LEVITAN & ASSOCIATES, INC.
MARKET DESIGN, ECONOMICS AND POWER SYSTEMS

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September 18, 2009

Andrew Bazinet
Manager - Finance & Origination
Pure Energy Resources LLC
25 Mall Road, Suite 100
Burlington, MA 01803

Re: Dispatch and Environmental Analysis of the Bayonne Energy Center

Dear Andrew,

Levitan & Associates, Inc. (LAI) was retained by Pure Energy Resources, LLC (PER), the developer of the proposed Bayonne Energy Center (Bayonne) Project, to perform a Dispatch and Environmental Analysis for the Project. The purpose of the Analysis was to ascertain the expected operation of the Bayonne Project in 2012 and the resultant changes (i) in market energy prices and (ii) in annual air emissions within New York City (NYC) and surrounding regions.

LAI is a management consulting firm that focuses exclusively on the energy industry. Since its founding in 1989, LAI has specialized in competitive gas and electric energy markets, working with end-users, producers, utilities, and regulators. Many of our assignments have been on behalf of generators and developers who are concerned about the impact of market dynamics and environmental regulations on specific power plants. LAI's staff of engineering, environmental, finance, economics, mathematical modeling, and regulatory policy experts helps clients and others understand complex fuel-power interactions. We have established a track record of success in the technical discipline of gas and electric market simulation that provide a foundation for clients to make major investment decisions.

LAI utilizes various models to simulate the electric and gas markets and for financial analysis. LAI is a licensee of MarketSym, an industry-leading chronological dispatch simulation software model used to forecast zonal energy prices, electricity production by individual generating units, and electric flows across transmission zones. Generators, lenders, and investors utilize MarketSym in order to assess generator dispatch dynamics and determine competitive pricing relationships. The New York Independent System Operator (NYISO) has relied on our dispatch simulation modeling to establish demand curve parameters used to establish Spot Capacity Market parameters. Major utilities throughout the US, including New York, have also relied on our dispatch simulation modeling for a variety of assignments.

Project Description and Study Approach

The Bayonne Project will consist of a dedicated 345 kilovolt (kV) submarine transmission cable and a nominal 512 megawatt (MW) multi-unit, simple-cycle natural gas-fired (with ultra low sulfur diesel oil as a backup fuel) aeroderivative gas turbine (GT) facility to be located in Bayonne, New Jersey. The Bayonne Project will interconnect to the NYISO electrical grid at the Consolidated Edison Company of New York, Inc. (Con Edison) Gowanus Substation in Brooklyn, which is part of the NYISO Zone J. Thus the Bayonne Project is considered a Zone J "in-city generator" for electric generation purposes and part of the eastern zone of the PJM power market (PJME) for emission calculations.

The Dispatch Analysis captures the "intrinsic value" of the Bayonne Project based purely on the merit of its heat rate, fuel costs, and other performance parameters within the expected 2012 generation mix and load projection in NYC and the surrounding regions. The Dispatch Analysis does not include any "extrinsic value" based on the Bayonne Project's quick start operating characteristics which would allow it to satisfy real time market requirements not captured in our deterministic dispatch analyses. Utilizing a dispatch simulation model allowed LAI to capture "portfolio" or secondary / indirect effects that the Bayonne Project would have on the NYISO and surrounding systems, *e.g.* the provision of ten minute non-spinning reserves NYISO can call upon when Bayonne is not operating.

Once the Dispatch Analysis was completed, the Environmental Analysis compared the 2012 air emissions of the power plants in Zone J, in the entire New York Control Area (NYCA), and in NYCA plus PJME with and without the addition of the Bayonne Project. LAI estimated power plant emissions for nitrogen oxides (NOx), sulfur dioxide (SO_2), and carbon dioxide (CO_2).

Key data sources for the Dispatch and Environmental Analysis include:

- The *2009 NYISO Load and Capacity Data Gold Book* provides expected loads and other system data for NYCA and individual NYISO zones.

- Plant-specific NOx emission rates are based on the Environmental Protection Agency's Clean Air Markets Program data.

- Bayonne Project performance data and emissions rates provided by the manufacturer via Pure Energy Resources, LLC.

LAI assessed the dispatch and environmental effects for two load scenarios. The first scenario is based on the projected 2012 electric peak demand and load as identified by the *NYISO Gold Book*. The second scenario used a slightly higher 2012 peak demand and load based on NYISO Zone J historical average growth rates in order to assess the expected Project dispatch without the current economic downturn that is reflected in the *2009 NYISO Gold Book*.

Summary of the Dispatch and Environmental Analysis

The Bayonne Project's 2012 expected capacity factor will be approximately 16% in each scenario under our intrinsic approach. When dispatched, the Bayonne Project will avoid the need for more expensive GTs and other peaking resources. During those hours, Zone J market energy prices are expected to decline by 0.5% - 1.0%.

When not operating, the Bayonne Project provides valuable energy reserves in Zone J, thus avoiding NYISO's need to operate load-following boilers (steam turbine generators) at minimum or part load conditions. LAI found that many Zone J steam turbine boilers have average NOx emission rates much higher than the Bayonne Project. The annual generation of the Zone J load-following boilers would be reduced by about 13% during on-peak hours and by about 21% during off-peak hours. As a result, in-city NOx emissions from power plants would decline by about 12%, while in-city SO_2 emissions from power plants would decline about 25%.

Major Findings of the Dispatch and Environmental Analysis

- LAI's Dispatch Analysis indicates that the Bayonne Project will have a capacity factor of between 15.8% and 16.4% based on our intrinsic modeling approach. Our analysis does not include any extrinsic value of the Bayonne Project based on its quick start capability that would allow the Project to satisfy real time market requirements. The Project will have close to 400 starts per year and will average about 3.7 operating hours per start.

- The Bayonne Project will be dispatched before older and more expensive GTs in Zone J, many of which have NOx emission rates that are ten times greater than the Project's. The Project will also be dispatched before expensive Special Case Resources and other peaking resources.

- In-City market energy prices would be lowered by 0.5% - 1.0% during those hours in which Bayonne is dispatched. The Bayonne Project will have mostly negligible energy price impacts in surrounding zones.

- The net economic impact on NYC ratepayers is uncertain, because Con Edison and the New York Power Authority, which have the majority of the in-city load obligations, have numerous contract hedges that were not factored into the Dispatch Analysis. However, the reduction in Zone J market energy prices during those hours in which Bayonne is dispatched should benefit NYC ratepayers as these contract hedges expire.

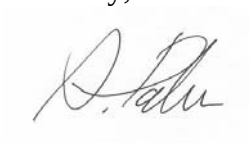
- Bayonne provides valuable energy reserves to NYISO when not operating thus avoiding the need for NYISO to operate higher emitting Zone J load-following boilers at minimum or part load. Operation of load-following boilers, many of which are oil-fired, would be reduced by about 12% during on-peak hours and by about 21% during off-peak hours. As a result, the Bayonne Project will materially lower power plant air emissions in Zone J:

  - NOx declines about 349 tons (12%)
  - SO_2 declines about 104 tons (25%)
  - CO_2 declines about 407,000 tons (5%)

- In addition to the Zone J air impacts, Bayonne will lower power plant NOx emissions across NYCA and PJME.

LAI appreciates this opportunity to be of service to Pure Energy Resources, LLC and to the Bayonne Energy Center. Please feel free to contact me if you have any questions.

Sincerely,



Seth Parker
VP & Principal

Dispatch and Environmental Results
Bayonne Energy Center

prepared for

Bayonne Energy Center, LLC

September 18, 2009

LEVITAN & ASSOCIATES, INC.
MARKET DESIGN, ECONOMICS AND POWER SYSTEMS

Executive Summary

- Bayonne Will Be Dispatched before Zone J (NYC) GTs
  - Intrinsic analysis using deterministic day-ahead dispatch simulation
  - Bayonne 2012 capacity factor ~16% under two load scenarios
  - Zone J market energy prices decline ~0.7% when Bayonne operating
  - Mostly negligible energy price impacts in surrounding zones
- Bayonne Provides Valuable Reserves When Not Operating
  - Avoids need to operate NYC boilers at min or part load
- Net Economic Impact on NYC Ratepayers Is Uncertain
  - Con Ed and NYPA contract hedges not factored into analysis
- Bayonne Materially Lowers NYC Power Plant Emissions
  - NOx declines ~12%, SO_2 declines ~25%, CO_2 declines ~5%
  - Bayonne lowers NOx emissions across NYCA and PJME

Table of Contents

Background

Background

- Bayonne Project Description
  - Eight aeroderivative GTs in Bayonne, NJ
  - Electrically interconnected to Gowanus substation in Brooklyn via dedicated marine transmission cable
    - Bayonne considered in Zone J (NYC) *for generation purposes*
    - Bayonne considered in PJME *for emission calculations*
- Primary Study Objective: Estimate 2012 Impacts of Bayonne
  - Market energy prices by zone
  - Regional air emissions / key emitters
  - Ratepayer impacts

Background

- Assumptions / Factor Inputs *(not included in this report)*
  - Prepared by LAI based on most current & reasonable data
  - Load forecasts *(with energy efficiency)*
  - Resource additions and retirements
  - Transmission topology *(incl. NYC 138kV and 345kV sub-zones)*
  - Fuel and emission allowance price forecasts
- Study Approach
  - Intrinsic analysis using deterministic, day-ahead dispatch simulation
    - Ancillary services (spinning and non-spin reserves) scheduled
  - Does not consider extrinsic values
    - Non-spin reserves not dispatched to meet real time energy market req’ts
    - Bilateral contracts
    - Hedging / trading benefits

Background – LAI Approach

- LAI Simulation Model Description
  - Applied previously for NYISO and NYC market participants
  - MarketSym chronological dispatch simulation model
    - Forecasts plant dispatch, day-ahead energy prices, and emissions
    - Simulates 8760 hours in 2012 *under deterministic conditions*
    - Captures portfolio effects in NYISO and surrounding markets

- MarketSym Produces Results by Zone
  - Bayonne dispatch / capacity factors
  - Changes in market energy prices due to Bayonne
  - Changes in regional air emissions due to Bayonne

Background – Trent 60 Performance Parameters

- State-of-the-art Aeroderivative Design
  - Inlet spray intercooling improves hot weather performance
  - 10 minutes to full power provides reserves
- Emissions
  - Wet low emission combustor, selective catalytic reduction, CO catalyst
  - NOx rate: 0.008872 lb/MMBtu
  - CO_2 rate: 117.08 lb/MMBtu
- Availability
  - Proven design based on aviation experience
  - Rolls Royce Long Term Service Agreement and modular design minimizes downtime
    - Forced outage rate 1% *for modeling purposes*
    - Scheduled outage rate 0% *for modeling purposes*

Background – Trent 60 Performance Parameters

- Output and Heat Rate
  - Bayonne Energy Center (Bayonne) will have eight Trent 60 GTs

	Winter 24°	Summer 85°	
Output (per unit)			
Gross output (new & clean)	64.00	61.15	MW
Parasitic load	1.75	1.75	MW
Net output (new & clean)	62.25	59.41	MW
Avg 1st yr degradation	0.25%	0.25%	
Net output (1st yr)	62.10	59.26	MW
Heat Rate			
Net heat rate (new & clean)	8500	8751	Btu/kWh (LHV)
HHV / LHV	1.109	1.109	
Net heat rate (new & clean)	9426	9705	Btu/kWh (HHV)
Avg 1st yr degradation	0.25%	0.25%	
Net heat rate (1st yr)	9450	9729	Btu/kWh (HHV)

Data provided by Pure Energy Resources, LLC

Background – Power Plant Emissions

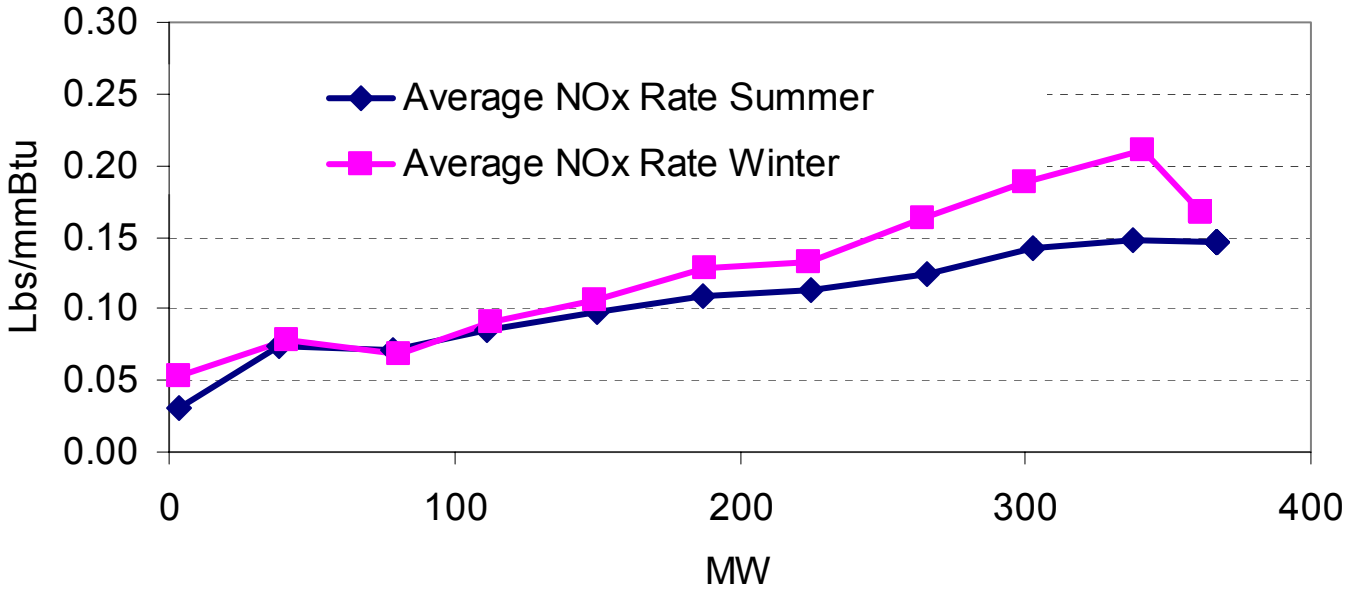
- LAI Verified MarketSym NOx Emission Rates with EPA Data
  - 2008 EPA data from Clean Air Markets reporting system
  - Boiler (steam turbine plant) NOx rate typically increases with load, *e.g.* Astoria 3
  - GT NOx rate typically flat, *e.g.* NYPA LM6000 and Holtsville 14

- LAI Used Load-Weighted 2008 Average NOx values
  - MarketSym utilizes average plant NOx emission rates
  - Boiler and GT emission characteristics largely unaffected by Bayonne
    - Boilers have similar ratio of min load to max load hours with or without Bayonne
    - GTs are dispatched at or close to full load with or without Bayonne
  - Using average emission rates provides reasonable results

Background – Power Plant Emissions

- Astoria 3 is an example of NYC oil-fired boiler
  - Much higher NOx emission rate compared to Bayonne

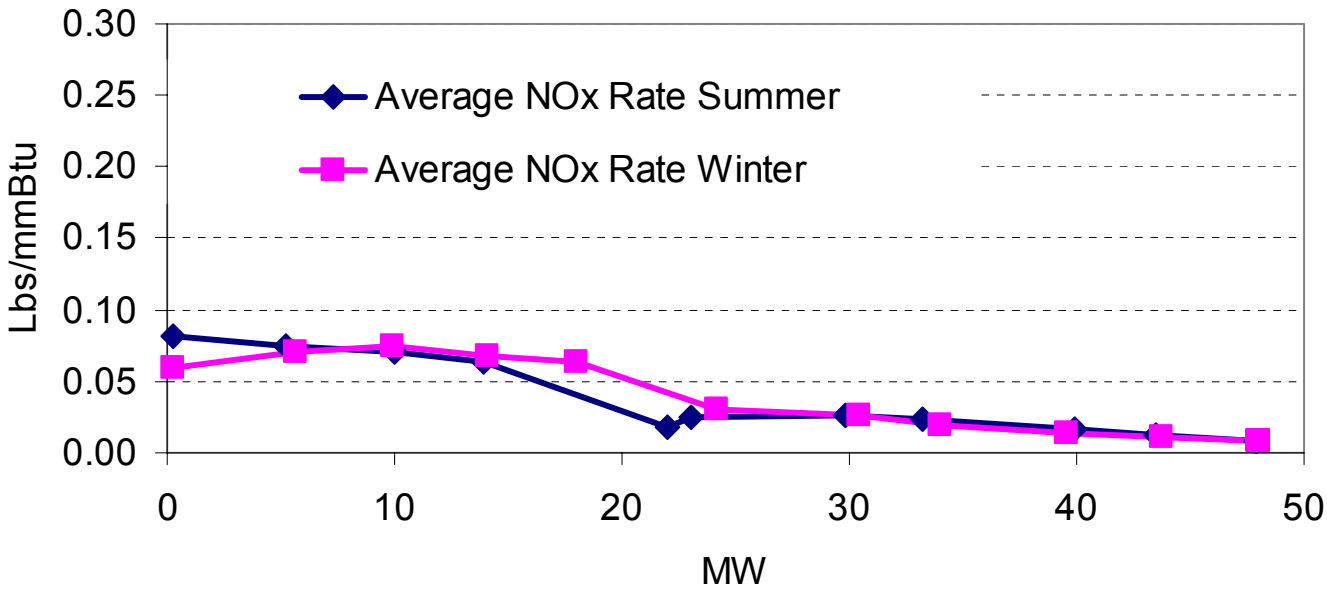
	Summer	Winter
Total NOx (lbs)	354,885	538,123
Total MMBtu	3,761,720	6,133,651
Average Rate (lbs/MMBtu)	0.0943	0.0877



Background – Power Plant Emissions

- NYPA LM6000 is an example of recent gas-fired GT
  - Recent GTs have low NOx emission rates

	Summer	Winter
Total NOx (lbs)	6,708	4,805
Total MMBtu	722,637	502,811
Average Rate (lbs/MMBtu)	0.0093	0.0096

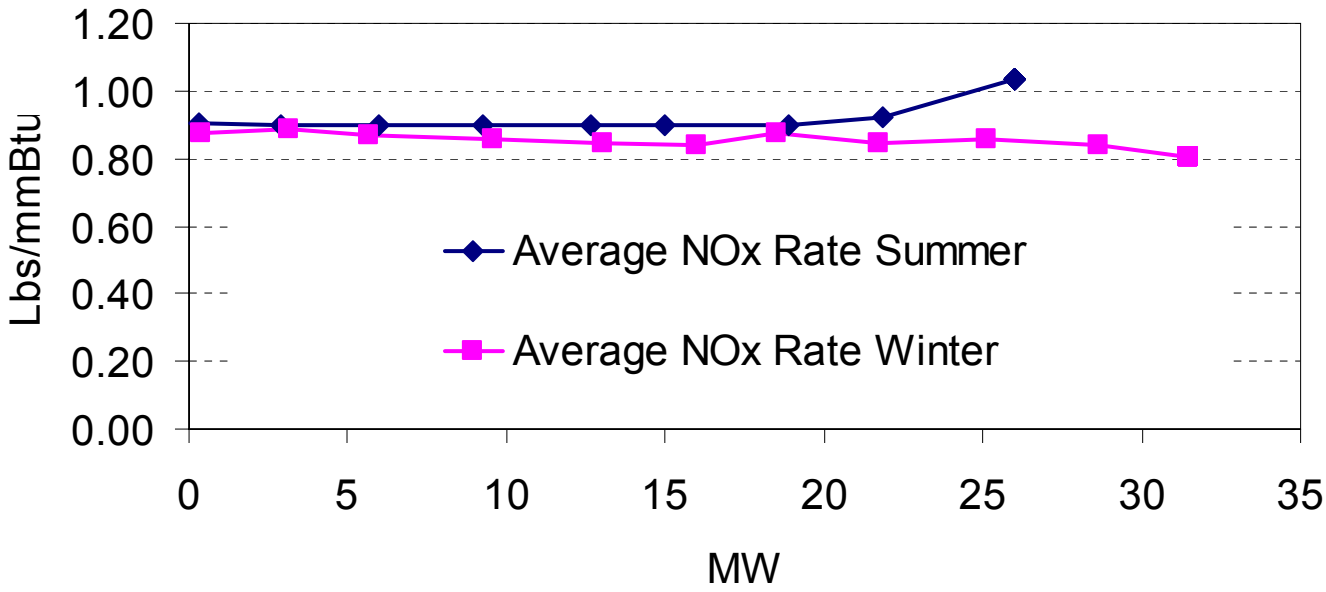


Source: 2008 EPA Clean Air Markets data

Background – Power Plant Emissions

- Holtsville 14 is an example of an older gas-fired GT
  - Much higher NOx emission rate compared to recent GTs

	Summer	Winter
Total NOx (lbs)	43,047	19,382
Total MMBtu	47,564	22,385
Average Rate (lbs/MMBtu)	0.9050	0.8659



Source: 2008 EPA Clean Air Markets data

Two 2012 Bayonne Cases

Two 2012 Bayonne Cases

- Current Emission Regulations with Federal CO_2 Cap & Trade
- Case 1.a – NYISO Load Growth
  - NYISO 2009 Gold Book: virtually zero growth 2008 - 2012
- Case 1.b – Historical Average Load Growth
  - Higher load growth (~1%) based on historical averages

Case 1.a – 2012 Operating Results

- Bayonne 2012 Operating Highlights
  - 15.8% capacity factor
  - Avg. 383 starts / unit, 3.7 operating hours / start
  - Units operate at or near full capacity when dispatched

Change in Generation	Imports	CC	Cogen	ST	Other GTs
On Peak Change w/ Bayonne	-0.8%	-1.5%	1.4%	-13.0%	-16.9%
Off Peak Change w/ Bayonne	-0.1%	-0.6%	1.2%	-20.3%	-19.9%

- Zone J (NYC) Market Energy Prices Lowered When Dispatched
  - Bayonne displaces more expensive peakers & Special Case Resources
  - Other GT generation decreases 17% on-peak, 20% off-peak over all hours

- Zone J Reliability Enhanced Even When Bayonne Not Dispatched
  - Bayonne provides 10 minute non-spin reserves
  - Multiple turbines provide dispatch modularity and increased reliability
  - Avoids need to operate boilers at min or part load for reserves
  - Boiler generation decreases 13% on-peak, 20% off-peak over all hours

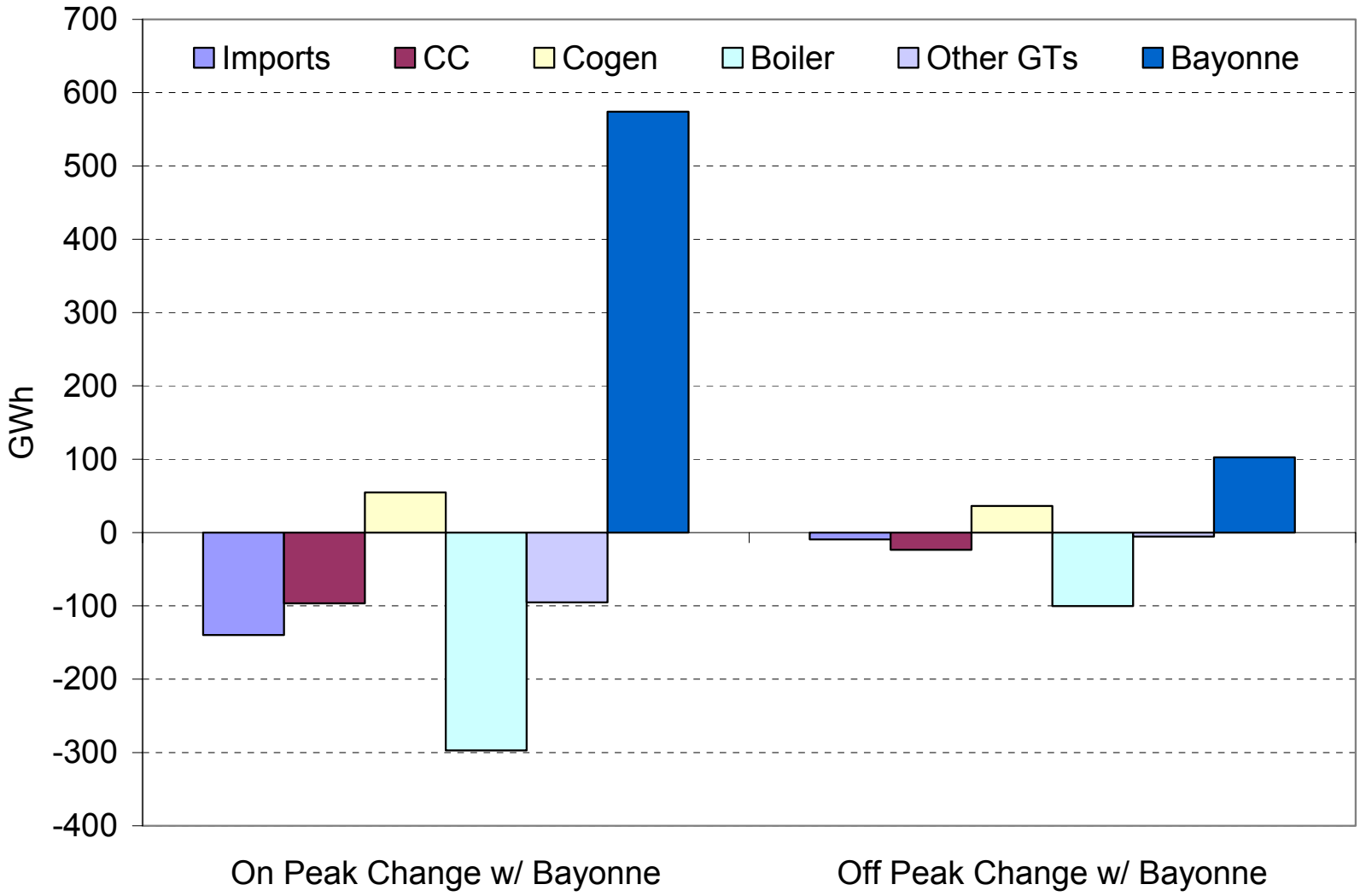
Case 1.a – Energy Price Effects

- Market Energy Prices Lowered When Dispatched
  - Largest decrease in Zone J
  - Smaller changes in other zones

	$/MWh	%
Zone J 138kV	-1.09	*-1.0*
Zone J 345kV	-1.09	*-1.0*
Zone K	-0.01	*0.0*
Zone GHI	-0.24	*-0.3*
Zone F	+0.02	*0.0*
NY West	-0.33	*-0.5*
PJME	-0.50	*-0.5*

Case 1.a – Zone J Effects

- Changes in Zone J Generation and Imports



Case 1.a – Emission Impacts

- Plants with Greatest NOx Reductions

	NOx		Generation	
	tons	%	GWh	%
Ravenswood 3	-75.8	*-24.6*	-182.4	*-25.3*
Arthur Kill 3	-58.3	*-29.4*	-125.9	*-24.3*
Hudson 1	-39.4	*-16.4*	-18.2	*-15.8*

- Changes in Regional Air Emissions
  - Material decline in Zone J emissions as boilers operate less

	NOx		SO_2		CO_2	
	tons	%	tons	%	tons	%
Zone J:	-358	*-12.5*	-105	*-25.6*	-408,242	*-4.9*
NYCA (incl. Zone J):	-302	*-0.7*	75	*0.0*	-373,313	*-0.9*
NYCA + PJME:	-340	*-0.4*	74	*0.0*	-31,580	*0.0*

Case 1.b – 2012 Operating Results

- Bayonne Operating Highlights
  - 16.4% capacity factor
  - Avg. 391 starts / unit, 3.7 operating hours / start
  - Units operate at or near full capacity when dispatched

Change in Generation	Imports	CC	Cogen	ST	Other GTs
On Peak Change w/ Bayonne	-1.0%	-1.5%	1.4%	-12.4%	-14.7%
Off Peak Change w/ Bayonne	0.1%	-0.8%	1.0%	-21.5%	-19.0%

- Zone J (NYC) Market Energy Prices Lowered When Dispatched
  - Bayonne displaces more expensive peakers & Special Case Resources
  - Other GT generation decreases 15% on-peak, 19% off-peak over all hours

- Zone J Reliability Enhanced Even When Bayonne Not Dispatched
  - Bayonne provides 10 minute non-spin reserves
  - Avoids need to operate boilers at min or part load
  - Boiler generation decreases 12% on-peak, 21% off-peak over all hours

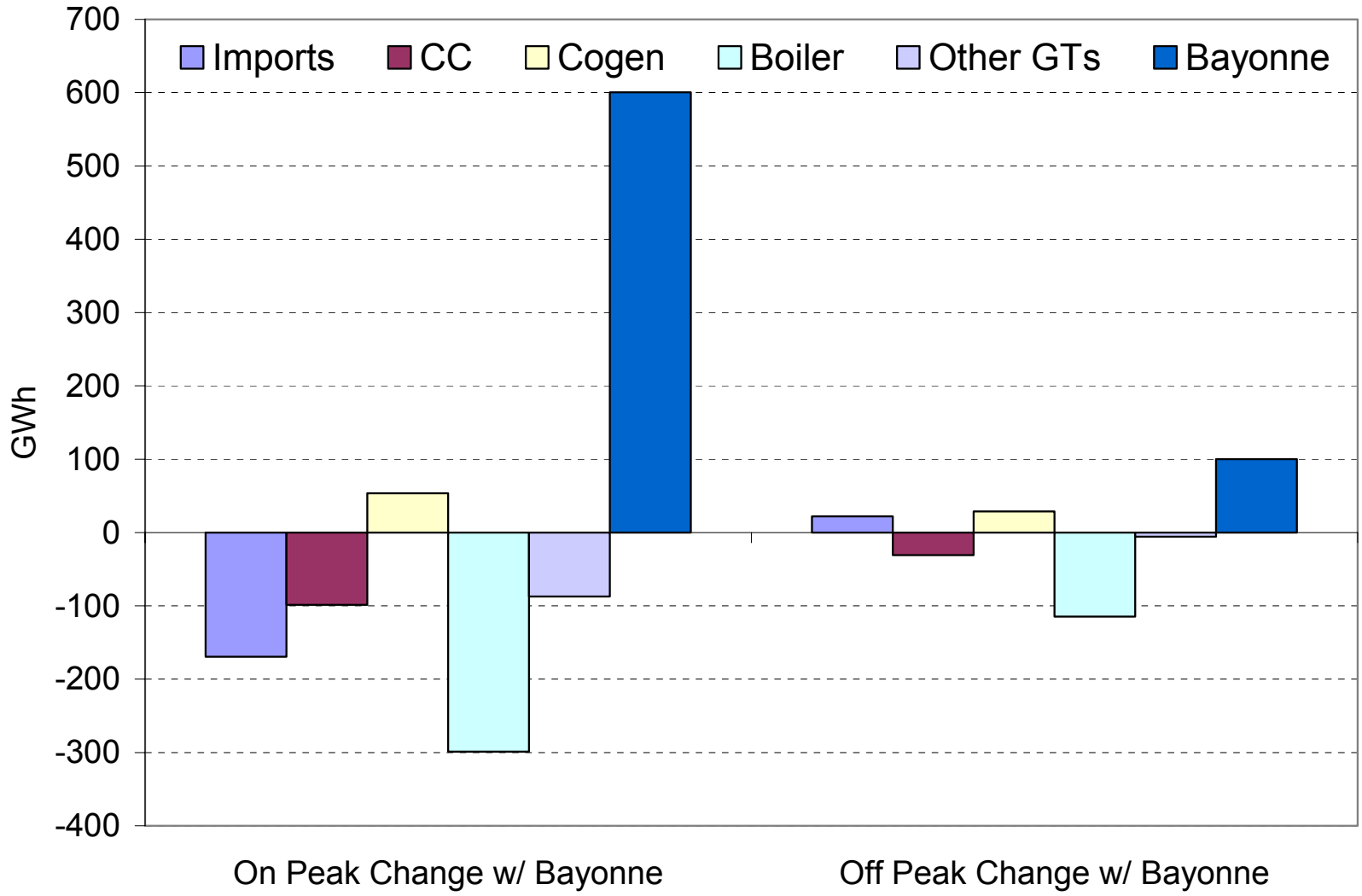
Case 1.b – Energy Price Effects

- Market Energy Prices Lowered When Dispatched
  - Zone J energy prices decline
  - Mixed changes in other zones

	$/MWh	%
Zone J 138kV	-0.44	*-0.4*
Zone J 345kV	-0.55	*-0.5*
Zone K	+0.63	*+0.6*
Zone GHI	+0.71	*+0.8*
Zone F	+0.61	*+0.7*
NY West	-0.05	*-0.1*
PJME	-0.02	*0.0*

Case 1.b – Zone J Effects

- Changes in Zone J Generation and Imports



Case 1.b – Emission Impacts

- Plants with Greatest NOx Reductions

	NOx		Generation	
	tons	%	GWh	%
Arthur Kill 3	-66.7	*-32.4*	-156.4	*-28.7*
Ravenswood 3	-65.1	*-20.0*	-159.2	*-20.9*
East River 7	-20.7	*-26.1*	-29.4	*-24.7*

- Changes in Regional Air Emissions
  - Material decline in Zone J emissions as boilers operate less

	NOx		SO_2		CO_2	
	tons	%	tons	%	tons	%
Zone J:	-339	*-11.4*	-102	*-23.7*	-405,091	*-4.7*
NYCA (incl. Zone J):	-313	*-0.7*	32	*0.0*	-391,747	*-0.9*
NYCA + PJME:	-286	*-0.3*	149	*0.0*	40,904	*0.0*

Conclusions

Power Market Conclusions

- When Dispatched, Bayonne Displaces More Expensive GTs
  - Other GT generation declines ~18% across all hours
- When Not Dispatched, Bayonne Provides Valuable Reserves
  - Bayonne provides 10 minute reserves instead of boilers
  - Large boiler generation declines ~17% across all hours
- Uncertain Net Impact on NYC Ratepayers
  - Zone J market energy prices decline ~0.7% when Bayonne operating
  - Load impact must consider Con Ed and NYPA hedges and changes in generation, imports, etc.
- Small Differences between Load Cases
  - Higher loads reduce Zone J energy price impact when Bayonne operating

Environmental Conclusions

- NOx Emissions Decline Significantly in Zone J
  - Less Zone J (NYC) generation and fewer emissions from boilers
  - Zone J power plant NOx emissions decline 339 - 358 tons *(~12%)*
  - Little change in rest of NY or in PJME
- SO_2 and CO_2 Emissions Also Decline in Zone J
  - Power plant SO_2 emissions decline 102 - 105 tons (*~25%)*
  - Power plant CO_2 emissions decline 405,091 - 408,242 tons (*~5%)*
- Small Differences between Load Scenarios
  - Zone J power plant emission reductions virtually unaffected by higher loads

SETH G. PARKER

SUMMARY

An economic and financial manager with an international background in project development, evaluation, financing, and divestiture / privatization / acquisition. Principal experience includes modeling and analyses of power, fuel, and infrastructure projects, inter-market transactions, procurement, contracts, market design, risk management, regulatory policy, and asset valuation.

PROFESSIONAL EXPERIENCE

1998 -	**Levitan & Associates, Inc.** Principal & Vice President Managing Consultant
1988-1998	**Stone & Webster Management Consultants (US and UK**) Vice President Assistant Vice President Executive Consultant Senior Consultant
1984-1988	**J. Makowski Associates, Inc.** Financial Manager - Ocean State Power
1981-1983	**ThermoElectron Energy Systems** Senior Financial Analyst
1978-1981	**Pacific Gas and Electric Co.** Project Financing Analyst

CONSULTING ASSIGNMENTS

Project and Due Diligence Evaluations

Forecasted expected operating regime for proposed Bayonne 512 MW GT peaker plant with u/w cable lead into New York City, including impact on market power prices and regional air emissions.

Prepared revenue and operating expense projections of PJM coal and combined cycle plants being sold by AES, including capacity revenues under alternative scenarios.

Conducted financial analysis of rival cogeneration projects at New York University, including operating cost savings, tax-exempt debt terms, and credit rating impacts; prepared project valuation and recommendation for Financial Committee.

Advised the New York State Housing Finance Agency as lender to a New York cogeneration project, including project review, contract negotiation, and financing terms.

Managed due diligence review, construction monitoring, and acceptance testing of the following cogeneration, combined cycle, fluidized bed, and industrial projects for commercial lenders, investment banks, and government, bilateral & multilateral agencies:

Brooklyn Navy Yard, a 220 MW cogeneration plant, New York
Derwent Cogeneration Project, a 210 MW cogeneration plant, England
East Java Power, a 500 MW combined cycle plant, Indonesia
EES Coke Battery, a 900,000 ton per year coke facility, Michigan
Guna Power Project, a 347 MW naphtha / gas combined cycle plant, India
Hadley Falls, a 43 MW hydroelectric plant, Massachusetts
Hub Power, a 1200 MW, $1.8 billion, World Bank-supported plant, Pakistan
Indiana Harbor Coke Battery, a 1.3 million ton per year facility, Indiana
Kot Addu, a 1600 MW oil / gas combined cycle plant, Pakistan
Midland Cogen Venture, a 1,370 MW $2.3 billion cogeneration plant, Michigan
Niagara Falls Resource Recovery, an 800,000 ton per year plant, New York
Panther Creek, an 80 MW fluidized bed power plant, Pennsylvania
Warrior Run, a 180 MW fluidized bed power plant, Maryland
York Research, financing of four plants, Texas, New York, and Trinidad

Established the economic value and financing plan for existing 43 MW hydroelectric power plant in support of acquisition and financing by a Massachusetts municipal utility.

Evaluated operating characteristics and economics of cogeneration expansion plans for the Massachusetts Institute of Technology, and recommended phased-in scheduling.

Managed due diligence reviews of US coal and gas-fired power plants in support of Manweb (UK) equity investments; helped negotiate transaction modifications as required.

Recommended cogeneration plant design and financing plan for Turkish Industrial Zone.

Evaluated the feasibility of converting the Bataan nuclear power station in The Philippines to a gas-fired combined cycle plant for Shell Oil Company.

Market / Policy Analysis

Prepared expert report on the Dominion Virginia Power's 2007 Solicitation for 2011 Unit Capacity for Shell Energy North America that addressed capacity needs, bidder qualifications, competitive procurement best practices, and bid evaluation methodology.

Provided financial, operational, and decommissioning funding advice to the Vermont Department of Public Service regarding Entergy's application to restructure the ownership of its merchant nuclear plants, including Vermont Yankee.

Prepared major deregulation study for the Maryland Public Service Commission that evaluated new generation, transmission, and demand-side options; evaluated divestiture impact on profitability of generation fleet and financial contribution to parent company; updated study for rate-base utility or power authority generation ownership.

Advised New York Power Authority (NYPA) on inter-market transactions, including power economics, interconnection requirements grid upgrades, reliability impacts, permit issues, and regulatory considerations; represented NYPA at PJM committee meetings.

Advised generator group on PJM proposed Reliability Pricing Model (RPM) capacity valuation mechanism, including gas turbine capital & operating costs, expected net revenues, financing charges, etc.; represented group before FERC.

Assessed market prices and congestion costs relative to competing generation and transmission project bids for Long Island Power Authority (LIPA); responsible for ICAP forecasts across northeast markets and commercial analysis of hvdc cable proposals.

Evaluated market potential of PJM cable exports into New York City for potential purchaser of Linden combined cycle project, including cable expansion issues.

Revised 2005/06 - 2007/08 capacity market parameters for NYISO based on levelized costs of gas turbine peaker capacity, including net energy revenues from multi-regional simulation model with stochastic treatment of hourly loads; evaluated demand curve slope and zero-crossing point; worked with stakeholder group to achieve consensus.

Advised counsel for Mirant Equity Committee regarding NYISO, ISO-NE, and PJM capacity markets and the use of demand curve mechanisms to forecast ICAP prices.

Established feasibility of inter-pool wheeling into load pocket to reduce congestion costs; quantified maximum benefit and related reliability and portfolio effects for LIPA.

Evaluated Indian Point Nuclear Power Station alternatives for Westchester County and its Public Utility Service Agency, including power and local economic implications of shut-down, repowering, replacement with transmission, conventional, and renewable resources, continued operation, and license extension.

Estimated market value of incremental energy and capacity from the Bonanza coal plant owned by the Deseret Generation and Transmission Cooperative in Utah.

Prepared analysis of US power markets and merchant plant business structures for overseas investor; recommended target areas and distressed asset screening model.

Advised stakeholder group on technical, environmental, operational, and regulatory issues of energy infrastructure projects across LI Sound and in southwest Connecticut for the Institute for Sustainable Energy; prepared guidelines for Connecticut Siting Council.

Prepared long-term market price forecasts by sub-regions in New England, New York, and PJM to capture congestion effects for PECO Energy's acquisition of Sithe assets.

Market analysis of conversion of Salem Harbor to gas for ISO-NE White Paper.

Assessed the market potential for independent power producers throughout the US; identified competitive capability of utility / non-utility developers and engineering firms.

New England cogeneration marketing and permitting assistance for Unitil gas utility.

Assessed state-by-state future demands for cogeneration systems based upon industrial activities, fuel costs, utility purchase and sales rates, and regulatory climates.

Auctions & Procurement

Retained by the Illinois Power Authority as Procurement Administrator for the 2009 competitive procurement of energy (financial swaps), capacity and RECs (both physical delivery) for the Ameren Illinois Utilities (AIU); responsible for benchmark pricing, bidder creditworthiness, security, performance, and related contract issues.

Advised the Connecticut Department of Pubic Utility Control (DPUC) on economic costs / benefits and credit / collateral terms and conditions for long-term PPAs.

Conducted power and fuel price forecasts and financial analysis for a confidential equity investor in the auction of the 2,480 MW Ravenswood Facility in New York City.

As Procurement Administrator for the Illinois Commerce Commission, conducted AIU's 2008 competitive procurement of energy (financial swaps), capacity and RECs (both physical delivery); responsibilities included benchmark pricing, credit, security, etc.

Assisted Allegheny Electric Cooperative to identify power purchase and equity investment opportunities in PJM; evaluated economics and risk parameters of PPA, tolling, market purchases, and ownership options; reviewed ISDA and EEI agreements.

Part of Procurement Monitor team on behalf of DPUC to oversee United Illuminating and Connecticut Light & Power 2006-2008 supply procurements; responsible for credit issues and evaluating financial barrier options to protect against unanticipated price movements.

Advised LIPA on commercial and financial issues associated with multiple solicitations for on-island and off-island capacity and energy; refined contract terms on risk and credit.

Evaluated third party contracts and on-site generation alternatives for Visy Paper in NYC.

Evaluated design-build proposals for a CHP plant at Rochester Institute of Technology, including engineering / construction qualifications, O&M strategy, financial structure, utility interconnection issues, and lifecycle cost / ROI results.

Evaluated strategic electric and gas procurement strategy options for the Buffalo Fiscal Stability Authority; made implementation recommendations to BFSA and City officials.

Project Financing

Advised multiple clients on off-balance sheet financing structures, including tax-exempt operating leases and third-party ownership of CHP and cogeneration facilities.

Structured non-recourse construction and permanent debt financing for Ocean State Power, the first IPP in the US; provided liaison between investors and financial advisor.

Developed off-balance sheet financing plans for ThermoElectron cogeneration projects.

Applied to the US Synthetic Fuels Corporation for price supports and loan guarantees.

Managed PG&E's $60 million pollution control Industrial Development Bond financing.

Recommended financing structures for PG&E subsidiaries & joint venture projects - coal mine, generating plants, gas exploration / production, and residential conservation.

Project Development

Advised Maine Department of Transportation on proposed LNG terminal project, including project feasibility, site, safety, comparative economics, and pipeline routing.

Provided commercial advice on 15 MW cogeneration upgrade for New York University, including economic feasibility, contract structure, and utility backup arrangements; advised on renewable wind project development / contractual support.

Advised The Stanley Works on business strategy / financing of 8MW hydroelectric plant.

Completed pre-financing development work (permits, construction, and financing) for Ocean State Power Phase I, a 225 MW combined cycle plant in Rhode Island.

Privatization / Divestiture

Prepared comprehensive descriptions of Southern California Edison thermal generation (12 plants, 10,000 MW) and Commonwealth Edison coal stations (6 plants, 6,000 MW).

Technical and economic advisor to Maine Public Service, Fitchburg Gas and Electric, and Unitil Corp for hydro, thermal, and power purchase agreement divestiture.

Contractual advice to Empressa Electrica de Guatemala, S.A. for power plant divestiture.

Technical and commercial advice (including forward pricing) to a confidential bidder for the New England Electric System divestiture (2800 MW thermal & 1200 MW hydro).

Provided technical / environmental advice to the Government of Pakistan for the 1600 MW Kot Addu plant privatization; developed capacity / energy contract pricing structure.

Gas and Fuel Projects

Developed integrated gas supply, storage, and forward haul transportation project for utilities in the metropolitan NY / NJ area to expand wintertime deliveries.

Evaluated equity return / risk profiles and prepared cash flow forecasts of interstate gas pipelines and storage projects for independent power plants throughout the Northeast.

Prepared testimony on risk, financing, and capital cost for the Endicott Pipeline Co.

Evaluated throughput and rate impacts on financial returns of competing gas pipeline proposals to support the development of Iroquois Gas Pipeline.

Technical Advisor to the Government of Pakistan for the privatization of the Sui Northern Gas Pipeline Company (approx. 200 bcf annual sales with 24,000 km of pipe).

Determined the distribution links between major domestic gas production basins and demand markets to help allocate exploration and development funds of Sohio Petroleum.

World Bank commercial advisor on the Asia Pacific Ltd. oil storage & pipeline, Pakistan.

Energy / Power Plant Optimization

Evaluated contract terms and conditions governing energy options for Nassau County Hub commercial district including cogeneration, spot market purchases, etc.

Assisted NYC industrial firm with cogeneration development; drafting steam purchase, power purchase option, site lease, and development contracts.

Developed cost-effective energy strategy, including asset reconfiguration, permit modification, and contract restructuring, for Massachusetts Water Resources Authority.

Implemented direct gas service via Algonquin Gas Transmission and evaluated cogeneration options for Phelps Dodge copper plant in Connecticut.

Developed inside-the-fence cogeneration and fuel strategy for Arizona paper mill.

Identified optimal cogeneration plant configuration and fuel supply for City of Holyoke.

Litigation Support and Expert Testimony

Submitted expert report and testified before the Virginia State Corporation Commission on behalf of Shell Energy NA regarding Dominion Virginia Power's 2007 Solicitation for 2011 Unit Capacity on RFP structure and bid evaluation issues (Case PUE-2008-00014).

Prepared information requests, submitted expert testimony, and testified before the VT Public Service Board on behalf of the VT Dep't of Public Service regarding the proposed restructuring of Entergy's merchant nuclear generation assets (Docket No. 7404).

Submitted expert report on behalf of generator group and participated in Technical Conference before FERC regarding proposed Reliability Pricing Model mechanism that will set market capacity prices in PJM (FERC Dockets Nos. EL05-148 and ER05-1410).

Prepared expert report on New York and New England capacity market mechanisms and plant valuation impacts for the Mirant Corp. equity committee in US Bankruptcy Court.

Submitted FERC affidavit regarding gas turbine engineering and economic parameters to reset locational ICAP demand curve; represented NYISO at FERC Technical Conference (FERC Docket No. ER05-428).

Expert witness regarding geothermal EPC contract performance and consequential damages based on market power rates before the American Arbitration Association.

Expert witness testimony for the Bridgeport RESCO waste-to-energy facility at the Connecticut DPUC re avoided cost pricing in the deregulated energy market.

Provided tax valuation support for gas and electric assets for Yankee Gas Company and The Connecticut Light and Power Company in Connecticut Superior Court.

Expert witness report supporting decision to cancel purchase of equity interest in the River Bend nuclear plant in US District Court for PECO Energy (Exelon).

Expert witness report regarding contractual benefits of major coal plant turbine upgrade based on future market power values in US District Court (Case No. 6:99-CV-76-ORL-22A); accepted as an expert in power project cost analysis and power price forecasting.

Expert witness regarding economic feasibility, financing, and profitability of a proposed cogeneration plant in West Virginia Circuit Court.

Presented testimony on relationship of independent power development fees to project capital costs before the American Arbitration Association.

Financial Analysis

Evaluated the intended financing plan and resulting credit strength of the proposed owner of Entergy's merchant nuclear plants, including Vermont Yankee, for the Vermont Department of Public Service; preparing information requests and rebuttal testimony.

Prepared investment analysis for Massachusetts Institute of Technology cogen project.

Advised lessor on utility buyout offer of wood-fired plant including future residual value.

Evaluated pro forma assumptions and risk / return analysis of Malaysian power projects.

Reviewed financial feasibility of proposed clean coal demonstration projects for DOE.

Managed steam purchase contract evaluation and internal cogeneration feasibility study for petrochemical producer in The Netherlands.

Proposed project financing options for Elektrenai plant modernization in Lithuania.

Power and fuel negotiation support for Cumbria Power, Ltd., the first IPP in England.

Determined economic assumptions, prepared financial pro formas, and analyzed equity return / risk for numerous proposed power projects for ThermoElectron and other clients.

Prepared long-term financial and rate forecasts of PG&E for state commission filing.

Generation Planning / Resource Economics

Evaluated bidders for Indianapolis Power & Light's 1992 competitive power solicitation.

Audited Florida Power & Light's resource plan, including fuel, load, and generation.

Techno-economic cogeneration feasibility study for Algonquin Gas Transmission.

Valued existing plant based on alternative peaking capacity for Delmarva Power & Light.

Forecasted avoided energy / capacity costs for third-party generators throughout the US.

Supervised life cycle power plant economic analysis for a Fuel Use Act application.

Compared historic and projected electric use by major manufacturing industry for EPRI.

PESENTATIONS & PUBLICATIONS

Gas and electric market interdependency panel moderator at Platt's 4th Annual Northeast Power Forum, 2009.

Sponsor for the Northeast Energy and Commerce and Association conference "Northeast Capacity Markets"; moderator for panel on generation entry / attrition outlook, 2007.

Conference organizer and moderator for "Capacity Markets – Impacts on Assets and Power Pricing" regarding G&T investment decisions in ISO-NE, NYISO, and PJM, 2007.

Conducted half-day workshop, "Forecasting Capacity Prices in the Northeast" and panel moderator on generation financing at Infocast Northeast Power Supply Forum, 2006.

"Financing Projects with ICAP Revenues", Infocast Financing U.S. Power conference, 2004.

Panel moderator on New England and Canadian LNG Projects, Infocast Atlantic Coast LNG Conference, 2004.

Speaker, "Power Sales Contract Restructuring Issues", at Infocast Asset Optimization and Portfolio Management Conference, 2003.

Panelist on "Southwest Connecticut Congestion", 10th Annual New England Energy Conference, 2003.

"Fuel and Power Contracting", Int'l District Energy Association Conference, 2002.

"Contract Restructuring", Infocast QF & IPP conference, 2001.

"Successful Valuation and Value-Creation of Transmission Assets", Infocast Electric Asset & Portfolio Valuation conferences, 2001.

"Evaluation of Repowering the Cabot Street Steam Station" using gas turbine technology, International District Energy Association conference, 2001.

"Plant Repowering" at the Infocast Plant Acquisition conference, 2000.

"Equipment Performance Impacts", Infocast Merchant Peaking Plant conference, 2000.

"The Pros and Cons of Repowering" in Competitive Utility, 2000.

"The First Wave" (initial divestiture results) 1998 and "Gas versus Coal" (techno-economic study) 1995, Independent Energy magazine.

"Evaluating Technical and Construction Risk" and "The Due Diligence Process", classes and case studies on for the Infocast Project Finance Institute, 1996-1998.

Non-utility generation and project financing classes at Stone & Webster Utility Management Development Program, 1989-96; General Electric, 1991-94; IBM 1994.

"Self Generation under Competitive Bidding", 1989 Cogen & IPP Congress.

EDUCATION

Wharton Graduate School (Univ. of Penn.), MBA in Finance / Operation Research, 1978.

Brown University, Sc.B. in Applied Mathematics / Economics, 1976.

International Gas Turbine Institute course: Basic Gas Turbine Technology, 1996.

Kennedy School (Harvard University) courses: International Geopolitics of Oil, 1982, and International Political Economy, 1993.

MISCELLANEOUS

Board of Directors, Northeast Energy and Commerce Association, 2007-.

Adjunct faculty lecturer in finance, Golden Gate University, 1979-1980.

Optimum yield resource management, National Oceanic and Atmospheric Admin, 1977.

Mayor's Waterfront Development Committee and Interface: Providence, 1974-1976.

JOHN J. ELDER

SUMMARY

A registered professional engineer in mechanical engineering with expertise in market simulation analysis, transmission load flow, and thermodynamics.

PROFESSIONAL EXPERIENCE

1995 - **Levitan & Associates, Inc.**
Manager, Power Systems and Market Design
Senior Consultant

1994 - 1995 **Hague International Corp.**
Project Engineer

1970 - 1994 **Stone & Webster Engineering Corp.**
Principal Mechanical Engineer - Heat Exchanger Specialist
Mechanical Engineer

CONSULTING ASSIGNMENTS

Market Analysis

Testified at the Maryland Public Service Commission regarding the expected value of the output of the Warrior Run project as sold into the PJM market vs. a bilateral contract.

Prepared analysis and report for the Maryland Public Service Commission on the impact of potential policy initiatives on Maryland electric consumer costs.

Prepared analysis and report on the impact of new peaking capacity in the NEMA/Boston area on emissions in New England.

Prepared analysis and report on the market revenues expected for new peaking resources for presentation to the NYISO ICAP Working Group in support of its determination of ICAP Demand Curve parameters.

Advised ISO-New England, New York-ISO and PJM Interconnection regarding the impacts of hurricane related damages to natural gas production, gathering and processing facilities in the Gulf of Mexico on fuel availability and grid reliability for the winter 2005/2006.

Analyzed the historical relationship between load, installed capacity and market energy prices in New England in support of financial analysis of proposed peaking market sales from an existing generator owned by the Massachusetts Water Resources Authority.

Analyzed the distribution of non-energy market revenues (including ancillary services, uplift/BPCG/Operating Reserve Credit and ICAP/UCAP) among various market participants in support of project financial analysis for multiple clients, including utilities, energy investors and generators.

Simulation Modeling

Maintains a database of project development status, generation retirements, load forecasts, transmission constraints and other market data in support of production simulations and other market forecasts.

Performed production simulation modeling for New York State and adjoining areas (PJM, ISO-NE and Canada) to prepare electric energy price forecasts under a congestion pricing framework covering all major consumption areas in New York State as well as plant specific operating costs and revenues for a variety of clients including NYISO, NYPA, LIPA, All Capital, Cornell University, Westchester County Public Utility Service Agency, Consolidated Edison, the New York State University Construction Fund, the University of Rochester, the Rochester Institute of Technology, American National Power.

Performed production simulation modeling for New England and adjoining areas to prepare electric energy price forecasts under a congestion pricing framework covering all major consumption areas in New England as well as plant specific operating costs and revenues for multiple clients, including Connecticut Department of Public Utility Control, Consolidated Edison, PP&L Global, TransCanada Power, El Paso, and BW Energy.

Performed production simulation modeling for PJM and PJM West and adjoining areas to support analysis of policy initiatives for the Maryland Public Service Commission and to develop gas consumption forecasts under transmission constraints for the PJM Interconnection.

Performed production simulation modeling for SERC and adjoining areas to prepare electric energy price forecasts in support of PowerGen on the acquisition of Louisville Gas &Electric.

Performed production simulation modeling for ERCOT and SPP to support financial analysis of the comparative economics of IGCC, pulverized coal and natural gas-fired combined cycle generating plants.

Performed production simulation modeling covering the NY-ISO and adjoining areas to develop electric generator gas consumption forecasts under transmission constraints for LIPA and Consolidated Edison.

Developed and/or reviewed production simulation model assumptions for use by the IMO, NY-ISO and ISO-NE and reviewed their simulation results for gas reliability studies. Analyzed simulation results from MAPS (NYISO and IMO) and Prosym (ISO-NE) to prepare reports and inputs for gas pipeline modeling.

Reviewed production simulation by others (MAPS, Prosym, Promode, UPLAN, IREMM) regarding model assumptions and results in connection with congestion forecasting, energy contracting, contract restructuring and litigation support.

Prepared electric energy price forecasts for several proposed cogeneration evaluations for the University of Rochester, the State University of NY and the University of Massachusetts.

Plant Performance

Analyzed performance parameters and operating limits of several proposed cogeneration technologies for the Cornell University, University of Rochester, the State University of NY and the University of Massachusetts.

Prepared analysis and report on the effect of natural gas supply temperature on plant performance and availability for Florida Power & Light. Analyzed the impact on delivered gas temperature of various pipeline operating modes including the Joule Thomson effect and heat transfer through the pipe wall.

Prepared analysis and report on steam turbine operating limits for a Massachusetts Water Resources Authority cogeneration project that resulted in increased operating flexibility and reduced fuel costs.

Analyzed the performance and operating modes of solid fuel and gas fired combined cycle cogeneration facilities to develop strategies for contract restructuring for utilities in New York, Pennsylvania, West Virginia and Washington.

Analyzed under-performance of Bay State Gas pipeline gas turbo expander energy project and predicted the maximum output that was realized after plant repairs.

Evaluated operating problems and proposed boiler and fuel handling upgrades for the Osceola and Okelanta Cogeneration projects.

Analyzed the performance and operating modes and operating costs of several gas fired combined cycle cogeneration facilities to develop strategies for contract restructuring for Puget Sound Energy.

Transmission Congestion Analysis

Analyzed transmission economic and reliability upgrades in PJM, NY and NE to identify regulated and merchant investment opportunities.

Analyzed transmission congestion in northern Maine to support expert testimony regarding the Maine Power Connection for the Connecticut DPUC.

Analyzed transmission congestion in northern NJ to support selection of points for analysis of Incremental Auction Revenue Rights resulting from the transmission upgrades proposed for the Neptune DC cable for LIPA.

Analyzed transmission constraints and locational capacity and spinning reserve requirements affecting power plants proposed for New York City, Western NY, Rockland County, Long Island, Maine, Rhode Island and Ontario.

Analyzed transmission congestion between JCP&L and the PJM CEI interface to support testimony in the NJ BPU hearings on the GPU First Energy merger.

Transmission Interconnection Support

Provided technical advisory services regarding interconnection options for a cogeneration facility at the Rochester Institute of Technology.

Provided technical advisory services regarding the development of the Green Path transmission project in southern California by Citizen's Energy.

Provided technical advisory services regarding selection of the RTO to serve as operating authority and transmission system upgrades required for the Neptune DC cable from NJ for LIPA.

Provided technical advisory services regarding transmission system upgrades required for interconnection of new generators for two projects in Maine, for Calpine and American National Power, a project in NYC for Visy Paper.

Procurement

On behalf of the Connecticut Department of Public Utility Control, testified regarding the comparison of proposals for development of peaking power plants in Docket No. 08-01-01.

Evaluated proposals for the sale of capacity and/or energy to the New York Power Authority.

Advised the Ameren Illinois Utilities regarding the procurement process for the acquisition of a portfolio of energy products, including energy swaps, capacity and renewable energy credits, to meet the utilities' native load requirements for the period June 2008 through May 2009.

On behalf of the Connecticut Department of Public Utility Control, provided modeling to set proxy prices for energy and capacity for the procurement of Standard Service and Supplier of Last Resort Service for the state's two investor-owned utilities.

Supported due diligence review of the Linden Cogeneration Plant's generation and transmission assets and the potential development of a VFT link between PJM and NY for a confidential client.

Provided advisory services regarding procurement of new base load capacity to Allegheny Electric Cooperative.

Evaluated proposals for the sale of capacity and/or energy to the Long Island Power Authority.

Prepared analysis of "seams issues" to support evaluation of proposals for off-island capacity and/or energy received by LIPA. Issues included scheduling constraints resulting from proposal terms and the requirements of the NYISO and PJM or ISO-NE as well as the costs and risks associated with the PJM or ISO-NE transmission service required to execute the proposed transactions.

Analyzed the role of New England pumped storage facilities in the ancillary services markets for PP&L Global.

Supported due diligence review of Commonwealth Electric's generation assets including production simulation to support an energy price forecast, evaluation of development potential and site inspection of existing facilities for BW Energy.

Supported due diligence review of Boston Edison's generation assets including production simulation to support an energy price forecast, evaluation of development potential and site inspection of existing facilities for Consolidated Edison.

Transaction Support

Evaluated proposals for the sale of capacity and/or energy to the Long Island Power Authority.

Contract Support

Analyzed the distribution of non-energy market revenues (including ancillary services, uplift/BPCG/Operating Reserve Credit and ICAP/UCAP) among various market participants in support of contract financial analysis for multiple clients, including utilities, energy investors and generators.

Analyzed the impact of the terms of a dispatchable NUG contract on market prices to evaluate the total portfolio cost of purchased power for Consolidated Edison.

Reviewed term sheets and draft contracts with regarding interactions with applicable market rules for Consolidated Edison.

Facilitated NUG restructuring of Tenaska Ferndale contract on behalf of Puget Sound Energy.

Supported due diligence review of Central American generation assets including
site inspection and evaluation of facilities for BankBoston.

Evaluated proposed strategies to mitigate the effects of minimum generation events with respect to the limitations and constraints imposed by the operating characteristics of the plants operating within the PJM control area.

Litigation Support

Prepared FERC affidavit regarding gas quality control on the Maritimes and Northeast system for Calpine Corporation.

Supported preparation of expert testimony regarding the Maine Power Connection for the Connecticut DPUC.

Prepared analysis of plant revenues in support of asset valuation in Mirant bankruptcy proceeding.

Provided litigation support to owners of a solid fuel, non-utility generator and a gas-fired cogenerator in PJM.

PRIOR BACKGROUND

Prepared performance data for proposals for advanced combined cycle plants using a proprietary coal fired gas turbine combustion system.

Developed a procedure to prevent overheating a combustion turbine when operating with high levels of air extraction.

In support of the development of a high temperature gas to air heat exchanger, predicted the circumferential and axial temperature distribution in a ceramic tube exposed to convective and radiation heat transfer to predict the tube life and susceptibility to thermal cracking.

For the Department of Energy, developed a conceptual design for a closed loop cooling water system to transfer heat from the helium in a closed loop gas turbine power plant to the circulating water system. This effort included sizing the cooling water/circulating water heat exchanger, selecting the flow rates for the cooling and circulating water, and developing a conceptual arrangement.

Evaluated the feasibility and desirability of adding a Secondary Condensing System (SCC) to ABB's System 80+ plant on behalf of the Korean Electric Power Company. Two design approaches were considered. The evaluation included sizing major equipment, equipment layout, interfaces with existing systems, and licensing impacts.

Reviewed the specification, bid evaluation, contract award, drawing review fabrication and testing for a high pressure and low-pressure feedwater heater for Electric Power Research Institute. Prepared a life cycle cost analysis for heaters using carbon steel, stainless steel and AL6XN tubing.

Participated in the Balance of Plant (BOP) design for a closed cycle helium gas turbine power plant using a helium-cooled reactor as a heat source. Prepared a plant cycle diagram and heat balance diagram. Determined the configuration and required sizes for BOP heat exchangers (recuperators, intercoolers, precooler and cooling tower).

Evaluated the impact of installing an oversized pump impeller for Sequoyah Nuclear Power Station - Tennessee Valley Authority. This analysis included consideration of consequences and repercussions to the system design of the containment spray system.

Developed procedures to ensure the technical accuracy and completeness of Design Basis Documents for North Anna - Virginia Power. Prepared Design Basis Documents for two nuclear power plant systems: the Auxiliary Feedwater and Component Cooling Water systems.

Coordinated engineering activities related to Duquesne Light Company application for a rate increase.

Coordinated and reviewed all Power Division activities related to Beaver Valley Unit 2 submitted to the NRC.

Prepared the Mechanical sections of the Description of Plant and the Plant Estimate for Patriot Power Station, Indianapolis Power & Light, and a 700 MW coal-fired steam power plant.

Supervised all Power Division engineers and designers as they prepared piping and diagrams for Boston Edison's Mystic Station wastewater treatment facility. Responsible for completion of the work on schedule and within budget.

Supervised work on the BOP for Sundesert Nuclear Power Plant. Oversaw activities related to flow diagrams, system descriptions, equipment specifications, and PSAR preparation, ensuring technical adequacy. Prepared BOP work package schedules and budgets.

Prepared and maintained flow diagrams and reviewed associated system diagrams and drawings prepared by other disciplines for Millstone Nuclear Power Station Unit 3. Prepared system descriptions, maintained equipment specifications reviewed vendor drawings and technical documents for compliance with the specifications, FSAR sections for the service water system and emergency diesel generators.

Calculated the thermal performance and fluid pressure drops for heat exchangers for many applications. Prepared calculations for equipment used to determine the heat exchanger configuration required to meet a specified thermal performance with constraints on pressure drop, overall length and/or diameter.

Prepared many engineering studies to evaluate the technical and economic feasibility of design concepts ranging in scope from individual mechanical components to integrated resource plans.

EDUCATION

Massachusetts Institute of Technology, M.S., Mechanical Engineering, 1967.

Massachusetts Institute of Technology, B.S., Mechanical Engineering, 1967.

PROFESSIONAL REGISTRATION

Commonwealth of Massachusetts Professional Engineer License #EN 27757-M

ASSOCIATIONS

ISO-NE Transmission Expansion Advisory Committee

American Society of Mechanical Engineers

New England Gas Association

Northeast Energy and Commerce Association

PUBLICATIONS

"A Test Program for Predicting and Monitoring the Emergency Diesel Generator Heat Exchangers at Limerick Generating Station and Peach Bottom Atomic Power Station," Proceedings of the International Joint Power Generation Conference, October 1995.

"Cost and Security of Backup Power Supplies," IDEA 13th College/University Conference Proceedings, February 2000.

JENNIFER A. BARTELS

SUMMARY

A Consultant with experience providing research support and quantitative analysis.

PROFESSIONAL EXPERIENCE

2006 – **Levitan & Associates, Inc.**
Consultant
Assistant Consultant

CONSULTING ASSIGNMENTS

Conducted an analysis of hourly and daily flow patterns on a major interstate natural gas pipeline in support of a FERC rate case.

Assisted with the development of long-term price forecasting of gas, oil and coal prices for multiple clients to assist with energy strategies and investment decisions.

Provided analytical support and database management for energy market analysis and price forecasting.

Conducted price discovery for futures and forwards for both power and gas in numerous Northeast markets.

Conducted long term gas forecast and pricing analysis for a major Northeast power authority.

Provided quantitative research and analytical support for various assignments.

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA
S.B. Management Science, June 2006