



ANALYSIS GROUP
ECONOMIC, FINANCIAL and STRATEGY CONSULTANTS

An Evaluation of the McCullough Research Report on New York's Wholesale Power Market

Susan F. Tierney, Ph.D.
Analysis Group

Boston, Massachusetts
March 25, 2009

This White Paper was prepared at the request of the New York Independent System Operator. The paper reflects the views of the author, and not necessarily the views of the NYISO, or its members.

An Evaluation of the McCullough Research Report on New York's Power Market

By Susan Tierney, Ph.D.
Managing Principal, Analysis Group
March 25, 2009

Introduction

At a public hearing before two Committees of the New York State Assembly, a report was introduced that was critical of the competitive markets introduced a decade ago in New York's wholesale electricity industry. The Analysis Group was requested by the New York Independent System Operator ("NYISO"), a not-for-profit corporation that administers those markets, to evaluate that report. Our conclusion is that the McCullough report is deeply and fundamentally flawed.

No one likes high prices. When prices are high for essential services, like water or electricity or basic food items, it is especially frustrating. High prices merit our spending time and attention to figure out why they are high, and what can be done to fix them.

Now, more than ever, it is popular to point the finger at markets as the cause of high prices. The financial crisis on Wall Street and in credit markets more generally, brought about in part by a failure of regulators to oversee the behavior of banks and other institutions as they took on too much risk, has had far-reaching effects on the economy and is enough to make any industry that relies on markets understandably skittish.

But these realities do not justify pointing the finger at all markets and deviating far from the facts as the basis for doing so. Indeed, the times require great care to make sure that we do not overreact to high price conditions by introducing "solutions" to a problem that do not address its underlying causes.

The recent report written by McCullough Research,¹ points out that "New York Pays the 4th Highest Electric Prices in the Continental U.S.," since it moved from a monopoly model, with highly-regulated electric utilities, to one that relies substantially on competitive markets. McCullough concludes that this market-based approach "is too expensive for New York." He incorrectly asserts that there was a time when "New Yorkers had ... relatively cheap electricity, and a system of regulation that, whatever its defects, was relatively transparent and that the public understood."² He recommends that New York return to its roots where power plants were subject to "cost-of-service" regulation, and where power plants be paid only their "true marginal cost," and where the information about power sources is more immediately transparent than it is today.³ While this report suffers from many serious technical errors⁴ of interest primarily to insiders and experts in electricity markets, there are several fundamental flaws in the McCullough Report's delineation of the problem and its underlying assumptions. These latter flaws render the report's conclusions unreliable. As much as one might want to

embrace the appealing notion espoused by the report – that changing the design of the wholesale markets administered by New York’s grid operator in the ways McCullough recommends would produce lower electricity prices – it would be wrong to reach that conclusion based on the analysis in the McCullough Report.

What are the fundamental flaws in the report? There are more than ten of them.

First, McCullough ignores the fact that New York’s electricity prices were high under the traditional regulatory approach that he idealizes in his report. In 1996, the New York State Assembly issued a report entitled “Competition Plus,” whose very first sentence begins with: “New Yorkers need relief from the high cost of electricity. Electricity rates in this state, among the most expensive in the nation..., damage New York’s business climate and burden its citizens.” A later section of the report entitled “Reducing Electricity Costs and Making New York Better for Business,” states that “Increasing competition in the electric industry, with proper safeguards, will result in lower electricity costs for ALL New Yorkers.” The findings of the Assembly are distinctly at variance from Mr. McCullough’s apparent belief that “New Yorkers had reliable and relatively cheap electricity” in the halcyon days before competition. In 1990, for example, New York had the highest electricity prices of all of the 48 states in the Continental U.S.⁵ In 1996 – the year that New York regulators called for a new system of regulation of the state’s electric industry⁶ – New York had the second-highest electricity prices.⁷ McCullough fails to mention that prices have risen in all states since then. Overall average U.S. electricity prices rose by 43 percent from 1996 through 2008; New York’s electricity price rose by 49 percent over the same period of time. (Inflation alone made up most of that price increase, in the U.S. and in New York State; and in general consumer prices in New York are higher than they are for the U.S.⁸) Electricity prices in many other states, however, rose even more than they did in New York during that same period, including in many states that did not restructure their electric industries and that regulate their utilities under more traditional cost-of-service utility regulation.⁹

Second, New York’s high electricity prices in the mid-1990s were a principal reason why the state decided to restructure its electric industry. The McCullough Report denigrates New York for having abandoned its traditional utility cost-of-service regulatory model, but fails to mention that the states, like New York, that sought another regulatory approach did so because they had such high prices at the time. These states, like New York, attributed their high prices, in part, to the poor incentives to control costs that existed under the traditional approach.¹⁰ In seeking another model, these states were searching for better ways to discipline utilities’ lack of adequate incentives to control costs of power plant investment under cost-of-service regulation. In fact, the very language that the McCullough Report uses to criticize New York’s current electric industry model (“These very high electric bills harm the state’s economy and cost the state thousands, if not millions of jobs, since businesses and industry tend to relocate to states or other countries where utility costs are cheaper”¹¹) is virtually identical to the

language used in 1996 (by consumers and regulators) as reasons why New York should restructure its industry *away* from the traditional cost-of-service regulatory model toward competition – an approach that created incentives for more efficient power plant operation and investment. The 1996 electric industry restructuring order issued by New York regulators said, in referring to comments received from the general public,¹² that “The common themes expressed by those who support competition are as follows, listed in descending order of frequency: Current utility bills are too high; Utilities are wasteful and inefficient, and their personnel receive excessive salaries; High electricity prices are causing industries to move, creating job losses; Customers would like to choose their electricity providers.” Needless to say, the McCullough report also fails to mention that, under the old regulatory regime, New York State had to bail out a major utility by purchasing several of its power plants, and purchased another major utility in order to keep a nuclear power plant from opening, resulting in consumers still paying for that plant while getting none of the economic or environmental benefits.

Third, McCullough ignores one of the primary reasons why New York’s electricity prices are high: the overall mix of fuels in New York relative to other parts of the country.

The states with relatively low electricity prices are states with a high percentage of their power produced by coal; that was true in the 1990s, and it is true today.¹³ Coal prices have been relatively low over the past decade, and states that rely heavily upon it for power generation are among the states with the lowest electricity prices: In 2007, for example, many of the states with the lowest power rates relied heavily on coal to produce electricity:¹⁴

<u>State</u>	<u>Rank in Electricity Price</u>	<u>Percentage of Power Generated from Coal</u>
West Virginia	2 nd lowest	98%
Wyoming	3 rd lowest	95%
Kentucky	4 th lowest	93%
North Dakota	6 th lowest	94%

These and many other coal-dependent states did not restructure their electric industries, in part because prices were already low. By contrast, New York State produces only 15 percent of its power from coal. In New York City and Long Island, there is no coal-fired generation and these parts of New York State depend heavily on power plants that use natural gas or oil.¹⁵ These downstate parts of New York State are areas where not only is electricity relatively expensive, but also where more than one-half of the state’s electrical demand is located,¹⁶ where there has been relatively fast-growing electricity use in recent years, where it has been difficult and expensive to build any kind of power plant besides ones that use natural gas as their primary fuel, and into which it is difficult and expensive to build power lines to import more economical power from power sources in upstate New York.¹⁷

Fourth, McCullough ignores the fact that from 1999 to the present – the same period during which New York’s system operator has administered the wholesale electricity

markets in the State – natural gas prices nearly quadrupled. Largely because of New York's rigorous environmental requirements, all of the recent power plants built in the State have been fueled by natural gas. Natural gas delivered to power plants rose from \$2.85 per million cubic feet (“mcf”) of natural gas in 1999, to \$10.81 per mcf in 2008.¹⁸ Given the dependence of the state on natural gas-fired generation (especially in New York City and Long Island), these underlying price increases for natural gas have greatly affected power prices in the state.

Fifth, McCullough fails to mention that New York actually depends upon contracts, rather than the spot power markets, for most of its supplies to consumers. In New York, approximately half of the wholesale electricity sold is through long or short-term contracts between generators and distribution companies. New York actually has a system in which the state's utility regulators require electric utilities to manage a portfolio of power supplies, with some under long-term contract, others under short-term contracts, some purchased from the day-ahead and real-time wholesale markets administered by NYISO, and some “avoided” through energy-efficiency programs designed to reduce demand. Although all of the state's power plants participate in the dispatch system administered by NYISO and the system uses hourly bids to determine an efficient dispatch of power plants, the prices actually paid by consumers reflect a mix of supplies whose prices do not track the prices in the hourly wholesale energy markets. This provides consumers with the benefits of less volatile electricity prices. The bids into the hourly markets determine wholesale electricity dispatch and prices but do not track directly into consumers' retail prices for power, just as the short-term price of wheat, which fluctuates in commodity markets, does not track on a day-to-day basis with the price of bread on supermarket shelves.

Sixth, McCullough fails to mention that New York's consumers no longer have to pay for power plants in utility rate base. Prior to New York's adoption of its restructured power market, the utilities owned most of the power plants in the state. The utilities charged rates to consumers that included “rate base” amounts to compensate the utilities for having built and maintained the plants, including a return on investment. Recovery of these power plants' “fixed” capital costs occurred largely without regard to whether a particular plant operated a lot or a little of the time. Typically, rates included the cost of plants needed to run only during emergency or peak conditions even when they weren't being used. By contrast, in today's electricity spot markets administered by the NYISO, companies that own power plants are only compensated when they are dispatched and produce power. A plant that runs infrequently due to poor operating performance or high operating cost is not compensated in today's spot energy markets – except in the hours it actually runs. A plant that provides capacity to the system is paid through NYISO's capacity markets that value capacity according to whether surpluses or shortages of power plant capacity needed for reliable power supply.

Seventh, McCullough leaves the false impression that electricity prices in New York's electric energy markets are not competitive by pointing to a \$1,000-per-megawatt-hour bid. By suggesting that this bid is routine (“every day”) and reflects a “gaming the market,” McCullough leaves the false impression that this bid is routinely selected by the system operator to produce power and leads to price spikes and other price distortions in consumer prices. I understand that in 2008, however, not a single bid of this level has ever been selected in New York's energy markets, and thus has never set the energy price. The offers represent potential output of plants used only occasionally for emergency power purposes. Just as a hospital might decide to invest in its own, on-site emergency generator to have power with virtually 100-percent reliability, so does the overall electric system need to induce power plants to be built and available to provide supply when consumers need power on a peak hot summer day. And just like the electricity produced by the hospital's on-site generator is much-more expensive during those few hours of use than the average price of power on the grid – because not only the fuel costs but the overall purchase price of the generator itself is spread over such few hours of use – so is the power provided by that bidder whose power is selected only occasionally in order to help keep consumers' lights on reliably.

Eighth, McCullough ignores all of the economic literature that supports New York State's wholesale power market design. The McCullough Report fails to address the evidence that if New York were to adopt a system where the generator were paid the price it actually bid (rather than the market clearing price), then bid prices and resulting energy market prices would rise.¹⁹ McCullough suggests an impossible outcome: He wants generators to offer their supply at their marginal cost, while also being paid only their offering prices. But if the power plant owner knew that he would only be paid his offering price, none would offer at only its “true” marginal cost, since he couldn't stay in business if he did. If a generator using natural gas to produce power were only allowed to bid and be paid a price that covered its out-of-pocket fuel costs, it would go out of business, because it couldn't pay his “fixed” costs – that is, those costs, like property taxes, or workers' salaries, or debt-repayment costs, that do not vary with the output of the plant. The same is true for an owner of a nuclear plant, whose fuel costs are relatively low compared to the “fixed” or capital costs of the plant. What McCullough overlooks is that in the old days under traditional regulation when the New York Power Pool used a system that dispatched power plants based on the cost to operate a plant in a given hour, the owners of those power plants collected their costs of return on investment, taxes, personnel, plant depreciation, etc., through rate-base payments and other expenses routinely paid for by consumers. These “fixed costs” were collected in rates whether those plants operated a little or a lot. Today, there is no rate-based recovery of investment, or taxes, or debt-repayment. The salaries of power plant workers are not picked up in traditional utility rates. So no power plant could stay in business if McCullough's system of marginal-cost-based energy-market bids were adopted. And under a “pay-as-bid” system, bid prices would rise if owners of plants would expect to receive only the amount they bid. The New York wholesale power

market design is well-understood to be efficient for power production and investment and reliability, alike.

Ninth, McCullough fails to mention that if suppliers were only paid at their marginal costs, valuable renewable power resources like wind farms, would have a much-harder time entering New York's power market. New York's markets have been spectacularly successful in attracting developers of wind generation. The cost to use the wind to produce power – once a wind turbine is built – is virtually zero. If wind farms were compensated only for their marginal cost, then they would be paid virtually nothing for the power they supply into the state's energy market. And yet, New York highly values their power for their absence of undesirable emissions, especially greenhouse gases. Under McCullough's formulation, a wind project could not recoup its investment, and New York would be severely challenged to achieve its important statewide renewable energy policy goals.

Tenth, McCullough fails to mention that New York's wholesale electricity spot markets are heavily regulated. While he states, correctly, that the state does not directly regulate the prices in the wholesale power markets operated by the New York system operator, it would be incorrect to conclude that these markets are not regulated. The tariffs and rules under which these markets operate are actively regulated by the Federal Energy Regulatory Commission ("FERC"). The rules for these markets are proposed through processes that routinely involve representatives of consumer groups, transmission-owning utilities, power generators, and others. The markets are actively monitored by internal and external watchdogs with access to bid information and details of power plants. Consumers are protected by three levels of market monitoring and oversight: the internal market monitoring group within the New York system operator; an external consultant who monitors the markets; and FERC's Office of Enforcement.²⁰ The federal regulators have and use extensive investigative and enforcement authorities. Like many other systems and industries that operate in interstate commerce, wholesale power sales in New York and in virtually every part of the nation are regulated by the federal government. But even so, New York's Public Service Commission regulates, among other things, the state's investor-owned utilities' participation in these markets, as well as their processes and decisions through which they procure power supplies for consumers.

Finally, McCullough fails to mention that electricity price information is much more transparent today than it was a decade ago, before the NYISO began operating wholesale markets. Previously, under traditional utility regulation and under the "New York Power Pool" system owned and operated by the state's electric utilities, it was extremely difficult if not impossible for the public to get access to the kind of information now published routinely by the NYISO. Today, the public can access abundant data on power demand, power supply, and prices, for locations throughout the state. To do so, one need only be an adept user of the internet.²¹ Previously, the

public had to participate in periodic, cumbersome, and often-resource-intensive rate-case proceedings of utility companies; even then, data on power requirements and costs were quite limited by contrast to those available today. In New York, the public can even get bid information several months²² after the fact – something that is never available in many parts of the country that today are not served by a regional transmission organization.²³ McCullough makes much of the unfounded claim that the FERC imposed confidentiality requirements permit collusion and manipulation. He is either unaware or ignoring of the fact that those requirements were imposed by FERC specifically to prevent collusion. In the FERC’s first order, it held that:

“Markets operate better under full information, and the availability of this information would help the market function more efficiently. We will also require that all information regarding energy bids be kept confidential for six months to help prevent collusive behavior. After a six-month delay, information on individual bids should be released to the public to help interested parties monitor the market.”²⁴

Conclusion:

New York’s electricity prices are no doubt higher than what any consumer would want. Prices for power, like many other goods and services, are higher in New York than in other parts of the country. There are many reasons why prices are high, and there are many things that New York State policy makers and private citizens are doing to attempt to keep those prices as low as possible.

That said, it would not be useful to rely on the recommendations of the McCullough Report to find sensible ways to address the state’s electricity prices. The report offers tantalizing simple – and seemingly attractive – suggestions for changes for New York to adopt; but they are, literally, too good to be true. The sober reality is that New York policy makers should resist the temptation to be wooed into believing that McCullough’s recommendations will produce lower power prices for New York. Adopting his recommendations would not lead to his promise of lower prices.

ENDNOTES

¹ McCullough Research, “The New York Independent System Operator’s Market-Clearing Price Auction Is Too Expensive for New York,” March 3, 2009 (“McCullough Report” or “McCullough”).

² McCullough, page 1.

³ Specifically, McCullough concludes with three recommendations, that New York: (1) require the grid operator (NYISO) “to make the identities of bidders, bids, and the calculations needed to calculate prices immediately available to the public, decision-makers, elected officials, scholars and the media;” (2) “Adopt the American Public Power Association’s recommendation limiting bids for short-term power sales to true marginal costs;” and (3) “Move consumer supplies back again to fully allocated, cost-of-service electric generating plants.” McCullough Report, pages 9-10. While the McCullough Report depicts these recommendations as “[t]hree alternative auction rules [that] would reduce the price of electricity across New York,” he does not connect the dots about how his three recommendations would constitute changes to the auction rules in the markets administered by New York’s grid operator.

⁴ Among the more egregious technical problems (including fatal errors and omissions) with the McCullough Report’s analysis are the following:

- Its “savings estimate” is fundamentally flawed for several reasons: It uses a narrow and unrepresentative time period (one year: November 2007 through October 2008) to assert that generators receive higher revenues than they would under cost-based regulation; the short time period he uses had the highest natural gas prices in recent history. It overstates payments in NYISO-administered markets, and relies inappropriately on a select group of 15 generating facilities to estimate payments for all power plants in New York State. It fails to take into account many costs associated with owning and operating generating facilities. It inappropriately relies on undisclosed market-transaction prices as a basis for estimating payments that ratepayers would make for capital costs under traditional regulation; transaction prices for power plants vary considerably across time, technology and fuel type, geography, and so forth, just as housing prices vary across these and other dimensions.
- It incorrectly suggests that there is a “normal” auction process, and New York doesn’t use it; in so doing, he ignores the evidence that all of the organized wholesale electricity markets in North America and a substantial number of commodity markets across the globe use a market-clearing price system.
- It incorrectly equates a so-called “producer surplus” with unearned and excessive profits, and does so in ways unsupported by common concepts in economics.
- It states that the “market-clearing price auction” produces higher prices than alternative systems, while ignoring the literature that a pay-as-bid auction would produce higher prices.
- It tries to discredit the competitiveness of the NYISO markets by claiming “there are a handful of buyers and sellers, but ignores the fact that there were fewer buyers and sellers in the electric industry prior to 1996 when the electric industry commenced its restructuring in New York State. In 2008, there were more than 400 parties registered as participants in the electricity markets administered by the NYISO.
- It implies that it would be somehow easy to build something besides natural gas plants, when the evidence in New York State over the past decade indicates that virtually the only plants that can be sited, permitted, financed and constructed are plants that use natural gas or wind to produce power.
- It assumes increases in the efficiency of operations at power plants that occurred as a result of competitive markets.
- It ignores the recent history of traditional cost-of-service regulation in New York State, which included cost overruns and significant disallowances related to them.
- It erroneously claims that the NYISO was “established by the businesses that participate in the market” and “writes its own rules,” ignoring the fact that the NYISO is regulated by the Federal Energy Regulatory Commission.

⁵ Energy Information Administration, Monthly Electric Utility Database (Form EIA-826), http://www.eia.doe.gov/cneaf/electricity/page/sales_revenue.xls, accessed March 21, 2009.

⁶ State of New York Public Service Commission, Opinion No. 96-12, Cases 94-E-0952 et al., In the Matter of Competitive Opportunities Regarding Electric Service, “Opinion and Order Regarding Competitive Opportunities for Electric Service,” Issued and Effective: May 20, 1996. See pages 25-30 for “Vision and Goals for the Future Regulatory Regime.”

⁷ This refers to prices in the 48 Continental States (since Hawaii and Alaska’s prices can be distinguished from those in the other 48 states for a number of reasons). New York’s prices were second highest, behind New Hampshire. Energy Information Administration, Monthly Electric Utility Database (Form EIA-826), http://www.eia.doe.gov/cneaf/electricity/page/sales_revenue.xls, accessed March 21, 2009.

⁸ From 1996 through 2008, inflation (measured by the Consumer Price Index) rose 37.2% in the U.S. and 41.3% in New York. In 1996, New York had overall consumer prices that were 6.4% higher on average than in the U.S.; in 2008, New York’s overall consumer prices were 9.5% higher than in the U.S. overall. U.S. Bureau of Labor Statistics, Consumer Price Index/All Urban Consumers databases. <ftp://ftp.bls.gov/pub/special.requests/cpi/cpi.txt>. <http://data.bls.gov/PDO/servlet/SurveyOutputServlet> (for New York: Series Id: CUURA101SA0, CUUSA101SA0 Not Seasonally Adjusted, for Area of New York-Northern New Jersey-Long Island, NY-NJ-CT-PA, All items, period 1996-2008). Accessed March 22, 2009.

⁹ States whose prices increased the same percentage or more than New York’s since 1996 include the following states that did not restructure their electric industry (with percentage increases in average retail electricity prices (1996-2008) shown in parentheses): Alabama (+59%), Kentucky (+54%), Louisiana (+58%), Mississippi (+49%), Tennessee (+51%), Washington State (+58%), Wisconsin (+71%). These figures are based on comparing a state’s average electricity prices in 1996 with its average electricity price in 2008 (through November). Energy Information Administration, Monthly Electric Utility Database (Form EIA-826), http://www.eia.doe.gov/cneaf/electricity/page/sales_revenue.xls, accessed March 21, 2009.

¹⁰ See Susan F. Tierney, “Decoding Developments in Today’s Electric Industry – Ten Points in the Prism,” October 2007, page 11: “It is fairly well understood that for the most part, the states that pursued early efforts to restructure their electric industries were ones that already had high electricity prices during the 1990s. These were states where at the time, a number of features – rate increases associated with new power plant investment, cost overruns, expensive long-term contracts, combined with opportunities to build new generating capacity at costs lower than prevailing electricity prices – motivated large electricity consumers (and their political representatives) to complain about utilities’ high price levels under traditional regulation and seek the option to buy power from the electricity supplier of their choice. Fifteen of the 17 states that now [fn] have higher-than-average retail electricity rates were also among the 19 states with higher-than-average rates on the eve of restructuring the electric industry in 1996. [fn] Almost all of the high-priced states [fn] in 1996 went on to restructure their industries during the 1990s, and several others [fn] did so as well. Notably, in 1995 the states that eventually restructured had electricity rates that were 22 percent higher (on average) than the other states (and 24 percent higher in 1997, on the eve of many restructuring laws); [fn] by 2006, this gap had narrowed to 20 percent higher (having been as low as 12 percent higher in 2000, near the start of natural gas price increases). [fn] Stated another way, electricity prices were higher in restructured states than in non-restructured states in 1995, but are less so in 2006. In fact, an important factor motivating states to implement restructuring were the high prices that prevailed during the 1990s and the potential for restructuring to achieve reductions in such rates relative to what they otherwise would have been.” (Footnotes in the original are omitted here.)

¹¹ McCullough Report, page 3.

¹² The Department of Public Service’s “Consumer Services Division staff arranged many different ways for consumers to provide the Commission with input about these critical matters. Staff set up a special telephone line with an 800 number and arranged a special computer site on the World Wide Web. As of May 14 [1996], we had received 2,042 comments from the public. [fn omitted] Comments were received from many types of customers. Many were submitted by individuals not affiliated with any party in this proceeding, but some were submitted as part of organized efforts by various parties to have their points of view represented. [fn omitted] Overall, 42% (854) of customer contacts indicated support for some form of competition, deregulation or restructuring.... On the other hand, 35% (724) of the consumer comments

expressed opposition to deregulating the industry. The common themes expressed by those who oppose deregulation are as follows, in descending order of frequency: High rates are due to high taxes on utility services, not the structure of the industry; Deregulation has not worked well in other industries such as telephone and airlines; People are concerned about loss of jobs in the utility industry; There is serious concern about deterioration of system reliability, safety, and service quality; Deregulation will increase rates; Competition will benefit only large customers; High rates are due to IPP contracts, not the industry structure; High rates are due to policy mistakes of the government; There is no study showing that deregulation will reduce costs.” State of New York Public Service Commission, Opinion No. 96-12, Cases 94-E-0952 et al., In the Matter of Competitive Opportunities Regarding Electric Service, “Opinion and Order Regarding Competitive Opportunities for Electric Service,” Issued and Effective: May 20, 1996, Page 8-11.

¹³ See Tierney, “Decoding Developments in Today’s Electric Industry – Ten Points in the Prism,” October 2007, Prepared for the Electric Power Supply Association.

¹⁴ Note that the state with the lowest electric prices (Idaho) relies heavily on hydroelectric power. Nebraska has the 5th lowest electricity prices, with 60% of the power in the state generated by coal-fired power plants. These data are for 2007, from Energy Information Administration. Form EIA-906 and EIA-920 Databases, with data from the March 2008, supplemental which shows year-to-date data for 2007; and Energy Information Administration, Monthly Electric Utility Database (Form EIA-826), http://www.eia.doe.gov/cneaf/electricity/page/sales_revenue.xls, accessed March 21, 2009.

¹⁵ Single-fuel plants using natural gas alone and dual-fuel plants that mainly use natural gas (i.e., dual fuel with air-permit limitations on the amount of generation that can come from oil) make up 95% of New York City’s generating capacity and 79% of Long Island’s capacity. Susan F. Tierney, et. al., *Fuel Diversity in the New York Electricity Market: A New York ISO White Paper*, October 2008, page 3-3.

¹⁶ NYISO, 2007 Load & Capacity Data, *Table I-2a*, Forecast of Annual Energy by Zone – GWh, comparing 2007 GWh for zones J (New York City area) and K (Long Island) with total GWh for the New York Control Area.

¹⁷ Susan F. Tierney, et. al., *Fuel Diversity in the New York Electricity Market: A New York ISO White Paper*, October 2008, page 3-2.

¹⁸ Energy Information Administration price data for natural gas sold for power production in New York State: http://tonto.eia.doe.gov/dnav/ng/hist_xls/N3045NY3a.xls, http://tonto.eia.doe.gov/dnav/ng/hist_xls/N3045NY2m.xls. Data for 2008 are for January through November, with the monthly prices weighted for monthly volumes.

¹⁹ This literature is summarized in Susan Tierney et al., “Pay-As-Bid Uniform Pricing: Discriminatory auctions promote strategic bidding and market manipulation,” *Public Utilities Fortnightly*, March 2008; and in Susan Tierney, Todd Schatzki, and Rana Mukerji, “Uniform-Pricing versus Pay-as-Bid in Wholesale Electricity Markets: Does it Make a Difference?” March 2008.

²⁰ See: <http://www.ferc.gov/enforcement/enforcement.asp>. The Energy Policy Act of 2005 increased both the jurisdiction and penalty authority of FERC. “The [federal] Commission’s regulations allow Enforcement staff to conduct investigations relating to any matter subject to the Commission’s jurisdiction. The investigative staff initiates investigations from information received through a variety of sources, both internal and external. Internally, information is received from other Commission offices, or from the Commission itself or in the course of another investigation. Externally, information may be received from: A Self-Report, The Enforcement Hotline, A referral from a Market Monitoring Unit for an Independent System Operator or Regional Transmission Organization, A Complaint, or A referral from another government agency.” <http://www.ferc.gov/enforcement/investigations.asp>

²¹ See, for example, NYISO’s websites on “markets” include: http://www.nyiso.com/public/market_data/pricing_data/dam_lbmp_zonal.jsp, and http://www.nyiso.com/public/market_data/reports/nyiso_capacity_report.jsp, and http://www.nyiso.com/public/market_data/power_grid_data/dam_outages.jsp, and

http://www.nyiso.com/public/documents/studies_reports/monthly_reports.jsp, and
http://www.nyiso.com/public/documents/studies_reports/market_advisor_reports.jsp.

²² See <http://mis.nyiso.com/public/P-27list.htm>. The NYISO releases bid data supplied by Market Participants to the public after six months. <http://mis.nyiso.com/public/postings/NYISO%206%20Month%20Bid%20Data%20Release%20Description.pdf>.

²³ In fact, in the parts of the country that today do not have their wholesale power markets administered by a regional grid operator, like New York's, it is nearly impossible for the public to get access to transparent electricity price, cost, supply, or demand information, whether on a real-time basis or at all for many important variables.

²⁴ Federal Energy Regulatory Commission, 86 FERC ¶ 61,062, Docket Nos. ER97-1523-000, OA97-470-000 and ER97-4234-000 (re: Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., Long Island Lighting Company, New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation, and New York Power Pool), Order Conditionally Accepting Tariff and Market Rules, Approving Market-Based Rates, and Establishing Hearing and Settlement Judge Procedures, Issued January 27, 1999, page 44. http://www.nyiso.com/public/webdocs/documents/regulatory/orders/1999/01/f_o12799.pdf.