



Item 5: Information Item - Summer 2023 Grid Reliability Update

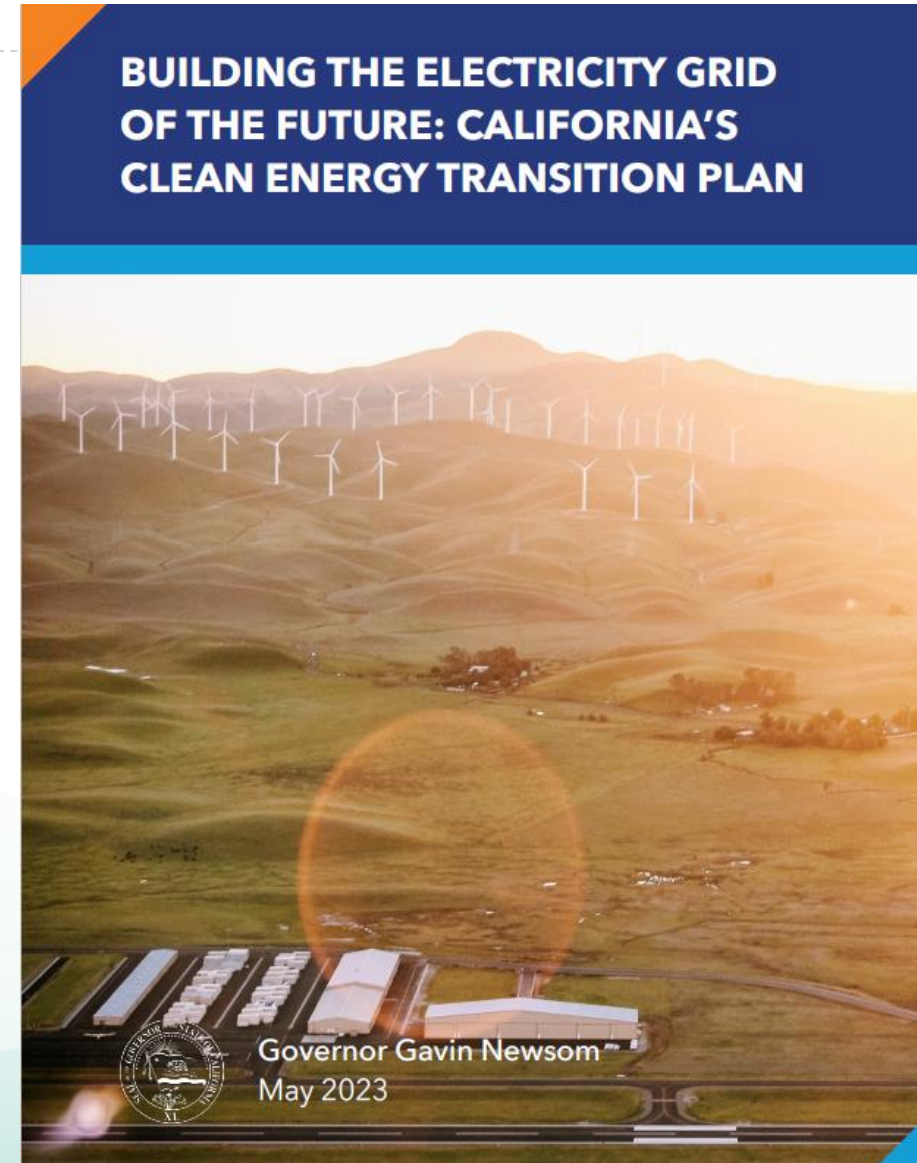
August 9, 2023 Business Meeting

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Energy Assessments Division



Transitioning to California's Clean Energy Future

- Cornerstones of California climate change leadership
 - Electrifying our economy
 - Decarbonizing the grid
- Ambitious clean energy goals
- Clean, safe, affordable, equitable, and reliable grid of the future
- Climate change is causing unprecedented stress on our grid





California Climate Commitment | Multiyear Budget Agreement



\$13.8 Billion
Clean Transportation



\$10.1 Billion
Zero-Emission Vehicles



\$8.7 Billion
Drought & Water Resilience



\$8.2 Billion
Clean Energy & Reliability



\$2.8 Billion
Wildfire & Forest Resilience



\$1.5 Billion
Community Resilience



\$1.4 Billion
Nature Based Solutions



\$1.2 Billion
Sustainable Agriculture



\$1.1 Billion
Coastal Resilience



\$975 Million
Climate Homes



\$723 Million
Climate Schools & Research



\$477 Million
Climate Innovation



\$443 Million
Circular Economy



\$404 Million
Extreme Heat



\$321 Million
Climate Health



\$315 Million
Climate Jobs



\$52.3 BILLION TOTAL

July 2023



California
Climate Action



New CEC Funding: Grid Reliability

Multiyear Budget Agreement



\$595 Million

Distributed Electricity Backup
Assets and Utility-Scale Assets



\$319 Million

Demand Side Grid Support



\$7 Million

Energy Modeling



\$5 Million

Energy Data Infrastructure
and Analysis



\$5 Million

DOE Grid Resilience Match

\$931 MILLION TOTAL

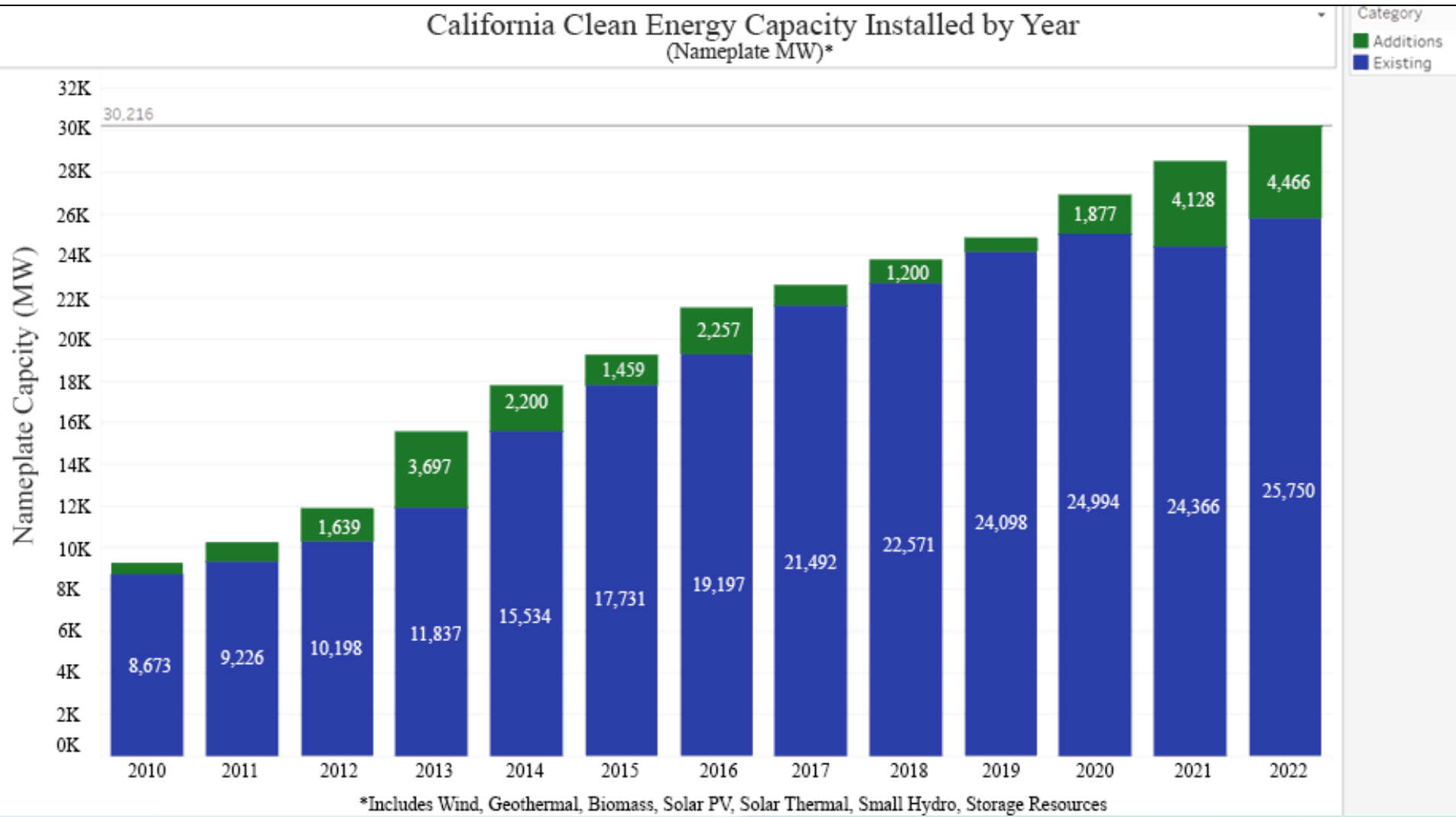
July 2023

*Includes \$24 million from Clean Energy Reliability Investment Plan (CERIP)



Clean Energy Resources - Progress

California Clean Energy Capacity Installed by Year
(Nameplate MW)*



- 59% of 2021 electric retail sales from renewable and zero-carbon energy
- More clean energy capacity developed in 2022 than any other year in the last ten years
- 5,600 MW of energy storage on CAISO bulk grid



Actions - Grid Reliability & Clean Energy Transition

- **Improving Grid Planning Processes**
 - Improve accounting for climate change-induced weather variability
 - Improve interconnection & permitting process
- **Scaling Supply & Demand-Side Clean Energy Resources**
 - Increase demand flexibility
 - Accelerate clean energy deployment
- **Preparing for Extreme Events (Contingencies)**
 - Retain existing and construct new assets & procure imports to backstop uncertainties
 - Create emergency demand flexibility opportunities



CEC Summer Stack Analysis - Results

- Overall improved outlook under all scenarios
- Grid remains vulnerable during widespread heat events
- Hours of most vulnerability are declining and continue to shift to hours after sunset

Projected September Surplus or Need for Contingencies (MW)

	2022 Projection	2023 Projection
Planning Standards	-1,700	2,300
2020 Equivalent Event	-3,000	-200
2022 Equivalent Event	-7,000	-1,900

Green is surplus, Red is shortfall

Shortfalls do not include coincident catastrophic fire risk



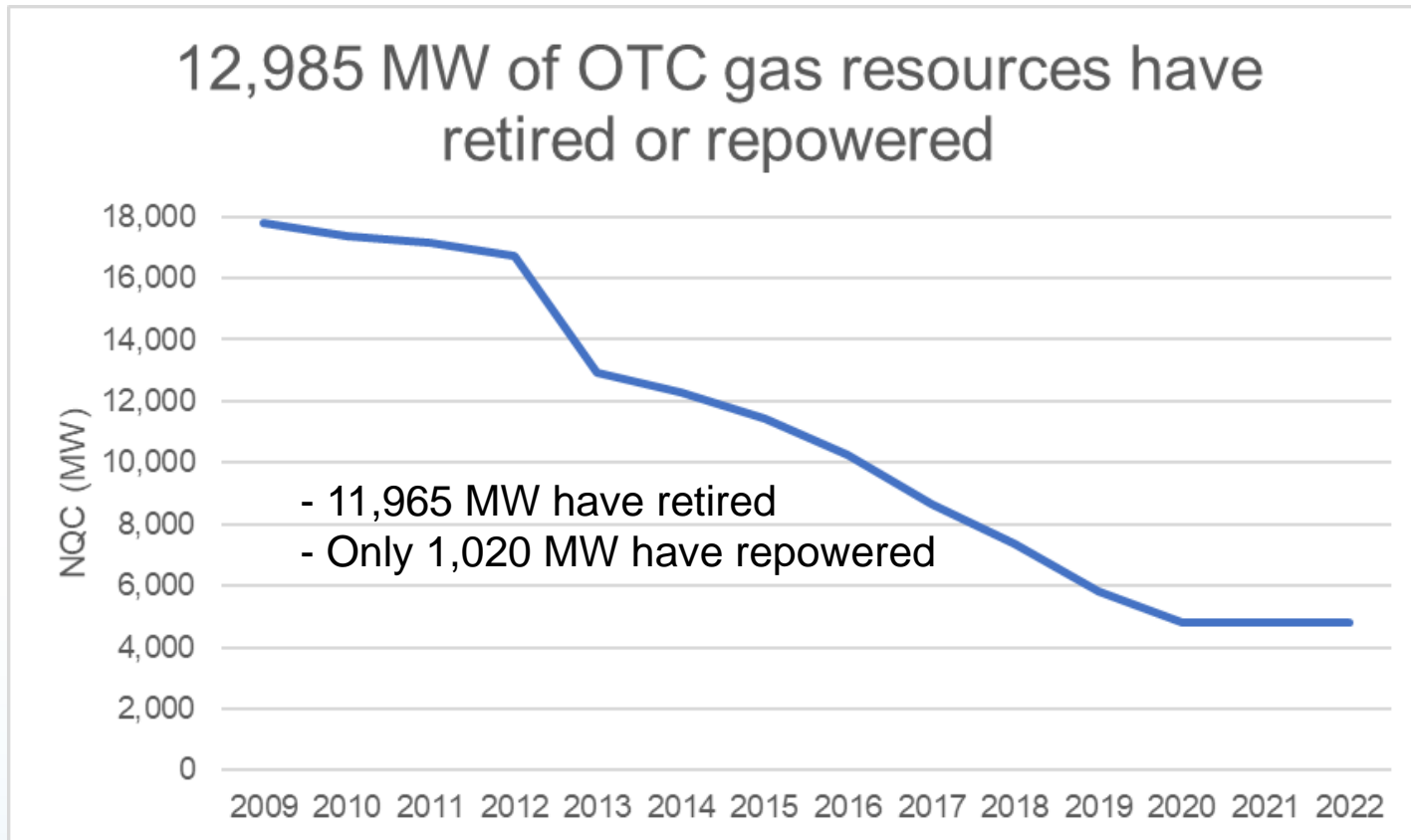
Summary of Contingencies

Type	Contingency Resource
Strategic Reliability Reserve (AB 205)	DWR ESSRRP (Long start, short start, imports)
	Demand Side Grid Support
	Distributed Electricity Backup Assets (under development)
CPUC Ratepayer Programs	Ratepayer Programs (ELRP, Smart Thermostats, etc.)
	Capacity at Co-gen or Gas Units Above Resource Adequacy
Non-Program	Balancing Authority Emergency Transfers
	DWR State Water Project
	Thermal Resources Beyond Limits: Gen Limits
	Thermal Resources Beyond Limits: Gen Limits Needing 202c

Total Contingencies up to 2,800 MW



Once-Through Cooling (OTC) Gas Generators - Phasing Out



Of the remaining 4,820 MW of OTCs:

- 834 MW expected to retire by 12/31/23
- 2,860 MW for ESSRRP
- 326 MW in LADWP to retire by 2024; requesting extension to 2029
- 800 MW in LADWP footprint to retire by 2029

Source: Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS), 2022
Special Report of the Statewide Advisory Committee on Cooling Water Intake Structures, September 2022,
Table 2: OTC Compliance Achievement and Table 3: OTC Compliance Plans for Remaining Units, pp. 20-22.



Alamitos Generating Station

- 6 units built in 1950s with capacity of 1,985 MW
 - 3 units (848 MW) retired in compliance with OTC policy
 - 3 units (1,137 MW) in extension request
- Adjacent
 - 675 MW combined cycle natural gas plant
 - 100 MW energy storage





Huntington Beach Generating Station

- 5 units built between 1958 and 1969 with capacity of 1,103 MW
 - 1 unit (210 MW) retired for using combustion turbine
 - 3 units (667 MW) in compliance with OTC policy
 - 1 unit (226 MW) in extension request
- Adjacent
 - 674 MW combined cycle natural gas plant





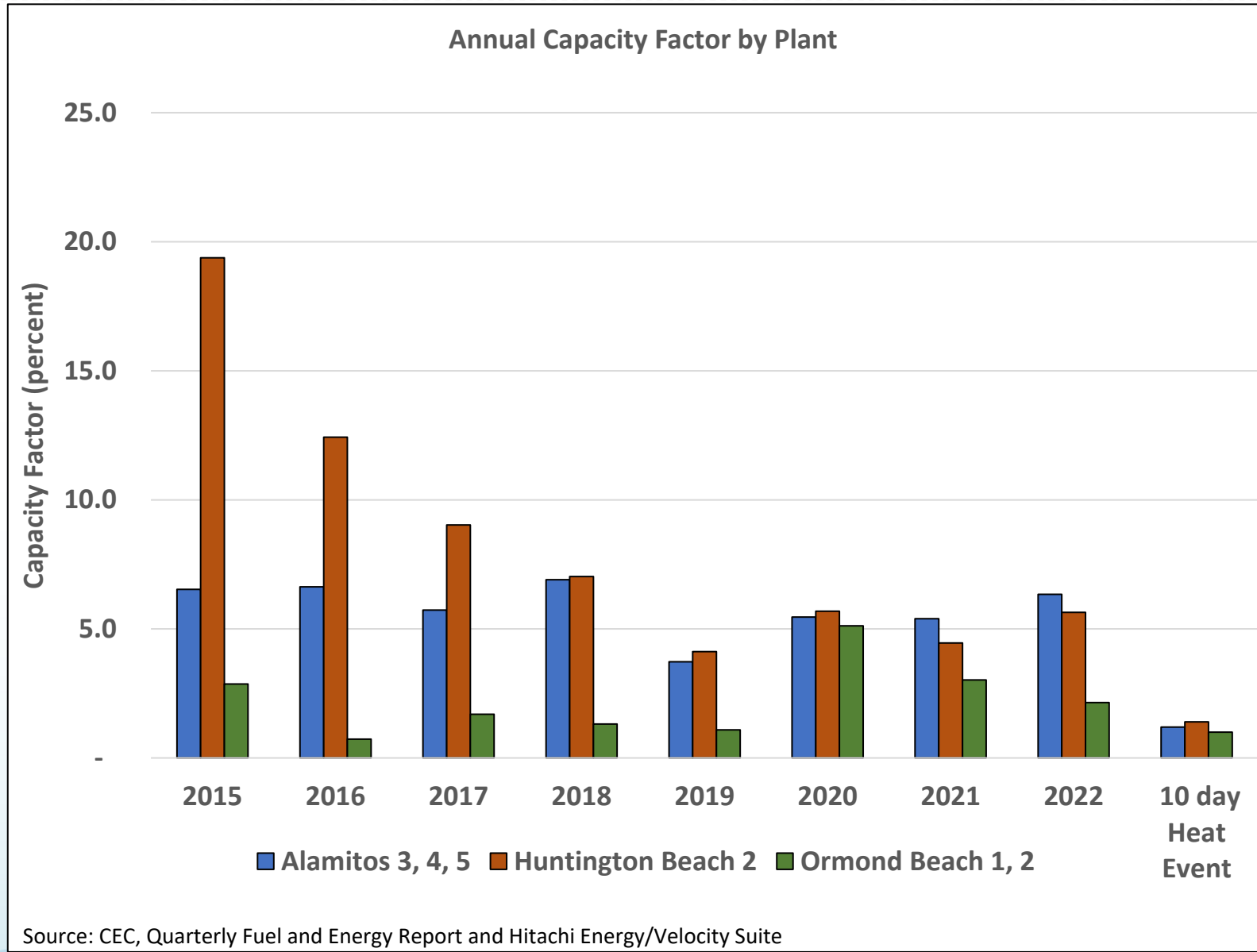
Ormond Beach Generating Station

- 2 units started operations in 1971 with capacity of 1,491 MW
 - 2 unit (1,491 MW) in extension request
- Post closure
 - Planned demolition and remediation of existing units (~37.2 acres)
 - Planned storage (~15.6 acres)
 - Planned public access and parking (~3.5 acres)
 - Planned habitat restoration (~18.1 acres)



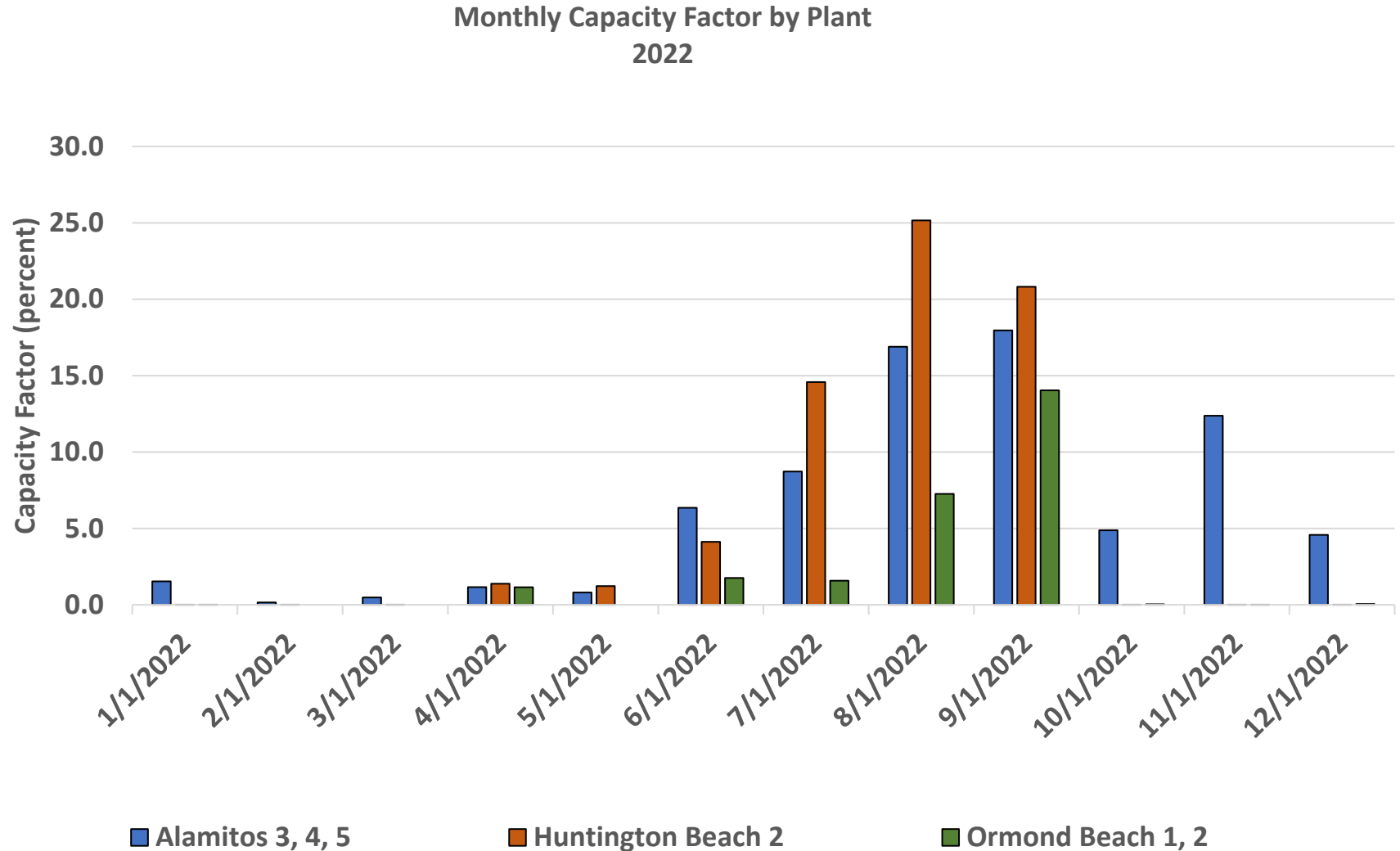


Annual Power Plant Operations





Monthly Power Plant Operations 2022

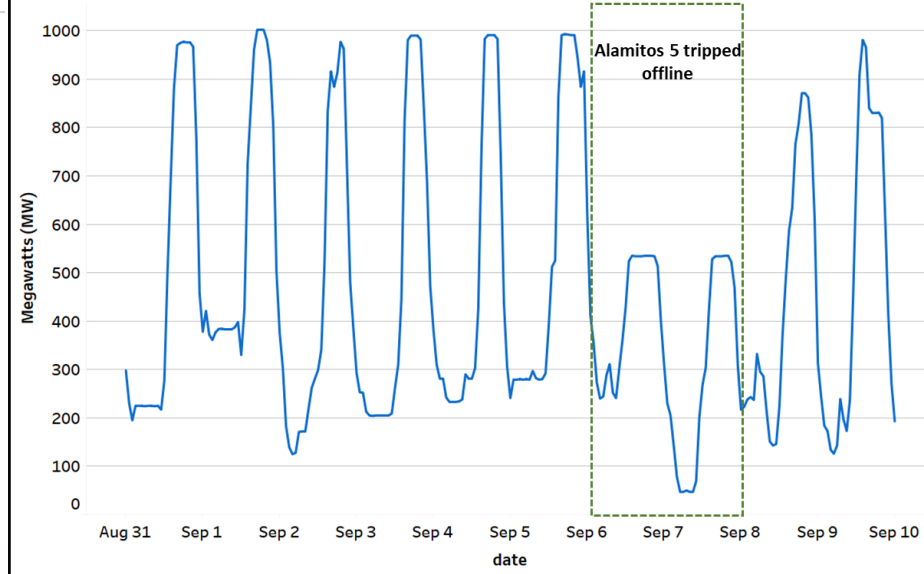


Source: CEC, Quarterly Fuel and Energy Report

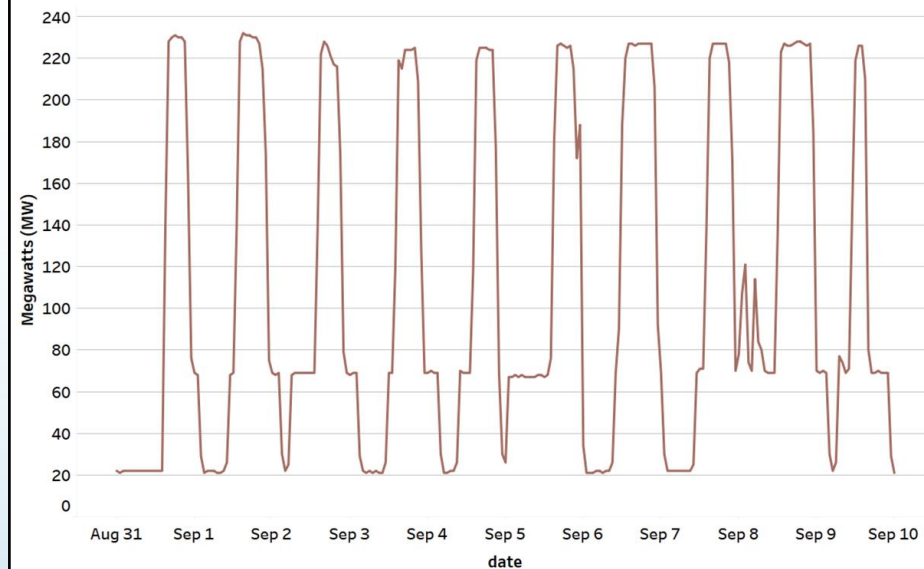


2022 Heat Event Operation

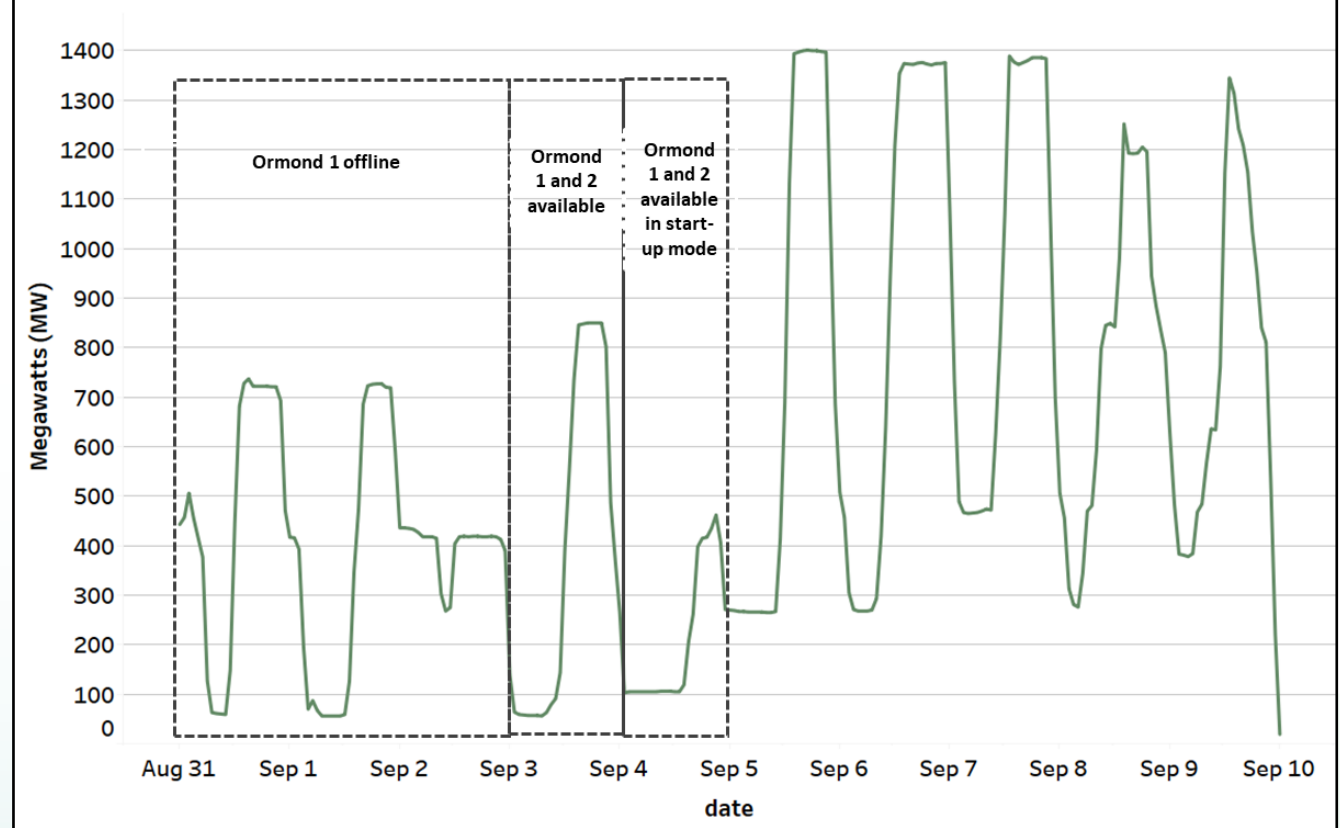
Alamitos 3, 4 & 5



Huntington Beach 2



Ormond Beach 1 & 2





California Key Takeaways

- Powering the economy with clean energy
- Challenges with scaling up clean energy resources, while retiring fossil resources and maintaining grid reliability during climate induced extreme events
- Focus on supply and demand to ensure grid reliability during peak-demand summer months - new investments, tools and mechanisms
- Approaches to proactively address our challenges now and going forward