

# Texas Renewables Integration Plan Quarterly Update for the Period Ending September 30, 2010

Prepared by the Renewable Technologies Working Group of  
the ERCOT Technical Advisory Committee

October 2010

Texas Renewables Implementation Plan  
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**Status of Renewable Generation Resources in Texas**

As of September 30, 2010, the total new renewable facilities<sup>1</sup> in Texas is approximately 10,073 MW<sup>2</sup> which exceeds the 5,000 MW goal specified in the Public Utility Commission of Texas (PUCT) Substantive Rule 25.173 – Goal for Renewable Energy and it exceeds the January 1, 2025 “target” of 10,000 MW.

Technology	MW
Biomass	40
Hydro	33
Landfill Gas	80
Solar	5
Wind	9,915
<b>Total</b>	<b>10,073</b>

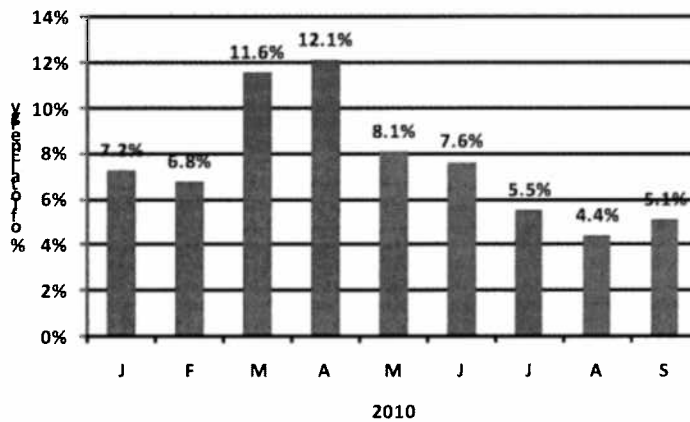
**Figure 1 – New Renewable Generation Capacity in Texas**

**Status of Wind and Solar Generation in ERCOT**

At the end of September, 2010, ERCOT had 9,317 MW of new wind generation capacity and 8 MW of solar generation capacity in operation. For the three months ending September 30, 2010, the following new wind and solar resources became operational in ERCOT:

- Texas Solar (Blue Wing) 8 MW in Bexar County (Solar Photovoltaic)

Wind generation has provided 7.3% of the total energy produced in ERCOT from January 1, 2010 through September 30, 2010. The monthly amount of wind energy production as a percentage of total monthly energy production in ERCOT is shown below in Figure 2.



<sup>1</sup> “new facilities” as defined in PUCT Subst. Rule 25.173(c)(7)

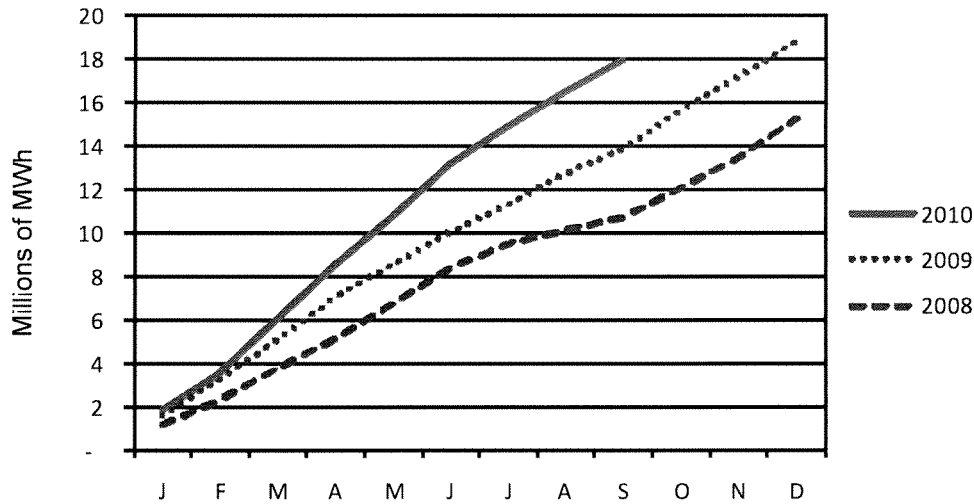
<sup>2</sup> Does not include those renewable resources that are not registered as REC generators in the Goal for Renewable Energy Credit trading program

**Figure 2 – Monthly Energy from Wind as a Percentage of Total ERCOT Energy Production**

The monthly ERCOT generation fuel mix is available at:

<http://planning.ercot.com/reports/demand-energy/>

Furthermore, the amount of energy (i.e., MWh) produced by wind generation in ERCOT continues to increase. Figure 3 below shows the monthly cumulative amounts of wind generation since 2008.



**Figure 3 – Cumulative Energy from Wind in ERCOT**

In addition to wind generation capacity that is installed and operating, there are a substantial number of renewable generation projects in various stages of study by ERCOT as part of the Generation Interconnection Process as shown in Figure 4 below.

Project Description	Capacity (MW)		
	Wind	Solar	Biomass
Projects with Interconnect Agreement/Public Letter	5,953	0	145
Projects Under Full Interconnect Study	29,127	699	50
Confidential Projects	3,628	340	0
<b>Total</b>	<b>38,708</b>	<b>1,039</b>	<b>195</b>

**Figure 4 – New Renewable Generation Capacity Under Study in ERCOT**

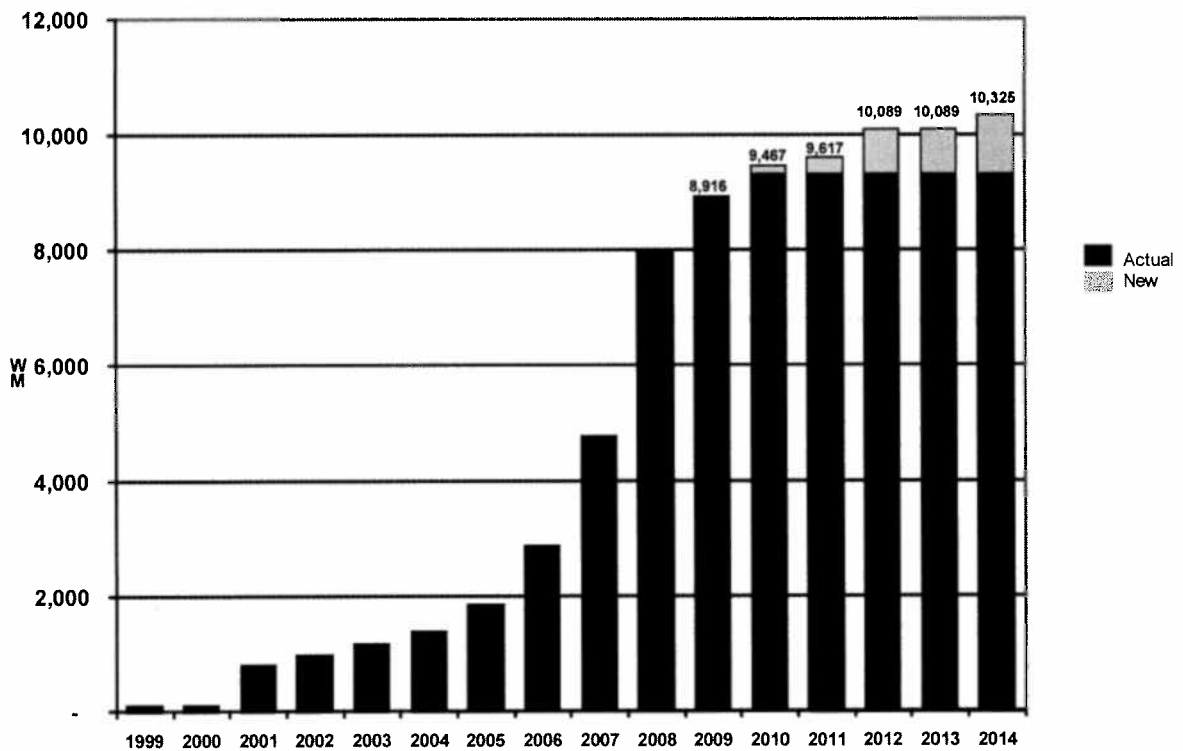
There are 20 wind generation projects and 2 biomass projects with Interconnect Agreements or public letters. In addition, there are 100 wind generation projects

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undergoing full interconnect studies. There are 9 solar projects and 1 biomass project undergoing full interconnect studies.

For the 3-month period ending September 30, 2010, no renewable resources signed Generation Interconnection Agreements. This is the second consecutive quarter that no renewable resources signed Generation Interconnection Agreements.

The annual actual and forecast ERCOT installed wind generating capacities are shown in Figure 5 below.



**Figure 5 – ERCOT Installed Wind Generating Capacity (End of Year)**

Note: “New” in Figure 5 above represents wind generators with a Signed Generation Interconnect Agreement and a planned in-service date in the year shown.

**Completed Issues**

During the 3-month period ending September 30, 2010, the following Issues were designated as completed by the RTWG:

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- SO 14 – Impact of Transmission Outage Planning on Wind Generation
- SP 2 – Wind Turbine Computer Models
- SP 3 – Wind Turbine Fault Tolerance
- WT 7 – Storage Workshop I

For a detailed list of all Issues and their current status, see the Appendix.

In addition, the following zonal Protocol Revision Requests (PRRs) and Nodal Protocol Revision Requests (NPRRs) impacting renewable resources in the ERCOT market were approved and/or became effective during the third quarter of 2010:

### **New Issues**

During the 3-month period ending September 30, 2010, the RTWG began consideration of the following new issues related to the integration of renewable resources into the ERCOT market:

#### **SP 10 – DOE Long-Term Planning Study**

Long-term transmission planning study and increased participation with state agencies, Non-governmental organizations and other interested parties.

#### **SO 35 – Operational Checklist for Resource Interconnection**

Establish a procedure whereby ERCOT, TSPs and interconnecting Resources check RARF data Resource capabilities to identify any gaps with Protocols and Operating Guides that need to be addressed prior to commercial operation. Consider the development of an ERCOT feedback loop identifying operational capability deficiencies.

#### **SP 11 – Sub-Synchronous Interactions**

Evaluate impact of series-compensated transmission lines which can result in interactions with generators at very low frequencies that can be damaging to the generators

#### **SP 12 – Short-Circuit Current Availability for Wind Turbines**

Consider impact of availability of short-circuit current sources in or around wind generation facilities during 3-phase faults

#### **SP 13 – Track Amount of Installed Distributed Generation and Other Technologies that Impact Load Magnitude and Load Shape**

Develop a process to track the amount of installed distributed generation and any other technologies that impact load magnitude and load shape.

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**WT 8 – Ancillary Services Evaluation Workshop**

Post Nodal Implementation Date (4-6 months) focusing on the effectiveness of ancillary service products in the nodal market design. Discussion of whether additional services or ancillary products are desirable or necessary.

**WT 9 – Storage Workshop II**

Workshop to focus on storage technologies issues.

**WT 10 – Periodic Renewable Resource Seminar**

Encourage the ERCOT Board to identify a means of engaging or learning from other ISOs' experience operating with renewable resources.

## Appendix

**Texas Renewables Implementation Plan  
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List of Market Design Issues**

Issue Category	Issue No.	Title	Description	Current Group	Priority	Impact	Solution Implemented by	Revision Mechanism	Status
MD	1	Ancillary Services Cost Allocations Applicable to Wind	Develop any ancillary services cost allocations applicable to wind generation resources.	ERCOT Board	Near Term	Medium	Market Participants	PRR/NPRR	The Board received a presentation from ERCOT staff at the July 20 Board meeting regarding potential changes to the Ancillary Services Procurement methodology. The Board took no action.
MD	4	New Ancillary Service Products Needed for Reliability	Determine if new ancillary services are needed to reliably integrate the large amounts of wind generation coming into the ERCOT market.	ROS	Long Term	Medium	ERCOT	PRR/NPRR	This issue is part of the DOE Study. Reference to SP-10 and SO-5. Post Go-Live, review of the adequacy of the existing suite of Ancillary Services in anticipation of possible revisions in the 2012 Ancillary Services procurement methodology.
MD	5	Benefits of Storage Technologies	Determine benefit and potential applications of storage technologies in the ERCOT market.	RTWG	Long Term	Low	Market Participants	Other	Subsequent to the Storage Workshop, the WMS formed the Power Storage Working Group (PSWG) to explore issues related to storage technologies.
MD	7	Wind Generating Resources Providing Ancillary Services	Determine possible changes in the ERCOT Nodal Protocols to allow Wind Generation Resources to provide ancillary services.	QMWG	Long-Term	Medium	Market Participants	NPRR	List of issues has been circulated; Walter Reid will be developing a NPRR to address market facilitation issues.
MD	9	Wind Generation Dispatch in the Nodal Protocols	Review of Nodal Protocols to ensure proper treatment of wind generation in regard to dispatch response.	QMWG	Near Term	Medium	Market Participants	NPRR	NPRR 214, which is a workaround, was approved by the ERCOT Board on May 18, 2010. QMWG will advance an NPRR to effect a system change in August 2010.
MD	10	Wind Generation Performance Metrics in the Nodal Protocols	Review of Nodal Protocols to ensure proper treatment of wind generation in regard to performance metrics when negative pricing exists.	QMWG	Near Term	Medium	ERCOT	NPRR	QMWG recommendations are due to ROS in August 2010 and initial values will be based on pre-nodal LFC testing. Values are expected to be reviewed quarterly post Nodal-Go Live.
MD	11	Wind Generation and Base Point Deviation in the Nodal Protocols	Review of Nodal Protocols to ensure proper treatment of wind generation in regard to Base Point deviation.	QMWG	Near Term	Medium	ERCOT	NPRR	Under discussion at QMWG.



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List of System Operations Issues**

Issue Category	System Ops Issue No.	Title	Description	Current Group	Priority	Impact	Solution Implemented by	Revision Mechanism	Status
SO	1	Inventory of Wind Generation Facilities	Develop forms and collect wind turbine data from Wind Generation Resources to improve ERCOT's modeling and operations databases.	ERCOT/Consultant	Near Term	Low	ERCOT	Other	Much of the data from wind farms has been collected and reviewed. Changes to the RARF to accommodate new wind farm data will not occur until after Nodal Go-Live. ROS will be asked to address the list of items of data for post-Go-Live implementation.
SO	4	Smart Grid Implications for Renewable Resources	Determine how development of a "smart grid" could benefit and improve integration of renewable resources into the ERCOT grid.	RTWG	Long Term	Low	Market Participants	Other	Steve Isser will develop a white paper to be presented to RTWG. Some discussion of this issue will be incorporated in the DOE study.
SO	5	Operational Studies Related to Wind Generation	Operational studies re. Wind (ramp rate, low load situations, forecasting) to identify if new ancillary services are needed.	RTWG	Long Term	Medium	ERCOT	NPRR	Some discussion of incorporating some of these issues in the DOE Study (see SP-10). Other issues may be discussed in other venues.
SO	6	Testing Reactive Capability of Wind Generation	Determine the appropriate testing methodology to measure the reactive capability of wind generation.	ERCOT Operations	Near Term	Medium	ERCOT	OGRR	See MD-8 (follow up activities associated with implementation of PRR 830).
SO	10	Voltage Management Practices Applicable to Wind Generation	Develop appropriate voltage management practices for ERCOT and Transmission Service Providers that would apply to wind generation resources.	ERCOT	Near Term	High	ERCOT/SPs	NPRR	ERCOT reactive study of West Texas was originally scheduled for completion by 2nd quarter 2010. A contract extension and expanded scope is currently being negotiated with expected completion of the study 7 weeks after contract is revised.
SO	23	Impact of Advanced Meters/ Smart Grid on Integration of Renewable Resources	Examine impact of advanced metering / Smart Grid capabilities on integration and deployment of renewable resources and demand-side management technologies.	DSWG	Long Term	Low	Market Participants	PRR/NPRR	Steve Isser to develop a white paper to be presented to RTWG. Some discussion of this issue will be incorporated into the DOE study.
SO	26	Impact of Solar Generation on System Operations	Determine potential impact of new solar generation on ERCOT system operations through appropriate studies of solar ramp rate capabilities, forecasting of solar energy production, voltage and reactive control capabilities.	RTWG	Long Term	Medium	Market Participants	NPRR	Steve Isser to develop a white paper to be presented to RTWG. Some discussion of this issue will be incorporated into the DOE study.
SO	30	Application of Wind Generation Forecast to PASA	Determine how the ERCOT wind generation output forecast could be used to improve the Projected Assessment of System Adequacy (PASA).	ERCOT Operations	Near Term	Medium	ERCOT	Other	To be discussed at a future RTWG meeting
SO	31	Tension Monitors on Transmission Lines	Determine the need (if any) to install tension monitors on certain existing transmission lines that will be affected by construction of CREZ transmission facilities.	RPG	Near Term	Low	Market Participants	Other	Pending potential Market Participant project submissions.
SO	32	Real-Time Wind Generation Capacity	Determine the value of having a real-time value of available wind generating capacity for use by ERCOT operations.	QM/WG	Near Term	Medium	ERCOT	PRR	Complete: PRR 811 was approved by the Board in February 2009. Additional follow-up activity is necessary to address issues associated with the re-definition of WGR in PRR 830 and to evaluate the utility of such information to ERCOT.

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List of System Operations Issues**

Issue Category	System Ops Issue No.	Title	Description	Current Group	Priority	Impact	Solution Implemented by	Revision Mechanism	Status
SO	33	Real-Time Wind Turbine Availability	Determine the value of having a real-time indication of the availability of each wind turbine for use by ERCOT operations.	QMWG	Near Term	Medium	ERCOT	PRR	The portion of PRR 830 related to reporting of status has been approved and will be in effect on June 1, 2010 pending resolution of the appeal of PRR 830 to the PUCT.
SO	34	SCED Line Ratings	Increase the frequency of SCED's consideration of dynamic line ratings to better model current system conditions.	ROS	Long Term	Medium	ERCOT	Other	Changed priority to Medium since it cannot be implemented for Nodal Go-Live; to be discussed at a later RTWG meeting.
SO	35	Operational Checklist for Resource Interconnection	Establish a procedure whereby ERCOT, TSPs and interconnecting Resources check RARF data Resource capabilities to identify any gaps with Protocols and Operating Guides that need to be addressed prior to commercial operation. Consider the development of an ERCOT feedback loop identifying operational capability deficiencies.	ROS	Near Term	High	ERCOT	To be determined	Issue identified by RTWG on 07-24-2010 and recommend ROS action.

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List of System Planning Issues**

Issue Category	Issue No.	Title	Description	Current Group	Priority	Impact	Solution Implemented by	Revision Mechanism	Status
SP	4	Voltage Transient and Small Signal Stability Study	Update ERCOT voltage transient and small signal stability study and prepare a West Zone to North Zone transfer study.	ERCOT Operations	Near Term	Medium	ERCOT	Other	Phase I of the study has been completed and Phase II is underway.
SP	5	Impact of Wind Turbines on System Inertia	Determine the potential impact on system reliability of large amounts of wind turbine generating capacity on ERCOT's system inertia requirements.	ERCOT Planning	Long Term	Medium	ERCOT	Other	Will be undertaken following completion of VRT study
SP	7	Voltage Control Process	Develop a process to better control voltage in areas with large amounts of wind generation.	ERCOT Planning	Long Term	Medium	ERCOT	OGRR/NOGRR	See SO-10
SP	9	Wind Turbine Model Validation	Validation of wind turbine non-steady-state planning models - WECC/EPRi has done some work in this area that might be useful to examine.	RTWG	Near Term	Medium	ERCOT	Unknown	Project 173 was approved at EPRi in February 2010, field measurements will be done on 4 different wind turbines; looking for partners for tests (esp. ERCOT). There is an EPRi meeting in September to discuss first round of results.

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List of Workshop/Training Opportunities**

July 2010

Issue Category	Issue No.	Title	Description	Current Group	Priority	Impact	Solution Implemented by	Revision Mechanism	Status
WT	1	Resource Plan and Schedule Update Process	Determine potential improvements to the Resource Plan and Resource Schedule update process to improve performance and reliability.	RTWG/ERCOT Operations	Undetermined	Low	Market Participants	Other	Potential topic for future Wind Workshop
WT	3	Wind Turbine Operator Training	Develop list of topics for use in development of a training session for wind turbine generator operators.	ROS	Long Term	Low	Market Participants	Other	RTWG to work with ROS to add Wind Operator Training in the Nodal Market to the ERCOT Operator Training Session of 2011.
WT	5	Wind Workshop IV	Workshop to focus on turbine vendors and facility engineers and requirements in ERCOT that might impact their products and/or facilities.	RTWG	Short-Term	Medium	Market Participants	N/A	Walter Reid will develop a tentative agenda, list of topics and speakers to discuss at the September 2010 RTWG meeting.
WT	6	Solar Workshop	Workshop to focus on existing market rules and how those rules might impact particular solar technologies. Target audience: manufacturers, developers, operators, other ISOs that have solar on-line. Schedule: First Quarter 2011	RTWG	Short-Term	Medium	Market Participants	N/A	Mark Bruce will develop a tentative list of topics/speakers to discuss at the September 2010 RTWG meeting.

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List of All Completed Issues**

Issue Category	Issue No.	Title	Description	Current Group	Priority	Impact	Solution Implemented by	Revision Mechanism	Status
MD	2	Ancillary Services Procurement Optimization for 2009	Develop any ancillary services cost allocations applicable to wind generation resources (see also MD-5).	QMWG	Complete	Medium	ERCOT	Other	<b>COMPLETE:</b> ERCOT Board approved the 2009 Ancillary Services Procurement methodology at the February Board Meeting
MD	3	Non-Spin Requirements	Determine if additional Non-Spin Service procurements are required to accommodate increased amounts of wind generation in ERCOT.	WMS	Complete	Medium	ERCOT	Other	<b>COMPLETE:</b>
MD	6	Ancillary Service Procurement Methodology	Determine impact and possible changes in amounts of ancillary services to be procured to ensure reliability with increasing amounts of wind generation being installed in the ERCOT market.	WOTF	Complete	Medium	ERCOT	Other	<b>COMPLETE:</b> WOTF reviewed draft procedure method and made comments that were incorporated in the AS methodology approved for 2009.
MD	8	Reactive and Voltage Requirements Applicable to Wind Generators	Review of current ERCOT Protocols to ensure reactive and voltage control requirements are applicable to all generating technologies, including wind generation.	WOTF	Near Term	Low	ERCOT	PRR	<b>COMPLETE:</b> PRR 830 "Reactive Power Capability Requirement" has been approved by the ERCOT Board. RTWG is examining the need for follow-up activities related to PRR 830.
MD	12	Wind Generation Resource LSL as a Percentage of HSL	Establish a minimum percentage for the Low Sustained Limit (LSL) of the High Sustained Limit (HSL) for a wind generation resource.	QMWG	Complete	Medium	Market Participants and ERCOT	PRR	<b>COMPLETE:</b> PRR 773 approved by the ERCOT Board
MD	13	Use of State of the Art Wind Forecast	Requires Wind Generation Resources to use of a state-of-the-art wind production forecast (AWS Truewind) in their daily resource plan submittals.	N/A	Complete	Medium	Market Participants	PRR	<b>COMPLETE:</b> PRR 763 approved by the ERCOT Board
SO	2	Nodal Tools to Integrate Wind Generation	Determine tools applicable to the Nodal Protocols to successfully integrate wind generation into the ERCOT markets.	RTWG	Complete	Medium	Market Participants and ERCOT	NPRR	<b>COMPLETE:</b> (pending completion of Nodal market trials) - open issues are addressed in other specific issues. Review and discussion of the Nodal Protocols indicates that wind is addressed adequately.
SO	3	Wind Generation Response and SCE	Determine proper wind generation response to down balancing instructions from ERCOT and also address SCE issues.	QMWG	Near Term	Low	Market Participants	PRR	<b>COMPLETE:</b> PRR 812 has been approved by BOD and went into effect on October 1.
SO	7	Wind Generation and High System Frequency	Determine impact of wind generation on high system frequency events and develop possible solutions.	WOTF	Near Term	Medium	Market Participants	PRR/NPRR	<b>COMPLETE:</b> PRR 833 was approved by the ERCOT Board on May 20, 2010.
SO	8	Wind Generation and System Inertia	Determine impact of wind generation on system inertia and develop possible solutions.	PDCWG	Complete	Low	Market Participants	Other	<b>COMPLETE:</b> PDCWG report to ROS in October 2008
SO	9	SCADA Control of Generator Circuit Breakers	Develop guidelines for better control of generator circuit breakers via SCADA.	OGRR TF	Near Term	Low	Market Participants	OGRR	<b>COMPLETE:</b> OGRR 226 "Generation Resource Response Time Requirements" was approved by TAC in December 2009.
SO	11	Technology-Specific Procedures and Protocols Changes	Develop renewable technology-specific changes in existing ERCOT Protocols, Operating Guides, Interconnection Agreements and interconnection procedures to recognize unique characteristics of various renewable generation technologies.	ROS	Near Term	Low	Market Participants	Other	<b>COMPLETE:</b> - This issue is covered by other individual issues in System Operations, Market Design and System Planning
SO	12	Low-Voltage-Ride-Through for Wind Generators	Develop low-voltage-ride-through requirements for wind generators.	N/A	Complete	Medium	Market Participants	OGRR	<b>COMPLETE:</b> ROS approved OGRR 208
SO	13	Performance Metrics for Wind Generation	Develop appropriate operational performance metrics for wind generation.	QMWG	Complete	Medium	Market Participants	PRR	<b>COMPLETE:</b> PRR793 approved by the ERCOT Board
SO	14	Impact of Transmission Outage Planning on Wind Generation	Examine possible ways to improve transmission outage planning to better coordinate with wind generation operations.	RPG	Long Term	High	ERCOT/TSPs	PRR	<b>COMPLETE:</b> PRR 795 was approved by the Board on 02/17/2009. This issue has been looked at in depth by RPG, CMWG RTWG and ROS, but no clear definition of the issue or resolution of the issue has occurred.
SO	15	Communications between Wind Farms and TSPs	Examine possible improvements in real-time communications between wind farms and transmission service providers (TSPs).	WOTF	Near Term	Medium	Market Participants	OGRR	<b>COMPLETE:</b> OGRR 226 "Generation Resource Response Time Requirements" was approved by TAC in December 2009.
SO	16	Wind Generation Ramp Limits	Develop appropriate ramp rate limits for wind farms	ROS	Complete	Medium	Market Participants	PRR	<b>COMPLETE:</b> PRRs 771 and 788 approved by the ERCOT Board

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List of All Completed Issues**

Issue Category	Issue No.	Title	Description	Current Group	Priority	Impact	Solution Implemented by	Revision Mechanism	Status
SO	17	Mid-Term and Short-Term Load Forecast Weather Sensitivity	WOTF determined that this was not a determining factor in the February 26, 2008 event.	WOTF	Complete	Low	Market Participants and ERCOT	Other	<b>COMPLETE:</b> Issue resolved as result of ERCOT Operations response to SDWG comments. WOTF recommended no further action.
SO	19	Improve Competitively Sensitive Constraints (CSC) Process	Evaluate increasing the frequency of ERCOT CSC studies to more accurately determine congestion problems that affect wind generation.	WOTF	Complete	Medium	Market Participants and ERCOT	Other	<b>COMPLETE:</b> ERCOT implemented hourly limits effective June 10, 2008
SO	20	Dynamic Transmission Line Ratings	Evaluate cost and benefits of using dynamic transmission line ratings in ERCOT's planning processes to allow more efficient use of transmission lines serving wind farms.	WOTF	Complete	Low	Market Participants	Other	<b>COMPLETE:</b> RPG has agreed to consider dynamic line rating solutions to congestion problems.
SO	21	Evaluate Emergency Electric Curtailment Plan (ECCP) Steps	Determine if the existing ECCP steps need to be modified to take into account the increasing amount of variable wind generation in the ERCOT system.	OWG	Complete	Low	Market Participants	PRR/NPRR	<b>COMPLETE:</b> PRR 769 approved by BOD and NPRR 142 at January 20 BOD meeting
SO	24	Settlement of Advanced Meters in the Nodal Market	Determine appropriate settlement timeline to accommodate use of advanced meters in the Nodal Market design.	AMIT	Complete	Medium	Market Participants	Other	<b>COMPLETE:</b> Go-live date is November 2009; all provisioned advanced meters will be settled on a 15-minute basis.
SO	25	Generator Governor Response for Wind Generators	Determine proper generator governor response requirements for wind generators in the Nodal Market design.	WOTF	Short Term	Medium	Market Participants	NPRR	<b>COMPLETE:</b> PRRs 824 and 833 have been approved by the ERCOT Board on 12-15-2009 (PRR 824) and 05-18-2010 (PRR 833).
SO	27	Manual Curtailment of Wind Generation to Resolve Local Congestion	Determine if changes can be made in the existing zonal systems to allow for automating curtailment of wind to resolve local congestion problems.	CMWG	Complete	High	ERCOT	Other	<b>COMPLETE:</b> ERCOT Operations discussed this issue extensively at February 2009 CMWG meeting, no reasonable, timely or cost-effective solution is available in the existing zonal market, issue is resolved by the Nodal market design.
SO	28	SPS Actuation for N-Q Conditions	Determine possible changes to eliminate actuation of special protection systems (SPS) caused by variable output of wind farms.	CMWG	Near Term	Medium	ERCOT	OGRR	<b>COMPLETE:</b> OGRR 224 has been approved by TAC in September, 2009
SO	29	Transmission Outage Planning for CREZ	Determine ways to accommodate large amounts of transmission outages associated with the CREZ buildout while still providing adequate transmission service to existing wind farms and maintaining adequate system reliability.	RPG	Near Term	High	ERCOT	Other	<b>COMPLETE:</b> PRR 795 was approved by the Board on 02/17/2009. This issue has been looked at in depth by RPG, CMWG RTWG and ROS, but no clear definition of the issue or resolution of the issue has occurred.
SP	1	Verify Wind Turbine Technical Data	Create and maintain an inventory of installed wind turbine characteristics.	ERCOT Operations	Complete	Medium	ERCOT	Other	<b>COMPLETE:</b> Survey has been completed
SP	2	Wind Turbine Computer Models	Collect and verify accuracy of computer models for each type of wind turbine installed on the ERCOT grid.	ERCOT Planning	Near Term	Low	ERCOT	Other	<b>Complete:</b> VRT Study was completed in July 2010
SP	3	Wind Turbine Fault Tolerance	Prepare a study of the fault tolerance of wind turbines installed on the ERCOT grid.	ERCOT Planning	Near Term	Medium	ERCOT	OGRR	<b>Complete:</b> VRT Study was completed in July 2010
SP	8	Voltage Ride-Through (VRT) Study	Prepare a study of the system reliability and associated requirements applicable to all generators for voltage ride-through capability.	ERCOT Planning	Near Term	High	ERCOT	Other	<b>Complete:</b> VRT Study was completed in July 2010. Study results indicating the adequacy of OGRR 208 were presented to ROS/TAC/ERCOT Board and a synchronizing NUGRR043.
WT	2	Wind Workshop III - Summer 2009	Develop list of topics and speakers for the ERCOT Wind Workshop III to be held in the summer of 2009	RTWG/ERCOT Operations	Near Term	Low	Market Participants	Other	<b>COMPLETE:</b> - Workshop held on June 26, 2009
WT	4	Wind in the Nodal Market	Develop presentation for use in the Wind Workshop explaining how wind generation will be treated in the Nodal Market design.	RTWG/ERCOT Operations	Complete	Low	Market Participants	Other	<b>COMPLETE:</b> Presentation included in ERCOT On-Line Training Course for Wind