



TEP Integrated Resource Plan (IRP) Advisory Council

Meeting Summary for October 17, 2019

Attendees:

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| • Sandy Bahr, Sierra Club | • Ann Chanecka, City of Tucson* |
| • Mark Clark, Pima Council on Aging | • Nicole Fyffe, Pima County* |
| • Gary Krivokapich, Davis Monthan AFB* | • Rob Lamb, GLHN |
| • Caryn Massey, SWEEP* | • Catalina Ross, Sierra Club* |
| • Julie Robinson, Pima County* | • Cynthia Zwick, Wildfire (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

Automated Metering Infrastructure (AMI) /Advanced Distribution Management System (ADMS) – Chris Fleenor, Manager, Protection and Controls / Chris Lindsey, Director Transmission and Distribution Planning

- Stakeholder Feedback and Responses to Questions (AMI)
 - How is data transmitted between nodes and collectors and how does TEP address cyber security concerns

Answer: TEP uses a proprietary wireless network (data is not transmitted via the World Wide Web) to transmit meter data. The data is encrypted prior to transmission and the Company uses third-party contractors to do “penetration testing” to test security.

- How is data identified at the collector (see Slide 5)?

Answer: All data items have a unique ID.

- Are analog meters still in use, specifically for customers that do not want smart meters?



Tucson Electric Power

Answer: There are no analog meters in the system as those meters have not been manufactured for a number of years. While all customers have digital meters, opt out customers have meters without a wireless transmitting radio.

Customers are allowed to “opt out” of automated meter reading and pay a fee to have their meter read manually. Reasons customers “opt out” include concerns about data security, radio frequencies, and others.

- What is the average cost for a small business to place these meters? (Installation costs?)

Answer: There is no direct charge for the installation of AMI meters. The cost is included in the electricity rate.

- Are meter deployments done by TEP directly or through third-party contractors?

Answer: TEP employees perform most of the meter deployments. However, we also utilize Southwest Energy Solutions for meter deployments. Southwest Energy Solutions is an unregulated fully-owned subsidiary of UNS Energy, TEP’s parent Company.¹

- Stakeholder Feedback (ADMS)

- Can the ADMS measure the efficiency/effectiveness of customer sited distributed resources or efficiency programs?

Answer: The ADMS expands grid visibility from the substation to the customer meter (there is already very good visibility between the system control center and the substations). For the most part ADMS does not provide data behind the meter, however, there is a select suite of behind the meter applications available.

- Do either of these applications (AMI meters or ADMS) provide benefits relating to sub-metering for multi-family housing?

Answer: The vast majority of multi-family housing developments have individual meters for each residence.

- Will the AMI meters and ADMS provide customers access to interval data (i.e. hourly usage data)?

Answer: Customers already have access to interval data through on-line account data or the TEP mobile app.

- Is TEP thinking about this upgrade as a resource for or benefit to emergency management (i.e., outages)?

Answer: One of the key benefits to the ADMS is improved power outage response as the ADMS system will provide more immediate notification of an outage as well as locational

¹ UNS Energy is a fully-owned subsidiary of Fortis Inc.

information that will decrease the time it takes to locate the cause of the outage. In addition, looking at historical profiles of power flow will improve decision making regarding areas of the grid that more vulnerable to outages.

Customer-Sited Energy Resources (CERs) – Ray Martinez, Principal – Emerging Technologies and Innovation

- Stakeholder Feedback
 - Are there industry standards for communication protocols for customer sited devices?
Answer: There are some industry standards for communication, but the flexibility in those standards results in variation in communication schemes between devices.
 - It would be helpful if utilities could provide the communication protocols such that entrepreneurs can develop products to solve problems and help advance grid efficiency.
Response: While the utility industry is working on that, TEP has little to no influence on how commercial products are designed and manufactured.

Customer-Sited Energy Resource Alignment – Clay Engle, West Monroe Partners

- Stakeholder Feedback
 - To what extent are the utility regulators involved in advancement of distributed energy resources.
Response: The ACC can and has developed policy statements relating to certain customer-sited resources (i.e. electric vehicles) and the ACC approved renewable energy and energy efficiency implementation plans developed by the utilities.
 - Referring to Slide 12, what would each of the “stages” identified look like to a typical customer with CERs (e.g. roof-top solar, electric vehicles).
Answer: In the “walk” stage, a utility could use CERs to reduce system peak (e.g. prevent an electric vehicle from charging during peak time. In the “jog” stage a utility could aggregate CERs within a particular location to address a distribution level grid management issue. In the “run” stage a centralized system would be continuously evaluating grid needs and dispatching CERs throughout the system to address those needs largely unbeknownst to the customers that own those CERs.

Project RAIN – Ray Martinez, Principal – Emerging Technologies and Innovation

- Were all 13 customer sites residential?
Answer: Some of the electric vehicles were at commercial sites, otherwise all the sites were residential.
- What are examples of the “Event Types” identified on slide 14? Where all these Event Types used to produce the 3kW of peak demand reduction (see slide 17).

Answer: Each “Event Type” represents a unique use case for the controlled devices. Examples include a “load up” event which increases demand (for use during periods of excess generation) and multiple levels of load curtailment events. The 3kW average load reduction referenced on slide 17 represents the average reduction from all tests of a single event type, in this case the level 1, or least aggressive, load shed event.

- Does the communication between the CERs and TEP create opportunities for cyber breaches?

Answer: TEP communication infrastructure is not used to communicate with the CERs. In Project RAIN, the communications took place between a stand-alone DERMS system, which was not connected to TEP infrastructure, and the various devices and aggregators. This ensured there was no cyber-risk to TEP during the project. However, the communication methods and protocols used in Project RAIN do meet high cybersecurity standards

- When the network is updated, does it cut off some of the systems? If so, how would TEP address this?

Answer: There is a risk that updates to vendor devices, such as to firmware, can disrupt the ability to communicate with controlled devices. This is an industry wide issue which TEP could help address through collaboration with device vendors and promoting standardization of communication capabilities and protocols.

Portfolio Summary Format– Jeff Yockey, TEP Director of Resource Planning

- Has TEP considered any other societal benefits of DSM and more renewables, outside of air quality such as jobs, etc?

Answer: Those macro-economic impacts are complicated and beyond the scope of the IRP.

- From the ACC workshop, for which the September meeting was cancelled, was there anything helpful or relevant to the council that was talked about?

Answer: Certain Commissioners expressed a strong preference for utilities to procure additional resources through “All Source” requests for proposal (RFP). An “All Source” RFP would not specify the technology to be used, rather it would identify the system need and allow all demand- and supply-side resources to bid.

Next Steps – Jeff Yockey, TEP Manager of Resource Planning

- Next meeting November 21st, 10am to 1pm