Market Renewal FACT SHEET

Energy Price - Congestion Component

#1

The single schedule market (SSM) is one initiative in the Market Renewal's Energy work stream. A SSM uses a Locational Marginal Price (LMP) for each time period at each location to operate the system. The Energy Congestion Price is a component of the LMP.

What is the Energy Congestion Price?

LMPs are calculated for each time period and at each location on the system as the sum of three components, the Energy Reference Price, the Energy Congestion Price, and the Energy Loss Price.[1]

The Energy Congestion Price is the change in incremental cost at any location on the grid, due to transmission congestion between that location and the Reference Location. On a specific transmission line, the change in incremental cost due to congestion is:

- Positive when transmission flows are limited away from the Reference Location into a specific location.
- Negative when transmission flows are limited towards the Reference Location from a specific location.
- Zero when there are no binding transmission constraints.

The Energy Congestion Price at each location on the system is calculated by adding the individual incremental congestion costs for each transmission constraint on the path between the Reference Location and the location in question.

Why is it important?

The Energy Congestion Price represents the cost of redispatching resources to incorporate transmission constraints while meeting load requirements. It is the additional system cost that occurs when transmission limits cause a higher cost generation resource to be dispatched locally instead of a lower cost resource that is in a different location.

[1] LMP = Energy Reference Price + Energy Congestion Price + Energy Loss Price

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The Energy Congestion Price reflects the majority of the difference in energy prices between regions and provides two important pieces of information to the system:

- Persistently high Energy Congestion Prices can signal the need for, and value of, transmission system expansion and upgrades at specific locations.
- The Energy Congestion Price can be used as a basis for financial contracts used by energy suppliers and energy consumers to mitigate price risk due to varying congestion costs between two locations.

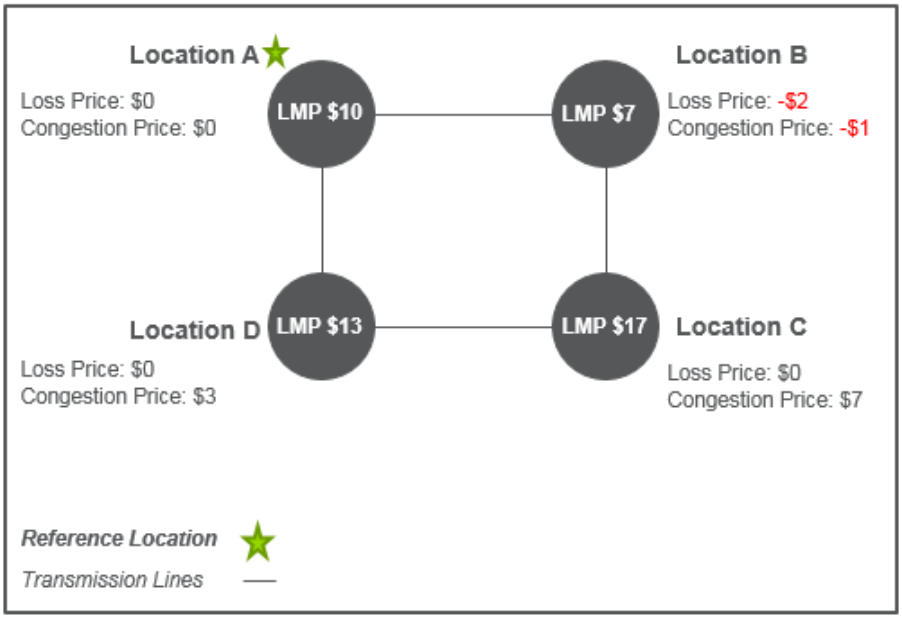
For example

In the example, Location A is the Reference Location and because of that the Energy Congestion Price is $0. The Energy Congestion Price for each other location is set in reference to Location A.

Location C has an Energy Congestion Price of $7, indicating that there are transmission limitations preventing the lower cost generation at Location A from flowing to Location C.

Location B has an Energy Congestion Price of -$1, indicating that there are transmission limitations preventing the lower cost generation at Location B from flowing to Location A.

Example - Congestion and Loss Components at Each Node



The LMP at Locations B and C can be determined by adding the Loss and Congestion components at each location to the Reference Energy Price at Location A ($10).

More information

For more information, please see the Market Renewal Fact Sheets on Financial Transmission Rights (#17), Energy Reference Price (#2), and Energy Price – Loss Component (#3).