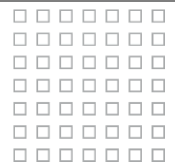


Meeting Objectives

- Provide recap of previous RPAC meetings and provide status of previous action items.
- Summarize RPAC feedback and suggestions for future RPAC meetings.
- Provide an update on the 2022 ASRFP bid submissions, high-level statistics on the results, and current industry developments impacting bid pricing.
- Provide RPAC members with an update on the 2023 IRP schedule and future RPAC meeting topics.
- Discuss ongoing developments occurring with the ACC.

Meeting Subject: August RPAC Meeting
 Meeting Date: 08/24/2022
 Start Time: 09:00am
 End Time: 12:00pm
 Location: Virtual

Attendees	Organization	Title/Role
Justin Joiner	APS	Vice President of Resource Management
Jessica Hankins	APS	RPAC Liaison, Resource Planning
Todd Komaromy	APS	Director, Resource Planning
David Peterson	APS	Advisor, Corporate Strategy
Mike Eugenis	APS	Manager, Resource Planning
Derek Seaman	APS	Manager, Resource Acquisition
Sadiya Jama	APS	Business Analyst, Resource Management
Lakshmi Alagappan	E3	Partner
Nick Schlag	E3	Partner
Adrian Au	E3	Consultant
Matt Lind	1898 & Co.	Director of Resource Planning
Evan Lipsitz	1898 & Co.	Consultant
Chase Kilty	1898 & Co.	Consultant
Keaton Clark	1898 & Co.	Analyst
Alex Routhier	Western Resource Advocates	Senior Clean Energy Policy Analyst
Autumn Johnson	Western Resource Advocates	AZ Gov. Affairs Manager
Gary Dirks	ASU	Director
Johnny Key	Freeport-McMoRan	Director
Cynthia Zwick	Wildfire	Executive Director
Nitin Luhar	Mitsubishi Power	Regional Director
Daniel Schwiebert	Arizona Corporation Commission	Policy Advisor
Amanda Ormond	Ormond Group, LLC	Principal
Sam Johnston	Interwest Energy Alliance	Policy Manager





Matt Lind (1898 & Co./Director of Resource Planning) – Introduction/April RPAC Recap/Updated Meeting Guidelines

▪ Slide 3 – Meeting Guidelines

- RPAC meeting materials will continue to be shared three business days ahead of meetings.
- RPAC meeting guidelines will remain consistent to previous meetings and an open, communicative environment will continue to be encouraged.
- **Comment – Matt Lind:** I really appreciate everybody's participation and willingness to following all the rules and guidelines with the RPAC meetings. I think it's been a really great experience and process so far.

▪ Slide 4 – Following Up

- APS and 1898 & Co. will continue to track action items from meeting to meeting.
- All previous action items up to this point have been closed.

▪ Slide 5 – Meetings Recap

- Original RPAC meeting was in April of 2021.
- RPAC meetings have covered load forecasting, evolving resource adequacy concerns, and the 2022 All-Source RFP evaluation and selection process.
- The future of the RPAC will primarily be focused on the results of the 2022 All-Source RFP and the 2023 IRP.

▪ Slide 6 – A Word on Inflation Reduction Act

- The Inflation Reduction Act legislation was signed into law Tuesday of last week and there is a lot of interest around the impacts.
- **Comment – Matt Lind:** I can tell you that there is a lot of exploration on how the legislation impacts the process of doing business, procuring resources, and the costs of those resources. There is a lot to try and unpack. While we understand and share the excitement around the IRA, there are no definitive conclusions on exactly what the impacts will be. We do want to make sure that we are hearing you and talking about what APS is looking at and how APS is making sure they are factoring it into the evaluation process, resource selection, and future resource planning efforts. I want to open up the conversation and have a discussion around the IRA impacts to start the meeting off.
- **Comment – RPAC Member:** It's really early to make any conclusions, now having said that, we are very confident that this is going to have the potential for big impacts. What I would maybe put on the table, not so much for APS specifically, but for all of us, is do we need some kind of a community discussion about this? About what the implications of IRA are going to be, particularly in the context of the of the very substantial changes that APS and the other utilities are already driving in the energy sector in the state? IIRA was not an inconsequential act either. It just feels to me like we might, as a community, benefit from some sort of joint conversation. I don't have a proposal to make about that, but I just put it out there for reflection.
- **Response – Matt Lind:** I appreciate the comment and suggestion there. Any others have any comments, thoughts, or reactions to the meeting suggestion? Would you be able to expand on the recommendation? Do you have an idea on the best way to facilitate that type of meeting.



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- **Comment – RPAC Member:** I don't know that there's necessarily a best way. It'll probably come down to which groups of people feel inclined to take on the task of convening and structuring the conversation. I imagine this would be something that might happen out of ACA. The governor has an office set up where his administration is looking at this federal money and asking the question, how does Arizona benefit from it? Arizona Thrives has been creating a forum where we could have these types of discussions. ASU has a number of centers that would have the ability to host something like this. I think we have options. It's more going to be the question of, would people come and participate? Would they see this as an opportunity to look in a more integrated way at what these pieces of legislation mean? I want to keep emphasizing that a lot of very good work is already going on in the state in the direction of transformation in the energy system. The question is who would be willing to take it on, will people come, and will people be interested in having this kind of conversation?
- **Response – Matt Lind:** Good comments and I have put down a note to consider this type of discussion in a broader perspective.

Todd Komaromy (APS/Director of Resource Planning) – RPAC Updates

- **Slide 8 – RPAC Updates**
 - **Comment – Todd Komaromy:** During our summer break I wanted to get a chance to get to know all of you a little bit better and also make sure that we are on the right path as an RPAC. I extended an opportunity to meet with each of you individually and over a dozen took me up on that offer and I really appreciate that. We were able to discuss, in those sessions, the very real challenges that we have in the West from a resource adequacy perspective and the transformation of the energy sector that we are enduring. From those discussions, we were able to chart a path for the RPAC moving forward.
 - Overall feedback from RPAC members indicated satisfaction with the RPAC meetings and process. Common themes that were mentioned include:
 - Providing RPAC meeting materials in advance
 - Overview of the material is very helpful and spurs open, transparent conversation
 - More opportunities for open discussion
 - Continue to make modifications to approach based on RPAC feedback
 - Consensus that hybrid meeting was not preferred
 - General group size is satisfactory
- **Slide 9 – RPAC Updates Continues**
 - In general, there were not a lot of offerings for change.
 - After pressing, a few opportunities for change were offered. The summary of potential changes include:
 - Send general updates in lieu of meetings, if warranted.
 - Send notices of relevant filings and/or Commission appearances.
 - If feedback is needed, make direct ask in advance to allow more time for preparation and response.

Matt Lind (1898 & Co./Director of Resource Planning) – 2022 ASRFP Update

- **Slide 11 – Overview and Schedule**

- Proposals were received on Friday, July 15th after a one-week extension.
- Weekly calls ongoing between APS, 1898, and the Independent Monitor to discuss the RFP process.
- IRA impacts may be further understood by short list negotiations.
- There was a robust response from the market and APS and team are in the midst of a robust evaluation process to get to the negotiation phase.
- **Slide 12 – Participation Data**
 - 187 registered entities in the PowerAdvocate platform. This value includes duplicate companies per the RFP requirements for multiple submissions.
 - 78 signed confidentiality agreements.
 - 46 different entities submitted one or multiple projects into the All-Source RFP.
 - 74 unique project sites. There were approximately 95 base bids submitted into PowerAdvocate with 110-130 pricing variations.
 - APS and 1898 are working in a fast, methodical manner to evaluate the bids effectively.
 - **Question – RPAC Member:** Can you give us any disaggregation of those bids? How many of those are solar plus storage? How many are energy efficiency? How many are gas? Are you able to give us any kind of breakdown on the kinds of bids that you received?
 - **Response – Matt Lind:** That's a great question. We did not have that detail broken out in this presentation. We must be careful about how much detail we can share but we certainly do want to share as much about the bids as possible. We did have a substantial amount, probably over half of the base bids, that were hybrid offerings. So, we had north of 50 total projects that were solar plus storage of varying duration, size, and site location. We also had, to different degrees, submissions of standalone energy storage, solar, wind, and thermal. The number of standalone solar, wind, and thermal bids were all fairly limited. Standalone storage was a more robust option within those categories. The numbers are still fresh, and we are working through clarifications with bidders, but we do intend to share more detail on the breakdown of the composition of the bids. More details will continue to be forthcoming when available.
- **Slide 13 – Minimum Participation Screening**
 - The RFP evaluation process is a four staged screening evaluation.
 - The first stage in the evaluation process was to review all of the proposals to ensure they meet the minimum requirements as stated in the RFP document.
 - APS notified Respondents of non-conformance with an opportunity to cure.
 - Cured bids with reviewed by the IM before accepting.
 - All but one proposal was cured and moved through to the next evaluation stage
- **Slide 14 – ASRFP Early Reactions**
 - Diverse resource offerings including hybrid solar plus storage, standalone battery energy storage, standalone solar, standalone wind, and standalone thermal resources.
 - Scoring stage of evaluation process is ongoing.
 - Early-stage evaluation price comparisons to previous All-Source RFP show significant increase (+20-60%) across all technology types.
 - Observed price increases are consistent with other recent 1898 & Co. resource solicitations.

- **Question – RPAC Member:** Can you say more about thermal options? Just gas? What percent of the bids were they?
- **Response – Matt Lind:** There were approximately five to ten stand-alone solar, wind, and thermal bids independently. So, there were limited buckets for each one of those options. Thermal options were all gas in nature. There were varying sizes, both smaller and larger scale options, and they were mostly existing resources looking at extension. The percentage was roughly 5 to 10 percent of the bids that were submitted.
- **Question – RPAC Member:** You mentioned there were some outliers as far as the price increases and I was just curious, you said all technologies had an increase, but some technologies were in the 60 percent range, and I was wondering which technologies had the largest increase?
- **Response – Matt Lind:** Storage had more impacts where we saw cost increases on the higher end in this range.
- **Question – RPAC Member:** I have two questions, the first is I'd like to dig a little bit more into the storage options. What was the longest duration storage that was bid?
- **Response – Matt Lind:** The standalone storage options that were offered were all four hours. A healthy number of options from a number of different entities were four-hour duration. What was interesting is that the variation in the duration was really found in the hybrid options. There was a limited amount, but there were some that had ten plus hours of duration. There was variation anywhere from three hours to ten plus hours of duration, but predominantly speaking, the four-to-six-hour duration was more common.
- **Question – RPAC Member:** I'm glad to hear we are seeing longer duration bid into the RFP. My second question is this, these price increases are big by any energy industry standard. How much of that do you see as short-term problems in the supply chain that will work themselves out? How much of this do you think represents long-term structural changes in the in the industry and can be expected in the future rather than seeing consistent price decreases in a lot of these technologies? Do we now have to be conditioning ourselves to flat or rising prices?
- **Response – Matt Lind:** I don't know if APS folks want me to provide some perspective first, but I do think this a great question that will certainly be good to hear from APS and E3 to get their perspective as well. I'll jump in with a few thoughts. Projects are being cancelled because the agreed upon price is no longer realistic because prices have gone up. I also think that the Inflation Reduction Act is going to add considerable demand into an area where there is still clearly supply chain issues to be worked out. This creates uncertainty around how long elevated prices will continue due to a variety of issues. We're seeing price increases not just in this solicitation, but in others around the country. The reality of this is there is limited supply and high demand in various jurisdictions throughout the country. I think that there are supply chain issues that are being corrected and worked out and there may be softness in other economies throughout the world that could help with the demand side of the equation. We are in an environment where we are seeing elevated pricing and I am cautious to assume that we are heading towards a lower cost curve in the near future. It is possible that it could happen and there are outcomes that could drive that. This is not just a battery storage or solar issue, there are natural gas prices and commodity prices that are increasing. Pricing also continues to go up with inflation, so we need something like the IRA to kick in and stagnate the price increases.
- **Question – RPAC Member:** Who sees the pricing and commercial terms? Considering 1898 views other's information and 1898's owner, Burns & McDonnell, could be seen as a competitor to the bidders.
- **Response – Matt Lind:** 1898 has had discussions around this potential conflict of interest in the past as a general topic with APS so I appreciate your question. The potential conflict of interest is something that we take very seriously.

Specific members within 1898 are restricted via physical and electronic firewalls so that sensitive information is not broadly seen beyond the individuals that are involved in that specific project or activity. So, for example, with the APS ASRFP we only have a handful of individuals that are involved. It's a tight restriction as far as who sees the information. We are part of Burns & McDonnell but there is a separation of pricing and resources between Burns & McDonnell and 1898.

- **Comment – RPAC Member:** There are always concerns, and I have heard this question many times, even on other RFPs. I know there can be leakage and I wanted to bring this up having been on both sides. I appreciate your answer.
- **Question – RPAC Member:** What can you say about the uncertainty created, especially for the solar industry, by the up to 30% import duties and the antidumping cases? And the 24-month bridge created by President Biden's executive order in June? How are the bidders dealing with this since it could create upward pricing pressures obviously, but also uncertainty for a 10–15-year project?
- **Response – Matt Lind:** This was happening during our RFP schedule and many bidders requested an extension based on impacts from the 24-month bridge and pause in tariffs that were part of the anti-dumping investigation. It is something that we have asked for clarity in bids as reasonably as possible to allow for us to evaluate projects without optimistic assumptions around something that may or may not materialize. The 24-month pause, and the Inflation Reduction Act will be something that may impact bids. As we move forward with the RFP evaluation, we are certainly going to be asking any bidder that is short listed or in contract negotiations about the impacts that these recently passed legislative initiatives have on bid pricing. Hopefully we will see positive benefits to APS customers in doing that.
- **Question – RPAC Member:** Do your supply chain comments regarding prices only apply to renewables or are you talking about gas too?
- **Response – Matt Lind:** The supply chain comments do not apply to renewables only, all aspects of the power sector are seeing impacts from that, so it's not isolated to renewables by any means. The impacts are not the same across the industry though, there are differences depending on different technology types or sector.
- **Question – RPAC Member:** I had a question about the potential savings that could be generated by the IRA. I think we're kind of circling around to the answer, but I just wanted to flag this as a potential issue. How do you determine how to share any savings between the shortlisted bidder and APS? Is that just an open negotiation item or are there terms and conditions of the RFP that address that?
- **Response – Matt Lind:** The RFP did make assumptions around capturing as much of the positive benefits of any policy for APS customers. Each kind of technology is going to be impacted differently based on policy type. In general, we would hope that the outcome would be a reduced price that would benefit APS customers.
- **Response – Derek Seaman:** I think we are at an interesting point that we happened to launch an RFP and then this favorable tax language has come our direction. I say that because we have already gone through the mechanism of having respondents bid in and identify our need. So, what we will do during the short list process is we will let bidders know that they are still competing against each other, and they will have the opportunity to demonstrate a favorable approach moving forward with the legislative changes that have occurred. I know we're hearing from some developers they're still trying to digest this, as are we, but this really puts the incentive on the respondents to put forward the best bid possible. We're at the forefront of this effort. Others might be trying to quickly gather information and put together an RFP and go to market, but we're already in the market saying here are the resources that are available, but we have the right timing to make sure we negotiate this the right way.



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- **Slide 15 – Remaining Steps**
 - Completion of the quantitative and qualitative scoring that was laid out in the scoring section of the RFP.
 - Complete portfolio evaluation screening in October.
 - Identify short list for contract negotiations by the end of October.
 - Execute contracts with selected proposals during Q1 of 2023.
- **Slide 16 – Discussion & Questions**
 - **Comment – Matt Lind:** APS would like to reiterate that as the RFP data is further evaluated, more information will be shared and made as transparent as possible.
- **Slide 17 - Break**

Derek Seaman (APS/Manager, Resource Acquisition) – APS Resource Acquisition Update

- **Slide 20 – Market Review – 2022 YTD**
 - Russo-Ukrainian War is impacting metal and fuel pricing.
 - China’s no-COVID policy disrupts clean energy supply chain
 - Solar industry grinds to a halt
 - Price increases are felt by all markets
 - Further supply chain challenges
 - Port of Durban largely shuts down cobalt shipments
 - EV manufacturers shift from NMC to LFP chemistry
 - Solar projects flood the market, increasing demand and pricing
 - Energy markets still evaluating legislation but will certainly increase demand for clean energy
 - **Comment – Derek Seaman:** The main point of this slide is to highlight recent events that have impacted the industry in the short-term. A lot of this is to highlight why we took the approach that we did with the RFP to ensure that we are getting accurate price bids and why we are seeing 20 to 60 percent price increases across the industry. This is also about transparency. We can’t just accept price increases as is, but we really have to understand why prices are going up and determine if it is a justified increase. The strategy that we took for the 2022 RFP is still playing out, it has not been a perfect strategy, but it has allowed us to manage these price changes and we have a means to get through the bids effectively.
 - **Question – RPAC Member:** The global energy system has worked over the recent history in terms of energy supply. As we are seeing with the Ukraine conflict, energy is back in the forefront of strategic conflict. The Europeans are going to go through a very tough time disengaging from Russian hydrocarbon. For renewables, we are very dependent on the Chinese. Are you seeing any movement yet towards strategic disengagement with the Chinese? Do you anticipate that there's likely to be strategic disengagement from the Chinese? I do think as a nation, we need to start considering changes to our supply chain.
 - **Response - Derek Seaman:** The IRA is a mechanism to try to take that first step and diversify away from China on the clean energy supply. I think everybody is recognizing that having concentrated supply coming from one nation, whether it's China or any nation, is a potential recipe for disaster, especially when you have global disruptions. Developers are looking at how they diversify their supply chain so that they are not trapped into a cycle where suddenly one contract



is upended, and requirements cannot be met. We've seen things like Indian panels being offered that come at a premium but are less risky. I don't want to speculate too far on whether the IRA will be successful in diversifying the supply chain. I think that there are a lot of cost calculations that need to go into this. We are going to have to navigate this for the next couple of years and there are some analysts that are saying they think there is some level of real relief that could come in 2023, others are saying 2024. I think any additional level of volatility that you see in the market, for example, any expansion of the Russo Ukrainian war, or any similar events to what we have seen with COVID could easily extend supply chain constraints and expand cost increases into 2025 or 2026.

- **Comment– RPAC Member:** I think there is a growing realization amongst senior leadership in the utility industry about bifurcation, or a separation from China with the supply chain. There is a lot of activity going on with the IRA, the Infrastructure Investment Act, and President Biden's use of the DPA to onshore manufacturing of EVs, battery storage, and other technologies. This is a trend that is going to continue for the utilities industry in the US. The energy industry less so because it has operations in Russia, China, and different countries that are considered to be strategic competitors of the United States. The second point I'm going to make is that we're not going to do this overnight. Even in the EV industry and in the battery industry, there a lot of things that we can reduce dependence on but we're still going to be part of a multilateral trading system where China, Russia, Indonesia, Congo are mineral superpowers. So called Mineral superpowers are going to exert influence, so I think we have to be prepared for that and both the government, and the utilities to plan for that with reserve capacity. The third point I'm going to make is that prices are going to go up, no question. We haven't produced minerals in this country for so long, we haven't developed these processing facilities for the minerals for batteries storage systems and it's going to be expensive. The environmental reviews are going to be intense. Local communities are going to resist. All of this adds to cost uncertainty. We need to think of these cost increases seriously. Costs are also going up for thermal resources. For those of you who read the Wall Street Journal today, or the news, gas hit over \$10/MMBtu yesterday due to a fire associated with an LNG facility. These types of events highlight that even for thermal resources, prices are probably headed upwards too. The renewables are probably going up too. It is very difficult to deal with this at the utility level in an RFP, because you are dealing with uncertainties over a 15-year project that are hard to quantify, and I sympathize with you.
- **Comment– RPAC Member:** I think this is really important discussion. I don't see how we avoid a world where tensions with China don't just get materially worse from what they are right now. I think it does become important for utilities to ask questions about how fast we can reasonable move away from strategic dependence on those type of supply chains.
- **Comment - Derek Seaman:** Thank you for your comments. This is one of those items that I lose sleep over. How to we make sure that we put a plan in place to make sure that we are having the right conversations with developers on how they are managing their supply chains. The success really does ride on having that trust, having that transparency, and having strong agreements with the developers. Yes, if suddenly China decided they were shutting down all exports for a period of time, it is going to be massively disruptive. Again, we are not going to be able to fix it overnight and it is going to take years of work. I'm glad to hear that the conversations are being had and that there is recognition of these issues. I still believe that we have a strong plan for how we are going to procure these resources for APS' future.
- **Question – RPAC Member:** Gas prices are up, way more than 20 to 60 percent. So, what I'm curious about is when you're evaluating the proposals, are you only looking at capital costs? Is that right? You are not looking at any operating costs? What I'm having trouble reconciling in my mind is that ratepayers must pay for the increase in gas through fuel



adjustments. It seems very confusing to me that you wouldn't be looking at total ratepayer impacts when you're comparing the different technologies. Can you confirm that you are not at all considering fuel prices when you're evaluating the ASRFP?

- **Response - Derek Seaman:** We are considering fuel costs when we're evaluating the ASRFP. We're still comparing among resource types, but I will explain it at a high level. We look at a forward fuel curve when evaluating the cost of the gas units. When it comes down to comparing across resource types, that's where we're going to be performing a portfolio analysis with a forward fuel curve. So, fuel price absolutely factors into the cost and whether that resource makes sense versus another resource.
- **Question – RPAC Member:** We have been seeing large fuel adjusters on recent utility bills. I think SRPs was recently as high as 10 percent this week. Ratepayers don't really care when they pay for it, they just care that they are having to pay for it so I just want to make sure that this is being considered.
- **Question – RPAC Member:** Can let us know what the price is when you think about forward fuel curves? What is the starting price? If you were to look at a price curve from last year, they would be a whole lot lower than they are today, so I am interested in how this is dealt with.
- **Response - Derek Seaman:** I am going to look for either 1898 or resource planning to provide more detail but what I will say is that it is a higher initial gas price but then forward markets do show it settling down overtime.
- **Response - Mike Eugenis:** In the near-term, we have all the current pricing information for fuel. As we look at the next couple of years, we utilize the forward contracts to determine what fuel prices are, and then for the forward price curve that we use in longer range analysis it's difficult to predict market volatility. There's generally a return to macroeconomic trends within that price curve and that's what we utilize going forward. We update the prices as we get more information and when we go through these periods where prices spike. Just a few years ago you had incredibly cheap gas, so you see both sides of this coin as you evaluate prices over a long period of time.
- **Question - RPAC Member:** I appreciate that but I'm looking for numbers because that's all kind of generic what you just said. I think that when I look at gas price long term, utilities always have slow price growing curves. I think that if we did the analysis of any period of gas price spikes, not like we're in now, but even short term, that the cost to consumers can be overwhelming compared to just having a slow price increase. I think from a modeling standpoint, it's always helpful to add in some gas price spikes to see what that would do to the overall economics. I think that because of the war, because of LNG going offshore, I just don't know that we're going to have a return to \$3 gas. I'm curious what the starting number is. Is it six and above? Is it three to five? I'm just curious where you are pegging gas. When you talk about return to normalcy, over what period is your analysis showing? A year? Five years? Ten years? All this stuff really matters.
- **Response - Justin Joiner:** To alleviate the concerns regarding gas pricing, we have a gas hedge program in place that hedges our position 85% current year. This year it has had substantial value and has protected our customers. For any short-term spike, such as the February 2021 freeze off, we are 85 percent hedged. Obviously, something that is in perpetuity or extends beyond a 12-month calendar year, is something that would be different. We can mitigate those spikes that are 12-months or less with our hedge program.
- **Question – RPAC Member:** What about the longer term?
- **Response – Justin Joiner:** Longer term, we must look at the assumptions that go into the IRP and look at the book ends and look at multiple industry projections. The long term is a different scenario for sure.



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- **Comment – RPAC Member:** I agree that it is a really challenging time to come up with these costs. With gas and where we are with the war in Europe, I think it will be a five-to-ten-year proposition that will keep gas prices elevated. It is of utmost importance to get as much information as you can. I'd say, do scenarios that look at very high and low gas prices and I know that you do that, but the more clarity that you can bring to the RPAC group the better.
- **Response – Justin Joiner:** I agree that it's all about the book ends and a couple years ago we never would have book ended \$10 or \$12 gas. Right now, it seems hard to bookend \$2 gas, but I think it's important that we do have both of those proper parameters that you're speaking of, and I vow that we will do that.
- **Comment – RPAC Member:** Again, it depends on the timeline, and I think over the next five or so years, \$2 gas is a longshot so I would be careful at how low your low end is.
- **Comment – RPAC Member:** Regarding gas, I think that Justin has explained how you deal with price spikes. The hedging program is a common way to deal with that. There is a long-term trend starting that I'm not sure to what extent markets have fully factored in and that is the reluctance of the oil and gas companies to return to drilling. There was a dramatic drop off when oil prices went negative around March of 2020, and it's been remarkably slow in coming back. Although those companies lost enormous amounts of money during that time, they're making more money now, but they're giving that back to their shareholders. I think if this trend continues, and I don't see an obvious reason why the public companies would change their mind, there is a possibility where we are going to be in an environment where we're going to be supply constrained simply because there's a reluctance to do a lot more drilling.
- **Response - Derek Seaman:** I don't disagree. I think that will be business as usual for that industry in today's current environment. I don't think that they're going to expand or retract, and we'll stay in that constrained environment, at least to some degree. I think policy would be the biggest driver, or the quickest driver to change that industry. We're absolutely going to take all feedback that we hear in these meetings and think about it as we look at our IRP and what we have for our book ends. We will make sure to keep the teams informed as we move forward.
- **Comment – RPAC Member:** We now have three pieces of legislation that are all somewhat pointing in a clean direction that are not listed on this slide. I think this is really important information that needs to be talked about because it is material to where we are going over the next decade.
- **Response – Derek Seaman:** As far as the clean legislation, we have the IRA listed but it sounds like there are a couple others that you may be thinking about?
- **Comment – RPAC Member:** Yes, there is the CHIPS and Science Act that is 50 billion in R&D and the infrastructure bill.
- **Response – Derek Seaman:** You're right, we should have both of those on this slide. That will have an impact in longer-term planning. We were trying to highlight what is impacting today's pricing. Bidders aren't doing anything that is speculative or might be changing in the long term. We are going to be asking the bidders to update their pricing during the short-listing period to put in their best offers for the short-term.
- **Comment – RPAC Member:** I agree it's not short term, but I think to a previous point about drilling, is the gas industry come back to and do massive drilling? I don't know if you have heard about the industry coming back to do drilling for geothermal. How robust is the gas industry going to be in the future. This country has never had a direction or an energy policy and that has changed in the past two months, and I think that has tremendous potential to set things in motion.



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- **Question – RPAC Member:** Supply constraints leads to high prices I think the gas issues are relevant to the ASRFP too, not just the IRP. What we build is going to have huge consequences. Are we going to be able to account for new resources from the ASRFP in the 2023 IRP?
- **Comment - Derek Seaman:** We are sort of at an intersect here in terms of what we are able to procure and get contracts signed for ahead of the work that starts with the IRP. It's an ongoing process, so once they start building the models, they can go back and make some adjustments along the way. I think the important part is that we capture the resources that we need and that we anticipate taking within the IRP. As much as we've signed agreements, we will make sure that those are incorporated in the model to that level.
- **Slide 21 – Discussion & Questions**
 - **Comment – Matt Lind:** I would like to take a moment and acknowledge that I really appreciate the engagement and discussion to this point. I would like to point out that the IRP and the All-Source RFP has some relation. We are not ignoring fuel price in the ASRFP and to any extent that there is blurring between the RFP and the IRP I would like to point out that a lot of the assumptions that go into the evaluation of the RFP and we are seeing some linkage with the IRP process. This is where some of the references are one in the same.

Mike Eugenis (APS/Manager, Resource Planning) – 2023 IRP Schedule

- **Slide 23 – RPAC Phase 2 Meeting Overview**
 - Three more meetings prior to the end of 2022
 - One for September, the next meeting
 - One in October
 - One in December time frame is anticipated
 - There is an RFP out currently and information is still being processed.
 - We're going to continue to update the stakeholders with information from the RFP as we continue into the shortlisting and negotiations.
 - Focus will shift to work that is being done for the IRP that is due in August of 2023.
- **Slide 23 – Preliminary Timeline: 2023 IRP**
 - Load forecast that was previously put together in tandem with the RPAC group will be revisited.
 - Model assumptions will be developed and updated internally. These include things like the forward pricing curves or any results from the All-Source RFP that should be included in the model.
 - Information is constantly being update but APS will need to lock down modeling assumptions at a certain point and start building portfolios and utilizing production cost models and capacity expansion models to put together more information for the IRP development.
 - RPAC members will be involved in the discussion around the development of portfolio sensitivities and technology assumptions in Q1 of 2023. The APS team will also begin capacity expansion and production cost modeling, as well as start the draft IRP.
 - Preliminary modeling results will be discussed with the RPAC members in Q2 of 2023. IRP draft will be revised and finalized with a target completion date of August 2023.

- **Comment - RPAC Member:** I just want to say thank you. I really appreciate the amount of RPAC inclusion that you have in the timeline here. My recollection of last time is that we didn't see any of the scenarios that APS put in the final IRP until it was filed. I also want to flag something I've mentioned a couple of times. In the last IRP there was talk of hydrogen capability in the final IRP that we never discussed during the entire year. Is there going to be inclusion of technologies that are not viable today, in a 20-year kind of planning horizon? I really hope we're going to spend time discussing this over the course of the next year. Last time we started going to meetings in December of 2018 for a filing in June of 2020. It was a full year and a half, so I'm just interested because TEP is also starting a lot later this year, so we only have one year to do the entire process. Are you feeling confident that we don't need as much time as the last IRP?
- **Response – Mike Eugenis:** As far as involvement in the process and how long it takes us to do this process, we have elements that push us to start as late as possible and then others that push us to start as early as possible. When we think about the assumptions that we utilize for the IRP, we want to have the most up-to-date information as we can. So, we want to lock those assumptions down as late as possible. This is what pushes our time frame out a little bit as we do this study work. The counter point is that it's a very aggressive timeline from the amount of work that's required from our internal team. We're also being requested to do more portfolios than we have in the past from the 2020 IRP docket and so there's going to be considerable additional volume of work that we're doing and that we are trying to balance. We want to create a work product that ultimately is valuable and one that includes your stakeholder input in it and then also has good assumptions that back it up. We really try to prioritize these RPAC meetings to ensure that we are talking to you all about what is important that is going on with the resource management group. The 2022 IRP has been a key driver of work right now and so there was a purposeful de-prioritization of discussing IRP materials with this wider group as we were going through that RFP process. Now we are shifting from the RFP and going to point our efforts towards the IRP going forward. We'll continue to update you all as necessary. I do want to start with a comment regarding the transparency, I must give a lot of credit here to Justin and Todd who both have championed transparency throughout this process, and we intend to build in as much transparency as we can going forward in both the RFP and IRP processes. I hope you all have seen the results of that transparency as we've talked over the last year, so I think that there's a testament there to the leadership we have here at APS.

- Slide 25 – Discussion & Questions

Todd Komaromy (APS/Director of Resource Planning) – ACC Updates

- Slide 26 – ACC Updates
 - **Question – RPAC Member:** Wondering if there's a filing, which docket you are using. Is there a new 2023 IRP docket or we are using the 2020 IRP docket?
 - **Response – Todd Komaromy:** I fully intend to request the creation of a new document for 2023 IRP work.
 - **Question – RPAC Member:** Can you share the new docket number when it is available?
 - On August 16th, the Commission voted to postpone acting on the rulemaking effort related to All-Source RFPs and IRPs until 2023 when a new commission will be sworn in.
 - On August 22nd, the commission held a distribution demand side resource aggregation tariff stakeholder workshop. All the materials are docketed, and the docket number is 22-0143.
 - The Commission is going to be holding a community solar workshop on the 30th and 31st to discuss the methodology that the Commission is planning to use to determine the value of the energy produced from community solar projects.



Matt Lind (1898 & Co./Director of Resource Planning) – Next Steps

- Slide 27 – Next Step & Open Discussion
 - **Question – RPAC Member:** I'd also like to know where we are with some organizations that have requested to join the RPAC, including Vote Solar.
 - **Response - Todd Komaromy:** We have been trying to keep the same group together as we have been working on the bulk of the RFP process. We see a natural break as we are launching into IRP planning, and we do think it's a good time to be adding any new members. Our intention is to extend those invitations so that by the September meeting we can have all the folks that are interested. Again, we received feedback that members do like the general size of the group and we don't want to get too large so we want to keep all of that in mind.
- Next Steps & Open Discussion:
 - **Comment - Matt Lind:** We have shared a discussion and list of activities to discuss in future meetings. A September meeting date, we should have that on calendars now. We are working to schedule October and December dates as well. Hopefully you all have gotten more awareness and what we want to bring into future meetings. We want to have good discussion and feedback like what was brought today. We have gone through a lot today and we really appreciate the engagement in everyone's discussion. This has really been a great process and hopefully we can continue to have it be meaningful for everybody.

New Action Items:

- APS to provide 2023 IRP docket number to RPAC members once update is made available.
- APS to share more information on All-Source RFP once data is further evaluated and summarized.