Locational Based Marginal Pricing
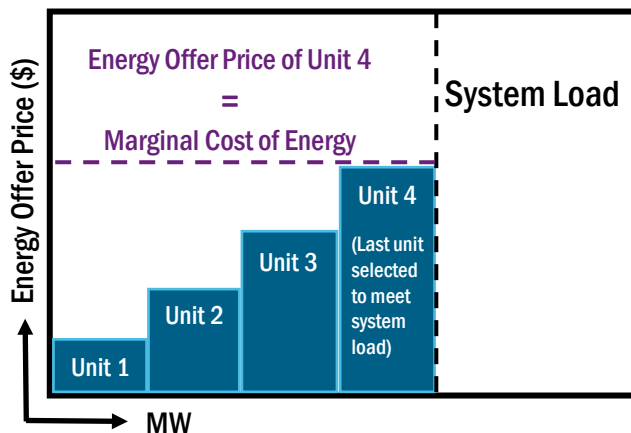
The **Locational Based Marginal Price (LBMP)** is the cost to serve the <u>next MW</u> of Load at a <u>specific location</u> in the grid.

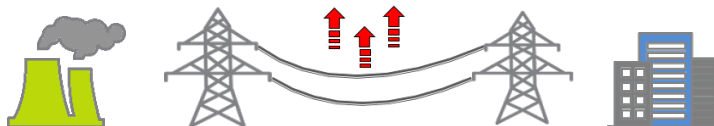## The Three Components of LBMP

Marginal Energy Price

Cost of producing energy to meet system load in an unconstrained system

- Component of LBMP remains the same at all buses
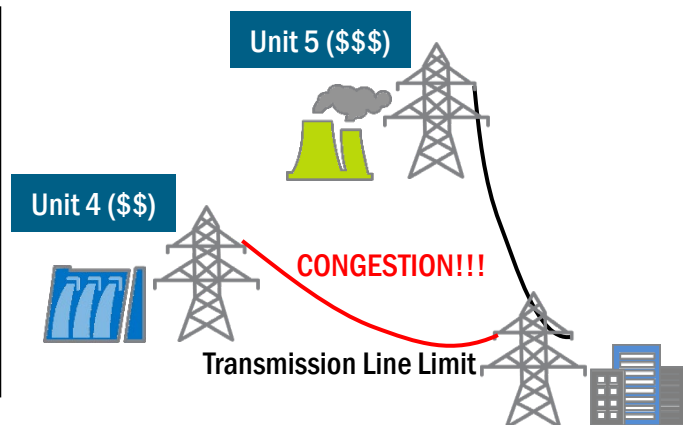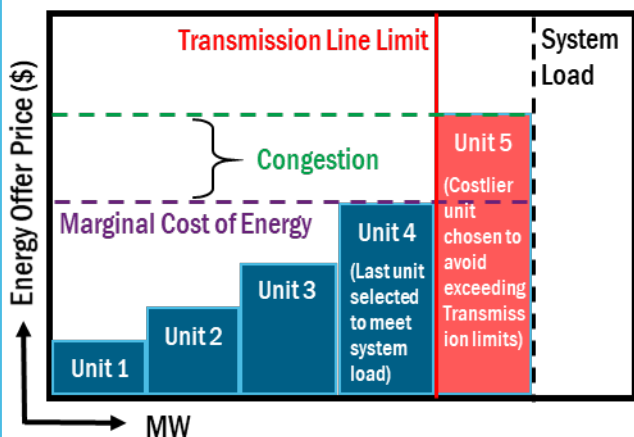- Assigned to a central Reference point (Marcy)

Energy Offer Price of Unit 4
=
Marginal Cost of Energy

System Load

Energy Offer Price ($)

Unit 1
Unit 2
Unit 3
Unit 4 (Last unit selected to meet system load)

MW

Marginal Loss Price

Component that captures Transmission Losses along path to Load caused by Heat dissipation

Marginal Cost of Congestion

Reflects the cost associated with costlier units dispatched to avoid exceeding Transmission Limits and other system constraints

Transmission Line Limit

System Load

Energy Offer Price ($)

Congestion

Marginal Cost of Energy

Unit 1
Unit 2
Unit 3
Unit 4 (Last unit selected to meet system load)
Unit 5 (Costlier unit chosen to avoid exceeding Transmission limits)

MW

Unit 5 ($$$)

Unit 4 ($$)

CONGESTION!!!

Transmission Line Limit

LBMP = Energy + Loss - Congestion