

**MINUTES OF THE
NEW YORK STATE ENERGY PLANNING BOARD MEETING
HELD ON APRIL 2, 2012**

Pursuant to notice dated March 21, 2012, the fourth meeting of the New York State Energy Planning Board (“Board”) was convened on April 2, 2012 at 1:00 p.m. at the Albany office of the New York State Energy Research and Development Authority, 17 Columbia Circle, Albany, New York. The meeting was videotaped. A copy of the meeting Notice is annexed as Exhibit A.

The following Energy Planning Board Members or their designees were present:

- Francis J. Murray, Jr., President and CEO of the New York State Energy Research and Development Authority and chair of the Board
- Garry Brown, Chairman of the NYS Public Service Commission
- Thomas Coakley
- Joe Martens, Commissioner of the NYS Department of Environmental Conservation
- James Winebrake
- Kenneth Adams, Chairman and CEO of Empire State Development (Joe Chan, designee)
- Darrel Aubertine, Commissioner of the NYS Department of Agriculture & Markets (Geoff Palmer, designee)
- Assemblyman Kevin Cahill (Conor Bambrick, designee)
- Joan McDonald, Commissioner of the NYS Department of Transportation (Stanley Gee, designee)
- Cesar Perales, Secretary of State (George Stafford, designee)
- Dr. Nirav Shah, Commissioner of the NYS Department of Health (Robert Chinery, designee)
- James Sherry, Director of the NYS Division of Homeland Security and Emergency Services (Brian Wright, designee)

- Stephen Whitley, President and CEO of the New York Independent System Operator (Patrick Curran, designee)

Also present were John Williams, Director of NYSERDA's Energy Analysis program and director of the Board's Working Group; Hal Brodie, NYSERDA General Counsel and Counsel to the Board; and David Munro, NYSERDA Deputy Counsel and secretary to the Board. In addition, the meeting was attended by staff from various entities on the Board as well as members of the public.

Chairman Murray called the meeting to order. He advised that the meeting was being videotaped, and the video will be placed on the Energy Planning Board website.

Mr. Murray stated that there were several items on the meeting agenda: (1) reviewing the minutes from the Board's third meeting on February 27, 2012; (2) several presentations from various agency staff; and (3) scheduling dates for Board meetings between now and September 1, 2012, when the Board must release a draft Energy Plan.

Minutes from February 2012 Meeting

Mr. Murray stated that a copy of the draft Minutes of the February 27, 2012 meeting was provided to Board members prior to the meeting. Whereafter, upon motion duly made and seconded, and by unanimous voice vote, the Minutes of the February 27, 2012 meeting were approved.

Mr. Murray stated that the presentations by agency staff would address modeling of the electricity system, natural gas market dynamics, and energy issues in the transportation sector. He noted that copies of the presentations were included in folders provided to Board members, and the presentations will also be posted on the State Energy Planning website, at

<http://www.nysenergyplan.com/boardmeetings.html>

These Minutes provide a high-level summary of each of the presentations.

Mr. Murray said the first presentation would be by NYSERDA program manager Karl Michael, who will present a status report on electricity system modeling. The modeling of the electric system is a critical component of the Plan. This analysis affects many other aspects of the Plan and also serves to highlight some of the challenging public policy issues that the Board will be considering. Mr. Murray stated that it would be productive and timely for Mr. Michael to provide the Board, in effect, with a primer on how staff go about modeling the electric system. Mr. Michael would also discuss some of the variables that the Board might wish to consider as it moves forward with its analysis. Mr. Murray advised that after Mr. Michael's presentation, Pat Curran of the New York Independent System Operator (NYISO) would provide the Board with a short explanation of the NYISO planning process, which generates important data that is a critical input into modeling work.

Electrical System Modeling

Mr. Michael discussed aspects of the Integrated Planning Model as designed and utilized by ICF International, the contractor that has been retained to perform electric system modeling for the Energy Planning Board. Mr. Michael explained that “inputs” to a model include many factors, such as: load forecasts for energy and peak; local reliability requirements; reserve margin data; fuel prices; existing generation units and known additions/retirements; transmission limits; emission caps and regulations; Renewable Portfolio Standard (RPS) requirements; and the cost and performance of potential new units. Model “outputs” include the following: generation mix; new capacity builds; facility retirements; emissions; wholesale energy and capacity prices; and CO2 emission allowance prices.

He then stated that the Working Group would benefit from guidance from Board members as to what assumptions should be modified in running various models. He then described two reference cases that the Working Group created, assessing the effects depending on whether or not the license for the Indian Point nuclear facility is renewed. The presented reference cases demonstrated the relative changes to the generation mix as well as the capacity additions that would likely be experienced in either reference case scenario for the current year, 2020 and 2030. Mr. Michael noted that the model, which optimizes decisions based on economic assumptions, showed that New York would rely much more heavily on natural gas-fueled generation in an IP-closure scenario.

Mr. Michael advised that in just a few weeks, the NYISO will be providing updated data via issuance of its annual Gold Book, which presents up-to-date transmission and generation data and load forecasts for the next ten-year period.

In response to a question from Garry Brown, Mr. Michael stated that the model did not assume that New York would meet either its RPS goal of “30 by 15” (increasing the amount of electricity delivered to New York consumers that is generated by renewable resources to 30 percent by 2015) or Energy Efficiency Portfolio Standard (EEPS) goal of “15 by 15” (achieving a reduction in statewide electricity usage by 15% by 2015), given the desire to maintain consistency with the assumptions used by the NYISO in their Comprehensive System Planning processes. Responding to a question from Stanley Gee, Mr. Michael explained that a model could make assumptions about population changes, economic growth, etc., thereby enabling the Board to better understand future energy needs in light of such changes. Similarly, in response to a question from Conor Bambrick, Mr. Michael stated that a model could be run based on a projection that Indian Point was not relicensed, but operated for a period of time after its current license expires.

Mr. Murray stated that while the number of variables for running models is almost unlimited, modeling is expensive, and the Board does not have unlimited funds; hence, it is incumbent on the Board to give some direction as to what modeling is most valuable.

Mr. Curran then gave a brief overview of the NYISO planning process, which generates important data for use in modeling work done by the Working Group.

First, Mr. Curran explained NYISO's Comprehensive System Planning Process (CSPP). Objectives include the following: (1) ensuring that the NY Control Area is in compliance with all mandatory national, regional and state reliability standards and criteria; and (2) ensuring that upgrades or other actions necessary to meet long-term reliability needs or potential needs are identified in a timely manner. Major components include the following:

- ATR – Area Transmission Review – annual Northeast Power Coordinating Council required assessment performed by NYISO, to demonstrate conformance with all applicable standards and criteria.
- LTP – Local Transmission Planning – biennial reviews, with annual updates, by Transmission Owners/utilities of the reliability needs of their own systems.
- RNA – Resource Needs Assessment – biennial assessment of system resource needs, with 5 and 10 year horizons, using ATR, LTP, and other inputs such as forecasts for load, plant construction and retirement, fuel supply and costs, energy efficiency and demand reduction targets, to arrive at a base case, against which multiple sensitivities are run.
- If the RNA identifies a resource need, NYISO requests a market based solution and simultaneously requests an alternative regulated solution.
- CRP – Comprehensive Reliability Plan – NYISO evaluates proposed solutions to the identified reliability need and uses this as the basis for the CRP.
- In combination, the ATR and CRP should demonstrate that all system reliability standards and criteria can be maintained and identify any system reinforcements or additions necessary to maintain reliability.

Mr. Curran also described an ongoing Congestion Assessment and Resource Integration Study (CARIS). This is an economic study that will (1) assess historic and projected congestion on the grid, and (2) estimate the potential economic benefits of relieving that congestion by evaluation and approval of economic transmission projects for regulated cost recovery under the NYISO tariff. Phase I of CARIS is designed to identify 10 years of projected impacts of congestion, applying cost/benefit analysis to assess the value of various options to relieve congestion. Phase II of CARIS will apply Phase I findings to specific development proposals seeking to alleviate identified congestion.

Finally, Mr. Curran stated that NYISO is engaged in System Reliability Impact Studies/ System Impact Studies. These consist of individual studies of every proposed transmission or generation project seeking to connect to the grid, to assess its potential impacts on system reliability.

Mr. Murray inquired as to the interactions of NYISO and Energy Planning Board planning processes, and how these activities could work together. NYISO legal counsel Carl Patka responded to the inquiry by noting that the Federal Energy Regulatory Commission has recently required that bulk system operators, such as the NYISO, must take account of public policy planning processes as an activity of overall system planning processes. FERC has stated that system operators can take account of state-based energy planning and policy activities to satisfy the FERC requirements. Mr. Patka explained that policies developed by the Energy Planning Board will be reflected in the NYISO's reliability and economic planning processes;

this interaction also supports, in turn, the use and reliance on NYISO data inputs in future deliberations of the Energy Planning Board.

Natural Gas Market Dynamics

Mr. Murray stated that natural gas has been in the news a lot lately, and not just because of issues regarding hydrofracking. He noted that the price and availability of natural gas affects so many aspects of energy, not simply the demand for electricity, but also investments in energy efficiency, renewable energy, new technology, and environmental quality. Mr. Murray stated that NYSERDA program manager Charlie Wesley would provide the Board with a briefing on natural gas markets.

Mr. Wesley explained that his presentation would cover the following:

- Natural Gas Resource Basins;
- Dry Gas and Natural Gas Liquids (NGLs);
- Prices: including the U.S. Energy Information Administration (EIA) Average Annual Outlook; the “Henry Hub Spot Price;” “NY Citygate Prices;” and Winter Demand Price Impacts;
- Northeast Pipeline Expansion Projects.

Mr. Wesley presented a slide showing a map produced by the EIA illustrating that shale formations are widely scattered throughout the country. He stressed that the Marcellus is only one of many shale formations, and more are being discovered as exploration activity continues.

Mr. Wesley also showed a slide showing the various types of fuel that come from a typical natural gas well. These include the following:

- Dry Gas – Methane - This is the fuel that is referred to as natural gas. It is what is used by the residential and other economic sectors for heat and power generation.
- Wet Gas – Ethane, Propane, Butane, Natural Gasoline, others. These “wet” fuels must be separated from the “dry” methane before commercial distribution.
 - Ethane is used by petrochemical industry to make plastics.
 - Propane is an important residential heating fuel used by over one million NY consumers.
 - Butane and Natural Gasoline are blended into motor gasoline.

Mr. Wesley’s next slide showed four years of monthly natural gas production in the U.S. from all types of geologic formations. The most recent month, January 2012, is a historic high-69 billion cubic feet per day.

- By 2009, falling U.S. natural gas production was causing the supply industry to consider construction of LNG natural gas import terminals to meet demand.
- By 2011, rising natural gas production is causing industry to consider turning the import terminals into export terminals.
- EIA is studying whether expansion of export capacity is warranted.

Mr. Wesley's next slide showed the EIA forecast of U.S. natural gas production by geologic formation. Shale gas production is forecast to grow to be the largest contributor to supply in future years, while imports are forecasted to decline.

Other slides showed the following:

- Historic natural gas production volumes from various shale formations. The Barnett in Texas and Haynesville in Louisiana and Texas are the largest producers. Marcellus production is growing at a steady pace.
- EIA forecast of natural gas prices over the past four years. With supply rising faster than demand, prices are projected to decline.
- Weekly average spot price of natural gas at Henry Hub Louisiana, a large pipeline collection and distribution point. Increased domestic production over the past four years is forcing prices to 10-year lows.
- NY prices in excess of domestic average price indicate supply constrictions within the NY region. There is not enough pipeline capacity to deliver all the natural gas that is demanded by consumers. If consumers could get all the natural gas they wanted, there would not be higher prices.
- This price analysis shows the marginal price of spot market natural gas. During these spikes the typical NY customer on firm gas service is paying a commodity natural gas price closer to the U.S. average.
- A graphic showing expansion efforts by Northeast pipelines.
- The proposed Spectra pipeline from New Jersey into NYC.
- Current week U.S. natural gas storage volumes. The combination of a warm winter and increased production has resulted in more natural gas in storage than is typical for this time of year. This will exert downward price pressure in the coming months.

Board members then discussed how lower gas prices may affect energy planning. Mr. Brown observed that historically the price of oil and gas was a 6 or 7 to 1 ratio, i.e., if oil was \$100 per barrel, gas would cost about \$15 per million cubic feet. With a glut of gas in New York, that ratio is about 50 to 1. Mr. Curran emphasized the growing dependence on natural gas as a generation fuel.

Energy Issues in the Transportation Sector

Mr. Murray stated that as anyone who has purchased a gallon of gasoline recently can attest, the cost of transportation is rising. This is only one of the many challenges faced in the transportation sector. Energy is a critical component in moving people and commerce throughout New York State. Beyond the issue of cost, the use of energy in the transportation

sector also presents formidable challenges in other ways, not least of which are fuel diversity and environmental impacts. Mr. Murray noted that transportation will be a key element of the State Energy Plan.

Mr. Murray stated that Lynn Weiskopf and Todd Westhuis, both from the NYS Department of Transportation (DOT), would address transportation issues as they pertain to the energy sector.

Ms. Weiskopf stated that New York has one of the largest and most diversified multimodal transportation systems in the nation – moving both people and goods, providing national and international connections that are critical to the economy. Specifically, the State’s transportation system moves:

- More than 130 billion vehicles miles of travel on more than 245,000 lane miles of highways and 17,400 bridges statewide;
- Approximately 2.75 billion passenger trips (8.5 million per day) provided by more than 130 public transportation operators (including the Metropolitan Transportation Authority (MTA)) throughout the State, accounting for one out of every three public transportation riders in the nation;
- More than 80 million airline passengers who travel through 485 public and private aviation facilities within the State;
- Approximately 1.5 million riders each year who use Amtrak’s Empire and Adirondack services, and more than 8 million rail passengers who pass through Penn Station using Amtrak’s Northeast Corridor;
- 68 million tons of freight that move across 3,500 miles of rail (4,100 operated miles if trackage rights are included);
- More than 150 million tons of freight that pass through four port authorities (the Port Authority of New York and New Jersey, Albany Port District Commission, Port of Oswego Authority and Ogdensburg Bridge & Port Authority), the Port of Buffalo and numerous private ports;
- The transportation sector accounts for 39% of the energy consumed in the State, and 75% of all petroleum consumed in the State; consequently, energy efficiency strategies from this sector will be important.

Ms. Weiskopf added that New York State’s transportation system is already energy efficient. New York has the lowest per-capita gasoline usage of any state in the nation. At 354 gallons per person, usage is about a third less than the national average - 562 gallons per capita. Additionally, 41% of New Yorkers do not own a car.

Ms. Weiskopf continued, stating that DOT has overall responsibility for transportation policy and planning in the State, but there are many other partners that own, operate and fund significant portions of the system.

- Significant funding is invested in transportation – approximately \$32 billion includes public spending on surface transportation for both capital and operating assistance from all sources – federal, state, local, user fees and taxes.

- While this investment is significant, two national commissions, the American Association of State Highway and Transportation Officials and NYSDOT's own studies all indicate a need to double investments from current levels to meet existing and future needs.
- Federal funding is particularly important to the State for capital investments in our aging infrastructure. It provides:
 - 50% of DOT's capital funding (about \$1.5 billion per year)
 - 25% of the MTA's capital funding (about \$1.5 billion per year) and
 - 75% of the transit capital funding for systems other than the MTA (about \$200 million per year).
- Current authorization of federal funding is now on its 9th extension, the most recent of which was passed in late March 2012 – extending the current programs for another 90 days. A key issue is identifying funding to continue existing levels of investment.
- Gas taxes are no longer sufficient to meet existing needs – an ironic consequence of more fuel efficient vehicles and travel.
- As increases in current funding are not expected, the State needs to make the best investments possible with the resources it has. The current focus is as follows:
 - Preservation – keep the system in the best condition possible – which is an energy efficient strategy;
 - Strategic investments in the system such as continued improvements to intercity passenger rail;
 - Operating the system as efficiently as possible.

Ms. Weiskopf stated that these strategies are all contained in the Transportation Chapter of the draft State Energy Plan. The chapter is divided into discussion and recommendations based on the type of travel market being served:

- Local and Regional travel
- Long distance travel
- Freight/goods movement
- Vehicle technologies and alternative fuels

Ms. Weiskopf stated that these strategies are consistent with Smart Growth, which is covered in greater detail in a separate chapter. Ms. Weiskopf concluded by outlining DOT's draft recommendations, which include:

- Maintaining the existing system
- Improving intercity passenger rail
- Improving connections between modes to allow use of all forms of transportation. This includes both infrastructure improvements where possible such as linking bicycle and pedestrian infrastructure, as well as better information to make the best travel choices.

- Operational strategies to better manage system usage and demand
- Building on emerging technologies and availability of real-time information to improve safety and operations, reduce congestion and promote use of alternatives to driving alone – such as transit and rideshare.
- Supporting continued tightening of fuel standards and lowering the carbon intensity of fuels, and supporting increased use of alternative fueled vehicles.

Todd Westhuis, the Director of DOT's Office of Traffic Safety & Mobility, then provided an overview of New York State's 511 Travel Information System. 511 New York was implemented in 2008 as a free, comprehensive travel information system geared to meet the multimodal needs of commuters, long-distance and local travelers, tourists and commercial-vehicle operators. Up-to-the-minute, comprehensive transportation information available to customers through this new 511 phone, web and e-notification system and strengthens efforts to improve mobility, allowing people and goods to move efficiently through New York State. 511NY will be used as one of the State's strategies to reduce energy consumption by providing users of the transportation system with real-time travel information that will allow them to avoid congestion and idling, and choose more efficient trip routing, including opportunities to ride share and trip planning that includes bus, rail and walking options.

Mr. Westhuis stated that 511 NY receives information from transportation management centers throughout the state, which have co-located NYSDOT and first responder staff who monitor and provide system condition information. 511NY integrates five separate existing databases (the TRANSCOM database that covers the metropolitan New York City area, which includes portions of New Jersey and Connecticut; the NITTEC database that covers western NY and into Ontario, Canada; NYSDOT's Transportation Management Centers' CARS IEN system; the Thruway Authority's CARS system; and NYSDOT's Winter Travel Advisory database that is used to report snow and ice conditions on state highways throughout New York State) into a single public source for multi-state, real time and static highway and transit information, including over 900 CCTV cameras. The 511NY SmartNet system that integrates the existing databases also provides an archive function for all of the condition information entered into the system, and provides NYSDOT with time stamped and geo-coded historical data required for operational planning, federal reporting, and system analysis.

511NY now provides information to users via the web (511ny.org), e-mail notification (TransAlerts), by phone (5-1-1), standard mobile device (511ny.mobi), mobile applications for BlackBerry, Google Android, and Apple iPhone, in a customizable format through My511NY (511ny.org/my511ny), via Social Media forums (Facebook, YouTube, Flickr, and Twitter), and through developer friendly XML feeds. The mobile applications provide traffic and transit conditions with weather options, mobile links, and the popular 511NY Transit Trip Planner with geographical location awareness. There have been over 20,000 mobile application downloads since their release in late 2010.

511NY provides traffic and transit condition information, call transfers to nearly 350 transportation agencies for customer service connections, driving times for Long Island, over 900 CCTV traffic cameras, travel links, and a comprehensive statewide transit trip planner that includes over 50 operators' fixed route transit schedules from across New York State, including

subways, buses, ferries, commuter bus and rail, Amtrak, and other intercity bus lines, in addition to schedules for services provided between Connecticut, New Jersey and New York.

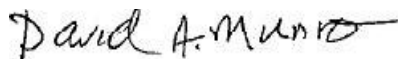
Mr. Westhuis advised that NYSDOT released a number of data feeds for open source use through a Developer Forum on the 511NY page <http://www.511ny.org/developer.aspx>). The data feeds include real-time highway incident and construction information, 1000+ CCTV highway cameras, bridge and parkway restriction information for commercial vehicles, and a number of transit operator's schedule data. Google maps began integrating incident information from the 511NY data feeds into their Traffic page in 2010, enhancing our ability to reach commuters and travelers through a number of sources.

Mr. Westhuis concluded by stating that NYSDOT continues to build on 511NY's success and expand its capabilities for the future.

Upcoming Board Meetings

Mr. Murray stated that the Energy Law directs the Board to publish a draft Energy Plan by September 1, 2012. He reminded the Board that it decided at its February 2012 meeting that the Board should meet monthly between now and September. Mr. Murray distributed a draft schedule of meeting dates.

The final agenda item was Other Business; there being none, the meeting was adjourned shortly before 3 p.m.



David A. Munro, Secretary to the Board
Deputy Counsel, NYSERDA

NEW YORK STATE ENERGY PLANNING BOARD

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March 21, 2012

NOTICE AND AGENDA

TO THE MEMBERS OF THE NEW YORK STATE ENERGY PLANNING BOARD:

PLEASE TAKE NOTICE that a meeting of the New York State Energy Planning Board will be held at the Albany office of the New York State Energy Research and Development Authority, 17 Columbia Circle, Albany, New York, on Monday, April 2, 2012, commencing at 1:00 p.m., for the following purposes:

1. To consider and act upon the draft minutes from the February 27, 2012 meeting.
2. Presentation to the Board and discussion of preliminary electricity system modeling results.
3. Presentation to the Board and discussion of natural gas markets.
4. Presentation to the Board and discussion of transportation strategies.
5. To transact such other business as may properly come before the Board.

Members of the public may attend the meeting.

NYSERDA will be posting a video of the Board meeting to the State Energy Plan website (<http://www.nysenergyplan.com>) within two business days of the meeting.



Francis J. Murray, Jr.
Chair