



ERCOT Actions Resulting from the April 17, 2006 EECF Event

ERCOT Board of Directors

December 12, 2006

Issues Addressed

- **ERCOT Load Forecast Improvement**
- **Changes to EECF Procedures**
- **Need for improved communication procedures with PUCT, Legislature and Public**
- **Operating Reserves**
- **Desirability of more Interruptible Load**
- **Review Transmission Operator Firm Load shedding Procedures**

- **Receiving second forecast from an independent load forecasting service**
 - Compare to AREVA forecast
 - Investigate reasons for any significant differences
 - Decide which one is best to use for Operations decisions
- **Project underway to make enhancements to AREVA load forecast model – PR 60084**
 - Upgrade from v2.2 to v2.5
 - Integrate multiple forecast sources into the application
 - Provide new methods to ensure data quality and reliability:
 - Reasonability limits
 - Rate-of-change detection
 - Weather data verification

Improvement in Mid-Term Load Forecasts

Month	Mean Absolute Percent Error for MTLF run at 16:00 Day Ahead (2005)	Mean Absolute Percent Error for MTLF run at 16:00 Day Ahead (2006)
January	5.02	4.79
February	3.47	4.81
March	3.41	4.95
April	3.37	5.59
May	4.21	3.59
June	3.91	2.65
July	5.22	2.62
August	4.86	2.09
September	6.24	4.03
October	4.51	3.63
November	4.53	3.28
December	5.95	N/A
Average MAPE for year	4.56	3.82

- **Approved by Board in November**
- **Implemented December 1, 2006**
 - Bases Notices, Advisories, Alerts and initiation of Steps 1 and 2 of EECP on discounted real-time reserves based on past experience
 - Public appeal for conservation can be made Pre-EECP, but no later than EECP Step 2 (when interruptible load is shed)
- **New Procedures in place for purposes of external communications**

ERCOT External Communications and EECF

System Operations Notice	ERCOT action / communication	Triggering event
“Alert”	Notify PUC – Tight capacity; conditions are being watched closely (Notified again when alert is cancelled)	To maintain 2500 MW Physical Responsive Capability (PRC)
“Potential for Firm Load Shed” at “Medium” or “High”	Notify PUC, SOC, Legislative/Government leadership, Board, Market Participants Issue media appeal for public conservation if management deems appropriate	System Operations Shift Supervisor determines potential based on situation
EECF Step 1	Use generation available from DC ties Dispatch uncommitted units	To maintain 2300 MW PRC
EECF Step 2	Deploy all responsive reserves, including interruptible loads (LaaRs) Implement block-load transfers of load to neighboring grids Issue media appeal for public conservation, if not already in effect	To maintain 1750 MW PRC
EECF Step 3	Instruct transmission operators to shed firm load via rotating outages in blocks of 100 MW	To maintain system frequency at 59.8 Hz or greater
Cancellation of EECF Step 3	All firm load restored	Frequency restoration
Cancellation of EECF	Media, PUC, SOC, Legislative/Government leadership notified	Grid conditions normal

Communications: Pre-EECP and EECP

Early Notifications



PUC

- Commissioners
- Exec. Director
- Media relations
- Infrastructure/Reliability
- Govt. Relations

Legislative Leadership

Governor's Office

SOC Hotline

ERCOT Officers, Board, & Client Services

Market Participants

- Subscriber list screened by ERCOT
- ROS on System Operations "PUCT Daily Report" emails

All EECP Stages



All of the above PLUS.....

- News media
- All legislators
- All market participants & other interested parties
- Activate ERCOT.com web page for public updates

Operating Reserves

- **EECP revision changes how reserves are monitored in real time and base notices and EECP implementation on discounted value (Physical Responsive Capability – PRC)**
- **Revised criteria for Non-Spinning Reserve procurement approved by Board in November with Ancillary Services requirements document**
 - Open second market for additional reserves based on analysis of next day's Resource Plan

Increased Interruptible Load

- **ERCOT Staff proposed an Emergency Interruptible Load Program (EILP) to obtain additional interruptible load that can be interrupted after EECF Step 2 and before Step 3 (firm load shedding)**
- **WMS set up a special task force to develop PRR for submittal to PRS**
 - Two PRRs developed
 - To be submitted for PRS consideration in January
- **PUCT has parallel project pending with several workshops conducted**

Firm Load Shedding Procedure

- **ERCOT sets the amount (MW) of load shed for each Transmission Operator (TO)**
- **Protocols only have general requirement for TOs to keep in mind “the need to protect the safety and health of the community and the essential human needs of the citizens.”**
- **ERCOT conducted survey of TO firm load shedding procedures**

Load Shedding Survey Results

- **Responses from 15 of 17 TOs (Non-responders ~ 1% of load shed responsibility)**
- **All TOs have established firm load shedding procedures**
- **All TOs rotate customer outages**
 - Minimum 15 minutes
 - Maximum 45 minutes
 - Average 18 minutes
- **Average time to shed load depends on amount requested by ERCOT**
 - 7 minutes for 100 MW
 - 13 minutes for 1000 MW
- **All but one TO has procedure for exempting or prioritizing critical customers (that TO has 15 minute rotation)**