Austin Energy
Briefing on System Operations
Rolling Blackouts

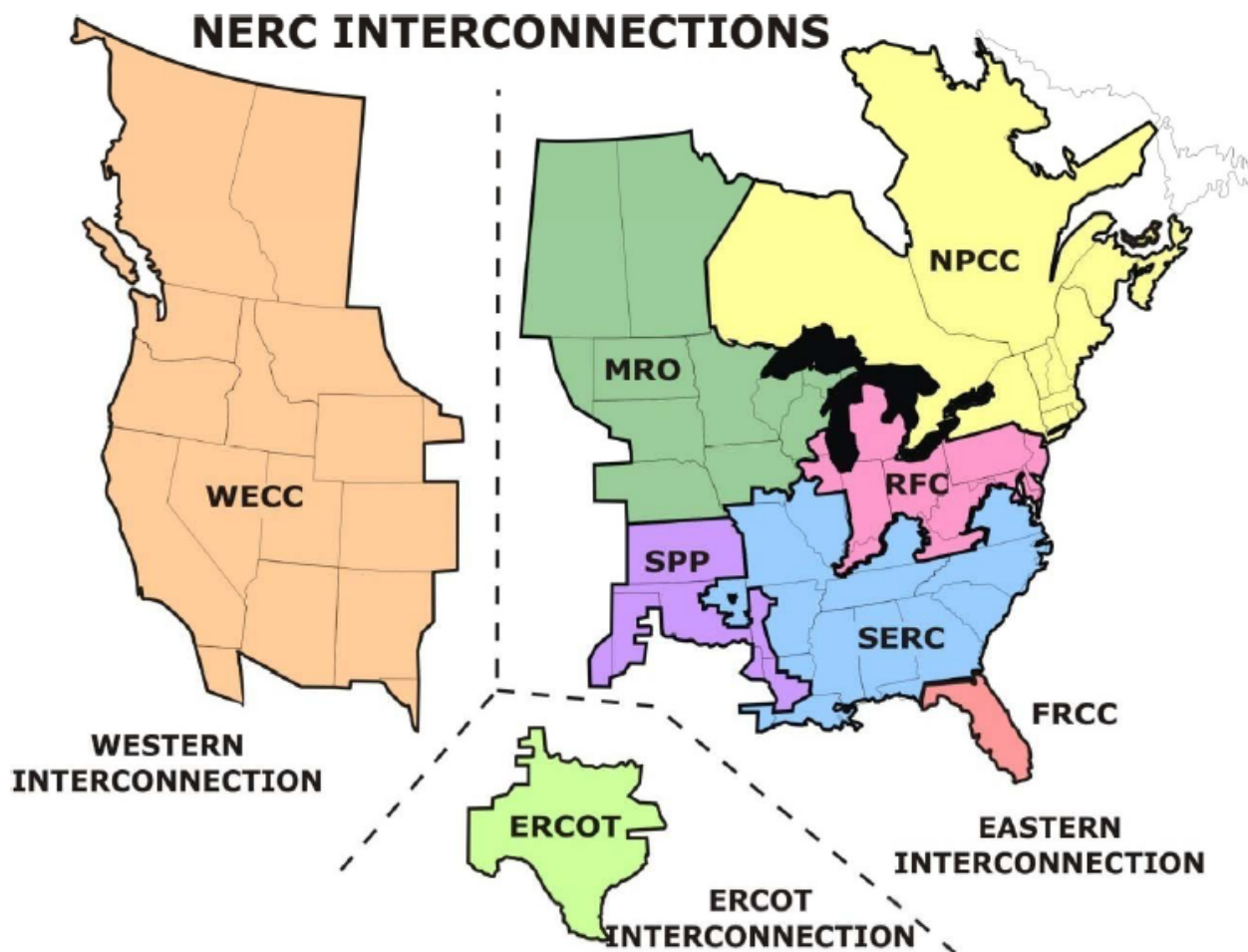*Mission:* *Deliver clean, affordable, reliable energy and excellent customer service.*

Cheryl Mele, Deputy General Manager

February 28, 2011

Electric Utility Commission

North American Reliability Regions

# Electric Reliability Council of Texas (ERCOT)

ERCOT grid serves 85% of Texas

ERCOT Rolling Blackouts

- Weather event - insufficient generation and high consumption

- Third time in recent history for AE (12/22/1989, 4/17/2006, 2/02/2011)

- Additional generation unable to start and stay online

- ERCOT alerts when reserves below 3,000 MW

- Rolling blackouts ordered by ERCOT as last step to restore grid balance

- If grid frequency declines to 59.3 Hz, relays activate automatically to prevent system blackout

ERCOT implemented emergency procedures when available generation was no longer sufficient to serve load.

Actual Generation vs. Actual Load

EEA Level 3 @ 05:43
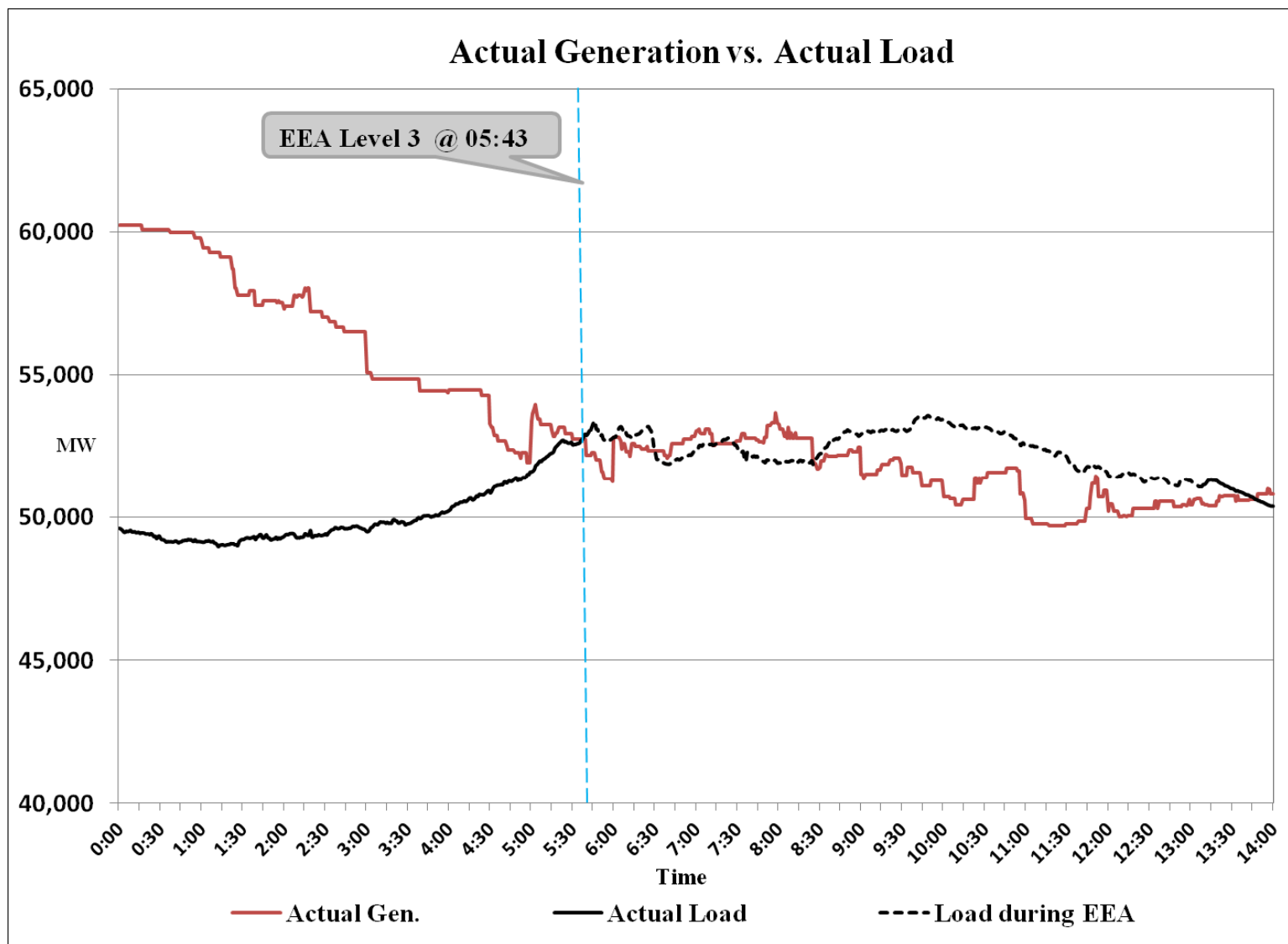
Rolling Blackout Response

- AE's system "shares the outage" within ERCOT

- Energy Control Center staff responded to ERCOT directive to begin load shedding immediately

- AE generation had minor interruptions

- Situation progressed rapidly
  - 12:01- 6:00 a.m. – Over 80 generating units trip & reduced output
  - 2:47 a.m. - Reserves shortage by ERCOT
  - 5:08 a.m. - ERCOT issued physical response below 2,500 MW notice
  - 5:17 a.m. - Energy Emergency Alert Level 2a (EEA2a) activated Emergency Interruptible Load Service (EILS) and Loads Acting as Resources (LaaRs)
  - 5:43 a.m. - Load shed ordered

Austin Energy Communications

- 5:42 a.m. - AE corresponded with City Of Austin Emergency Operations Center (EOC) shortly after ERCOT issued Energy Emergency Alert Level 2a (EEA2a) at 5:17 a.m.

- 6:14 a.m. - AE communicated with media and Corporate PIO initially followed by
  - Ongoing status reports throughout the day

- AE maintained staffing at City Of Austin Emergency Operations Center (EOC) once activated

AE Criteria for Load Shed Plan

- ERCOT requires AE to develop a load shed plan

- AE plan is to shed 4% share of 1,000 MW or 40 MW via rolling blackouts

- Plan includes 44 circuits with rotations targeting about 7-10 minute outages for 10 circuits at a time

- Internal policy considers the function and service of each of the 376 circuits in service at any given time

- 332 circuits are excluded from load shed plan
  - **211** health and safety critical loads and industrial loads
  - **31** serving downtown network
  - **90** with automatic required under frequency load shed relays

- 48 circuits utilized for rolling blackouts impacting more than 80,000 or 20% of AE customers

AE Distribution Circuits

Attachment 6
AE Distribution Circuits
Used for Load Reduction
February 2, 2011
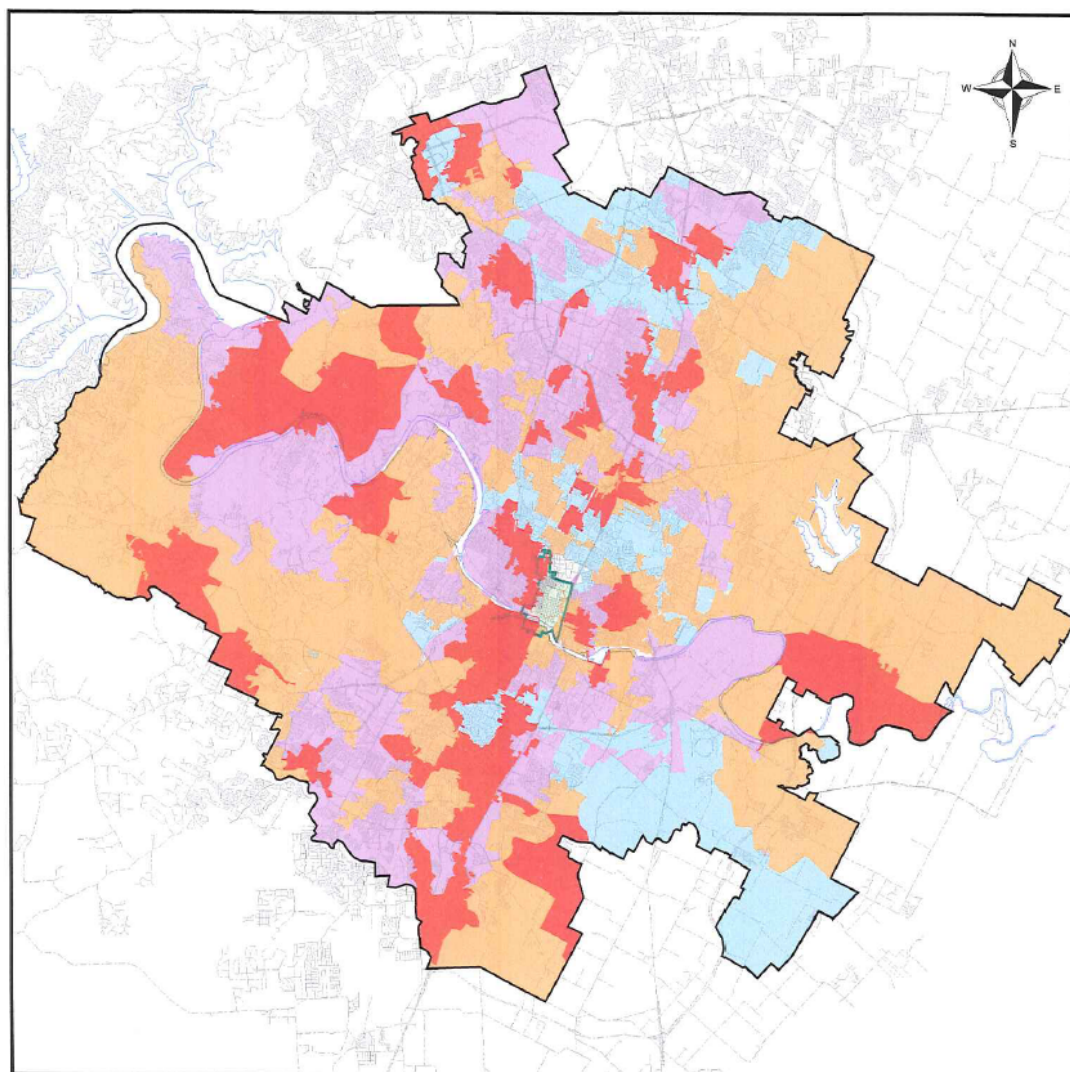
Load Shed Circuits

Industrial Circuits

Critical Load Circuits

Under Frequency Circuits

Network

Austin Energy Service Area

Street Centerline

Note: Circuit areas are approximate boundaries

0mile   2mile   4mile   6mile

02/08/2011

This map has been produced by Austin Energy for the sole purpose of geographic reference. No warranty is made by the City of Austin regarding specific accuracy or completeness.

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Health and Safety Critical Loads

- Defined as those benefiting public safety, security and health

  – Hospitals, inpatient treatment and surgery centers with overnight facilities

  – Licensed eldercare nursing facilities, dialysis facilities, residential hospice

  – Water and sewage treatment facilities

  – Airport

  – Public safety, military, detention facilities, 911 & 311

  – Media broadcasting facilities

Outages larger and longer than planned

- AE Plan based on 1,000 MW system wide load shed, 40 MW for AE

- ERCOT rapidly increased load shedding requirement to 4,000 MW system wide, 160 MW for AE
  - Duration of rolling blackout intervals increased to 30-45 minutes
  - Included up to 40 circuits at a time to meet ERCOT obligations

- Power outages also occurred outside load shed operation

AE Customers Responded

- About 45 commercial & industrial customers responded to AE's appeal for conservation on behalf of ERCOT

- AE staff in constant contact with 500+ customers to encourage load conservation and provide updates including:
  - State and local agencies
  - School districts (8), local colleges and universities
  - Hospitals
  - Industrial facilities
  - Large residential retirement communities

- AE staff expanded communications to include small businesses, national retail and social service non-profits

Overall AE Power Plants Performed Well

- AE planned for the weather

- Outage crews were ready

- Power plant crews completed cold weather checklists

- Some weather impact on AE units
  - 400 MW unit producing 90 MW tripped off line at 1:04 a.m. and was back online at 2:14 a.m. prior to rolling blackouts
  - 50 MW unit derated by 25 MW at 8:53 a.m. and 11:17 a.m. and was running consistently by 12:54 p.m.
  - 25 MW unit failed to start at 4 a.m. and was online at 2:33 p.m.

- AE switched from gas to oil in a 325 MW Decker unit to mitigate potential gas delivery issues

AE – Impacted Power Plants

Austin Energy units that experienced a Forced Outage, as defined in the ERCOT Protocols, at some time during **February 1 – 4, 2011**. Table below is an excerpt from the ERCOT Forced Outage List – Public Version 1.3

Resource Entity (RE)	Resource Name/Physical Unit Name	Primary Fuel	County
CITY OF AUSTIN DBA AUSTIN ENERGY (RES)	CITY OF AUSTIN DBA AUSTIN ENERGY (RES)_DECKER_DPG2	Natural Gas	Travis
CITY OF AUSTIN DBA AUSTIN ENERGY (RES)	CITY OF AUSTIN DBA AUSTIN ENERGY (RES)_DECKER_DPGT_1	Natural Gas	Travis
CITY OF AUSTIN DBA AUSTIN ENERGY (RES)	CITY OF AUSTIN DBA AUSTIN ENERGY (RES)_DECKER_DPGT_2	Natural Gas	Travis
CITY OF AUSTIN DBA AUSTIN ENERGY (RES)	CITY OF AUSTIN DBA AUSTIN ENERGY (RES)_DECKER_DPGT_3	Natural Gas	Travis

DPG2 – tripped on 2/2 – Drum level transmitter malfunction – prior to event

DPGT 2 – derated on 2/2 – Speed sensor failure

DPGT 3 – failed to start on 2/2 – Air inlet valve frozen

DPGT 1, 2 & 3 – tripped on 2/4 due to inadvertent activation of fire protection system

Next Steps

- Reviews of this event already initiated by
  - Public Utility Commission of Texas (PUCT)
  - Electric Reliability Council of Texas (ERCOT)
  - North American Electric Reliability Corporation (NERC) and Texas Reliability Entity (TRE)
  - Texas Senate Business and Commerce and Natural Resources Committees (Tuesday, February 15)
  - Texas Railroad Commission (Natural Gas Regulation)
- AE to evaluate process and identify improvements
  - Policies and load shed plan
  - Communications procedures
  - Other alternatives