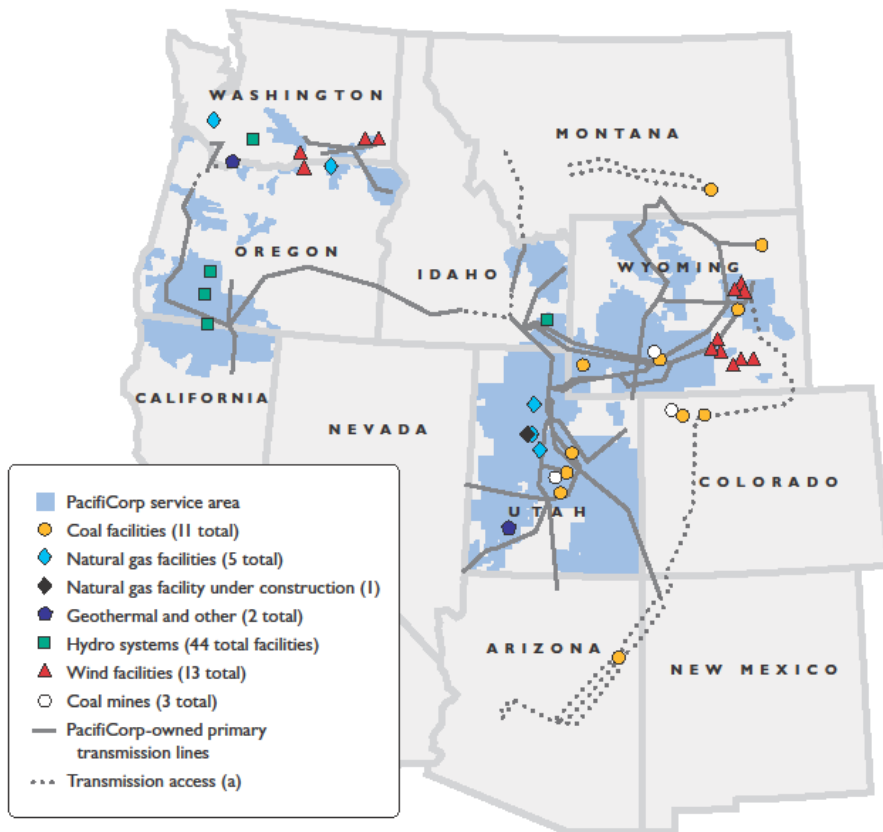


Role of Energy Markets in Resource Planning & Utility Operations

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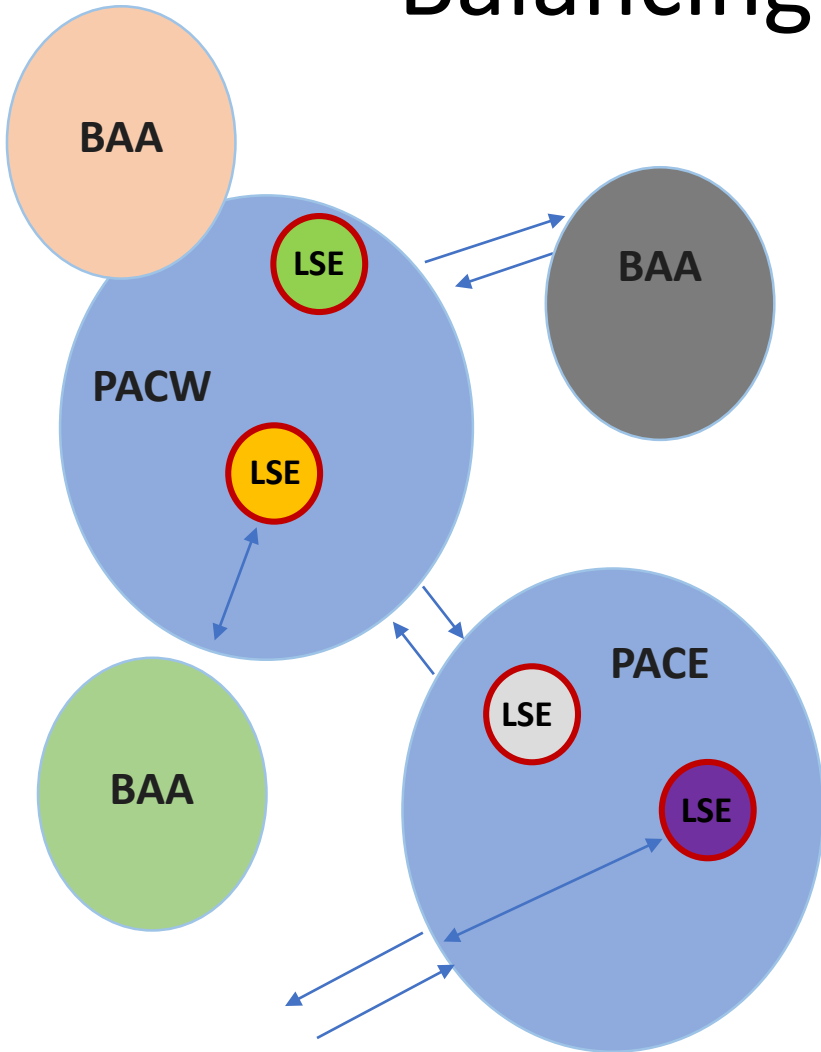


PacifiCorp Resources & Service Territory



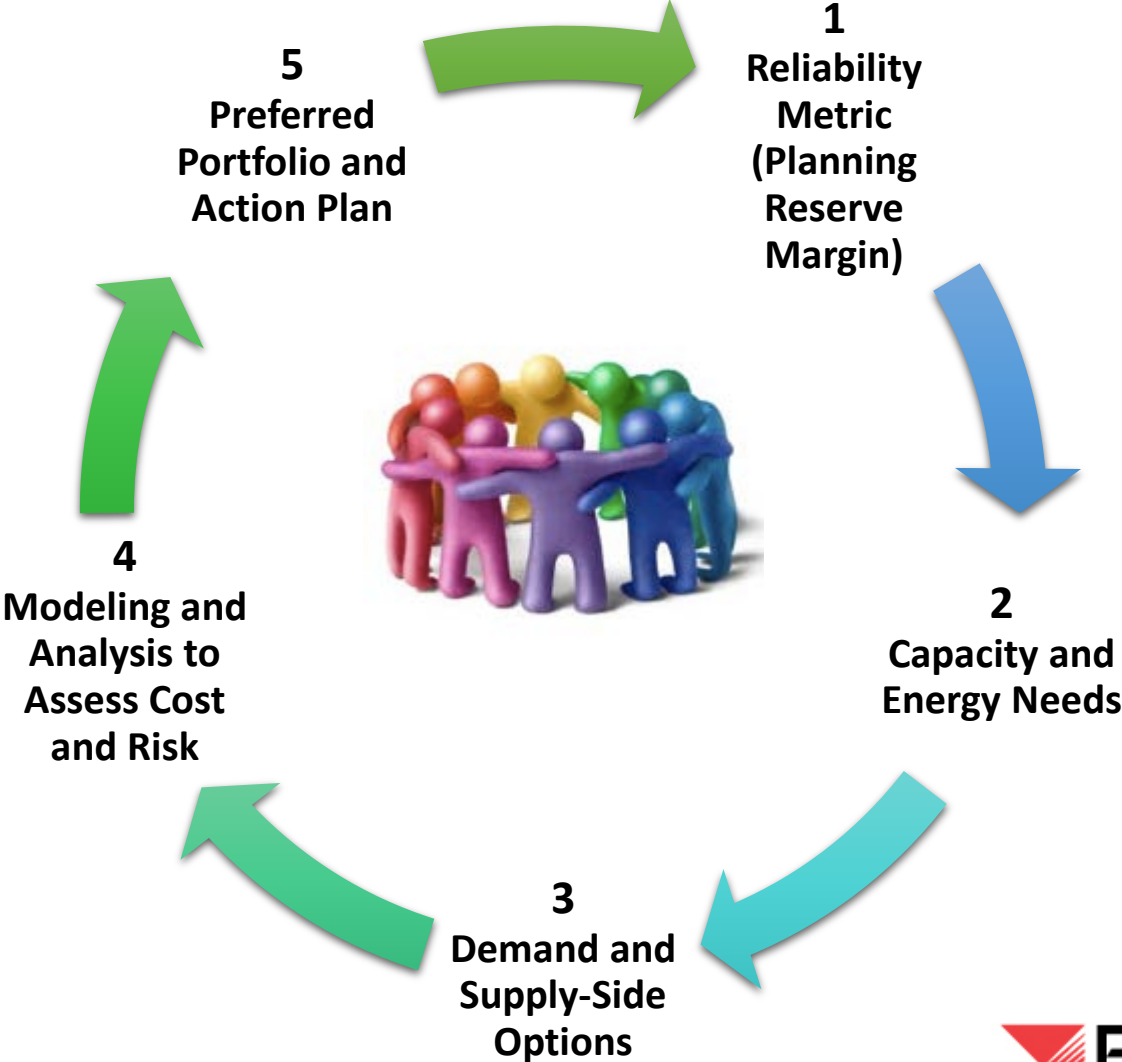
- PacifiCorp system is made up of loads and resources connected by transmission and distribution lines
- To reliably serve retail load, supply must be in constant balance with demand
- PacifiCorp plans to reliably and cost-effectively meet long-term load requirements through its integrated resource planning and follow-on resource procurement processes
- Planning margins and operating reserve requirements are built in to short- and long-term planning processes to ensure adequate and reliable supply

PacifiCorp Service Territory & Balancing Authority Area



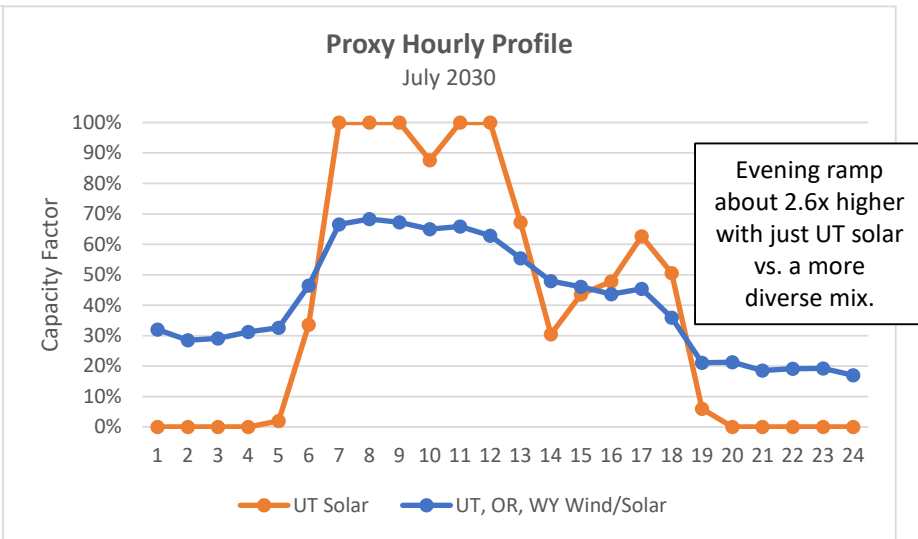
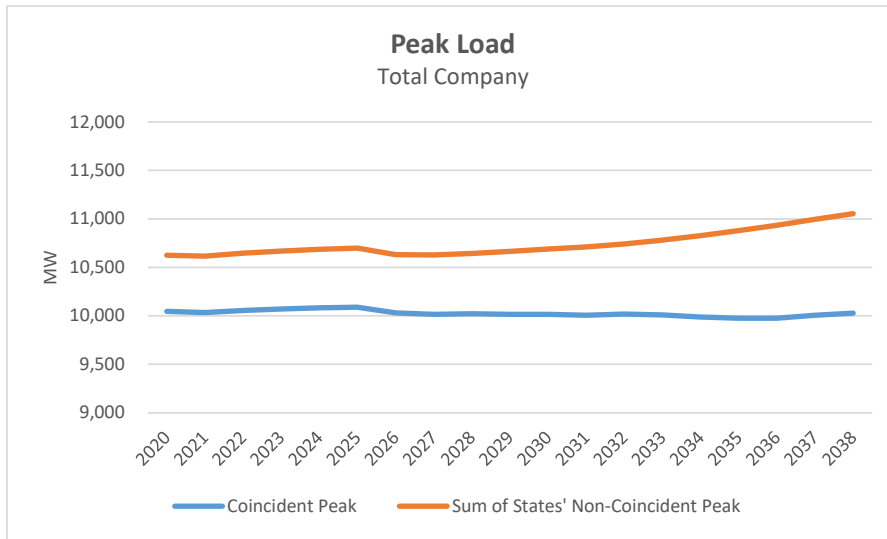
- PacifiCorp loads and resources are part of two balancing authority areas (PACE & PACW) that PacifiCorp is responsible for balancing
- Some third-party resources and loads are also included in PacifiCorp balancing authority areas
- PacifiCorp resource planning, available supply, and market purchases only cover PacifiCorp's obligations as the load-serving entity to loads on its system
- As the balancing authority area operator, PacifiCorp provides balancing services to third-party loads and resources but does not plan to serve third-party load

PacifiCorp Integrated Resource Planning



Benefits of Geographic Diversity Reflected in the IRP

- PacifiCorp's system, with retail service territory in six states and generation resources in ten states, has geographic diversity in terms of both load and resources



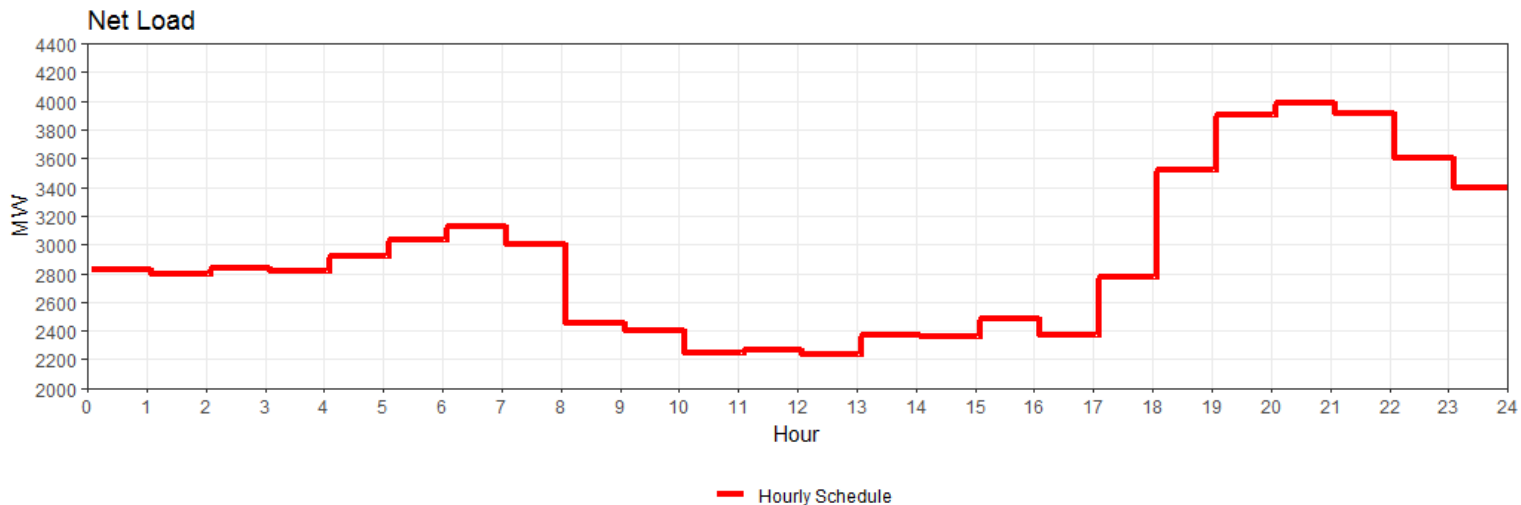
- The west-side of PacifiCorp's system (OR, WA, CA) peaks in the winter while the east-side of the system (UT, WY, ID) peaks in the summer
- Reduces PacifiCorp's total capacity needs and reduces costs for customers
- Geographical diversity also helps to balance the intermittency of resources like wind and solar and bolsters resource adequacy
- Markets help balance demand and supply across a broader and more diverse footprint

The Role of Markets in the IRP

- The IRP preferred portfolio includes existing resources, planned resource retirements, and incremental supply- and demand-side resources depending on the need identified
- One resource type the IRP model can select is front office transactions, which represents an open position (*i.e.*, a need not met with generating resources or demand-side resources) that will be filled through on-going market transactions on a forward basis and into real time
- Front office transactions can be made years, quarters or months in advance, however, most transactions made to balance PacifiCorp's system are made on a balance of month, day-ahead, hour-ahead, or intra-hour basis
- In the context of the long-term resource plan, market purchases allow PacifiCorp to accommodate short-term uncertainty in load and resource forecasting and avoid incremental longer lead-time capital investments that ultimately may not be needed

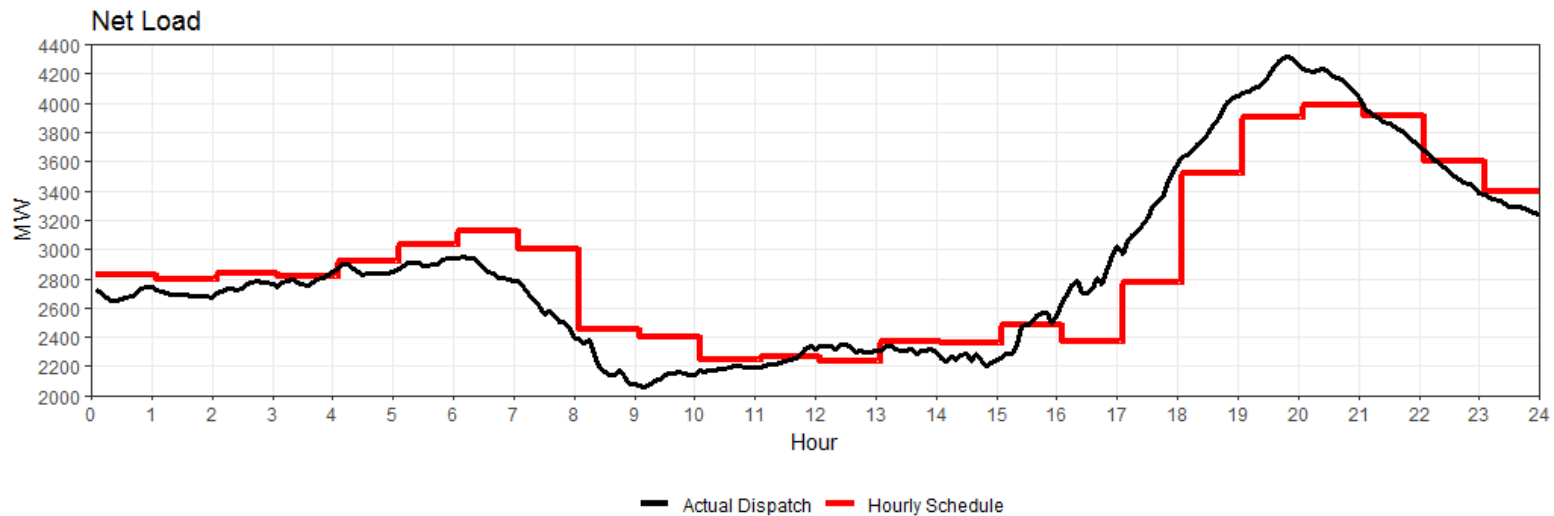
Planning to Meet Hourly Loads

- PacifiCorp plans to balance load and resources across all hours
- These plans rely on market purchases to achieve balance
- The chart illustrates the observed hourly net load profile for a specific day; PacifiCorp must plan to meet this requirement for each hour

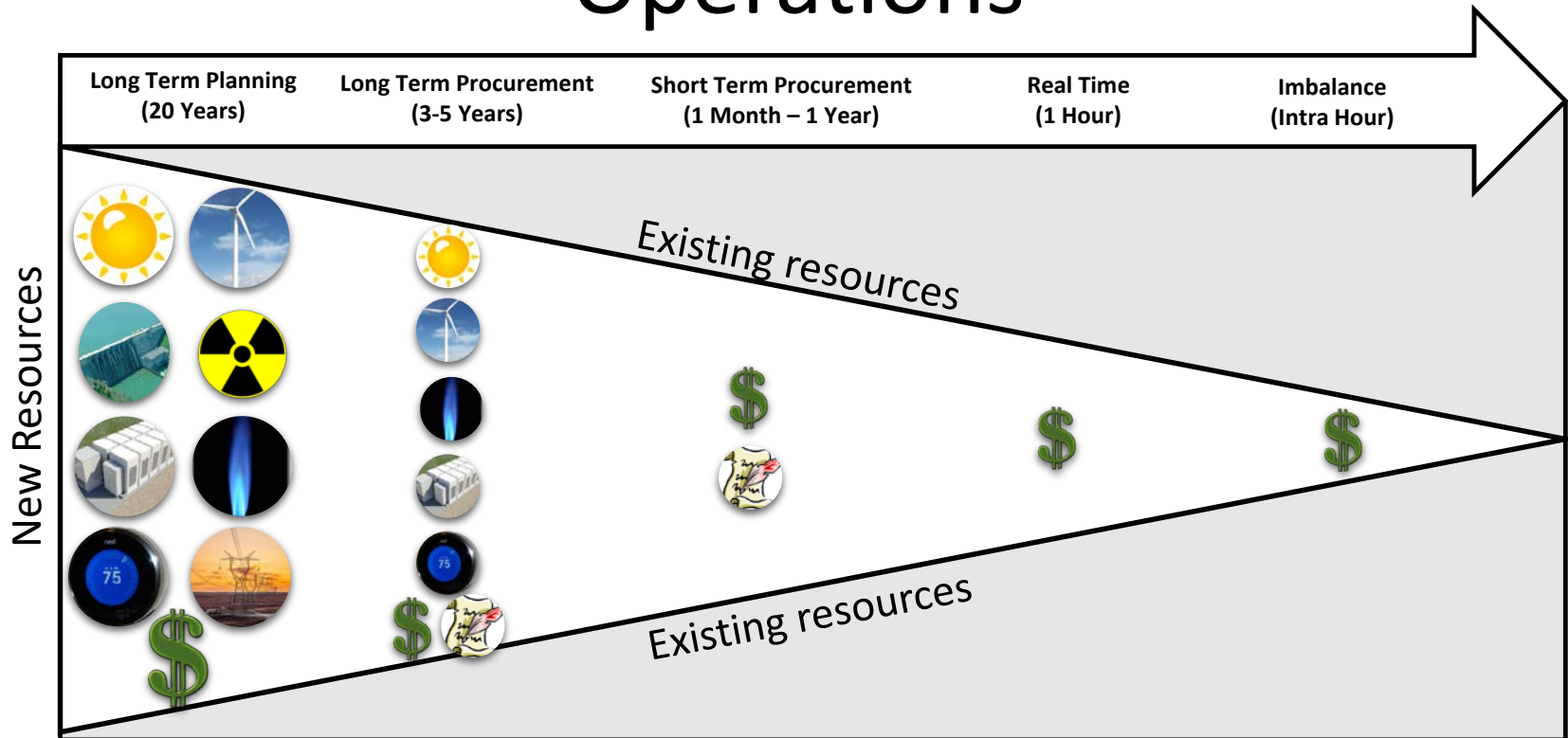


Actual Operations

- The following chart illustrates the actual net load profile for the same day
- Intra-hour variations in load, wind and solar create challenging ramp requirements with a greater need for capacity
- Markets play a critical role in maintaining balance when planning to meet load and when operating the system to meet load in real time



From Planning to Procurement to Operations



- As we move from planning to operations, load and resource forecasts become more granular and accurate but options for meeting incremental energy and capacity needs are reduced
- The ability to rely on and procure new resources is more constrained as you move from long-term planning to real-time operations
- PacifiCorp engages in the purchase and sale of electricity on an ongoing basis to balance the system and maximize the economic efficiency of power system operations

Beyond PacifiCorp

- PacifiCorp's operations and costs are tied to a larger electric system which functions, on a day-to-day basis, as a geographically dispersed marketplace
- Market transactions yield economic efficiency by assuring that resources with the lowest operating cost are serving demand in a region and by providing reliability benefits that arise from a larger portfolio of resources
- Without the wholesale market, PacifiCorp or any other load serving entity would need to construct or contract for an unnecessarily large amount of generating resources that would go unused in all but the most unusual circumstances and would substantially diminish its capability to cost effectively match delivery patterns to the profile of customer demand
- The benefits of access to an integrated wholesale market have grown with the increased penetration of intermittent generation such as solar and wind

Why Efficient Markets?

- Optimize existing resource portfolio
- Provide reliable energy at least costs to consumers
- Integrate renewable/variable energy resources
- Reduce curtailments for renewables by selling/distributing supply across a broader system
- Harness benefits of geographic diversity
- Shape around resource and network constraints
- Produce correct price signals to motivate efficient generation and resource investments over time
- Hedge price risk to protect customers from market volatility