



Energy Trends and UAMPS' Carbon Free Power Project (CFPP)

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Today's Conversation

- What is UAMPS?
- Background on energy basics
- Project analysis and the changes in policy at a state and federal level
- Carbon Free Power Project

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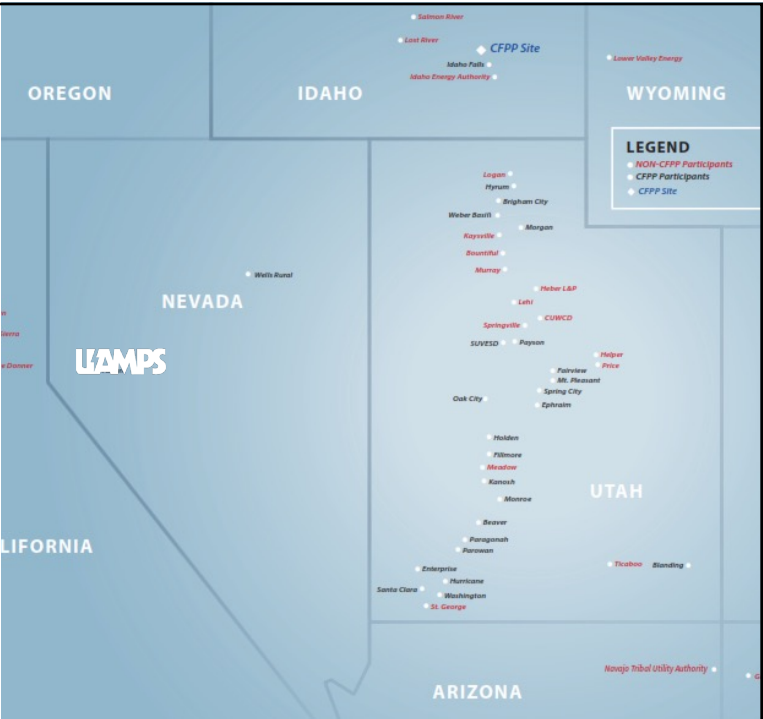


Who is UAMPS?

- Utah Associated Municipal Power Systems (UAMPS) is a Joint Action Agency
 - 50 members in 7 western states
 - Does not have retail customers
- Members are community-driven
- Regional perspective on energy development and capacity need
- UAMPS provides members project options including other zero-carbon energy resources

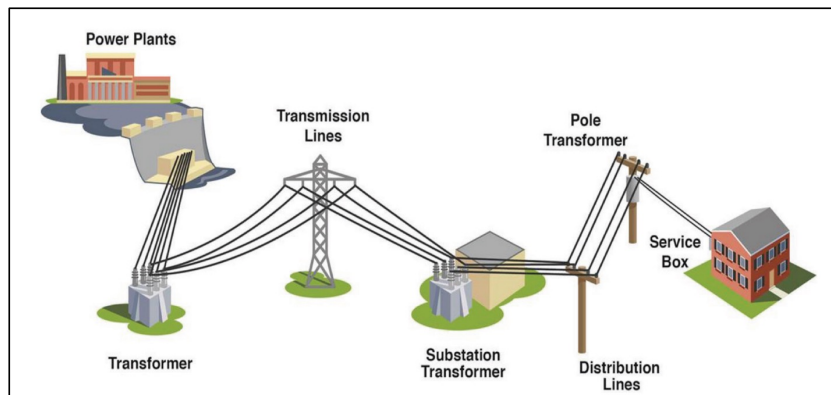


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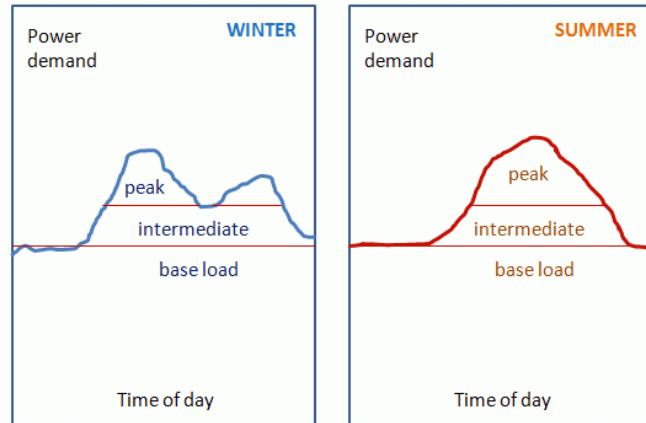
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How is energy produced and delivered?



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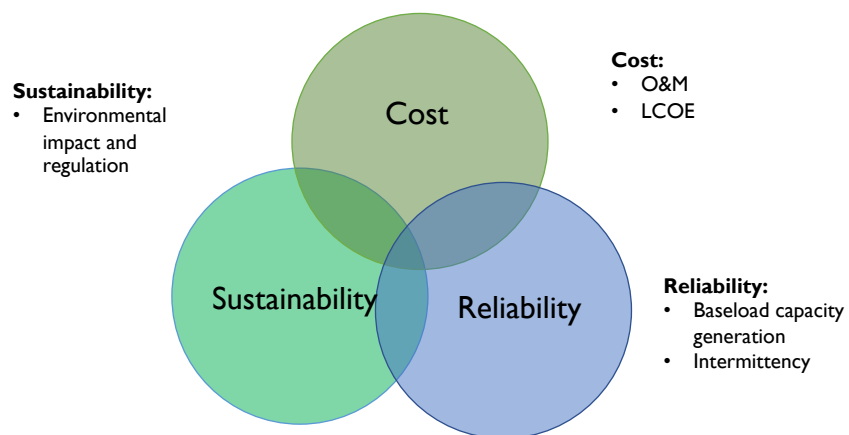
Baseload vs. Intermittent



Charts showing how demand changes during the year

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Project development analysis



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Utah State Energy Policy

Installed Solar PV Installed Capacity Intermountain West (2021)*		
State	Capacity (MW)	National Rank
AZ	5,549	5th
CO	2,130	13th
ID	590	27th
MT	121	43rd
NM	1,252	19th
NV	4,244	6th
UT	2,461	12th
WY	2,130	13th

Engaging with utilities:

- S.B. 3 (2019) Transmission Working Group
- H.B. 418 (2022) Grid Resilience Committee
- OED's Energy Planning Process

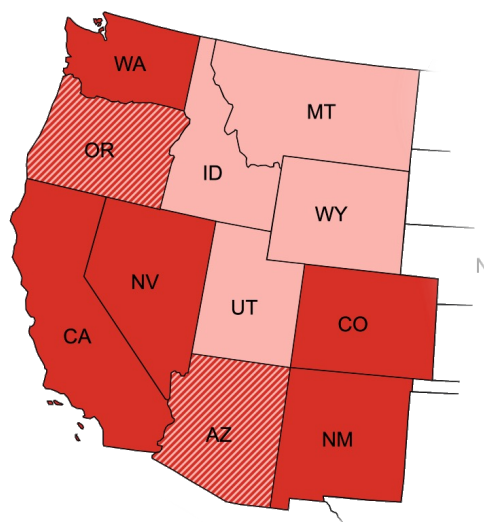
“Utah shall have adequate, reliable, affordable, sustainable, and clean energy resources”

Utah State Energy Policy (Utah Code Ann. § 79-6-301)

* Solar Energy Industry Association, State by State Solar Installations (2021), available at: <https://www.seia.org/states-map> (accessed January 10, 2022).

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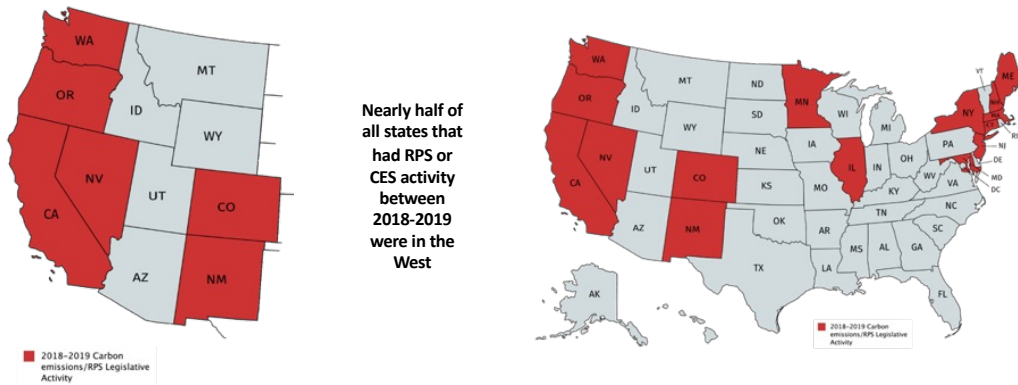
Changes to state energy policy (2020-2021)



- **Oregon HB 2021:** Requires IOUs to reduce GHG emissions:
 - 80% by 2030
 - 90% by 2035
 - 100% by 2040
 - No new natural gas plants
- **Arizona ACC:**
 - Adopts top-line goal of 100% reductions by 2070
 - 80% by 2050
 - 50% by 2032
- **Colorado:**
 - 80% by 2050
- **New Mexico:**
 - 80% by 2040, (100% carbon-free by 2050)
- **California:**
 - 60% by 2030, (RPS with remaining 40% met by carbon-free resources)
- **Nevada:**
 - 50% by 2030, (100% carbon-free by 2050)
- **Washington:**
 - 100% "clean" by 2045

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The Trend continues nationwide



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Background

 = GOP Controlled  = Dem Controlled

Congress	House	Senate	White House
110 th (2007-2009)			
111 th (2009-2011)			
112 th (2011-2013)			
113 th (2013-2015)			
114 th (2015-2017)			
115 th (2017-2019)			
116 th (2019-2021)			
117 th (2021-2023)			

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CEPP Origins

- 2019: Speaker Pelosi forms House Select Committee on Climate change; Democrats look CES policies
- 2020: Democrats nominate Biden who becomes POTUS
- 2021: Democrats lead with federal CES policy – Clean Future Act; and Clean Electricity Performance Standard; budget reconciliation is the legislative vehicle



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What is CEPP?



- Baseline years for 2023 – 2019/2020
- Requires utilities to procure 4% clean energy each year starting in 2023 – 2030
- Clean energy = zero-carbon not more than 0.10 metric tons CO₂e/MWh
- Administered by DOE
- Meeting 4% target = grant
- Failure to meet 4% = payment



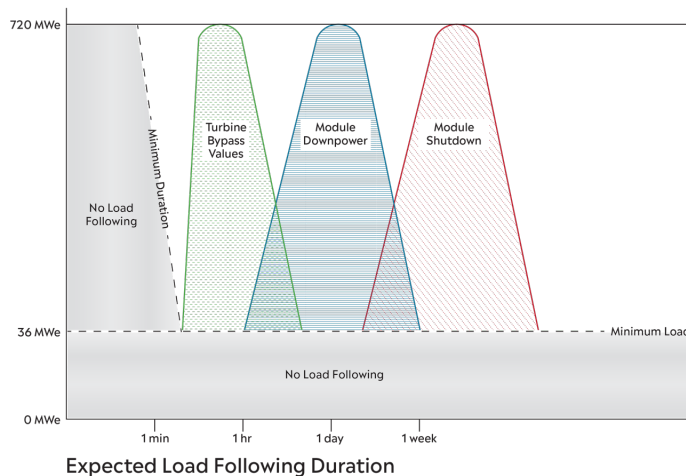
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Why Small modular Nuclear reactors?

- Zero carbon emitting
 - Regulatory benefits
 - Customer's desire for cleaner resources and rate stabilization benefits
 - Minimal environmental footprint
- Ability to integrate renewable and follow load
- Decarbonization strategies without nuclear are flawed
- Other advanced nuclear technologies are less mature
- Ability to be sited near existing transmission

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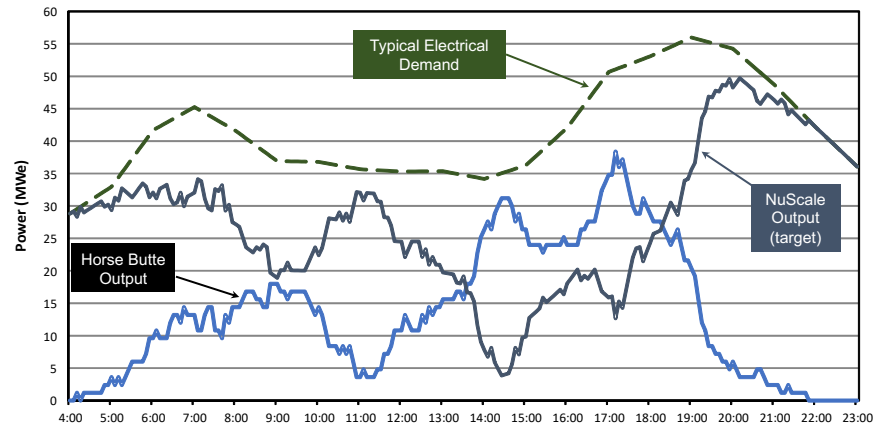
Integrating Renewables: Load Follow Strategies



Method	Up Power	Down Power
Turbine Bypass	20% to 100% (27 min) 3%/min	100% to 20% (8 min) 10%/min
Reactor Power Change	20% to 100% (96 min) 50%/hr	100% to 20% (≤ 24 min) 200%/hr
Module Dispatch	HSD to 100% (13 hrs) Refueling	100% to HSD (30 min) 200%/hr

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Flexible Operations Enable Further Growth In Renewables



NuScale design meets or exceeds EPRI Utility Requirements Document (URD), Rev. 13, load following and other ancillary service requirements.

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Carbon Free Power Project (CFPP) Video



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What is the Carbon Free Power Project (CFPP)?

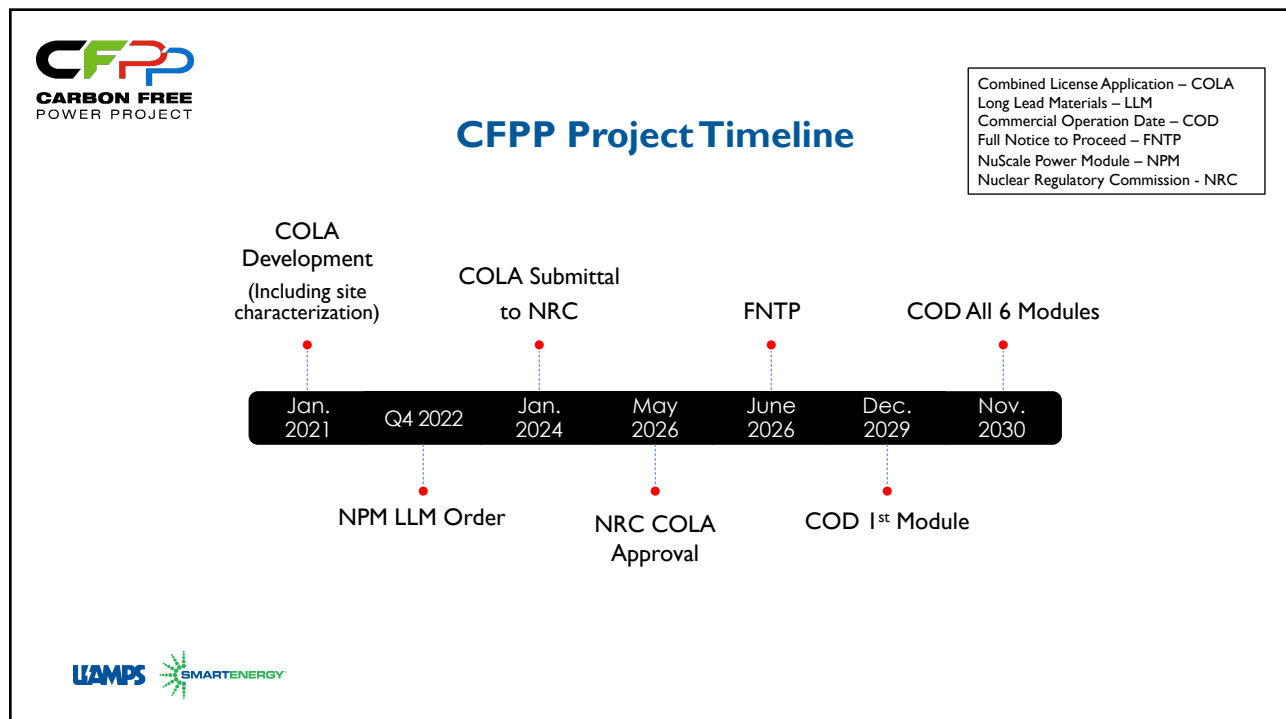
- Nation's first small modular reactor nuclear plant; project begun in 2015
- Cost-competitive and carbon-free capacity; ability to integrate renewables
- 462-megawatt CFPP; six 77-megawatt modules
- Will be sited at Idaho National Laboratory (INL)
- Xcel Energy Nuclear Services Holdings to potentially become CFPP operator announced March 2022
- DOE grant awarded in 2020
 - \$1.4 B over ten years (≈ 25% total project)
- 27 UAMPS members already participating - 115 MW
- Other utilities:
 - 2 WA Letters of Interest - 227 MW
 - 5 other northwest utilities expressed interest




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