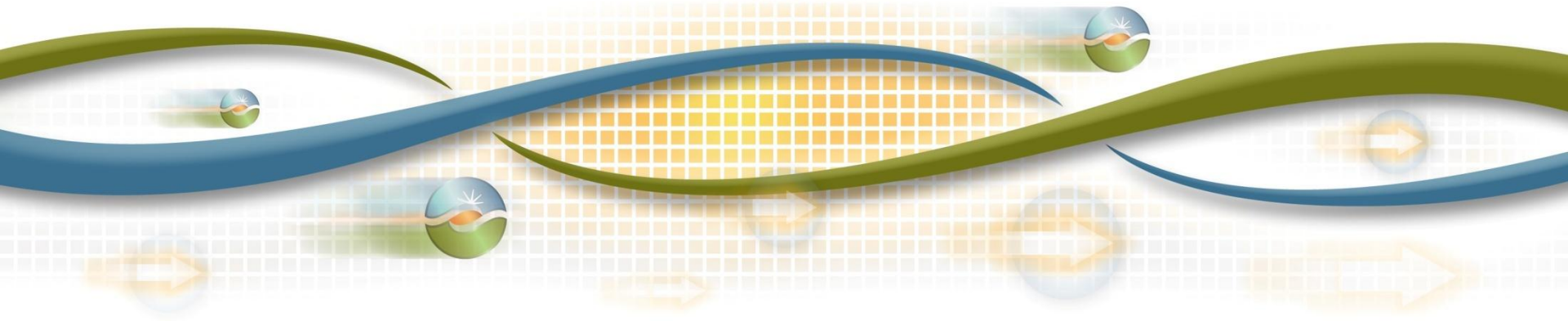


Pre-Regulation Energy Management Markets Overview

Client Training

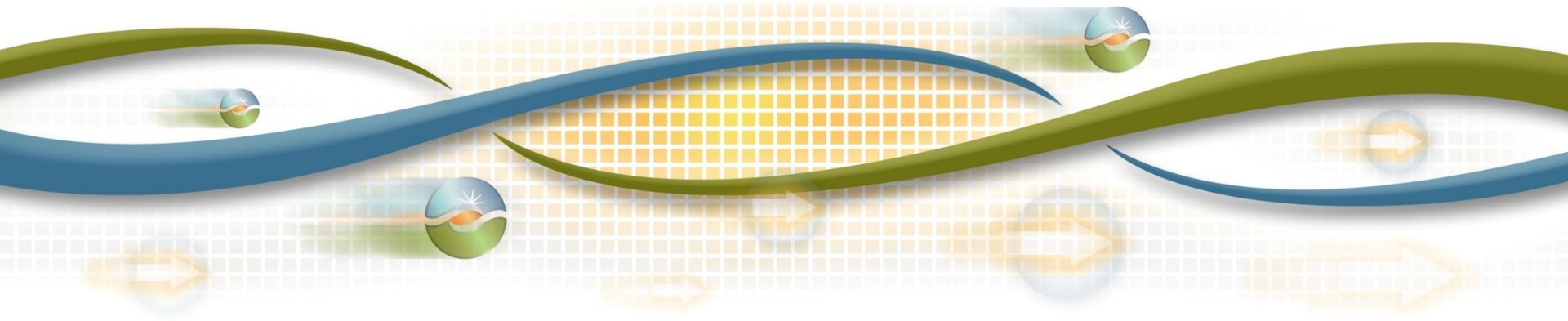
Customer Services Department



Agenda

- Scheduling Coordinator process
- Day-Ahead & Real-Time Market Timeline and Process
- Locational Marginal Price
- Key Application Systems
- Settlements Timeline and Processes

New Scheduling Coordinator Information



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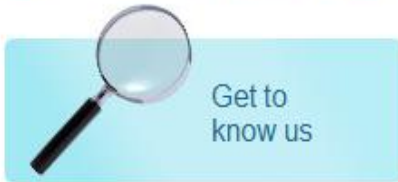
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Today's Outlook Tue Nov 29 10:31:39 2011

Current Demand: **28,160 MW** Forecast Peak: **30,442 MW**



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TUESDAY, 11/29/2011



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around the clock to keep the lights on
for 30 million Californians

Get to know us

Become a participant

Today's Outlook Tue Nov 29 10:31:39 2011

Current Demand: **28,160 MW** Forecast Peak: **30,442 MW**

Welcome to our site
Learn how to find the information you need

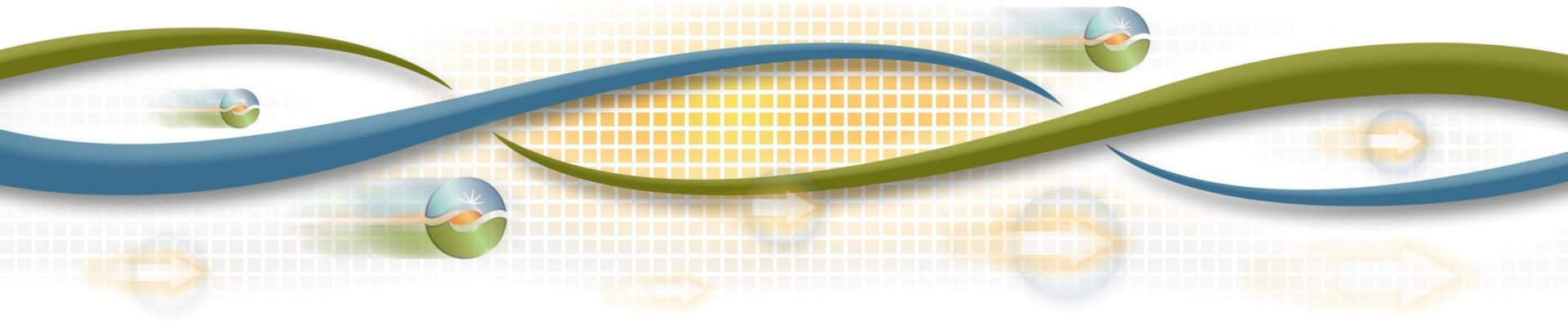
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TUESDAY, 11/29/2011

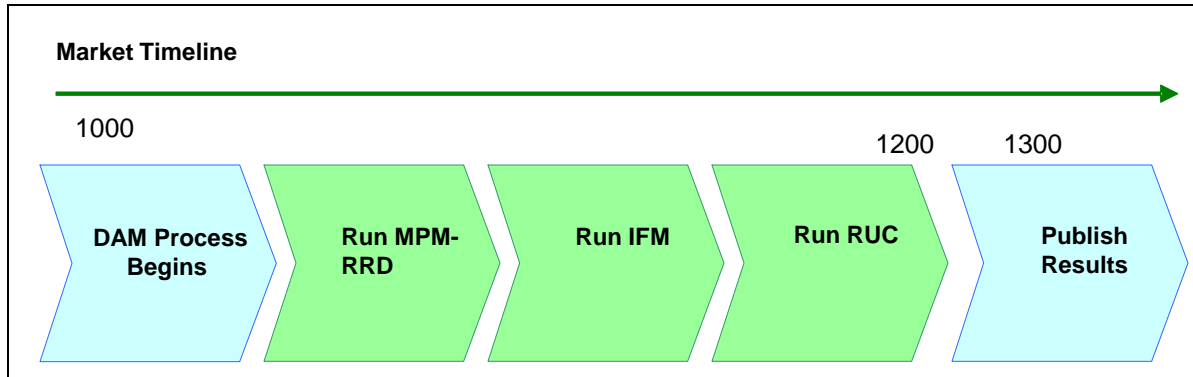


CAISO Markets

DAM – Day-Ahead Market



Day-Ahead Market (DAM) Timeline



Pull data from external sources, including:
SIBR
Master File
Outage
FNM

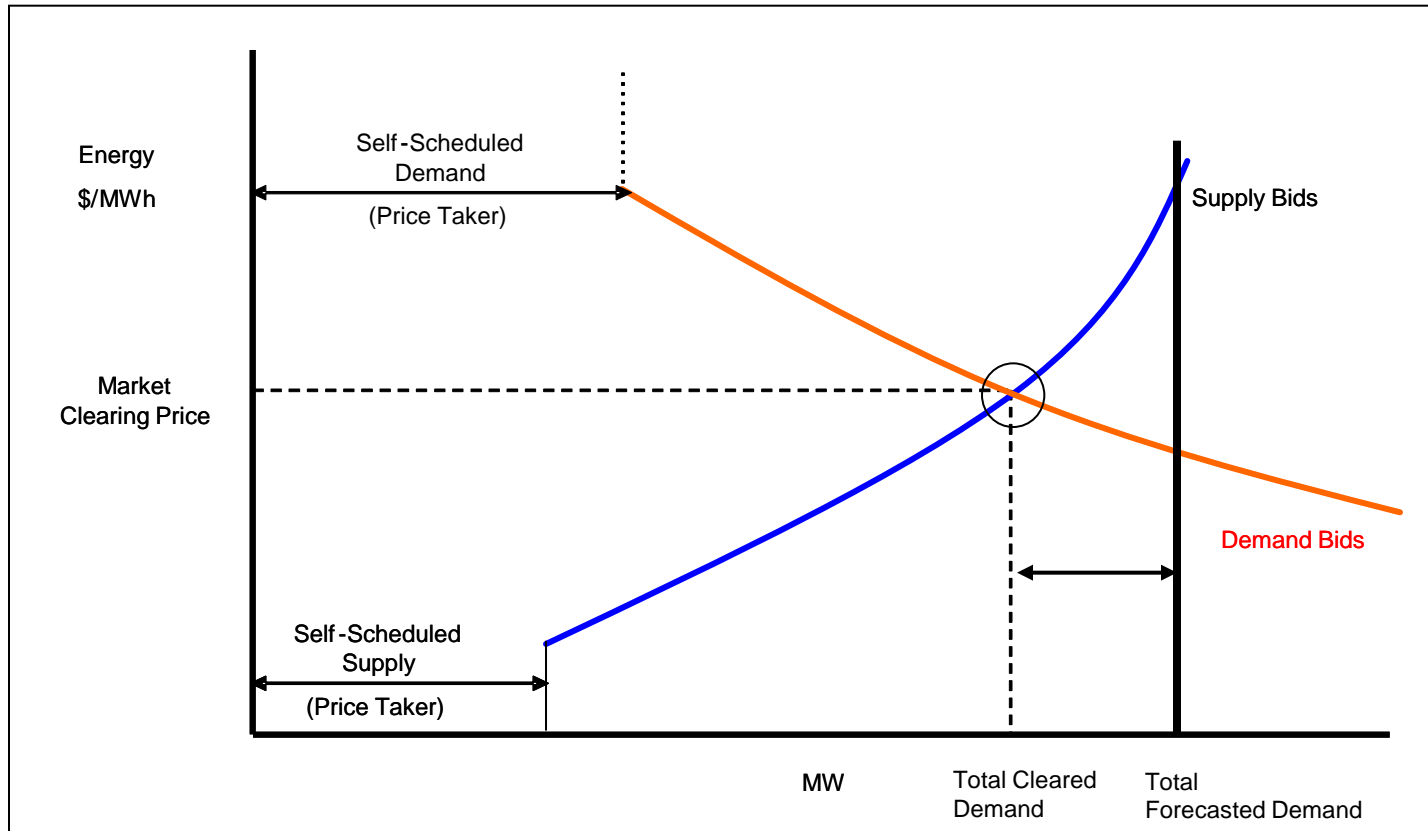
Evaluate Bids for Market Power based on the Full Network Model and mitigate Bids that are deemed to have Market Power

Will clear bid-in Supply with bid-in Demand plus procure 100% of the Ancillary Service requirement

Will procure additional capacity, based on CFCD as required to meet locational requirement

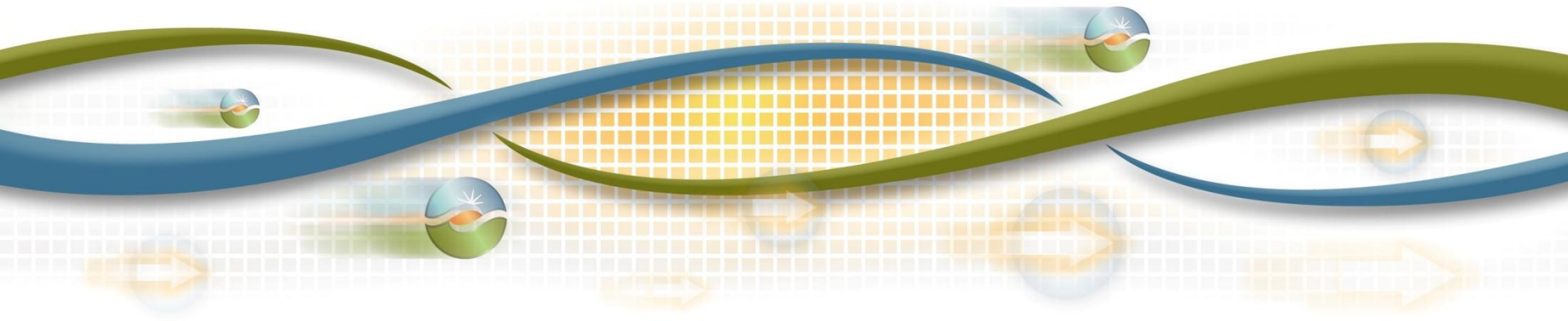
DAM Results published to CAISO Market Results Interface

Day-Ahead Market Processes



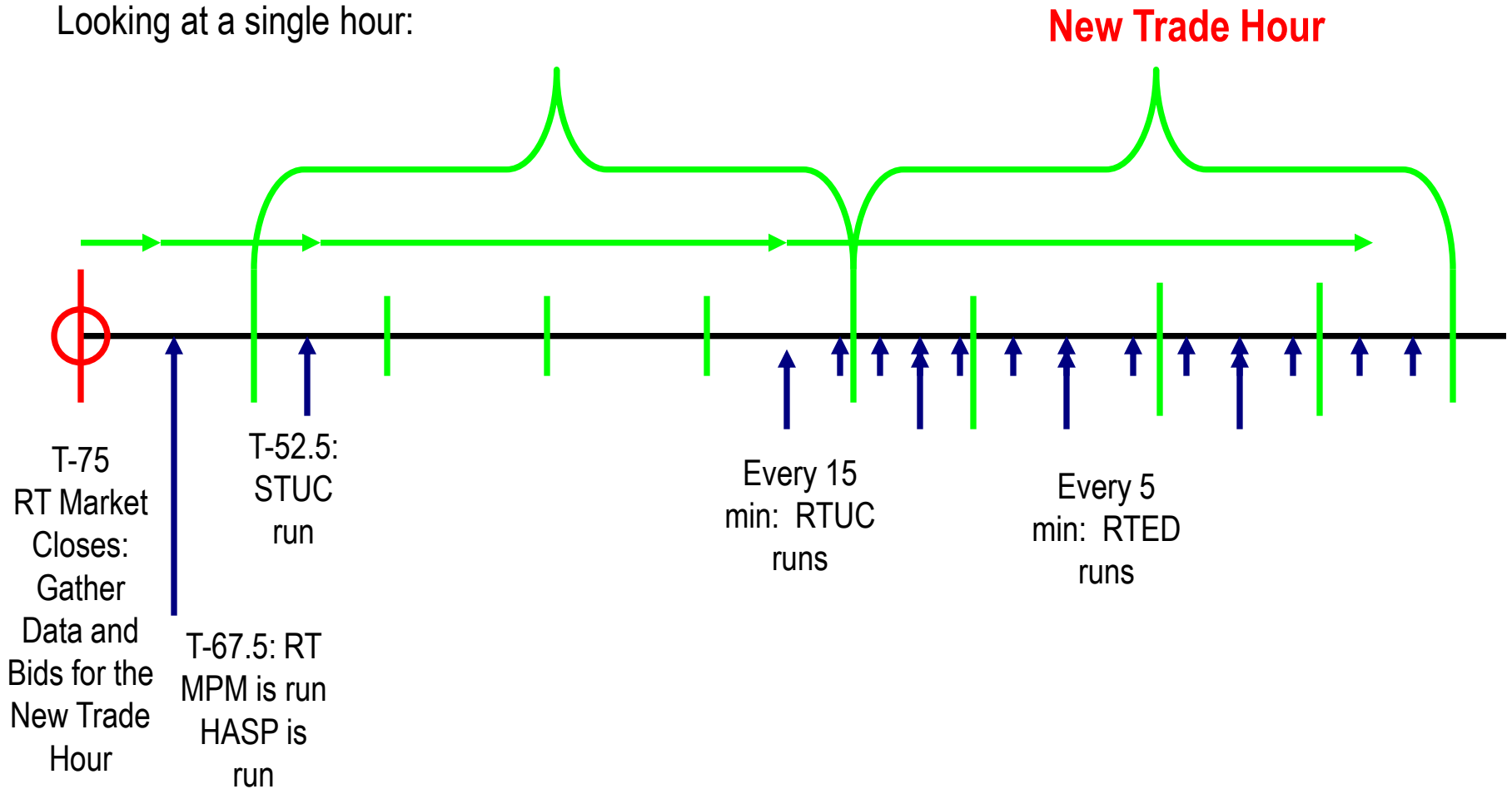
CAISO Markets

RTM – Real-Time Market

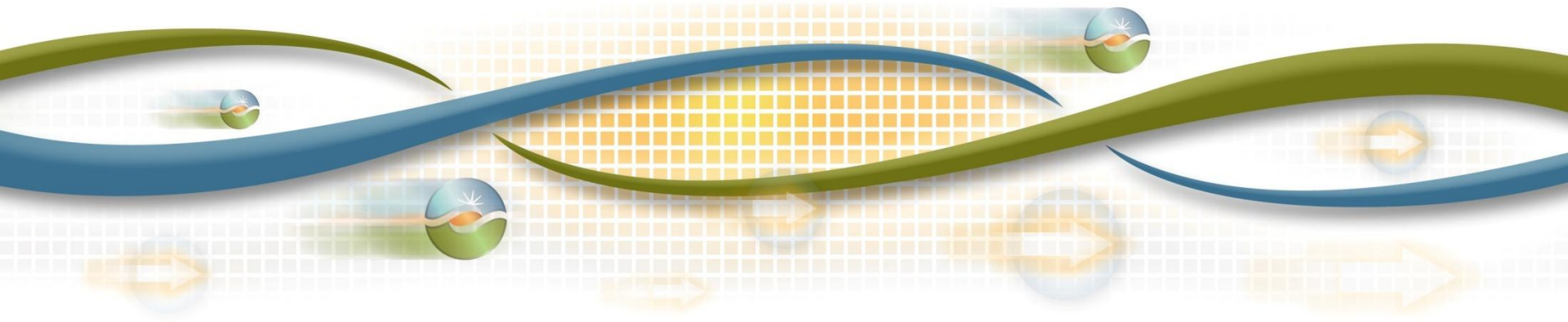


The Real Time Market (RTM) Timeline

Real Time is a continuous process:
Looking at a single hour:



Locational Marginal Pricing



Locational Marginal Price: (LMP)

DEFINITION:

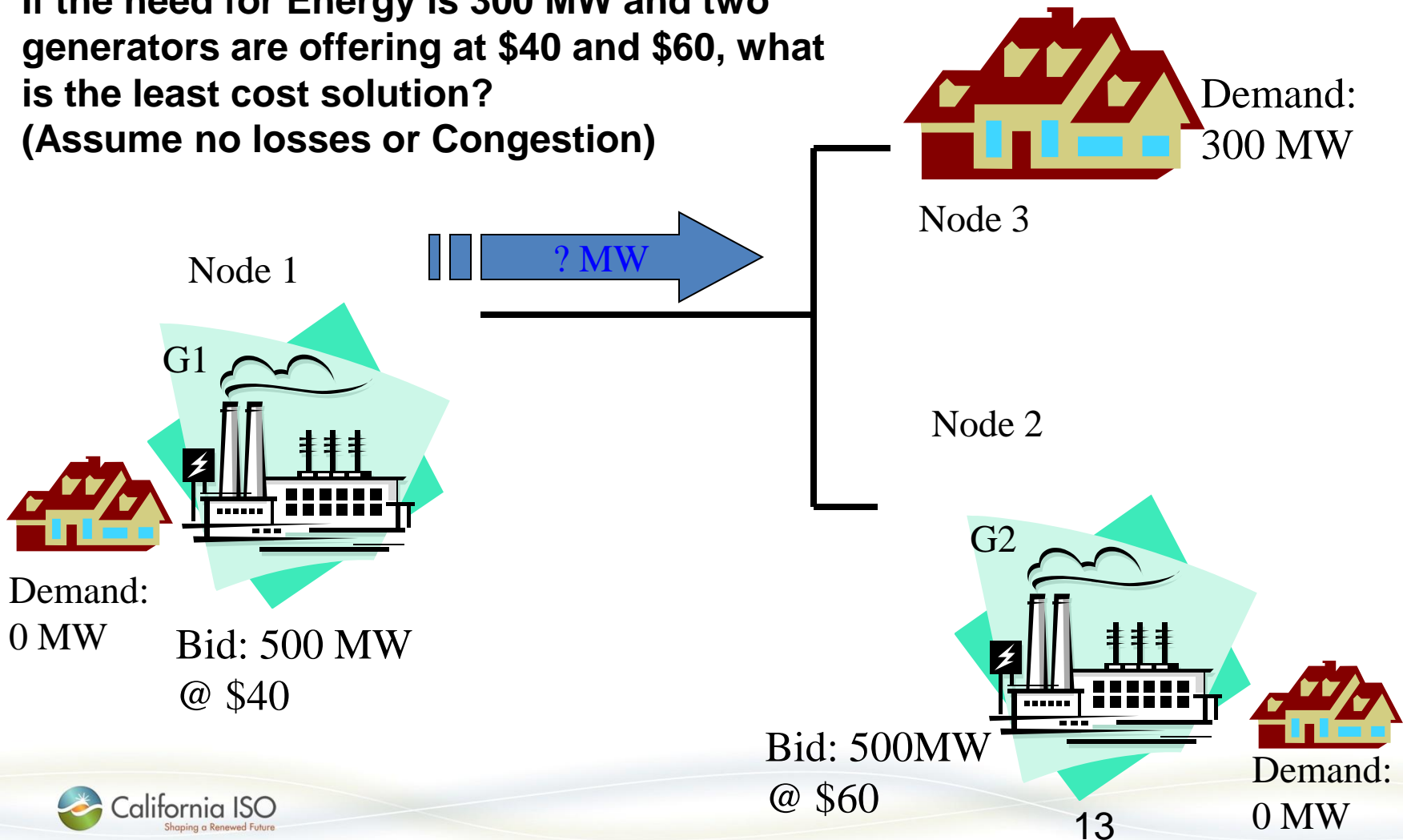
- The marginal cost of serving the next increment of Demand at that PNode consistent with existing transmission facility constraints and the performance characteristics of resources. (CAISO Tariff definition)

IN GENERAL:

- Supply resources will be paid the LMP at the Pnode they reside at
- Demand resources will pay the LMP at the LAP level

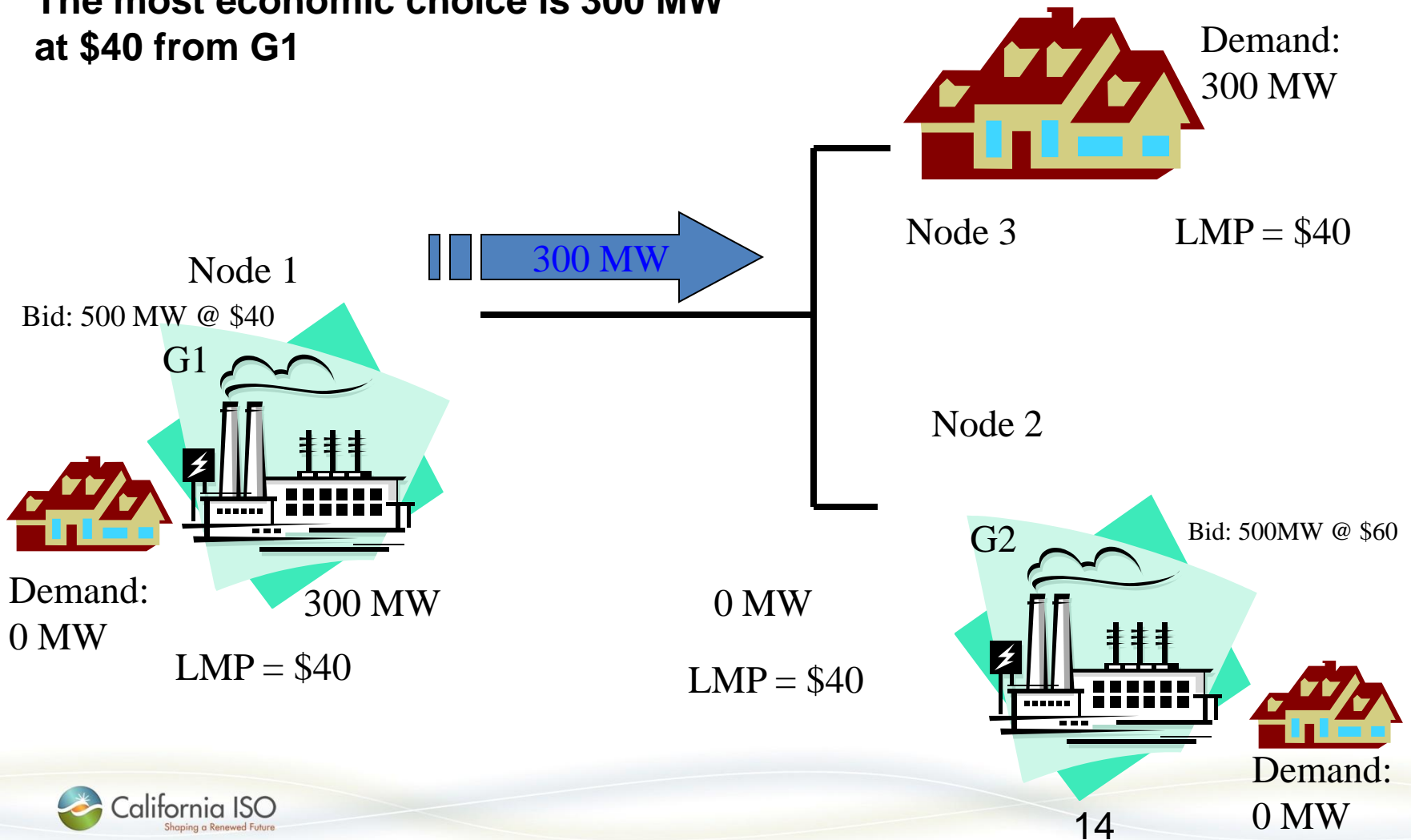
LMP: Energy Example #1

If the need for Energy is 300 MW and two generators are offering at \$40 and \$60, what is the least cost solution?
(Assume no losses or Congestion)



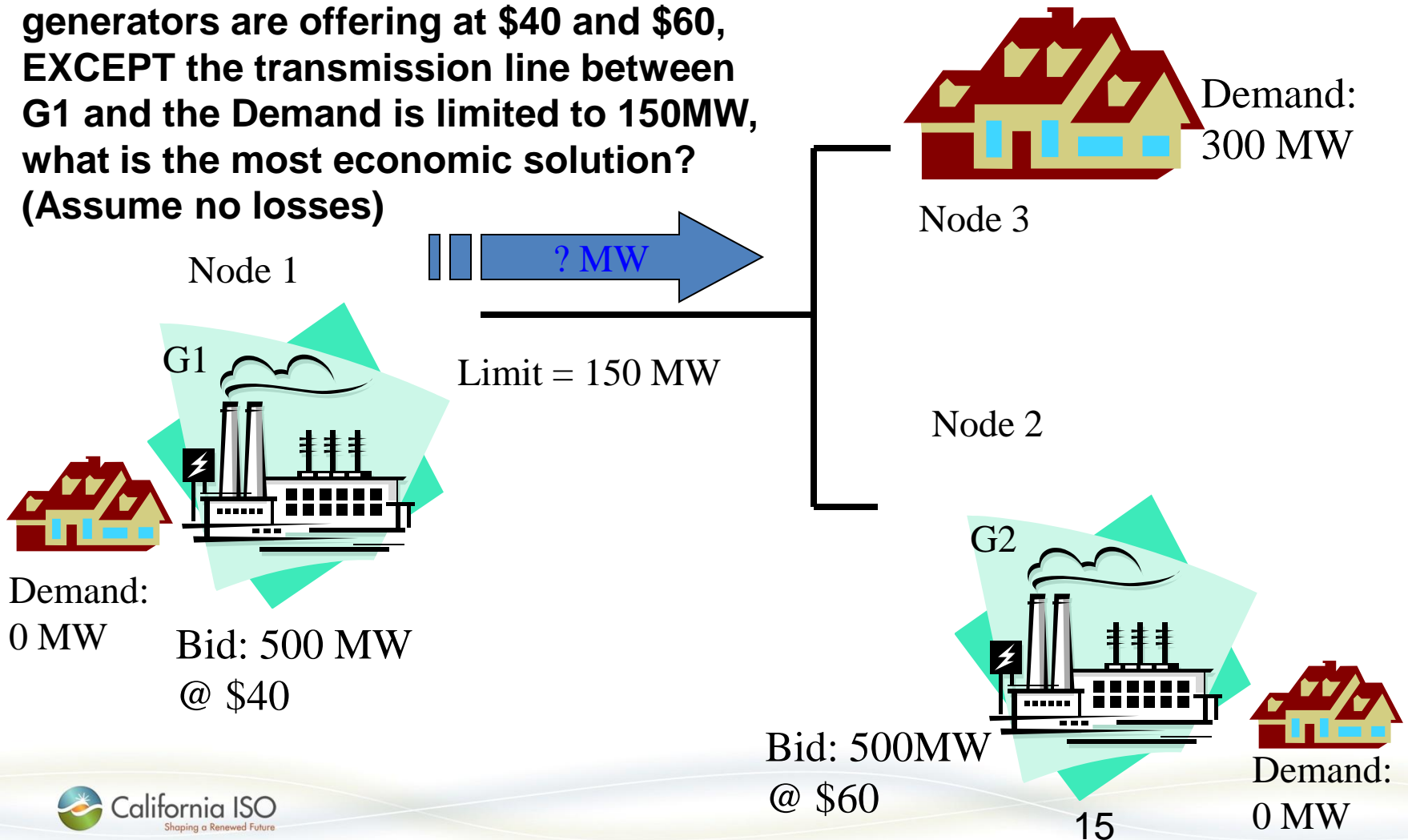
LMP: Energy Example #1

The most economic choice is 300 MW at \$40 from G1



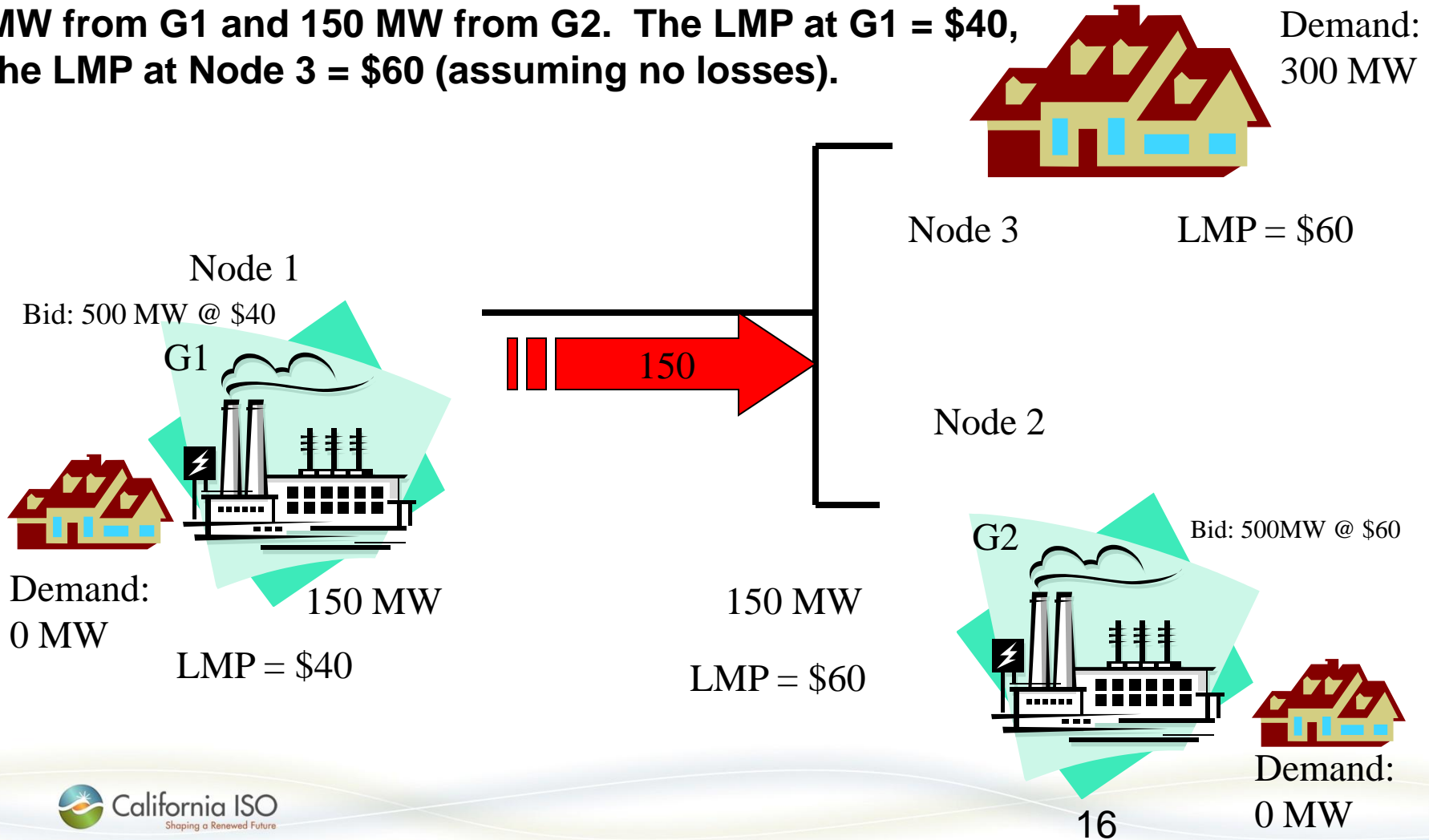
LMP: Energy Example #2

If the need for Energy is 300 MW and two generators are offering at \$40 and \$60, EXCEPT the transmission line between G1 and the Demand is limited to 150MW, what is the most economic solution? (Assume no losses)



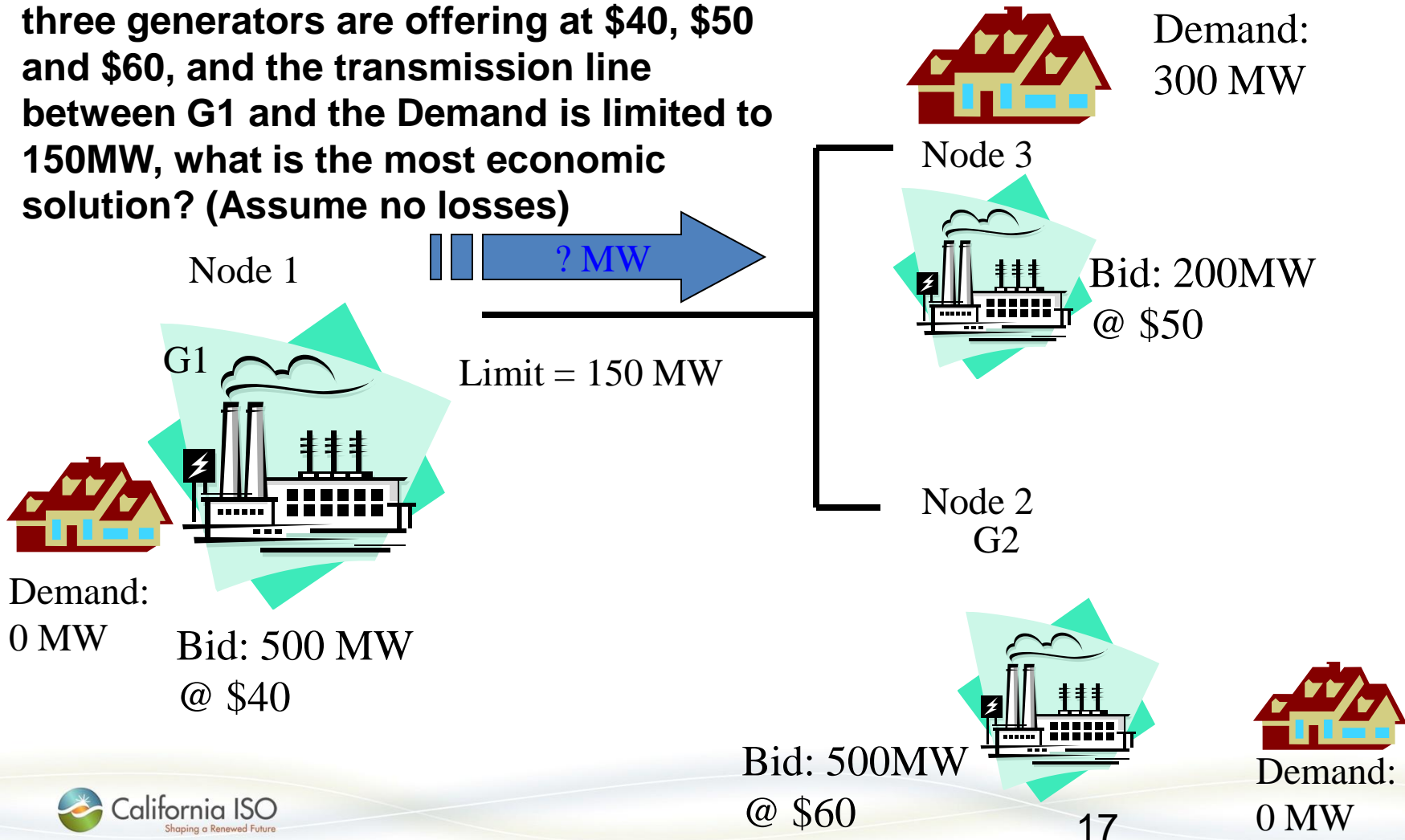
LMP: Energy Example #2

The most economic solution, that honors the line limit: 150 MW from G1 and 150 MW from G2. The LMP at G1 = \$40, the LMP at Node 3 = \$60 (assuming no losses).



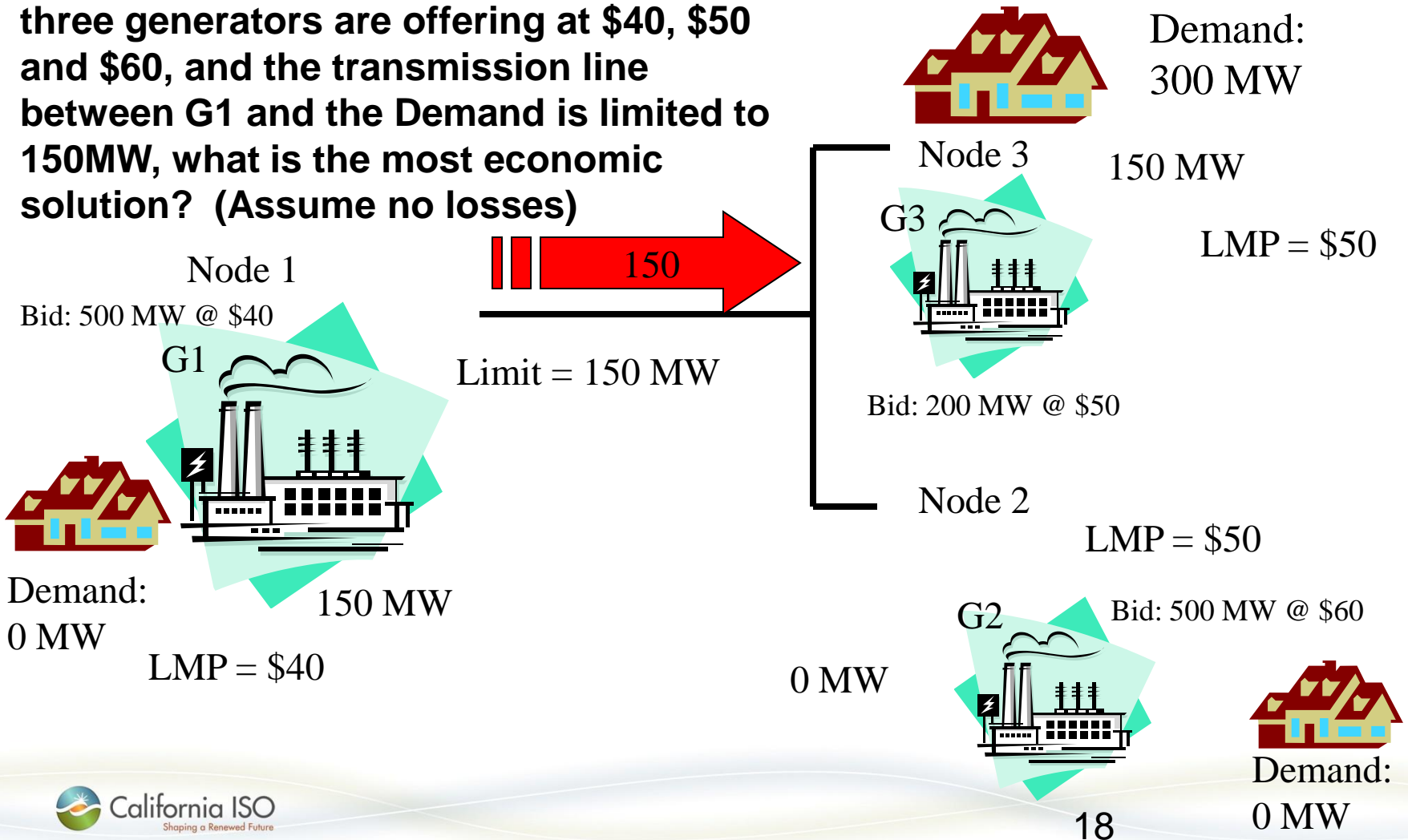
LMP: Energy Example #3

If the need for Energy is 300 MW and three generators are offering at \$40, \$50 and \$60, and the transmission line between G1 and the Demand is limited to 150MW, what is the most economic solution? (Assume no losses)



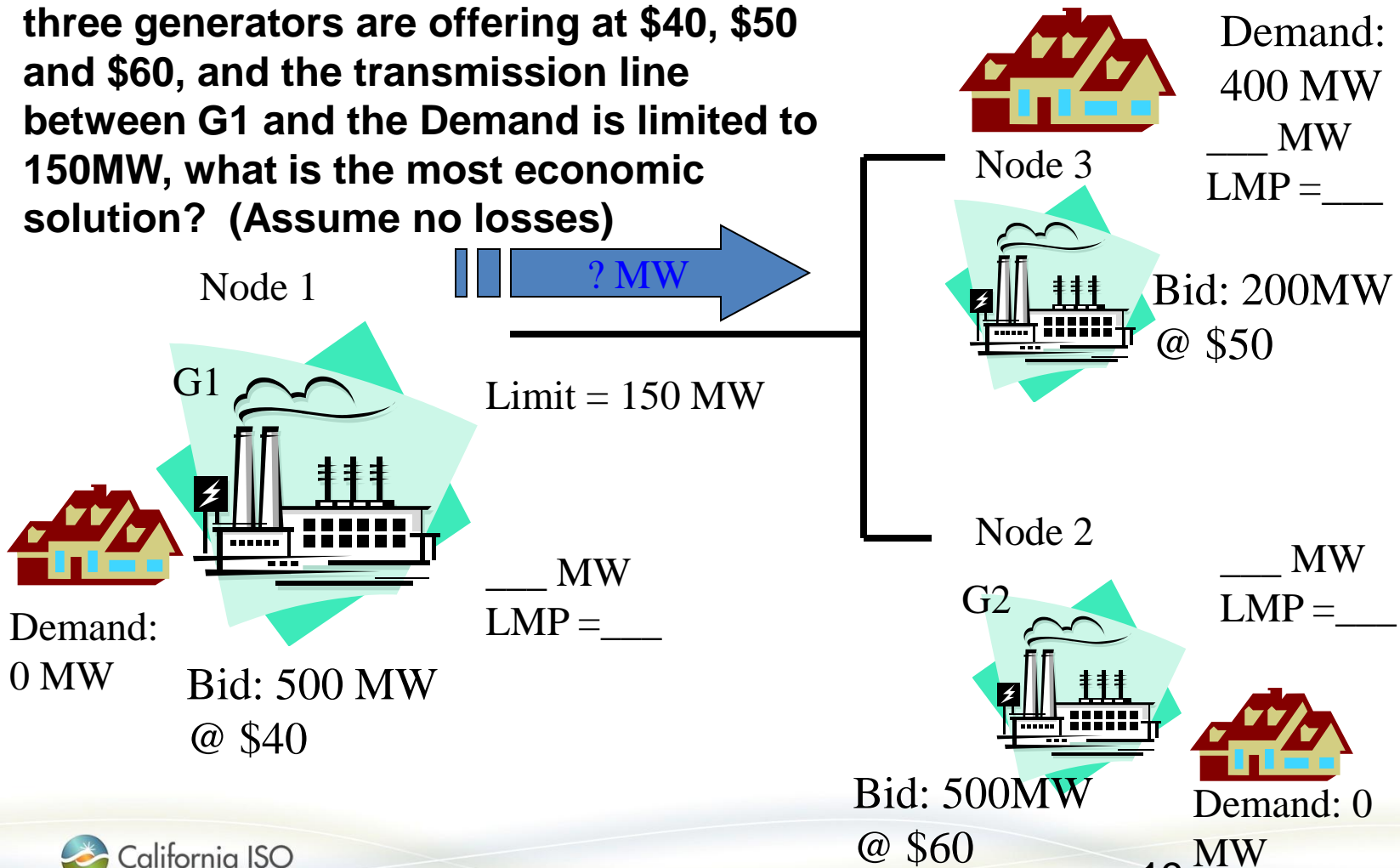
LMP: Energy Example #3

If the need for Energy is 300 MW and three generators are offering at \$40, \$50 and \$60, and the transmission line between G1 and the Demand is limited to 150MW, what is the most economic solution? (Assume no losses)



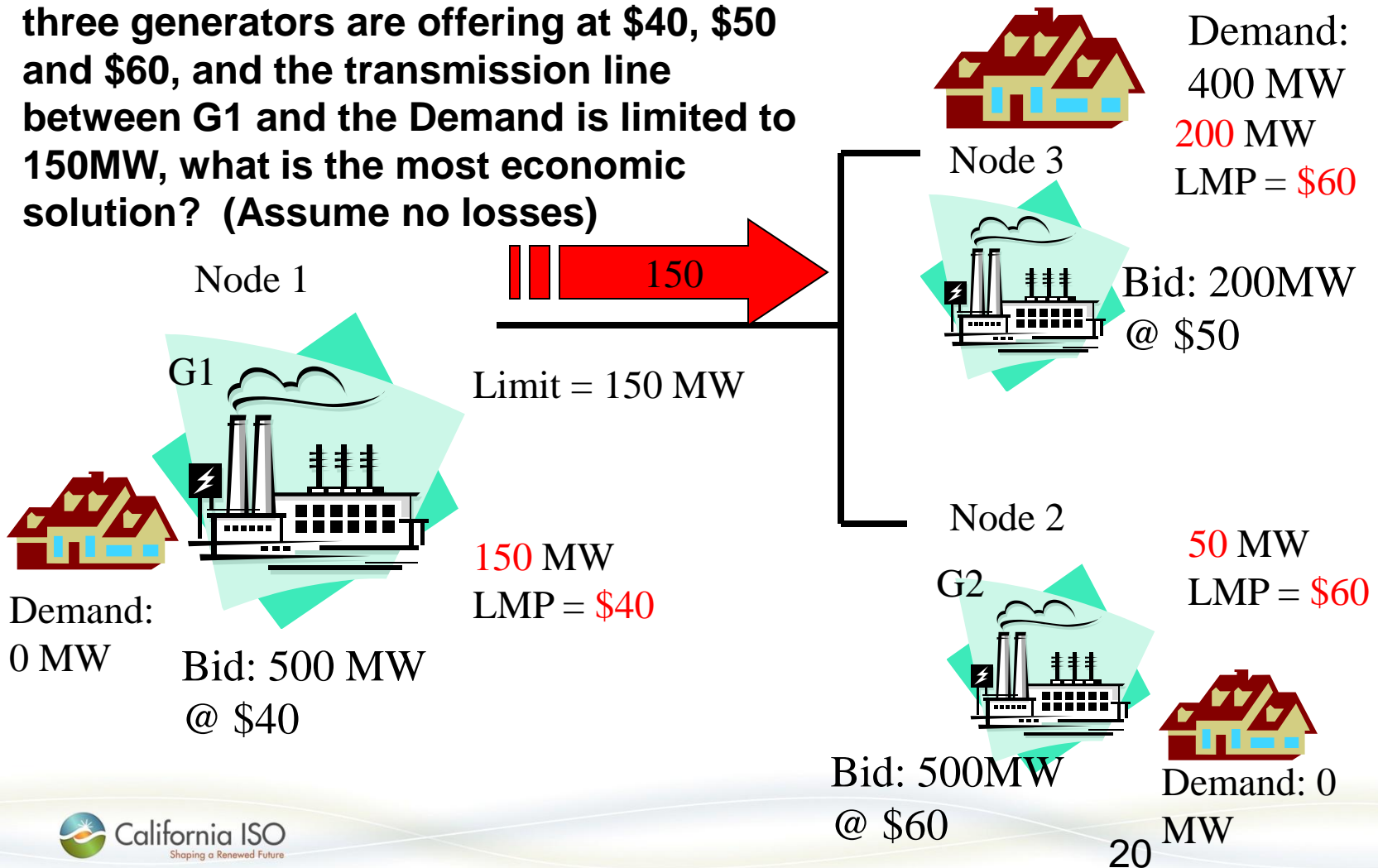
LMP: Your Turn

If the need for Energy is 400 MW and three generators are offering at \$40, \$50 and \$60, and the transmission line between G1 and the Demand is limited to 150MW, what is the most economic solution? (Assume no losses)



LMP: ANSWER: Congestion

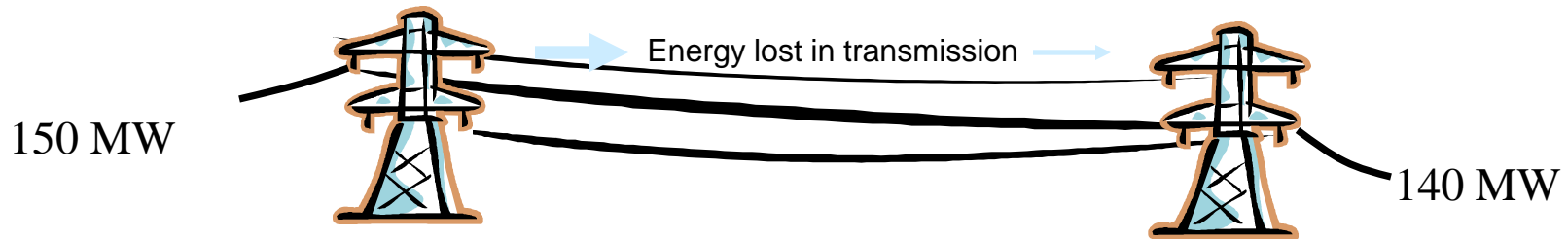
If the need for Energy is 400 MW and three generators are offering at \$40, \$50 and \$60, and the transmission line between G1 and the Demand is limited to 150MW, what is the most economic solution? (Assume no losses)



Three (3) Components of LMP (Tariff Definitions)

- **The System Marginal Energy Cost (SMEC)**
 - The component of the LMP that reflects the marginal cost of providing Energy from a designated reference location. (The CAISO will utilize a distributed Reference Bus whose constituent PNodes are weighted throughout the system.)
- **The Marginal Cost of Congestion (MCC)**
 - The component of LMP at a PNode that accounts for the costs of congestion, as measured between that Node and a Reference Bus
- **The Marginal Cost of Losses (MCL)**
 - The component of LMP at a PNode that accounts for the marginal real power losses as measured between that Node and a Reference Bus

LMP: Loss Component Example



Actual losses are calculated by the use of the Full Network Model and the optimal power flow solution and will affect the LMP calculated by the IFM program.

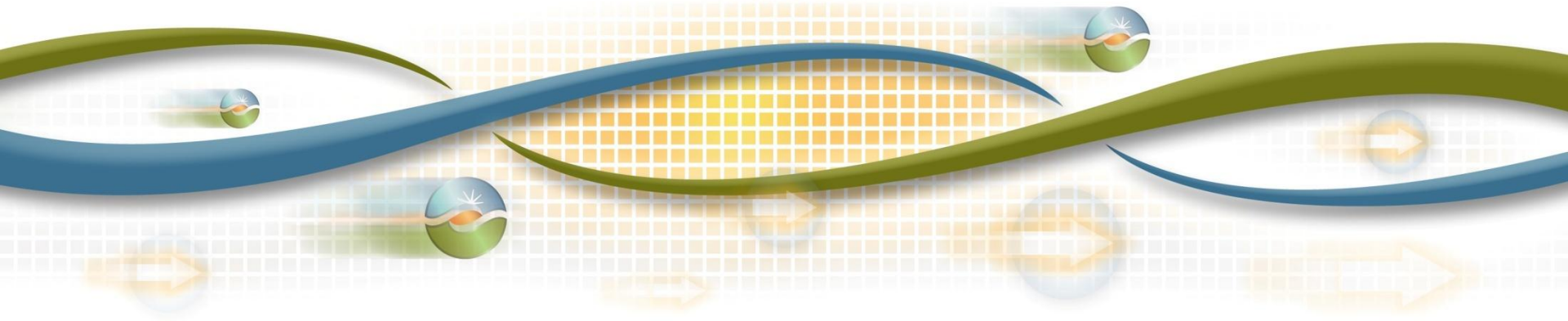
The loss component of the LMP is based on the MARGINAL losses. That is, the amount of losses incurred when serving an additional MW of load at a Node.

The marginal losses are based on loss sensitivity factors produced by the IFM program.

LMP - Summary

- LMP consists of 3 components: Energy, Congestion and Losses
 - The energy component is the same at all network nodes
 - Congestion will change where the MW are coming from, but not the dispatch amount.
 - Losses will change the amount of MW dispatched

Key Application Systems



Applications ▾

-  **BAPI** Business Associate Portal Interface
-  **CMRI** CAISO Market Results Interface
-  **OASIS** Open Access Same-Time Information System
-  **OASIS History** through Trade Date 3/31/09
-  **RIMS** Resource Interconnection Management System
-  **SIBR** Scheduling Infrastructure & Business Rules
-  **SIBR Reports**
- Applications below require separate log on**
-  **CIDI** Customer Inquiry Dispute and Information
-  **OMAR** Operational Meter Analysis & Reporting
-  **OMAR Legacy**
-  **SLIC** Scheduling & Logging for ISO of California

Welcome to the California ISO Market Participant Portal, the centralized access point for secure applications and business critical information.

12/8/2011 - MPP Outage scheduled for 8:00 - 8:30 p.m. Please log out of the system prior to the outage.

12/7/2011 - System Integration Discussions board implemented.

11/16/2011 - A new look implemented on the portal!

6/29/2011 4:49 p.m. - The new reporting platform conversion for SIBR, TD, DIMS, BPM and Credit Management reports is now complete.



Market Operations ▾

[Market Status](#) [Market Event Log](#) [System Operating Messages](#)

Day Ahead Market

Select Trade Date ▾

Bids & Schedules	Inter SC Trades
OPEN	OPEN

Hour Ahead and Real Time Market

Select Trade Date ▾

Hour Ending	Bids & Schedules	Inter SC Trades
11	CLOSE	PUBLISHED
12	CLOSE	OPEN
13	OPEN	OPEN
14	OPEN	OPEN

Market Prices ▾

11378 TH_NP15_GEN= \$25.933

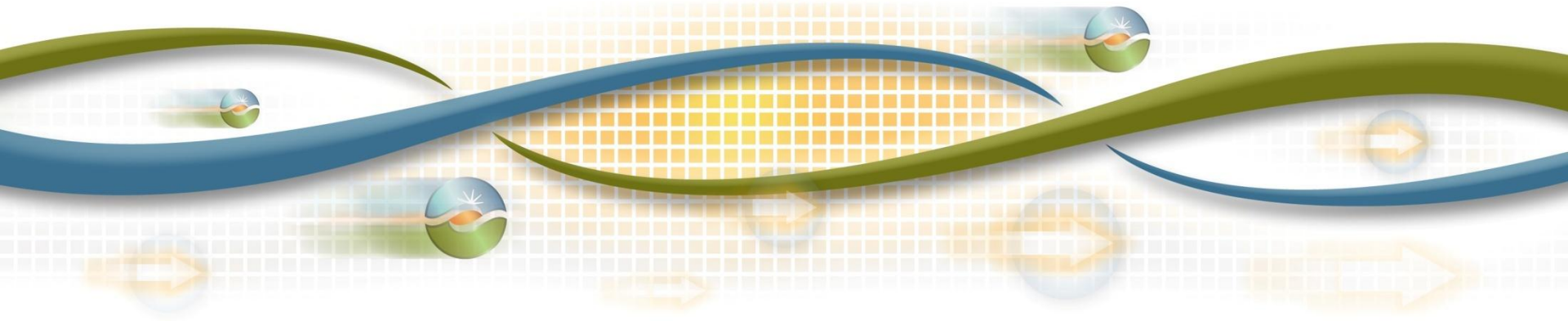
My Links ▾

There are no items to show in this view of the "My Links" list. To create a new item, click "New" above.

Information Security

Name	Document Description	Posted Date
B2B Security Requirements	This document provides definition of the syntax and semantics of security tokens that California ISO exchanges with external entities.	1/29/2010

Settlements Timeline and Processes



Settlements Process

All Energy Scheduled in the Day-Ahead Market will be paid or charged the Locational Marginal Price (LMP) at the location where the resource Bid/scheduled

- Generator will be paid the LMP at the Pnode
- Imports will be paid the LMP at the Scheduling Point
- Export will be charged the LMP at the Scheduling Point
- Non-Participating Demand will be charged the LMP at the Default LAP

All Ancillary Services Awards from the DAM will be paid the resource specific ASMP

Settlements Process

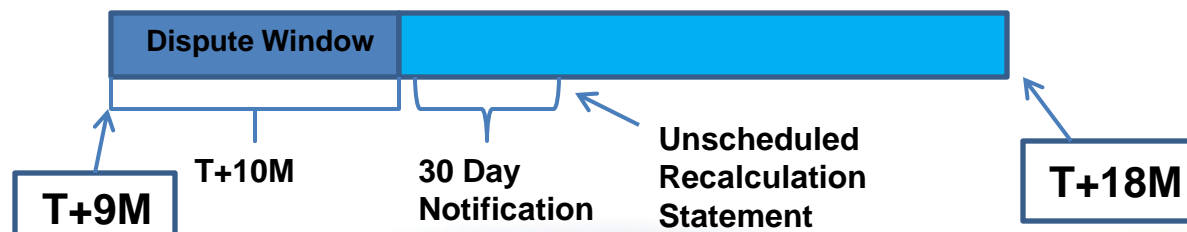
- Day-Ahead results are financially binding: resources will be paid/charged based on the results of the Day-Ahead Market – REGARDLESS of Real-Time performance
- If a resource does not deliver on the Day-Ahead energy schedule in Real-Time, the resource will be subject to Real-Time charges
- Resources that do not honor Day-Ahead Ancillary Services Awards in Real-Time will be subject to No-Pay

Settlements Timeline

- Initial Settlement Statement – T+3B
 - ISO ESQMD Only
- Recalculation Settlement Statement – T+12B
 - SC ESQMD, SC ASQMD submit by T+8B
 - If no SC data submitted, ISO ESQMD will be input
 - ISO ME data (ISO polled data) will be actual
- Recalculation Settlement Statement – T+55B
 - SC ASQMD data must be submitted by T+48B
 - If no data is submitted and there is no SC ESQMD then ISO ESQMD data will be changed to zero

Settlements Timeline

- Recalculation Settlement Statement T+9M thru T+36M
 - SC ASQMD submittal window (T+168B to T+172B)
- Unscheduled Recalculation Settlements Statements - T+9M, T+18M, and T+35M will be published in the event the following criteria is met:
 - \$1,000,000 per day fiscal impact to market
 - Result of CAISO processing error
 - Identified within the respective settlement dispute window



Settlements Invoicing

- Published on a weekly basis – Every Wednesday
 - To the extent the Wednesday is a CAISO holiday, invoices are published on the next business day.
- Includes market transactions from Trading Days Monday through Sunday of the week preceding the invoice.

Settlements Invoicing



CAISO Payments Calendar DRAFT Transition from Payment Acceleration Timeline to Credit Reform and Settlement Process Timeline Change October 1, 2011 through January 31, 2012

Calendar Date	Day	Credit Reform: Publish Daily Initial T+3B	Proposed: Publish Recalculation Statement T+12B	Proposed: Publish Recalculation Statement T+55B	Proposed: Publish Recalculation Statement T+9M (as T+194B) - optional (as needed)	Credit Reform: Weekly Invoice by <u>Billing Period</u> (each Wednesday)	Credit Reform: Weekly Invoice Due by 10:00am for Disbursement at 2:00pm T+4B
01-Oct-11	Saturday						
02-Oct-11	Sunday						
3-Oct-11	Monday						
4-Oct-11	Tuesday						
5-Oct-11	Wednesday	10/01-10/02/2011				T+3B Initial: 10/01-10/02/2011, T+18M Recalc: 03/01-03/31/2010	
6-Oct-11	Thursday	10/03/2011					
7-Oct-11	Friday	10/04/2011					
08-Oct-11	Saturday						
09-Oct-11	Sunday						
10-Oct-11	Monday	10/05/2011					
11-Oct-11	Tuesday	10/06/2011					T+3B Initial: 10/01-10/02/2011, T+18M Recalc: 03/01-03/31/2010
12-Oct-11	Wednesday	10/07-10/09/2011				T+3B Initial: 10/03-10/09/2011, T+7B Initial: 09/01-09/30/2011	
13-Oct-11	Thursday	10/10/2011					

Settlements Dispute Timeline

- Disputes may be submitted through the Settlement Dispute System:

Statement Publication	Settlement Dispute Deadline	Settlement Dispute Data
T+12B	T+26B	All but ESQMD
T+55B	T+77B	All
T+9M (T+194B)	T+10M (T+216B)	Incremental Changes Only

- Disputes may be submitted for errors not related to Estimated Settlement Quality Meter Data

Thank You for Attending!!

Please send additional questions to:

MarketTraining@caiso.com