



# Overview Of PJM Demand Response and Energy Efficiency MARAMA Workshop on Energy and Air Quality Issues

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Susan Covino,  
Senior Consultant  
Market Strategy

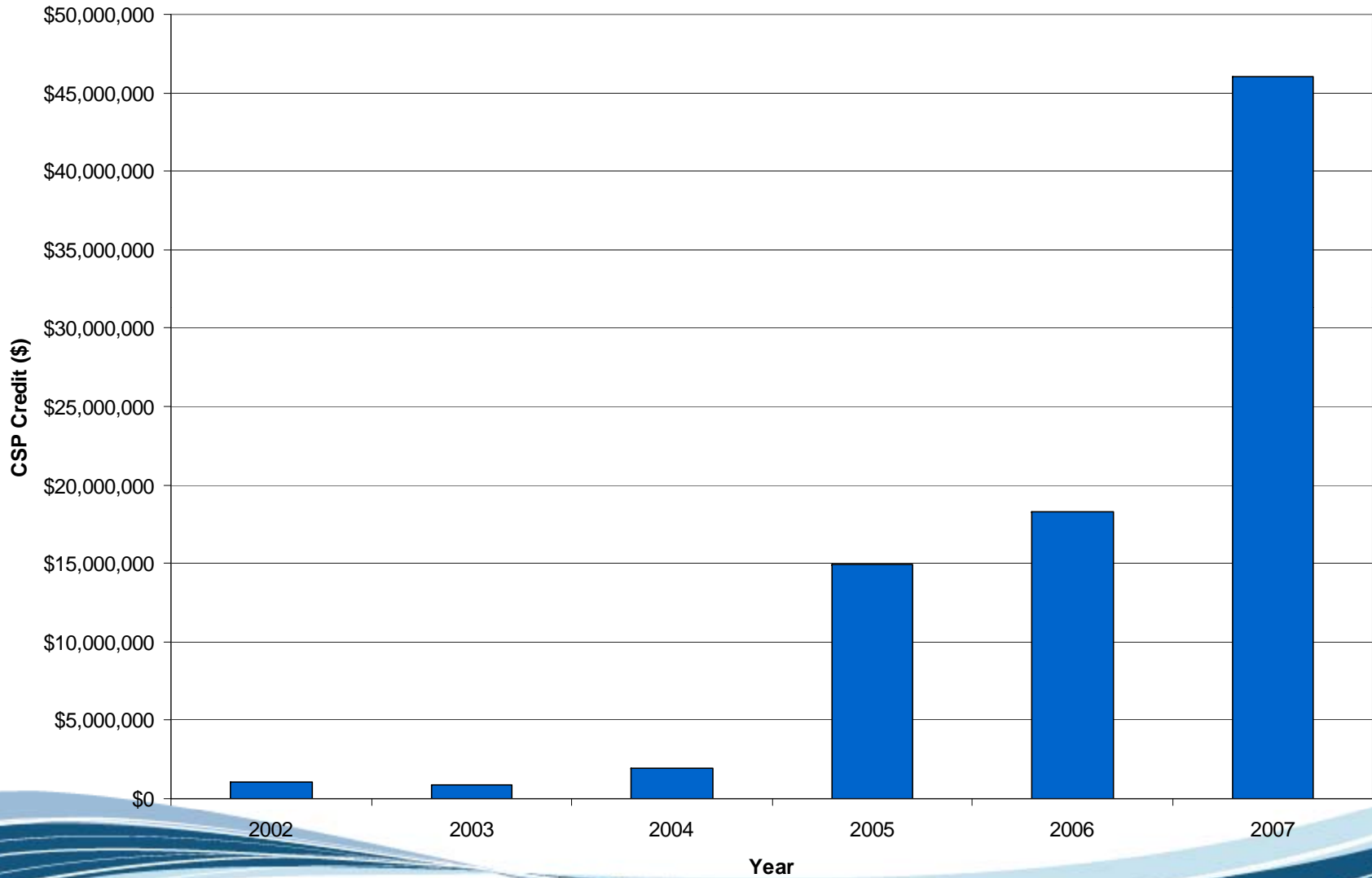
- Energy Revenue incentive no longer available.
  - Energy providers now paid the market price minus their cost (retail G&T) to buy the resold energy.
  - Prior to 2008 energy demand response providers were not charged for the cost of their resold energy.
- Direct access to Energy market remains for demand responders.

- Economic Load Response\*
    - Self Scheduled
    - Dispatched by PJM in Real Time
    - Cleared by PJM in the Day Ahead Market
  - Emergency Load Response
    - Energy Only Option
    - Full Emergency Load Response
  - Synchronized Reserve
- \* Incentive payment when LMP equals or exceeds \$75/MWh expired 12/31/07



# Economic annual total CSP revenue

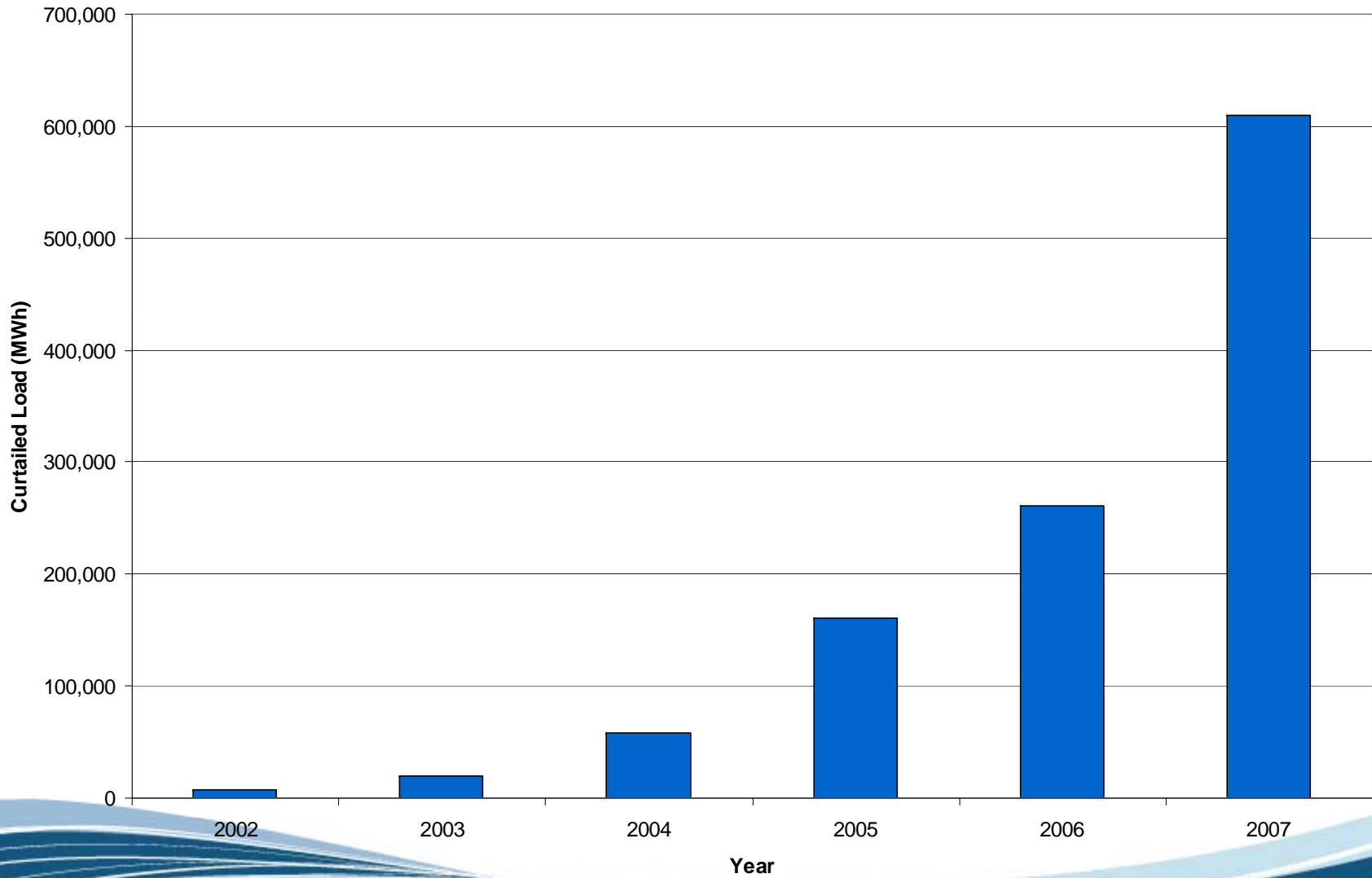
## Yearly CSP Credit





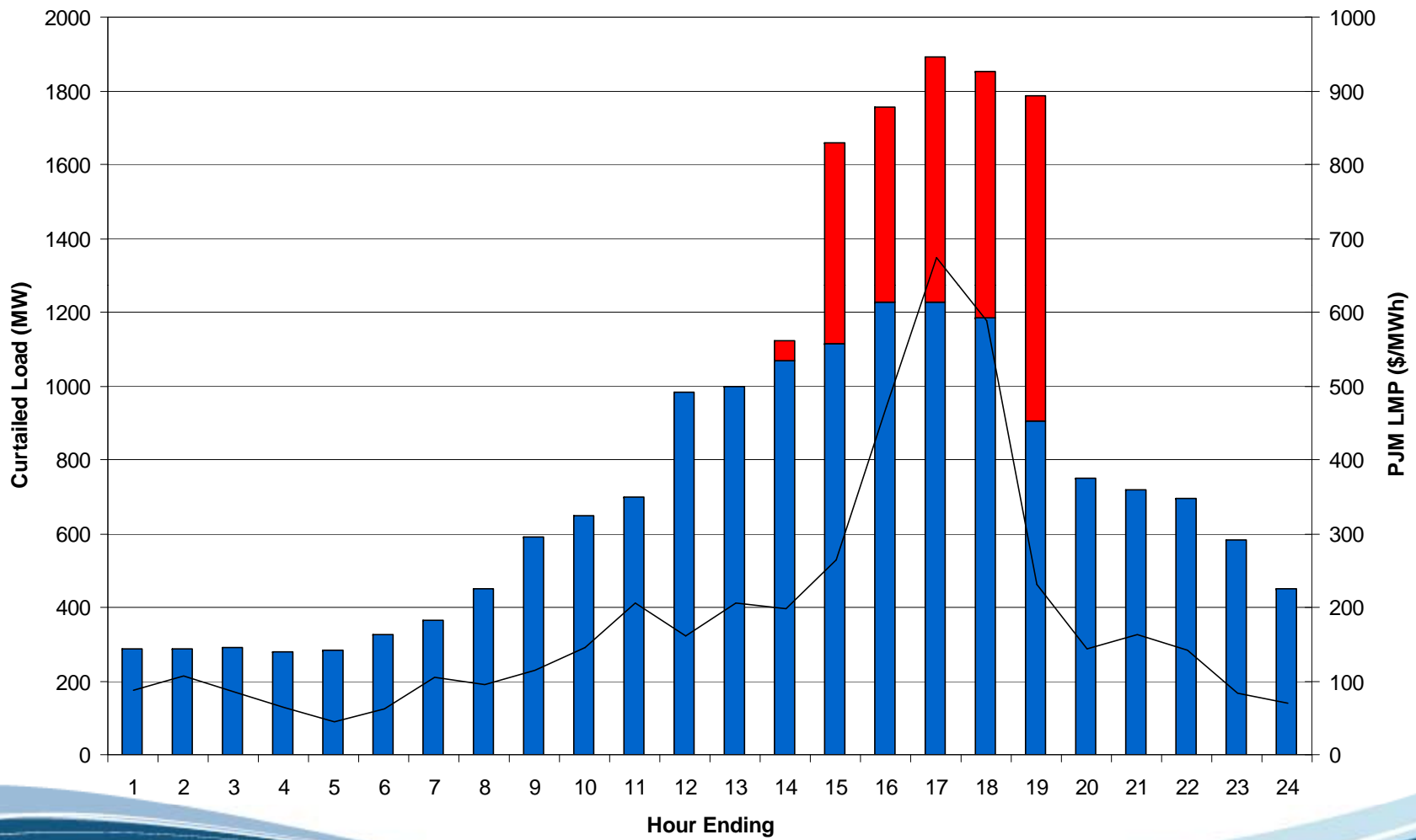
# Economic annual total CSP curtailed Mwh

## Yearly Curtailed Load





### Demand Side Response Scheduled Curtailments August 8, 2007

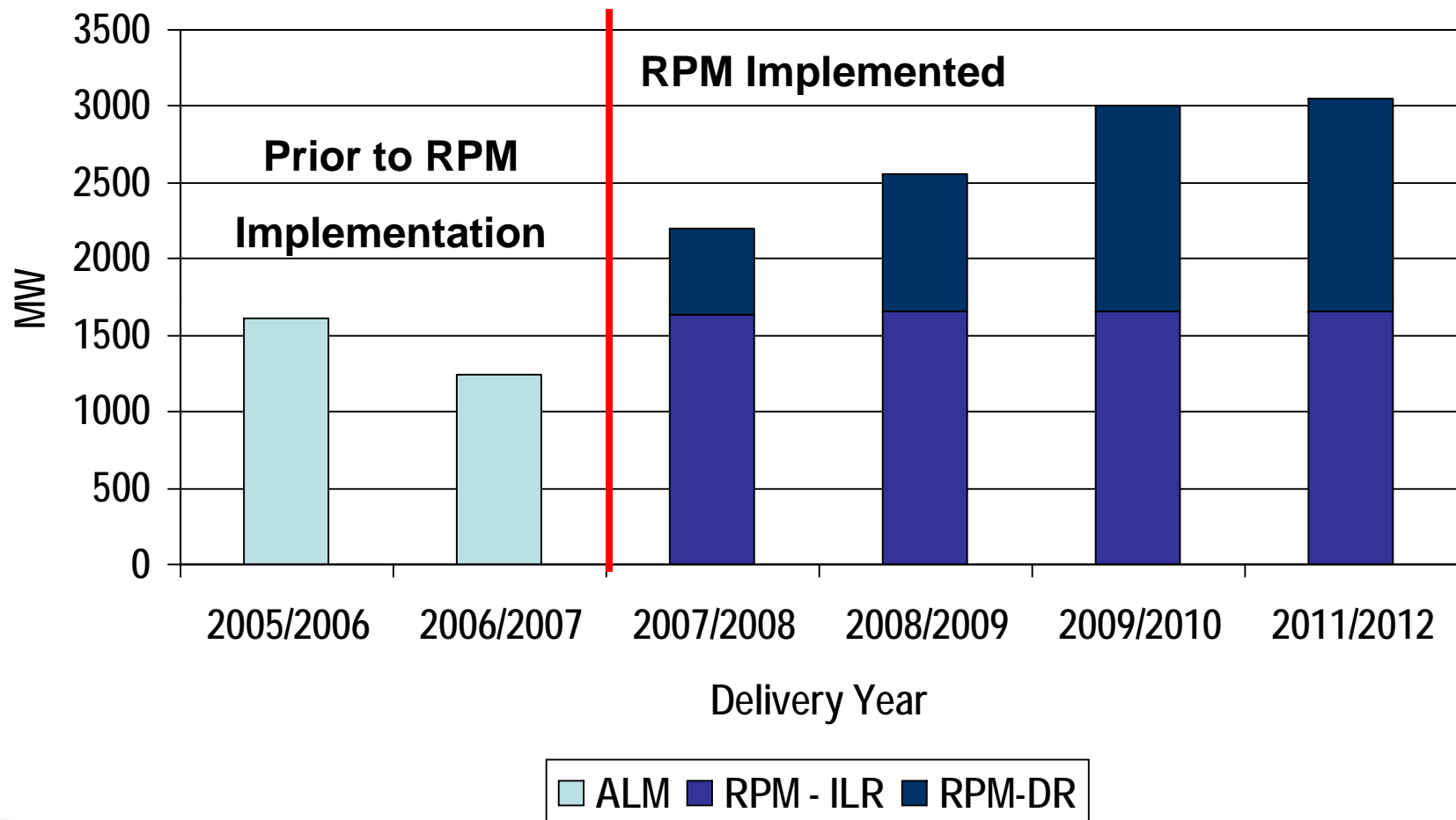


■ Economic ■ Emergency — PJM LMP

- **Load Management (LM)\***
  - Demand Resource (DR)
    - Existing or Planned
    - Bids into the forward RPM auctions
    - Paid the auction clearing price
  - Interruptible Load for Reliability (ILR)
    - Certified to PJM 3 months before the delivery year
    - Paid the final zonal ILR price

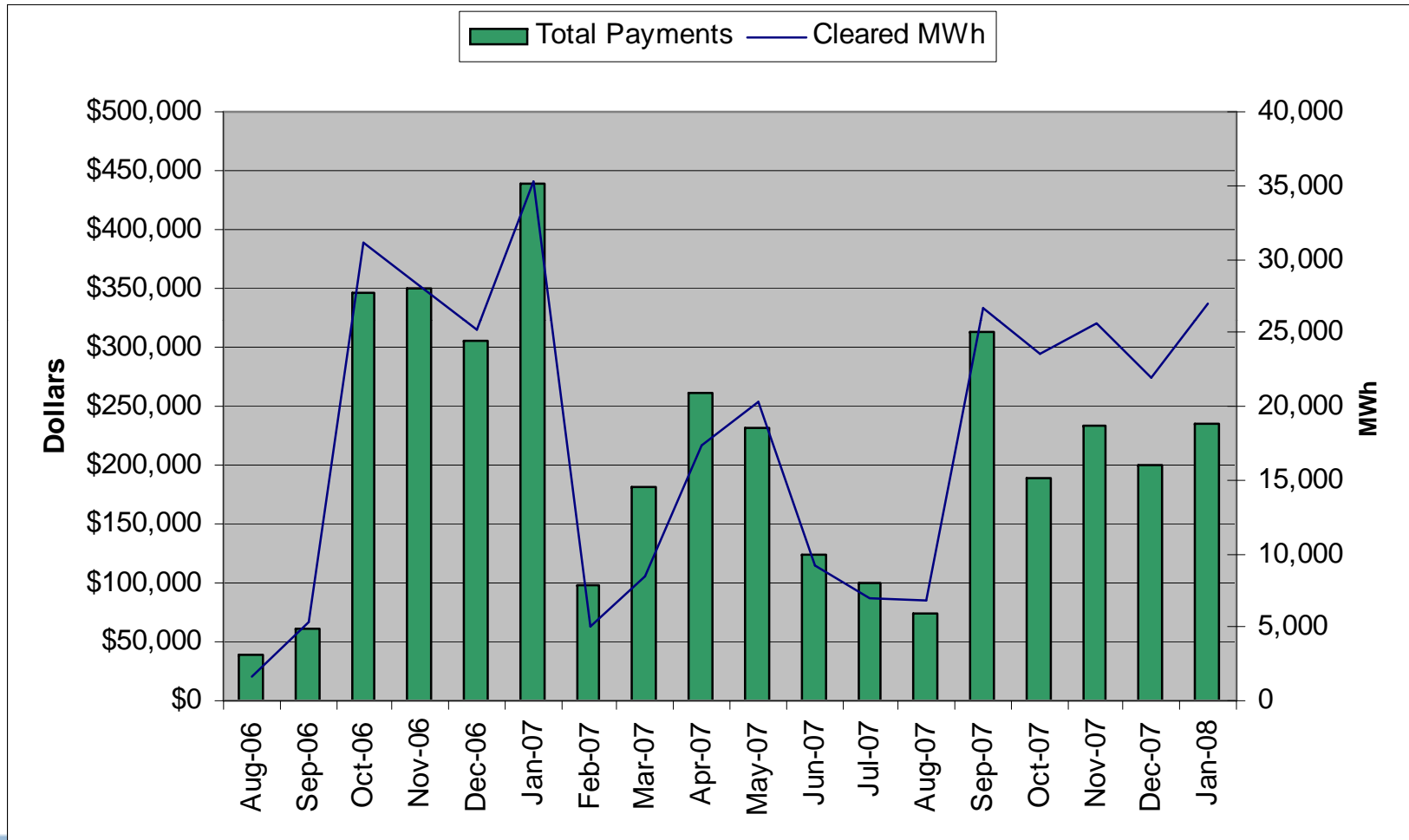
\*LM must respond to no more than 10 events of 6 hours duration between June 1 and September 30 of the delivery year or be subject to penalty

# Demand Response Participation Volume in Capacity Market

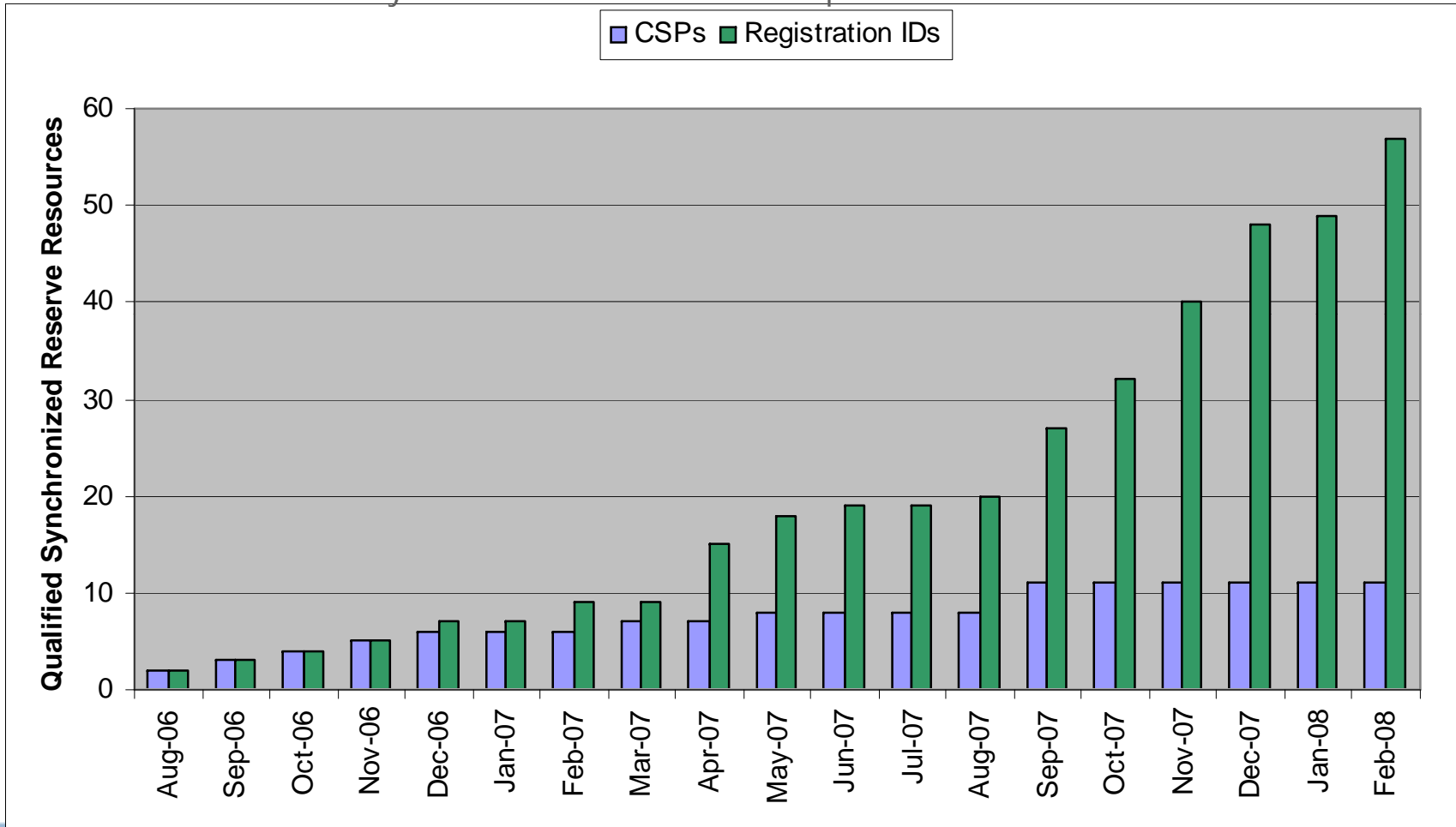


- Demand resource must:
  - be capable of providing a response within 10 minutes
  - have metering infrastructure in place to verify response and compliance (1 minute scan rate)
- Mandatory training for Curtailment Service Provider
- Subject to penalties for failure to perform during an event
- Limited to 25% of the synchronized reserve requirement in each Reserve Zone

### CSP Credits vs. MWh Reductions



## Qualified Synchronized Reserves Participation: CSPs vs. Resources



- Must meet all of the requirements of regulation including real-time telemetry
- Mandatory training for Curtailment Service Provider
- Subject to penalty for failure to perform in response to PJM direction
- Limited to 25% of the regulation requirement in the Reliability First Corporation Council region
- To date no demand resources have qualified for participation in the regulation market

- Demand Response Roadmap
  - Derived from many sources (DR opportunities identified at the Demand Response Symposium, MADRI, state commission DR working groups, PJM DSRWG, and the NARUC/FERC demand response collaborative)
  - Provides a guide for better coordination of demand response development and activity between the wholesale and retail markets
  - Adopted unanimously by the Mid-Atlantic Demand Resources Initiative (MADRI) steering committee in late 2007
  - DR Symposium II held May 12 & 13 focused on AMI/Data Management, Customer Education and Coordination of DR with Planning and the Reliability Pricing Model
  - Five functional areas: dispatch, data management, settlement, planning process, forward price signals

- Efficient communication of critical customer data without comprising customer privacy
  - Lack of transparency and standardization for getting customer authorization
  - Data
    - Peak Load Contribution (PLC) value for ILR and DR
      - PJM requirement to complete calculation by January 1
      - Option to put PLC value in the notes section of the customer's bill
    - Loss Factor
    - G+T (retail rate)
    - Electric distribution company (EDC) account number

- Develop standard customer data consent form for the region
- Maintain the AMI Pilot Matrix for the PJM region
- PJM to provide market participants with updates on the new Load Response application (targeted production date of 6/1/09) and development of Meter Data Service Provider certification and standards

- Speaker's Bureau established by the Mid-Atlantic Distributed Resources Initiative to develop general demand response messages and identify key policy makers and media outlets
- Improve customer's bills to show what they could have saved or did save by choosing DR
- Use text messages, cell phone messages, email, etc. to more quickly and effectively make customers aware of high load/high cost days



- Market design and rules before the Demand Response Steering Committee
- Measurement and Verification key to stakeholder support
- Goal to include Energy Efficiency in the upcoming Base Residual Auction to be conducted in May 2009 for the 2012/2013 Planning Year.