PA Consulting Group

City of Vero Beach

Power Contracts Analysis

August 2012

Privileged and Confidental

PA

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1. POWER CONTRACTS

The City of Vero Beach ("the "City") is party to four power contracts (together, the "Power Contracts") with the Florida Municipal Power Association ("FMPA") and the Orlando Utilities Commission ("OUC"). Through the three FMPA contracts, the City has an ownership interest in the electrical output of Units I and II of the Stanton coal power plant and Unit II of the St. Lucie nuclear power plant. The City's ownership interests entitle it to a portion of the electricity generated by Stanton I-II and St. Lucie II, and the costs associated with generating the electricity. Through the OUC contract, the City meets its incremental electricity needs, after accounting for the electricity it receives from its own power plant, a 155 megawatt ("MW") natural gas power plant, and the FMPA contracts.

The Power Contracts, along with City's own power plant currently service the City's entire electricity needs. The terms of the Power Contracts are as follows:

- The first FMPA contract entitles the City to 1.5% of the St. Lucie nuclear plant's output, and expires December 31, 2043.
- The second FMPA contract entitles the City to 4.5% of Unit 1's output from the Stanton coal plant, and expires December 31, 2057.
- The third FMPA contract entitles the City to 4.0% of Unit II's output from the Stanton coal plant, and expires December 31, 2066; and
- The OUC contract requires that OUC serve all of the City's incremental electricity needs - after accounting for the City's share of the output from Stanton I, Stanton II and St. Lucie II and the output from City's own power plant, and expires December 31, 2029.[1]

Edwards Wildman Palmer LLP ("EWP"), on behalf of Vero Beach, requested that PA Consulting Group ("PA") opine on the fair market value ("FMV") of the Power Contracts, in order to support the potential acquisition of Vero Beach's generation, transmission and distribution system by Florida Power and Light ("FPL").

PA determined the FMV of the Power Contracts to be between -$82.8 million and -$50.9 million, with FMPA contracts having a FMV between -$29.6 million and -$18.2 million, and the OUC contracts having a FMV between -$53.2 million and -$32.7 million.

The following memorandum outlines PA's methodology, assumptions and findings, which are all consistent with our standard approach to power contract valuation.

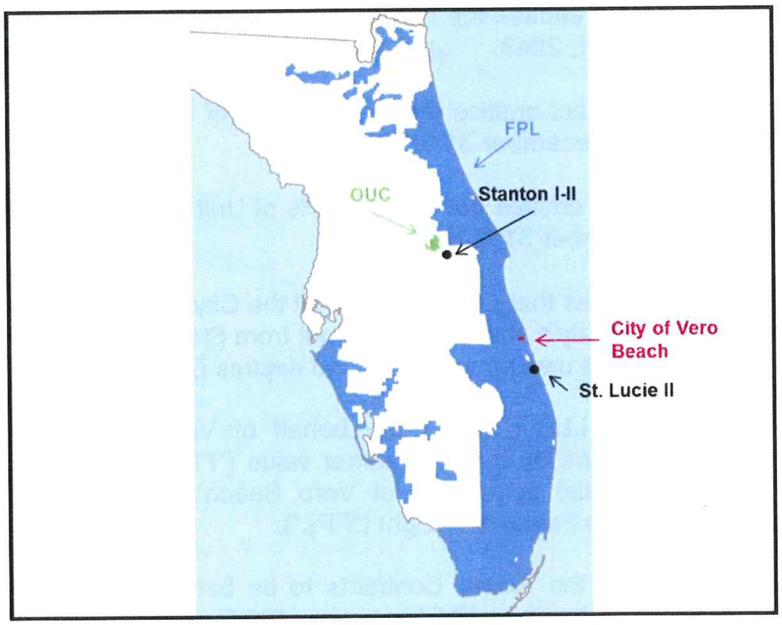
[1] Unofficially, this contract is referred to as the 'All-requirements' contract.

1.1 OVERVIEW OF THE POWER CONTRACTS

Through the FMPA contracts the City has ownership interests of 4.5% and 4.0% in Units I-II, respectively, of the Stanton coal power plant and 1.5% in St. Lucie II, a nuclear power plant. These ownership interests entitle the City to a share of the electricity generated by the power plants, as well as their associated costs. These costs include, but are not limited to, fuel, operations and maintenance, and debt service (ie principal and interest payments).

The OUC contract serves the City's incremental electricity needs that are not met by the electricity the City receives through the FMPA contracts and its own power plant. In return, the City pays OUC a demand charge, in addition to the average cost of generating electricity from OUC's system.

Figure 1-1: Service Territory Overview



Sources: PA Consulting Group and copyrighted material excerpted from Ventyx's Velocity Suite.

1.2 METHODOLOGY AND ASSUMPTIONS

The FMV of the Power Contracts is determined using a discounted cash flow analysis of the annual mark-to-market values of each contract.[2] In simplified terms, the mark-to-market value is the difference between the City's cost for the electricity it receives under the Power Contracts, and the cost to purchase the same amount of electricity from the market (ie the market cost for electricity).

Table 1-1 below provides an illustrative example of how a mark-to-market value is calculated. In this example, the cost of the electricity the City receives (labeled as '*City's Share of St. Lucie's II Electricity Costs ($ millions)*') is greater than the cost for the same amount of electricity if the City had purchased it from the market (labeled as '*Market Electricity Costs (7,000,000 x 1.34% x $35) ($ millions)*'). Therefore, the mark-to-market is a negative value, -$3.4 million, which means the City would need to pay a potential buyer to assume the liability (ie negative contract value).

Table 1-1: Hypothetical Example of Mark-to-Market Annual Value for St. Lucie II	
St. Lucie II's Electricity Output (MWh)	7,000,000
St. Lucie II's Electricity Costs	
Fuel ($ millions)	55
Operating & Maintenance ($ millions)	145
Debt Service ($ millions)	300
St. Lucie II's Total Electricity Costs ($ millions)	500
City's Ownership Interest in St. Lucie II	1.34%
City's Share of St. Lucie's II Electricity Costs ($ millions)	**6.7**
Market Cost for 1 MW of Electricity ($)	35.00
Market Electricity Costs (7,000,000 x 1.34% x $35) ($ millions)	**3.3**
Mark-to-Market Value ($ millions)	**(3.4)**

[2] Mark-to-market analysis is an accounting procedure in which the value of an asset is recorded at its current market value, which may be higher or lower than its purchase price or book value.

PA determined the City's share of the electricity costs (eg fuel, operations and maintenance, debt service) under the FMPA Contracts based on a detailed analysis of FMPA's 2012 power projects budget and allocations and 2011 Annual Report. Additionally, PA projected the electricity the City would receive under the Power Contracts (i.e. how much electricity Stanton I, Stanton II and St. Lucie II would generate) using its energy market forecasting model. PA's energy market forecasting model simulates the electrical output of all power plants across the U.S. - based on inputs such as fuel prices, electricity demand, new power generation additions, etc. The energy market forecasting model also projects a market price for electricity for all regions of the U.S., including Florida.

PA then compared the total cost of the electricity received under the FMPA contracts (effectively the sum of the fuel, operations and maintenance and debt service costs) to the cost of electricity if it had been purchased at the projected market price for electricity in Florida. The difference between these two values for a given year represents the annual mark-to-market value of the respective FMPA contract.

PA determined the annual mark-to-market value of the OUC contract based on a similar approach. Combining PA's energy market forecasting model results with an analysis of OUC's annual reports and the OUC contract, PA projected OUC's electricity costs under the contract (i.e. demand and average system costs). PA then calculated the amount of electricity OUC would deliver to the City. This value was calculated by adding the electricity projected to be provided by the FMPA contracts and the electricity projected to be provided by the City's power plant (also projected using PA's energy market forecasting model) and comparing those values to the City's forecasted electricity needs. The difference between the City's electricity needs and what it receives from the FMPA contracts and its power plant was assumed to be served by the OUC contract. Finally, PA compared the cost of the electricity received under the OUC contract to the cost of the electricity if it had been purchased from the market, in order to calculate the annual mark-to-market values of the OUC contract.

1.3 RESULTS

Relying upon the methodology and assumptions outlined in the previous sections, PA determined the FMV of the Power Contracts based on PA's projection of the mark-to-market values of the Power Contracts and PA's view of the market cost for electricity in Florida. Based on this analysis, PA calculated the FMV of the Power Contracts to be between -$82.8 million and -$50.9 million, with FMPA contracts having a FMV between -$29.6 million and -$18.2 million, and the OUC contracts having a FMV between -$53.2 million and -$32.7 million. Additionally, PA has separated the FMV of the Stanton contracts into the FMV for the first 3 years (2014-2016) and the value from year 4 (2017) to maturity.

The FMV range was developed primarily based on assumptions surrounding the ability of a potential buyer to use the annual mark-to-market values of the Power Contracts to offset tax liabilities. These values are presented by contract in Table 1-2 below.

Table 1-2: Fair Market Value Ranges (2014 $millions)

	Low Fair Market Value			**High Fair Market Value**		
	Maturity (2014 +)	**2014-16**	**2017 +**	**Maturity (2014 +)**	**2014-16**	**2017 +**
FMPA						
Stanton I	**(11.1)**	(11.9)	0.8	**(6.8)**	(7.3)	0.5
Stanton II	**(8.6)**	(8.0)	(0.6)	**(5.3)**	(4.9)	(0.4)
St. Lucie II	**(9.9)**	n/a	n/a	**(6.1)**	n/a	n/a
Total FMPA	**(29.6)**	**n/a**	**n/a**	**(18.2)**	**n/a**	**n/a**
OUC						
OUC Contract	(53.2)	n/a	n/a	(32.7)	n/a	n/a
Total OUC	**(53.2)**	**n/a**	**n/a**	**(32.7)**	**n/a**	**n/a**
Total FMPA + OUC	**(82.8)**	**n/a**	**n/a**	**(50.9)**	**n/a**	**n/a**

APPENDIX A: *DETAILED RESULTS*

This section provides detailed proforma of PA's projections for the Power Contracts.

Table A-1 (a): Mark-to-Market Projections – 2014 to 2023 (nominal $s)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Stanton I										
Electricity Output (GWh)	80	87	134	137	138	141	141	143	147	145
Contract Electricity Cost ($000s)	8,718	9,382	11,479	11,815	13,528	13,851	9,591	9,928	10,367	10,501
Market Cost for Electricity ($000s)	3,453	4,285	7,573	8,220	8,701	9,274	9,939	10,796	11,687	12,075
Mark-to-Market Value	**(5,265)**	**(5,097)**	**(3,906)**	**(3,595)**	**(4,827)**	**(4,577)**	**348**	**868**	**1,321**	**1,574**
Stanton II										
Electricity Output (GWh)	65	68	105	111	114	116	118	120	122	121
Contract Electricity Cost ($000s)	6,544	6,696	8,334	8,762	9,034	9,296	9,617	9,910	10,226	10,371
Market Cost for Electricity ($000s)	2,791	3,378	5,923	6,632	7,147	7,611	8,313	9,044	9,712	10,097
Mark-to-Market Value	**(3,753)**	**(3,318)**	**(2,411)**	**(2,131)**	**(1,887)**	**(1,685)**	**(1,304)**	**(866)**	**(514)**	**(274)**
St. Lucie II										
Electricity Output (GWh)	90	90	90	90	90	90	90	90	90	90
Contract Electricity Cost ($000s)	8,035	8,137	8,239	8,345	8,454	8,565	8,679	8,796	10,675	5,909
Market Cost for Electricity ($000s)	3,893	4,465	5,118	5,406	5,688	5,953	6,357	6,807	7,183	7,541
Mark-to-Market Value	**(4,142)**	**(3,672)**	**(3,122)**	**(2,939)**	**(2,766)**	**(2,612)**	**(2,322)**	**(1,989)**	**(3,492)**	**1,632**
OUC										
Electricity Output (GWh)	490	480	400	385	374	368	369	352	348	354
Contract Electricity Cost ($000s)	29,838	30,135	30,411	31,338	32,259	32,699	36,421	36,648	37,168	38,229
Market Cost for Electricity ($000s)	21,107	23,693	22,682	23,052	23,555	24,247	25,943	26,555	27,706	29,518
Mark-to-Market Value	**(8,730)**	**(6,441)**	**(7,729)**	**(8,285)**	**(8,704)**	**(8,452)**	**(10,477)**	**(10,093)**	**(9,462)**	**(8,711)**

Source: PA Consulting Group analysis.

Table A-1 (b): Mark-to-Market Projections – 2024 to 2033 (nominal $s)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Stanton I										
Electricity Output (GWh)	146	146	147	146	146	144	147	147	147	147
Contract Electricity Cost ($000s)	10,840	11,117	11,427	11,708	11,980	12,176	12,640	12,959	13,269	13,586
Market Cost for Electricity ($000s)	12,699	13,234	13,813	14,366	14,794	15,115	15,857	16,496	16,908	17,331
Mark-to-Market Value	**1,860**	**2,117**	**2,386**	**2,658**	**2,814**	**2,939**	**3,217**	**3,537**	**3,640**	**3,745**
Stanton II										
Electricity Output (GWh)	123	124	123	120	122	123	120	122	122	122
Contract Electricity Cost ($000s)	10,730	10,966	11,173	11,241	17,136	9,737	9,845	10,210	10,465	10,726
Market Cost for Electricity ($000s)	10,738	11,193	11,596	11,789	12,354	12,871	13,030	13,730	14,073	14,425
Mark-to-Market Value	**8**	**227**	**423**	**548**	**(4,783)**	**3,134**	**3,185**	**3,520**	**3,608**	**3,698**
St. Lucie II										
Electricity Output (GWh)	90	90	90	90	90	90	90	90	90	90
Contract Electricity Cost ($000s)	6,035	6,164	6,296	5,559	5,698	5,841	5,987	6,137	6,290	6,447
Market Cost for Electricity ($000s)	7,857	8,184	8,513	8,863	9,154	9,467	9,771	10,170	10,425	10,685
Mark-to-Market Value	**1,822**	**2,019**	**2,217**	**3,304**	**3,456**	**3,626**	**3,784**	**4,034**	**4,134**	**4,238**
OUC										
Electricity Output (GWh)	361	370	380	399	409	418	0	0	0	0
Contract Electricity Cost ($000s)	39,158	40,457	41,676	43,490	44,704	45,514	0	0	0	0
Market Cost for Electricity ($000s)	31,370	33,535	35,790	39,130	41,437	43,791	0	0	0	0
Mark-to-Market Value	**(7,787)**	**(6,922)**	**(5,886)**	**(4,361)**	**(3,268)**	**(1,723)**	-	-	-	-

Source: PA Consulting Group analysis.

Table A-1 (c): Mark-to-Market Projections – 2034 to 2043 (nominal $s)

	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Stanton I										
Electricity Output (GWh)	147	147	147	147	147	147	147	147	147	147
Contract Electricity Cost ($000s)	13,509	13,847	14,193	14,548	14,912	15,285	15,667	16,058	16,460	16,871
Market Cost for Electricity ($000s)	17,764	18,208	18,664	19,130	19,608	20,099	20,601	21,116	21,644	22,185
Mark-to-Market Value	4,255	4,361	4,470	4,582	4,697	4,814	4,934	5,058	5,184	5,314
Stanton II										
Electricity Output (GWh)	122	122	122	122	122	122	122	122	122	122
Contract Electricity Cost ($000s)	10,995	11,269	11,551	11,840	12,136	12,439	12,750	13,069	13,396	13,731
Market Cost for Electricity ($000s)	14,785	15,155	15,534	15,922	16,320	16,728	17,146	17,575	18,014	18,465
Mark-to-Market Value	3,791	3,886	3,983	4,082	4,184	4,289	4,396	4,506	4,619	4,734
St. Lucie II										
Electricity Output (GWh)	90	90	90	90	90	90	90	90	90	90
Contract Electricity Cost ($000s)	6,608	6,774	6,943	7,117	7,295	7,477	7,664	7,855	8,052	8,253
Market Cost for Electricity ($000s)	10,952	11,226	11,507	11,794	12,089	12,391	12,701	13,019	13,344	13,678
Mark-to-Market Value	4,344	4,452	4,564	4,678	4,795	4,915	5,037	5,163	5,292	5,425
OUC										
Electricity Output (GWh)	0	0	0	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	0	0	0	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	0	0	0	0	0	0	0	0	0	0
Mark-to-Market Value	-	-	-	-	-	-	-	-	-	-

Source: PA Consulting Group analysis.

Table A-1 (d): Mark-to-Market Projections – 2044 to 2053 (nominal $s)

	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
Stanton I										
Electricity Output (GWh)	147	147	147	147	147	147	147	147	147	147
Contract Electricity Cost ($000s)	17,293	17,725	18,169	18,623	19,088	19,566	20,055	20,556	21,070	21,597
Market Cost for Electricity ($000s)	22,740	23,308	23,891	24,488	25,100	25,728	26,371	27,030	27,706	28,399
Mark-to-Market Value	5,447	5,583	5,722	5,866	6,012	6,162	6,317	6,474	6,636	6,802
Stanton II										
Electricity Output (GWh)	122	122	122	122	122	122	122	122	122	122
Contract Electricity Cost ($000s)	14,074	14,426	14,786	15,156	15,535	15,923	16,321	16,729	17,148	17,576
Market Cost for Electricity ($000s)	18,926	19,400	19,885	20,382	20,891	21,414	21,949	22,498	23,060	23,637
Mark-to-Market Value	4,852	4,974	5,098	5,226	5,356	5,490	5,627	5,768	5,912	6,060
St. Lucie II										
Electricity Output (GWh)	0	0	0	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	0	0	0	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	0	0	0	0	0	0	0	0	0	0
Mark-to-Market Value	-	-	-	-	-	-	-	-	-	-
OUC										
Electricity Output (GWh)	0	0	0	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	0	0	0	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	0	0	0	0	0	0	0	0	0	0
Mark-to-Market Value	-	-	-	-	-	-	-	-	-	-

Source: PA Consulting Group analysis.

Table A-1 (e): Mark-to-Market Projections – 2054 to 2063 (nominal $s)

	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063
Stanton I										
Electricity Output (GWh)	147	147	147	147	0	0	0	0	0	0
Contract Electricity Cost ($000s)	22,137	22,690	23,257	23,839	0	0	0	0	0	0
Market Cost for Electricity ($000s)	29,109	29,837	30,582	31,347	0	0	0	0	0	0
Mark-to-Market Value	**6,972**	**7,147**	**7,325**	**7,508**	-	-	-	-	-	-
Stanton II										
Electricity Output (GWh)	122	122	122	122	122	122	122	122	122	122
Contract Electricity Cost ($000s)	18,016	18,466	18,928	19,401	19,886	20,383	20,893	21,415	21,951	22,499
Market Cost for Electricity ($000s)	24,227	24,833	25,454	26,090	26,743	27,411	28,096	28,799	29,519	30,257
Mark-to-Market Value	**6,212**	**6,367**	**6,526**	**6,689**	**6,856**	**7,028**	**7,204**	**7,384**	**7,568**	**7,757**
St. Lucie II										
Electricity Output (GWh)	0	0	0	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	0	0	0	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	0	0	0	0	0	0	0	0	0	0
Mark-to-Market Value	-	-	-	-	-	-	-	-	-	-
OUC										
Electricity Output (GWh)	0	0	0	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	0	0	0	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	0	0	0	0	0	0	0	0	0	0
Mark-to-Market Value	-	-	-	-	-	-	-	-	-	-

Source: PA Consulting Group analysis.

Table A-1 (f): Mark-to-Market Projections – 2064 to 2073 (nominal $s)

	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073
Stanton I										
Electricity Output (GWh)	0	0	0	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	0	0	0	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	0	0	0	0	0	0	0	0	0	0
Mark-to-Market Value	-	-	-	-	-	-	-	-	-	-
Stanton II										
Electricity Output (GWh)	122	122	122	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	23,062	23,638	24,229	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	31,013	31,788	32,583	0	0	0	0	0	0	0
Mark-to-Market Value	**7,951**	**8,150**	**8,354**	-	-	-	-	-	-	-
St. Lucie II										
Electricity Output (GWh)	0	0	0	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	0	0	0	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	0	0	0	0	0	0	0	0	0	0
Mark-to-Market Value	-	-	-	-	-	-	-	-	-	-
OUC										
Electricity Output (GWh)	0	0	0	0	0	0	0	0	0	0
Contract Electricity Cost ($000s)	0	0	0	0	0	0	0	0	0	0
Market Cost for Electricity ($000s)	0	0	0	0	0	0	0	0	0	0
Mark-to-Market Value	-	-	-	-	-	-	-	-	-	-

Source: PA Consulting Group analysis.

APPENDIX B: *PA'S MODELING APPROACH*

B.1 INTRODUCTION

PA uses a bottom up approach to forecasting market electricity prices and power generating asset earnings. This process is formed around a fundamental analysis. As part of the fundamental analysis, PA develops assumptions using an approach that continuously combines research, data and industry knowledge. PA translates the insight gained from published industry data and its proprietary inputs into modeling inputs, thus plant results. PA also analyzes plant results from its fundamental analysis by applying its own proprietary stochastic dispatch optimization model and current configuration of a locational marginal pricing model to assess the impacts of price volatility and transmission constraints, respectively.

B.2 CORE PRINCIPLES

Two principles are fundamental to PA's approach:

- **Supply and demand equilibrium:** Power markets migrate toward a balance between capacity and load.
- **Compensation for generation:** Generators are compensated for more than the marginal cost of generation.

B.2.1 Supply and Demand Equilibrium

A fundamental tenet of PA's approach is that market participants continuously adjust toward economic equilibrium conditions by making decisions to add or retire generating capacity. Participants respond to the opportunity to capture excess margins through entry and the inverse opportunity to exit when expected returns do not justify ongoing costs. As a consequence, neither excessively high nor excessively low returns should persist over the long term because participants will change the level of supply until a balance with demand is reached. While PA believes that markets gravitate toward equilibrium conditions, participants often react to both below- and above-market returns causing pendulum-like price variations over time.[3]

[3] Actual markets rarely achieve precise equilibrium. Many industries have shown a pendulum of cycling returns, where above-market returns are followed by excess entry resulting in lower returns, followed by under-investment, which in time yields higher returns. While such cycles are often characteristic of commodity markets, the market generally seeks economic equilibrium.

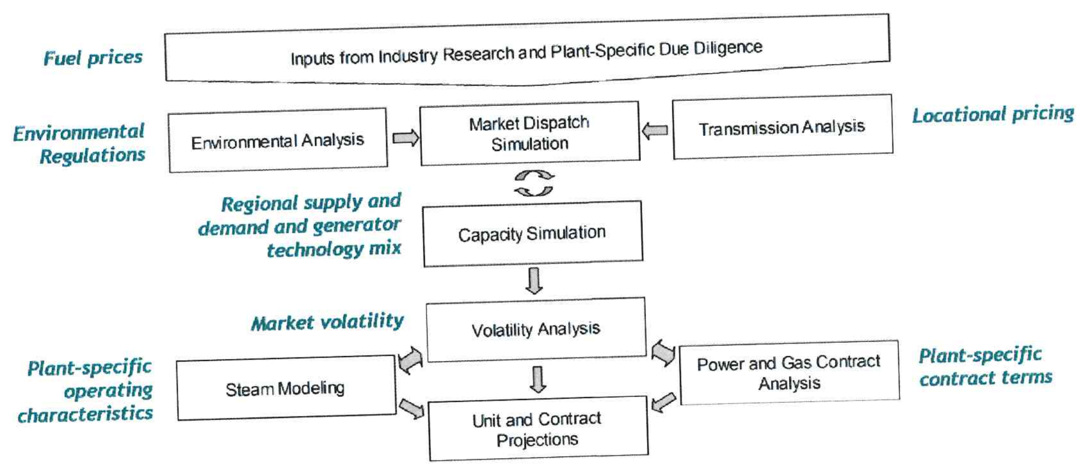
B.2.2 Compensation for Generation

PA's analysis utilizes a market model based on the premise that generators are compensated for more than the marginal cost of energy. PA's approach forecasts additional compensation (above marginal cost) for the going-forward costs of generation (i.e. costs of generation that are not sunk) to maintain system reliability. In a deficit or equilibrium market, this compensation would include the cost of debt and equity required to build the necessary units for system reliability requirements. This compensation could come in the form of energy payments (in spot, forward, and bilateral markets), capacity payments (installed capacity or ICAP, unforced capacity or UCAP, and bilateral payments), and ancillary service payments.

B.3 KEY COMPONENTS OF THE ANALYSIS

PA employs a variety of models to forecast market prices in regional markets and project the performance of power generating assets. The approach and the types of models used are widely accepted and commonly relied upon in the energy industry to forecast asset cash flows. The key components of the analysis are illustrated in Figure C-1.

Figure C-1: Key Components of the Modeling Process



The central components of PA's analysis are the simulation of plant dispatch operations ("Dispatch Simulation" on the diagram) and capacity additions and retirements ("Capacity Simulation"). Multiple inputs drawn from industry research also shape the analysis.

B.3.1 Environmental Analysis (emissions)

Environmental regulations force generators to incur costs to comply with limits on emissions of certain pollutants, generally reducing cash flows. PA uses its proprietary Multi-Pollutant Optimization Model (MPOM) to project the costs of these regulations.

PA's forecast reflects the costs and constraints of a multi-pollutant regulatory scenario, which includes restrictions on sulfur dioxide (SO_2), nitrogen oxides (NOx), mercury (Hg) and carbon dioxide (CO_2) emissions. In this context, PA projects:

- the optimal timing and type of environmental capital expenditures (given the trade-off between expensive environmentally efficient equipment and higher emissions costs)
- the optimal fuel type for each plant (given the trade-off between cleaner fuel and higher emissions costs)
- emissions cost rates for the pollutants (given volumetric caps imposed by regulation).

MPOM is a model that solves for the optimal market-driven decisions to comply with emissions constraints and maximize cash flows over the long term.

Beyond the near term (when forward prices are used), the prices for NOx and SO_2 emissions allowances are outputs of this model based on the current regulations in place. CO_2 pricing is derived based on an analysis of proposed legislation. The prices and decisions associated with all environmental programs are used as an environmental cost in the dispatch of generating units.

B.3.2 Environmental Analysis (renewable energy)

The renewable energy credit (REC) market has emerged as a way for renewable generators to capture additional payments for the green attributes of their energy production. In general, a REC is defined as one megawatt-hour of renewable energy generation delivered to the electric power system. RECs are purchased by load-serving entities, often to satisfy renewable portfolio standards (RPS).

PA projects REC prices based on the additional revenue needed (above and beyond revenues earned from the energy market) for the lowest cost renewable resource needed to meet RPS requirements. Main drivers to the REC price forecast include:

- market energy prices
- transmission constraints
- the type and amount of renewable resources that can be built in a region
- renewable tax incentives
- technology development costs.

PA's REC price modeling approach involves projecting demand for renewable energy based on the projected electricity sales for the load serving entities and the RPS annual goals. For each year of the forecast, a cash flow is developed for renewable resources to determine project revenues and to calculate the REC price sufficient for a renewable project to break even. In early years, transmission limitations restrict the amount of renewable resources that can be added in addition to the amount of planning and construction time required for resources to be brought into service.

The REC forecast is determined by identifying the required REC payment for the marginal technology needed to meet the RPS goal. The identification is accomplished by comparing the renewable supply stack, sorted from low to high cost technologies, to the RPS demand in each year. For most years, wind generation is expected to be the marginal resource and thus set the REC price. In the early years, the REC price reflects current market prices.

B.3.3 Transmission Analysis

Transmission limitations introduce power price disparities within a region, and these price disparities affect cash flows. For favorably located units (for instance, within an area of high demand but limited access to supply due to transmission constraints, such as Southwest Connecticut), these disparities increase gross margins. For unfavorably located plants (for instance, within an area of low demand and minimal transmission access to areas of high demand), these price disparities reduce gross margins.

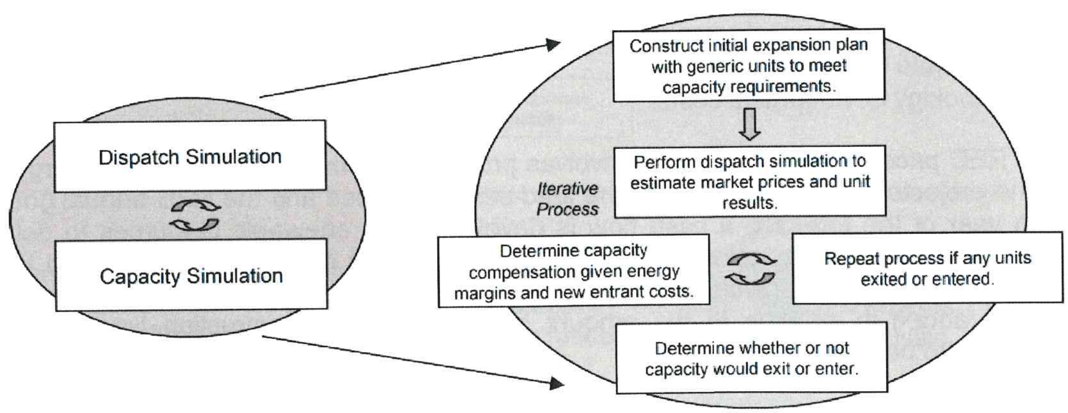
PA employs GE-PSLF software for power flow analysis to identify inter-area transmission congestion and constraints.

B.3.4 Dispatch Simulation

Power plants are dispatched to generate and sell power when demand justifies the operating costs. Units with low operating costs relative to other facilities are dispatched often; units with high costs are dispatched less frequently. The hour-by-hour interaction of supply and demand determines how frequently and how profitably plants dispatch within a market, and simulating this interaction is a modeling approach that is commonly relied upon in the industry to forecast cash flows.

An iterative process of dispatch and capacity simulation is at the core of PA's methodology. After PA specifies an initial capacity plan to satisfy the load projections, PA's model simulates the behavior of the regional power markets and the corresponding dispatch decisions of the power generating asset. PA's model then simulates the decisions market participants would make to add or retire capacity given the performance of the plants. Figure C-2 illustrates the iterative process.

Figure C-2: Iterative Dispatch and Capacity Simulation



The dispatch of the regional markets is simulated using MULTISYM™, an hour-by-hour chronological production cost-based dispatch model. Within MULTISYM™, generating units in each pertinent transmission area are modeled individually, taking into account the unit-specific cost and operating characteristics. Units are dispatched in the simulation in the order of economic merit (according to dispatch cost) until adequate generation is brought on line. The cost of the last unit dispatched to meet load requirements sets the power price for that hour.

The products of the dispatch simulation are energy price forecasts for the regional power markets and performance statistics for each of the generating units (such as capacity factors and gross margin).

a. FUEL PRICING

Fuel pricing assumptions impact the variable costs of the power generating asset available for operation within PA's model. Fuel costs of primary importance to a market's power prices include coal, fuel oil, and natural gas.

Delivered natural gas prices for are based on PA's market-by-market view of regional and local transportation, demand seasonality and spot basis differentials to the Henry Hub. Henry Hub projections incorporate NYMEX futures for 2012 and 2013. For 2014 and 2015, natural gas prices are trended toward a consensus forecast commencing in 2016.

PA's analysis reflects delivered coal price projections on a unit-by-unit basis, reflecting PA's projection of a particular power generating asset's marginal coal selection and market pricing for that coal type, and transportation charges. Coal selections are projected using MPOM, which simultaneously solves for the optimal combination of coal selections, environmental retrofit decisions, unit dispatch, and emission allowance prices.

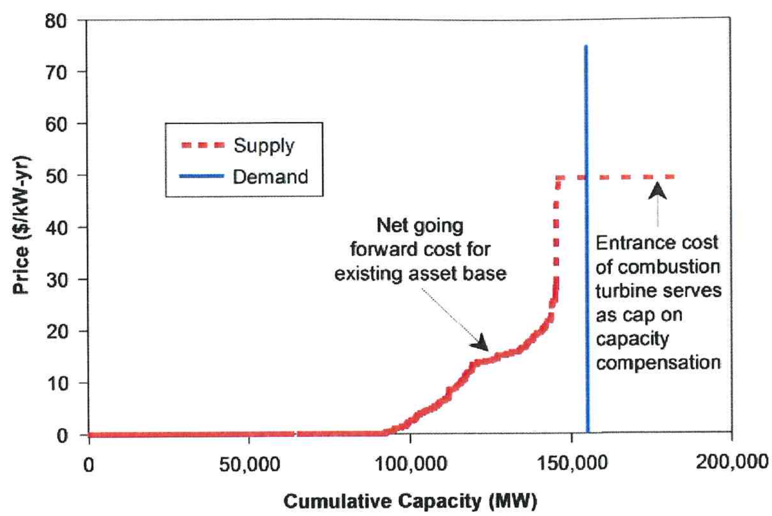
Free-On-Board (FOB) mine prices for 2012 are based on SNL futures, trended to PA's long-term projection commencing in 2015. PA's long-term projections of FOB prices are based on EIA models of expected long-run mining costs in each major coal-mining region, supply and demand economics for different coal types and other market knowledge available to PA, in an integrated market analysis. PA projects transportation costs based on proprietary models, which factor in recent transportation pricing trends, long-term input costs and forecasted changes in productivity.

B.3.5 Capacity Simulation

The remaining steps of the dispatch and capacity simulation (see Figure C-3) relate to the decisions market participants make regarding capacity entry and exit.

Plants that continue to lose money will eventually be retired. Conversely, market participants who perceive the opportunity for an attractive investment return will undertake to construct new plants. Both of these dynamics will change the power markets over time and affect the earnings prospects for a given power generating asset.

Figure c-3: Example Supply and Demand Curve



a. CAPACITY COMPENSATION SIMULATION

The difference between the energy margins produced by the dispatch analysis and the going-forward costs drives the amount of additional compensation necessary to motivate generators to provide capacity (PA defines this as capacity compensation).[4]

PA's capacity compensation model assumes that each regional market will retain a sufficient amount of capacity to meet reliability requirements. The intersection between capacity supply and demand determines the rate for capacity compensation.

b. CAPACITY ADDITIONS AND RETIREMENTS

Over the projection period, each regional supply mix changes due to capacity additions and retirements.

- For the near term, capacity changes are based on PA's assessment of public information regarding retirements and additions. PA excludes construction projects that have been announced but not yet financed, permitted, or started.

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[4] Going-forward costs are the fixed costs that could be avoided with unit shutdown, i.e. the costs exclusive of sunk capital or financing costs.

- For the long term, capacity changes are a function of projected returns. Units that expect to lose money for five consecutive years are retired at the end of the third losing year. New units are added if the projected energy and capacity margins provide an adequate investment return.

The resulting supply mix then becomes the basis for another dispatch model run. This process is repeated until retirements and additions converge, marking the end of the dispatch and capacity simulation process.

B.3.6 Volatility Analysis

Electricity prices are highly unpredictable due to physical characteristics (non-storability) and network dynamics (unpredictable load, generation and transmission outages, etc.). Price volatility may impact energy margins, particularly for some types of units.

PA assesses the impact of volatility on specific power generating assets by using its proprietary stochastic dispatch model. This model is designed to simulate market price volatility and plant operating decisions made in the context of uncertainty. The results of the stochastic dispatch include plant operations and gross margin projections.

B.4 CONCLUSIONS

PA has extensive experience projecting the operations and gross margin of physical power generating assets and marking related financial assets to market for the purposes of debt financing, acquisition support, business planning, litigation support, portfolio optimization, restructuring and sales. PA has analyzed physical and financial assets in nearly every North American power market.

PA employs an industry leading modeling approach that leverages the knowledge of its subject matter experts and utilizes a unique mix of integrated modeling capabilities. Specifically:

- PA has experts in power market economics, operations and modeling, emissions regulation and modeling, transmission analysis, oil and natural gas markets, and renewable markets, among others. PA leverages this expertise to offer an integrated view of the energy markets and to support its proprietary modeling suite.
- PA has a robust, well-developed, and industry-tested fundamental modeling process, including its proprietary stochastic dispatch optimization, capacity compensation, environmental, renewable, and valuation models along with the use of production cost, transmission, and natural gas models that are operated by PA experts and populated with PA data.

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