
Other Elements of Perfect Storm

- **No load / Light load**
  - Lack of voltage control when wind generation is not producing
  - No reactive control/capability
  - May require opening interconnect to control network voltage

- **GI and Transmission Service Studies may not identify all system loading issues**
  - Upgrades not assigned to Customers for all wind on at 100% nameplate
  - Studies start with “system intact” before running ‘n-1’ (no maintenance outages, NERC alerts, etc. accounted for)

- **FERC Separation of Functions Rules**
  - Constrain communication/collaboration among TOs and generators
  - Using SPP to coordinate is key
How Do We Minimize Wind Curtailments?

- **Speed up process for reducing wind output to protect reliability**
  - Change from proactive N-1 mitigation to reactive? Can this be done short of implementing Special Protection Systems?

- **Reconsider process for reviewing and approving transmission facility outages**
  - Should pre-contingent curtailment of wind continue to be an acceptable mitigation for violations identified when studying planned outage impacts?

- **Improve how we coordinate required outages from a SPP region-wide perspective to minimize wind impacts while continuing to protect reliability**
  - Would require more input from SPP (FERC Separation of Functions Rules)
How Do We Minimize Wind Curtailments?

- Investigate ways to factor in economic impact of wind curtailment
  - On generation owners – loss of PTC
  - On Project off-takers - potential make whole payments
  - How and can this be incorporated into CME process?

- Moving projects from NDVER to DVER
  - Are projects capable?
  - What are the potential costs?
  - Are there control system changes required?
  - What is the required time frame to convert?

- How will this change with Integrated Market?

- What else?
Revisiting VER Integration

Energy Bar Association
Mid-Year Meeting
Washington, DC
October 23, 2013

N. Beth Emery
Partner
Definition of VER

- Variable Energy Resource - a device for the production of electricity that is
  - Renewable
  - cannot be stored by the facility owner or operator; and
  - has variability that is beyond the control of the facility owner or operator.

- This includes, for example, wind, solar thermal and photovoltaic, and hydrokinetic generating facilities. See *Integration of Variable Energy Resources Notice of Proposed Rulemaking*, FERC Stats. & Regs. ¶ 32,664, at P 64 (2010) (Proposed Rule).
History of FERC Rulemaking

- Order 888
- Standard Interconnection Procedures and LGIA *pro forma*
  - Orders 2003, *et al.* — Policies limited to large conventional generators
  - Orders 661, *et al.* — large wind *pro forma*
  - Order 890 *et al.*
    - *Pro forma* Imbalance Schedule 9
    - VERs exempted from third tier imbalance penalties
History of FERC Rulemaking

- January 21, 2010 – Notice of Inquiry on:
  - Power production forecasting (tools, data and reporting)
  - Scheduling practices, flexibility, and incentives for accurate scheduling of VERs
  - Forward market structure and reliability commitment processes
  - Balancing authority area coordination and/or consolidation
  - Suitability of reserve products and reforms necessary to encourage the efficient use of reserve products
  - Capacity market reforms
  - Redispatch and curtailment practices necessary to accommodate VERs in real time
History of FERC Rulemaking

- Comments on NOI – 135 separate filings – common theme – need for regional flexibility
- NOPR – November 18, 2010 - Reforms to address “undue burdens on VERs”
  - Intra-hour scheduling (15 minute)
  - New LGIAs to require VER to provide meteorological and forced outagel data for improved power production forecasting
  - *Pro Forma* Schedule 10 – Generator Regulation and Frequency Response Service
History of FERC Rulemaking

- **Order 764, et al.**
  - Final Rule – June 22, 2012
    - Kept intra-hour scheduling (for all transmission customers, not just VERs)
    - Kept data requirements
    - Opted for Schedule 10 to be case-by-case
  - Rehearings
    - No fundamental changes, but extension of time for utilities to file changes in Tariffs
    - Clarified intra-hour scheduling not limited to VERs
    - Clarified how certain charges are to be calculated
Development of Natural Gas Pipeline Infrastructure: Challenges and Opportunities
EBA’s Mid-Year Meeting & Conference
October 23-23, 2013
Expedited Federal Authorization of Interstate Natural Gas Pipelines: Are Agencies Complying with EPAct 2005?

Prepared for The INGAA Foundation, Inc.
By: Holland and Hart LLP
December 21, 2012
Expedited Federal Authorization of Interstate Natural Gas Pipelines: Are Agencies Complying with EPAct 2005?

Executive Summary

This report presents a study showing that the time to obtain required federal authorizations from agencies other than the Federal Energy Regulatory Commission (FERC or Commission) for interstate natural gas pipeline projects has actually increased since the passage of the Energy Policy Act of 2005 (EPAct 2005), a law with the stated intent to streamline and expedite federal authorizations for such projects.

The only provision in EPAct 2005 Section 313 that provides an applicant with recourse in the face of agency delay—a petition to the U.S. Court of Appeals for the D.C. Circuit—has rarely been used, allowing agencies to miss the required federal authorization deadline without consequence.

The undesirable effects of permitting delays range from increased project costs to missed in-service dates, along with a variety of associated adverse business, environmental, and other consequences. Using survey and interview data from the majority of large pipeline projects over the past 13 years, this report analyzes permitting timeframes and identifies possible improvements.

It should be noted that no causal link was identified between the passage of EPAct 2005 and the increase in time required to obtain all required federal authorizations for interstate pipeline projects. Rather, the causes for delay that were identified included agency inexperience and inadequate agency staff, interagency conflicts, applicant changes to the project requiring additional or revised environmental review, and site-access problems. Improving the Act may help to alleviate the delays that appear to have increased in recent years.

In order to streamline and expedite the federal authorizations required for interstate natural gas pipeline projects, EPAct 2005 authorized FERC to establish a schedule for such authorizations. To accomplish this, FERC implemented a 90-day deadline for other agencies to issue the federal authorizations required for a pipeline project after the issuance of FERC’s environmental analysis under the National Environmental Policy Act.

Five years after implementation of the Act, The INGAA Foundation, Inc. commissioned Holland & Hart LLP to conduct a study to determine whether the law had reduced the time to obtain federal authorizations for interstate natural gas pipeline projects as intended and, depending on the results of the study, to develop strategies for streamlining the issuance of such authorizations. The study focused on the EPAct 2005 provision regarding the federal

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1 Federal authorizations include both authorizations issued by federal agencies and authorizations issued by state agencies acting under federal delegation.
authorization deadline, which applies to non-FERC authorizations. The study does not cover FERC processes or certification except in relation to the other federal authorizations.

To collect data for the study, Holland & Hart conducted a survey, with respondents representing 51 interstate natural gas pipeline projects from both before and after the effective date of EPAct 2005.

For post-EPAct 2005 projects, the survey data showed:

1. an increase from 7.69% to 28.05% of federal authorizations that were delayed (see Table 2);

2. an increase from 3.42% to 19.51% of federal authorizations that were delayed 90 days or longer beyond the FERC deadline (see Table 3); and

3. an increase in the time federal agencies took to deem an application for a federal authorization “complete.”

In response to open-ended questions administered to the survey-respondents, the most common cause cited for federal authorization delays was conflict between two agencies. Other causes included inadequate or under-trained agency staff, applicant changes to the project requiring additional or revised environmental review, site-access problems, third-party protests, and agency review and determination of requirements to mitigate for environmental impacts.

Suggestions to reduce future delays included:

1. providing consequences when agencies fail to meet the FERC deadline;

2. planning for the project early and thoroughly; and

3. establishing better applicant-agency relationships and lines of communication.

The survey was designed to quantify delays experienced in receiving federal authorizations and gather information on the causes of such delays. Based on the survey outcomes, Holland & Hart conducted qualitative interviews with representatives from four post-EPAct 2005 projects that experienced significant delays to explore further some of the causes for such delays.²

The interviewees expressed a strong desire for the Commission to have the authority to impose consequences or take unilateral action when agencies failed to abide by the federal authorization deadline set by FERC. The interviews also revealed a general desire for more

² Further research would be needed to determine all of the reasons that the frequency and duration of delay increased after the Act.
FERC involvement in the federal authorization process, especially to provide more education and training to the other federal agencies involved in the process.

A majority of the interviewees also indicated that state agencies with delegated federal permitting authority were a common source of delays, even though such delegated authorizations are subject to the EPAct 2005 provision establishing a federal timeline. Several of the interviewees offered that the time it took to satisfy U.S. Fish and Wildlife Service requirements under the Migratory Bird Treaty Act and to obtain permits from the Army Corps of Engineers under Section 404 of the Clean Water Act contributed to major delays for their projects. The interviewees also indicated that under-staffed agencies and increased public concern over natural gas production issues like hydraulic fracturing were sources of pipeline project delay. Finally, the interviewees noted that duplicative agency processes, FERC’s inability to enforce the federal-authorization deadline, and project changes by the applicant also contributed to delays.

Overall, the survey and interviews revealed increased permitting delays since the enactment of EPAct 2005 for the federal authorizations required to develop interstate natural gas pipeline projects. Thus, it appears that federal agencies have not complied with EPAct 2005’s requirements for streamlining and expediting federal authorizations.

In order to achieve the Act’s stated goal of streamlined permitting, there must be consequences for agencies that fail to meet deadlines. Additional process improvements, regulatory revisions, and/or legislative actions likely are needed. Based on analysis of the study data, potential options include:

1. Amending the Natural Gas Act to provide effective tools to enforce the federal-authorization deadline, such as granting automatic approval if an agency does not respond by the deadline or allowing FERC to grant approval in the agency’s stead.

2. Greater FERC involvement in permitting processes to educate and train other federal agencies, facilitate communications with those agencies, and move the permitting processes forward.

3. Encouragement of other federal agencies to recruit staff with specific experience permitting linear projects.

4. Revision of FERC’s policy that encourages cooperation with state and local agencies to recognize more definitively that state or local law that overlaps or conflicts with FERC’s authority over pipeline facilities is preempted by the Natural Gas Act.

5. Recognition by federal agencies that, as the lead agency, FERC’s completion of National Historic Preservation Act Section 106 consultation and Endangered Species Act Section 7 consultation is sufficient for other federal authorizations that require such consultation for interstate natural gas pipeline projects.
6. Explicit direction by the Council on Environmental Quality to require expedited review for pipeline projects under the National Environmental Policy Act.

7. Statutory amendments to authorize interstate natural gas pipeline companies access to private property for required non-invasive project surveys and to authorize FERC to apply authorization deadlines to non-federal authorizations required from state and local agencies.

8. Congressional or federal court action to address issues and associated delays resulting from the U.S. Fish and Wildlife Service requirements under the Migratory Bird Treaty Act, which currently prohibits the take of migratory birds that occurs incidental to otherwise lawful activities, such as interstate natural gas pipeline development.
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Appendix I Computer-Based Survey Questionnaire
# Acronyms and Abbreviations

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<tbody>
<tr>
<td>ACHP</td>
<td>Advisory Council on Historic Preservation</td>
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<tr>
<td>BiOp</td>
<td>biological opinion</td>
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<td>BLM</td>
<td>Bureau of Land Management</td>
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<tr>
<td>Corps</td>
<td>Army Corps of Engineers</td>
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<td>CP</td>
<td>Certificate Proceeding</td>
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<tr>
<td>CZMA</td>
<td>Coastal Zone Management Act</td>
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<td>EA</td>
<td>environmental assessment</td>
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<tr>
<td>EIS</td>
<td>environmental impact statement</td>
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<tr>
<td>ESA</td>
<td>Endangered Species Act</td>
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<tr>
<td>FERC or Commission</td>
<td>Federal Energy Regulatory Commission</td>
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<tr>
<td>IA</td>
<td>interagency agreement</td>
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<tr>
<td>MBTA</td>
<td>Migratory Bird Treaty Act</td>
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<tr>
<td>MOU</td>
<td>memorandum of understanding</td>
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<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
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<tr>
<td>NPDES</td>
<td>National Pollutant Discharge Elimination System</td>
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<tr>
<td>NGA</td>
<td>Natural Gas Act</td>
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<tr>
<td>NHPA</td>
<td>National Historic Preservation Act</td>
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<tr>
<td>OEP</td>
<td>FERC’s Office of Energy Projects</td>
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<tr>
<td>SHPO</td>
<td>State Historic Preservation Officer</td>
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<tr>
<td>USFS</td>
<td>U.S. Forest Service</td>
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<tr>
<td>USFWS</td>
<td>U.S. Fish and Wildlife Service</td>
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I. Introduction

In 2001, President George W. Bush issued Executive Order 13212 regarding Actions to Expedite Energy-Related Projects.\(^3\) In that Executive Order, the President acknowledged that the “increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people. In general, it is the policy of this Administration that executive departments and agencies . . . shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy.”\(^4\) To that end, he mandated that, “[f]or energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections.”\(^5\)

Four years later, Congress similarly recognized the need for expedited permitting for energy-related projects in the Energy Policy Act of 2005 (EPAct 2005 or Act),\(^6\) when it designated the Federal Energy Regulatory Commission (Commission or FERC) as the lead federal agency for review of interstate natural gas pipeline projects under the National Environmental Policy Act (NEPA).\(^7\) It also gave FERC the authority to establish a schedule for federal authorizations and state authorizations required under federal law for interstate natural gas pipeline projects (collectively, federal authorizations).\(^8\)

By regulation, the Commission has indicated that agencies must make a final decision on federal authorizations no later than 90 days after FERC issues its final environmental document under NEPA, unless a schedule is otherwise established by federal law.\(^9\) However, EPAct 2005 does not give FERC any means to enforce the 90-day deadline or impose consequences on the agencies for failure to comply. EPAct 2005 only provides that an applicant may pursue remedies in federal court against agencies that delay issuance of federal authorizations.\(^10\)

II. Study Purpose and Need

In the years since Congress enacted EPAct 2005, the Commission has approved over 100 interstate natural gas pipeline projects. However, the issuance of federal authorizations has not necessarily proceeded in the manner anticipated by the Act. Despite the efforts by the executive and legislative branches to expedite and streamline the permitting process and encourage timely issuance of federal authorizations for interstate natural gas pipeline facilities,

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4 Id. § 1.
5 Id. § 2.
9 18 C.F.R. § 157.22.
anecdotal evidence has suggested that the time required to secure regulatory approvals for such projects is increasing rather than decreasing. Many believe that FERC’s lack of authority to compel other agencies to meet a schedule has allowed agencies to ignore the federal-authorization deadline. There is also general concern that some agencies are using their discretion to determine when an application is “complete” (under regulatory schemes that do not sufficiently define application requirements) to place undue burdens on applicants and to delay the commencement of a decisional timeline prescribed by statute or regulation. The undesirable effects of these delays range from increased project costs to missed in-service dates, along with a variety of associated adverse business, environmental, and other consequences.

As a result, The INGAA Foundation, Inc. commissioned this study, with the objective to determine whether the EPAct 2005 provision contemplating the timely issuance of all federal authorizations is being met or whether additional improvements are necessary. In July 2011, The INGAA Foundation engaged Holland & Hart LLP to study and report on the effectiveness of the federal-authorization deadline provision of EPAct 2005.

III. Study Scope

The purpose of this study was to examine the implementation of the federal-authorization deadline provision introduced by EPAct 2005 (1) to determine whether the provision has been effective in decreasing the time required to secure federal authorizations; (2) to identify strengths and weaknesses of the federal authorization process; and (3) to develop potential policy, regulatory, and legislative options to strengthen or alter the process and address burdens and obstacles that may be identified. Areas of inquiry included sources of delay in the permitting process, agency-coordination issues, satisfaction of application requirements, and the impact of delay on interstate natural gas pipeline projects.

To determine the actual results of applying the fixed-time provision of EPAct 2005, a confidential quantitative computer-based survey questionnaire using both open-ended questions (i.e., those requesting comments) and closed-ended questions (i.e., selection of responses from a predefined list) was developed in conjunction with The INGAA Foundation for the proponents of interstate natural gas pipeline projects authorized both before and after EPAct 2005. All natural gas pipeline projects that required a FERC certificate of public convenience and necessity under Section 7(c) of the Natural Gas Act (NGA) between 1999 and 2011 were identified. However, this pool of 410 projects was reduced to include only those projects involving 30 miles or more of pipeline. This threshold was used to focus on pipeline projects that were likely to require a number of federal authorizations in addition to a FERC certificate and were likely to face the permit challenges that the fixed-time provision was designed to address. After applying this threshold, the project proponents for 87 projects were asked to complete the computer-based survey, and 51 project proponents did so.

Holland & Hart analyzed the responses from the computer-based survey to identify strengths and weaknesses in the permitting process and to determine whether the goals of the fixed-time provision in EPAct 2005 are being achieved. Drawing from survey data, individual
interviews were designed with INGAA Foundation input for a targeted sample of survey participants to solicit in-depth information on individual experiences with the permitting process. Four projects that experienced substantial delay in the permitting process were targeted for the individual interviews to help hone in on and provide additional insight into causes of delay.

The interview results were then analyzed to identify common themes, anomalies, and important insights. Key principles were identified that define the industry experience with fixed timelines for interstate natural gas pipeline projects through common responses and issues raised in the survey and interviews. Finally, this report was prepared to articulate difficulties generally experienced by the interstate natural gas pipeline industry during the permitting process and to identify process improvement, regulatory, and legislative options to address these difficulties. It should be noted that the survey results and interviews did not indicate that the passage of EPAct 2005 itself resulted in the increases in permitting time; rather, this report concludes that the provisions of EPAct 2005 designed to streamline the permitting process are not being adhered to by federal agencies.

IV. Natural Gas Act Section 7(c) Certificate Process

A. Certificate and Environmental Review

FERC has the authority under the NGA to approve the original construction or expansion of interstate natural gas pipelines through the issuance of a certificate of public convenience and necessity (certificate). The NGA also requires Commission approval and issuance of a certificate prior to abandonment of any interstate natural gas pipeline facility or services.

In order for an interstate natural gas pipeline company to obtain a certificate of public convenience and necessity, it must file a detailed application with FERC. Among other things, this application must include maps showing the preliminary pipeline route, a description of the proposed pipeline facilities, and up to 13 specific environmental resource reports. These resource reports, which are referred to collectively as the Environmental Report, cover the topics of project description and land requirements, water use and quality, vegetation and wildlife, cultural resources, socio-economics, geological resources, soils, land use, air and noise quality, project alternatives, safety and reliability, and, for projects involving older pipe or facilities, polychlorinated biphenyls.

11 15 U.S.C. § 717f(c). Blanket certificates cover a range of projects approved by FERC that satisfy cost limitations identified in the Commission’s regulations. The FERC blanket-certificate process is not within the scope of this report. The NGA also gives FERC the authority to set “just and reasonable rates” for natural gas transportation or sale in interstate commerce. Id. § 717c(a).
13 See generally 18 C.F.R. part 157, subpart A. Note that blanket certificates are subject to a streamlined application process. 18 C.F.R. part 157, subpart F.
15 Id. § 380.12.
Before the Commission will authorize construction, however, it must review the proposed project to determine if it is in the public interest.\textsuperscript{16} This review includes an evaluation of the costs of transporting natural gas by the pipeline and need for the project. The Commission also conducts an environmental review through the preparation of an environmental assessment (EA) or an environmental impact statement (EIS) under NEPA to evaluate the project’s anticipated impact on the public and the environment.\textsuperscript{17} While FERC has exclusive authority under the NGA to authorize construction of interstate natural gas pipelines, such projects are also subject to authorization requirements from a variety of other federal agencies. A pipeline must obtain all required authorizations before commencing construction.

**B. Traditional and Pre-Filing Processes**

FERC currently employs two environmental review processes, which both include consulting with stakeholders, identifying environmental issues through scoping, and preparing environmental review documents, such as EAs or EISs. These two review processes are known as the “traditional filing process” and the “pre-filing process.”\textsuperscript{18} These two processes are specific to FERC’s approach to evaluation of a certificate application and do not affect the fixed-timeline provision except to the extent that (1) the use of one process versus the other may affect the timing of issuance of the final NEPA analysis to which the 90-day deadline (discussed further below) is attached, and (2) FERC’s coordination with other agencies occurs sooner under the pre-filing process than under the traditional filing process, which could potentially have some impact on the timing of those other agencies’ authorizations.

**Traditional Filing Process.** In the traditional filing process, the applicant prepares the Environmental Report generally without FERC involvement during the applicant’s planning phase, which is the first of the three commonly recognized phases in this process.\textsuperscript{19} Following the applicant’s planning phase is the traditional FERC scoping and environmental review phase, followed by the construction phase.\textsuperscript{20}

The applicant may choose to use “team permitting,” which gathers early input from other regulatory agencies and stakeholders.\textsuperscript{21} This latter involvement can range widely, from none to extensive, depending on the project and company philosophy and issues of confidentiality.\textsuperscript{22} FERC usually opts not to participate in the applicant’s planning phase before

\textsuperscript{16} 15 U.S.C. § 717f(e).

\textsuperscript{17} See 42 U.S.C. §§ 4321 – 4347; 18 C.F.R. part 380.


\textsuperscript{19} See id. at 1-4; see also FERC, “Processes for Natural Gas Certificates,” available at http://www.ferc.gov/help/processes/flow/gas-2.asp.


\textsuperscript{21} See INGAA Foundation, Inc., supra n.18 at 1-4.

\textsuperscript{22} Id.
filing. However, it has provided guidance to some applicants prior to filing an application. Although FERC often knows (at least informally) that a project is in the planning stages, it usually is not aware of any project details until the formal filing by the applicant.

Under the traditional filing process, FERC involvement usually begins when it accepts the application and issues a Certificate Proceeding (CP) number for the project. FERC’s issuance of a CP number begins the second phase of the traditional filing process, FERC’s certificate and environmental review.

Pre-filing Process. In 2002, FERC’s Office of Energy Projects (OEP) established the pre-filing process to allow FERC to be involved in the earliest stages of the project, several months (sometimes up to a year) before the application is filed. The pre-filing process also allows applicants and FERC to engage stakeholders including state, local, and other federal agencies prior to filing an application for a certificate. There was a demand for this process due in part to the increasing complexity of the NEPA review process and the need to streamline and expedite the overall permitting process. The goal of the pre-filing process is to encourage early identification and resolution of issues, in order to expedite the permitting process for energy projects.

The pre-filing process differs from the traditional filing process in that the applicant’s planning phase overlaps and is combined with the FERC scoping and environmental review phase. The construction phase follows and is similar for both filing processes.

V. Pre-EPAct 2005 Interagency Agreements and MOUs

Prior to EPAct 2005, FERC recognized the importance of encouraging cooperation among federal agencies in permitting pipeline projects and attempted to achieve coordination

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23 Id.
24 Id.
25 Id.
26 Id.
27 Id. at 1-5.
28 Id.
29 Id.
30 This goal is consistent with the direction provided in Executive Order 13212, Actions to Expedite Energy-Related Projects (May 18, 2001) and its amendment by Executive Order 13302 (May 20, 2003).
32 Id. In October 2007, The INGAA Foundation issued a report on “Review and Analysis of the Federal Energy Regulatory Commission Pre-Filing and Traditional Filing Processes for Natural Gas Act Section 7 Applications.” See supra n.18. That report concluded that the timeframe for the overall filing process is not significantly less for pre-filed projects compared to traditionally filed projects. Because this study focuses on the impact of the fixed-timeline provision of EPAct 2005, which is directed at other federal authorizations and did not change the FERC filing processes, the effect of the filing option on the length of the permitting process was not further analyzed for this report.
through a series of agreements called variously interagency agreements (IAs) and memoranda of understanding (MOUs).

With assistance from the White House Task Force on Energy Project Streamlining, FERC entered into an IA in May 2002 to coordinate projects with the Bureau of Land Management (BLM), the National Park Service, the Minerals Management Service, the Bureau of Reclamation, the Bureau of Indian Affairs, the U.S. Forest Service (USFS), the Army Corps of Engineers (Corps), the Department of Transportation, the Environmental Protection Agency, the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service, the Advisory Council on Historic Preservation (ACHP), and the Department of Energy. The purpose of the IA was to establish a framework for early cooperation and participation among the participating agencies that would enhance coordination of the processes through which their environmental and historic preservation review responsibilities under NEPA and other related statutes are met in connection with the authorizations that are required to construct and operate interstate natural gas pipeline projects certificated by FERC.

To streamline the regulatory processes, the IA focused on early coordination between the participating agencies to identify areas of potential concern, establish a schedule, identify agency responsibilities, and share information. Participating agencies were encouraged to communicate informally with the lead agency (generally, but not necessarily, FERC) and resolve disputes with other participating agencies. The IA, however, was intended only to improve the working relationships of the participating agencies in connection with expediting decisions for interstate natural gas pipeline project authorizations and was not made enforceable against the participating agencies.

FERC and the Corps later signed an MOU to streamline their respective regulatory processes further through early coordination and early identification of project purposes, need, and alternatives that can be used by each agency in carrying out its respective legal responsibilities. The MOU acknowledged that FERC is the lead agency for purposes of complying with NEPA, and FERC is responsible for authorizing the construction and operation of

33 The National Marine Fisheries Service is now known as NOAA Fisheries.
35 Id. at 1.
36 Id. at 4-6.
37 Id. at 6-7.
38 Id. at 7-8.
interstate natural gas pipelines. The MOU states that “the Corps will give deference, to the maximum extent allowed by law, to the project purpose, project need, and project alternatives that FERC determines to be appropriate for the project.” The MOU also provided that the agencies would coordinate with each other early, resolve disputes at the lowest level possible, and that the Corps would be responsive to FERC timelines. Like the IA, the MOU states that it does not confer any right or benefit enforceable against the agencies.

Notably, under the permitting process prior to EPAct 2005, even though the Commission usually did act as the lead agency, it was not required to do so. FERC also lacked authority to set a schedule for state and other federal agencies to ensure expeditious decision-making with respect to necessary federal authorizations.

VI. EPAct 2005 Amendments to the NGA

Statutory Provisions. As previously noted, EPAct 2005 amended the NGA to make FERC the lead agency for coordinating federal authorizations and the NEPA process for applications to construct or expand interstate natural gas pipelines pursuant to Section 7 of the NGA. The EPAct 2005 amendments further mandate that each federal and state agency considering an aspect of an application for a federal authorization “shall cooperate with the Commission and comply with the deadlines established by the Commission.”

The Act gives the Commission authority to set a schedule for all federal authorizations in compliance with all applicable schedules established by federal law and must “ensure expeditious completion of all such proceedings.” However, if a federal or state agency does not comply with the FERC schedule for federal authorizations, EPAct 2005 only provides an enforcement option for the applicant, not FERC. The applicant may file a petition with the United States Court of Appeals for the District of Columbia Circuit, which is given original and exclusive jurisdiction over any civil action for review of an alleged failure of an agency to issue, condition, or deny any permit required under federal law. The D.C. Circuit is authorized to

40 Id. at 1-2.
41 Id. at 2.
42 Id. at 2-3.
43 Id. at 4.
44 EPAct 2005 § 313(a)(3), codified at 15 U.S.C. § 717n(b)(1). The lead agency is “the agency or agencies preparing or having taken primary responsibility for preparing the environment impact statement.” 40 C.F.R. § 1508.16. “Federal authorization” is defined as “any authorization required under Federal law” including “permits, special use authorizations, certifications, opinions, or other approvals with respect to an application for authorization” under NGA Section 3 to export or import natural gas or for a certificate under Section 7. 15 U.S.C. § 717n(a).
remand the case to the agency to take appropriate action and must “set a reasonable schedule and deadline for the agency to act on remand.”\textsuperscript{48}

The EPAct 2005 amendments also require the Commission, with the cooperation of federal and state administrative agencies and officials, to maintain a complete consolidated record of all decisions made or actions taken by the Commission or a federal administrative agency or officer or state administrative agency or officer acting under delegated federal authority with respect to any federal authorization.\textsuperscript{49} Such record shall be the record used for judicial review of “decisions made or actions taken of Federal and State administrative agencies and officials.”\textsuperscript{50}

**FERC’s Regulations.** In 2006, FERC promulgated regulations to implement Section 313 of EPAct 2005.\textsuperscript{51} With respect to the federal-authorization deadline provision, FERC’s regulations provide that, for certificate applications requiring an EA or an EIS, “notice of a schedule for the environmental review will be issued within 90 days of the notice of the application, and subsequently will be published in the Federal Register.”\textsuperscript{52} The regulations also require a final decision on a request for a federal authorization no later than 90 days after FERC issues its final environmental document, unless a schedule is otherwise established by federal law.\textsuperscript{53}

Related to this federal-authorization deadline, FERC’s regulations impose an obligation on the applicant to provide an exhibit with its application that includes the following information:

[a] statement identifying each Federal authorization that the proposal will require; the Federal agency or officer, or State agency or officer acting pursuant to delegated Federal authority, that will issue each required authorization; the date each request for authorization was submitted; why any request was not submitted and the date submission is expected; and the date by

\textsuperscript{48} EPAct 2005 § 313(b), codified at 15 U.S.C. § 717r(d)(3). This provision does not apply to actions taken under the Coastal Zone Management Act, but EPAct 2005 included other provisions in Section 381 designed to expedite decisions under that statute.


\textsuperscript{50} Id.


\textsuperscript{52} 18 C.F.R. § 157.9(b).

\textsuperscript{53} Id. § 157.22. Interestingly, the regulations also delegate to the Director of the OEP the authority to establish a schedule for federal authorizations required for Section 7 natural gas projects. Id. § 375.308(bb). This provision, which pre-dated EPAct 2005, appears to have been superseded by the 90-day schedule set by regulation.
which final action on each Federal authorization has been requested or is expected.\textsuperscript{54}

Although it does not appear to be followed in practice, FERC also issued a regulation requiring federal agencies and state agencies acting pursuant to federal law to provide notice to FERC when they receive an application for a federal authorization.\textsuperscript{55} The notice is supposed to indicate (1) whether the application is ready for processing, and if not, what additional information or materials will be necessary to assess the merits of the request; (2) the time the agency will allot to the applicant to provide the necessary information or materials; (3) what studies, if any, will be necessary in order to evaluate the request; (4) the anticipated effective date of the agency’s decision; and (5) if applicable, the schedule set by federal law for the agency or official to act.\textsuperscript{56}

VII. Evaluation of the Effectiveness of the EPAct 2005 Fixed-Timeline Provision

A. Survey

In order to evaluate whether EPAct 2005 has accomplished its goal of expediting the federal permitting process for interstate natural gas pipelines, Holland & Hart, in coordination with The INGAA Foundation, designed and administered a survey intended to provide concrete data regarding the experience of interstate natural gas pipeline companies with the federal permitting process before and after EPAct 2005 went into effect.

\textbf{Focus of the Survey.} The survey was designed to identify (1) whether interstate natural gas pipeline projects have experienced delays in the permitting process; (2) if so, the frequency, magnitude, and causes of such delays; and (3) whether EPAct 2005 has helped reduce those delays. The survey questions were based around seven of the most common federal authorizations required by pipeline companies, aside from the FERC certificate.

1. BLM Right-of-Way Grant: Authorization to use a specific portion of BLM-managed federal land, usually for the life of the project.\textsuperscript{57}

2. Army Corps of Engineers Clean Water Act Section 404 Permit: Authorization for the discharge of dredged and fill material into waters of the United States, including wetlands.\textsuperscript{58}

\textsuperscript{54} 18 C.F.R. § 157.14(a)(12).
\textsuperscript{55} Id. § 385.2013.
\textsuperscript{56} Id.
\textsuperscript{57} Rights-of-way across federal lands for natural gas pipelines are issued under the Mineral Leasing Act, 30 U.S.C. § 185(a). When the pipeline crosses lands under the jurisdiction of two or more federal agencies, BLM issues the right-of-way grant. 43 C.F.R. § 2881.11. If the pipeline crosses federal lands under the jurisdiction of only one agency other than the BLM, that agency issues the requisite authorization. Id. § 2884.19(b).
\textsuperscript{58} 33 U.S.C. § 1344(a).
3. Army Corps of Engineers Rivers and Harbors Act Section 10 Permit: Authorization required to construct any structure in or over any navigable waters of the United States or to excavate, dredge, or deposit material in these waters or make any obstruction or alteration in any navigable water.  

4. Endangered Species Act (ESA) Section 7 Consultation: Consultation with USFWS and/or NOAA Fisheries to ensure that the proposed federal action is not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of designated critical habitat.

5. National Historic Preservation Act (NHPA) Section 106 Consultation: Consultation with the State Historic Preservation Officer (SHPO) regarding the effects of the project on historic properties, including providing the ACHP an opportunity to comment on the project. While some officials within FERC and the ACHP have questioned whether the Section 106 consultation process is a federal authorization subject to the EPAct 2005 amendments, the preamble to FERC’s regulations treat NHPA compliance as such. Regardless of the interpretation, the survey results indicate when the Section 106 consultation process extended 90 days or more beyond FERC’s issuance of its NEPA analysis.


7. Coastal Zone Management Act (CZMA) Consistency Determination: Determination from the applicable state that the proposed activities within or affecting the coastal zone are consistent with the state’s Coastal Zone Management Plan. Note that the CZMA consistency determination also has its own regulatory timelines, so the 90-day

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59 Id. § 401.
60 16 U.S.C. § 1536(a)(2). It should be noted that USFWS and NOAA Fisheries joint regulations impose a 135-day timeframe for the formal Section 7 consultation process (90 days for formal consultation and 45 days for USFWS to issue the biological opinion). 50 C.F.R. § 402.14(e). If the agencies agree, this timeframe can be extended for up to 60 days without the applicant’s consent or longer if the applicant consents. Id. Thus, formal consultation arguably is not subject to the 90-day federal-authorization deadline established by FERC regulation, though FERC appears to have taken a contrary position in the preamble to its EPAct 2005 implementing regulations. See Federal Energy Regulatory Commission, Regulations Implementing the Energy Policy Act of 2005; Coordinating the Processing of Federal Authorizations for Applications Under Sections 3 and 7 of the Natural Gas Act and Maintaining a Complete Consolidated Record, 71 Fed. Reg. 62,912, 62,912 n.6 (Oct. 27, 2006). In any event, informal consultation has no regulatory timeframe, so it should be subject to FERC’s 90-day deadline. The survey results for the ESA consultation process provide data on the length of the process and whether it extends beyond 90 days after FERC issues its NEPA analysis.
63 30 U.S.C. § 185(a); 36 C.F.R. part 251.
64 16 U.S.C. § 1456(c).
deadline does not apply to this determination. The survey elicited information regarding this authorization to determine whether it was a source of delay that potentially would benefit from being made subject to FERC’s deadline.

Of course, not every project required every authorization. Instead, the 51 respondents completed questions only about the authorizations that were required for their projects, the processes that they participated in to obtain those authorizations, and the length of time it took to obtain the authorizations. In addition, the survey included open-ended questions to identify other permits that may have been required for specific projects and to elicit both specific problem areas with and suggestions for improving the process. The most common additional permits required by responding projects were (1) the Clean Water Act Section 401 water quality certification, (2) a Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit, and (3) a Clean Air Act permit.

Survey Recipients. To determine whether the EPAct 2005 fixed-timeline provision has been effective, the survey elicited information from interstate natural gas pipeline companies regarding projects authorized both before and after the implementation of EPAct 2005. The pre-EPAct 2005 projects provide a baseline, and the projects authorized after EPAct 2005 are measured against this baseline. A comprehensive list of pipeline projects of 30 miles or more that completed the permitting process between 1999 and 2011 was compiled from the FERC docket. The project proponents for these 87 projects were asked to complete the survey based on their actual permitting experiences. Of the 87 projects targeted for the survey, 60 were pre-EPAct projects and 27 were post-EPAct projects.

B. Survey Results

1. Survey Response Rate

Holland & Hart received survey responses for 51 of the 87 pipeline projects. Of the 51 responses, 29 were pre-EPAct 2005 projects (out of 60 possible) and 22 were post-EPAct 2005 projects (out of 27 possible). The response rate for pre-EPAct 2005 projects is 48.33%; the response rate for post-EPAct 2005 projects is 81.48%. Departure of project personnel and the difficulty of accessing older documentation likely account, at least in part, for the lower pre-

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66 FERC began utilizing the fixed timelines provision in December 2006, after it promulgated regulations implementing the EPAct 2005 amendments. Aside from FERC’s implementation of its pre-filing process and EPAct 2005’s 90-day authorization deadline, the process for obtaining a FERC certificate has not changed significantly since 1999.
67 Originally, 95 projects were identified for the 1999-2011 time period, but eight were eliminated because the appropriate survey respondent could not be identified or was no longer with the company. Survey respondents were emailed a link to the survey and could complete the survey at their convenience online. The survey questions are included in Appendix I.
68 Holland & Hart contacted respondents whose projects fell within a year of the implementation date to determine whether EPAct 2005 applied to their projects.
EPAct 2005 response rate. The survey results and percentages in this report are calculated based on the projects for which a response was provided.

2. Federal Authorizations Required

As noted above, the survey requested information about seven of the most common federal authorizations required for interstate natural gas pipeline projects. Table 1 below shows the number of pipeline projects that required each of the seven specific federal authorizations in the survey, listed in order from the most post-EPAct 2005 projects to the least. A Corps 404 permit, ESA Section 7 consultation, and NHPA Section 106 consultation were required for nearly all projects, both before and after EPAct 2005. A BLM right-of-way grant was the next most common before the Act, but was required for a much smaller percentage of projects after the Act.69 A Corps Section 10 Rivers and Harbors permit was required of just over one-third of projects after the Act and just under one-third before.

Table 1 – Federal Authorizations Required for Surveyed Pipelines

<table>
<thead>
<tr>
<th>Permit Type</th>
<th>Number of Pre-EPAct Projects (29)</th>
<th>% of Total Pre-EPAct Projects</th>
<th>Number of Post-EPAct Projects (22)</th>
<th>% of Total Post-EPAct Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHPA Sec. 106</td>
<td>27</td>
<td>93.10%</td>
<td>21</td>
<td>95.45%</td>
</tr>
<tr>
<td>Corps 404 Permit</td>
<td>28</td>
<td>96.55%</td>
<td>20</td>
<td>90.91%</td>
</tr>
<tr>
<td>ESA Sec. 7</td>
<td>27</td>
<td>93.10%</td>
<td>20</td>
<td>90.91%</td>
</tr>
<tr>
<td>Corps Rivers &amp; Harbors Permit</td>
<td>9</td>
<td>31.03%</td>
<td>8</td>
<td>36.36%</td>
</tr>
<tr>
<td>CZMA Consistency Determination</td>
<td>8</td>
<td>27.59%</td>
<td>6</td>
<td>27.27%</td>
</tr>
<tr>
<td>BLM Right-of-Way Grant</td>
<td>12</td>
<td>41.38%</td>
<td>5</td>
<td>22.73%</td>
</tr>
<tr>
<td>USFS Special Use Permit</td>
<td>6</td>
<td>20.69%</td>
<td>2</td>
<td>9.09%</td>
</tr>
</tbody>
</table>

3. Overall Delay

Overall, the survey showed a general increase since EPAct 2005 in the number of authorizations delayed beyond 90 days after issuance of the FERC NEPA document. The delays for federal authorizations for pre-EPAct 2005 and post-EPAct 2005 projects are summarized below by authorization type in Table 2, listed from greatest percentage delayed post-EPAct 2005 to least. Each of the different authorization types experienced more delay post-EPAct 2005, with BLM rights-of-way, Corps Rivers and Harbors permits, and Coastal Zone Management Act consistency determinations showing the largest increases. Although the number of surveyed projects that required these three authorizations is fairly low, the number

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69 This report does not explore the differences between the number and type of authorizations required before and after EPAct 2005.
of projects requiring these authorizations relative to the total number of projects surveyed is fairly consistent from pre- to post-EPAct projects.

Two of the most common authorizations, the Corps 404 permit and NHPA Section 106 consultation, also experienced large increases in the percentage of projects delayed, though these authorizations caused delay in fewer than half of the post-EPAct projects surveyed (10 of 23). For the Corps 404 permits, the percentage of surveyed projects experiencing delay more than tripled after EPAct 2005 (10.7% to 35%). NHPA consultation delay also more than tripled (3.7% to 14.2%), although the overall percentage experiencing delay remains below 15 percent. Because many projects require these authorizations, the increase in delay for these two authorizations post-EPAct 2005 affected a considerable number of projects.

Table 2 – Delay in Federal Authorizations

<table>
<thead>
<tr>
<th>Authorization</th>
<th>Total Authorizations Required</th>
<th>Authorizations Not Received Within 90 Days70</th>
<th>% Delayed</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLM Right-of-Way Grant</td>
<td>12</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Corps Rivers &amp; Harbors Permit</td>
<td>9</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>CZMA Consistency Determination</td>
<td>8</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>USFS Special Use Permit</td>
<td>6</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Corps 404 Permit</td>
<td>28</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>NHPA Sec. 106</td>
<td>27</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>ESA Sec. 7</td>
<td>27</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>82</td>
<td>9</td>
</tr>
</tbody>
</table>

70 We use 90 days from the date FERC issues its NEPA document (either an EIS or EA) as the general measure of delay. Although there was no statutory deadline pre-EPAct 2005, the post-EPAct 2005 90-day deadline provides a reasonable comparison point for the timeliness of pre- and post-EPAct authorizations.
Not only are more authorizations delayed since EPAct 2005, the delays are longer. The survey showed more than a three-fold increase in the percentage of federal authorizations delayed more than 90 days beyond the standard FERC authorization deadline. Table 3 below shows the extended delays by agency for pre- and post-EPAct projects, arranged from the highest percentage of post-EPAct 2005 extended delay to lowest.

**Table 3 – Delays More than 90 Days Beyond 90-Day Deadline for Post-EPAct 2005 Projects**

<table>
<thead>
<tr>
<th>Authorization</th>
<th>Total Authorizations required from the Agency</th>
<th>Permits received 90 days or more beyond 90-day deadline after FERC EA/EIS</th>
<th>Extended delays as percentage for the Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corps Rivers &amp; Harbors Permit</td>
<td>9</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>CZMA Consistency Determination</td>
<td>8</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Corps 404 Permit</td>
<td>28</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>BLM Right-of-Way Grant</td>
<td>12</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>ESA Sec. 7</td>
<td>27</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>NHPA Sec. 106</td>
<td>27</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>USFS Special Use Permit</td>
<td>6</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>82</td>
<td>4</td>
</tr>
</tbody>
</table>
As shown in Table 4, when grouped by project, before EPAct 2005, 27.59% of the projects reported no delay in obtaining any of the listed federal authorizations. After EPAct 2005, only 18.18% of the projects reported no delay in obtaining any of the authorizations included in the survey.

<table>
<thead>
<tr>
<th>Table 4 – Delay by Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects Experiencing No Delay</td>
</tr>
<tr>
<td>8 (27.59%)</td>
</tr>
</tbody>
</table>
Another question asked respondents to characterize (subjectively) the length of each authorization’s delay as “no delay,” “little delay,” “moderate delay,” and “large delay.” As can be seen in Table 5 below, the largest increases were in the percentage of small delays, with large delays increasing only slightly as a percentage.

Table 5 – Amount of Delay by Number of Projects and Percentage of Total

<table>
<thead>
<tr>
<th>Authorization</th>
<th>No Delay</th>
<th>Little Delay</th>
<th>Moderate Delay</th>
<th>Large Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLM Right-of-Way Grant</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>45.45%</td>
<td>33.33%</td>
<td>18.18%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Corps 404 Permit</td>
<td>15</td>
<td>10</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>65.22%</td>
<td>50.00%</td>
<td>18.18%</td>
<td>10.00%</td>
</tr>
<tr>
<td>Corps Rivers &amp; Harbors Permit</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>75.00%</td>
<td>22.22%</td>
<td>12.50%</td>
<td>33.33%</td>
</tr>
<tr>
<td>ESA Sec. 7</td>
<td>14</td>
<td>15</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>63.64%</td>
<td>78.95%</td>
<td>13.64%</td>
<td>10.53%</td>
</tr>
<tr>
<td>NHPA Sec. 106</td>
<td>14</td>
<td>13</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>70.00%</td>
<td>65.00%</td>
<td>10.00%</td>
<td>25.00%</td>
</tr>
<tr>
<td>USFS Special Use Permit</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>33.33%</td>
<td>66.67%</td>
<td>16.67%</td>
<td>0.00%</td>
</tr>
<tr>
<td>CZMA Consistency Determination</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>80.00%</td>
<td>42.86%</td>
<td>20.00%</td>
<td>14.29%</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>47</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>63.16%</td>
<td>55.95%</td>
<td>12.63%</td>
<td>19.05%</td>
</tr>
</tbody>
</table>

71 Some respondents did not respond to every question, so the numbers in this table do not always match the total number of authorizations obtained for the various projects represented in the survey.
4. Incomplete Applications

There was only a small difference between the percentage of federal authorization applications deemed complete upon submission before and after EPAct 2005, with 62.26% of those reporting deemed complete before EPAct 2005 and 61.45% deemed complete after. See Table 6 below. However, for post-EPAct 2005 projects, it took longer to get a completeness determination for those applications initially deemed incomplete. Since EPAct 2005, a greater percentage of applications required 90 days or longer to achieve completeness (26.39% for pre-EPAct compared to 37.50% for post-EPAct).

Of the seven federal agency authorizations specifically included in the survey, the BLM right-of-way grant and the Corps 404 permit have the highest rates of incomplete applications and the longest delays in deeming applications complete since EPAct 2005. BLM right-of-way grants were required for 22.72% of the post-EPAct 2005 projects surveyed (5 of 22). For these projects, 80% of the BLM right-of-way applications (4 of 5) were deemed incomplete upon submission. Of the BLM right-of-way applications deemed incomplete, 40% (2 of 5) took 121 days or more after the initial submission to be deemed complete. BLM also had the highest rate of secondary requests for additional information, with 75% of post-EPAct 2005 projects (3 of 4) that required a BLM right-of-way grant having to respond at least twice to requests for additional information before the application was deemed complete.

After EPAct 2005, 44.44% of the respondents (8 of 18) reported that their Corps 404 application was deemed incomplete upon submission (up from 28% pre-EPAct 2005 (7 of 25)). Of those applications deemed incomplete, 40% took 121 days or more to be deemed complete. Corps 404 permits were second only to BLM right-of-way grants in secondary requests for additional information: 50% of the incomplete Corps 404 applications received at least two information requests from the Corps before their applications were deemed complete after EPAct 2005 compared with 30.77% before EPAct 2005.

NHPA Section 106 consultation and USFS permits were the only authorizations to show improvement in the number of filings deemed complete upon initial submission. The percentage of incomplete NHPA submissions decreased from 45.45% before EPAct 2005 to only 26.32% after EPAct 2005. However, although the percentage of incomplete NHPA submissions decreased, there was still a higher percentage of NHPA authorizations with extended delays (90 days or more beyond the deadline) after EPAct 2005 (with 3.70% experiencing extended delays pre-EPAct and 14.29% experiencing extended delays post-EPAct). The data for USFS special use permits are less conclusive because only two post-EPAct 2005 projects required such a permit; one was deemed complete and the other was not.
Table 6: Pre- vs. Post-EPAct 2005 – Was filing deemed complete upon initial submission?

<table>
<thead>
<tr>
<th>Authorization</th>
<th>Total Deemed Complete</th>
<th>Total Deemed Incomplete</th>
<th>% Deemed Incomplete</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLM Right-of-Way Grant</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Corps 404 Permit</td>
<td>18</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Corps Rivers &amp; Harbors Permit</td>
<td>6</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>ESA Sec. 7</td>
<td>17</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>NHPA Sec. 106</td>
<td>12</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>USFS Special Use Permit</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>CZMA Consistency Determination</td>
<td>6</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>47</td>
<td>40</td>
</tr>
</tbody>
</table>

5. Legal Remedies

Of all the projects surveyed, only two out of 51 pursued legal remedies to address agency authorization delays. Both of these projects were authorized before EPAct 2005 was passed. Both filed for declaratory orders—one against a state agency administering a federal permitting program and the other relating to the CZMA consistency determination and Clean Water Act Section 401 water quality certification. The fact that none of the survey respondents for the post-EPAct 2005 projects petitioned for review, even though these projects experienced increased delay, is a strong indicator that the judicial remedy provided by EPAct 2005 is not an effective method to combat delay. Despite the increase in number and length of delays, pipeline companies are very reluctant to use legal remedies to address agency delay in the permitting process. This issue is discussed further below in the interview section.
6. Mileage

The project sponsors that responded to the survey represented a broad range of project lengths as shown in Table 7 below. No significant correlation was found between pipeline length and delay. The correlation between mileage and delayed authorizations was -0.087, which was not statistically significant.72

<table>
<thead>
<tr>
<th>Mileage Range</th>
<th># of Pre-EPAct Projects</th>
<th># of Pre-EPAct with Delay</th>
<th>% of Pre-EPAct Projects with Delay</th>
<th># of Post-EPAct Projects</th>
<th># of Post-EPAct with Delay</th>
<th>% of Post-EPAct Projects with Delay</th>
<th>Total # of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-59</td>
<td>10</td>
<td>8</td>
<td>80.00%</td>
<td>5</td>
<td>5</td>
<td>100.00%</td>
<td>15</td>
</tr>
<tr>
<td>60-100</td>
<td>5</td>
<td>4</td>
<td>80.00%</td>
<td>3</td>
<td>3</td>
<td>100.00%</td>
<td>8</td>
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7. Survey Respondent Extended Answers on Causes of and Remedies for Delay

The survey included five open-ended questions about specific causes of delay and solicited suggestions for both agencies and project proponents to avoid delay for future projects.

Causes of Delay: Survey respondents provided substantive responses about the causes of delay with respect to 16 projects (seven pre-EPAct 2005 and nine post-EPAct 2005). Several of the respondents cited multiple causes of delay. The most common causes cited for long authorization delays were disagreements, conflicts, or other issues between two federal agencies—either two of the agencies charged with issuing federal authorizations or one of these agencies and FERC. Problems included one agency duplicating the efforts of another, one agency discounting results from another agency’s process (related to NHPA Section 106 determinations), or both agencies waiting for each other to complete a review before agreeing

72 0.544 2-tailed significance; correlation of 0.36 needed for statistical significance at p<.05.
to proceed. Respondents for eight projects (four pre- and four post-EPAct 2005) indicated these interagency issues were at least one cause of delay.

The next most common cause of delay was inadequate or inexperienced agency staff that made it necessary either to restart a process or to invest time in training or bringing the staff member up to speed. This type of delay was listed in conjunction with six projects (two pre- and four post-EPAct 2005). Applicant changes to the project were cited as a cause of delay with respect to four projects (all post-EPAct 2005). Other causes listed for individual projects included the inability to access survey sites (post-EPAct 2005), incomplete application determinations (post-EPAct 2005), third-party environmental protests (pre-EPAct 2005), problems resolving environmental concerns (post-EPAct 2005), and problems with seasonal timing because of a delay in obtaining a biological opinion and incidental take statement (post-EPAct 2005).

**Suggestions to Avoid Delay:** The survey respondents were asked to identify recommendations for future applicants to avoid or minimize delay in obtaining federal authorizations. Although the wording of the suggestions varied, the following common themes emerged.

- Engage in consistent communication and establish strong relationships with FERC and other agencies (28 respondents)
- Ensure applications are as complete as possible (five respondents)
- Hold interagency meetings to create a team atmosphere and encourage working together (five respondents)
- Obtain political support or connections to help prevent delays (five respondents)
- Engage in thorough environmental analysis and planning before beginning the project (one respondent)
- Pay close attention to public land management agencies’ planning processes (one respondent)
- Engage the public thoughtfully and address reasonable demands early in the process (one respondent)
- Commence field surveys and ensure access for the surveys early in the process (one respondent).

**Suggestions to Improve Agency Processes:** The following suggestions were provided for how federal agencies (and delegated state agencies) could help prevent delay.

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One respondent remarked, “Providing the agencies as complete an application as possible is the single most effective means to securing permits in a timely manner.”
• Clearly identify the single division, department, or office within each agency that will have the lead for the project in order to avoid confusion and duplication. This should include a single point of contact at each agency.

• Provide clear communication among the agency, the project proponent, and FERC regarding project timelines and requirements.

• Provide better agency staff training on EPAct 2005 requirements.

• Assign sufficient staff to each project to avoid delays. If sufficient staff is not available, use third-party contractors to process applications.

• Develop better interagency cooperation and coordination during the permitting process, including multiple joint agency meetings. Cooperating agencies need to work more closely and effectively with FERC and with each other.

• Provide better oversight of staff members to ensure schedules are kept, agency requirements are fair and consistent, and internal coordination is maintained.

• Adhere to existing application processing guidelines and interagency agreements.

**Suggestions for Overall Process Improvement:** The most common suggestion for improvement was to provide FERC with the ability to enforce the federal-authorization deadline against cooperating agencies with real consequences for missing such deadline. Several respondents suggested that FERC be authorized to provide automatic authorization if an agency does not act by the deadline. This solution was also expressed in conjunction with the need for enforcement options other than litigation.

Several respondents also recommended that the Commission work with agencies to provide more explicit completeness requirements. Agencies need to provide well-defined application requirements and deliverables to make the permitting process more transparent and easy to understand. Survey respondents for two projects wanted permits to be based on the single FERC NEPA process, eliminating supplemental environmental documents or separate NHPA Section 106 processes carried out by other agencies. Determination of ACHP involvement earlier in the Section 106 process, the ability to obtain site access to conduct surveys, and consistent agency requirements for surveys and drawings were also recommended.

**Effective Permitting Strategies:** The survey asked respondents to identify the most effective methods for avoiding or minimizing delays in the federal agency authorization process. The methods identified focused on early planning and identification of issues; involving agencies early and communicating frequently; filing complete and timely applications; minimizing changes once the process has started; and developing and drawing on relationships with higher-level agency officials and other influential contacts. Specific suggestions included:
• Meeting with agencies that will be commenting or otherwise providing input on the project even if the agency does not have its own authority to issue a permit or authorization required to construct the project.

• Meeting with agencies in the field to address issues of concern.

• Discussing the agencies’ application processing guidelines and interagency agreements before submitting an application and making sure the agency follows its own guidelines.

• Involving legal counsel well versed in applicable permitting requirements and who can coordinate with key agency personnel.

• Securing permission for surveys prior to permit application submittals.

• Commencing field surveys well in advance of initiating the pre-filing process and completing surveys on schedule.

• Building a good rapport with agencies, including a strong sense of “team,” during the permitting process and ensuring each agency knows that the success of the project is strongly contingent upon both applicant and agency’s timely responses and participation.

• Paying careful attention to land management agencies’ land use plans.

VIII. Interviews of Pipeline Company Personnel

To obtain a better understanding of the causes of permit delays, Holland & Hart conducted in-depth interviews with pipeline company personnel regarding four of the post-EPAct 2005 projects addressed in the survey. These four projects were selected because (1) they each experienced substantial delays in receiving one or more federal authorizations, and (2) they represent a broad range of geographical locations as well as pipeline lengths.

The interviews provided an opportunity to explore more thoroughly the specific causes of delay for these projects as well as suggestions for improvement. The interviewees were promised anonymity so that they could speak candidly about their experiences with specific agencies. As a result, this report does not identify the interviewees or provide specific details about the interviewees’ projects.

Although the interviewees’ projects represent diverse locations and lengths, several common themes emerged from the interviews that clarify at least some of the causes of federal permitting delay. The interviews also provide concrete experiences that verify at least some of the concerns that prompted this study. The interviewees identified FERC’s lack of permit enforcement authority and the other federal agencies’ discretion about what constitutes a
complete application as two of the major causes of federal authorization delay and overall project delay. The common themes from the interviews are discussed below.

A. Desire for Stronger FERC Lead Agency Role

**Delay Concerns:** All four of the companies interviewed reported having good working relationships with FERC and were hesitant to criticize the agency, particularly since they recognize the difficulty of the process and the lack of enforcement options that EPAct 2005 provided for FERC. Still, they each wished that FERC, as the lead agency, had had a greater level of involvement with the entire federal authorization process. For instance, they wanted FERC to take stronger action when agencies did not meet their federal-authorization deadlines. They also wished that FERC had intervened earlier when they experienced problems with other federal agencies that developed into significant delays.

One interviewee felt that most of the agencies were not even aware of the EPAct 2005 federal-authorization deadline. If the agencies did know about the deadline, their conduct suggested that they felt no pressure to meet it. Another interviewee wanted more assistance and guidance from FERC when the project proponent ran into problems with other agencies that it could not overcome. Instead, this interviewee felt that FERC too often left it to the project proponents to negotiate the difficult issues with the relevant agencies on their own. Two companies wished FERC had intervened earlier in the Migratory Bird Treaty Act (MBTA) negotiation process and felt that FERC should have been aware of this issue and brought it to the companies’ attention during the pre-filing process. Other companies wished FERC had put more pressure on the Corps to accept FERC as the lead agency and not to duplicate NEPA processes.

One company related that a disputed permit was eventually approved after much negotiation and delay. But despite the long and arduous negotiation process, the permit was virtually the same as it would have been if FERC had simply imposed the draft permit conditions that already had been identified when the deadline passed. The company saw this as an indication that if FERC were to intervene in cases of unreasonable delay, it would have little impact on the actual permit conditions ultimately imposed but might speed up the process.

Two contrasting experiences illustrate how FERC can make a difference when it intervenes in a permitting process. For the first project, an agency imposed a requirement that the company felt was unreasonable. The company worked with the agency to negotiate this requirement, but the process continued to cause delay. It appeared that this agency was waiting for FERC to act, and FERC was waiting for the agency to act. But FERC did not get directly involved in negotiating with the other agency. The end result was additional delay that likely could have been avoided had FERC chosen to be involved in the process.

The second project involved a federal agency that attempted to insert requirements into a permit that already had been released for public comment. The company approached FERC,

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74 MBTA issues are discussed further in Section VIII.C below.
and FERC intervened to prevent the agency’s field office from adding requirements so late in the process. In this case, because of FERC’s involvement, the other agency’s actions did not cause delay. These examples show that the level of FERC’s involvement with other agencies during the federal authorization process can affect potential causes for delay.

**Suggestions for Improvement:** The companies all felt that FERC needs to be able to impose consequences or override other agencies when they fail to meet the deadline. Without this tool, the authorizing agency may delay authorizations with impunity. Therefore, it is easy to let other agency priorities take precedence. Most project proponents expressed a desire for FERC to do more outreach and education to the other permitting agencies about the requirements of EPAct 2005 and good practices to meet the deadlines imposed.

Several indicated that had the Commission taken action when agencies did not respond in a timely manner, the problems causing them large delays could have been avoided. All of the interviewees indicated that, in hindsight, they should have involved FERC earlier when problems arose and not waited until the permit was late to ask FERC to intervene. Even permits that are issued right on the deadline can cause pipeline companies considerable uncertainty, which requires contingency planning and puts pressure on the schedule.

However, although wanting FERC to take stronger action, the interviewees expressed some concern that more pressure from FERC could result in poor working relationships with particular agencies. They recognized that, without the ability to impose consequences on the other agencies, too much pressure from FERC, especially early in the process, could backfire and result in longer delays. Yet they added that, if FERC had greater involvement as standard operating procedure, the other agencies would come to expect it, and this problem could be avoided.

**B. State Involvement Often Delays Permitting Processes**

**Delay Concerns:** For two of the four projects, state agencies contributed to a major part of the delay. The delays resulted from inadequate agency staffing, lack of experience with pipelines, and unclear or uncommon state permitting requirements.

For example, one project experienced several months of delay when the state agency with authority to issue an NPDES permit informed the pipeline company that it did not have adequate staff or funding to review and respond to comments from local municipal governments. This revelation came several months after the agency had reassured the company that it was processing those comments and did not require the company’s assistance. The pipeline company was forced to negotiate with the local governments on an individual basis to resolve their concerns in order to reach the point where the state agency was willing to issue the permit. This caused major project delays and frustration, as the state agency was unwilling or unable to mediate or broker agreements with the local governments. Another company indicated that although the staff of the state agency was willing to work on the permit application, the fact that the agency representative had not worked before with a large linear
project slowed the process down and required significant company involvement to keep the process on track.

Another project had difficulty interpreting and applying differing state regulations governing access to project sites to conduct on-the-ground surveys for ESA and NHPA consultation and Corps Section 404 permits. The pipeline crossed several different states, and each state had different laws governing site access. Even when the laws allowed access, the state offices often refused to intervene when private landowners denied access for cultural or ecological surveys. The lack of access delayed several federal authorizations, including ESA and NHPA consultation and the Corps 404 permit.

**Suggestions for Improvement:** One company acknowledged that consultation with FERC earlier in the permitting process might have helped avoid delays because a state agency gave the company incorrect advice about the process required to comply with the NHPA. The conflicting standards caused delay in obtaining a federal authorization that could have been routine had the pipeline company been correctly advised to pursue involvement by the ACHP up front.

One company asserted that clear guidelines and predictability from the agencies are the most important elements for pipeline companies. It is not difficult for companies to follow differing state requirements as long as those requirements are clear and generally align with standard practices in other states. Problems arise when agencies provide inaccurate information, change requirements after significant time and effort has already been invested, or impose unclear legal requirements or guidelines.

C. Migratory Bird Treaty Act Issues

**Delay Concerns:** Two of the four projects experienced major delays due to issues related to the MBTA. In both cases, the USFWS required the companies to develop an MBTA conservation plan that included mitigation measures before it would issue its biological opinion (BiOp) to complete the ESA Section 7 consultation. One company reported that this has been a problem with other pipeline projects it has undertaken, and that USFWS requirements for the conservation plan and mitigation differ greatly from state to state, with no real guidance to serve as a starting point for discussions with USFWS.

One of the companies experienced even further delays after the MBTA issue was resolved because the delay resulted in construction taking place during the nesting period for other endangered species. This required reroutes or stoppages to avoid impacts to the species and their nests. The company was not allowed to take any steps or access the site to prevent nesting before the BiOp was issued, and USFWS refused to issue the BiOp until the MBTA issues were resolved.

Because of the substantial delays, both companies also felt that their MBTA conservation plans were overly restrictive because they were negotiating under substantial time pressure and uncertainty about FERC expectations and the legal requirements for MBTA
compliance. One interviewee claimed that USFWS had the company “over the barrel” for the MBTA conservation plan.

**Suggestions for Improvement:** Both companies felt that the Commission should have helped them recognize and address the MBTA issue much earlier in the permitting process. In addition, both felt that FERC guidance on MBTA planning, mitigation, and compensation expectations would greatly facilitate the process in the future.

D. **Army Corps of Engineers 404 Permits**

**Delay Concerns:** The Corps 404 permits caused major delay for two of the four projects, and minor delays for the other two projects. Some of these delays were actually the result of delays in other federal authorization processes. One Corps office required a full review of all other environmental permits required before it would sign off on the 404 permit. The MBTA issue mentioned above also contributed to delays in obtaining their 404 permits. Other delays related to agency staffing problems. Because the 404 permit requires compliance with other federal environmental laws, such as ESA Section 7 and NHPA Section 106, there is often a duplication of FERC’s efforts as the lead agency. In some cases, this duplication is not exact, with the Corps imposing different requirements to satisfy the same environmental requirements. One project reported that a Corps office conducted its own tribal consultation that followed different rules relating to mitigation. This process was required in addition to FERC’s NHPA process and caused delay because the Corps office had no deadline for tribal responses and waited to issue the permit until all tribes had given at least some response. Another Corps office initially indicated that a project could use a general permit but later indicated that an individual permit would be required. After the office sat on the permit application for several months, the pipeline company was required to re-apply for the permit, which the agency could contend restarted the clock for processing the application.

E. **Lack of Deadline Enforcement Options**

Two companies stated that the legal remedies in federal court provided by EPAct 2005 were not a realistic solution for permitting problems. Both companies had experiences with agencies that they felt were overstepping legal bounds, and one company even tried presenting formal legal arguments to an agency when it believed that the agency was not abiding by the requirements of EPAct 2005. Both companies, however, indicated that litigation is almost never a realistic option when a company is in the midst of the permitting process. This sentiment is supported by the survey results. As one company expressed, “at the end of the day, keeping up a good relationship with an agency is always more important.” Companies would prefer to preserve a positive relationship and keep an agency working on the authorization rather than filing a lawsuit that would only serve to further delay their project and antagonize the agency.
F. Inconsistent Agency Staffing and Coordination with Other Agencies

**Delay Concerns:** Two projects experienced significant delay in the federal authorization process when agency officials assigned to the project left or were reassigned in the middle of the process. One company was not notified for three months after its agency contact left. The other project experienced delay as the new official had to be brought up to speed and insisted on repeating several assignments that the company had considered complete.

Another problem with staffing involved the communication of inaccurate information that the project proponent relied upon to its detriment. As mentioned above, one agency indicated it would handle interactions with local governments, but after four months, the agency admitted it was overwhelmed and required the pipeline company to take over this process. Another company relied on an agency staff member’s assertion that he would make the necessary decisions related to its project. The company later learned that the final decision would be made by the agent’s superior, who had not been included in discussions and negotiations. This inaccurate information caused delay and some confusion within the agency.

Consistent with the narrative survey results, interviewees for all four projects also reported that the potential for delay increased when multiple agencies were involved. For example, for three of the projects, the Corps and another agency were each waiting for the other to issue its permit first. Other agencies involved in interagency conflicts that resulted in delay included the USFWS, which delayed its response to a migratory bird plan for over seven months or requiring complete mitigation plans before starting the time clock for FERC’s notice of initial consultation. One state agency responsible for issuing water quality certifications waited for FERC to complete all of its NEPA, ESA, and NHPA analysis before signing off on the certificate. And the Corps also waited for FERC to obtain ESA and NHPA authorizations before it would proceed to issue an authorization. In two projects, the USFWS attempted to get involved in other agencies’ permitting processes after the deadline for comments had passed. As related above in Section VIII.A., the results of these attempts differed depending upon the level of FERC involvement.

**Suggestions for Improvement:** Two companies expressed the desire that agencies hire staff specializing in linear projects because the issues associated with these types of projects are often different from those associated with single-site projects. Another company recommended hiring more third-party contractors to help understaffed agencies.

G. Impact of Hydraulic Fracturing on Pipeline Projects

Two companies reported that increased public concern over hydraulic fracturing had an impact on their projects. With the increased public interest, they reported that more outside parties are becoming involved in the permitting processes and making demands for mitigation or withholding approvals. In addition, they reported that the parties with direct involvement, such as landowners, state agencies, and non-governmental organizations, have become savvier in general. These parties are recognizing that they have leverage and are using this leverage to
obtain more mitigation requirements from pipeline companies during the federal authorization process, which sometimes results in delay.

H. Duplicative Processes

Some duplicative processes have been discussed above in relation to the Corps and interagency coordination. In addition to those overlapping efforts, two companies mentioned difficulties caused by similar agency application requirements with small but important differences in the details regarding project drawings. One company delayed its federal permit applications because it did not have the engineering resources to produce the required specifications and drawings for both FERC and the other federal agencies at the same time. The company had to focus on the FERC submissions and then move on to other federal permits to address the differences in detail. The project reported that quality control suffered as a result of confusion over slight differences in drawing requirements between FERC and agencies in different states. The company unable to present the data in the drawings in the way that it felt best represented the reality on the ground. Instead, it had to satisfy the varied requirements of different agencies and FERC. The company has remedied this for future projects by expanding its engineering drawing teams.

A second company also expressed confusion about different drawing requirements for FERC and another federal agency. The agency had similar requirements to FERC’s for construction permits, but there was confusion over some of the details. The company was required to make difficult changes to drawings that basically covered the same things. The company reported that this was a difficult process to manage.

I. Pipeline Company Contributions to Delay

Each of the four companies interviewed indicated they felt their projects were very well planned, that they made considerable efforts to learn from the Commission what problems they should anticipate, and that they had educated FERC and other agencies about their project plans. None of the companies interviewed reported any major changes to their projects that contributed to the delay, but most reported some smaller changes or reroutes. Some company shortcomings that were reported by the interviewees included:

- Inadequate engineering resources to handle FERC and federal agency requirements;
- Unfamiliarity with state laws and the idiosyncrasies of state agencies, including access laws, mitigation requirements for streams, and tribal review of mitigation parcels;
- Waiting too long to ask for FERC’s help or involvement in a conflict or process;
- Not enough on-the-ground planning before entering into the permitting process;
- Assuming that no news from an agency was good news; and
• Revising the pipeline project route, requiring resubmission of forms.

IX. Implications of Delay

While the survey did not ask respondents to quantify the costs of delay in the federal authorization process, such delay can have a significant financial impact on interstate natural gas pipeline companies. It can cause immense construction stand-by charges for pre-ordered equipment and construction crews and demobilization/remobilization costs for construction windows that are missed as a result of delay. It can push the construction period into the winter, when bad weather can slow construction, create safety concerns, and require additional manpower and other costly measures. Delay can also increase environmental disturbance and impact property owners and cause restoration challenges that must be addressed in the spring. In addition, it can result in substantial revenue losses for the pipeline company.

Delay in the construction of interstate natural gas pipelines can also have significant ramifications for other parties. Because transmission bottlenecks can create price differentials that directly affects natural gas consumers, a delay in construction extends the period during which consumers experience that price differential. Furthermore, construction delays can result in the loss of economic benefits to the community and construction jobs. Finally, delay in the construction of a pipeline can postpone millions of dollars of sales and use tax revenues to states and ad valorem taxes to local jurisdictions.

X. Options to Address Delay in the Federal Authorization Process

In March 2012, President Obama recognized in Executive Order 13064 that, in the context of infrastructure projects,

our Federal permitting and review processes must provide a transparent, consistent, and predictable path for both project sponsors and affected communities. They must ensure that agencies set and adhere to timelines and schedules for completion of reviews, set clear permitting performance goals, and track progress against those goals. They must encourage early collaboration among agencies, project sponsors, and affected stakeholders in order to incorporate and address their interests and minimize delays.75

This Presidential directive underscores the need to minimize or eliminate the causes of delay in the federal authorization of interstate natural gas pipeline projects. The following suggestions are intended to address one or more of the sources of delay identified in this report.

A. Legislative Options

Schedule Enforceability. Perhaps the most commonly cited complaint in the survey and interviews was the lack of enforcement authority for the federal-authorization deadline, aside from applicant-initiated litigation in federal court. Congress has mandated that “[e]ach Federal and State agency considering an aspect of an application for Federal authorization shall cooperate with the Commission and comply with the deadlines established by the Commission.” However, this congressional directive lacks teeth because there are no repercussions if federal and state agencies do not comply with the deadline established by FERC. Filing a lawsuit is essentially futile because (1) the applicants want to maintain positive working relationships with the agencies for the proposed project and future projects; (2) the time and expense required for such a legal challenge generally outweigh any favorable ruling; and (3) filing a lawsuit virtually guarantees additional delay.

An option to resolve this issue is for Congress to revisit its 2005 amendments to the NGA to require (or at least authorize) FERC to take over issuance of a federal authorization that remains pending when the 90-day deadline expires. Alternatively, the pending authorization could be deemed granted when the deadline passes, unless the agency responsible for the authorization has obtained the concurrence from FERC and the applicant for an extension of the deadline. Until such enforcement options are available, the effectiveness of FERC outreach with the other agencies will be limited because other demands imposed on those agencies that have real consequences will take priority.

Pre-Certificate Access. The interviews revealed that the inability to access certain land to conduct biological or cultural resource surveys during the permitting process led to delays in obtaining the required authorizations. Currently, the NGA does not allow a pipeline company to force a landowner to allow access for such surveys until the company receives its certificate from FERC and can exercise the power of eminent domain. Congress could amend the NGA to grant interstate natural gas pipeline companies the right to access private property to conduct non-invasive surveys that are required during the federal authorization process.

Eliminate MBTA Strict Liability. Because no incidental take authorization can be obtained under the MBTA, the EPAct 2005 federal-authorization deadline has no impact on delays caused by negotiations with the USFWS for migratory bird conservation measures to minimize the likelihood of MBTA liability. The potential for strict criminal liability under the MBTA with no incidental take permit available results in numerous project planning difficulties, including risk-management and delay concerns. This conundrum could be eliminated if the courts universally recognized that the MBTA was not intended to criminalize incidental take that occurs during the implementation of otherwise lawful activities or if Congress amended the MBTA to state that position definitively. Under that scenario, migratory bird conservation

77 While the recent Memorandum of Understanding between FERC and the USFWS regarding Implementation of Executive Order 13186, “Responsibilities of Federal Agencies to Protect Migratory Birds” provides some sideboards to the consideration of migratory bird conservation issues during the federal authorization process, it neither
measures would still be evaluated and imposed, as appropriate, as part of the NEPA and Commission approval process, but incidental take of migratory birds during the construction or operation of pipelines would not subject a project proponent to criminal liability.

**State-Authorization Deadline.** The EPAct 2005 fixed-timeline provision is directed solely at federal authorizations. Although technically preempted, interstate natural gas pipeline companies are required by FERC’s policy to obtain numerous state-level permits. As demonstrated by the survey and interview results, these state-level permits can be the cause of delay. Congress could amend the federal authorization provision of the NGA to make it applicable to any authorization for an interstate natural gas pipeline, including state and local authorizations that are not pursuant to federal law.

**B. Process Options**

**Greater FERC Involvement.** The survey and interview results indicate a strong industry desire for FERC to play a more assertive lead-agency role in shepherding a proposed project through the permitting process. As mentioned above, without real consequences for agency delay, the effectiveness of FERC outreach to the agencies will be limited by other pressures on those agencies. However, by adopting a policy of greater interaction and involvement with the permitting agencies (state and federal), the Commission could take a more proactive role so that the project proponent would not be solely responsible for resolving issues with those agencies. The FERC project manager could attend meetings with other agencies to educate them, attempt to resolve permitting issues, and ensure adherence to the 90-day deadline, when applicable. FERC has already conducted considerable outreach to agencies about EPAct 2005, and recently appointed a new interagency coordinator, which could prove useful in minimizing agency delays.

Another avenue to facilitate FERC’s involvement would be to push for better compliance with the FERC regulation requiring federal agencies and state agencies acting pursuant to federal law to provide notice to FERC when they receive an application for a federal authorization. This would raise FERC’s awareness of the agencies involved and provide an opportunity early in the process for FERC to educate an agency about the 90-day deadline and statutory requirements for a timely authorization process.

**Use of Conditional Authorizations.** More than one project experienced a situation in which an agency withheld its authorization pending action by another agency. Delay could be minimized if each agency with jurisdiction over an infrastructure project adopted a policy of authorizing the project contingent upon completion of the other agency’s process, (i.e., conditional authorizations), because that agency’s authorization would automatically be effective once that other process was complete.

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78 Eliminates strict liability nor provides authorization to take migratory birds. Thus, it does little to alleviate liability concerns and potentials for delay.

**Education and Outreach.** It appears that agency awareness of the fixed-timeline provision of EPAct 2005 may be limited. Additional outreach by FERC early in the process to other agencies subject to the 90-day federal-authorization deadline could perhaps result in greater recognition of and adherence to the deadline.

**Linear-Facility Specialists.** Some of the delay in the pipeline permitting process was attributable to a lack of agency experience with linear facilities. One policy option to address this issue would be for each agency that may be involved with the authorization of linear projects to assign an agency official with considerable experience with such projects to be the main point of contact and project lead regardless of where that facility is being proposed. For instance, the Corps could have one or more national linear-facility coordinators who could oversee and guide each district office’s consideration of a 404 permit for a proposed pipeline. The assigned linear-facility coordinator would be the ultimate decision-maker for the agency after obtaining the input of the agency officials in the offices affected by the proposed action. BLM’s use of national project managers for linear facilities is a good example of how specialists can be used to oversee the permitting process. Still, BLM’s program could be improved by providing the project managers with the ultimate decision-making authority for the right-of-way grant.

**Use of Third-Party Contractors.** The use of a third-party contractor funded by the applicant to prepare a NEPA analysis is a well-established approach for assisting federal agencies with their NEPA obligations. A similar concept could be employed for other agencies’ evaluation of permit applications. The project applicant could fund a third-party contractor to review the information submitted to the agency with the permit application and recommend to the agency whether additional information is required or whether the application is complete and can be acted upon. The efforts of the third-party contractor would be solely under the direction of the agency with no involvement by the applicant other than funding. This approach could help alleviate some of the staffing issues identified as causes of delay in the permitting process.

**FERC Policy on Preemption.** Although this report focuses on the federal-authorization deadline provision of EPAct 2005, the survey results and interviews also identified causes of delay with state-level authorizations. State or local laws that regulate environmental issues over which FERC has authority are preempted by the NGA. Nonetheless, as a matter of policy, FERC has “encouraged applicants to cooperate with state and local agencies with regard to the siting of pipeline facilities, environmental mitigation measures, and construction procedures.”

As a result, FERC-regulated pipeline companies feel obligated to seek permits under state and

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79 Northern Natural Gas Co. v. Iowa Utilities Board, 377 F.3d 817, 823 (8th Cir. 2004) (citing Nat’l Fuel Gas Supply Corp. v. Pub. Serv. Comm’n, 894 F.2d 571, 579 (2d Cir. 1990) (“Because FERC has authority to consider environmental issues, states may not engage in concurrent site-specific environmental review.”)); but see Schneidewind v. ANR Pipeline Co., 485 U.S. 293, 308 (1988) (providing that not every state law that has some indirect effect on FERC’s authority is preempted).

80 See Northern Natural Gas Co., 377 F.3d at 823 (quoting Maritimes & Northeast Pipeline, L.L.C., 81 FERC ¶ 61,166 (1997)).
local law. While FERC recognizes, consistent with U.S. Supreme Court precedent, that state and local agencies, through application of state and local laws, may not prohibit or unreasonably delay the construction of facilities approved by FERC,\(^1\) small delays or additional processes are not uncommon. Although FERC’s current policy of encouraging cooperation with state and local agencies makes diplomatic sense, if FERC revised its policy to recognize more explicitly and more forcefully that state and local laws that delay the construction of facilities approved by FERC are preempted by the NGA, pipeline companies likely would be able to avoid these delays in many cases.

C. Regulatory Options

**Eliminate Duplicative Efforts.** The survey and interviews also identified issues with duplicative agency compliance efforts, especially in the context of ESA Section 7 consultation and NHPA Section 106 consultation. The logical solution for this issue is for other agencies with jurisdiction over an aspect of an interstate natural gas pipeline to update their regulations to recognize that FERC, as the lead agency, has the responsibility for satisfying those consultation requirements and that the federal authorizations can be issued conditioned on FERC’s conclusion of those processes.

**Clearly Defined Application Requirements.** Several survey respondents indicated that agency requirements for applications were unclear or inconsistent. FERC and industry representatives could work with agencies to develop clear application requirements, provide guidance on common mistakes that result in applications being deemed incomplete, and follow-up with agencies, such as BLM, that have a pattern of designating applications incomplete.

**Agency-Specific EPAct 2005 Regulations.** As noted above, one reason suggested for some agencies’ failure to adhere to the federal-authorization deadline is limited agency awareness of the requirements of EPAct 2005. Knowledge of and compliance with the deadline would be enhanced if agencies responsible for authorization of interstate natural gas pipelines issued regulations acknowledging the deadline and requiring compliance with it.

**Require Expedited NEPA Compliance.** In light of the President’s recognition of the need to streamline federal permitting for infrastructure development,\(^2\) the Council on Environmental Quality could issue new rules requiring agencies to expedite the NEPA review for qualified national infrastructure projects. These rules would need to contain clear directives regarding the responsibilities and compliance metrics for the relevant agencies. This expedited NEPA review would increase the likelihood that other federal authorizations required for an interstate natural gas pipeline would be issued in time to meet the project’s schedule.

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\(^1\) See id. (citing Maritimes & Northeast Pipeline, L.L.C., 80 FERC ¶ 61,136 (1997)); Schneidewind, 485 U.S. at 300 (providing that state law that conflicts with the federal regulatory scheme under the NGA is preempted).

XI. Conclusion

Congress enacted EPAct 2005 by strong majorities. One of the Act’s significant purposes is to expedite the federal-authorization timeline for interstate natural gas pipelines. Unfortunately, the trend since EPAct 2005 is in the opposite direction – authorization delays have increased in both number and length. Consequently, EPAct 2005 has not lived up to its promise to reduce the time required to obtain necessary federal permits and further amendments to the Act may be the solution. While the federal authorization process is complex and involves a multitude of actors and issues, the industry survey and interviews verify that the process is not working as intended and that agencies are not meeting their legal obligations to issue authorizations by the FERC deadline. The legislative, process, and regulatory changes suggested in this report offer potential options for reversing the trend toward increased delay in the pipeline authorization process.
Appendix I

Computer-Based Survey Questionnaire

1. Please list the name and FERC docket number for the project that you will be addressing in this survey.

2. FERC Certificate of Public Convenience and Necessity (CPCN) Application Process:
   Traditional or Pre-filing?

3. Were pre-filing meetings held with FERC staff?

4. Other Federal Authorizations – Scheduling:
   - Were these federal agency authorizations needed?
   - Date of filing for agency authorization in comparison to CPCN application
   - Was a desired schedule submitted with filing to agency?
   - Did agency indicate it could meet the desired schedule?
   - Were pre-filing meetings held with agency before filing?
   - How long before filing were pre-filing meetings held?

<table>
<thead>
<tr>
<th>BLM Right-of-Way Grant – Mineral Leasing Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Army Corps of Engineers 404 Permit</td>
</tr>
<tr>
<td>Army Corps of Engineers Rivers and Harbor Permit</td>
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<tr>
<td>ESA Section 7 Consultation</td>
</tr>
<tr>
<td>NHPA Section 106 Consultation</td>
</tr>
<tr>
<td>Forest Service Special Use Permit</td>
</tr>
<tr>
<td>Coastal Zone Management Act Consistency Determination</td>
</tr>
</tbody>
</table>

5. Please list any other federal authorizations that were needed.

6. Other Federal Authorizations – Completeness:
   - Was filing deemed complete after initial submittal?
   - How long after submittal was filing deemed completed?
   - Did agency request additional information to complete filing?
   - How long after original filing did agency request additional information?
   - How long did it take to respond to agency request for additional information?
   - Was additional follow-up information requested to complete filing?
BLM Right-of-Way Grant – Mineral Leasing Act
Army Corps of Engineers 404 Permit
Army Corps of Engineers Rivers and Harbor Permit
ESA Section 7 Consultation
NHPA Section 106 Consultation
Forest Service Special Use Permit
Coastal Zone Management Act Consistency Determination

7. If a federal agency requested additional information after you submitted an application, please identify the type(s) of additional information requested:

8. Other Federal Authorizations – FERC Deadline:
   - Please indicate the amount of delay in obtaining agency authorization.
   - Was agency authorization received within 90 days of the issuance of FERC’s final EA/EIS (or by the alternate deadline established by law)?
   - If FERC applied an alternate deadline, what was the length of that deadline?
   - How long after the federal authorization deadline was each agency authorization received?

BLM Right-of-Way Grant – Mineral Leasing Act
Army Corps of Engineers 404 Permit
Army Corps of Engineers Rivers and Harbor Permit
ESA Section 7 Consultation
NHPA Section 106 Consultation
Forest Service Special Use Permit
Coastal Zone Management Act Consistency Determination

9. For those federal agency authorizations that were not issued within 90 days of the issuance of FERC’s Final EA/EIS (or by the alternate deadline established by law), please explain what caused the delay.

10. What approach would you recommend to a future applicant for those federal agency authorizations mentioned in your response to Question 9 to avoid and/or minimize delay?

11. What recommendations would you provide to those federal agencies mentioned in your response to Questions 9 and 10 to avoid and/or minimize delay in the future?

12. EPAct 2005 provides a process for applicants to pursue remedies in the United States Court of Appeals for the District of Columbia for federal agency delay for pipeline projects that require a CPCN. For projects proposed after EPAct 2005 was passed, did you pursue such remedies for federal agency delay on your project? (Yes or No)
13. For projects proposed prior to EPAct 2005, did you pursue any judicial or other remedy for federal agency delay on your project? (Yes or No)

14. If Yes, please describe those remedies and whether they were effective.

15. What were the most effective methods in avoiding and/or minimizing delays in the federal agency authorization process for your project?

16. How do you think the federal authorization process for natural gas pipeline projects could be improved to prevent and/or minimize delays and improve coordination between federal agencies?

17. May we contact you to follow up for more information concerning your experiences and thoughts? Names of individual respondents will not be associated with individual answers in any publicly available report. This information is being gathered for the INGAA Foundation’s internal research purposes only. If yes, please provide us with your name and contact information below.
Financing New Electric Generation and Transmission Infrastructure – Key Issues for Today’s Market
EBA’s Mid-Year Meeting & Conference
October 23-23, 2013
Energy Capital Partners

- A private equity firm focused on investing in North America’s energy infrastructure with over $8 billion in equity and mezzanine fund commitments
- Pursue both development and operating asset platforms with a North American focus
- Investment approach focuses on acquiring and developing interests in high quality assets and businesses primarily in the following sectors: fossil fuel generation, renewable energy facilities, new and existing electric transmission lines, midstream gas, energy and environmental services
Typical Private Equity Fund Mechanics

- Investors make commitments during the fundraising period at the beginning of a fund.
- Capital is called down during the commitment period as investments are made.
- As companies are sold, distributions are made until all businesses are exited.

A Single Private Equity Fund

<table>
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<tr>
<th>COMMITMENTS</th>
<th>Drawdowns</th>
<th>Distributions</th>
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<td>YEAR</td>
<td>1  2  3  4</td>
<td>5  6  7  8  9</td>
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</tbody>
</table>

EnergyCapital Partners
Private Equity Investment Process

Transaction Sourcing
• Developer / owner initiative
• Private equity initiation
• Formal sale process

Due Diligence
• Risk review – e.g. market, technology, environmental, regulatory, contract, litigation
• Management team and work force assessment

Investment Selection
• Return potential
• Investment size
• Business plan

Value Creation
• Improving/growing the business
• Using private-equity owner experience and resources

Exit Opportunities
• Sale to a strategic or financial buyer
• IPO
Current View of Transmission Investment

Pros

• Order No. 1000, renewable growth & coal / nuclear plant shutdowns creating opportunities
• Possible regulated rate of return or contracted stability
• Highly leverageable given operating cash flow stability
• Low operating risk and minimal maintenance capital expenditures
• Reduced commodity price variability or competitive threats
• Opportunities created by capital expenditures can be large and predictable

Challenges

• Development capital might be needed over a long time horizon
• Time-consuming permitting/environmental review timelines
• Regulatory uncertainty – e.g. Order No. 1000, cost allocations
Cash Flow Stability Dictates Financing

- Debt capacity and cost of debt for generators is dictated by stability of cash flow from various sources

More Stable

- PPA / Physical toll
- Cleared capacity payments
- Financially hedged energy
- Future capacity payments
- Merchant baseload energy
- Merchant peaking energy

Less Stable
Select Investments

ADA Carbon Solutions, LLC
Energy Services
In October 2008, Energy Capital announced the formation of ADA Carbon Solutions ("ACS") to develop and construct an activated carbon ("AC") production facility in Coushatta, Louisiana.

Broad River Power LLC
Power Generation
In December 2012, Energy Capital acquired Broad River, a 847 MW simple cycle, natural gas-fired power plant located in Gaffney, South Carolina. The plant began commercial operations in June 2000 and has had a strong operating history. The plant sells 100% of its output through two long-term power contracts with Carolina Power & Light Co., a subsidiary of Duke Energy Corp.

Cardinal Gas Storage Partners, LLC
Midstream Oil & Gas

CoaLogix Holdings, Inc.
Energy Services
In August 2011, Energy Capital acquired CoaLogix, the established leader in selective catalytic reduction ("SCR") management services and catalyst regeneration technologies used by coal-fired power plants to reduce nitrogen oxide (NOx) emissions.

Chieftain Sand and Proppant LLC
Energy Services
In July 2012, Energy Capital funded the recapitalization of Chieftain Sand from its Mezzanine Opportunities Fund. Chieftain Sand is a growing producer of frac sand that meets strict technical specifications for use in the oil and gas industry.

Empire Gen Holdings, Inc.
Power Generation
Energy Capital purchased Empire, a 635 MW combined cycle natural gas turbine ("CCGT") power plant in Rensselaer, New York, in July 2007 during its development stage and prior to construction commencement. The plant began commercial operations in September 2010 after a successful 3 year construction period.

EnergySolutions, Inc.
Energy Services
In May 2013, Energy Capital acquired EnergySolutions, Inc., a leading global provider of nuclear services to government and commercial customers, for approximately $1.2 billion from public shareholders in a take-private transaction. The company’s broad range of service offerings includes plant decommissioning, environmental remediation projects, engineering, in-plant support services, and transportation logistics, processing and disposal of low-level radioactive waste. EnergySolutions also provides the nuclear industry with critical back-end products and technologies, including water treatment solutions.

EquiPower Resources Corp.
Power Generation
In May 2010 Energy Capital formed EquiPower, a power generation company that owns and operates a portfolio of fossil power generation facilities in the eastern United States.

FirstLight Power Resources, Inc.
Power Generation
A diverse portfolio of predominantly hydro-generation plants acquired by Energy Capital in November 2006 for $1.34 billion and sold to a subsidiary of GDF SUEZ (EPA: GSZ) in December 2008.

NextLight Renewable Power, LLC
Renewable Energy
NextLight was formed by Energy Capital in December 2007 to develop, acquire, own, manage and operate utility-scale solar power plants in the western U.S. By the time the company was sold to First Solar, Inc. (Nasdaq: FSLR) in July 2010, it had grown to become the largest pure-play utility-scale developer of solar power plants in the U.S.
Select Investments

Odessa Power Holdings, LLC
Power Generation
In July 2011, Energy Capital acquired Odessa, a 1,000 MW combined cycle natural gas turbine (“CCGT”) power plant in West Texas. This 2001 vintage power plant utilizes General Electric 7FA technology and supplies power to the Electric Reliability Council of Texas (“ERCOT”).

PLH Group, Inc.
Energy Services
Energy Capital formed PLH Group, Inc. in 2009 to focus on acquiring and integrating a select group of construction and maintenance services providers to the electric power delivery and pipeline industries.

ProPetro Services, Inc.
Energy Services
In March 2013, Energy Capital announced the acquisition of ProPetro Services, a Midland, Texas based oilfield service provider. ProPetro is a leading provider of critical well completion and drilling services to upstream oil and gas customers throughout the Permian Basin, the Mid-Continent, and the Uinta-Piceance region of the Rocky Mountains.

Red Oak Power, LLC
Power Generation
Energy Capital acquired the 830 MW Red Oak power plant in Sayreville, New Jersey from a subsidiary of The AES Corporation (NYSE: AES) in April 2012. Red Oak sells power under a long-term contract expiring in 2022. In Q3 2013, Energy Capital entered into an agreement to sell Red Oak to The Carlyle Group. The transaction is subject to customary closing conditions.

Summit Midstream Partners, LLC
Midstream Oil & Gas
In September 2009, Energy Capital formed Summit Midstream Partners to focus on acquiring and developing a portfolio of Master Limited Partnership (“MLP”) qualifying midstream energy infrastructure assets that are strategically located in traditional and emerging North American production basins and import centers. In August 2011, Energy Capital sold an interest in Summit to GE Energy Financial Services, a unit of GE (NYSE: GE). On September 27, 2012, Summit Midstream Partners, LP priced an Initial Public Offering on the NYSE under the ticker symbol “SMLP.”

SunZia Southwest Transmission Project, LLC
Electric Transmission
In June 2008, Energy Capital and five partners announced an agreement to develop the SunZia Southwest Transmission Project, a transmission line that will connect renewable energy sources in New Mexico and Arizona to Phoenix and other load centers. In September 2010, Southwestern Power Group agreed to purchase Energy Capital’s stake in the project.

Waterbury Generation LLC
Power Generation
In mid-2007, Energy Capital, through FirstLight Power Resources, Inc., an Energy Capital power generation platform, acquired the exclusive development rights for a 96 MW gas-fired power plant in Waterbury, Connecticut. The project was sold to a subsidiary of GDF SUEZ (EPA: GSZ) in December 2008.

Sungevity, Inc.
Renewable Energy
In January 2013, Energy Capital provided Sungevity with project financing from its Mezzanine Opportunities Fund. Sungevity is a leading distributed solar company focused on the residential market providing customers with 20-year leases.
Energy Bar Association
Mid-Year Meeting & Conference

Steven Schleimer
Vice President, Regulatory Affairs

October 23, 2013
Forward-Looking Statements
The information contained in this presentation includes certain estimates, projections and other forward-looking information that reflect Calpine’s current views with respect to future events and financial performance. These estimates, projections and other forward-looking information are based on assumptions that Calpine believes, as of the date hereof, are reasonable. Inevitably, there will be differences between such estimates and actual results, and those differences may be material.

There can be no assurance that any estimates, projections or forward-looking information will be realized.

All such estimates, projections and forward-looking information speak only as of the date hereof. Calpine undertakes no duty to update or revise the information contained herein other than as required by law.

You are cautioned not to place undue reliance on the estimates, projections and other forward-looking information in this presentation as they are based on current expectations and general assumptions and are subject to various risks, uncertainties and other factors, including those set forth in Calpine’s Annual Report on Form 10-K for the year ended December 31, 2012, Quarterly Reports on Form 10-Q for the quarters ended March 31 and June 30, 2013, and in other documents that Calpine files with the SEC. Many of these risks, uncertainties and other factors are beyond Calpine’s control and may cause actual results to differ materially from the views, beliefs and estimates expressed herein. Calpine’s reports and other information filed with the SEC, including the risk factors identified in its Annual Report on Form 10-K for the year ended December 31, 2012, can be found on the SEC’s website at www.sec.gov and on Calpine’s website at www.calpine.com.

Reconciliation to U.S. GAAP Financial Information
The following presentation includes certain “non-GAAP financial measures” as defined in Regulation G under the Securities Exchange Act of 1934, as amended. Schedules are included herein that reconcile the non-GAAP financial measures included in the following presentation to the most directly comparable financial measures calculated and presented in accordance with U.S. GAAP.
Calpine Overview

Strategically positioned within U.S. power industry value chain

Fuel Supply

Transportation

Power Generation

Transmission & Distribution

Retail

Calpine (NYSE: CPN)
- 2,100+ employees
- 27,000+ MW generation capacity
- 93 operating plants
Calpine: National Portfolio of More Than 28,000 MW

- Geographically diversified portfolio: Scale in three most competitive power markets in America
- Largest operator of combined heat and power (cogeneration) technology in America
- Largest geothermal power producer in America
- Featuring one of smallest environmental footprints in America’s power generation sector
Advocating for Competitive Markets and Responsible Regulation

California
- Properly compensating existing flexible capacity

Texas
- Incentivizing new capacity

North
- Discouraging non-competitive, subsidized resources

Southeast
- Competing with utility self-build

Advocating for market-driven solutions that result in nondiscriminatory, transparent forward price signals for generators and their investors.
The PJM Capacity Market has Added Resources While the Price of Wholesale Power Has Fallen

PJM Reserve Margins Have Grown

- Source: 2016/2017 RPM Base Residual Auction Results, PJM, May 2013

Wholesale Power Costs Are At Historic Lows


A Significant Amount Of Resources Has Been Added To Replace Retirements and Derates

<table>
<thead>
<tr>
<th></th>
<th>Total Since Capacity Market Inception</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in Generating Capacity</td>
<td>28,177.8</td>
</tr>
<tr>
<td>Decrease in Generating Capacity</td>
<td>-20,319.4</td>
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<tr>
<td>Net Increase in DR</td>
<td>14,370.7</td>
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<tr>
<td>Net Increase in EE</td>
<td>1,111.6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>23,341.7</strong></td>
</tr>
</tbody>
</table>


“Market Based” Entry Has Been Much, Much Cheaper Than Entry Subsidized By Long-Term State Sponsored RFPs/Contracts

- Source: New Entry from PJM 2016/17 BRA Results, May 2013; Average from 2015-16-BRA Report, May 2012

Average EMAAC Capacity Price Since Mkt Inception

- Competitive Entry: 1.61, priced at market
- 6.69, escalates for 20 years
- 8.70, escalates for 20 years

- Source: New Entry from PJM 2016/17 BRA Results, May 2013; Average from 2015-16-BRA Report, May 2012
Incentivizing Necessary New-Build Investment in ERCOT

**Energy-Only Market:**

*New Investment Signals Depend Upon Scarcity Pricing*

Scarcity Pricing Illustration

![Chart showing energy-only market design obscures scarcity signals; capacity market provides clarity needed for new investment.](chart)

**Capacity Market:**

*Sustainable Market-Based Solution*

- Ensures resource adequacy
- Provides transparency and liquidity
- Reduces price volatility
- Sends forward price signal

**Key Points:**

- Ensures resource adequacy
- Provides transparency and liquidity
- Reduces price volatility
- Sends forward price signal

*ORDC: Operating Reserves Demand Curve. Shown here for illustrative purposes only and may not be representative of the ORDC ultimately implemented. The actual curve slope and resulting impact on power prices remains subject to additional analysis, stakeholder comments and other considerations. Note that “Pre-ORDC” represents the all-in Locational Marginal Price during scarcity, while “Post-ORDC” represents an adder to the Locational Marginal Price during scarcity.*
California and Southeast: Capturing Value through Contracts

**California: Compensation for Flexible Generation**


- Metcalf: 500 MW
- Delta: 857 MW
- Sutter: 578 MW
- Pastoria: 749 MW
- Gilroy Cogen: 50 MW
- Greenleaf I: 60 MW
- Otay Mesa: 50 MW
- QFs: 140 MW
- Los Medanos: 280 MW
- Agnews: 28 MW
- Peakers: 515 MW
- Geysers: 329 MW
- Los Esteros: 250 MW
- Russell City: 309 MW
- Agnews: 675 MW
- Peakers: 650 MW

Legend: Toll / PPA, RA (+ RECs for Geysers), QF

Note: Where full plant output has been contracted, capacities shown here represent summer peaking capacity as reported in 2012 10-K; actual contract amounts may vary depending upon contract terms. Contract expiration may occur within the final year shown. For California: Sutter, Los Medanos and Gilroy Cogen for 2013 represents summer only.

**Southeast: Focused on Monetization**

Years Contracted: 2013 2016 2019 2022 2025 2028 2031 2034

- Hog Bayou: 340 MW
- Pine Bluff: 608 MW
- Osprey: 28 MW
- Santa Rosa: 309 MW
- Auburndale: 340 MW
- Columbia: 117 MW
- Decatur: 200 MW
- Carville: 795 MW
- Morgan: 309 MW
- Oneta - SPS: 485 MW
- Oneta - OMPA: 135 MW
- Oneta - PSO: 200 MW
- Oneta - WFEC: 200 MW
- Oneta: 260 MW
- Oneta - SPS: 160 - 280 MW

Delivering value through customer-oriented origination

Note: Where full plant output has been contracted, capacities shown here represent summer peaking capacity as reported in 2012 10-K; actual contract amounts may vary depending upon contract terms. Contract expiration may occur within the final year shown. For California: Sutter, Los Medanos and Gilroy Cogen for 2013 represents summer only.
Conference
Speaker Biographies
BIOGRAPHY

Will Agate is the Senior Vice President, Navy Yard Management and Development, for the Philadelphia Industrial Development Corporation (PIDC). PIDC is Philadelphia’s citywide economic development corporation, which plans and implements financing and real estate transactions throughout all neighborhoods that attract investment and jobs to Philadelphia. The Navy Yard is a thriving 1,200-acre business campus with more than 10,000 employees and 130 companies occupying more than 6.5 million square feet of office, industrial/manufacturing, and research and development space, making it the most successful Navy base redevelopment in the country.

Will leads the PIDC team that manages all aspects of The Navy Yard’s management and development. Most recently, Will oversaw the completion of the comprehensive Energy Master Plan that allows PIDC to continue to own and operate The Navy Yard’s existing unregulated electric grid, while deploying various smart grid technologies. Will also serves on the Energy Efficient Building Hub’s (EEB Hub) Operating Committee. The EEB Hub, located at The Navy Yard, was established by the U.S. Department of Energy as one of five energy innovation Hubs, which aims to reduce energy consumption in the Greater Philadelphia commercial building sector by 20 percent by 2020.

Will is an avid proponent for incorporating progressive sustainability practices as a core principle driving development. He serves on a number of civic boards in the Greater Philadelphia region, and was recently appointed to the Mayor’s Climate Change Subcommittee. Will grew up in New England, but moved to the Philadelphia area more than 30 years ago after attending Gettysburg College. He lives with his wife of 25 years and two sons in Chestnut Hill, a neighborhood of Philadelphia.
Donna M. Attanasio
Senior Advisor for Energy Law Programs,
Professorial Lecturer in Law
The George Washington University Law School

Donna Attanasio joined the law school in July 2013. From November 2006 until May 2013, she was a partner at White & Case LLP, in its Energy, Infrastructure, Project and Asset Finance practice (Energy Markets and Regulatory Group), with a primary focus on power purchase contract negotiations, advising clients on the regulatory aspects of financings and mergers, and regulatory matters. While at White & Case she served as chair of its renewable energy task force and co-chair of the DC Office’s Women’s Initiative. Previously she was with the firms of Dewey Ballantine LLP (1993-2006) and Sutherland, Asbill & Brennan (1998-1992). Prior to law school, she supervised load management programs and worked on conservation and customer service projects at Potomac Electric Power Company.

Ms. Attanasio is a former President of the Energy Bar Association (EBA), former EBA officer and board member, former co-chair of its Program Committee and previously served by appointment to EBA’s three-person Nominations Committee. She has been recognized as a leading practitioner in the field of electric energy regulatory law by Chambers U.S.A., Chambers Global, Best Lawyers, Legal 500 and Super Lawyer and for customer service by BTI All Stars. In 2013, she received the Euromoney LMG Americas Women in Business Law Award for Energy, Natural Resources and Mining.

Education: A.B., Smith College; J.D. Harvard Law School

Address: 2000 H Street, N. W., Washington, DC 20052

Telephone: 202.994.0859

Email: dattanasio@law.gwu.edu
Nora M. Brownell is the co-founder of ESPY Energy Solutions, LLC, a women-owned business providing innovative and highly-skilled consulting services.

Prior to this, Nora Mead Brownell was nominated by President George W. Bush to the Federal Energy Regulatory Commission (FERC) on April 30, 2001. She was confirmed by the United States Senate on May 25, 2001, for a term that expired June 30, 2006.

Ms. Brownell’s tenure at the FERC reflects her longstanding and unwavering commitment to fostering competitive markets to serve the public interest. She championed the development of independent transmission organizations for wholesale power, which now represent the electricity market structure serving two-thirds of the U.S. $10 trillion economy. As a leading advocate of responsive and effective independent board governance at RTOs and corporations, Ms. Brownell is a strong proponent of FERC policies that promote investment in national energy infrastructure development.

Prior to FERC, Ms. Brownell served as a member of the Pennsylvania Public Utility Commission (PUC) from 1997 to 2001. During her time at the PUC, Ms. Brownell took an active role in the rollout of electric choice in Pennsylvania. In addition to her work in establishing the framework for one of the most successful retail electric markets in the country, she actively supported Pennsylvania’s pursuit of competition in the local markets for telecommunications, deployment of advanced services, enhancement of services to rural areas, protection of consumers and advancement of special services. Ms. Brownell has helped craft unique solutions to a number of these industry issues.

Prior to her appointment to the Pennsylvania Commission, she was executive director of the Regional Performing Arts Center in Philadelphia, a $200 million arts and economic development initiative. Additionally, she previously served as the senior vice president for Meridian Bancorp, Inc.’s Corporate Affairs Unit. Prior to joining Meridian in 1987, Ms. Brownell was deputy executive assistant to former Pennsylvania Governor Richard Thornburgh. Ms. Brownell is the former president of the National Association of Regulatory Utility Commissioners (NARUC).

Ms. Brownell serves on the boards of National Grid PLC, ONCOR, Spectra Energy Partners, Tangent Energy, Converge and TerViva Bioenergy. She also serves on the advisory boards of New World Capital and CleanHatch. Previously, Ms. Brownell served on the boards of Starwood Energy Fund, GridWise Architecture Council, Millennium Bank, Foundation of Architecture, Philadelphia Free Library and the Philadelphia Regional Performing Arts Center. In addition, Ms. Brownell has lectured at the Vermont Law School’s Center for Energy and the Environment, the Michigan State University Institute of Public Utilities, the University of Idaho, and at the Wharton Energy Club, among others.

Ms. Brownell has lectured at the Vermont Law School’s Center for Energy and the Environment, the Michigan State University Institute of Public Utilities, the University of Idaho, and at the Wharton Energy Club, among others.

Ms. Brownell is a native of Erie, Pennsylvania and attended Syracuse University.
Clarke Bruno oversees Anbaric Transmission’s legal affairs and transmission projects in the Mid-Atlantic region. He also is helping launch the company’s district energy business. He has two decades of experience in law, energy and environmental policy, and project development. As counsel to former New Jersey Governor Corzine, he helped craft initiatives to upgrade the grid, spur renewable energy projects, and increase infrastructure investments. During Mayor Bloomberg’s first term in New York City, Mr. Bruno spearheaded the effort that won dismissal of four twenty-year old class action lawsuits. Before entering government, he was a regulatory lawyer and litigator for nine years and clerked for a federal judge for one year. Mr. Bruno chairs the NYC Bar Association’s energy committee for the 2012-2015 term.

Mr. Bruno graduated with honors from Swarthmore College where he won a Thomas J. Watson fellowship and cum laude from New York University School of Law where he was awarded an Arthur Garfield Hays fellowship.
Areas of Focus

Wilderness protection, natural resource law, access to government information.

Bio

Sharon Buccino is a senior attorney and director of NRDC’s land and wildlife program. Based in Washington D.C., Sharon has led NRDC’s litigation, challenging oil and gas drilling in Wyoming, Colorado, and Utah. She is also leading NRDC’s fight to stop new coal mining outside Bryce Canyon National Park. Her current work focuses on energy policy and transparent government. Prior to joining NRDC, Sharon practiced environmental and administrative law with a private firm in Washington, D.C. She also served as a law clerk for the Alaska Supreme Court.

Ms. Buccino earned her J.D. from Stanford Law School and her B.A. from Yale University.
Leonard Crook is a Vice President in ICF International’s Natural Gas Practice, with over 30 years’ experience in North American and international natural gas markets. Prior to joining ICF, Mr. Crook served at FERC for 10 years, where he held positions in hydro licensing, Office of Economics, and Pipeline and Producer Regulation. Mr. Crook’s practice at ICF has focused on the economics of gas supply, pipelines, LNG, and gas markets. He has advised distribution companies, independent power producers and electric utilities on gas supply strategies and has served as lenders’ gas expert on over $4 billion in project financed power and natural gas facilities. He recently has advised governments and private clients in Ontario and Nova Scotia on the implications of shale production on future gas supply strategies. Elsewhere internationally, he has participated in ICF projects to design gas markets for Australia and Singapore. In 2012, led an ICF team that developed the gas master plan for Mozambique and currently is advising the Government of Mozambique on gas development issues. In 2010-2011 Mr. Crook directed a conceptual design for a national gas pipeline grid for the Government of India. In this project, ICF developed a fundamentals analysis of potential gas demand in India, across all of the major industries and the potential in over 200 cities. Mr. Crook has an MA in History and a BA in Economics and History from the University of Memphis.
Robert E. Curry, Jr. served for over six years (until 2012) as a Commissioner of the New York State Public Service Commission with jurisdiction over investor-owned utilities and their more than $30 billion in annual charges. He now provides energy-related and legal advice to private clients, as well as to the City of New York. Mr. Curry is also a Senior Consultant to Charles River Associates.

As a member of the U.S. Department of Energy’s Electricity Advisory Committee since 2010, Mr. Curry advises on strategies for the modernization of the nation’s electricity infrastructure. He also is involved in the New York City Energy Planning Board, the Harvard Electricity Policy Group and other power industry and regulatory activities, including those which address the development of the Marcellus shale in New York. In addition, at Columbia University Mr. Curry is a speaker on energy issues at its Earth Institute and was a Member of the Board of Advisors of its Law School’s Center on Corporate Governance.

Mr. Curry has been a corporate counselor and manager, specializing in transactions, financing and corporate governance. His experience includes sitting with boards of directors and related committees of public companies for more than 30 years. He also served as a senior executive and general counsel of a company ranked 148th on the Fortune Industrial 500 while it was transformed to 46th on the Fortune Services 500.
Tim Daniels

Mr. Daniels is a co-founder of Hudson Energy Development, LLC. Hudson is a New York based company focused on the development of projects in the Eastern US that combine utility-scale renewable technologies with advanced dispatchable generation and energy storage. At Hudson, he oversees development of several of Hudson's projects in New York as well as leading its external affairs activities.

Prior to co-founding Hudson, Mr. Daniels served as Senior Vice President of Market Development for Deepwater Wind, LLC, for three years. In addition to managing many aspects of external affairs for the company, he oversaw development activities in the New York, New Jersey and Connecticut markets for Deepwater's 3,000 MW of proposed offshore wind projects in federal waters and two HVDC, multi-terminal submarine transmission networks.

Prior to joining Deepwater Wind, Mr. Daniels served as Vice President of Energy Policy for Constellation Energy, Inc. He represented and supported the company's wholesale and retail commodity businesses, its nuclear group, and its project development group in Delaware, New Jersey, New York, and the six New England states. Mr. Daniels also served as the solar and smart grid "Subject Matter Expert" for policy for Constellation's deregulated businesses across all North American markets.

From 2004 to 2006, Mr. Daniels served as the Assistant Vice President for Energy Policy for the New York City Economic Development Corporation where his primary responsibility was the management of the implementation of Mayor Michael Bloomberg's 2004 "Energy Policy." During that time, he was an active participant in a number of important City and State initiatives including the formation of the New York State Renewable Portfolio Standard, the creation of an innovative $224M three-year targeted load reduction initiative in New York City, and the development of a business plan for the future of Con Edison's $450M/year steam district energy system.

Mr. Daniels previously held senior internal and external positions at several distributed generation development and technology companies including Northern Power Systems, Inc, and ReallEnergy, Inc. He played a key role in negotiating favorable standby electric rates for distributed generation technologies in New York State, helped negotiate the first streamlined interconnection standards for small generators in Massachusetts, shaped favorable policies related to distributed generation at both the New York ISO and ISO New England, and contributed to several clean energy federal legislative provisions that were ultimately incorporated into the Energy Policy Act of 2005.

In the mid to late-1990s, Mr. Daniels actively participated in early federal electric industry restructuring and emissions cap-and-trade debates while serving as the Legislative Director of the 130+ member Northeast-Midwest Congressional Coalition and the Congressional Task Force on Manufacturing. Under his leadership, the coalitions introduced several groundbreaking pieces of legislation including "Innovation-Based Electricity Reform Act" and the "Power Marketing Administration Reform Act." He also spearheaded appropriation and authorization initiatives in the US House of Representatives for a number of critical national energy programs including the Environmental Protection Agency's Energy Star program, DOE's Office of Renewable Energy & Energy Efficiency, and the Energy Information Administration.

Mr. Daniels earned a BA in Political Science from Emory University and a MS in Environmental Science and Policy from Johns Hopkins University.
John Dumas is the Director of Wholesale Market Operations where he is responsible for all Day-Ahead, Real-Time and Congestion Revenue Rights market activities.

Prior to this position, Mr. Dumas served as Manager of Operations Planning where he was responsible for wind integration, advanced network applications and load forecasting.

Mr. Dumas has 27 years of experience in the electric power industry beginning as a transmission lineman with TXU Electric in 1986. John transferred to the Texas Utilities System Operations center in 1990 where he supported generation control and power trading after deregulation. He joined ERCOT Operations in 2004.

Mr. Dumas earned his bachelor’s degree in Electrical Engineering from the University of Texas at Arlington.
Carolyn Elefant is principal attorney with the Law Offices of Carolyn Elefant PLLC in Washington D.C. (www.lawofficesofcarolynelefant.com) Prior to founding her firm, Carolyn worked as an attorney-advisor with the Federal Energy Regulatory Commission and as associate and of counsel to several law firms with national energy practices. Carolyn is also co-founder of and counsel to the Ocean Renewable Energy Coalition (www.oceanrenewable.com), a fifty-member national trade association for the marine and hydrokinetic industry.

Carolyn thrives on matters of first impression and last resort, meaning that she eagerly tackle issues never addressed before or successfully resolve problems where others have tried and failed. Carolyn represents and counsels emerging companies in energy and legal technology sector, and leverages her regulatory knowledge to help innovators penetrate and prosper in transforming markets.

Carolyn's clients include large corporations, demand response providers, state commissions, trade associations, conservation trusts, municipalities and landowners. Carolyn represents clients before FERC, state regulatory commissions and in federal district and appellate courts on a wide range of matters under the Federal Power Act, Natural Gas Act (including eminent domain proceedings) and the Freedom of Information Act (FOIA). Worth noting, Carolyn is one of just a handful of lawyers who has succeeded in overturning FERC on appeal, blocking condemnation under the Natural Gas Act and recovering fees under the Equal Access to Justice Act (EAJA) and the Uniform Relocation and Assistance Act in energy related matters.

An early adopter of social media, Carolyn is author of the book Social Media for Lawyers: the Next Frontier and author of The Power of Social Media, published in the Energy Law Journal (January 2012). You can follow Carolyn on Twitter at @nxtgenenergylaw and @carolynelefant.

Carolyn's firm has been recognized as an Energy and Natural Resources Superlawyer in Washington D.C. for 2011-2013, the only small firm so recognized on a list of large practices. Carolyn was also recognized as an ABA Legal Rebel in 2010. Carolyn's firm has been featured in the Maryland Daily Record, the Washington Legal Times and the ABA Journal and she is regularly quoted as an expert on energy issues in publications such as the Wall Street Journal, Platts, Energy 360 and others.
Beth Emery has been active in electric finance and regulatory issues since 1977. She is a partner in the Washington, DC office of Husch Blackwell, LLP. Since the firm’s July merger with Texas’ Brown McCarroll, LLP, Beth has been splitting her time between the firm’s new Houston and Austin offices. She concentrates on energy finance and regulatory matters, with a substantial amount of her current work relating to development and integration of wind resources and Southwest Power Pool, Inc. and Electric Reliability Council of Texas market and transmission issues.

Beth has served as the initial in-house General Counsel for two utilities. From start-up in 1997 through 1999 she was Vice President, General Counsel, and Secretary of the California Independent System Operator Corporation, where she was responsible for the legal and regulatory, public affairs, board relations, and market monitoring groups. From 2003 through May 2006, she was Senior Vice President, General Counsel, and Secretary to CPS Energy of San Antonio, the nation’s largest municipally-owned electric and gas utility. At CPS Energy she was responsible for legal and claims matters as well as Board activities.

From 1981 until joining CPS in late 2003 (and except for her two years in California), Beth was in private practice in Washington, D.C., focusing on the representation of generation and transmission companies and, in later years, independent system operators. Beth started her legal career upon moving to Washington in 1977, serving as an attorney-advisor to the Rural Electrification Administration, handling electric and telecommunications finance and business matters, and then as legal advisor to one of the initial five Federal Energy Regulatory Commissioners, Matthew Holden, Jr.

She has her B.A. with highest honors in Journalism from the University of Oklahoma (1974) and her J.D. from Harvard Law School (1977). Beth is admitted to practice in Texas and D.C. Until its sale to Johnson Controls, Inc., in June 2011, she served as an independent director of EnergyConnect Group, Campbell, CA, (OTCBB: ECNG), a demand response provider to PJM and Southern California Edison Company. She is active in various professional and community organizations, including serving as President of the Alamo Breast Cancer Foundation, and as a member of San Antonio’s Greater Chamber of Commerce Energy & Sustainability Committee.

Beth lives in Olmos Park, TX and has been married to fellow-Oklahoman Lee M. Emery since 1974. They have two children: Paul, in the Stanford’s Graduate School of Business class of 2014 at and Kate, a civil engineer-in-training in the Houston office of HNTB.
And their biography pages -
http://www.lawmoss.com/richard-j-johnson/
http://www.lawmoss.com/dan-lipschultz/
Chairman Finley was born in North Wilkesboro, North Carolina. He holds a Bachelor of Arts degree in history from the University of North Carolina at Chapel Hill and a Juris Doctor from the University of North Carolina School of Law.

Between 1974 and 2007 he practiced law in Raleigh, North Carolina, with the firm of Joyner & Howison from 1974 to 1980 and the firm of Hunton & Williams from 1980 to 2007, after a merger of the two firms. His primary area of practice was public utility regulation.

Governor Easley appointed Finley to the Commission on January 23, 2007, to fill a term that expired on June 30, 2011. Governor Perdue reappointed Finley to the Commission effective July 1, 2011, for a term that expires on June 30, 2019.

Governor Easley appointed Finley as Chairman of the Commission on April 10, 2007, to fill a Chair term that expired on June 30, 2009. Governor Perdue reappointed Finley as Chairman effective July 1, 2009, for a Chair term that expired on June 30, 2013. Governor McCrory reappointed Finley as Chairman effective July 1, 2013, for a chair term that expires on June 30, 2017.

Chairman Finley is active in community and civic affairs. He and his wife, Ginger, have two sons.
Ms. Foley, assistant general counsel at PJM Interconnection, L.L.C., is primarily responsible for the legal issues regarding transmission planning and generator/merchant interconnections. Ms. Foley has been involved extensively with the development of PJM’s Order No. 1000 regional and interregional transmission planning and cost allocation initiatives. She also played an active role in PJM’s Net Energy Metering Senior Task Force.

Prior to coming to PJM, Ms. Foley practiced law in several capacities including in-house counsel for Pinnacle West Corporation in Arizona and PSEG Services Corporation in New Jersey. She was an associate with Thelen, Reid & Priest, LLC, where she concentrated her practice in both state and federal electric utility law representing another large New Jersey electric utility and providing guidance throughout the state’s deregulation process. Ms. Foley also served as a Deputy Attorney General at the New Jersey Division of Law where she served as both counselor and prosecuting deputy before the professional boards.

While with PSEG, Ms. Foley served as a utility representative on the large and small generator interconnection working groups at the Federal Energy Regulatory Commission. The focus of those working groups was to develop interconnection procedures which served as a model for Order No. 2003 (Large Generator Interconnection Procedures) and Order No. 2006 (Small Generator Interconnection Procedures).

While at Pinnacle West, Ms. Foley served as the Legal Chairperson on the WestConnect Legal Subcommittee. WestConnect is composed of utility companies who collaborate to provide transmission of electricity in the Western Interconnection.

Ms. Foley received her juris doctor degree from Rutgers Law School in Newark, New Jersey. She is admitted to the Pennsylvania and New Jersey Bars. She is a Board Member of the Energy Bar Association, Northeast Chapter.

PJM Interconnection, founded in 1927, ensures the reliability of the high-voltage electric power system serving 61 million customers in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. PJM coordinates and directs the operation of the region’s transmission grid, which includes 65,000 miles of transmission lines; administers a competitive wholesale electricity market; and plans regional transmission expansion improvements to maintain grid reliability and relieve congestion. Visit PJM at www.pjm.com.
Mr. Herman is a Managing Director at Energy Capital Partners, a private equity firm with over $8 billion in capital commitments. He is involved in all areas of the firm’s investment activities, with a particular emphasis on renewable and fossil power generation, electric transmission, environmental infrastructure and energy field services.

Prior to joining Energy Capital in 2005, Mr. Herman was Senior Energy Counsel for Goldman Sachs’ power asset investment management activities. Prior to that, Mr. Herman was Senior Vice President and General Counsel of PG&E National Energy Group and its predecessor, U.S. Generating Company. Mr. Herman has also been a Partner at Latham & Watkins and Kirkland & Ellis.

Mr. Herman has been President of the Energy Bar Association and Vice-Chair of the Energy Industry Restructuring Finance and Mergers & Acquisitions Committee of the American Bar Association; he has authored the FERC Practice and Procedure Manual and the BNA Natural Gas Handbook; and has also taught at the University of Chicago Law School.

Mr. Herman received a B.S. in Economics from the Wharton School of Finance and Commerce; at the University of Pennsylvania, and an LL.B. from the University of Virginia Law School.
EXECUTIVE PROFILE

Patrick J. Hester
Associate General Counsel
Spectra Energy Corp

Pat Hester is associate general counsel for Spectra Energy’s U.S. pipelines. He is responsible for commercial, regulatory, environmental and operational legal matters related to the company’s pipelines.

Hester also serves on the board of directors for Spectra Energy’s publicly traded partnership, Spectra Energy Partners.

He joined Spectra Energy’s predecessor company, Algonquin Gas Transmission (AGT) in 1973 as an engineer. After serving in various positions in the legal, marketing and engineering areas of AGT in Boston, Mass., he was named vice president and general counsel for AGT in 1992, and vice president and general counsel for Maritimes & Northeast Pipeline in 1997. In 2003, he was named general counsel of Duke Energy Gas Transmission – East (DEGT) and became vice president, project management and development for DEGT in 2005.

Before joining the company, Hester was employed by Stone & Webster Engineering in Boston, Mass., as a civil engineer.

Hester graduated with distinction from Worcester Polytechnic Institute with a Bachelor of Science degree in civil engineering. He earned a Master of Science degree in civil engineering from Northeastern University and a juris doctor degree, with honors, from Suffolk University Law School in Boston.

Hester is a registered professional engineer and is licensed to practice law in Massachusetts and Federal District Court (Mass.), First Circuit Court of Appeals, D.C. Circuit Court of Appeals and the U.S. Supreme Court. He is a member of the Energy Bar Association, American Bar Association, Massachusetts Bar Association, Guild of Gas Managers and Society of Gas Lighters.

In 2008 and 2012, Hester received Spectra Energy’s Summit Award – the company’s highest recognition award – for his participation on the Northeast Gateway Project and the NJ/NY Expansion Project. In 2002, he received Duke Energy's Pinnacle Award – the company's highest award for outstanding contribution to Duke Energy's business success – for his leadership in the development of the Maritimes & Northeast Pipeline Phase II and Algonquin Hubline pipeline projects in New England. He also received the Boston Harbor Island Alliance Stewardship Award in 2003 for his efforts with the Hubline project, and the Coastal America Special Recognition Award in 2001 for his efforts in establishing the Maine Corporate Wetlands Restoration Partnership.

Spectra Energy Corp (NYSE: SE), a FORTUNE 500 company, is one of North America’s premier natural gas infrastructure companies serving three key links in the natural gas value chain: gathering and processing, transmission and storage, and distribution. For more than a century, Spectra Energy and its predecessor companies have developed critically important pipelines and related infrastructure connecting natural gas supply sources to premium markets. Based in Houston, Texas, the company’s operations in the United States and Canada include more than 19,000 miles of transmission pipeline, approximately 305 billion cubic feet of storage, as well as natural gas gathering and processing, natural gas liquids and local distribution operations. The company also has a 50 percent ownership in DCP Midstream, one of the largest natural gas gatherers and processors in the United States. Spectra Energy is a member of the Dow Jones Sustainability World and North America Indexes and the Carbon Disclosure Project’s Global 500 and S&P 500 Carbon Disclosure Leadership Indexes. For more information, visit www.spectraenergy.com.
James J. “Jim” Hoecker

Jim Hoecker is Senior Counsel and Energy Strategist at Husch Blackwell LLP in Washington, D.C., where he focuses on emerging wholesale electric and natural gas markets and assists energy providers, customers, and state and federal policymakers with electric power, natural gas transportation, and related regulatory, environmental, and climate change matters. Dr. Hoecker is also principal Counsel to WIRES, a major national non-profit trade association that advocates increased investment in electric transmission infrastructure and Principal of Hoecker Energy Law & Policy, PLLC (HELP), a law and public policy consulting firm.

Prior to rejoining private practice, Dr. Hoecker served as Chairman of the Federal Energy Regulatory Commission, from 1997-2001 during the Clinton Administration and, before that, as a FERC Commissioner for four years. Among his accomplishments as Chairman, he instituted regional transmission organizations to plan and administer the bulk electric power system and streamlined FERC’s regulatory processes. Dr. Hoecker has practiced energy administrative law for over three decades.

Dr. Hoecker has served on the Boards of a public utility and a private university. He is the recipient of the Distinguished Service Award of the National Energy Resources Organization and the Silver Good Citizenship Award of the Sons of the American Revolution. He speaks and publishes widely on energy and infrastructure issues.

He holds advanced degrees from the University of Wisconsin and the University of Kentucky. For more information, see www.huschblackwell.com or www.helppllc.com.
Charles Hornbrook is a Principal at ICF International and the Director of ICF’s Distributed Energy Resources group. The group provides advisory services and solutions to governments, utilities and commercial customers on distributed energy (e.g. CHP, Solar PV), integrated demand side management and distribution networks. Prior to joining ICF, Charles was at Itron developing products and solutions for the integration of distributed energy resources with Itron’s Smart Grid offerings and part of Itron’s consulting practice managing and delivering projects on the evaluation and impact of solar PV and CHP programs in California and Massachusetts. Prior to joining Itron, Charles ran Pacific Gas and Electric’s Customer Distributed Generation group, the largest in the United States. Charles has an MBA and an MS in environmental policy from the University of Michigan. He and his family live in the city of San Francisco. Internationally, Charles had an opportunity to install a solar PV system and a bio digester in rural Ecuador and provide disaster relief in Indonesia and Mississippi.
KTM is an energy consulting firm specializing in providing information, strategic advice and economic analysis on energy market and regulatory issues related to the natural gas and power consumption of its industrial and large commercial clients. KTM provides its services to clients throughout the United States and Canada.

Mr. Inge holds a Bachelor of Business Administration from the University of Virginia (1976) and a Master of Business Administration from the University of Virginia's Colgate Darden School of Business Administration (1979).

Upon receiving his MBA, Mr. Inge was recruited into CONOCO Inc.'s Management Development Program, where he gained experience in all aspects of the natural gas gathering and processing business. In 1982 Mr. Inge joined Delhi Gas Pipeline’s Gas Acquisition Group as a gas buyer and was promoted to Senior Gas Buyer for the midcontinent region in 1983. He joined KTM in February, 1987 and has served as President of KTM since January, 2000.

During his 26 years with KTM, Mr. Inge has analyzed numerous pipeline and electric rate filings before the Federal Energy Regulatory Commission (FERC) and state public utility commissions, presenting gas valuation, cost allocation and rate design testimony. Drawing on his in-depth experience, Mr. Inge builds analytically-based cost allocation and rate design strategies to support his clients’ litigation and settlement goals, and provides ongoing consulting services on natural gas and power consumption issues to industrial and large commercial clients throughout the U.S. and Canada.

**Testimony before the Federal Energy Regulatory Commission**
- Docket No. GP91-8-008 (Jack J. Grynberg v. Rocky Mountain Natural Gas Company)
- Docket No. RP96-306-000 (Paiute Pipeline Company)
- Docket No. RP08-426 (El Paso Natural Gas Company)
- Docket No. RP10-21 (Florida Gas Transmission Company)
- Docket No. RP10-1398 (El Paso Natural Gas Company)
- Docket No. RP11-1670 (Eastern Shore Natural Gas Company)

**Testimony before the National Energy Board**
- Docket No. RH-003-2011 (TransCanada PipeLines Limited)

**Testimony before State Regulatory Commissions**
- Public Utilities Commission of Nevada - Docket Nos. 92-4021, 01-11030, 03-12002, 05-12001, 06-12001 and 07-09016
- California Public Utilities Commission - Applications A.01-06-041, A.05-06-018, A.08-08-004 and A.12-02-014.

**Client Rate Negotiation Support**
- Docket Nos. CP11-303 & CP11-333 (Eastern Shore Natural Gas Company)
- Docket No. RP13-185 (Viking)
- Docket No. RP11-1566 (Tennessee Gas Pipeline Company)
- Docket No. RP13-886 (Southern Natural Gas Company)
- Docket Nos. RP09-406 & RP05-163 (Paiute Pipeline Company)
- Docket No. CP12-4 (Southern Natural Gas Company)
Paula N. Johnson is a Senior Attorney - Regulatory for Alliant Energy Corporate Services, Inc., representing Alliant Energy Corporation’s wholly-owned utility subsidiaries, Interstate Power and Light Company and Wisconsin Power and Light Company before various administrative agencies. Paula was born in Troy, Kansas, and attended Washburn University as a Garvey Scholar and with vocal performance and English scholarships. Upon graduation, she attended Washburn University School of Law on a Washburn Alumni Scholarship. She was admitted to the Kansas bar in 1998, while working for the Kansas Corporation Commission, where she garnered nearly 10 years of experience from the regulator’s perspective. She began working for Alliant Energy Corporation in 2006, and lives with her husband and two children in Cedar Rapids, Iowa. She was subsequently admitted to the Iowa Bar in 2011 and the Wisconsin Bar in 2012.

Paula’s practice areas have included general natural gas and electric issues including general rate case issues, return on equity and capital structure issues, energy efficiency, renewable energy programming, PURPA, NERC compliance, interconnection agreements, demand side management and appellate practice.

Paula has been involved with the Energy Bar Association, particularly the Midwest Chapter, since her time with the Kansas Corporation Commission, and has served on committees such as the Climate Change Committee, Renewables Committee, System Reliability Committee, State Practice Committee, and the DSM and Smart Grid Committee. Paula served on the Midwest Chapter’s Board of Directors, and ultimate served as its President in 2011-2012).

In her spare time, Paula still enjoys vocal performance and, in 2012, participated in a 300-person choir for a performance at Lincoln Center in New York City. Also in 2012, Paula performed the rockabilly song Inside Out at the Kansas Womens Attorney Association banquet in Lindsborg, Kansas, and performed the alto recitative and aria, “O Thou That Tellest Good Tidings from Zion,” from Handel’s Messiah in Marion, Iowa.
Rick has represented investor-owned utility and telephone companies for over 30 years in multiple regulatory proceedings, including over 20 rate cases and many more earnings and other regulatory investigations. His experience also includes representation, negotiation, and documentation of numerous mergers, sales and acquisitions, and other transactions involving regulated businesses. Issues addressed in regulatory proceedings include:

- Capital structure, including imputed structures
- Cost of debt, including imputed interest rates;
- Return on Common Equity;
- Income taxes, including consolidated income tax issues;
- Overall revenue requirements;
- Pension expenses, including recovery of losses;
- Sales forecasts;
- Compensation;
- Rate base adjustments and prudence;
- Renewable cost recovery;
- Jurisdictional cost allocations
- Earnings reviews;
- Affiliated interest and cost allocations;
- Service rights;
- Tariff disputes;
- Rulemakings

**Areas of Practice:**
- Regulated Industries
- Business Law

**Education:**
- Harvard Law School, Cambridge, Massachusetts, J.D.
- University of Minnesota-Twin Cities, B.S., Business Administration

**Honors and Awards:**
- *The Best Lawyers in America*—1995-present
  - “Lawyer of the Year,” Administrative / Regulatory Law, Minneapolis, 2012

**Professional Associations and Memberships:**
- Federal Communications Bar Association
- American Bar Association
- Minnesota State Bar Association
- Hennepin County Bar Association

**Bar Admissions:**
- Minnesota
Keith Johnson is a reporter for The Wall Street Journal currently based in Washington. He currently covers energy and the environment, including domestic energy policies, environmental rules and regulations, and the economic and geopolitical implications of the shifting global energy landscape.

Mr. Johnson has spent the entirety of his career with The Wall Street Journal, much of that overseas. From 2001 to 2007, based in Spain, he covered primarily energy, airlines, and terrorism. From 2008 to early 2010, he ran the WSJ blog “Environmental Capital,” which covered energy and environmental issues. Between 2010 and 2012, he covered national-security issues and foreign affairs, including Homeland Security and the State Department. He has reported from Europe, Asia, North Africa, and the Middle East.

Born in Atlanta, Mr. Johnson received a B.A. in History and an M.A. in Spanish Literature from the University of Georgia. He taught Spanish and English in the U.S., Spain, and Mexico.

#
A. Gregory Junge
Partner

Greg Junge represents a wide variety of energy companies, including interstate natural gas pipelines, intrastate natural gas pipelines, natural gas marketers, and local distribution companies. Greg’s practice focuses on regulatory counseling and administrative litigation before the U.S. Federal Energy Regulatory Commission (FERC) as well as appellate litigation in federal courts.

Greg works with interstate pipeline clients to develop new service and rate offerings, and to defend pipeline services and rates in administrative proceedings. He has extensive experience representing pipeline clients in rate case litigation under both Section 4 and Section 5 of the Natural Gas Act (NGA), and he represents interstate pipelines regarding certificate and abandonment matters under Section 7 of the NGA.

He serves as co-chair of the firm’s Electric-Gas Coordination Working Group, and he has worked with electric marketers and electric utilities on various regulatory, transactional, and administrative litigation matters. Greg also represents clients in FERC enforcement investigations and audits, and he assists clients with internal compliance audits and developing compliance programs.

Greg is a frequent instructor at the “Pipeline Training Course” sponsored by New Mexico State University’s Center for Public Utilities, the Energy Bar Association, and the Interstate Natural Gas Association of America. He is also a contributing author of the “AGA FERC Manual: A Guide for Local Distribution Companies,” distributed by the American Gas Association.

Professional Background

Prior to joining Van Ness Feldman, Greg was an Associate at Jones Day, where he represented clients in litigation matters in federal and state courts.

Professional and Civic Affiliations

- American Bar Association
- Energy Bar Association

Honors & Distinctions

- Member, The George Washington Law Review

Publications

Hon. Joseph T. Kelliher
Executive Vice President, Federal Regulatory Affairs

Joseph T. Kelliher is executive vice president – federal regulatory affairs for NextEra Energy, Inc. In this role, he is responsible for managing federal regulatory matters for NextEra Energy and its principal subsidiaries, NextEra Energy Resources and Florida Power & Light Company. He has held this position since May 2009.

Previously, Mr. Kelliher served as Chairman of the Federal Energy Regulatory Commission (FERC) from 2005 to 2009. In that role, he served as the chief executive officer of the agency, managing 1,400 employees and a $260 million annual budget. Among the highlights of his chairmanship was efficient implementation of the Energy Policy Act of 2005, the largest expansion in FERC regulatory authority since the 1930s. This law gave FERC a new mission to assure reliability of the interstate power grid, granted the agency strong enforcement authority for the first time, and expanded FERC authority in other areas. Chairman Kelliher pursued a series of reforms to promote competitive wholesale power and natural gas markets, improve FERC economic regulation, and strengthen the U.S. energy infrastructure.

Mr. Kelliher has spent his entire professional career working on energy policy matters, serving in a variety of roles in both the public and private sectors. These include senior policy advisor to the U.S. Secretary of Energy, majority counsel to the U.S. House Commerce Committee, and positions with private corporations, trade associations, and law firms.

Mr. Kelliher earned a Bachelor of Science degree from Georgetown University, School of Foreign Service, and a Juris Doctor degree, magna cum laude, from The American University Washington College of Law.

NextEra Energy, Inc. (NYSE: NEE) is a leading clean energy company with consolidated revenues of approximately $14.3 billion, more than 42,000 megawatts of generating capacity, and nearly 15,000 employees in 26 states and Canada as of year-end 2012. Headquartered in Juno Beach, Fla., NextEra Energy's principal subsidiaries are Florida Power & Light Company, which serves approximately 4.6 million customer accounts in Florida and is one of the largest rate-regulated electric utilities in the United States, and NextEra Energy Resources, LLC, which together with its affiliated entities is the largest generator in North America of renewable energy from the wind and sun. Through its subsidiaries, NextEra Energy generates clean, emissions-free electricity from eight commercial nuclear power units in Florida, New Hampshire, Iowa and Wisconsin. For more information about NextEra Energy companies, visit these websites: www.NextEraEnergy.com, www.FPL.com, www.NextEraEnergyResources.com.
As General Counsel, Cary Kottler is responsible for all legal, contractual, regulatory and compliance matters for Clean Line. In addition Cary works on Clean Line’s commercial arrangements and advises on business development opportunities and corporate strategy.

Prior to joining Clean Line, Cary worked as a corporate attorney for Vinson & Elkins in Houston, Texas, specializing in mergers and acquisitions, project development and private equity investments. His completed transactions ranged in value from $5 million to over $4 billion and encompassed many areas of the renewable energy industry, including wind, solar and geothermal energy. Cary’s work at V&E involved clients, projects, companies or assets located in more than twenty U.S. states and fifteen countries across North America, Latin America, Europe, Australia, Asia and the Caribbean. Cary earned a Bachelor of Arts in Political Science from Rice University, and a Juris Doctor from UCLA School of Law. Cary is a director and founding member of Empower Nepali Girls, a non-profit foundation that provides educational opportunities to neglected children in Nepal.
Michael Levi is the David M. Rubenstein Senior Fellow for Energy and the Environment at the Council on Foreign Relations (CFR) and Director of the CFR Program on Energy Security and Climate Change. Michael's research focuses primarily on the relationship between energy developments and broader economic, security, and environmental concerns. He is the author of *The Power Surge: Energy, Opportunity, and the Battle for America’s Future* (Oxford University Press, 2013), and co-author of *By All Means Necessary: How China’s Resource Quest is Changing the World*, forthcoming in February 2014. His previous book, *On Nuclear Terrorism* (Harvard University Press), which analyzed strategy for combatting nuclear terrorism, was published in 2007. He is a member of the Advisory Board to Princeton University's Carbon Mitigation Initiative and the Strategic Advisory Board for NewWorld Capital LLC. Previously a fellow at the Brookings Institution, Michael holds a Bachelors of Science in mathematical physics from Queen’s University, an MA in physics from Princeton University and a Ph.D. in war studies from the University of London.
Clyde Loutan is presently a Senior Advisor at the California Independent System Operator Corporation (ISO) focusing on power system operation performance and was the Principal Investigator for the ISO’s renewable resource integration studies published in 2007 and 2010. Mr. Loutan serves on the North American Electric Reliability Corporation (NERC) Frequency Responsive Reserve, and the NERC Reliability Based Control Standards teams developing national operating standards. Mr. Loutan previously worked at the Pacific Gas and Electric Company for 14 years in various capacities such as Real Time System Operations, Transmission Planning and High Voltage Protection.

Mr. Loutan is a licensed professional engineer in the State of California. He holds B.S. and M.S. degrees in Electrical Engineering from Howard University in Washington D.C., and is a senior member of the IEEE.
Mr. Lucas joined Southern Company Services, Inc. (SCS) in 1977 and has worked in the areas of System Planning, Bulk Power Markets and Bulk Power Operations. In 1995, as the industry began dealing with the Commission’s initiatives on open access transmission service, John began work in the newly created Transmission Services function. In his current role as General Manager - Transmission Policy and Services, Mr. Lucas has responsibility for overall management, development and implementation of federal transmission and interconnection policy and for the administration of Southern Companies’ Open Access Transmission Tariff (Tariff).

Mr. Lucas participated as a charter member of the Commercial Practices Working Group (CPWG) before the group was established as the NERC Market Interface Committee (MIC). Mr. Lucas served for over two years as the SERC representative on the MIC during which time the MIC developed, filed and implemented the OASIS Business Practices accepted by FERC in Order 638. Mr. Lucas served on the North American Energy Standards Board (NAESB) from June 2005 through December 31, 2010 representing the Transmission IOU segment and has been engaged in the DOE funded Eastern Interconnection Planning Collaborative effort.
Bill Mapes practices at the Law Office of William R. Mapes, Jr., located in Washington D.C. He has represented a number of interstate natural gas pipelines and shippers on such pipelines during his 25+ year energy career on matters involving rates, tariff and certificate issues before the Federal Energy Regulatory Commission (FERC). He has also represented landowners impacted by pipeline construction activity, including matters arising from condemnation proceedings.

Bill counsels clients on the development of internal compliance programs and FERC’s enforcement policies and has provided training on these matters. He also has advised on pipeline Department of Transportation and oil pipeline regulatory matters.

Further, Bill has addressed a broad range of issues in the electric regulatory field, including enforcement, compliance, ratemaking, rulemaking, PURPA and other regulatory matters. This has involved representation of investor owned and municipal utilities, customers, environmental organizations and independent system operators.
Betsy retired from Exelon Corporation in 2010 where she served as Executive Vice President, Government Affairs and Policy. She headed Exelon’s Washington, DC office for 10+ years and was on Exelon’s Executive Committee. During 1999 she was a partner at Vinson & Elkins, a law firm. She is currently a member of the Boards of Directors of the Climate Action Reserve and the Henry M. Jackson Foundation. She previously served on the Boards of Schlumberger Limited, Genon Energy, Inc. (now a part of NRG), and Unicom Corp. (now Exelon).

Betsy is a recognized energy policy expert, with particular emphasis on electricity markets, transmission policy, and climate change.

Betsy had a long career in government service. She was a staff member on Capitol Hill for 20 years. She served as Senior Counsel for the United States Senate Committee on Energy and Natural Resources from 1976 to 1988.

She was appointed by three Presidents and confirmed by the U.S. Senate to serve as a Member of the Federal Energy Regulatory Commission (FERC) from 1988-1997. In 1993, President Clinton designated her as Chair of FERC. Under her leadership FERC adopted a landmark initiative (Order Nos. 888 and 889) to require utilities to open their transmission lines on an equal access basis to their competitors, paving the way for robust wholesale competitive electricity markets.

In 1997 she was appointed by President Clinton and confirmed by the U.S. Senate to serve as the Deputy Secretary, U.S. Department of Energy (DOE) where she served as the Chief Operating Officer. As COO she managed the day-to-day operation of a $16 billion budget with more than 10,000 federal employees and over 100,000 contract employees. She resigned in 1998.

Betsy has a B.A. in International Relations from the American University and a J.D. from George Washington University. She is married to Thomas B. Williams and has two adult children. She is a member of the District of Columbia Bar.
Jonas Monast
Director, Climate & Energy Program


Jonas also teaches courses on the intersection of energy and environmental issues at Duke University’s School of Law and Nicholas School of the Environment. Prior to joining Duke, Jonas worked as an attorney in the Corporate Social Responsibility Practice at Foley Hoag LLP, where he advised clients on emerging legal and reputational risks regarding human rights and the environment. Jonas also served as a congressional fellow for the late Senator Paul Wellstone and as legislative counsel for the Center for Responsible Lending. He earned his law degree from Georgetown University and his B.A. from Appalachian State University.
Parker dedicates his practice to successful project development. He helps clients nationwide from every economic sector navigate issues arising under the Clean Water Act (CWA), the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), the Migratory Bird Treaty Act (MBTA) and related environmental laws. He also defends clients in agency enforcement actions and citizen suits, applying his substantive knowledge of natural resources law and project development to craft creative, sound and successful legal strategies. He co-chairs B&D’s Environmental Practice Group and its NEPA, Wetlands, and ESA Section.

Parker’s experience includes:

- Defending one of North America’s largest railroad companies against CWA citizen suits alleging unpermitted discharges of coal from railcars to waterbodies and wetlands throughout Washington State.
- Representing members of the oil and gas industry in the development of one of the first ever general conservation plans under the ESA to authorize incidental take of listed species.
- As an appointed special Attorney General, helping state Departments of Transportation build administrative records to support their highway projects and defending them in citizen suits under NEPA.
- Developing unique protocols for oil and gas companies to advance projects without first obtaining incidental take permits under the ESA.
- Negotiating on behalf of a Fortune 200 company the largest CWA settlement in Virginia history.
- Defending a $1.4 billion Kansas intermodal facility and its wetlands permit against a citizen suit challenge under the CWA and NEPA.
- Defending an international wireless telecommunications company against federal criminal investigations for alleged violations of the ESA, MBTA and Bald and Golden Eagle Protection Act.
- Defending a Maryland homebuilder against state enforcement for unpermitted disturbance of wetlands and floodplain.
- Authoring a pivotal amicus brief cited by the U.S. Supreme Court in the controversial wetlands regulation case, Rapanos v. United States.
- Assisting federal lawmakers draft legislation to streamline project development under NEPA and expedite the CWA permitting process.

Before joining Beveridge & Diamond, Parker clerked at the White House Council on Environmental Quality. He also is a professionally-trained wetlands ecologist and has years of experience identifying wetlands, obtaining jurisdictional determinations from the U.S. Army Corps of Engineers, surveying for endangered species and drafting NEPA documents. He holds a B.S. in Natural Resources (Geology and Forestry) from the University of the South, and he graduated magna cum laude from Vermont Law School.
Scott Moore is Vice President of Worldwide Marketing for Anadarko Petroleum Corporation. Anadarko is one of the largest independent oil and natural gas exploration and production companies in the world and a leading domestic producer. Mr. Moore has management responsibility for Anadarko’s U.S. and international marketing of natural gas, crude oil, natural gas liquids, and liquefied natural gas as well as commodity derivatives and market fundamentals. He has been employed in the natural gas industry for 28 years with experience in marketing, trading, logistics, commodity derivatives, economics, risk management, commercial litigation, project finance and engineering. Mr. Moore served as assistant chair of the coordinating subcommittee for the National Petroleum Council’s Prudent Development study for the U.S. Secretary of Energy. He currently serves on the board of directors of the Natural Gas Supply Association, Denver Metro Chamber of Commerce, and Junior Achievement – Rocky Mountain, Inc. He is a member and immediate past chairman of the board of directors of the Colorado Oil and Gas Association.

Mr. Moore holds a B.S. in Chemical Engineering with honors from the University of Colorado (1984) and an M.S. in Mineral Economics from the Colorado School of Mines (1988).
Robert (Bob) S. Mudge
Principal

Washington
Robert.Mudge@brattle.com
Voice: +1.202.955.5050

Education
University of Chicago Graduate School of Business, M.B.A.
Harvard College, B.A.

Practice Areas
Electric Power
Financial Institutions
Regulatory Finance & Accounting
Utility Regulatory Policy & Ratemaking
Valuation

Biography
Mr. Mudge is an expert in corporate and project finance matters in the energy industry. He has advised energy clients on issues relating to corporate restructuring, contract terminations or amendments, special capital needs, and acquisitions and divestitures. He also has experience in analyzing contractual, regulatory, financing, and tax matters, and projecting effects on cash flows, earnings, and customer rates.

Prior to joining The Brattle Group, Mr. Mudge was a principal at CRA International, where he focused on financial restructuring initiatives for electric utility clients and consulted on matters involving rate design, asset valuation, and project finance structuring and credit requirements. He has provided expert testimony in proceedings before federal and state courts, utility regulators in the U.S. and Canada, and state environmental regulators, as well as in connection with mediation and arbitration proceedings.
As a former investment and commercial banker at Rothschild, ABN AMRO, and Sanwa Bank, he played a central role in developing financeable contract structures for large public and private infrastructure projects, utility mergers and acquisitions, bankruptcy restructuring, and numerous power project financings. He has also served on the advisory board of a start-up venture focused on the acquisition, development, and operation of renewable fuel generation projects and has served as a guest expert for courses on project finance at Georgetown Law School.

**Representative Engagements**

*Power plant valuation*

For an offshore investor in U.S. power markets, provided periodic reviews of capacity, ancillary service, and energy market conditions in diverse regions of the United States to support acquisition and financing due diligence.

*Conducted solicitation process for Northern Illinois Municipal Power Agency*

Conducted a solicitation process in connection with a share in the Prairie State Energy Campus coal plant held by the City of Batavia Illinois. The City’s goal was to transfer the risks and benefits associated with their share to minimize risk exposure and maximize present value. Assessed credit characteristics and pricing features associated with multiple bids.

*Testimony regarding competitive bidding process for TransCanada Energy Ltd.*

Analyzed and submitted written testimony in connection with the Competitive Process for Critical Transmission Infrastructure in Alberta, Canada. Constructed an illustrative financial model to show unintended consequences of the original RFP design that could have led to high-cost bid selection. The Alberta Electric System Operator accepted this analysis and revised the RFP rules.

**Testimony**


Stuart Murray is a Managing Director in Citigroup’s Project & Infrastructure Finance group and has over 15 years experience in structured finance, with a focus on power, energy, and renewable energy transactions and clients. Recent transactions include the Topaz Solar Farms 550 MW solar project financing, Desert Sunlight 550 MW solar project financing, the Caithness Shepherds Flat 845 MW wind farm financing and the Terra-Gen Alta Wind II-V 570 MW wind farm financing. Prior to joining Citi’s Infrastructure & Energy Finance group, Stuart was a banker in Citi’s Power & Utilities group, managing a portfolio of North American power & utility clients. Prior to joining Citi, Stuart was the Director of Corporate Finance at The AES Corporation, the global independent power producer based in Arlington, Virginia. Before joining AES, Stuart was a Vice President in Leveraged Finance at JPMorgan Chase & Co., working out of JPMorgan’s New York and London offices where he executed non-investment-grade financings in the leveraged loan and high yield bond markets. Stuart received a BA from Hamilton College in Clinton, New York and an MBA from the Tuck School at Dartmouth College, where he was named an Edward Tuck Scholar.
Amy S. Mushahwar is an experienced data privacy, security, and management attorney with more than 15 years’ experience in the technology industry in both legal and engineering capacities. She defends companies in privacy-related matters, including privacy litigation, breach of security litigation, and advises on regulatory issues involving e-commerce, including social networking sites, the use of mobile platforms in banking transactions, and PCI compliance for payment cards. Amy also assists clients in the development of integrated digital platforms, particularly those using the Internet, cloud computing, emerging payments, database APIs, and mobile technology. Amy is an editor of the American Bar Association’s *Data Security Handbook*, and authored numerous publications that have appeared in titles like *Corporate Counsel* and *Information Security Magazine*, among other publications. Amy is a *magna cum laude* graduate of the Catholic University, Columbus School of Law. In her spare time, Amy is on the White Hat Gala Committee to benefit Children’s National Medical Center.
Ms. Nuschler is a long-time FERC attorney, with over 25 years in practice before the Federal Energy Regulatory Commission. She has been involved extensively with Order No. 1000 regional compliance efforts in the WestConnect region, and in the development of a single interregional compliance tariff common to all four transmission planning regions within the United States portion of the Western Interconnection: the California ISO, ColumbiaGrid, Northern Tier Transmission Group and WestConnect. Prior to forming her own law office, Ms. Nuschler was a partner at the law firm, Akin, Gump, Strauss, Hauer & Feld. She began her legal career as a trial attorney in the Federal Energy Regulatory Commission Office of the General Counsel. Ms. Nuschler received her law degree from Tulane University School of Law in New Orleans, Louisiana.
David Pumphrey is Co-Director and Senior Fellow in the Energy and National Security Program at the Center for Strategic and International Studies. His work focuses on energy policies and strategies that will address US security and climate change challenges, with a recent focus on the economic and geopolitical implications of unconventional oil and gas developments in the United States. Mr. Pumphrey spent more than 35 years working in the U.S. government on a wide range of domestic and international energy policy issues. In his last position he served Deputy Assistant Secretary for International Energy Cooperation at the Department of Energy. During his career Mr. Pumphrey led the development and implementation of energy policy initiatives with individual countries as well as multilateral energy organizations. He was responsible for policy engagement with numerous key energy producing and consuming countries including China, India, Canada, Mexico, Russia, Saudi Arabia and the European Union. Mr. Pumphrey represented the US Government in various committees of the International Energy Agency and the Energy Working Group of the Asia Pacific Economic Cooperation. Mr. Pumphrey also represented the Department of Energy in the negotiations of the energy related sections of the U.S-Canada Free Trade Agreement and the North American Free Trade Agreement. Mr. Pumphrey received a Bachelor’s Degree in Economics from Duke University and a Master’s Degree in Economics George Mason University. He speaks extensively on energy issues including testifying before Congress.
Janice Radel is an Energy Industry Analyst in the Office of Administrative Litigation at the Federal Energy Regulatory Commission. Ms. Radel received a Bachelor of Science degree in Economics from Frostburg State University in 2002. She has over a decade of experience working on gas pipeline rate cases at the Commission. Ms. Radel has been involved in negotiating and settling over 60 dockets involving natural gas and oil pipeline companies and electric utilities. She prepared and filed written testimony in 18 different hearing proceedings before the FERC and testified as an expert witness in ten formal hearings before an Administrative Law Judge. Ms. Radel’s area of natural gas ratemaking expertise is primarily in allocation and rate design. Specific areas testified to include demand determinants and commodity throughput, fuel tracker methodologies, pipelines at-risk conditions, pipeline capacity level, re-functionalization between gathering and production facilities, revenue credits, discount adjustments and other general rate design issues.
John A. Roscher Bio

John is currently the Director of Rates and Tariffs in TransCanada’s Houston office. John and his department are responsible for nine (9) FERC-jurisdictional pipelines, two (2) FERC-jurisdictional storage facilities, and four (4) existing and planned pipelines in Mexico under the jurisdiction of the CRE. John joined TransCanada in 2004 when TransCanada acquired a number of U.S. pipelines including Gas Transmission Northwest in Portland, OR, where John had been employed since 1995. John started his industry career as a FERC co-op student from Penn State in 1984. While at FERC, John spent the majority of his time working in the Allocation and Rate Design Branch under both Adrian Moorhead and Wayne Guest.

John holds a Master of Business Administration degree from Portland State University and a Bachelor of Science degree in Mineral Economics from Penn State. John is a Program Director with New Mexico State University’s Center for Public Utilities, and instructs a component of The Basics of Natural Gas Pipeline Ratemaking Course held annually in Albuquerque, NM.
Mr. Schleimer is currently Vice President of Governmental and Regulatory Affairs for Calpine, and has significant experience in the Mid-Atlantic, Northeast, and Western Markets. From 2010-present, Mr. Schleimer has managed Calpine’s presence in ISO, state regulatory, and legislative efforts on the East Coast. From 2000-2006, Mr. Schleimer managed Calpine’s presence in ISO, state regulatory and legislative efforts on the West Coast.

From 2006-2010, Mr. Schleimer worked in the Governmental Affairs group for Barclays Capital in New York where he was responsible for providing coverage of regulatory and legislative activities associated with energy and emissions market developments in the US.

Mr. Schleimer started his career at Pacific Gas and Electric Company, where he worked for 12 years in various roles related to wholesale market restructuring, including active participation in the design and formation of both the CAISO and CalPX, as well as development and implementation of PG&E’s initial long-term electricity procurement process.

Mr. Schleimer has published numerous articles and provided a significant amount of oral and written testimony before federal and state regulatory agencies, as well as the California state legislature. He received a masters degree in Economics from the University of California at Santa Cruz and a bachelors degree in Economics, with highest honors, also from the University of California at Santa Cruz.
Phil Sharp is president of Resources for the Future. Previously, he served in the US House of Representatives, on the faculty of Harvard University’s Kennedy School of Government, and as director of the university’s Institute of Politics. During his congressional tenure from 1975 to 1995, he was deeply involved in energy and environmental issues, playing a major role in the passage of the 1990 Clean Air Act Amendments and the Energy Policy Act of 1992.

Sharp currently serves on the board of directors of Duke Energy and the Energy Foundation, as well as on the External Advisory Board of the MIT Energy Initiative. He was a member of the Blue Ribbon Commission on America’s Nuclear Future and The National Academies’ Committee on America’s Climate Choices. In addition, he was congressional chair of the National Commission on Energy Policy and vice chair for policy of the National Petroleum Council’s *Prudent Development* study. Sharp has a PhD in government from Georgetown University.
David G. Shuford
Vice President – Policy and Business Evaluation, Alternative Energy Solutions

David G. Shuford is vice president – Policy and Business Evaluation, Alternative Energy Solutions.

Shuford joined Dominion in 2003 as vice president-Regulation from the Richmond law firm LeClair Ryan, where he was a partner on the Business Litigation and Administrative Law & Government Relations teams. He was named vice president-State Regulation in January 2006, and was named deputy general counsel and executive advisor-State & Federal Affairs in July 2009. He assumed his current position in July 2011.

Before joining LeClair Ryan in 1994, he was a partner at Mays & Valentine (now Troutman Sanders) in Richmond and served as law clerk to U.S. District Judge Robert R. Merhige Jr.

Shuford is a past chairman of the Virginia Bar Association’s Civil Litigation Section; a member of the board of directors of the Richmond Bar Association, and has been recognized by Virginia Business magazine as among Virginia’s “Legal Elite” in the fields of civil litigation and lobbying.

He was a member of the State Council of Higher Education for Virginia from 2000 to 2002, and currently serves on the boards of directors of St. Andrew’s School and The Commonwealth Club.

Born in Richmond, Shuford received his bachelor’s degree from the University of North Carolina at Chapel Hill and his J.D. from the University of Virginia School of Law.

September 2012
Adam Sieminski was sworn in on June 4, 2012, as the eighth administrator of the U.S. Energy Information Administration (EIA). EIA is responsible for collecting, analyzing, and disseminating independent and impartial energy information to promote sound policy-making, efficient markets, and public understanding of energy and its interaction with the economy and the environment. EIA also prepares analyses and special reports on topics of current interest.

From March 2012 to May 2012, while awaiting confirmation as EIA administrator, Mr. Sieminski served as senior director for energy and environment on the staff of the National Security Council. From 1998 until March 2012, he served as a senior energy analyst for Deutsche Bank, working with the Bank’s global research and trading units. Drawing on extensive industry, government, and academic sources, Mr. Sieminski forecasted energy market trends and wrote on a variety of topics involving energy economics, climate change, geopolitics, and commodity prices.

Mr. Sieminski has served in leadership positions for the International Association for Energy Economics and the affiliated U.S. Association for Energy Economics. He also has acted as a senior adviser to the Energy and National Security Program at the Center for Strategic and International Studies, a nonpartisan policy think tank in Washington. In 2006, Secretary of Energy Samuel Bodman appointed Mr. Sieminski as a member of the National Petroleum Council (NPC), an industry-government advisory group to the U.S. Secretary of Energy.

He is a member of the Washington, D.C., investment professional society, and holds the Chartered Financial Analyst (CFA) designation. He received both an undergraduate degree in civil engineering and a master’s degree in public administration from Cornell University.
Carrie Simpson manages operations policy and support for Southwest Power Pool’s (SPP) real-time markets. She provides SPP members, staff, and stakeholders with subject matter expertise on the Energy Imbalance Service (EIS) Market and the new Integrated Marketplace. In her four and a half years at SPP, Simpson has been heavily involved in the development of the Integrated Marketplace rules, system requirements and design, as well as management of the implementation. Currently, Simpson leads a group of engineers and analysts in Operations responsible for validating the Marketplace software, proposing market design enhancements, and integrating new participants into the SPP footprint. In a previous role, as a member of SPP’s Market Design team, Simpson served as the Market Working Group SPP Staff Secretary and facilitated the stakeholder process for Market protocol development and the corresponding FERC Tariff filings.

Simpson earned a Bachelor of Arts degree from Harvard University, where she was also a member of the women’s basketball team. Since joining the electricity industry in 2001, she has developed a diverse skillset. She started as a real-time trader at Enron and then worked for Sempra Energy Trading as an energy marketer focused on the Midwest and non-ISO/RTO trading regions. After a three year hiatus, during which she worked as a public high school social studies teacher and basketball coach, Simpson returned to the energy industry in 2006 at Empire District Electric Company (EDE) where she was responsible for developing revenue and demand forecasts. Also at EDE, Simpson worked in the supply management group managing the company’s resource and load portfolio on a day-ahead basis. Simpson joined SPP in 2009 as an operations trainer, combining her teaching and industry background, focused on developing market curriculum and training NERC standards to operators and SPP members before moving to the Market Design team and later to her current position.
Holly Rachel Smith is the Assistant General Counsel of the National Association of Regulatory Utility Commissioners (“NARUC”). She is responsible for NARUC’s legal relations on energy matters before the Federal Energy Regulatory Commission, the Department of Energy, the Environmental Protection Agency and the federal courts.

Previously, Ms. Smith managed a law firm serving Fortune 100 companies and State government agency clients with regard to energy and telecommunications law and policy. In this role, Ms. Smith assisted clients, including one of the nation’s largest private energy consumers, with development and promotion of policies that enable energy customers to reduce energy costs and maximize investments in renewable, Demand Side Management and Demand Response technologies. She represented clients in more than 50 rate case and energy policy proceedings before 23 State commissions. Ms. Smith also directed State and federal legislative strategies that dovetailed her regulatory advocacy.

Ms. Smith developed extensive experience in federal and State telecommunication and energy regulatory issues while working for six years in Washington, D.C. at several large law firms, including Hogan & Hartson LLP and Preston Gates Ellis & Rouvelas Meeds. Ms. Smith earned her Juris Doctorate from the University of Oregon School of Law in 1999. She also holds a Masters of Public Policy from the College of William and Mary, and a Bachelor of Arts (Economics) from the University of Colorado at Boulder. Ms. Smith currently chairs the State Commission Practice and Regulation Committee of the Energy Bar Association. She also recently served as a State government sector representative to the Membership Representative Committee of the North American Electric Reliability Corporation (NERC).
Sandri Snodgrass is a partner in the Denver office of Holland & Hart LLP. She helps natural resource developers, pipeline companies, traditional and renewable energy companies, and other clients successfully navigate the complex federal environmental review and permitting processes for a variety of proposed projects. Her extensive experience includes National Environmental Policy Act compliance and litigation; Endangered Species Act Section 7 consultation, Section 10 habitat conservation plans and incidental take permits, candidate conservation agreements, species listing issues, and litigation; development of avian and bat protection plans and bird and bat conservation strategies under the Migratory Bird Treaty Act; Bald and Golden Eagle Act permitting issues; Clean Water Act Section 404 permits; National Historic Preservation Act Section 106 consultation; right-of-way grants under the Federal Land Policy and Management Act and Mineral Leasing Act; voluntary conservation agreements; and certificates of public convenience and necessity under the Natural Gas Act. Ms. Snodgrass joined Holland & Hart in 1999 after graduating from Northwestern University School of Law.
Joan P. Sullivan

Education
JD, 1987, St. John’s University School of Law
BA, 1984, State University of New York at Oswego

Admissions to Practice
New York State Bar
United States District Court
Northern District of New York
Southern District of New York

Legal Practice
Ms. Sullivan is a member of the law firm of Harris Beach and practices with the Government Compliance and Investigations Practice Group. She also serves on the Energy and Telecommunications Team. Ms. Sullivan advises clients on matters related to corporate compliance, government investigations and federal and state actions. For example, Ms. Sullivan represented a major public utility under investigation by various regulators such as the New York State Public Service Commission, New York Office of Inspector General and New York Office of the Attorney General. Additionally, she has represented clients before a gubernatorial investigative committee on storm preparedness and conducts ethics training to energy clients on topics such as compliance with state ethics and lobbying laws.

Prior to joining Harris Beach, Ms. Sullivan served as associate counsel to the New York State Commission on Public Integrity (formerly the New York State Ethics Commission and New York Temporary State Commission on Lobbying). In this capacity, she authored formal and informal advisory opinions on a range of issues to executive branch public officials and employees interpreting New York State Public Officers Law. Ms. Sullivan also provided legal ethics training to state agency executive level employees, commissioners and other attorneys, and investigated the conduct of elected and appointed public officials and executive branch employees for possible violations of the ethics and integrity laws.

Prior to her service with the New York State Commission on Public Integrity, Ms. Sullivan served as an Assistant District Attorney in the Office of the New York County District Attorney, Robert Morgenthau, in the Special Prosecution Bureau, where she supervised criminal investigations of white collar criminals and presented cases to the grand jury. She also served in the Appeals Bureau, where she prepared briefs and presented oral arguments to the New York State Appellate Division, and the New York State Court of Appeals. Ms. Sullivan began her legal career with Mendes and Mount, a New York City law firm, where she focused on medical malpractice defense and accountants’ liability litigations on behalf of Lloyds’ of London, the international insurance syndicate.

Professional and Community Activities
Ms. Sullivan is a member of the New York State Bar Association and a member of the Hogan-Morgenthau Society. Ms. Sullivan is a former member of the Council on Governmental Ethics Laws. She has authored articles on ethics in government for the New York Law Journal and the New York State Bar Association Journal, and regularly appears as a member of continuing legal education panels.
Ms. Tatro is Corporate Counsel for Ameren Corporation, the parent company of Ameren Missouri, Ameren Illinois and related entities. Collectively, Ameren serves 2.4 million electricity and 900,000 natural gas retail customers. Ameren is headquartered in St. Louis, Missouri.

Ms. Tatro has worked for Ameren since 2005 and her legal practice is primarily before the Missouri Public Service Commission, the state agency responsible for the oversight of public utility services and rates. She frequently appears as hearing counsel on a variety of matters related to tariffs, integrated resource planning, compliance issues related to Missouri’s renewable energy standard, energy efficiency and rate cases. Recently, Ms. Tatro was lead counsel in a case that was successful in getting Commission approval of the largest energy efficiency program in the state of Missouri under the state’s new energy efficiency statute – the Missouri Energy Efficiency Investment Act.

She is a graduate of Washburn University in Topeka, Kansas with a degree in Business Administration and of the University of Kansas School of Law. Ms. Tatro has previously served as Assistant General Counsel for the Kansas Corporation Commission, focusing in electricity and natural gas, and has practiced law privately in Lawrence, Kansas.

Ms. Tatro resides in Webster Groves, Missouri with her husband and two daughters.
Jeffrey M. Taylor

Jeffrey M. Taylor is the Associate General Counsel in the Office of the Corporate Secretary at Pepco Holdings, Inc. (PHI). Headquartered in Washington, D.C., PHI is one of the largest energy delivery companies in the mid-Atlantic region, serving approximately 2 million electricity and natural gas customers in Delaware, the District of Columbia, Maryland and New Jersey. In this role, Mr. Taylor is responsible for all aspects of PHI’s securities and corporate law compliance, including: the preparation of SEC filings and other public disclosures; corporate governance matters; conducting debt and equity financings and loan transactions; executive compensation and employee benefits matters; compliance with New York Stock Exchange requirements; and general corporate law and day-to-day business matters. Mr. Taylor also serves as a counselor and legal advisor to a number of operating and business units within PHI, including the Board of Directors, Accounting, Treasury, Corporate Communications, Human Resources, Investor Relations and Shareholder Services.

Prior to joining PHI in 2011, Mr. Taylor devoted over 17 years of private practice to the representation public and private clients in a wide array of industries, in securities, mergers and acquisitions, corporate finance and capital raising, corporate governance, executive compensation and business and corporate law matters. Most recently, Mr. Taylor was a partner in the Public Companies and Capital Formation practice group in the Philadelphia office of Blank Rome LLP. Prior to joining Blank Rome, Mr. Taylor practiced with “Top 10” law firms in both Atlanta, Georgia and West Palm Beach, Florida.

Mr. Taylor is a member of the advisory board of the Middle Atlantic Chapter of the Society of Corporate Secretaries and Governance Professionals, and served as the chapter’s President from May 2010 to May 2011. Mr. Taylor was also Vice/Co-Chair of the Securities Regulation Committee of the Business Law Section of the Philadelphia Bar Association from May 2009 to July 2011. Mr. Taylor is actively committed to the legal representation of those in need, and has been the recipient of several awards for his significant and longstanding pro bono legal service. Mr. Taylor is a member of the American Bar Association and the Energy Bar Association, and is licensed to practice in the District of Columbia, Florida, Georgia and Pennsylvania.

Mr. Taylor received his Bachelor of Arts degree in Political Science from Northwestern University in Evanston, Illinois, and earned his Juris Doctor, with honors, from the University of Florida College of Law, in Gainesville, Florida.
Matthew L. Wald is a reporter in the Washington bureau of The New York Times, where he writes about energy and the environment, and transportation safety. Reporting for The Times since 1976, Mr. Wald has covered some of the most interesting issues facing the energy industry to date. He has written extensively about nuclear power and the manufacture of nuclear weapons materials, and has been particularly interested in civilian nuclear power since the Three Mile Island accident. In the 1980's and 1990's he wrote extensively about the production of materials for nuclear weapons, and the resulting environmental problems. He has also written about oil refining, alternative fuels including biofuels, oil and natural gas production, oil spills including the Exxon Valdez and the oil fires set by the Iraqis in Kuwait at the end of the first gulf war. Mr. Wald also covers cutting edge technologies such as energy storage technologies, smart grid and transmission, wind energy and solar energy. Come hear Mr. Wald’s perspective on how energy reporting contributes to and helps shape public opinion.
Noman L. Williams is vice president, transmission policy for Sunflower Electric Power Corporation. Sunflower operates the generation and transmission systems of Sunflower and Mid-Kansas Electric Company, LLC, serving directly or indirectly approximately 400,000 rural and small municipal consumers in 55 counties in central and western Kansas. Williams is chair of the Southwest Power Pool, Inc., Transmission Working Group; Vice Chair of the SPP Market Operations Policy Committee; on the SPP Members Committee; and is an SPP representative on the NERC Planning Committee. Williams has been active in transmission policy matters for many years, speaking on behalf of rural transmission-owning utilities facing the challenges of interconnecting and integrating the nation’s vast variable energy resources that often locate on such systems. He joined Sunflower as a transmission engineer in 1988 and has served in various engineering, management, and executive positions in the areas of transmission planning, engineering, system operations, transmission operations and maintenance. In 1981, Noman graduated from Washington State University, earning a bachelor of science degree in electrical engineering and a minor in economics. In 2004, he completed a master's degree in business administration from Colorado State University.
Jeff Wright joined the Commission in 1979 and served as project manager on many applications to site natural gas facilities. Currently, he is the Director of the Office of Energy Projects at the Federal Energy Regulatory Commission and has been a member of the Office of Energy Projects since its inception in 2000. This Office is responsible for the processing of applications for the construction and operation of natural gas pipelines and storage facilities; the siting and safety of liquefied natural gas terminals; and the licensing, safety, and administration of non-federal hydroelectric projects. Mr. Wright received a B.A. in Economics from the College of William and Mary and a M.B.A. from the University of Maryland.
Thomas E. Wright was appointed to the Kansas Corporation Commission by Governor Kathleen Sebelius on May 23, 2007. Wright was appointed for a second term by Governor Mark Parkinson on January 8, 2010.

Wright served as Chair of the Governor's Gaming Committee and of the Consolidation Commission of Topeka-Shawnee County in 2005. He was Chair of the Washburn Board of Regents from 1986 to 1988, beginning as a Board Member in 1982. Throughout his career, he has taught classes at Washburn University Law School and in the NITA program at Loyola Law School in Chicago. He is a member of Regulatory Utility Commissioners (NARUC) Committee on International Relations and Committee on Electricity.

He additionally serves as the Kansas delegate to the Eastern Interconnection States Planning Council and the Southwest Power Pool.

Wright was elected President of the Kansas Bar Association (KBA) beginning June of 2008. He was a member of the Board of Governors for the KBA from 1998 to 2005. He served on the KBA Committee on Prevention of Legal Malpractice and chaired the Legislative Committee. He was on the Civil Justice Reform Advisory Group of the Federal Court from 1992 to 1998 and the Federal Bench/Bar Committee from 1990 to 1998. Wright also served on the Kansas Supreme Court Nominating Committee from 1995 to 2003.

Wright, earned a degree in mathematics from Wichita State University in 1961. He graduated from Washburn University School of Law in 1964 and earned a Bachelor of Arts degree in German from Washburn University in 1979.

Wright and his wife, Carole, have two grown children and five grandchildren. They reside in Topeka.

Commissioner Wright's term will expire March 15, 2014.