

# *Technical Advisory Committee*

Presentation to the  
ERCOT Board of Directors  
January 20, 2009

# *TAC Report Summary*

- 8 PRRs for Approval
- 8 NPRRs for Approval
- 1 SCR for Approval
- Summary of PRR and NPRR activity to date
- Wind Integration Update
- Notification of NERC representatives
- Hurricane Ike Report
- TAC Goals

# *Protocol Revision Requests*

PRR 753 PRR Appeals Process

PRR 778 Clarification of Authorized Representative

PRR 779 Transparency for PSS and Full Interconnection  
Studies

PRR 780 Extending Black Start Service Bid Timeline

PRR 781 EILS Self-Provision Formula Correction and  
Clarification

PRR 783 Elimination of Non-ERCOT LSE Fee - URGENT

PRR 788 Ramp Rate Limits for Existing WGRs

PRR 792 Revised Renewable Portfolio Standards Allocation  
Process, Pursuant to P.U.C. Subst. R. 25.173 - URGENT

# *PRR 753* – *PRR Appeals Process*

Purpose	Provides a more structured process for parties to appeal PRS decisions to TAC and adds reference to Board Policies and Procedures for appeals of TAC decisions to the ERCOT Board.	
Benefit	A structured and transparent appeals process creates predictability for all parties and ensures due process	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present.	
Effective Date	Feb. 1, 2009	

# PRR 753 – PRR Appeals Process

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *PRR 778* – *Clarification of Authorized Representative*

Purpose (ERCOT)	Codifies “Authorized Representative” in Protocols and clarifies the need to designate an Authorized Representative.	
Benefit	Protocols do not currently define “Authorized Representative”.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	February 1, 2009	

# *PRR 778* – *Clarification of Authorized Representative*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *PRR 779 – Transparency for PSS and Full Interconnection Studies*

Purpose (PSEG Texas, IGEN)	Provides transparency to status of Power System Stabilizer (PSS) equipment and interconnection requests.	
Benefit	Will assist in updating cases for stability limit studies and provide insights into types and locations being considered for new generation for modeling purposes.	
Market Impact	Provides access to information.	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC recommended approval with 1 abstention from the Cooperative Segment; all Market Segments were present	
Effective Date	February 1, 2009	



# *PRR 779* – *Transparency for PSS and Full Interconnection Studies*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *PRR 780 – Extending Black Start Service Bid Timeline*

Purpose (ERCOT)	Changes Black Start Service bids from a 1 year period to a 2 year period.	
Benefit	Provides market participants more time to prepare and train their system operators.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	February 1, 2009	

# PRR 780 – *Extending Black Start Service Bid Timeline*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *PRR 781 – EILS Self-Provision Formula Correction & Clarifications*

Purpose (ERCOT)	Corrects settlement equation terms to ensure that formulae are consistent with EILS intent; clarifies EILS Self-Provision option where less than 1000 MW has been offered.	
Benefit	Provides certainty in settlement for QSEs/EILS Resources offering into EILS through self-provision.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	February 1, 2009	

# *PRR 781 – EILS Self-Provision Formula Correction & Clarifications*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *PRR 783 – Elimination of the Non-ERCOT LSE Fee*

Purpose (AEP, IOU)	Eliminates language within Section 9.7.3 which describes the Texas Non-ERCOT Load Serving Entity Fee.	
Benefit	Eliminates a fee of approximately \$250K being charged to a single Market Participant for systems which are already fully depreciated.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	TAC recommends earliest possible effective date and implementation date	

# PRR 783 – *Elimination of the Non-ERCOT LSE Fee*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *PRR 788 – Ramp Rate Limits for Existing WGRs -- URGENT*

Purpose (FPL Energy, IGEN)	Proposes a requirement that certain existing Wind-powered Generation Resources (WGRs) limit the unit ramp rate to 10% per minute of their nameplate capacity ratings as registered with ERCOT.	
Benefit	Enhance system reliability by limiting frequency deviations associated with near-instantaneous ramping of WGRs.	
Market Impact	Likely positive market impact associated with decreased need for Regulation Service procurement and deployment to compensate for variability in WGR production	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC recommended approval with 1 abstention from the Independent Power Marketer Segment; all Market Segments were present	
Effective Date	February 1, 2009	



## *PRR 788 – Ramp Rate Limits for Existing WGRs*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

***PRR 792– Revised Renewable Portfolio Standards  
Allocation Process, Pursuant to PUC Subst. R.  
25.173 -- URGENT***

Purpose (TIEC, Consumer)	Modifies Protocols to comply with PURA §39.904 and PUC Subst. R. 25.173, Goal for Renewable Energy	
Benefit	Implements PUC rule and accompanying order as adopted December 4, 2008.	
Market Impact	Modifies the Renewable Portfolio Standard (RPS) allocation process to comply with PURA and PUC rules	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments	
Effective Date	February 1, 2009	

*PRR 792– Revised Renewable Portfolio Standards  
Allocation Process, Pursuant to PUC Subst. R.  
25.173 -- URGENT*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *Nodal Protocol Revision Requests*

NPRR 140 Revision to CRR Obligation Margin Adder

NPRR 142 EECF Media Appeal Change

NPRR 152 References to Section 22 Attachments

NPRR 154 Correction of Entities Able to Bid for Point-to-Point Obligations in the Day Ahead Market

NPRR 155 Clarification of Authorized Representative

NPRR 159 Resource Category Startup Offer Generic Cap for Wind Resources

NPRR 160 Elimination of non-ERCOT LSE Fee

NPRR 162 Change the Sign Convention of Net Real Power, LPC and MPC of Load Resources (Formerly, Change the Sign Convention for Load Resources)

# *NPRR 140*– *Revision to CRR Obligation Margin Adder*

Purpose (J Aron, IPM)	Revises the margin adder for Point-to-Point (PTP) Obligations to a value of “x” to be determined by the TAC Subcommittee process.	
Benefit	Will facilitate purchase of PTP Obligations which is necessary for appropriate transmission risk hedging in the nodal market.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval with initial values set as recommended by WMS; all Market Segments were present.	
Effective Date	Upon Texas Nodal implementation; no incremental impact to nodal budget or schedule	

# NPRR 140– *Revision to CRR Obligation Margin Adder*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *NPRR 142–EECP Media Appeal Change*

Purpose (ERCOT)	Corrects conflicting language in Nodal Protocols; language reflects that approved by the ERCOT Board in PRR 769.	
Benefit	Eliminates conflicting language.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	Upon Texas Nodal implementation; no incremental impact to nodal budget or schedule	

# *NPRR 142–EECP Media Appeal Change*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		



## *NPRR 152– Reference Section 22 Attachments*

Purpose (ERCOT)	Corrects references in attachments to Section 22.	
Benefit	Corrects references.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	Upon Texas Nodal implementation; no incremental impact to nodal budget or schedule.	

## *NPRR 152– Reference Section 22 Attachments*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *NPRR 154— Corrections of Entities Able to Bid for PTP Obligations in the Day-Ahead Market*

Purpose (ERCOT for TPTF)	Clarifies that only QSEs may bid for PTP Obligations in the Day-Ahead Market.	
Benefit	Reduces risk of future disputes.	
Market Impact	N/A	
System Change	Yes	Impacts MMS & EIP
Assumptions	Cost \$100K - \$250K	
TAC Vote	TAC recommended approval with 1 abstention from Cooperative Market Segment; all Market Segments were present	
Effective Date	Upon Texas Nodal implementation; no incremental impact to nodal schedule	

# *NPRR 154— Corrections of Entities Able to Bid for PTP Obligations in the Day-Ahead Market*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>		★	<i>\$100K - \$250K</i>
<i>Staffing</i>	★		
<i>Computer Systems</i>		★	<i>Impacts to MMS, EIP</i>
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *NPRR 155*– *Clarification of Authorized Representative*

Purpose (AEP Texas, IOU)	Companion to approved PRR 778. Codifies “Authorized Representative” in Protocols and clarifies the need to designate an Authorized Representative.	
Benefit	Protocols do not currently define “Authorized Representative”.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	Upon Texas Nodal implementation; no incremental impact to nodal budget or schedule.	

# *NPRR 155*– *Clarification of Authorized Representative*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

# *NPRR 159– Resource Category Start-up Offer Generic Cap for Wind Resources*

Purpose (Verifiable Cost WG)	NPRR revises Resource Category Start-up Offer Generic Cap for Wind Resources to \$0 from \$7200.	
Benefit	Overall savings to market and consistent with the intent of verifiable costs in the nodal market.	
Market Impact	N/A	
System Change	No.	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present.	
Effective Date	Upon Texas Nodal implementation; no incremental impact to nodal budget or schedule.	

# *NPRR 159*– *Resource Category Start-up Offer* *Generic Cap for Wind Resources*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		



# *NPRR 160*– *Elimination of the Non-ERCOT LSE Fee*

Purpose (AEP, IOU)	Eliminates language within Section 9.16.2 which describes the Texas Non-ERCOT Load Serving Entity Fee.	
Benefit	Eliminates a fee of approximately \$250K currently being charged to a single Market Participant for systems which are already fully depreciated.	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments	
Effective Date	Upon Texas Nodal implementation; no incremental impact to nodal budget or schedule.	

# *NPRR 160*– *Elimination of the Non-ERCOT LSE Fee*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

***NPRR 162– Change the Sign Convention of Net Real Power Consumption, LPC, and MPC of Load Resources (formerly, Change the Sign Convention for Load Resources)***

Purpose (ERCOT)	Changes the sign convention for Load Resources such that the low reasonability limit, Low Sustained Limit, telemetered values, High Sustained Limit and high reasonability limit are all positive numbers.	
Benefit	Eliminates changes to EMS & MMS	
Market Impact	N/A	
System Change	No	N/A
Assumptions	N/A	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	Upon Texas Nodal implementation; no incremental impact to nodal budget or schedule	

*NPRR 162– Change the Sign Convention of Net Real Power Consumption, LPC, and MPC of Load Resources (formerly, Change the Sign Convention for Load Resources)*

<i>Item Reviewed</i>	<i>No Impact</i>	<i>Impact</i>	<i>Description</i>
<i>Budget</i>	★		
<i>Staffing</i>	★		
<i>Computer Systems</i>	★		
<i>Business Functions</i>	★		
<i>Grid Operations</i>	★		
<i>Credit Monitoring/ Liability</i>	★		

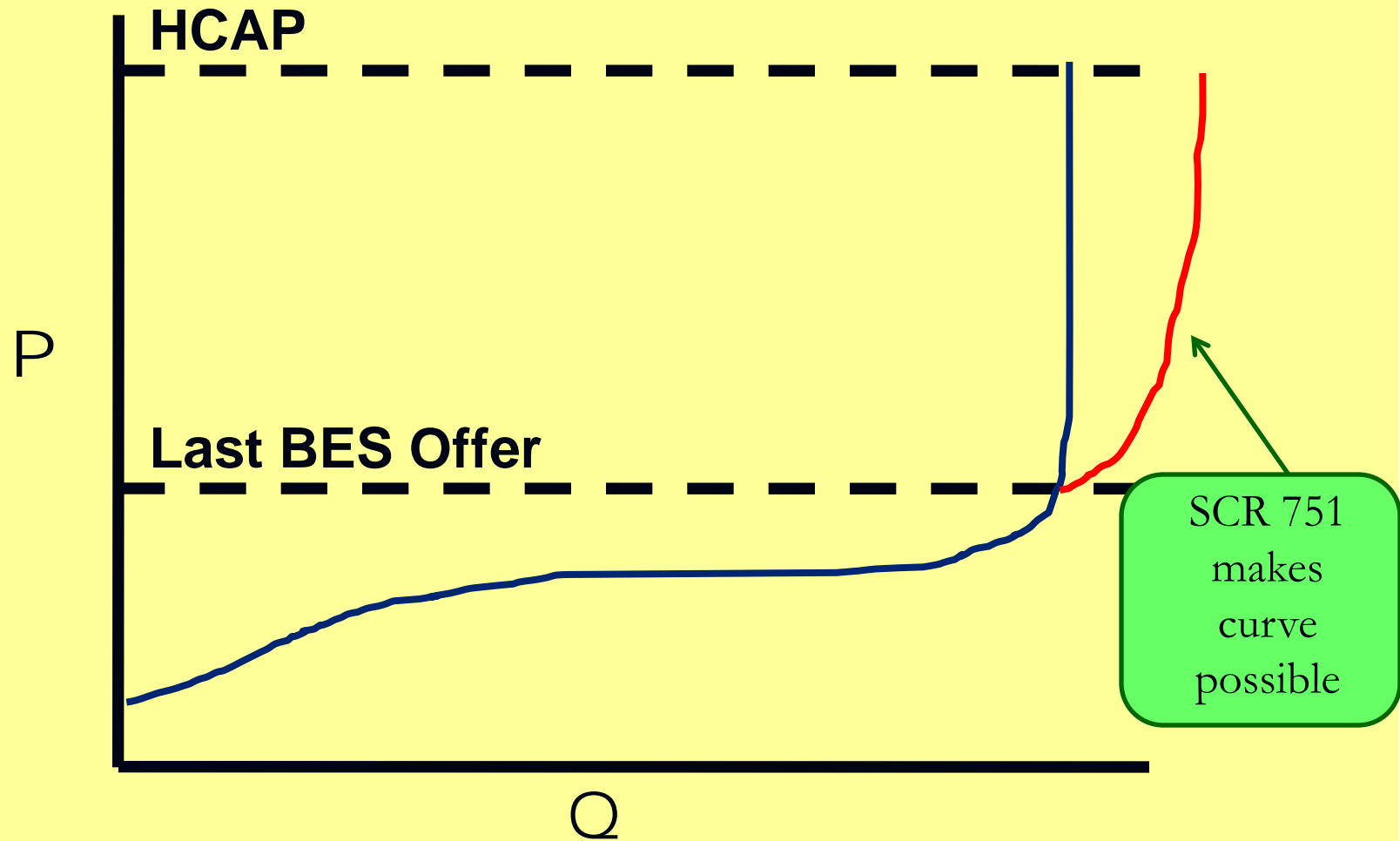
# *System Change Request*

SCR 751 Nodal – Power Balance Shadow Price Cap Curve  
for SCED (formerly Nodal – Shadow Price Cap)

# SCR 751 – Nodal – Power Balance Shadow Price Cap Curve for SCED (formerly Nodal – Shadow Price Cap)

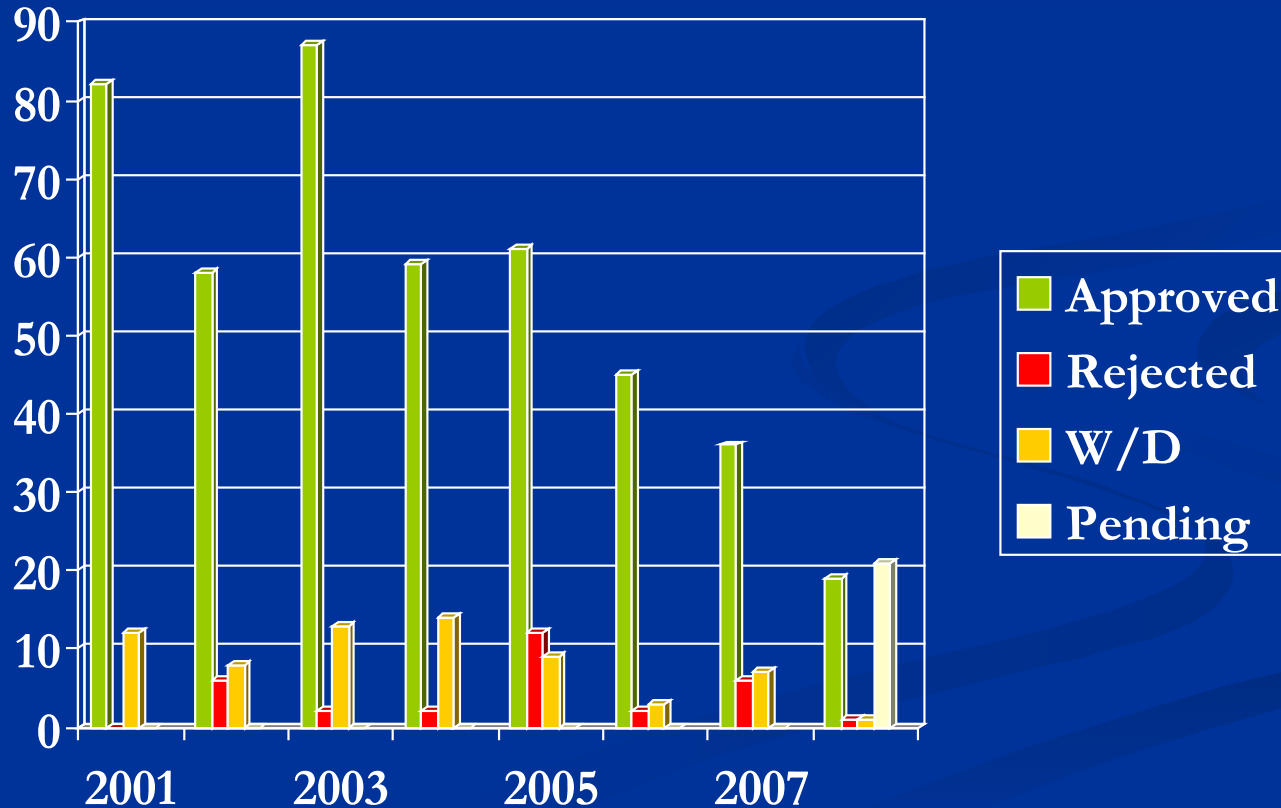
Purpose (CMWG)	Convert the power balance penalty from a fixed value to a curve that is applied on a MW basis to avoid high prices during power balance violations for small MW values.	
Benefit	Allows for prices that are related to the violation amount instead of a fixed price. May provide a cost savings to the market overall because not all violations will be priced at the same price.	
Market Impact	Will require change to the Market Management System (MMS)	
System Change	Yes	Impacts on MMS
Assumptions	Incremental cost to Nodal project is less than \$50k	
TAC Vote	TAC unanimously recommended approval; all Market Segments were present	
Effective Date	Upon the Texas Nodal implementation	

# *SCR 751*



# *PRR Statistics*

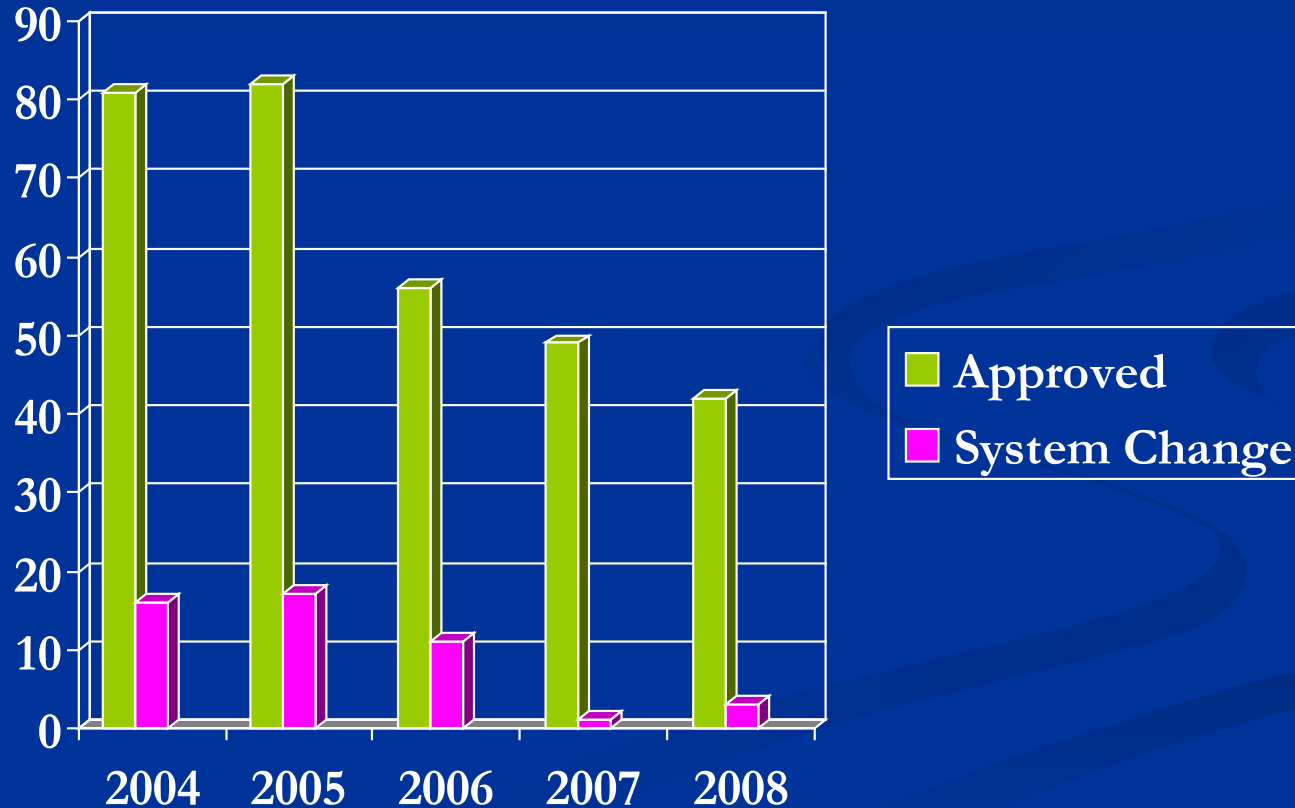
*Between March 2001 and December 2008, 584 PRRs were submitted and, of those, 447 PRRs were approved. (The first “PRR” was PRR 211.)*





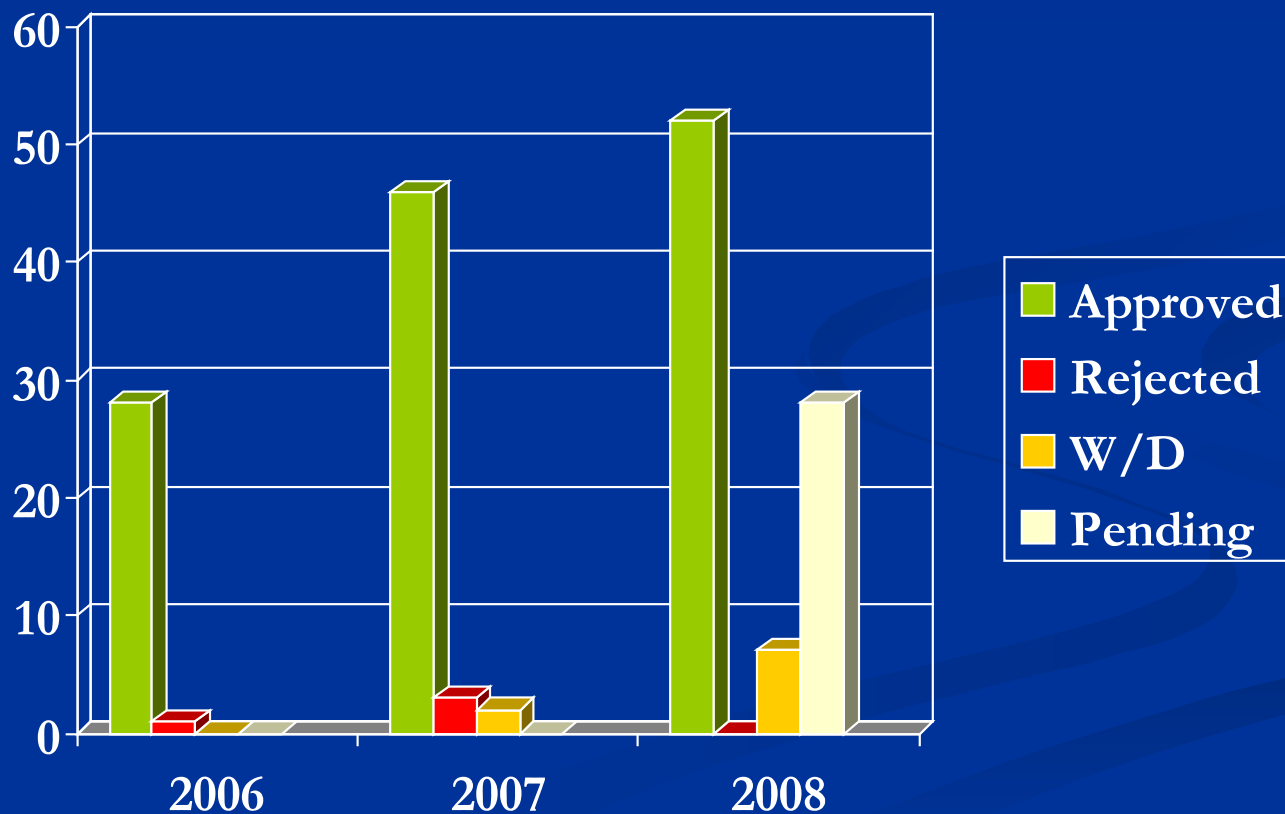
# *PRR Statistics*

*Between January 2004 and December 2008, the number of system changes required by PRRs has significantly declined.*



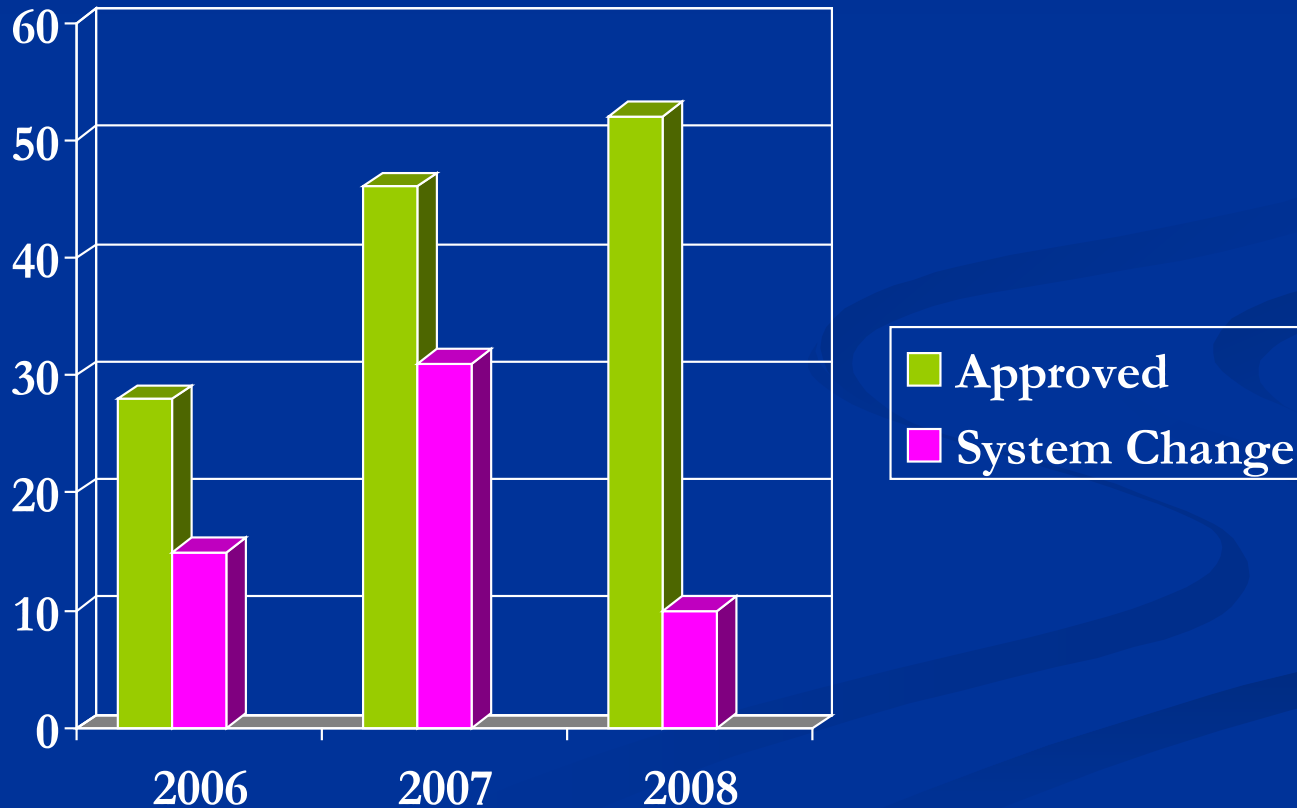
# *Nodal PRR (NPRR) Statistics*

*Between May 2006 and December 2008, 169 NPRRs were submitted and, of those, 126 NPRRs were approved.*



# *Nodal PRR (NPRR) Statistics*

*Between May 2006 and December 2008, the number of system changes required by NPRRs has significantly declined. The majority (>70%) of changes were addressed by the July 2007 “Baseline 1 & 2” activity.*



# Wind Integration Update

- Ancillary Services Cost Allocation Recommendation
- Ancillary Services Procurement Optimization
- Wind Issues Preview

# Ancillary Services Cost Allocation Recommendation

## ■ Assignment

- WMS explored assigning incremental ancillary services costs to wind generators

## ■ Study areas

- Function of ancillary services
- Definition of incremental ancillary services
- Ancillary services procurement methodology
- Keeping up with evolving policy and market consequences

## ■ Conclusion

- Ancillary services are not properly directly assignable to individual entities since they are purchased for the system as a whole

# Ancillary Services Cost Allocation Recommendation

- Recommendation: Remain with current allocation methodology
  - Direct assignment forces some arbitrary allocation
  - Costs and complexity of developing and implementing direct assignment methodology greater than likely market impact
  - Avoids re-allocation of costs every time ancillary services procurement methodology is adjusted
- Observation
  - Change to status quo likely introduces market policy goals more complex than procuring system security at lowest cost

# Ancillary Services

## Procurement Optimization

- Analysis thus far suggests ERCOT's amended 2008-2009 procurement methodology does not wildly over procure NSRS
- QMWG believes some optimization is possible and is working through some proposals to purchase NSRS in smaller, more targeted blocks

# Wind Issues Preview

- Expect prioritized issues matrix with status report at February Board meeting
- Working with ERCOT Staff to develop first Quarterly CREZ Report to PUCT
- Framing wind integration issues in 2009 TAC goals
- New Wind QSE performance metrics PRRs filed
  - PRR 793
  - PRR 794



# Notification of NERC representatives

- ERCOT Bylaws Sec. 5.4 requires TAC selection of NERC committee representatives of ERCOT region
- NERC Critical Infrastructure Protection Committee
  - Purview includes both physical and cyber security
  - Facilitates communication of alerts, required actions, and best practices between Dept. of Homeland Security, NERC, FERC, Regional Entities, ISOs, and market participants
- TAC approved stakeholder and staff representatives
  - Steve Martin (Oncor – IOU segment)
  - David Grubbs (Garland Power & Light – Municipal segment)
  - Jim Brenton (ERCOT)

# Hurricane Ike Report

- Ike was worst Texas hurricane since 1961's Carla
  - \$2.6 billion in property damage
  - 21 people killed
  - Approximately 2.5 million customers lost power in the ERCOT region
  - Major restoration effort lasted two weeks
- All things considered, ERCOT system performed well under severe duress

# Hurricane Ike Report

- Successfully implemented lessons learned from Hurricane Rita
  - Load shutdown during pre-storm evacuations caused local high voltage problems
  - Removing capacitors from service prior to Ike provided better voltage control before and during the storm

# Hurricane Ike Report

## ■ Lessons learned from Ike

- Higher elevation substations provided some protection from storm surge
- Availability of mobile substations aided restoration effort
- Hurricane training effectively prepared personnel for storm duties
- Pre-arranged staging areas and communication with local officials aided quick restoration
- Field personnel need additional training in damage evaluation
- Emergency Block Load Transfers remain effective restoration tool
- ERCOT identified improvements to be made in communication with market participants, communication of telemetry status, use of pre-set list of N-2 contingencies in RTCA, need to review Energy Management System settings and tuning parameters to minimize limitations during major events

# TAC Goals 2008

- Policy guidance to TPTF – ongoing
- TAC organizational review – complete
  - Realignment of existing groups, creation of new groups
- Alignment of ERCOT/NERC/TRE terminology – ongoing
- Advanced metering implementation – ongoing
- Provide more detailed analysis and formal reporting of system disturbances and major events – improved and ongoing
  - Feb 26 EECF follow-up – wind workshops, PRRs, OGRR
  - Hurricane Ike Report

# TAC Goals 2009

- Discussion at February TAC meeting and TAC leadership retreat
- Expected adoption at March TAC meeting
- Likely big issues include
  - Nodal implementation
  - Renewable technologies integration
  - Implementation of legislative and Commission mandates
  - Study horsepower
- TAC welcomes input from stakeholders, ERCOT Directors and Staff, and PUCT Commissioners and Staff

