THE DEREGULATED TEXAS ELECTRICITY MARKET

March 4, 2016
RECENT HISTORY OF TEXAS ELECTRICITY MARKET
1999 – 2015

1999:
• S.B. 7 passed
• Deregulated TX electricity market
• Established RPS

2002:
• S.B. 7 implemented with RPS goal of 2,880 MW by 2009; beginning of retail competition

2005:
• S.B. 20 passed
• Expanded RPS goal of 5,880 MW by 2015 and a target of 10,000 MW by 2025
• Established CREZ

2006:
• ERCOT completes its CREZ study

2007:
• TX surpassed expanded 2015 RPS goal

2008:
• PUCT approved $5B CREZ transmission project
• GE Energy delivers its report, “Analysis of Wind Generation Impact on ERCOT”
• ERCOT finalizes CREZ transmission optimization study

2009:
• TSPs selected to build CREZ

2010:
• TX surpassed expanded 2025 RPS goal
• CREZ line construction began

2010-2013:
• CREZ projects proceed; route segments selected

2013:
• Final CREZ line construction completed

2015:
• TX sets all-time record for wind energy production (13.9 GW)

CREZ: Competitive Renewable Energy Zones
ERCOT: Electric Reliability Council of Texas
PUCT: Public Utility Commission of Texas
RPS: Renewable Portfolio Standard
TSP: Transportation Service Provider
S.B. No. 20

(g) The commission, after consultation with each appropriate independent organization, electric reliability council, or regional transmission organization:

(1) shall designate competitive renewable energy zones throughout this state in areas in which renewable energy resources and suitable land areas are sufficient to develop generating capacity from renewable energy technologies;

(2) shall develop a plan to construct transmission capacity necessary to deliver to electric customers, in a manner that is most beneficial and cost-effective to the customers, the electric output from renewable energy technologies in the competitive renewable energy zones; and

(3) shall consider the level of financial commitment by generators for each competitive renewable energy zone in determining whether to designate an area as a competitive renewable energy zone and whether to grant a certificate of convenience and necessity.
IDENTIFY AREAS OF HIGHEST WIND POTENTIAL
PUC PROJECT NO. 33577

Best Wind Zones are in West Texas

Possible Wind Zones in other parts of state are not as windy -- Electric production costs will be higher

In Time, Texas Offshore should be viable

South Texas winds blow match load well

Source: PUCT
CREZ OPTIONS
25 DIFFERENT ZONES

Source: ERCOT
CREZ TRANSMISSION LINES

Competitive Renewable Energy Zones (CREZ)
Transmission Optimization Study
Figure 5: Scenario 2

Source: PUCT
SELECTION OF TRANSMISSION LINES
PUC DOCKET NO. 35665

CREZ Projects - TSP's

Legend

<table>
<thead>
<tr>
<th>CREZ Zones</th>
<th>Transmission Service Provider (TSP)</th>
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<tr>
<td>Panhandle A</td>
<td>Bandera</td>
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<tr>
<td>Panhandle B</td>
<td>Brazos</td>
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<tr>
<td>Central</td>
<td>Cross Texas</td>
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Source: PUCT
THE CREZ PROCESS WAS A NEW PROCESS

• Typically, transmission is built from generation or to load when there are no lines or when current lines get congested.

• Designating the zones and building transmission before the generation is in place is the reverse of what normally happens; removes “the chicken or the egg” problem.

• PURA 39.904(h) – In reviewing CREZ CCN applications, “need” should not be considered.

• The PUC approved different transmission providers to build the CREZ lines to encourage new market participants rather than rely exclusively on incumbent TSPs.

• New TSPs awarded projects in Panhandle of West Texas, as well as “non-priority projects.”
TRANSMISSION LINE APPROVAL PROCESS

• Under PURA, the PUC must consider factors such as the community, historical, and aesthetic values, and the environmental integrity associated with the transmission line.

• Additional factors in PUC rules are whether the routes:
  – utilize existing compatible rights-of-way, including the use of vacant positions on existing multiple circuit transmission lines;
  – parallel existing compatible rights-of-way;
  – parallel property lines or other natural or cultural features; and
  – conform with the policy of prudent avoidance.

• Utilities must apply to the PUC for a certificate of convenience and necessity (CCN) before it can build a power line.

• Originally, TSPs provided the PUC with a “preferred route” and two alternate routes, but unintended consequences led to elimination of the “preferred route” requirement.

• After transmission lines were selected, the TSPs had to apply for a CCN, which gives utilities the power of eminent domain to obtain the use of private property easements for the power lines.
WIND ENERGY IN TEXAS
2005 – 2015 (MWH PER YEAR)

Source: ERCOT
U.S. WIND POWER CAPACITY INSTALLATIONS, BY STATE
FOURTH QUARTER 2015

TEXAS ENERGY USE COMPARISON
2003, 2009, & 2014

Energy Use 2003
Total energy consumed: 279,373,420 MWh
Source: ERCOT Public

Energy Use 2009
Total energy consumed: 305,432,222 MWh

Energy Use 2014
Total energy consumed: 340,033,353 MWh
Energy Use 2015

Total Energy Consumed:
347,522,948 MWh

Source: ERCOT Public
Barry is the only person to ever serve on both the Public Utility Commission of Texas (PUCT) and the Railroad Commission of Texas (RRC), and is a nationally recognized authority on a number of emerging energy trends. With this background, Barry brings unique experience and perspective when advising clients on issues relating to state and federal regulations, energy project development, legislative matters, and energy litigation.

Barry's experience at the PUCT and RRC, coupled with his service on a number of national and regional energy-focused boards and committees, gives him particular insight into emerging developments such as unconventional oil and gas development, electric transmission development, renewable energy generation, and energy storage.

Barry was appointed to the RRC in 2011 to serve an unexpired term and, in 2012, was elected statewide for a two-year term. He was later chosen by his colleagues to serve as chairman of the RRC. During his chairmanship, he also served as chair of the Gas Committee of the National Association of Regulatory Utility Commissioners from 2013 to 2014.

Prior to his service with the RRC, Barry was a member of the PUCT for more than seven years and served as chairman of the agency for most of 2007 to 2011. In addition to a number of significant achievements, Barry is best known for leading the PUCT’s adoption and management of the 3,600-mile Competitive Renewable Energy Zone transmission line project, handling routing disputes and acting as the agency’s liaison with the Texas Legislature, service providers, and landowners.

Prior to beginning public service, Barry spent 16 years as an investment banker. He held leadership positions with several firms, including Lazard, where he led the Houston office; The First Boston Corporation, where he was co-head of the “sunnybelt infrastructure” group; J.P. Morgan Securities, where he was head of Texas public finance; and Banc One Capital Markets, where he was the National Head of tax-exempt origination. During this time, he managed billions in municipal bond offerings on behalf of state and local governments.
THANK YOU