



# Developing “*Strategic Reserves*” *a third, cheaper and faster alternative*

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## **A new idea that:**

- Could work as an ancillary service in the energy only market place, or
- As a limited capacity market

**It meets today’s needs  
quickly, cheaply and  
helps us prepare the  
grid for the future**



# What will we need in the future?



- A responsive reserve system that is:
  - Fast acting
  - Able to start and stop frequently
  - Targeted just to meet needs
  - Low cost
  - Quickly implemented
  - Easily and regularly updated
  - Includes out of ERCOT resources

## To balance a portfolio that is shaped by:

- Demand management
  - ✦ Load acting as reserves
  - ✦ ERS
  - ✦ Smart meters
  - ✦ Smart appliances
- Storage
- Distributed generation
- More coastal wind
- Wind delivered by CREZ lines
- Grid Interconnection
- Fast acting gas peakers

# A load curve that is shaped by load



- Where large quantities of loads drop based on market price signals
  - Controllable Load Resources
  - Loads in SCED
  - 10 & 30 Min ERS (Emergency Reserve Service)
  - Weather sensitive loads
- Loads reduced by munis and coops as part of their load shedding programs
- Loads reduced by customers responding to smart meters
- Smart appliances



# A load curve reduced by storage



## Storage publicly announced

- Apex has publicly announced 317 MW of CAES in East Texas and Dresser-Rand has publicly announced that Apex has ordered the equipment and posted the financial security to back up the order.
- Chamisa has publicly announced 270 MW of CAES in the Panhandle
- Duke has the 36 MW lead-acid battery online now at Notrees.

**All those publicly announced projects total 623 MW by Summer 2016.**

- Storage going in as UPS systems on customer premises. ~300-500 MW (mostly Li) by 2018 .
- **By 2020** up to 1 GW of storage online -High estimate 1.5 GW of storage online



A load curve responding to distributed generation:



Increases in distributed solar  
300 MW in operation  
600 MW by 2016  
2,500-10,000 MW estimated by 2020

Possible Geothermal Development

# A load curve responding to large scale renewables



The Brattle Group said that under the "more likely" cases they analyzed, **renewables will increase from about 10% to between 25% and 43% of ERCOT power generation by 2032**

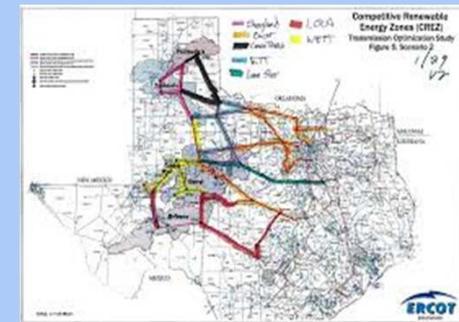
The last of the CREZ lines was energized last week. CREZ initiative involved constructing 3,600 miles of transmission lines to carry 18,500 megawatts of west Texas wind generation to major load centers in ERCOT.

## Wind

Wind capacity under construction west	5,300
Wind capacity under construction costal	1,928
Wind capacity with signed interconnection agreements	18,041
Wind capacity with interconnection study in progress	22,693
Estimated 2016 new additional capacity total	7,228

## Solar

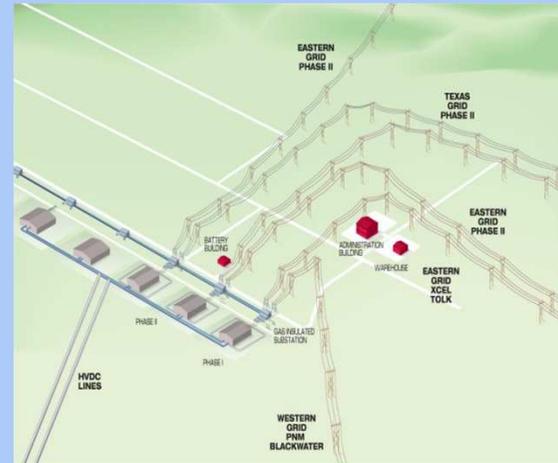
Solar capacity with signed interconnection	600 MW
Solar capacity in planning	1,759



# A grid that will utilize grid interconnections



- Grid inter connections can add 4,650 of reserves and will lead to the beginnings of a national renewable grid
  - Tres Amigas 1,500
  - Southern Cross 3,000
  - Railroad 150

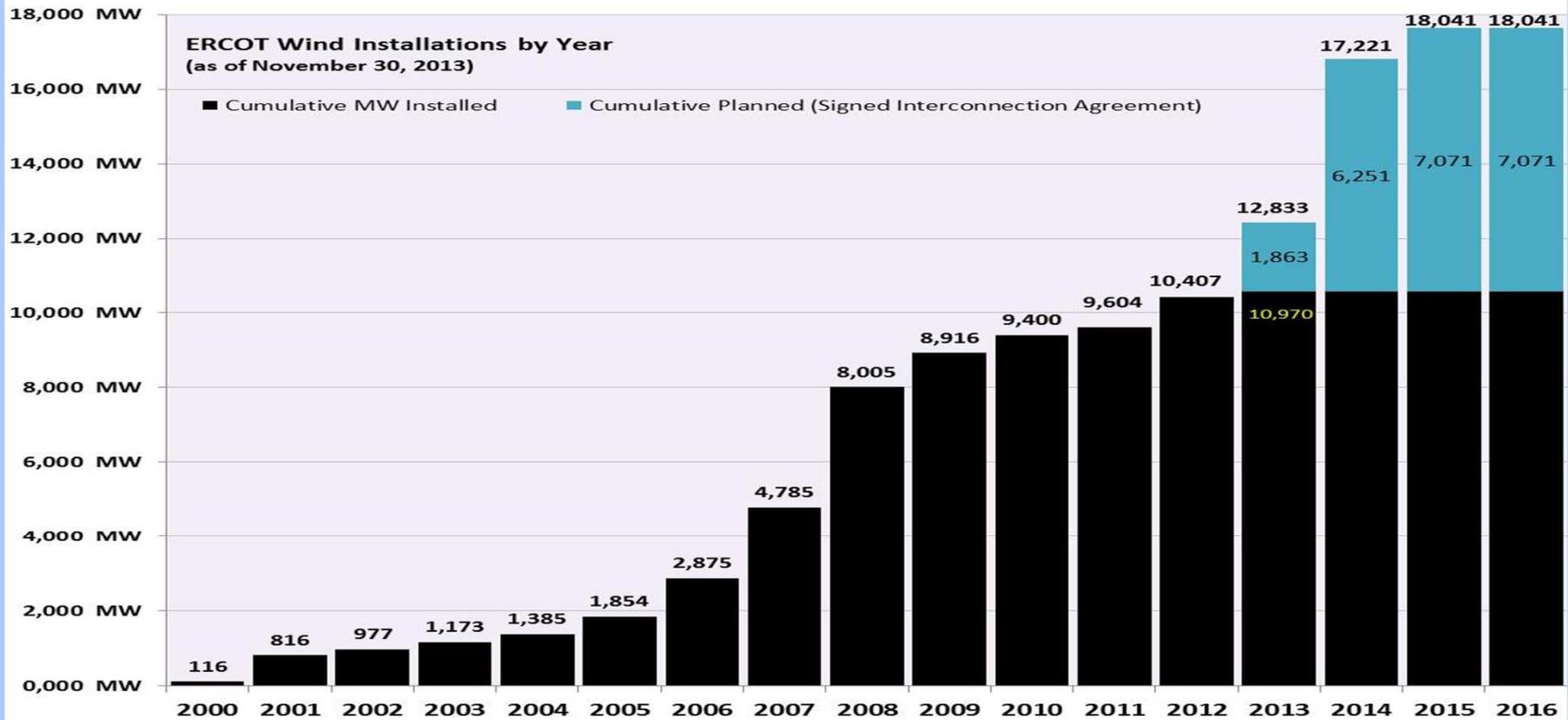


Tres Amigas



Southern Cross

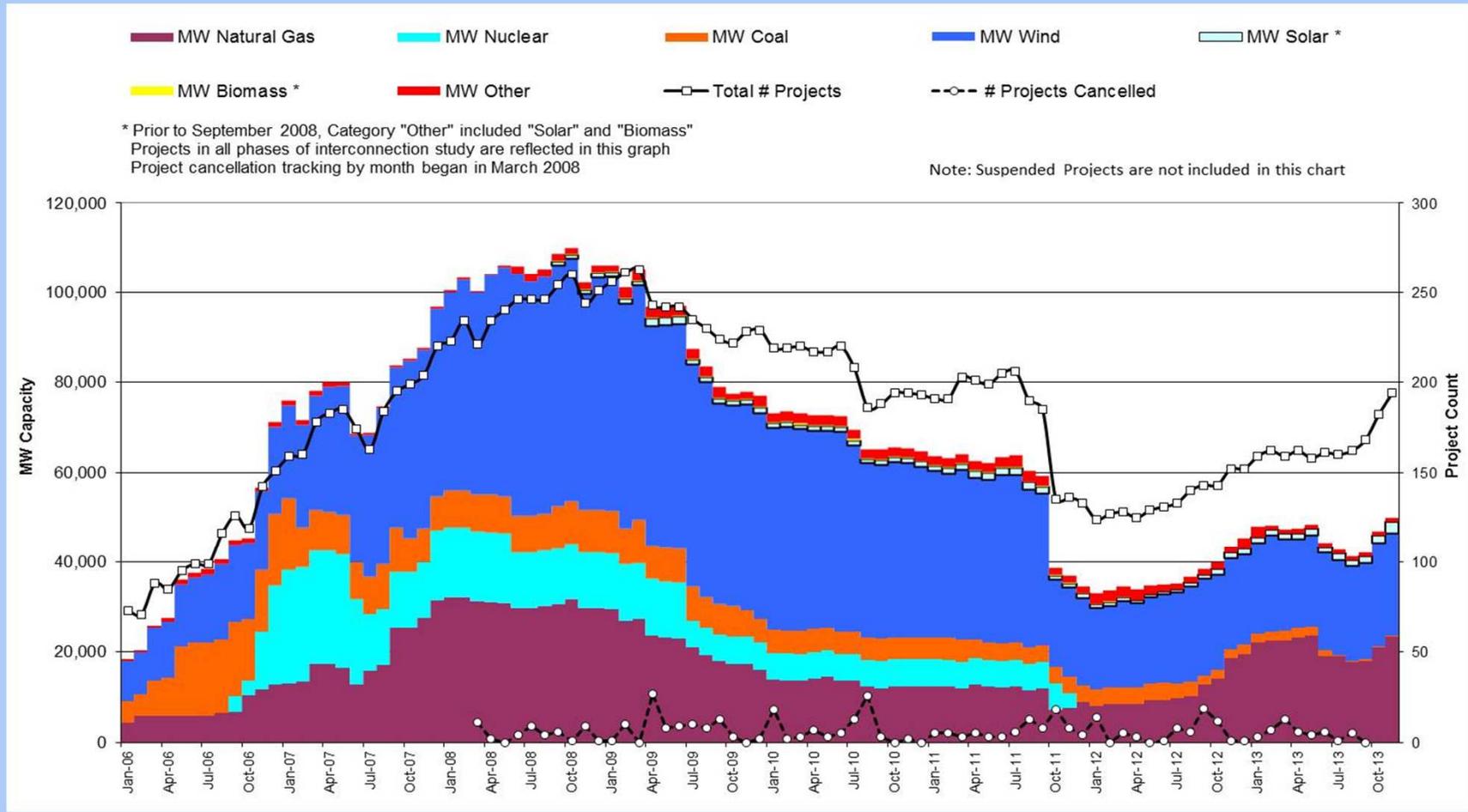
# Wind Installations



The data presented here is based upon the latest registration data provided to ERCOT by the resource owners and can change without notice. Any capacity changes will be reflected in current and subsequent years' totals. Scheduling delays will also be reflected in the planned projects as that information is received.

This chart reflects planned units in the calendar year of submission rather than installations by peak of year shown.

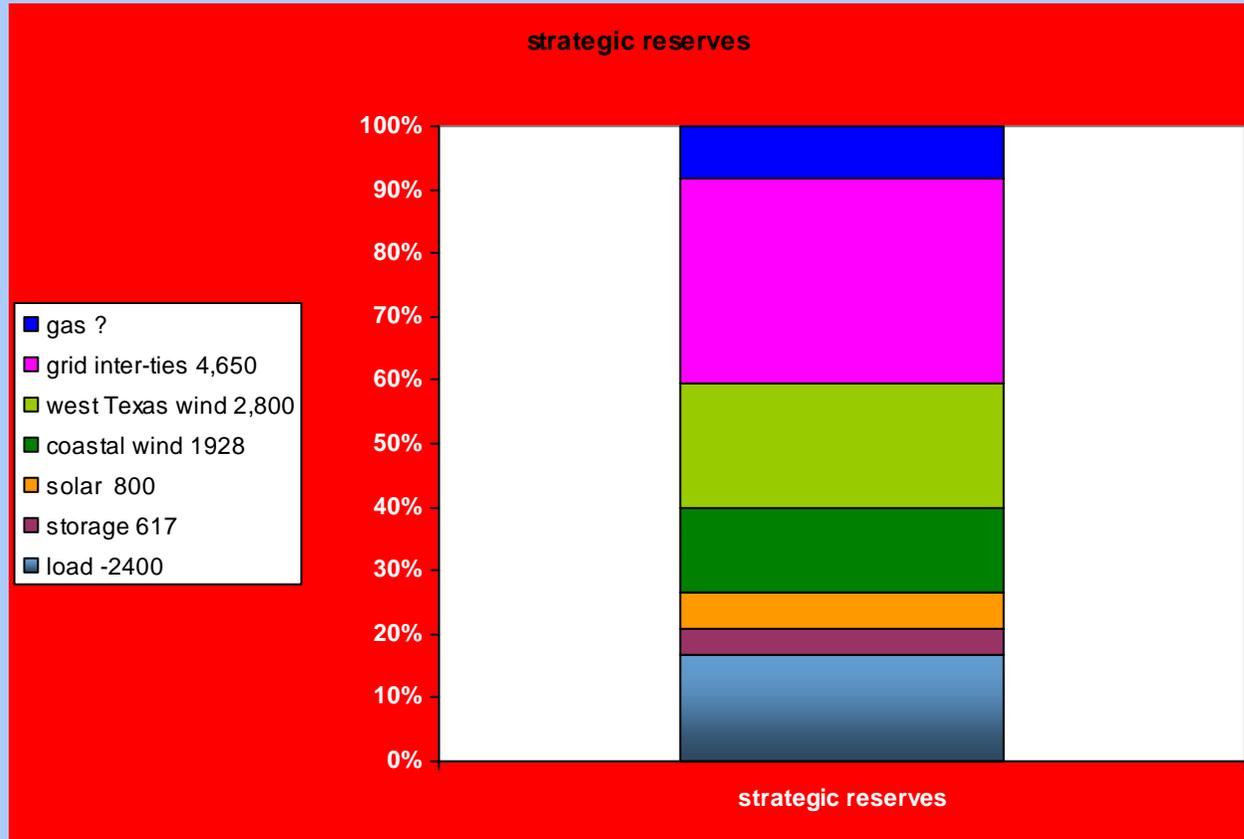
# ERCOT New Project Development curve



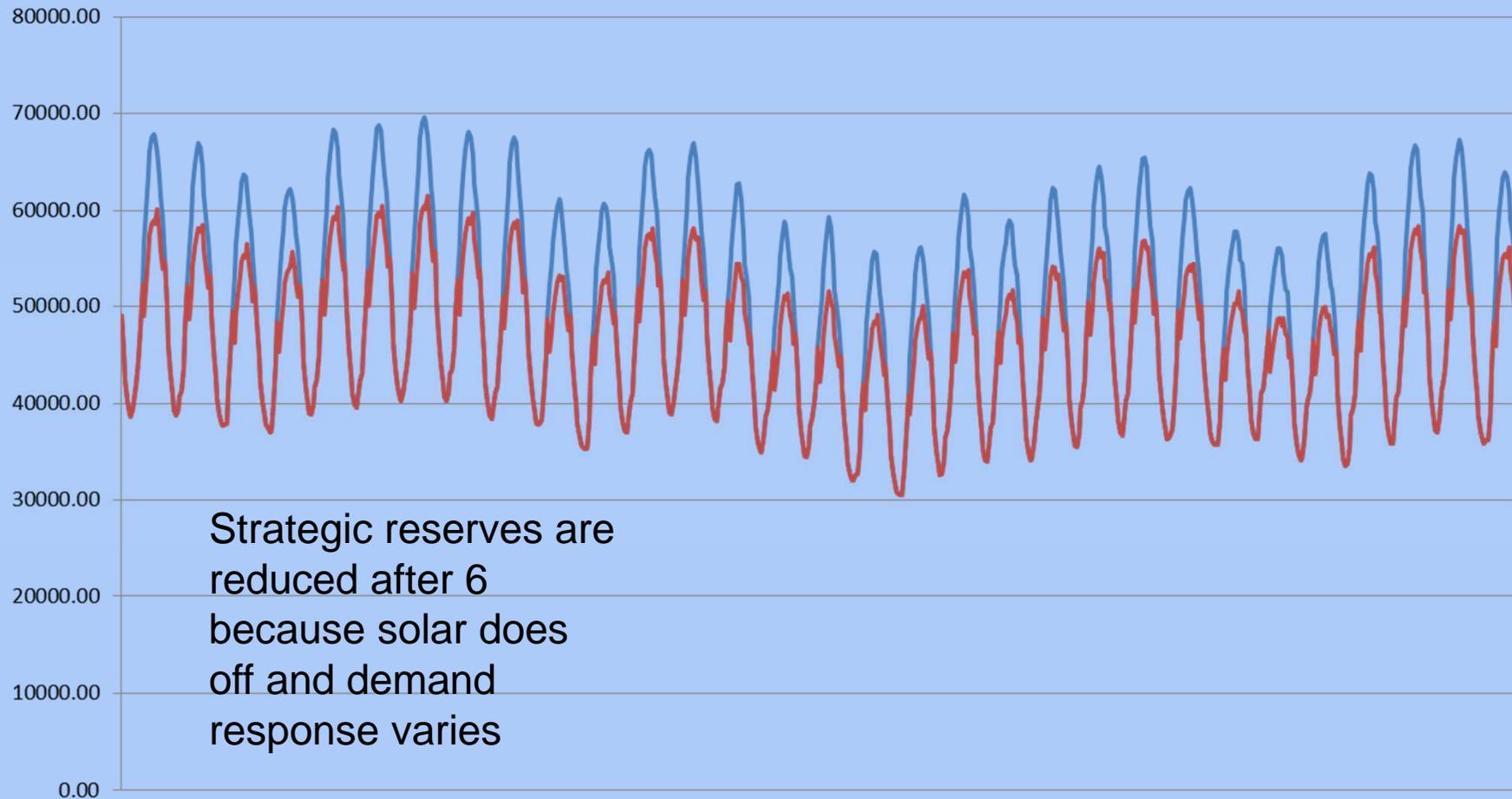
## How much could strategic reserves reduce load by 2016 ?



# Strategic Reserves -18.8% +



# August 2016 load estimate minus load management, wind, solar, storage and interconnections



# How could this work as an Ancillary Service?

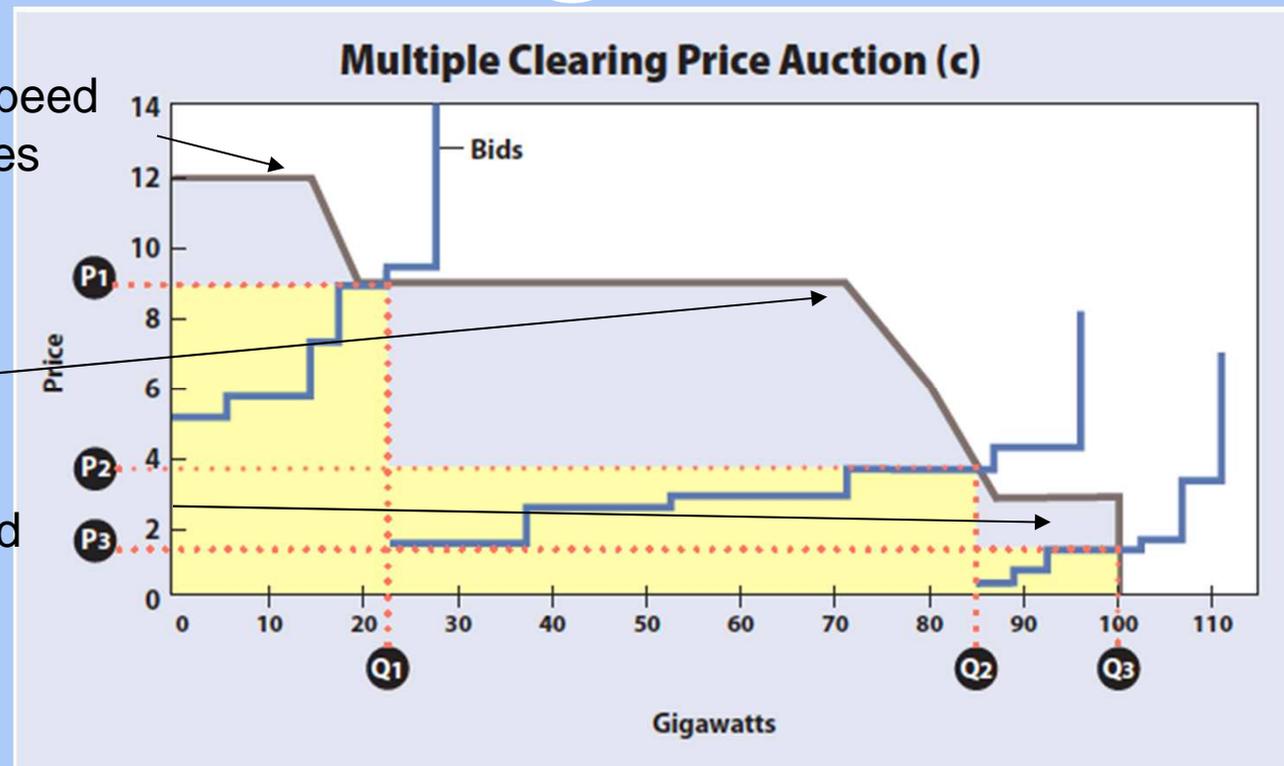


- ***A NPRR to provide added reserves has been discussed at ERCOT as an ancillary service***
- Strategic Reserves could be
  - A day ahead product
  - Or as a 3-5 year product.
- Advantages
  - It can be rapidly and regularly changed
  - It only pays for services needed
  - Reduces litigation

# As a an Apportioned Capacity Market Segmented by Speed



High speed reserves  
Moderate speed reserves  
Base load



# Why we oppose the capacity market



## **It won't solve the short term problems:**

- It will take till 2016- 18 to set up a capacity market .... and then 3 years to build needed generation
- It costs too much:
  - Commissioner Anderson estimates \$396 per meter per year
  - Costs were \$140 per year per consumer in PJM-
    - ✦ 94% that goes to pay for old generation- not new plants built
  - It has led to significant overcapacity
- It hasn't resulted in new generation being built in other ISOs
- It will likely lead to litigation
  - Other ISOs are facing the same difficulties in financing plants
  - In PJM just 6% or \$2.6b of the \$46b capacity market went to building new capacity
- It props up the old dirty and inefficient plants
  - Old coal and mothballed gas are big winners
  - Losers are new, efficient gas, renewables, demand side management programs
- It won't be enough to bail out EFH
  - Capacity payments will just go to pay off the debt and will only meet 1/3 of shortfall

# Summary



- **Strategic Reserve market can:**
  - Provide rapid responding reserves
  - Be modified quickly and regularly
  - Pays only for what's needed now thus reduces costs
  - Reduces regulatory dilemmas
  - Build on litigation free ancillary service
  - Anticipates future grid
  - Be uniquely Texan