



**SEDCC**  
Smart Energy Demand Coalition

# Smart Energy Demand Coalition

**Jessica Stromback**





# SEDC

Smart Energy Demand Coalition

## Executive Members



## Associate Members



# Our Membership



## Smart Energy Demand Coalition

The **SEDC** is an not-for-profit industry group,  
representing the requirements of programs involving  
**Smart Energy Demand**  
in order to support the 2020 objectives, further the  
development of the Smart Grid and ensure improved  
end-consumer benefits

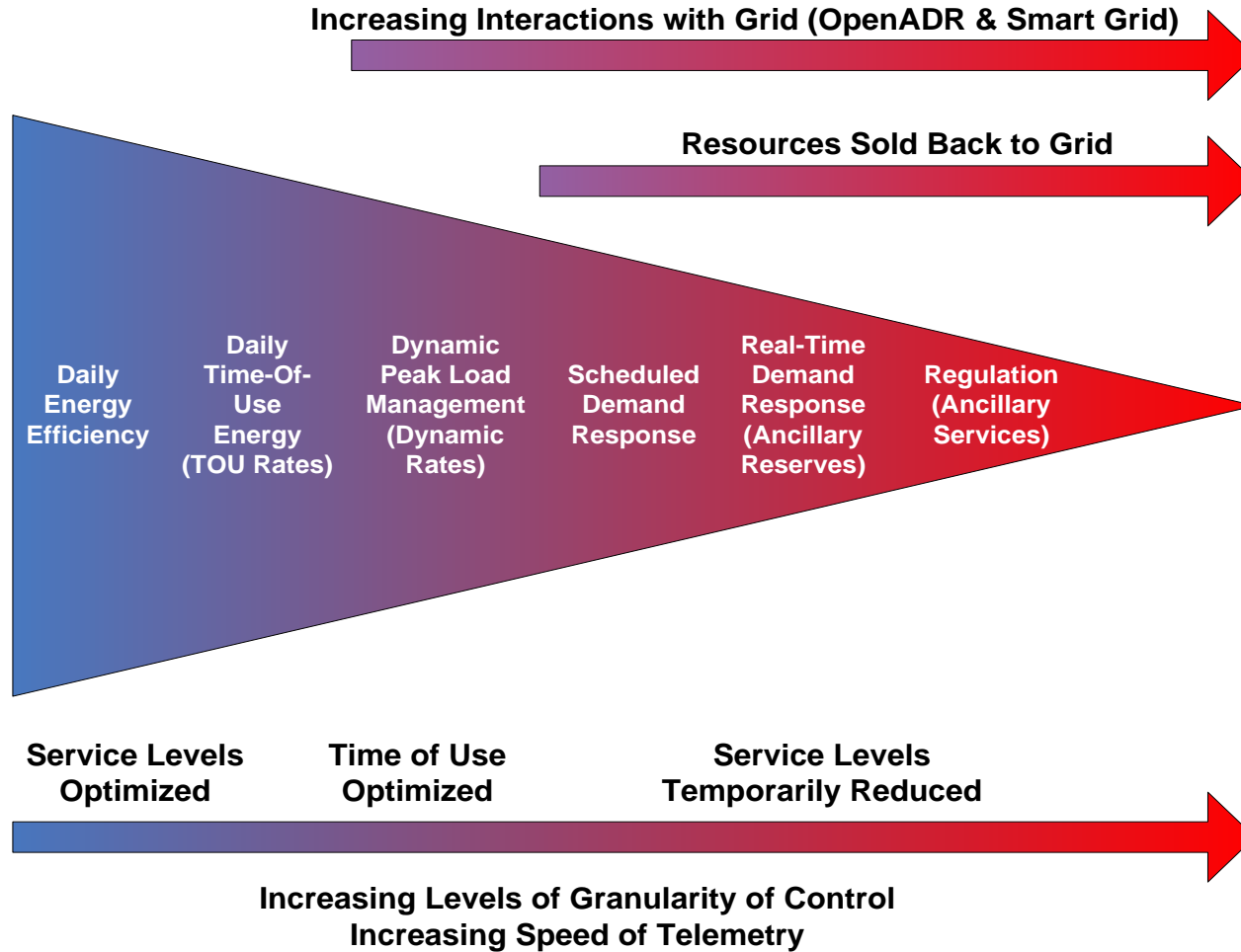
# Summary

## **The SEDC supports the General Principles of the Electricity Balancing Network Code**

- These seem positive and open to the participation of Demand Response, distributed renewables etc.. The challenge now will be to fulfill these goals.
- The SEDC would encourage ENTSO-E not to push all areas of detail onto later stages of the process, as this will make unification and coordination more difficult.
- There are at this point a few Articles which may have unintended consequences for consumers and Demand Response and these should be reviewed.

## State of the Art Integrated, Automated Demand Response for Control Centers

Time Scale of DR  
Source: LBNL



### Demand can participate:

- 2 second, 30 second, 2 min 1 hour, intra-day...



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# Demand Response Back Office

## Identify



Operators see need for event

## Notify



Event calls are made to customers

## Curtail



Customers change their consumption

## Monitor

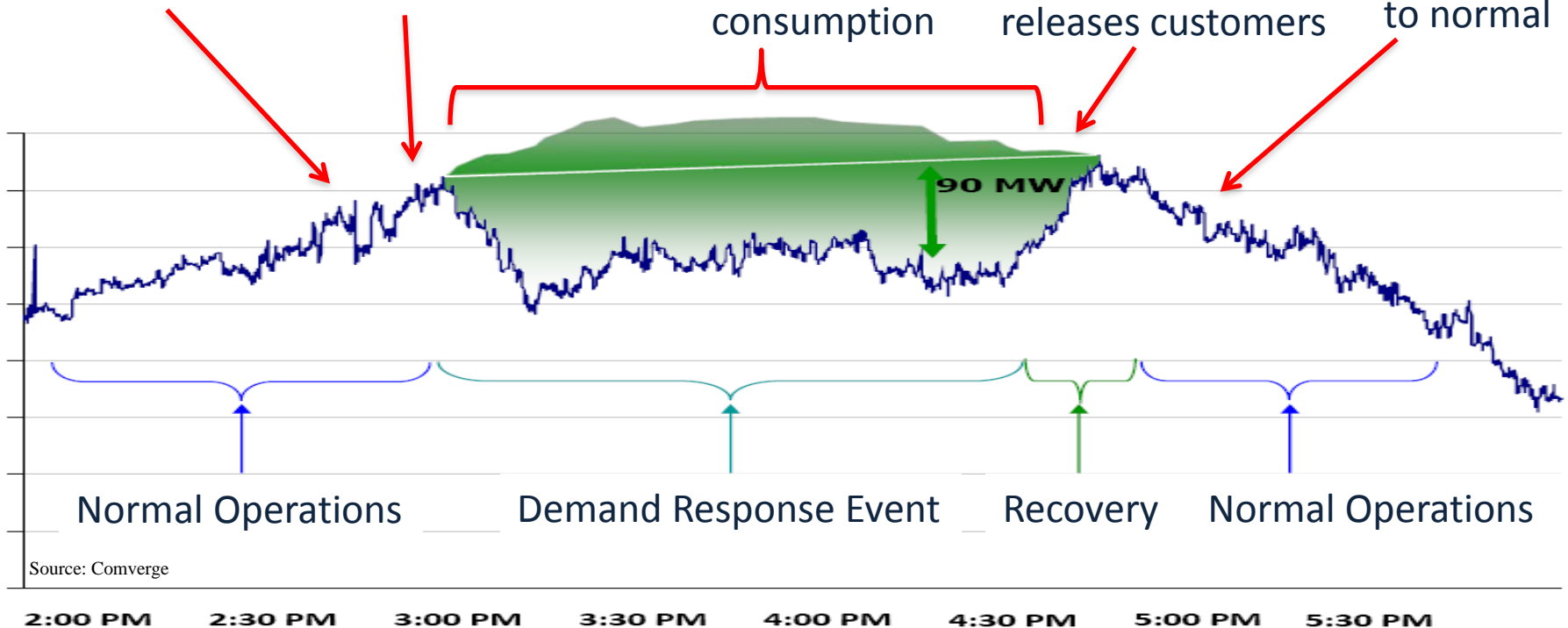


Operators monitor response, then releases customers

## Restore



Customer load returns to normal

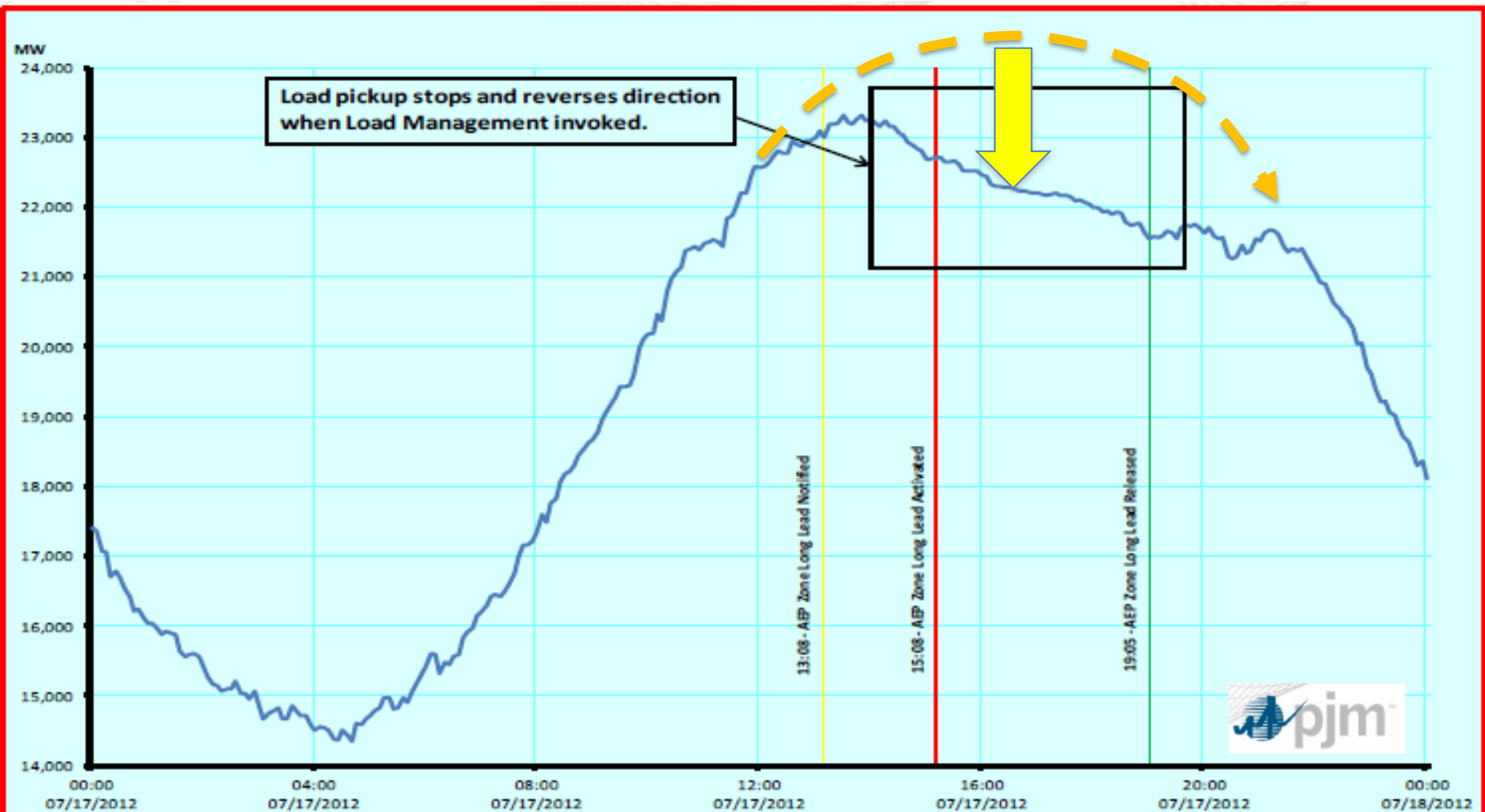


Source: Comverge



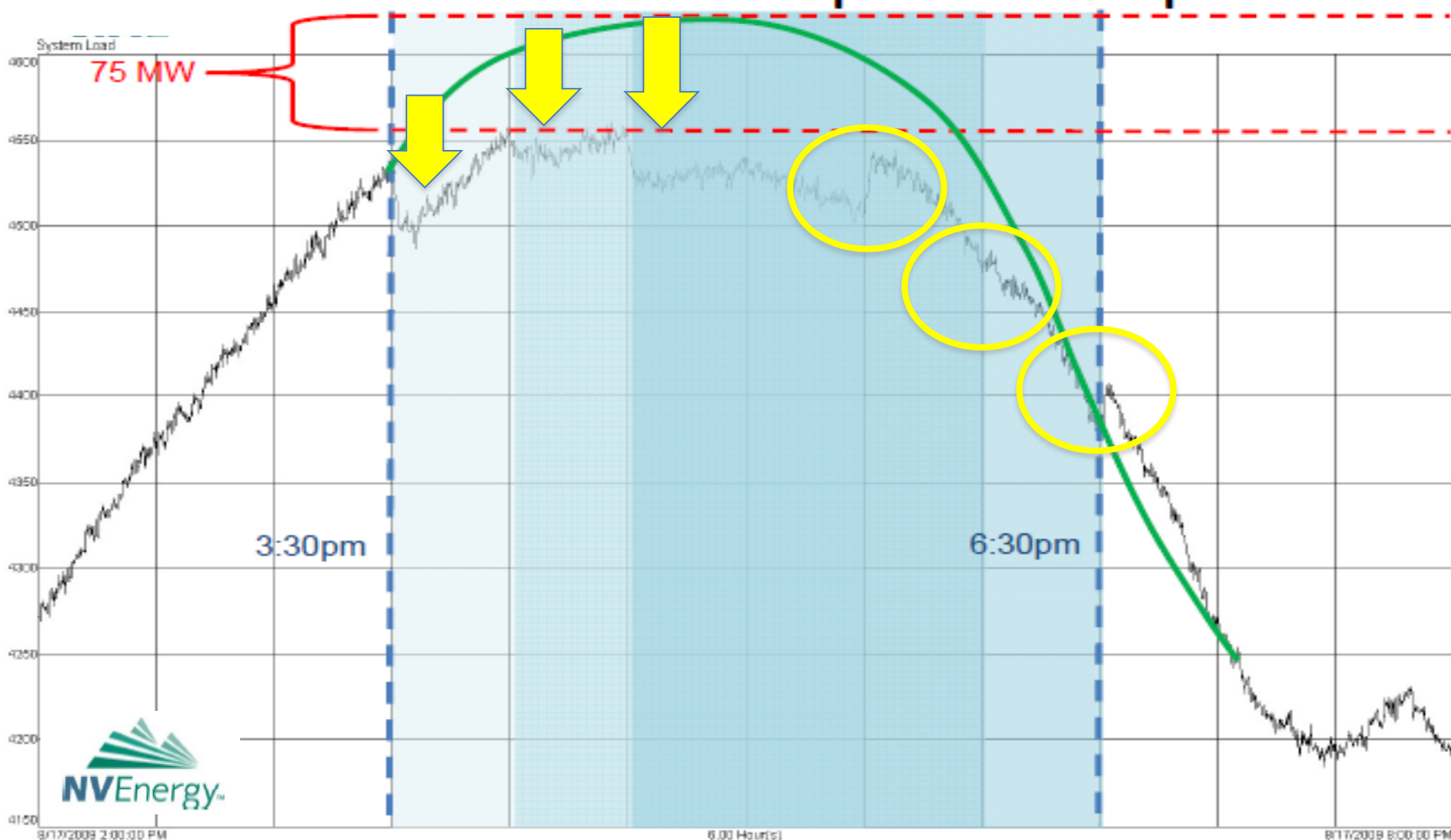
## Emergency Capacity called by operators

7/17/2012: Another 1500MW helps avoid more serious problems



## Energy Economic Energy Dispatch

8/17/2009: Via phasing, 75MW of expensive generation avoided





## Comments on EBSAG

Pooled aggregated load treated as a single resource of a wide variety of loads.

Art 13 2.a

(a) allow for the aggregation of, at least, small demand and/or generation units within a Relevant Area to offer Balancing Services;

- Limiting the type of consumer who can be aggregated increases the difficulty of creating robust and reliable aggregated pools of demand
- It also puts arbitrary limits on consumer and business participation and benefits from Demand Response

**The SEDC would suggest that all consumers can participate in Demand Response through aggregation**

## Comments on EBSAG

### Energy Efficiency Directive: Clarity of tender and participation requirements for Demand Response?

#### Art 14:

4. The standard Balancing Reserve and Energy products shall consist of at least the following standard characteristics:
  - (a) Full Activation Time;
  - (b) minimum and maximum quantity;
  - (c) Deactivation Time;
  - (d) Price of the bid;
  - (e) divisibility;
  - (f) delivery period; and
  - (g) Mode of Activation.

**This minimal list will not enable consumer participation.**

The minimal standard products should not by their very limitations of descriptions exclude Demand Response



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## What is relevant

### **Individual market requirements should be specific and unbundled:**

- Minimum number of kW aggregated capacity needed for participation
- Baseline measurement methodology, and where needed, validation method to assess an activation or measure the energy that was activated.**
- Duration of demand response activation
- Timing of demand response activation
- Notice time for activation of demand response**
- Telemetry requirements**
- Penalty requirement**
- Intervals between activations**
- Tender duration timeframe
- Long enough contract terms to incentivize full engagement
- The option to bid on positive or negative capacity
- Information exchange, when DR capacities are activated, between third parties (like aggregators) and suppliers and DSOs**



## Comments on EBSAG

### Non-discriminatory treatment

#### Art 19

4. The terms and conditions on procurement of Balancing Reserves shall establish that the procurement of Upwards and Downwards Balancing Reserves is done through separated processes, except for Frequency Containment Reserves. Notwithstanding that, each Transmission System Operator shall, be entitled to combine procurement and accept additional bids linking Upwards and Downwards Balancing Reserve products if:
  - (a) it can be demonstrated that combination of Upwards and Downwards Balancing Reserve bids improves Social Welfare; and
  - (b) combined procurement does not hinder participation of Demand Response in the procurement of Balancing Reserves.

**Unclear how this could be done in a manner which does not discriminate against Demand Response?**



THANK YOU

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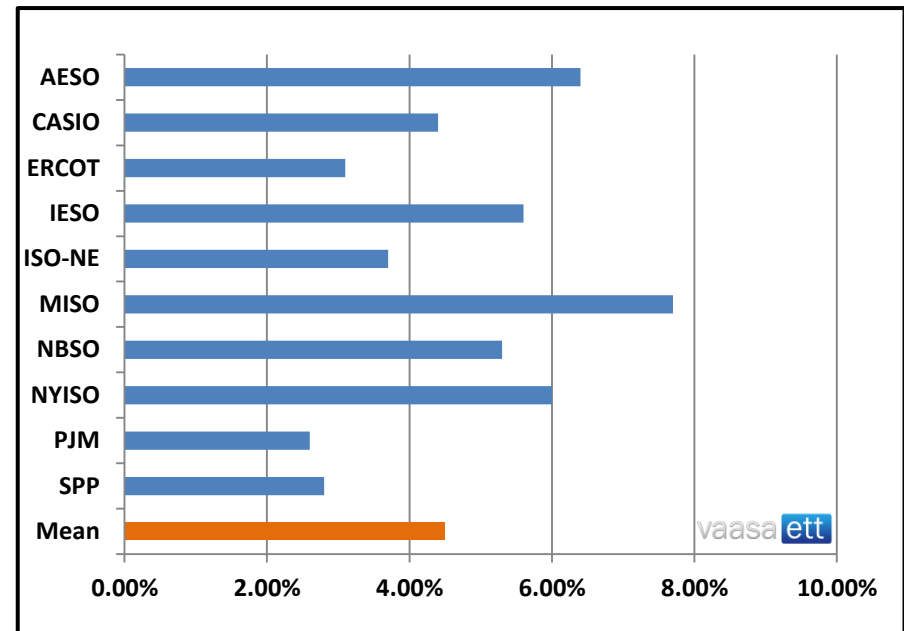
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<http://sedc-coalition.eu/>

## Demand Response = Growing Potential Globally

**Why Care? As of 2012, 29.5 GW of Demand Response**

- **USA Multi Billion \$ Business Direct Revenue + avoided investments Generation, T&D**
- Demand Response “took off” in 2005 with Demand Side access to capacity markets
- Average estimate peak clipping 8-11% US
- Average estimate possible peak clipping 6-13% Europe
- Developing nations looking at DR for peak clipping purposes. India, Brazil, China etc.

**A total of 66 GW were under some form of control, making up 9% of total US national capacity**



**Actual Peak Clipping USA 2010  
C&I + Residential Demand Response.**  
Source: FERC



# Next Generation Market Place

Internal Congestions

More and more complex operational issues to solve on the Grid (AC/DC)

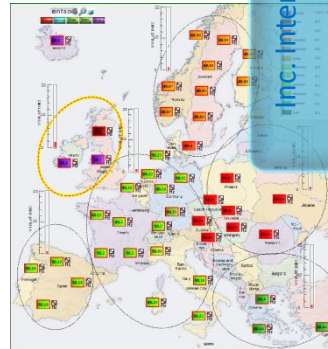
Need to Explicitly take into account models / physics in electricity markets



Inc. Interconnections

More and more need for collaboration

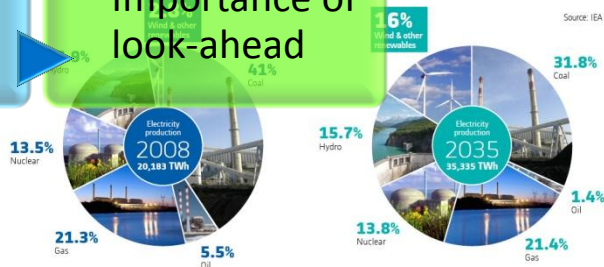
Need Regional coordination for both System and Market operation



Stochastic Power

More and more uncertainties

Need to get Closer to real-time market operation  
Importance of look-ahead



Lack in Capacity

Need to provide incentives to cover investments

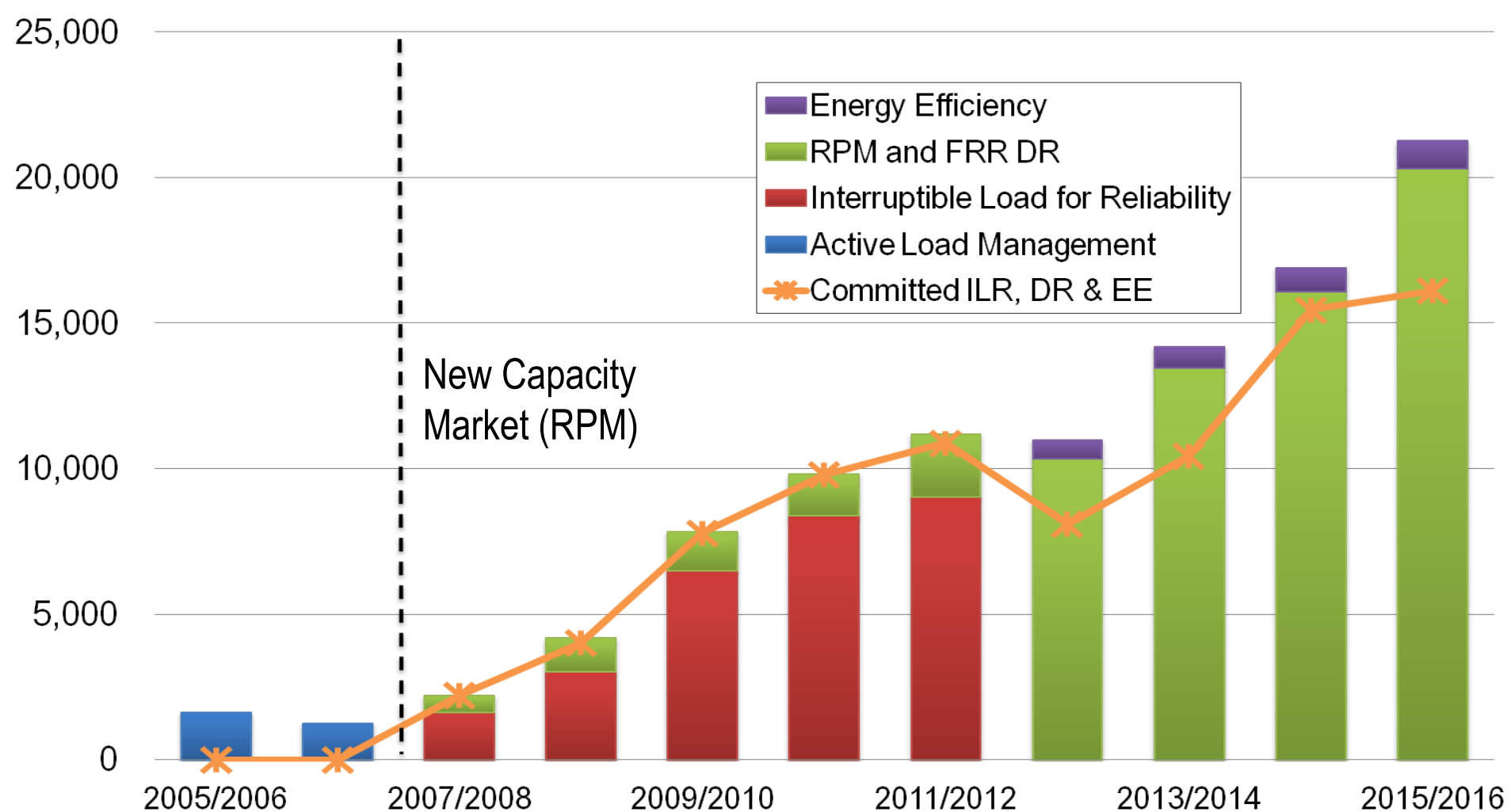
Importance of regulation  
New products (DR, flexibility)  
Capacity markets



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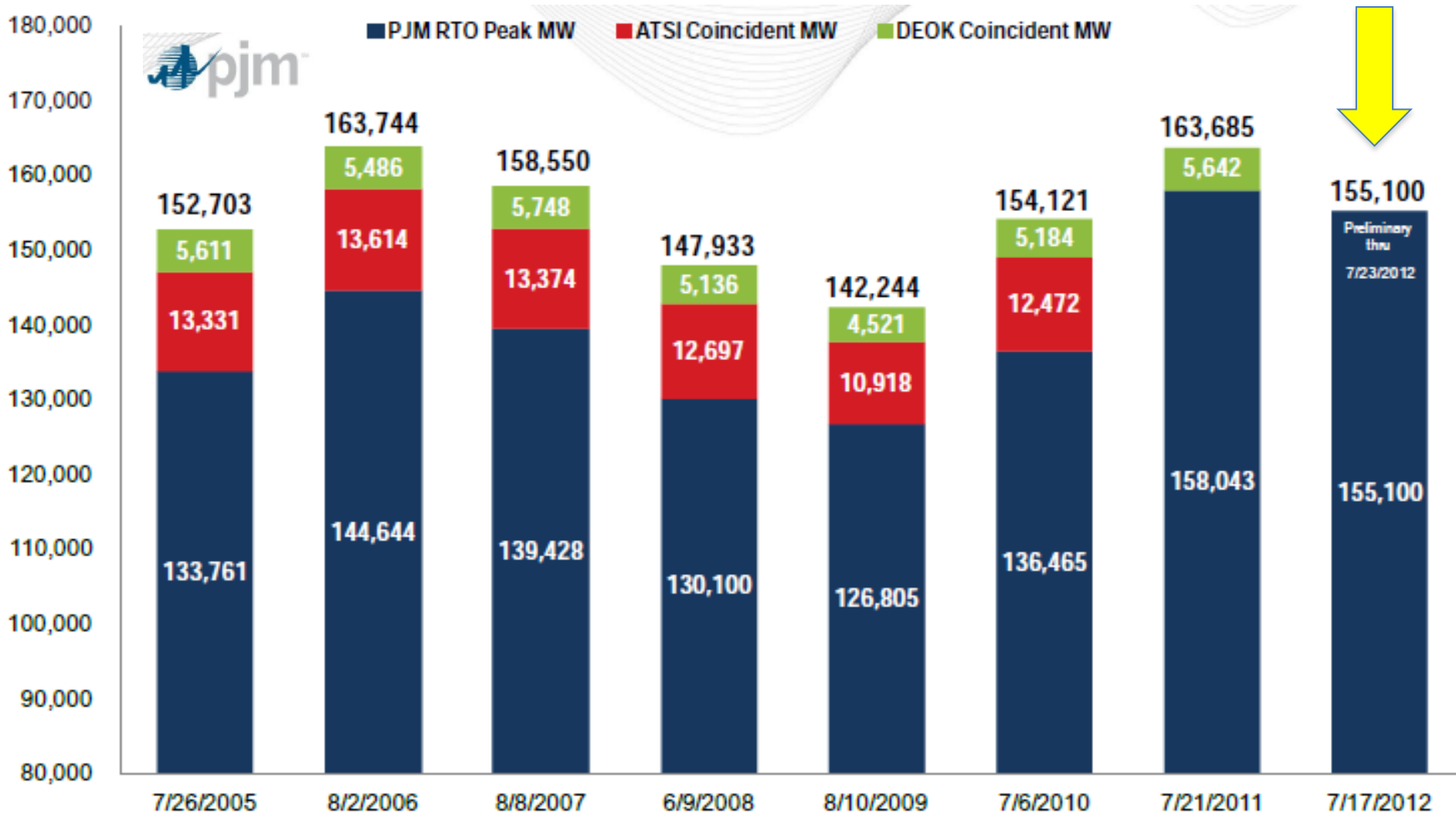
# PJM has over 15GW of Demand Response

35% CAGR since new DR capacity market opened in 2007



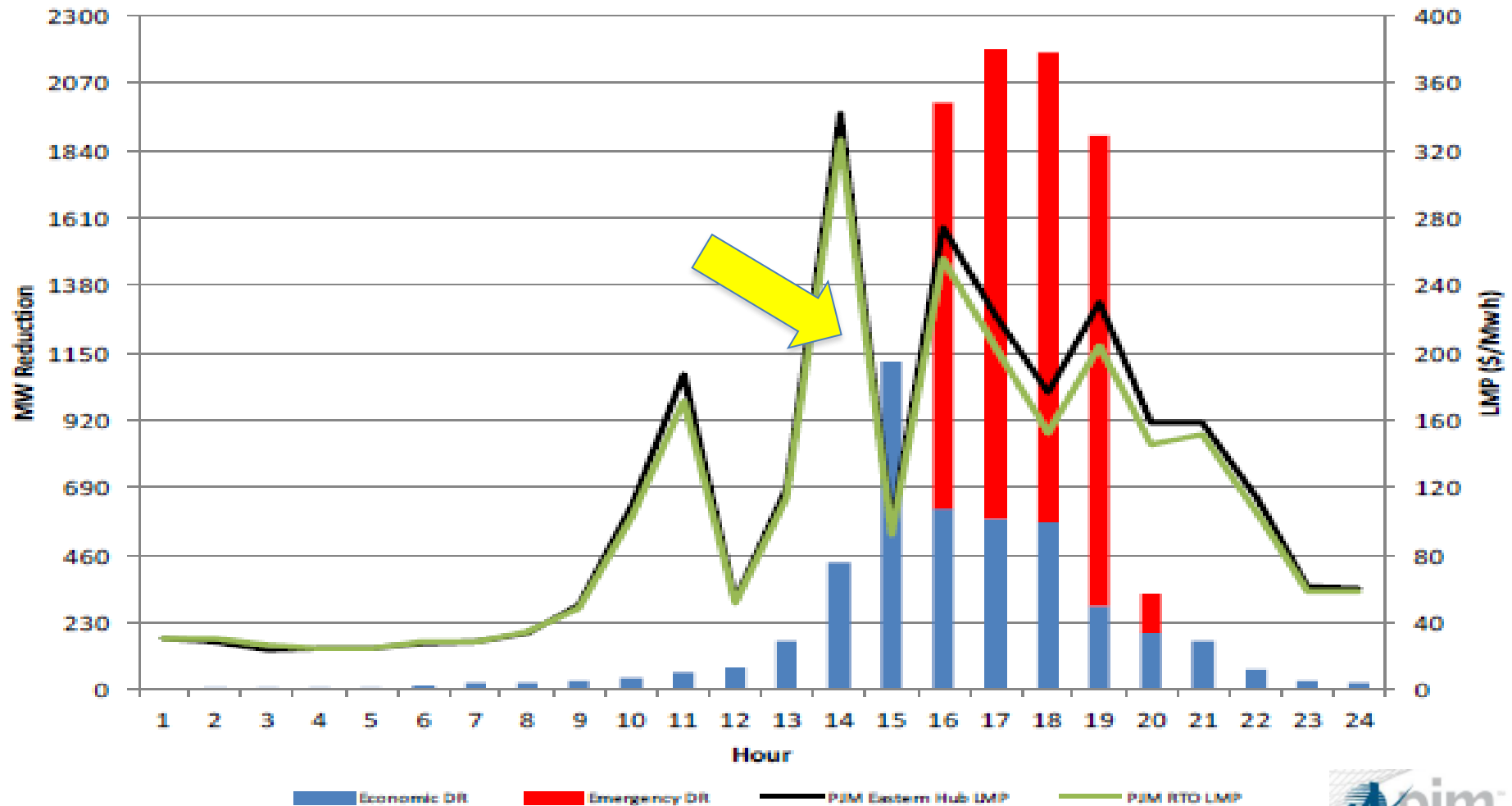
## PJM used DR in a recent heat wave

7/17/2012: Historic peak load of 155GW, with 6GW of gen offline



# PJM Economic Energy was dispatched first

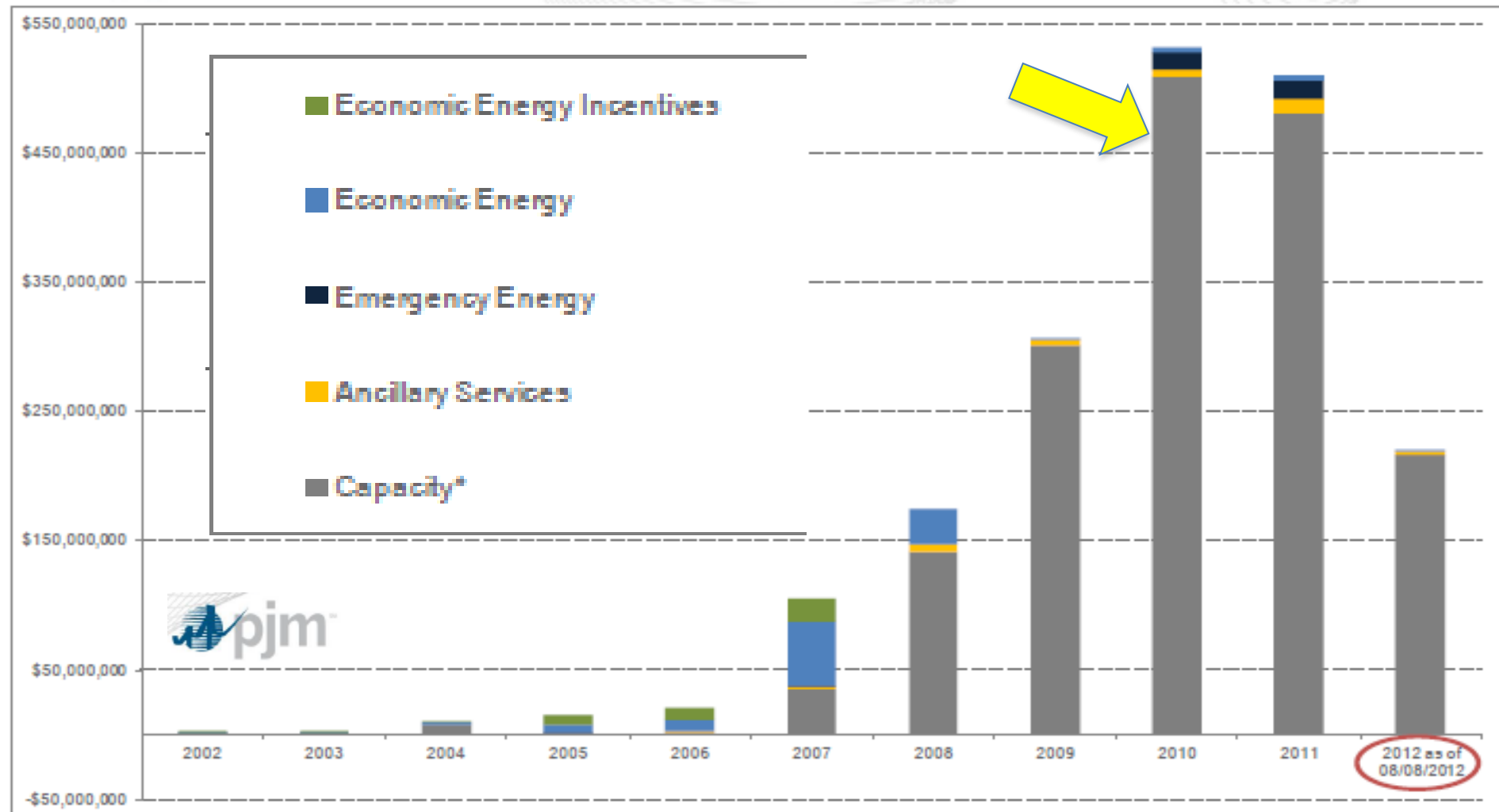
7/17/2012: 1000MW of economic DR helps suppress LMPs



Registered Emergency DR Amounts adjusted for RPM Commitments.  
Note: Actual load reductions are not finalized until up to 3 months after event.

## PJM Demand Response is a \$500M market

Capacity payments represent the vast majority of DR revenues



\*Capacity Net Revenue inclusive of Capacity Credits and Charges.

**NVEnergy has +185MW of DR  
with 250MW more in deployment**

Distributed Energy Resources Portfolio

**Cool Share 2.0**

Residential/Small Commercial

- Deploy Advanced Home Area Network (HAN) on top of Advanced Meter Infrastructure
- 148 MW & 60k Customer Target

**NDPT**

Residential/Small Commercial

- Pilot advanced rates across various treatments
- Meet ARRA Compliance (1-3 MW & 9k Customers)

**Cool Share 1.0**

Residential/Small Commercial

- Programmable Communicating Thermostats (Paging)
- 152 MW & 60k Customers Achieved

**IS-2**

- Emergency DR / Irrigation Pump Control
- 35 MW under control

**Distributed Energy  
Storage**

- Community Energy Storage – Batteries embedded in Distribution Network (Villa Trieste Pilot)
- Develop Optimization Algorithms / Business Case

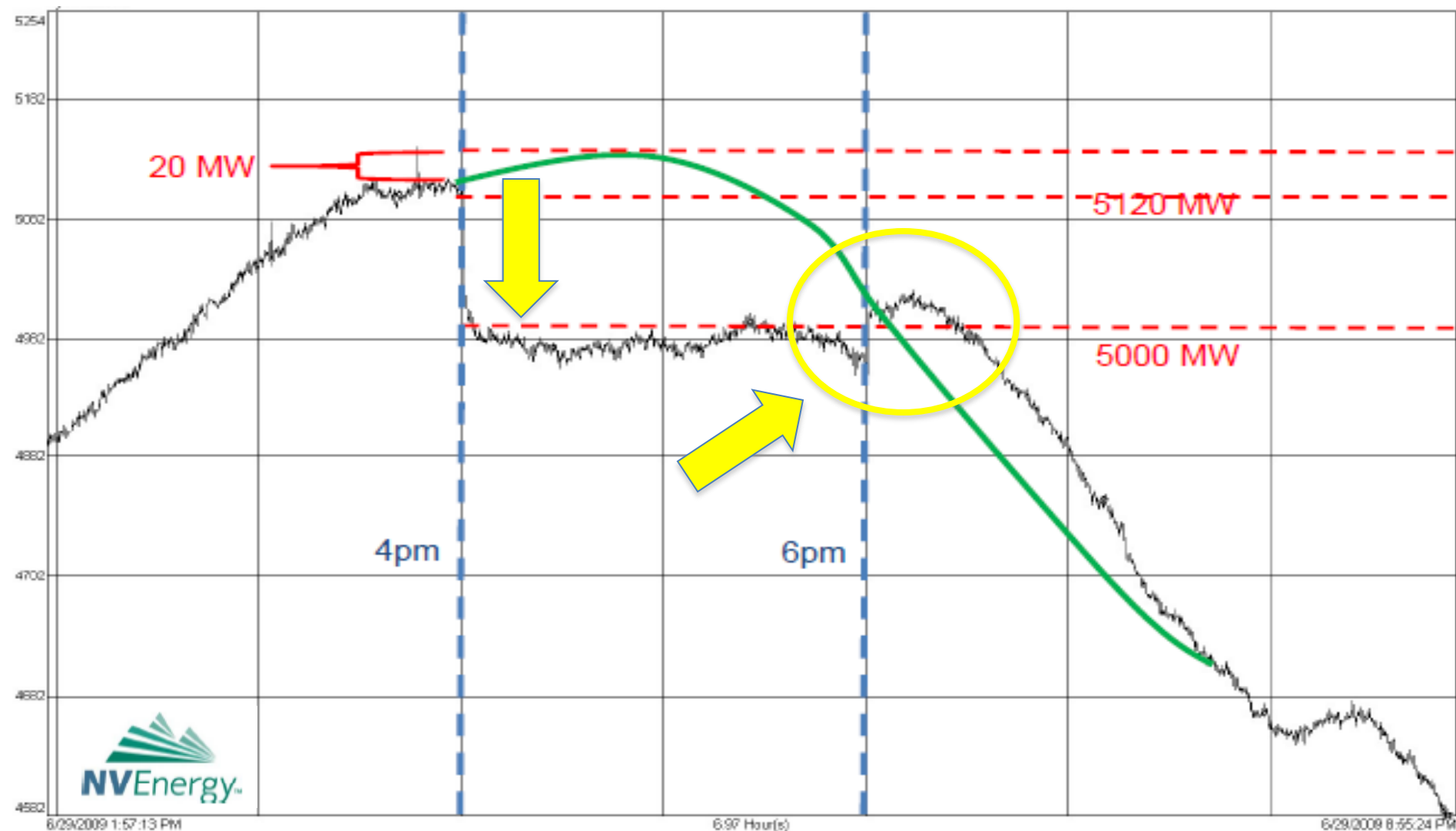
**Commercial &  
Industrial DR**

- Integrated Energy Efficiency & Demand Response
- 100 MW Target???



# NVEnergy Emergency Energy Dispatch

6/29/2009: 5 minute drop of +120MW, sustained for 2 hours



## Cross Border Balancing Markets

SEDC believes these Network Code on Electricity Balancing code can create a **positive, unified framework** within which demand and supply side resources can compete on an equal footing

This will provide balancing resources at the lowest possible cost and increase security of supply

We also support the general principles governing the Articles described in this draft.

**The following position outlines a few of the considerations which are needed to demand side participation in the markets**