

**BEFORE THE FLORIDA  
PUBLIC SERVICE COMMISSION**

080203

**DOCKET NO. 08\_\_\_\_-E1  
FLORIDA POWER & LIGHT COMPANY**

**IN RE: FLORIDA POWER & LIGHT COMPANY'S  
PETITION TO DETERMINE NEED FOR  
WEST COUNTY ENERGY CENTER UNIT 3  
ELECTRICAL POWER PLANT**

**DIRECT TESTIMONY & EXHIBITS OF:**

**ALAN S. TAYLOR**

DOCUMENT NUMBER-DATE

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2                   **FLORIDA POWER & LIGHT COMPANY**

3                   **DIRECT TESTIMONY OF ALAN S. TAYLOR**

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5                   **APRIL 8, 2008**

6

7   **Q.     Please state your name and business address.**

8   A.     My name is Alan S. Taylor, and my business address is 5511 Northfork Court,  
9           Boulder, Colorado, 80301.

10 **Q.     By whom are you employed and what position do you hold?**

11 A.     I am President of Sedway Consulting, Inc.

12 **Q.     Please describe your duties and responsibilities in that position.**

13 A.     I perform consulting engagements in which I assist utilities, regulators, and  
14           customers with the challenges that they may face in today's dynamic  
15           electricity marketplace. My area of specialization is in the economic and  
16           financial analysis of power supply options.

17 **Q.     Please describe your education and professional experience.**

18 A.     I earned a Bachelor of Science Degree in energy engineering from the  
19           Massachusetts Institute of Technology and a Masters of Business  
20           Administration from the Haas School of Business at the University of  
21           California, Berkeley, where I specialized in finance and graduated  
22           valedictorian.

1 I have worked in the utility planning and operations area for 20 years,  
2 predominantly as a consultant specializing in integrated resource planning,  
3 competitive bidding analysis, utility industry restructuring, market price  
4 forecasting, and asset valuation. I have testified before state commissions in  
5 proceedings involving resource solicitations, environmental surcharges, and  
6 fuel adjustment clauses.

7  
8 I began my career at Baltimore Gas & Electric Company (BG&E), where I  
9 performed efficiency and environmental compliance testing on the utility  
10 system's power plants. I subsequently worked for five years as a senior  
11 consultant at Energy Management Associates (EMA, now New Energy  
12 Associates), training and assisting over two dozen utilities in their use of  
13 EMA's operational and strategic planning models, PROMOD III and  
14 PROSCREEN II. During my graduate studies, I was employed by Pacific Gas  
15 & Electric Company (PG&E), where I analyzed the utility's proposed demand  
16 side management (DSM) incentive ratemaking mechanism, and by Lawrence  
17 Berkeley Laboratory (LBL), where I evaluated utility regulatory policies  
18 surrounding the development of brownfield generation sites.

19  
20 Subsequently, I worked at PHB Hagler Bailly (and its predecessor firms) for  
21 ten years, serving as a vice president in the firm's Global Economic Business  
22 Services practice and as a senior member of the Wholesale Energy Markets  
23 practice of PA Consulting Group, when that firm acquired PHB Hagler Bailly

1 in 2000. In 2001, I founded Sedway Consulting, Inc. and have continued to  
2 specialize in economic analyses associated with electricity wholesale markets.

3 **Q. What is the purpose of your testimony?**

4 A. I was retained to assist Florida Power & Light Company (FPL) in conducting  
5 its 2007 solicitation for competitive power supplies. The purpose of my  
6 testimony is to describe my role as an independent evaluator and present my  
7 findings. I reviewed FPL's solicitation process and performed a parallel and  
8 independent economic evaluation of FPL's Next Planned Generating Unit  
9 (NPGU) and the proposals that were received by FPL in response to the  
10 utility's solicitation. FPL's NPGU is the West County Energy Center  
11 (WCEC) Unit 3 combined-cycle (CC) facility described in FPL's Request for  
12 Proposals (RFP), with an in-service date of June, 2011. I will discuss the  
13 process and tools that I used to conduct that parallel economic evaluation.  
14 Based on the results of my independent evaluation, I concluded that the  
15 NPGU portfolio represents the most cost-effective portfolio to meet FPL's  
16 resource needs for 2011-2013.

17 **Q. Are you sponsoring any exhibits in this case?**

18 A. Yes. I am sponsoring Exhibits AST-1 and AST-2, which are attached to my  
19 direct testimony:

20 Exhibit AST-1 Resume of Alan S. Taylor

21 Exhibit AST-2 Sedway Consulting's Independent Evaluation Report.

22 **Q. Please describe the role you performed as an independent evaluator in**  
23 **FPL's solicitation.**

1 A. I reviewed FPL's 2007 Ten-Year Site Plan and participated in the  
2 development of the utility's 2007 RFP. I reviewed FPL's modeling processes  
3 pertaining to its use of P-MArea, a detailed production costing model that was  
4 used in the economic evaluation of resource options in this solicitation. I,  
5 and/or members of the Sedway Consulting team, listened in on the  
6 December 11, 2007 Pre-Issuance Conference Call and attended the  
7 December 20, 2007 Bidders Conference. Before receiving the proposals, I  
8 requested that FPL run P-MArea and provide production costing results that I  
9 could use to calibrate Sedway Consulting's resource evaluation model. I flew  
10 to Miami to participate in the opening of proposal packages on the Proposal  
11 Due Date (February 13, 2008), retained one copy of each submitted proposal,  
12 and evaluated the economic/pricing information from each proposal. FPL  
13 conferred with me on a number of issues relating to proposal RFP-  
14 noncompliance decisions, interpretation of proposal information, clarification  
15 requests, and economic evaluation assumptions. As the evaluation  
16 progressed, FPL and I discussed appropriate courses of action and modeling  
17 assumptions. Using Sedway Consulting's Response Surface Model (RSM), I  
18 developed and evaluated portfolios of resources and assessed their overall  
19 costs. I compared Sedway Consulting's portfolio ranking and results with  
20 with those of FPL to confirm consistency of assumptions and concurrence of  
21 conclusions, and I documented the entire process in an independent evaluation  
22 report (Exhibit AST-2).

1 **Q. You stated that you were involved in the development of the RFP. What**  
2 **did your involvement entail?**

3 A. As the independent evaluator, I reviewed draft versions of the RFP document,  
4 participated in several discussions by phone, and was given the opportunity to  
5 provide my input and suggestions for improving the RFP.

6 **Q. Do you believe that FPL's RFP was a reasonable document for soliciting**  
7 **proposals?**

8 A. Yes. As one who has developed over a dozen such utility resource RFPs, I  
9 believe that FPL's RFP struck a good balance between being sufficiently  
10 detailed without being burdensome on the respondent. With its RFP, FPL  
11 attached two versions of a draft power purchase agreement (PPA) that  
12 provided the proposers with a clear understanding of the general business  
13 arrangement that FPL contemplated.

14 **Q. Do you believe that FPL's evaluation process was conducted fairly?**

15 A. Yes. The proposals, FPL's NPGU, and other FPL self-build options included  
16 in the evaluation process were evaluated on an equal footing, with consistent  
17 assumptions applied to all resource options.

18 **Q. Please describe Sedway Consulting's RSM model and its use in FPL's**  
19 **solicitation.**

20 A. The RSM is a spreadsheet model that I have used in solicitations around the  
21 country. It is a relatively straightforward tool that allows one to  
22 independently assess the cost impacts of different generating or purchase  
23 resources for a utility's supply portfolio. Most of the evaluation analytics in

1 the RSM involve calculations that are based entirely on my input of proposal  
2 costs and characteristics. A small part of the model examines system  
3 production cost impacts and needs to be calibrated to simulate a specific  
4 utility's system. In the case of the FPL solicitation, in the weeks prior to the  
5 proposal opening, I requested that FPL execute specific sets of runs with  
6 P-MArea. With the results of these runs, I was able to calibrate the RSM to  
7 approximate the production cost results that P-MArea would produce in a  
8 subsequent evaluation of any proposals or self-build options that FPL might  
9 receive. Thus, I would not have to rely on FPL's modeling of a proposal;  
10 instead, I would be able to insert my own inputs into my own model and  
11 independently evaluate the economic impact of any particular proposal. In  
12 short, the RSM provides an independent assessment to help ensure against the  
13 inadvertent introduction of significant mistakes that could cause the  
14 evaluation team to reach the wrong conclusions.

15 **Q. How is the RSM an independent analytical tool if it is based on initial**  
16 **P-MArea results?**

17 A. As I noted above, most of the calculations performed by the RSM are not  
18 based on P-MArea results in any way. There are two main categories of costs  
19 that are evaluated in a resource solicitation: fixed costs and variable costs.  
20 The costs in the first category – the fixed costs of a proposal – are calculated  
21 entirely separately in the RSM, with no reliance on the P-MArea model for  
22 these calculations. The second category – variable costs – has two parts:  
23 (1) the calculation of a resource's variable dispatch rates and, (2) the impact

1 that a resource with such variable rates is likely to have on FPL's total system  
2 production costs. As with the fixed costs, a proposal's variable dispatch rates  
3 are calculated entirely separately in the RSM, with no basis or reliance on the  
4 P-MArea model. It is only in the final subcategory – the impact that a  
5 resource is likely to have on system production costs – that the RSM has any  
6 reliance on calibrated results from P-MArea.

7 **Q. Please elaborate on that area of calculations where the RSM is affected by**  
8 **the P-MArea calibration runs.**

9 A. This is the area of system production costs. These costs represent the total  
10 fuel, variable operation and maintenance (O&M), emission, and purchased  
11 power energy costs that FPL incurs in serving its customers' load. Given  
12 FPL's load forecast, the existing FPL supply portfolio (i.e., all current  
13 generating facilities and purchase power contracts), and many specific  
14 assumptions about future resources and fuel costs, P-MArea simulates the  
15 dispatch of FPL's system and forecasts total production costs for each month  
16 of each year of the study period. At the outset of the solicitation project, the  
17 RSM was populated with monthly system production cost results that were  
18 created by the P-MArea calibration runs.

19 **Q. What did the RSM do with this production cost information?**

20 A. Once incorporated into the RSM, the production cost information allowed the  
21 RSM to answer the question: How much money (in monthly total production  
22 costs) is FPL likely to save if it acquires a proposed resource, relative to a  
23 reference resource? The use of a reference resource simply allowed a



1 consistent point of comparison for evaluating all proposals and FPL's self-  
2 build options. As a reference resource, I used a hypothetical gas-fired  
3 resource with a very high variable dispatch rate associated with a heat rate of  
4 25,000 Btu/kWh. In fact, I could have picked any variable dispatch or heat  
5 rate for the reference resource and obtained the same relative ranking of  
6 proposals out of the RSM. The cost of the reference resource has no impact  
7 on the relative results – it is merely a consistent reference point.

8 **Q. Can you provide a numerical example that shows how the RSM works?**

9 A. Certainly. Assume that a utility has a one-year resource need of 1,000 MW  
10 and must select one of the two following proposals:

11

	Proposal A	Proposal B
12 Capacity:	1,000 MW	1,000 MW
13 Capacity Price:	\$9.00/kW-month	\$5.50/kW-month
14 Energy Price:	\$20/MWh	\$50/MWh

15

16

17 For both proposals, the RSM has already calculated the fixed costs (and  
18 represented them in the capacity price) and the variable costs (and represented  
19 them in the energy price). Proposal A is more expensive in terms of fixed  
20 costs, but Proposal B is more expensive on an energy cost basis. The RSM  
21 calculates the final piece of the economic analysis – the different impacts on  
22 system production costs – to determine which proposal is less expensive in a  
23 total sense for the utility system as a whole.

1 Assume that the 25,000 Btu/kWh reference unit has a variable cost of  
2 \$150/MWh and that the RSM has been calibrated and populated with the  
3 following production cost information:

4  
5 For a 1,000 MW proxy resource, the utility's one-year total system production  
6 costs are:

- 7
- 8 • \$2.500 billion for a \$150/MWh energy price reference resource
- 9 • \$2.488 billion for a \$50/MWh energy price resource (Proposal B)
- 10 • \$2.452 billion for a \$20/MWh energy price resource (Proposal A)

11  
12 Thus, the energy savings (relative to the selection of a \$150/MWh reference  
13 resource) are \$48 million for Proposal A with its \$20/MWh energy price and  
14 \$12 million for Proposal B with its \$50/MWh energy price. In its proposal  
15 ranking process, the RSM converts all production cost savings into a \$/kW-  
16 month equivalent value so that the savings can be deducted from the capacity  
17 price to yield a final net cost (in \$/kW-month) for each proposal. Converting  
18 the energy savings in this numerical example into \$/kW-month equivalent  
19 values yields the following:

20

$$21 \quad \$48 \text{ million} / (1,000 \text{ MW} * 12 \text{ months}) = \$4.00/\text{kW-month}$$

$$22 \quad \$12 \text{ million} / (1,000 \text{ MW} * 12 \text{ months}) = \$1.00/\text{kW-month}$$

1 The RSM calculates the net cost of both proposals by subtracting the energy  
2 cost savings from the fixed costs:

	Proposal A	Proposal B
3 Capacity Price:	\$9.00/kW-month	\$5.50/kW-month
4 Energy Cost Savings:	\$4.00/kW-month	\$1.00/kW-month
5 <b>Net Cost:</b>	<b>\$5.00/kW-month</b>	<b>\$4.50/kW-month</b>

6

7  
8 Proposal B is less expensive. This can be confirmed through a total cost  
9 analysis as well:

10

11 Proposal A will require total capacity payments of \$108 million (= 1,000 MW  
12 x \$9.00/kW-month x 12 months), and Proposal B will require \$66 million  
13 (= 1,000 MW x \$5.50/kW-month x 12 months). Thus, Proposal A has fixed  
14 costs that are \$42 million more than Proposal B.

15

16 Proposal A will provide \$36 million more in energy cost savings  
17 (= \$48 million - \$12 million); however, this is not enough to warrant paying  
18 \$42 million more in fixed costs. Therefore, Proposal B is the less expensive  
19 alternative.

20

21 Note that the RSM is described in more detail in the independent evaluation  
22 report that is attached to my testimony as Exhibit AST-2.

1 Q. **With that understanding of the RSM process, what did you do to**  
2 **calibrate the RSM to P-MArea?**

3 A. I reviewed the production cost information that FPL provided at the start of  
4 the project and confirmed that the production costs were, for the most part,  
5 exhibiting smooth, correct trends (i.e., they were increasing where they should  
6 be increasing and declining where they should be declining). Having verified  
7 that the RSM production cost values were “smooth,” I was confident that  
8 inputting variable cost parameters into the models for similar proposals would  
9 yield similar production cost results. Although the RSM is not a detailed  
10 model and could not simulate FPL’s production costs with P-MArea’s  
11 accuracy, in the end, the independent RSM evaluation results tracked  
12 P-MArea’s results reasonably well. Also, it is important to note that FPL  
13 made some changes to its P-MArea modeling assumptions just prior to the  
14 Proposal Due Date (February 13, 2008). A new set of production cost results  
15 were provided to Sedway Consulting following the opening of proposals. It  
16 was believed that these new results did not vary significantly from the set that  
17 had already been provided to Sedway Consulting. In any case, Sedway  
18 Consulting decided to use the original set to see if the pre-bid-opening  
19 information supported all eventual evaluation conclusions.

20 Q. **Once the RSM was calibrated, what was the next step?**

21 A. I flew to Miami on the Proposal Due Date, observed the opening of all  
22 proposal packages, and retained my own copy of each proposal. There were  
23 three proposals; they were labeled P1 through P3. I read each proposal and

1 participated in discussions with FPL about interpreting the proposals,  
2 identifying areas requiring clarification, and assessing each proposal's  
3 compliance with the RFP's Minimum Requirements. Although it was not  
4 immediately clear whether or not all three proposals were in compliance with  
5 the RFP's Minimum Requirements, it was decided that the economic  
6 evaluation should proceed with all of the received proposals. Meanwhile,  
7 FPL communicated with proposers to seek clarification and corrections to  
8 uncertain areas of the proposals.

9  
10 I incorporated pricing and operational information from each proposal into the  
11 RSM. Such information included contract commencement and expiration  
12 dates, summer and winter capacity, capacity pricing, heat rates, fuel supply  
13 assumptions, variable O&M charges, start-up costs, expected forced outage  
14 hours, and expected planned outage hours. Most of this information was  
15 directly inputted into the RSM. As part of this process, FPL provided Sedway  
16 Consulting with its own modeling input spreadsheets so that Sedway  
17 Consulting could cross-check these inputs and ensure consistency with the  
18 information in the RSM.

19 **Q. What were the results of Sedway Consulting's RSM analysis?**

20 A. Using the RSM, Sedway Consulting performed a portfolio analysis. The  
21 ranking of portfolios was similar to FPL's portfolio ranking and supports the  
22 evaluation process' selection decision. The results are described in detail in

1 Sedway Consulting's independent evaluation report that is attached as  
2 Exhibit AST-2.

3 **Q. What did those rankings reveal?**

4 A. In the portfolio ranking, FPL's NPGU portfolio (i.e., developing WCEC 3 in  
5 2011) was found to be the most cost-effective means of meeting FPL's 2011-  
6 2013 capacity needs. That portfolio was found to be approximately \$536  
7 million less expensive on a cumulative present value of revenue requirements  
8 (CPVRR) basis than the next least expensive portfolio that included outside  
9 proposals. As far as an economic comparison with portfolios of other FPL  
10 self-build options that Sedway Consulting considered, the NPGU portfolio  
11 was found to be approximately \$112 million CPVRR less expensive than the  
12 next least expensive self-build portfolio. That next least expensive self-build  
13 portfolio involved the development of WCEC 3, with a delayed in-service  
14 date of June, 2012.

15 **Q. What do you conclude about FPL's solicitation?**

16 A. I conclude that the portfolio of FPL's NPGU (i.e., WCEC 3 in 2011) is the  
17 most cost-effective portfolio for meeting FPL's 2011-2013 capacity needs and  
18 concur with FPL's decision to move forward with that project. The  
19 solicitation process yielded the best results for FPL's customers while treating  
20 proposers fairly. The RFP was sufficiently detailed to provide necessary  
21 information to proposers. The economic evaluation methodology and  
22 assumptions were appropriate and unbiased, and the independent evaluation  
23 procedures provided a cross-check of FPL's proposal representation in P-

1 MArea and confirmed FPL's conclusions. Finally, I conclude that FPL's  
2 NPGU portfolio is \$536 million CPVRR less expensive than the next best  
3 portfolio that does not include FPL self-build options and \$112 million  
4 CPVRR less expensive than the next best FPL self-build portfolio.

5 **Q. Does this conclude your testimony?**

6 A. Yes.

## RESUME OF ALAN S. TAYLOR

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### AREAS OF QUALIFICATION

Independent evaluation services for competitive bidding resource selection, integrated resource planning, market analysis, risk assessment, and strategic planning

### EMPLOYMENT HISTORY

- ◆ President, Sedway Consulting, Inc., Boulder, CO, 2001-present
- ◆ Senior Member of PA Consulting, Inc., Boulder, CO, 2001
- ◆ Vice President, Global Energy Business Sector, PHB Hagler Bailly, Inc., Boulder, CO, 2000
- ◆ From Senior Associate to Principal, Utility Services Group, Hagler Bailly Consulting, Inc., Boulder, CO, 1991-1999
- ◆ Senior Consultant, Energy Management Associates, Atlanta, GA, 1983-1988
- ◆ Internships at: Pacific Gas & Electric Company, San Francisco, CA (1990)  
Lawrence Berkeley Laboratory, Berkeley, CA (1989-1991)  
MIT Resource Extraction Laboratory, Cambridge, MA (1982)  
Baltimore Gas and Electric Company, Baltimore, MD (1980)

### EDUCATION

- ◆ Walter A. Haas School of Business, University of California at Berkeley, MBA, Valedictorian, Corporate Finance, 1991
- ◆ Massachusetts Institute of Technology, BS, Energy Engineering, 1983

### PROFESSIONAL EXPERIENCE

- ◆ Developed and/or reviewed dozens of requests for proposals for utility resource solicitations.
- ◆ Conducted numerous competitive bidding project evaluations for conventional generating resources, renewable facilities, and off-system power purchases.
- ◆ Assisted in or monitored contract negotiations with shortlisted bidders in utility resource solicitations.
- ◆ Testified on utility competitive bidding solicitation results, affiliate transactions, cost recovery procedures, rate case calculations, and incentive ratemaking proposals.
- ◆ Managed the development of market price forecasts of North American and European electricity markets under deregulation.
- ◆ Performed financial modeling of electric utility bankruptcy workout plans.
- ◆ Trained and assisted many of the nation's largest electric and gas utilities in their use of operational and strategic planning computer models.

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RESUME OF ALAN S. TAYLOR

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**SELECTED PROJECTS**

**2005- California Solicitations for Conventional and Renewable Resources**

2008 Client: Southern California Edison

Served as the Independent Evaluator (IE) in three solicitations for new power supplies in southern California – one for over 2,500 MW of conventional resources and two others for renewable energy purchases to help Southern California Edison meet its state Renewable Portfolio Standard requirements. Mr. Taylor managed a Sedway Consulting team that performed a parallel evaluation of all proposals, monitored communications and negotiations with power suppliers, and supported the review of the final selected proposals by the Procurement Review Group – a collection of non-market-participant stakeholders and regulators who were provided confidential access to the evaluation results at intermediate stages. He has filed IE reports and sponsored testimony before the California Public Utilities Commission concerning the results of the solicitations.

**2007- Avoided Cost Analysis for Interruptible Loads**

2008 Client: Public Service Company of Colorado

Provided an independent assessment of Public Service Company of Colorado's peaking resource avoided costs for use in the utility's development of customer credits for its interruptible service tariff.

**2007 Florida Solicitation for New Resources**

Client: Tampa Electric Company

Provided independent evaluation services in Tampa Electric Company's solicitation for 600 MW of new power supplies for 2013, as a market test for the utility's proposal to develop an integrated gasification combined cycle (IGCC) facility (Polk 7).

**2005- California Solicitations for Conventional and Renewable Resources**

2008 Client: Pacific Gas & Electric

Served as the Independent Evaluator in three solicitations for new power supplies in northern California – one for 2,200 MW of conventional resources and two others for between 1,400 and 2,800 GWh/year of renewable energy purchases. Mr. Taylor managed a Sedway Consulting team that performed a parallel evaluation of all proposals, monitored communications and negotiations with power suppliers, and supported the review of the final selected proposals by the Procurement Review Group – a collection of non-market-participant stakeholders and regulators who were provided confidential access to the evaluation results at intermediate stages. He has filed IE reports and sponsored testimony before the California Public Utilities Commission concerning the results of the solicitations.

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RESUME OF ALAN S. TAYLOR

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**2004- Regulatory Support of Commission Staff**

2005 Client: Utah Division of Public Utilities

Assisted staff for the Utah Division of Public Utilities in the division's efforts to analyze PacifiCorp's 2005 rate case. Mr. Taylor reviewed production cost modeling results and forecasts of system-wide fuel and purchase power costs.

**2004- Minnesota Solicitation for New Resources**

2005 Client: Minnesota Power

Provided independent evaluation services in a solicitation for 200 MW of firm power supplies. Mr. Taylor reviewed all proposals and performed a parallel economic evaluation among proposed turnkey facilities and power purchases.

**2004 Canadian Solicitations for Conventional and Renewable Resources**

Client: Ontario Energy Ministry

Participated in a broader consulting team and provided assistance in the development of RFPs for 2,500 MW of conventional resources and 300 MW of renewable resources. New long-term sources of power were sought to replace regional coal-fired generation.

**2003- Florida Solicitation for New Resources**

2004 Client: Florida Power & Light

Provided independent evaluation services in Florida Power & Light's solicitation for 1,100 MW of new power supplies for 2007. Mr. Taylor performed a parallel economic evaluation to that which was undertaken by the utility. His work efforts allowed all proposal parameters to be cross-checked and corrected where necessary. He sponsored testimony before the Florida Public Service Commission concerning the results of the solicitation evaluation.

**2002- Minnesota Solicitation for New Resources**

2003 Client: Northern States Power

Assisted in the evaluation of a large number of multi-option proposals for new power supplies in the 2005-2009 time frame. Mr. Taylor was the independent evaluator in two separate solicitations. He managed a team of individuals in the evaluation of responses for both Requests for Proposals (RFPs). In the first solicitation, contingent proposals were received that could serve as replacement contracts for 1,100 MW of nuclear capacity if NSP were forced to decommission its Prairie Island power plant in 2007. In the second solicitation, NSP sought approximately 1,000 MW of new supplies to supplement its existing supply portfolio. The evaluation included the review of over a dozen proposed wind projects.

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RESUME OF ALAN S. TAYLOR

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**2002 Florida Revisions to Bidding Rule**

Client: Consortium of utilities

Provided the Florida Public Service Commission with recommendations concerning appropriate revisions to the state's bidding rule. Mr. Taylor participated in public workshops to provide the benefits of his extensive experience in performing competitive bidding solicitations and to convey what changes should or should not be made to Florida's existing bid rule to ensure the selection of the best resources for the state's electricity customers.

**2002 Arizona Testimony Concerning Competitive Bidding Solicitations**

Client: Harquahala Generating Company, LLC

Filed testimony before the Arizona Corporation Commission in the Generic Proceedings Concerning Electric Restructuring Issues and Associated Proceedings. Mr. Taylor's testimony provided the Commission with information about competitive bidding processes that he had seen work in other states. Also, his testimony addressed various concerns that were raised by Arizona Public Service as to the feasibility of implementing competitive bidding in Arizona.

**2002 Florida Solicitation for New Resources**

Client: Florida Power & Light

Provided independent evaluation services in Florida Power & Light's solicitation for 1,750 MW of new power supplies in the 2005-2006 time frame. Mr. Taylor performed a parallel economic evaluation to that which was undertaken by the utility. His work efforts allowed all proposal parameters to be cross-checked and corrected where necessary. Also, he provided suggestions on resource optimization modeling approaches that ensured the most comprehensive examination of thousands of potential combinations of proposals.

**2001 Wisconsin Testimony Concerning Competitive Bidding Solicitations**

Client: MidWest Independent Power Suppliers

Provided testimony in a proceeding before the Wisconsin Public Service Commission on behalf of a consortium of independent power producers. Mr. Taylor testified on the benefits and timing of a competitive bidding solicitation that Wisconsin Electric Power Company (WEPCO) should be ordered to conduct prior to the utility's development of \$2.8 billion in self-build generation facilities (embodied in a WEPCO proposal called Power the Future - 2). Without the benefits of a competitive solicitation, there would be no defensible means of ensuring that the utility's customers were being offered the best, most cost-effective resources.

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RESUME OF ALAN S. TAYLOR

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**2001 Negotiation of Full-Requirements Purchase Contract**

Client: Georgia cooperative utility

Assisted in negotiation of a \$2 billion power purchase contract. Mr. Taylor worked with a team of legal experts and other consultants to assist the client in negotiating a 15-year full-requirements contract with a large, national power supplier. Detailed modeling simulations were performed to compare the complex transaction to the utility's own self-build alternatives. Mr. Taylor helped investigate and negotiate detailed provisions in the power supply contract concerning ancillary services and other operational parameters.

**2001 Evaluation of Resource Proposals**

Client: North Carolina municipal utility

Reviewed responses to a utility resource solicitation and assisted the client in developing a short list of the best bidders. Mr. Taylor reviewed the results of the client's economic analysis of the proposals and provided insights on various nonprice factors related to each of the top-ranked proposals. Mr. Taylor helped the client in structuring and strategizing for the negotiation process.

**2000- Solicitation for New Resources**

2001 Client: Public Service of Colorado

Assisted in the evaluation of a large number of multi-option proposals for new power supplies in the 2002-2005 time frame. Mr. Taylor managed a team of a dozen individuals who performed economic and nonprice evaluations of conventional and renewable proposals. Mr. Taylor developed recommendations for a short list of the best resources and managed a supplemental evaluation of second-tier bidders when the client's capacity needs subsequently increased. Ultimately, over \$2 billion of contracts were negotiated for over 1,700 MW of new power supplies under terms of up to 10 years. Mr. Taylor testified before the Colorado Public Utilities Commission on the processes and results of both the primary and supplemental evaluations.

**1999- Solicitation for New Resources**

2000 Client: MidAmerican Energy

Reviewed MidAmerican's solicitation for new power supplies for the 2000-2005 resource planning period. Mr. Taylor managed a team of individuals who performed an independent parallel evaluation of MidAmerican's analysis of responses to the utility's request for proposals (RFP). Mr. Taylor reviewed MidAmerican's evaluation and negotiation process and testified to the fairness and appropriateness of MidAmerican's actions. He filed testimony before the utility regulatory commissions in Iowa, Illinois, and South Dakota.

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RESUME OF ALAN S. TAYLOR

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**2000 Electricity Market Assessments**

Client: various American and European clients

Helped develop electricity market prices for regional electricity markets in North America (California, New England, Arizona/New Mexico, Louisiana) and Europe (Austria, Belgium, France, Germany, and the Netherlands). Mr. Taylor worked with project teams in the U.S. and Europe to develop simulation models and databases to forecast energy and capacity prices in the deregulating power markets.

**1999 Evaluation of New Resources**

Client: Florida Power Corporation

Helped prepare the FPC's RFP for long-term supply-side resources and assisted in the independent evaluation of responses. Mr. Taylor oversaw the review of FPC's computer simulations (in PROVIEW and PROSYM) of the proposals that were received. The project team also evaluated the proposals by using a response surface model to approximate the results that might be produced in the more detailed simulations. Mr. Taylor testified before the Florida Public Service Commission concerning his assessment of FPC's solicitation and the results of the analysis.

**1998 Evaluation of New Resources**

Client: Public Service of Colorado

Assisted the evaluation of proposals for PSCo's near-term 1999 resource additions and managed the complete third party evaluation of proposals for resources in the 2000-2007 time frame. Such resources included third-party facilities and power purchases, as well as company-sponsored interruptible tariffs. Mr. Taylor assisted with the development of the request for proposals and oversaw the evaluation of all responses. He and his team monitored subsequent negotiations with shortlisted bidders. Mr. Taylor testified before the Colorado Public Utilities Commission on the fairness of the solicitation and the results of the evaluation.

**1997- Evaluation/Negotiation of Transmission Interconnection Solicitation**

1999 Client: New Century Energies

Managed a solicitation for participation in a major transmission project interconnecting Southwestern Public Service (a Texas member of the Southwest Power Pool) and Public Service of Colorado (a member of the Western Systems Coordinating Council). As the first major inter-reliability-council transmission project in the era of open access, FERC required that SPS and PSCo solicit third-party interest in participation. This project required the development of an RFP and evaluation of responses for both equity participation and long-term transmission service for over 21 alternative high-voltage AC/DC/AC transmission projects. The evaluation focused on the costs and intangible risks of different transmission alternatives relative to the benefits and

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RESUME OF ALAN S. TAYLOR

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savings associated with increased economy interchange, avoided future generating capacity, and reductions in single-system spinning reserve and reliability requirements.

**1996- Evaluation/Negotiation of All-Source Solicitation**

1997 Client: Southwestern Public Service

Managed the evaluation of a broad array of responses to an all-source solicitation that was issued by Southwestern Public Service (SPS). Resources in the areas of conventional supply-side generation, renewable resources, off-system transactions, DSM, and interruptible loads were proposed. The evaluation entailed scoring the proposals for a variety of price and nonprice attributes. Mr. Taylor assisted Southwestern in its negotiations with the bidders and performed the detailed evaluation of the best and final offers.

**1996- Risk Assessment for 1,000-MW Solicitation**

1997 Client: Seminole Electric Cooperative

Managed the review and assessment of risks associated with responses to a 1,000-MW solicitation that was issued by Seminole Electric Cooperative. The evaluation entailed reviewing selected proposals' financial feasibility, performance guarantees, fuel supply plans, O&M plans, project siting, dispatching flexibility, and bidder qualifications.

**1997 Analysis/Testimony Concerning Louisville Gas & Electric's Fuel Adjustment Clause**

Client: Kentucky Industrial Utility Customers

Performed a detailed examination of Louisville Gas & Electric's (LG&E) fuel adjustment clause and identified misallocated costs in the areas of transmission line losses and purchased power fuel costs. Mr. Taylor also critiqued LG&E's rate adjustment methodology and recommended closer scrutiny of costs associated with jurisdictional and non-jurisdictional sales. Mr. Taylor testified before the Kentucky Public Service Commission and presented the findings of his analysis.

**1995 Development of All-Source Solicitation RFPs**

Client: Southwestern Public Service

Managed the development of five RFPs that solicited resources in the areas of conventional supply-side generation, renewable resources, off-system transactions, DSM, and interruptible loads. The RFPs were issued by SPS as part of an all-source solicitation to identify resources that may be competitive with two generation facilities that SPS intended to develop.

**1994 Development of Competitive Bidding RFP**

Client: Empire District Electric Company

Based on knowledge gained from the review of dozens of other utility RFPs, developed a combined-cycle resource RFP for Empire District Electric Company. The project team was

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responsible for the RFP's entire development, including the development of scoring provisions for price and nonprice project attributes.

**1993 Selection of Developer for 25 MW Wind Facility**  
Client: Northern States Power

Evaluated ten bids that were received by NSP in a solicitation for the development of a 25 MW wind facility in Minnesota. The proposals were scored and ranked through a point-based evaluation system that was developed prior to the solicitation. The scoring involved an assessment of operational and financial feasibility, power purchase pricing terms, construction schedules, and community acceptance issues.

**1993 Competitive Bidding Design**  
Client: Northern States Power

Assisted NSP in the utility's effort to design a generic competitive bidding RFP that could be issued for a variety of generation resources. Two dozen RFPs from other utilities were reviewed to determine the appropriate weights and mechanisms that should be used to score various project attributes.

**1993 Evaluation of 500 MW Supply-Side Solicitation**  
Client: San Diego Gas & Electric

Assisted in the evaluation of 15 bids that were received from a 500 MW solicitation for power by SDG&E. The utility wanted to determine whether or not there were less expensive alternatives to the implementation of its plan to repower one of its own units. The 15 projects represented over 4,000 MW. The bids were evaluated using extensive production costing modeling, in which over 1,000 model runs were performed to evaluate each bid under a variety of scenarios.

## **Introduction and Background**

On December 13, 2007, Florida Power & Light Company (FPL) issued a Request for Proposals (RFP) for capacity and energy to satisfy the utility's projected incremental resource needs for 2011-2012. The RFP noted that power supply proposals would compete with an FPL power plant construction option in addressing a projected cumulative capacity need of 426 MW by 2012. The FPL option entailed a natural-gas-fired 3-on-1 combined-cycle (CC) power plant at the West County Energy Center site in Palm Beach County, with a summer capacity rating of 1,219 MW; this resource was referred to as the Next Planned Generating Unit (NPGU).

Sedway Consulting, Inc. (Sedway Consulting) was retained to provide independent evaluation services to FPL and provide a parallel economic evaluation of responses to the RFP. Alan Taylor, Sedway Consulting's President and the individual who provided the primary consulting services for this project, has provided independent evaluation services in numerous utility power supply solicitations around the country.

After the RFP was issued, a revised load forecast and additional circumstances led FPL to conclude that it may not have a resource need until 2013 (of 301 MW). However, FPL recognized that there may be substantial benefits associated with acquiring capacity earlier than would be dictated solely by standard reserve margin requirements. Specifically, the possibility of performing extensive maintenance or repowering some of its older power plants could be facilitated by having sufficient capacity to cover such outages. Also, in an environment of rapidly escalating generation construction costs, acquiring capacity earlier than later could have significant cost-reduction benefits. Thus, FPL chose to continue with the RFP and explore the benefits that might be achieved with earlier resources than were absolutely needed.

On February 13, 2008, FPL received three proposals from two power suppliers. Sedway Consulting's representative traveled to Miami to participate in the bid opening and retained a copy of each proposal for the firm's review and evaluation. In addition to the three proposed power supplies and FPL's NPGU, two other FPL self-build options were considered – a one-year-delayed version of the NPGU with an in-service date of June, 2012 and a Greenfield 3-on-1 CC facility with an in-service date of June, 2013. Table 1 provides a summary of the proposed and available resources.

Several of the proposals included elements or conditions that appeared not to meet the Minimum Requirements of FPL's RFP. In the interest of completeness and expediency, FPL and Sedway Consulting decided to conduct an economic evaluation of all proposals while FPL worked with the proposers of questionably-compliant proposals in an effort to rectify any RFP Minimum Requirements compliance issues.



**Table 1**  
**Summary of Evaluated Resources**

Resource	Summer Capacity (MW)	Start Year	Technology	Location*	Term/Economic Life (years)
P1	568	2011	CT	St. Lucie Co.	3
P2	600	2012	CC	DeSoto Co.	25
P3	600	2012	CC	DeSoto Co.	20
FPL NPGU	1219	2011	CC	Palm Beach Co.	28**
FPL NPGU '12	1219	2012	CC	Palm Beach Co.	27**
FPL Greenfield 3x1 CC '13	1219	2013	CC	Unknown	26**

\* All projects were located in Florida.

\*\* These projects had life-of-facility terms and were assumed to generate throughout the study period.

Although mathematically speaking there were numerous potential resource combinations or portfolios that would meet or exceed FPL's capacity need, many of such combinations would result in FPL acquiring more than its 2011-2013 need. Thus, for FPL's current solicitation, Sedway Consulting condensed the universe of potential combinations down to eight specific portfolios that are depicted in Table 2.

**Table 2**  
**Evaluated Portfolios**

Portfolio Number	2011 Resource	2012 Resource	2013 Resource
1	WCEC 3		
2	P1		
3		P2	
4		P3	
5	P1	P2	
6	P1	P3	
7		WCEC 3	
8			Greenfield CC
WCEC 3 = FPL's West County Energy Center Unit 3			

Sedway Consulting conducted its parallel economic evaluation of the proposals by using its proprietary response surface model (RSM). The RSM is a power supply evaluation tool that can be calibrated to simulate the expected resource dispatch and resulting production costs of a specific utility's operations. Prior to the opening of the proposals, Sedway Consulting requested FPL to execute several dozen runs of its system simulation planning tool – P-MArea, a detailed production cost model. The results of these runs were used to calibrate the RSM and allowed Sedway Consulting to evaluate the production cost impacts of all proposed resources.<sup>1</sup>

This independent evaluation report documents Sedway Consulting's evaluation process and presents the results of Sedway Consulting's economic analysis. It describes the RSM, the ranking methodology that was employed, fundamental assumptions that were applied, and additional economic factors that affected the final cost of each portfolio of resources. Also, it presents the evaluation results and depicts the resource portfolios without disclosing proposers' identities or any specific proposal pricing information.

## Overview of Results

Sedway Consulting found that the least-cost portfolio was the portfolio that consisted of FPL's NPGU – the West County Energy Center Unit 3 CC facility in 2011 with a summer capacity of 1,219 MW.

Sedway Consulting estimated that the next lowest cost portfolio that did not include an FPL self-build resource was at least \$537 million more expensive than the NPGU portfolio on a cumulative present value of revenue requirements (CPVRR) basis.<sup>2</sup> In evaluating FPL's other self-build options (i.e., delaying the NPGU by a year or developing a greenfield CC in 2013), Sedway Consulting found that the NPGU portfolio was less expensive than those other two self-build options by approximately \$112 million and \$462 million (CPVRR), respectively. Thus, Sedway Consulting concluded that the West County Energy Center Unit 3 CC facility with an in-service date of 2011 should be selected.

## Evaluation Process

Sedway Consulting received the following economic information for each proposal:

- Capacity (winter and summer; base and duct-fired, where applicable)

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<sup>1</sup> FPL made some changes to its P-MArea modeling assumptions that resulted in a second set of RSM calibration runs being provided to Sedway Consulting after proposals had been opened. Sedway Consulting chose to continue to use the original set of information (i.e., that which was provided prior to bid opening) as a cross-check to ensure that the late modifications did not affect the selection decision.

<sup>2</sup> All CPVRR values in the evaluation have a base year of 2008 and were discounted with an 8.3% discount rate.

- Commencement and expiration dates of contract
- Capacity pricing, including transmission interconnection costs
- Fixed operation and maintenance (O&M) and capital replacement pricing
- Firm fuel transportation assumptions
- Fuel pricing or indexing
- Heat rate (base and duct-fired, where applicable)
- Variable O&M pricing (base and duct-fired, where applicable)
- Start-up costs and fuel requirements
- Expected forced outage and planned outage hours.

The same or analogous information was received for FPL's NPGU and other self-build options.

The remainder of this report section addresses the following topics:

- a description of the RSM and the ranking process that it employed,
- the use of a "filler" resource in evaluating proposed transactions that expired before the end of the study period, and
- the process of developing cost estimates for portfolios of resources.

### ***RSM and Net Levelized Fixed Price Ranking***

The economic information for all outside proposals and FPL's self-build options was input into Sedway Consulting's RSM – a power supply evaluation tool that was calibrated to approximate the impact of each proposal on FPL's system production costs. The RSM calculated each option's annual fixed costs and variable dispatch costs, estimated the production cost impacts of each option, accounted for capacity replacement costs for all proposed contracts that expired before the end of the study period, and developed a ranking of all options. That ranking was based on the net levelized fixed price of each option, expressed in \$/kW-month.

An option's net cost was a combination of fixed and variable cost factors. On the fixed side, the RSM calculated annual fixed costs associated with capacity payments (or generation and transmission revenue requirements), fixed O&M costs, incremental capital charges, and firm gas transportation costs. These annual total fixed costs were discounted and converted into an equivalent levelized fixed price, expressed in \$/kW-month. This was done by taking the present value of the stream of costs and dividing it by the present value of the kW-months of capacity associated with the option.

On the variable cost side, the RSM first developed a variable dispatch charge (in \$/MWh) for each option for each month. This charge was calculated by multiplying the option's heat rate by the specified monthly fuel index price and adding the variable O&M charge and a \$/MWh estimate of an option's start costs.

The RSM then estimated FPL's system production costs for each month and each option by interpolating between production costs estimates that were extracted from a set of P-MArea runs. These runs were performed at the start of the project and were used to calibrate the RSM by varying the monthly variable dispatch charge for a proxy proposal and recording the resulting FPL system production cost.

For the same capacity as the proposal under consideration, the RSM also estimated FPL's system production costs for a natural-gas-fired reference unit that had a high variable dispatch charge based on a heat rate of 25,000 Btu/kWh. Thus, for each option, the RSM yielded estimates of the annual production cost savings that FPL would be projected to experience if the utility selected the resource option, relative to acquiring the same sized transaction but at the high reference resource dispatch rate. The lower an option's variable dispatch charge, the greater the production cost savings.

The RSM then converted these annual savings into a levelized \$/kW-month value, using the same arithmetic process that was performed with the annual fixed costs. Although energy-related costs are not normally expressed this way, this conversion normalized the production cost savings (i.e., accounted for the different amounts of capacity offered by each option) and yielded a value that could be subtracted from the levelized fixed price. Because the purpose of the solicitation was to acquire firm capacity, this conversion process translated energy savings into a metric (i.e., a comparable standard of measurement) that was tied to the capacity that an option offered.

For each proposal, the RSM then subtracted the levelized production cost savings from the levelized fixed price to yield a net levelized fixed price – a value expressed in \$/kW-month that embodied both the fixed costs and variable production cost impacts of a proposed resource. The proposals and FPL resources were ranked in ascending order based on this net levelized fixed price. The top-ranked options had the lowest net levelized fixed prices, representing those options with the lowest fixed costs, or the greatest production cost savings, or a good combination of both.

### ***Filler Resource***

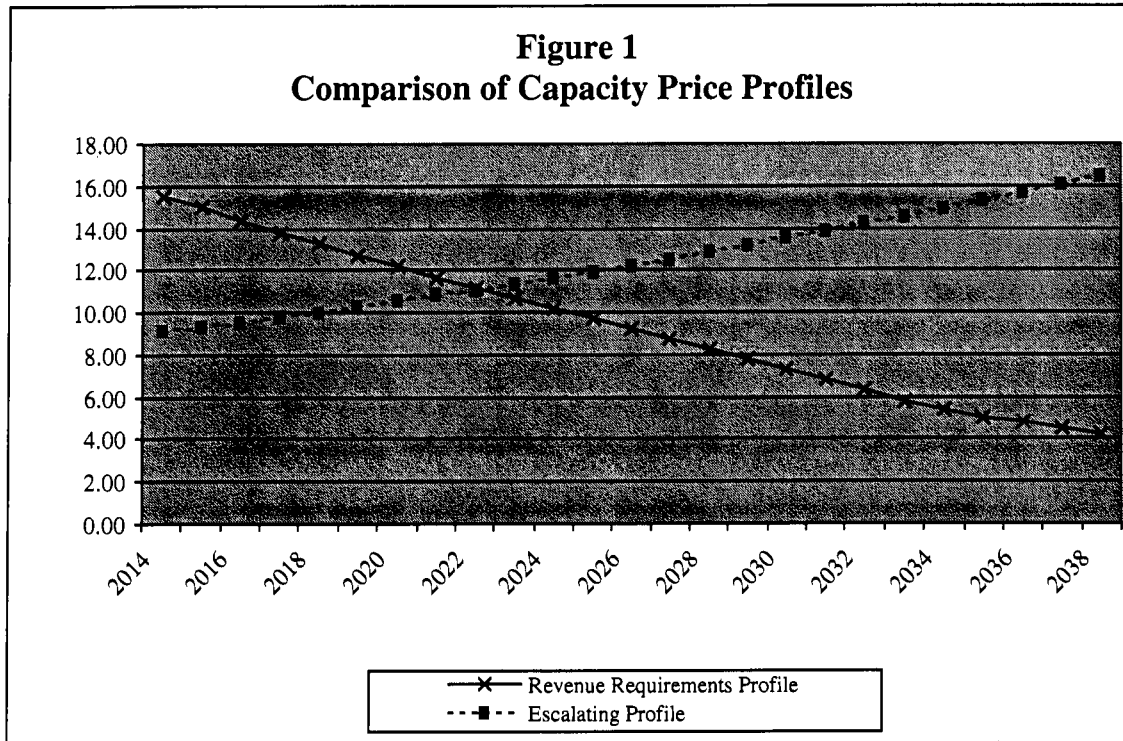
As was mentioned earlier, the RSM accounted for the costs of replacing capacity for all proposed contracts that expired before the end of the study period (2038). This was done by "filling in" for the lost capacity at the end of each proposal's term of service. This allowed for a side-by-side comparison of the value of proposals that had varying contract durations. Also, the RSM had been calibrated with P-MArea runs that assumed that a proxy proposed resource would provide its capacity for the entire duration of the study period. Thus, it was necessary to continue a proposal's capacity throughout the entire period so as to maintain consistent and sufficient reserve margins. In effect, by supplementing each short-term proposal with a filler resource for the later years, the RSM was simulating what FPL would have to do when a proposed transaction expired – acquire or develop an amount of replacement capacity equal to that expired resource.

As the basis for cost assumptions for the filler resource, Sedway Consulting used the same future 3-on-1 G technology combined-cycle resource as FPL used in the early years of its P-MArea runs. The same \$/kW fixed cost assumptions (e.g., construction cost, fixed O&M costs, capital replacement charges) and variable cost assumptions (e.g., heat rates, variable O&M costs, fuel supply issues) were used in the RSM as in P-MArea. The only difference involved a methodological variation, whereby the RSM scaled the replacement capacity to exactly equal the size of the expiring proposal resource. Thus, all proposals enjoyed the benefit of being replaced at the end of their terms with a resource that exhibited the operating efficiencies and economy-of-scale benefits of a 1,219 MW combined-cycle plant. In other words, if a 200 MW proposal ended in 2032, the RSM assumed that a 200 MW combined-cycle facility replaced it in 2033; however, the construction costs for the replacement facility were not those that would typically be associated with a 200 MW combined-cycle plant, but rather, they were a prorated portion (i.e., 200/1219) of the construction costs of a larger combined-cycle facility.<sup>3</sup>

Depending on the "in-service date" for the filler resource, the filler's capital costs were escalated from a 2013 base-year value by 2.5% per annum. This escalation assumption represented FPL's estimate of how construction costs were likely to increase for its generation alternatives. Sedway Consulting decided to use this escalation value to trend the filler's annual capacity charges over time. Thus, instead of using FPL's declining revenue requirements profile for the recovery of capacity costs, Sedway Consulting used an escalating pattern that yielded the same long-term present value of revenue requirements. A traditional revenue requirements profile – as was used for calculating the annual revenue requirements for FPL's NPGU – results in the highest capital charges in a project's early years. Thereafter, the capital-related charges decline. This is the opposite from what is usually seen in most power purchase proposals in power supply solicitations. Most power purchase proposals tend to have flat or escalating capacity charges, presumably reflecting expectations that general inflation will increase the costs of constructing new facilities in the future. Sedway Consulting therefore restructured the filler's profile of capacity costs to match what is generally seen in the marketplace. This meant that the filler's first year's capacity costs were the lowest, with each year thereafter escalating at 2.5%. Figure 1 displays the escalating capacity price profile used by Sedway Consulting as well as the traditional declining revenue requirements profile. Both profiles have the same present value.

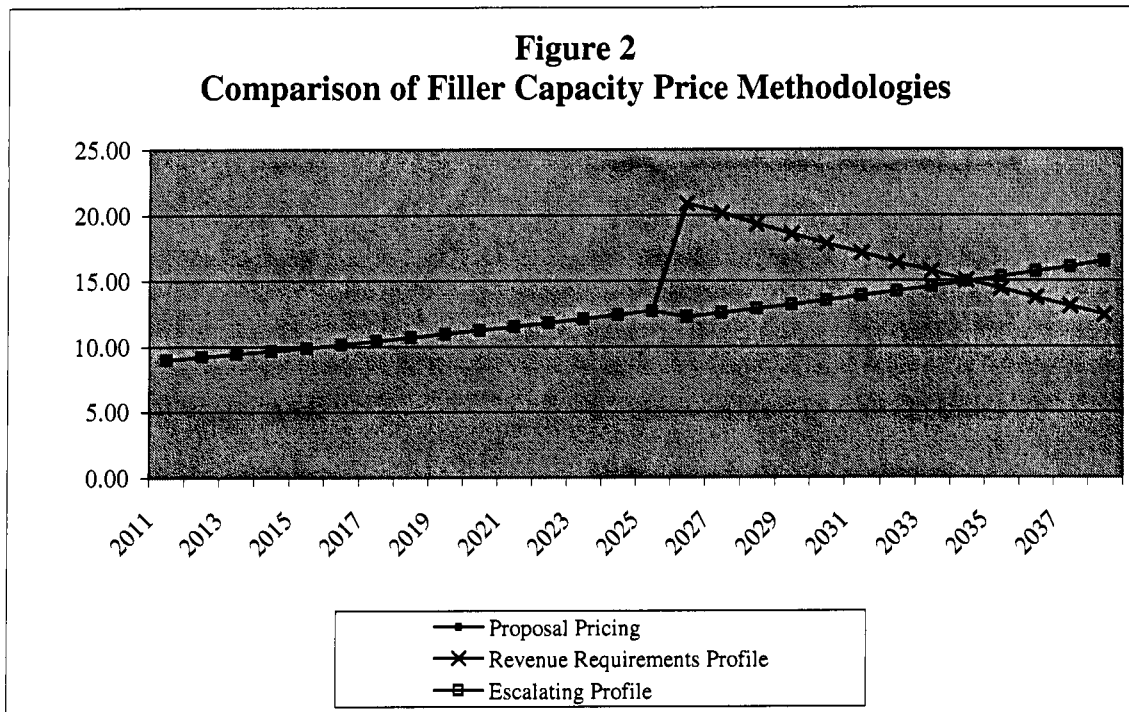
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<sup>3</sup> FPL used a 553 MW 2-on-1 F technology CC filler for the later years (post-2020) of its analysis. It made sense for FPL to use this smaller (but less efficient) CC filler to minimize end-of-period differences in the total capacity of the evaluated portfolios. Given that Sedway Consulting's RSM process automatically scales the filler, this was not a concern for the Sedway Consulting analysis. Therefore, Sedway Consulting chose to use the same 1,219 MW 3-on-1 G technology CC filler throughout the study period.



Over the full 25 years, the restructuring of the filler's capacity costs made no difference to the present value of the facility's revenue requirements. However, in the evaluation of outside proposals that did not extend through 2038 (the end of the study period), it provided the most favorable basis for such proposals' evaluation. In effect, it assumed that, following the expiration of an outside proposal's term, FPL would procure replacement power supplies at a prevailing market price. In reality, if an FPL self-build resource was determined to be most cost-effective at this future decision point, the declining revenue requirements profile would present the actual annual costs that FPL's customers would likely pay.

Figure 2 depicts a comparison of the two approaches for replacing a hypothetical 15-year proposed power supply contract. The proposed contract is assumed to have a capacity charge that begins at \$9/kW-month and escalates at 2.5% per annum.



Relative to the declining revenue requirements methodology, the escalating filler capacity price methodology favors the 15-year proposed power supply because it defers the most expensive years of capacity costs until beyond the end of the study period. Thus, the present value of total study-period capacity costs (i.e., power supply proposal plus filler resource) is lower under the escalating filler methodology than under the declining revenue requirements methodology. Ultimately, the use of different filler methodologies by Sedway Consulting and FPL provided added value in looking at the evaluation results from two different perspectives and ensuring that the conclusions were supported from either perspective.

***Portfolio Development and Cost Computation***

Most of the input assumptions for the proposals and FPL's NPGU and other self-build options were directly input into the RSM in a straightforward fashion. There were some additional external cost estimates that were developed outside of the proposal. They entailed the following:

- Firm gas transportation
- Net equity adjustment
- Transmission integration
- Capacity-related transmission loss impacts
- Energy-related transmission loss impacts.

**Firm gas transportation.** All gas-fired proposals and FPL resources were modeled with firm gas transportation costs as described in Table D.1-1 in FPL's RFP. For the three FPL self-build options, incremental gas transportation costs were assumed to commence in April, 2011 regardless of the option's actual in-service date. One of the proposals was for an oil-fired facility that could also be fired on natural gas. That proposal was modeled both ways (burning oil or natural gas). In the natural gas scenario, the facility was modeled with firm gas transportation costs as described in the RFP's Table D.1-1.

**Net Equity Adjustment.** Rating agencies view some portion of a utility's capacity payment obligations to a power provider as the equivalent of debt on the utility's balance sheet. If a utility does not rebalance its capital structure by issuing stock, this debt equivalent can negatively impact a utility's financial ratios and cause rating agencies to downgrade their opinion of the utility's creditworthiness. This can increase the utility's cost of borrowing.

Sedway Consulting corroborated FPL's estimate for each proposal of the costs for FPL to rebalance its capital structure if it were to enter into a PPA with a proposer. This estimate was referred to as an "equity adjustment" because it reflected the present value of the incremental cost of the additional equity that FPL would need to raise to preserve the integrity of its balance sheet. FPL indicated in its RFP that the completion security and performance security aspects of potential PPAs may mitigate and reduce a purchase's equity adjustment. Sedway Consulting corroborated the calculation of those two mitigating reductions to the equity adjustment (as described in FPL's RFP) for each purchase and included those costs, where applicable, in the individual bid portfolios. Although FPL updated the marginal energy costs that were used in calculating the performance security mitigation values, Sedway Consulting chose to use the marginal energy costs that were published in the RFP. This was done to verify that the use of either set of values did not affect the solicitation's selection outcome.

**Transmission integration.** With a large addition of new generation to a utility system, several portions of the transmission grid may need to be reinforced. This can entail the construction of new circuits or the reconductoring and upgrading of existing transmission lines. However, FPL determined that none of the portfolios were likely to require material transmission integration investments.

**Capacity-related transmission loss impacts.** Based on the description of FPL's transmission evaluation processes in Appendix D of the RFP, FPL developed estimates for FPL's peak-hour system transmission losses (and the costs associated with such losses) for each portfolio of resources. The costs were based on estimates for replacement capacity that would be added to each portfolio's costs. This process ensured that all portfolios would be compared consistently by having differences in capacity-related transmission losses appropriately addressed. Sedway Consulting checked the calculation of those costs for each portfolio.

**Energy-related transmission loss impacts.** For each portfolio of resources, FPL developed estimates not only for FPL's peak-hour system transmission losses but



average-hour losses as well. These two annual values for each portfolio were used to calculate the energy-related transmission losses that would have to be made up in each hour in order to bring each portfolio's total system generation back up to a level that would be comparable with FPL's reference portfolio. FPL's RFP described how these energy losses would be used to develop cost estimates for replacement energy that would be added to each portfolio's costs. Sedway Consulting checked the calculation of those costs for each portfolio.<sup>4</sup>

Portfolios of resources were developed that would meet FPL's capacity needs by 2013. The total portfolio costs included the sum of the present value net costs of each of the resources that made up a portfolio, the transmission costs described above, the net equity adjustment (also described above) for each appropriate resource in the portfolio, and a value of surplus capacity calculation. The surplus capacity value was meant to capture differences in the size of portfolios. Specifically, if a portfolio provided more than FPL's capacity need in 2013, then the portfolio was deemed to have surplus capacity. This capacity had value because it could potentially be sold as a single-year capacity sale in any of the years in which it occurred and/or would reduce FPL's capacity needs in 2014 and beyond. Thus, in subsequent solicitations, FPL would not have to request as much capacity as it otherwise would if it only acquired or developed exactly 301 MW of 2013 capacity in the current solicitation. The value of surplus capacity is dependent on the market price for capacity in 2014 and beyond. Using the exact same filler information (i.e., the 1,219 MW 3-on-1 CC facility) as was described earlier, Sedway Consulting derived a 2014 value of \$9.05/kW-month, escalating thereafter at 2.5% per year. This stream represented trended values for the net cost of the filler unit.

The inclusion of a surplus capacity benefit in the RSM portfolio results placed those results on a more comparable footing with the FPL P-MArea/Integrated Model portfolio results. While no explicit surplus capacity benefit was calculated to supplement the P-MArea/Integrated Model results in FPL's analysis, this benefit was captured in the long-range expansion plans that were developed for each portfolio.

## **Review of FPL Model Results and Additional Cost Elements**

In addition to the parallel evaluation process involving the RSM, Sedway Consulting assisted FPL in a review of the evaluation results and additional cost elements. This involved three activities:

- Comparing rankings for all evaluated portfolios
- Verifying that the results reflected the correct input assumptions
- Confirming the transmission-loss-related and net equity adjustment calculations.

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<sup>4</sup> As noted in the net equity adjustment discussion, FPL revised its forecast of marginal energy costs and used its updated values in its calculation. Sedway Consulting used the marginal energy cost values provided in the RFP to ensure that the revised values did not affect the final selection decision.

Sedway Consulting and FPL independently developed rankings of the evaluated portfolios. In comparing these rankings, Sedway Consulting and FPL were able to confirm that the proposals were being interpreted correctly and that all of the latest assumptions and information from proposer clarification communications were incorporated into P-MArea and the RSM. Generally speaking, the rankings lined up fairly well. Some of the portfolios had ranking positions that flipped, but not in any material respect. As noted earlier, Sedway Consulting chose to use RSM calibration and marginal energy cost information that was acquired prior to bid opening. FPL had some modeling revisions that resulted in updates to these values. FPL's analysis was based on the latest numbers; Sedway Consulting's analysis was based on the earlier numbers. However, the fact that both analyses resulted in the same conclusion proves that FPL's revised assumptions did not affect the final selection decision.

FPL's analysis entailed the development of future resource plans for each portfolio to maintain the necessary 20% reserve margin for the FPL system over time. Given FPL's annual load growth, the retirement of existing resources, and expiration of the new power supply contracts under consideration, FPL's resource plans had to add future generic resources in various years after 2013 to satisfy FPL's reserve margin requirements. This was a more comprehensive process than what was achieved with the RSM. The RSM simply examined single proposals, one at a time, and assumed that they would be replaced with a filler resource of exactly the same size upon the expiration of the proposed PPA. FPL's analysis had a broader focus. However, given numerous factors that influenced the timing of the addition of new generic resources throughout the study period, the "lumpiness" of FPL's long-range resource plans could distort the present value of a portfolio's long-term costs. This "lumpiness" comes from the fact that FPL adds new resources in any year in which FPL's reserve margin drops below its reserve margin. If the new resource options are large facilities, this can lead to varying levels of surplus capacity in each year. However, FPL chose to use a relatively small future generic resource alternative (i.e., its 553 MW filler unit) in the post-2020 portion of the study period so that the long-term expansion plans exhibited a "smoother" pattern.

As mentioned above, Sedway Consulting also reviewed and corroborated the calculations of many of the additional costs that were added to the core economic results that were produced by P-MArea and the RSM. Specifically, Sedway Consulting confirmed the calculations of capacity-related costs associated with peak-hour transmission losses, energy-related costs associated with annual transmission losses, and the net equity adjustment values.

## **RSM Evaluation Results**

Table 3 depicts the full portfolio analysis results for the eight portfolios evaluated by Sedway Consulting. For each element of the portfolios, the table presents the resource's capacity, in-service year, term (i.e., duration), and present value net cost (in millions of dollars). The net cost is developed in the RSM and was described above. Also included in the table are additional costs or credits (as described above) for each portfolio

pertaining to surplus capacity benefits, capacity-related transmission loss impacts, energy-related transmission loss impacts, and net equity adjustments. The values in the far right column show the difference in costs (CPVRR, in millions of dollars) between the evaluated portfolios and the least-cost NPGU portfolio. Note that the differences are accurate but may not match a direct subtraction of the displayed portfolio costs because of rounding.

The NPGU portfolio was found to be \$537 million less expensive than the next cheapest evaluated portfolio that did not include an FPL self-build option.

**Table 3**  
**Comparison of Evaluated Portfolios**

		Net			Net Cost	Difference from
		Capacity (MW)	In-Service Year	Term (years)	(\$M)	Portfolio #1 (\$M)
<b>Portfolio #1</b>						
FPL	WCEC 3	1219	2011	26	\$141	
	Total:	1219			\$141	
	2013 Surplus Capacity:	918			(\$383)	
				Subtotal:	(\$242)	
	Transmission Integration:				\$0	
	Capacity Losses:				\$0	
	Energy Losses:				\$0	
	Net Equity Adjustment:				\$0	
				Net Total Cost:	(\$242)	\$0
<b>Portfolio #2</b>						
P1	-	563	2011	3	\$319	
	Total:	563			\$319	
	2013 Surplus Capacity:	262			(\$109)	
				Subtotal:	\$209	
	Transmission Integration:				\$0	
	Capacity Losses:				\$12	
	Energy Losses:				\$75	
	Net Equity Adjustment:				(\$1)	
				Net Total Cost:	\$295	\$537
<b>Portfolio #3</b>						
P2	-	600	2012	24	\$594	
	Total:	600			\$594	
	2013 Surplus Capacity:	299			(\$125)	
				Subtotal:	\$469	
	Transmission Integration:				\$0	
	Capacity Losses:				\$10	
	Energy Losses:				\$92	
	Net Equity Adjustment:				\$127	
				Net Total Cost:	\$697	\$939
<b>Portfolio #4</b>						
P3	-	600	2012	20	\$582	
	Total:	600			\$582	
	2013 Surplus Capacity:	299			(\$125)	
				Subtotal:	\$457	
	Transmission Integration:				\$0	
	Capacity Losses:				\$10	
	Energy Losses:				\$95	
	Net Equity Adjustment:				\$93	
				Net Total Cost:	\$656	\$898

**Table 3 - Continued**  
**Comparison of Evaluated Portfolios**

		Net	In-Service	Term	Net Cost	Difference from
		Capacity	Year	(years)	(\$M)	Portfolio #1
		(MW)				(\$M)
<b>Portfolio #5</b>						
P1	-	563	2011	3	\$319	
P2	-	600	2012	24	\$594	
Total:		1163			\$913	
2013 Surplus Capacity:		862			(\$360)	
					Subtotal:	\$553
Transmission Integration:						\$0
Capacity Losses:						\$16
Energy Losses:						\$100
Net Equity Adjustment:						\$126
Net Total Cost:					\$794	\$1,036
<b>Portfolio #6</b>						
P1	-	563	2011	3	\$319	
P3	-	600	2012	20	\$582	
Total:		1163			\$901	
2013 Surplus Capacity:		862			(\$360)	
					Subtotal:	\$541
Transmission Integration:						\$0
Capacity Losses:						\$16
Energy Losses:						\$104
Net Equity Adjustment:						\$92
Net Total Cost:					\$753	\$995
<b>Portfolio #7</b>						
FPL	WCEC 3	1219	2012	26	\$247	
Total:		1219			\$247	
2013 Surplus Capacity:		918			(\$383)	
					Subtotal:	(\$136)
Transmission Integration:						\$0
Capacity Losses:						\$0
Energy Losses:						\$6
Net Equity Adjustment:						\$0
Net Total Cost:					(\$130)	\$112
<b>Portfolio #8</b>						
FPL	Greenfield 3x1 G CC	1219	2013	26	\$572	
Total:		1219			\$572	
2013 Surplus Capacity:		918			(\$383)	
					Subtotal:	\$189
Transmission Integration:						\$0
Capacity Losses:						\$6
Energy Losses:						\$25
Net Equity Adjustment:						\$0
Net Total Cost:					\$220	\$462

## Conclusions

Sedway Consulting performed an independent and parallel evaluation of the responses to FPL's 2007 resource RFP and concluded that the West County Energy Center Unit 3 in 2011 (the Next Planned Generating Unit) represented the most cost-effective portfolio for meeting FPL's 2011-2013 resource needs. This portfolio was found to be \$537 million CPVRR less expensive than the next most economical portfolio that did not include an FPL self-build option and at least \$112 million CPVRR less expensive than any of the other FPL self-build portfolios.