



Tucson Electric Power

TEP Integrated Resource Plan (IRP) Advisory Council

Meeting Summary for July 18, 2019

Attendees:

- Julie Robinson, Pima County*
- Nicole Fyffe, Pima County*
- Chuck Huckelberry, Pima County
- Andrea Gerlak, U of A
- Andrew Greenhill, City of Tucson*
- Mark Clark, PCOA
- Rene Pina, AARP/PCOA*
- Rob Lamb, GLHN
- Caryn Massey, SWEEP*
- Ellen Zuckerman, SWEEP
- Jordy Fuentes, RUCO (phone)
- Sandy Barr, Sierra Club
- Jared Frosch, Davis Monthan AFB*
- Gary Krivokapich, Davis Monthan AFB* (phone)

*Alternate

Note: This summary is intended to capture key points of discussion during the meeting. Summaries will be drafted by TEP and submitted for review to Advisory Council (AC) members, who can request corrections, clarifications or amendments. Our goal is to create a high-level record of our conversations to support our resource planning process and provide observers with a way to follow the AC's progress. These summaries are not designed to provide complete, detailed descriptions of slides, reports or other meeting materials. AC discussions will be summarized without attribution.

Welcome – Kevin Skinner, Corporate Training Program Manager

- Participants introduced themselves and were asked to discuss what they love about Tucson (or where they live).

Modeling Overview – Jeff Yockey, TEP Director of Resource Planning (slides 3-11)

- Stakeholder Feedback
 - Does the model anticipate reserve sharing with other utilities to help lower customer costs? *Answer: Yes. The reserve requirement inputs reflect our participation in the Southwest Reserve Sharing Group.* TEP should consider additional reserve sharing opportunities.
 - TEP should include portfolios where they pay the “take or pay” provision in the coal contracts without using the coal energy. Other utilities have found that paying the “take or pay” while getting the energy from low cost renewables can result in a lower cost alternative.
 - How is the cost of capital determined for TEP assets and are there alternative forms of capital that could reduce the carrying costs of purchased or new build assets? *Answer:*



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The cost of capital and the capital structure (equity to debt ratio) is determined through a rate case proceeding by the Arizona Corporation Commission and is fixed until the next rate case proceeding.

- Is TEP targeting its Demand Side Management (DSM) programs toward the classes of customers that have the most potential to reduce energy and reduce costs to the system? The value DSM incentives provide to the system will vary for different classes of customers. *Answer: Energy efficiency and DSM assumptions will be discussed in detail at a future meeting.*
- Is the source and emissions of market purchases known? *Answer: It may be possible to determine the source of energy purchased through a bilateral contract. We generally do not know the source of spot market purchases.*
- In referring to the dispatch profile on slide 10, are the purchases in the late afternoon / early evening hours the result of high solar production in California? *Answer: Some of the purchases could be due to low market prices as a result of solar overproduction, however, it doesn't appear to be occurring at the solar peak, and some of it occurs after sunset. It is difficult to make any definitive conclusions regarding the drivers for the dispatch pattern observed in the slide without much more detail regarding market and resource conditions.*
- Interested in further conversations about DSM and the specific assumptions that TEP is using (e.g. state, federal, codes and standards). *Response: Energy efficiency and DSM assumptions will be discussed in detail at a future meeting.*
- TEP should track and compare the water use for different portfolios. The water use comparison would need to show impacts at specific plants as water consumption is a localized issue.

Technology and Cost Projections – Jeff Yockey, TEP Director of Resource Planning (slides 12-19)

- Stakeholder Feedback
 - Once you lock in a point does the projection include cost savings or is it just based on inflation? *Answer: The capital cost projections presented on slides 14-16 include changes due to technology development as well as inflation.*
 - What is the likely source of the price gap between the National Renewable Energy Laboratory's Annual Technology Baseline and Wood Mackenzie? *Answer: the fact that the Wood Mackenzie data are more current is likely the primary difference between the cost projections. Renewable technology forecast costs are declining rapidly.*
 - Are there transmission costs associated with utility solar projects? *Answer: TEP's cost model captures transmission costs for particular projects. If a solar project is local and can interconnect to TEP's 138 kilovolt system or a lower-voltage system, no transmission costs are assumed.*
 - TEP should consider additional storage technologies (besides battery and pumped hydro) such as Compressed Air Energy Storage (CAES).
 - Identify the date for various sources of cost data (NREL, Wood Mackenzie, etc.)



- Most people do not have a contextual reference for “Revenue Requirement”, therefore, TEP should consider putting certain costs in the form of a meaningful metric (e.g. monthly or annual bill for a typical family of four).

Market Projections – Jeff Yockey, TEP Manager of Resource Planning (slides 20-22)

- Stakeholder Feedback
 - What did TEP use in its last IRP for market projections? *Answer: For the 2017 IRP, TEP hired PACE Global to develop three market scenarios (Base Case, High Technology Case, High Economy Case) and each of the portfolios analyzed in the IRP was evaluated against each of those scenarios. See Appendix A of the 2017 IRP*
<https://www.tep.com/wp-content/uploads/2017/04/TEP-2017-Integrated-Resource.pdf>

Advisory Council Feedback – Kevin Skinner, Corporate Training Program Manager (slides 23-28)

- TEP provided a brief summary of what was discussed in the past meetings. The remainder of the meeting was dedicated to soliciting feedback from Advisory Council members. Following is a summary of the comments/questions from Advisory Council members.
- Stakeholder Feedback
 - TEP should consider what other utilities/jurisdictions are doing (markets other than Arizona) in relating to utility resource planning. What are the “best practices” for avoiding big bets or lowering risks? What are other projected government changes?
 - As part of TEP’s emission reduction goal, are you considering reducing absolute emissions (total tons) or reducing the emission rate (tons/MWh) of carbon? TEP should consider using absolute emissions as the goal as there is a concern that using an emissions rate metric can still result in an increase in absolute emissions.
 - There are likely opportunities to reduce or eliminate the land costs associated with new utility scale solar facilities by using land that cannot be used for other purposes. Potential examples given were Davis Monthan’s departure corridor and State Trust Lands.
 - What is the relationship between the IRP and rate setting impacts and when is that considered? Is the Revenue Requirement the best way to show what the cost impact of various resource options would be? TEP needs to ensure affordability before it considers profitability. *Response: The structure and use of the Revenue Requirement in the IRP will be discussed in detail at a future meeting.*
 - The greater Tucson area is at risk of exceeding the EPA’s ambient air quality standard for ozone. The IRP should include an indication of the contribution of ozone precursors (e.g. NOx) to the local air shed associated with different resource alternatives.
 - TEP should have a broader discussion of the role of electric vehicles in the IRP; specifically, how TEP’s plans fit within the broader state plan.
 - TEP should keep its primary focus on affordability in order to protect the low income population and seniors who are on fixed income.
 - Stakeholders want a better understanding of the difference between targets for “renewable energy” versus “clean energy” versus “emissions.” TEP should conduct



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modeling runs for each form of target to evaluate the cost and environmental benefits/tradeoffs associated with each.

- There is a state-level energy planning initiative underway that could inform TEP's IRP. TEP should participate in that effort to leverage what is learned in that plan.
- TEP's IRP should distinguish between the first five years of the plan (Action Plan) and the last 10 years and should offer more focus and detail on the Action Plan because it represents actions that are actively being pursued or considered.
- A couple of IRP cycles ago there was discussion about externalities (societal costs) associated with the emissions from fossil generation. TEP should consider including that in this IRP.

Next Steps – Jeff Yockey, TEP Manager of Resource Planning (slides 2-14)

- TEP will send out a doodle poll to decide a date for the August meeting.
- The meeting will remain 10am to 1pm