



California ISO
Your Link to Power

Proposal for Design of Proxy Demand Resource (PDR)

Margaret Miller
Senior Market & Product Economist

MSC/Stakeholder Stakeholder Meeting

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The ISO has been working on enhancements to enable greater participation of DR in the wholesale markets

Two new products are proposed:

- Dispatchable Demand Resource (DDR)
 - Meets needs of aggregated pumps and demand response located at single node or collection of nodes that can be forecasted and bid at a CLAP
 - Beneficial for DR that operates over many hours in a year
- Proxy Demand Resource (PDR)
 - Contains most of the same functionality as DDR but easier to administer needs of end-use customer participation
 - No requirement for underlying load associated with DR resource or program to be uniquely forecast and scheduled at CLAP

Direct Participation of Demand Response Resources Introduces Unique Challenges

FERC Order 719 requires that ISOs permit a DR aggregator to bid demand response on behalf of retail customers directly into the organized energy market

Sampling of Issues Currently Under Review:

- Relationships between different entities: LSE, Curtailment Service Provider (CSP), Retail Customer
- Roles and responsibilities of the LSE, CSP, etc.
- CSP registration process and requirements
- metering responsibilities of LSE and CSP
- settlement rules between the LSE and CSP
- How are customer migrations tracked and impact on the resource?
- What M&V protocols need to be developed and implemented?

Three options for PDR design were discussed at January 15 Stakeholder Meeting

- PDR Option 1
 - Settlement with LSE at Default LAP
 - LSE Day-Ahead Schedule adjusted for Day-Ahead cleared PDR

- PDR Option 2
 - Settlement with LSE at Default LAP
 - All settlements in Real-Time through uninstructed deviation

- PDR A – developed by stakeholder working group
 - Settlement with CSP at Custom LAP
 - Baseline used to determine performance of PDR

ISO worked with stakeholder working group to refine PDR proposal

- Worked through examples of all three design options
- Determined pros and cons of each option
- Reviewed gaming concerns and settlements impacts
- PDR A was selected as best option to meet requirements of FERC Order 719

ISO Plans to implement PDR by Summer 2010

- Baseline calculations will need to be developed
- Other issues around direct participation will be resolved through the stakeholder process
- ISO will seek input from MSC as to what performance requirements are needed to address gaming concerns
- Initial implementation analysis indicates that all requirements will need to be complete by Sept 1, 2009 for May 1, 2010 implementation

Board Decision moved from March to May to allow more time for stakeholder process

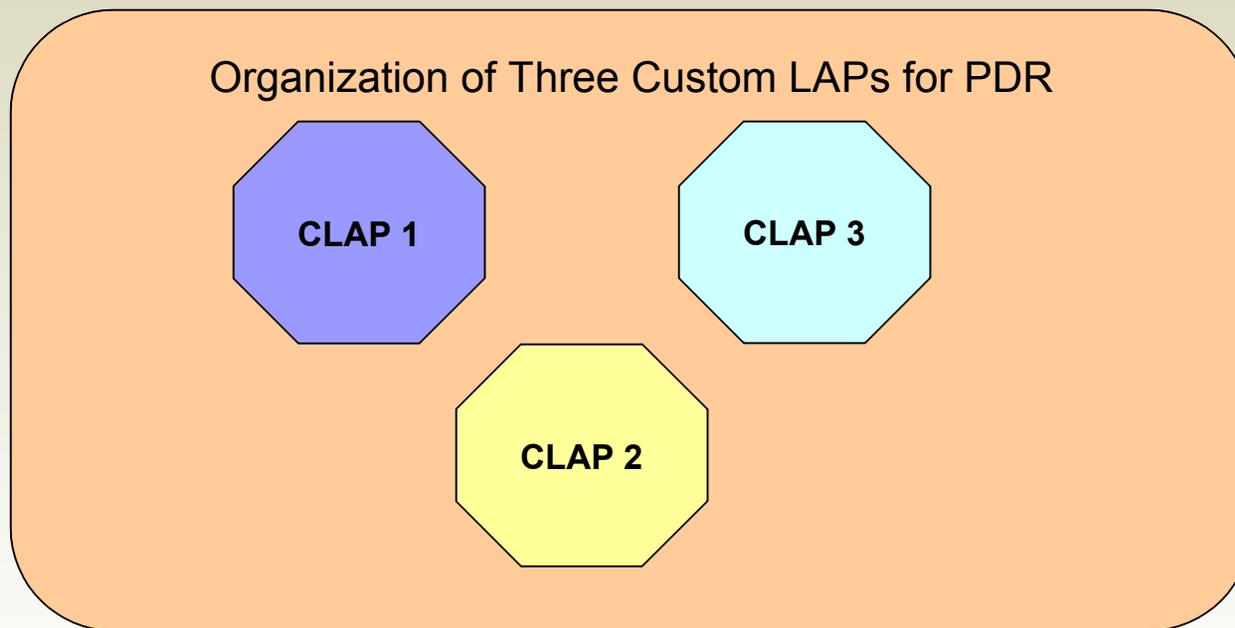
- March 5 – Straw Proposal
- March 12 – MSC Meeting
- March 19 – Stakeholder comments due
- Late March – Stakeholder conference call
- April 8 – Draft Final Proposal posted
- Week of April 16th – Stakeholder Conference Call
- Mid-April – Begin Stakeholder process for Direct Participation Issues
- Week of April 20th – Stakeholder comments due
- May 18 – 19 Board of Governors Meeting
- Late August – Stakeholder process complete for direct participation issues

Bid to Bill Walk Through of PDR Proposal

PDR is a combination of load scheduled by the LSE at the DLAP and a bid to curtail submitted by the CSP using a separate proxy generator at the CLAP

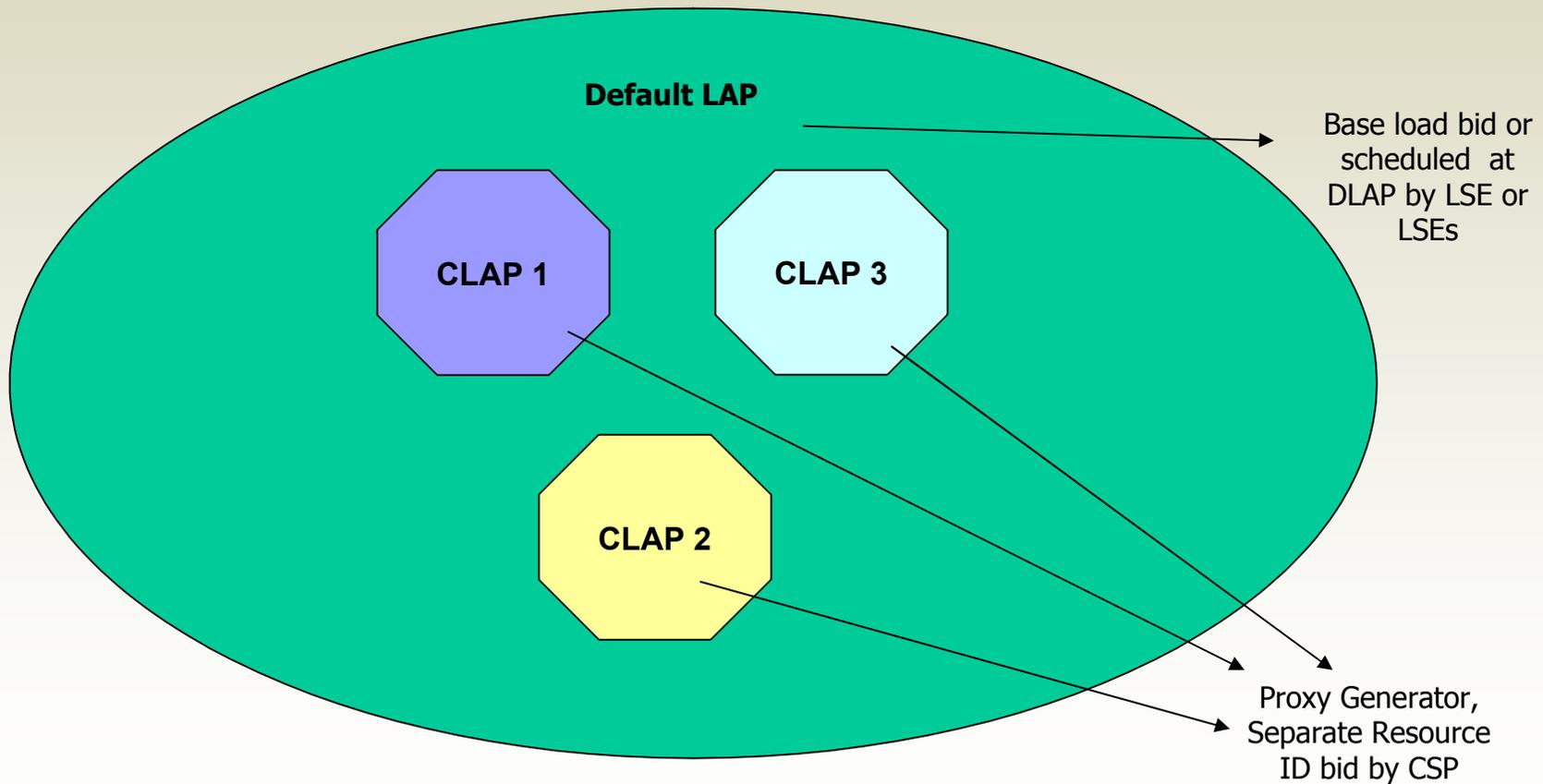
- The LSE and the CSP may be the same or different entities
- PDR may participate in the Day-Ahead, Real-Time, and Non-Spinning Reserve markets
- PDR Performance will be measured using a pre-determined baseline
- Settlement for curtailed portion of the load is settled directly with the CSP
- LSE's Day-Ahead schedule will be adjusted based on actual PDR performance for the calculation of UIE

PDR will be organized by CSPs into CLAPs for bidding into the ISO Markets

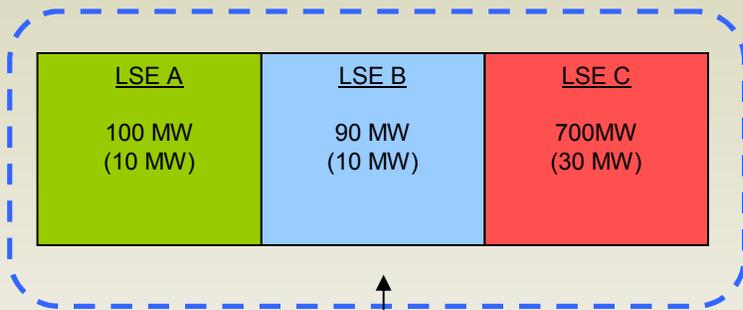


CLAP may be as small as a single node or as large as a SubLAP

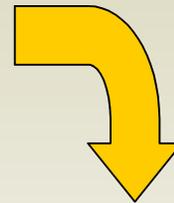
PDR will be bid into ISO markets as a proxy generator at the CLAP



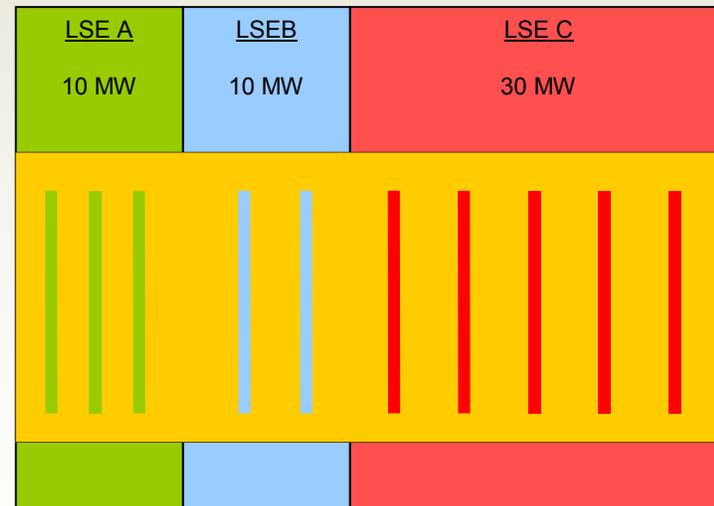
Since the DR resources are uncoupled from Load, it is possible for a PDR in a CLAP to contain load served by more than one LSE



Load served by LSE



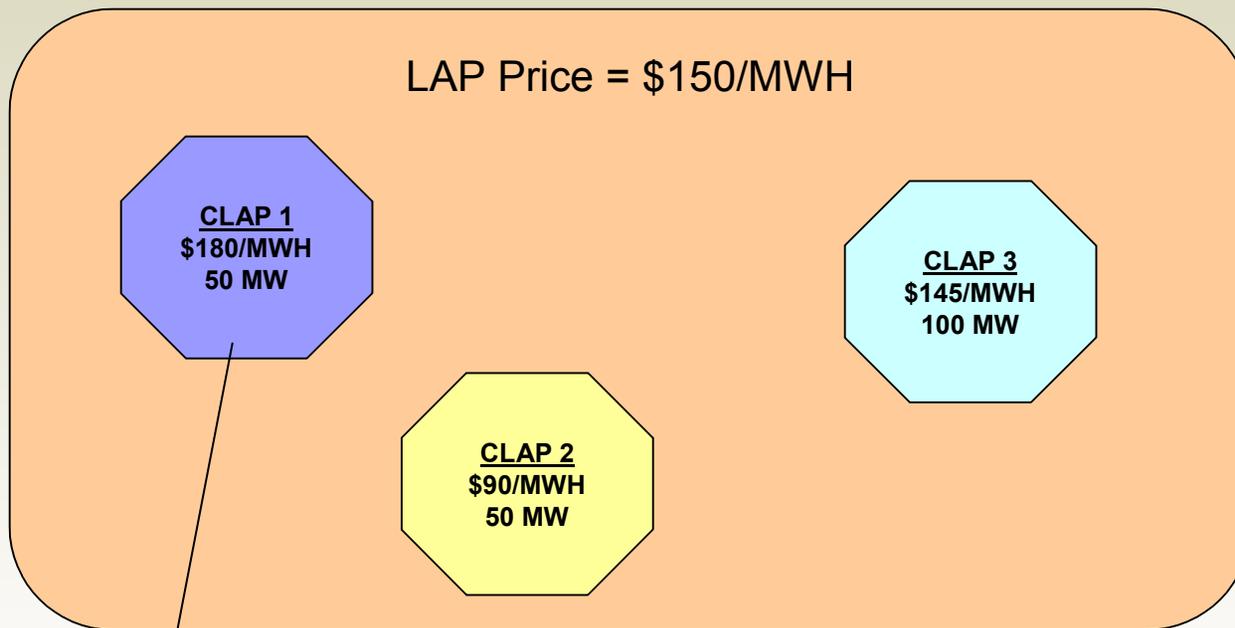
Customer accounts identified as providing demand response for PDR in CLAP 1



50 MW PDR

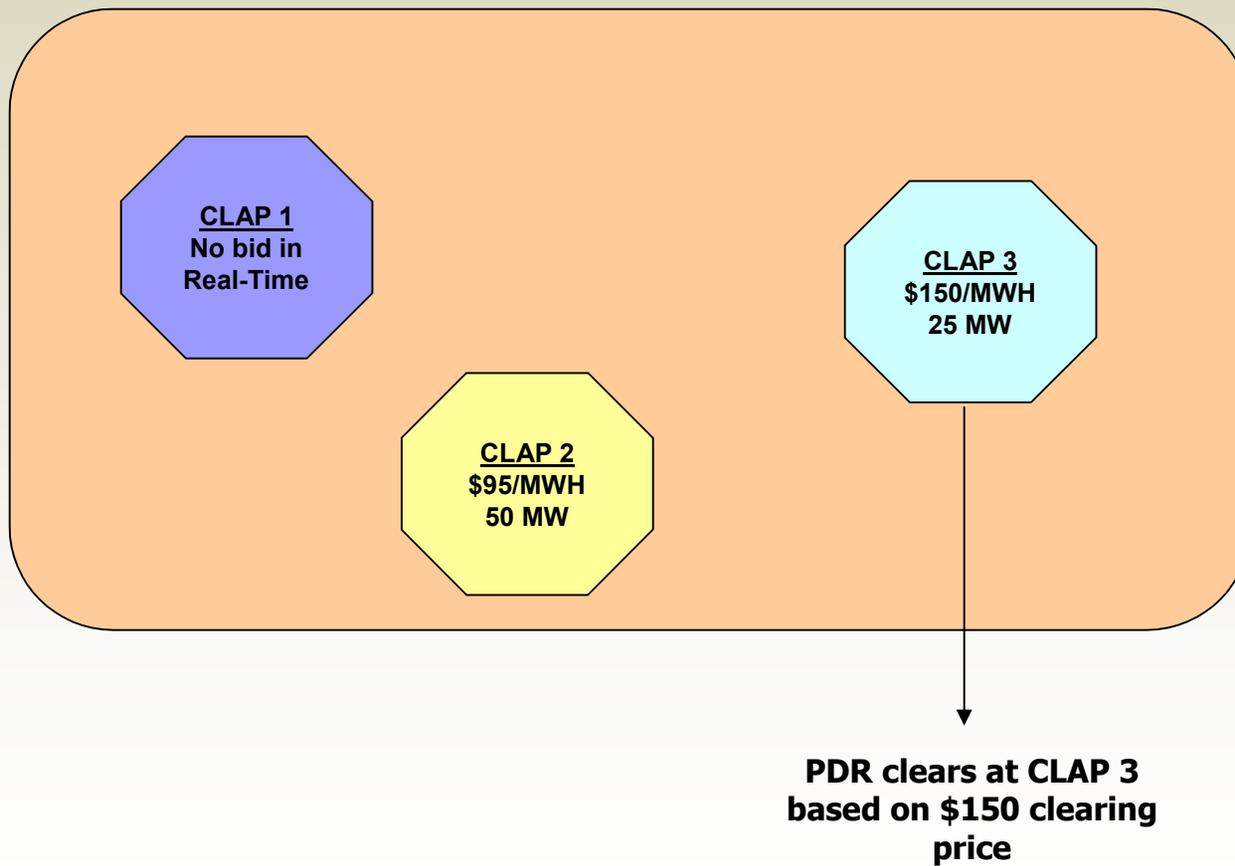
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The PDR was bid into Day-Ahead Market at \$150/MWH at all three locations

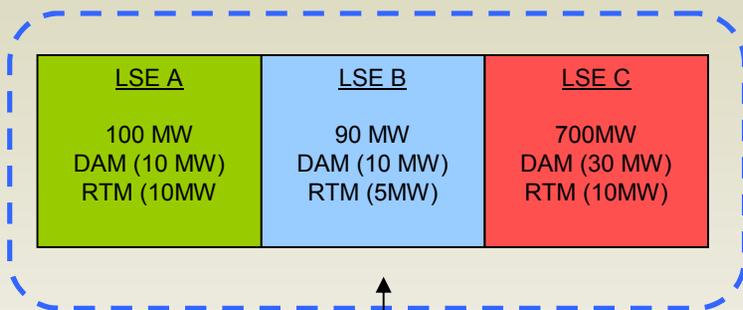


PDR 1 at CLAP 1 clears market based on \$180 clearing price

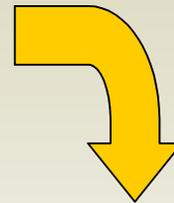
The PDR was bid into Real-Time Market at \$150/MWH at two locations



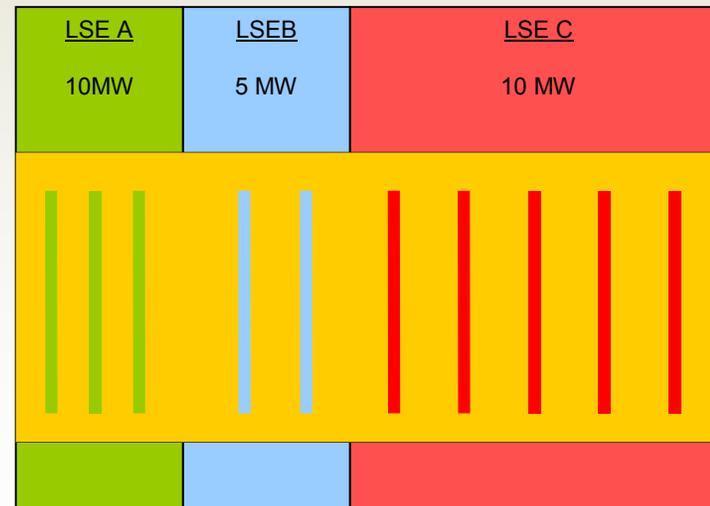
The Real-Time PDR bid that cleared in CLAP 3 involved the same three LSEs



Load served by LSE



Customer accounts identified as providing demand response for PDR in CLAP 3



25 MW PDR

Adjustments are made to each LSE's Schedule based on actual PDR

LSE A	LSE B	LSE C
100 MW	90 MW	700 MW
(10 MW)	(10 MW)	(30 MW)
(10 MW)	(5 MW)	(10MW)
80 MW	75MW	660MW

Adjustment to LSE's Day-Ahead Load are tallied separately for each LSE within the CLAP for calculating Uninstructed Deviation (UIE)

Example – Settlement to CSP for PDR

	LSE 1	LSE 2	LSE 3
LSE Day-Ahead Demand Schedule			
LSE Cleared Day-Ahead Schedule	100	90	700
CSP's Operation in Day-Ahead Market			
CSP's Cleared Demand Reduction Day-Ahead	-10	-10	-30
Settlement to CSP CC 6011	50MW * \$180MWH = \$9000		
CSP's Operation in Real-Time Market			
Cleared demand reduction Real-Time	-10	-5	-10
Settlement to CSP CC 6475	25MW * \$150MWH = \$3750		

Example – Settlement to LSE for PDR

	LSE 1	LSE 2	LSE 3
Settlement to LSE			
LSE's Original Day-Ahead Schedule	100	90	700
Actual PDR (Baseline – Meter Reads)	20	15	40
LSE Adjusted Day-Ahead Schedule	80	75	660
Actual Meter Read	80	75	660
Uninstructed Deviation (UIE)	0	0	0

LECG identified gaming concerns related to DR in their February 2005 report on MRTU LMP Market Design

- Gaming concern related to when dispatches are not settled at the same location as the underlying demand schedules
- The ISO believes these gaming concerns can be mitigated in a number of ways that will be explained in the next presentation

The next steps in the stakeholder process to work towards implementation in summer 2010 are:

- ISO will provide a firm, detailed meeting schedule to meet 9/1 goal
- Stakeholder process to define and resolve issues around direct participation as they pertain to PDR will begin in April