

# Hydropower's Contribution to Grid Resiliency

Chelan PUD Comments in FERC Docket  
AD17-8



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# FERC Grid Resiliency Proceeding (AD17-8)

- The Federal Energy Regulatory Commission (FERC) is evaluating the resilience of the bulk power system in regions operated by regional transmission organizations and independent system operators.
- Coal and nuclear resources are seeking economic support for providing resilient capacity.
- Policy makers and electric generators are debating whether resources that ensure the grid can withstand disruptive events deserve compensation.
- [Chelan PUD submitted comments on May 9, 2018.](#)

# Chelan PUD Interest

- Our goal: Ensure hydropower continues to operate economically in a changing electric system.
  - California (CAISO) market influences pricing and services traded in the western power market. This affects the value of our hydropower generation.
  - Variable energy resources are changing the economics of energy generation and creating growing demands for other grid services.
  - Energy prices are decreasing while the value of reliability and resiliency services is increasing.
  - Coincides with a major need for hydro reinvestment.
  - Hydropower is usually left out of the debate – even though it can provide all attributes necessary for a resilient electric grid.

	Flexible Capacity	Firm capacity	Annual energy	Regulation	Spin reserves	Non-spin reserves	Long-Term Storage	Inertia	Black Start	Carbon-Free
Hydroelectric (large project)	yes	yes, water dependent	yes, water dependent	yes	yes	yes	yes	yes	yes	yes
Gas (CCCT)	yes	yes	yes	yes, could be limited	yes, could be limited	yes, could be limited	no	yes	yes	no
Gas (SSCT)	limited	yes	yes, could be limited	yes, could be limited	yes, could be limited	yes, could be limited	no	yes	yes	no
Coal	no	yes	yes	limited	limited	no	no	yes	no	no
Nuclear	no	yes	yes	no	no	no	no	yes	no	yes
Biomass	limited	yes	yes	yes, could be limited	yes, could be limited	yes, could be limited	no	no	no	limited
Geothermal	no	yes	yes	yes	yes	yes	no	no	no	yes
Solar, PV	no	location dependent	yes, location dependent	yes, limited by energy potential	yes, limited by energy potential	yes, limited by energy potential	no	no	no	yes
Solar, thermal	no	limited to yes	yes, location dependent	yes, limited by energy potential	yes, limited by energy potential	yes, limited by energy potential	yes	no	no	yes
Wind	no	location dependent	yes, location dependent	yes, limited by energy potential	yes, limited by energy potential	yes, limited by energy potential	no	possibly, using synthetic product	no	yes
Demand response	yes	reduces peak need	no	program dependent	program dependent	program dependent	no	no	no	yes
Energy efficiency	no	reduces peak need	reduces energy need	no	no	no	no	no	no	yes
Batteries	yes	yes	uses energy	yes	yes, depends on size	yes, depends on size	yes	no	yes, limited by size	limited by charging source

# Chelan PUD Comments on Grid Resiliency

- Issues

- Growing need for flexible capacity and other grid services.
- Without Northwest hydro, CAISO would need to purchase from more expensive sources.
- Current western market design does not fully compensate for the value of hydro's flexibility.
- Northwest hydro often a victim to price discrimination between in-state and out-of-state and between new and existing resources.
- Lack of proper price signals for hydropower could result in underinvestment in hydropower and undermine grid resilience.

# Chelan PUD Comments on Grid Resiliency

- Recommendations:
  - Northwest hydro ideally suited to provide balancing, firming and flexible capacity to CAISO.
  - Load-serving entities need to invest in the capacity, flexibility and other services to meet load, instead of leaning on the hydropower system without equitable compensation.
  - More transparency is needed in capacity pricing, terms and conditions.
  - Regional markets should incentivize optimal provision of grid services.
  - FERC, RTOS and ISOs should consider how markets, on a regional basis, may affect reinvestments signals.
  - Market design should be technology neutral, focusing on the services or characteristics needed to support resiliency rather than specifying a particular resource type.

# Next Steps

- FERC will consider reply comments.
- FERC may decide whether additional Commission action on resilience is warranted .
- Chelan PUD will continue to promote hydropower:
  - Fair value for its reliability and resilience attributes.
  - Optimal dispatch for hydropower's highest and best use.
  - Necessary incentives to promote reinvestment in the aging system.