Integrated Resource Plan Public Advisory Group Meeting 10 – November 2, 2017

Overview on Public Advisory Process



Meeting Agenda

- Welcome and Introduction
- Schedule Overview
- Overview of EPE's Public Advisory Process
- Summary Slides of presented material from EPE and PAG presentations
- PAG's feedback on EPE's Public Advisory Process
- EPE's Review and Consideration to Date for Incorporation of PAG Feedback into the Portfolio Analysis
- Comments by Facilitator
- Conclusion from EPE on steps moving forward



Welcome and Introduction

Presenters for this Meeting

- Maritza Perez: NM IRP Case Manager
- Omar Gallegos: Director of Resource Planning and Management
- PAG Participants
- Myra Segal: Facilitator



Basic Meeting Information

- Please sign in. You will be added to our PAG distribution list
 - Skype participants can email <u>NMIRP@epelectric.com</u>
- Recording of Meetings
- Acronyms on last slide



Safe Harbor Statement

Certain matters discussed in this Integrated Resource Plan ("IRP") public advisory group presentation other than statements of historical information are "forward-looking statements" made pursuant to the safe harbor provisions of the Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Such statements are subject to a variety of risks, uncertainties and other factors, most of which are beyond El Paso Electric Company's ("EPE" or the "Company") control, and many of which could have a significant impact on the Company's operations, results of operations, and financial condition, and could cause actual results to differ materially from those anticipated. Additional information concerning factors that could cause actual results to differ materially from those expressed in forward-looking statements is contained in EPE's most recently filed periodic reports. Any such forwardlooking statement is qualified by reference to these risks and factors. EPE cautions that these risks and factors are not exclusive.

Management cautions against putting undue reliance on forward-looking statements or projecting any future assumptions based on such statements. Forward-looking statements speak only as of the date of this IRP public advisory group presentation, and EPE does not undertake to update any forward-looking statement contained herein, except to the extent the events or circumstances constitute material changes in this IRP that are required to be reported to the New Mexico Public Regulation Commission ("NMPRC" or "Commission") pursuant to its IRP Rule, 17.7.3 New Mexico Administrative Code.



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Ground Rules

Meeting Rules and Guidelines

- Meetings will follow the agenda
- Presentations and Discussion
 - If you have questions or comments, please raise your hand and wait for the microphone.
 - Skype attendees may type in questions in the instant message box
- Discussion time at end of meeting can relate to any presentation
 - All public input and requests submitted in writing will be responded to in writing*
- Keep communications respectful and to the point

*Joint Stipulation Case No. 15-00241-UT



Maritza Perez

Schedule Overview and Overview of Public Advisory Process



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Public Advisory Group Meeting Schedule

17.7.3.9 NMAC

Past Meetin

	Meeting	Date	Subject	Location	Publ
	(1)	5/25/2017	Kick-off and Introduction	EPE Office	1 401
Past Meetings		2:00 PM -	Explanation of IRP Process and Goals	555 S. Compress Rd.	
r dot mootingo		4:00 PM	Resource Planning Process and Overview	Las Cruces, NM	مر م ام ا
			Preliminary Listing of Resource Options to Consider		Ider
	(2)	6/8/2017 2:00 PM - 3:30 PM	Summary of IRP process and introduction to system	NMPRC Offices 4th Floor Hearing Room P.E.R.A. Building 1120 Paseo de Peralta Santa Fe, NM	
	(3)	7/6/2017	Operational Considerations/Requirements for Future Resources	Dona Ana County	
		2:00 PM -	Assessment of need for additional resources	Conference Room 113	Acc
		4:30 PM	System Operations - Reliability, Import Limits and Balancing	845 N. Motel Blvd.	733
			Existing Conventional Resources	Las Cruces, NM	
			System generation retirement plan and process		
			Transmission & Distribution Systems Overview and Projects		
	(4)	8/8/2017	Existing Renewable Resources and Distributed Generation (DG)	Dona Ana County	
		2:00 PM -	Demand Response (DR) Programs and Options	Conference Room 113	
		4:30 PM	Energy Efficiency (EE)	845 N. Motel Blvd.	loa
			Load Forecast	Las Cruces, NM	200
	(5)	9/7/2017	Conventional Capacity and Generation Option Considerations	Dona Ana County	
		2:00 PM -	Demand Side Resource Options	Conference Room 113	
		4:30 PM	Renewable Energy Options (Solar, Wind, Geothermal, Storage, DG)	845 N. Motel Blvd.	
			Operational Considerations for Intermittent Resources and Balancing	Las Cruces, NM	Fva
			Renewable Portfolio Standard Impacts		
			L&R Table		
			Strategist Introduction		
			Resource Input Template		
			Renewable & Conventional Power Plant Siting and Environmental Considerations		
PAG-designed meetings highlighted 🔿	(6)	9/22/2017	Presentation by PAG members Merrie Lee Soules and Don Kurtz: "Public Advisory Group Special Session on Analysis for 2018 IRP"	Dona Ana County Conference Room 113 845 N. Motel Blvd, Las Cruces, NM	
	(7)	10/5/2017	Initial Resource Options Submittal from PAG Due for November Run	Dona Ana County	Ma
		2:00 PM -	Rate Considerations and Potential Impacts on Resource Planning Decisions	Conference Room 113	IVIO
		4:30 PM	Resource Planning Base Case Assumptions	845 N. Motel Blvd.	Cos
			Initial Cost Estimates for Resource Planning Options	Las Cruces, NM	
			Modeling and risk assumptions and the cost & general attributes of potential additional resources		reso
	(8)	10/20/2017	Presentation by PAG Members Merrie Lee Soules, Phil Simpson, Allen Downs, and Steve Fischmann: Special Session on Resource Analysis for 2018 IRP	Dona Ana County Conference Room 113 845 N. Motel Blvd. Las Cruces, NM	
Additional Meeting on Retirements 🔔				Dona Ana County	
(based on BAC feedback)		10/26/2017		Conference Room 113	
(Dased OILL AG IEEUDACK)	(9)	2:00 PM -	Retirements, Cost Modeling Assumptions, and other topics of interest to PAG	845 N. Motel Blvd.	
		4:30 PM		Las Cruces, NM	
	(1.0)	/a /a a			
	(10)	11/2/2017	SANTA FE - Overview on Public Advisory Process	Santa Fe	
			EPE Proprietary Material		

lic Advisory Process Required Topics

ntification of Resource Options

essment of Need for Additional Resources

d Forecast

aluation of Supply and Demand Side Resources

deling and Risk Assumptions st and general attributes of potential additional ources



Public Advisory Group Meeting Schedule

Future Meetings

Meeting	Date	Subject	Location
(11)	11/16/2017	Preliminary Results with 2017 Load Forecast	Dona Ana County
	2:00 PM -	Presentation of Resulting 20-year Expansion Plan	Conference Room 113
	4:30 PM	Development of the most cost-effective portfolio of resources for utility's IRP	845 N. Motel Blvd.
			Las Cruces, NM
(12)	1/19/2018	PAG Presentations and Discussions as Requested	Las Cruces
	2/2/2018	Last Resource Input Submittals from PAG Due	
(13)	2/16/2018	PAG Presentations and Discussions as Requested	Las Cruces
(14)	4/30/2018	IRP Draft Presentation	Las Cruces
(15)	5/16/2018	Follow-up meeting to receive and respond to public feedback	Las Cruces
(16)	6/8/2018	2018 Final IRP presentation showing new load forecast	
(17)	6/29/2018	Follow-up meeting to receive and respond to public feedback	Las Cruces
	7/15/2018	IRP Filing Date	

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17.7.3.9 NMAC Public Advisory Process Required Topics

Development of the most cost-effective portfolio of resources for utility's IRP

Final Review Meetings*

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*Joint Stipulation Case No. 15-00241-UT



Integrated Resource Plan

Public Advisory Process

The purposes of the public participation process are for the utility to provide information to, and receive and consider input from, the public regarding the development of its IRP. Topics to be discussed as part of the public participation process include, but are not limited to,

- the utility's load forecast;
- evaluation of existing supply- and demand-side resources;
- the assessment of need for additional resources;
- identification of resource options;
- modeling and risk assumptions and
- the cost and general attributes of potential additional resources; and
- development of the most cost-effective portfolio of resources for the utility's IRP.
 - <u>NM Rule 17.7.3.9 (H)</u> 5



Overview of EPE's Public Advisory Process

Promoting Participation

- Outreach efforts: Customer Newsletter, Newspaper Notice, and EPE Main Webpage
- Skype Participation
- Recorded Meetings
- Requesting Feedback and Taking Public Input into Consideration
 - Feedback Forms
 - Special Topics Meetings
 - Written Requests and EPE Responses
 - Resource Input Template

Facilitating Discussions

- 4 PAG-designed meetings scheduled
- Written Input Discussion at Beginning of Meetings
- Facilitator Recommendations. Example: "U" Shape Table setup
- Providing Resources and Information
 - Informational material found on EPE's IRP Webpage
 - Presentations provide detailed explanations on technical material required for Resource Planning
 - Email distribution list with updates on new material, schedule updates, etc.
 - PAG can submit questions, comments, feedback at any time in person or online <u>NMIRP@epelectric.com</u>



Progress Report



Omar Gallegos

Summary of Presented Material



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High Level Summary of Presentations

- High level explanation of resource planning process
- Description of EPE's service area and the transmission system (i.e. import constraints)
- Reliability requirements and agencies
- Review of existing generation resources
- Load forecast (including distributed generation and energy efficiency)
- Presentation of planned resource retirements
- Resulting Loads and Resources Table



High Level Summary of Presentations

- Explanation of Strategist capacity expansion model and total resource portfolio cost
 - Concept of resource dispatch for portfolio analysis
- Resource options to be modeled
 - Characteristics
 - Costs
 - Operational considerations
- PAG presentations on proposals, load forecasts and modeling options



Existing Conventional Generation

Unit Name	Fuel Type	Summer Net Capacity	Commission Year
Palo Verde 1	Nuclear	211	1986
Palo Verde 2	Nuclear	211	1986
Palo Verde 3	Nuclear	211	1988
Rio Grande 6	Gas	46	1957
Rio Grande 7	Gas	46	1958
Rio Grande 8	Gas	142	1972
Rio Grande 9	Gas	88	2013
Newman 1	Gas	74	1960
Newman 2	Gas	76	1963
Newman 3	Gas	97	1966
Newman 4	Gas	227	1975
Newman 5	Gas	278	2009
Copper	Gas	64	1980
MPS 1	Gas	88	2015
MPS 2	Gas	88	2016
MPS 3	Gas	89	2016
MPS 4	Gas	89	2016



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Existing Renewable Resources

Resource	Туре	Nameplate Capacity (MW)	Commission Date
Hatch	Solar	5	2011
NRG Roadrunner	Solar	20	2011
Centennial Solar	Solar	12	2012
El Chaparral Solar	Solar	10	2012
Macho Springs Solar	Solar	50	2014
Newman Solar	Solar	10	2014
EPE Community Solar (TX)	Solar	3	Planned 2017*
Holloman Solar	Solar	5	Planned 2017**
EPCC Solar	Solar	0.014	2012
Wrangler Substation	Solar	0.048	2011
Stanton Tower	Solar	0.031	2012
Rio Grande Carport	Solar	0.064	2009
Newman Carport	Solar	0.064	2009
Van Horn	Solar	0.02	2013
Camino Real Landfill	Biogas	1.6	2008

* Note: The EPE Community Solar (TX) facility was commissioned on May 31, 2017. At the time this slide was presented in May 2017, it had not yet been commissioned.

** Holloman Solar planned commercial operation date is now in 2018.



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Distributed Generation

Cumulative Number of Interconnected DG Systems										
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017(through June)
тх	1	7	36	102	226	324	492	1,210	2,271	2,886
NM	18	93	260	486	917	1,495	1,800	2,102	2,453	2,623
Total Number	19	100	296	588	1,143	1,819	2,292	3,312	4,724	5,509

	Cumulative Interconnected Capacity (kW ac)										
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017(through June)	
тх	2	18	156	682	2,032	2,759	3,662	8,062	12,845	15,570	
NM	55	390	996	2,204	4,959	8,122	10,160	11,862	14,743	16,207	
									Total kW	31,777	



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NERC Reliability Standards

- Regulating Reserves (Real Time Power Balancing)
 - BAL-001, BAL-005-0.2b, BAL-006-2
- Contingency Reserves (Replacement Power due to Loss of Generation)
 - BAL-002, BAL-002-WECC
- Frequency Response (Replacement Power due to Grid Disturbance)
 - BAL-003
- Real Time Assessment of System Conditions
 - TOP-001-3



Demand Forecast Summary

Year	Native System Peak Demand (MW)	Percent Growth
2016	1,892	
2017	1,927	1.83%
2018	1,946	0.99%
2019	1,963	0.88%
2020	1,978	0.78%
2021	2,002	1.18%
2022	2,024	1.11%
2023	2,048	1.17%
2024	2,067	0.94%
2025	2,098	1.49%
2026	2,122	1.17%



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EPE Generation

Current Plan for Upcoming Retirements

Unit Name	Fuel Type	Gen Type	Category	Commission Year	Age	Current Planned Retirement	Age at Retirement
Rio Grande 7	Gas	Conventional Steam	Baseload	1958	59	2022	64
Newman 1	Gas	Conventional Steam	Baseload	1960	57	2022	62
Newman 2	Gas	Conventional Steam	Baseload	1963	54	2022	59
Newman 3	Gas	Conventional Steam	Baseload	1966	51	2026	60
Newman 4	Gas	Combined Cycle	Intermediate	1975	42	2026	51
Copper	Gas	Combustion Turbine	Peaking	1980	37	2030	50
Rio Grande 8	Gas	Conventional Steam	Baseload	1972	45	2033	61



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GADS Unit Age Dashboard



About This Metric

NOTICE: The data sets and aggregations reported on this page are in a sample format. They are currently being reviewed and verified. The data and aggregations may be modified pending further review and analysis. As such, this data should not be utilized for policy making or planning purposes.



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Retirement Analysis

- Per the 2015 IRP settlement stipulation, EPE agreed to analyze retirement decisions in Strategist (or comparable program) for any unit scheduled for retirement within five years
- EPE has three units scheduled for retirement within the five year window
 - Rio Grande 7
 - Newman 1
 - Newman 2



Retirement Analysis

- EPE will first run the Strategist base case with retirements as currently planned for all three units in 2022
- EPE will run a second Strategist run introducing the units as resource options available to select from
 - Extended asset life, life extension investment and O&M costs
- Strategist will then consider selection of retirement extensions versus new resource options
- If any retirement extension is selected, it will be included for evaluation in the sensitivity runs
- Additional system reliability will be considered for the portfolio (e.g. regulating reserve capability considering amount intermittent generation selected)



20-Year Loads and Resources Table

El Paso Electric Company Loads & Resources 2018-2036 20-Yr Scenario --- No Expansion Plan

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	
1.0 GENERATION RESOURCES																				
1.1 RIO GRANDE	276	276	276	276	276	230	230	230	230	230	230	230	230	230	230	230	88	88	88	
1.2 NEWMAN	752	752	752	752	752	602	602	602	602	278	278	278	278	278	278	278	278	278	278	
1.3 COPPER	64	64	64	64	64	64	64	64	64	64	64	64	64						-	
1.4 MONTANA	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	354	Un
1.5 PALO VERDE	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	633	Rio
1.6 RENEWABLES	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	Nev
1.7 NEW BUILD (local)	-	-	-	-	-		-		-	-	-	-	-		-		-	-	-	Nev
1.0 TOTAL GENERATION RESOURCES ⁽¹⁾	2,085	2,085	2,085	2,085	2,085	1,889	1,889	1,889	1,889	1,565	1,565	1,565	1,565	1,501	1,501	1,501	1,359	1,359	1,359	Nev
2.0 RESOURCE PURCHASES																				New
2.1 RENEWABLE PURCHASE (SunEdison & NRG)	29	29	29	29	28	28	28	28	27	27	27	27	27	26	26	26	26	26	25	Rio
2.2 RENEWABLE PURCHASE (Hatch)	4	3		3			3	3	3	3	3	3	3			3	3		3	Rio
2.3 RENEWABLE PURCHASE (Macho Springs)	35	35	34	34	34	34	34	34	33	33	33	33	33	33	32	32	32	32	32	Re
2.4 RENEWABLE PURCHASE (Juwi)	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	Sur
2.5 RESOURCE PURCHASE																				
2.0 TOTAL RESOURCE PURCHASES (2)	75	74	73	73	72	72	71	71	71	70	69	69	69	68	68	67	67	67	66	
																				Dis
3.0 TOTAL NET RESOURCES (1.0 + 2.0)	2,160	2,159	2,158	2,158	2,157	1,961	1,960	1,960	1,960	1,635	1,634	1,634	1,634	1,569	1,569	1,568	1,426	1,426	1,425	Dist
4.0 SYSTEM DEMAND																				r
4.1 NATIVE SYSTEM DEMAND	1 973	1 997	2 020	2 051	2 080	2 1 1 1	2 138	2 176	2 208	2 242	2 274	2 318	2 358	2 397	2 4 3 2	2 481	2 5 2 5	2 569	2 608	Co
4.2 DISTRIBUTED GENERATION	(17)	(20)	(22)	(25)	(27)	(29)	(32)	(35)	(37)	(39)	(42)	(44)	(46)	(48)	(51)	(52)	(56)	(57)	(60)	Ren
4.3 ENERGY EFFICIENCY	(10)	(14)	(19)	(24)	(29)	(34)	(39)	(43)	(48)	(53)	(57)	(63)	(67)	(72)	(77)	(82)	(87)	(92)	(96)	
4.4 LINE LOSSES	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	
4.5 INTERRUPTIBLE SALES	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(52)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	(53)	a
5.0 TOTAL SYSTEM DEMAND (4.1-(4.2+4.3+4.4+4.5)) ⁽³⁾	1.889	1.906	1.922	1,945	1,968	1,991	2.010	2.041	2.066	2.093	2,118	2,154	2,187	2,220	2.247	2.289	2.325	2,363	2.394	The
5.0 TOTAL STOTEM DEMAND (4.1-(4.2+4.3+4.4+4.3))	1,000	1,000	1,022	1,040	1,000	1,001	2,010	2,041	2,000	2,000	2,110	2,104	2,101	2,220	2,241	2,200	2,020	2,000	2,004	
6.0 MARGIN OVER TOTAL DEMAND (3.0 - 5.0)	271	252	236	213	190	(30)	(49)	(81)	(106)	(457)	(483)	(519)	(552)	(650)	(678)	(721)	(899)	(937)	(969)	
	202	284	200	202	205	200	304	300	340	344	340	322	320	322	337	343	340	354	350	
1.0 FLANNING RESERVE 13% OF TOTAL STSTEM DEMAND	283	286	200	292	295	299	301	306	310	314	318	323	328	333	337	343	349	354	309	
8.0 MARGIN OVER RESERVE (6.0 - 7.0)	(13)	(34)	(52)	(79)	(106)	(328)	(350)	(387)	(416)	(771)	(801)	(842)	(880)	(983)	(1,015)	(1,064)	(1,248)	(1,291)	(1,328)	

Unit Retirements

Rio Grande 7 (46MW) - December 2022 Newman 1 (74MW) - December 2022 Newman 2 (76MW) - December 2022 Newman 3 (97MW) - December 2026 Newman 4 CC (227MW) - December 2026 Copper (64MW) - December 2030 Rio Grande 8 (142MW) - December 2033

Renewable Purchases

unEdison, NRG, Macho, Newman and Hatch solar purchases reflect 70% availability at Peak.

Distributed Generation

ributed Generation (DG) esources reflect 45% availability at Peak.

Company Owned Renewables

Updated 10-24-2017

newable Resources shown in line item 1.6 consists of EPE Community Solar, Holloman Solar, EPCC, Stanton, Wrangler, Rio Grande & Newman Carports, and Van Horn

The Resource Purchase is supported by firm transmission through (i) simultaneous buy/sell with Freeport McMoRan (formerly Phelps Dodge), (ii) Four Corners switchyard after Four Corners retires, and (iii) SPS via the Eddy Tie.

1. System Demand based on Long-term and Budget Year Forecast issued April 6, 2017.

Includes state-required targets for Energy Efficiency.

Interruptible load reflects current contracts.



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Assumptions for Resource Options

	Capital Costs (\$/kw)	Heat Rate (Btu/kWh)	Fixed O&M (\$/kW-yr.)	Variable O&M
Technology				(\$/MWh)
Solar*	\$1,450	-	\$12.00	-
Wind*	\$1,700	-	\$40.00	-
Biomass*	\$4,000	14,500	\$95.00	\$15.00
Geothermal*	\$6,400	-	-	\$40.00
Gas Fired CC	\$1,000	6,600	\$5.85	\$2.75
Gas Fired CT	\$1,000	9,000	\$25.00	\$7.50
Gas Reciprocating Engine	\$1,100	9,000	\$20.00	\$15.00
Demand Response	\$369	-	-	-

*Renewables to be considered are in addition to and above Renewable Portfolio Standard requirements, as per Joint Stipulation Case No. 15-00241-UT.

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Assumptions for Storage Option

Technology	Capital Costs (\$/kwh)	O&M (\$/kWh)	Charging Cost (\$/MWh)	Battery Replacement after 10 yrs (\$/kWh)
Storage	\$1,082	\$12.00	\$35.00	\$338

*Renewables to be considered are in addition to and above Renewable Portfolio Standard requirements, as per Joint Stipulation Case No. 15-00241-UT.





Resource Capacity Assumptions

Technology	Capacity (MW)	Total available to add**
Solar*	25, 75, 100	2, 3, 2
Wind*	100	2
Biomass*	20	1
Geothermal*	20	1
Gas Fired CC	320	3
Gas Fired CT	100	3
Gas Reciprocating Engine	50, 100	2, 2
Storage	15	3
Demand Response	1	1

*Renewables to be considered are in addition to and above Renewable Portfolio Standard requirements, as per Joint Stipulation Case No. 15-00241-UT

**If options are exhausted, EPE will re-evaluate the total available to add while keeping in mind reliability and operational impacts (Frequency response, load regulation, system balancing, etc.)

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Resource Intermittency - Solar



 Battery storage may allow for some mitigation of solar deficiency at peak hour.



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Resource Intermittency – Solar



- 50 MW battery storage mitigates a smaller percentage of the potential intermittency
- Need to consider both regulating reserve requirements as well as "back-up" generation



Summary of PAG's Presentations

September 22, 2017

- Discussion of current energy environment
- Strategic Implications
- Defining "equivalent" and "minimize environmental impacts"
- Assumptions that feed the Loads & Resources Table



Summary of PAG's Presentations

October 20, 2017

- Discussion of Supply Side Resources
- Discussion of Demand Side Resources, Energy Storage, Rate Design



PAG Participants

PAG'S Feedback on EPE's Public Advisory Process



Omar Gallegos

EPE's Review and Consideration to Date for Incorporation of PAG Feedback into the Portfolio Analysis



Renewable Heavy Portfolio Scenario

- PAG Input: Create and analyze a portfolio that only adds renewable resources
- EPE Review and Response:
 - EPE agreed to create a portfolio for analysis that is heavily renewable favored
 - It may not be possible to create a portfolio that only incorporates renewables since resources such as a battery storage or quick responding gas generation may be needed to support the intermittency of renewables



Concern with Strategist's Portfolio Diversity

- PAG Input: Concern that the EPE's 2015 IRP Strategist results indicated a gas-fired combined-cycle for every listed portfolio
- EPE Review and Response:
 - EPE provided explanation for the intrinsic process that Strategist performs (i.e. Strategist internally analyzes options for the first resource and then picks the first resource)
 - EPE understands the PAG participant concerns and the optics that it appears various options were not analyzed
 - EPE agreed to run a second Strategist run off the base case but remove the first selected resource to compare results
 - PAG participant was appreciative of this proposal



Incorporation of PAG Analysis Request

- PAG Input: EPE should model solar, wind and storage options with declining costs given their continued drop in costs
- EPE Review and Response:
 - EPE will evaluate and identify expected costs drops for assets to be added in the 2021-2023 timeframe for use in the model
 - There are many uncertainties in the cost forecast given items such as potential tariffs, phasing out of the tax incentives and material costs
 - EPE finds it reasonable to assume some cost drops for the five year near-term, however finds it difficult to forecast beyond the five years
 - EPE feels this is a reasonable compromise since the IRP is on a three year cycle, anything beyond five years will be re-evaluated in the next IRP



Incorporation of PAG Analysis Request

- PAG Input: EPE should model an option that is solar coupled with battery storage
- EPE Review and Response:
 - EPE will introduce a resource option of solar coupled with storage
 - EPE had already presented how battery storage may work well with solar and renewables in general
 - EPE had already planned to include battery storage as a resource option in this IRP as it had already done in the 2015 IRP
 - EPE sees no issue introducing a resource option that is inclusive of solar and storage



Myra Segal

Facilitator Comments



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Omar Gallegos

Conclusion from EPE and Steps Moving Forward



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Remaining Process

- November 2017 Initial Strategist run with results for inputs provided within this presentation
- Evaluate portfolio and amount of intermittent generation to determine if any additional regulating reserves and/or reserve margin are required
- Determine sensitivity runs to perform considering PAG input provided to date
- January and February 2018 Additional PAG meetings for PAG input
- April to June 2018 update with latest load forecast and draft report
- July 2018 file 2018 IRP Report



Acronyms

CC	-	Combined Cycle	MPS	-	Montana Power Station
СТ	-	Combustion Turbine	MW	-	MegaWatts (1,000 kW)
DG	-	Distributed Generation	MWh	-	Megawatt hours
EE	-	Energy Efficiency	NERC	-	North American Reliability Council
EPE	-	El paso Electric Company, or "EPEC"	NMAC	-	New Mexico Administrative Code
FERC	-	Federal Energy Regulation Commission	NMPRC	-	New Mexico Public Regulation Commission
FM	-	Freeport McMoRan	PAG	-	Public Advisory Group
GT	-	Gas turbine	PDES	-	Phelps Dodge Energy Services
IRP	-	Integrated Resource Plan	SNMIC	-	Southern New Mexico Import Capability
KV	-	Kilovolt (1,000 volts)	SRP	-	Salt River Project
kW	-	kilowatt (1,000 watts)	ST	-	Steam Turbine
kWh	-	kilowatt hour	TEP	-	Tucscon Electric Power Company
L&R	-	Loads and Resources	WECC	-	Western Electricity Coordinating Council



Discussion



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