To: Omar Gallegos, Maritza Perez, Myra Segal, Public Input Participants
Fm: Steve Fischmann
Re: EPE IRP Public Input process
Date: July 5, 2017

Listed below are minimum components that I believe should be included in the IRP.

As part of the agenda for July 6, please include a discussion confirming when each of these components will be discussed in future meetings. That will better enable public participants to do their own research on each topic prior to the public meetings with EPE.

Also, please provide agenda a week ahead of time to allow public input on what should be included. If EPE is sole arbiter of agendas, input is likely to be influenced to support its preconceptions about where the IRP should go. Encouraging public input into upcoming agendas will better facilitate thoughtful alternate perspectives from IRP participants.

EPE IRP – Required Analysis for a thorough Least Cost Portfolio Study

1. **A thorough review of demand management and energy efficiency options to address the continued increase in peak loads.**

   Demand Management resources were flat in the prior IRPs even though demand projections show peak demand growing far faster than total demand. This peakiness is enormously expensive. Five peak demand plants representing 25% of EPE's capacity are needed to serve native customer demand just 2% of the time, yet native customers bear 100% of the expensive capital and holding costs of those plants – about $10 million per plant per year.

   Study of potential peak pricing and curtailment programs for the residential and small commercial customers that represent the majority of EPE's New Mexico load is needed, along with study of more robust energy efficiency measures.

   Potential pilots for residential and small commercial based on what other utilities are doing:

   Residential & Small Commercial Peak Pricing
   Residential & small commercial Curtailment Rates
   Behind the meter energy storage (Vermont – GMP- has a $15 per month plan)

Demand Response smart thermostat programs
Demand response smart electric water heater programs (GIWH)
Integration software for all the above as well as distributed renewables.

2. **Thorough in front of the meter energy storage evaluation.**

   Battery energy storage is experiencing a cost reduction curve similar to what happened with wind and solar. Tucson Electric has contracted for 100MW solar generation with a 30MW/120MWH battery storage system at under $45 per MWH to go into operation in 2019. Tucson Electric enjoys a full 30% tax credit on the storage portion by directly linking it to solar power. New combined cycle gas generation is generally pegged at closer to $70 per MWH.

   No storage was included in EPE's last IRP, and no analysis was done to show when storage becomes economically viable or how it could be most effectively used. (As a centralized resource, or at critical distribution and transmission points where storage can serve multiple functions regulating frequency, voltage, peak etc.). Evaluation of storage should take into consideration the reductions in additional generation and transmission investments it can create.

3. **Specific analysis of Solar costs in the southwest.**

   Tucson Electric's 100 MW facility is a $30 per MWH, 20 year purchase power deal. Many solar PPA deals reported in the trades are well under $40 per MWH. Self- build solar comes in as low as 2.5 cents kWh. Currently at 3% solar through direct PPA's. 2015's IRP appears to use nationwide solar costs as opposed to more favorable solar costs experienced in the sunny Southwest.

4. **Evaluation of any presumed plant decommissioning and replacement plans vs the relative costs of extended maintenance or upgrades.**

5. **Evaluation of early plant closings in favor of lower cost renewables.**

   Strategist modelling defaults assume all existing resources stay in place. It does not evaluate the economics of replacing an existing facility with a lower cost resource unless the modeler specifically decides to run that scenario.

6. **A comparison of the following scenarios in the published IRP:**

   a. high renewables option

b. High storage option
c. no nukes option
d. high demand response option
e. high purchased power option
f. an extended plant life option through upgrades.

7. **Listing of all strategist modeling parameters and data inputs used for each resource in each scenario. Include capacity parameters, peak hour contributions, costs broken down into generating, regulatory, and integration expenses, any caps on total use of a particular resource,……**

8. **Calculation of the levelized cost of each resource as modeled in the scenarios that are presented.**

   This can provide a useful cross check on how reasonable a strategist or another modeled scenario is.

9. **Analysis of purchased power as a resource.**

   Purchased power was used as a resource in the 2012 IRP but EPE did not use it in the 2015 IRP even though it can be far cheaper than new plant construction and a potential bridge to future low-cost renewables that avoids investment in fossil fuel facilities that could face early obsolescence. For the last several years, purchased power costs have been low due to low gas prices and an apparent glut of generation on the market. Include transmission issues in this analysis.

10. **Analysis of spot purchases and sales of power, firm power sale and power purchase agreements, and non-spot power purchase and sale agreements and their impact on total system costs.**

    2014 FERC reports show wholesale electricity sales of 3.4 million megawatts from EPE to other power companies generating $101 million in revenues. At 2.9 cents per KWH, this would not cover fuel costs on marginal production from EPE's less efficient gas plants. Are there other factors that make these sales worthwhile? The same year, EPE purchased 2.1 million megawatts of energy at a cost of $65 million or about 3.1 cents per KWH. EPE estimated in the 2015 IRP that off system sales would continue to represent over 30% of its total energy sales through 2034. In recent years sales of power ranging from 100-200 MW have occurred even during peak summer hours. Examination of this practices' impact on peak capacity requirements is needed.

11. **Various timing scenarios of resource additions/deletions to take advantage of federal tax incentives for renewables.**

Incentives phase out, dropping from 30% to 0% by 2023.

12. **Palo Verde levelized costs including future nuke capital investment.**

Merchant nuclear plants are having a difficult time competing on price in open power markets across the nation. Most are asking for subsidies or shutting their doors. A clear picture of how nuclear stacks up in EPE's IOU monopoly environment is required.