Meeting Notes

Meeting Objectives

- Recap January RPAC meeting and provide status of previous action items.
- Discuss developments from January ACC open meetings and implications.
- Provide summary of E3 Southwest Resource Adequacy study.
- Review APS resource needs and update progress based on recent contract negotiations related to 2020 RFP results.
- Introduce RFP structure and openly discuss importance of evaluation criteria with RPAC members to solicit initial feedback on the RFP process.

Meeting Subject: February RPAC Meeting
Meeting Date: 02/17/2021
Start Time: 09:00am
End Time: 12:00pm
Location: Virtual

Attendees	Organization	Title/Role
Jeffrey Burke	APS	Director of Resource Planning
Justin Joiner	APS	Vice President of Resource Management
Jessica Hankins	APS	RPAC Lead/Liaison
Todd Komaromy	APS	Manager of State Reg. Compliance
Mike Eugenis	APS	Supervisor, Resource Planning
Yessica Del Rincon	APS	Communications Consultant
David Peterson	APS	Advisor, Corporate Strategy
Jill Freret	APS	Director of Resource Acquisition
Scott Henry	APS	IT Support Specialist
Daniel Haughton	APS	Director, Grid Solutions
Lakshmi Alagappan	E3	Director
Nick Schlag	E3	Partner
Adrian Au	E3	Consultant
Matt Lind	E98	Director of Resource Planning
Debashis Bose	E98	Project Management
Chase Kilty	E98	Consultant
Sandy Bahr	Sierra Club	Chapter Director
Alex Routhier	Western Resource Advocates	Senior Clean Energy Policy Analyst
Cynthia Zwick	Wildfire	Executive Director
Mackenzie Salomonson	Arizona Corporation Commission	Engineer
Robin Reed	Occam Sustainability Partners	President, Sr. Strategy Officer
Autumn Johnson	Western Resource Advocates	AZ Gov. Affairs Manager
Gary Dirks	ASU	Director

John Cordes	UPC Solar	VP of Utility Development
Nitin Luhar	Mitsubishi Power	Regional Director
Devi Glick	Synapse Energy Economics	Principal Associate
Rikki Seguin	Interwest Energy Alliance	Executive Director
Diane Brown	Arizona PIRG	Executive Director
Alex Routhier	Western Resource Advocates	Sr. Clean Energy Policy Analyst
Johnny Key	Freeport-McMoRan	Director
Caryn Potter	SW Energy Efficiency Project	Utility Program Manager
Blan Holman	Pine Gate Renewables	Vice President
Scott Henry	Griffith Energy	Plant Manager

Matt Lind (E98/Director of Resource Planning) – Introduction/January RPAC Recap/Updated Meeting Guidelines

- Slide 3 – January RPAC Meeting Recap
  - APS is moving forward with an RFP process over and RFI aimed at resource procurement for 2025 through 2027.
  - APS will continue to use the RPAC meetings as a forum for feedback as the RFP is developed.
  - The meeting minutes from the January RPAC meeting have been posted for feedback. No feedback has been received up to this point so please provide comments and concerns to the RPAC email address if there is a need to update or change the minutes.
- Slide 4 – Following Up
  - There were no new action items from the January RPAC meeting and all action items have been addressed to date.
  - Letter to ACC on load forecast was shared for feedback before posting and website was setup to share RPAC meeting materials publicly.
  - APS will still distribute meeting materials to RPAC members at least three business days prior to each RPAC meeting. RPAC discussion in the January meeting was valuable and it is encouraged that future meetings have the same level of engagement.
- Slide 5 – Meeting Guidelines
  - Guidelines largely have remained the same and will be included in each RPAC presentation moving forward.
  - Main adjustment for RPAC meetings moving forward is that RPAC members with potential resource development interest will be excused from all discussion specifically related to the development and evaluation criteria of the RFP.
  - Question: Will all of the RPAC materials also be emailed to us?
  - Response – Matt Lind: Yes. All meeting materials will be sent out through the RPAC email.

Justin Joiner (APS/Vice President of Resource Management) – ACC Open Meeting Updates

- Slide 7 – Proposed Energy Rules / IRP
  - Many RPAC members have been contacted and I have spoken to directly and those that have not received a meeting request should expect to receive one in the following weeks.
  - Comment – Justin Joiner: I am making the rounds to contact RPAC members on a weekly basis and it has been great. I am getting a lot of diversity of opinions and thoughts, but one theme has been consistent. Transparency and openness in the decision-making process is valued and APS intends to continue this throughout the RPAC forum.

- Proposed energy rules were not approved in the ACC open meeting in late January. It was a 3 to 2 vote in declining the rules. Several amendments were added to the rules and APS is looking into them to identify the impact to future processes.
- ACC opened a new rulemaking docket for all-source RFP and IRP rules. APS will continue to work with RPAC members to go over the amendments and APS remains dedicated to its clean energy commitment and to the RPAC.
- ACC acknowledged APS' 2020 IRP which speaks to the good work done by Jeff Burke and team and IRP stakeholders and APS is very pleased with the formal acknowledgement.
- Question: What is the new IRP rulemaking docket number?
- Response – Jessica Hankins: New proposed rulemaking docket is as follows: RE-00000A-22-0029
- Comment: SWEEP looks forward to our introductory call.

- Slide 8 – APS Resource Update
  - APS added 215 MW of new renewable contracts since the January RPAC update and backed it with a one for one match of 215 MW of storage.
  - APS continues to negotiate bids from previous RFP process and will update RPAC members with progress in future meetings.
  - The global disrupted supply chain is impacting key inputs to the current process directly, and some bidders are utilizing Force Majeure clauses or "Acts of God" that could prevent the ability to fulfill contracts. The current supply chain conditions emphasize the need to continue to do the work now and to get out in front early and often so there are contingency plans to adapt for delays and make sure that there are enough resources online to fulfill reliability needs.
  - California and some of our neighbors in the east are continuing to see projects delayed and have concerns for capacity shortfalls. APS must continue to move in a deliberate and thoughtful manner to ensure the procurement of sufficient resources.
  - Comment: Thank you for that Justin. We are all aware that there are supply chain issues, and we ask that you keep us apprised if anything occurs that will impact timelines.
  - Response – Justin Joiner: Absolutely. We will do that. We want to pass on the latest and greatest information in these RPAC meetings. We remain optimistic but felt it important to share these details with the group.

Nick Schlag (E3/Partner) – Southwest Resource Adequacy Study

- Slide 10 – Study Purpose
  - A link will be provided that includes the full webinar that discussed study results and provides all the materials of the presentation.
  - The Southwest Resource Adequacy Study report addresses analysis performed over the previous nine months that examines the region's resource adequacy position over the next decade.
  - The study was funded by APS, SRP, Tucson Electric, El Paso Electric, Arizona Electric Power Cooperative, and other entities in the west to evaluate the Arizona and New Mexico region.
  - The purpose was to understand where there might be threats to the region in terms of resource adequacy and identify best practices for the region given the challenges being faced from changing industry conditions.
- Slide 11 – What is Resource Adequacy?
  - Maintaining reliability in a utility's footprint requires many planning and operational efforts.

- Resource adequacy planning is one aspect of these planning and operational efforts and is focused on ensuring that there are enough resources in the portfolio to maintain reliability when considering variability in the supply and demand of electricity.
- No real system is planned to a perfect standard. Many systems in North America are planned to meet a one day in ten years event. The question of resource adequacy is fundamentally probabilistic. The goal is to assess the probability of certain occurrences that can impact supply and demand balance.

- Slide 12 – Scope of Technical Analysis
  - Scope of analysis was to look at resource adequacy at the regional level for Arizona and New Mexico.
  - E3 utilized the outputs from the integrated resource plans of participating utilities to forecast load and resource additions over the study period. Given the plans, E3 assessed if there was enough capacity to meet an acceptable standard for reliability.
  - Many hourly simulations were performed that account for variability of resources and load to assess where conditions might create a shortfall in capacity.
  - The study was a contextual complement to each utility's individual look at their own system's resource adequacy.
- Slide 13 – Study Scenarios and Sensitivities
  - Five different generation stacks were analyzed for the study period. Study period included analysis that looked primarily at 2025 and 2033 because the dates aligned with major coal retirements in the region.
  - Two scenarios were analyzed for each year. One included only existing and committed resources to assess to what extent existing steel in the ground and committed PPAs in the region could meet reliability needs. These generation stacks were not sufficient.
  - The second scenario included resources that were identified in utility IRPs on top of the existing and committed resources included in the first scenario. When these resources were included, resource adequacy needs were met at a regional level.
  - Question: Does the study address retail competition and its impacts on adequacy?
  - Response – Nick Schlag: No, it does not look at retail competition. We are not assessing contractual relationships or transactions between utilities. We are stacking up physical resources and physical loads to address resource adequacy.
  - Question: Why did E3 only go to 2033 and not 20+ years out. e.g. 2045/2050?
  - Response – Nick Schlag: The focus was to look at imminent needs of the system given the transition that is expected to occur in the next 5, 10, and 15 years. The level of precision becomes a lot hazier as you extend the time horizon with assumptions that are uncertain by nature.
  - Question: Can you review the role that energy efficiency plays in these scenarios?
  - Response – Nick Schlag: We used the load forecasts from the IRPs that included energy efficiency. This is how the role of energy efficiency was incorporated into the study analysis.
- Slide 14 – Load Growth & Resource Retirement Impact
  - Load growth and resource retirements create urgent and significant need for capacity in the Southwest. Existing resources will be insufficient to meet need in the short term. The combination of an increase in load, a decrease in 2,140 MW of effective capacity, and a projected increase of 1,740 MW of effective capacity does not meet resource need. There is an additional need of approximately 4,000 MW of effective capacity to maintain reliability in 2025.

- Effective capacity is not equivalent to installed capacity. It refers to how much each resource can attribute to meeting peak demand. APS has referred to this in the past as reliable capacity.
- The resource need for effective capacity in 2033 increases to approximately 13,200 MW.
- Question: For clarity, all of your inputs came from utilities, no other sources?
- Response – Nick Schlag: Load forecasts and resource additions reflect inputs provided by the utilities. E3 gathered other input data in order to develop a representative system that could be modeled hourly. Hourly profiles, outage rates, and other inputs relied on public sources to finalize assumptions.
- Question: Are those other inputs referenced in the report?
- Response – Nick Schlag: Yes
- Comment: At your convenience, I would appreciate a call from APS regarding the references, and to which sections of the analysis they are used.

- Slide 15 – Resource Adequacy Challenge with Net Peak
  - Solar fundamentally changes the shape of net load. Net load represents the peak demand after subtracting the output from intermittent resources, specifically wind and solar. The net load will shift into the evening once solar additions increase.
  - By 2025, there is enough solar projected to be online to shift the risk of loss of load into the evening. This is important and significant because it dictates the type of resources that contribute towards meeting peak demand.
  - Solar will provide very little incremental effective capacity while resources such as battery storage can provide significant levels of capacity if operating at the availability level that is expected.
- Slide 16 – Western Utilities' Resource Plan Additions
  - When resource plans were pieced together, there was enough capacity in the region to meet the 1 day in 10-year peak. The IRPs identified 14,000 MW of additions by 2025 and 38,000 MW of additions by 2033.
  - The composition of the resources is mostly solar and storage. It is important to highlight that the plans identified by the utilities incorporate enough resources to meet the regions resource adequacy need. It points to the level of sophistication of each utility's plan.
- Slide 17 – Long-Term Resource Needs met with "Non-Firm" Resources
  - The study shows the increasing role that solar, wind, and storage have towards meeting the system's needs as more is added to the system. Storage and demand response contribute to meeting net peak demand after the sun goes down. In 2033, the portfolio of solar, wind, and demand response is meeting 50% of the peak demand and the rest is met mostly with existing nuclear and natural gas plants.
  - Energy storage duration is mostly four-hour batteries. An important dynamic is that the system will need longer duration of storage to meet resource adequacy needs. The amount of storage provided that provides impact to net peak extends throughout the evening and into the morning in the later years of the study period.
  - Comment: This also says to me that demand response and other tools will need to be extended well beyond the peak periods (3-7 PM today)
  - Response – Nick Schlag: Thank you for that thought. I agree that these tools will need to be extended and the trends are very interesting.
- Slide 18 – Substantial Reliability Risk Remaining

- The assumptions made in the report have a lot of uncertainty.
- Climate impact risk should be highlighted because it is a time of unprecedented climatic uncertainty. The standard used to be to take historical weather data and predict the future but that is no longer the case due to the increase in substantial climatic events.
- Battery performance is another important uncertainty. There is a significant role for battery storage in meeting system peak demand in the future. Battery storage is a technology that has not yet been deployed widely at grid scale. There is potential for volatility in respect to its performance.

- Slide 19 – Immediate and Sustained Action Required
  - The level of development of resources over the next 10 to 15 years is unprecedented in the history of the Southwest region. The rate of development is needed to meet adequacy requirements over the next 10 years and the unprecedented rate of deployment needs to be sustained. There is a very small margin for error. Falling behind one year could cause a ripple effect that makes it harder and harder to catch up and failure to build new resources quickly will create the need to maintain existing plants that are wanted to be retired.
  - Question: Are all storage additions assumed to be 4-hour battery systems? Are other storage technologies/durations considered?
  - Response – Nick Schlag: We included all storage additions that are in the resource plans which have a diverse range of battery storage options. Many of the plans include some increases in duration. The best way to answer the question is that 2025 is mostly 4-hr batteries. 2033 has some 5-hour batteries, 8-hour batteries, and some 12-hour energy storage resources.
  - Comment – Nick Schlag: One more thing that I missed mentioning is that we appreciate the utilities that funded this work and the contributions of a technical advisory group that participated and helped with the analysis. Members from WECC, FERC, and NREL helped shape the work and made sure that the technical analysis and findings remained on track.
  - Question: Is the technical group listed in the report?
  - Response – Nick Schlag: Yes
  - Question: Looking at the chart from 2022 to 2034, can you briefly explain the figure?
  - Response – Nick Schlag: The year-by-year additions are based on the utility IRPs aggregated together and represent the entire region. The breakdown is generally driven by coal retirements, and they correlate with new installed capacity in the region.
  - Question: On the gas front, where are the increases coming from?
  - Response – Nick Schlag: There is a little bit of natural gas that is included in the IRPs. Most is from SRPs Coolidge expansion and from El Paso's IRP. There are other additions that represent natural gas plant uprates.
  - Question: If the Coolidge expansion is not allowed to go through, is there a reason that the following years would not be impacted?
  - Response – Nick Schlag: The timeline is showing incremental capacity that is added to the system. It is not a cumulative look at the system.
  - Question: Did you use the utilities' load growth projections for this? If so, specifically what was used for APS?
  - Response – Nick Schlag: Region wide growth rate was around a 2% annual increase. I can't speak on specific load growth for APS. Jeff can speak better to APS specific assumptions.

- Response – Jeffrey Burke: It was the load growth assumed in the previous IRP which was in the neighborhood of 2%.
- Question: Can I get clarity of the greatest potential of energy efficiency in this study? It is unclear how cumulative impact of EE and targeted DSM is being used to address peak needs. I would be curious to get more information. There is a difference between using inputs from utilities versus having a more precise quantification of EE and what is achievable in the market. As we increase reliance on renewables, it will be so important to tie both aspects together.
- Response – Nick Schlag: I appreciate the comment. The idea that you can take EE further than what is implied is possible. Those types of questions were beyond the scope of the exercise. The purpose of this study was given the utilities' plans and load forecasts, is there a capacity gap? This did not take E3's own plan in terms of how other types of plans and technologies would impact resource adequacy at a utility level.
- Comment: The results of this study will have a presence in future resource plans. I would like it to be noted that other plans are possible when doing final resource plans.
- Question: What assumptions were made regarding inter-utility transmission. Did you assume any upgrades or structural changes?
- Response – Nick Schlag: We did a regional look. There were no binding internal constraints that prevented resources from meeting utility needs sufficiently. To the extent that there are binding constraints, actual level of reliability would be lower than what is seen in the model. No transactional friction between utilities to optimize for the regions outside of their own were considered. This would make the analysis a little bit optimistic.
- Questions: Are there good studies that can be shared on the potential of energy efficiency?
- Response – Nick Schlag: I don't have library off top of my head. Caryn probably is in the best position to point towards public information on energy efficiency potential.
- Question: As a follow up to the transmission answer, assuming no constraints feels optimistic, were additional transmission developments considered in the study?
- Response – Nick Schlag: Additional transmission developments were outside the scope of the study. The transmission system was not explicitly modeled in this work, but we didn't necessarily exclude any transmission system upgrades.
- Question: Is generation included in the footprint all utility owned or is it all generation added in the utilities' footprint?
- Response – Nick Schlag: It is the total physical addition of generation capacity. All future additions were not differentiated by ownership.
- Question: To me the results of the study are quite alarming. What has led to this sort of revelation of these capacity deficits in 2022 when many of the retirements were known. Why was there such low investment from 2014 to 2020?
- Response – Nick Schlag: The capacity gap that has been identified is built up to by 2025. We also found that in the 2021 timeframe, the region was in a load resource balance. I would not characterize it as an unexpected gap due to lack of foresight but if we don't act now there will be a quick transition to a system that is out of load resource balance.
- Comment: Main complicating factor is that we have waited for a time in which everyone is doing it at the same time and there is a global supply chain problem. As a customer, that is very alarming to us.
- Question: Does the study include all of the balancing authorities of the entities that funded the study?
- Response – Nick Schlag: Yes, all of the balancing authorities were included in the study.
- Question: Were there any additional transmission flows outside of the balancing authorities that were included?
- Response – Nick Schlag: No.
- Comment: Planned coal retirements should free up transmission too.

- Question: I suspect that I will have a long list of queries that I would not like to burden this group with. I think I would like the opportunity to go through it with more detail. After my review of the report, I will have more questions and it will be better if after, APS will give me a call to discuss.
- Response – Matt Lind: We could have spent the entirety of the agenda on this study. We appreciate the comment and know it is a challenge to balance going through the report at detailed level and remaining on schedule for this RPAC meeting. We will setup a follow up call to answer the questions that you have.

- Slide 20 – Questions/Response

Jeffrey Burke (APS/Director of Resource Planning) – APS Needs Review

- Slide 22 – Resource Need Drivers and RFP Period
  - APS wants to provide the RPAC with a snapshot of the current system. APS is working though the 2020 RFP and will discuss how the outcomes will impact the next RFP.
  - Dropoff in existing resources are associated with resource retirements and contract roll offs. We need to fill in the blank space to meet our capacity need.
  - APS will continue to be clear that the priority is to keep the lights on while meeting or exceeding the clean energy commitment.
- Slide 23 – Capacity Needs through 2027
  - Pending contracts could reduce 2025 capacity needs from 700-750 MW to 200-250 MW.
  - Pending contracts are expected to be sorted out closer to the release of the all-source RFP and the load and resource balance will continue to be updated as contracts are negotiated.
  - 2025 need is driven by the Cholla retirement and load growth.
  - 2026 is driven by load growth.
  - 2027 is driven by load growth and contract roll offs.
- Slide 24 – Renewable Energy Needs through 2027
  - APS is in a good spot to meet or exceed renewable goals.
  - If additional contracts are signed in 2020 RFP, an additional 1,700 to 2,400 GWh of additions are needed through 2027. This equates to anywhere between 150 and 250 MW of renewable capacity.
  - If no more contracts are signed, the need is between 3,200 and 3,900 GWh of additions which is roughly 250 MW of wind or 450 MW of solar.
  - The endpoint would achieve mid to upper 30 percent of renewable energy on a system basis.
  - Question: Are your discussions with Tribal entities regarding resource acquisition encompassed here? Or will it be encompassed in future IRP processes?
  - Response – Jeffrey Burke: We have regular discussions with tribal entities. Those would be encompassed in meeting the clean energy commitment. We think about it and plan to include approaches in the next IRP.
  - Question: So this will be a carve out? Has a certain amount of the resource needs been carved out for dealings with tribal entities?
  - Response – Jeffrey Burke: We have discussed it internally but have not carved out a specific number. We will need to discuss it further as we move on.
  - Comment: Hopefully I can have more granularity in future discussions.

- Response – Jeffrey Burke: Yes, thank you.

- Slide 25 – Discussion & Questions
  - RPAC members with resource development interests will be excluded from the following discussion.

Nick Schlag (E3/Partner) - RFP Resource Options

- Slide 29 - New Resource Options in an All-Source RFP
  - Types of resources considered in all-source RFPs include renewables, storage, hybrid resources, energy efficiency, demand response, and natural gas. Other resources can be included as well but these are the main technology types highlighted for the RPAC meeting.
  - Procurement process is designed to allow different resources with different characteristics to compete on a level playing field.
  - Every resource looks a bit different from the others. There needs to be a clear understanding of the benefits that each technology provides.
  - Three benefit types that each resource provides at different levels are energy, capacity, and flexibility.
- Slide 30 - Each Resource Contributes Differently
  - Each resource contributes to a summer peak day differently.
  - The purpose of an all-source RFP is to encourage creativity and include all possible options.
  - Question: Storage appears to be batteries here, does it not include pumped storage?
  - Response – Nick Schlag: In the context of this conversation, energy storage can be any array of storage technologies.
  - Question: How did you create this wind profile? Is this based on a specific location?
  - Response – Nick Schlag: This was a random day in New Mexico for demonstration purposes, I wouldn't read too much into it, wind will vary day to day.
- Slide 31 - Resource Highlights: Solar PV
  - Global supply chain issues and volatile commodity pricing will be putting upward pressure on almost all resources we would expect to see in an all-source RFP.
  - Historical pricing data might be a low estimate compared to future procurement.
  - PPA prices are flattening out over time and have been ticking back up recently.
  - Primary value that is provided to system is energy during daylight hours. As net peak is shifted to nighttime hours, the capacity value of solar diminishes. Its value is concentrated in supply of energy in daylight hours. There is a saturation effect where you could have more solar than what the system could absorb.
- Slide 32 - Resource Highlights: Wind
  - Previous years have had low-cost wind PPAs, but currently there is upward pressure from supply chain issues.
  - Wind is a very site specific and locationally dependent resource. Pricing is dependent on location. Low quality capacity factors can be in low the 30% range, high quality can be as high as 50%.
- Slide 33 - Resource highlights: Storage
  - Primarily focused on battery storage.
  - Storage provides some capacity value and a lot of flexibility shifting energy from period to period.
  - Battery storage has not been widely tested at grid scale to this date.
  - Question: Can you elaborate on questions about battery storage at grid level?

- Response – Nick Schlag: I think the main question is will those batteries be available when they are needed to contribute to resource adequacy. Specifically, heat related issues bring questions to what the appropriate outage rate would be to assign to those battery resources. We don't have as much information on that as say coal or gas resources.
- Response – Matt Lind: I would add a thought on the durability and useful life of these lithium ion resources and maybe the unknown costs associated with useful life uncertainty. There are also recycling questions that remain unanswered due to a lack of information. As we get more empirical data, it will help inform the industry.

- Slide 34 - Resource highlights: Natural Gas
  - The technology is well established and hasn't changed much over last decade.
  - Fuel supply related issues include fuel cost and the exposure to fuel price and volatility risk that other resources do not have.
  - Natural gas resources have proven themselves to be an important source of capacity to meet regional reliability needs.
  - Question: Can you speak to trends relating to price volatility resulting in greater pass-through costs relating to natural gas? Since Arizona is not a major gas producing state, these types of costs can skyrocket prices for consumers with some of the issues you have discussed today.
  - Response – Nick Schlag: Jeffrey or Justin may want to hop in here. The impacts of fuel price volatility and the impact to the consumer has a lot to do with rate design and how the utility hedges themselves against fuel volatility.
  - Comment: Looking at trends regarding price volatility for all resources would be useful.
  - Response – Justin Joiner: Yes, I'll speak to that. I also think price volatility for all resources would be useful to look at. Regarding gas, we have a forward hedge program that goes several years out in which we phase in the percentage of how much we are hedged. Each year we increase the hedge percentage to insulate our customers from fuel price volatility. February 2021 would be worst case example. A prior entity I was engaged with was unhedged and got hundreds of millions of dollars of impact and APS was roughly a 10th of that impact due to hedging programs. Having a hedge program in place is best tool against the volatility and APS has those in place. Gas prices were in the $100 range compared to the typical $4 range. Trends across the board are all over the place for gas and we feel most secure about looking 12 months out. Anything outside of that is more hearsay if you will. Being consistent with a conservative approach will serve us well here.
  - Comment: Our expert in the Coolidge siting case spoke about the 4-hour batteries and pointed out that many assume that you must dispatch all of the energy in four hours, when you can do it over a longer period of time and that having more batteries in more locations along with a lot of solar could really help address capacity issues. This is my shorthand for what he said. Also, there are gas pipeline explosions to consider, such as the one that occurred down in the Coolidge area.
  - Response – Nick Schlag: It is certainly possible to operate a 4-hour battery at a lower capacity over a longer period, but by doing that you get a little less capacity value. I liken this to putting your phone on battery saver mode and the limitations that come along with that. There is a tradeoff on how you operate a battery and its capacity value.
- Slide 35 - Resource Highlights: Distributed and Demand-Side Resources
  - A defining feature of demand side programs is that they are not offered at same scale as the other utility scale offerings.
  - Comment: This speaks more to the actual re-structuring of the RFP coming out. Most RFPs are oriented towards the supply side, but there are some specific considerations for demand side resources here. There may be a respondent

that can offer many different types of demand side resources, but if the RFP is not crafted in a way that allows these offerings to compete, they may get lost in the review process. Just something to consider.

- Response – Matt Lind: Some of the concerns around structure and language of the RFP will hopefully be resolved in an upcoming meeting by going through evaluation criteria and RFP language. There is an intent here that we can talk through these issues and make sure the resources are on a level playing field.
- Response – Justin Joiner: Customer grid solutions team has handled distributed energy resources RFPs previously and we plan to have the group in front of the RPAC at a future date. We need to discuss if it is included in the all-source RFP or if the demand side resources will be addressed in a separate RFP process provided by customer grid solutions team.
- Question: What is APS's current DSM name plate capacity?
- Response – Jeffrey Burke: We have several programs with current name plate currently around 100 MW. We're probably going to be about around 150 MW this summer.
- Question: Did most of that come into existences from the 2021 RFP?
- Response – Jeffrey Burke: The C&I demand response was out of 2019 DR RFP. Much of the thermostat has come through APS programs.

- Slide 36 - Questions and Discussions
  - Question: This didn't fully capture the diversity benefits of the different options or practical application of ELCC. Really considering how these resources fit together, we want to have a thoughtful discussion on how APS will look at resources at a portfolio perspective because resources have different capacity benefits when combined in certain ways.
  - Response – Matt Lind: Some clarification there may come in the evaluation criteria discussion.
  - Response – Jeffrey Burke: For several RFPs we've done, we have really emphasized the portfolio view and we will talk more about that in the future. It is something that is mentioned in the evaluation criteria in historical RFPs. It gets more rigorous and complicated but that is a good comment, and we will spend more time talking about it in the future.

Matt Lind (E98/Director of Resource Planning) - RFP Evaluation Criteria

- Slide 38 - Request For Proposal (RFP) Process
  - RFP process overview
- Slide 39 - Key Attributes for Evaluation
  - Four categories for criteria alignment:
    - Transparent
    - Flexible
    - Aligned
    - Well Documented
  - Clarity and stability will be beneficial to customers and participants.
- Slide 40 - What/How to Evaluate
  - What to evaluate?
    - Alignment with needs
    - Cost to customer
    - Ability to perform
    - Other project-specific risks

- How to evaluate?
  - Criteria can include quantitative and qualitative
  - Compare apples to apples
  - Portfolio analysis consistent with IRP methodology.

- Slide 41 - Potential Criteria
  - RPAC feedback is desired to determine the potential criteria that will be utilized in the RFP.
- Slide 42 – Survey
  - The intentions of the survey are to identify the importance of each evaluation criteria through RPAC member feedback.
  - Question: How do you envision using the results of this survey?
  - Response – Matt Lind: We are trying to garner feedback from everyone, so this survey is an opportunity to compile these viewpoints. This is an early discussion around what are important criteria to you all. APS has done RFPs before, but we want to make sure that we are considering feedback.
  - Response – Justin Joiner: We can look at price and nothing but price and make decisions there or we can look at other factors that are qualitative. It will be helpful to see from this group if there are specific criteria that is important. With all the challenges we are seeing now, what are the other things that we need to be focused on and let's try to make it as scientific as we can. We can weigh qualitative factors, combine it with price, and identify the options that are best based on the desired criteria. Costs are always subject to change until a deal is signed. We can send further surveys and will definitely have conversation in RPAC open meetings moving forward.
  - Comment: What I'm hearing is you may take these results to develop some additional criteria, which is what I hope will be the case is.
  - Response – Justin Joiner: Yes, this is one input into the beginning of the scoring and weighting conversation.
- Slide 43 – Final Discussions
  - Comment: I think asking us to select percentages is not helpful. The answers will be arbitrary. I think qualitative questions would be more useful. I don't intend to respond.
  - Response – Matt Lind: That is noted, the intent is not to be arbitrary but to reduce bias as much as possible. I appreciate the perspective. To put all on an even playing field is very challenging and we would like to avoid introducing bias in the RFP language by having a measured approach with a percentage weighting. There is logic and rationale to it so that evaluation process is more predictable and less arbitrary.
  - Response – Justin Joiner: You could put 100% at most and 0% if you don't care about it. We could reissue as good, better, best but there are text boxes for more comments.
  - Comment: Us selecting this arbitrarily is not that helpful, you have employed 1898 as an expert here, so I personally think it would be more useful for 1898 to show their most important criteria and then have the RPAC weight according to criteria sentiment.
  - Response – Matt Lind: I appreciate the comment there, thank you. We truly do want to hear what you all think are the most important considerations. There is not going to be consensus on everything here and this was designed to gather feedback.

- Response – Justin Joiner: This is the first request to get input. From what I am hearing, we need 1898 to come up with something that you can evaluate, and it may be more helpful to look at and then provide feedback? Is that more consistent with what RPAC members would like?
- Question: We appreciate you want feedback early and often. This is the starting point and then we will refine it more as we move forward. Yes, we would really like opportunity to provide feedback. Do you envision us being able to look at those more detailed scoring metrics in the future?
- Response – Justin Joiner: This is just general feedback and then it will be more granular in the future. We can come up with a proposal for future RPAC meetings for discussion purposes. April or May issuance is the goal. If we need an Ad Hoc meeting, we can do that too. We are going to take all this feedback, think about it, and be responsive. We want RPAC feedback and opinions. If folks would like to respond to the survey, it would not hurt and would help focus our efforts. This is just the first step of the process.
- Comment – Matt Lind: There has been a lot of discussion and feedback and we appreciate that. The minutes will be issued from this meeting, and we will want your feedback on them. The Southwest RA study will be provided in more detail. We appreciate the engagement and discussion, and we want that moving forward.
- Comment – Justin Joiner: I am thankful and happy with the dialogue today. We have a lot of work ahead of us and we look forward to the next meeting. For those that I have not spoken with be looking for invites coming in the future.

New Action Items:

- 1898 & Co. to update RFP survey and issue to solicit RPAC member feedback.
- 1898 & Co. to provide an example of a weighted RFP scoring criteria for RPAC members.
- APS and Justin Joiner to schedule remaining meetings with RPAC members for formal introduction.