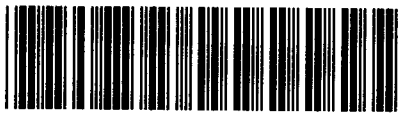
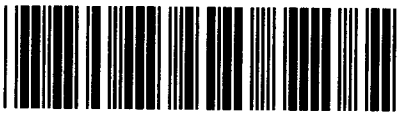


Control Number: 40000



Item Number: 373

Addendum StartPage: 0

PROJECT NO. 40000 2013 FEB 13 AM 9:58

COMMISSION PROCEEDING TO ENSURE RESOURCE ADEQUACY IN TEXAS	§ § §	**PUBLIC UTILITY COMMISSION OF TEXAS**

ERCOT ANALYSIS OF THE "INTERIM SOLUTION B" PROPOSAL DISCUSSED AT THE JANUARY 24, 2013 COMMISSION WORKSHOP ON SCARCITY PRICING ALTERNATIVES

COMES NOW, Electric Reliability Council of Texas, Inc. (ERCOT) and submits, as Attachment A, a presentation entitled "Analysis of the 'Interim Solution B' Proposal Discussed at the January 24, 2013 Commission Workshop on Scarcity Pricing Alternatives."

ERCOT prepared this presentation in response to a request from Chairman Nelson and Commissioner Anderson at the Commission's January 24, 2013 workshop, which was convened to discuss proposals advanced by Professor William W. Hogan in materials filed in this project.[1] The backcast analysis focuses on the potential impacts of the "Interim Solution B" concept discussed at the Commission's workshop. ERCOT's presentation outlines a methodology for determining an Operating Reserve Demand Curve (ORDC), examines the impact of different assumptions for the parameters of the ORDC, and provides a backcast analysis using data from 2011 and 2012.

ERCOT staff is prepared to answer questions regarding the analysis as requested by the Commission.

[1] Supplemental Comments of IPR-GDF SUEZ Energy North America, Inc. (comments attach Professor Hogan's paper entitled "Electricity Scarcity Pricing Through Operating Reserves: An ERCOT Window of Opportunity") (Interchange Item 355); Second Supplemental Comments of IPR-GDF SUEZ Energy North America, Inc. (comments attach Professor Hogan's paper entitled "Improved Scarcity Pricing and Operating Reserves") (Interchnage Item 370).

373

Respectfully submitted,

By: _____

Bill Magness
General Counsel
Texas Bar No. 12824020
(512) 225-7076 (Phone)
(512) 225-7079 (Fax)
bmagness@ercot.com

ERCOT
7620 Metro Center Drive
Austin, Texas 78744

ATTORNEY FOR ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.

Analysis of the "Interim Solution B" Proposal Discussed at the January 24, 2013 Commission Workshop on Scarcity Pricing Alternatives

Background and Objective of ERCOT Presentation

- At its January 24th PUCT workshop, Professor William W. Hogan presented his paper "Electricity Scarcity Pricing through Operating Reserves: An ERCOT Window of Opportunity" and ERCOT presented two potential interim solutions to achieve Dr. Hogan's proposal

- Based on the discussion at the workshop, the PUCT directed ERCOT to backcast the impacts of the Interim B proposal

- In this presentation ERCOT outlines a methodology for determining the Operating Reserve Demand Curve (ORDC) and examines the impact of different assumptions for the parameters of the ORDC

000004

Background and Objective of ERCOT Presentation

- Operating reserves include a variety of load and generation responses. Different capacities, ramp rates and notification requirements affect the marginal value of each category. For simplicity, the exploratory ORDC backcast presented here treats all operating reserves as the same.

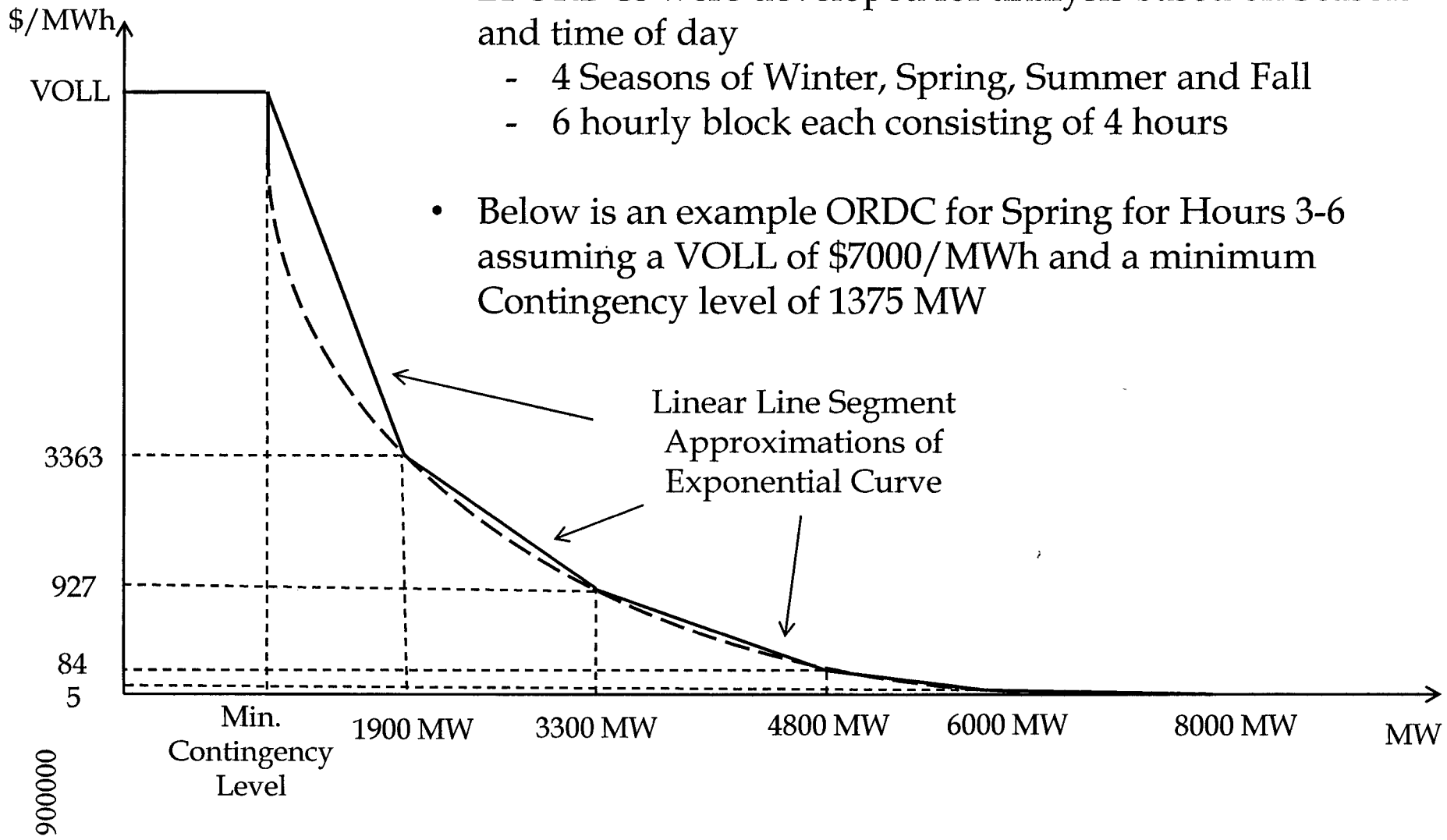
- Work is continuing to incorporate modifications in the model to include different categories of reserves, and this could have a material effect increasing the implied prices of faster responding reserves.

- ERCOT staff appreciates Professor Hogan's time and cooperation in this endeavor

000005

Operational Reserve Demand Curves used for the Analysis

- 24 ORDCs were developed for analysis based on Season and time of day
  - 4 Seasons of Winter, Spring, Summer and Fall
  - 6 hourly block each consisting of 4 hours
- Below is an example ORDC for Spring for Hours 3-6 assuming a VOLL of $7000/MWh and a minimum Contingency level of 1375 MW



Operational Reserve Demand Curves used for the Analysis

- A range of values at each breakpoint for the 24 ORDCs are shown in the table below for various VOLLs and Contingency levels. The values vary for different season and hours of the day.
  - The units for the data is $/MWh

Breakpoint	VOLL of $5000/MWh		VOLL of $7000/MWh		VOLL of $9000/MWh	
	1375 MW Contingency Level	1750 MW Contingency Level	1375 MW Contingency Level	1750 MW Contingency Level	1375 MW Contingency Level	1750 MW Contingency Level
MW Value of Min. Contingency Level	5000	5000	7000	7000	9000	9000
1900 MW	823 - 3305	1247 - 3813	1152 - 4627	1746 - 5338	1481 - 5949	2245 - 6863
3300 MW	90 - 1205	182 - 1717	127 - 1687	254 - 2403	163 - 2170	327 - 3090
4800 MW	2 - 165	7 - 273	3 - 232	10 - 383	4 - 298	12 - 492
6000 MW	0.03 – 27	0.13 - 50	0.04 - 38	0.18 - 70	0.05 - 48	0.23 - 90
8000 MW	0	0	0	0	0	0

000007

Methodology used to Determine the Minimum Price Adder

- The appropriate ORDC was determined based on the Season of the year and the time of the day. The price adder in Real Time was calculated using the selected ORDC and the remaining reserve level in Real Time
- Operating reserves include a variety of load and generation responses. Different capacities, ramp rates and notification requirements affect the marginal value of each category.
- For simplicity, all operating reserves were valued the same to get the lower end range of the price adder. The remaining reserves in Real Time for this analysis were determined as the sum of:
  - HSLs of non-WGRs and non-Nuclear Resources
  - Minus Base Points of non-WGRs and non-Nuclear Resources
  - HSLs of Offline Non-spin Resources
  - HSLs of Offline Resources that can be started from a cold start state in 30 minutes and are available
  - RRS available from Load Resources
- The methodology used for this analysis did not consider a discount for the price adder due to already high Real Time energy prices or potential changes in market behavior

800008

Minimum Price Increase for Different Values of Lost Load and Contingency Levels

Energy-weighted Minimum Average Price Adder (in $/MWh) based on Year and VOLL and a Contingency level of 1375 MW

VOLL	2011	2012	2011 & 2012 combined
$5000/MWh	5.22	0.47	2.87
$7000/MWh	7.31	0.66	4.02
$9000/MWh	9.40	0.85	5.17

Energy-weighted Minimum Average Price Adder (in $/MWh) based on Year and VOLL and a Contingency level of 1750 MW

VOLL	2011	2012	2011 & 2012 combined
$5000/MWh	8.51	0.93	4.77
$7000/MWh	11.91	1.30	6.67
$9000/MWh	15.32	1.68	8.58

600000

Minimum Price Increase for Different Seasons and Contingency Levels

Energy-weighted Minimum Average Price Adder (in $/MWh) based on Year and Season for a VOLL of $7000/MWh and a Contingency level of 1375 MW

Year	Winter	Spring	Summer	Fall
2011	6.78	0.95	17.16	0.20
2012	0.27	1.81	0.50	0.09
2011 & 2012 combined	3.60	1.38	9.09	0.15

Energy-weighted Minimum Average Price Adder (in $/MWh) based on Year and Season for a VOLL of $7000/MWh and a Contingency level of 1750 MW

Year	Winter	Spring	Summer	Fall
2011	9.54	1.75	28.76	0.49
2012	0.58	3.43	1.03	0.23
2011 & 2012 combined	5.16	2.60	15.32	0.36

000010

Potential Concerns about Market Incentives

- During the January 24th workshop, concerns were raised in regards to whether or not this proposed solution would incentivize negative market behavior

- Concerns included:
  - Resources ignoring instructions to "chase" the higher energy prices
  - Entities reducing Real Time offers to values below costs in order to offset the potential inconsistency
  - Entities needing to buy back Day-Ahead Market energy awards in Real Time at a higher cost due to inconsistency

- Dr. Hogan has proposed a reserve imbalance solution for the stated incentive concerns
  - This proposal has not yet been vetted with the ERCOT stakeholders