



APS RPAC Meeting

4/3/2024



MEETING AGENDA



Welcome & Meeting Agenda
Matt Lind
1898 & Co.



IRP Stakeholder Comment Responses
Mike Eugenis
APS



Western Markets Update
Kent Walter
APS



ACC Summer Preparedness
Tim Rusert
APS



2023 ASRFP Update
Jill Freret
APS



Next Steps & Closing Remarks
Matt Lind
1898 & Co.



Break

Meeting Guidelines



Member Engagement

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.



Action Items

We will keep a parking lot for items to be addressed at later meetings.



Meeting Minutes

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.



Preliminary Content

Meetings and content are preliminary in nature and prepared for RPAC discussion purposes. Litigating attorneys are not expected to participate.



February Meeting Recap

- APS Vice President of Resource Management, Brian Cole, delivered opening remarks regarding APS load growth.
- APS discussed the 2023 All-Source RFP and provided an update on the status of projects in negotiations.
- APS presented its revised Generation Interconnection Process and addressed pending FERC actions related to the Interconnect Queue.
- APS addressed IRP Stakeholder Comments and thanked Stakeholders for their engagement.



Following Up

- Action Items from Previous Meetings: N/A
- Ongoing Commitments:
 - Distribute meeting materials in a timely fashion (3 business days prior)
 - Transparency and dialogue





Western Markets Update

Kent Walter, APS



APS exploring participation in Day-ahead market

- Day-ahead markets allow production cost savings by expanding the pool of available resources across a broad, diverse footprint and optimizing their use a day prior to operations
- APS is exploring two potential Day-ahead markets
 - CAISO's EDAM
 - SPP's Market+

Key Milestone	CAISO EDAM	SPP Markets+
Stakeholder Process Established	X	X
Tariff Filed	X	X
Tariff Approval	X	
Compliance filing accepted		
BPM/Protocols	Underway	Underway
Go-Live*	Q2 2026	Q3 2027

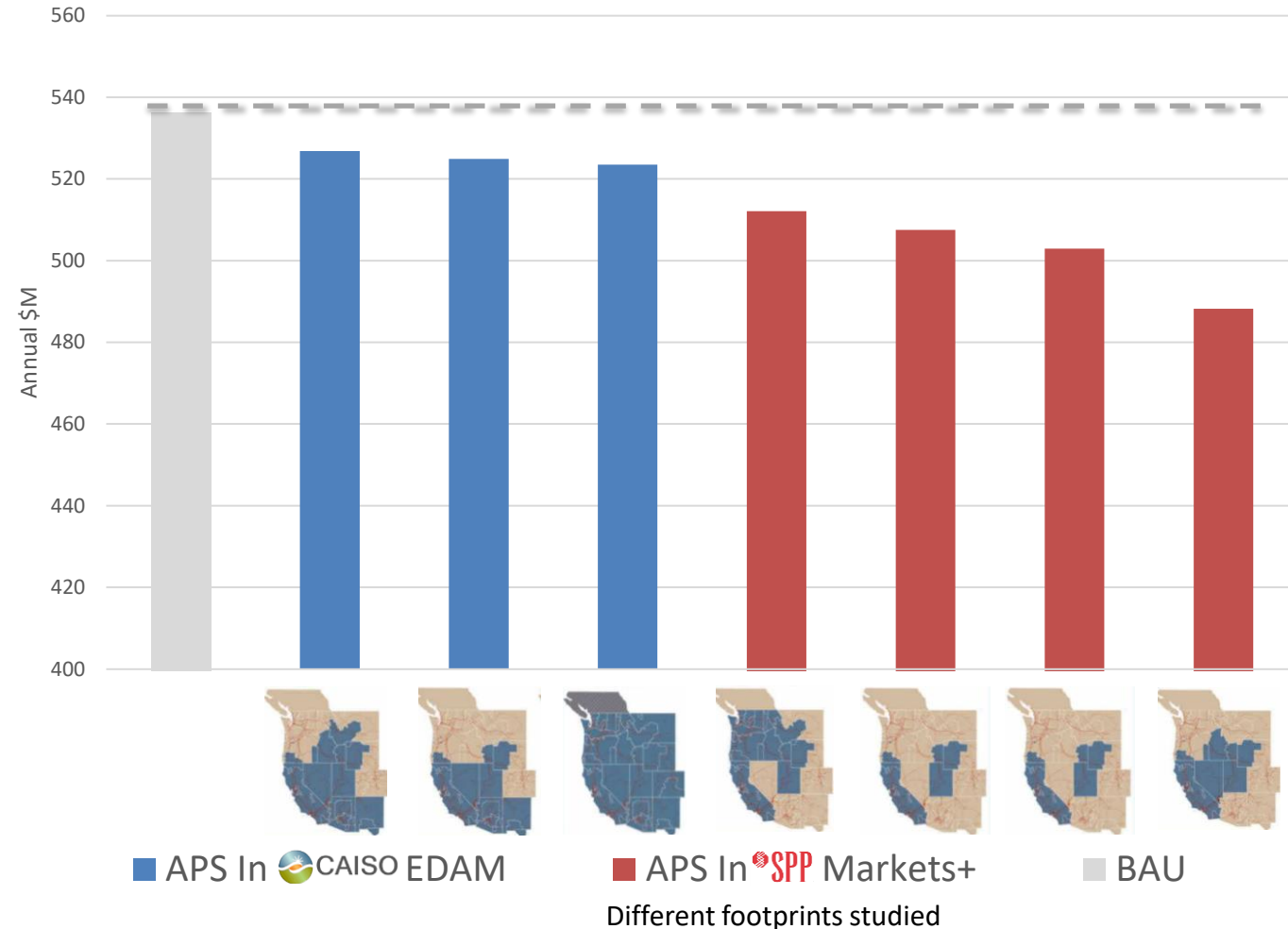
*tentative times



APS customers have lower costs from a range of footprints

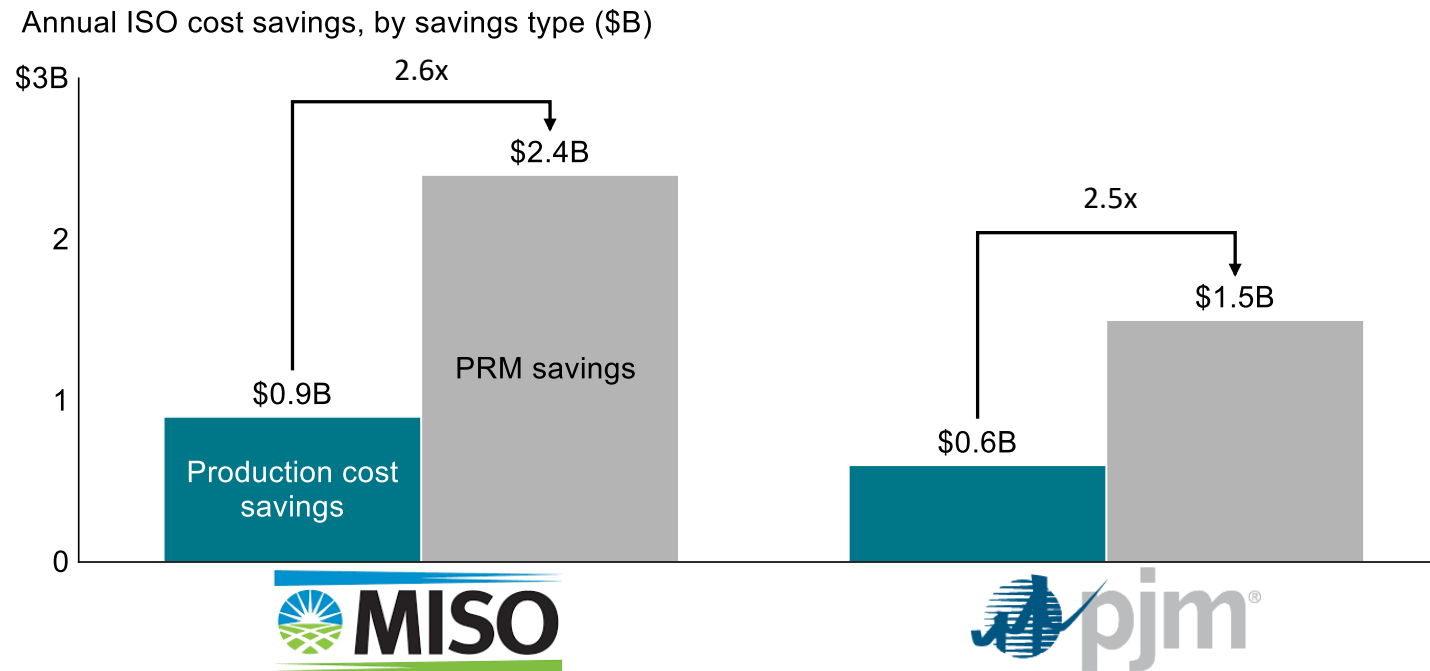
- Production cost benefits can be achieved with either market. Savings range from ~2.5% to 9%.
- Production cost reductions are only a portion of overall market benefits

APS WMEG Results – Net Costs 2026



Exploration of benefits extends beyond Production Costs

- Common resource adequacy structure can result in reduced Planning Reserve Margins (PRM) which can exceed production cost savings
- Organized markets illustrate PRM reductions as their highest customer savings



Critical Market Characteristics

Issue	Outcome Sought	Issue	Outcome Sought
ECONOMIC PROTECTIONS		RELIABILITY	
Allow for WRAP PRM Benefits	Market design that position's APS customers to capture lower reserve margins through participation in WRAP	Participant Leaning of Resource Adequacy	The market design must either assure that each BA has sufficient RA, or ensure that there is no "leaning" by short BAs
Congestion Revenue as a Market Hedge	Congestion revenues are structured to hedge customer risks of congestion costs	Market Sufficiency	Market is structured to limit shortfall risks allow participation without risk of reliability
GHG Construct	Enable state policy choices for GHG without imposing costs on other states	Deliverability of RA Resources	Requirement that external RA resources have firm transmission
Issue	Outcome Sought	Issue	Outcome Sought
LONG-TERM OUTLOOK		ECONOMIC OPPORTUNITIES	
Independent Governance	Independence in decision making and operations	Efficient Balancing Authority Seams	Flow based resource dispatch within the market footprint including between BA seams
Representative Stakeholder Process	Stakeholder process captures perspective of stakeholders	Reduced Production Costs	Efficient unit commitment and dispatch due to larger pool of resources
Transmission Development	Market design compensates entities' transmission for congestion relief		





Next steps

Seeking to develop an understanding of market footprints

- Market Participants will need to get a sense for market footprint prior to binding commitments
- APS expecting to issue a document stating initial market preference
- Continue monitoring and participating in market development



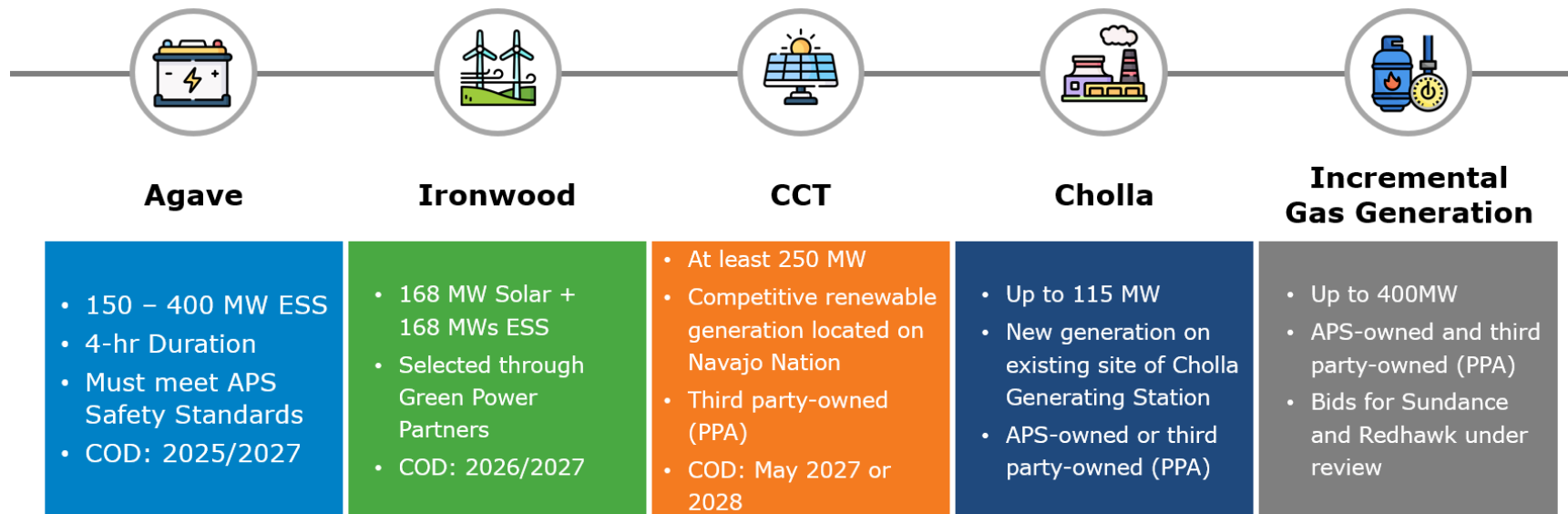


2023 ASRFP Update

Jill Freret, APS

2023 ASRFP Update

- Need of approximately 1,000 MWs of capacity and at least 700 MWs of renewables
- Focus on projects that can be in-service in 2026-2028
- Projects Secured: 500 MWs of wind in Northern Arizona
- Negotiations are underway for Agave, Ironwood, Sundance and Redhawk and a mix of PPAs
- Pursuing clean energy projects at 5x capacity of natural gas additions



Sundance and Redhawk as part of Reliable Portfolio

- Diverse energy portfolio necessary to reliably and affordably serve customers
 - Growing customer demand; extreme temperatures
 - Continued renewable integration
 - Quick start gas units respond flexibly to changes in demand
 - Competitive RFP process ensures cost effective portfolio
- Continued supply chain risk
 - Challenges with timely in-service of some resources already under contract
 - Responsible approach to transition to clean
- Generating units capable of burning hydrogen
 - Positioned to make transition to clean when infrastructure and cost make sense

Reliable

Affordable

Clean



Sundance Update

- Re-opened Sundance development opportunity on March 4, 2024
 - APS was pursuing a proposal (90MW) that competed favorably for 2026 COD
 - APS aware that other market participants may be able to provide even more cost-effective solution
 - RFP re-opened with support of Independent Monitor
 - Re-evaluating all proposals received March 29, 2024 in conformance with original RFP requirements
 - Eligible for System Reliability Benefit (SRB) cost recovery mechanism
 - Generating units capable of burning hydrogen
- Project information available at apssundanceproject.com





Redhawk Update

- Negotiating Redhawk as APS-owned resource
 - 397MW (8 units) in service prior to Summer 2028
 - Eligible for SRB cost recovery mechanism
 - Generating units capable of burning hydrogen
 - Information about the project can be found at www.aps.com/reliabilityupgrades

Near-Term Project Targets:





Break



IRP Stakeholder Comment Responses

Mike Eugenis, APS



IRP Stakeholder Comment Responses

Docket No. E-99999A-22-0046

Topics to Address:

- ▶ Preferred Portfolio & Four Corners Early Exit Cases
- ▶ Natural Gas Build into the Future
- ▶ Modeling Specifics
- ▶ Western Markets Discussion
- ▶ Timeline for Future IRPs



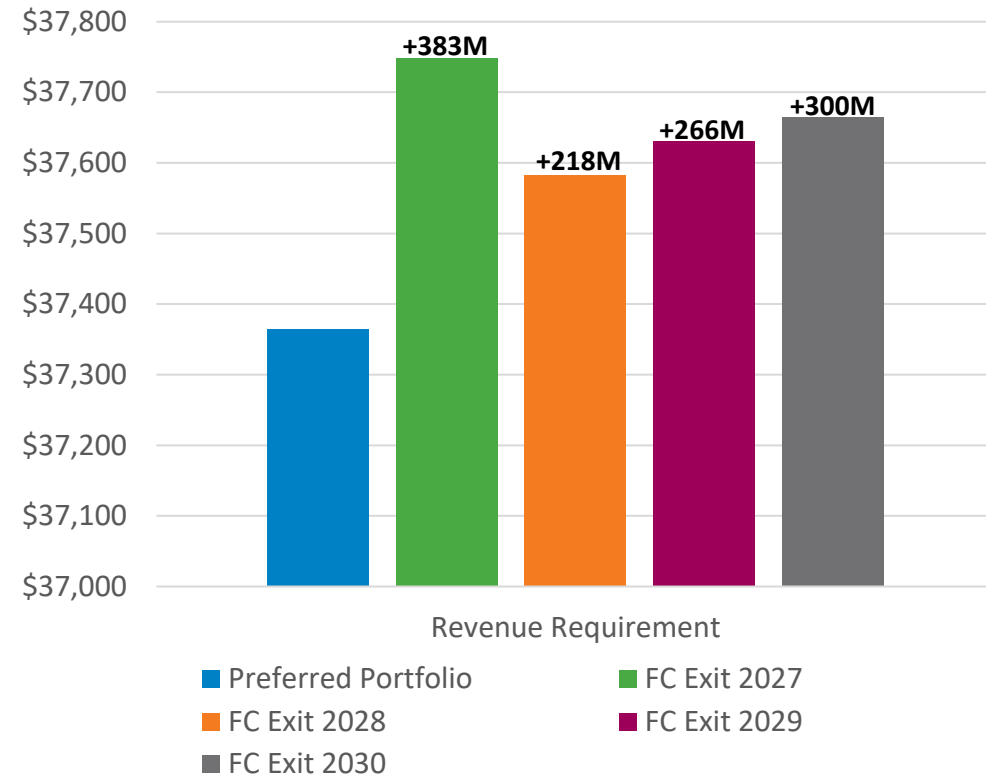


Preferred Portfolio

Differences Between Preferred and Other Portfolios:

- Preferred Portfolio is the **most cost-effective case** and **meets Clean Energy Commitment in 2030 organically**.
- Preferred Portfolio **maintains reliable Four Corners operation until 2031**, with value being driven by **wind firmed by gas transmission sharing construct**.
- It is **infeasible** to construct transmission facilities to support wind firmed by gas prior to 2031.

Revenue Requirement Comparison (\$M)

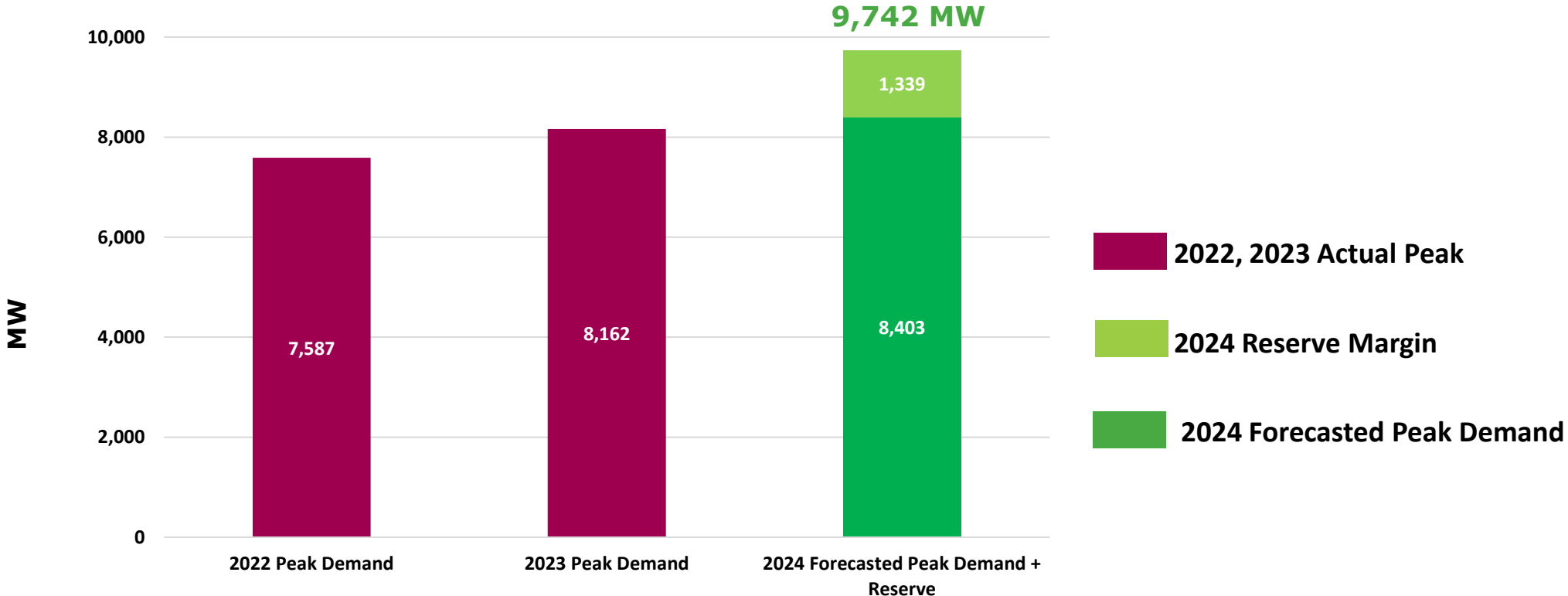




ACC Summer Preparedness

Tim Rusert, APS

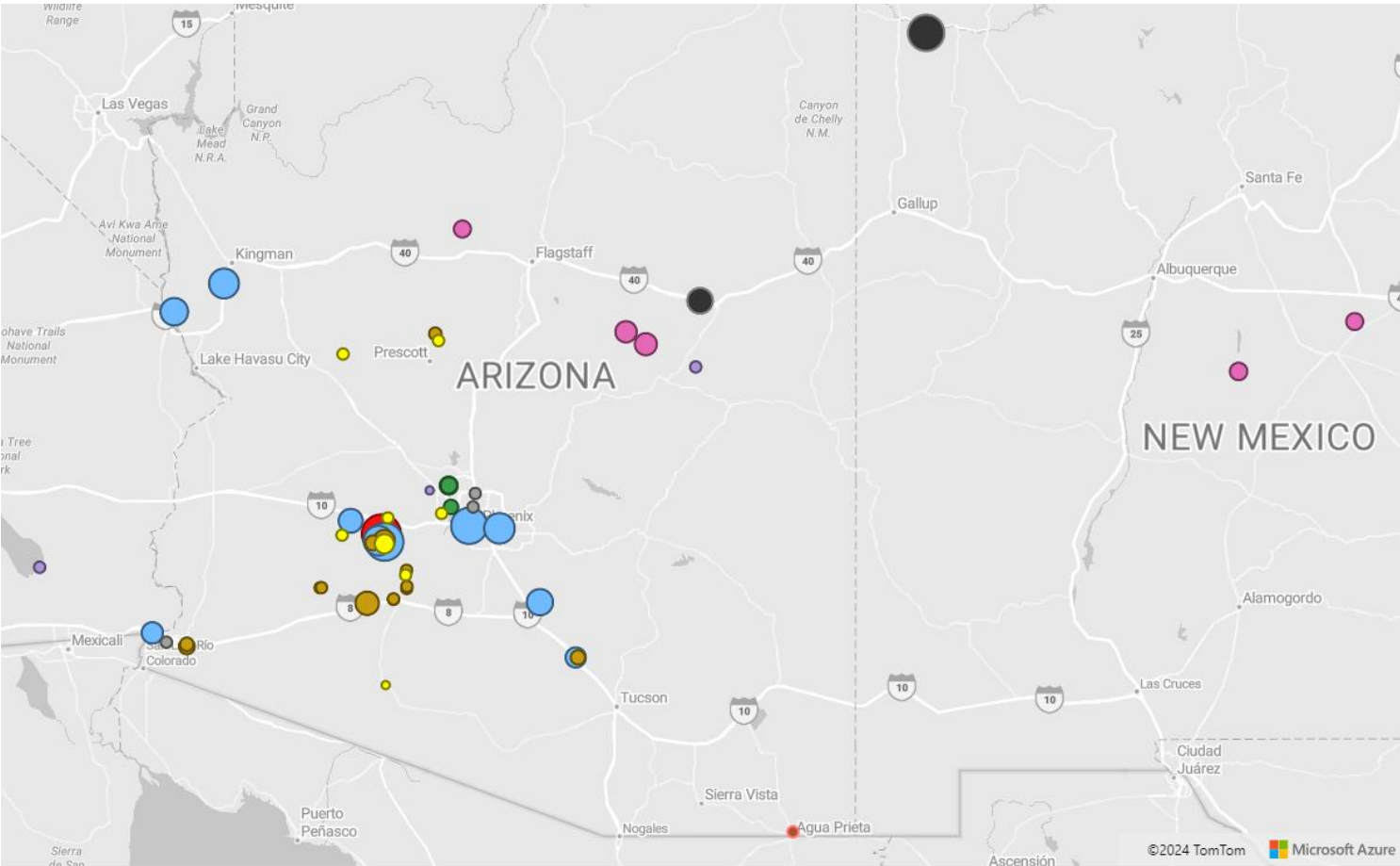
2024 Forecasted Peak Demand and Reserves



144 MW of incremental 2024 capacity contribution for DSM and DE.

Peak Demand reflects reductions from DSM programs and distributed energy in actuals and forecast.

2024 APS Resource Diversity



● Nuclear ● Coal ● Gas ● Wind ● Storage ● Microgrid ● Oil ● Solar + Storage ● Geothermal/Bio ● Solar

	PEAK CAPACITY	NAMEPLATE CAPACITY
Nuclear	1,146	1,146
Coal	1,351	1,357
Natural Gas	5,061	5,137
APS Owned	3,463	3,539
PPAs	1,598	1,598
Short-term Purchases	954	954
Microgrid (Quick Start)	42	42
Renewables	996	1,913
Solar (including Solar +Storage)	777	1,034
APS Owned Solar + Storage	288	402
Solar + Storage PPAs	489	632
Wind (PPAs)	194	853
Other (PPAs)	25	26
Energy Storage	83	130
Demand Response	112	132
TOTAL	9,745	10,811

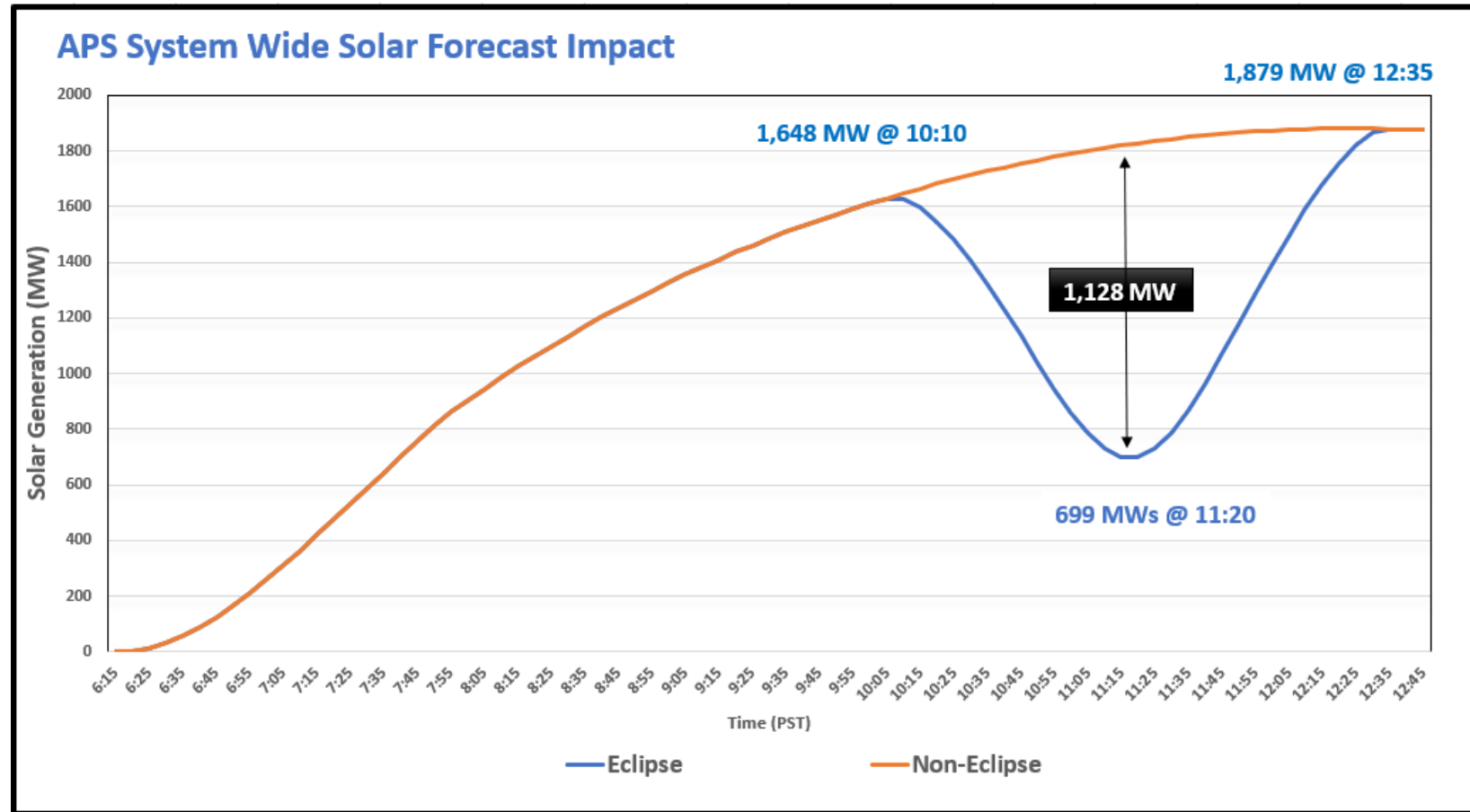
April 8 Solar Eclipse Preparation



- Phoenix area impact
 - Irradiance reduction from 10:09 – 12:35
 - Maximum eclipse at 11:20
 - 64% obscuration
- Solar impacts centered in Texas, reduce towards the west
- ERCOT has 23GW of solar; “will use available tools to balance system”

Solar Eclipse Impacts to APS

- 1,128 MW reduction from utility scale & rooftop solar
- Steep ramps challenge system flexibility
- Energy storage and natural gas units required to replace solar
- EIM prices spiked \$70/MWh during October 2023 eclipse

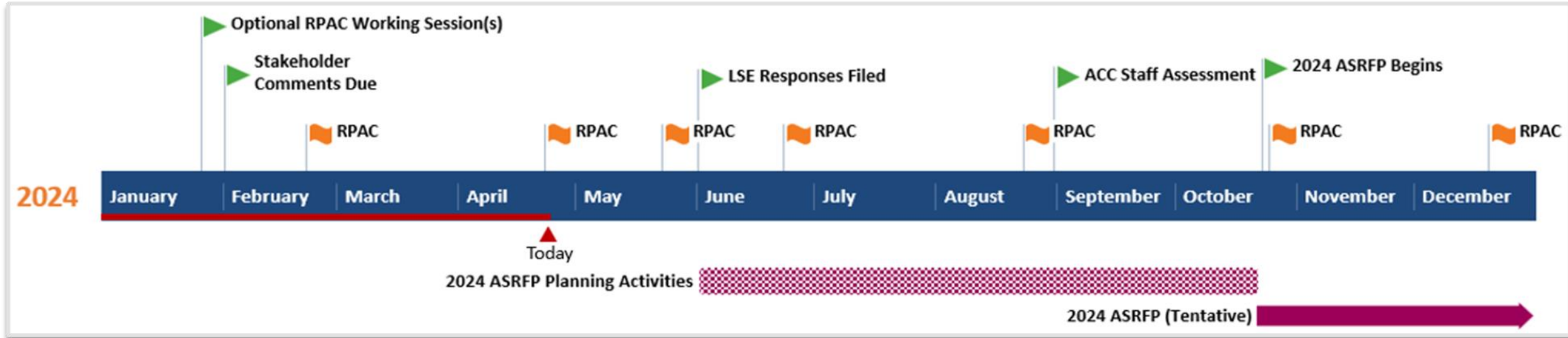




Next Steps & Closing Remarks

Matt Lind, 1898 & Co.

Forward Plans and Meetings



Key Milestones

May RPAC Meeting: 5/22/2024
Time: 9:00am

LSEs responses filed: 5/31/2024

