

UAMPS

UTAH ASSOCIATED MUNICIPAL POWER SYSTEMS

EDAM INTRODUCTION

Board of Public Utilities - Work
session

11/05/2025

LOS ALAMOS COUNTY AND EDAM

- Bilateral Markets today
- Western Energy Imbalance Markets
- Extended Day-Ahead Market
 - Resource Sufficiency Evaluation
 - Transmission
 - Congestion



BILATERAL TRADING TODAY

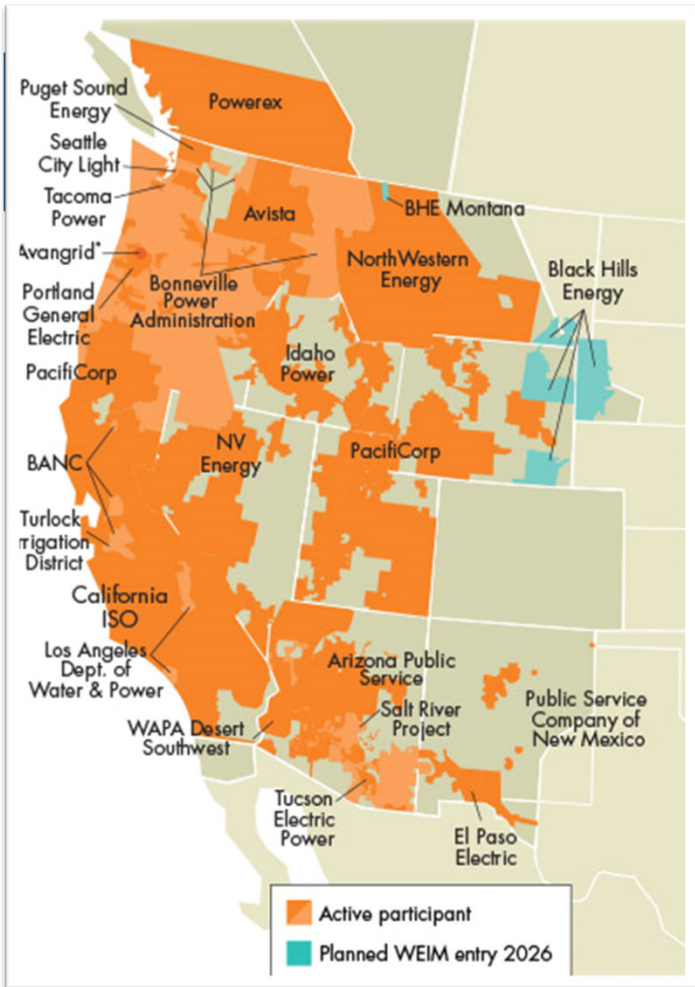


- Trades occur **between single buyers and single sellers** at a bilaterally negotiated price
- Products are standardized:
 - Non-Firm Energy
 - Unit Contingent
 - Firm Energy (most liquid)
 - Specified Source
- Day-ahead energy is generally traded in 4-hour super peak, 16-hour on-peak and 8-hour off-peak blocks

CAISO WEIM

CALIFORNIA INDEPENDENT SYSTEM OPERATOR WESTERN ENERGY IMBALANCE MARKET

- **First step towards organized markets** - launched November 2014 with PacifiCorp
- By 2024 expanded to 22 entities serving 80% of the total load (~132 GW) within the WECC (Western Electricity Coordinating Council) Western Interconnection area
- Key drivers for WEIM growth were transmission connectivity and loss of real-time liquidity and trading partners
- WEIM is a 5-min and 15-min market (sub-hourly). **Resource participation is not required** from LSEs (Load Serving Entities, such as Los Alamos) within WEIM Entity Balancing Authorities
- WEIM impacted Los Alamos generation and load imbalance, but **Los Alamos is not required to participate**



LOS ALAMOS COUNTY-WEIM

- Los Alamos County passively operates in the WEIM
 - CAISO Settlements are passed through the PNM Network Integrated Transmission Service Agreement
 - Los Alamos relies on EIM settlements for Energy Imbalance from PNM
 - CAISO Billing goes through the Balancing Area
- Resources for full participation require specialized equipment
 - Generators
 - AGC-Automatic Generator Control
 - Operate to Signals sent by the CAISO
 - Front-Back Office
 - Interface with CAISO software
 - Specialty software for settlements
 - No direct settlements with CAISO

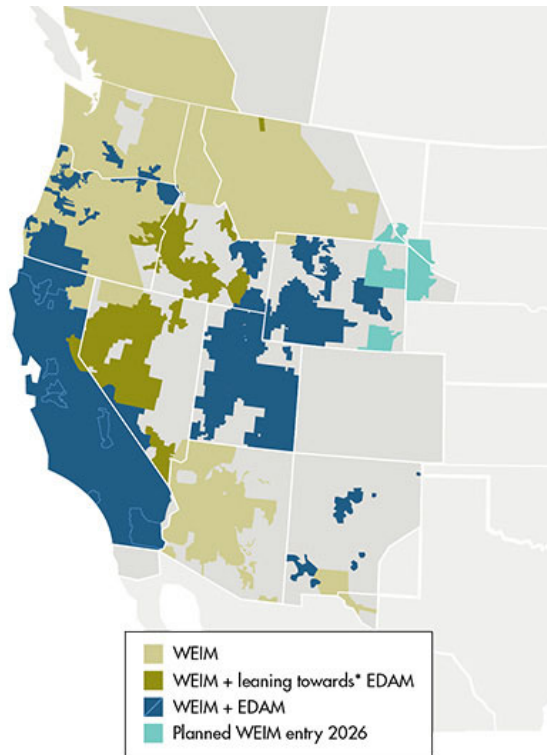


EDAM

- A voluntary, Balancing Area-level, day-ahead electricity market
- Designed to deliver reliability, economic and environmental benefits to utilities throughout the West
- Building on the success of the WEIM, the EDAM will enhance regional coordination, support states' policy goals, and meet demand cost-effectively
- Participation in the EDAM, as in the WEIM, continues to be at a balancing area level
- With PNM entering EDAM, Los Alamos will be required to participate



EXPANSION IN EDAM



*These entities have publicly indicated a leaning towards EDAM as their preferred day-ahead market.

Planned entry Spring 2026:

- PacifiCorp
- Portland General Electric

Planned entry Fall 2027:

- Public Service Company of New Mexico
- Turlock Irrigation District
- LADWP
- Balancing Authority of Northern California

Planned entry Fall 2028:

- Imperial Irrigation District

Entities with public leaning towards EDAM:

- PowerWatch – *Announced intention to join EDAM following WEIM onboarding*
- Idaho Power – *Announced leaning towards EDAM as its preferred day-ahead market*
- NV Energy – *Signaled intention to join EDAM in an IRP filing*

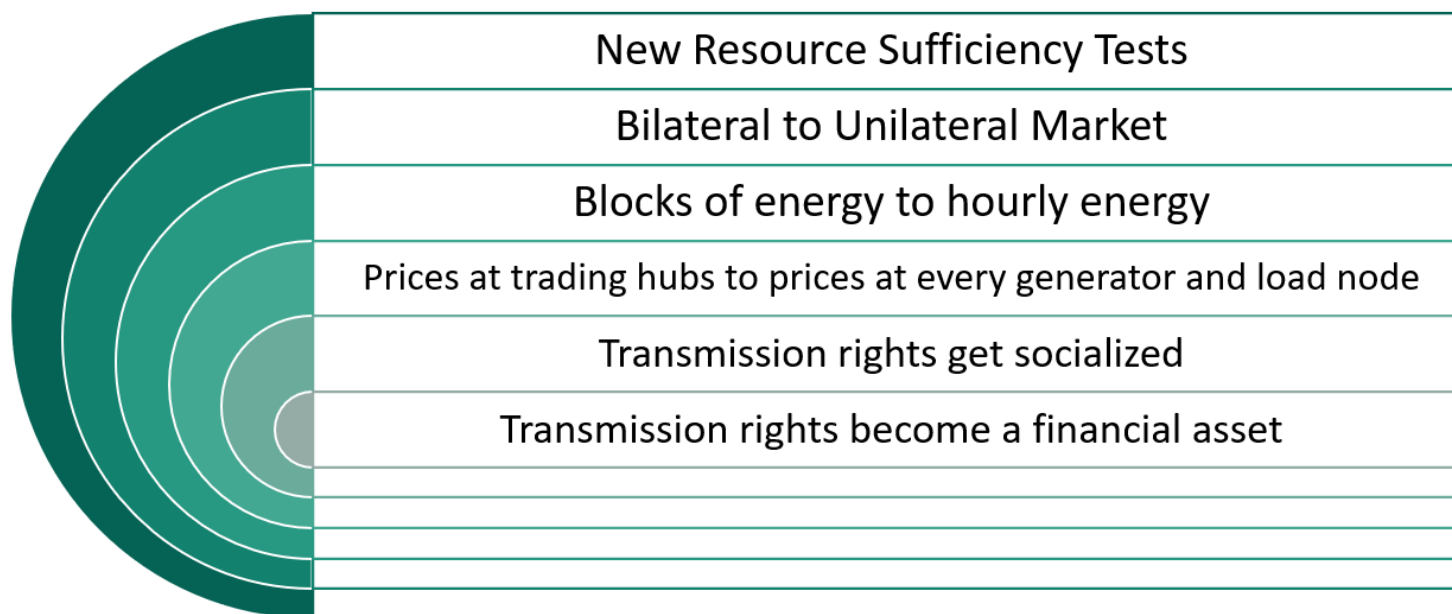


WHAT'S CHANGING, WHAT'S NOT

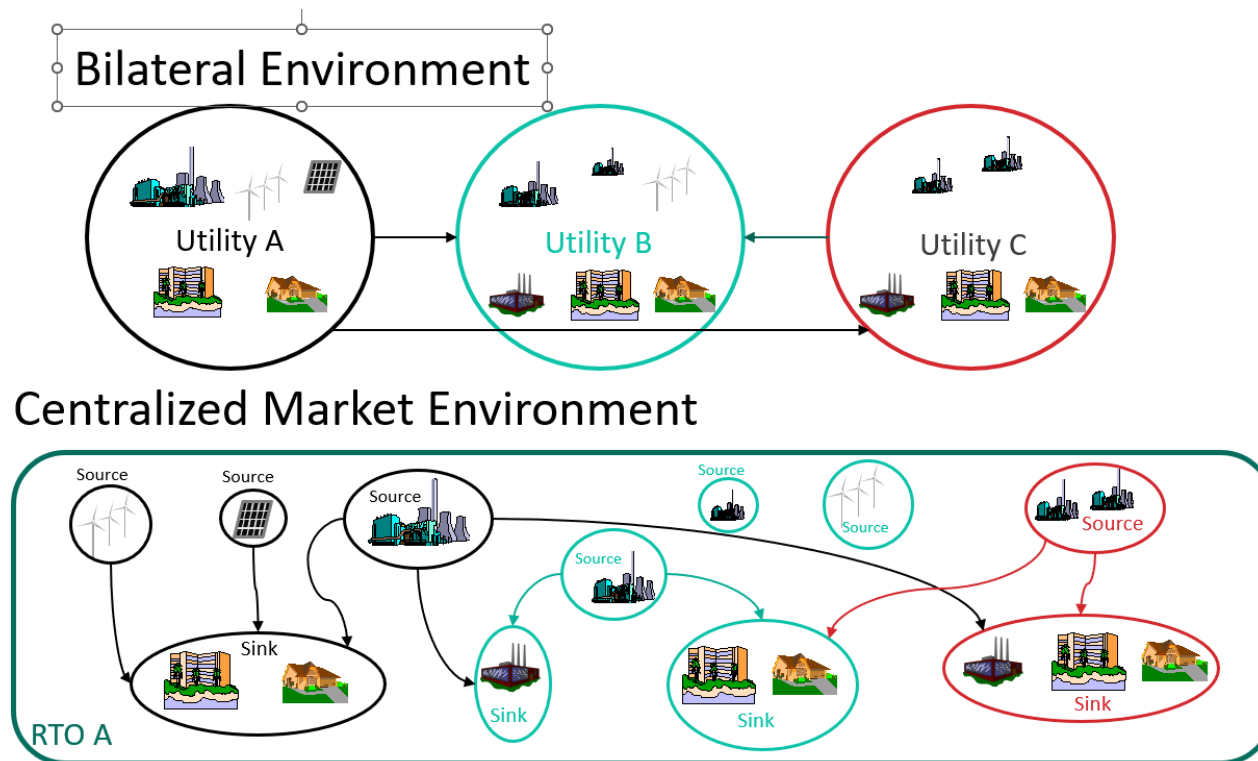


RSE – CAISO Resource Sufficiency Evaluation
WRAP - Western Resource Adequacy Program

KEY CHANGES IN CAISO'S EXTENDED DAY-AHEAD MARKET



TRANSITION TO CENTRALIZED MARKETS



UTILITY CENTRALIZED MARKET BUSINESS MODEL

Same:

- Primary objective is **still to keep the lights on and minimize costs**
- **Oversee operation** of generation, transmission, & load (demand)

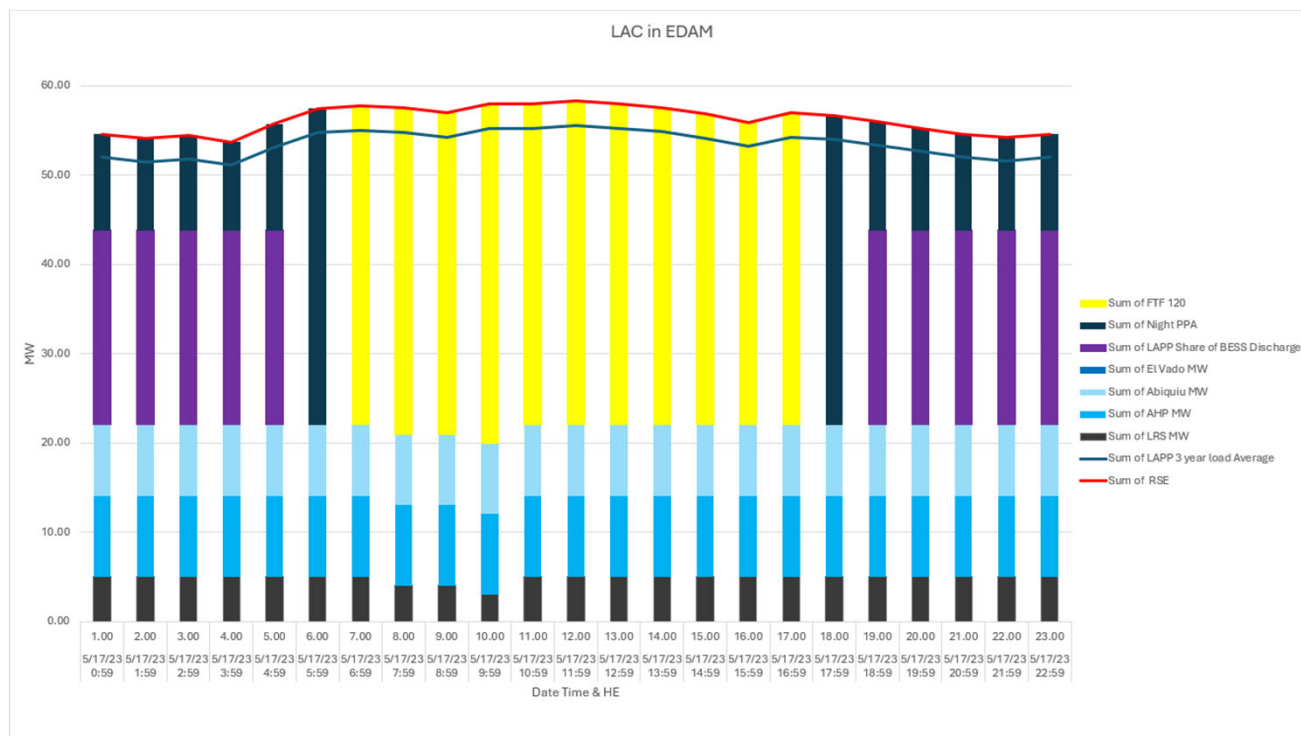
Different:

- **Separation between generation and load**
- **Utility's demand served by the market** - through lowest cost market-supplied resources
- Utility sells generation into market - **organized market is a "unilateral" market** – transaction counterparty is the organized market
- Utility can **use "financial" bilateral market to hedge** market price uncertainty



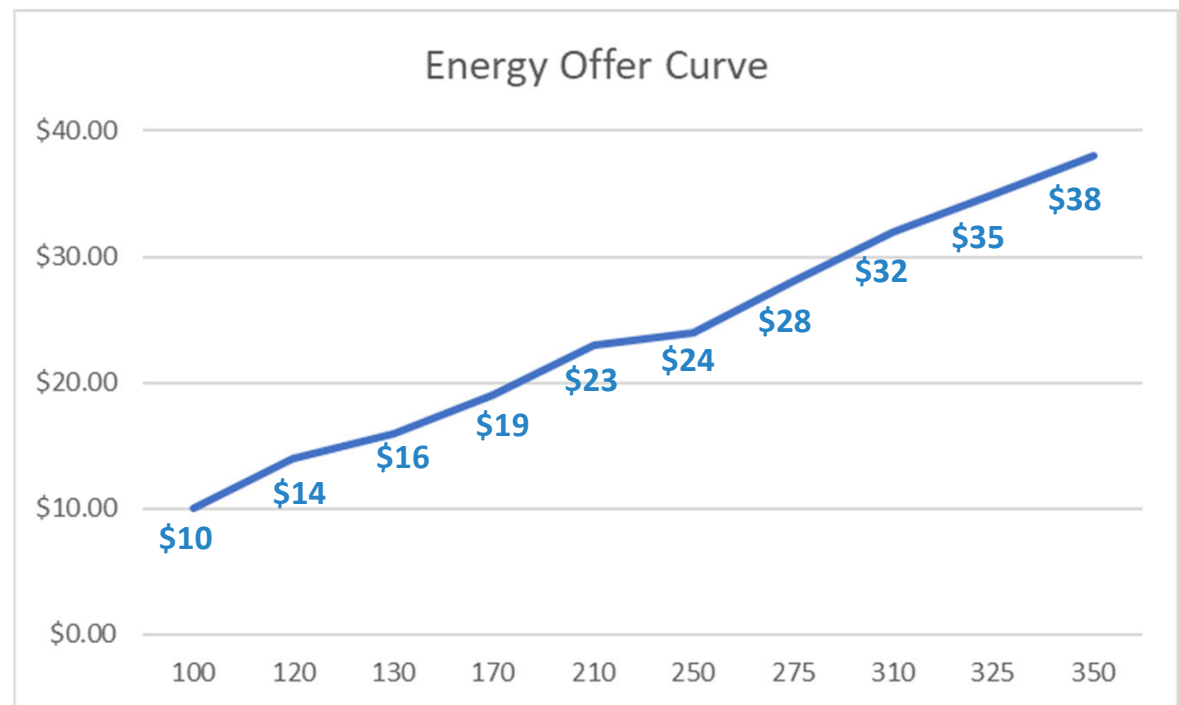
RESOURCE SUFFICIENCY

- **EDAM requires that all market participants offer in enough resources day-ahead to meet load and some uncertainty**
- **PNM will pass this requirement on to its LSEs**
- **LAC will need to be fully resource sufficient Day-Ahead**
- **Deficiencies result in penalties**



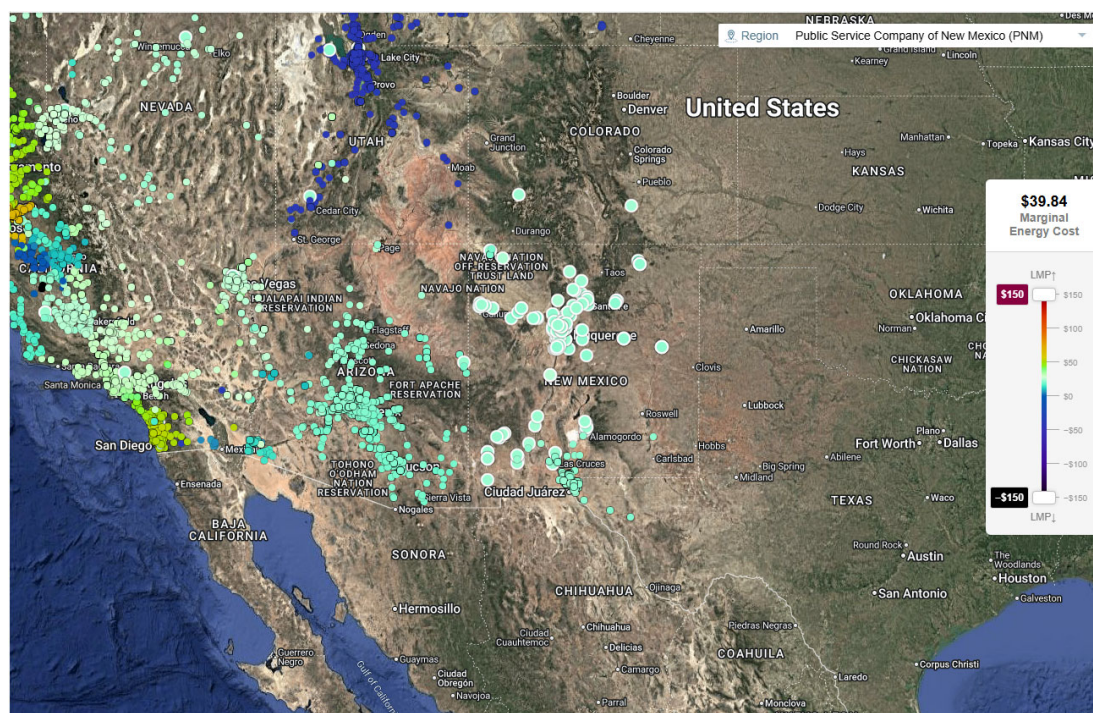
ORGANIZED MARKET RESOURCE ENERGY OFFER CURVES

- All resources **submit economic offers** to tell the market how many MWs a Market Participant is willing to sell when the price reaches a certain level
- Resources can also be self-scheduled (price taker)



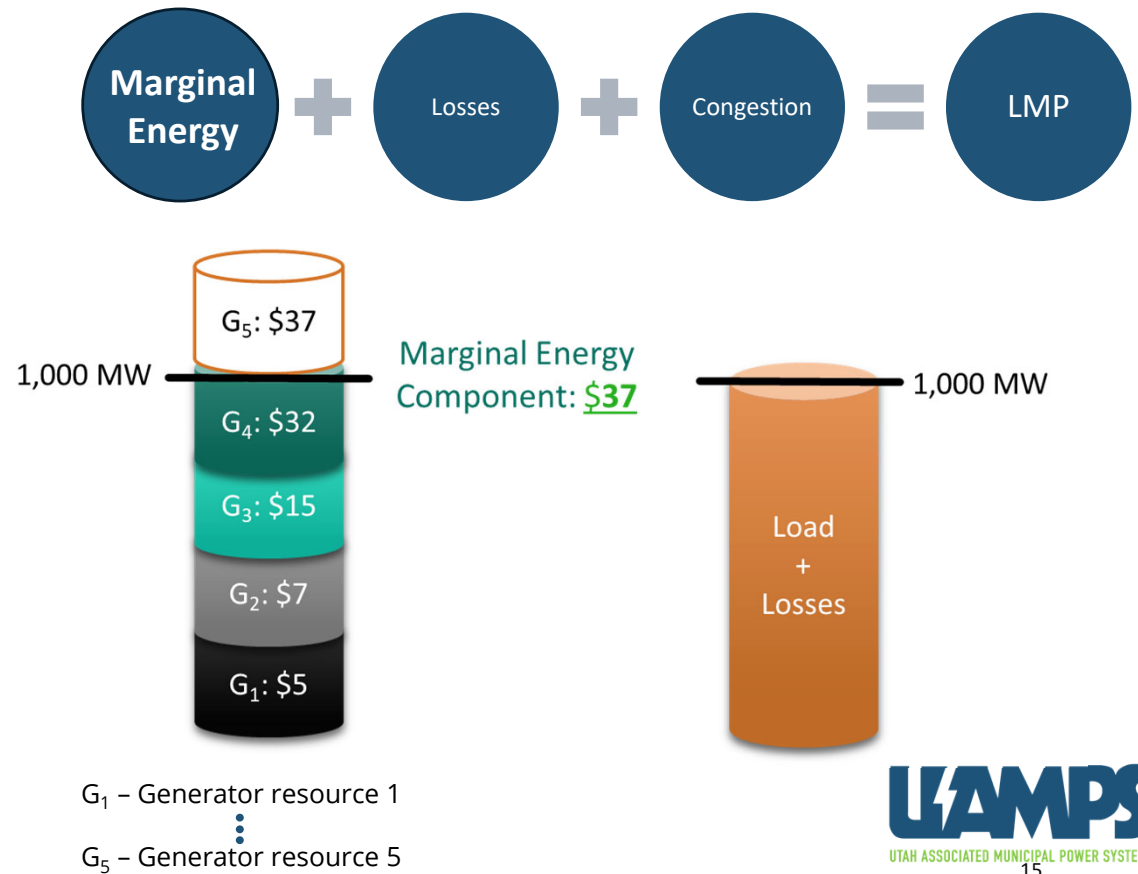
ORGANIZED MARKET PRICING

- In organized markets, prices are determined for every generator and load node
- **Load pays** the load aggregation point price **and generation is paid** the locational marginal price (LMP) for every MWh
- The marginal energy price is the same for the entire market, but the **price differs between nodes due to congestion and losses**
- PNM load is aggregated into one point

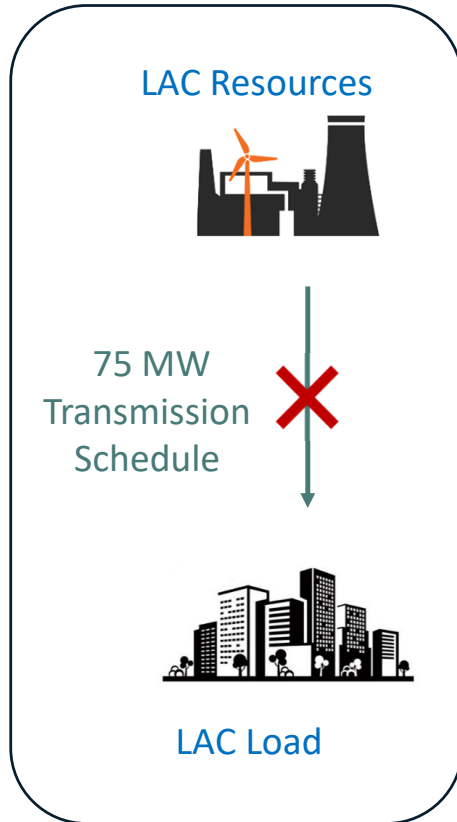


ORGANIZED MARKET PRICING

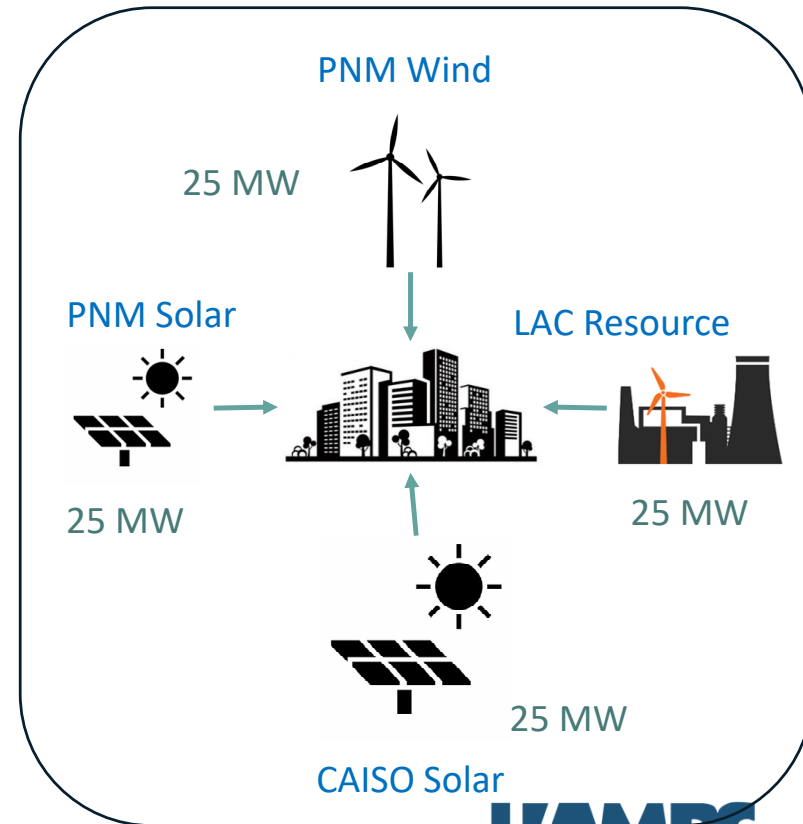
- Locational Market Prices (LMPs) are **composed of 3 components**
- The **Marginal Energy Price is the same** for all price nodes
- Price **differences** between price nodes **reflect the cost of losses and congestion**



TRANSMISSION

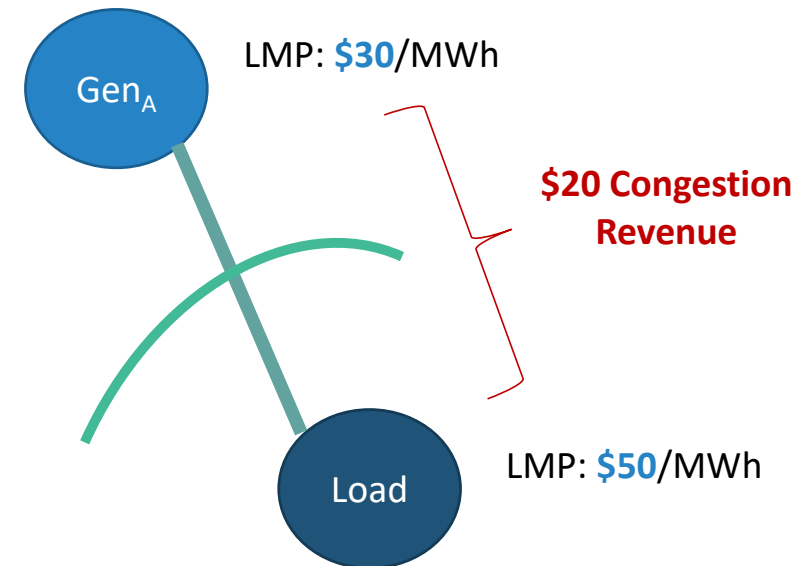


- LAC will **no longer schedule generation to its PNM load** on its transmission rights
- **All** of LAC's **transmission rights** internal to the PNM BA **get made available to EDAM**
- EDAM will **economically dispatch the generation fleet to serve all demand**, not individual generation to individual loads



TRANSMISSION AND CONGESTION REVENUE

- Transmission **congestion occurs when the lowest-priced energy can't reach areas of high demand**, causing price separation
- The resulting price difference between nodes is considered **congestion revenue**
- CAISO allocates out the congestion revenue to PNM who will determine how to sub-allocate the congestion revenue to transmission customers



SUMMARY

- The presence of day-ahead markets in the West will **impact all trade in the West.**
- Day-ahead markets **fundamentally change several aspects of market participation:**
 - New resource sufficiency tests
 - Bilateral to unilateral market
 - Separation between generation and load
 - Blocks of energy to hourly energy
 - Prices at trading hubs to prices at every generator and load node
 - Transmission rights get socialized and become a financial asset



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QUESTIONS

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