



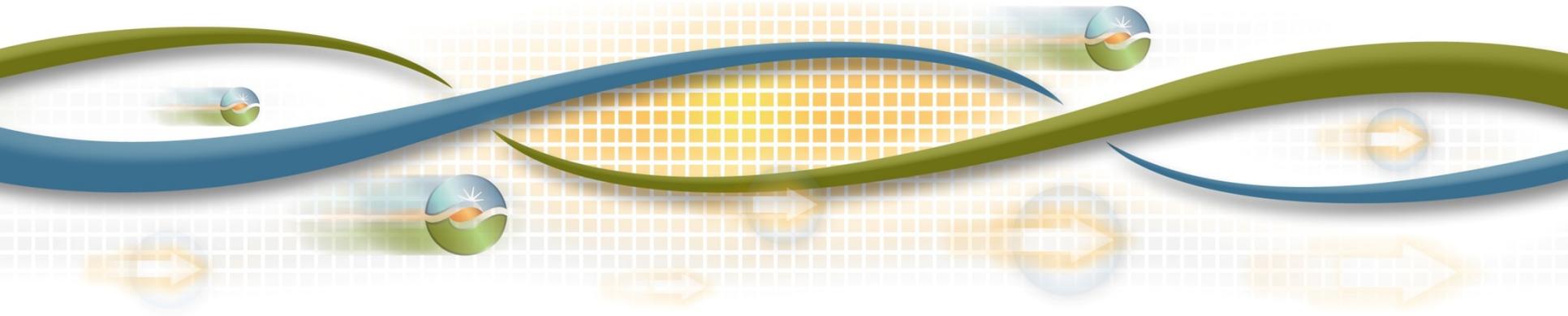
California ISO  
Shaping a Renewed Future

# Renewables Integration Phase 2

## *Market Vision & Roadmap*

Stakeholder Meeting  
October 18, 2011

California ISO  
250 Outcropping Way

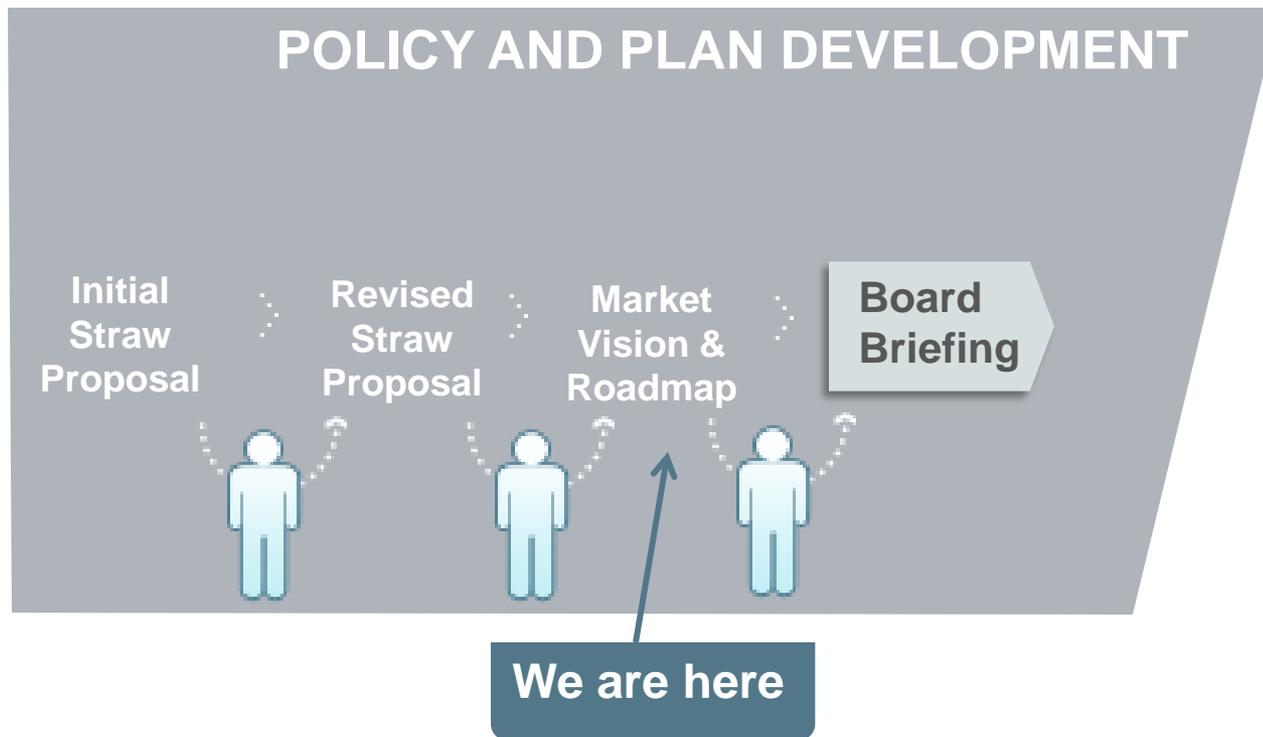


# Agenda

<b>TIME</b>	<b>ITEM</b>	<b>PRESENTER</b>
<b>10:00-10:15</b>	Introduction	Chris Kirsten
<b>10:15-10:45</b>	Initiative Update & Roadmap Overview	John Goodin
<b>10:45-11:00</b>	Stakeholder Process	Eric Little
<b>11:00-11:55</b>	Enhancements Update	
	<ul style="list-style-type: none"><li>• Short-term</li></ul>	Khaled Abdul-Rahman
	<ul style="list-style-type: none"><li>• Mid-term</li></ul>	Don Tretheway/Lin Xu Karl Meeusen
<b>11:55-12:00</b>	Wrap Up & Next Steps	John Goodin

# ISO Policy Initiative Stakeholder Process

## Stakeholder Input Opportunities



Renewable Integration Phase 2

# INITIATIVE UPDATE & ROADMAP OVERVIEW

*JOHN GOODIN*

# Renewable Integration Phase 2 Updates

- Concluding the renewable integration market vision and roadmap initiative so that we can immediately begin development of the identified mid-term enhancements;
- Briefing the Board on the Renewable Integration Market Vision & Roadmap in October instead of December;

## Renewable Integration Phase 2 Updates (cont'd)

- Moved the forward procurement of flexible capacity into the mid-term acknowledging the challenges and complexity of the issues. Will address in two phases.
- Included Pay-for-Performance regulation in the mid-term but delaying immediate development until receive further guidance from FERC; and
- Established a projected roadmap for the mid-term enhancements.

# The market vision and roadmap lays out an incremental approach for evolving the market.

- Market Evolution vs. Market Transformation
- Objectives by Period:
  - Short-term → (now to 2013)  
*Increase dispatchability from intermittent resources and implement enhancements that increase market efficiency*
  - Mid-term → (2013 to 2015)  
*Ensure flexible resources remain viable and available and provide market incentives to increase resource flexibility*
  - Long-term → (2015 to 2020)  
*Understand short and mid-term impacts and consider west wide market developments prior to making further market reforms*

# The proposed market enhancements by period are as follows:

## Short-term (now to 2013)

Regulation Energy Management	Dynamic Transfers
Flexible Ramping Constraint	Energy Bid Floor
Bid Cost Recovery	PIRP Modifications
72-Hour RUC	VER Forecasting
Start-up and Shut-down Profiles	Enhanced Operating Reserves Management

## Mid-term (2013 to 2015)

Flexi-ramp Product	PIRP Resource Dec Bidding
Intertie Pricing & Settlement	Pay for Performance Regulation
Flexible Capacity Forward Procurement	

## Long-term (2015 to 2020)

Frequency / Inertia Response	Evaluate Need for RTIS
Real-time Settlement (15-min market)	

# Originally Discussed Market Enhancements

## *Short-term*

- Hourly Contingency-only Election
  - Short-term: Under consideration by the ISO including DMM; likely apply only in the IFM if implemented
- RUC Enhancements
  - Short-term: 72-hour RUC & granular VER forecasting
  - Deferred: Simultaneous IFM/RUC optimization- must resolve fundamental issues first, including interplay between flexiramp and RUC
- Flexible Ramping Constraint
  - Short-term: Implement December 2011

# Originally Discussed Market Enhancements

## *Mid and Long-term*

- Pay for Performance Regulation
  - Mid-term: Pending FERC guidance
- Forward Procurement of Capacity
  - Mid-term: Develop capability to procure forward flexible capacity
- 15-Minute Real Time Market
  - Long-term: consideration dependent on other market developments
- Load Following Reserve
  - Long-term: “RTIS” dependent on market developments
- Frequency Response and System Inertia
  - Long term: Not an immediate need, substantiated by GE study

# Originally Discussed Market Enhancements

## *Deferred*

- **Minimum-online Constraint**
  - Suspend: Local capacity requirement tied to specific resources which limits ability to create a market product for this service
- **Full Hour Ahead Market**
  - Deferred: Not under consideration due to complexity and lack of stakeholder support; could be reconsidered long-term
- **Multi-settlement for Ancillary Services**
  - Deferred: Does not provide any immediate value to integrating renewables or provide more system flexibility; does offer some market and arbitrage opportunities, but other priorities exist

# The mid-term is the ISO's primary focus. The highest priority mid-term enhancements are:

- **Forward Procurement of Flexible Capacity**

*A forward procurement mechanism to ensure sufficient flexible ramping and balancing capacity is available to the ISO in the future.*

- **Flexi-ramp Product**

*Ensures sufficient ramping capability is available to the ISO in real-time and the resource is compensated for providing the service.*

- **Hourly Intertie Pricing & Settlement**

*Addresses both the RTIEO concern and the HASP day-ahead versus real-time price discrepancy.*

# The projected mid-term enhancements roadmap.



## Forward Procurement of Flexible Capacity (2-Phases)

Policy Board Develop Production **Phase 1**

Policy Board Develop Production **Phase 2**

## Flexi-ramp Product

Policy Board Develop Production

## Intertie Pricing & Settlement

Policy Board Develop Production

## Dec Bidding from PIRP Resources

Policy Board Develop Production

## Pay-for-Performance Regulation

Policy *(design dependent on FERC decision)*

## Renewables Integration Phase 2

# STAKEHOLDER PROCESS

*ERIC LITTLE*

# Stakeholder Process

- With a large number of elements to consider, the ISO seeks to make the process as effective as possible while providing as much opportunity for stakeholder input
  - Certain elements will therefore utilize a working group structure

# Stakeholder Process (Cont.)

- Working Group Process
  - ISO will market notice such working groups
  - Those who sign up for a working group will be expected to directly participate in the development of:
    - Complete statement of issue (if it does not already exist)
    - The initial draft proposal in conjunction with the ISO
- The proposal developed will then be vetted through the traditional stakeholder process to finalize the proposal

## Renewables Integration Phase 2

# SHORT-TERM INITIATIVES UPDATE

*KHALED ABDUL-RAHMAN*

# Short-term Enhancements Update

Enhancement	Target Dates
<b>Ramping and Reserve Management Enhancements</b>	
<b>Regulation Energy Management</b>	<i>Proposed implementation: Spring 2012</i>
<b>Flexible Ramping Constraint</b>	<i>Proposed implementation: December 2011</i>
<b>Enhanced Contingent/Non-Contingent Operating Reserve Management</b>	<i>Proposed implementation: Spring 2012</i>

# Short-term Enhancements Update (cont'd)

Enhancement	Target Dates
<b>Renewable Resource Integration Products</b>	
Dynamic Transfers	<i>Proposed implementation: Spring 2013</i>
<b>Renewable Integration Market and Product Review Phase I:</b> <ul style="list-style-type: none"> <li>– PIRP Modifications</li> <li>– Lower Energy Bid Floor</li> <li>– Modify Bid Cost Recovery</li> </ul>	<i>ISO Board decision: December 2011</i> <i>Proposed implementation: Fall 2012</i>
<b>Operational Enhancements</b>	
72-Hour Residual Unit Commitment	<i>Proposed implementation: Fall 2012</i>
More Granular Variable Energy Resource Forecasting for Residual Unit Commitment	<i>Proposed implementation: Spring 2012</i>
Startup and Shutdown Profiles	<i>Proposed implementation: December 2011</i>

## Renewables Integration Phase 2

# MID-TERM ENHANCEMENTS UPDATE

*DON TRETHERWAY / LIN XU*

*KARL MEEUSEN*

# Flexible Ramping Product Initiative

- Target
  - BOG Approval February 2012
  - Implementation Spring 2013
- Scope
  - Flexible Ramping UP and Flexible Ramping DOWN
  - Day-ahead and real-time procurement
  - Allocation based upon cost causation
- Leads
  - Lin Xu: Product Design
  - Don Tretheway: Allocation

# Flexible Ramping Product Proposed Schedule

<b>Item</b>	<b>Planned Date</b>
<b>Post Straw Proposal</b>	<b>10/31/11</b>
<b>Stakeholder Meeting</b>	<b>11/7/11</b>
<b>Stakeholder Comment</b>	<b>11/14/11</b>
<b>Post Revised Straw Proposal</b>	<b>11/28/11</b>
<b>Stakeholder Meeting</b>	<b>12/5/11</b>
<b>Stakeholder Comment</b>	<b>12/12/11</b>
<b>Post Draft Final Proposal</b>	<b>01/05/12</b>
<b>Stakeholder Meeting</b>	<b>01/12/12</b>
<b>Stakeholder Comment</b>	<b>01/19/12</b>
<b>Board of Governors</b>	<b>02/16/12</b>

# Intertie Pricing Initiative

- Target
  - BOG Approval March 2012
  - Implementation Spring 2013
- Scope
  - Primary: Solutions to intertie pricing and settlement to reduce the real-time imbalance energy offset
  - Secondary: Potentially provide a mechanism that allows intertie convergence bidding
- Lead
  - Karl Meeusen: Product Design

# Intertie Pricing Proposed Schedule

<b>Item</b>	<b>Planned Date</b>
<b>Issue Paper</b>	<b>10/31/11</b>
<b>Working Group Meeting</b>	<b>11/09/11</b>
<b>Working Group Meeting</b>	<b>11/30/11</b>
<b>Post Straw Proposal</b>	<b>Mid December 2011</b>
<b>Stakeholder Meeting</b>	<b>Early January 2012</b>
<b>Stakeholder Comment</b>	<b>Mid January 2012</b>
<b>Post Draft Final Proposal</b>	<b>Mid February 2012</b>
<b>Stakeholder Meeting</b>	<b>Late February 2012</b>
<b>Stakeholder Comment</b>	<b>Early March 2012</b>
<b>Board of Governors</b>	<b>Spring 2012</b>

# Forward Procurement of Flexible Capacity: Phase One

- Target
  - BOG Approval Spring 2012
  - Implementation Spring 2013
- Scope
  - Create an interim mechanism that administratively procures flexible capacity resources
  - Specify attributes needed to qualify as flexible capacity
- Lead
  - Karl Meeusen: Product Development

# Forward Procurement of Flexible Capacity: Phase One

<b>Item</b>	<b>Planned Date</b>
<b>Issue Paper</b>	<b>11/07/11</b>
<b>Stakeholder Meeting</b>	<b>11/14/11</b>
<b>Stakeholder Comment</b>	<b>11/21/11</b>
<b>Post Straw Proposal</b>	<b>Mid December 2011</b>
<b>Stakeholder Meeting</b>	<b>Early January 2012</b>
<b>Stakeholder Comment</b>	<b>Mid January 2012</b>
<b>Post Revised Straw Proposal</b>	<b>Mid February 2012</b>
<b>Stakeholder Meeting</b>	<b>Late February 2012</b>
<b>Stakeholder Comment</b>	<b>March 2012</b>
<b>Board of Governors</b>	<b>Spring 2012</b>

# Forward Procurement of Flexible Capacity: Phase Two

- Target
  - BOG Approval Spring 2013
  - Implementation Spring 2014
- Scope
  - Design a market-based solution that meets ISO flexibility needs 3-5 years into the future
  - Identify the full set of attributes the ISO will need to operate reliably under a 33% RPS
- Lead
  - Karl Meeusen: Product Development

# Forward Procurement of Flexible Capacity: Phase Two

<b>Item</b>	<b>Planned Date</b>
<b>Post Straw Proposal</b>	<b>Late Spring 2012</b>
<b>Stakeholder Meeting</b>	<b>Late Spring 2012</b>
<b>Stakeholder Comment</b>	<b>Late Spring 2012</b>
<b>Post Straw Revised Proposal</b>	<b>Summer 2012</b>
<b>Stakeholder Meeting</b>	<b>Late Summer 2012</b>
<b>Stakeholder Comment</b>	<b>Late Summer 2012</b>
<b>Post Draft Final Proposal</b>	<b>Fall 2012</b>
<b>Stakeholder Meeting</b>	<b>Late Fall 2012</b>
<b>Stakeholder Comment</b>	<b>Late Fall 2012</b>
<b>Board of Governors</b>	<b>Spring 2013</b>

## Renewables Integration Phase 2

# WRAP-UP AND NEXT STEPS

*JOHN GOODIN*

# Schedule

- Market Vision & Roadmap Published:
  - October 11, 2011
- Comments due on Market Vision & Roadmap:
  - October 21, 2011 –
  - [phase2ri@caiso.com](mailto:phase2ri@caiso.com)
- Board Briefing:
  - October 27-28, 2011