



2016 RTP – Study Scope for Transmission Impact of Environmental Regulation Scenario

May 17, 2016
RPG Meeting

Agenda

- Background and Purpose
- Study Scope
- Next Step

Background and Study Purpose

- ❑ There are several recently finalized environmental regulations that could have an impact on grid reliability in ERCOT. One of these rules is the Regional Haze Federal Implementation Plan (FIP), which will
 - Set SO₂ emissions limits for specific coal-fired units in the ERCOT region
 - Require affected coal units to be retrofitted with new scrubbers or upgrade existing scrubbers by February 2021 and February 2019, respectively

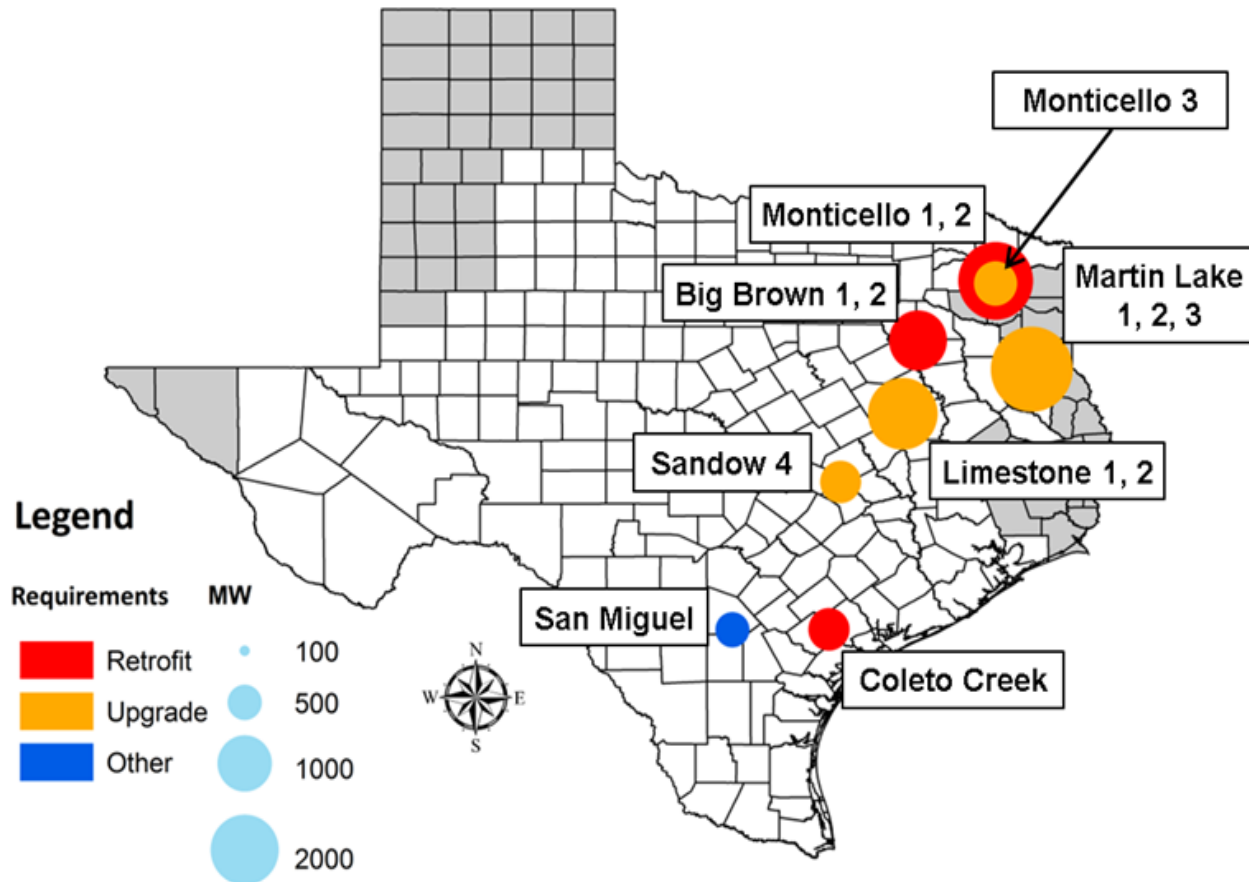
- ❑ ERCOT presented a very high level study result in the Oct-2015 RPG. As part of the 2016 RTP, ERCOT will perform more detailed study to identify potential system issue and solution.

Background and Study Purpose

- ❑ This study is not intended to evaluate the viability of specific units, but rather to assess the transmission reliability implications of the retirement of multiple coal-fired units over a relatively short period of time, using the Regional Haze requirements to provide a scope for the analysis.

Regional Haze Affected Generation in ERCOT

- ❑ 3,000 MW in ERCOT required to retrofit with new scrubbers;
5,500 MW required to upgrade existing scrubbers



Study Scope

□ Base Cases

- 2021 North/North Central, East/Coast and South/South Central summer peak cases with 2016 RTP reliability projects

□ Generation Assumption

- ERCOT will switch off all coal-fired units requiring new scrubbers in all base cases.
 - Big Brown 1 and 2 (600 MW, 595 MW in East)
 - Monticello 1 and 2 (535 MW, 535 MW in East)
 - Coletto Creek (650 MW in South)
- Based on the counties proposed for non-attainment with 2010 SO₂ NAAQS, ERCOT will switch off the following coal-fired units requiring the upgrade of existing scrubbers in all base cases.
 - Martin Lake 1, 2 and 3 (800, 805, and 805 MW in East)
 - Monticello 3 (760 MW in East)

Study Scope

- Total 6,085 MW generation will be switched off in all study cases
- To resolve the power imbalance resulting from the generation offline, ERCOT will review the latest GIS report to add
 - 1) any new generation that has met all the Planning Guide Section 6.9 requirements but were not included in the RTP start cases,
 - 2) any new conventional and solar units with a signed interconnection agreement (IA) but which do not meet Planning Guide 6.9 requirements. However, ERCOT will not use certain units for power balance (e.g. Units without air permit).
 - 3) If additional generation is still needed, ERCOT will adjust the load in the non-study region.

Study Scope

□ Criteria and Contingency

- The reliability criteria used in this study is consistent with the 2016 RTP study assumptions
- NERC TPL-001-4 contingency events (P0, P1, P2-1, P3 and P7) will be analyzed

Next Step

- Build the study cases based on the scope, as the 2016 RTP case with all reliability project is ready
- Identify system issues and develop potential solutions with TSPs
- Document study result as part of the 2016 RTP Report

Question



Appendix I

Table 1. Units requiring the upgrades of existing scrubbers by 2019

Unit	Capacity (MW)	Weather Zone	In County Proposed for Nonattainment with 2010 SO ₂ NAAQS?
Limestone 1	831	North Central	-
Limestone 2	858	North Central	-
Martin Lake 1	800	East	Yes
Martin Lake 2	805	East	Yes
Martin Lake 3	805	East	Yes
Monticello 3	760	East	Yes
Sandow 4	600	South Central	-
Total	5,459		

Table 2. Units requiring new scrubbers by 2021

Unit	Capacity (MW)	Weather Zone	In County Proposed for Nonattainment with 2010 SO ₂ NAAQS?
Big Brown 1	600	East	Yes
Big Brown 2	595	East	Yes
Monticello 1	535	East	Yes
Monticello 2	535	East	Yes
Coletto Creek	650	South	-
Total	2,915		

Appendix II

Reference 1. Units - scrubber retrofits and upgrades

https://www.epa.gov/sites/production/files/2015-12/documents/tx-ok-rh-sip-final-disapproval-and-fip_disclaimer_signed_.pdf

Reference 2. Nonattainment area with 2010 SO₂ National Ambient Air Quality Standards (NAAQS)

<https://www3.epa.gov/airquality/sulfurdioxide/designations/stater2.html>

Appendix III Units qualified per study scope (source: May 2016 GIS Report)

Category	GINR Reference Number	Project Name	County	Projected Date	Fuel	MW For Grid	Meets Section 6.9 Requirements (1)(b) through (1)(d)	Sufficient Financial Security Received by TSP	Air Permit	Water Rights	FIS completion
2	14INR0066	Lamar Power Upgrade	Lamar	6/2016	GAS	130	No	No	Yes	N/A	Complete
2	16INR0049	Nazareth Solar	Castro	9/2016	SOLAR	201	No	No	N/A	N/A	Incomplete
2	15INR0061	SolaireHolman 1	Brewster	3/2017	SOLAR	50	No	No	N/A	N/A	Incomplete
2	16INR0023	BNB Lamesa Solar	Dawson	3/2017	SOLAR	200	No	No	N/A	N/A	Incomplete
2	18INR0004	Shawnee G	Hill	4/2017	GAS	928	No	No	Yes	No	Incomplete
2	16INR0044	Halyard Wharton	Wharton	6/2017	GAS	419	No	No	Yes	Yes	Complete
1	16INR0065a	Castle Gap Solar 2	Upton	9/2017	SOLAR	63	Yes	Yes	N/A	N/A	Complete
2	15INR0059	Pecos Solar I	Pecos	10/2017	SOLAR	108	No	No	N/A	N/A	Incomplete
2	16INR0006	Pinecrest G	Angelina	11/2017	GAS	785	No	No	Yes	Yes	Complete
2	12INR0059c	Barilla Solar 2	Pecos	12/2017	SOLAR	21	No	No	N/A	N/A	Complete
2	16INR0019	Capricorn Ridge Solar	Coke	12/2017	SOLAR	100	No	No	N/A	N/A	Incomplete
2	16INR0004	LaPaloma G	Cameron	2/2018	GAS	730	No	No	Yes	Yes	Complete
2	16INR0010	FGE Texas 1	Mitchell	4/2018	GAS	799	No	No	Yes	Yes	Complete
2	18INR0001	Rockwood G	Colorado	4/2018	GAS	1122	No	No	Yes	No	Complete
2	17INR0010	FGE Texas II	Mitchell	5/2018	GAS	799	No	No	Yes	No	Incomplete
2	14INR0027	Guadalupe II	Guadalupe	6/2018	GAS	362	No	Yes	Yes	No	Complete
2	16INR0045	Halyard Henderson	Henderson	6/2018	GAS	432	No	No	Yes	Yes	Complete
2	17INR0016	Navasota South Peaker	Wilson	6/2018	GAS	582	No	No	Yes	No	Complete
1	17INR0020a	RE Palmwood 2a Solar	Pecos	10/2018	SOLAR	100	Yes	Yes	N/A	N/A	Incomplete
2	16INR0005	Brownsville G	Cameron	12/2018	GAS	871	No	No	Yes	No	Complete
2	15INR0023	Indeck Wharton	Wharton	2/2019	GAS	654	No	No	Yes	Yes	Complete
2	16INR0008	Tenaska Roans Prairie	Grimes	4/2019	GAS	663	No	No	Yes	No	Incomplete
2	17INR0020b	RE Palmwood 2b Solar	Pecos	5/2019	SOLAR	200	No	No	N/A	N/A	Incomplete
2	13INR0023	Texas Clean C	Ector	12/2019	COAL	240	No	No	Yes	Yes	Complete
1	17INR0020c	RE Palmwood 2c Solar	Pecos	1/2020	SOLAR	100	Yes	Yes	N/A	N/A	Incomplete
1	17INR0020d	RE Palmwood 2d Solar	Pecos	7/2020	SOLAR	100	Yes	Yes	N/A	N/A	Incomplete