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Meeting Minutes

Resource Planning Advisory Council – Virtual Meeting

Date March 2, 2023
Time 9:00 AM – 12:00 AM MST
Location Hybrid – In-person & Online

Agenda

9:00 **Welcome, Introductions, & Logistics**

9:10 **Update on SME Survey**

9:15 **Rocky Mountain Institute (RMI) - Presentation**

9:40 **Q &A**

9:50 **Portfolio Modeling Prep**

- TEP Portfolio Modeling - Then and Now
- Objectives and Outcomes of Portfolio Modeling in Current IRP
- Matching Portfolio Modeling capabilities with IRP Needs/Requirements and Other Issues of Interest

10:30 Break

10:45 **Portfolio Modeling Prep *contd*.**

- Portfolio Evaluation Criteria
- Portfolio Dashboard Demonstration
- Discussion on First Round of Portfolios to Analyze

11:35 **Next Steps & Topics for Next Meeting; Addendum and Updates**

Attendees	Organization
Aaron Schwartz	Rocky Mountain Institute
Alex Routhier	Western Resource Advocates
Autumn Johnson	Arizona Solar Energy Industries Association
Catalina Ross	Sierra Club
Claire Michael	Wildfire
Damian Rueda	Davis-Monthan Air Force Base
Daniela Gallagher	Sun Corridor
Dr. George Hammond	University of Arizona
Georgina Felix	Fresh Produce Association of the Americas
Justin Brant	Southwest Energy Efficiency Project
Lance Jungmeyer	Fresh Produce Association of the Americas
Luke Hutchinson	Arizona Corporation Commission
Rob Lamb	GLHN
Sandy Bahr	Sierra Club
Sarita Morales	IBEW 1116
Stephen Cassidy	Davis-Monthan Air Force Base
Stephen Jennings	American Association of Retired Persons
Waylon Jones	IBEW 1116
Bonnie Medler	TEP
Brianna Robles	TEP
Catherine Schladweiler	TEP
Ilse Morales Duarte	TEP
Jenny Crusenberry	TEP
Joe Barrios	TEP
Joe Salkowski	TEP
Karen Kansfield	TEP
Lee Alter	TEP
Megan Garvey	TEP
Nonso Emordi	TEP
Rhonda Bodfield	TEP

Victor Aguirre	TEP

Nonso Emordi (Lead Resource Planner) – Logistics and Introductions/Agenda/Update on SME Survey

Slides 1-5

- Question: RPAC Member: Did you send out the slides or can you do that now?
    - Response: We will do that.

Aaron Schwartz (Rocky Mountain Institute) – Resource Planning: Presentation to TEP's RPAC

Slides 14-19

- Question: RPAC Member: are there specific modeling software packages recommended to be used or not used with these features (Slide 14)
    - Response: There are a whole range of modeling tools are out there, a lot of the leading industry tools are able to do that. Often, smaller utilities are unaware of these tools. There is a growing speed of open-source planning tools.
- Question: RPAC Member: So far, the presentation has focused on generation and storage planning, how is the co-optimization of generation and storage with transmission planning, with system wide planning?
    - Response: It's an emerging area, the more stuff added to modeling, the more computational it becomes. Hawaii electric is using renewable energy transmission zones, looking at the cost of building interconnections to areas where there are large amounts of renewables. They separate the zones into different cost buckets, and then incorporate those into their capacity expansion modeling, so they can evaluate costs.
- Comment: RPAC Member: Suggest sharing resources via email as well. Like APS, qualitatively address the technologies incorporated into the modeling, it is important.
- Question: RPAC Member: I've seen other IRPs trying to develop curves for DSM and DERs, it seems like the development of those curves is important. Do you have any suggestions for best practices on how utilities can develop those curves?
    - Response: Utilities typically contact a consulting firm to apply, I can't speak to the actual methodology.
- Comment: RPAC Member: Often these studies have been conservative, that's why I asked the question.

Slide 20

- Question: RPAC Member: Last slide you were talking about DTE, and how they saved $500 million, how will it change how their goals, resource mix *etc*.? Do you think the plan changed at all?
    - Response: In the blog post, their plans did change, their amount of solar and wind increased from 3GW to 15GW, their batteries increased, and updated retirement dates. They ran a whole new scenario to look at that impact, their procurement process changed because of this. Between the 2018 plan and their current plan is the change of 3GW to 15GW, so total renewable target went up that much.

- Question: RPAC Member: Are you suggesting that was primarily due to the IRA and not just other things in the last few years?
    - Answer: IRA was a big factor but can't say that it is only that.

- Question: RPAC Member: I'm curious about the IRA tax credit, it will save customers ½ billion dollars over 20 years, but were they planning to make those investments? Now that the tax funded credits are provided in that money, this would be coming from the rate payers. Is this money that the government is going to pay instead of rate payers?
    - Response: Regarding questions about DTE's $500M savings from incorporating IRA tax credits in their 2022 IRP, it looks the 15GW of solar and wind was planned pre-IRA, but that the inclusion of tax credits did lead to an increase the amount of storage they intended to procure, so sorry if I mischaracterized that. I'm happy to connect you or the RPAC members with the authors to answer additional questions they had about this or other information in the blog.

- Question: RPAC Member: When thinking about the next 5 years, I think about building and buying, why have the additional granularity? Not looking at nuclear, gas, *etc*., so it seems over complicating if we redo this process every couple of years. Do we need to do all this analysis now?
    - Response: Right now, wind and solar are extremely cheap, so we agree there, starting to build more granularity into models now is allowing us to see the lead time necessary. Being ready with the right tools to evaluate those, if you want to have the most accurate numbers of the technologies that you'll be adding 15 years from now.

      Not to overlook the value of those features, storage can offer short term, can help capture benefits, distributed renewables.

- Comment: RPAC Member: To your point, I get what you are saying, doing things over and over again, we know how much we have to build *etc*. It isn't something policy

makers know. IRPs are very important and external documents, law makers, don't understand the basic point of storage or renewables being built, APS was asked why we are doing this but it seems like this is just a lack of understanding.

- Comment: RPAC Member: I second the previous comment, these seem to be mostly for legislature and commission and people outside TEP.
- Question: RPAC Member: You've talked about sub-hourly modeling, and storage, but haven't talked about market. How does that fit into this process?
    - Response: The focus on IRPs is transmission and distributed planning, thinking about availability and capacity are important, even thinking about aligning resource adequacy regimes. All of these are beneficial, if not directly integrated to the IRP.
- Comment: RPAC Member: What I've taken away from this presentation is how the good IRPs are looking at distributed generation and how we're getting the most value from those resources. As we get more sophisticated with the modeling, it will help us understand what will provide more value to our customers and model that.

Lee Alter (Lead Resource Planner) – Portfolio Modeling Prep

Slides 7-8

- Question: RPAC Member: When load and renewable data is entered into model, are you using net load or are they separate?
    - Response: We model gross load.
- Question: RPAC Member: Could you explain IRP planning vs procurement planning?
    - Response: By procurement I meant RFP, I do see the IRP as a formula that the RFP utilizes. When you have a robust RFP process, you get a lot of competition between proposals. Solar prices came down 90%, but the procurement process is important. We got a lot of proposals, many that had to be screened out because of the interconnection. The RFP process helped identify the location aspect of new resources.

Slides 9

- Question: RPAC Member: What voltage are the transmission lines at?
    - Response: A mix of 345 and 500.

Slides 11

- Question: RPAC Member: You mentioned not trying to pick the best portfolio, but part of the commission order is to pick a preferred port, how does that fit?
    - Response: We will have a preferred portfolio, but it is only meaningful because it sends out a signal to all the developers, exactly what we build when and where in the near future.
- Question: RPAC Member: The RFP is generally 3yrs out, but for some resources are not capturing that, what are you trying to capture for the longer queue in the RFP?
    - Response: Longer duration resources like on-site hydrogen, long duration storage, pumped hydro, and compressed air – must consider if they will be available within the time range, or do we have to deal with what we have now. EE can go on for a long time.

Slides 13

- Question: RPAC Member: I understand the fuel adjuster for TEP, I understand the different fuel adjusters and filing and IRP. When modeling the different portfolios, what extent do these fuel adjusters play a part?
    - Response: Typically, we cover most of our fuel expenses, if we over collect, we return the revenues to keep the rates down. We don't really gain off the fuel prices, it doesn't really have a role in IRP, because it is a cost that it is passed on. Where it can be more consequential is whether resources are owned, or Purchase Power. There is only so much capital you can raise at once, there is a financial limit and can get passed to PPAs, TEP makes no real profit on these.

      TEP's revenue requirements include all fuel costs, whether TEP takes all those costs or if they get passed on.
- Question: RPAC Member: Suggesting that we expect the request of electric power keep increasing with warehouses. How is the availability of the electric power? Is the request of electric power going to keep increasing?
    - Response: Yes absolutely, new EVs and computers and more data centers that are not steady with large load variability. Natural gas cost issues do get passed down. We don't apply those gas sensitivities to every portfolio, but it is important to apply it to those that are highly affected by gas prices (*i.e.* the portfolio on the left of Natural Gas Reliability.)
- Question: RPAC Member: When you are running the model, is the objective function to reduce revenue requirement or rate base?

- Response: Our objective is to reduce revenue requirement, not rate base, but we don't necessarily choose the cheapest portfolio as other variables are considered.

Slides 14

- Question: RPAC Member: The reserve margin calculations in history aren't working as well in this environment, is there a way to tune this? Where some assumptions went awry, learn what happened quantitatively and what went wrong during the blackouts in California and how to solve those.
  - Response: Real world case studies are great, not too sure if that'd be the best way to go about it, not sure how we can model that, thinking of different blackouts like the San Diego substation black out. We shouldn't focus much on those type of black outs, but more on the transmission side.
- Question: RPAC Member: How are you stressing system for loss of load modeling? Are you looking at different weather years, are you looking at anomaly situations like Texas and California, and how is it stressed? Where in these steps do you check the feasibility at the end or in multiple points?
  - Response: It is predominantly linear – stress the system to the risk assessments.
- Question: RPAC Member: Going back to the previous question of the CA and TX blackouts, have you reviewed CAISO's report and are familiar with the issues?
  - Response: Yes, we have reviewed the gas equipment freezing and the heat wave issues.

Slides 17

- Question: RPAC Member: Last meeting, there was a specific spreadsheet of portfolios we were doing, have you changed those portfolios? It would be helpful to send an updated spreadsheet of the portfolios you will be using.
  - Response: These are basically the same portfolios, but this slide includes detail along with the risk of each.
- Question: RPAC Member: Follow up question - Is the High EV scenario still being done?
  - Response: The high demand case was taken out and the EV Charging increasing was seen as a sensitivity not a portfolio.

Slides 21 -Workbook

- Question: RPAC Member: When talking about cycles for batteries, looking at long duration storage what is the return on equity?

- Response: Debt cost and equity costs all get folded into the non-fuel revenue requirements.

- Question: RPAC Member: Follow up question - What amount does the Commission let TEP return?
  - Response: That changes with the rate case, so every time it gets updated that is factored into the cost, cost like fuel or taxes.

Next Steps

- Question: RPAC Member: Curious, when to anticipate the NDA and Aurora Licensing will be released?
  - Response: Two issues, getting the license, the vendor says it can take a few weeks, because they need to amend the contract. For NDAs we will see what APS has done.

- Portfolio modeling of approximately four portfolios: Reference Case, Heavy Solar, Heavy Wind, and TBD.

Addendum

Information shared by Aaron Schwartz of the **Rocky Mountain Institute**:

- Reimagining Resource Planning: https://rmi.org/insight/reimagining-resource-planning/
- Power Planning to the People: https://rmi.org/insight/power-planning-to-the-people/
- What Happens When Utilities Start to Integrate the IRA into Planning? (Blog Post): https://rmi.org/what-happens-when-utilities-start-to-integrate-the-ira-into-planning/
- Form Energy report, "Best Practice Modeling to Achieve Low Carbon Grids", mentioned in response to one of the RPAC members questions: https://formenergy.com/wp-content/uploads/2020/12/Form-Energy-4Q2020-Best-Practice-Modeling-whitepaper-12.21.20.pdf

Regarding questions about DTE's $500M savings from incorporating IRA tax credits in their 2022 IRP, it looks the 15GW of solar and wind *was* planned pre-IRA, but that the inclusion of tax credits did lead to an increase the amount of storage they intended to procure, so sorry if I mischaracterized that. I'm happy to connect you or the RPAC members with the authors to answer additional questions they had about this or other information in the blog.