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IEPR Joint Agency Workshop on Summer 2021 Electric & Natural Gas Reliability

Presented By:
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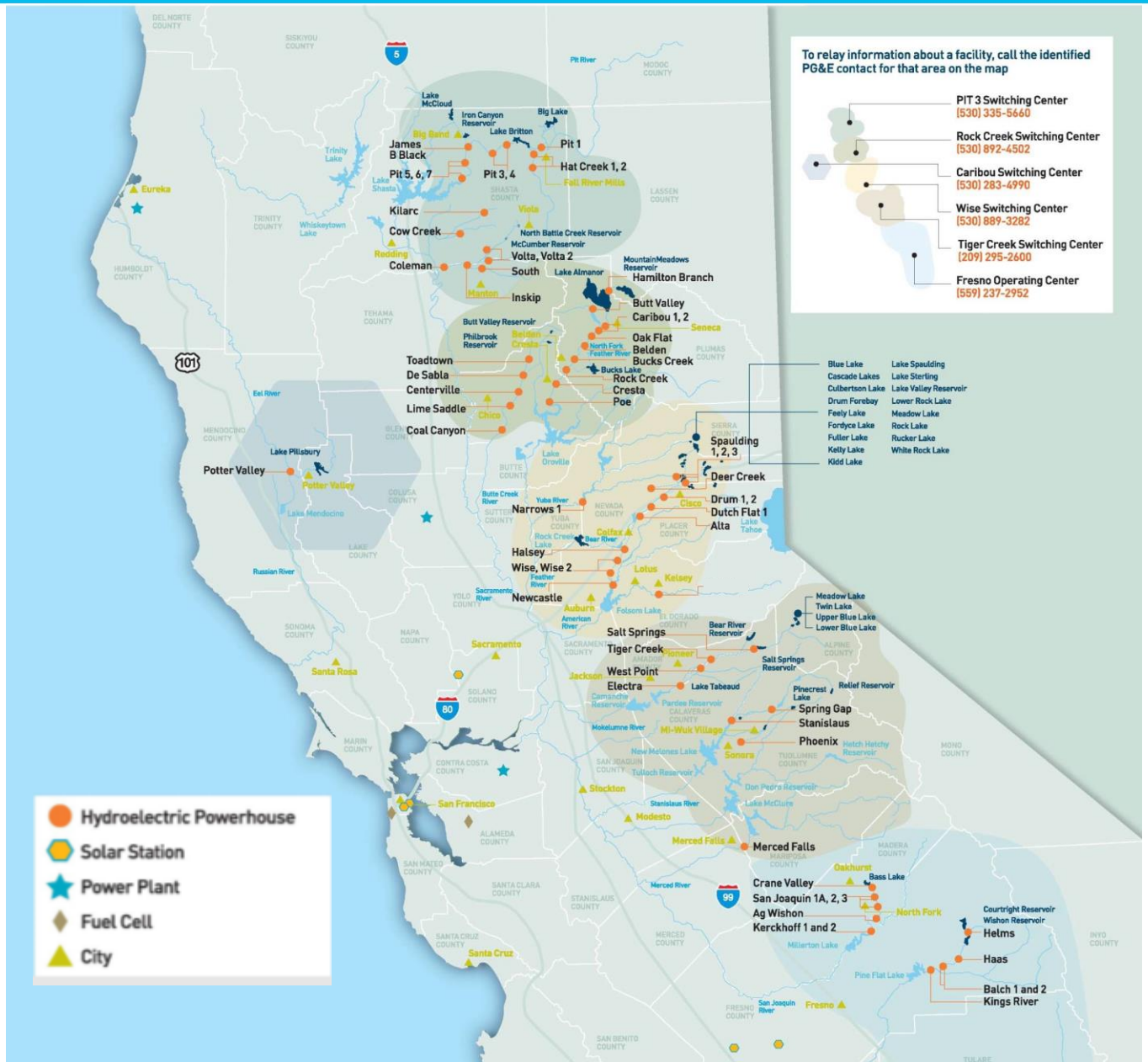
Senior Director Hydro O&M
July 8, 2021

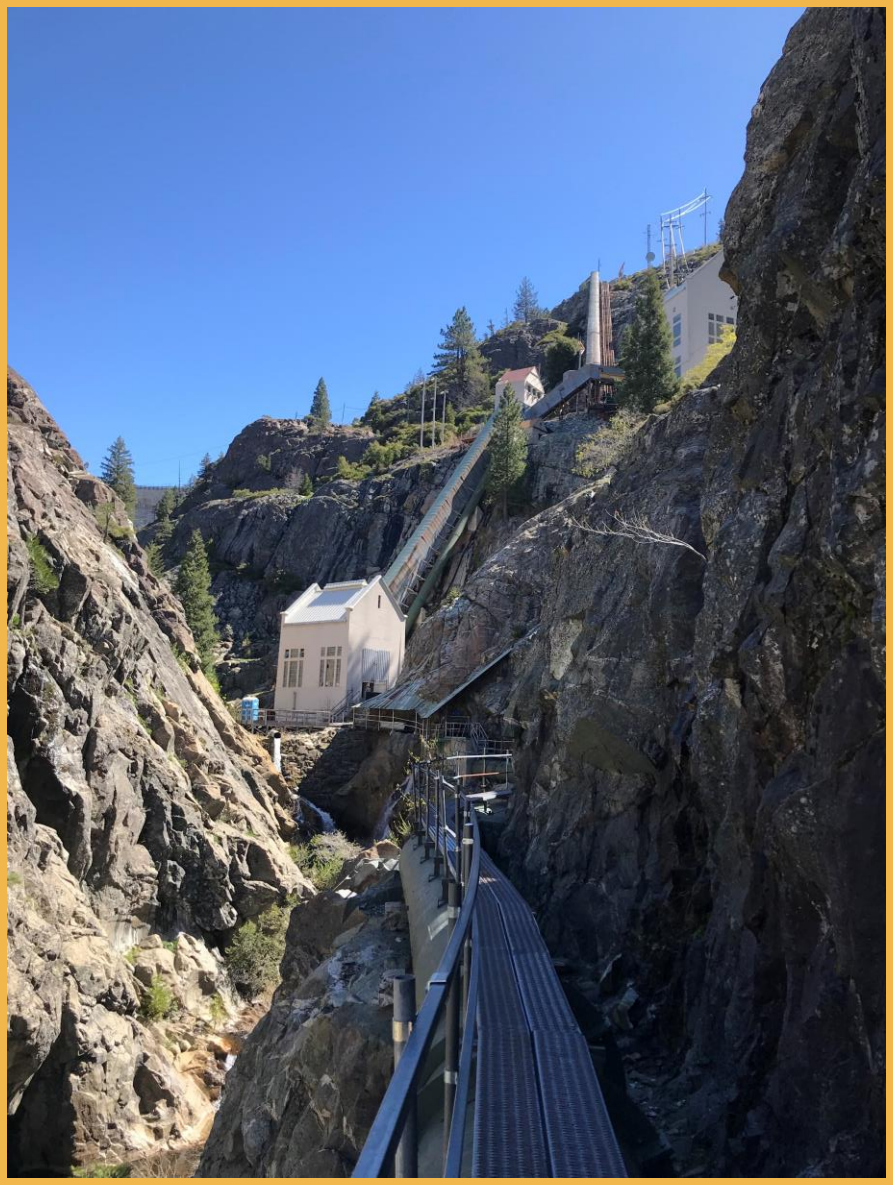
PG&E Hydro Fleet



PG&E Hydro Fleet

Type	Facility	Capacity (MW)
Hydro	• Helms - Pump Storage (1,212 MW) • Conventional (2,624 MW)	3,836

- The system includes:
  - 62 Powerhouses
  - Over 90 reservoirs
  - 15 Watersheds
  - Over 140,000 acres of land

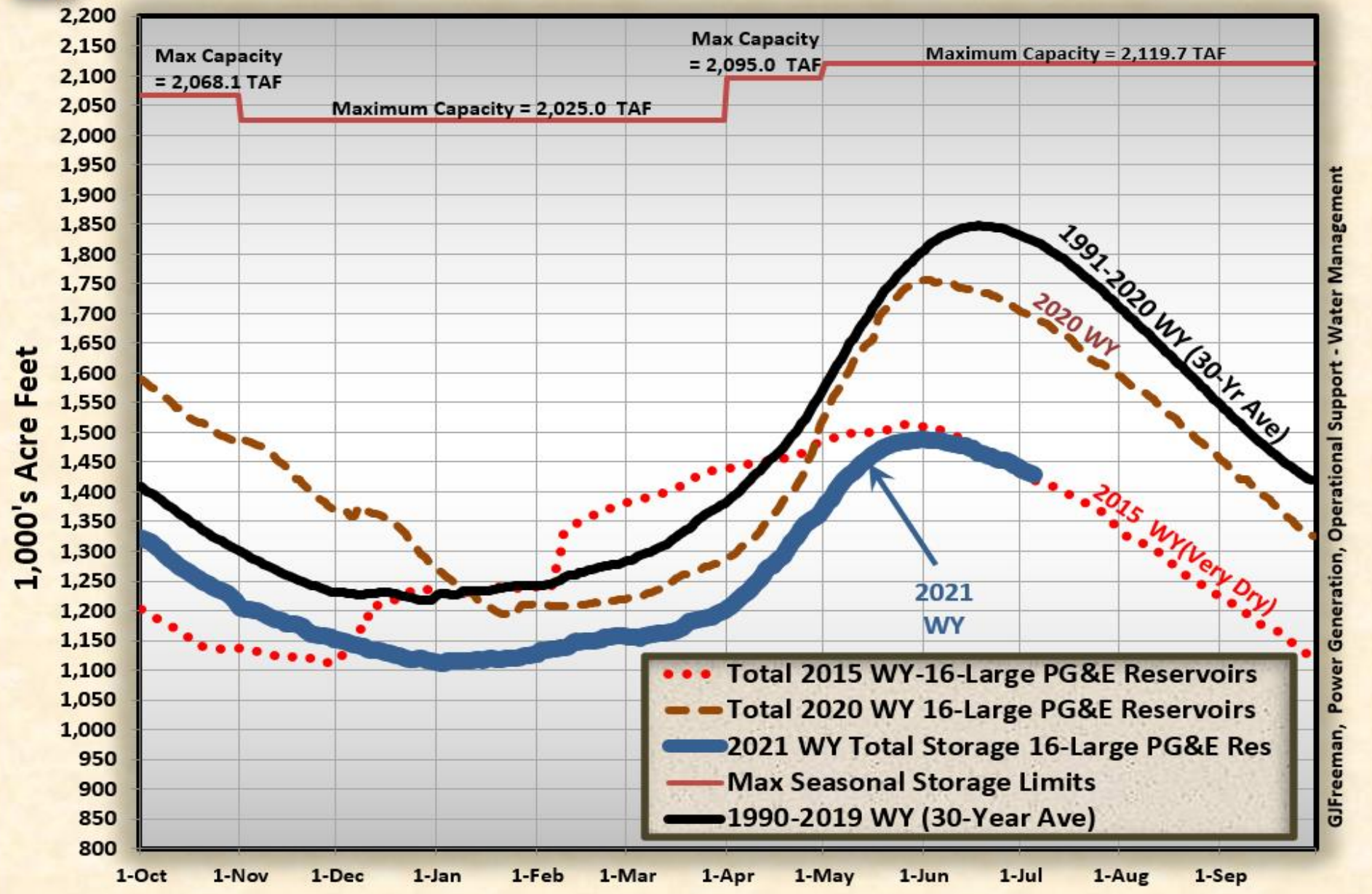


Precipitation and Storage

- **July 1st accumulated precipitation to date was 45% of normal for PG&E Watersheds**

PG&E's combined large reservoir storage is currently at its second lowest storage during the past 40-years of record. Only 2015 was slightly lower than this year

Total Storage 16-Large PG&E Reservoirs



PG&E 2021 Annual Hydro Generation Forecast

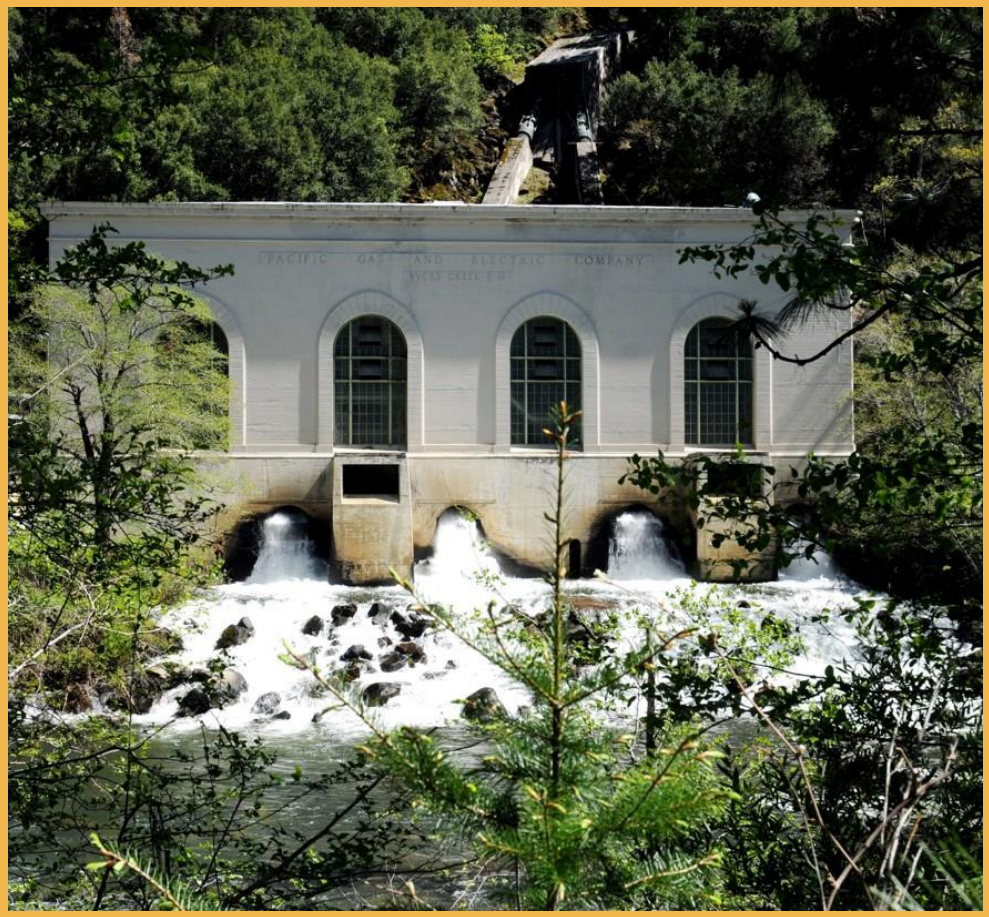
- **PG&E is forecasting approximately 45% of historic average annual hydro generation (Excluding Helms)**

Consecutive dry and critically dry water years have reduced water available to support generation

PG&E 2021 Summer Hydro Generation Forecast

- PG&E is forecasting approximately 70% of average annual July-September hydro generation (excluding Helms)

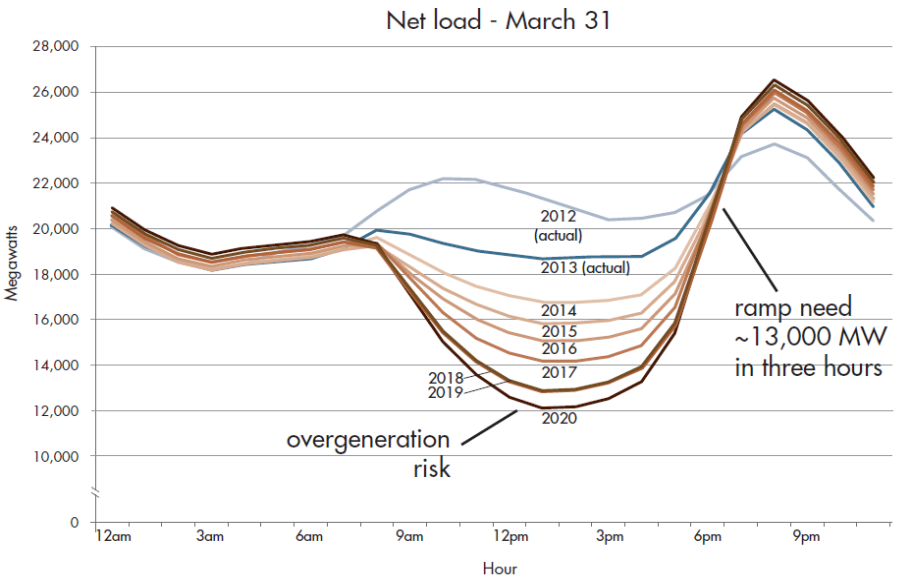
- Reduced springtime generation in order to maximize reservoir storage and focus our flexible generation on higher demand months / highest demand hours
- PG&E anticipates being able to fully ramp up our available hydro generation for the critical hours of the critical days this summer to support the grid



PG&E 2021 Hydro Generation Forecast

- **Helms Pump Storage Plant (1212 MW) is not anticipated to be impacted by the drought conditions this year and is currently fully available.**

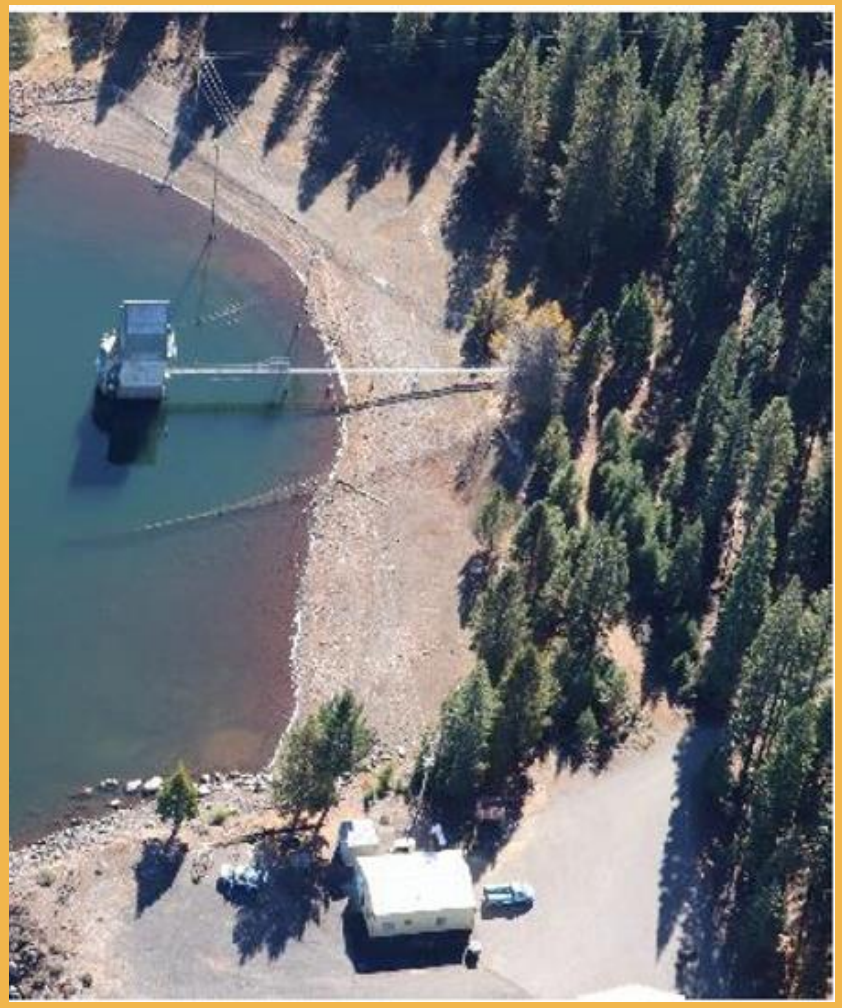
The Challenge of Lower Generation



- Hydro generation is inherently cyclical based on annual precipitation
- Despite the lower generation forecast, hydro provides quick response to meet peek loads
- Available Hydro becomes even more focused on critical days and critical hours

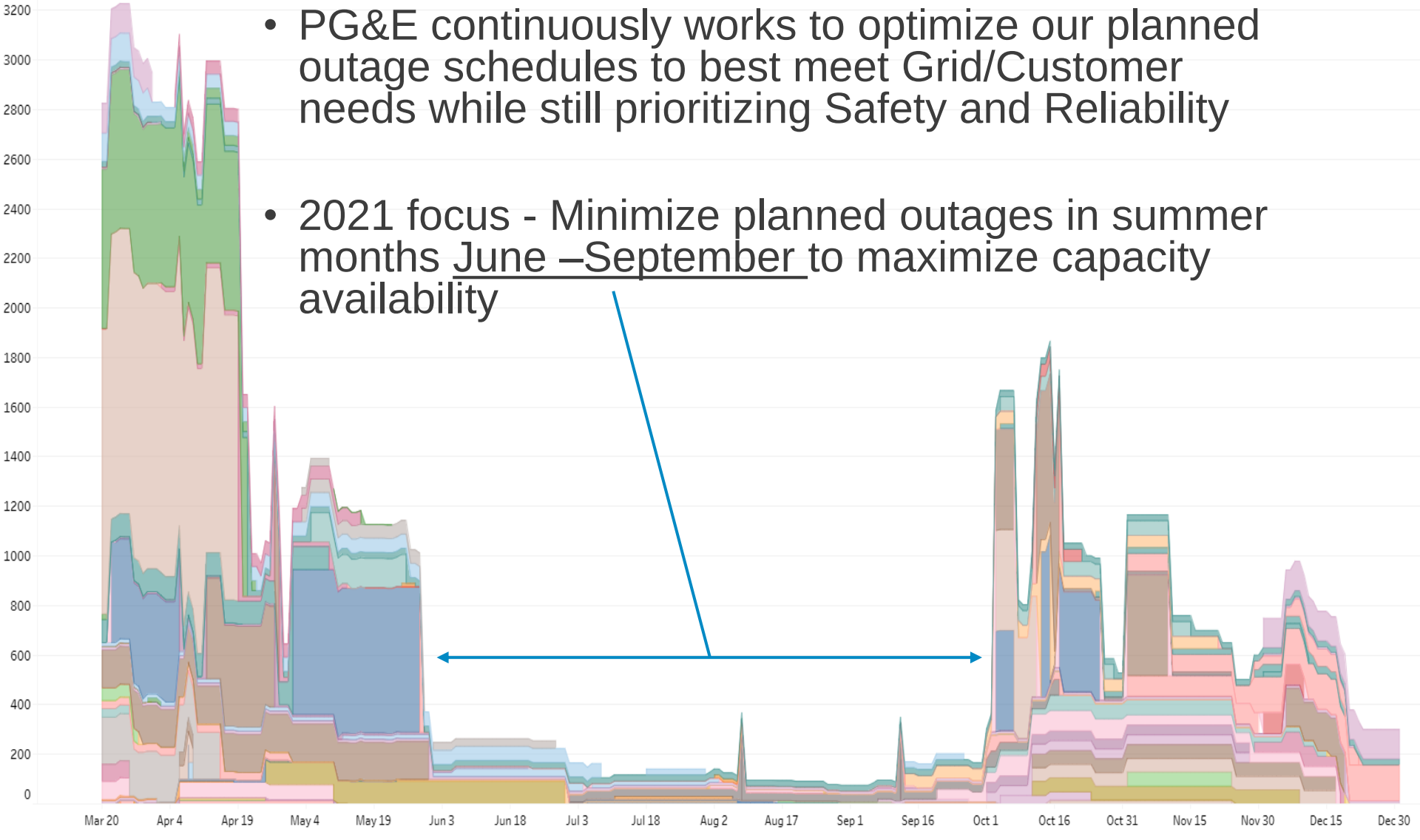
Operational Constraints

- Low lake levels are anticipated to cause earlier than normal curtailments of a few of our units in the late summer/early fall
- Meeting license required flows
- Requested and received variances for reduced flows at multiple locations throughout our watersheds (making the water we have last through the summer and fall to best support the environment)
- Recreation flows may require rescheduling based on grid conditions (Pit River)
- Working collaboratively with partner agencies, downstream entities and users to conserve, coordinate and make the best use of the water available

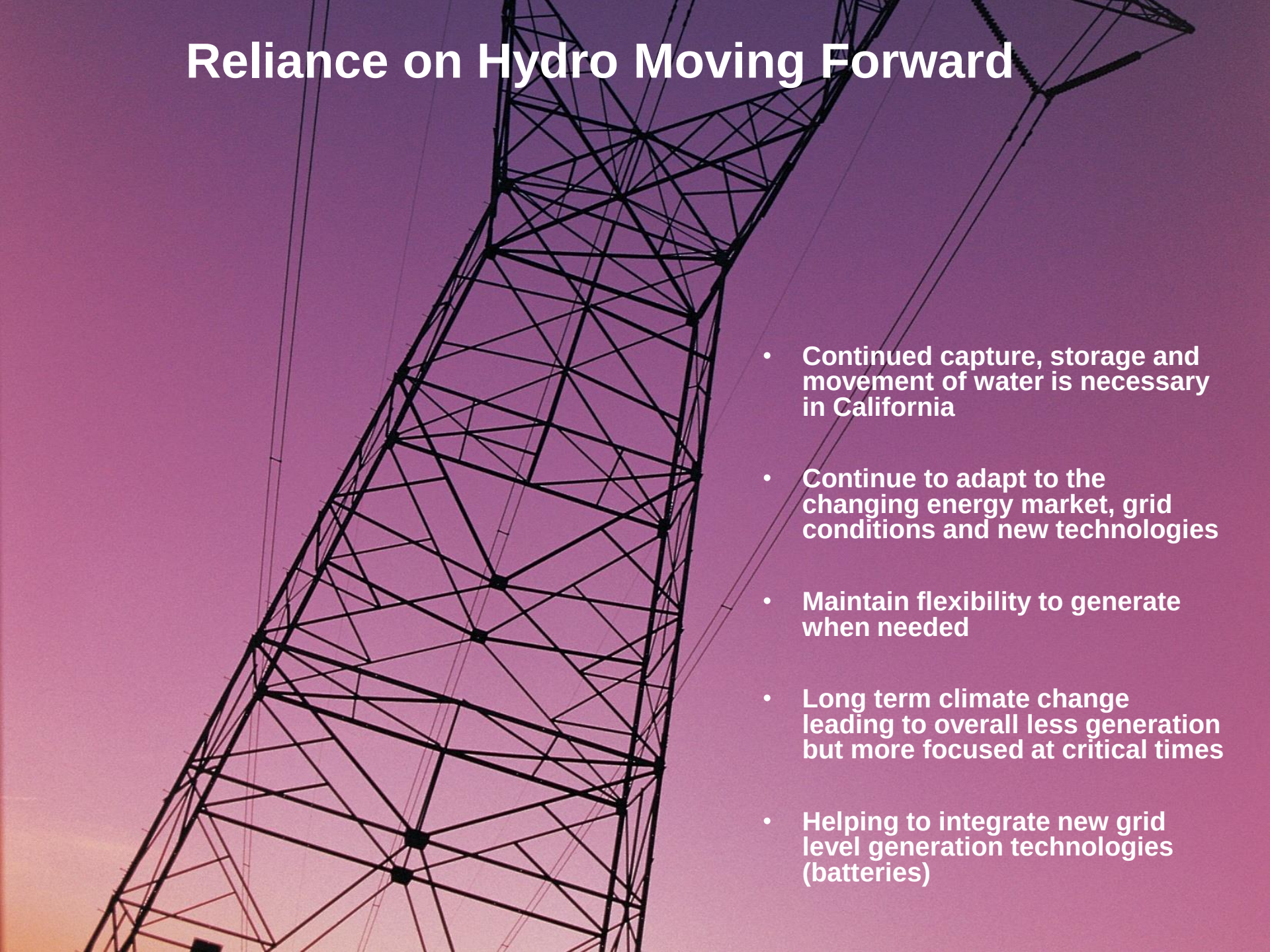


Utility Owned Generation Planned Outage Schedule

- PG&E continuously works to optimize our planned outage schedules to best meet Grid/Customer needs while still prioritizing Safety and Reliability
- 2021 focus - Minimize planned outages in summer months June –September to maximize capacity availability



Reliance on Hydro Moving Forward



- Continued capture, storage and movement of water is necessary in California
- Continue to adapt to the changing energy market, grid conditions and new technologies
- Maintain flexibility to generate when needed
- Long term climate change leading to overall less generation but more focused at critical times
- Helping to integrate new grid level generation technologies (batteries)

Thank You