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COMMISSION
CLERK

DEAN CANNON
Speaker of the
House of Representatives



August 3, 2011

Ann Cole
Commission Clerk and
Administrative Services
Room 100, Easley Building
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Re: Docket No. 110009-EI

Dear Ms. Cole:

On July 8, 2011, our office filed, subject to a claim of confidentiality that Florida Power & Light Company (FPL) submitted on the same date, the prefiled testimony and exhibits of OPC witnesses Dr. William Jacobs and Mr. Brian Smith. Because FPL had not screened the prefiled testimony to identify the precise portions to which its claim relates, we did not provide "public" versions of the testimony and exhibits at the time of the initial filing.

On July 29, 2011, FPL filed its "Request for Confidential Classification of the Testimony and Exhibits of William Jacobs (Request)". In its Request, FPL identifies specific portions of the prefiled testimony and exhibits of Dr. Jacobs that FPL asserts to be confidential. FPL provided with its Request a redacted version of Dr. Jacobs' testimony and exhibits. In a letter accompanying the pleading, FPL stated that it does not regard any portion of the prefiled testimony of Mr. Smith as confidential.

In view of FPL's Request, OPC is filing today the original of the public versions of the testimony and exhibits of Dr. Jacobs and Mr. Smith, along with a CD containing these documents in electronic format. The public version of Dr. Jacobs' testimony and exhibits reflects the same redactions as Exhibit B to FPL's request. Pursuant to FPL's letter, Mr. Smith's testimony and exhibits are not subject to the procedures governing confidentiality and contain no redactions.

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August 3, 2011
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Please contact me if you have any questions or need additional information. Thank you for your assistance.

Yours truly,

A handwritten signature in blue ink that reads "Joe A. McGlothlin". The signature is written in a cursive style with a horizontal line underlining the name.

Joseph A. McGlothlin
Associate Public Counsel

JAM:bsr

cc: Anna Norris
Keino Young
Parties of record

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Nuclear Cost Recovery)
Clause.)
_____ /

Docket No. 110009-EI
FILED: July 8, 2011

(PUBLIC VERSION)
DIRECT TESTIMONY
OF
BRIAN D. SMITH
ON BEHALF OF THE CITIZENS OF
THE STATE OF FLORIDA

REVIEW OF FLORIDA POWER AND LIGHT COMPANY'S
NUCLEAR COST RECOVERY RULE FILING

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DIRECT TESTIMONY

Of

BRIAN D. SMITH

On Behalf of the Office of Public Counsel

Before the

Florida Public Service Commission

Docket No. 110009-EI

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is Brian D. Smith. I am a Senior Project Manager at GDS Associates, Inc. My business address is 1850 Parkway Place, Suite 800, Marietta, Georgia 30067.

Q. PLEASE SUMMARIZE YOUR EDUCATION AND EXPERIENCE.

A. I received a Bachelor of Industrial Engineering in 1981 from the Georgia Institute of Technology. I am a registered professional engineer in the state of Florida and I have twenty-nine years of experience in electric utility planning activities. This includes time spent working for municipal utility planning departments as well as my association with GDS where I have worked as a power supply and utility system simulation consultant. I have been responsible for the development and analysis of integrated resource plans and for computer simulation of utility production operations and financial operations. Particular emphasis has been on economic feasibility studies of alternative power supply resources. My resume is included as Exhibit BDS-1.

1 **II. SUMMARY OF TESTIMONY**

2 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

3 A. In my testimony, I will identify and describe a means of using the same information that
4 FPL has presented to approximate the extent to which the uprate projects are projected to
5 be economical or uneconomical for customers. My testimony dovetails with that of Dr.
6 William Jacobs. In his testimony, Dr. Jacobs describes shortcomings in the methodology
7 that FPL witness Dr. Steven Sim employs when assessing the long term economic
8 feasibility of FPL's EPU uprate project. Dr. Jacobs makes the point that with FPL's
9 current methodology, in which a comparison is made between revenue requirements
10 associated with a resource plan that includes the uprates and those of a resource plan that
11 does not include the uprates, the exclusion of amounts spent on the uprate project to date
12 (so-called "sunk costs") from the capital costs of the 'with uprate' plan that FPL
13 includes in the comparison--when coupled with a rapidly increasing estimate of the cost
14 to complete the projects-- causes distortions in the exercise to determine whether the
15 uprates are cost-effective to customers.

16
17 **III. REVIEW OF FPL'S ANALYSIS**

18 **Q WHAT IS YOUR UNDERSTANDING OF THE APPROACH THAT FPL USES**
19 **TO EVALUATE THE FEASIBILITY OF THE EPU PROJECT?**

20 A. FPL's calculations involve the use of computerized simulations to model the manner in
21 which FPL's system would operate to meet projected customer needs under two
22 alternative resource plans and quantify the revenue requirements of each of the plans over
23 time. The objective of each plan is to add generating capacity when needed to maintain

1 FPL's targeted minimum reliability criteria over time. One resource plan incorporates the
2 EPU uprate projects as the means for satisfying near term increases in demand, while the
3 other plan does not. FPL's analyst expresses the total revenue requirements of each plan
4 in terms of the cumulative net present value of those costs. He then compares the
5 cumulative net present value figures. If the cumulative net present value of the revenue
6 requirements associated with the resource plan that includes the uprates is lower than the
7 cumulative net present value of the revenue requirements of the resource plan that does
8 not include the uprates, then FPL concludes the project is economically feasible.
9

10 **Q. WHAT IS WRONG WITH THAT APPROACH?**

11 A. As Dr. Jacobs describes, each time FPL has produced a comparison of revenue
12 requirements (beginning in 2009), FPL has excluded the capital costs of the uprates that it
13 has already spent. Presumably, for ratemaking purposes FPL will not propose to exclude
14 this amount: instead, FPL will expect to earn a return on it. Accordingly, the comparison
15 of resource plans that FPL performs for the long term feasibility analysis understates the
16 revenue requirements associated with the uprates that it will seek to collect from
17 customers.
18

19 **Q. ISN'T THIS TREATMENT OF "SUNK COSTS" AND "TO GO COSTS" AN**
20 **ACCEPTED METHOD OF ASSESSING THE COST-EFFECTIVENESS OF A**
21 **PROJECT?**

22 A. It is appropriate to exclude sunk costs in typical cost-effectiveness evaluations. In this
23 instance, where estimated costs to complete continue to increase, excluding amounts

1 spent to date in each annual evaluation has the potential to distort the measurement of
2 cost-effectiveness. In his testimony, Dr. Jacobs discusses this aspect of the choice of
3 economic feasibility methodologies in more detail.
4

5 **Q. WON'T FPL ASSERT THAT THE "SUNK COSTS" CAN'T BE SUBTRACTED**
6 **FROM THE SAVINGS, BECAUSE THEY WOULD ALSO APPEAR IN THE**
7 **ALTERNATIVE RESOURCE PLAN AS COSTS TO BE RECOVERED FROM**
8 **CUSTOMERS EVEN IF THE UPRATE PROJECT IS NOT CONSTRUCTED?**

9 A. The assertion that the "sunk costs" must be excluded from the comparison because they
10 would show up in both resource plans, and therefore cancel out, is dependent on the
11 assumption that the sunk costs would be fully recoverable—i.e., would be amortized and
12 earn a return—in the alternative plan to the same extent as they would be in the resource
13 plan that includes the uprate project. If previous costs were prudently incurred and are
14 allowed to be included in rate base, then excluding them in current and future feasibility
15 analyses is appropriate. This rationale would not hold, however, if the Commission were
16 to determine that a portion of the costs of the uprate project should be attributed to
17 imprudence and should be disallowed, because in that instance the disallowed costs (and
18 associated revenue requirements) would not appear in both resource plans. In his
19 testimony Dr. Jacobs will recommend such a disallowance and explain the basis for his
20 recommendation. However, the exclusion of "sunk costs" is only one aspect that renders
21 FPL's methodology inappropriate for its EPU projects.

22 **Q. WHAT IS THE OTHER FACTOR THAT AFFECTS FPL'S**
3 **METHODOLOGY?**

1 A. The other equally important factor is that the estimate of overall capital costs and “to
2 go” costs have increased each time FPL has produced a feasibility analysis. It is the
3 combination of excluding past expenditures while also increasing projected costs of
4 completion that can result in unreliable indications of cost-effectiveness. Under FPL’s
5 approach, the faster the utility spends, the better able it is to show that a project of
6 significantly increasing costs remains feasible. I agree with Dr. Jacobs’ statement that
7 while FPL’s method of comparing the present value of revenue requirements may be
8 suitable for a project of known and stable costs, it is a poor choice for assessing its
9 volatile and uncertain EPU projects.
10

11 **IV. ALTERNATE EVALUATION METHOD**

12 **Q. EARLIER YOU SAID IT IS POSSIBLE TO USE THE SAME INFORMATION**
13 **THAT FPL PRESENTS TO APPROXIMATE THE TRUE COST-**
14 **EFFECTIVENESS OF THE PROJECT. PLEASE EXPLAIN HOW THIS CAN BE**
15 **DONE.**

16 A. FPL’s Dr. Sim expressed the streams of future costs of competing resource plans in
17 present value terms, then compared the two resulting present value figures. By “present
18 value terms,” I mean that he discounted the stream of future revenue requirements so as
19 to measure them in 2011 dollars. The “amounts spent” that have been excluded from the
20 comparison were expended very recently. These past spent amounts can be expressed in
21 present value terms, such that they are quantified and measured on the same basis as are
22 the revenue requirements of the resource plans being analyzed. To illustrate, it is
B possible to express the present value of the revenue requirements for the term of a

1 multiyear plan in 2011 dollars, then also convert amounts spent in 2009 and 2010 to 2011
2 dollars. Assuming that the amounts spent to date are included in rate base and allowed to
3 earn a return over the life of the project, there would be a stream of annual capital-related
4 revenue requirements associated with the "sunk costs." I have used FPL's response to
5 OPC's Interrogatory No. 59 as an example of how the present value of future revenue
6 requirements compares to the actual amounts of capital expenditures. I have included an
7 edited version of that response as Exhibit BDS-2 to my testimony. Column 2a on the
8 exhibit shows FPL's projection of the annual revenue requirements (in nominal dollars)
9 associated with the EPU project capital investment. Using the discounting factors shown
10 in column 1, I have converted the values in column 2a into 2011 dollars. These values
11 are shown in column 6 which I added to FPL's table. Summing the annual present value
12 amounts results in a total present value of \$2.17 billion. This present value of revenue
13 requirements is associated with the \$1.78 billion "going forward" capital costs that FPL
14 included in its evaluation. This demonstrates that the present value of revenue
15 requirements associated with a capital expenditure is greater than the actual expenditure.
16 I will conservatively assume, however, that the present value of revenue requirements
17 equals the actual expenditure for the remainder of my testimony. To gauge whether
18 customers are receiving a net benefit or a net cost from an overall perspective, one can
19 approximate the effects of the present value of capital-related revenue requirements
20 associated with the amounts previously spent by expressing the amounts previously spent
21 in 2011 dollars and adding them to the present value of the costs of the resource plan with
22 the uprates before comparing the costs of the two resource plans. Since FPL has already
3 compared the costs of the two plans and concluded there is a positive benefit, one can

1 subtract the amounts spent to date (measured in 2011 dollars) from the present value of
2 the claimed savings benefit (also measured in 2011 dollars) and determine whether the
3 resulting figure is positive or negative. If it is positive, then the project is cost-effective
4 even when both the rapidly increasing estimates of “to go” costs and the past
5 expenditures are accounted for. If it is negative, then customers are “in the hole” by the
6 amount of the difference.
7

8 **Q. CAN YOU ILLUSTRATE THE ADDITIONAL STEP THAT HAVE**
9 **DESCRIBED?**

10 A. Yes. I will use round figures to keep the explanation simple. Assume that the revenue
11 requirements of the resource plan that includes the uprate projects over a period of 33
12 years have been calculated and then discounted back to a present value, in 2011 dollars,
13 of \$100 million. Next assume the corresponding cumulative present value of the resource
14 plan that does not include the uprate projects is \$125 million. FPL would contend that
15 customers would save (on a net present value basis) \$25 million dollars through the
16 uprate projects. However, pursuant to FPL’s methodology, this conclusion ignores the
17 amount of money that FPL has spent on the projects and on which it will expect a
18 return—which will be reflected in revenue requirements. Therefore, to gauge better the
19 cost-effectiveness of the project, one can subtract the amount spent to date from the
20 claimed “savings” figure. If, for instance, FPL spent \$20 million in the past two years
21 (assume the original amount has been adjusted as necessary to express the amount in
22 2011 dollars), the additional step I describe would be to subtract the \$20 million of
23 “amounts previously spent” from the \$25 million of claimed net savings resulting from

1 the comparison of the two resource plans. The result in this example would be the
2 indication that the projects are cost-effective, but only in the amount of approximately \$5
3 million. If on the other hand FPL had spent \$35 million to date, then the calculation
4 would be to subtract the \$35 million from the \$25 million of claimed savings that resulted
5 from FPL's "CPVRR comparison" exercise. In this example, doing so would result in
6 the conclusion that customers are actually worse off by approximately \$10 million, in
7 present value terms, at this stage of the project, even though FPL claims the project is
8 economically feasible.

9 **Q. HAVE YOU APPLIED YOUR METHOD TO THE INFORMATION THAT FPL**
10 **HAS PROVIDED WITH ITS FEASIBILITY ANALYSIS?**

11 A. Yes. At Exhibit SRS-8 his testimony, Dr. Sim reports the results of the comparison of
12 the two resource plans, using medium fuel and medium environmental compliance cost
13 assumptions to be positive for customers in the amount of \$622 million on a present
14 value basis. At page 20, he states that he has removed \$700 million of amounts
15 previously spent from the resource plan that includes the uprate projects. Expressed in
16 2011 dollars, and based on a spending profile of \$347 million in 2009 and \$353 million
17 in 2010, the amounts already spent total \$778 million. Subtracting the already spent
18 amount of \$778 million from the claimed savings amount of \$622 million demonstrates
19 that the impact on customers can be conservatively estimated as a negative \$156 million
20 for the medium fuel and medium environmental compliance cost case.

21
22 **Q. DOES THIS MEAN THE UPRATE PROJECTS SHOULD NOT GO FORWARD?**

1 A. No. However, it does mean that the Commission should adopt a method of viewing the
2 project that will enable it to identify and disallow costs that exceed the maximum amount
3 that would be cost-effective for customers.

4 **Q. CAN YOU RECOMMEND A WAY IN WHICH SUCH A MAXIMUM AMOUNT**
5 **CAN BE IDENTIFIED?**

6 A. Yes. For its evaluation of the feasibility of Turkey Point units 6 & 7, FPL used a
7 breakeven analysis. I suggest that a similar approach could be used to identify a
8 maximum amount of EPU related cost that should be included in FPL's rate base. FPL
9 should be directed to produce a breakeven analysis that identifies the amount of EPU
10 investment that can be included in the "nuclear" resource plan in order to yield the same
11 Cumulative Present Value of Revenue Requirements ("CVPRR") as the "non-nuclear"
12 resource plan. For purposes of this discussion, the "nuclear" resource plan is the one in
13 which the EPU project is included. The "non-nuclear" resource plan is the one in which
14 the EPU project is not included and is the one against which the nuclear plan is
15 compared. The breakeven EPU investment amount should be the maximum amount
16 allowed to be included in rate base and should include all dollars spent beginning in 2009
17 for the project. This would protect FPL's rate payers from costs (associated with the plan
18 that FPL has identified as its least cost choice) that exceed those associated with what it
19 has identified as its second best choice.

20
21 **Q. DOES THAT CONCLUDE YOUR TESTIMONY?**

22 A. Yes, it does.

Brian D. Smith
Senior Project Manager

GDS Associates, Inc.
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EDUCATION: Bachelor of Industrial Engineering
Georgia Institute of Technology, 1981

PROFESSIONAL REGISTRATION: Registered Professional Engineer - State of Florida

PROFESSIONAL MEMBERSHIP: Institute of Industrial Engineers

EXPERIENCE:

Mr. Smith has twenty-eight years experience in electric utility planning including time spent as a staff member of municipal utility planning departments prior to his association with GDS as a power supply and system simulation consultant. He has been responsible for the development and analysis of integrated resource plans and for computer simulation of utility production operations and financial operations. Particular emphasis has been on economic feasibility studies of alternative power supply resources and projections of wholesale supplier rates based on cost of service as well as market forecasts. Mr. Smith has also been involved in the auditing of incremental energy cost billing calculations for retail customers.

1987 to Present – GDS Associates, Inc.

As Senior Project Manager in GDS' Modeling department, responsibilities include data research, database preparation, and computer simulation of investor-owned and cooperative utility systems using integrated planning software (including resource expansion optimization). He is also responsible for projecting regional market prices that are used for project justification

Mr. Smith has modeled the production systems and construction programs of investor-owned and cooperative utilities using either industry standard planning software or detailed spreadsheet models. Industry standard planning software utilized for project work includes Strategist, PROMOD, and MarketPower.

1985 to 1987 – Municipal Electric Authority of Georgia - Atlanta, Georgia

As Generation Planning Engineer, was responsible for production costing simulation PROMOD, for operations budgeting. Was a member of team responsible for customizing and installing PROSCREEN II (now Strategist) system. Participated in joint planning activities with other regional utilities.

1981 to 1985 – Jacksonville Electric Authority - Jacksonville, Florida

As Generation Planning Engineer, was responsible for production costing simulation, using PROMOD, for budgeting purposes and analysis of alternative power resources. Participated in development of PC based corporate financial model. As Load Research Engineer, was responsible for sample design, coordination of data collection equipment installation and removal, and statistical

Brian D. Smith
Senior Project Manager

GDS Associates, Inc.
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analysis of electric consumption data. Analysis contributed to cost of service studies and energy management program evaluation.

Specific Project Experience Includes:

East Texas Electric Cooperative, Inc. – Participated in preparation of Request for Proposals for power supply resources. Coordinated communications with potential RFP respondents and conducted evaluation of submitted proposals.

Produced periodic projections of wholesale rates of investor-owned utility power suppliers using Strategist. Conducted economic feasibility analysis of load transfers from one electric reliability council to another. Prepared loan application for construction financing requirements.

Kansas Electric Power Cooperative, Inc. – Modeled production and financial systems to support financial forecast. Assisted in preparation of RFPs for power supply, evaluated responses to RFPs, participated in regulatory review and approval process. Evaluated impacts on members associated with reductions in sales.

North Carolina Electric Membership Corporation - Member of project team assembled to evaluate alternative uses of power resources. Responsibilities included data research, database preparation and computer simulation of investor-owned utilities, as well as cooperative utility system, using a customized PROSCREEN II integrated planning system.

Participated in audit of energy bills from wholesale supplier.

Blue Ridge Power Agency - Projected wholesale rates of investor-owned power supplier.

Georgia Public Service Commission - Assisted in review of Georgia Power Company's Request for Proposal (RFP) procedure, including economic evaluation of resource proposals. Focused on proposal representation and modeling methods.

Member of team responsible for review of Georgia Power Company's 1995, 1997, and 2001 Integrated Resource Plans. Assisted Commission staff with Strategist analyses of company's filed expansion plans.

Seminole Electric Cooperative, Inc. - Participated in review of coop's planning procedures and modeling methods.

Department of Public Utilities, Wallingford, CT - Modeled utility system in order to evaluate power supply alternatives. Analyzed financial impacts of each alternative in order to rank options on basis of economics.

Brian D. Smith
Senior Project Manager

GDS Associates, Inc.
Page 3 of 4

Grand Island, Nebraska Electric Department - Participated in formulation of the city's Integrated Resource Plan. Designed resource screening model and comprehensive model of city's production and financial operations.

4-County Electric Power Association - Evaluated proposals received in response to 4-County Request for Proposals. Analyzed impacts of switching power suppliers on other customers of current supplier.

Lafayette, Louisiana Utilities System - Modeled the production and financial operations of the utility system. Designed and implemented models to analyze resource options at bus-bar and on an integrated basis. Participated in preparation of Integrated Resource Plan.

South Mississippi Electric Power Association - Developed spreadsheet screening models for analysis of power supply options received in response to Request for Proposals.

Air Liquide America Co. - Modeled generating resources and load requirements of the Electric Reliability Council of Texas. Developed power market clearing prices and dispatch forecast.

Tenaska Power Co. - Modeled generating resources and load requirements of the Electric Reliability Council of Texas. Developed power market clearing prices and dispatch forecast.

State of Hawaii - Modeled investor owned utility systems. Analyzed potential impacts of market power.

Analyzed feasibility of various levels of renewable generation technology.

Alabama Electric Cooperative, Inc. - Modeled investor owned utility system. Developed projections of retail customer class rates. Reviewed AEC staff analysis of bids received in response to solicitation for power.

Northeast Texas Electric Cooperative, Inc. - Developed screening model for analysis of power supply options received in response to Request for Proposals. Modeled utility system using Strategist for detailed integrated system analysis.

Nucor Corporation - Audited incremental energy billing calculations and procedures of electric service provider. Reviewed and recreated hourly billing records for a multi-year service period. Prepared forecasts of expected electric service curtailments under contract provisions for service interruptions

GST Steel Corporation - Calculated power cost over charges due to outage of power supplier generating resource.

Brian D. Smith
Senior Project Manager

GDS Associates, Inc.
Page 4 of 4

Big Rivers Electric Corporation – Produced supply-side resource evaluation for Integrated Resource Plan.

Central Electric Power Corporation – Conducted simulation of power supply contracts to determine impacts on members.

Corn Belt Power Cooperative – Compared cost of continued asset ownership to purchased power contract.

Citizens Utility Board of Wisconsin – Calculated impacts to ratepayers associated with sale of investor-owned generating asset.

Kiewit Mining Group, Inc. – Produced forecasts of ERCOT market prices to support asset fuel pricing analysis.

American Municipal Power – Ohio, Inc. – Produced production simulation of all PJM entities to support analysis of market restructuring.

Co-Owners of Arkansas Coal Projects – Produced evaluation of impacts associated with interruptions in fuel supply.

Old Dominion Electric Cooperative – Developed triennial Market Power Screen analytics included in FERC filings.

PRIOR TESTIMONY OFFERED:

Public Service Commission of the State of Missouri, Case No. EC-99-553, GST Steel Company vs. Kansas City Power & Light Company Relating to Overcharges to GST Resulting from Generating Station Explosion, November 1999

Georgia Public Service Commission, Docket No. 13305-U and Docket No. 13306-U, In the Matter of Georgia Power Company's Application for Approval of and Integrated Resource Plan and Savannah Electric and Power Company's Application for Approval of an Integrated Resource Plan Relating to Review and Evaluation of the Companies' Integrated Resource Plans on Behalf of the Commission Staff Adversary Team, May 2001

Wisconsin Public Service Commission, Docket No. 5-EI-136, In the Matter of the Application for All Approvals Necessary for the Transfer of Ownership and Operational Control of the Kewaunee Nuclear Power Plant From Wisconsin Public Service Corporation and Wisconsin Power and Light Company to Dominion Energy Kewaunee, Inc. on Behalf of Citizens Utility Board, May 2004.

Georgia Public Service Commission, Docket No. 31081, In the Matter of Georgia Power Company's 2010 Integrated Resource Plan on behalf of Georgia Public Service Commission Public Interest Advocacy Staff, May 2010.

Table OPC - 59 - 1

Projected FPL
System Revenue Requirement Impact of EPU Project (Expanded)
2011 - 2043

Fuel Cost Forecast = Medium Fuel
Environmental Compliance Cost Forecast = ENV II

	[1]	[2a]	[2b]	[2c] = [2a] + [2b]	[2d]	[2e] = [2c] + [2d]	[3a]	[3b]	[3c] = [3a] + [3b]	[4a] = [2c] - [3a]	[4b] = [2d] - [3b]	[4c] = [2e] - [3c]	[5] = [1] * [4c]	[6] = [1] * [2a]
Year	Discount Rate 7.29%	w/ EPU Project Capital Investment Nominal \$ Millions	w/ EPU Project Non-EPU Capital Investment Nominal \$ Millions	w/ EPU Project Total Capital Investment Nominal \$ Millions	w/ EPU Project Non Capital Investment Nominal \$ Millions	w/ EPU Project System Revenue Requirements Nominal (\$ Millions)	w/o EPU Project Total Capital Investment Nominal (\$ Millions)	w/o EPU Project Non Capital Investment Nominal (\$ Millions)	w/o EPU Project System Revenue Requirements Nominal (\$ Millions)	System Capital Revenue Requirement Impact Nominal (\$ Millions)	System Non-Capital Revenue Requirement Impact Nominal (\$ Millions)	System Revenue Requirement Impact Nominal (\$ Millions)	System Revenue Requirement Impact NPV (\$ Millions)	w/ EPU Project Capital Investment NPV \$ Millions
1 2011	1.000	78	0	78	3,500	3,579	0	3,481	3,481	78	20	98	98	78
2 2012	0.932	226	0	226	3,692	3,918	0	3,577	3,577	226	115	341	317	210
3 2013	0.869	278	0	278	3,628	3,906	0	3,721	3,721	278	(93)	185	161	242
4 2014	0.810	256	0	256	3,868	4,124	0	3,986	3,986	256	(117)	138	112	207
5 2015	0.755	244	0	244	4,136	4,380	0	4,265	4,265	244	(128)	115	87	184
6 2016	0.703	232	105	337	4,919	5,256	105	5,064	5,169	232	(145)	87	61	163
7 2017	0.656	221	174	396	5,376	5,772	174	5,544	5,719	221	(168)	53	35	145
8 2018	0.611	211	168	379	7,052	7,440	168	7,282	7,450	211	(221)	(10)	(6)	129
9 2019	0.570	200	162	362	7,682	8,045	276	7,818	8,094	86	(136)	(50)	(23)	114
10 2020	0.531	190	274	464	8,200	8,663	346	8,423	8,769	117	(223)	(106)	(56)	101
11 2021	0.495	180	346	526	8,878	9,404	455	9,189	9,644	71	(311)	(240)	(119)	89
12 2022	0.461	169	333	503	9,411	9,914	523	9,797	10,320	(20)	(385)	(405)	(187)	78
13 2023	0.430	159	321	480	9,626	10,106	504	9,940	10,444	(24)	(314)	(337)	(145)	68
14 2024	0.401	149	309	458	10,231	10,689	485	10,636	11,121	(27)	(405)	(432)	(173)	60
15 2025	0.373	139	434	572	11,358	11,930	467	11,700	12,167	106	(343)	(237)	(89)	52
16 2026	0.348	128	583	712	12,110	12,821	589	12,455	13,044	122	(345)	(223)	(78)	45
17 2027	0.324	119	755	874	12,945	13,819	810	13,338	14,149	64	(393)	(329)	(107)	38
18 2028	0.302	111	903	1,014	13,736	14,750	956	14,123	15,078	58	(387)	(329)	(99)	33
19 2029	0.282	104	1,074	1,178	14,546	15,724	1,048	14,879	15,927	131	(333)	(202)	(57)	29
20 2030	0.263	99	1,220	1,319	15,550	16,868	1,219	15,984	17,202	100	(434)	(334)	(88)	26
21 2031	0.245	94	1,309	1,403	16,422	17,825	1,363	16,892	18,256	40	(470)	(430)	(105)	23
22 2032	0.228	77	1,483	1,560	17,962	19,522	1,534	18,278	19,812	26	(315)	(289)	(66)	18
23 2033	0.213	39	1,802	1,841	19,996	21,837	1,764	20,288	22,052	77	(292)	(214)	(46)	8
24 2034	0.198	35	2,003	2,037	21,428	23,465	1,993	21,637	23,630	45	(210)	(165)	(33)	7
25 2035	0.185	33	2,078	2,111	22,511	24,621	2,130	22,857	24,987	(19)	(346)	(366)	(68)	6
26 2036	0.172	22	2,343	2,364	25,171	27,535	2,297	25,153	27,450	67	17	85	15	4
27 2037	0.160	16	2,547	2,562	26,420	28,983	2,435	26,551	28,985	128	(130)	(2)	(0)	3
28 2038	0.150	15	2,614	2,628	27,741	30,370	2,504	27,800	30,304	124	(59)	66	10	2
29 2039	0.139	14	2,785	2,799	29,599	32,397	2,678	29,735	32,414	120	(137)	(16)	(2)	2
30 2040	0.130	14	2,922	2,936	31,064	34,000	2,820	31,045	33,865	116	19	135	18	2
31 2041	0.121	13	2,987	3,000	31,938	34,938	2,888	32,013	34,900	112	(75)	38	5	2
32 2042	0.113	12	3,053	3,065	32,813	35,878	2,958	32,913	35,871	108	(100)	7	1	1
33 2043	0.105	9	3,352	3,360	33,935	37,296	3,261	33,984	37,245	100	(48)	51	5	1
	CPVRR = (\$ Millions)	3,884	38,438	42,322	507,456	549,778	38,748	514,349	553,097	3,574	(6,893)	(3,319)	(628)	2,170

Cost to Complete

1,780