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COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION
PUBLIC SERVICE
COMMISSION

In The Matter Of:

**APPLICATION OF KENTUCKY POWER
COMPANY FOR APPROVAL OF ITS
2011 ENVIRONMENTAL COMPLIANCE
PLAN, FOR APPROVAL OF ITS
AMENDED ENVIRONMENTAL COST
RECOVERY SURCHARGE TARIFF, AND
FOR THE GRANTING OF A
CERTIFICATE OF PUBLIC
CONVENIENCE AND NECESSITY FOR
THE CONSTRUCTION AND
ACQUISITION OF RELATED
FACILITIES**

CASE NO. 2011-00401

Notice of Filing Of Corrected Rebuttal Testimony
of Mark A. Becker

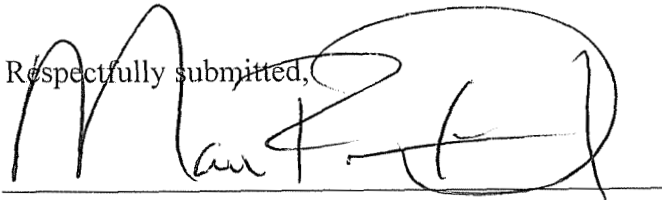
Kentucky Power Company files the corrected Rebuttal Testimony of Mark A. Becker.

Mr. Becker's Rebuttal Testimony has been corrected as follows:

(a) Exhibit MAB-1, which was inadvertently omitted from the Rebuttal Testimony filed and service on April 16, 2012, is included in the corrected testimony; and

(b) The remaining exhibits to Mr. Becker's testimony are labeled to conform to the descriptions in his testimony.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Mark R. Overstreet', written over a horizontal line.

Mark R. Overstreet
R. Benjamin Crittenden
STITES & HARBISON, PLLC
421 West Main Street
P.O. Box 634
Frankfort, KY 40602-0634
Telephone: (502) 223-3477
COUNSEL FOR KENTUCKY POWER
COMPANY

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing was served by Overnight Delivery, upon the following parties of record, this 19th day of April, 2012.

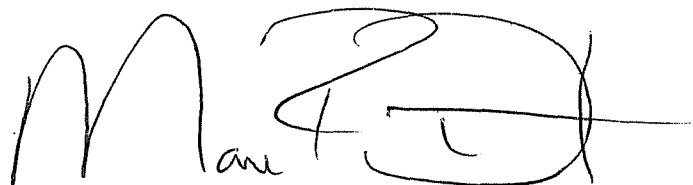
Michael L. Kurtz
Boehm, Kurtz & Lowry
Suite 1510
36 East Seventh Street
Cincinnati, Ohio 45202

Joe F. Childers
Joe F. Childers & Associates
300 The Lexington Building
201 West Short Street
Lexington, Kentucky 40507

Dennis G. Howard II
Lawrence W. Cook
Assistant Attorney General
Office for Rate Intervention
P.O. Box 2000
Frankfort, Kentucky 40602-2000

Kristin Henry
Sierra Club
85 Second Street
San Francisco, California 94105

Shannon Fisk
235 Rector St.
Philadelphia, PA 19128

A handwritten signature in black ink, appearing to read "Matthew F. Childers". The signature is written in a cursive style with a large, stylized "M" and "C".

Counsel for Kentucky Power Company

COMMONWEALTH OF KENTUCKY
BEFORE THE
PUBLIC SERVICE COMMISSION OF KENTUCKY

IN THE MATTER OF

APPLICATION OF KENTUCKY POWER COMPANY)
FOR APPROVAL OF ITS 2011 ENVIRONMENTAL)
COMPLIANCE PLAN, FOR APPROVAL OF ITS)
AMENDED ENVIRONMENTAL COST RECOVERY) Case No. 2011-00401
SURCHARGE TARIFF, AND FOR THE GRANT OF A)
CERTIFICATE OF PUBLIC CONVENIENCE AND)
NECESSITY FOR THE CONSTRUCTION AND)
ACQUISITION OF RELATED FACILITIES)

REBUTTAL TESTIMONY

OF

MARK A. BECKER

April 16, 2012

**REBUTTAL TESTIMONY OF
MARK A. BECKER, ON BEHALF OF
KENTUCKY POWER COMPANY
BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY**

CASE NO. 2011-00401

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	BACKGROUND.....	3
III.	PURPOSE	4
IV.	DESCRIPTION OF STRATEGIST CAPITAL COST MODELING INPUTS AND REQUIREMENTS	7
V.	THE BIG SANDY RETROFIT ALTERNATIVE CAPITAL COSTS WERE MODELED CORRECTLY IN STRATEGIST	8
VI.	THE (2016) BIG SANDY CC REPLACEMENT AND DELAYED NEW BUILD CC ALTERNATIVES' CAPITAL COSTS WERE MODELED ACCURATELY IN STRATEGIST®	11
VII.	DESCRIPTION OF STRATEGIST® INPUTS AND METHODOLOGY FOR CALCULATING AN ALTERNATIVE'S ANNUAL LEVELIZED CARRYING CHARGES	12
VIII.	DESCRIPTION OF DR. FISHER'S METHODOLOGY FOR CALCULATING AN ALTERNATIVE'S ANNUAL CARRYING CHARGES	14
IX.	COMPARISON OF THE COMPANY'S AND DR. FISHER'S NOMINAL IN- SERVICE DATE CAPITAL COSTS DERIVED FROM THE ALTERNATIVE'S IN-SERVICE DATE ANNUAL LEVELIZED CARRYING CHARGES	15
X.	THE BIG SANDY RETROFIT ALTERNATIVE FIXED O&M COSTS WERE CONSISTENTLY APPLIED	23
XI.	CONCLUSIONS	23

**REBUTTAL TESTIMONY OF
MARK A. BECKER, ON BEHALF OF
KENTUCKY POWER COMPANY
BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY**

I. INTRODUCTION

1
2 **Q. WOULD YOU PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND**
3 **POSITION?**

4 A. My name is Mark A. Becker, and my business address is 212 E. 6th Street, Tulsa,
5 Oklahoma. I am employed by the American Electric Power Service Corporation
6 (AEPSC) as Manager – Resource Planning.

II. BACKGROUND

7
8 **Q. WOULD YOU PLEASE DESCRIBE YOUR EDUCATIONAL AND**
9 **PROFESSIONAL BACKGROUND?**

10 A. I received a Bachelor of Science Degree in Electrical Engineering from the University
11 of Arkansas in 1983.

12 I am currently employed by AEPSC as Manager – Resource Planning. I have over 28
13 years of experience working for municipal and investor-owned electric utilities and
14 energy trading companies. The majority of my experience, approximately 25 years,
15 has been related to performing a utilities' resource planning and operational analysis
16 functions using the proprietary long-term resource optimization software known as
17 STRATEGIST[®]. One of my responsibilities at Florida Power and Light (FPL) in
18 1983-1985, was to develop the first PROSCREEN[®] (predecessor to Strategist[®])

1 database of the FPL system. While developing FPL's PROSCREEN® database, I
2 also beta tested several modules of the PROSCREEN® software for its developer
3 New Energy Associates. In addition, I also participated in the beta testing of EPRI's
4 Electric Generation Expansion Analysis System (EGEAS) while at FPL. A summary
5 of my work experience is attached as **Exhibit MAB-1**.

6 **Q. WHAT ARE YOUR RESPONSIBILITIES AS MANAGER – RESOURCE**
7 **PLANNING?**

8 A. I am responsible for the coordination and performance of long-term generation
9 resource planning studies using Strategist®. These studies include evaluating the
10 economics of emission retrofits that could be installed on AEP's generating fleet and
11 developing Integrated Resource Plans for AEP's operating companies.

12 **Q. DID YOU FILE DIRECT TESTIMONY IN THIS CASE?**

13 A. No.

14 **III. PURPOSE**

15 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

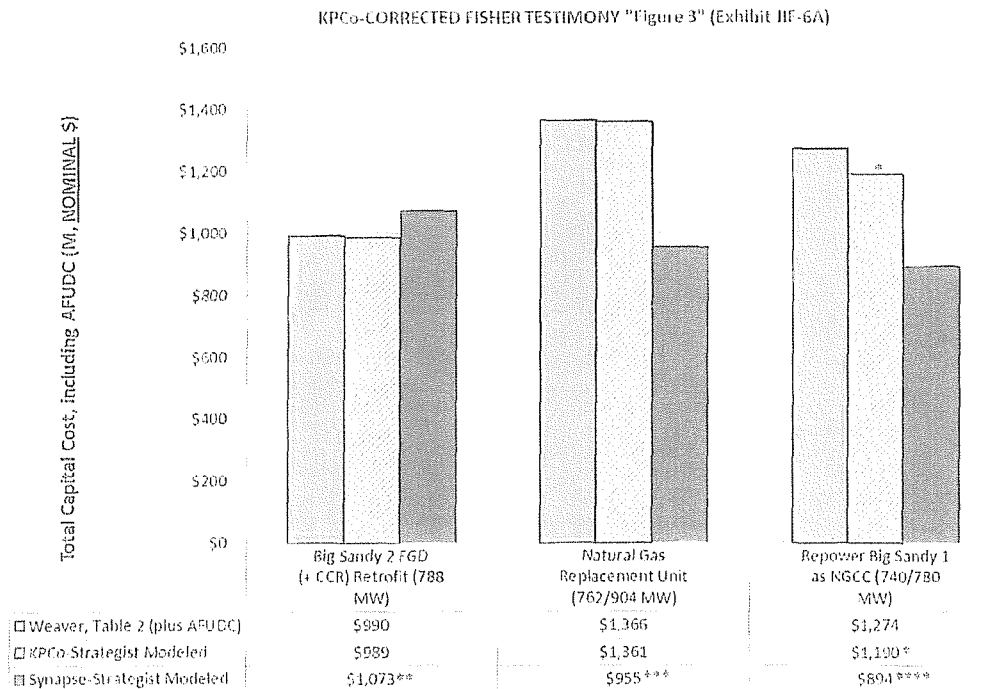
16 A. The purpose of my rebuttal testimony will be to respond to certain assertions made by
17 Sierra Club's witnesses Dr. Fisher as it pertains to certain inputs utilized in Kentucky
18 Power Company's (KPCo, or "the Company") Strategist® modeling. Specifically, I
19 will refute Dr. Fisher's argument that the Company's Strategist® modeling
20 incorrectly represented the "installed" capital costs—and, therefore, attendant annual
21 levelized carrying charges—for the Big Sandy retrofit alternative (Option #1) and the
22 Big Sandy replacement options (Options #2, #3, #4A and #4B) by:

- 1 • proving that the Company did not understate the installed capital costs—and
2 attendant annual levelized carrying charges—assumed in Strategist® for the Big
3 Sandy retrofit alternative (Option #1);
- 4 • proving that the Company did not overstate the installed capital costs assumed in
5 Strategist® by double-counting corporate overheads for the brownfield
6 combined-cycle (CC) alternative modeled to replace Big Sandy (Option #2), as
7 well as for the studied alternatives that assumed delayed construction of such
8 replacement new build CCs (Options #4A and #4B);
- 9 • proving that the methodology Dr. Fisher utilized in his re-analysis to “correct”
10 the Company’s capital cost modeling actually understated the installed capital
11 cost and attendant annual carrying charges for all of the alternatives that were
12 evaluated. I will show that Dr. Fisher’s methodology is not representative of the
13 annual levelized carrying charges produced by Strategist® and utilized by the
14 Company in its evaluation of the alternatives. In order to make this argument, I
15 will provide a brief description of Strategist®’s capital cost modeling inputs and
16 requirements necessary to establish the annual levelized carrying charges
17 applicable to the capital investment¹; and finally
- 18 • as part of this modeling input validation, I will also refute Dr. Fisher’s argument
19 that the Company, inconsistently modeled the fixed O&M costs used as an input
20 into the Strategist® model for the Big Sandy retrofit alternative (Option #1).

¹ Capital carrying charges representing a levelized annual proxy for a (pre-tax) return on assumed investment capitalization, depreciation charges, as well as other minor attendant administrative costs applicable to the investment.

1 Q. PLEASE PROVIDE A SUMMARY OF YOUR OVERALL FINDINGS.
 2 A. After reviewing Dr. Fisher’s testimony and methods used in his “re-analysis” of the
 3 Company’s evaluation, I have found that he has overstated the in-service date capital
 4 cost of the Big Sandy retrofit alternative (Option #1) and understated the in-service
 5 date capital cost of the brownfield CC modeled to replace Big Sandy, and also the Big
 6 Sandy 1 CC repower. Figure 1 below (also Exhibit MAB-5) compares the in-service
 7 date capital costs found in the testimony of Company witness Weaver (Weaver, Table
 8 2 (plus AFUDC)), to those utilized in the Company’s Strategist® modeling (KPCo-
 9 Strategist Modeled) and to those found in Dr. Fisher’s testimony (Synapse-Strategist
 10 Modeled).

11 Figure 1



* See Rebuttal Exhibit MAB-1 (KPCo-Strategist modeling understated the escalation rate required to match the project's projected cost in nominal \$)
 ** See Rebuttal Exhibit MAB-2

*** See Rebuttal Exhibit MAB-3
 **** See Rebuttal Exhibit MAB-4

1 Figure 1 shows the KPCo-Strategist Modeled capital costs are very similar, if not
2 somewhat understated, compared to Weaver, Table 2 (plus AFUDC). However, the
3 Synapse-Strategist Modeled capital costs overstate the Big Sandy 2 FGD retrofit
4 (Option #1) costs by \$83M. In addition, the capital cost for the Natural Gas CC
5 Replacement Unit (Option #2, #4A and #4B) and the Repower Big Sandy 1 as a
6 NGCC (Option #3) are understated by \$411M and \$380M, respectively.

7 **IV. DESCRIPTION OF STRATEGIST® CAPITAL COST MODELING**
8 **REQUIREMENTS**

9 **Q. PLEASE DESCRIBE ANY REQUIREMENTS FOR MODELING AN**
10 **ALTERNATIVE'S CAPITAL COSTS IN STRATEGIST®.**

11 A. One of the input requirements of Strategist® is that annual construction costs of an
12 alternative can only be captured in the alternative's overnight capital cost without
13 AFUDC (2011\$/kW) up to the alternative's in-service year. If an option has an in-
14 service date other than January 1 of year X, then any year X cash flows, and any cash
15 flows occurring after that in-service date must be captured uniquely. For example, if
16 an alternative has an in-service date of June 30, 2016, the annual construction costs
17 for that alternative can only be captured through 2015 in the alternative's overnight
18 capital cost utilized by the model. Therefore, due to this requirement, any annual
19 construction costs that occur *during* the in-service year (January 1, 2016 through June
20 30, 2016), as well as any estimated post-in service "clean-up costs", must be
21 accounted for by some other mechanism.

1 Q. PLEASE DESCRIBE THE REQUIRED MECHANISM FOR RECOVERING
2 ANNUAL CONSTRUCTION COSTS THAT OCCUR IN AN
3 ALTERNATIVE'S IN-SERVICE YEAR AND BEYOND.

4 A. One of the mechanisms for recognizing annual construction costs that occur in an
5 alternative's in-service year and potentially beyond is to calculate the annual
6 levelized carrying charges for those "incremental" construction costs and simply
7 capture them by way of some other input in the model. For example, such annual
8 levelized carrying charges would be calculated separately and then included in the
9 alternative's Fixed O&M Cost input within the model. This is the approach that the
10 Company has used to capture the annual construction costs that occur in the in-
11 service year and beyond for alternatives evaluated in this analysis, in particular, the
12 Big Sandy 2 retrofit alternative (Option #1).

13 V. THE BIG SANDY RETROFIT ALTERNATIVE CAPITAL COSTS WERE
14 MODELED CORRECTLY IN STRATEGIST

15 Q. DO YOU AGREE WITH DR. FISHER'S ASSERTION THAT THE CAPITAL
16 COSTS FOR THE BIG SANDY 2 RETROFIT ALTERNATIVE (OPTION #1)
17 WERE UNDERSTATED IN THE COMPANY'S STRATEGIST®
18 MODELING?

19 A. No. The Company has correctly modeled the Big Sandy 2 retrofit alternative's
20 capital costs in Strategist® working within the model's required capital cost inputs
21 and modeling requirements. In fact, as shown later in my testimony, the nominal
22 installed capital costs of the Big Sandy 2 retrofit alternative closely matches the

1 values for that alternative set forth in Company witness Weaver's TABLE 2 from his
2 direct testimony.

3 **Q. PLEASE DESCRIBE HOW THE BIG SANDY 2 RETROFIT OVERNIGHT**
4 **CAPITAL COSTS WERE DERIVED FOR USE AS STRATEGIST INPUTS.**

5 A. As described above, the Strategist® capital cost modeling utilized in this analysis
6 allows annual construction costs only up to the project's in-service year to be directly
7 accounted for in the alternative's overnight capital cost without AFUDC (2011\$/kW).
8 The Big Sandy 2 retrofit alternative is assumed to be in-service by June 1, 2016.
9 Therefore, using the annual construction expenditures for 2011 through 2015 that
10 were the basis for Company witness Weaver's TABLE 2, an overnight capital cost
11 without AFUDC (2011\$/kW) was developed for the Big Sandy 2 retrofit alternative.
12 Exhibit MAB-2 provides a summary of these calculations. In fact, as demonstrated in
13 that exhibit, the total Big Sandy 2 retrofit alternative's cost per kW (2011\$) input of
14 \$696/kW aligns with the figure as recognized by Sierra Club witness Rachel Wilson
15 on page 7, line 1 of her direct testimony.

16 **Q. PLEASE THEN DESCRIBE HOW THE ANNUAL CONSTRUCTION COSTS**
17 **OCCURRING DURING THE IN-SERVICE YEAR AND AFTER WERE**
18 **ACCOUNTED FOR IN THE MODELING OF THE BIG SANDY 2**
19 **RETROFIT.**

20 A. As also described above, one of the mechanisms for recovering annual construction
21 costs that occur in an alternative's in-service year and beyond is to calculate the annual
22 levelized carrying charges for those construction costs and capture those elements of
23 total expended capital as part of the Fixed O&M costs for that alternative. Exhibit

1 MAB-2 also provides a summary of those (incremental) fixed O&M calculations for
2 the Big Sandy 2 retrofit alternative. Exhibit MAB-2 identifies nearly \$288 million of
3 capital expenditures associated with the Big Sandy 2 retrofit project that occurred
4 either within the in-service year (2016), or beyond, that had to be uniquely accounted
5 for in this 'incremental' Fixed O&M modeling. Exhibit MAB-2 shows that nearly \$48
6 million of 'incremental' Fixed O&M would be included in the unit's Fixed O&M cost
7 modeling over the 2017-2030 period to recover the \$288 million.

8 In summary, and counter to Dr. Fisher's contention, this exhibit clearly
9 demonstrates that, in effect, the total of the nominal capital expenditure associated
10 with the Big Sandy 2 DFGD retrofit alternative of \$887 million as identified in
11 Company witness Weaver's testimony in TABLE 2, were indeed properly recognized
12 and utilized in the Strategist® cost modeling for that option.

13 **Q. AS A RESULT, IS DR. FISHER'S RE-CALCULATION OF THE BIG SANDY**
14 **ALTERNATIVE COSTS SHOWN IN "TABLE 2" (PAGE 25) OF HIS DIRECT**
15 **TESTIMONY IN ERROR?**

16 **A.** Yes. Dr. Fisher has overstated the costs of the Big Sandy retrofit alternative. While
17 he applied the carrying charge methodology described in his testimony to the 'full'
18 project' capital spend, he has not properly accounted for the capital carrying charges
19 already captured in "incremental" Fixed O&M. Therefore, his adjustment for the Big
20 Sandy 2 retrofit alternative has effectively double-counted the construction costs that
21 occurred in 2016 and beyond.

1 VI. THE (2016) BIG SANDY CC REPLACEMENT AND DELAYED NEW BUILD
2 CC ALTERNATIVES' CAPITAL COSTS WERE MODELED ACCURATELY
3 IN STRATEGIST®

4 Q. IS DR. FISHER CORRECT IN HIS ASSERTION THAT CORPORATE
5 OVERHEADS WERE EFFECTIVELY "DOUBLE-COUNTED" IN THE
6 COMPANY'S CAPITAL COST MODELING OF THE 2016 BIG SANDY CC
7 REPLACEMENT AND DELAYED NEW-BUILD CC ALTERNATIVES
8 (OPTION #2, #4A AND #4B)?

9 A. No. It appears that Dr. Fisher believes that certain project-related direct owner's costs
10 and corporate capital overhead (OH) allocations are one and the same. They are not.
11 The Company's projected new-build CC "owner's costs" are reflective of \$53.8
12 million of estimated non-engineering, procurement and construction (EPC) costs
13 associated with the \$790.2M costs for the brownfield CC option. Those costs are
14 considered "direct" costs related to project construction and cover Project
15 Management, Engineering, and Construction (PMEC) costs anticipated to be borne by
16 the Company and *not* the EPC-provider, as well as start-up/unit commissioning costs,
17 Builder's-All-Risk (BAR) insurance, etc. These \$53.8 million of estimated project
18 costs are embedded in the overall "direct" project cost estimates of \$969.1M for this
19 brownfield CC option (before a 10% contingency adder).

20 Contrastingly, the 7% corporate capital overheads reflected on Company
21 witness Weaver's TABLE 2 summary (col. e) are considered "indirect" costs related to
22 project construction and cover costs related to typical KPCo corporate overhead
23 charges applied to capital work orders.

1 By sheer coincidence, the \$53.8M AEP owner's cost is approximately 7%
2 (6.8%) of the \$790.2M in total EPC capital spend. The AEP owner's cost of 6.8% is
3 comparable to the 7% used for the indirect capital overheads rate applied to KPCo
4 capital work orders as shown on Company witness Weaver's TABLE 2. Because
5 these two completely different rates are very similar, the Company contends that Dr.
6 Fisher has mistakenly assumed these costs were double-counted.

7 **VII. DESCRIPTION OF STRATEGIST® INPUTS AND METHODOLOGY FOR**
8 **CALCULATING AN ALTERNATIVE'S ANNUAL LEVELIZED CARRYING**
9 **CHARGES**

10 **Q. PLEASE DESCRIBE STRATEGIST®'S INPUTS AND METHODOLOGY**
11 **FOR CALCULATING ANNUAL LEVELIZED CARRYING CHARGES AND**
12 **THE MODEL'S ABILITY FOR REPORTING OF THOSE CHARGES.**

13 **A.** Several inputs--and sequential "steps"—are required for the model to determine an
14 alternative's fixed, on-going annual levelized carrying charges necessary to recover
15 the capital investment of an alternative:

- 16 • The alternative's overnight capital cost without AFUDC expressed in
17 2011\$/kW.
- 18 • The alternative's megawatt (MW) capacity used to convert the overnight
19 capital cost (2011\$/kW) to an overnight construction cost, expressed in
20 2011\$.
- 21 • An expenditure profile that creates annual construction expenditures
22 (2011\$) by spreading the overnight construction costs over the
23 alternative's construction period.

- 1 • An escalation rate used to convert annual construction costs (in 2011\$), to
2 nominal or “as-spent” dollars over the alternative’s construction period.
- 3 • The Company’s weighted average cost of capital (WACC) used to
4 calculate the alternative’s AFUDC from the annual nominal construction
5 costs. The WACC allows the return on the investment to be recovered.
6 The AFUDC cost is then added to the annual nominal construction costs
7 to create a nominal total project capital cost at the alternative’s in-service
8 date.
- 9 • An annual levelized carrying charge rate used to create an annual levelized
10 carrying charge to recover the alternative’s “in-service date” total project
11 capital cost over its projected economic recovery period. This annual
12 levelized carrying charge rate recovers the Company’s WACC,
13 depreciation, Federal Income Taxes, property taxes and G&A expenses
14 associated with a capital project. Through the use of a levelized carrying
15 charge, the return of and on an investment can be captured.
- 16 • The in-service date annual levelized carrying charge for an alternative is
17 created by multiplying the nominal total plant cost at the alternative’s in-
18 service date by the annual levelized carrying charge rate. The in-service
19 date annual levelized carrying charge is de-escalated at the alternative’s
20 escalation rate to calculate the annual levelized carrying charge that would
21 occur if the in-service date was earlier than what was modeled. For in-
22 service dates occurring later than what was modeled, the in-service date
23 levelized carrying charge is escalated to the desired in-service year at the
24 alternative’s escalation rate to determine the levelized carrying charge for
25 that year.
- 26 • Strategist® determines the annual levelized carrying charges for each year
27 of the study period (2011-2040) for all of the alternatives’ modeled by
28 utilizing the inputs and methodology described above. Through activating
29 the model’s diagnostic that produces the Levelized and Replacement Cost

1 Tables, the user can generate a table of these annual levelized carrying
2 charges as calculated by the model over the study period.

3 **Q. IN THE COMPANY'S ANALYSIS OF BIG SANDY ALTERNATIVES, DID**
4 **THE COMPANY USE THE STRATEGIST® INPUTS, MODEL**
5 **METHODOLOGY AND REPORTING DESCRIBED IN THE TESTIMONY**
6 **ABOVE?**

7 A. Yes. The Company allowed Strategist® to calculate the annual levelized carrying
8 charges used in the analysis of Big Sandy alternatives. The Company activated the
9 diagnostic that produces the Levelized and Replacement Cost Tables and has used
10 that information as the basis for representing the levelized carrying charges in their
11 calculation spreadsheets for each alternative. Dr. Fisher has referred to these
12 calculation spreadsheets as the "Company Strategist Compilation Workbook" on page
13 21 lines 16-17 of his testimony.

14

15 **VIII. DESCRIPTION OF DR. FISHER'S METHODOLOGY FOR CALCULATING**
16 **AN ALTERNATIVE'S ANNUAL LEVELIZED CARRYING CHARGES.**

17 **Q. BRIEFLY DESCRIBE DR. FISHER'S METHODOLOGY FOR**
18 **CALCULATING AN ALTERNATIVE'S ANNUAL LEVELIZED CARRYING**
19 **CHARGE.**

20 A. As described on page 24 lines 17-18 and footnote 23, Dr. Fisher created his annual
21 levelized carrying charges by using the Excel PMT function assuming the Company's
22 8.64% WACC as the interest rate in that PMT function. This PMT function calculates

1 an annual payment, similar to a mortgage payment, which must be made over the book
2 life of the asset to recover the capital cost of that asset.

3 **Q. HOW DOES DR. FISHER'S METHODOLOGY FOR CALCULATING AN**
4 **ALTERNATIVE'S ANNUAL LEVELIZED CARRYING CHARGE**
5 **UNDERSTATE THOSE CHARGES?**

6 A. The Company's WACC is only one component of the cost that must be recovered
7 when making a capital investment. In addition to the WACC, the investments
8 depreciation cost, Federal Income Taxes (FIT), property taxes and General &
9 Administration (G&A) Expenses must also be taken into account. Dr. Fisher has
10 understated his annual levelized carrying charges by only taking the Company's
11 WACC into account effectively reflecting only a return on, not return on and of the
12 investment.

13 **IX. COMPARISON OF THE COMPANY'S AND DR. FISHER'S NOMINAL IN-**
14 **SERVICE DATE CAPITAL COSTS DERIVED FROM THE ALTERNATIVE'S**
15 **IN-SERVICE DATE ANNUAL LEVELIZED CARRYING CHARGES.**

16 **Q. HOW CAN AN ALTERNATIVE'S NOMINAL IN-SERVICE DATE CAPITAL**
17 **COST BE DERIVED FROM THE ALTERNATIVE'S IN-SERVICE DATE**
18 **ANNUAL LEVELIZED CARRYING CHARGE?**

19 A. As described in the above testimony, the in-service date annual levelized carrying
20 charge for an alternative is created by multiplying the nominal total plant cost at the
21 alternative's in-service date by the levelized carrying charge rate. For example, if the
22 alternative's nominal in-service date total plant cost is \$1M and the levelized carrying

1 charge rate is 15% the annual levelized carrying charge for the alternative would be
2 \$150,000 over the alternative's book life. (Example: $\$1,000,000 * .15 = \$150,000$).
3 Therefore, if the in-service date annual levelized carrying charge and levelized
4 carrying charge rate are known, the nominal in-service date total plant cost can be
5 determined by dividing the in-service date annual levelized carrying charge by the
6 levelized carrying charge rate. (Example: $\$150,000 / .15\% = \$1,000,000$)

7 **Q. PLEASE DERIVE THE NOMINAL IN-SERVICE DATE CAPITAL COST FOR**
8 **THE BIG SANDY RETROFIT (OPTION#1) USING THE IN-SERVICE DATE**
9 **ANNUAL LEVELIZED CARRYING CHARGE UTILIZED BY THE**
10 **COMPANY IN THE KPCO MODELING.**

11 A. The derivation of this cost can be found in Exhibit MAB-2 Section II.
12 OVERSTATEMENT of witness Fisher "Restatement" of Option #1 (BS2 Retrofit)
13 Project Capital Cost. The required components for this calculation were found either
14 in workpapers provided Synapse to support Dr. Fisher's testimony, or by the Company
15 in response to Sierra Clubs various discovery requests and are noted in Exhibit MAB-
16 2. Using the annual levelized carrying charge of \$111,179,000 for 2016 (in-service
17 date) and the Company's 15 year levelized carrying charge rate of 16.57% a 2016 in-
18 service date capital cost of \$670,966,000 is calculated as shown in Exhibit MAB-2 and
19 as follows:

20
$$\$111,179,000 / .1657 = \$670,966,000$$

21 This calculated 2016 in-service date capital cost compares closely to the capital cost
22 (\$672,499,000) developed from the cash-flows in Exhibit MAB-2. As described
23 above the additional \$317,770,000 in capital costs that occurred during and after the

1 2016 in-service date were captured in the Fixed O&M for this alternative. If these
2 post in-service date capital costs are accounted, the total project cost of \$988,736,000
3 (\$670,966,000 + \$317,770,000) is determined. This total project cost closely matches
4 the \$990,270,000 developed from the capital cash flows. Therefore, no “Corrected
5 Capital Cost” adjustment is necessary as suggested by Dr. Fisher in Table 2 of his
6 testimony.

7 **Q. PLEASE DERIVE THE NOMINAL IN-SERVICE DATE CAPITAL COST FOR**
8 **THE BIG SANDY RETROFIT (OPTION#1) USING THE IN-SERVICE DATE**
9 **ANNUAL CARRYING CHARGE UTILIZED BY DR. FISHER IN HIS RE-**
10 **ANALYSIS WITH CORRECTED CAPITAL COSTS.**

11 A. The derivation of this cost can be found in Exhibit MAB-2 Section II.
12 OVERSTATEMENT of Sierra Club witness Fisher “Restatement” of Option #1 (BS2
13 Retrofit) Project Capital Cost. The first step is to determine the annual carrying charge
14 in 2011\$. Using the annual cost of the Big Sandy 2 Retrofit option (Option #1)
15 assumed by Synapse (\$897.1M) and the Company’s WACC of 8.64% (which is much
16 lower than the Company’s 15 year levelized carrying charge rate of 16.57%) a 2011\$
17 annual carrying charge of \$108,933,000 is calculated using the Excel PMT function as
18 shown below and in Exhibit MAB-2.

19
$$\text{PMT} (.0864, 15, \$897,100,000) = \$108,933,000$$

20 The 2011\$ annual carrying charge is escalated at the alternative’s escalation rate
21 (2.8%) for 5 years to determine the annual carrying charge at the alternative’s 2016 in-
22 service date.

23
$$\$108,933,000 * 1.028^5 = \$125,063,000$$

1 By properly applying the Company's 15 year annual levelized carrying charge rate of
2 16.57% (instead of the incorrect 8.64% WACC) to the 2016 annual carrying charge,
3 the 2016 in-service date capital cost of \$754,756,000 is determined.

$$4 \quad \$125,063,000 / .1657 = \$754,756,000$$

5 Dr. Fisher did not remove the additional \$317,770,000 in capital costs that occurred
6 after the 2016 in-service date that were captured in the Fixed O&M for this alternative
7 in his re-analysis. By virtue of not removing these Fixed O&M cost, he essentially
8 created a capital cost including AFUDC for this alternative of \$1,072,527,000
9 (\$754,756,000 + \$317,770,000). Effectively overstating the capital cost for this
10 alternative by approximately \$82M.

11 **Q. PLEASE DERIVE THE NOMINAL IN-SERVICE DATE CAPITAL COST FOR**
12 **THE (2016) BIG SANDY CC REPLACEMENT AND DELAYED NEW BUILD**
13 **CC ALTERNATIVE (OPTION #2, #4A AND #4B) USING THE IN-SERVICE**
14 **DATE ANNUAL LEVELIZED CARRYING CHARGE UTILIZED BY THE**
15 **COMPANY IN THE KPCO MODELING.**

16 A. The derivation of this cost can be found in Exhibit MAB-3 Section II.
17 UNDERSTATEMENT of Sierra Club witness Fisher "Restatement" of Option #2,
18 #4A and #4B (NGCC Replacement) Project Capital Cost. The required components
19 for this calculation were found either in workpapers provided Synapse to support Dr.
20 Fisher's testimony, or by the Company in response to Sierra Clubs various discovery
21 requests and are noted in Exhibit MAB-3. Using the annual levelized carrying charge
22 of \$182,739,000 for 2016 (in-service date) and the Company's 30 year levelized

1 carrying charge rate of 13.43%, a 2016 in-service date capital cost of \$1,360,678,000
2 is calculated as shown in Exhibit MAB-3 and as follows:

3
$$\$182,739,000 / .1343 = \$1,360,678,000$$

4 This calculated 2016 in-service date capital cost is lower than, but compares closely to,
5 the capital cost (\$1,365,979) developed from the cash-flows for this alternative in
6 Exhibit MAB-3. The slight (.038%) difference is due to small differences in AFUDC
7 calculations in the Company's Strategist® modeling of this alternative. Therefore, no
8 "Corrected Capital Cost" adjustment is necessary by Dr. Fisher for this alternative.

9 **Q. PLEASE DERIVE THE NOMINAL IN-SERVICE DATE CAPITAL COST FOR**
10 **THE (2016) BIG SANDY CC REPLACEMENT AND DELAYED NEW BUILD**
11 **CC ALTERNATIVE USING THE IN-SERVICE DATE ANNUAL CARRYING**
12 **CHARGE UTILIZED BY DR. FISHER IN HIS RE-ANALYSIS WITH**
13 **CORRECTED CAPITAL COSTS.**

14 A. The derivation of this cost can be found in Exhibit MAB-3 Section II.
15 UNDERSTATEMENT of Sierra Club witness Fisher "Restatement" of Option #2
16 (NGCC Replacement) Project Capital Cost. The first step is to determine the annual
17 carrying charge in 2011\$. Using the annual cost of the NGCC Replacement assumed
18 by Synapse (\$1,260M) and the Company's WACC of 8.64% (which is much lower
19 than the Company's 30 year levelized carrying charge rate of 13.43%) a 2011\$ annual
20 carrying charge of \$118,747,000 is calculated using the Excel PMT function as shown
21 below and in Exhibit MAB-3.

22
$$\text{PMT}(.0864,30,\$1,260,000,000) = \$118,747,000$$

1 The 2011\$ annual carrying charge is escalated at the alternative's escalation rate
2 (1.55%) for 5 years to determine the annual carrying charge at the alternative's 2016
3 in-service date.

$$4 \quad \$118,747,000 * 1.0155^5 = \$128,239,000$$

5 By properly applying the Company's 30 year annual levelized carrying charge rate of
6 13.43% (instead of the incorrect 8.64% WACC) to the 2016 annual carrying charge
7 the 2016 in-service date capital cost of \$954,870,000 is determined.

$$8 \quad \$128,239,000 / .1343 = \$954,870,000$$

9 Dr. Fisher's use of the 8.64% WACC as an annual carrying charge rate has effectively
10 underestimated the nominal in-service date capital cost of the NGCC Replacement by
11 approximately \$411M.

12 **Q. PLEASE DERIVE THE NOMINAL IN-SERVICE DATE CAPITAL COST FOR**
13 **THE BIG SANDY 1 CC REPOWER (OPTION#3) USING THE IN-SERVICE**
14 **DATE ANNUAL LEVELIZED CARRYING CHARGE UTILIZED BY THE**
15 **COMPANY IN THE KPCO MODELING.**

16 A. The derivation of this cost can be found in Exhibit MAB-4 Section II,
17 UNDERSTATEMENT of witness Fisher "Restatement" of Option #3 (BS1 CC
18 Repowering) Project Capital Cost. The required components for this calculation were
19 found either in workpapers provided Synapse to support Dr. Fisher's testimony, or by
20 the Company in response to Sierra Clubs various discovery requests and are noted in
21 Exhibit MAB-4. Using the annual levelized carrying charge of \$180,208,000 for
22 2016(in-service date) and the Company's 20 year levelized carrying charge rate of

1 15.14% a 2016 in-service date capital cost of \$1,190,277 is calculated as shown in
2 Exhibit MAB-4 and as follows:

3
$$\$180,208,000 / .1514 = \$1,190,277$$

4 This calculated 2016 in-service date capital cost used in the Company's Strategist®
5 modeling actually understates the capital cost (\$1,273,479,000) by 7% compared to
6 those developed from the cash-flows in Exhibit MAB-4. The understatement of the
7 capital cost used in the Company's Strategist® modeling was due to using a capital
8 cost escalation rate of 1.55% instead of the 2.8% used in the development of the cash
9 flows. Therefore, there should actually be an adjustment to increase the capital costs
10 of this option rather than an adjustment to decrease the capital cost of this option as
11 suggested by Dr. Fisher in Table 2 of his testimony.

12 **Q. PLEASE DERIVE THE NOMINAL IN-SERVICE DATE CAPITAL COST FOR**
13 **THE BIG SANDY 1 CC REPOWER (OPTION#3) USING THE IN-SERVICE**
14 **DATE ANNUAL CARRYING CHARGE UTILIZED BY DR. FISHER IN HIS**
15 **RE-ANALYSIS WITH CORRECTED CAPITAL COSTS.**

16 **A.** The derivation of this cost can be found in Exhibit MAB-4 Section II,
17 UNDERSTATEMENT of Sierra Club witness Fisher "Restatement" of Option #3
18 (BS1 CC Repowering) Project Capital Cost. The first step is to determine the annual
19 levelized carrying charge rate in 2011\$. Using the annual cost of the BS1 CC
20 Repowering assumed by Synapse (\$1,174,700,000) and the Company's WACC of
21 8.64% (which is much lower than the Company's 20 year levelized carrying charge
22 rate of 15.14%) a 2011\$ annual carrying charge of 125,396,000 is calculated using the
23 Excel PMT function as shown below and in Exhibit MAB-4.

1
$$\text{PMT}(.0864, 20, \$1,174,700,000) = \$125,396,000$$

2 The 2011\$ annual carrying charge is escalated at the alternatives escalation rate
3 (1.55%) for 5 years to determine the annual carrying charge at the alternative's 2016
4 in-service date.

5
$$\$125,396,000 * 1.0155^5 = \$135,421,000$$

6 By properly applying the Company's 20 year annual levelized carrying charge rate of
7 15.14% (instead of the incorrect 8.64% WACC) to the 2016 annual carrying charge
8 the 2016 in-service date capital cost of \$894,457,000 is determined.

9
$$\$135,421,000 / .1514 = \$894,457,000$$

10 Dr. Fisher's use of the 8.64% WACC as an annual levelized carrying charge rate has
11 effectively underestimated the nominal in-service date capital cost of the NGCC
12 Replacement by approximately \$379M.

13 **Q. PLEASE SUMMARIZE THE COMPARISON OF THE BIG SANDY**
14 **ALTERNATIVES' NOMINAL IN-SERVICE DATE CAPITAL COSTS USED**
15 **IN THE COMPANY'S ANALYSIS AND DR. FISHERS ANALYSIS.**

16 A. Exhibit MAB-5 provides a graphical comparison of the nominal in-service date capital
17 costs used by the Company (KPCO-Strategist Modeled) and Dr. Fisher (Synapse-
18 Strategist Modeled) compared to Company witness Weaver's Table 2. The graph
19 indicates that the Company's in-service date capital cost modeling closely matches, or
20 even understates (in the case of the Big Sandy 1 repower) the costs shown in witness
21 Weaver's Table 2. However, the in-service date capital costs used by Dr. Fisher in his
22 re-analysis with "Corrected Capital Costs" overstate the capital costs of the Big Sandy
23 2 retrofit alternative by \$82M and significantly understate the capital costs of the Big

1 Sandy CC replacement alternative and the Big Sandy 1 Repower alternative by
2 approximately \$411M and \$380M, respectively.

3 **X. THE BIG SANDY RETROFIT ALTERNATIVE FIXED O&M COSTS WERE**
4 **CONSISTENTLY APPLIED**

5 **Q. IS DR. FISHER CORRECT IN HIS ASSERTION THAT THE COMPANY**
6 **INCONSISTENTLY APPLIED THE RETROFIT ALTERNATIVE FIXED**
7 **O&M COSTS?**

8 A. No. As previously discussed in this rebuttal testimony, due to the fact that certain
9 Strategist® modeling requires the proxying of “post-in-service year” annual capital
10 carrying charges under the modeling category Fixed O&M, then an explanation of the
11 relative reduction in the on-going annual O&M costs for the Big Sandy retrofit option
12 (Option #1) beginning in the year 2031—or the year in which the Big Sandy retrofit
13 was assumed to be fully-amortized for modeling purposes—is readily explainable. In
14 summary, there was no understatement of such Fixed O&M costs beginning in that
15 out-year as suggested by Dr. Fisher.

16 **XI. CONCLUSIONS**
17

18 **Q. PLEASE SUMMARIZE THE CONCLUSIONS OF YOUR TESTIMONY.**

19 A. In summary, the Company has not understated the capital cost of the Big Sandy 2
20 retrofit alternative. The Company has accounted for all of those capital costs by
21 utilizing the Strategist® capital cost modeling requirements and capturing the cost
22 occurring in the in-service year and beyond in the alternative’s “incremental” fixed
23 O&M modeling. However, Dr. Fisher has overstated the costs of the Big Sandy 2

1 retrofit alternative by not removing those “incremental” fixed O&M costs in his re-
2 analysis of this alternative.

3 The Company has not overstated the capital costs of the Replacement CC by double-
4 counting the Company’s overhead cost. The Company has correctly captured the
5 approximately 7% owner’s costs and the additional 7% overheads for the project.

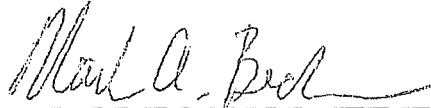
6 The Company has consistently utilized Strategist®’s capabilities to represent the
7 capital cost of the Replacement CC and Big Sandy 1 repower projects through the
8 application of a levelized carrying charge rate that recovers all of the cost of making
9 the investment (i.e. WACC, depreciation, FIT, insurance and G&A expenses).
10 However, Dr. Fisher has understated those capital costs through the carrying charge
11 methodology that he has used outside of Strategist® that recovers only the WACC
12 component of making those investments.

13 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

14 A. Yes.

VERIFICATION

The undersigned, Mark A. Becker, being duly sworn, deposes and says he is the Manager, Resource Planning for American Electric Power Company that he has personal knowledge of the forgoing testimony, and the information contained therein is true and correct to the best of his information, knowledge, and belief.



MARK A. BECKER

STATE OF OKLAHOMA

)

) CASE NO. 2011-00401

COUNTY OF TULSA

)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by, Mark A Becker, this the 11 day of April 2012.


Notary Public

My Commission Expires: 2-27-14

Mark A. Becker

Education, Professional Qualifications and Business Experience

Education and Professional Qualifications

In 1983, I received a Bachelor of Science degree in Electrical Engineering from the University of Arkansas.

Business Experience

I began working for Florida Power and Light (FPL) in 1983, as an engineer in the System Planning Department. In that position, from 1983 to 1985, I performed generation planning studies, production costing studies and short-term energy supply studies using New Energy Associates PROSCREEN (predecessor to Strategist) and PROMOD, as well as EPRI's Electric Generation Expansion Analysis System (EGEAS) software.

In 1986, I worked in FPL's Load Management Group. In this position, I provided engineering support during the procurement and testing of FPL's Load Management System (LMS).

In 1987, I began working for the City of Austin Electric Utility Department. In this position, I provided engineering support and project management during the City of Austin's ElectriCREDIT residential direct load control pilot project. In addition to this function, I was involved in the analysis of the City of Austin's commercial time-of-use rates.

In 1989, I began working in the City of Austin Electric Utility Department's Resource Planning Division. In this position, I was responsible for developing integrated

resource plans, production costing analyses and developing all-source Request for Proposals (RFP) as well as evaluating the operating and economic impacts of those proposals.

In 1997, I began working as a Project Manager in Electric Resource Planning within Central and South West Services, Inc. (CSWS). I was responsible for overseeing the price evaluation of the CSWS' Expedited Renewable RFP, the All-Source RFPs for the Central Power and Light Company's Lower Rio Grande Valley, West Texas Utilities Company and Southwestern Electric Power Company.

In 2000, I assumed the position as Staff Coordinator in the Resource Planning Section of American Electric Power Service Corporation, a subsidiary of American Electric Power Company, Inc. In this position, I oversaw AEP's production costing and resource planning functions.

In 2001, I began working for William's Energy Marketing and Trading (WEM&T). I was responsible for representing WEM&T's position in the development of various Regional Transmission Operators (RTO) and FERC's Standard Market Design. In addition, I performed analyses in support of WEM&T's transmission rights trading function.

In 2002, I returned to AEP's Resource Planning Section as a Project Manager and have since been promoted to Manager – Resource Planning. In this position, I am responsible for the development AEP's capacity resource plans and other resource planning related studies utilizing the Strategist model.

Nominal \$000	Capital Expenditures Estimated (IP ID) "In Service Year" (i.e. thru 2015 only)					Capital Exp. IN/BELYOND "In Service Year" Sum (11-1)	Annual KFCO Carrying Charge Schedule (15-19)	Additional Annual (Increment) Fixed O&M (2016 only)	Sum (11-1) (Additional) Annual (Increment) Fixed O&M (2017 thru 2030)	(A)+(B) TOTAL PROJECT CAPITAL SPEND Nominal (\$000) (2011-2017)
	2011	2012	2013	2014	2015					
I. EXPLANATION of Option #1 (B2Z Retrofit) Project Capital Costs Established & Applied in KFCO's Modeling Due to Strategist Requirements										
DETERMINING Project Capital Costs (Excl. O&M & AFUDC)										
Total B2Z (DFGD Retrofit) Project Costs (Excl. O&M & AFUDC)	2,736	32,816	98,724	164,417	239,394	231,562	172	0	231,733	769,210
AF Owner's Costs (Allocated comp. & co. capital OH) (9.1%)	249	2,985	8,338	14,952	21,285	21,022	16	0	21,088	70,808
TOTAL (DFGD) Project Capital Expenditures (Excl. AFUDC)	2,985	35,803	107,162	179,379	260,679	252,604	187	0	252,821	839,238
AFUDC (CFP require only)	128	1,893	6,091	21,028	41,286	28,092	8	0	28,092	1,745
TOTAL DFGD Project Capital Expenditure (incl. AFUDC)	3,113	37,696	113,253	200,456	302,965	280,726	187	0	280,913	840,986
DETERMINING Additional Carrying Charges Associated with Strategist Requirements										
Total B2Z (CR-Related) Project Costs (Excl. O&M & AFUDC)	1,747	9,674	11,371	14	13	21,592	11,233	0	11,233	44,156
AF Owner's Costs (Allocated comp. & co. capital OH) (9.1%)	153	1,053	876	1,035	1	1,065	1,022	0	1,067	5,022
TOTAL (CR) Project Capital Expenditures (Excl. AFUDC)	1,900	10,727	12,247	15	14	23,557	12,255	0	12,255	49,178
AFUDC (CFP require only)	82	618	201	1,065	0	1,065	0	0	1,065	49,963
TOTAL CR-Related Project Capital Expenditure (incl. AFUDC)	1,982	11,345	13,106	17	15	24,602	12,255	0	12,255	49,963
Total DFGD Retrofit + CR Related Capital Expenditures (Excl. AFUDC)	181,285	271,679	598,213	760	686	276,191	12,442	0	288,633	897,210
Total DFGD Retrofit + CR Related Capital Expenditures (incl. AFUDC)	202,445	314,083	672,693	853	781	305,328	12,442	0	317,770	950,270

Net: Matched SC witness testimony, page 7 (Company representation of rate for project cost @ \$566/AM in real '15, excluding AFUDC)

Net: Matched SC witness testimony, page 27 (which discusses assumed Fixed O&M "discrepancies" for the years 2016-2030)

II. OVERSTATEMENT of Sierra Club Witness Fisher "Restatement" of Option #1 (B2Z Retrofit) Project Capital Costs (and Resultant "Corrected Carrying Charges" reflected in Exhibit JIF-3B (this "Table 2"))	
CORRECT Representation of Option #1 Capital Cost in KFCO Modeling:	111,179 (\$000)
Annual Levelized Carrying Charge rate (assumed by KFCO modeling):	16.57%
Equivalent ("Partial") Option #1 Cost (incl. AFUDC) utilized in determination of "Carrying Charges" (Nominal \$)	670,985 (\$000)
Interest rate (10.25%)	317,770 (\$000)
Equivalent ("Partial") Option #1 Cost (incl. AFUDC), Cost including AFUDC applied to "Fixed O&M" due to modeling requirements (Nominal \$)	588,738 (\$000)
TOTAL Option #1 Project Cost (incl. AFUDC) established & applied in KFCO Strategic modeling (Nominal \$)	1,000,000 (\$000)
"Matched" total Option #1 Project Cost (incl. AFUDC), hence, no "Corrected Capital Cost" adjustment is required	1,000,000 (\$000)

INCORRECT Representation of Option #1 Capital Cost per Fisher Exhibits: 897.1 (\$Millions) Assumed Cost of Option #1 with AFUDC (2011 \$)

Variables used on Proposed "Carrying Charge" Calculation:

- 15 Yr. Recovery Period
- 8.64%
- 108,933 (\$000)

Calculation: $108,933 \times 15 \times 8.64\% = 1,000,000$

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell O16

o KFCO filled workbook "KFCO Carrying Cost Rates/2011.xls" (response to Sierra Club 1-6)

o Synapse worksheet file: "Exhibit JIF-6B AFUDC Calc for modeling - all projects.xls", cell M61

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU7

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BH5

o "UpDichate" per Synapse worksheet file: Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx, tab: "StratComp - Syn", cell C6

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU11

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU16, CH16, CH17

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU11

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU16, CH16, CH17

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU11

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU16, CH16, CH17

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU11

o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KFCO New Adds", cell BU16, CH16, CH17

I. Option #2, #4A, and #4B (NGCC Replacement) Project Capital Costs Established & Applied by KPCCO

Nominal \$000	Capital Expenditures (Total)					Basis for	
	2011	2012	2013	2014	2015	Carrying Charges in Strategic ¹	Cost per LW
	5,330	58,625	319,770	499,314	191,862	1,065,900	1,179 \$
Total NGCC Replacement Project Costs (Excl. OH & AFUDC)	323	4,108	27,382	39,321	13,430	74,613	83 \$
AF Owner's Costs/Allocated corp & co. capital OH (@ 7.0%)	5,703	67,728	347,154	524,636	205,290	1,140,513	1,262 \$
TOTAL NGCC Replacement Project Capital Expenditure (Excl. AFUDC)	245	3,201	20,866	538,635	211,356	225,467	1,169
TOTAL NGCC Replacement Project Capital Expenditure (Incl. AFUDC)	5,947	65,930	364,999	584,455	346,648	1,385,972	1,511 \$

II. UNDERSTATEMENT of Sierra Club witness Fisher "Restatement" of Option #2, #4A and #4B (NGCC Replacement) Project Capital Costs (and Resultant "Corrected" Carrying Charges) reflected in Exhibit JIF-3B (his Table 27)

CORRECT Representation of Option #1 Capital Cost per Fisher Exhibits:
 187,739 (\$000)
 13,433
 1,350,972 (\$000)
 "Matches" total Option #2 Project Cost (incl. AFUDC), hence, no "Corrected Capital Cost" adjustment is required

DISCREPANCY Representations of Option #1 Capital Cost per Fisher Exhibits:

Variables used on Fisher "Carrying Charge" calculation:
 30 Yrs.
 8.64%
 118,747 (\$000)
 x 1.0125⁵
 = 128,239 (\$000)
 / 13.43%
 = 954,870 (\$000)
 1,350,972
 411,109 (\$000)

Date Source:
 o Synapse worksheet file: "Exhibit JIF-2.2 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCCO New Adds", cell M60
 o KPCCO filed worksheet: "KPCCO Carrying Costs Rates 2011.xlsx" (response to Sierra Club 1.69)
 o Synapse worksheet file: "Exhibit JIF-6B AFUDC Calc for modeling - all projects.xlsx", cell M72; and
 o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCCO New Adds", cell CD54
 o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCCO New Adds", cell BD49
 o "UndisRate" per Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "StratComp - Syn", cell C6
 o Synapse worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCCO New Adds", cell CD55
 and Fisher testimony, page 24 (footnote #23)
 o Fisher worksheet file: "Exhibit JIF-2.3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCCO New Adds", cell CD50, CD59, DD59

Totals Match Weaver Direct Testimony "TABLE 2" (col. c, ll. 13) AND Exhibit JIF-6B (pg. 2 of 2)
 Totals Match Weaver Direct Testimony "TABLE 2" (col. e, ll. 13)
 Totals Match Weaver Direct Testimony "TABLE 2" (col. f, ll. 13) AND Exhibit JIF-6B (pg. 2 of 2)
 Totals Match Exhibit JIF-6B (pg. 2 of 2) Synapse worksheet file: "Exhibit JIF-6B AFUDC Calc for modeling all projects.xlsx" cell M69
 Totals Match Exhibit JIF-6B (pg. 2 of 2) Synapse worksheet file: "Exhibit JIF-6B AFUDC Calc for modeling all projects.xlsx" cell M70

I. Option #3 (B51 CC Repowering) Project Capital Costs Established & Applied by KPCo

Nominal \$000	Capital Expenditures (Total)					Basis for	
	2011	2012	2013	2014	2015	(2011-2015)	2011 \$
	DETERMINING Project "Carrying Charges" in Strategic*						
	Total						
Total B51 CC Repowering Project Costs (Excl. OH & AFUDC)	4,959	54,655	198,116	457,111	178,870	993,720	\$ 1,274
AEP Owner's Costs/Allocated corp & co. capital OH (@ 7.0%)	348	3,826	20,868	31,998	12,521	69,561	\$ 89
TOTAL B51 CC Repowering Project Capital Expenditure (Excl. AFUDC)	5,316	58,480	318,984	489,109	191,390	1,063,280	\$ 1,363
AFUDC	228	2,885	15,624	55,269	131,783	210,599	\$ 2.63
TOTAL B51 CC Repowering Project Capital Expenditure (Incl. AFUDC)	5,544	61,465	334,618	544,378	323,173	1,273,879	\$ 1,633

* Note: Project in service date is 1/1/2016. Therefore, the Strategic input purposes, the relative impact in service (2010) project cash flow was \$11,000,000 to be expended in 2015 so as to avoid the need to modify the cost category used above with such incremental carrying costs (as required with Option #1).

II. UNDERSTATEMENT of Sierra Club witness Fisher "Restatement" of Option #3 (B51 CC Repowering) Project Capital Costs (and Resultant "Corrected Carrying Charges" reflected in Exhibit JIF-3B [this Table 2])

CORRECT Representation of Option #1 Capital Costs in KPCo Modeling:
 Annualized Option #3 (B51 CC Repowering) Levelized Carrying Charge per KPCo modeling eff: 2016 (Nominal \$)
 180,208 (\$000) / 15.14% = 1,190,277 (\$000)
 Annual Levelized Carrying Charge rate (20-Yr recovery) applied in KPCo modeling
 TOTAL Option #3 Cost (incl. AFUDC) established & applied in KPCo Strategic modeling (Nominal \$)
 (note: 7% difference is due to the use of a 2.8% escalation rate in the cashflows and only a 1.55% in KPCo Strategic modeling)
 KPCo Strategist modeled (Nominal) Total Option #3 Project Cost (Incl. AFUDC) UNDERSTATED the estimated costs...
 Therefore, any ultimate adjustment to "Corrected Carrying Costs" for this option should have been an INCREASE in to the CPW costs

INCORRECT Representation of Option #1 Capital Cost per Fisher Exhibits:

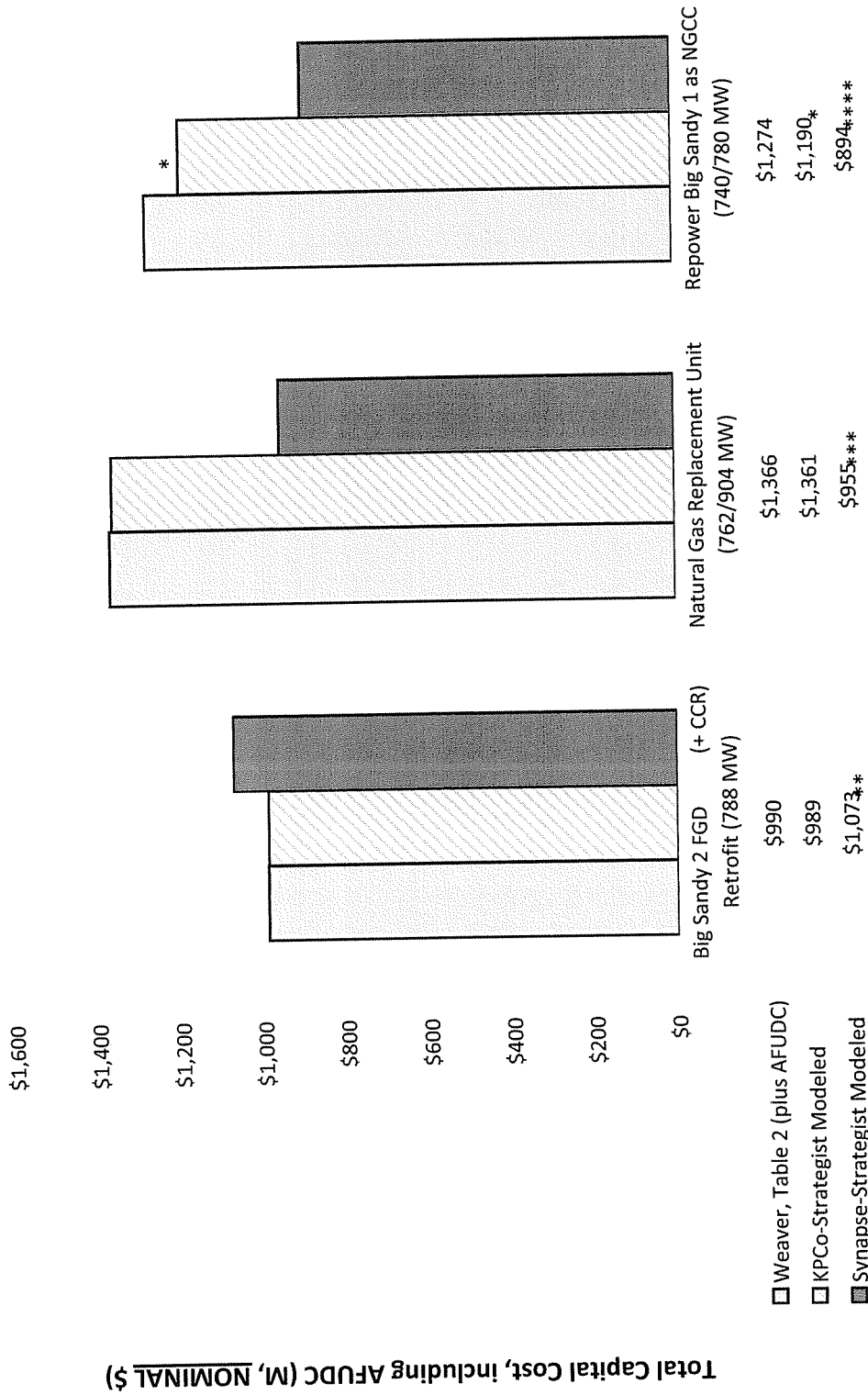
1,174.7 (\$Millions) Assumed Cost of Option #3 with AFUDC (2011 \$)
 Variables used on Fisher's "Carrying Charge" Calculation:
 20 Yr. Recovery Period
 8.64% KPCo Weighted Average Cost of Capital, "only" (i.e., NOT a Levelized Carrying Charge Rate)
 CALCULATED Annual Option #1 (Retirof) "Carrying Charge" assumed by Synapse in its modeling (2011 \$)
 (utilizing Excel "PMT" function: =PMT(0.0864,20,\$174.7M))
 In this calculation, Synapse applied a WACC instead of a full Carrying Charge Rate (incl. depreciation & FTM), which results only reflects an "After-tax Return ON" capital... not an appropriate "Pre-Tax" Return ON and OF" capital (i.e., true revenue requirement)
 Escalation to get to Nominal \$ @ 2016 (1.55% per annum for 5 years used in Strategist)
 CALCULATED Annual Option #3 (B51 CC Repowering) "Carrying Charge" assumed by Synapse in its modeling (Nominal \$)
 Annual Levelized Carrying Charge rate (20-Yr recovery) as above
 Equivalent Option #3 Cost (Incl. AFUDC) utilized in determination of "Carrying Charges" (Nominal \$)
 = 894,657 (\$000)
 = 3,273,879 (\$000)
 Understatement of Option #2, #4A and #4B Capital Cost by Sierra Club

Data Source:

- o Synapse worksheet file: "Exhibit JIF-2,3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCO New Add", cell X1:104
- o KPCo filed worksheet "KPCo CarryingCost Rates2011.xls" (response to Sierra Club 1-69)
- o Synapse worksheet file: "Exhibit JIF-69 AFUDC Calc for modeling - all projects.xlsx", cell M395; and
- o Synapse worksheet file: "Exhibit JIF-2,3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCO New Add", cell CD:99
- o Synapse worksheet file: "Exhibit JIF-2,3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCO New Add", cell BQ:99
- o "UtilizeRate" per Synapse worksheet file: "Exhibit JIF-2,3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "StratComp - Syn" cell C:6
- o Synapse worksheet file: "Exhibit JIF-2,3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCO New Add", cell CD:99 and Fisher testimony, page 24 (footnote #23)
- o Synapse worksheet file: "Exhibit JIF-2,3 & 6 Strategist_Compilation_Workbook_Synapse.xlsx", tab: "Carrying Charges KPCO New Add", cells CD:104, CD:104, DD:105

Totals Match Weaver Direct Testimony "TABLE 2" (col. e, ll. 18) AND Exhibit JIF-69 (pg. 2 of 2)
 Totals Match Weaver Direct Testimony "TABLE 2" (col. e, ll. 18)
 Totals Match Weaver Direct Testimony "TABLE 2" (col. f, ll. 18) AND Exhibit JIF-69 (pg. 2 of 2)
 Totals Match Exhibit JIF-69 (pg. 2 of 2) Synapse worksheet file: "Exhibit JIF-69 AFUDC Calc for modeling all projects.xlsx" cell M392
 Totals Match Exhibit JIF-69 (pg. 2 of 2) Synapse worksheet file: "Exhibit JIF-69 AFUDC Calc for modeling all projects.xlsx" cell M393

KPCo-CORRECTED FISHER TESTIMONY "Figure 3" (Exhibit JIF-6A)



* See Rebuttal Exhibit MAB-4 (KPCo-Strategist modeling understated the escalation rate required to match the project's projected cost in nominal \$)

** See Rebuttal Exhibit MAB-2

*** See Rebuttal Exhibit MAB-3

**** See Rebuttal Exhibit MAB-4

Total Capital Cost, including AFUDC (M, NOMINAL \$)