U.S. House of Representatives
"What's Cooking with Gas: the Role of Natural Gas in Energy Independence and Global Warming Solutions"

July 30, 2008

Testimony of David J. Manning,
Executive Vice President, U.S. External Affairs, National Grid

Good morning. My name is David J. Manning and I am the Executive Vice President, U.S. External Affairs, at National Grid.

I wish to thank Chairman Markey and ranking member Sensenbrenner for conducting this timely and important inquiry into the importance of natural gas in today's U.S. energy mix.

In particular, I appreciate Chairman Markey's longtime leadership role in the energy sphere, both nationally and regionally. Chairman Markey deserves particular credit for the building, lighting and appliance efficiency improvements and the vehicle fuel economy (CAFE) standards included in the Energy Independence and Security Act of 2007.

I also wish to acknowledge the Chairman's assistance with the development of the Iroquois Natural Gas Pipeline which introduced western Canadian natural gas to the Northeast. That project significantly lowered the cost of gas by bridging the environmentally sensitive Northeast to a vast supply of the preferred carbon fuel.

National Grid

National Grid is one of the largest investor-owned utilities in the world—with a market capitalization of $38 billion. It is known for its expertise in transmission and distribution of electricity and natural gas, particularly in complex urban environments.

In the U.S., National Grid is the second largest natural gas and electric utility, serving approximately 15 million people in Massachusetts, New York, Rhode Island and New Hampshire. Grid's U.S. employment is 17,000 and its new U.S. headquarters—a cutting edge, green-certified building—is under construction in Waltham, Massachusetts.

National Grid's core business includes:

- National Grid has an extensive electric transmission business—with 9,000 miles of transmission stretching from the suburbs of Boston west to Lake Erie and from the Canadian border south to Rhode Island Sound.
- National Grid has large ownership interests in three natural gas pipelines serving the Northeast—the Iroquois, Millennium, and proposed Islander East projects.
- National Grid is the largest U.S. importer of liquefied natural gas (LNG). LNG imports are vital during times of peak demand, such as cold winter days. Most of the liquefied natural gas coming into the Northeast is from Trinidad, provided through the Suez terminal in the Boston Harbor.
- National Grid delivers to firm customers and the generation market over half a trillion cubic feet of natural gas per year, over 3% of U.S. gas supply.
- National Grid has spent in excess of $1.5 billion on energy efficiency programs in New England going back thirty years. Those programs have now been introduced to the state of New York in the residential and commercial sectors.

National Grid is committed to environmental excellence. We are 37% of the way to our company-wide target of an 80% reduction of our greenhouse gas emissions by 2050 under our "Power of Action" program. In the U.S., we have worked closely with governments, industry, environmental groups, and other stakeholders in Massachusetts, New York, Rhode Island, and New Hampshire on the development of the Northeast Regional Greenhouse Gas Initiative (RGGI), state renewable portfolio standards, and state efficiency and conservation programs to meet the economic and environmental challenges facing our region.

We emphasize that National Grid is a natural gas distributor. The commodity cost makes up the majority of the bill that a Grid customer receives. It also represents the largest component of the electricity cost borne by the consumer from gas generated power. The price of natural gas is a North American price, but is impacted by the current world price of oil, as many large gas consumers have been able to switch to natural gas to avoid high oil prices. Therefore, while the price of natural gas is not linked to the world oil price, fuel switching does put pressure on natural gas as the oil price increases.

While National Grid appears with expertise in electric generation, transmission and distribution, as well as natural gas transmission and distribution, my own background may be of interest. Early in my career, I served as Deputy Minister for Energy for the Province of Alberta, Canada, a major source of natural gas for the U.S. I was President of the Canadian Association of Petroleum Producers, a trade group representing most natural gas producers exporting to the U.S. I was also a delegate to the Kyoto conference on climate change in 1997, having worked continuously on climate change abatement strategies for the past 15 years.

Later, I co-chaired the working committee on natural gas demand for the National Petroleum Council's 2003 study: "Balancing Natural Gas Policy – Fueling the Demands of a Growing Economy" (www.npc.org).

Natural Gas

The efficiency, cleanliness and reliability of natural gas make it increasingly popular:

- According to the U.S. Department of Energy (DOE), natural gas consumption will increase by 11% by 2020—even though businesses and consumers are making great strides in efficiency. Indeed, per capita residential and commercial natural gas consumption is declining because of efficiency gains. At current market pricing, efficiency gains have reached 5% according to the American Gas Association, even as the industry grows due to the efficiency, environmental benefits and relative cost of natural gas as a fuel.
- Natural gas supplies almost one fourth of U.S. energy needs, with 20 trillion cubic feet (Tcf) consumed in 2006.
- U.S. natural gas consumption is split four ways—33% industrial, 31% electric power generation, 22% residential and 14% commercial. Compared with the U.S. as a whole, Massachusetts and New York—Grid's two biggest markets—have lower shares for industrial, slightly higher shares for electric power, and substantially higher shares for residential and commercial.
- U.S. natural gas supply is split three ways—81% U.S., 16% Canadian, and 3% LNG (2006). The U.S. has an estimated 80 years of reserves at current consumption levels, though access to this supply is a challenge. Promising new areas in the U.S. include the Barnett shale formation in Texas and, closer to home, the Marcellus shale field stretching from New York to West Virginia. Canadian exports are declining long-term due primarily to increased demand at home and a maturing of the basin. New sources of natural gas are harder to find and the industrial sector continues to grow. Therefore, many expect LNG's market share to increase, although current world demand is driving a higher price than the U.S. domestic price.

- Natural gas delivery is through 300,000 miles of transmission lines which in turn feed 1.9 million miles of local utility distribution pipes. Most experts agree that additional pipeline infrastructure is necessary to ensure reliability and meet growing demand. In the Northeast context, a combination of pipelines serving the U.S. oil patch, western Canada and eastern Canada provide the bulk of our supply. New pipeline projects giving us access to Rocky Mountain and nearby Marcellus Shale production will be helpful.
- Natural gas is the cleanest fossil fuel. To compare, carbon dioxide emissions for a billion Btu of energy are 117,000 pounds for natural gas—compared with 164,000 pounds for oil and 208,000 pounds for coal (EIA).

We caution that we do not see the U.S. achieving "energy independence"—if that means complete independence from any foreign source of energy—but we do consider it possible—and imperative—for the U.S. to move towards energy security.

Natural Gas and Electrical Generation

In 1980, natural gas fueled less than 1% of the power generation fleet in New England. By 2006, natural gas use for power generation represented over 40% of New England supply. The availability of natural gas following completion of the Iroquois pipeline, the environmental benefits of natural gas, the relative efficiency of combined cycle power generation and the relatively low capital cost of gas-fired plants drove a new build of New England generators. Between 1998 and 2003, 10,000 megawatts were added.

In New York, in 2006, natural gas represented 12% of the power generation fleet, while 24% run on either gas or oil, or a combination thereof. 23% of the New Jersey generation uses natural gas.

As we all recognize, natural gas has increasingly become the "fuel of choice" for new power plants, with this trend accelerating with existing state and regional and potential nationwide carbon caps. The carbon footprint of a combined cycle natural gas-fired plant is significantly lower than one powered by coal or oil. It also is easier to site, emits no mercury, and has much lower emission numbers in NO_X and SO_X.

The good news is that these new state-of-the-art gas-fired plants are clean and efficient and they can be located in urban and suburban areas adjacent to the electric "load." Combined cycle or co-generation plans have dramatically improved the heat efficiency and reduced emissions per unit of power purchased.

In the near-term, the U.S. will need more of these facilities if we are to meet our environmental goals and provide a stable supply of electricity to meet growing demand. In our region as well as in many other parts of the country, new coal-fired plants are almost impossible to site.

New nuclear plants, while contemplated, have a high capital cost and are complicated by unresolved issues concerning nuclear waste. However, we do expect a new merchant nuclear plant will be built in Canada in the near future. National Grid has entered into a joint venture to build transmission connecting that plant, as well as renewable power, to bring carbon-free energy to Boston.

New renewable power enjoys great public support generally, but continues to face opposition in siting. National Grid believes transmission will be more critical to ensure renewable power gets developed where practical and is linked to major power loads. Expertise in “intermittent power” and the ability to site transmission will be key drivers in the development of renewable energy, particularly in complex urban environments.

Notwithstanding the advantage of natural gas for power generation, many in the industrial sector argue that the heavy use of natural gas for power plants imposes price pressure on natural gas—potentially harming all “direct users” of natural gas, especially the industrial sector which faces vigorous foreign competition.

We, of course, are aware of the contentious debate in Congress over energy in general and the concern over natural gas prices in particular.

Our position is that the U.S. needs a balanced approach to energy overall—all options must be on the table. Clearly, advanced energy efficiency poses the most available and cost-effective solution to current energy pressures. The cheapest power plant is the one that never gets built. We must work together to reduce consumption and increase production in a cost-effective manner that moves us towards energy security and addresses global warming.

Natural gas is the preferred fuel for our current technology electric supply for a number of reasons:

- It provides multiple high efficiency technology options in baseload plant generation.
- Natural gas can fuel modern “combined heat and power” generation ”inside the fence”, dramatically improving energy efficiency and lowering costs for commercial operators.

- Natural gas can power high efficiency appliances in the residential market (high efficiency furnaces achieve 92% efficiency) and new state-of-the art micro combined heat and power technologies for the home such as the Honda Free Watt.

Therefore, the U.S. should focus its attention on improved energy efficiency, including the power sector. Older, inefficient power stations utilizing 1950's technology must be repowered or replaced over time to conserve this non-renewable resource.

Natural Gas and Renewable Energy Generation

The massive development of renewable generation, including wind, solar, geothermal, traditional hydropower and tidal power, and the associated transmission and related infrastructure is imperative from a national security, economic and environmental perspective.

Because some forms of renewable generation are intermittent—i.e., the wind does not always blow—a combination of gas-fired and renewable generation is necessary for reliability.

To illustrate, National Grid has begun working with Bangor Hydro Electric Company on an electric transmission project facilitating the development of Maine and eastern Canadian renewable and low-carbon generation to serve the greater Boston and Connecticut markets and help meet New England renewable portfolio standards and the Regional Greenhouse Gas Initiative (RGGI). Importantly, the new generation and transmission from the project will increase reliability because much of New England's electric generation is dependent on Sable Island natural gas. In short, New England consumers benefit from the combination of gas-fired and renewable generation.

As I have emphasized throughout, there is no single solution for our nation's energy challenges, and we need a variety of strategies to meet our economic, environmental and security needs.

Natural Gas Vehicles

National Grid has a long commitment to the development of natural gas vehicles (NGVs). Vehicles fueled with natural gas can reduce carbon dioxide emissions by 85% to 90% and particulate and toxic emissions by 99%.

NGVs are most practical in fleets, such as busses, delivery and utility trucks, and corporate and government fleets, because fleets are centrally fueled and maintained and often have a given route or range of travel.

In Massachusetts, National Grid has led the way. We have helped convert about one-third of the Massachusetts Bay Transportation Authority (MBTA) bus fleet to natural gas.

In New York, National Grid has worked with transit agencies such as Long Island Bus and the MTA. Long Island Bus has converted its entire fleet of nearly 400 busses to natural gas.

We have also been working with school districts to improve student health and lower emissions from the school bus fleet. National Grid partnered with the Long Beach City School District, which serves 3,800 students, and with federal and state agencies to help the school district replace its 38 aging and less efficient diesel bus fleet with a combination of 20 new clean-fueled (CNG) busses and 18 diesel-fueled busses retrofitted with emission-reducing technology. Over their life span, these vehicles will displace 4.8 million pounds of pollutants and save 505,000 gallons of petroleum.

Energy Efficiency

National Grid, in partnership with other leading energy companies, asked McKinsey & Co. to look at energy efficiency. This landmark study, "Reducing U.S. Greenhouse Gases: How Much at What Cost?", found that the U.S. can make substantial emissions reductions by 2030 without damaging the economy with the help of energy efficiency. A good chart summarizing the study is attached, and the report itself is available via: www.mckinsey.com/mgi/publications/Curbing_Global_Energy/executive_summary.asp.

Studies show that efficiency programs average approximately 3 cents per kilowatt-hour (kWh)—as opposed to 12 cents per kWh for new generation. In short, the most cost-effective power plant is the one that isn't built.

Utilities like National Grid are uniquely positioned to continue to create and administer customized energy efficiency plans to meet the individual needs of their customers and service territories. This is, in large part, because we enjoy an ongoing relationship and regular communications with our customers.

Our efficiency programs are saving customers in New England over $250 million annually, after an expenditure of $1.5 billion on efficiency technologies.

- We have budgeted $130 million per year in electric and gas energy efficiency programs—an investment expected to double in 3-5 years.
- More than 4 million National Grid customer projects have been completed in New England to date, saving more than $3.6 billion in energy costs. This effort includes converting almost all of the public schools in the City of Boston from oil to natural gas.
- For small businesses, electric and gas efficiency programs include rebates; incentives and financial assistance for installing or purchasing high-efficiency equipment; onsite and online energy audits; and efficiency training and education.
- On the residential side, we're targeting a significant number of Northeast oil heating customers to convert to natural gas with rebates and incentives. When a residential customer replaces a dated oil heat appliance with a modern high efficiency gas furnace or boiler, carbon dioxide and other emissions can be reduced up to 40%, with savings of up to 40% in annual fuel bills.
- In 2007, we delivered energy efficiency to (1) 41,000 gas participants, saving 4.6 million thermal units and avoiding 27,000 tons of carbon dioxide; and (2) 1.8 million electric participants, saving 387,000 megawatts and avoiding 218,000 tons of carbon dioxide. Total carbon reductions equate to 48,068 cars not driven for one year.

The challenge for our industry is to connect a more informed consuming public through "smart meters" to a "smart grid", fed by a variety of energy sources including renewables and high efficiency carbon generation. As we invest heavily to improve our aging infrastructure, we must facilitate best available technologies and all forms of energy efficiency.

We are also pursuing "decoupling" which removes disincentives to energy efficiency in our sector and opens the door to incentives for reduced energy consumption.

Optimal Role for Natural Gas in Increasing Energy Security and Addressing Global Warming

Natural gas is essential to moving our nation towards energy security and addressing global warming. At the same time, natural gas is not the "silver bullet." The U.S. needs a balanced approach that includes a combination of energy efficiency and generation from renewable, clean coal, nuclear and natural gas-fired generation to meet its economic, environmental and national security needs.

This approach includes a commitment to (first) carbon reduction through changed behaviors and new technology; and (second) enhanced energy infrastructure. We must work with policy makers to break down the barriers to these important initiatives.

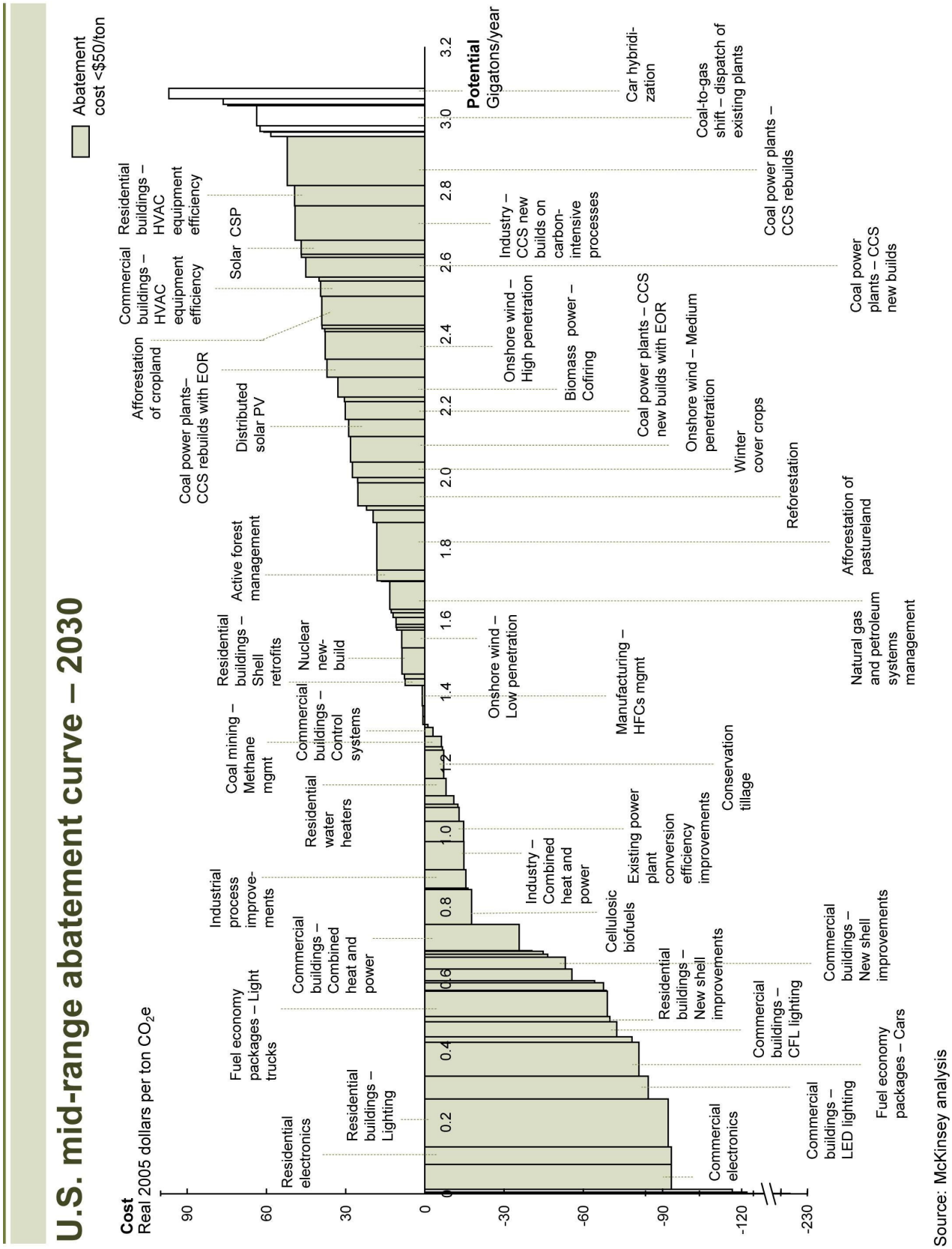
Continued uncertainty over nationwide carbon cap-and-trade legislation freezes investment in clean energy technologies. That's one reason National Grid supported the Boxer-Lieberman-Warner bill that the Senate considered earlier this year.

Similarly, continued uncertainty over infrastructure siting discourages investment needed to ensure economic growth, enhance system reliability, and address global warming. For example, because renewable generation typically is far from the load, new electric transmission is necessary. Unfortunately, even an environmentally sensitive transmission project can get bogged down in lengthy legal disputes. The same holds true with interstate natural gas pipelines that provide clean energy to industrial, commercial and residential consumers and to clean gas-fired power plants.

Conclusion

We should all keep in mind that energy is a challenge, but also an opportunity, for the innovators in our economy. Many of these innovators are based in the National Grid service territory, which includes numerous leading research institutions and start-up companies focused on energy and environmental solutions.

National Grid looks forward to working with Congress on energy and environmental issues. Once again, I appreciate the opportunity to appear before your Committee, and look forward to answering your questions. Thank you.



Source: McKinsey analysis

David J. Manning, Q.C.

Current Title:
Executive Vice President, U.S. External Affairs

Date Joined: April 1999 (KeySpan)

Responsible for:
David leads National Grid's U.S. External Team, with responsibility for federal relations and issues. He is also central to the company's U.S. and U.K. teams, handling all issues and functions external to the company from climate change to communications.

Experience:
After several years in private law practice in Canada (awarded a Queen's Council designation), from 1988 to 1993 David was resident in New York, as Senior International Trade Counsel for the government of Alberta focusing on International trade and energy issues. Following an intense effort to achieve the passage of the Canada - U.S. trade agreement, David focused on efforts to significantly increase the flow of natural gas from resource rich Alberta to the underserved U.S. Northeast.

Mr. Manning returned to Canada to be Deputy Minister of Energy for the Province of Alberta, Canada, the largest energy producing region in North America. He held this post from 1993 to 1995, a critical period in the development of Alberta's Oil Sands these deposits are the largest and most strategic resource available to the U.S. and now the focus of significant environmental issues and initiatives.

Mr. Manning then was selected to lead the Canadian Association of Petroleum Producers, a national trade association representing all significant oil and gas producers nationally and internationally. CAPP moved early in climate change response, initiating the first voluntary action recognition program in Canada in the early 90's. Mr. Manning was a delegate to the Kyoto conference on climate change in that capacity, in 1997.

More recently, Mr. Manning has served as Executive Vice President and Chief Environmental Officer of KeySpan, New York State's largest power generator and one of the largest gas distributors in the U.S. In that capacity, he was central to a "system repowering" of the Ravenswood power station (New York's largest) with the addition of combined-cycle capacity. Following KeySpan's acquisition by National Grid, Mr. Manning joins as EVP a company which has already achieved a 37% reduction towards its Kyoto targets and has mandated an 80% reduction in CO_2 emissions by 2050.

Mr. Manning remains active in the communities served by National Grid, including: Past Chair, Brooklyn Chamber of Commerce, and sits on the Boards of the New York City Police Foundation, Audubon New York, Long Island Housing Partnership, Citizen Budget Commission, and the New York League of Conservation Voters.

Education:
David was educated in law and has Bachelor of Arts and Bachelor of Laws degrees from the University of Alberta. He did post-graduate study in international law at Australian National University as a Rotary Foundation Fellow. He is a member of the Law Society of Alberta, the Canadian Bar Association, and is eligible for admission to the New York Bar.

Personal:
Mr. Manning is married to Jacqueline Siben, a lawyer in New York, and they have four daughters.

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Grant Certification June 30, 2008

National Grid and I have not received any federal grant or contract during Fiscal Years 2006, 2007 or 2008.

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National Grid