



ISO Course Outline

Course Title:	Introduction to the California ISO Market
Course Topics:	<ul style="list-style-type: none">• Who is the California ISO• Products and Services Procured• Wholesale procurement of energy• Day-Ahead Market Timeline and Inputs• Real-Time Market Timeline and Inputs• Operational Reliability• Post Market Process Overview
Intended Audience:	This class is intended for individuals who wish to gain a better understanding of the purpose and function of the ISO, the wholesale energy and Ancillary Service markets, and an overview of the purpose and timelines of the market and post-market processes. This class is designed as an introductory class for new Scheduling Coordinators or for new employees of existing Scheduling Coordinators.
Course Description:	This course is designed as an introductory course that covers basic market concepts beginning with an introduction of the California ISO, describing its roles and responsibilities. This course provides an overview of products and services procured by the California ISO and presents the concepts behind the ISO's Day-Ahead and Real-Time Markets, outlines the timelines, processes, results and explains how external factors such as demand response programs impact Real-Time reliability and wholesale procurement.
Pre-Requisites:	None
Offering:	This class will be available as an instructor-led training class to be held quarterly, beginning in February 2010.



Module Topics and Objectives

Who is the California ISO?

By the end of this section, the participant will be able to:

- Describe the purpose of the California ISO
- Describe what kinds of products and services the ISO procures

This section will present basic information on the history and purpose of the ISO and will answer the following questions:

1. What does the ISO do and why?
2. How does the ISO procure products and services?
3. How do energy suppliers and energy consumers interact with the ISO?

Market Concepts

By the end of this section, the participant will be able to:

- Describe the basic components of an economic curve
- State the basic nature of supply curves
- State the basic nature of demand curves

This section will present basic information on the concept of Markets and will answer the following questions:

1. What is the difference between a supply curve and a demand curve?
2. How would I use a supply or demand curve in the ISO Markets?
3. Why are bid curves important? What kind of information does it provide to the market?

CAISO Procurement of Products and Services

By the end of this section, the participant will be able to:

- State the types of products and services the ISO procures through the Markets
- Describe the purpose of capacity procurement
- State the types of Capacity Products that are procured by the ISO
- State the difference between capacity procured for Ancillary Services and capacity procured for Residual Unit Commitment
- State how these products are procured
- State the difference between energy and capacity products



This section will present basic information on the products and services the ISO procures through the DAM and will answer the following questions:

1. What does the ISO buy?
2. What is the difference between AS capacity and RUC capacity?
3. How is each capacity product used?

Wholesale Procurement of Energy

By the end of this section, the participant will be able to:

- Describe the basic concept of wholesale energy procurement
- Describe how suppliers put energy on the grid and how consumers take energy off the grid

This section will present basic information on the concept of wholesale energy procurement and will answer the following questions:

1. How does an LSE know how much energy they'll need for a specific day?
2. Where and from whom does the LSE buy their energy?
3. How is it different if the LSE buys energy from a supplier or from the ISO?
4. Where do suppliers offer in generation?
5. What is the difference between an importer and an internal generator?

Day-Ahead Market Timeline

By the end of this section, the participant will be able to:

- Describe the Day-Ahead Market Timeline
- Describe how the Day-Ahead Market Timeline leads into Real-Time
- State the products procured in the Day-Ahead Market
- Describe the different markets that the ISO operates

This section will present basic information on the ISO Day-Ahead Market and will answer the following questions:

1. When does the Day-Ahead Market Open and Close?
2. What kind of information is used in the Day-Ahead Market?
3. What is the purpose of the Day-Ahead Market?
4. What does the ISO buy in the Day-Ahead Market?
5. How does the ISO use the products they buy from the Day-Ahead Market?



6. What other markets does the ISO operate?

Inputs into the Day-Ahead Markets

By the end of this section, the participant will be able to:

- List at least 3 participant data criteria into the Day-Ahead Market
- List at least 3 ISO requirement criteria into the Day-Ahead Market
- Describe how inputs are used in the Day-Ahead Market

This section will present basic information on the inputs into ISO Day-Ahead Market and will answer the following questions:

1. What kind of information is used in the Day-Ahead Market?
2. What are energy bid curves?
3. What kind of information is submitted for AS bids
4. What is a demand forecast and how is it used?
5. Who determines how much Ancillary Services the ISO needs to buy?
6. How does the ISO determine which resources can provide what services?
(Resource specific information)

Day-Ahead Market Processes

By the end of this section, the participant will be able to:

- List the 3 Processes that take place in the Day-Ahead Market
- State the output and purpose of Market Power Mitigation
- State the output and purpose of the Integrated Forward Market
- State the output and purpose of Residual Unit Commitment
- Describe how the outputs from the Day-Ahead Market are used in Real-Time

This section will present basic information on the ISO Day-Ahead Market processes and will answer the following questions:

1. What are default energy bid curves?
2. Who provides default energy bid curves to the ISO?
3. How are default energy bid curves used?
4. What is a proxy bid curve?
5. What is the difference between proxy bids curves and default energy bid curves?
6. Under what circumstances would either the default energy bid curve or proxy bid curve be used?



Day-Ahead Market Results

By the end of this section, the participant will be able to:

- Describe where one would locate the Day-Ahead Market Results
- Describe how one would use the Day-Ahead Market Results
- Describe the settlement impact of the Day-Ahead Market Results

This section will present basic information on the ISO Day-Ahead Market results and will answer the following questions:

1. Where would I find my DAM Results?
2. What is the difference between schedules and awards?
3. Where would I find prices?
4. How can I determine what my financial position is out of the DAM?
5. How do the results of the DAM impact the Real-Time Market?
6. How do I know when the ISO needs my power?
7. How do I interpret the DAM Results? (quick lesson in CMRI, locating results, interpreting what acronyms mean – like HE)

Real-Time Market Timeline and Process

By the end of this section, the participant will be able to:

- Describe how the DA Market Results are used in the RTM
- Describe the RTM timeline and processes
- Describe how RT dispatches are received
- List the kind of inputs into the RTM

Post-Market Processes

By the end of this section, the participant will be able to:

- Describe the post-market timeline and processes including metering, settlements, and compliance.