BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF SOUTHWESTERN PUBLIC SERVICE COMPANY'S APPLICATION REQUESTING APPROVAL TO RETIRE AND ABANDON ITS CARLSBAD GENERATING STATION,	)	**CASE NO. 17-00_____-UT**
SOUTHWESTERN PUBLIC SERVICE COMPANY,	)	
APPLICANT.	)	

DIRECT TESTIMONY

of

ALAN J. DAVIDSON

on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY

TABLE OF CONTENTS

GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
CGS	Carlsbad Generating Station
Commission	New Mexico Public Regulation Commission
CT	Combustion Turbine
MW	megawatt
O&M	operating and maintenance
PLC	Programmable Logic Controllers
PVRR	present value revenue requirement
RFP	Request for Proposal
Spring 2016 retirement assessment	Cost-benefit assessment performed by SPS regarding early retirement of CGS
SPS	Southwestern Public Service Company, a New Mexico corporation
Xcel Energy	Xcel Energy Inc.
XES	Xcel Energy Services Inc.

LIST OF ATTACHMENTS

Attachment	Description
AJD-1	Spring 2016 retirement assessment
AJD-2	SPS Loads & Resources Table - Summer 2018-2025

Case No. 17-00xxx-UT
Direct Testimony
of
Alan J. Davidson

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Alan J. Davidson. My business address is 600 South Tyler Street, Amarillo, Texas 79101 (effective May 22, 2017 my new address will be 790 S. Buchanan Street, Amarillo, Texas 79101).

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. ("XES"), the service company subsidiary of Xcel Energy, as Director, Regional Capital Projects in the Engineering and Construction Department of Energy Supply, which is the generation operation and maintenance business unit of Xcel Energy.

Q. Please briefly outline your responsibilities as Director, Regional Capital Projects in the Engineering and Construction Department of Energy Supply.

A. I am responsible for managing the capital budget process and projects for the SPS region within the Energy Supply business unit. Thus, I am responsible for the regional capital budget, schedules, development, and construction for all of SPS's

electric generating projects. I directly manage the major projects for SPS and supervise other managers handling smaller projects. My management duties include safety, technical design selection, engineering and contractor oversight, managing the bidding process, and negotiating major equipment supply agreements. I work with the Environmental, Regulatory, Engineering and Technical Resources, and Resource Planning departments to assist with scoping and planning of new generation and major generation retrofit projects.

Q. Please describe your educational background.

A. I have a Bachelor of Science degree in Mechanical Engineering from Texas Tech University.

Q. Please describe your professional experience.

A. I have worked in the electric power industry for over 30 years in various positions with Xcel Energy and SPS. My experience has included: plant engineering responsibilities for boilers, turbines, and the balance of plant equipment; performance testing and analysis responsibilities for combustion turbines ("CT") and fossil units; control system design and installation for CT and fossil units; photovoltaic systems installation; plant refurbishments; operation and maintenance management; project director for environmental controls projects on coal units; and project director for installation of simple cycle CTs.

Q. Have you attended or taken any special courses or seminars relating to public utilities?

A. Yes. Over my career, I have taken numerous courses and seminars related specifically to the construction and operation of power plants. I have given technical presentations to internal and external groups on water treatment, general project management, solar project installation, environmental controls for coal plants, and installation of gas turbines. I have presented a paper on potential turbine upgrade projects at a Marcus Evans industry conference and given a "lessons learned" presentation on gas turbine installation to an international group of engineers and managers for Siemens.

Q. Do you hold a professional license?

A. Yes. I am a Registered Professional Engineer in Texas.

Q. Are you a member of any professional organizations?

A. Yes. I am a member of the American Society of Mechanical Engineers, the Texas Society of Professional Engineers, and the National Society of Professional Engineers.

Q. Have you testified before any regulatory authorities?

A. Yes. I have testified before the New Mexico Public Regulation Commission ("Commission") and the Public Utility Commission of Texas. My testimony has

addressed, among other topics, Energy Supply capital additions, generating plant operations and planning, useful lives of generating plants, and generating plant dismantling costs.

II. ASSIGNMENT AND SUMMARY OF TESTIMONY AND RECOMMENDATIONS

Q. Please discuss your assignment in this proceeding and summarize your testimony.

A. My testimony demonstrates how the retirement of the Carlsbad Generating Station ("CGS") meets the criteria under NMSA 1978 § 62-9-5. In particular, the CGS is no longer needed for the public convenience and necessity because:

(1) the CGS is near the end of its useful life and the capital and operating and maintenance ("O&M") expense required to safely operate the plant until its current 2025 retirement date could be saved for the benefit of customers through early retirement;

(2) SPS undertook an assessment ("Spring 2016 retirement assessment") that showed early retirement of the CGS will save customers approximately $4.9 million (or $0.9 million New Mexico retail);[1]

(3) the CGS has operated primarily for voltage support over the past several years; however, recent transmission and distribution upgrades have eliminated the need for this voltage support; and

(4) SPS does not need the capacity from the CGS to reliably serve its customers.

[1] New Mexico retail amounts provided throughout this testimony are approximations based on the 12 Coincident Peak-Production jurisdictional allocator as of June 30, 2016.

In addition to demonstrating how the criteria under NMSA 1978 § 62-9-5 are met, I provide background regarding the CGS and address the decommissioning and dismantling activities.

Q. Is there another witness who presents testimony on behalf of SPS?

A. Yes. SPS witness Christopher Larson presents testimony on the following issues:

- the unrecovered plant balance for the CGS;
- the amounts recovered for decommissioning and the potential shortfall based on the most recent decommissioning study estimate; and
- SPS's plan to address in its next rate case the unrecovered investment and costs to decommission and dismantle the CGS in excess of the cost of removal reserve.

III. THE CARLSBAD GENERATING STATION

Q. What type of power plant is the CGS?

A. It is a Westinghouse W-191 G gas turbine.

Q. When was the CGS first installed?

A. It was first installed in 1967 at the Guymon Plant. It was then relocated to the current site in 1977.

Q. What is the output of the CGS?

A. The CGS has the ability to generate 13 megawatts ("MW") in the summer and 16 MW in the winter.

Q. What purpose does the CGS serve for SPS's customers?

A. Due to its location, it was run primarily for voltage support over the past several years.

Q. What is the current estimated useful life for the CGS?

A. The currently approved depreciation rates, from Case No. 12-00350-UT,[2] are based on an estimated useful life for the CGS until 2025.

[2] *In the Matter of Southwestern Public Service Company's Application for Revision of its Retail Rates Under Advice Notice No. 245*, Case No. 12-00350-UT, Final Order Partially Adopting Recommended Decision (Mar. 24, 2014).

Q. Are improvements required to allow the CGS to reasonably operate to 2025?

A. Yes. To continue to maintain the unit properly until 2025, the following Capital and O&M expenditures should be performed:

- Control Upgrade for approximately $500,000 (or $96,910 New Mexico retail); and
- Unit Battery Replacement for approximately $80,000 (or $15,506 New Mexico retail).

In addition, there are several other projects that likely need to be undertaken to ensure the CGS can safely maintain operations until 2025. These projects were not considered in the Spring 2016 retirement assessment I discuss later in my testimony. These additional projects are:

- overhaul of the diesel starting engine for approximately $250,000 (or $48,455 New Mexico retail);
- upgrade of the vibration monitoring system for approximately $180,000 (or $34,888 New Mexico retail); and
- upgrade of the CGS lighting systems for approximately $25,000 (or $4,846 New Mexico retail).

In addition to the capital projects listed above, a significant O&M expense is a major overhaul outage that could be required. I discuss the capital projects and major overhaul outage later in my testimony.

IV. SUPPORT FOR EARLY RETIREMENT OF THE CGS

Q. Why has SPS determined that early retirement is reasonable?

A. Because the CGS is near the end of its useful life, SPS conducted a Spring 2016 retirement assessment to determine whether it would be more beneficial to retire the unit early, as opposed to incurring the capital and O&M costs I described earlier in my testimony to properly maintain the unit until 2025.

Q. You mentioned that the CGS had been used primarily for voltage support over the past several years. Explain the scenarios under which the CGS provided such support.

A. It provided voltage support in case SPS lost one of the 115/69-kilovolt ("kV") transformers at Carlsbad Interchange.

Q. Does SPS currently need the voltage support from the CGS?

A. No. Over the past several years, there has been 345-kV and 115-kV transmission build-out in the Southeast New Mexico area, which in turn led to the conversion of some 69-kV distribution substations to 115-kV. The conversion of the distribution substations to 115-kV reduces the power flow on the 69-kV system and through the 115-kV and 69-kV autotransformers at the CGS. Thus, there is no longer a need for voltage support previously provided from the CGS.

Q. Does SPS need the capacity from the CGS?

A. No. SPS has sufficient supply-side generation resources, as well as purchased power, to reliably serve its customers without the CGS.

Q. Please describe the supply-side generation resources SPS owns.

A. SPS owns a number of supply-side generation resources, located in both New Mexico and Texas, which serve its entire system. These resources have a 2017 summer generation peak capacity of 4,485 MW and are comprised of a mix of coal, gas steam units, and simple-cycle CT units.

Q. Describe the power that SPS purchases in addition to the supply-side generation resources listed above.

A. In addition to SPS's owned generation, SPS currently has long-term purchased power agreements totaling 1,192 MW of firm thermal generation capacity and also purchases the energy output from renewable intermittent generation consisting of 1,220 MW of wind and 190 MW_{AC} of solar. These resources serve SPS's entire system.

Q. In light of the supply-side generation resources and purchased power, does SPS have sufficient resources to meet its customers' electricity needs without the CGS?

A. Yes. Attachment AJD-2 shows SPS's Loads & Resources Table - Summer 2018-2025, excluding the CGS. As demonstrated therein, SPS has adequate generating capacity for the period 2017-2025 without the CGS.

Q. Please describe the Spring 2016 retirement assessment SPS performed regarding the early retirement of the CGS.

A. In the Spring 2016 Xcel Energy undertook an assessment regarding whether to retire the CGS early. A copy of the Spring 2016 retirement assessment is provided as Attachment AJD-1.

Q. What facts regarding the CGS were considered in the Spring 2016 retirement assessment?

A. The assessment considered several facts related to the CGS, but some of the most relevant were:

- CGS requires $26,000 to $35,000 (or $5,039 to $6,784 New Mexico retail) of O&M annually;
- CGS has an average 25% start success rate;

- CGS will require a control upgrade and battery replacement at an estimated total cost of $580,000 (or $112,416 New Mexico retail) to operate reliably; and
- the capacity or voltage support from the CGS is not needed.

I discussed the lack of need for capacity and transmission voltage support earlier in my testimony. I discuss the other factors further below.

Q. What does the 25% start success rate mean?

A. The CGS has a microwave-based communication system link between it and the Cunningham Generating Station. There are Programmable Logic Controllers ("PLC") at each end for communication to the operator of the plant(s) and the local control system for remote starting purposes. The remote starting was successful approximately 25% of the time. This was due to a combination of PLC issues and microwave issues, but mainly due to the age of the local controls system components. When remote starting did not occur, SPS personnel had to physically start the plant on site. The $500,000 (or $15,506 New Mexico retail) local control system is a key component that needs to be replaced.

Q. Does the 25% start success rate mean the unit was not a reliable option?

A. Yes, *if* the CGS was needed to address an emergency or reliability situation; however, the CGS is no longer needed for this type of an event. As I discussed above, the remote starting capability at the CGS was not as effective due to the

combination of the PLC, microwave link, and age of the local controls. As I noted previously, the unit could be turned on manually when remote starting was not successful. However, due to the continued degradation of the controls and the lack of trained personnel on this age of equipment, it is becoming much more difficult to keep the unit running, even physically starting the plant on site.

Q. What does the $500,000 (or $15,506 New Mexico retail) in control upgrades entail?

A. It entails replacing the current PLC communication system and local hardware with a new complete PLC package. This includes: (1) replacement of the mechanical relays, actuators, and pneumatic controllers; (2) replacement and rewiring of the control cabinets; (3) engineering; (4) startup; and (5) testing and tuning. These capital costs were one of the factors weighed against the value of maintaining operations at the CGS until 2025.

Q. What type of battery replacement was envisioned by the $80,000 estimate (or $15,506 New Mexico retail) included in the Spring of 2016 retirement assessment?

A. All operating units are required to have a station battery (and charger) to maintain the unit's controls, lube oil systems, and any other critical components in case of loss of electrical supply at any time. This is to protect the unit from a catastrophic

failure. The battery system is a North American Electric Reliability Corporation compliance mandate, as well. The CGS unit battery would need to be replaced if the unit were to maintain operations until 2025. Again, this was another capital cost weighed against the value of maintaining operations at the CGS until 2025.

Q. While you have addressed the two capital projects considered in the Spring 2016 retirement assessment, are there other projects that have been identified afterwards that should be considered?

A. Yes, as I listed above, additional capital projects have been identified that likely would need to be implemented if the CGS is operated until 2025. Those additional capital projects are: (1) an overhaul of the diesel starting engine for approximately $250,000 (or $48,455 New Mexico retail); (2) an upgrade of the vibration monitoring system for approximately $180,000 (or $34,888 New Mexico retail); and (3) an upgrade of plant lighting for approximately $25,000 (or $4,846 New Mexico retail).

Q. Explain further the overhaul of the diesel starting engine.

A. The CGS's diesel starting engine has had reliability issues over the past few years and an overhaul or replacement might be required if the degradation continues. The cost of overhaul is approximately $250,000 (or $48,455 New Mexico retail). These costs were not included as a critical item at the time of the Spring 2016

retirement assessment but would increase the costs in maintaining operations at the CGS until 2025.

Q. Explain further the upgrade of the vibration monitoring system.

A. The vibration system monitors the vibration of the unit. If there are any detected exceedances, the system will trip the unit to protect it from further damage (even catastrophic failure, which could cause a fire). Because the CGS is in a remote location, all protective systems need to operate correctly. The current vibration system at the CGS is obsolete and, therefore, needs to be replaced to maintain adequate protection. The system is maintained by using old spare parts obtained from other replaced systems in the SPS fleet, but these parts have become scarce. These replacement costs of approximately $180,000 (or $34,888 New Mexico retail) were not included as a critical item at the time of the Spring 2016 retirement assessment but would increase the costs in maintaining operations at the CGS until 2025.

Q. Explain further the needed upgrade of plant lighting.

A. The upgrade of plant lighting is to install modern lighting fixtures to support personnel when they work or operate the unit, as well as ensure security at night. These costs of approximately $25,000 (or $4,846 New Mexico retail) were not

included as a critical item at the time of the Spring 2016 retirement assessment but would increase the costs in maintaining operations at the CGS until 2025.

Q. Discuss the overhaul outage and associated O&M costs that could be required, but were not included in the Spring 2016 retirement assessment.

A. The Original Equipment Manufacturer recommends an overhaul of the unit at 400 equivalent starts. The unit currently has 360 equivalent starts, but had no run time in 2016. If CGS returned to historical operating trends later this year or next year, then the unit would be due for an overhaul outage in 2020. This assumes, however, the unit would reach 400 equivalent starts in the summer of 2019. The last unit inspection and rebuild was in 2004. There is not currently a request in the system for an outage on the unit in anticipation of low hours and pending retirement.

The estimated overhaul cost could be between $500,000 (or $96,910 New Mexico retail) and $2,200,000 (or $426,404 New Mexico retail) depending on how far the inspection goes and what is found. For example, the vintage of the unit might require the exhaust end insulation to be removed for a good non-destructive evaluation of the support hardware. These overhaul outage costs were not included in Spring 2016 retirement assessment.

Q. Turning back to the Spring 2016 retirement assessment, how did Xcel Energy determine $4.9 million (or $0.9 New Mexico retail) could be saved due to early retirement of the CGS?

A. To consider the impact of the CGS on SPS's system, Xcel Energy used the Portfolio Rationalization Model. A base case was run that included the CGS. Then, another case was run that did not include the CGS, which determined the cost to replace the CGS capacity. The base case showed a present value revenue requirement ("PVRR") for CGS of $4.9 million (total company). The replacement cost for the CGS capacity resulted in $5.9 million (total company) PVRR. If SPS needed the capacity of the CGS, the cost of replacing the CGS would have been $1 million (total company). However, because SPS does not need the capacity from the CGS, the $4.9 million (or $0.9 million New Mexico retail) is the estimated savings.

Q. You mentioned that the assessment was performed in the Spring 2016. Do you believe the results have changed given the passage of time?

A. Only slightly, but in further support of early retirement. SPS no longer needs the capacity or voltage support from the CGS. However, the additional items discussed earlier would increase the cost of maintaining the unit with no other real

benefit than operating reliably and safely. Therefore, the PVRR associated with the CGS including the capital expenditures and equipment would increase – thereby increasing the potential customer savings by avoiding these expenses through early retirement.

Q. Did SPS's 2015 IRP contemplate the early retirement of the CGS?

A. No. It was not until after SPS filed the 2015 IRP that the cost-benefit assessment was conducted and it was determined that the early retirement of the CGS was in the best interests of customers.

V. DECOMMISSIONING AND DISMANTLING ACTIVITIES FOR THE CARLSBAD GENERATING STATION

Q. What activities are anticipated to decommission the CGS and who will perform the activities?

A. The decommissioning activities will be performed by XES or SPS personnel and can be summarized as follows:

- site security;
- de-energize equipment;
- removal of plant consumables (chemicals, fuels, oils, water, etc.);
- disconnect utilities – water, others;
- substation - GSU, breakers, others; and
- asset recovery.

Q. What is involved with site security?

A. As the category suggests, these activities entail ensuring the site is secure from non-authorized personnel. This primarily includes welding all doors shut with the exception of one, which will be heavily pad-locked.

Q. What will SPS do with the plant consumables that are removed?

A. The consumables can either be used elsewhere in SPS or can be offered for sale or will be disposed of properly. This can also be part of the asset recovery effort,

i.e., where assets are evaluated to determine whether they can be reused elsewhere or sold to other customers. Consumables of this nature are generally small in quantity and are generally properly disposed.

Q. How long do you expect the decommissioning activities to take?

A. It can take up to four months due to the remote nature of the site. These activities would be worked as time permits from the normal maintenance activities at Cunningham and Maddox Generating Stations.

Q. What will SPS do with the decommissioned equipment?

A. Before a Request for Proposal ("RFP") is issued for dismantling activities, the existing equipment that is determined to have a potential resale value will be put onto the market to ascertain any interest. Any inquiries will be handled on a first come basis. All equipment put up for sale will be on an "as-is where-is" basis, with no warranties and must be removed by the buyer in a timely manner at the buyers' full cost.

Q. Does SPS expect to receive any offers for the decommissioned equipment?

A. I find it very unlikely based on: (1) my experience with past demolitions; (2) the age of the decommissioned equipment; (3) its present location; (4) the equipment

already on the market; and (5) the change in technology. If small items (i.e., spare parts) are sold they will be for a nominal value.

Q. How long will it take to sell the decommissioned equipment?

A. The whole process will take four to five months to adequately test the market.

Q. Once the decommissioning activities are complete, how will the dismantling activities be undertaken?

A. SPS will issue an RFP for a third-party contractor to perform the dismantling activities. The third-party contractor will be selected based on various criteria, but primarily qualifications, work history, safety performance, and price.

Q. How long do you expect the RFP process to take?

A. Once the process is started, it can take up to three months to bid, select, and award a contract.

Q. How long do you expect the dismantling activities to take once a third-party contractor is selected?

A. It could take up to two months to complete. The timeline will not be known with greater certainty until the RFP process is complete and a third-party contractor is chosen.

Q. If the equipment removed is scrapped, how is the recovery of the cost handled?

A. As in past demolitions, the scrap value is handled by the contractor and is included in their bid. This cost awarded to the contractor for the removal of all equipment includes their ownership of the scrap material. This means that they will remove all existing equipment to below four feet of grade and leave the sight graded flat with a rock or gravel overlay. The contractor takes the risk of the scrap price market in their bid. In other words, the contractors' bid prices are the net of the cost to perform the demolition and their estimates of the salvage value of the scrap material. This approach allows: (1) the contractor to remove any items they believe are worth the labor to remove (copper wire) versus just selling it for scrap value; (2) SPS to take no further risk on timing of the pricing in the scrap market; and (3) all bids to be evaluated on an apples-to-apples basis.

VI. CONCLUSION

Q. NMSA 1978 62-9-5 requires the Commission to authorize abandonment if the Commission finds that the continuation of service is unwarranted or that the present and future public convenience and necessity do not otherwise require the continuation of the service or use of the facility. Does your testimony demonstrate there is no requirement for the CGS to continue to be in service?

A. Yes. My testimony, along with the testimony of Mr. Larson, demonstrates that the CGS has been in service now for approximately 50 years and is nearing the end of its useful life. SPS does not need the CGS for either capacity or voltage support. In addition, SPS has sufficient supply-side generation resources and purchased power to meet its customers' electric service needs. Finally, the early retirement will save customers approximately $4.9 million (or $0.9 million New Mexico retail) on a net present value basis.

Q. Is an expedited approval important?

A. Yes. SPS would like to begin the decommissioning as soon as possible so that SPS can avoid expending O&M expense for the CGS.

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

A. Yes.

VERIFICATION

STATE OF TEXAS)
) ss.
COUNTY OF POTTER)

ALAN J. DAVIDSON, first being sworn on his oath, states:

I am the witness identified in the preceding testimony. I have read the testimony and the accompanying attachments 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.

ALAN J. DAVIDSON

SUBSCRIBED AND SWORN TO before me this 28th day of April, 2017.

CARRIE OLIVER
Notary Public, State of Texas
Comm. Expires 06-08-2020
Notary ID 13069198-2

Notary Public of the State of Texas
My Commission Expires: 08/08/2020

2016 PORTFOLIO RATIONALIZATION ASSESSMENT - CARLSBAD

CARLSBAD 2016 RETIREMENT SUMMARY

- Energy Supply is requesting to accelerate the retirement of Carlsbad from 2025 to 2016 to reduce cost and avoid spending limited funding on an unreliable asset
- O&M: Current O&M budget is ~ $26 to 35k per year
- CapX: Requires controls upgrade ($500k) and battery replacement ($80k) to improve reliability
  - Next major outage projected in 2021 at $2.2M based on starts, but unit fails to start
- 2014 YE Remaining NBV: $673k
  - Capital Asset Accounting has options to recover undepreciated book value
- Decommissioning exposure: ~$349k
- Reliability: 25% start success rate
- Safety: No significant safety risk
- Resource Planning: Early retirement will not accelerate resource need
- Regulatory: Requires filing in New Mexico
- Transmission: No longer needed for transmission support

2

FINANCIAL SUMMARY

- Because the capacity does not need to be replaced for accelerating the retirement of Carlsbad, early retirement in 2016 would avoid $4.9M of cost to the ratepayer on a 2015 present value basis.

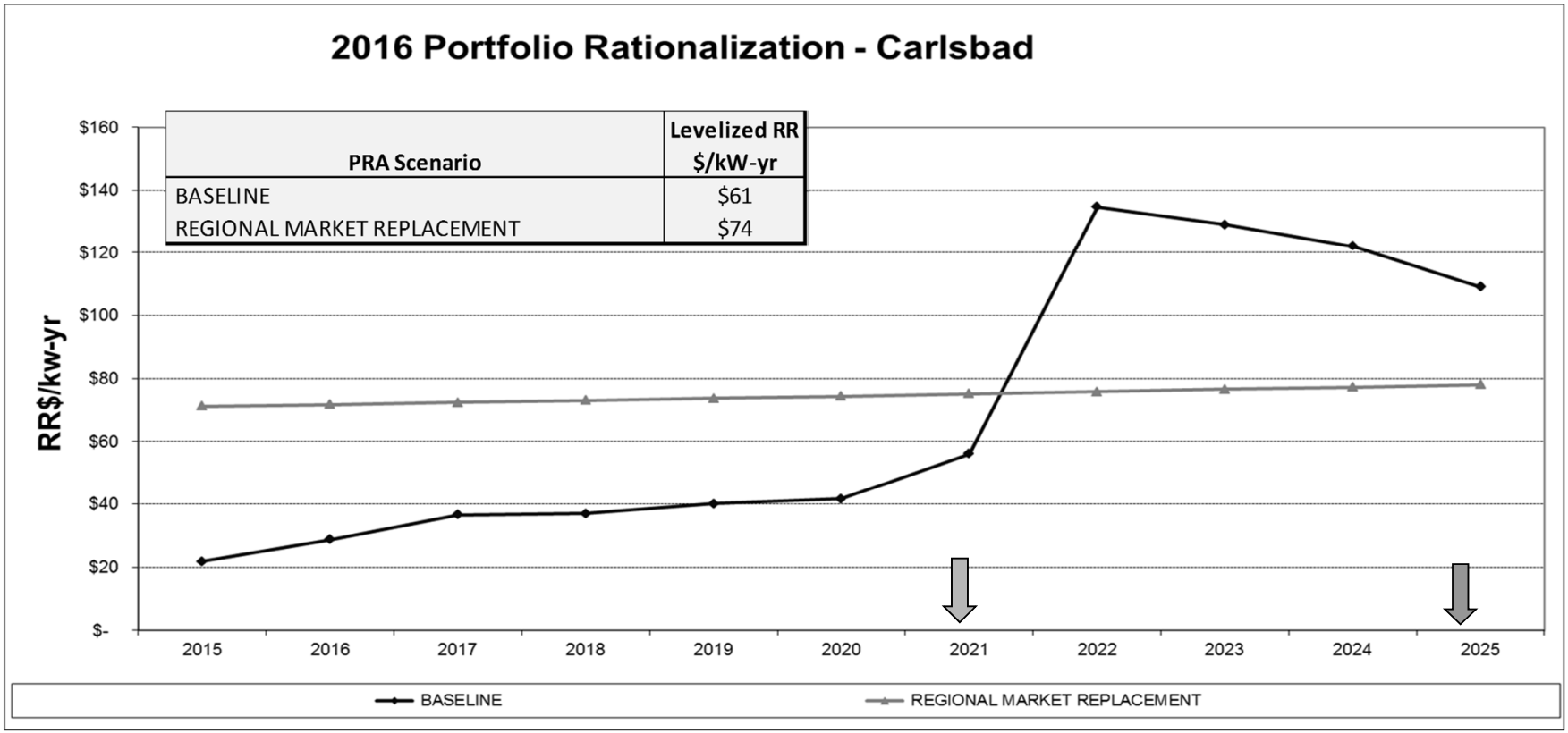
- Alternative Evaluated (PRA approach):
  - Early retirement results in resource need & capacity is replaced
    - Least cost scenario: Replacing the station batteries and controls and retiring in 2020. Assuming that the increased reliability did not result in more starts and accelerate the major overhaul scheduled in 2021. THIS CASE IS MODELED ON THE FOLLOWING TWO SLIDES

- **Recommendation: Energy Supply recommends early retirement in 2016 to avoid incremental spend on an unreliable asset**

3

CARLSBAD CT

Total MW: 11 Fuel: Gas
In-Service: 1968 Age: 47
NBV @ EOY 2014: $472k
Book Retirement Year: 2025



Current Book Retirement

Inflection Year

- **THIS ANALYSIS ASSUMES THE CAPACITY MUST BE REPLACED**

4

CARLSBAD CT

Total MW: 11 Fuel: Gas
In-Service: 1968 Age: 47
NBV @ EOY 2014: $472k
Book Retirement Year: 2025

PRA Scenario	Period	Forecasted O&M $M (1)	Forecasted Capital $M (1)	Forecasted PVRR $M (2)	Forecasted PVRR $M Increase (2)	Forecasted PVRR % Increase (2)	Levelized RR $/kw-yr (2)	Incremental PVRR $M for CO2 (2)
BASELINE	2015-44	$0.3	$3.2	$4.9	$0.0	0.0%	$61	$0.0
	2015-24	*$0.3*	*$3.2*	*$4.3*				*$0.0*
	2025-34	*$0.0*	*$0.0*	*$0.6*				*$0.0*
	2035-44	*$0.0*	*$0.0*	*$0.0*				*$0.0*
REGIONAL MARKET REPLACEMENT	2015-44	N/A	N/A	$5.9	$1.1	21.8%	$74	$0.0
	2015-24			*$5.5*				*$0.0*
	2025-34			*$0.4*				*$0.0*
	2035-44			*$0.0*				*$0.0*

(1) Costs are with contingency and without escalation

(2) Costs are with contingency, with escalation, and undepreciated book value of unit(s) in Mkt Scenario and Reference CT

(3) Costs are with contingency, with escalation and without labor loading

5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SPS Loads & Resources Table - Summer 2018-2025

Based on April 2017 Load Forecast

	2017	2018	2019	2020	2021	2022	2023	2024	2025
Existing Generation	4485	4,485	4,485	4,485	4,485	4,485	4,485	4,485	4,485
Purchased Capacity	1471	1486	1083	1083	1083	1083	1075	856	845
Expansion Plan	0	9	9	(86)	(173)	(171)	(283)	(172)	(265)
Net Dependable Capacity	5956	5,980	5,577	5,482	5,395	5,397	5,277	5,169	5,065
Full Requirements Load:									
Retail	3447	3476	3512	3557	3595	3636	3677	3723	3760
Total Wholesale	992	1,012	371	377	383	-	-	-	-
DSM Impact	-	(2)	(3)	(5)	(6)	(8)	(10)	(12)	(14)
Interruptibles	(41)	(42)	(43)	(43)	(43)	(44)	(44)	(44)	(45)
Total SPS Firm Load	4398	4,444	3,837	3,887	3,929	3,585	3,623	3,667	3,701
Firm Partial Req. Load:	-	-	170	172	174	326	328	280	283
Firm Load Obligation	4,398	4,444	4,007	4,059	4,103	3,911	3,951	3,947	3,983
Planning Reserve Margin	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Required Reserves	528	533	481	487	492	469	474	474	478
Existing Excess Capacity	1,558	1,536	1,570	1,423	1,292	1,486	1,326	1,222	1,082
Cap Position: Long (Short)	1,030	1002	1090	936	800	1017	852	748	604
Lubbock Firm Cap Sale			400	400					
Net Cap Position: Long (Short)	*1,030*	*1,002*	*690*	*536*	*800*	*1017*	*852*	*748*	*604*

Attachment AJD-2
Page 1 of 1
Case No. 17-00xxx-UT