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<td>Presentation - IEPR Joint Agency Workshop on Summer 2021 Electric &amp; Natural Gas Reliability</td>
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<td><strong><strong>Supersedes TN 238734</strong></strong> S1.2A Eric Van Deuren, Pacific Gas and Electric</td>
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<td>Filer:</td>
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<td>Organization:</td>
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IEPR Joint Agency Workshop on Summer 2021 Electric & Natural Gas Reliability
The system includes:

- **62 Powerhouses**
- **Over 90 reservoirs**
- **15 Watersheds**
- **Over 140,000 acres of land**

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