



Congestion Revenue Rights (CRR) Educational Classes

This three-day course is designed to provide Market Participants a basic understanding of the concepts surrounding CRRs through a series of ten educational presentations. The material will be presented at a fundamental level and will not cover policy related issues.

Day 1

CRR Educational Material Overview

This presentation covers the following:

- High level overview of the CRR Allocation process
- High level overview of inputs and outputs
- Brief explanation of the importance of the subsequent presentations.

Locational Marginal Pricing: Basics of Nodal Price Calculation

This presentation covers the following:

- Definition of nodal price
- Characteristics and general observations about nodal prices
- Energy and congestion settlements with nodal prices
- Calculation of nodal prices using examples

Full Network Model

This presentation covers the following:

- Fundamental components of an alternating current (AC) model
- Development of the Full Network Model at the ISO
- Conversion of the AC model to a direct current (DC) model, which will be used in the CRR Allocation process

Operating Constraints

This presentation covers the following:

- General definition of operating constraints
- The need for operating constraints
- Types of operating constraints
- How operating constraints may be used with a DC full network model



Day 2

Shift Factors

This presentation covers the following:

- Definition of a shift factor in both the AC and DC models
- Methodology for calculating shift factors
- Example of determining flows on lines using shift factors

CRR Basics Overview

This presentation covers the following:

- Definition and attributes of the CRR
- Different CRR hedge types
- How CRRs are used to hedge against congestion
- General settlements of CRRs and revenue adequacy

Pricing Nodes and Aggregated Pricing Nodes

This presentation covers the following:

- Definition of Pricing Nodes and Aggregated Pricing Nodes
- How pricing nodes are defined and what they represent
- How Aggregated Pricing Nodes differ from pricing nodes used in the CRR Allocation and Forward Market

Day 3

Load Distribution Factors

This presentation covers the following:

- Definition of Load Distribution Factors (LDFs)
- Calculation of LDFs
- Connection between Load Distribution Factors and allocation factors used in Aggregated Pricing Nodes
- How load varies through the control area and how load is measured

CRR Allocation

This presentation covers the following:

- Overview of the allocation process
- Inputs into the allocation process
- Basics on the optimization formulation for the allocation process
- Use of shift factors in determining the curtailment of CRRs
- Use of priorities within an allocation process
- Use of tie-breaker methodologies in the allocation process
- Impact of using Aggregated Pricing Nodes in the allocation process

Settlements

This presentation covers the following:

- Settlements process of providing CRR revenue back to the CRR holders
- Examples of CRR revenue
- Use of the CRR balancing account