Zero Carbon Plan Update

Annual Utility Scale Update

April 16, 2025

Powering forward.
Together.

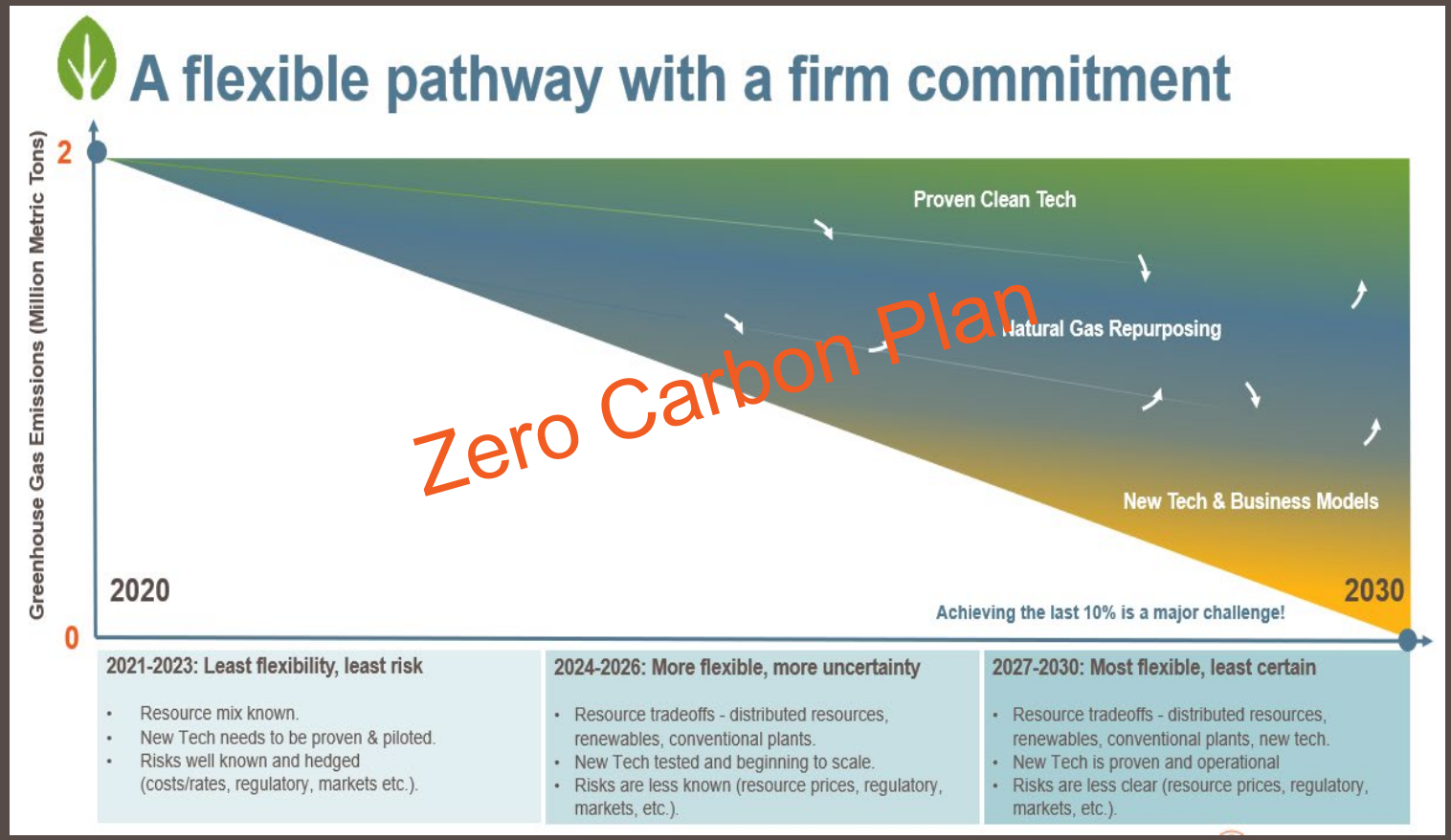
SMUD®

Zero Carbon Plan: Recap & Progress

Significant progress towards:

- Up to 90% proven clean tech (wind, solar, storage & geothermal projects)
- 10% new tech (carbon capture & sequestration project)

Significant headwinds & challenges to our guardrails



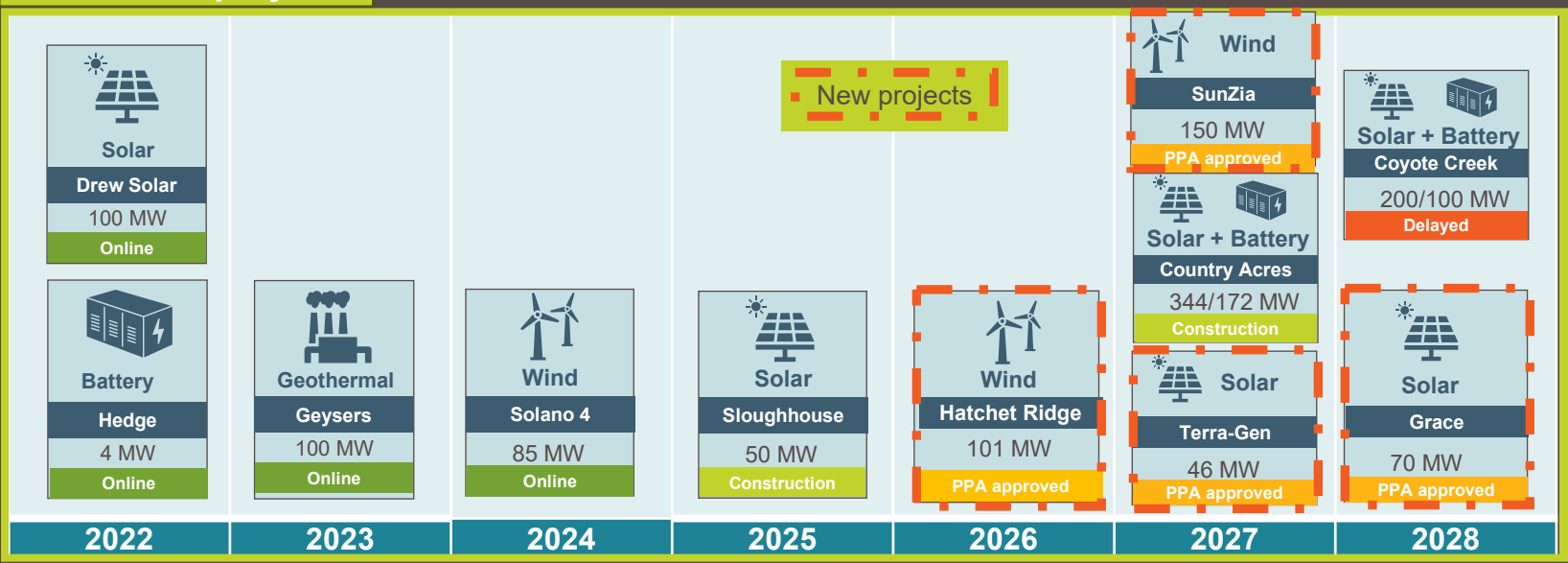
Guardrails: Affordability & Reliability

The Zero Carbon Plan was designed to be a flexible pathway, without compromising the guardrails of **affordability** & **reliability.**

Renewable & Storage Progress Update

Committed projects

ZCP Goal = Up to ~3400 MW



~1,520 MW of new carbon free projects
~44% of goal

RPS Compliance Period 5
52% by 2027

RPS Compliance Period 6
60% by 2030

Project Evaluation & Development Pipeline

TIMING TBD

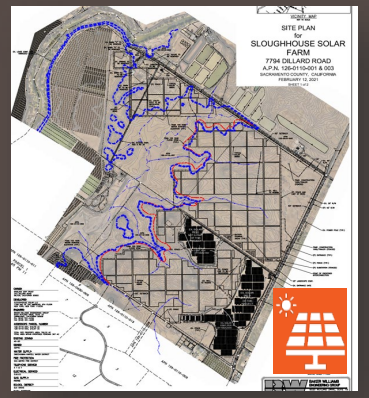
Local Solar	Local Battery	Regional Wind	Regional Solar	Geothermal	CCS
510 MW	390 MW	95 MW	165 MW	100 MW	315 MW

~1,575 MW of new carbon free projects

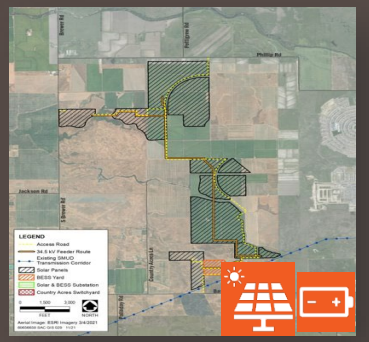
Clean Distributed Energy Resources & Programs

Continued support of clean distributed customer solar/storage and new customer programs such as Virtual Power Plants to reduce use of thermals during peak

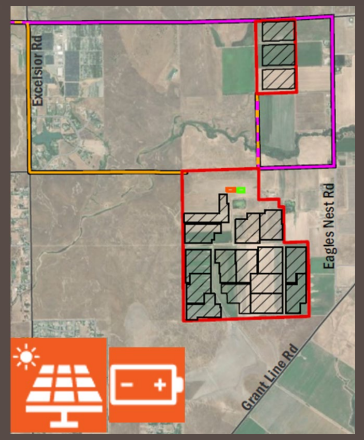
Local Utility Scale Renewable & Storage Projects



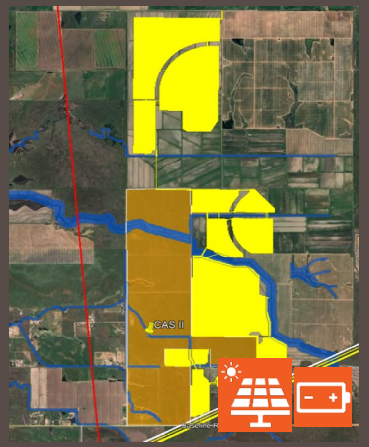
Sloughhouse – Nearing completion:
- 50 MW solar
- Location: Sacramento County
- Online: Mid-2025
- Term: 20 years
- Construction underway
- Annual generation: ~124,000 MWh
- GHG reduction: ~48k MT



Country Acres – Construction underway
- 344 MW Solar + 172 MW x 4hr battery storage
- Location: Placer County
- Online: 2027
- Term: 30 years
- Annual generation: ~637,000 MWh
- GHG reduction: ~248k MT



Oveja Ranch - NEW:
- 75 MW solar + 37 MW x 4hr battery storage
- Location: Sacramento County
- Online: TBD
- Annual generation: ~190,000 MWh
- GHG reduction: ~74k MT

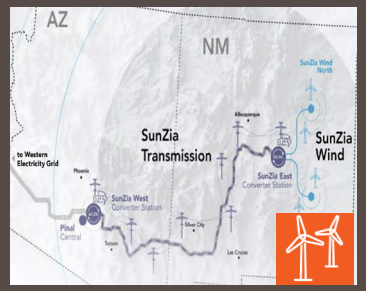


Curry Creek - NEW:
(Formally Country Acres II)
- 156 MW solar + 156 MW x 4hr battery storage
- Location: Placer County
- Online: TBD
- Annual generation: ~289,000 MWh
- GHG reduction: ~113k MT

TOTAL GHG reduction: ~483k MT

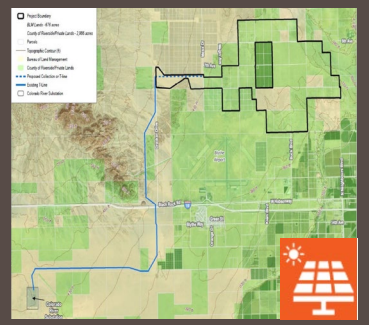
Regional Renewable Projects

Hatchet Ridge - NEW:
- 101.2 MW wind
- Location: Shasta County, CA
- Online: December 2025
- Term: 7 years
- Annual generation: ~270,000 MWh
- GHG reduction: ~63k MT



Sunzia - NEW:
- 150 MW wind
- Location: New Mexico
- Online: April 2027
- Term: 15 years
- Annual generation: ~488,000 MWh
- GHG reduction: ~114k MT

Terra-Gen - NEW:
- 46 MW solar
- Location: Kern County, CA
- Online: January 2027
- Term: 8 years
- Annual generation: 125,000 MWh
- GHG reduction: ~49k MT



Grace - NEW:
- 70 MW solar
- Location: Riverside County, CA
- Online: December 2027
- Term: 20 years
- Annual generation: ~203,000 MWh
- GHG reduction: ~47k MT

Solano 4:
- 85.5 MW wind
- **Update:** Completed in 2024
- Annual generation: ~303,000 MWh
- GHG reduction: ~71k MT

Solano 5 (Solano 2 Repower) - **NEW**:
- 108 MW Wind
- Online: TBD
- Planning & preliminary engineering underway
- Annual generation: 327k MWh
  - Energy production increases 80%
- GHG reduction: ~78k MT

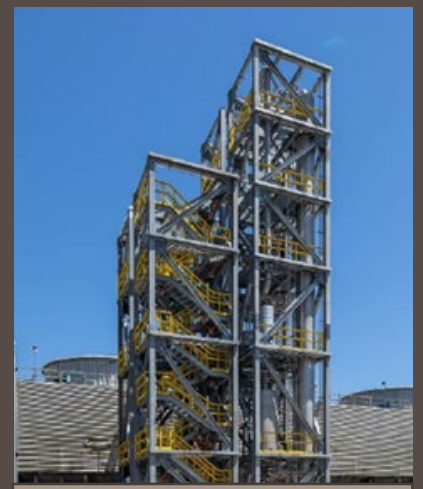
TOTAL GHG reduction: ~422k MT

New Technology Update

Calpine - Sutter carbon capture & sequestration (CCS) project

- Up to 1.7 million metric tons of GHG stored annually.
- Calpine's Los Medanos Energy Center (LMEC) CCS demonstration project showed success in capturing GHG >95%.
- Calpine is working to complete the Front End Engineering Design (FEED) study, which will inform PPA pricing.
- Calpine was awarded up to $270 million in 2023 by the DOE to add CCS technology to the existing Sutter Energy Center.
- SMUD's interest is to potentially purchase clean energy under a power purchase agreement (PPA).
- SMUD is supporting a Bill to revise the definition of "pipeline" in the Elder California Pipeline Safety Act of 1981 to include intrastate transportation of carbon dioxide.
- **NEXT STEPS: SMUD to discuss a potential PPA with the Board by mid 2026 (project online in 2029).**

Sutter Decarbonization Project



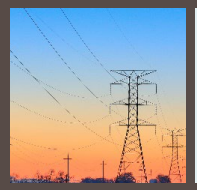
CCS Demonstration

A flexible path through today's conditions

Recent Challenges and Considerations

Renewable/storage project delays – Longer lead times to bring projects online - Coyote Creek and Country Acres have experienced 3+ year delays.

Upward resource cost pressures – Higher costs for clean resources and uncertainty around availability of tax credits, grants and import tariffs.

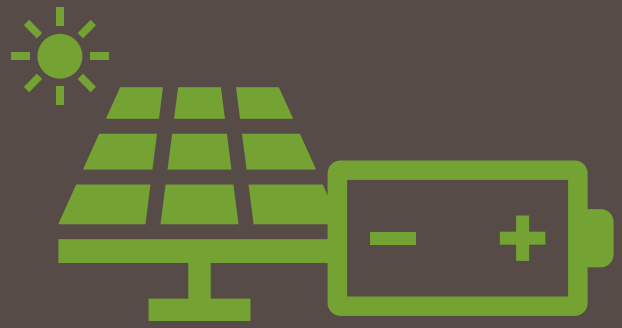


California grid reliability – State studies support keeping natural gas plants available for a reliable and affordable transition to zero carbon.

Weather volatility – Extreme temperatures and changing weather patterns impact peak loads and availability of hydro and other energy supply resources.

New federal policies – The current administration is focused on energy addition rather than energy subtraction, so things like carbon capture and sequestration and removal of thermal generation assets may fall out of favor.

Reliability Study Highlights



Operational Flexibility

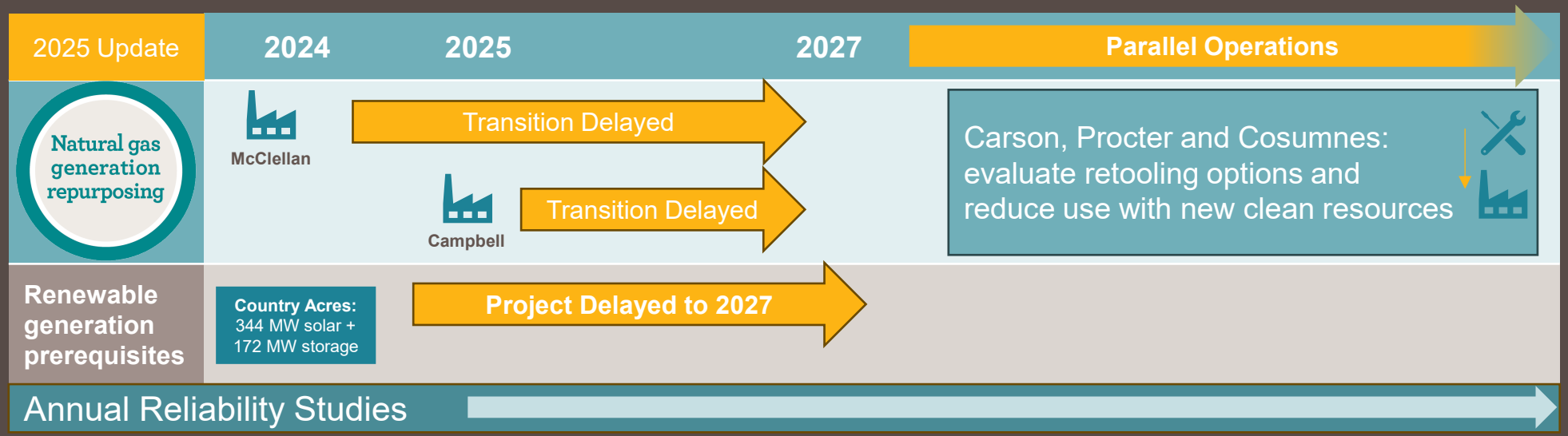
Edge Operating Conditions

System Reliability

Unanticipated System Peak Demand

Focus on Emissions Reductions

McClellan & Campbell Transition Update



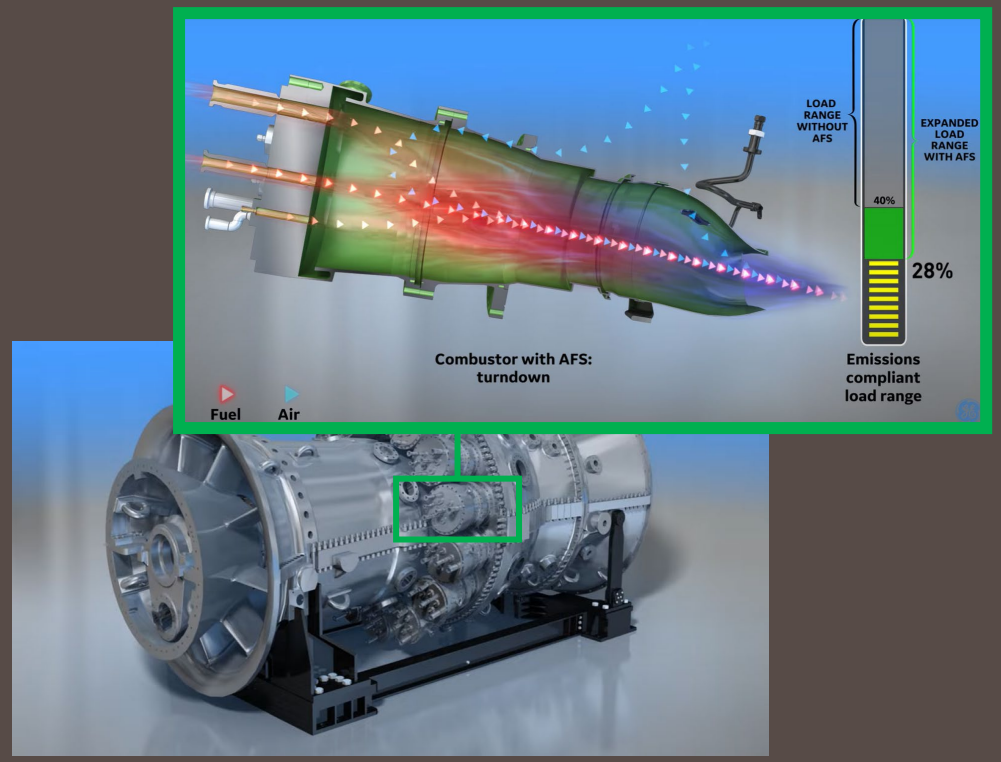
McClellan and Campbell replacement resources are delayed shifting the original schedule out.

- Updated reliability studies confirmed the Country Acres project can replace McClellan and Campbell.
- Once Country Acres is online, parallel availability of thermals will be needed to ensure a reliable transition.

Cosumnes Power Plant (CPP) Retooling

Turndown Project

- This project will allow CPP to reduce MW output while keeping both gas turbines online, resulting in:
  - Operational flexibility gained as we can operate CPP at a lower minimum capacity when generation isn't needed.
  - Up to 27% reduction in GHG at CPP, ~100k MT.
  - Up to an estimated $7 million/year savings in fuel.
- Completion date: Q4 2025



TOTAL GHG reduction: up to ~100k MT

ZCP Affordability Update

We've been tracking our financial outlook to implement the ZCP between now and 2030 and several realities may impact our affordability metrics.

- Clean energy project costs are significantly higher due to a number of conditions in our economy that have occurred since our ZCP was adopted in 2021.
- Uncertainties over grants, tax incentives and tariffs could further increase the cost of new clean resources beyond already elevated pricing.
- The magnitude of clean resource we're attempting to add to our portfolio between now and 2030 could impact affordability.

- We'll need to carefully navigate changes to our portfolio to stay within our affordability guardrails.

ZCP Affordability Pressures

Clean energy resource costs have increased significantly since 2021 with additional cost pressures under the current administration

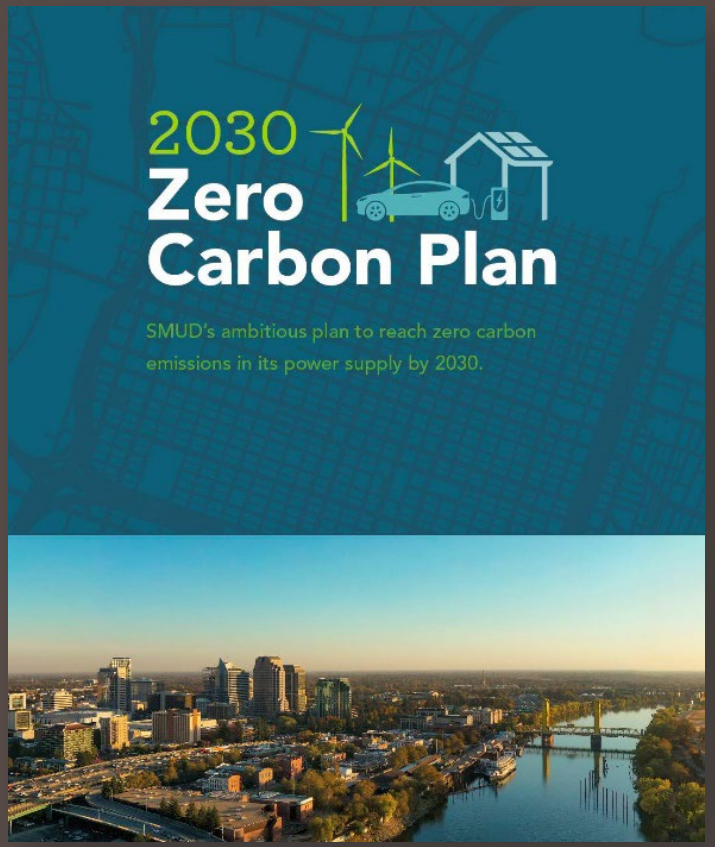
Areas of significant cost pressure	ZCP assumption	Change in ZCP assumption	Cost impact

Renewables and storage costs:
• **Supply chain stalls**
• **New import tariffs**
	• In 2020, renewables & storage resources were reasonably priced.
	• Past 2 decades, costs were trending down.
		• Pandemic impacts:
		  • Slowed supply chain and delayed schedules
		  • Significantly increased costs of renewable and storage resources
		• Tariffs impacts:
		  • Further increase costs
			

Federal and state grant funding opportunities	• Grant awards was a core part of our strategy to keep rates affordable.	• New administration: • Probability of achieving the original level of grant funding is low.	
Federal investment and production tax credits	• Tax credits were expected to reduce costs of renewables and new technology resources.	• New administration: • Tax credits are uncertain and will significantly increase the cost of these resources if removed.	

5-year anniversary of our 2030 ZCP in 2026

- 2026 marks the 5-year anniversary since SMUD's Board adopted our ambitious decarbonization plan.
- We're proud of the significant progress to-date and continue to work toward decarbonization of the Greater Sacramento region.
- We've learned a lot in the past 5 years and the conditions around the plan have changed significantly, it's time to update our integrated resource plan (IRP).
- Spring 2026, we'll present a schedule to update our IRP, which will include:
  - Board Committee Meetings to discuss IRP process, scenarios to be explored, and results
  - Community outreach plan to discuss IRP updates, share information, and receive feedback



Questions