APS RPAC Meeting

1/20/2022

MEETING AGENDA

Welcome & Meeting Agenda
Matt Lind
1898 & Co.

Near Term Supply Update
Justin Joiner
VP Resource Management

Timing Considerations for Procurement
Lakshmi Alagappan
E3

RPAC Update
Jeff Burke
Director Resource Planning

Discussion & Next Steps
Matt Lind
1898 & Co.

December RPAC Meeting

- RPAC redesigned to be facilitated by 1898 & Co. and E3 to continue providing an open, transparent process.
- APS system reliability was stressed in summer of 2020 and 2021. APS wants to focus on near term supply conditions and evaluate current process for selecting and procuring new resources.
- Load forecast to be finalized and sent to ACC.

Welcome to 2022!

- Action Items from December Meeting:
  - ✓ Public posting of material on APS website
  - ✓ Share draft letter to ACC outlining the load forecast process and outcomes

- Ongoing Commitments:
  - Distribute meeting materials in a timely advance fashion (3 bd prior)
  - Transparency and dialogue

Meeting Guidelines

- RPAC Member engagement is critical. Clarifying questions are welcome at any time. There will be discussion time allotted to each presentation/agenda item, as well as at the end of each meeting.
- We will keep a parking lot for items to be addressed at later meetings.
- Meeting minutes will be posted to the public website along with pending questions and items needing follow up. We will monitor and address questions in a timely fashion.
- Consistent member attendance encouraged; identify proxy attendee for scheduling conflicts.
- Meetings and content are preliminary in nature, and prepared for RPAC discussion purposes. Litigating attorneys are not expected to participate.


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RPAC Role

What to Expect

January

Theme: Planning and Procurement Landscape

- Supply Position
- Procurement Challenges
- ***Action: Announce intent to issue RFP in April and explain RPAC role in reviewing RFP***

February

Theme: APS Specific Needs

- SWRA study
- APS needs & timing
- Resource options
- ***Action: Provide RPAC with draft RFP following this meeting***

March

Theme: Draft RFP

- Review draft RFP and get feedback on:
  - Characterization of need
  - Eligible resources
  - Term requirements
  - Evaluation criteria

April

Theme: Evaluation of RFP responses

- Bid evaluation overview
- E3 SWRA study: best practices
- Capacity valuation methodology
- Role of monitor

TBD

Theme: RFP Results & Next Steps

- Timing TBD
- ***Action: Provide RPAC with draft summary of RFP bids***

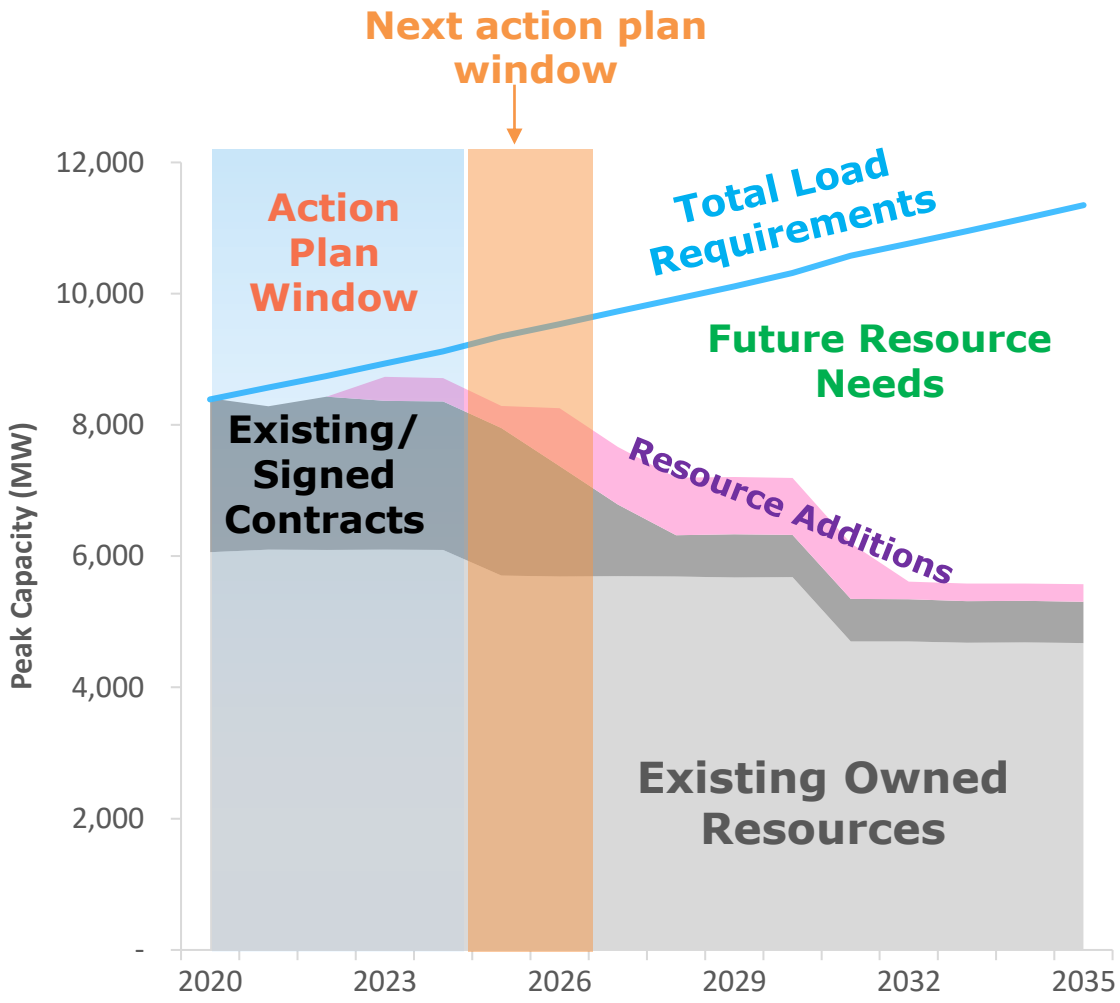
Discussion & Questions

Near Term Supply Update

Justin Joiner

Peak Resource Need Drivers

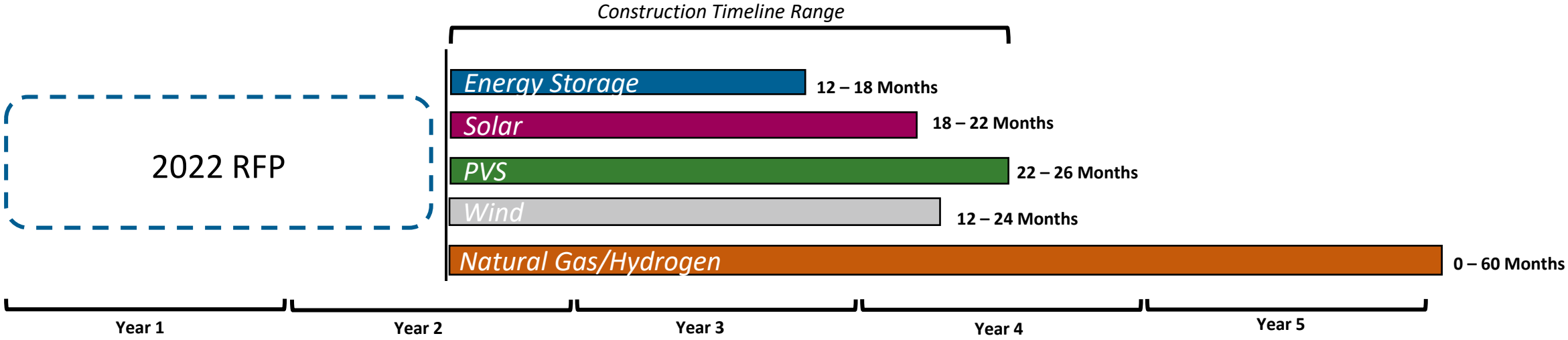
- Resource needs are driven by:
  - Increasing load
    - Enormous interest in new businesses locating in Arizona
  - Reduced regional capacity
    - Western Markets are stressed with supply demand imbalance
  - Unit retirements/contract expirations
    - New resources required to replace existing capacity
  - Lead time for construction
    - Large impacts related to supply chain challenges
  - Extreme weather conditions
    - Near-term temperatures higher than normal averages
- Resource needs will be updated when 2020 RFP is concluded
  - Conclusion of remaining contracts under negotiation expected by end Q1 2022

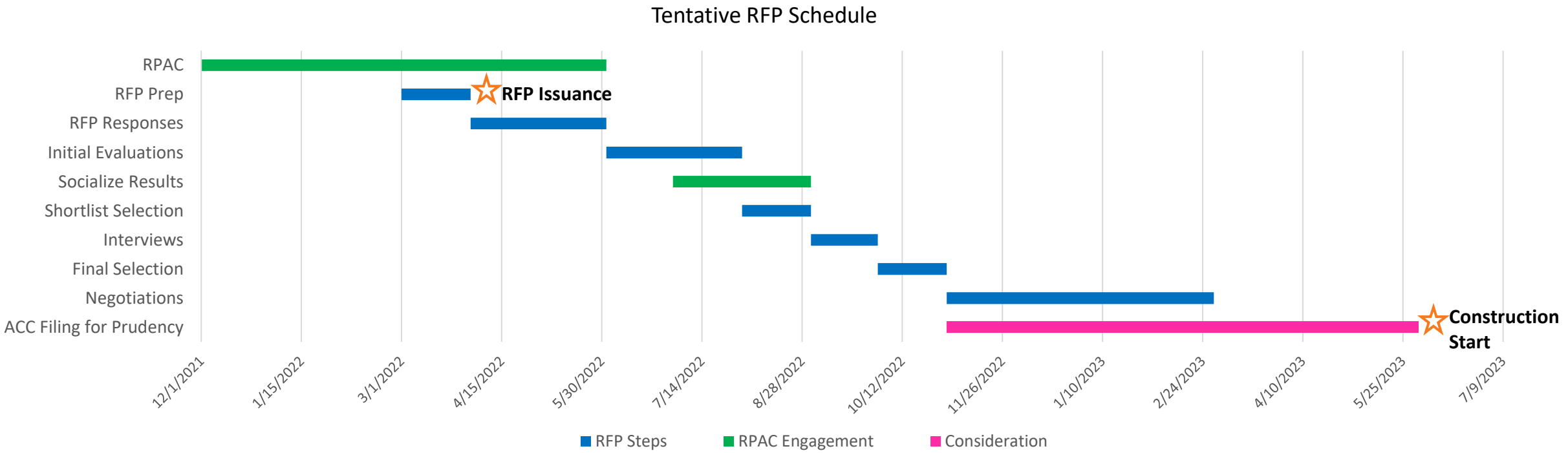


2020 All Source RFP Update

- To date, six contracts executed:
  - Renewable nameplate:
    - Solar and Wind ~ 450 MW (Reliable Capacity: 163 MW)
  - Energy storage nameplate
    - Energy Storage ~ 360 MW (Reliable Capacity: 238 MW)
  - Natural gas nameplate:
    - Arlington CC contract extension ~ 565 MW (Reliable Capacity: 565 MW)
- Over 1200 MW of renewables and 1000 MW of storage continues to be negotiated for 2024 with potential contracts executed end of Q1 2022

Typical All-Source Lifecycle/Development Timeline

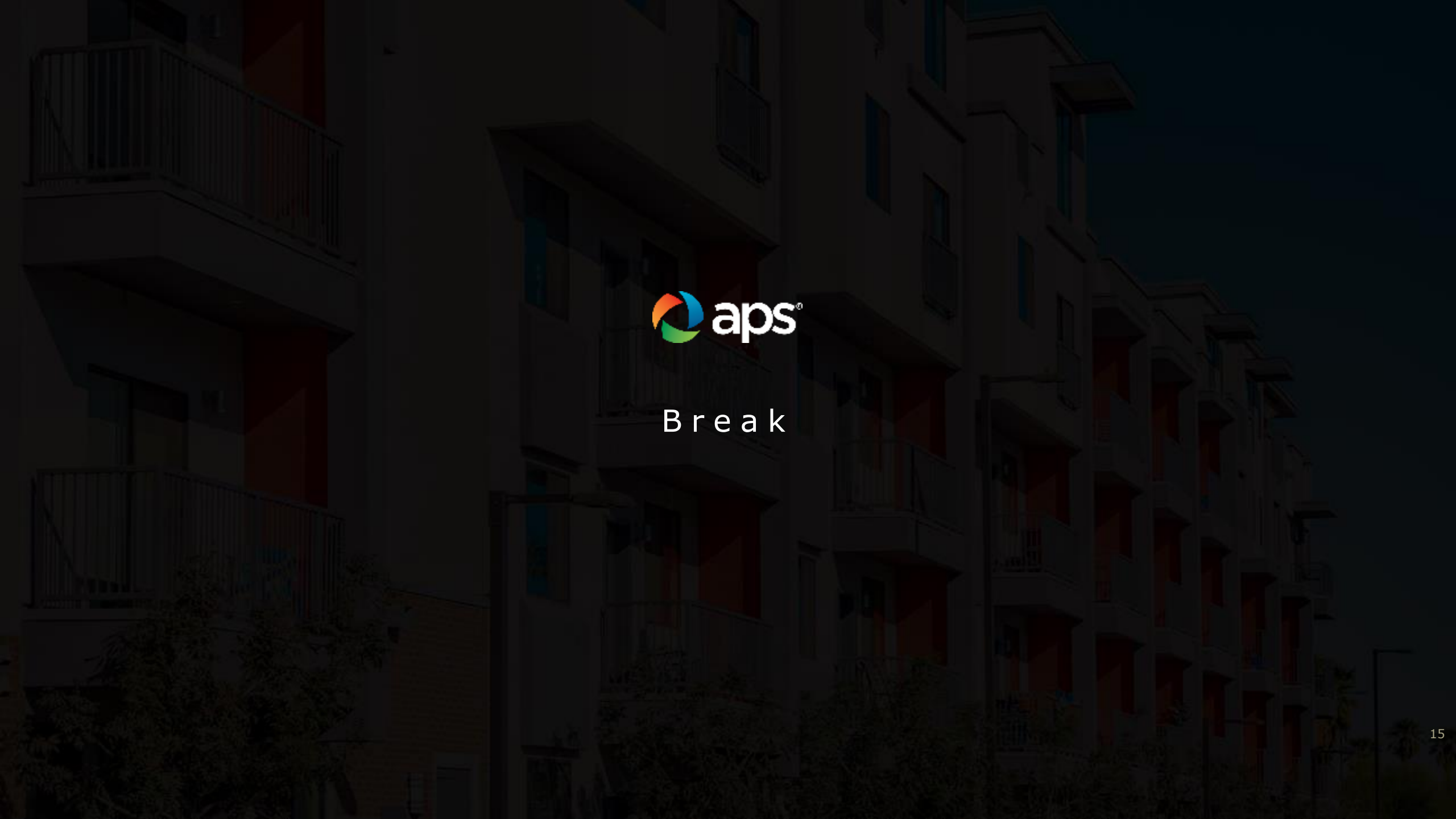




APS Resource Needs and RFP Approach

- Timing for resource additions has increased as resource needs have grown:
  - Customer additions driving load growth
  - Demand for renewable additions increasing
  - Supply chain challenges create longer lead times
- APS intends to replace RFI with RFP process to maintain system reliability, avoid duplication of efforts, and provide genuine information to RPAC
- Overview of upcoming All-source RFP will be interactive process with the RPAC
- High level results of All-source RFP process will be shared with the RPAC
  - Details of individual bids are protected under NDA

Discussion & Questions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Break

Timing Considerations for Procurement

RFI & RFP: definitions

+ **Request for information (RFI): a solicitation to developers to provide information on potential generation resources with the purpose of gathering market intelligence**

+ **Request for proposals (RFP): a solicitation to developers to provide competitive bids for generation resources that will be evaluated by a utility to fill a specified procurement need**

Key differences between an RFI and an RFP

+ **RFIs and RFPs serve fundamentally different purposes in informing utility procurement choices:**
  - An RFI helps a utility gather information on the cost and performance of different resource options, allowing it to monitor new trends and developments in the industry
  - An RFP initiates a formal procurement process when utilities have identified an imminent need for new resources in its portfolio
+ **Both instruments can provide useful information; the right option for a utility will depend on the nature of a utility's needs**

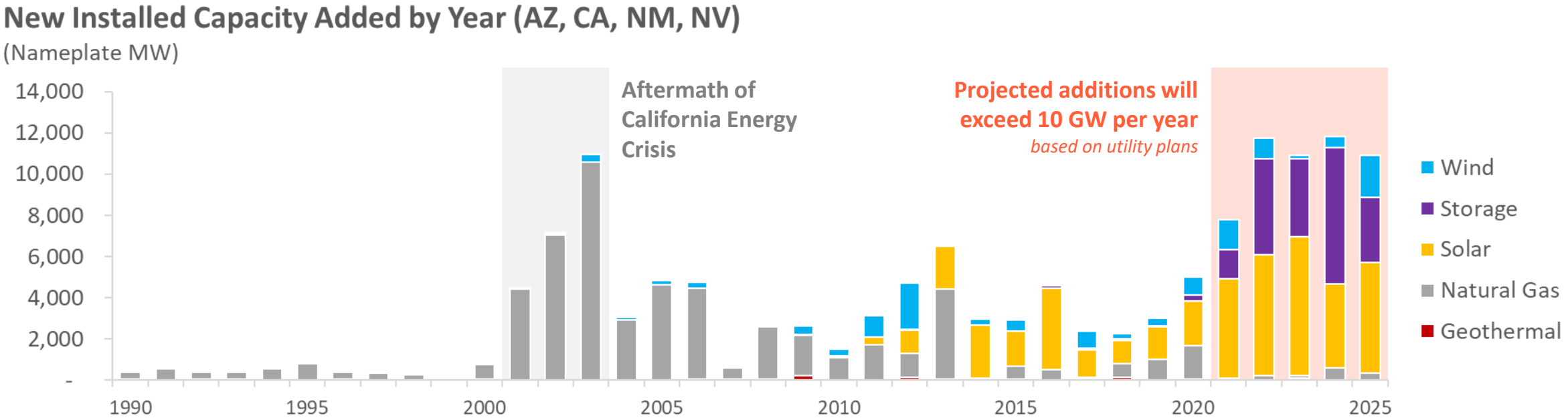
	Request for Information (RFI)	Request for Proposals (RFP)
Primary Purpose	**Gather market intelligence** *on possible costs and characteristics of new resources*	**Solicit competitive bids** *for new resources to meet a specific identified need*
Timeline	**3-6 months**	**Up to 15 months** *Timelines vary considerably based on size & complexity of RFP, regulatory requirements, and contract negotiation processes*
Reliability of Pricing Information	? *No binding commitment made by respondents; cost estimates may become outdated as technology changes*	✓ *Bidders make commitments to develop project by a specific date at a specific cost*
Requirements for Participation	✘ *Few requirements for participation*	✓ *Credit requirements and other requirements help ensure participants will successfully execute on projects if selected*

See ***All-Source Competitive Solicitations: State and Electric Utility Practices*** (LBNL, 2021) for additional detail on all-source RFPs

Development of new resources is expected to occur at an unprecedented rate

+ To maintain reliability and meet clean energy objectives, utilities in the Southwestern region must add significant quantities of renewables and storage resources in the next five years

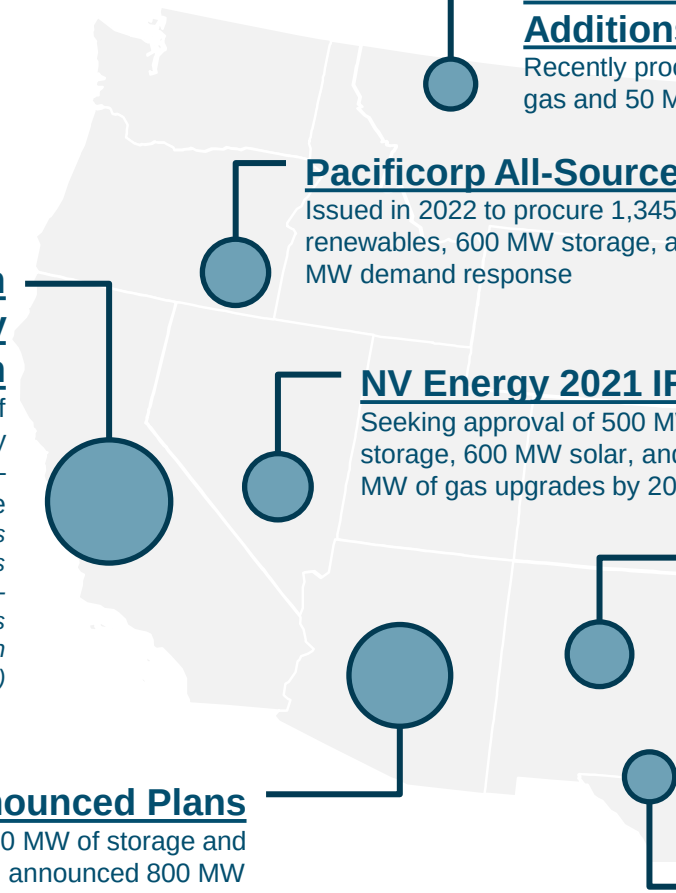




As markets tighten, utilities across the West are acting quickly to procure new resources

+ **Load growth and resource retirements are driving a need for new resources across the West**

+ **The amount of capacity being procured across the region has two implications for APS:**
  - Opportunities for contracting with existing resources are limited – but valuable
  - Quantities of new resources needed could contribute to supply chain issues with impacts on costs and potential project delays



Northwestern Energy Additions
Recently procured 175 MW new gas and 50 MW new storage

Pacificorp All-Source RFP
Issued in 2022 to procure 1,345 MW renewables, 600 MW storage, and 275 MW demand response

CPUC Mid-Term Reliability Decision
Authorizes 11.5 GW of effective capacity procurement by 2025 – most likely storage *(in the interim, the state has extended operating licenses for select once-through-cooling natural gas plants and eased restrictions on use of back-up generators)*

NV Energy 2021 IRP
Seeking approval of 500 MW of storage, 600 MW solar, and 200 MW of gas upgrades by 2024

PNM Replacement Resource Filings
Received approval for 650 MW of solar & 300 MW of storage; currently seeking approval of an additional 450 MW of solar & 290 MW of storage by 2023

SRP Announced Plans
Signed PPAs for 340 MW of storage and 840 MW of solar; announced 800 MW expansion of Coolidge natural gas plant; issues all-source RFP for an additional 400 MW or peaking capacity by 2024 and 1,000 MW by 2026

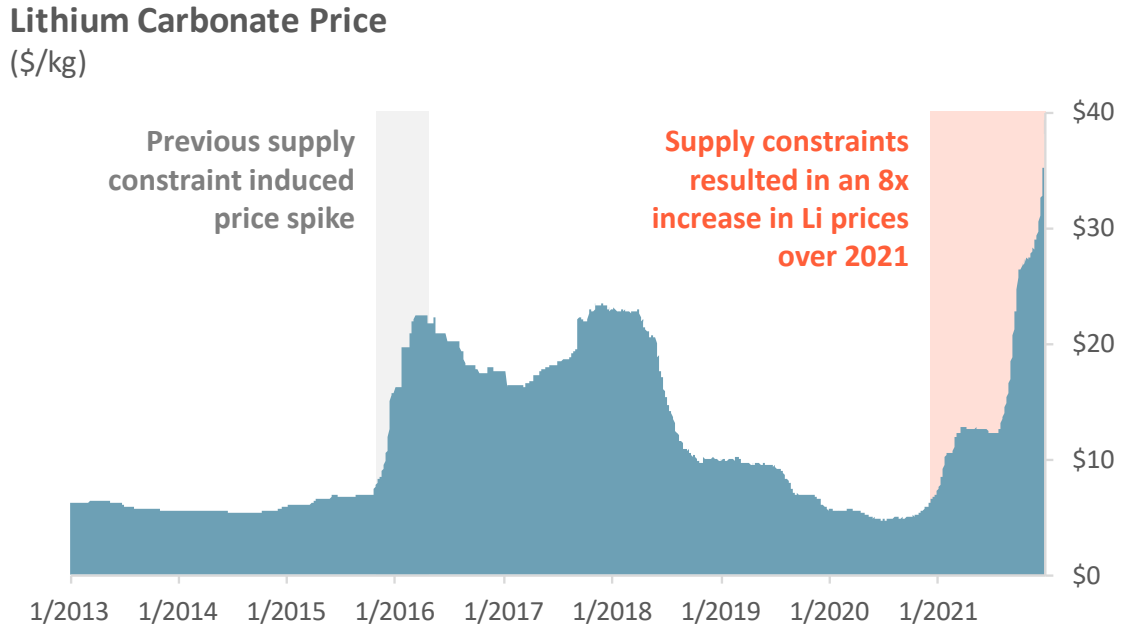
EPE All-Source RFP
Issued in 2021 to fill 265 - 335 MW capacity need by 2025

Battery supply chain issues create greater risk of project delays

+ **As global demand for lithium ion batteries has surged, upstream extraction and refining industries have become constraints**
  - Recent commodity prices for key raw materials increased significantly in 2021
  - Industry analysts expect lithium, nickel, and cobalt commodity markets to be short on supply in or before 2025

+ **COVID-19 impacts on global trade have further disrupted the market**

+ **Impacts could include increased costs and greater risk of project delays**
  - Raw materials currently make up roughly 70% of total cell costs

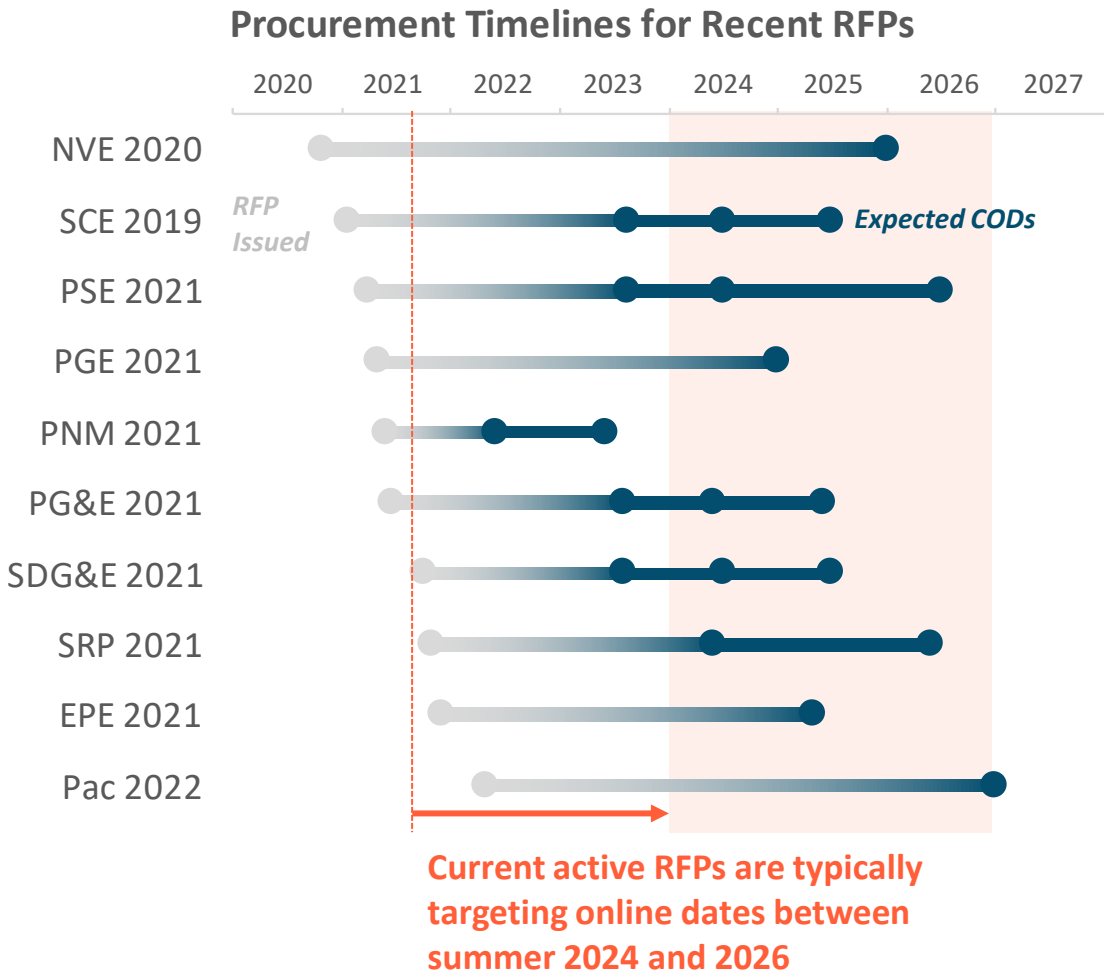


"…new-build resources require at least 4-6 years of lead time, and there are a number of macroeconomic factors that must be taken into account that are beyond the control of sellers and buyers, such as the COVID-19 pandemic, the global semiconductor shortage, and tight battery supplies."

California Energy Storage Alliance, Comments to CPUC

Current RFPs are targeting resources online in 2024-2026

+ **Most current active RFPs focus on procurement resources that can come online between 2024-2026**
  - Reflects a 2-4 year timeline for procurement and development that begins when a utility issues an RFP
  - Many include procurement targets for multiple years, which naturally increases RFP evaluation complexity



Discussion & Questions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R P A C
Jeff Burke

RPAC Going Forward

- APS requests that all members make an effort to attend RPAC meetings
- To allow everyone to participate we are requesting a single member attend RPAC meetings going forward
- Please inform us if you are unavailable to attend any meeting and we will follow up with you afterward
- Please come prepared to ask questions, discuss your ideas, and previous experiences

APS Commitment to RPAC

- RPAC member participation remains critical to our approach to the IRP
- APS is committed to RPAC partnership, involvement, and a successful outcome of the RFP and the IRP process
- APS will provide draft of the RFP and information on RFP development, needs, evaluation, and results in subsequent meetings
- APS will always be available to answer questions as they arise both in and outside of meetings

Open Discussion & Next Steps