BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF SOUTHWESTERN PUBLIC SERVICE COMPANY'S APPLICATION REQUESTING: (1) ACKNOWLEDGEMENT OF ITS FILING OF THE 2017 ANNUAL RENEWABLE ENERGY PORTFOLIO REPORT; (2) APPROVAL OF ITS ANNUAL RENEWABLE ENERGY PORTFOLIO PROCUREMENT PLAN FOR PLAN YEAR 2019; (3) APPROVAL OF THE PROPOSED RATE FOR ITS 2019 RENEWABLE PORTFOLIO STANDARD RIDER; (4) APPROVAL OF ITS PROPOSED TREATMENT OF RENEWABLE ENERGY CERTIFICATES ASSOCIATED WITH THE SAGAMORE AND HALE WIND FACILITIES; AND (5) OTHER ASSOCIATED RELIEF,	)	**CASE NO. 18-_____-UT**
SOUTHWESTERN PUBLIC SERVICE COMPANY,	)	
APPLICANT.	)	

DIRECT TESTIMONY

of

BEN R. ELSEY

on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY

July 2, 2018

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
2015 IRP	SPS's current IRP
CT	Combustion Turbine
DAM	Day Ahead Market
DART	Day Ahead and Real Time
DG	Distributed Generation
IRP	Integrated Resource Plan
kW	Kilowatt
LMP	Locational Marginal Price
MW	Megawatt
MWh	Megawatt-hour
Next Plan Year	SPS's Filing for Plan Year 2020
NOx	Nitrogen Dioxide
O&M	Operation and Maintenance
Plan Year	SPS's filing for Plan Year 2019
PPA	Purchased Power Agreement
RCT	Renewable Cost Threshold
RPS	Renewable Portfolio Standard
RTBM	Real Time Balancing Market
Rule 572	Renewable Energy Rule (17.9.572 NMAC)

Acronym/Defined Term	Meaning
SO_2	Sulfur Dioxide
SPP	Southwest Power Pool Inc.
SPS	Southwestern Public Service Company, a New Mexico corporation
SunE	SunEdison, LLC
Xcel Energy	Xcel Energy Inc.

LIST OF ATTACHMENTS

Attachment	Description
BRE-1	RCT Revenue Requirement Adjustments

Case No. 18-00_____-UT
Direct Testimony
of
Ben R. Elsey

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Ben R. Elsey. My business address is 1800 Larimer, Denver, Colorado 80202.

Q. On whose behalf are you testifying in this proceeding?

A. I am filing testimony on behalf of Southwestern Public Service Company, a New Mexico corporation ("SPS") and wholly-owned electric utility subsidiary of Xcel Energy Inc. ("Xcel Energy").

Q. By whom are you employed and in what position?

A. I am employed by Xcel Energy Services Inc. as Analyst II, Resource Planning.

Q. Please briefly outline your responsibilities as Analyst II, Resource Planning.

A. I am responsible for working with other analysts and planners in the development of strategic resource plans for SPS including: need assessment, planning, solicitation and negotiation of long-term purchased power agreements ("PPAs"), and financial analysis of various resource and purchase/sales options.

Q. Please describe your educational background.

A. I graduated from Plymouth College of Further Education in Great Britain with a Higher National Certificate in Building Studies (2004). Since relocating to the

United States, I have graduated from Amarillo College with an Associate's Degree in Business Administration (2017) and am currently pursuing a Bachelor's Degree in Accounting from Colorado State University.

Q. Please describe your professional experience.

A. I began employment with Xcel Energy in June 2012 as a Project Control Specialist in the Engineering and Construction department within Energy Supply. In 2015, I moved into the role of Construction Estimator within the same department. In each of these roles, my responsibilities included producing cost assumptions and estimates to be used in modeling, and completing financial analysis and cost forecasting of capital projects. In 2017, I became Analyst II, Resource Planning. Prior to joining Xcel Energy, I worked for various construction companies in Great Britain and the United States as an estimator, quantity surveyor and contracts manager.

II. ASSIGNMENT

Q. What is your assignment in this proceeding?

A. My testimony will provide required data and information to allow SPS's 2019 Annual Renewable Energy Plan for the 2019 Plan Year ("Plan Year") and 2020 Next Plan Year ("Next Plan Year") to comply with 17.9.572 NMAC ("Rule 572"). In particular, I:

- provide Plan Year revenue requirement information to allow SPS witness Ruth M. Sakya to calculate the Reasonable Cost Threshold ("RCT") (Rule 572.14(C)); and
- address Rule 572.14(B)(10), which requires testimony and exhibits demonstrating that the Renewable Portfolio Standard ("RPS") portfolio procurement plan is consistent with SPS's Integrated Resource Plan ("IRP").

Q. Do you sponsor or co-sponsor any sections of the 2019 RPS Plan presented by Ms. Sakya?

A. Yes. I sponsor Plan Section II(E).

Q. Was Attachment BRE-1 prepared by you or under your direct supervision and control?

A. Yes.

III. ANALYSES TO COMPLY WITH 17.9.572.14(C) NMAC

Q. What do you address in this section of your testimony?

A. Rule 572.14(C) governs how plan year revenue requirements shall be determined for RCT purposes. I address the following potential revenue requirement adjustments used to determine SPS's RCT, as required under the Rule: (1) cost savings resulting from environmental credits; (2) cost savings or increases for operation and maintenance ("O&M") expense; (3) cost savings or increases for back-up and load following generation; (4) cost savings or increases from avoided fuel and energy costs and off-system sale opportunities; (5) cost savings or increases for avoided capacity; (6) cost savings or increases for generation, transmission, or distribution; and (7) costs savings or increases for other facilities and improvements or functions that may be required and that can be shown to result in actual reductions or increases in plan year revenue requirements. I quantified these adjustments and provided the information to Ms. Sakya for use in the RCT calculation. A summary of these calculations is contained in Attachment BRE-1, page 1.

A. Cost Savings Resulting from Environmental Credits

Q. For RCT purposes, how does SPS account for cost savings resulting from environmental credits?

A. Consistent with Rule 572.14(C), which requires consideration for environmental credits "pursuant to compliance rules in effect during the plan year," SPS expects environmental credit cost savings associated with sulfur dioxide ("SO_2") and nitrogen dioxide ("NO_X") emissions reductions during the Plan Year and Next Plan Year. Under the Clean Air Act, the Environmental Protection Agency has implemented SO_2 and NO_X emission allowance programs. SPS will receive SO_2 allowances under the Acid Rain Program in both New Mexico and Texas and seasonal NO_X allowances in Texas under the Cross State Air Pollution Rule. Because SPS runs it system as a whole, for the benefit of both its New Mexico and Texas customers, SPS calculated the emission reductions on all system resources, regardless of physical location.

Q. What is the expected value of SO_2 and NO_X emissions allowances?

A. The estimated credit value for SO_2 is $0.00029/megawatt-hour ("MWh") in 2019 and $0.00012/MWh in 2020. The estimated credit value for Seasonal NO_X is $0.01251 in 2019 and $0.01410 in 2020. Please refer to Attachment BRE-1.

Q. How are the environmental credit cost savings calculated?

A. At a high level, SPS performed two production cost model runs. The first run modeled the dispatch of the SPS system excluding the generation from SPS's five solar PPAs with SunEdison, LLC ("SunE"). For the second case, the system was re-dispatched with the renewable resources included. The difference in emissions (SO_2 and NO_X) between the two model runs represents the incremental impact of the renewable resources measured in tons of SO_2 and NO_X.

Q. Please describe how you quantified the expected value of the environmental credits.

A. To quantify the expected value of the environmental credits for purposes of the RCT calculation, I took the following steps:

1) Determined the avoided tons for SO_2 and NOx emissions. For NOx emissions the avoided tons was limited to the period between May 1st and September 30th to represent the seasonal NOx allowance program. This was done based upon two models, the first being the "base" case which did not include the SunE solar generation, and the second being the same as the "base" case except with the SunE solar generation included. The difference in tons of SO_2 (99 tons in 2019 and 41 tons in 2020) and NOx (9 tons in 2019 and 10 tons in 2020) between the two model runs represents the avoided emissions.

2) Assigned the following costs per ton for SO_2 and NOx - $0.32/ton and $150.00/ton, respectively. These figures were based upon information from the April 2018 Allowance Price Report.

3) Quantified the total cost of SO_2 and NOx by multiplying the total incremental tons of emissions for SO_2 and NOx by the cost per ton.

4) Determined a dollar amount per MWh by dividing the total cost for SO_2 and NOx by the total forecasted SunEdison MWh, which for SO_2 resulted in $0.00029/MWh for 2019 and $0.00012/MWh in 2020, and for NOx was $0.01251/MWh in 2019 and $0.01410/MWh in 2020.

B. Cost Savings or Increases for O&M Expense due to Renewable Resources

Q. Please describe how a renewable resource, such as a solar facility, can impact overall O&M expense.

A. The intermittent nature of renewable generation, such as solar facilities, can create additional O&M costs to the overall system. These costs are known as integration costs; they are often embedded, and, as a result, they are not captured in traditional resource planning models. Cycling induced plant wear is one example of an integration cost. Increased levels of intermittent generation force a change from the design operation of base load coal-fired generating units and increase the cycling of these units. This increases cycling induced plant wear and in turn the costs of maintaining the unit and the system as a whole.

Q. For RCT purposes, did SPS account for any savings or increases in O&M expense due to the SunE solar facilities?

A. No. The Southwest Power Pool Inc. ("SPP") is ultimately responsible for dispatching the generating units of all its members, including SPS. Thus, the impact of the SunE solar facilities must be evaluated in context of the overall SPP market. The SunE solar facilities (50 megawatts ("MW")) are relatively small in comparison to the total size of the SPP Integrated Marketplace (approximately 87,000 MW). So, for all practical purposes (i.e., from a unit-commitment and dispatch standpoint), the O&M impact on the SPS system due to the SunE PPAs is extremely small. In other words, 50 MW of intermittent solar does not materially change unit commitment and dispatch on the SPP Integrated Marketplace. Accordingly, SPS has included a value of $0/MWh for O&M impacts in its RCT calculation.

C. Cost Savings or Increases for Back-Up and Load Following Generation

Q. Please describe what is meant by "back-up" and "load following" generation.

A. SPP Integrated Marketplace protocols require certain ancillary services to support the transmission of capacity and energy from resources while maintaining reliable

operation of the system. These requirements include operating reserves or "back-up generation" and "load following" generation, which is able to regulate up and down to follow the varying load requirements during a given period.

Q. For RCT purposes, how does SPS account for cost savings or increases related to back-up and/or load following generation?

A. As shown in Attachment BRE-1, pages 3 and 4, for purposes of assessing the impact of SPS's renewable resources on back-up and load following generation, SPS was able to rely upon two sources of available cost data from the SPP Integrated Marketplace: 1) the reliability unit commitment make whole payment distribution; and 2) the cost increases or savings associated with variances between day-ahead and real-time generation ("DART").

Q. Briefly explain the reliability unit commitment make whole payment distribution.

A. Under the SPP Integrated Marketplace protocols, the SPP uses an economic dispatch model to prioritize generation offers. In conjunction with this model, a market clearing algorithm considers all known constraints within the bulk electric system. Outcomes from this algorithm may result in the out-of-merit real-time dispatch of additional resources for reliability purposes. A portion of the costs

associated with these additional resources is allocated across the footprint through a funding mechanism known as the Reliability Unit Commitment Make Whole Payment Distribution. A resource's ability to follow SPP's load–based dispatch instructions will determine how much funding that resource is responsible for.

Thus, the Reliability Unit Commitment Make Whole Payment Distribution: (1) is a reasonable proxy for the cost impact that intermittent generation resources are causing for back-up and load following generation, and, in particular, the costs allocated to SPS for the SunE solar generation for the twelve months ending December 2017; and (2) serve as a reasonable estimate for 2019 and 2020 back-up and load following generation cost impacts.

Q. What was the final amount (expressed as a $/MWh value) that was assessed to the SunE PPAs for reliability unit commitment make whole payment distribution?

A. The annual reliability unit commitment make whole payment distribution amount allocated to the SunE PPAs for the period identified above was $11,784 and the annual production was 101,977 MWh. Dividing the cost ($11,784) by the SunE PPAs' annual production (101,977 MWh) results in a per-unit impact of $0.1156/MWh with respect to back-up and load following generation. These amounts are shown in Attachment BRE-1, page 3.

Q. Briefly explain variances between Day-Ahead and Real-Time Generation.

A. In the SPP Integrated Marketplace, all generation Market Participants are required to offer their generation resources in the Day Ahead Market ("DAM"). As these offers are submitted ahead of time, there can be a difference between forecasted generation in the DAM and actual generation in the Real Time Balancing Market ("RTBM"). This is especially true when forecasting intermittent renewable generation such as solar. When forecasted output exceeds actual generation, the market participant is responsible for buying back the energy shortfall in the real-time market. Conversely, if actual generation exceeds the forecasted volume, the incremental MWh are sold to the market at the real-time price. Summing the total value of these charges and credits, over a period of time, represents the impact of DART.

Q. What was the final amount (expressed as a $/MWh value) that was assessed to the SunE PPAs for variances between Day-Ahead and Real-Time Generation?

A. SPS used historical data from calendar year 2017 and multiplied the delta in hourly MWh (i.e., the difference between DAM and RTBM generation) by the real-time hourly nodal locational marginal price ("LMP"). This calculation provided the hourly cost impact of sales and purchases of all generation, including

renewable generation on the SPP Integrated Marketplace. Summing the results for all hours of 2017 represents the total cost increases or savings associated with the variances in DART generation (-$306,723) – see attachment BRE-1, page 4. Dividing this result by the annual SunE production (101,977 MWh) represents the cost impact as expressed on a $/MWh basis. The final calculated amount was -$3.01/MWh. This amount which is shown in Attachment BRE-1, page 4, is negative, meaning that actual deliveries of SunE energy fell short of SunE scheduled production, and, thus, the shortfall had to be made up with purchases at the RTBM LMPs for SunE generation. That is, the SunE PPAs caused additional costs.

D. Cost Savings or Increases from Avoided Fuel and Energy Costs and Off-System Sales Opportunities

Q. For RCT purposes, how does SPS account for avoided fuel and energy costs and additional sales opportunities?

A. As shown in Attachment BRE-1, page 5, for the purposes of assessing the impact of SPS's renewable resources on avoided fuel and energy costs, and the impact of energy purchases and sales, SPS followed a similar approach as it has taken in past RPS filings. In particular, SPS developed two cases in its production cost model to determine system avoided energy costs. Under the first case, SPS

modeled the dispatch of the SPS system excluding the SunE generation. For the second case, the system was re-dispatched with the renewable resources included. The difference in the total system energy costs, including the change in purchases and sales between the two cases or model runs represents the avoided energy costs and the impact of sales opportunities attributable to the SunE PPAs.

Q. What amount did you quantify for avoided fuel and energy?

A. The avoided fuel and energy costs attributable to the SunE PPAs were $24.97/MWh in 2019 and $22.75 in 2020. These amounts are shown in Attachment BRE-1, page 5.

E. Cost Savings or Increases from Avoided Capacity Costs

Q. Please generally describe the nature of avoided capacity costs.

A. Avoided capacity costs are capital expenditures that would be "avoided", but for the addition of the resource(s) being examined, which, for the purposes of this testimony, will be the SunE PPAs. In other words, the accredited capacity of the SunE PPAs avoid (or more accurately, defer) the need to acquire or construct additional capacity resources. Such avoided costs can be assessed on either a short-term or long-term basis. Given SPS's current capacity position, it is unlikely that SPS could avoid or defer any capacity resource additions as a result

of the SunE PPAs. Nevertheless, in order to provide a very liberal interpretation and examination, SPS has calculated both a short-term and longer-term capacity credit associated with the SunE PPAs. The capacity credit amounts were provided to Ms. Sakya for use in calculating SPS's RCT. I describe below how these assumed capacity credits were determined.

Q. Does Rule 572.14(C) place any limit on the RPS revenue requirement offset for avoided capacity?

A. Yes, to qualify for a RPS revenue requirement offset under Rule 572.14(C), the avoided capacity must be shown to result in reductions in Plan Year revenue requirements.

Q. Is SPS able to show the avoidance or deferral of capacity one year after it makes a RPS filing?

A. No. With respect to generation resource planning, there should be adequate capacity on the system to cover system peak plus planning reserves on a running three-year basis. Furthermore, because generation additions are "lumpy," meaning generation sizes typically never match perfectly the forecasted need for capacity, a positive long position is common when looking up to three years into the future.

The impact of the SunE PPAs has already been incorporated into SPS's resource planning process. However, trying to look one year (i.e., for the Plan Year) or two years (i.e., the Next Plan Year) out to examine current loads and resources capacity positions, and then develop a position that the SunE capacity does or does not have value is inconsistent with the fundamentals of resource planning.

Simply put, the nature of resource planning and the lead time necessary to acquire the required generation capacity necessitate the need for SPS to take a longer-range perspective. Thus, while the SunE PPAs now earn accredited capacity under the SPP Criteria 7.1.5.3(7), specifying an economic value of the capacity in a particular year for RPS revenue requirement purposes is not realistic nor consistent with how SPS actually performs its resource planning.

Q. Even if SPS were able to identify a deferral or avoidance of capacity to the degree required under Rule 572.14(C), what would be the value of that capacity on a short-term basis, e.g., during the Plan Year?

A. The value of the additional capacity depends on whether another entity would be willing to buy the SunE PPA capacity from SPS and, if so, for what amount and what duration. For this analysis, SPS assumed it would be able to sell the

capacity for $2.40 per kilowatt ("kW")-month during the summer months of June through September ($9.6kW-Year). This avoided cost was then multiplied by the accredited capacity of the SunEd PPAs (34 MW) and then divided by the projected generation in 2019 and 2020 to calculate the $/MWh value. The resulting avoided capacity values are included on Page 6 of Attachment BRE-1.

Q. Notwithstanding that Rule 572.14(C) cannot be met for purposes of offsetting SPS's Plan Year RPS revenue requirement for avoided capacity, did you also provide an assessment of avoided capacity for the SunE PPAs based on a long-range resource planning horizon?

A. Yes. SPS has provided a quantification of avoided capacity related to the SunE PPAs based upon a capacity deferral methodology. The capacity deferral valuation methodology is consistent with long-range resource planning fundamentals. The avoided capacity values resulting from application of this methodology are included on Page 6 of Attachment BRE-1.

Q. Briefly describe the capacity deferral methodology mentioned above.

A. As in prior RPS filings, SPS calculated the avoided capacity component based upon the installed costs of a combustion turbine ("CT"), which typically has the lowest cost of capacity. The revenue requirements to construct, maintain and operate a CT were then converted into an economic carrying charge and the

resulting annualized avoided capacity cost expressed on a $/kW-year basis. Dividing this result by the summer generation capacity rating of a CT (200.9 MW) provides a representative value of the avoided capacity on a $/MW-year basis. This $/MW-year was then applied to the 34 MW accredited capacity of the SunE PPAs to calculate the value of avoided capacity.

F. Cost Savings or Increases from Transmission and Distribution

Q. For RCT purposes, did SPS include any cost savings or increases related to transmission or distribution?

A. No. SPS did not incur any transmission or distribution costs or savings when executing the SunE PPA. Thus, for RCT purposes SPS did not include any costs or savings.

G. Cost Savings or Increases from Facilities and Improvements or Other Functions

Q. For RCT purposes, did SPS include any cost savings or increases related to other facilities and improvements or functions that may be required and that can be shown to result in actual reductions or increases in plan year revenue requirements?

A. No. SPS is not aware of any additional costs or savings from the SunE PPAs that impact the plan revenue requirements collected from ratepayers.

IV. COMPLIANCE WITH RULE 572.14(B)(10)

Q. What does Rule 572.14(B)(10) require?

A. Rule 572.14(B)(10) requires testimony and exhibits demonstrating that the RPS portfolio procurement plan is consistent with the IRP and explaining any material differences.

Q. Is SPS's RPS portfolio procurement plan consistent with the resource procurement plan provided in its IRP filed in 2015?

A. Yes. SPS's current IRP ("2015 IRP") was accepted in Case No. 15-00217-UT.[1] In its 2015 IRP, SPS assumed for modeling purposes, full compliance with the RPS requirements of the Renewable Energy Act and Rule 572. Nevertheless, in recognition of SPS's RCT constraints, SPS did not propose in its 2015 IRP to acquire additional RPS-related renewable resources. The 2015 IRP went on to say that, to the extent renewable energy can be acquired as a cost-effective resource addition, SPS will pursue such additions under a buy-over-time acquisition strategy.[2] As discussed by Ms. Sakya, SPS's RPS procurement plan is

[1] Case No. 15-00217-UT, *In the Matter of Southwestern Public Service Company's Integrated Resource Plan*, Final Order (Sept. 23, 2015).

[2] On March 21, 2017, SPS filed a Notice of Material Change and Updated Action Plan to its 2015 IRP regarding purchase sales agreements for two wind facilities.

consistent with the 2015 IRP because SPS: (1) need not add any additional renewable generation to meet the overall RPS requirements for the Plan Year and Next Plan Year; and (2) cannot add any additional renewable generation without exceeding the RCT. For the same reasons, SPS expects its RPS procurement plan to be consistent with its IRP due to be filed mid-July 2018.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

VERIFICATION

STATE OF COLORADO)
) ss.
COUNTY OF DENVER)

Ben R. Elsey, first being sworn on his oath, states:

I am the witness identified in the preceding testimony. I have read the testimony and the accompanying attachment(s) and am familiar with their contents. Based upon my personal knowledge, the facts stated in the direct testimony are true. In addition, in my judgment and based upon my professional experience, the opinions and conclusions stated in the testimony are true, valid, and accurate.

BEN R. ELSEY

SUBSCRIBED AND SWORN TO before me this 25 day of June, 2018.

RAEDYNE SMITH
Notary Public
State of Colorado
Notary ID # 20034030529
My Commission Expires 09-10-2019

Notary Public of the State of Colorado
My Commission Expires: 9/10/19

Summary of Avoided Cost Impacts - $/MWh

Line No.		2019	2020	Source
1	Forecasted SunEdison MWh	109,102	108,885	Production Cost Model
2				
3	SunEdison Contract Price $/MWh	$ 129.17	$ 133.43	Production Cost Model
4				
5	**Credits**			
6	Environmental Credits NOX	($0.01251)	($0.01410)	BRE-1, Page 2
7	Environmental Credits SO2	($0.00029)	($0.00012)	BRE-1, Page 2
8	O&M Impacts	$0.0000	$0.0000	
9	SPP RUCC (Charges)	$0.1156	$0.1156	BRE-1, Page 3
10	SPP DART (Charges)	$3.0078	$3.0078	BRE-1, Page 4
11	Avoided Energy $/MWh	($24.9733)	($22.7490)	BRE-1, Page 5
12	Capacity Value $/MWh ECC Method	($17.4851)	($17.8697)	BRE-1, Page 6
13	Capacity Value Short-Term Capacity Market	($2.9917)	($2.9977)	BRE-1, Page 6
14				
15				
16	**Total (No Generation Capacity)**	**($21.8628)**	**($19.6399)**	
17	**Total (Incl. Short-Term Generation Capacity)**	**($24.8545)**	**($22.6376)**	
18	**Total (Incl. ECC Generation Capacity)**	**($39.3479)**	**($37.5096)**	

Acronyms:

DAM -Day Ahead Market
DART - Day-Ahead and Real-Time
ECC - Economic Carrying Charge
NOX -Nitrogen Dioxide
RTBM -Real Time Balancing Market
RUCC -Reliability Unit Commitment Charges
SO2 -Sulfur Dioxide
SPP -Southwest Power Pool

Avoided Emissions & Costs
Production Cost Model Output

Line No.	Tons		2019		2020
1	Avoided NOX Emissions (May - Sep)		(9.10)		(10.24)
2					
3	**Tons**				
4	Avoided SO2 Emissions		(99.10)		(41.44)
5					
6	Market Price Seasonl NOX $/Ton	$	150.00	$	150.00
7	Market Price SO2 $/Ton	$	0.32	$	0.32
8	SunEdison MWh		109,102		108,885
9					
10					
11	Total Avoided NOX Emissions $	$	(1,365)	$	(1,536)
12	Total Avoided SO2 Emissions $	$	(32)	$	(13)
13	Total Avoided NOX $/MWh	$	(0.01251)	$	(0.01410)
14	Total Avoided SO2 $/MWh	$	(0.00029)	$	(0.00012)

Back-Up & Load Following Charges
Based upon SPP RUCC

Line No.		2017-1	2017-2	2017-3	2017-4	2017-5	2017-6	2017-7	2017-8	2017-9	2017-10	2017-11	2017-12	Grand Total
1	SOLAR	$1,584	$405	$386	$1,346	$1,019	$1,497	$3,441	$622	$194	$159	$273	$857	$11,784
2														
3														
4		**MWh**												
5	Sun 1	19,521												
6	Sun 2	20,551												
7	Sun 3	19,699												
8	Sun 4	21,651												
9	Sun 5	20,555												
10	Total	101,977												
11														
12		**$ 0.1156**	**Total Solar RUCC $/MWh**											

Back-Up & Load Following Charges
Based upon SPP DART

Line No.		(RTMWh-DAMWh)* RTLMP	MWh	$/MWh
1	Sun 1	$ (84,311)	19,521	(4.32)
2	Sun 2	$ (121,352)	20,551	$ (5.90)
3	Sun 3	$ (3,040)	19,699	$ (0.15)
4	Sun 4	$ (84,275)	21,651	$ (3.89)
5	Sun 5	$ (13,746)	20,555	$ (0.67)
6				
7	Total	$ (306,723)	101,977	$ (3.01)

Avoided Energy Cost
Production Cost Model

Line No.		2019	2020
1	SunEdison MWh	109,102	108,885
2	SunEdison Total Cost ($,000)	$14,092,657	$14,528,499
3	SunEdison Avoided Energy Cost	$2,724,625	$2,477,021
4	REC Value	$1,091,016	$1,088,848
5	SunEdison (amount above Avoided Cost)	$10,277,016	$10,962,630
6	Avoided Energy Cost $/MWh	($24.97)	($22.75)

Avoided Capacity Cost
Production Cost Model

Line No.		2019	2020
1	MWh SunEdison Solar	109,102	108,885
2			
3	SunEdison AC MW	50	50
4			
5	SunEdison accredited MW	34	34
6			
7	Avoided Capacity Value (34MW)	$ 1,907,656	$ 1,945,734
8			
9	Capacity Value ECC Method $/MWh (L7/L1)	$ 17.49	$ 17.87
10			
11	Short Term Capacity Value $/kW-year	$ 9.60	$ 9.60
12	Short-Term Capacity Value $/MWh (L11*L5/L1*1000)	$ 2.99	$ 3.00