Revised
OCA Statement No. 1-S

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

JOINT PETITION OF METROPOLITAN	:	DOCKET NO. M-2013-2341990
EDISON COMPANY, PENNSYLVANIA	:	DOCKET NO. M-2013-2341991
ELECTRIC COMPANY, PENNSYLVANIA	:	DOCKET NO. M-2013-2341993
POWER COMPANY AND WEST PENN	:	DOCKET NO. M-2013-2341994
POWER COMPANY FOR APPROVAL OF	:	
THEIR SMART METER DEPLOYMENT	:	
PLAN	:	

SUPPLEMENTAL TESTIMONY

of

J. RICHARD HORNBY

On behalf of:

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

May 6, 2014

THIS TESTIMONY HAS BEEN REVISED TO REMOVE THE PROPRIETARY DESIGNATIONS

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, EMPLOYER, AND PRESENT POSITION.

A. My name is James Richard Hornby. I am a Senior Consultant at Synapse Energy Economics, Inc., 485 Massachusetts Avenue, Cambridge, MA 02139.

Q. ARE YOU THE SAME J. RICHARD HORNBY WHO SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY?

A. My supplemental testimony responds to the supplemental testimonies of witnesses Fitzpatrick and Gifford supporting the revised Smart Meter Deployment Plan ("Revised Deployment Plan") filed by FirstEnergy Companies of Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company, and West Penn Power Company ("the Companies") on March 16, 2014. The fact that I do not respond to every statement in the supplemental testimonies of those two witnesses should not be interpreted to mean I agree with those statements.

Q. PLEASE SUMMARIZE THE FINDINGS FROM YOUR ANALYSIS OF THE PROPOSED REVISED DEPLOYMENT PLAN.

A. The findings from my analysis of the proposed Revised Deployment Plan may be summarized as the following:

- Under the Revised Deployment Plan the Companies would complete the installation of meters in the Penn Power service territory in 18 months rather than three years, and thereby complete the Solution Validation phase one year sooner. Ultimately, however, the Revised Deployment Plan only advances the cumulative deployment of

98.5% of its smart meters by six months relative to the Original Deployment Plan, i.e., from December 2019 to June 2019.

- The Companies project that, by 2032, the total capital and operating costs of the Revised Deployment Plan will be the same as the Original Deployment Plan. However, the net present value (NPV) the net costs of the Revised Deployment Plan to ratepayers through 2032 will be 9% higher than the Original Deployment Plan according to the Companies' projections. Moreover, through 2019 the NPV of the revenue requirements is projected to be 46% higher than the Original Deployment Plan. (The NPV of the Revised Deployment Plan to ratepayers is the value today of the amount of revenue requirements the Companies will seek to collect through rates in order to recover the capital and operating costs of the Plan less the savings from the Plan).
- The Companies' shareholders will have higher NPV aggregate earnings under the Revised Deployment Plan than under the Original Deployment Plan, particularly through 2019. The higher earnings during that period (2013-2019) are associated with the $47 million, or 9%, higher capital investments through 2019.
- The Companies' ratepayers will pay substantially higher SMT-C rates under the Revised Deployment Plan than under the Original Deployment Plan through 2019. Between 2014 and 2016 residential SMT-C rates will be higher by amounts ranging from $0.95/month to $3.39/month, representing increases ranging from 40% to 259%.

Q. PLEASE SUMMARIZE YOUR CONCLUSION AND RECOMMENDATIONS BASED UPON THOSE FINDINGS.

A. Based on my findings, I conclude that the Revised Deployment Plan is not reasonable. The Revised Deployment Plan does advance the deployment of meters somewhat through 2019. However, to achieve that modest advance the Revised Deployment Plan would impose much higher revenue requirements and rates on customers. The NPV of those revenue requirements will be 46% higher than the Original Deployment Plan through 2019 and ultimately 18% higher through 2032. Based on that conclusion, I recommend that the Commission reject the Revised Deployment Plan.

II. ACCELERATION OF DEPLOYMENT AND COSTS UNDER REVISED DEPLOYMENT PLAN

Q. WHAT IS THE MAJOR DIFFERENCE BETWEEN THE REVISED DEPLOYMENT PLAN AND THE ORIGINAL DEPLOYMENT PLAN?

A. Under the Revised Deployment Plan the Companies would complete the installation of meters in the Penn Power service territory in 18 months rather than three years. By advancing that deployment the Companies would complete the Solution Validation phase one year sooner.[1] In the Solution Validation Phase of the Original Deployment Plan, the Companies planned to install 60,000 meters in the Penn Power territory to serve as a "mini-lab" prior to full deployment.[2] Under the Revised Deployment Plan, the Companies would build-out the Penn Power service territory of 170,000 meters in 18 months and commence with full scale deployment in 2016.[3] Under the Revised Plan, the other three companies would have higher costs through 2019 as they would start

[1] Fitzpatrick, 2014. Page 3, lines 12 -13.
[2] Fitzpatrick, 2014. Page 3 lines 13-14.
[3] Fitzpatrick, 2014. Page 3 lines 18-21.

incurring information technology and meter costs sooner than under the Original Deployment Plan.

Q. HOW DOES THE PACE OF SMART METER DEPLOYMENT DIFFER UNDER THE REVISED DEPLOYMENT PLAN RELATIVE TO THE ORIGINAL DEPLOYMENT PLAN?

A. According to Mr. Fitzpatrick, by the end of 2019 the Companies will deploy the same total number of meters under the Revised Deployment Plan as under the Original Deployment Plan. However, under the Revised Deployment Plan they will deploy significantly more meters between 2015 and 2017. In 2015, the cumulative difference in smart meter deployment between the Revised and Original Deployment Plans is 150,000. By 2017 that cumulative difference peaks at 570,000 meters.

The cumulative number of smart meters projected to be deployed by year under the Original Deployment Plan and under the Revised Deployment Plan is shown in Exhibit JRH-1 S and replicated in Table 1 below.

Table 1 Meter Deployment Schedule under Original and Revised Deployment Plans

	2014	2015	2016	2017	2018	2019
Original Deployment Plan	5,000	20,000	60,000	600,000	1,400,000	2,000,000
Revised Deployment Plan	50,000	170,000	670,000	1,170,000	1,670,000	2,000,000
Difference Revised vs. Original	45,000	150,000	610,000	570,000	270,000	-

Notes
Data from Exhibit GLF-1S

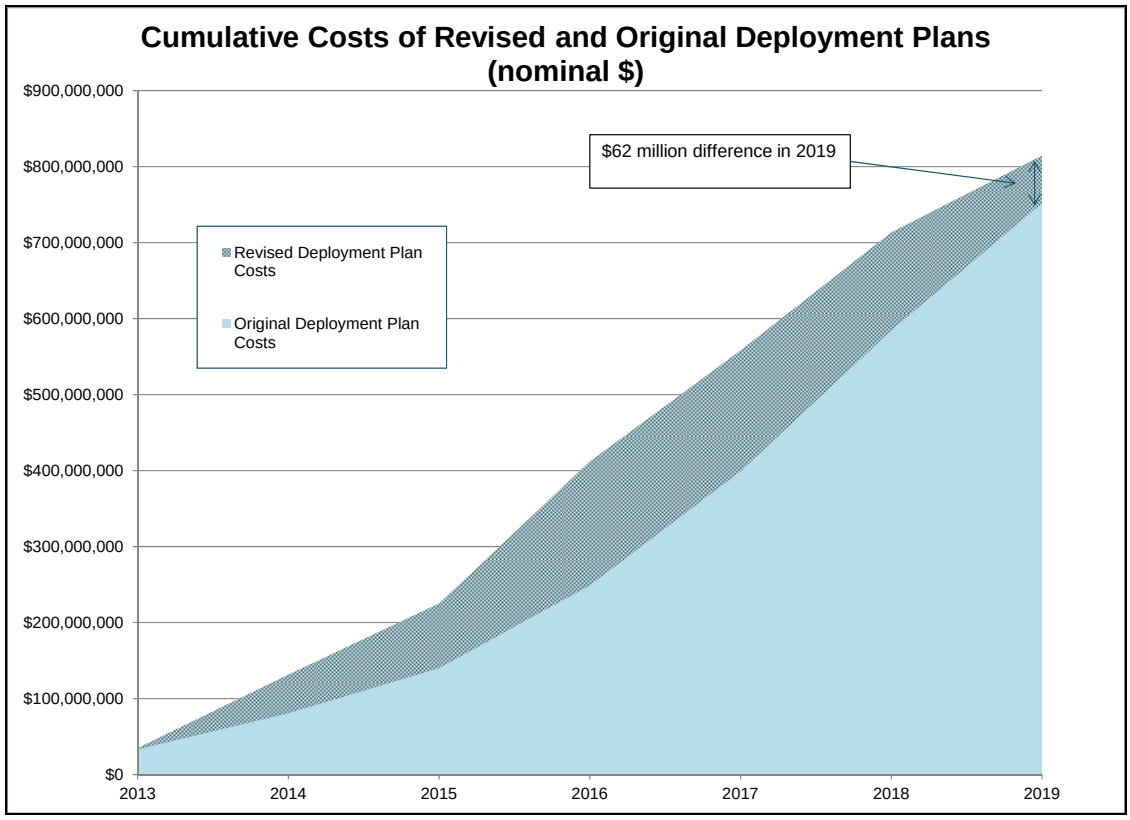
Ultimately, however, the Revised Deployment Plan only enables the Companies to advance the installation of 98.5% of smart meters by six months, i.e., to the middle of 2019 as compared to the end of 2019 under the Original Deployment Plan.[4]

[4] Fitzpatrick, 2014. Page 4, line 10.

Q. ARE THE COMPANIES PROPOSING TO ACCELERATE THEIR EXPENDITURES IN ORDER TO ACCELERATE THE DEPLOYMENT OF SMART METERS?

A. Yes. The Companies' cumulative capital and operating costs through 2019 are projected to be $62.7 million, or 8%, higher under the Revised Deployment Plan than under the Original Deployment Plan. Exhibit JRH-2 S page 1 plots the cumulative expenditures under the Original Deployment Plan through 2019, and also plots the increase in expenditures under the Revised Deployment Plan. That Exhibit is replicated below in Figure 1.

Figure 1 Cumulative Costs of Revised and Original Deployment Plans (nominal)



The shaded, cross-hatch portion of Exhibit JRH-2 S page 1 illustrates the increase in cumulative costs associated with the proposed Revised Deployment Plan compared to the

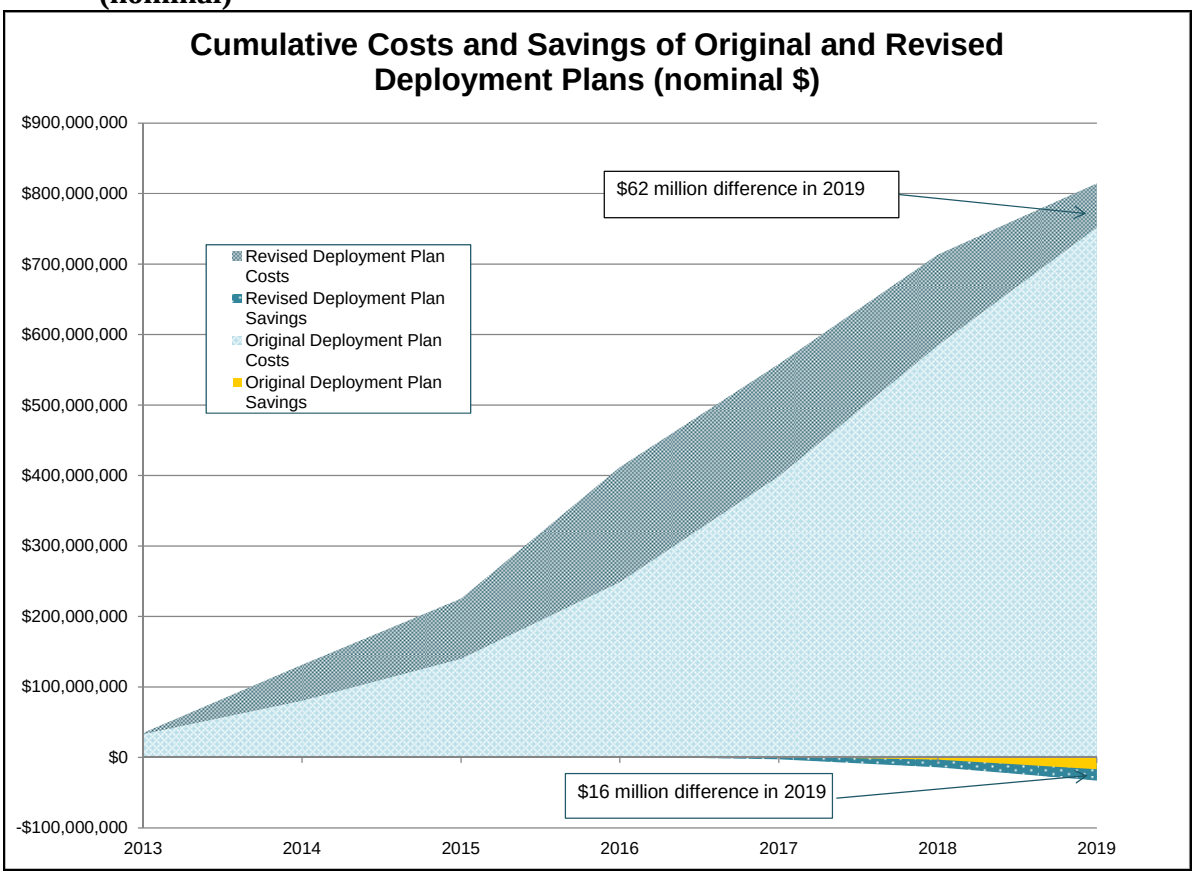
Original Deployment Plan. The increased costs of the Revised Deployment Plan translate into higher revenue requirements than the Original Deployment Plan. Those higher revenue requirements translate into higher SMT-C rates under Revised Deployment Plan over that period and ultimately into higher bills.

Q. **DOES THE ACCELERATED DEPLOYMENT OF SMART METERS RESULT IN A SIGNIFICANT INCREASE IN SAVINGS UNDER THE REVISED DEPLOYMENT PLAN THAN UNDER THE ORIGINAL DEPLOYMENT PLAN?**

A. No. The Companies are not projecting a material increase in savings under the Revised Deployment Plan relative to the Original Deployment Plan. The Companies estimate that, by the end of 2019, savings will be $16.2 million more under the Revised Deployment Plan than under the Original Deployment Plan.[5] Although almost double the cumulative savings under the Original Deployment Plan, that increase in savings is far less than, and thus does not fully offset, the much larger $62.7 million increase in cumulative costs under the Revised Deployment Plan noted earlier, Exhibit JRH–2 S page 2, replicated as Figure 2 plots the cumulative savings under the Original and Revised Deployment Plans through 2019, as well as the cumulative costs of both Plans.

[5] Fitzpatrick.2014. Exhibit GLF-1S.

Figure 2 Cumulative Costs and Savings of Revised and Original Deployment Plans (nominal)



Q. HAVE THE COMPANIES FILED PROJECTIONS OF SAVINGS IN ADDITIONAL BENEFIT CATEGORIES SINCE YOU FILED YOUR ORIGINAL AND REBUTTAL TESTIMONY?

A. No. The Companies have not quantified benefits in additional categories beyond those in its Original Deployment Plan. In his Supplemental testimony Mr. Fitzpatrick does refer to "acceleration of realized savings" and to "non-operating cost benefits."[6] [7] However, the

[6] Fitzpatrick. 2014. Page 6, line 16.
[7] Fitzpatrick. 2014. Page 7, line 5

only savings the Companies have quantified are those presented in Exhibit JRH-3 S page 1.

The Companies have stated their intent to investigate and track all sources of potential operational cost savings driven by smart meter deployment including theft reduction, revenue enhancements, avoided capital costs, and distribution operations.[8]

Q. DOES THE ACCELERATION OF EXPENDITURES UNDER THE REVISED DEPLOYMENT PLAN AFFECT THE COSTS TO EACH OF THE FOUR OPERATING COMPANIES OR JUST PENN POWER?

A. The Revised Deployment Plan affects the cost to all four operating companies. Witness Gifford notes that common costs are allocated consistent with the Commission's Order of March 6, 2014 and uses the average annual number of meters as of June 30th prospectively.[9] [10]

Q. IS THE REVISED DEPLOYMENT PLAN MORE EXPENSIVE TO RATEPAYERS IN TODAY'S DOLLARS THAN THE ORIGINAL DEPLOYMENT PLAN?

A. Yes. Mr. Fitzpatrick states on page 6 that the total capital and operating costs of the Revised Deployment Plan through 2032 in nominal dollars will be the same as the Original Deployment Plan in nominal terms. Mr. Fitzpatrick presents that nominal total cost as $1,257 million in Exhibit GLF-1S.

However, that comparison of total amounts in nominal terms by 2032 is misleading because it does not measure the impact of the significant acceleration of

[8] Documentation from First Energy to PA OCA provided on March 20, 2013 informal discovery meeting.
[9] Gifford, 2014. Page 7, line 21.
[10] Pennsylvania Public Utility Commission. Order March 6, 2014. Page 45.

capital investments under the Revised Deployment Plan relative to the Original Deployment Plan. That difference has important implications for the Companies' shareholders as well as their ratepayers because of the time value of money.

According to Mr. Fitzpatrick's Exhibit GLF-1S, the NPV of the Revised Deployment Plan through 2032 will be 9% higher than the Original Deployment Plan when calculated at the Companies' discount rates from Exhibit GLF-1S. (Those discount rates vary from 8.17% to 11.29 %) The top portion of Exhibit JRH-3 S Page 1, replicated below as Table 2, presents Mr. Fitzpatrick's NPV calculation of the net cost of the Original Deployment plan and our calculated replication of the Revised Deployment Plan. (Note that my NPV calculations of the costs through 2032 replicate the Company's results to within 0.44% or $3 million. The difference in costs flows through to the calculation of net costs, so our resulting percent differences is 8% versus 9% reported in Exhibit GLF-1S)

Table 2 NPV of Costs and Benefits of Original and Revised Deployment Plans from Exhibit GLF-1S and for 2013-2019

Period 2013-2032 from Exhibit GLF-1S			
	Original Deployment Plan	Revised Deployment Plan	Percent Difference (Revised vs Original)
Costs	$693,560,709	$747,048,921	8%
Benefits	$133,876,123	$142,228,285	6%
Net Costs	$559,684,586	$604,820,637	8%
Period 2013-2019			
	Original Deployment Plan	Revised Deployment Plan	Percent Difference (Revised vs Original)
Costs	$529,273,518	$603,404,297	14%
Benefits	$9,709,205	$19,839,498	104%
Net Costs	$519,564,313	$583,564,799	12%

Notes
Calculated NPV of Revised Deployment Plan costs within 0.44% of Exhibit GLF-1S
Original Deployment Plan data from FE Estimated Annual SMT-C.xls
Data Revised Deployment Plan from Company provided workbooks

The bottom portion of Table 2, presents my NPV calculation of the net cost of the Original Deployment Plan and of the Revised Deployment Plan through 2019. I present the net cost because that is the time period during which the two Deployment Plans differ most, and during which the Company's acceleration of capital spending would occur. The NPV of the net cost of the Revised Deployment Plan through 2019 would be 12% higher than the Original Deployment Plan.

Q. Please explain what you mean by the NPV of the Revised Deployment Plan.

A. The NPV of the Revised Deployment Plan is the value today of the amount of revenue the Companies will seek to collect through rates in order to recover the capital and operating costs of the Plan less the savings from the Plan. Analysts calculate the NPV of

projects such as the Revised Deployment Plan, which entail expenditures of costs in many future years and projections of resulting savings in those future years, in order to account for the time value of money. The time value of money refers to the generally accepted view that a dollar to be received sometime in the future, e.g., five years from now, is not worth the same as a dollar received today. Even at today's low interest rates, most people would prefer to have a dollar in their pocket today than to be promised a dollar five years from now.

Q. Please explain how analysts account for the time value of money by calculating an NPV.

A. Analysts account for the time value of money in their evaluations of projects such as the Revised Deployment plan by calculating the NPV of the project's annual costs and savings in each year of the study period based on a specified discount rate. Present discounted value is thus defined as "the current value of an expected future cash flow."[11]

Analysts calculate the present value of future costs and future savings by applying a discount rate to their nominal values in future years in order to calculate their lower value today. The discount rate analysts choose to calculate present value can have a major influence on the result. The lower the discount rate, the more future values are considered to be worth today, and vice versa. The choice of a discount rate is important in a proceeding like this because the Companies will be recovering the costs of the Revised Deployment Plan from customers years before those customers begin receiving any material savings from the smart meter installation. The Companies have calculated

[11] Pindyck, R., Rubinfeld, D. *Microeconomics Fifth Edition.* Prentice Hall Publishing Company, Upper Saddle River, NJ, 2001. Page 670.

the NPV of the Revised Deployment Plan using their weighted average cost of capital (WACC) as a discount rate, because that reflects their time value of money.

Q. **Is the calculation of NPV of costs and benefits sufficient to understand the impact of the Revised Deployment Plan on ratepayers?**

A. No. As I note previously the NPV analysis is a way of quantifying the present value of the future costs and benefits of the Revised Deployment Plan. What is important is that the costs and benefits of the Original and Revised Deployment Plans are inputs to the revenue requirements that are the basis for the rates the Companies charge customers and for the returns earned by shareholders. Thus, it is more meaningful to compare the NPV of revenue requirements between the Original and Revised Deployment plan to understand the impact of the Revised Deployment Plan on rates for ratepayers. Exhibit JRH-3 S page 2, replicated below, shows the NPV of the revenue requirements of the Original and Revised Plans for the 2013-2032 and 2013-2019 time periods.

Table 3 Synapse calculation of Revenue Requirements NPV from Companies perspective

Net Present Value of Operating Companies Revenue Requirements			
Period 2013-2032			
	Original Deployment Plan	**Revised Deployment Plan**	**Percent Difference (Revised vs Original)**
Revenue Requirements	$578,672,444	$682,188,966	18%
Period 2013-2019			
	Original Deployment Plan	**Revised Deployment Plan**	**Percent Difference (Revised vs Original)**
Revenue Requirements	$308,973,296	$450,498,786	46%

Table 3 shows that the Revised Deployment Plan through 2032 would result in an 18% increase in revenue requirements compared to the Original Deployment Plan. However,

the Revised Deployment Plan through 2019, would result in 46% increase in revenue requirements compared to the Original Deployment Plan.

Q. WILL RATEPAYERS PAY HIGHER RATES UNDER THE REVISED DEPLOYMENT PLAN?

A. Yes. As I have shown in the Exhibit JRH-2 S for cumulative costs and I have shown in Exhibit JRH 3 S, the NPV of revenue requirements is higher under the Revised Deployment Plan than under the Original Deployment Plan according to the Companies' discount rates. That implies that the Companies' ratepayers will pay higher SMT-C rates under the Revised Deployment Plan than under the Original Deployment Plan, particularly through 2019, because higher revenue requirements translate into higher SMT-C rates.

The higher costs of the Revised Deployment Plan discussed earlier and plotted in Exhibit JRH-2 S translate into an increase in cumulative revenue requirements through 2019 that are reflected in the increase in the NPV of revenue requirements, relative to the Original Deployment Plan. Revenue requirements are the basis for the rates the Companies charge customers and for the returns earned by shareholders. Based on information provided by the Companies, Exhibit JRH-4 S, replicated in Figure 3, presents a bar chart of the projected annual revenue requirements under the Original Deployment Plan and the Revised Deployment Plan through 2019.

Figure 3 Annual Revenue Requirements of Original and revised Deployment Plans to 2019

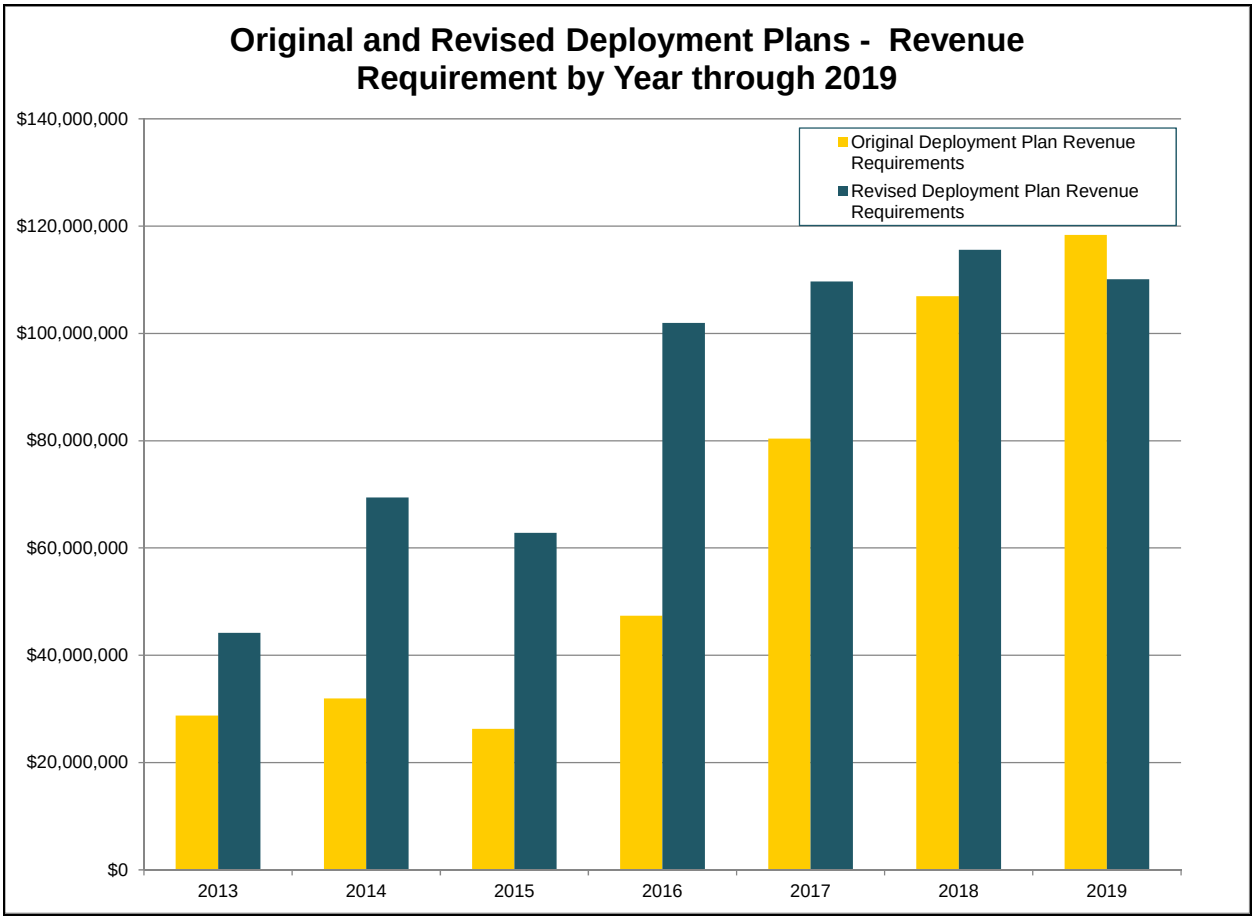


Figure 3 demonstrates that the Companies are projecting the annual revenue requirements to be higher under the Revised Deployment Plan than under the Original Deployment Plan in every year from 2014 through 2018. As a result, the Companies are projecting higher SMT-C rates under the Revised Deployment Plan than under the Original Deployment Plan in those years.

Q. DID THE COMPANY PROVIDE PROJECTED SMT-C RATES FOR 2015-2019 AS PART OF ITS REVISED DEPLOYMENT PLAN FILING?

A. No. In her Supplemental Testimony, Witness Gifford provides rate and bill impacts of the Revised Deployment Plan relative to the Original Deployment Plan for each of the Companies for each rate class in her Exhibits LWG-5 through LWG-8. Those schedules do not provide a comprehensive picture of the increases in SMT-C rates that ratepayers will experience through 2018 under the Revised Deployment Plan.

Q. WILL RATEPAYERS PAY HIGHER SMT-C RATES THROUGH 2018 UNDER THE REVISED DEPLOYMENT PLAN RELATIVE TO THE ORIGINAL DEPLOYMENT PLAN?

A. Yes. Ratepayers will pay substantially higher SMT-C rates from 2016 through 2018. Exhibit JRH-5 S presents rate impacts of the Revised Deployment Plan relative to the Original Deployment Plan for residential customers for each year, 2014 through 2019. These projections are based on data for the Revised Deployment Plan the Companies provided in response to informal discovery and on information on the Original Deployment Plan we obtained during the initial phase of this proceeding.

Exhibit JRH-5 S, replicated below in Table 4, demonstrates that from 2014 through 2016 residential SMT-C rates under the Revised Deployment Plan will be higher by amounts ranging from $0.95/month to $3.39/month Those amounts represent an increase in SMT-C rates ranging from 40% to 259%.

Table 4 SMT C Monthly Rates for Residential Customers – Original and Revised Deployment Plans

SMT-C Monthly Rates for Residential Customers- Original and Revised Deployment Plans							
		2014	**2015**	**2016**	**2017**	**2018**	**2019**
Met Ed	Original Deployment Plan ($) (1)	$1.29	$1.04	$1.87	$3.18	$4.18	$4.58
	Revised Deployment Plan ($) (2)	$2.26	$1.91	$3.50	$4.22	$4.59	$4.38
	Change vs Filed	$0.97	$0.87	$1.63	$1.04	$0.41	-$0.20
		75%	**83%**	**87%**	**33%**	10%	-4%
Penn Elec	Original Deployment Plan ($) (1)	$1.28	$1.03	$1.86	$3.14	$4.20	$4.62
	Revised Deployment Plan ($) (3)	$2.23	$1.88	$3.48	$4.18	$4.50	$4.26
	Change vs Filed	$0.95	$0.85	$1.62	$1.04	$0.30	-$0.36
		75%	**83%**	**87%**	**33%**	7%	-8%
Penn Power	Original Deployment Plan ($) (1)	$1.31	$1.08	$1.91	$2.86	$3.76	$4.31
	Revised Deployment Plan ($) (4)	$2.88	$3.87	$5.30	$4.64	$4.41	$4.15
	Change vs Filed	$1.57	$2.79	$3.39	$1.78	$0.65	-$0.16
		120%	**259%**	**177%**	**62%**	17%	-4%
West Penn	Original Deployment Plan ($) (1)	$0.00276	$0.00246	$0.00296	$0.00347	$0.00451	$0.00491
	Revised Deployment Plan ($/kWh) (5)	$0.00393	$0.00345	$0.00508	$0.00489	$0.00500	$0.00472
	Change vs Filed	$0.00117	$0.00099	$0.00212	$0.00142	$0.00049	-$0.00019
		42%	**40%**	**72%**	**41%**	**11%**	**-4%**

V. NPV OF COSTS AND BENEFITS AT DIFFERENT DISCOUNT RATES

Q. WILL THE COMPANIES' SHAREHOLDERS HAVE HIGHER AGGREGATE NPV EARNINGS UNDER THE REVISED DEPLOYMENT PLAN?

A. Yes. Shareholders will have higher NPV aggregate earnings under the Revised Deployment Plan than under the Original Deployment Plan, particularly through 2019, due to the $47 million, or 9% increase, in capital investment through 2019. Aggregate earnings are component of revenue requirements. Exhibit JRH-6 S, replicated below as Table 5, presents the cumulative and NPV of capital costs through 2019 under the Original Deployment Plan and under the Revised Deployment Plan.

Table 5 Summary of Capital Costs of Revised and Original Deployment Plans Through 2019

	Cumulative (nominal $)	NPV
Original Deployment Plan	$496,384,733	$336,581,451
Revised Deployment Plan	$543,505,864	$395,914,015
Difference	$47,121,131	$59,332,564
Percent Differences	**9%**	**18%**
Notes Original Deployment Plan data from FE Biz Case Analysis.xls Revised Deployment Plan data from OCA Informal #2 Attachment Discount rates from Exhibit GLF-1S		

Q. DOES THE COMPANY MAINTAIN THAT CUSTOMERS WILL BE BETTER OFF UNDER THE REVISED DEPLOYMENT PLAN THAN UNDER THE ORIGINAL DEPLOYMENT PLAN?

A. Yes. On page 9 of his testimony, witness Fitzpatrick states that customers will be better off under the Revised Deployment Plan. Mr. Fitzpatrick bases this assertion on his assumption that the Companies' customers are essentially indifferent between receiving a dollar today or that same dollar several years in the future, such as 2019. Mr. Fitzpatrick's assumption is reflected in his use of a 0.37% discount rate to calculate the net present value of the stream of annual costs and savings associated with the Revised Deployment plan between 2013 and 2032.

Q. DO YOU AGREE THAT CUSTOMERS WILL BE BETTER OFF UNDER THE REVISED DEPLOYMENT PLAN THAN UNDER THE ORIGINAL DEPLOYMENT PLAN?

A. No. I disagree with Mr. Fitzpatrick's assertion for two major reasons. First, Mr. Fitzpatrick's assumption that customers discount future costs and savings at a 0.37% discount rate has no foundation. Second, assuming arguendo that the Companies'

customers do discount future costs and savings at a 0.37% discount rate, the NPV of Revised Deployment Plan through 2032 is only 0.9% less than the original Deployment Plan, and through 2019 the NPV to ratepayers is 6.6% higher under the Revised Deployment Plan than under the Original Deployment Plan.

Q. WHAT IS THE BASIS FOR YOUR POSITION THAT MR. FITZPATRICK HAS NOT PROVIDED A FOUNDATION FOR HIS DISCOUNT RATE ASSUMPTION.

A. Mr. Fitzpatrick's assumption of a 0.37% discount rate is based on the average rate on a one year Certificate Deposit. Mr. Fitzpatrick maintains that rate is representative of the opportunity cost of the money customers would use to pay their smart meter rider charges.[12] However, in response to data requests Mr. Fitzpatrick admitted that his choice of this assumption was not based on a review of economic literature or consumer research reports.[13] He also admitted that the Commission has not established a benchmark discount rate to represent the opportunity cost of ratepayers.[14] It is interesting to note that customers of Metropolitan Edison with overdue bills have opportunity costs of money equal to a discount rate of 19% (1.19 = 1.015^12). That is the effective annual rate of the monthly interest rate Met Ed applies to overdue bills as a Late Payment Charge.[15]

[12] Fitzpatrick. Page 8, line 23 to page 9, line 4.
[13] Informal Response 4C
[14] Informal Response 4A
[15] Metropolitan Edison. *Electric Service Tariff Effective in the Territory as Defined on Page Nos. 8-10 of this Tariff.* Effective March 1, 2014. Original page 48, Section 13.

Q HAVE YOU CALCULATED THE NPV OF THE COMPANIES' ORIGINAL AND REVISED DEPLOYMENT PLANS USING A DIFFERENT DISCOUNT RATE TO REPRESENT A CUSTOMER PERSPECTIVE?

A. Yes. I have prepared the same NPV calculations as Mr. Fitzpatrick using a discount rate of 9.0 percent. The 9% discount rate is consistent with the weighted average cost of capital of 8.17% to 11.29% that the Companies used to prepare NPV analyses from their perspective. Specifically, the discount rate of 9 percent assumes a 7 percent real discount rate based upon a U.S. Government Office of Management and Budget (OMB) Circular No. A-94 titled "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs" plus a 2% inflation rate based upon Federal Reserve Bank estimates.[16] Section 8 b (1) of the OMB circular states that public investments and regulations displace private investment and consumption, and should be analyzed "…using a real discount rate of 7 percent, the marginal pretax rate of return of an average investment in the private sector." The OMB memo dated February 4, 2014 indicates a forecast rate of inflation of approximately 2.0 percent over 20 years. This is the forecast 20-year nominal interest rate of 3.6% minus the forecast 20-year real interest rate of 1.6%.[17]

Q AT A 9% DISCOUNT RATE ARE CUSTOMERS BETTER OFF UNDER THE REVISED DEPLOYMENT PLAN THAN UNDER THE ORIGINAL DEPLOYMENT PLAN?

[16] Federal Reserve Bank. Economic Projections of Federal Reserve Board Members and Federal Reserve Bank Presidents March 14, 2014. Available at http://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20140319.pdf

[17] Office of Management and Budget. 2014 Discount Rates for OMB Circular No. A-94. February 7, 2014. Available at http://www.whitehouse.gov/sites/default/files/omb/memoranda/2014/m-14-05.pdf

A. No. At a 9% discount rate the net cost to ratepayers through 2019 is 12% higher under the Revised Deployment Plan than under the Original Deployment Plan. The results of my NPV calculations using a discount rate of 9.0% are presented in Exhibit JRH-7 S.

Q. PLEASE EXPLAIN WHY CUSTOMERS ARE NOT MATERIALLY BETTER OFF UNDER THE REVISED DEPLOYMENT PLAN EVEN AT A 0.37 PERCENT DISCOUNT RATE?

A. Assuming arguendo that the Companies' customers do discount future costs and savings at a 0.37% discount rate, the NPV under the Revised Deployment Plan through 2032 is only 0.9% lower than the NPV cost than under the Original Deployment Plan. Moreover, the NPV to ratepayers through 2019 is 6.6% higher under the Revised Deployment Plan than under the Original Deployment Plan. These comparisons are presented in Exhibit JRH–8 S.

III. CONCLUSION AND RECOMMENDATION

Q. PLEASE SUMMARIZE YOUR CONCLUSION AND RECOMMENDATIONS REGARDING THE COMPANIES' PROPOSED REVISED DEPLOYMENT PLAN.

A. The Revised Deployment Plan is not reasonable. It does advance the deployment of meters somewhat through 2019. However, to achieve that modest advancement the Revised Deployment Plan imposes much higher revenue requirements, and rates on customers. The NPV of net costs (2013-2032) will be 9% higher than the Original Deployment Plan according to Mr. Fitzpatrick. (On a revenue requirement basis, they

will be approximately 46% higher through 2019 according to my calculations). Based on that conclusion I recommend that the Commission reject the Revised Deployment Plan.

Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL TESTIMONY?

A. Yes.

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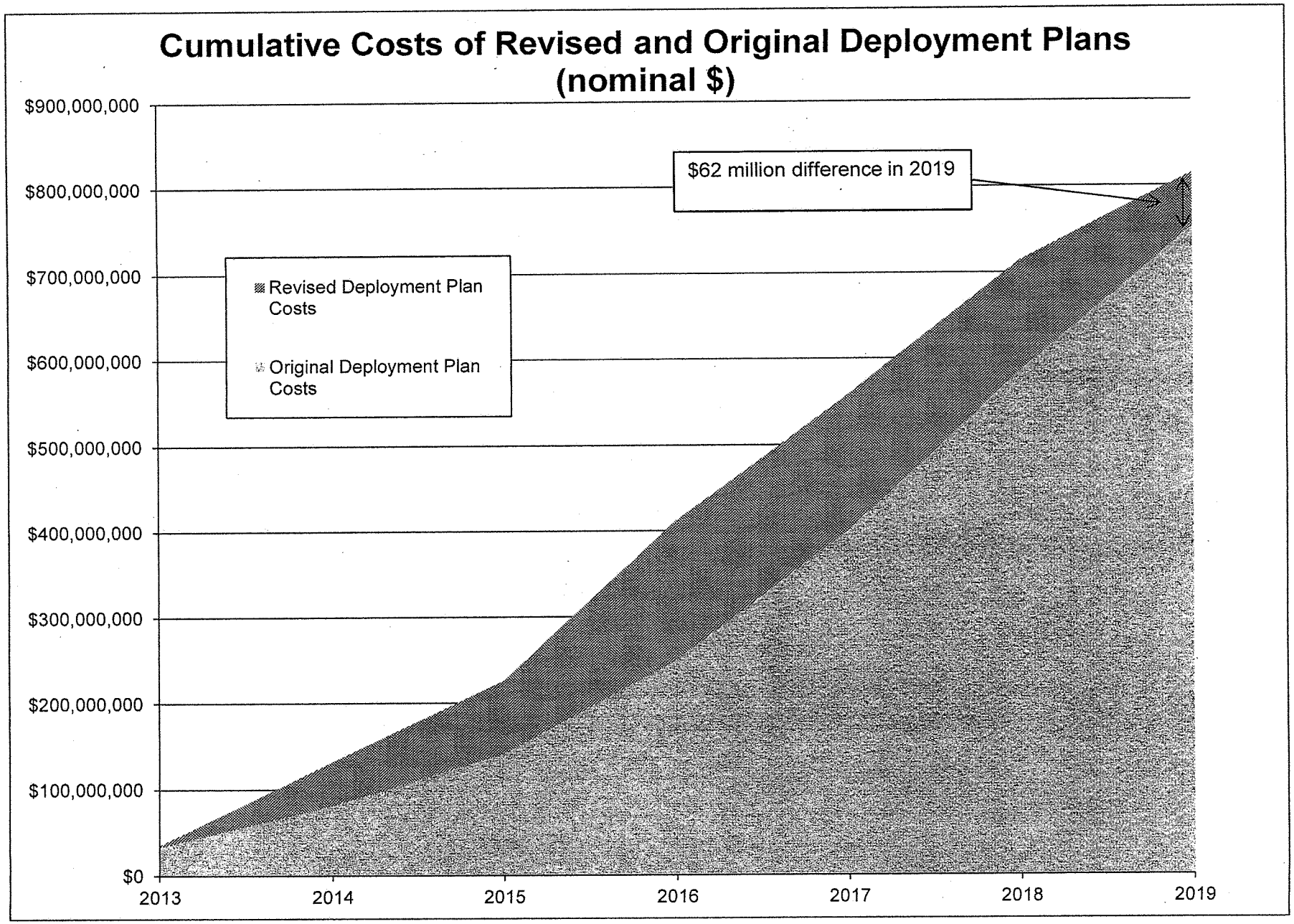
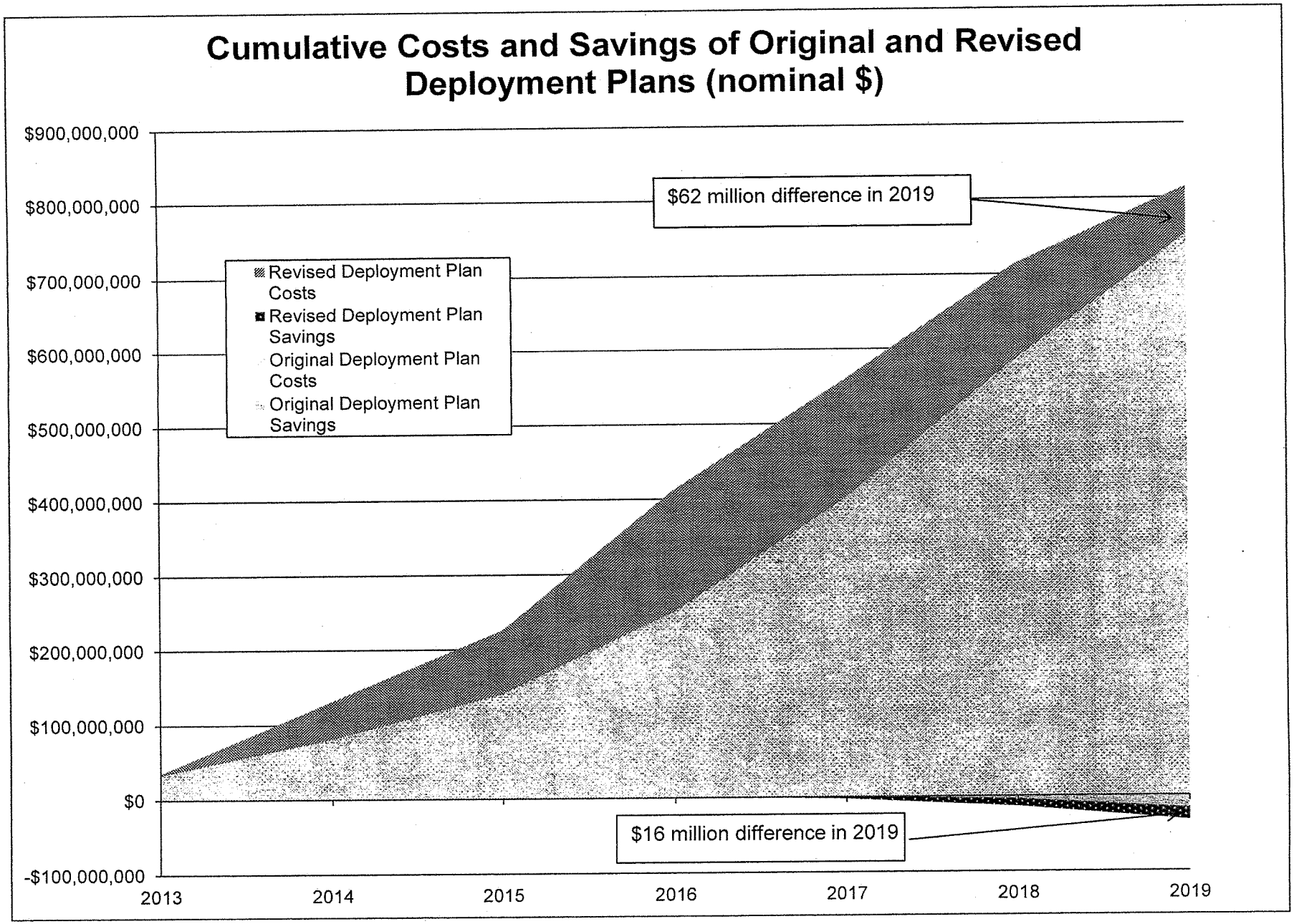
EXHIBITS

Cumulative Meter Deployment Schedule under Original and Revised Deployment Plans

	2014	2015	2016	2017	2018	2019
Original Deployment Plan	5,000	20,000	60,000	600,000	1,400,000	2,000,000
Revised Deployment Plan	50,000	170,000	670,000	1,170,000	1,670,000	2,000,000
Difference Revised vs. Original	45,000	150,000	610,000	570,000	270,000	-

Notes
Data from Exhibit GLF-1S


Cumulative Costs of Revised and Original Deployment Plans
(nominal $)
$900,000,000
$800,000,000
$700,000,000
$600,000,000
$500,000,000
$400,000,000
$300,000,000
$200,000,000
$100,000,000
$0
2013
2014
2015
2016
2017
2018
2019
$62 million difference in 2019
Revised Deployment Plan Costs
Original Deployment Plan Costs


Cumulative Costs and Savings of Original and Revised Deployment Plans (nominal $)
$900,000,000
$800,000,000
$700,000,000
$600,000,000
$500,000,000
$400,000,000
$300,000,000
$200,000,000
$100,000,000
$0
-$100,000,000
2013
2014
2015
2016
2017
2018
2019
$62 million difference in 2019
$16 million difference in 2019
Revised Deployment Plan Costs
Revised Deployment Plan Savings
Original Deployment Plan Costs
Original Deployment Plan Savings

Costs and Savings Associated with Revised and Original Deployment Plans (nominal$)								
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**Cumulative (2013-2019)**
	Capital and O&M Costs							
Original Deployment Plan	$33,019,997	$47,627,022	$59,332,912	$108,873,601	$150,201,660	$185,408,583	$167,377,577	$751,841,352
Revised Deployment Plan	$34,856,892	$96,677,033	$93,885,829	$186,669,314	$146,144,182	$155,353,579	$101,026,246	$814,613,076
Difference	**$1,836,895**	**$49,050,011**	**$34,552,918**	**$77,795,713**	**-$4,057,478**	**-$30,055,004**	**-$66,351,331**	**$62,771,725**
	Savings							
Original Deployment Plan	$0	$0	$0	-$538,047	-$435,615	$3,998,781	$13,532,624	$16,557,743
Revised Deployment Plan	$0	-$51,798	-$147,284	-$1,239,348	$3,811,390	$11,416,553	$18,983,840	$32,773,354
Difference	**$0**	**-$51,798**	**-$147,284**	**-$701,302**	**$4,247,005**	**$7,417,772**	**$5,451,216**	**$16,215,610**

Notes
Original Deployment Plan data from FE Biz Case Analysis.xls
Revised Deployment Plan data from OCA Informal #2 Attachment

Net Present Value of Costs and Benefits of Original and Revised Deployment Plans			
Period 2013-2032 from Exhibit GLF-1S			
	Original Deployment Plan	**Revised Deployment Plan**	**Percent Difference (Revised vs Original)**
Costs	$693,560,709	$747,048,921	8%
Benefits	$133,876,123	$142,228,285	6%
Net Costs	$559,684,586	$604,820,637	8%
Period 2013-2019			
	Original Deployment Plan	**Revised Deployment Plan**	**Percent Difference (Revised vs Original)**
Costs	$529,273,518	$603,404,297	14%
Benefits	$9,709,205	$19,839,498	104%
Net Costs	$519,564,313	$583,564,799	12%

Notes

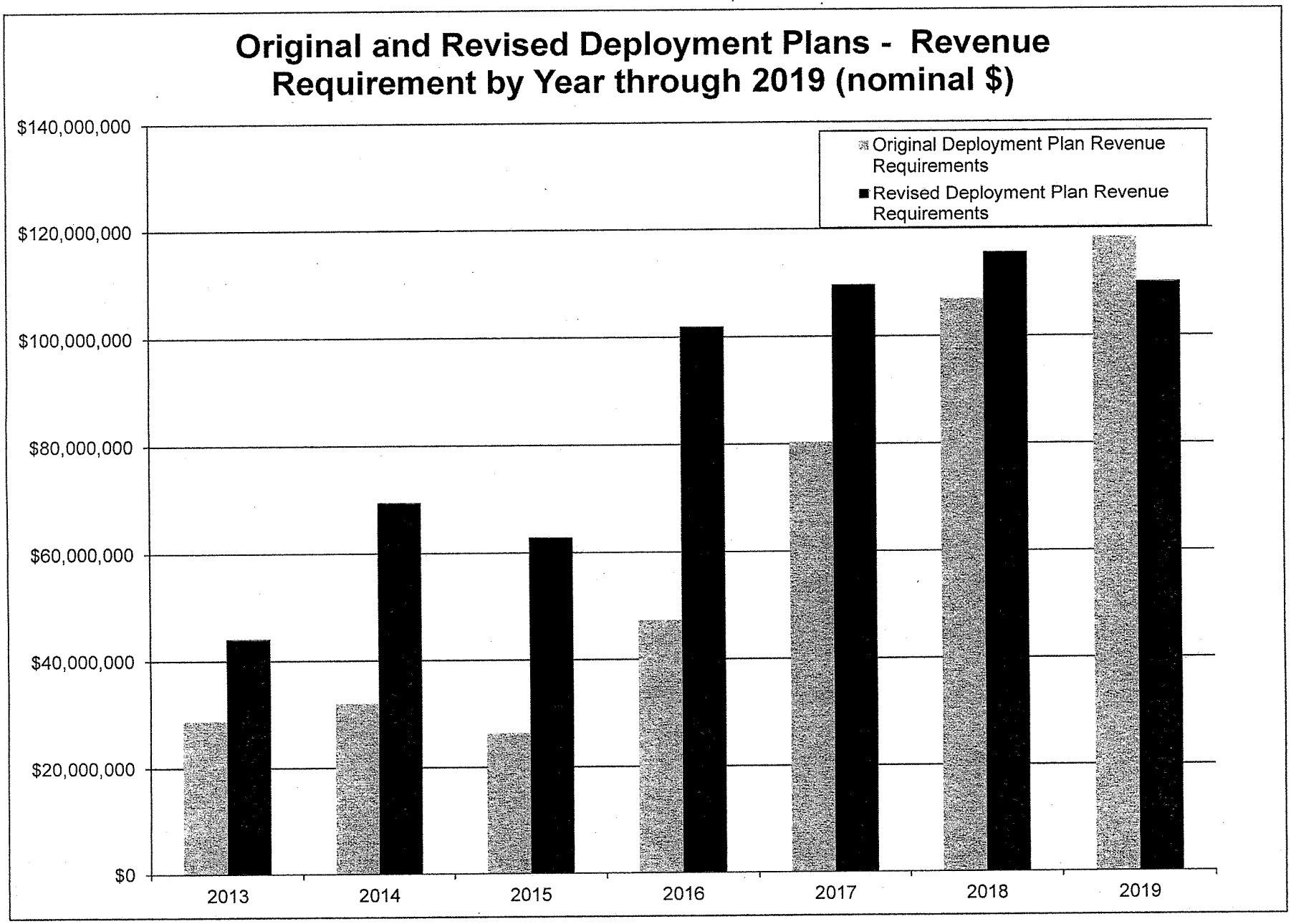
Calculated NPV of Revised Deployment Plan costs within 0.44% of Exhibit GLF-1S
Original Deployment Plan data from FE Estimated Annual SMT-C.xls
Data Revised Deployment Plan from Company provided workbooks

Net Present Value of Operating Companies Revenue Requirements

Period 2013-2032			
	Original Deployment Plan	Revised Deployment Plan	Percent Difference (Revised vs Original)
Revenue Requirements	$578,672,444	$682,188,966	18%
Period 2013-2019			
	Original Deployment Plan	Revised Deployment Plan	Percent Difference (Revised vs Original)
Revenue Requirements	$308,973,296	$450,498,786	46%

Notes

Discount rates from Exhibit GLF-1S
Original Deployment Plan data from FE Estimated Annual SMT-C.xls
Data Revised Deployment Plan from Company provided workbooks


Original and Revised Deployment Plans - Revenue Requirement by Year through 2019 (nominal $)
$140,000,000
$120,000,000
$100,000,000
$80,000,000
$60,000,000
$40,000,000
$20,000,000
$0
2013
2014
2015
2016
2017
2018
2019
Original Deployment Plan Revenue Requirements
Revised Deployment Plan Revenue Requirements

SMT-C Monthly Rates for Residential Customers- Original and Revised Deployment Plans

		2014	2015	2016	2017	2018	2019
Met Ed	Original Deployment Plan ($) (1)	$1.29	$1.04	$1.87	$3.18	$4.18	$4.58
	Revised Deployment Plan ($) (2)	$2.26	$1.91	$3.50	$4.22	$4.59	$4.38
	Change vs Filed	$0.97	$0.87	$1.63	$1.04	$0.41	-$0.20
		75%	83%	87%	33%	10%	-4%
Penn Elec	Original Deployment Plan ($) (1)	$1.28	$1.03	$1.86	$3.14	$4.20	$4.62
	Revised Deployment Plan ($) (3)	$2.23	$1.88	$3.48	$4.18	$4.50	$4.26
	Change vs Filed	$0.95	$0.85	$1.62	$1.04	$0.30	-$0.36
		75%	83%	87%	33%	7%	-8%
Penn Power	Original Deployment Plan ($) (1)	$1.31	$1.08	$1.91	$2.86	$3.76	$4.31
	Revised Deployment Plan ($) (4)	$2.88	$3.87	$5.30	$4.64	$4.41	$4.15
	Change vs Filed	$1.57	$2.79	$3.39	$1.78	$0.65	-$0.16
		120%	259%	177%	62%	17%	-4%
West Penn	Original Deployment Plan ($) (1)	$0.00276	$0.00246	$0.00296	$0.00347	$0.00451	$0.00491
	Revised Deployment Plan ($/kWh) (5)	$0.00393	$0.00345	$0.00508	$0.00489	$0.00500	$0.00472
	Change vs Filed	$0.00117	$0.00099	$0.00212	$0.00142	$0.00049	-$0.00019
		42%	40%	72%	41%	11%	-4%

Notes

1) FE Estimated Annual SMT-C.xls
2) ME SMT 2013-2032 Filed PLUS 03262014.xls
3) PE SMT 2013-2032 Filed PLUS 03262014.xls
4) PP SMT 2013-2032 Filed PLUS 03262014.xls
5) WP SMT 2013-2032 Filed PlUS 03262014.xls
6) West Penn Power SMT-C conversion factor based on $3.81 per month/$0.00393 per kWh or 969 kWh/month

Summary of Capital Costs of Revised and Original Deployment Plans Through 2019

	Cumulative (nomimal $)	NPV
Original Deployment Plan	$496,384,733	$336,581,451
Revised Deployment Plan	$543,505,864	$395,914,015
Difference	$47,121,131	$59,332,564
Percent Differences	**9%**	**18%**

Notes
Original Deployment Plan data from FE Biz Case Analysis.xls
Revised Deployment Plan data from OCA Informal #2 Attachment
Discount rates from Exhibit GLF-1S

NPV of Original and Revised Deployment Plans At Different Periods Using 9.0% Discount Rate

	2013-2032	
	Original Deployment Plan	Revised Deployment Plan
NPV Costs	$708,504,427	$761,066,910
NPV Benefits	-$139,280,522	-$148,503,252
Net Costs	$569,223,904	$612,563,659
Percent Difference		**7.6%**
	2013-2019	
	Original Deployment Plan	Revised Deployment Plan
NPV Costs	$537,435,514	$611,456,243
NPV Benefits	-$9,943,923	-$20,166,933
Net Costs	$527,491,591	$591,289,309
Percent Difference		**12.1%**

Notes

Data for Original Deployment Plan from FE SMIP Biz Case Analysis.xlsx

Data for Revised Deployment Plan from OCA Informal #2 Attachment

9.0% discount rate based on 2% inflation from Federal Reserve and 7% real discount rate from U.S. Government Office of Management and Budget (OMB) Circular No. A-94 titled "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs

NPV of Original and Revised Deployment Plans At Different Periods Using 0.37% Discount Rate

	2013-2032	
	Original Deployment Plan	Revised Deployment Plan
NPV Costs	$1,222,541,061	$1,226,290,273
NPV Benefits	-$386,459,773	-$397,924,451
Net Costs	$836,081,288	$828,365,822
Percent Difference Net Costs		**-0.9%**
	2013-2019	
	Original Deployment Plan	Revised Deployment Plan
NPV Costs	$740,766,515	$804,309,472
NPV Benefits	-$16,200,324	-$32,107,474
Net Costs	$724,566,191	$772,201,997
Percent Difference Net Costs		**6.6%**

Notes

Data for Original Deployment Plan from FE SMIP Biz Case Analysis.xlsx

Data for Revised Deployment Plan from OCA Informal #2 Attachment