Platte River Power Authority

Estes Park • Fort Collins • Longmont • Loveland

Welcome

2024 Integrated Resource Plan

Community listening session

Energy leaders since 1973

In the event of an emergency

Fire/evacuation

- Follow your Platte River contact to the designated assembly area
- Primary exit is the north door

Shelter in place

- Interior hallways, bathrooms

Agenda

- Overview
- Presentation
- Break
- Community input process and remarks
- Closing remarks

Community input process

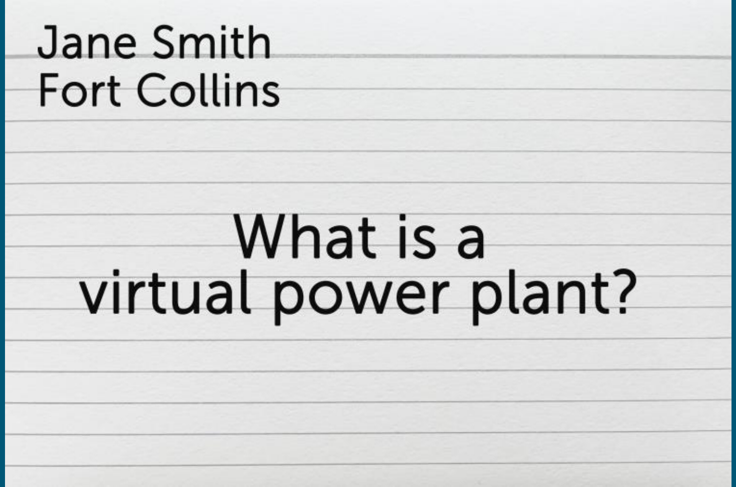
- Meeting purpose
- What we hope to accomplish today

Submit input

- Index cards
- PollEv.com/PRPA
- Join by text: send “prpa” to 22333

Optional card formatting

- Name, city of residence, organization (if applicable)



IRP community engagement process

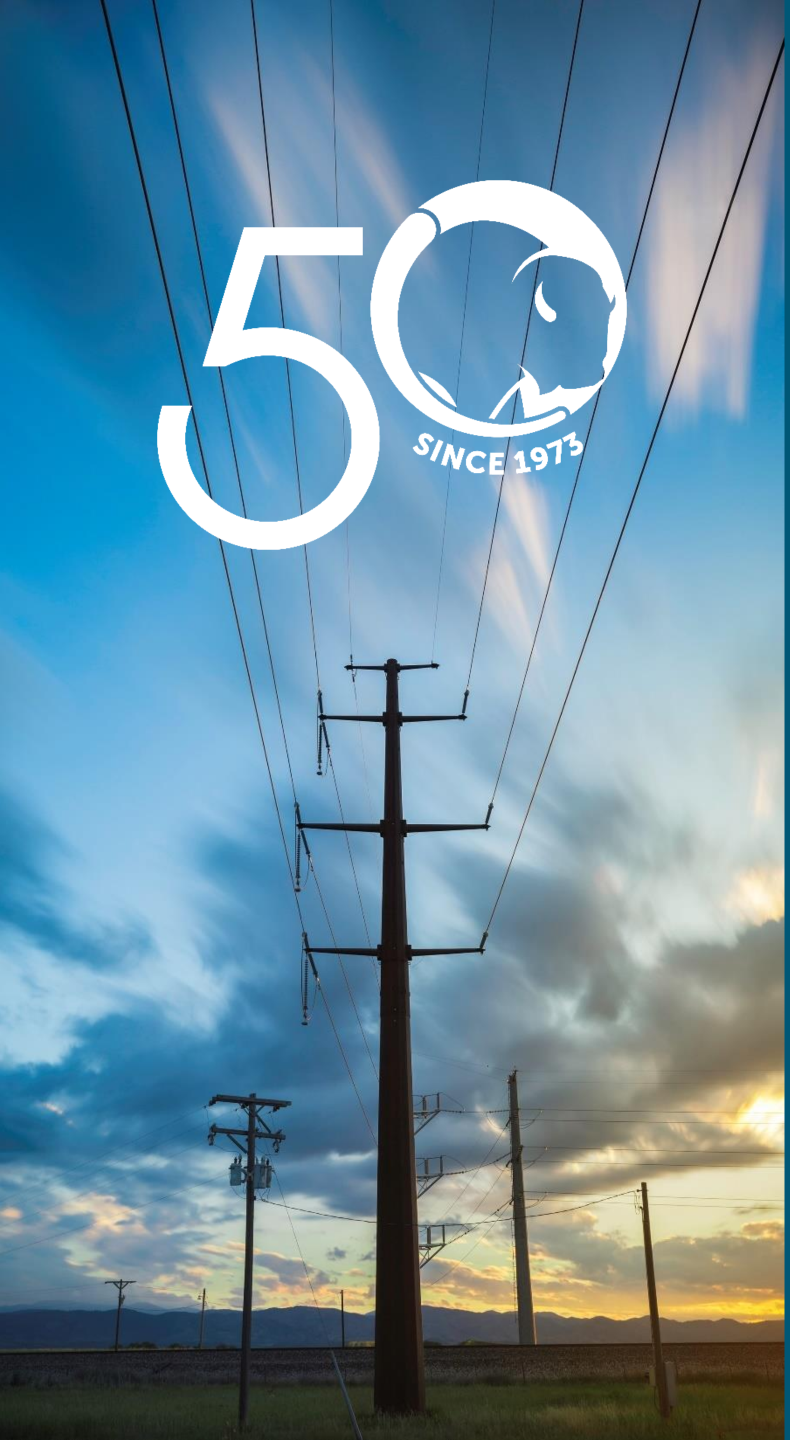
Stay informed

- prpa.org/2024irp

Submit additional questions and request community presentations

- 2024irp@prpa.org


City of Fort Collins
Owners
Owners
ESTES PARK COLORADO
Platte River Power Authority
CITY OF LONGMONT COLORADO
Owners
Owners
City of Loveland



About Platte River Power Authority

Platte River Power Authority is a not-for-profit, community-owned public power utility that generates and delivers safe, reliable, environmentally responsible and financially sustainable energy and services to Estes Park, Fort Collins, Longmont and Loveland, Colorado, for delivery to their utility customers.

At a glance

Headquarters
Fort Collins, Colorado

General manager/CEO
Jason Frisbie

Began operations
1973

Employees
297

Peak demand
707 MW on July 28, 2021

2023 projected deliveries of energy
5,174,234 MWh

2023 projected deliveries of energy to owner communities
3,301,376 MWh

Transmission system
Equipment in 27 substations, 263 miles of wholly owned and operated high-voltage lines and 522 miles of high-voltage lines jointly owned with other utilities.

Foundational pillars

Platte River is committed to decarbonizing our resource portfolio without compromising our three pillars:

- Reliability
- Environmental responsibility
- Financial sustainability

Opening remarks

Raj Singam Setti, chief transition and integration officer

Resource Diversification Policy

Passed by Platte River's Board of Directors in 2018

Purpose

To provide guidance for resource planning, portfolio diversification and carbon reduction.

Goal

To support owner community clean energy goals, we will proactively work towards a 100% noncarbon resource mix by 2030 while maintaining our foundational pillars of providing reliable, environmentally responsible and financially sustainable energy and services.

Accomplished

- An organized regional market must exist with Platte River as an active participant

In progress

- Transmission and distribution infrastructure investment must be increased
- Transmission and distribution delivery systems must be more fully integrated
- Improved distributed generation resource performance
- Technology and capabilities of grid management systems must advance and improve
- Advanced capabilities and use of active end user management systems
- Generation, transmission and distribution rate structures must facilitate systems integration

Awaiting technology

- Battery storage performance must mature and the costs must decline
- Utilization of storage solutions to include thermal, heat, water and end user available storage

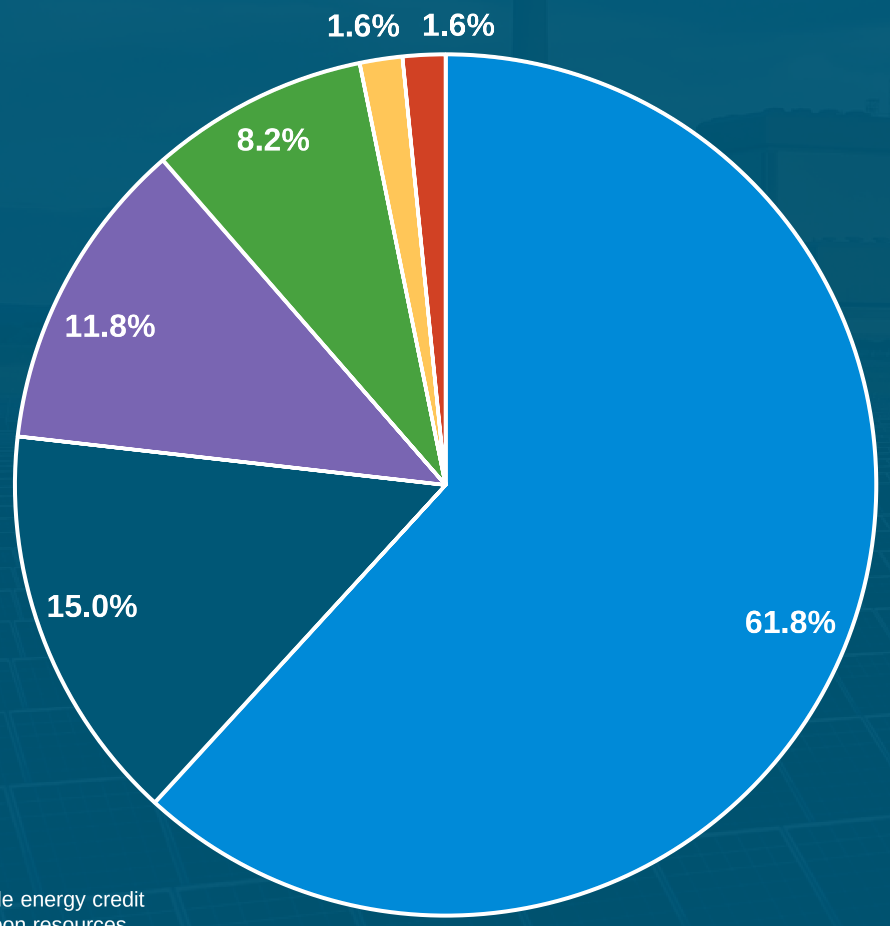
Progress since 2018

The 2024 IRP builds on the 2020 IRP and resource planning and modeling that occurred in 2021 and 2022

- 225 MW of Roundhouse wind
- Announcement to retire coal resources
- Developed a distributed energy resources strategy
- Filed 2020 IRP
- 22 MW Rawhide Prairie Solar with 2 MWh battery
- 150 MW Black Hollow Solar power purchase agreement
- Additional solar and anergy storage RFPs
- Filed Clean Energy Plan with the state of Colorado, which requires all electric utilities to achieve 80% carbon reduction by 2030
- Entry into Southwest Power Pool Western Energy Imbalance Service market

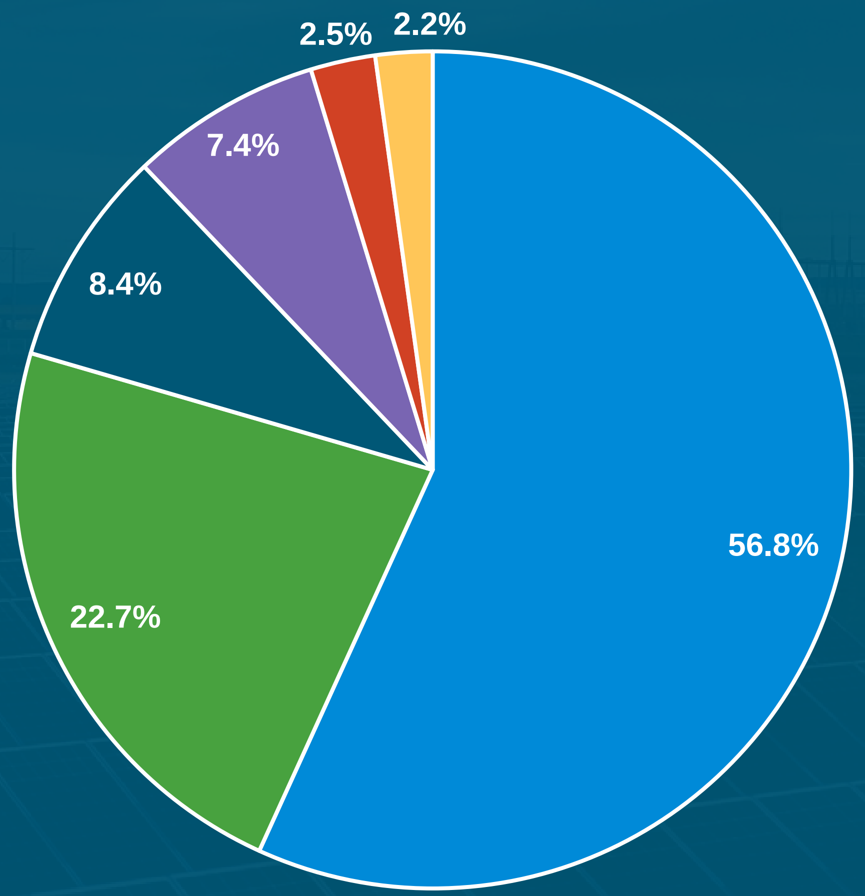
2018 system total

24.8% noncarbon resources



2023 budget system total

33.3% noncarbon resources



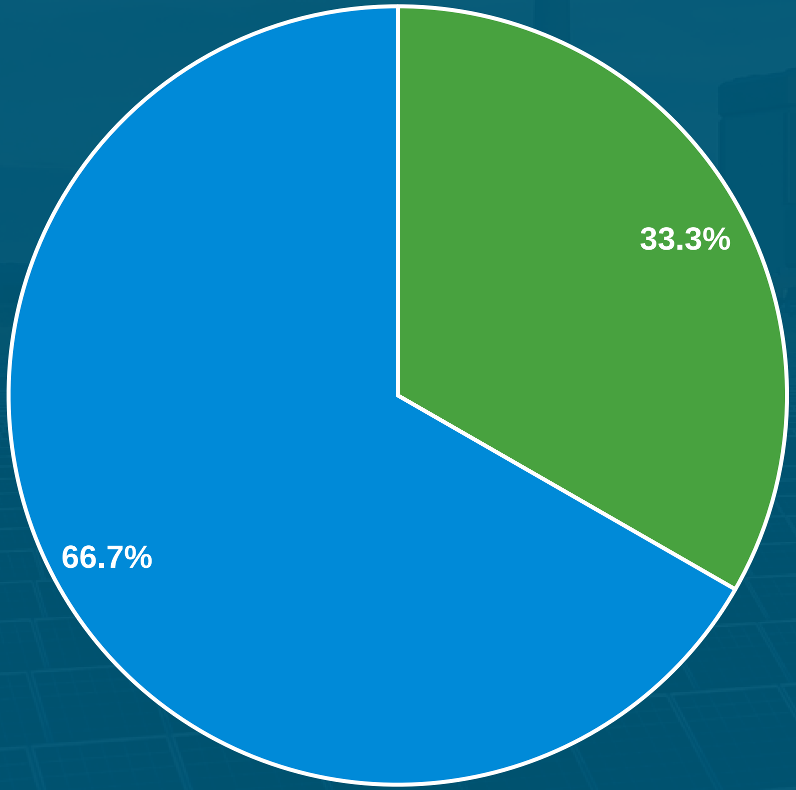
Includes renewable energy credit allocations to carbon resources

Due to drought conditions, not all hydropower may be considered noncarbon

Coal Wind Hydropower Solar Other purchases Natural gas

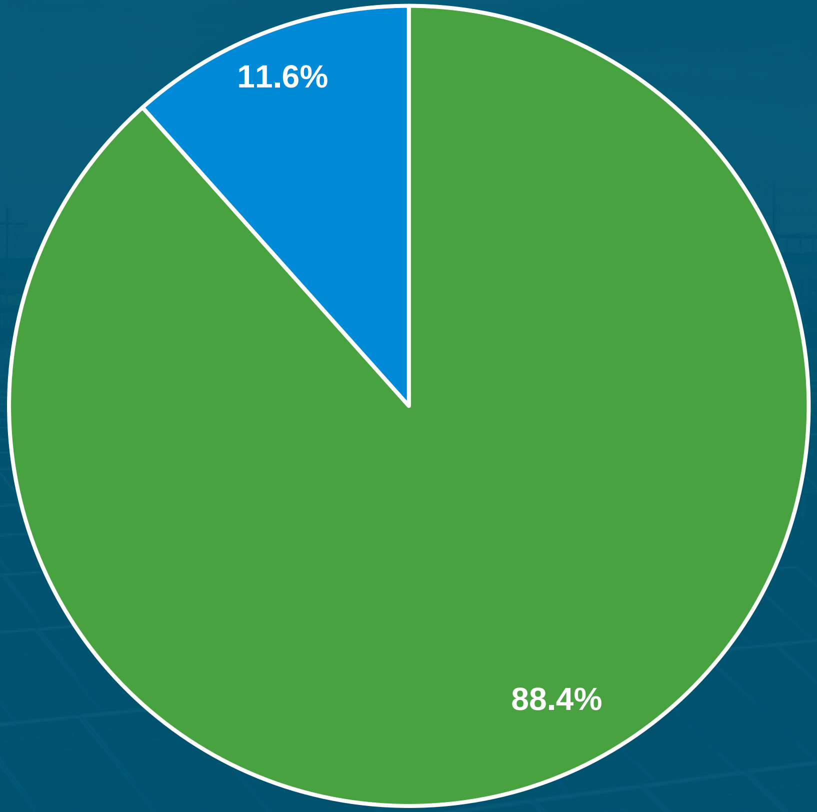
2023 budget system total

33.3% noncarbon resources



2030 projected system total

88.4% noncarbon resources



Includes renewable energy credit allocations to carbon resources

Due to drought conditions, not all hydropower may be considered noncarbon

Renewable resources   Dispatchable resources (includes purchases)

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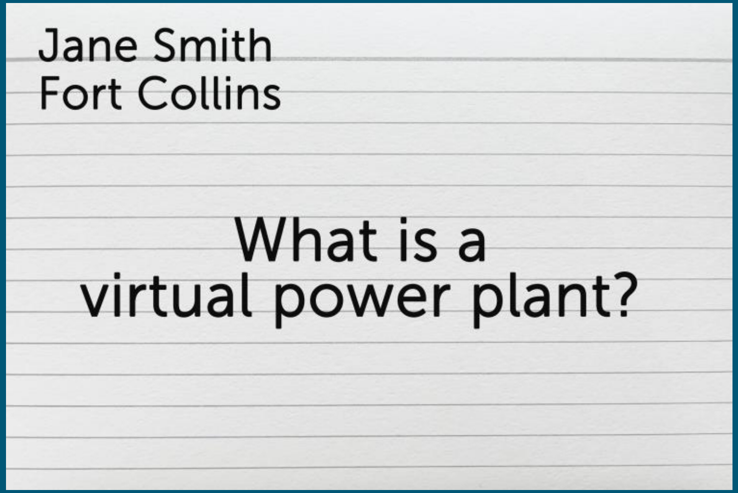


2024 IRP timeline and process

Masood Ahmad, resource planning manager

What is an IRP

- IRP is a planning process which integrates customer demand and resources (DERs) with utility resources to provide reliable, economical and environmentally desirable electricity to customers
- Typically developed for the next 10-20 years and updated every few years
- IRP assists with preparing for industry changes including:
  - Technological progress
  - Consumer preferences
  - Regulatory mandates
- Required by Western Area Power Administration (WAPA) every five years
- WAPA requires a short-term action plan and an annual follow up on plan execution
  - Last IRP was submitted in 2020

Timeline

June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | April | May | June

Community engagement

Listening session

Listening session

Listening session

Ongoing public engagement in collaboration with owner communities

Resource planning

- Pre-IRP studies
- Load forecasting
- Other inputs, assumptions

IRP modeling

Portfolio development

Review results

Reliability assessment with renewables and DER integration

Board presentation

IRP document development

IRP modeling process

Input assumptions

- Load forecast
- DER potential
- Power price forecast
- Resource cost forecast
- Extreme weather models
- Renewable profiles

Portfolio development

- Resource mix
  - Renewable
  - New technology
- Least cost
- Carbon reduction
- Reserve margins

Reliability testing

- Portfolio testing with
  - Dark calms (low supply)
  - Extreme weather (high demand)
  - Different wind/solar profiles

Plexos model

Studies

Complex modeling of an uncertain future

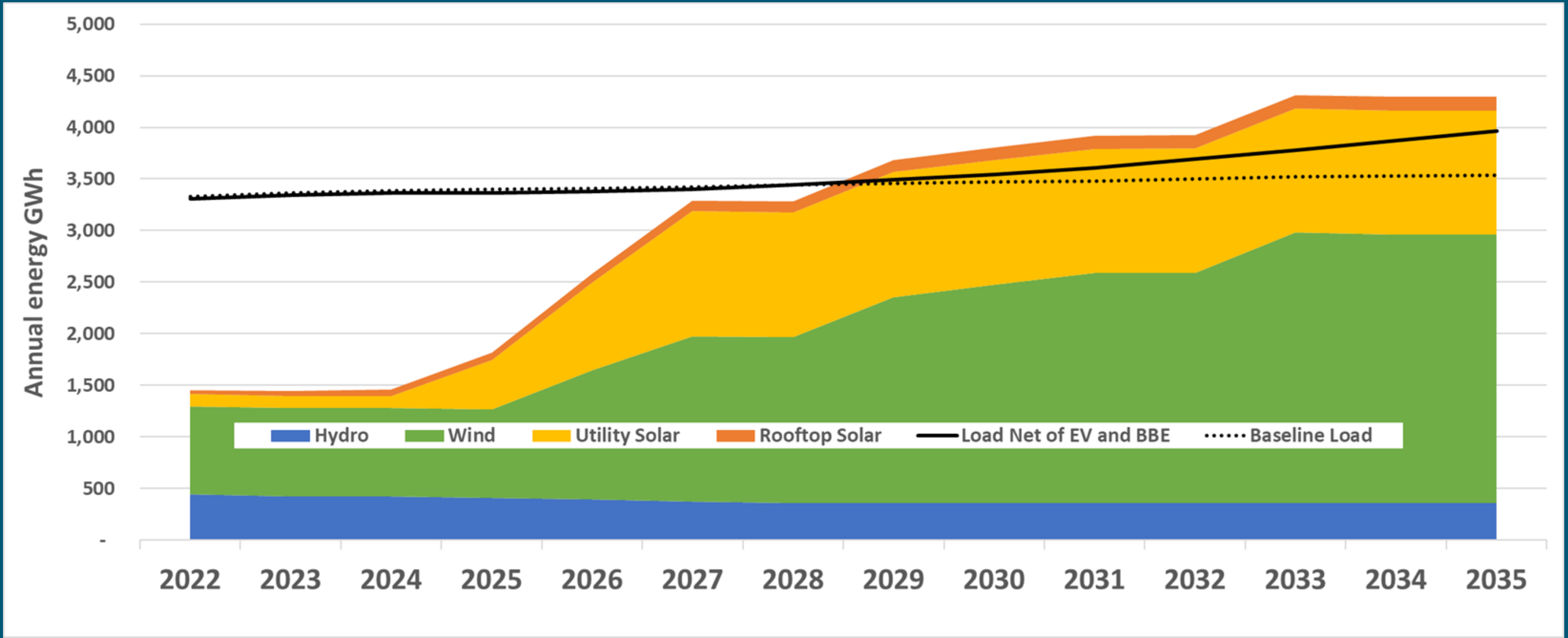
- Extreme weather modeling
- Load forecast, customer load contributions/flexibility
- Market prices, volatility and congestion
- Required reserve margin and ELCC
- Beneficial electrification assessment

Technology evaluation

- Emerging technology screening
  - Cost curves
  - Time to maturity
- Dispatchable technology evaluation
  - High flexibility
  - Low carbon
  - Proven technology
- Distributed energy resource assessment
  - Customer adoption rate
  - Usage profiles

Integration of renewable resources

Currently planned renewable supplies

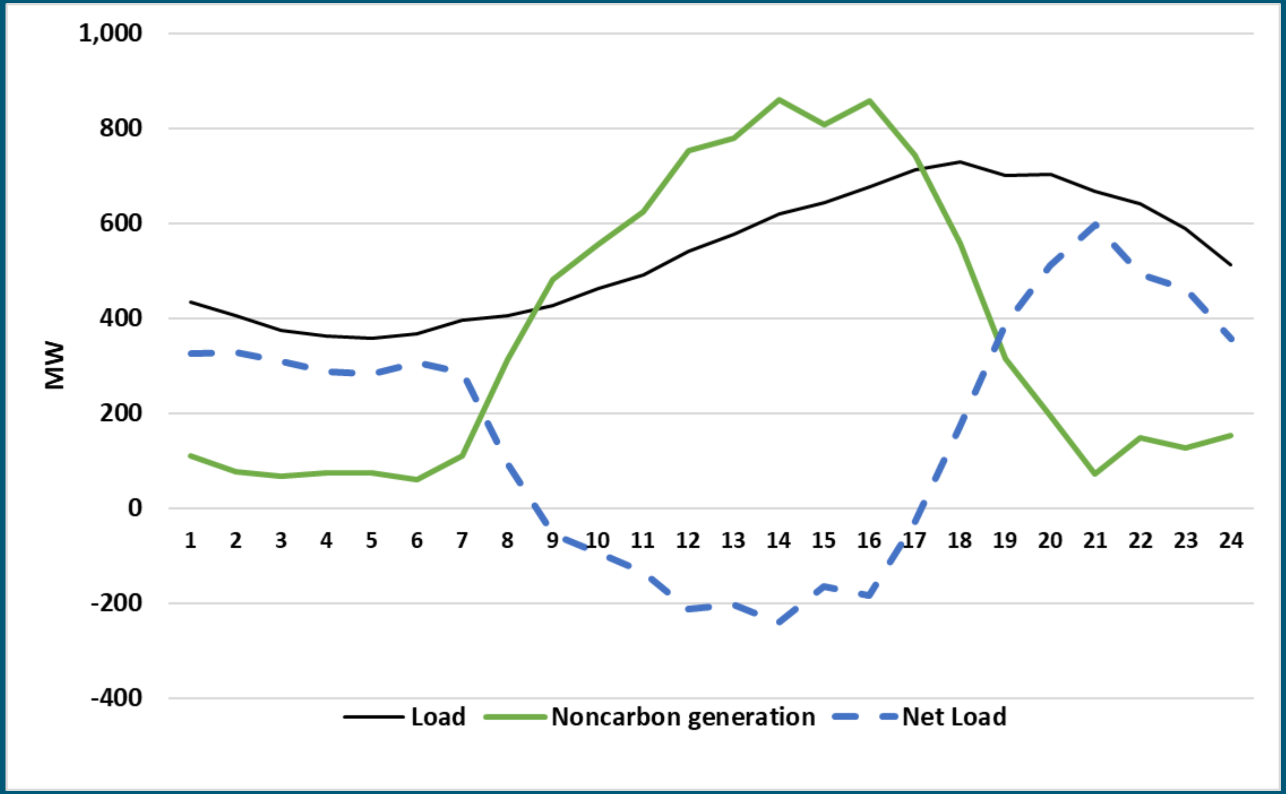


Renewable integration challenges

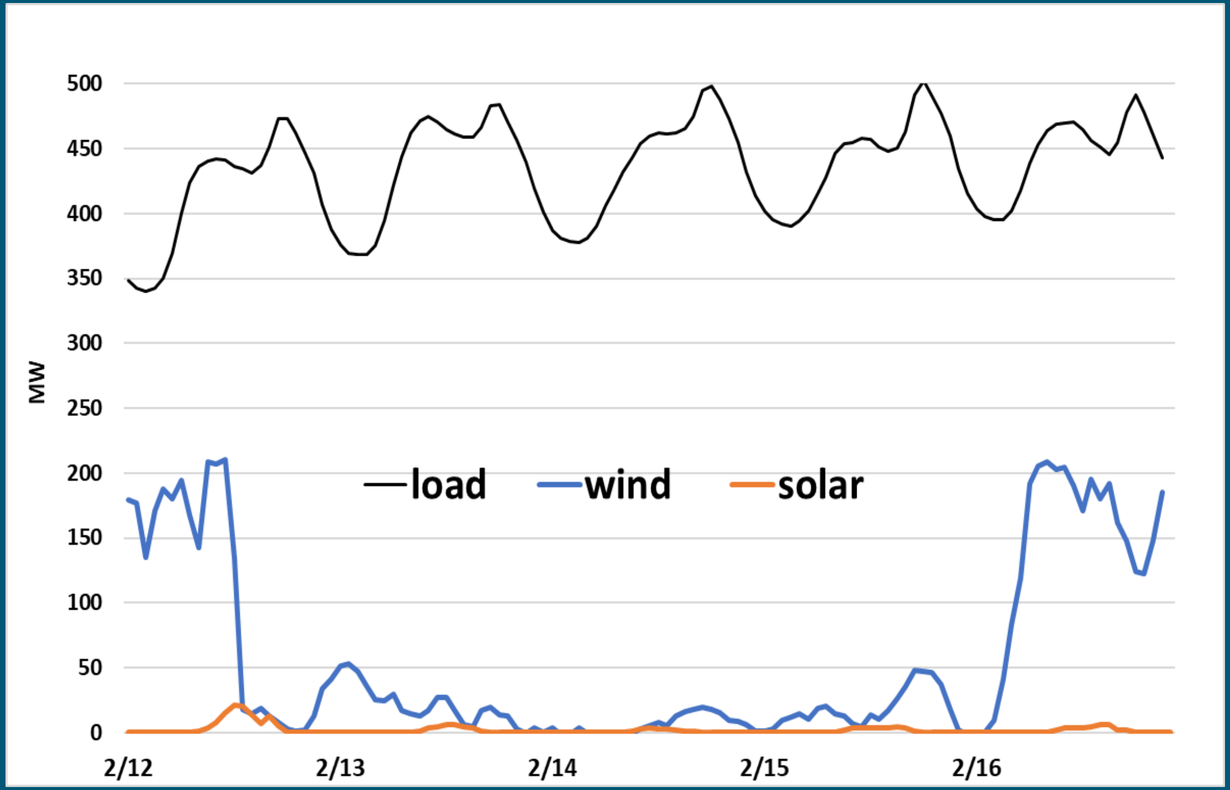
- Renewable intermittency
  - Day to day operation
  - Extreme weather operation
- Ensuring reliability in all weather conditions
- Serving load with intermittent renewable generation will require:
  - Energy storage
  - DERs and flexible load
  - Dispatchable generation

Renewable intermittency challenges

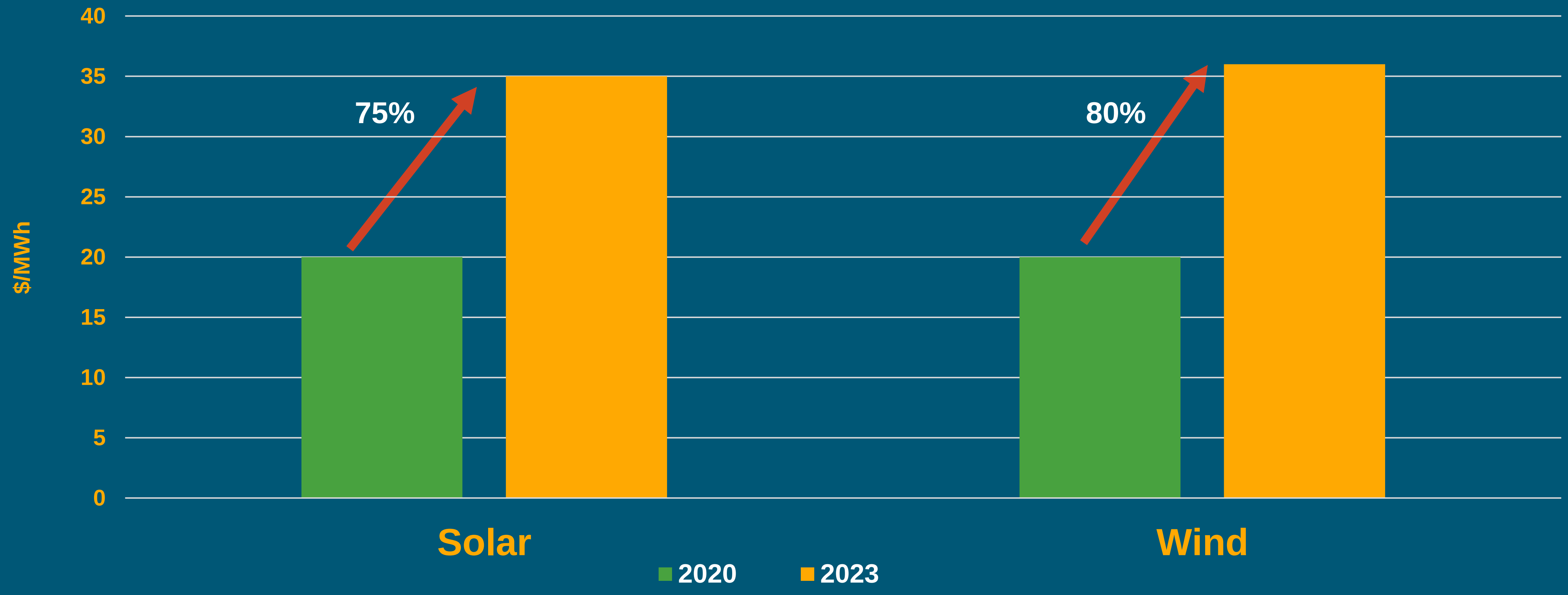
Hourly (Summer 2030 forecast)



Extreme weather (Valentine's week 2021)



Trends in renewable costs



Technology evaluation and implementation

Battery storage technology

Opportunities

- Currently available technology: four-hour storage (short duration storage)
  - Major use cases include clipping daily peaks (charge and discharge within 24 hours)

Challenges

- Technology is not viable for long duration storage strategy
  - Primary challenge in decarbonization
  - Example: adopting this technology for 24 hours of storage would cost $3 billion and more than double rates (2020 IRP portfolio 3)

Future technology

Opportunities

- Exploring and possibly piloting technologies
  - Hydrogen
  - Carbon sequestration
  - Renewable fuels
- Will adopt when commercially and economically viable

Challenges

- Time to maturity
- Cost

Summary

- Modeling is a complex and challenging process
- Next steps: modeling, reviewing studies, engaging industry experts
- Your input tonight is appreciated

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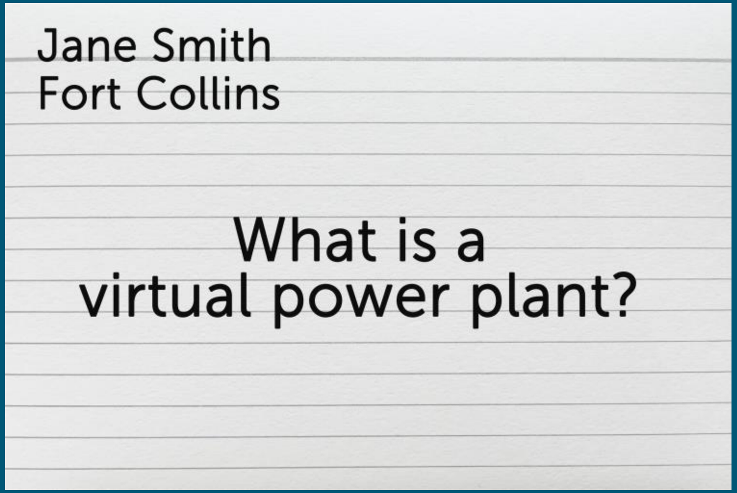

Key takeaways

Raj Singam Setti

Key takeaways

- Clean energy transition
- Reliability
- Emerging technologies

Listening session break

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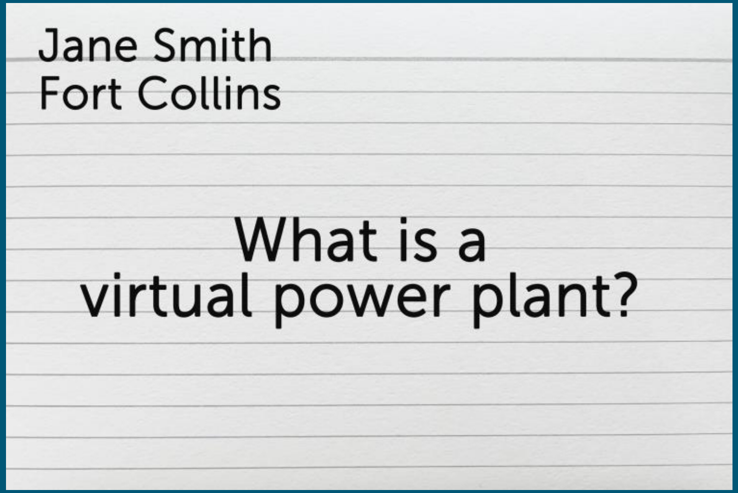

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Concluding remarks

prprpa.org/2024irp