Report on Existing and Potential Electric System Constraints and Needs

December, 2010

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1. Executive Summary

The annual Electric System Constraints and Needs report is provided by the Electric Reliability Council of Texas, Inc. (ERCOT) to identify and analyze existing and potential constraints in the transmission system that pose reliability concerns or may increase costs to the electric power market and, ultimately, to Texas consumers. This report satisfies the annual reporting requirements of Public Utility Regulatory Act (PURA) Section 39.155(b) and Public Utility Commission (PUC) Substantive Rule 25.361(c)(15) and a portion of the requirements of Substantive Rule 25.505(c).

Background

ERCOT prepares this report annually to summarize the continuing efforts to plan a reliable and efficient transmission system. It provides highlights of completed improvements from 2009 through August 2010 and of planned improvements for 2011 through 2015 as well as an analysis of the impact of these cumulative improvements on future congestion.

As the transmission planning authority for the Region, ERCOT works with its stakeholders to identify the need for new transmission facilities based on engineering analysis of four principal factors:

Operational Results - The results of actual ERCOT operations are analyzed on a continual basis in order to identify areas of recurring congestion and to identify activities that can and should be taken to meet reliability standards while gaining efficiency from the existing network.

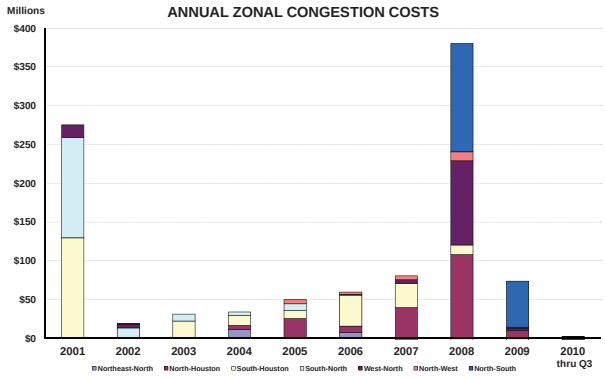
Load Forecasting - Load forecasts developed by ERCOT planning staff using econometric modeling techniques, as well as delivery point forecasts developed by the transmission providers, are used to study projected system needs due to customer load growth.

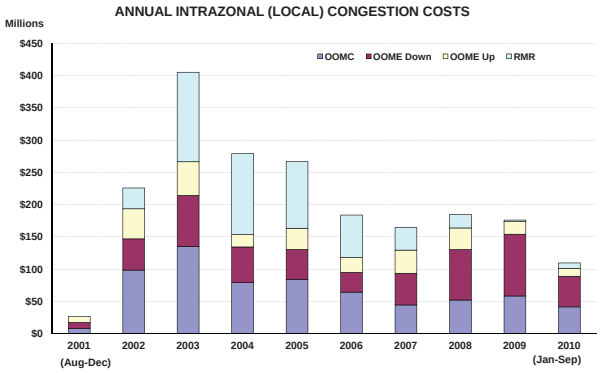
Generation Interconnections - ERCOT processes requests to interconnect, change, or decommission generation throughout the ERCOT Region. Studies of these requests enable planning staff to analyze and respond to the impact of the resulting changes in power injection into the system.

Transmission and System Studies - ERCOT planning staff, with input from stakeholders through the Regional Planning Group (RPG), evaluates and endorses transmission improvements required to meet the North American Electric Reliability Corporation (NERC) and the ERCOT Region's reliability criteria and to reduce expected congestion based on ERCOT's economic planning criteria.

Highlights

This report presents data and updates for each area of the ERCOT Region, including defined congestion zones, intra-zonal (local) congestion areas, and weather zones. Congestion costs are significantly down from a high of over $375 million in 2008, in part due to a combination of events, including a reduction in fuel costs, revised market rules, and transmission system improvements. In 2010, congestion costs were the lowest they have been since 2002.





Since 2009, ERCOT transmission providers have completed numerous improvement projects affecting approximately 1,933 miles of transmission and about 12,299 MVA of autotransformer capacity, with an estimated capital cost of over $2 billion.

SUMMARY OF MAJOR COMPLETED TRANSMISSION IMPROVEMENTS

Weather Zone	Completed Improvement	In-Service	Voltage	Circuit Miles
Coast	Meadow New Switching Station	May-10	345	0.1
Coast	Alvin New Switching Station	May-10	138	-
East	Tyler Grande New Switching Station and New Autotransformer	Apr-09	345/138	-
East	Singleton New Switching Station	Apr-09	345	0.5
Far West	Big Spring - Chalk - McDonald 69 kV Line Rebuild	Apr-09	138	35.2
Far West	Stanton East - Big Spring Switch 138 kV Line Rebuild and New Auto	May-10	138	21.6
North	Bowman - Jacksboro Switch Rebuild Line	Jun-10	345	46.7
North Central	Parkdale New SVC Installation	Jun-09	138	-
North Central	Goldthwaite - Evant Line Rebuild	May-10	138	24.0
North Central	RD Wells - Hickory New Line	May-10	69	1.6
North Central	Renner New SVC Installation	Jun-10	138	-
North Central	W. Levee - Norwood New Line	Jun-10	345	6.5
South	Lobo New Switching Station	Jun-09	138	-
South	Lobo - San Miguel New Line	Mar-10	345	113.8
South Central	Sandow Switch - Salty - Thorndale North - Taylor Line Upgrade	Apr-09	138	21.9
South Central	Taylor - Taylor West - Hutto Switch Line Upgrade	Jun-09	138	10.1
South Central	Sandow Switch - Elgin Switch Line Rebuild	Apr-10	138	21.8
South Central	Elgin - Gilleland Creek Line Upgrade	May-10	138	12.9
South Central	Hutto Switch - Salado Switch New Line	Jun-10	345	73.8
South Central	Hutto New Switching Station and New Autotransformer	Jun-10	345/138	-
West	Abilene South - Putnam Line Upgrade	Mar-09	138	35.3
West	Yellowjacket New Station and Phase Shifting Transformer	Jan-10	138	-
All Areas	Total Lines	2009-2010	345/138/69	1,933
All Areas	Total Autotransformers	2009-2010	345/139	12,299 MVA

The planned projects included in this report are estimated to cost over $9 billion over the next five years and are expected to improve or add 7,866 circuit miles of transmission lines and 27,026 MVA of autotransformer capacity to the ERCOT system. These totals include that portion of the planned Competitive Renewable Energy Zone (CREZ) additions that are planned to be in service by the end of 2013.

SUMMARY OF MAJOR PLANNED TRANSMISSION IMPROVEMENTS

Weather Zone	Completed Improvement	Voltage	In-Service	Circuit Miles
Coast	Zenith Switching Station Addition	345	2011	-
Coast	Garrott - Midtown - Polk Upgrade	138	2011	2.4
Coast	Zenith - Fayettteville Double Circuit Line Addition	345	2015	120
East	Bell County East - TNP One Double Circuit Line Addition	345	2011	82.6
Far West	Faraday Switch Station and Autotransformer Addition	345/138	2014	-
North Central	Renner Static Var Compensators Phase II	138	2011	-
North Central	Hicks Autotransformer and Hicks - Elizabeth Creek Double Circuit Line Addition	345/138	2014	3.8
North Central	Jack County Autotransformer Addition	345/138	2015	-
South Central	Gilleland Creek Autotransformer Addition	345/138	2011	-
South Central	Zorn/Clear Springs - Gilleland Creek - Hutto Switch Double Circuit Line Addition	345	2011	165
All Areas	Total Lines	345/138/69	2011-2015	7,866
All Areas	Total Autotransformers	345/138	2011-2015	27,026 MVA

Additionally, this report contains an update of the CREZ process as well as a summary of the 2010 Long-Term System Assessment.

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2. Transmission Planning Process

The ERCOT transmission planning process integrates requests for transmission service to interconnect new power producers and consumers, as well as supports continued safe and reliable service while accommodating growth for existing customers. In collaboration with transmission providers and other interested stakeholders, ERCOT staff assesses the electric needs of existing and potential transmission system users, on both an individual and collective basis, to determine whether transmission upgrades are required and to respond to the need. All ERCOT recommendations are supported by a series of detailed technical analyses in accordance with industry-accepted performance criteria and practices and the Regional Planning Group (RPG) Charter and Procedures.

For this planning process, ERCOT seeks input from all market participants and stakeholders about options and possible solutions. The ERCOT-led RPG is a forum for market participants, as well as the general public, to provide input. Participants of the RPG have the opportunity to highlight needs and to propose solutions, which ERCOT staff will evaluate as a part of the overall system plan. The RPG also provides participants a way to review and comment on proposed projects that address transmission constraints and other system needs.

By utilizing the RPG forum, ERCOT is committed to being inclusive - to share proposals openly and to listen to a diverse spectrum of interested entities - in the development of transmission improvement proposals. Potential projects to be reviewed by ERCOT and the RPG can be proposed by ERCOT staff, individual transmission providers, other market participants, the Public Utility Commission of Texas (PUC), or the general public. The RPG generally meets monthly, as well as exchanges information via e-mail. Agendas and presentations are available publicly, and project files are posted to a secure web site.

As stated in the RPG Charter and Procedures[1], major projects must be endorsed by the ERCOT Board of Directors. Following the RPG review, ERCOT staff will complete an independent review of the projects and make recommendations to the ERCOT Board of Directors for approval. The ERCOT Board will be asked to endorse major projects that have met the following criteria:

- ERCOT staff has recommended the proposed transmission project based on its analyses of identified constraints, including proposals from transmission providers and any necessary requirements to integrate new generation facilities.
- The project has been reviewed and considered through the open RPG process.
- ERCOT staff has determined the designated provider of the additions.

Following the Board of Directors review, ERCOT will notify the PUC of all ERCOT Board-endorsed transmission facility additions and their designated providers.

1 The RPG Charter and Procedures document is available at http://www.ercot.com/committees/other/rpg/

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3. Load

Forecasting electrical demand and energy is one of the most significant factors in determining the future infrastructure needs of the ERCOT power system. Should the forecast understate the actual load growth, adequate facilities may not be in place in time to reliably serve the load. On the other hand, if the forecast overstates the actual growth, facilities may be built before they are necessary, resulting in inefficient use of resources.

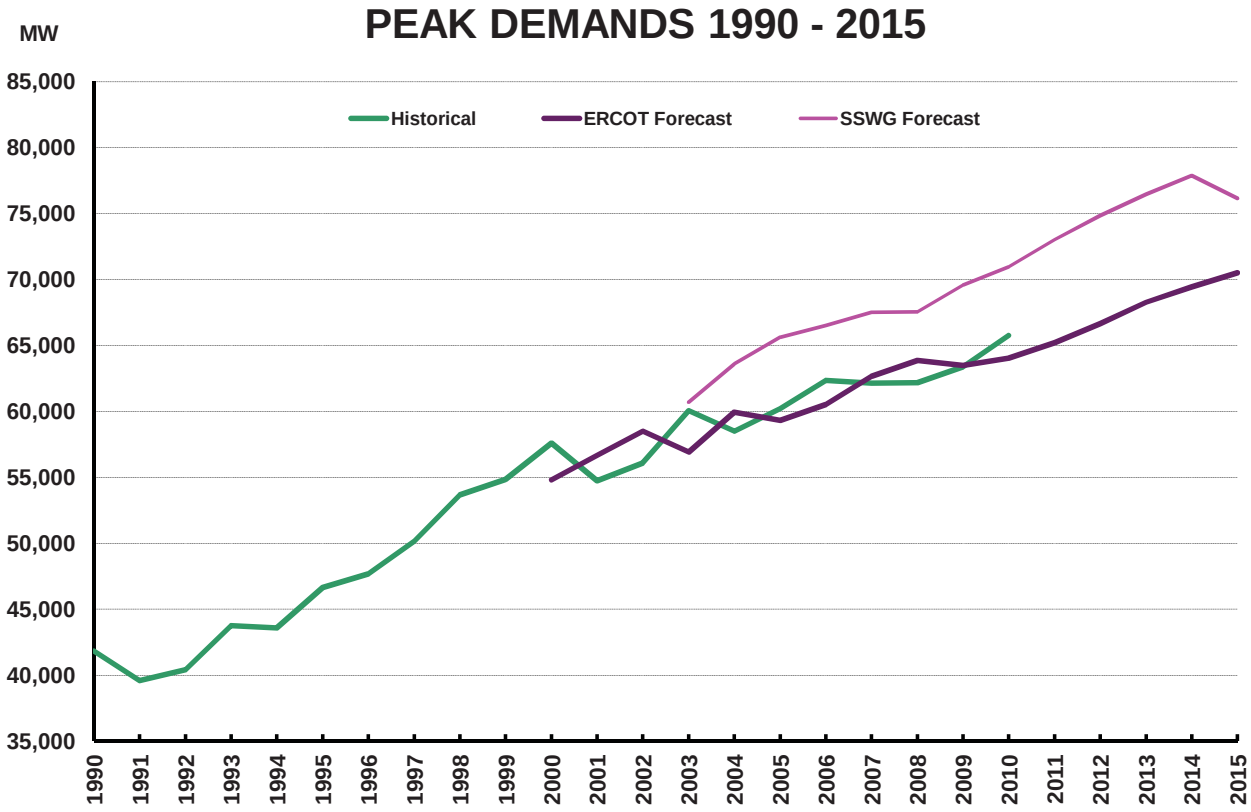
To develop the most reasonable load projections for the system, ERCOT load forecasters consider a wide range of variables such as population, weather, land usage, general business economy, governmental policy, and societal trends in terms of both historical load data and the best predicted future indicators available.

3.1 Peak Demand

The 2011 summer peak demand forecast of 65,206 MW represents a slight decrease from the 2010 actual peak demand of 65,776 MW, which occurred during a period of sustained, above-normal temperatures. The ERCOT system forecast for 2011 as reported in the 2010 Long-Term Hourly Demand and Energy Forecast (LTDEF) is virtually unchanged from the system forecast for 2011 as reported in the 2009 LTDEF. This forecast, as compared to a few years ago, is mainly due to the continuing economic recession as reflected in the economic outlook for the state of Texas.

The key factor driving the peak demands and energy consumption is the overall health of the economy as measured by economic indicators such as the real per capita personal income, gross domestic product (GDP), and various employment measures, including non-farm employment and total employment.

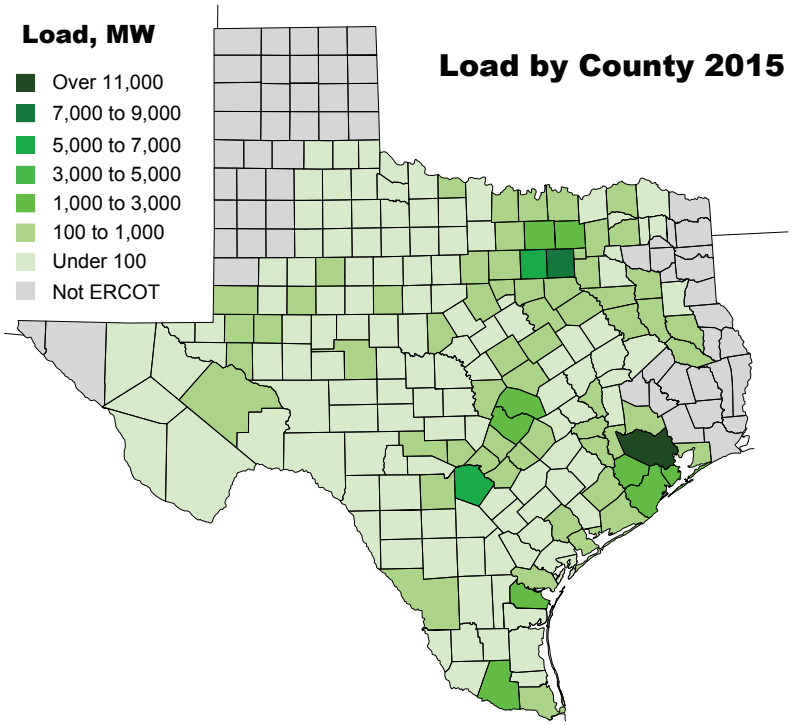
The figure below shows the historical peak demand from 1990 through 2010 and the forecasted peak demand through 2015. The historical compound growth rate for the last five years is slightly over 1%. The forecasted annual growth rate between 2011 and 2015, the next five years, is 1.89% due to a strong economic recovery after 2011 reflected in the economic forecast. The all-time hourly peak demand for ERCOT of 65,776 MW was recently set this past summer, occurring on August 23, 2010.

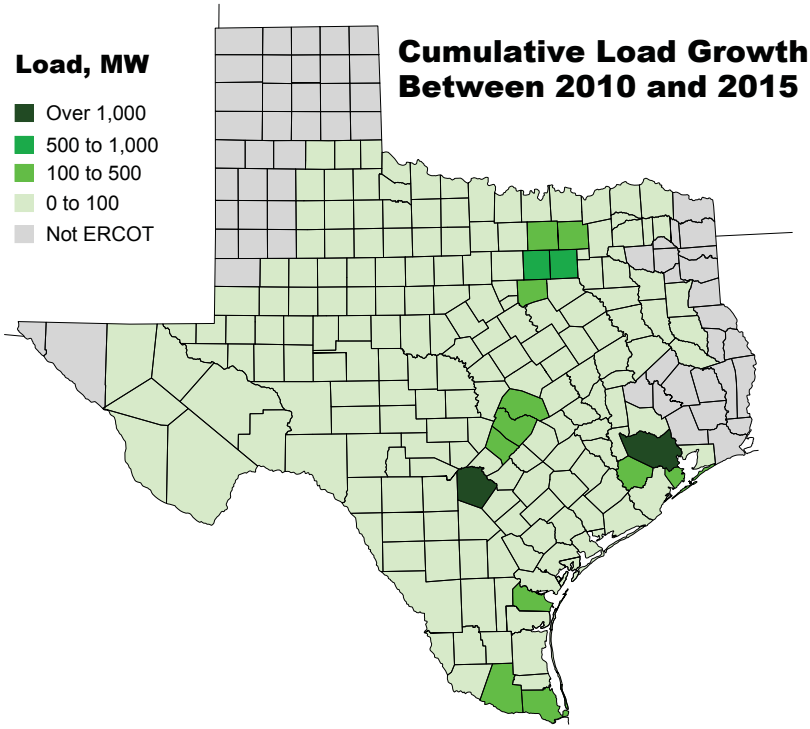


The Steady-State Working Group (SSWG) load forecast is developed by the aggregation of the individual load forecasts provided by each transmission and distribution provider submitted to ERCOT in the Annual Load Demand Request (ALDR). This forecast uses the non-coincident peak of each individual transmission and distribution provider. The SSWG load forecast, depicted above, was modified to remove the Private Use Network (PUN) load that is also excluded from the ERCOT load forecast. The SSWG forecast is used to determine the reliability needs of the ERCOT transmission system.

3.2 Non-coincident Peak by County

The loads by county shown to the right are non-coincident peak demand forecasts provided by the transmission and distribution providers in the 2010 ALDR. The counties with the greatest peak demands are Harris, Dallas, Tarrant, and Bexar. These four counties comprise roughly 46% of the load within ERCOT.





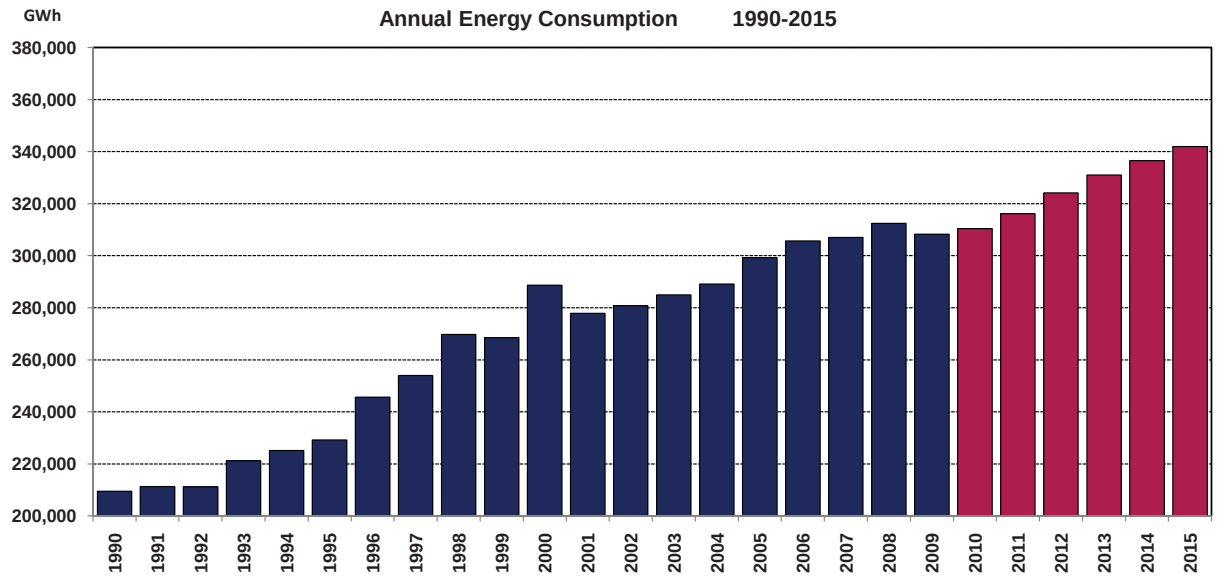
While ERCOT's overall peak demand forecast calls for almost a 2% annual growth rate, some areas within the state are experiencing growth as high as 6.5% per year. As expected, the greatest growth is around the metropolitan areas. The counties with the greatest expected cumulative load growth are Bexar, Harris, Dallas, and Tarrant. Other areas expected to experience significant load growth include the counties along Interstate 35 between San Antonio and Waco, counties near Dallas, Fort Worth and Houston, and the lower Rio Grande Valley.

3.3 Energy

While the peak demand forecast provides an indication of the size of electrical facilities that should be constructed to serve the expected peak demand, the energy usage forecast assists in determining the usage of these facilities over all hours of the year.

The overall energy forecast growth rate from 2010 to 2015 is 2.0%. The forecasted energy growth rate from the actual energy in 2009 to the forecast for 2010 is 0.7%. The key factor driving the low energy consumption is the outlook of the overall health of the economy as captured by economic indicators such as the real per capita personal income, gross domestic product (GDP), population, and various employment measures including non-farm employment and total employment.

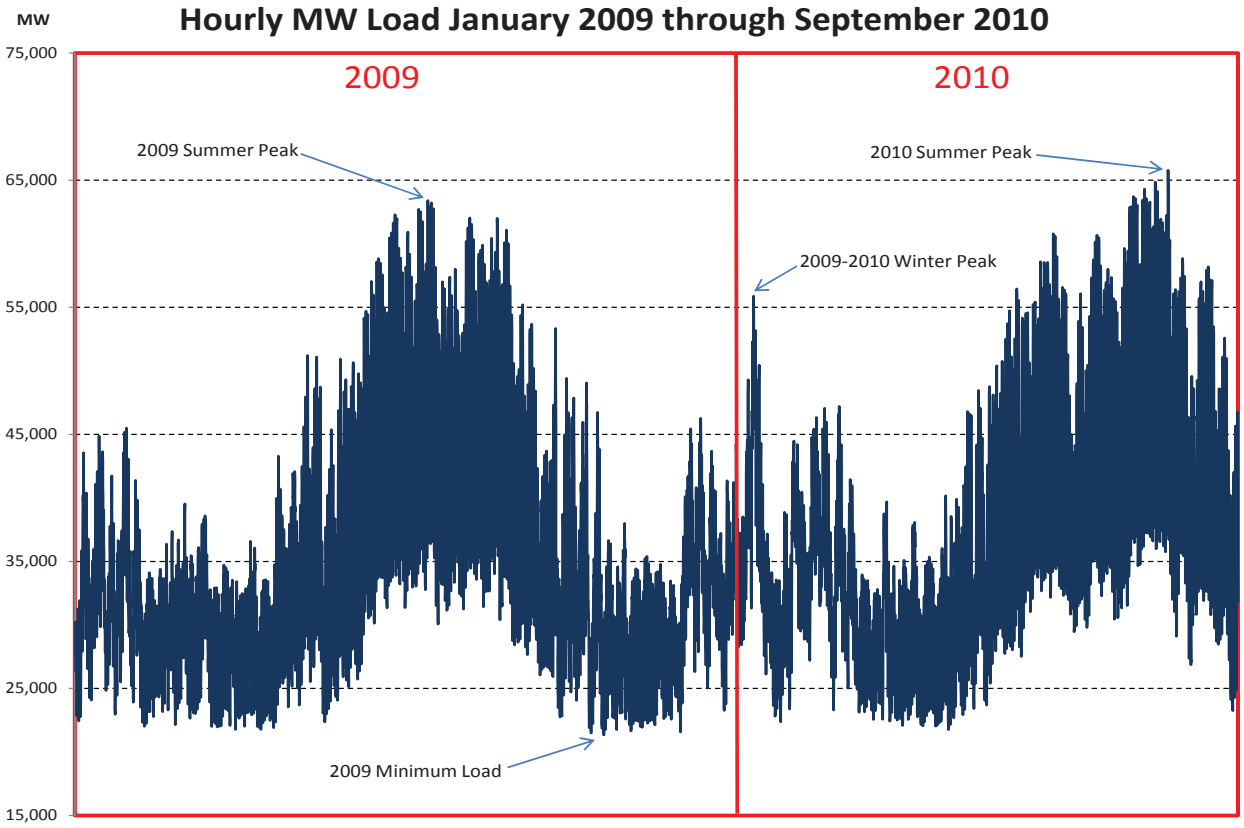
The figure below shows the historical and forecasted energy consumption.



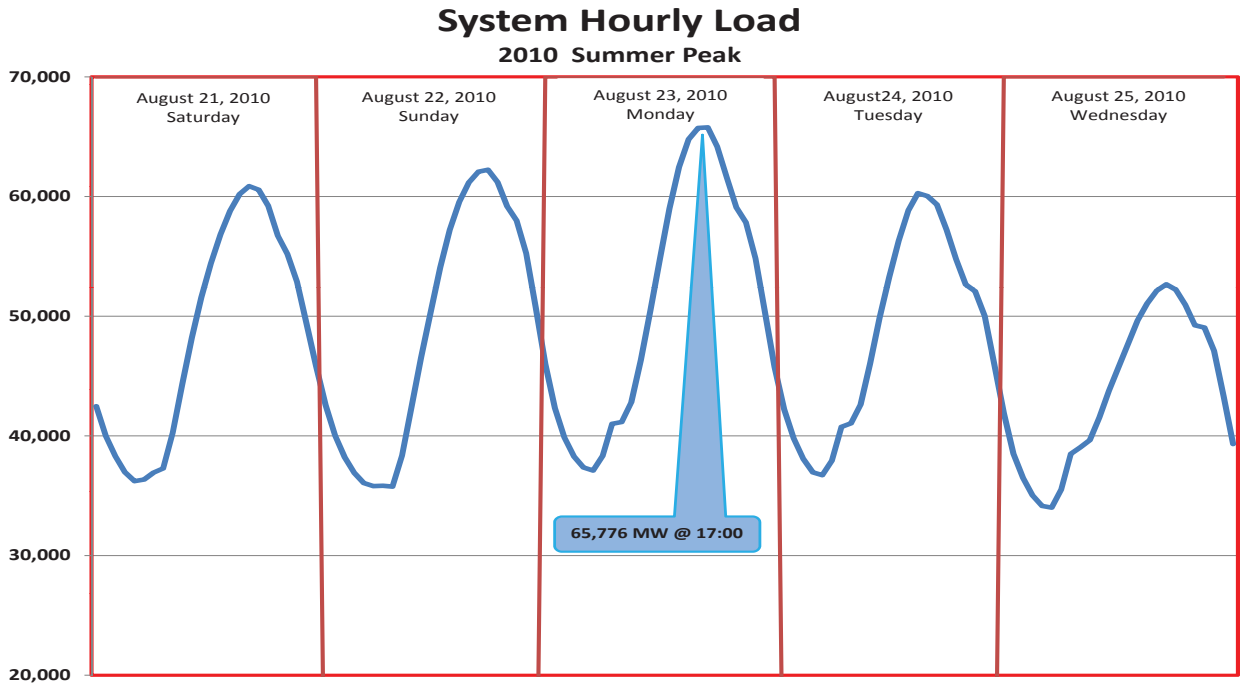
3.4 Hourly Load

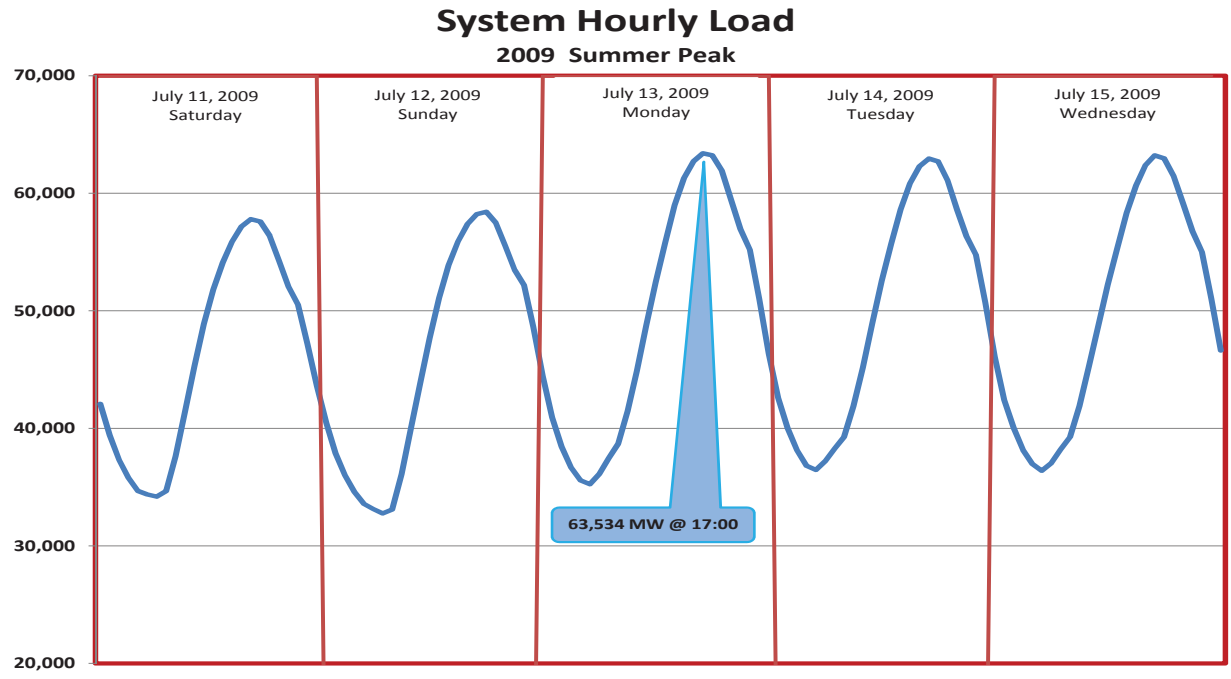
Hourly load is an extremely useful tool for understanding the magnitude of change and the pattern of load being served over a specific time. The following pages illustrate some of the varying load shapes encountered while operating the grid.

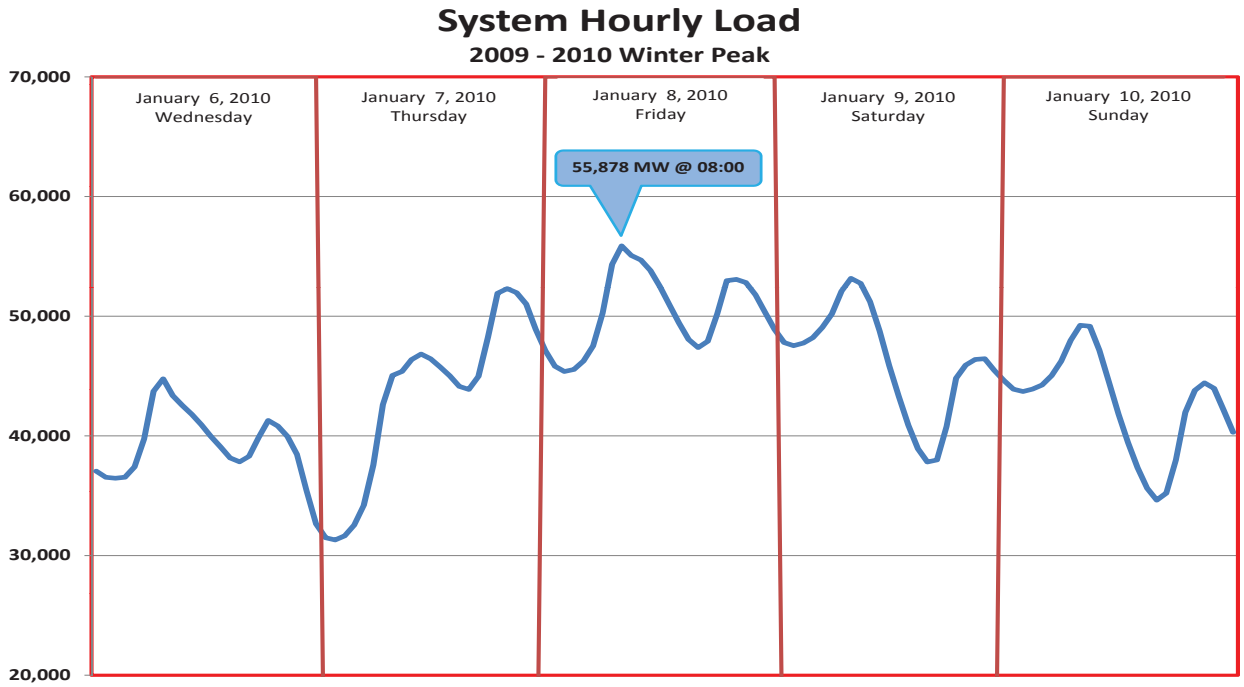
The chart below shows the actual load over the time frame of this report.

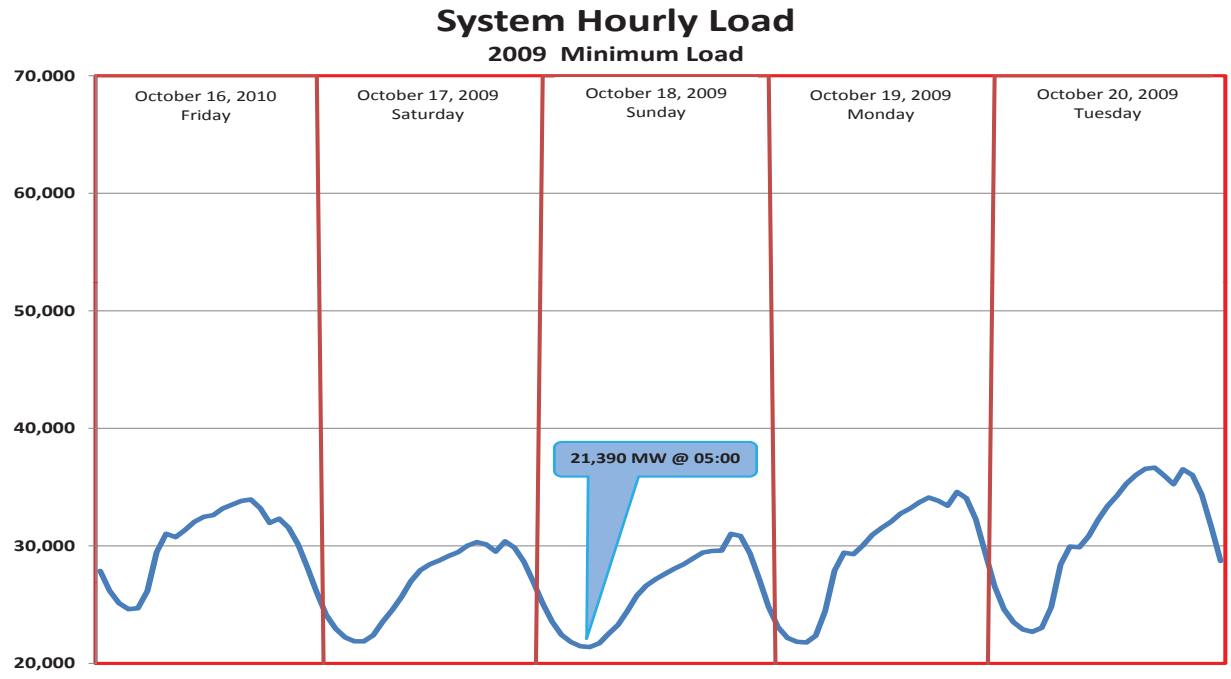


The following four charts are close up views around the minimum load and the seasonal peaks.






System Hourly Load
2009 - 2010 Winter Peak
70,000
60,000
50,000
40,000
30,000
20,000
January 6, 2010
Wednesday
January 7, 2010
Thursday
January 8, 2010
Friday
January 9, 2010
Saturday
January 10, 2010
Sunday
55,878 MW @ 08:00


System Hourly Load
2009 Minimum Load
70,000
60,000
50,000
40,000
30,000
20,000
October 16, 2010
Friday
October 17, 2009
Saturday
October 18, 2009
Sunday
October 19, 2009
Monday
October 20, 2009
Tuesday
21,390 MW @ 05:00

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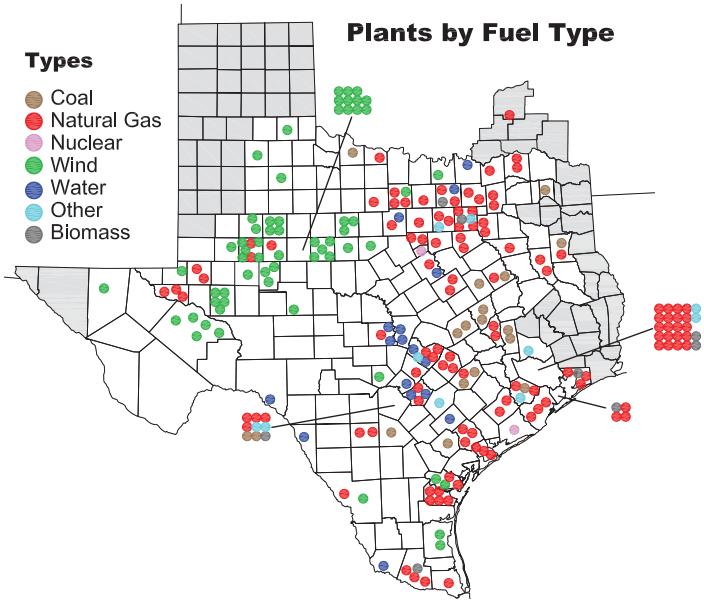
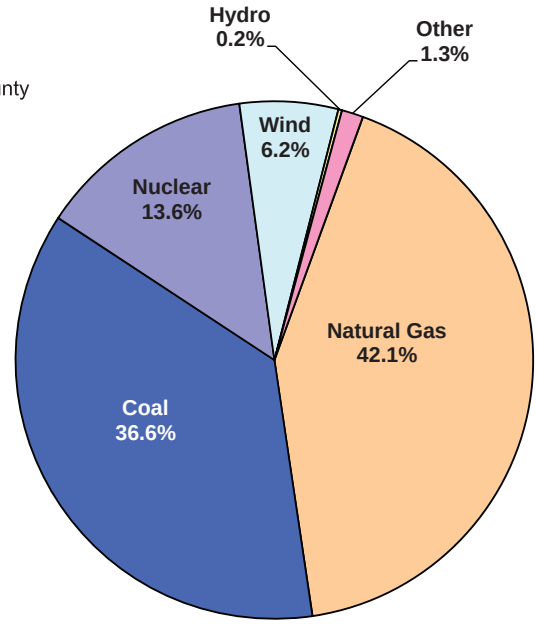
4. Generation

Current installed generation capacity[2] in the ERCOT Region is about 80,000 MW, which includes about 3,000 MW of generation that has suspended operations or been "mothballed" but not retired.

In terms of energy produced within ERCOT in 2009, approximately 42% was fueled by natural gas, followed by coal at 37%, nuclear at 14% and wind at 6%. The map below is an indicator of generating facilities across the Region by fuel type, and the pie chart shows the energy produced by fuel type.



Dots do not reflect actual location of the unit within the county

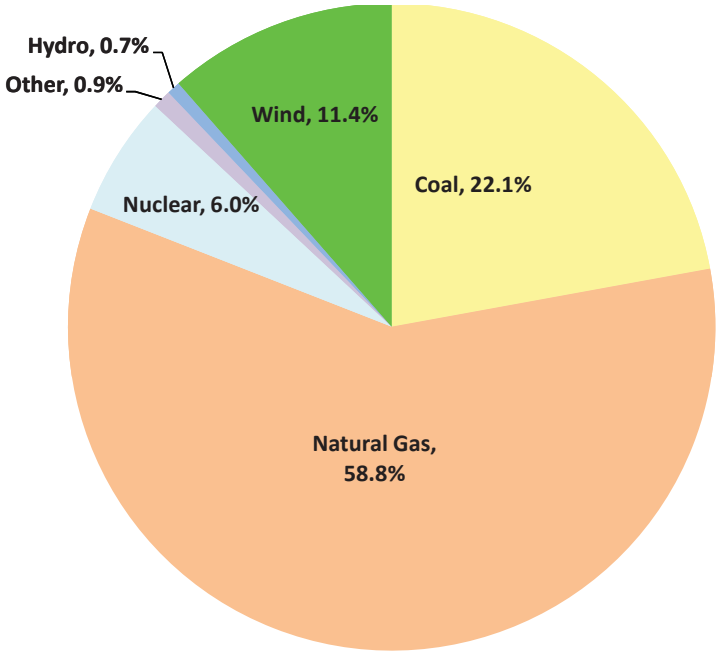


2009 Energy Generated by Fuel Type

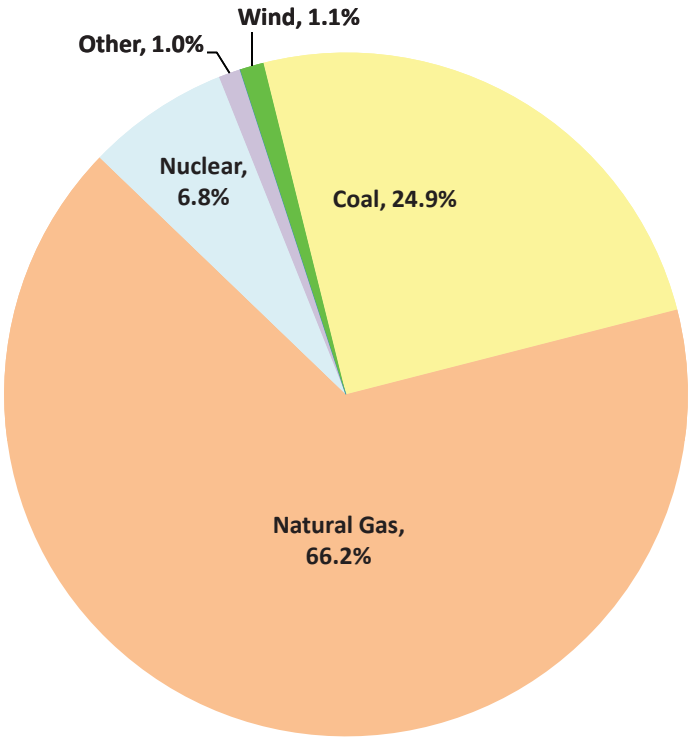
2 For additional information, please see the Capacity, Demand and Reserve report posted at http://www.ercot.com/news/presentations.

It is important to highlight the distinction between installed capacity and available capacity. Power from some fuel types, such as wind and water, may not be available coincident with system need.

In terms of installed capacity within ERCOT, approximately 59% is fueled by natural gas, followed by coal at 22%, wind at 11%, and nuclear at 6%. The pie chart to the right shows the installed capacity by fuel type.



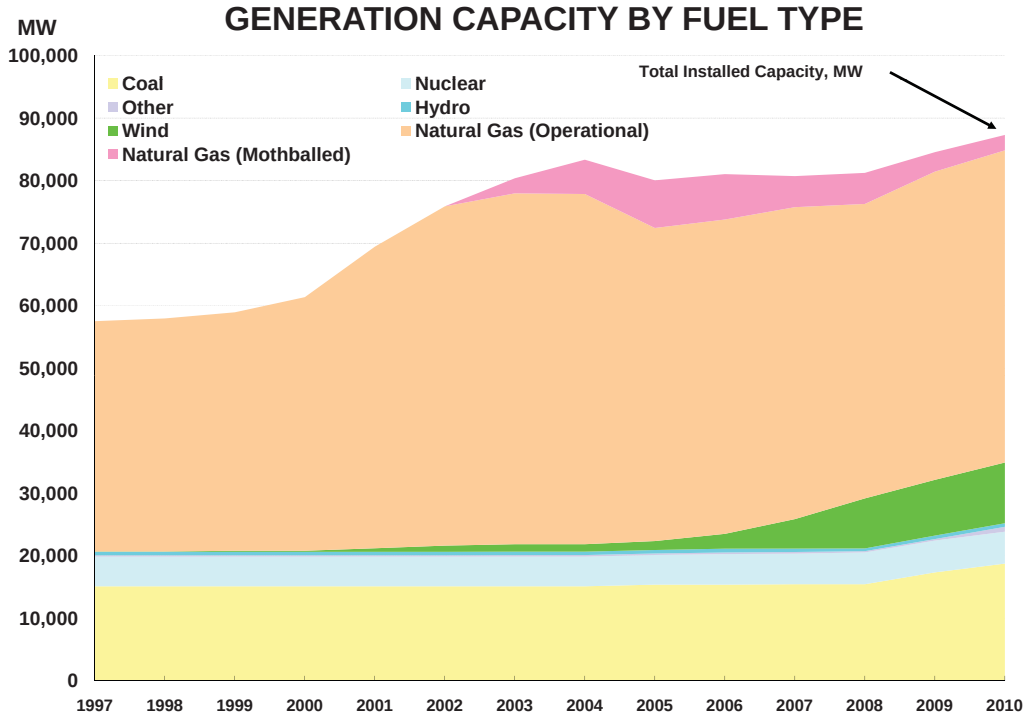
2010 Generation Capacity by Fuel Type



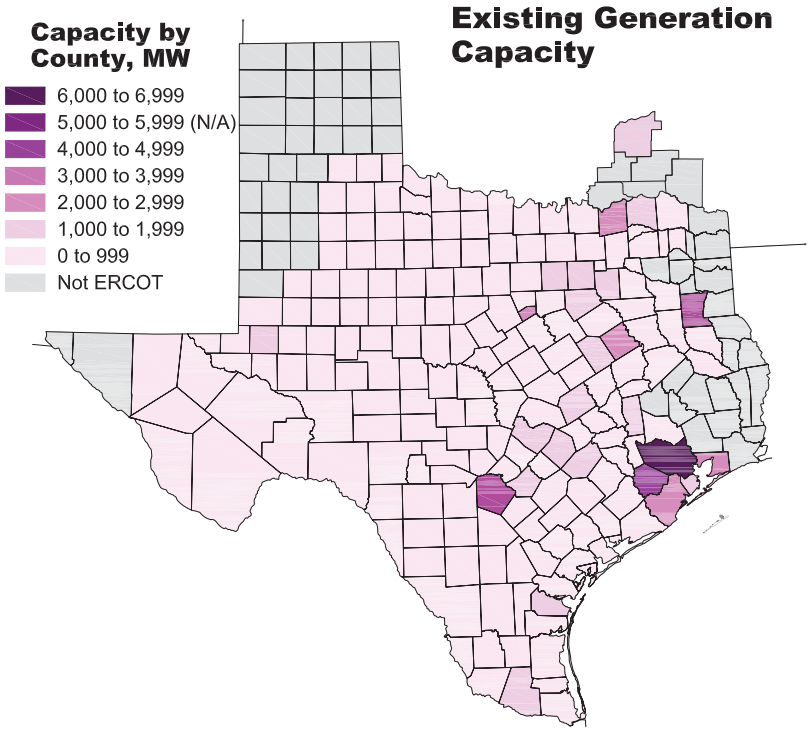
2010 Generation Availability by Fuel Type

In terms of available generation, the chart to the left illustrates the proportion of generation available after the wind and hydro sources have been discounted using availability factors of 8.7% and 0% respectively, giving a more realistic view of expected generation by fuel during system peak load conditions.

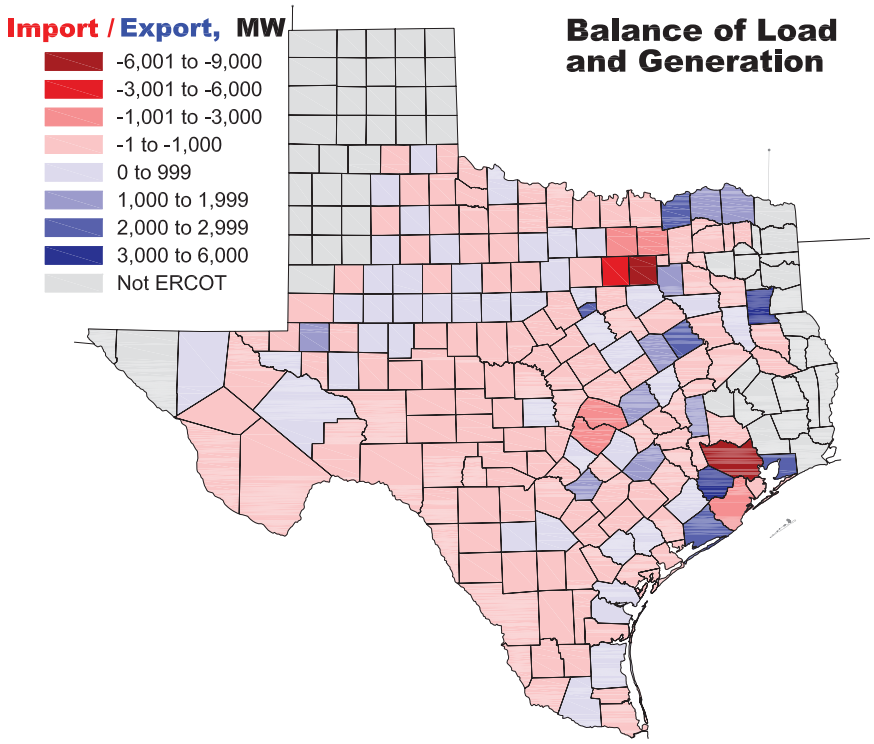
In 2010, most generation capacity additions were coal facilities, although new wind and gas-fired generators have been added. The chart below depicts installed capacity additions by fuel type.



The existing generation capacity by county shown on the map to the right is based on information from the generation companies and includes asynchronous ties to other regions, private network generation, distributed generation that is registered with ERCOT, and all Switchable Resources, which are Resources that can be connected to either the ERCOT Transmission Grid or a grid outside the ERCOT Region.

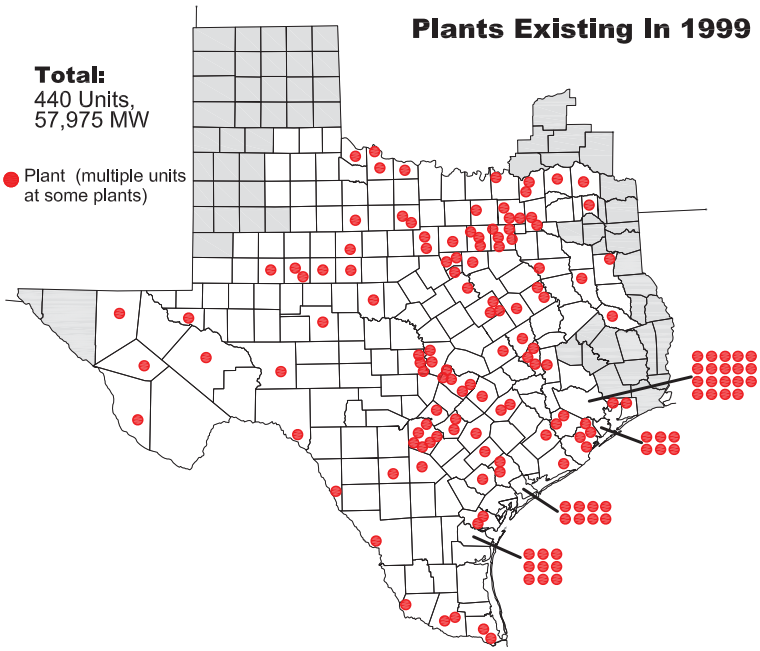


The map below illustrates the balance of load and generation within each county in the ERCOT Region for the summer of 2010. A county with more generation than load will export generation to other counties; comparatively, a county with more load than generation will import generation from other counties. Please note this map is for general illustrative purposes only, however it clearly shows that the Dallas/Fort Worth area, the Houston area, and the Austin/Round Rock area are importers and dependent on transmission to serve load.

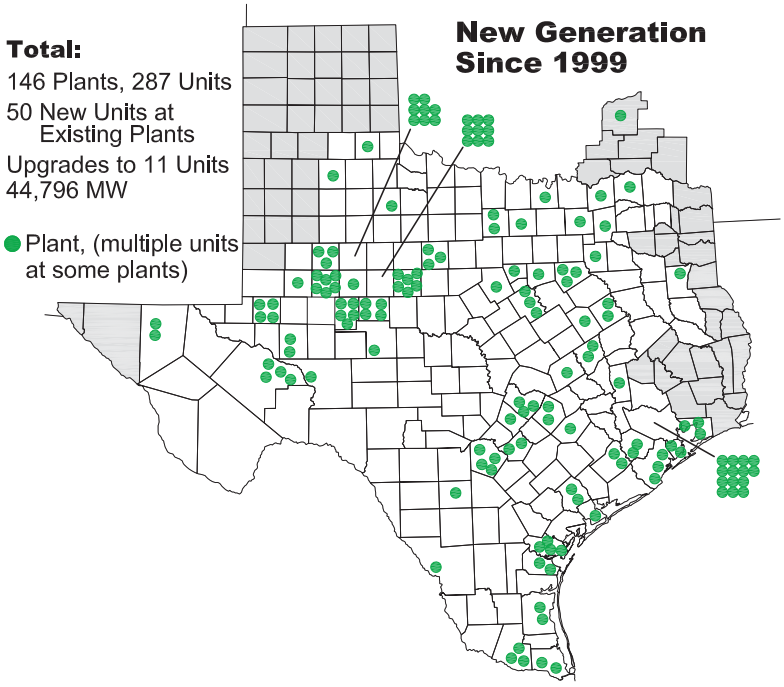


4.1 Historical Generation

In 1999, ERCOT had approximately 58,000 MW of installed generation capacity. Much of that generation was concentrated in the metropolitan areas of Houston, Dallas/Fort Worth, San Antonio, and Corpus Christi. The map to the right shows generation within the ERCOT Region as of 1999.



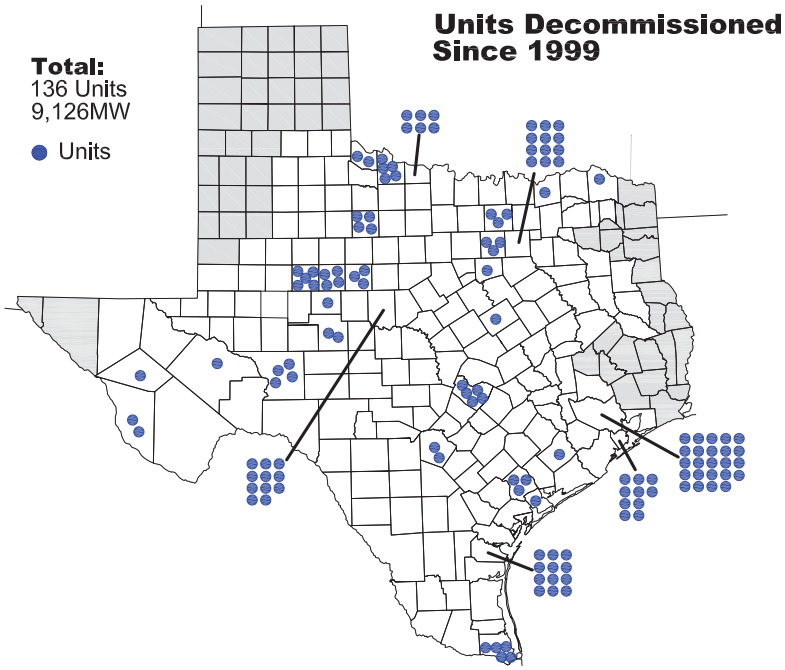
Dots do not reflect actual location of the unit within the county



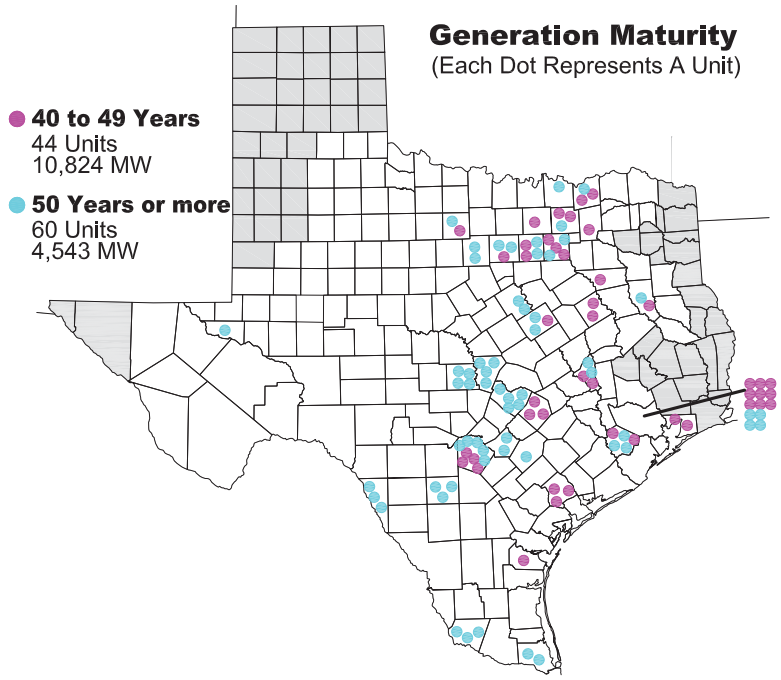
Dots do not reflect actual location of the plants within the county

Since 1999, ERCOT capacity has grown by adding new generation sites, expanding existing sites, and upgrading or repowering existing units. The additional generation totals almost 45,000 MW. Much of the new installed generation capacity added in the last few years is from large wind projects built in West Texas. This significant change in the generation portfolio has placed new challenges on the adequacy and the reliability of the existing transmission system. The map to the left shows generation added within the ERCOT Region between 1999 and September 2010.

Since 1999 a total of 136 units have been decommissioned. The map to the right shows generation within the ERCOT Region that has been decommissioned since of 1999. Decommissioning of older plants near metropolitan areas due to economics or environmental restrictions requires ERCOT to undertake an assessment of system reliability needs and to propose maintaining certain units under Reliability Must-Run (RMR) contracts and any transmission alternatives to these RMR sources.



Dots do not reflect actual location of the unit within the county

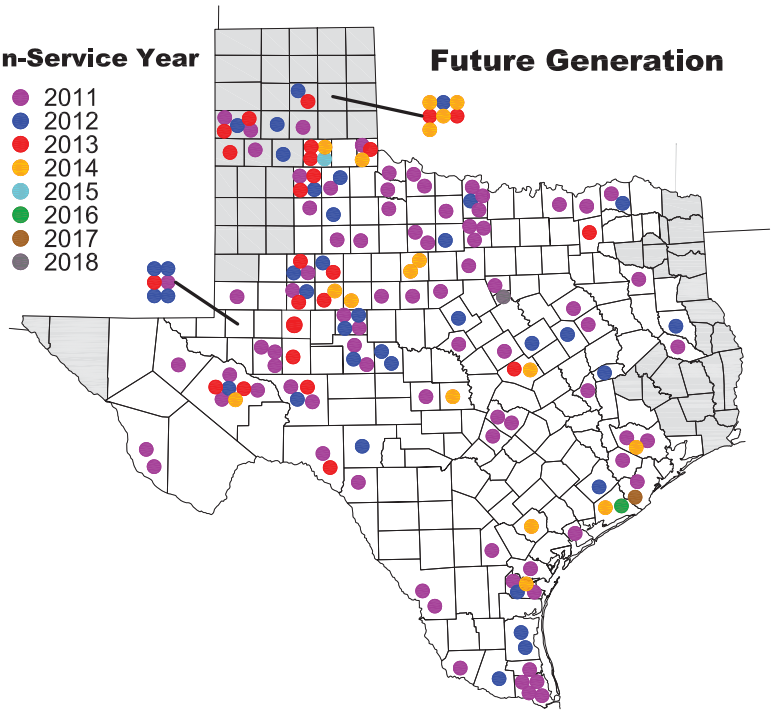


Dots do not reflect actual location of the unit within the county

Many factors, including fuel cost, O&M cost, efficiency, environmental requirements and revenues, influence whether a generating unit will remain in service or be decommissioned. Age, as an indication of the relative efficiency and maintenance cost of a generating unit, has been used to provide some limited insight into some of the factors that are considered in the decommissioning of units. Currently there is over 15,000 MW of generation within ERCOT that is over 40 years in age. Most of the older capacity is located in and around the larger metropolitan areas of the state. The map to the left shows generation that is over 40 years in age.

4.2 Future Generation

ERCOT has received interconnection requests for proposed generation having aggregate nameplate capacity over 65,000 MW. Of this capacity, over 60,000 MW is considered public information to some degree and is shown on the map to the right.



Dots do not reflect actual location of the unit within the county

The following table shows the interconnection requests for proposed capacity by fuel type, as of October 1, 2010.

Active Generation Interconnection Requests
By Fuel Type (MW)

Fuel	Confidential	Limited Public	Public	Total
Gas-CC		7,471	3,972	12,043
Gas-CT	600	247		247
Nuclear			5,900	5,900
Coal		1,740	3,213	4,953
Wind	3,628	29,127	5,953	38,708
Solar	340	699		1,039
Biomass		50	145	195
Other		740	1,300	2,040
Total	4,568	40,074	20,483	65,125

* The "Other" category includes generation fueled by petroleum coke, gasified petroleum coke, and batteries.

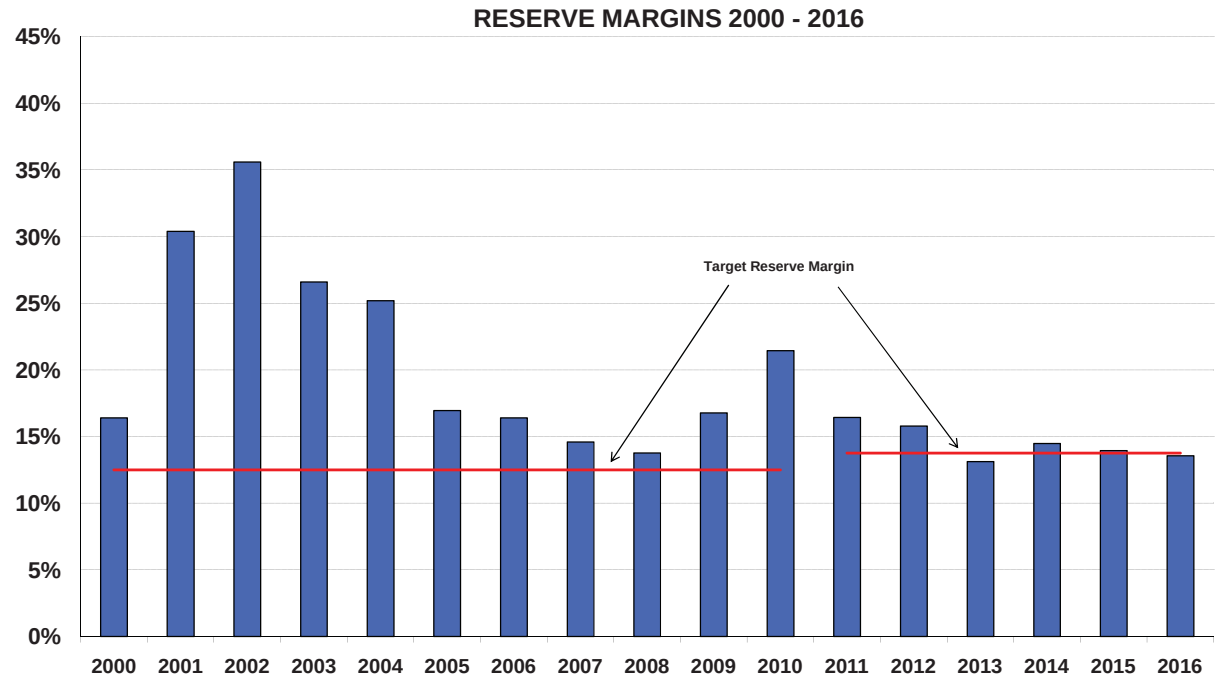
The following table shows the requests for new generation in ERCOT between October 2009 and September 2010.

Generation Interconnection Request Activity in 2010						
FUEL	Screening Studies Requested		Interconnection Studies Requested		Interconnection Agreements Signed	
	Number	MW	Number	MW	Number	MW
Coal	1	15	1	15	1	660
Gas - CC	2	645	2	645	3	2,940
Gas - CT	3	643	2	247		
Wind	33	6,204	27	6,488	1	250
Solar	9	460	6	260		
Other	2	740	2	740	1	1,300
Total	50	8,707	40	8,395	6	5,150
Projects may appear in more then one category						

There is much uncertainty associated with many of the proposed interconnections. One reason is that multiple interconnection requests may be submitted representing alternative sites for one proposed facility. For this and other reasons, it is possible that much of this capacity will not be built.

5. Reserve Margin

Reserve margin[3] is the percentage by which the available generating capacity in a system exceeds the peak demand. The chart below shows the historical and projected (as of December 16, 2010) reserve margins for the ERCOT system from 2000 through 2016, as well as the approved target. Between 1999 and 2004, different methodologies were used to calculate ERCOT's margins, which accounts for some of the wide variation of the margins shown. In 2005, the ERCOT Board of Directors approved a methodology that recognizes a generator's contribution to reserve is determined more by availability than by nameplate capacity. Beginning in 2006, the reserve margins have been calculated using this new methodology, applying a 12.5% target. In 2010, this target was adjusted to 13.75% for years 2011 and beyond by the ERCOT Board of Directors.



3 Reserve margin is calculated by the following formula: ((generation – demand) / demand). The Capacity, Demand and Reserve report reflects these calculations.

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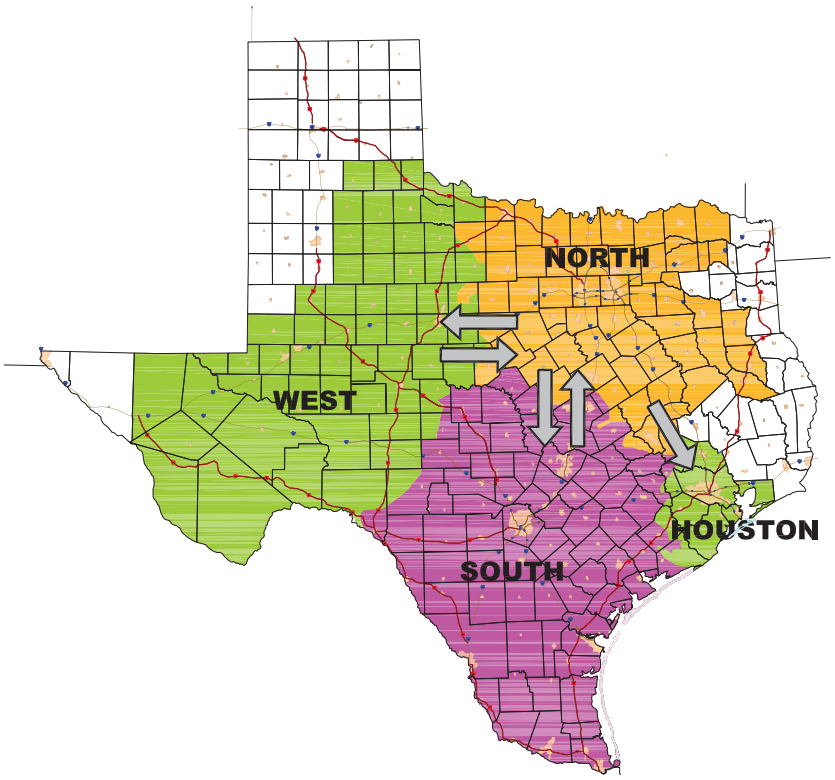
6. Congestion

Transmission congestion occurs whenever the economic need for power transfer exceeds the secure transfer capability of a transmission facility or facilities. Congestion costs are incurred when more expensive generation is deployed in order to maintain the reliable operation of the system. The differences in generation costs quantify the amount of congestion and are ultimately borne by the consumer.

To ensure reliability, ERCOT system operators perform a Real-Time Contingency Analysis (RTCA) approximately every five minutes. This analysis identifies when the loss of any single transmission element in the system would result in exceeding the capability limits of another transmission element. RTCA assists the system operators in determining the course of action to remedy the identified congestion. Prior to the nodal market implementation, ERCOT categorized congestion in two ways: inter–zonal or zonal congestion and intra-zonal or local congestion.

6.1 Zonal Congestion and Costs

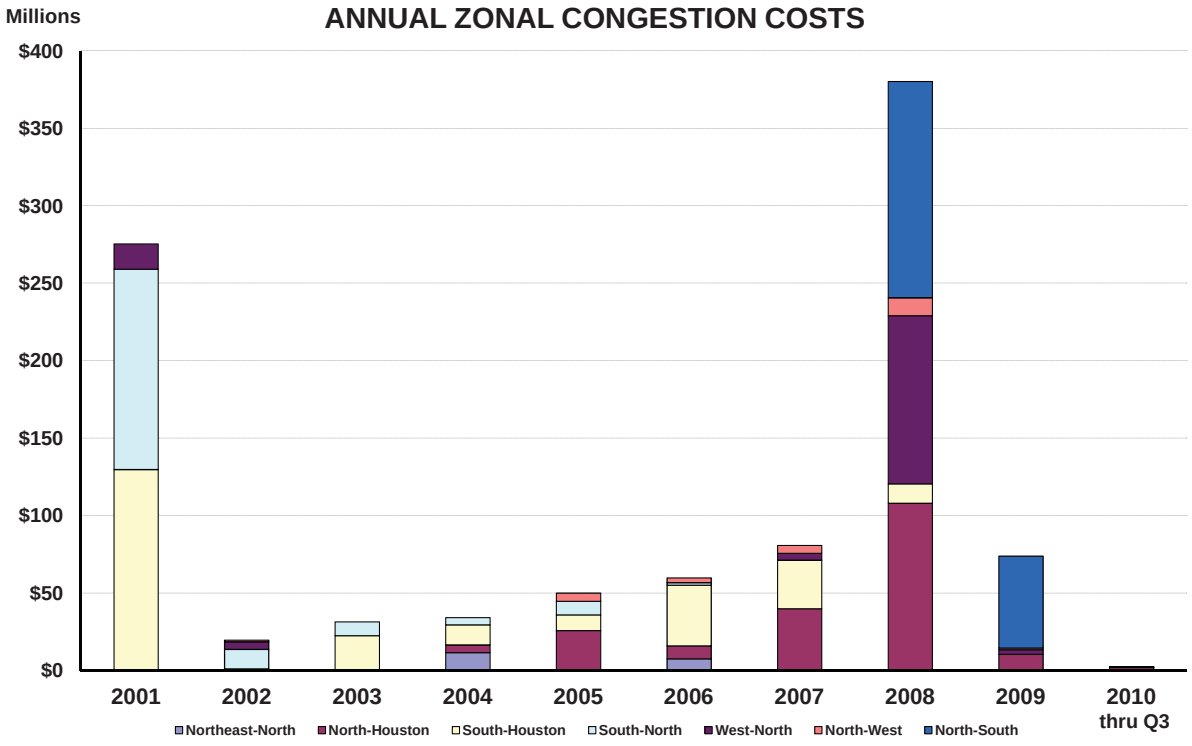
For most of 2010, ERCOT operated a zonal balancing energy market for the resolution of transmission congestion between Congestion Zones. Commercially Significant Constraints (CSCs) are constraints that were selected annually in the zonal market due to their potential to result in congestion and to limit the flow of energy within the ERCOT market to a commercially-significant degree. A CSC is generally a 345 kV transmission facility that is representative of the flow between two zones.

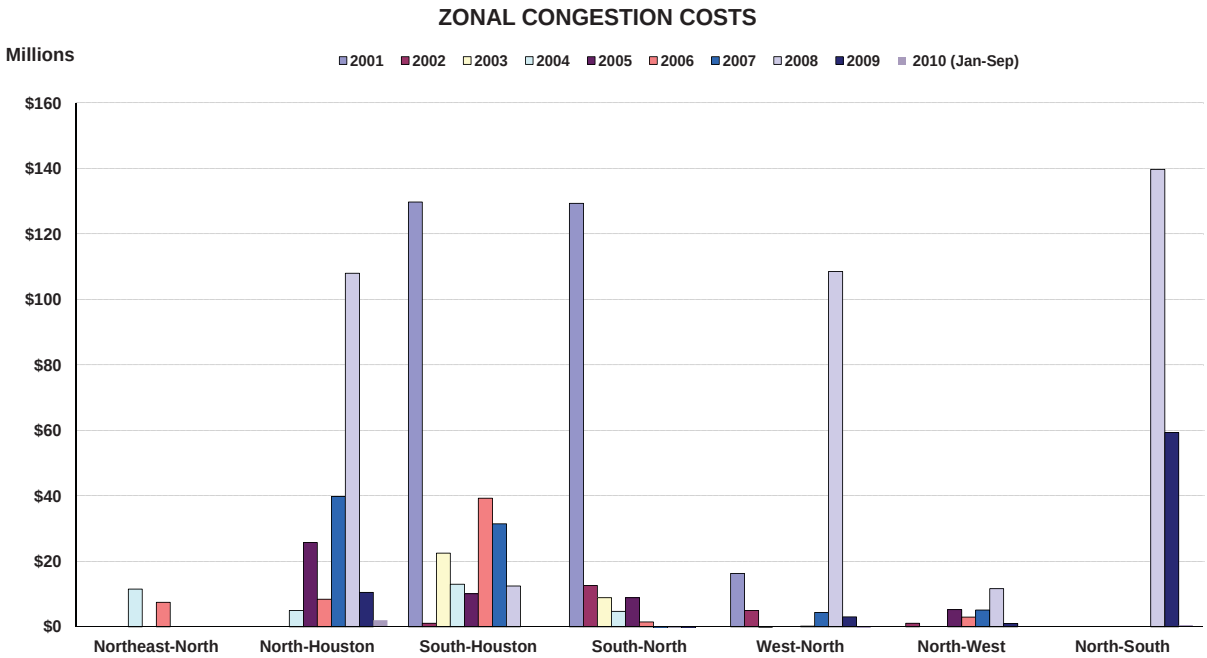


Each year studies are made to determine the Congestion Zones. For 2010 there were four congestion zones and five CSCs as illustrated to the right.

When an ERCOT system operator determines a CSC is congested, the operator reduces line loading by issuing instructions to increase the generation in the zone importing power and to decrease generation in the zone exporting power. The instructions are based upon the generator bids available in the balancing market. The resulting costs are defined as zonal congestion costs and are directly assigned on a pro-rata basis to those market participants scheduling energy over the CSC.

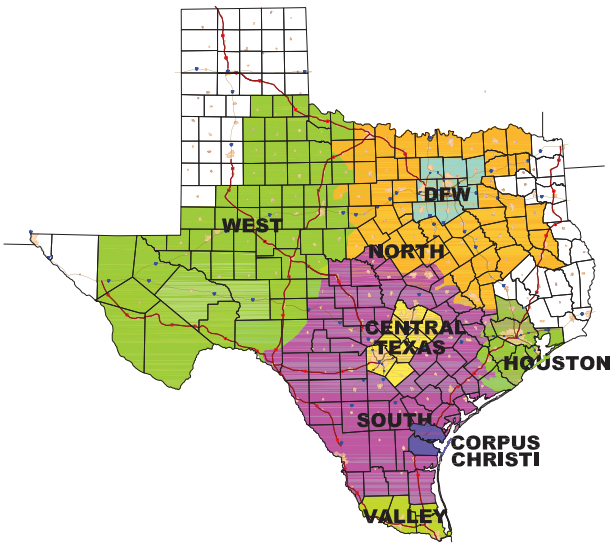
The following graphs show the zonal congestion costs from 2001 through September 2010 by CSC.



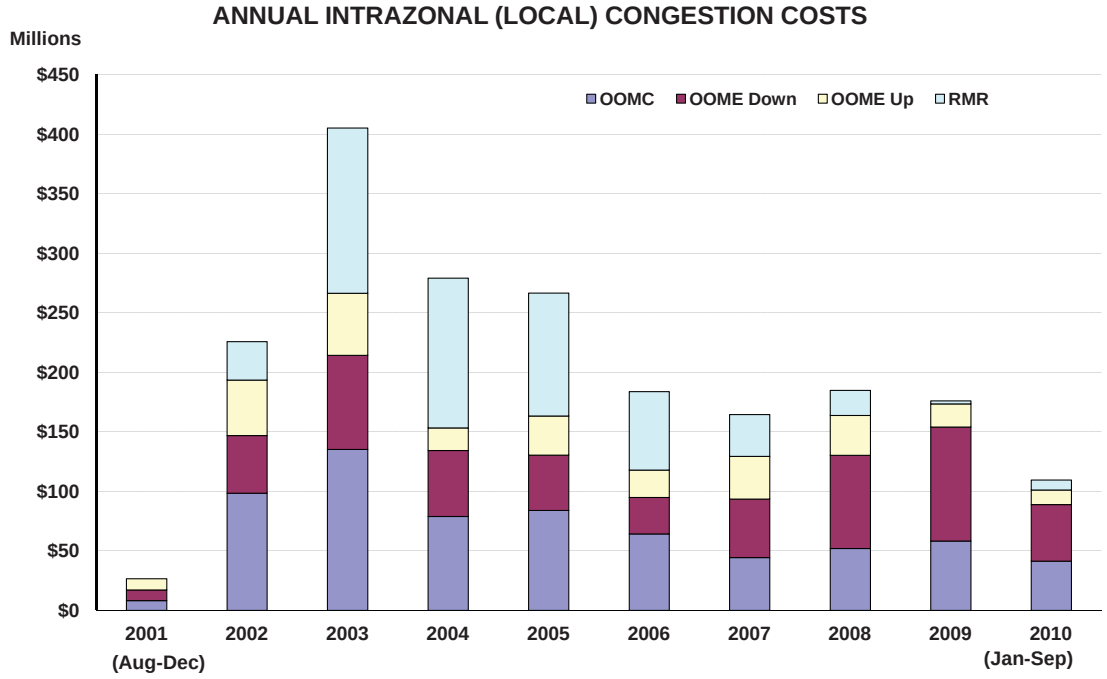


6.2 Local Congestion and Costs

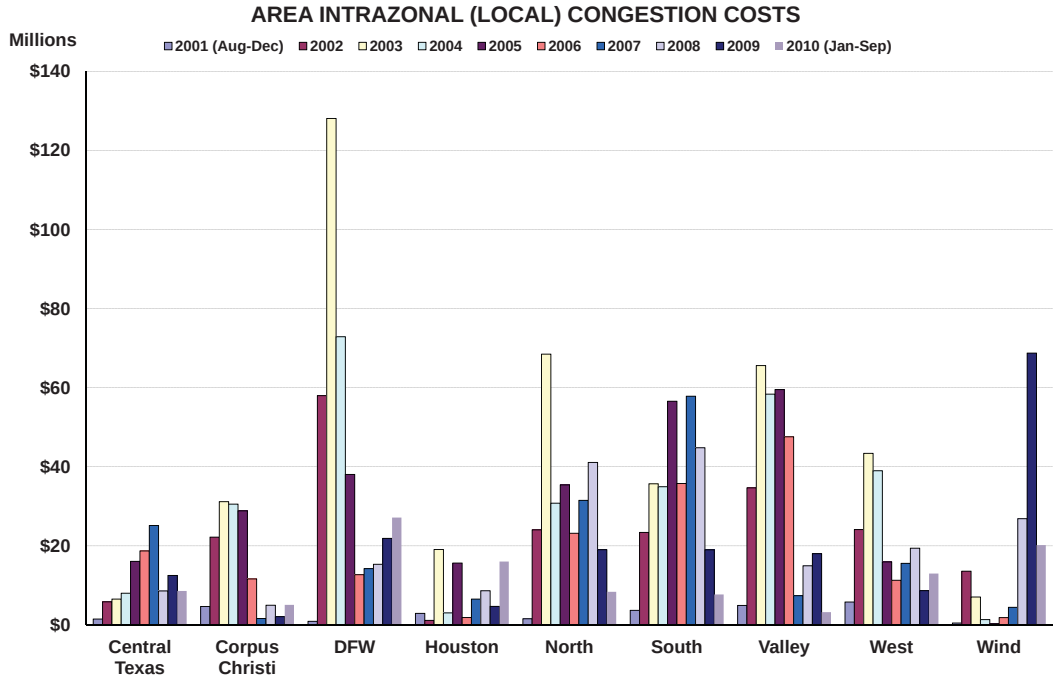
Intra-zonal or local congestion is the congestion that occurs within a congestion management zone. The congestion associated with wind power is not limited to a specific geographic area. Intra-zonal congestion is usually remedied by running higher cost, less efficient generation in the local area to reduce transmission flows and to improve the voltage profiles in the area. To resolve intra-zonal congestion, ERCOT uses three different market services to deploy specific generating units. These services are Out-of-Merit Energy (OOME), Out-of-Merit Capacity (OOMC), and Reliability Must-Run (RMR). The cost of providing these services is collectively defined as intra-zonal congestion costs and is uplifted on a load-ratio share to all load-serving entities within the ERCOT Region. For reporting purposes, ERCOT has grouped local congestion into eight congestion areas with local constraints as illustrated on this map.

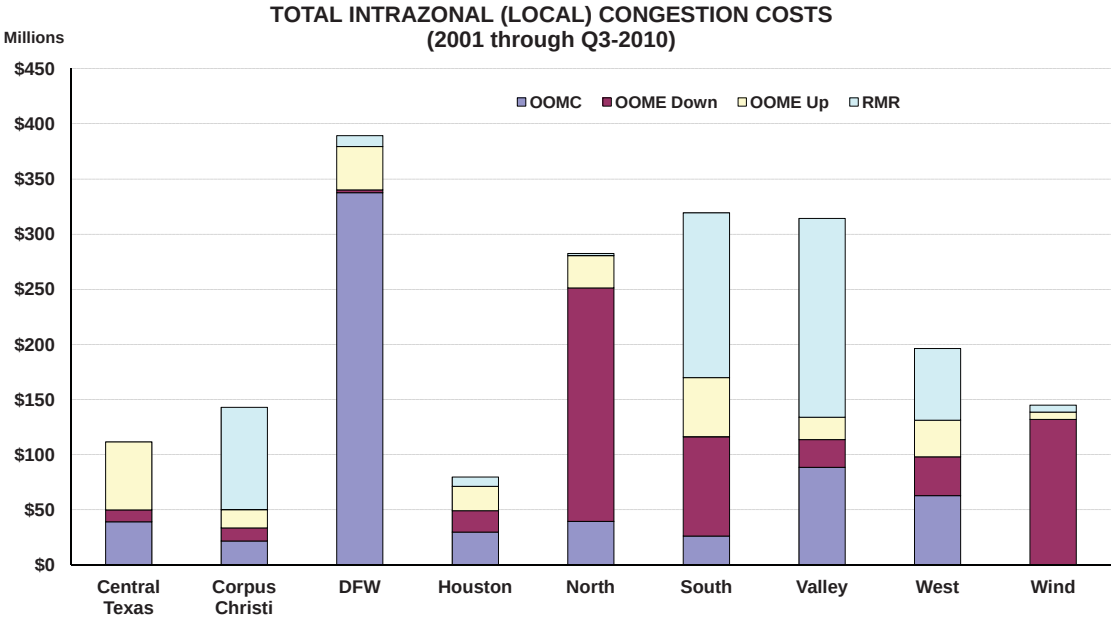


As described above, intra-zonal congestion costs are highly dependent on local generation availability, the limits of the current transmission infrastructure, the impact of scheduled and non-scheduled outages, and local area demand. ERCOT has worked diligently with market participants to develop both short-range and long-range plans to minimize intra-zonal congestion costs. As a result of transmission and other operational improvements, annual intra-zonal congestion costs have been reduced from over $405 million in 2003 to $176 million in 2009 and $109 million through September 2010, as shown below.



Congestion costs are allocated to the eight different zones with wind resources isolated as shown below. Prior reports showed the wind allocation as the McCamey area.





7. Transmission Improvements

In order to improve grid reliability and power deliverability as well as to reduce congestion and improve grid efficiency, ERCOT completes system planning studies of the ERCOT transmission system. Since January of 2008, ERCOT transmission providers have completed major projects estimated at over $2 billion as well as numerous smaller projects not reported through ERCOT transmission project tracking. The major projects that are being considered through years 2011 – 2016 and beyond are estimated at over $9 billion. This estimate includes the Competitive Renewable Energy Zones (CREZ) projects ordered by the Public Utility Commission of Texas (PUC) in Docket 33672.

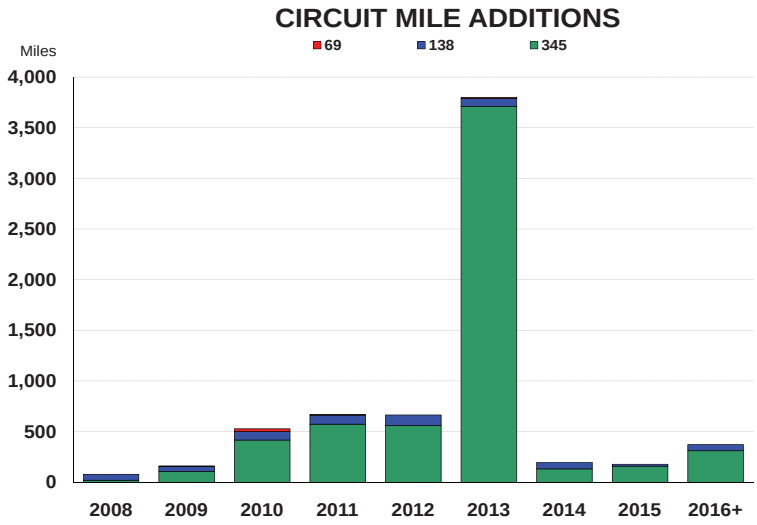
Transmission system improvements and expansions are built by transmission owners and paid for by consumers. In addition to load growth and congestion reduction, interconnection of new generation and decommissioning of generation may also require upgrades or additions to the transmission system elements in order to maintain reliability.

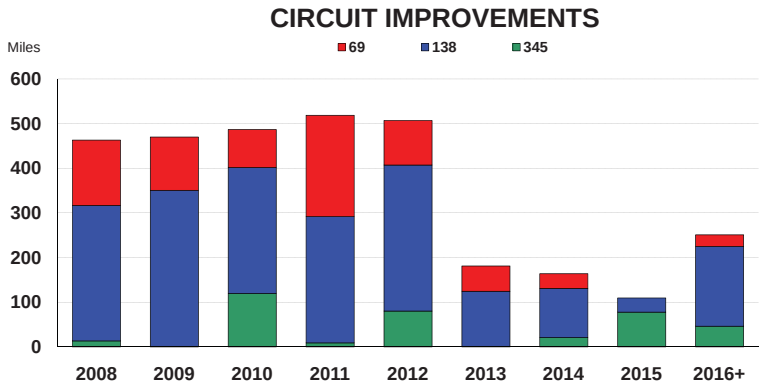
7.1 Improvement Projects

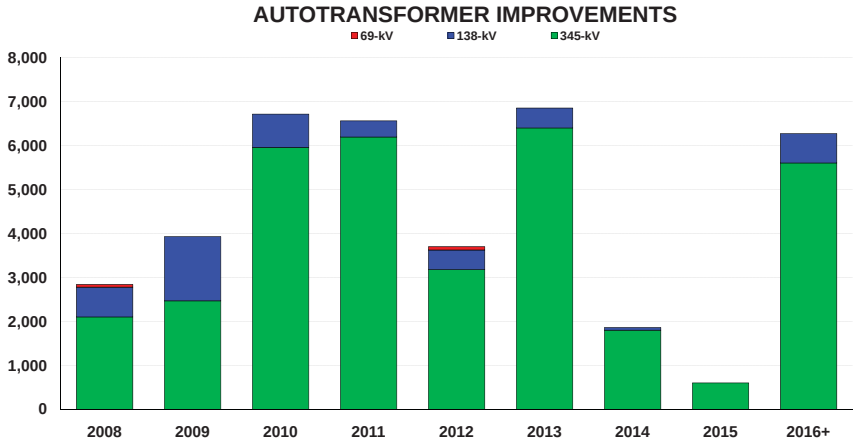
By studying current congestion costs and projected congested elements, ERCOT identifies the portions of the transmission grid prone to persistent congestion and proposes cost-effective solutions to resolve those constraints and thus lower the cost of power to consumers. Reliability Must Run (RMR) requirements are also taken into consideration.

Since 2008, transmission providers have completed projects adding over 656 miles of new circuits, upgrading over 1,277 miles of transmission lines, adding over 2,996 MVAr of shunt capacitor support, 445 MVAr of shunt reactor support, and installing 12,299 MVA of autotransformer capacity. The projects that are being considered through the years 2010 – 2016+ are expected to add over 5,993 miles of new circuits, upgrade or improve over 1,873 circuit miles of transmission lines, adding over 3,259 MVAr of shunt capacitor support, 1025 MVAr of shunt reactor support and add 27,026 MVA of autotransformer capacity.

The following three charts on the next page provide a breakdown of both completed and recommended projects by new transmission, improved transmission, and autotransformer capacity additions by in-service year. Due to report timing, the figures do not include all of the transmission projects that resulted from the 2010 five-year transmission plan.



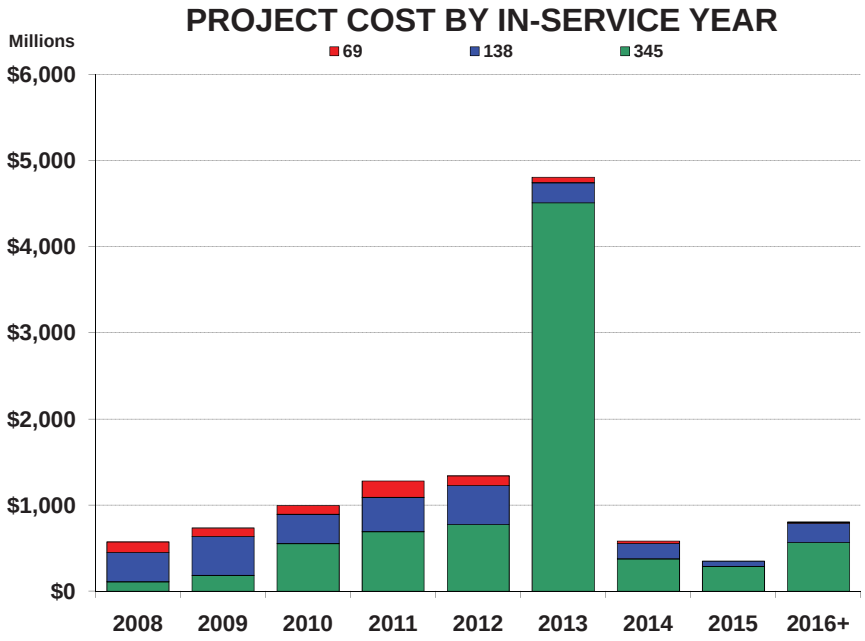




7.2 Improvement Costs

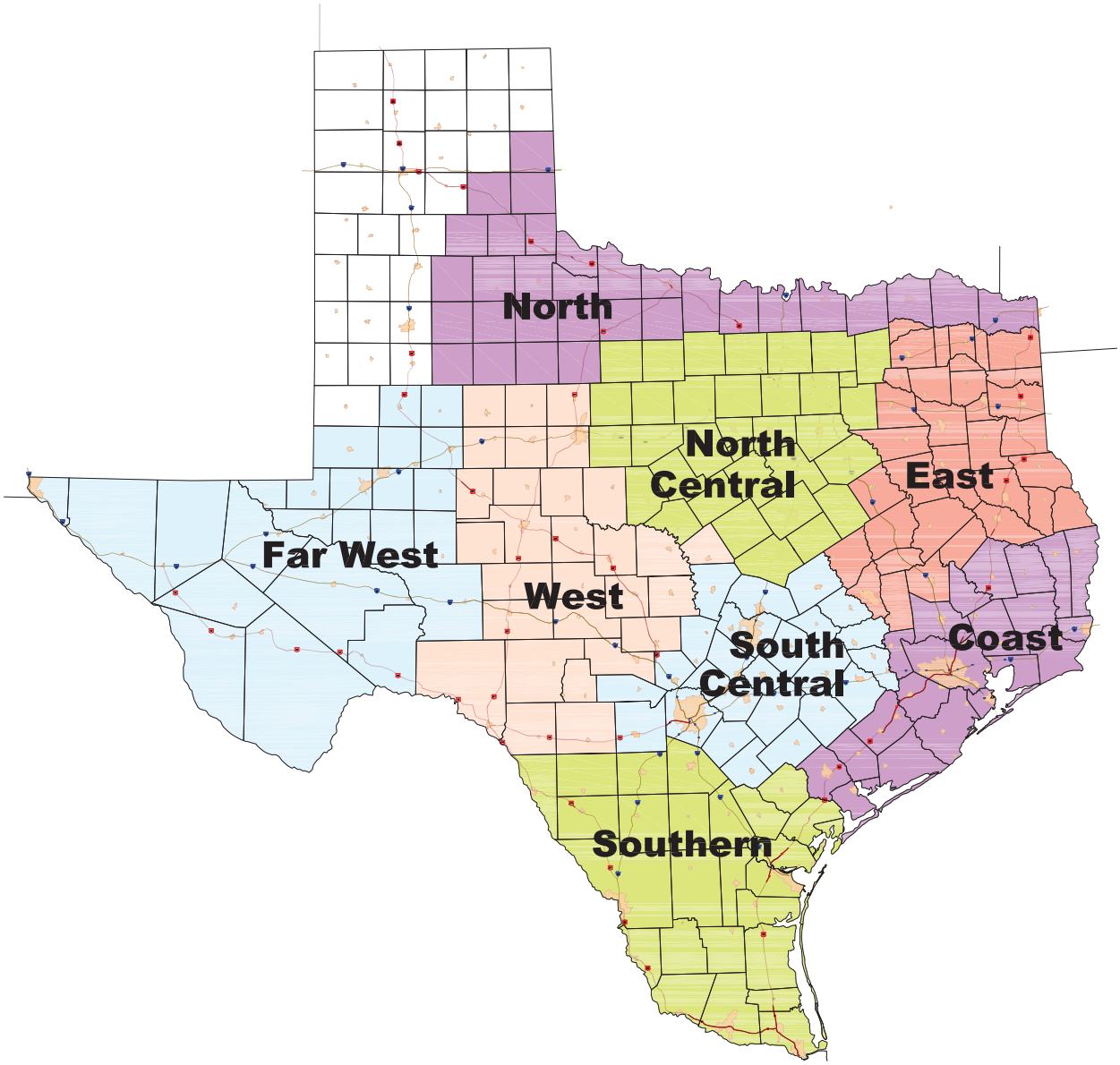
While transmission improvements are often needed to reduce congestion, it is difficult to produce a side-by-side comparison of transmission improvement costs against congestion costs. This is mainly due to the time inconsistencies – improvement costs are spread over many years while congestion costs are paid for on an annual basis. Due to this, there are no direct allocations of project costs to congestion costs, but each is shown separately.

The following figures reflect improvements based on project[4] estimates and do not reflect actual transmission cost, including operations and maintenance, in a given year. The actual costs for a single project will be spread over several years to account for engineering, regulatory approvals, material, right-of-way procurement, construction, etc. In addition, the figures do not include all of the transmission projects that resulted from the 2010 five-year transmission plan. The graph below provides a breakdown of both completed and recommended project costs by in-service year.



4 The projects included in these graphs are listed in ERCOT's Transmission Project Information Tracking (TPIT) spreadsheet found at http://planning.ercot.com/reports/tpit. This is located on the secure Planning and Operations web site, http://planning.ercot.com. There may be additional minor projects that are not reported to ERCOT by the transmission providers through this spreadsheet.

ERCOT WEATHER ZONES



8. Area Constraints and Improvements

This section highlights recent constraints, completed improvements, planned improvements, and projected constraints on the ERCOT power system by weather zone, which are shown on the map to the left. Each section includes a brief discussion of issues along with supporting tables and maps. This chapter does not identify planned Competitive Renewable Energy Zone (CREZ) projects, however the CREZ projects were incorporated into the reliability and economic planning studies. The default CREZ projects were included according to the transmission provider's projected in-service dates. The remaining CREZ projects were included as of the end of 2013.

For each weather zone, four types of information are provided:

- Recent Constraints – the elements that have caused local congestion on the system at some point during 2010, as reported in monthly operations reports.

  The illustrated constraints were not necessarily experienced throughout this period; constraints may change due to generation changes, transmission and generation outages, construction schedules for transmission improvements, and changing load patterns.

- Completed Improvements – the major additions to the transmission system made in 2009 and 2010.

- Planned Improvements – the additions currently underway or being studied in ERCOT's and in the transmission providers' analyses.

  The planned improvements listed in each weather zone section are generally the largest projects in that area. The in-service year is the first year that the improvement will be available for the summer peak.

- Projected Constraints – constraints based on a computer simulation of an hourly security-constrained unit-commitment and economic-dispatch model for a forecasted annual period.

The computer model determines an optimal unit commitment and dispatch based on the assumption that units will be bid into a nodal market at their variable cost of generation and does not consider transmission outages. Security constraints can cause the model to deviate from the most economic dispatch on an hourly basis. The measure of this deviation is marginal congestion which is defined as the rating of the line multiplied by the shadow price on the limiting transmission element in the hour the congestion occurs.

Congestion Color Key	
	None
	Low
	Medium
	High

The amount of annual marginal congestion for each element is categorized by color. The lighter colors indicate little (tan) to no congestion (white). The darker colors signify medium (orange) to severe (dark orange) congestion.

Congestion may exist until planned improvements can be put in place to alleviate it. In addition, some level of congestion may acceptably continue to be experienced on some elements of the system where it is uneconomic to construct the improvements that could be required to eliminate the constraints.

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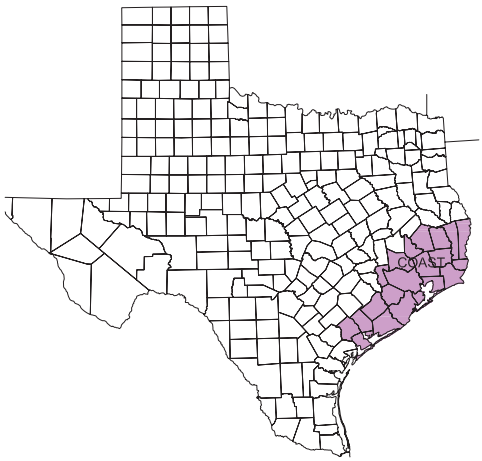
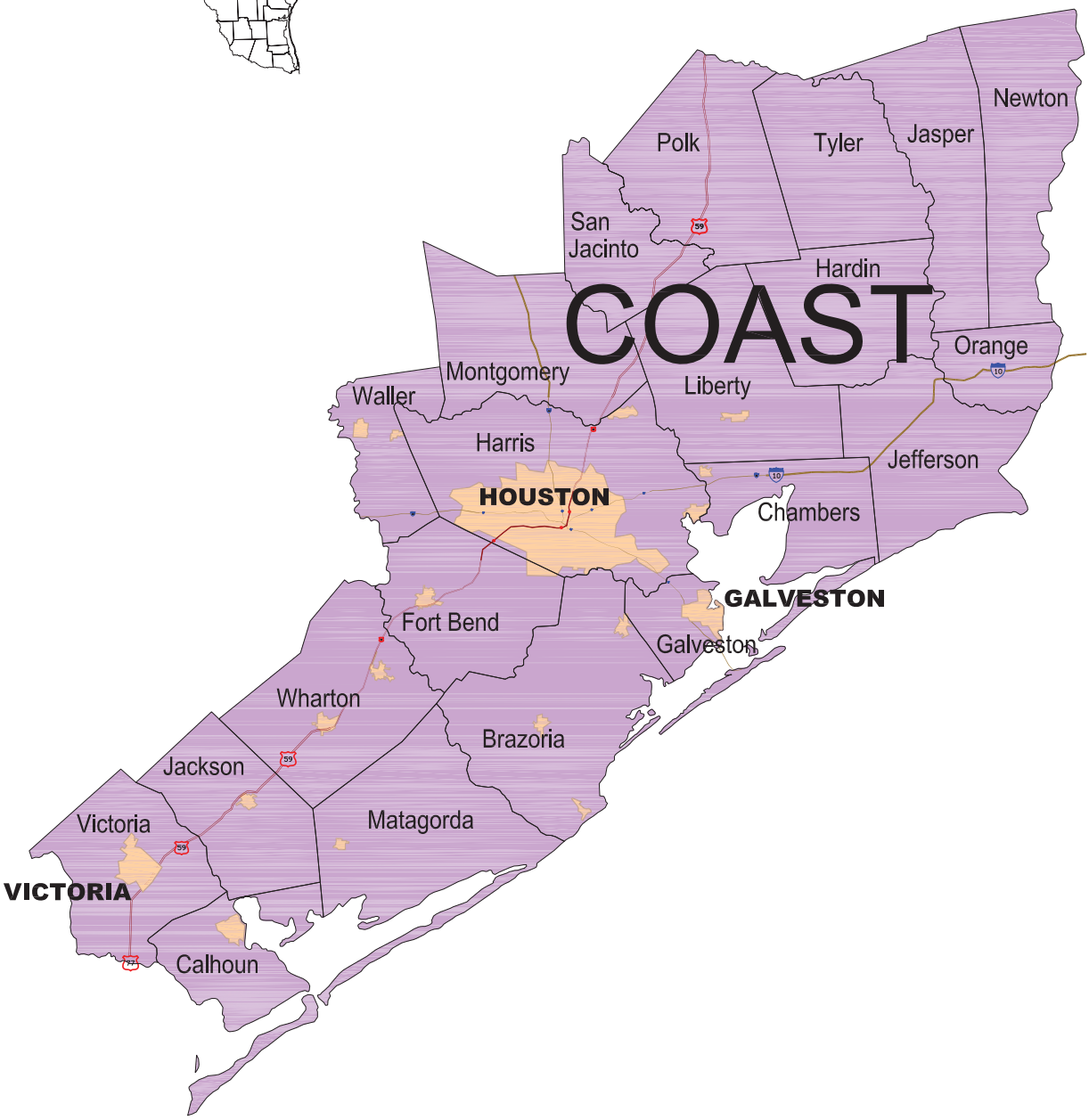
8.1 Area Constraints and Improvements – Coast Weather Zone

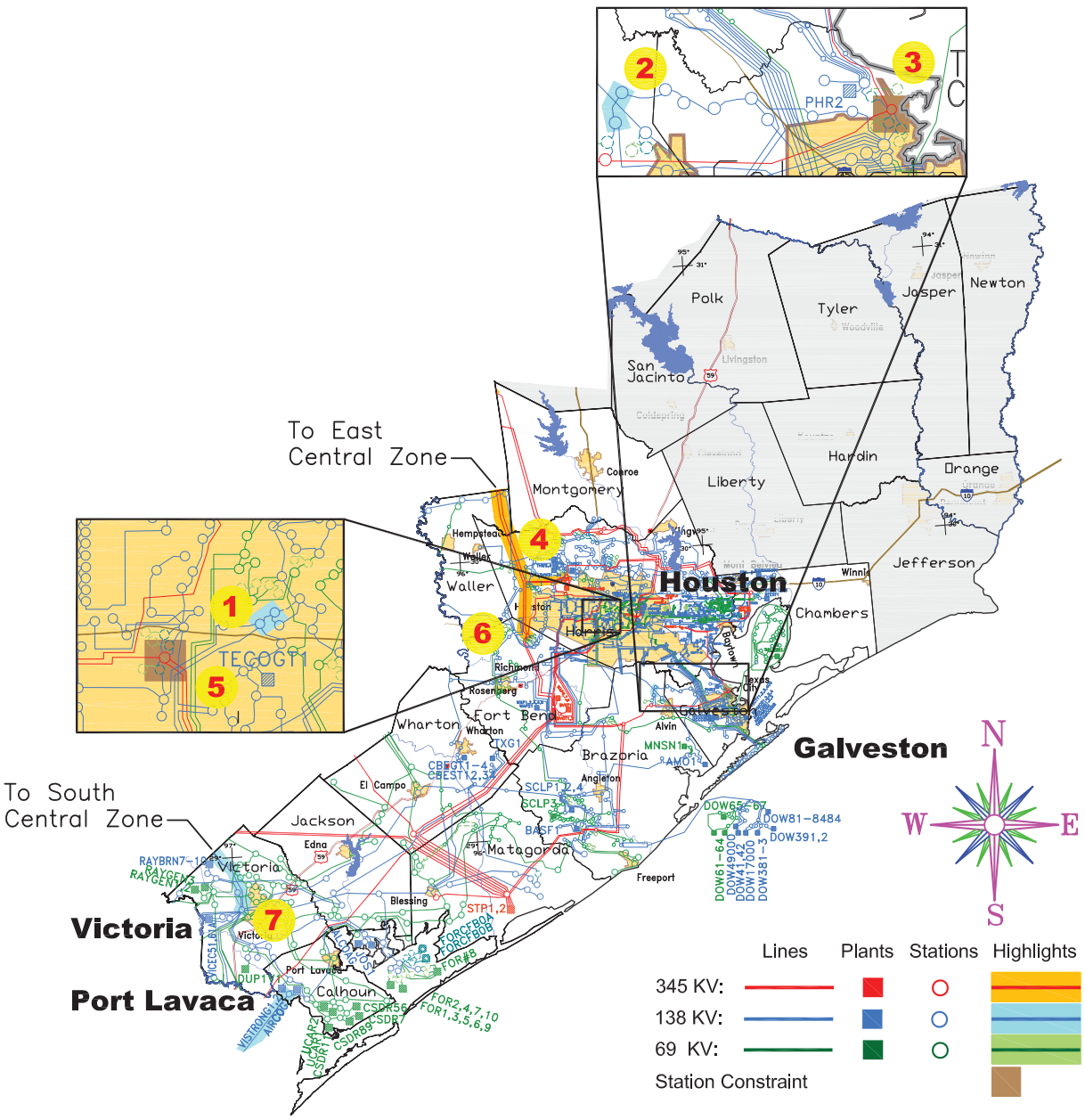


The Coast weather zone is primarily composed of the Houston metropolitan area, which is one of ERCOT's largest load centers. The map below highlights the counties included in the Coast weather zone.



8.1.1 Recent Constraints Map – Coast Weather Zone

The map below identifies the location of the recent constraints for the Coast weather zone.



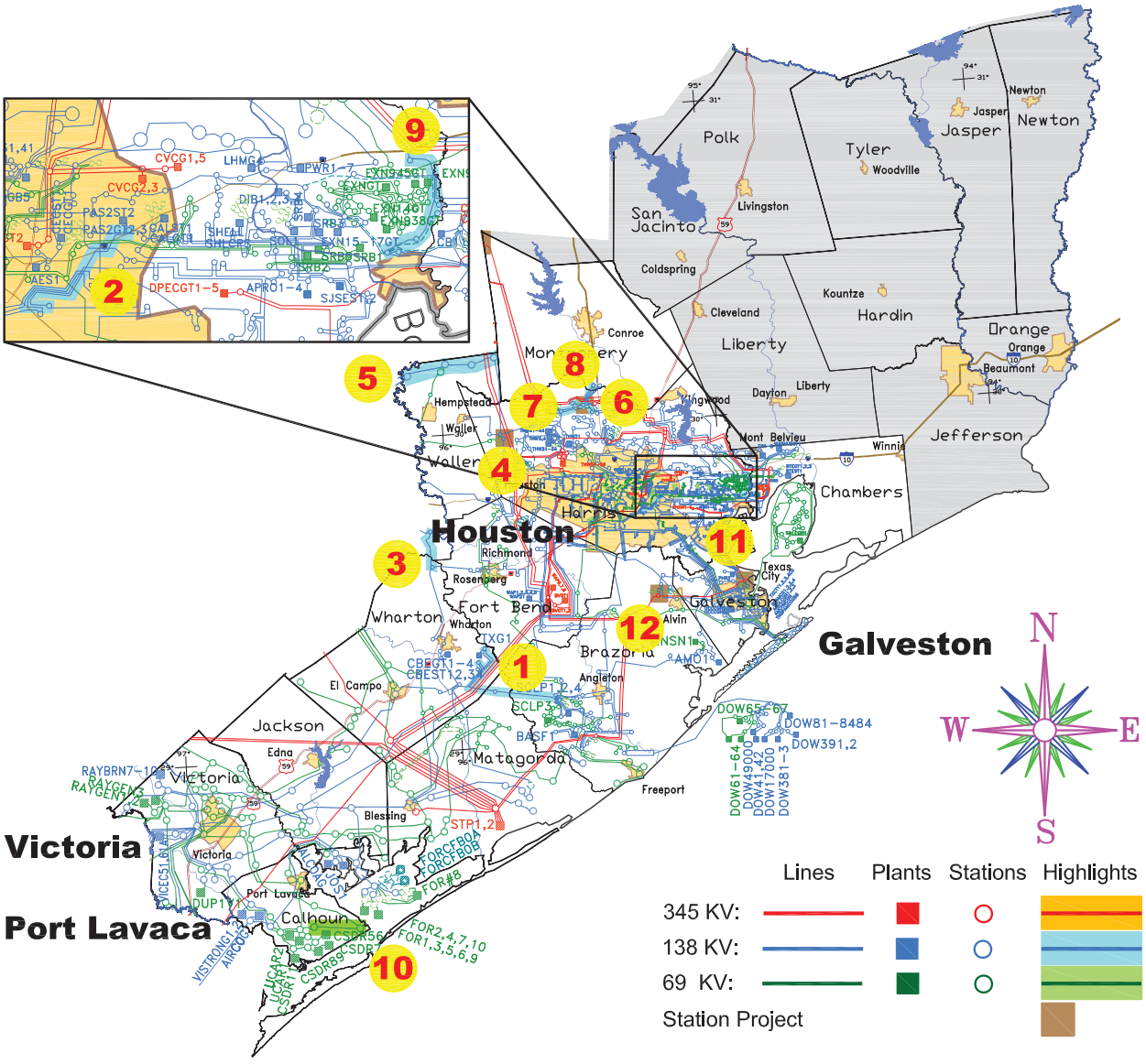
8.1.2 Recent Constraints – Coast Weather Zone

Transmission constraints in the Coast weather zone are primarily due to transmission construction outages. Congestion occurs when transmission paths into Houston are out of service for project improvements or maintenance. The table below highlights the constrained elements for 2010.

Map Index	Constraining Element	Voltage (kV)
1	Garrott - Midtown	138
2	North Alvin - Hastings	138
3	PH Robinson Autotransformer 1	345/138
4	Singleton - TH Wharton	345
5	Bellaire Autotransformer 4	345/138
6	Obrien - Singleton	345
7	Victoria - Thomaston - Cuero	138

8.1.3 Completed Improvements Map – Coast Weather Zone

The map below identifies the location of the completed improvements for the Coast weather zone.



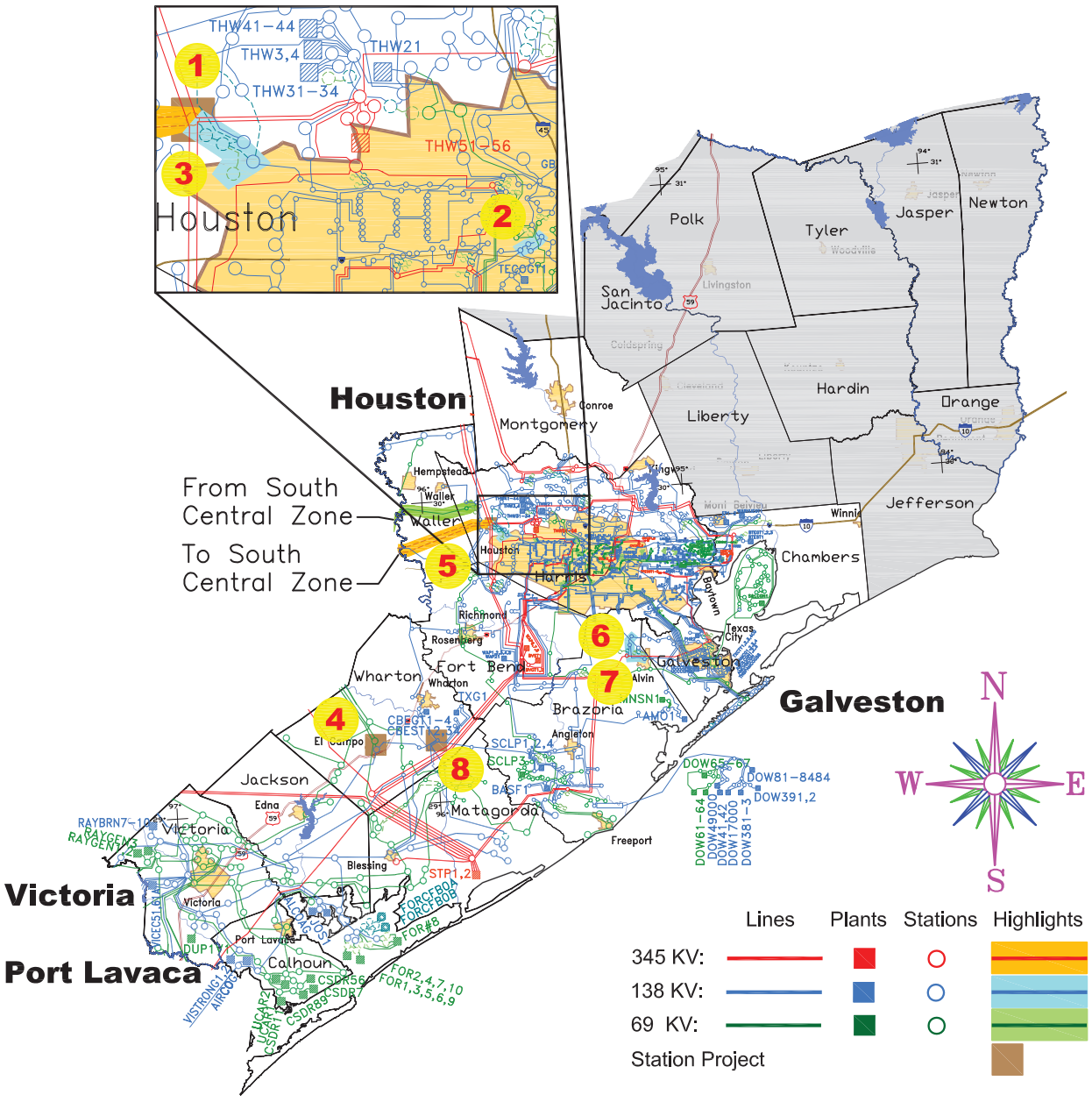
8.1.4 Completed Improvements – Coast Weather Zone

The map shows the most significant new and upgraded elements that were completed in 2009 and 2010 in the Coast weather zone. The elements consisted of four new stations in addition to transmission improvements. There were almost 15 miles of new transmission and over 108 miles of upgraded lines. Many of these upgrades were accomplished by increasing the line clearance, upgrading the limiting equipment or replacing the existing conductor.

Map Index	Completed Improvement	In-Service	Voltage (kV)	New (miles)	Upgrade (miles)
1	Gulftap-Pledger Tap-West Columbia Line Upgrade	Jan-09	138	0.0	27.5
2	Jefferson - College Tap - Pasadena Reconductor	Jan-09	138	0.0	4.7
3	East Bernard - Wallis - Sealy - Peters Ckt.65 Line Rebuild	May-09	138	0.0	25.3
4	Betka New Switching Station	Jul-09	138	1.7	0.0
5	Waller-Prairie View-Seaway-Macedonia Line Upgrade	Aug-09	138	0.0	22.0
6	Rothwood New Switching Station	Mar-10	345	0.4	0.0
7	Tomball - Rothwood - Rayford Ckt.66 Line Upgrade	Mar-10	138	0.0	13.0
8	Rayford - Westfield Ckt.66 Line Upgrade	Mar-10	138	0.0	9.1
9	Baytown - Haney Ckt.66 Line Upgrade	Apr-10	138	0.0	7.1
10	Port O'Conner to Seadrift 69 kV New Line	May-10	69	12.4	0.0
11	Meadow New Switching Station	May-10	345	0.1	0.0
12	Alvin New Switching Station	May-10	138	0.0	0.0

8.1.5 Planned Improvements Map – Coast Weather Zone

The map below identifies the location of the planned improvements for the Coast weather zone.



8.1.6 Planned Improvements – Coast Weather Zone

The majority of the major planned improvements for the Coast weather zone have to do with increasing the import capability into the Houston area, primarily from north and west of the area.

The new Zenith switching station will reduce Houston import congestion from the north beginning in 2011. A 345/138 kV autotransformer will be added in 2012 at Zenith switching station in order to relieve overloads on other nearby autotransformers. A new 345 kV double circuit from Fayetteville to Zenith is planned to be in place by 2015 in order to further alleviate congestion on imports into the Houston area.

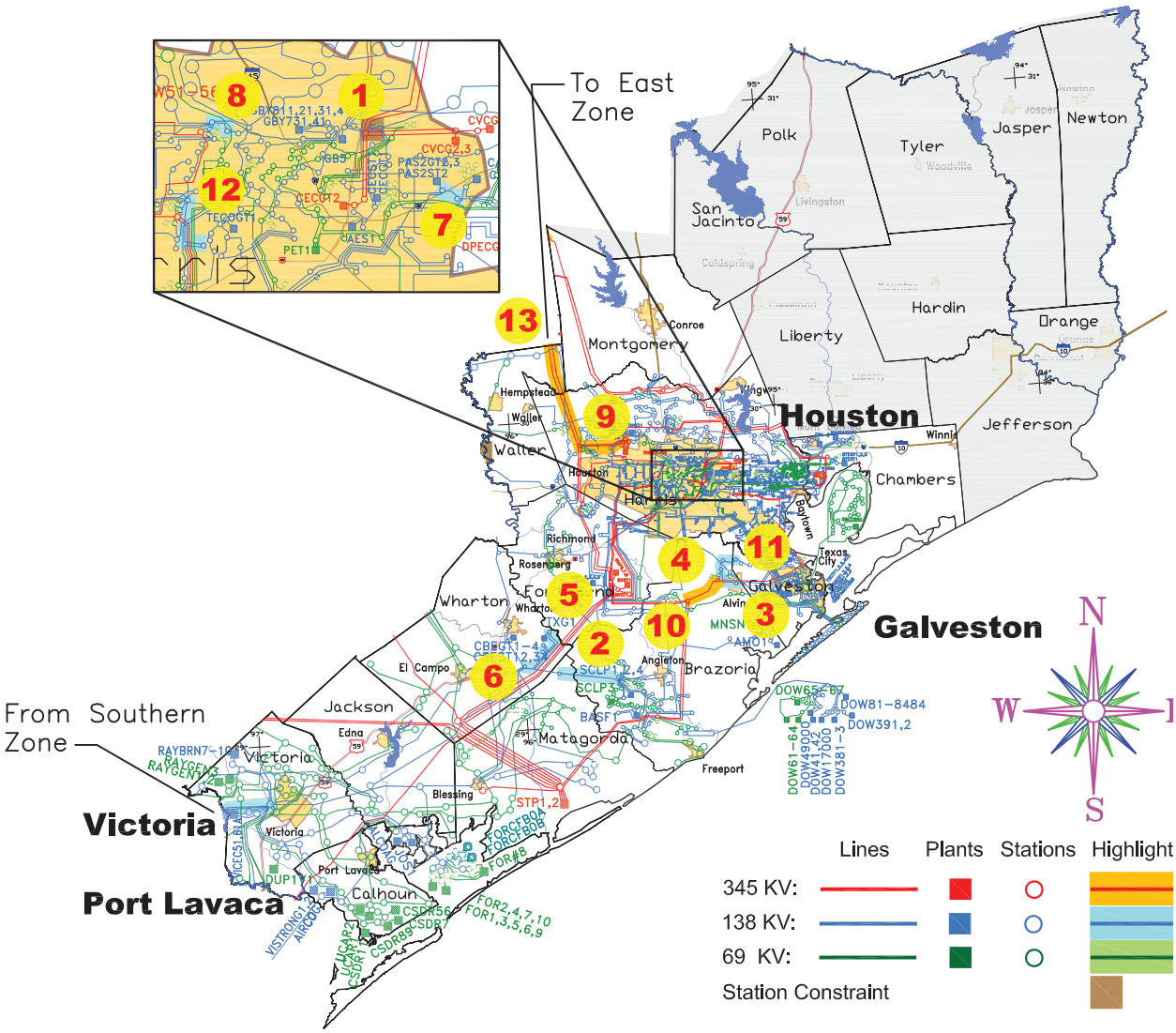
The Garrott to Midtown to Polk 138 kV circuit upgrade is planned to relieve congestion and improve reliability in downtown Houston. Elsewhere, a new 138 kV to 69 kV connection is planned in the El Campo area in order to enhance reliability.

The Hastings Sub to Alvin Tie Switching Station and the Alvin Tie Switching Station to Alvin Sub 138 kV upgrades are expected to improve reliability and relieve congestion in the Alvin area. The South Lane City Improvements project should improve efficiency in the coast weather zone and relieve area congestion.

Map Index	Planned Element	Voltage (kV)	Year in Service
1	Zenith Switching Station Addition	345	2011
2	Garrott - Midtown - Polk Upgrade	138	2011
3	Zenith Substation Autotransformer And Zenith - Gertie Addition	345/138	2012
4	El Campo Autotransformer Addition	138/69	2013
5	Zenith - Fayetteville Double Circuit Line Addition	345	2015
6	Hastings Sub - Alvin Tie Switch Station	138	2014
7	Alvin Tie Switch Station - Alvin Sub Upgrade	138	2015
8	South Lane City Improvements	138	2012

8.1.7 Projected Constraints Map – Coast Weather Zone

The map below identifies the location of the projected constraints for the Coast weather zone.



8.1.8 Projected Constraints – Coast Weather Zone

The import of power into the Houston area is projected to be constrained throughout the five-year period of this assessment. However, the Houston Import Project, which includes the new Zenith to Fayetteville 345 kV double circuit planned for 2015, is anticipated to lessen this congestion.

Congestion in downtown Houston area will be relieved with the Garrott to Midtown underground 138 kV cable upgrade in 2011. Also in Harris County, one of the 345/138 kV autotransformers at Greens Bayou Plant Substation will be congested throughout the five-year assessment period.

In order to maintain reliability and to improve economic benefits in the Alvin area, several 138 kV line upgrades will be implemented in later years of this report. These 138 kV lines will be congested until the 138 kV line improvements are completed.

Several 138 kV lines around South Lane City will be congested until an economic project in the area is implemented in 2012.

Index	Projected Constraining Element	Voltage (kV)	2011	2012	2013	2014	2015
1	Greens Bayou Autotransformer A2	345/138					
2	Pledger - West Columbia	138					
3	Alvin Tie Sw Station - Alvin Sub	138					
4	Hastings Sub - Alvin Tie Sw Station	138					
5	New Gulf - CSW Energy	138					
6	New Gulf - South Lane City	138					
7	Jefferson - South Channel	138					
8	Airline - White Oak	138					
9	Zenith - TH Wharton Plant Station	345					
10	Meadow - Oasis	345					
11	Friendswood Sub - Hastings Sub	138					
12	Bellaire - Brays	138					
13	Singleton - Zenith	345					

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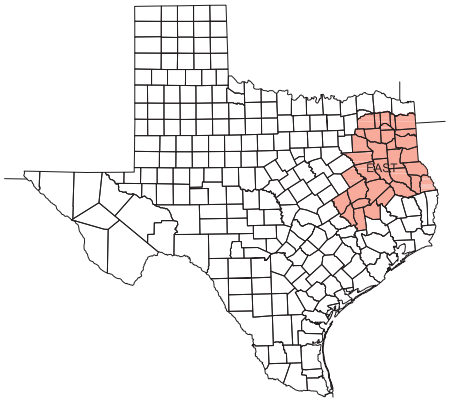
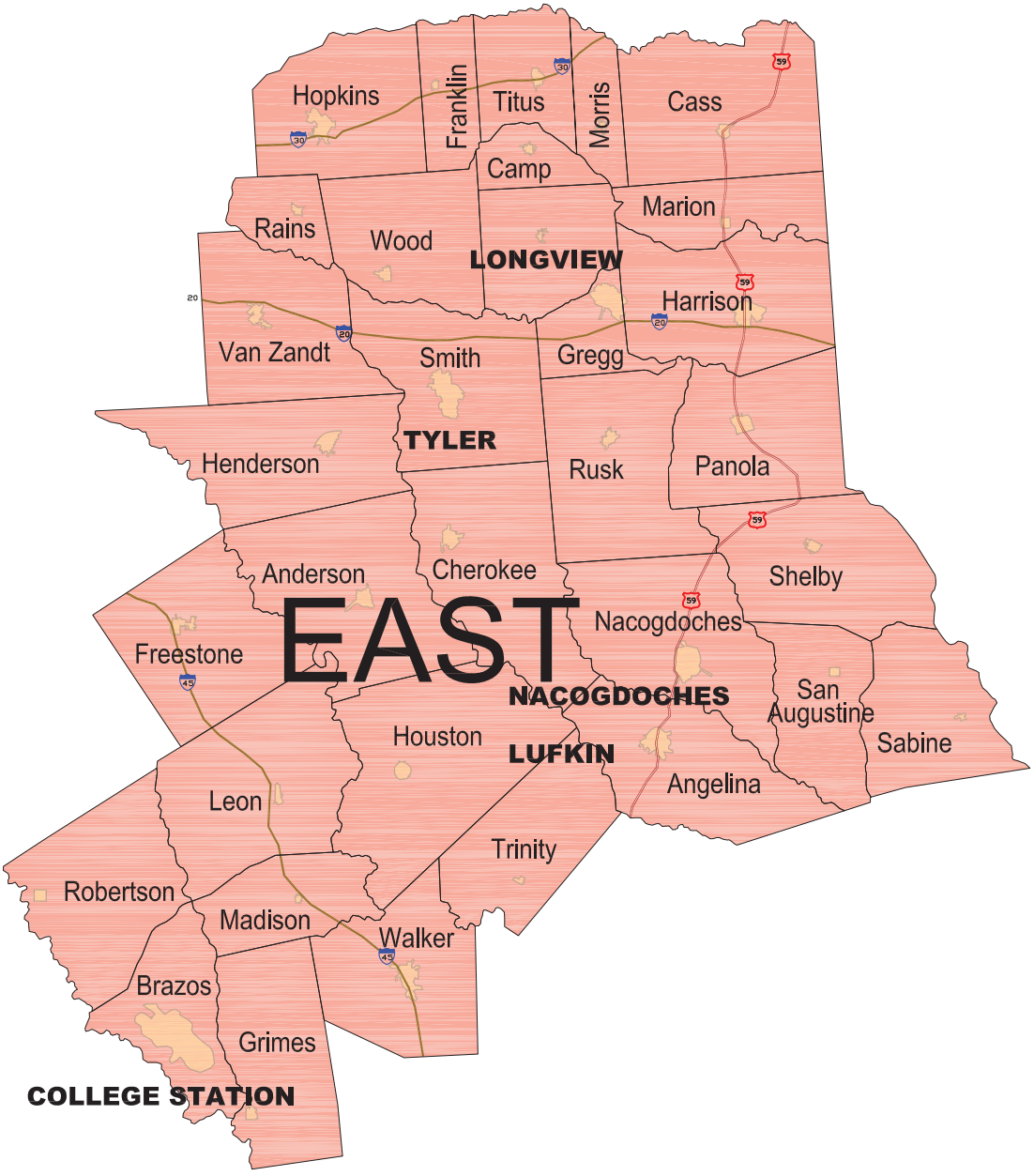
8.2 Area Constraints and Improvements – East Weather Zone

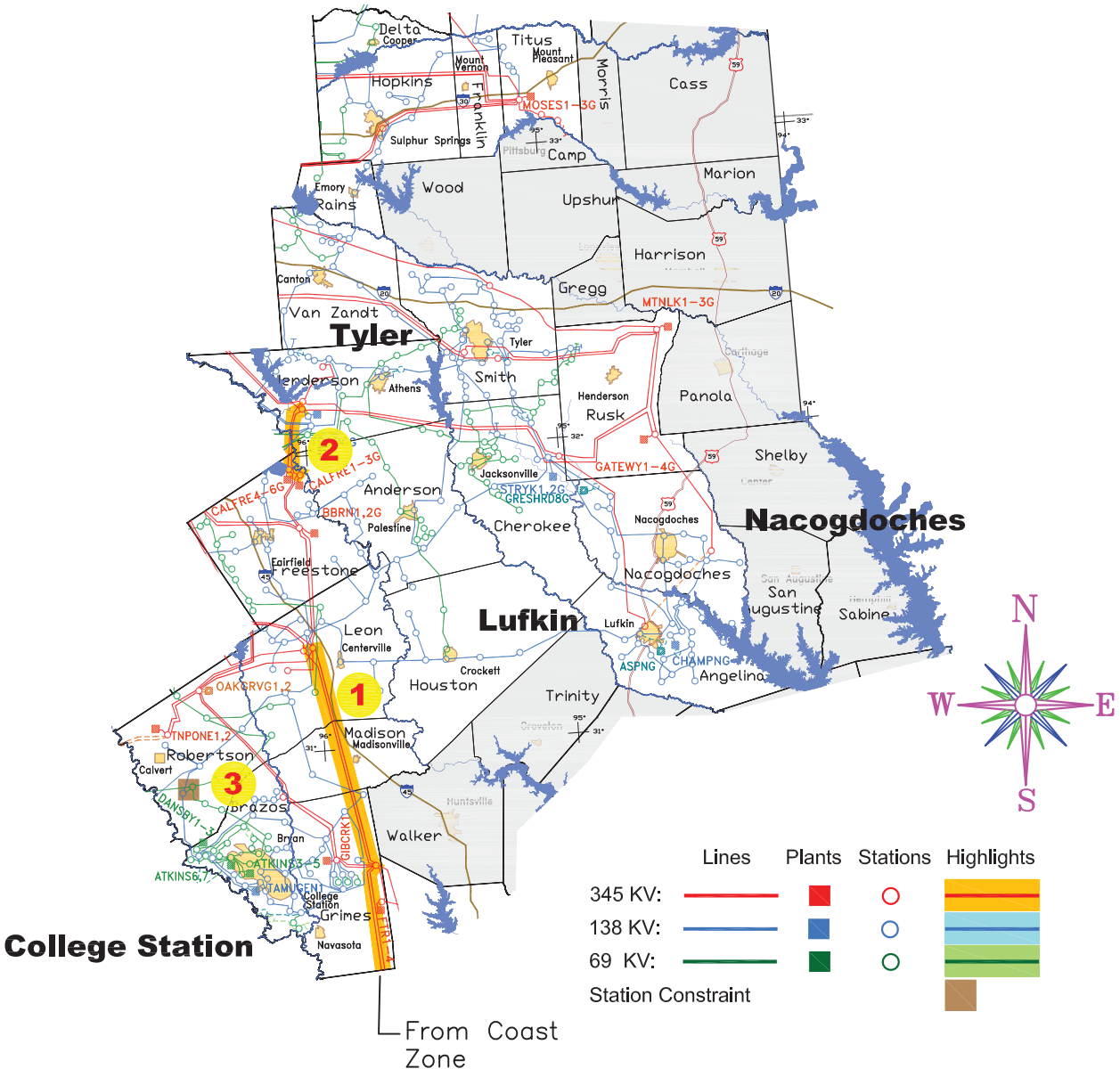


The East weather zone includes the cities of Bryan, College Station, Tyler, Nacogdoches, and Lufkin. The map below highlights the counties included in the East weather zone.



8.2.1 Recent Constraints Map – East Weather Zone

The map below identifies the location of the recent constraints for the East weather zone.



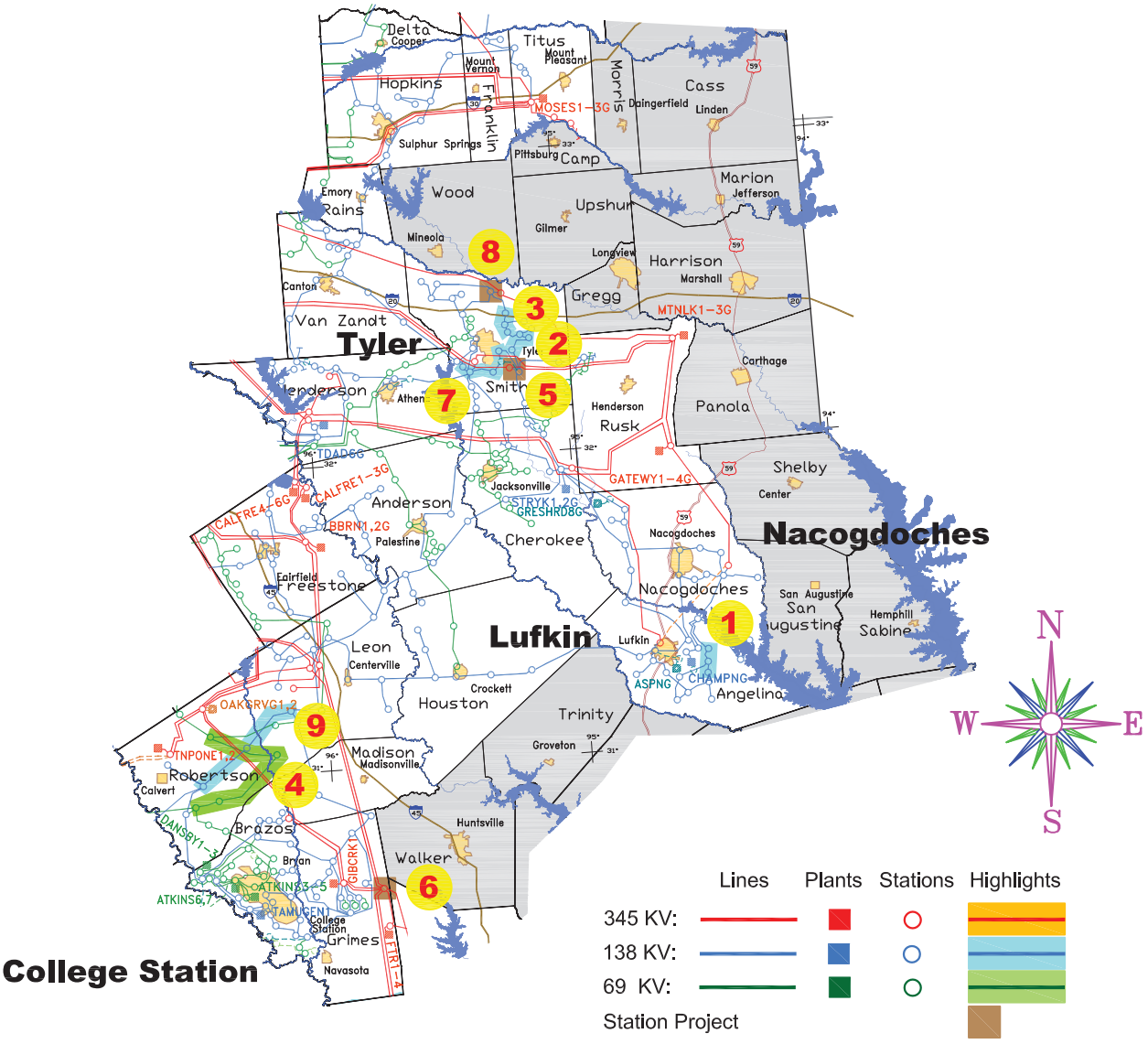
8.2.2 Recent Constraints – East Weather Zone

Transmission constraints in the East weather zone are primarily due to transmission construction outages for maintenance and transmission improvements.

Map Index	Constraining Element	Voltage (kV)
1	Jewett - Singleton	345
2	Trinidad - Richland Chambers	345
3	Hearne Autotransformer	138/69

8.2.3 Completed Improvements Map – East Weather Zone

The map below identifies the location of the completed improvements for the East weather zone.



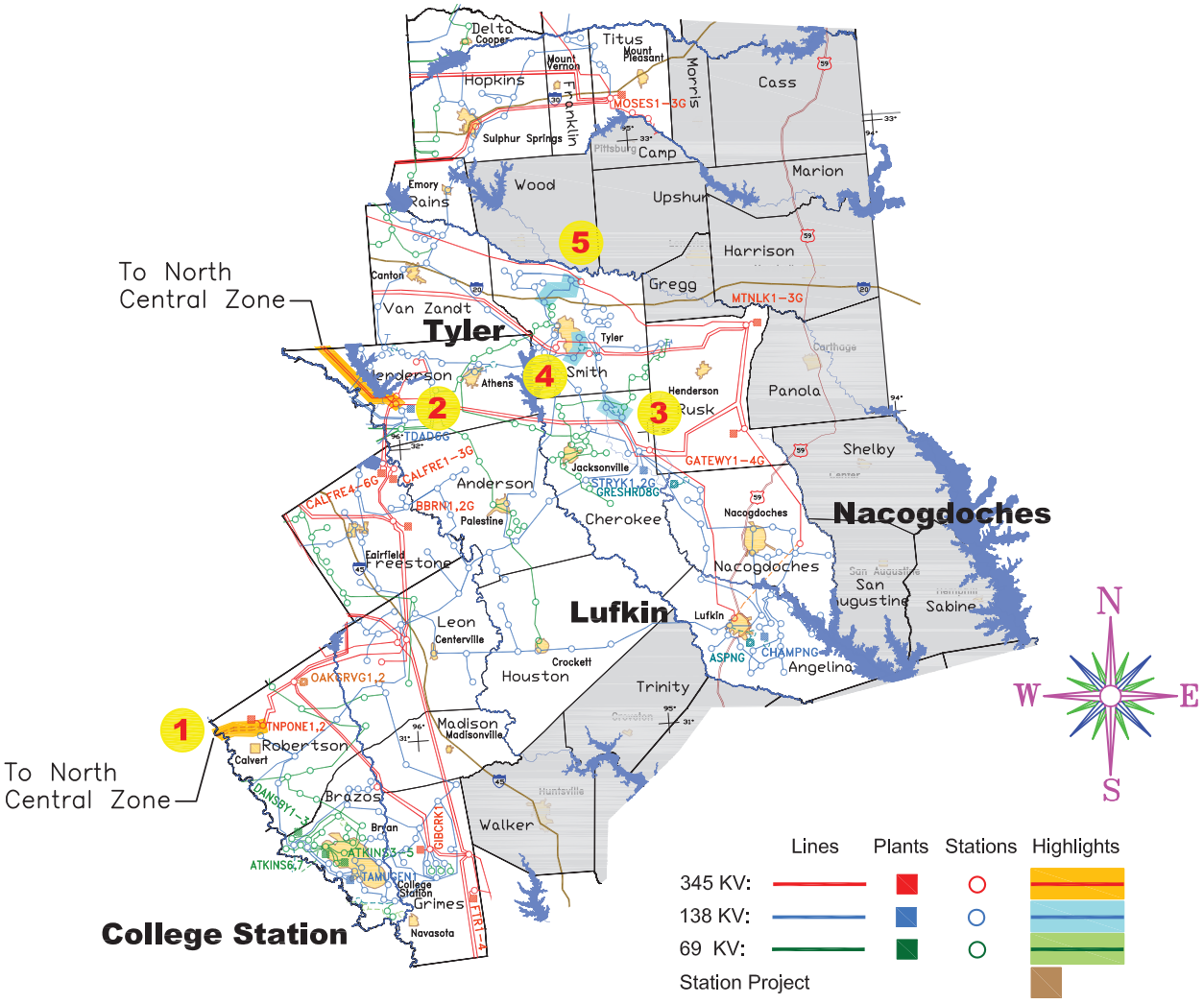
8.2.4 Completed Improvements – East Weather Zone

The map shows the most significant new and upgraded elements that were completed in 2009 and 2010 in the East weather zone. The elements consist of approximately 54 miles of transmission and several new substations and autotransformers. Many of these upgrades were accomplished by raising the voltage level, upgrading the line or replacing the existing conductor. The Singleton switching station is a part of the Houston area constraint mitigation effort.

Map Index	Completed Improvement	In-Service	Voltage (kV)	New (miles)	Upgrade (miles)
1	Lufkin E. - Lufkin S. Line Upgrade	Jan-09	138	0.0	6.3
2	Tyler GE - Tyler Omen Road Line Rebuild	Jan-09	138	0.0	2.4
3	Tyler NE - Tyler East Line Upgrade	Feb-09	138	0.0	3.7
4	Hilltop Lakes Sw. to Hearne Line Rebuild	Apr-09	69	0.0	14.5
5	Tyler Grande New Switching Station and New Autotransformer	Apr-09	345/138	0.0	0.0
6	Singleton New Switching Station	Apr-09	345	0.0	0.5
7	Tyler Grande - Tyler S. Line Rebuild	May-09	138	2.3	2.3
8	Shamburger Switch New Reactive Device Installation	Jun-09	138	0.0	0.0
9	Robertson to Watson Chapel Line Rebuild	Nov-09	138	0.0	21.6

8.2.5 Planned Improvements Map – East Weather Zone

The map below identifies the location of the planned improvements for the East weather zone.



8.2.6 Planned Improvements – East Weather Zone

The largest planned improvement for the East weather zone is a new double circuit 345 kV line from the TNP One plant to a new Bell County East switching station near Temple. The project will increase exit capability for newly built and planned coal plants in the area.

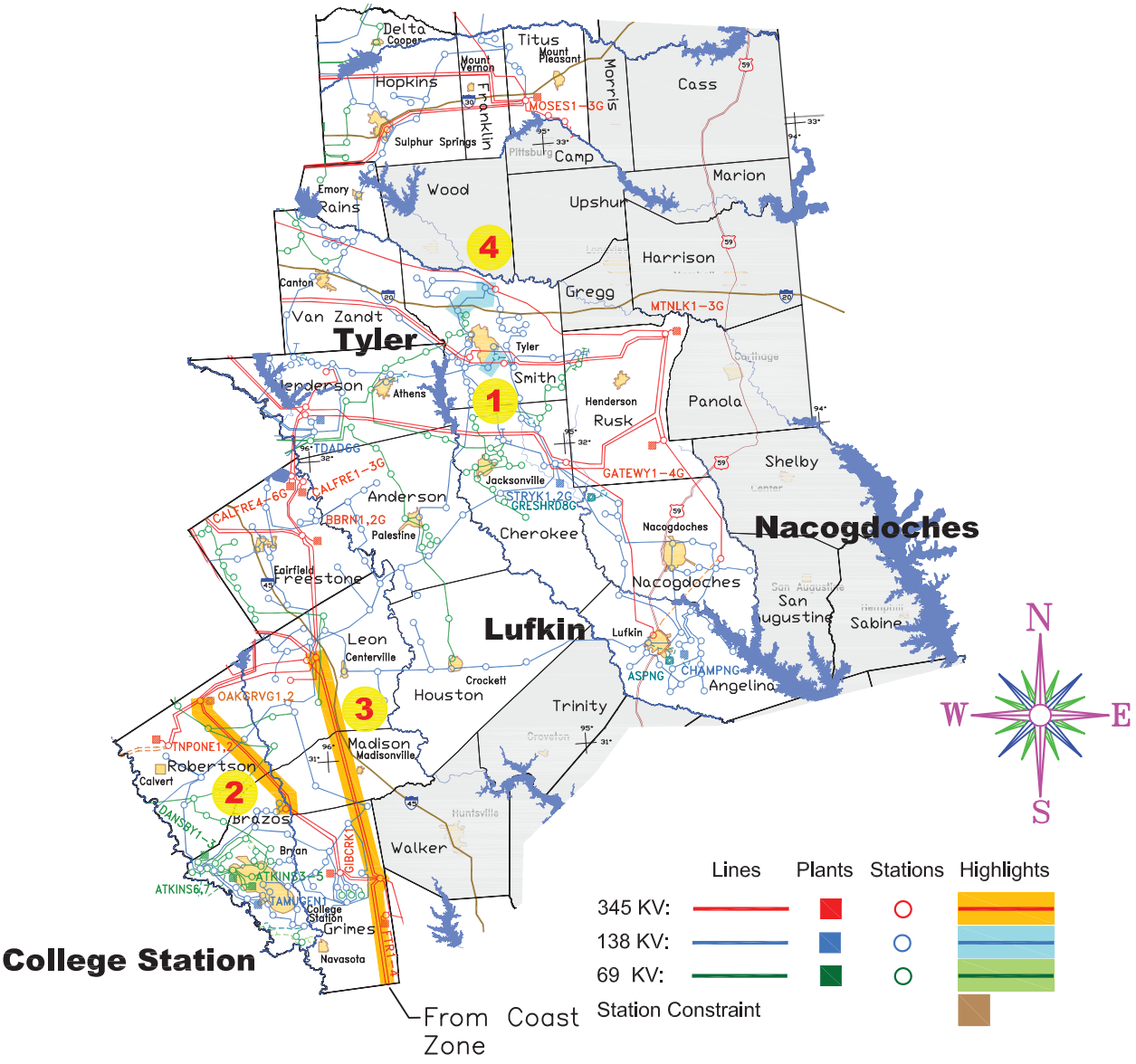
The Trinidad switching station to Watermill switching station 345 kV line upgrade will allow for greater imports into the Dallas/Fort Worth area. Also, the Troup substation to Walnut Grove substation upgrade will relieve overloads south of the Tyler area.

The Tyler Bullard Road to Tyler Loop South Tap 138 kV line and Shamburger to Tyler Northwest 138 kV line upgrades will relieve area congestion.

Map Index	Planned Element	Voltage (kV)	Year in Service
1	Bell County East - TNP One Double Circuit Line Addition	345	2011
2	Trinidad - Watermill Line Upgrade	345	2012
3	Troup - Walnut Grove Line Upgrade	138	2015
4	Tyler Bullard Road - Tyler Loop South Tap	138	2012
5	Shamburger - Tyler Northwest	138	2015

8.2.7 Projected Constraints Map – East Weather Zone

The map below identifies the location of the projected constraints for the East weather zone.



8.2.8 Projected Constraints – East Weather Zone

The addition of several new coal-fired plants will cause congestion on the 345 kV system between central Texas and the Houston area. This congestion is expected to persist throughout the five-year assessment period.

A few 138 kV line upgrades in the Tyler area have been planned for the later years to meet reliability needs. Congestion in the Tyler area will persist until these 138 kV line improvements are implemented.

Index	Projected Constraining Element	Voltage (kV)	2011	2012	2013	2014	2015
1	Tyler Bullard Rd - Tyler Loop South Tap	138					
2	Jack Creek - Twin Oak SES	345					
3	Jewett - Singleton	345					
4	Shamburger - Tyler Northwest	138					

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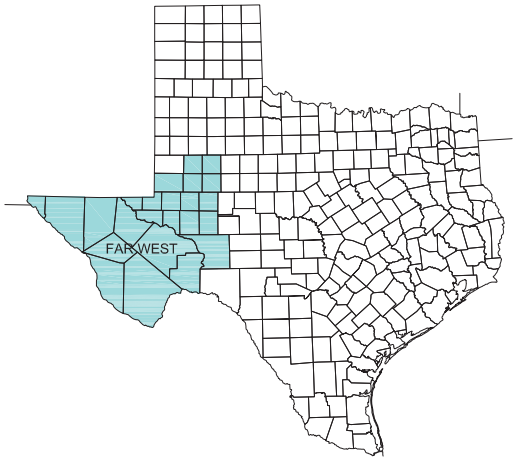
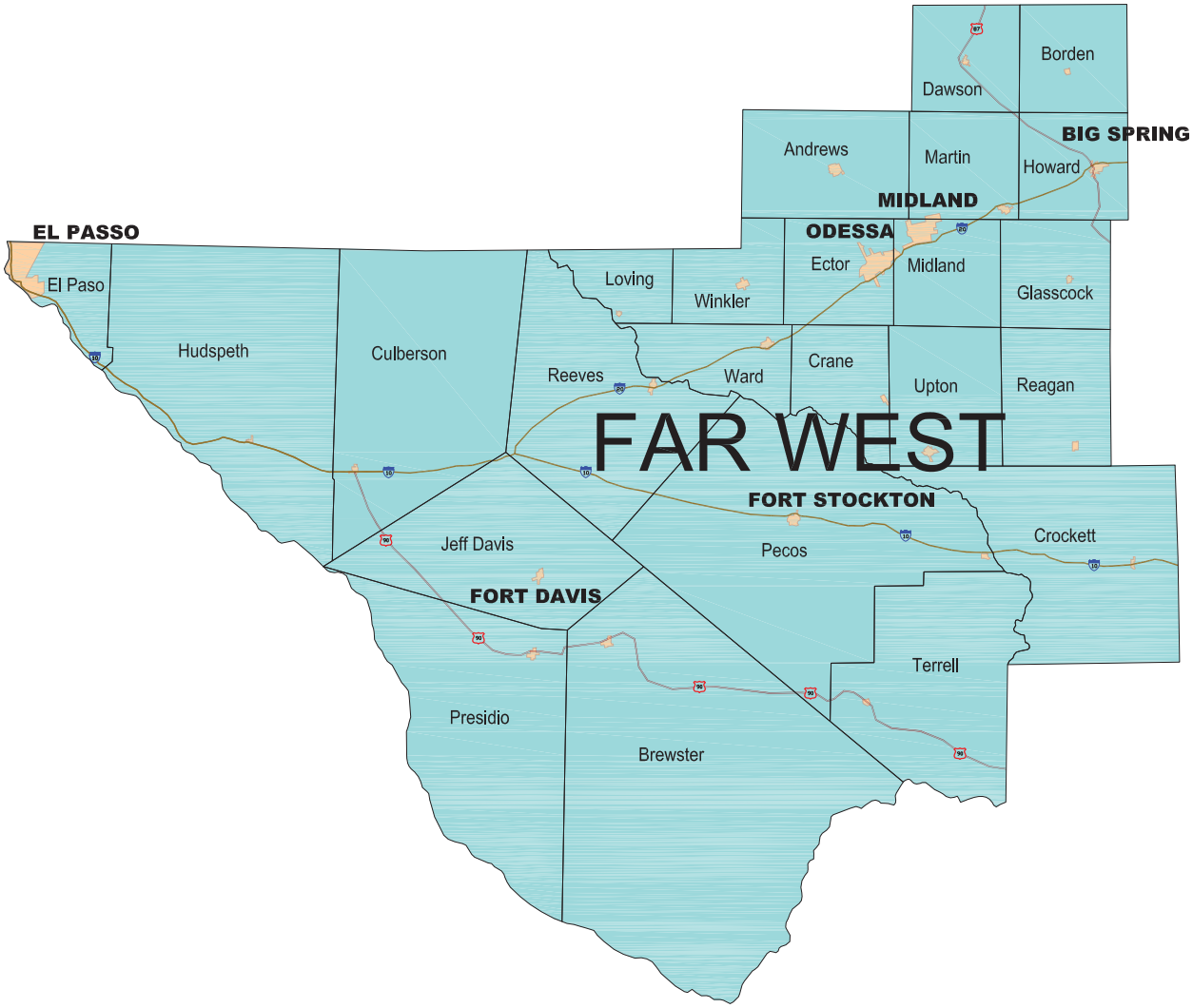
8.3 Area Constraints and Improvements – Far West Weather Zone

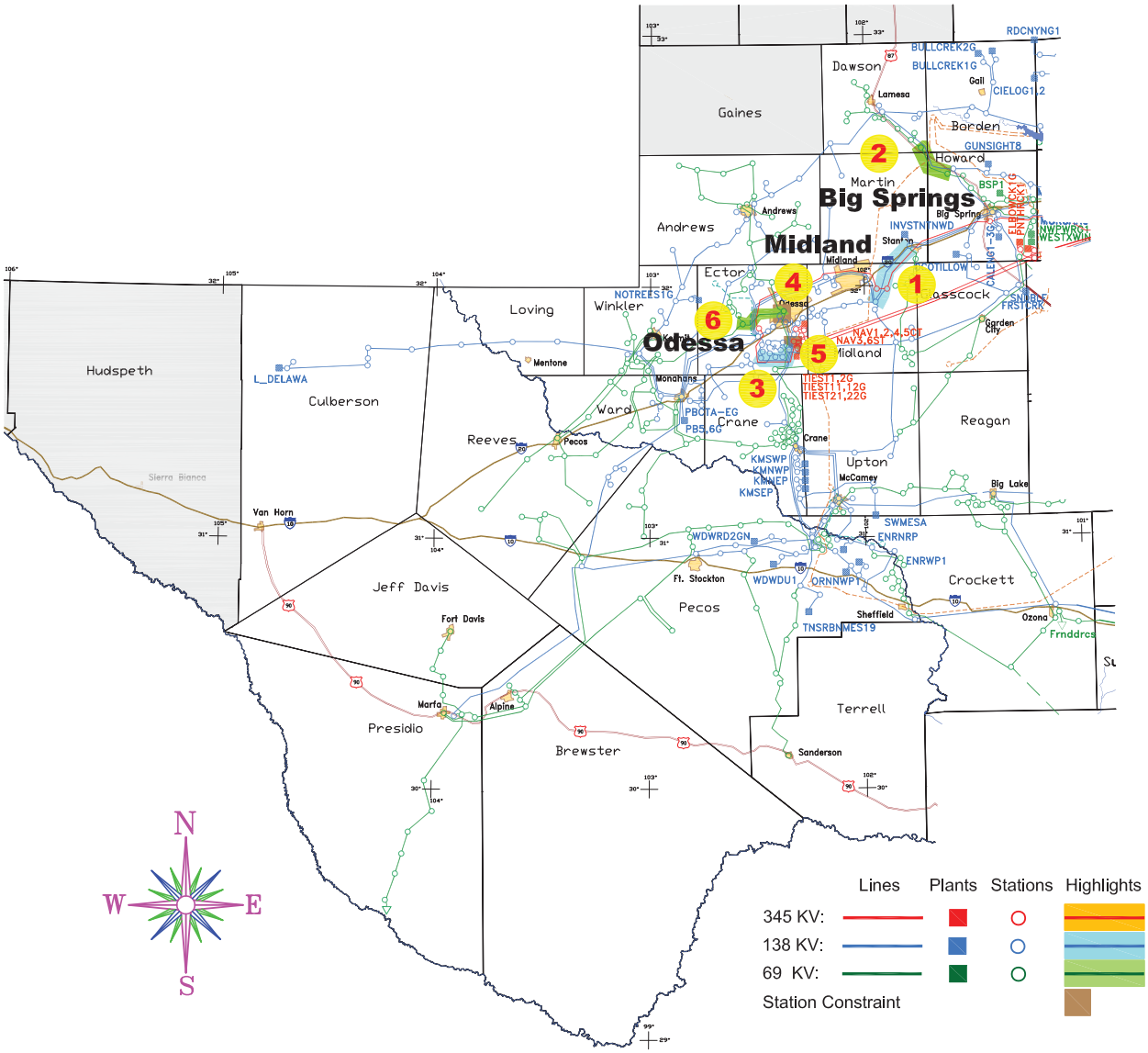


The main cities in the Far West weather zone include Midland and Odessa. This zone stretches to include Big Bend and the McCamey area. The map below highlights the counties included in the Far West weather zone.



8.3.1 Recent Constraints Map – Far West Weather Zone

The map below identifies the location of the recent constraints for the Far West weather zone.



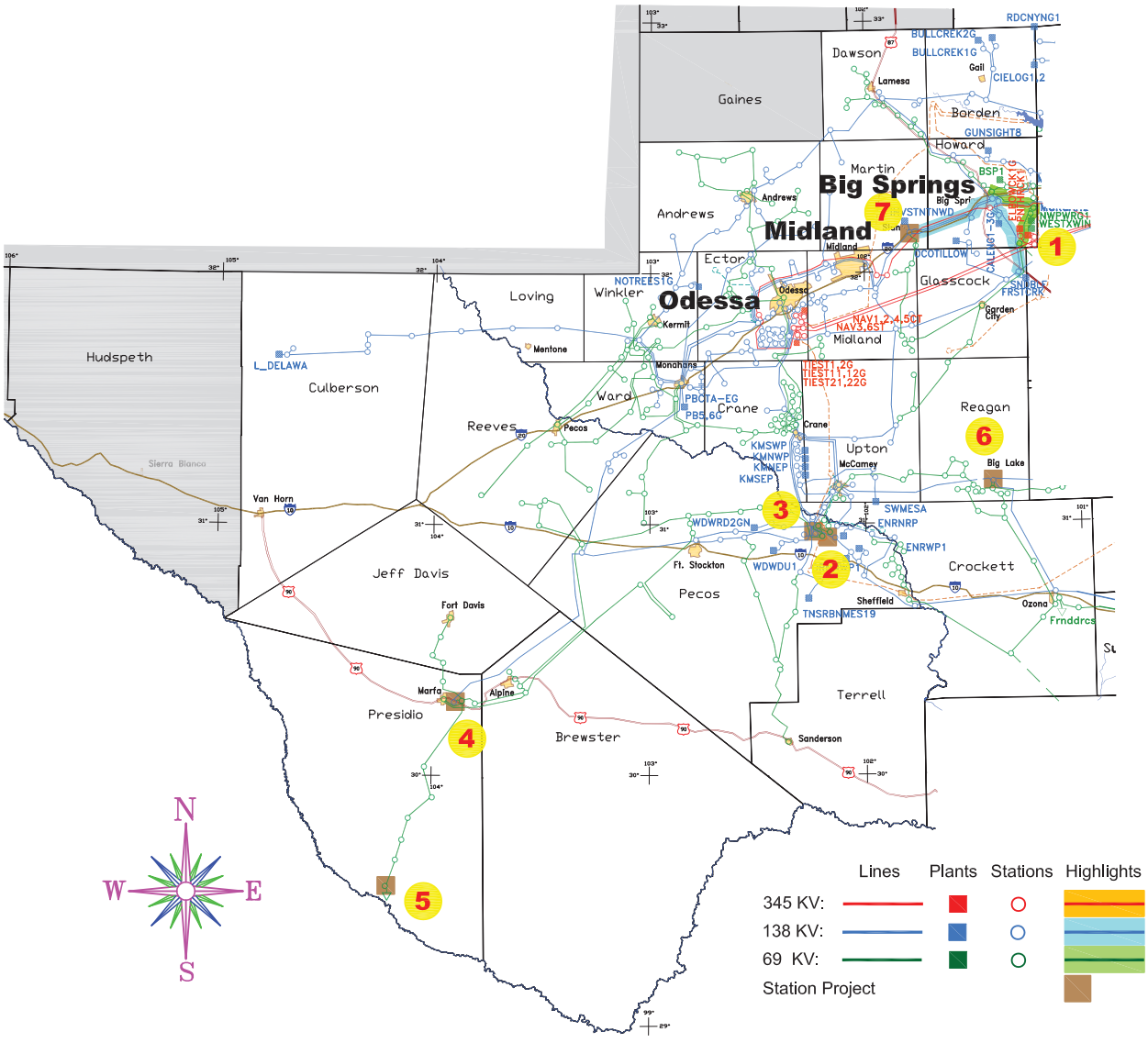
8.3.2 Recent Constraints – Far West Weather Zone

The Far West weather zone constraints are due, in part, to moderate load growth. However, the primary cause for congestion is due to the large amount of wind generation in the area and the limited ability to export the power to load centers to the east.

Map Index	Constraining Element	Voltage (kV)
1	Stanton East Switching Station - Midland East	138
2	Ackerly Vealmoor Switch - Ackerly	69
3	Odessa - Big Three Odessa Tap	138
4	Odessa North Auto	138/69
5	Odessa EHV Autotransformer #1	345/138
6	Odessa North - Odessa Basin	69

8.3.3 Completed Improvements Map – Far West Weather Zone

The map below identifies the location of the completed improvements for the Far West weather zone.



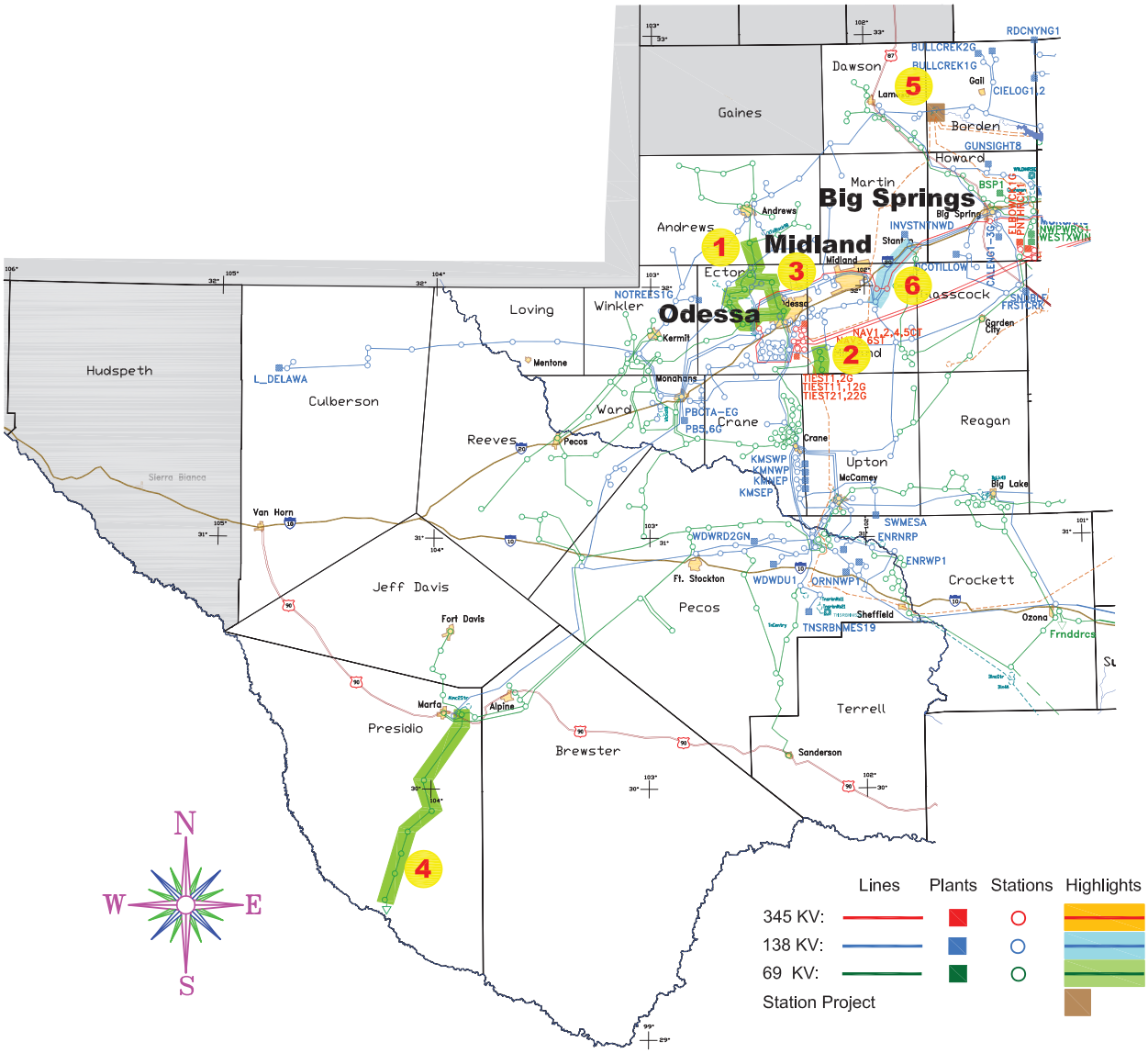
8.3.4 Completed Improvements – Far West Weather Zone

The map shows the most significant new and upgraded elements that were completed in 2009 and 2010 in the Far West weather zone. The elements consist of almost 57 miles of transmission, new autotransformers, and static VAr compensator additions. There were over 17 miles of new 138 kV transmission and 39 miles of upgraded 138 kV lines. Many of these upgrades were accomplished by raising or replacing the existing conductor and reconfiguring the existing station. The upgraded circuits increase the line capacity for generator export.

Map Index	Completed Improvement	In-Service	Voltage (kV)	New (miles)	Upgrade (miles)
1	Big Spring - Chalk - McDonald Line Rebuild	Apr-09	138/69	17.6	17.6
2	Reconfigure Rio Pecos, SVC Addition	Dec-09	69	0.0	0.0
3	Reconfigure Rio Pecos, SVC Addition & New Autotransformer	Dec-09	138/69	0.0	0.0
4	Alamito Creek New Autotransformer	Feb-10	138/69	0.0	0.0
5	Gonzales New Autotransformer	Mar-10	138/69	0.0	0.0
6	Big Lake New Phase Shifting Transformer	Mar-10	138	0.0	0.0
7	Stanton East - Big Spring Switch Line Rebuild and New Autotransformer	May-10	138/69	0.0	21.6

8.3.5 Planned Improvements Map – Far West Weather Zone

The map below identifies the location of the planned improvements for the Far West weather zone.



8.3.6 Planned Improvements – Far West Weather Zone

There are several transmission improvements in the Far West weather zone that involve the conversion of 69 kV circuits and substations to 138 kV service. This is primarily driven by load growth in and around the Odessa area. These conversions are designed to meet reliability needs now and into the future.

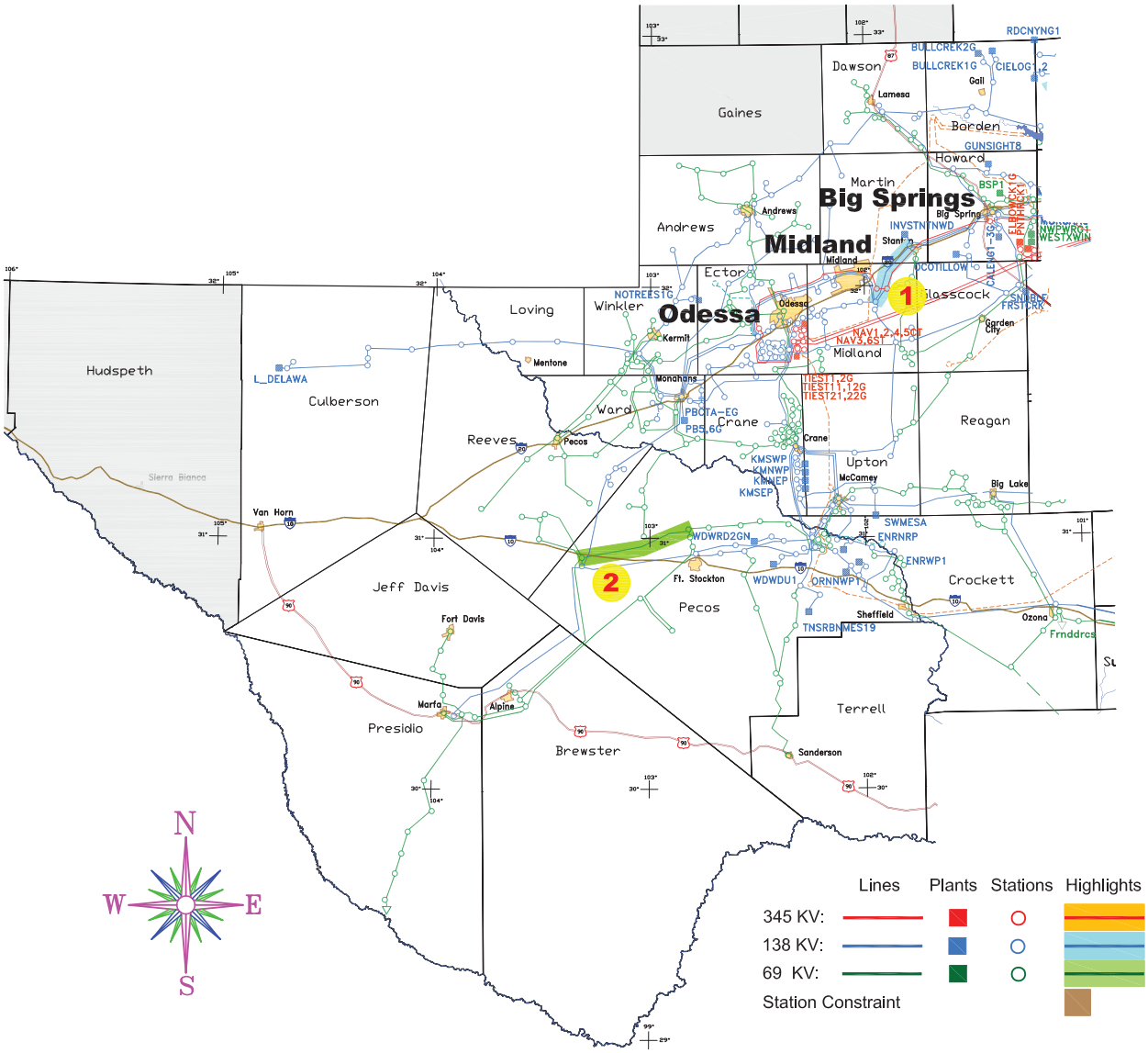
The planned Presidio Area Reliability Improvements Project, which included a 4 MW NaS battery that was recently installed at Presidio, will conclude with the construction of a new Alamito Creek to Gonzales 69 kV line. This project will increase the reliability of service for customers served by this line and will prevent pre-contingency and post-contingency voltage violations.

Several improvements are planned to relieve congestion due to wind generation in the Far West weather zone. The Faraday switching station and associated autotransformer addition will allow existing and planned wind generation to export power through the CREZ system. The Midland East to Stanton East line upgrade will also mitigate wind generation related congestion.

Map Index	Planned Element	Voltage (kV)	Year in Service
1	Odessa North - Emma Tap Line Upgrade	69	2011
2	Pegasus - South Pegasus 138 kV Conversion	138/69	2011
3	Odessa North - Holt Switch 138 kV Conversion	138/69	2012
4	Alamito Creek - Gonzales New Line Addition	69	2012
5	Faraday Switch Station and Autotransformer Addition	345/138	2014
6	Midland East - Stanton East Upgrade	138	2015

8.3.7 Projected Constraints Map – Far West Weather Zone

The map below identifies the location of the projected constraints for the Far West weather zone.



8.3.8 Projected Constraints – Far West Weather Zone

The projected constraints in the Far West weather zone are primarily due to the development of new wind generation. The power export from the McCamey area is limited by the congestion on the Fort Stockton Switching Station to Barilla Junction 69 kV line. This will be alleviated with the CREZ facilities coming online in the McCamey area.

Index	Projected Constraining Element	Voltage (kV)	2011	2012	2013	2014	2015
1	Midland East – Stanton East	138					
2	Ft Stockton Switch Stn - Barilla Junction	69					

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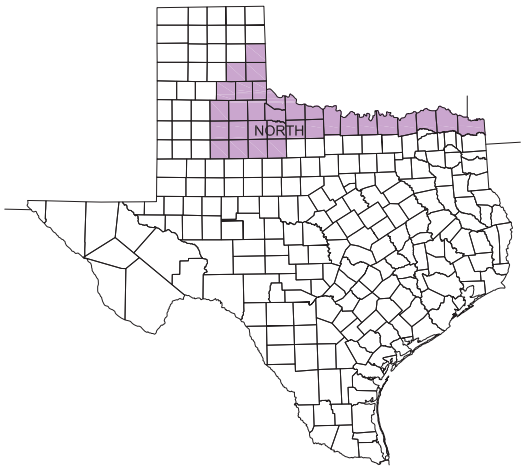
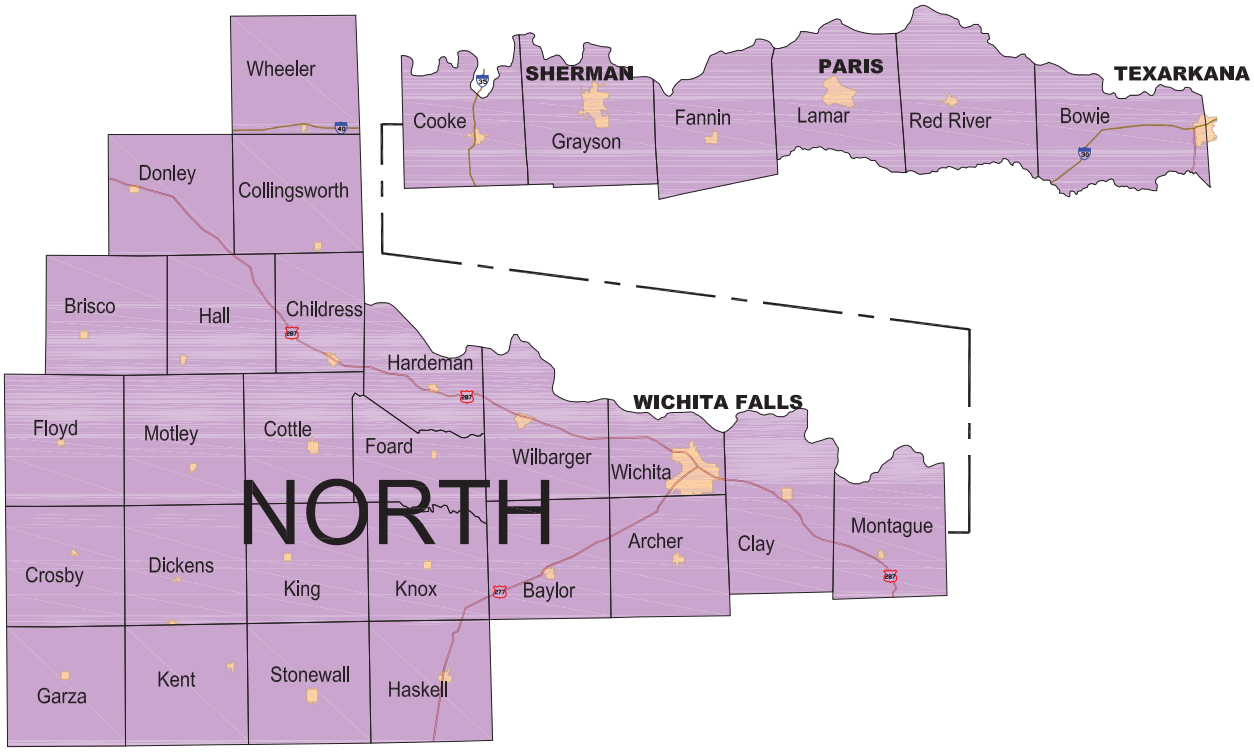
8.4 Area Constraints and Improvements – North Weather Zone

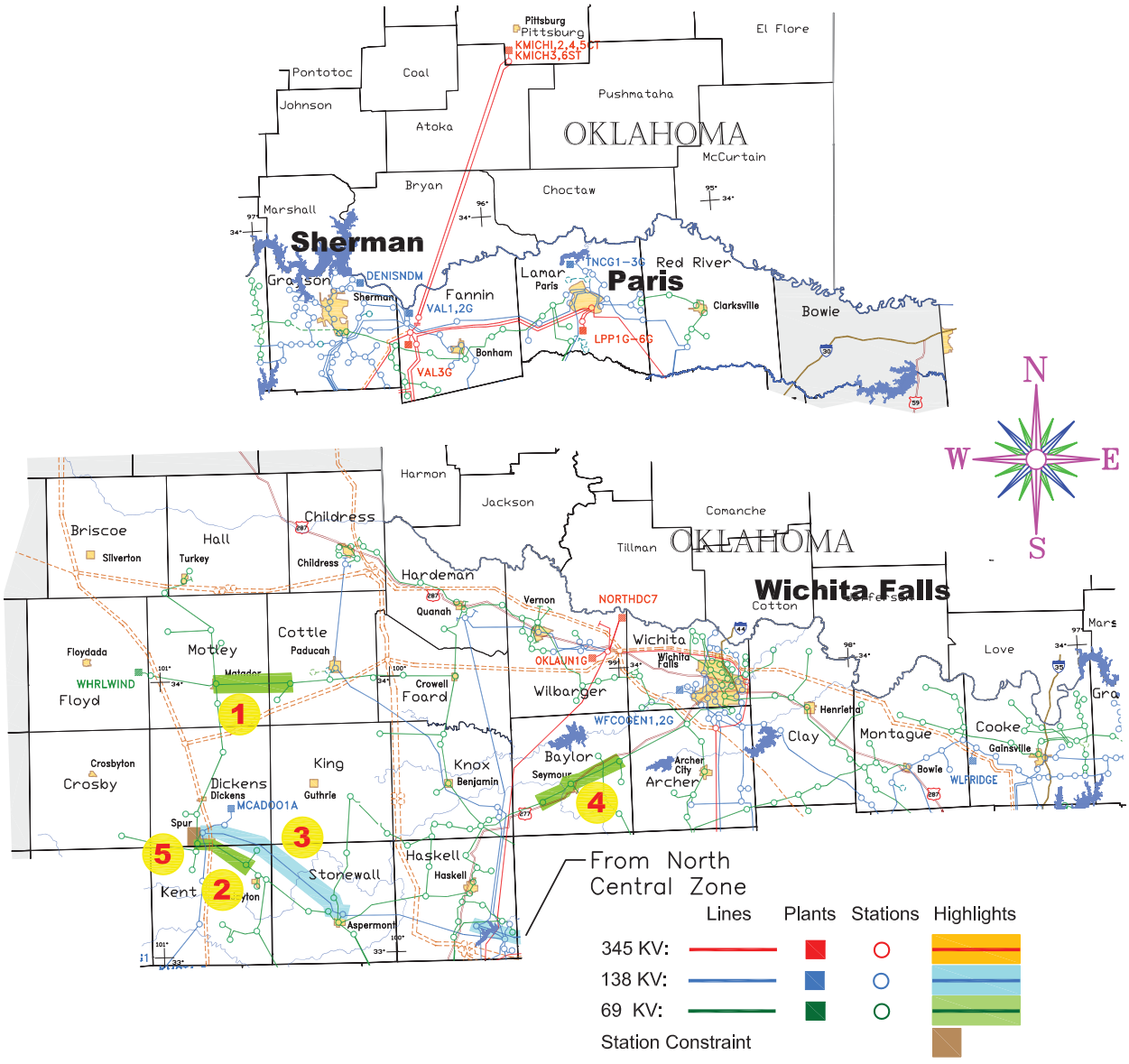


The North weather zone covers the northern counties of ERCOT's territory, including the cities of Wichita Falls and Paris. The map below highlights the counties included in the North weather zone.



8.4.1 Recent Constraints Map – North Weather Zone

The map below identifies the location of the recent constraints for the North weather zone.



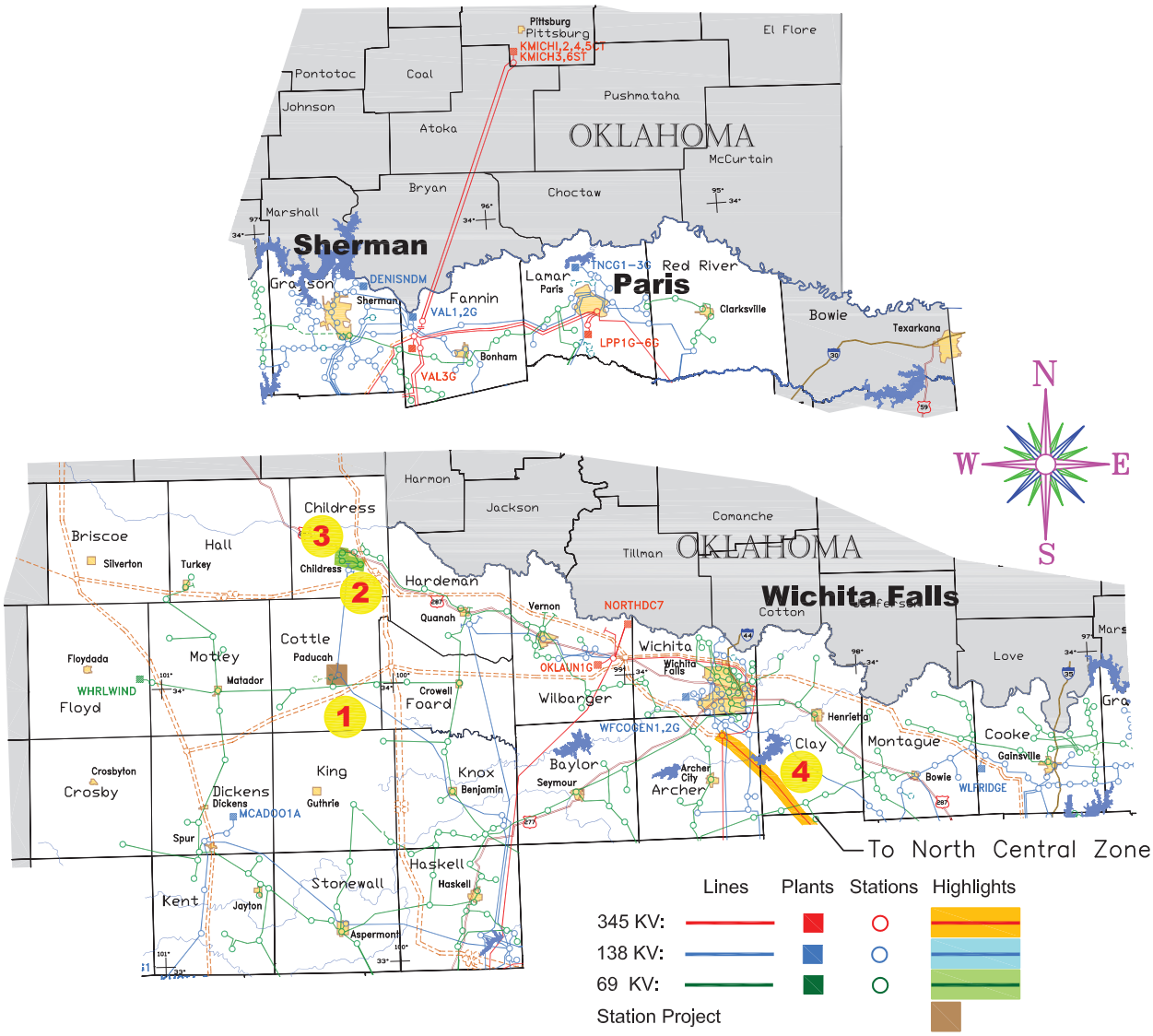
8.4.2 Recent Constraints – North Weather Zone

The recent constraints for the North weather zone are located and due primarily to wind generation congestion.

Map Index	Constraining Element	Voltage (kV)
1	Matador - Paducah REA Tap	69
2	Spur - Girard Tap	69
3	Spur - Aspermont	138
4	Bomarton - Baylor County Tap	69
5	Spur Autotransformer	138/69

8.4.3 Completed Improvements Map – North Weather Zone

The map below identifies the location of the completed improvements for the North weather zone.



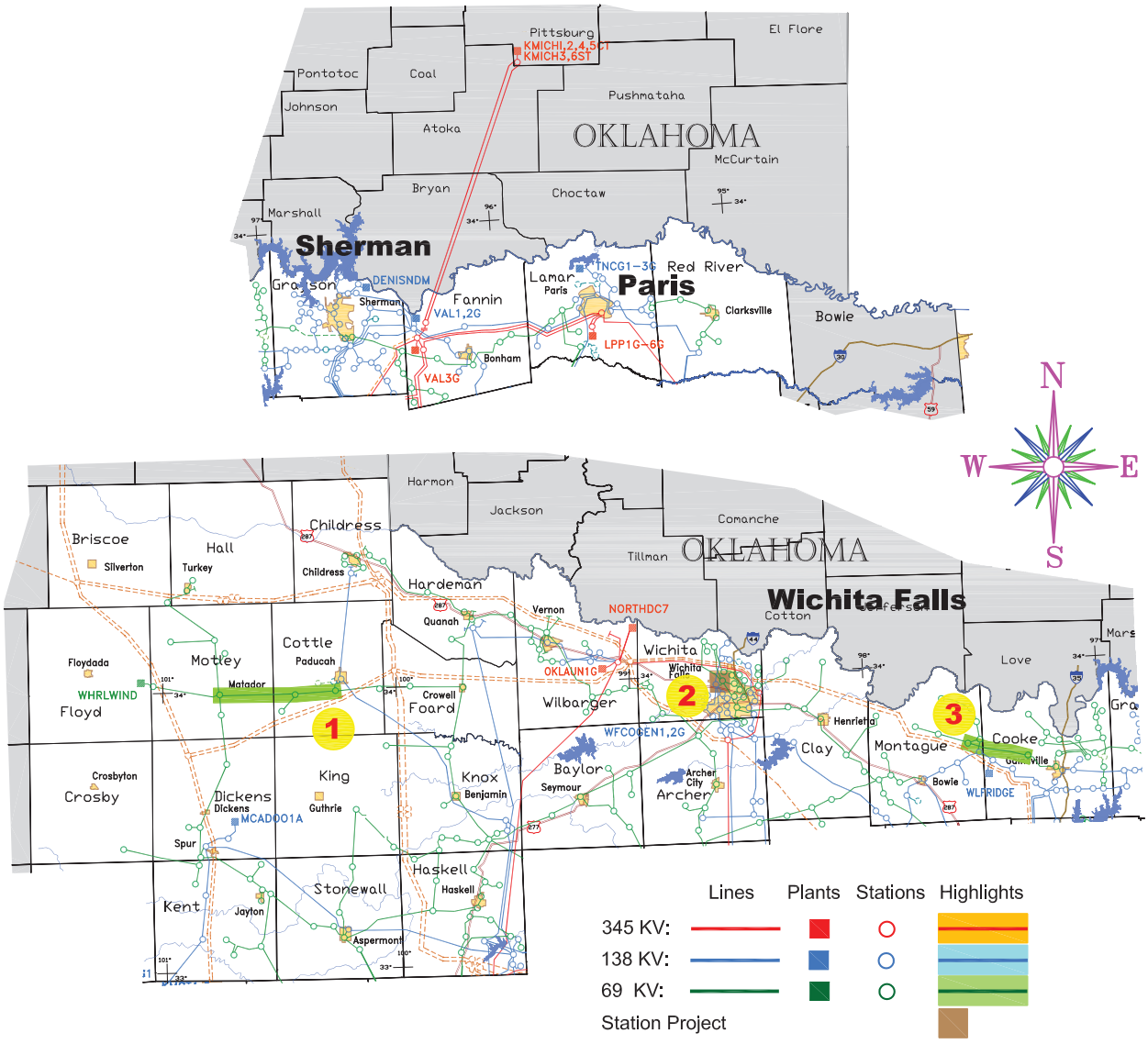
8.4.4 Completed Improvements – North Weather Zone

The map shows the most significant new and upgraded elements that were completed in 2009 and 2010 in the North weather zone. The elements consist of an autotransformer addition and over 48 miles of transmission line improvements, of which approximately 47 miles are 345 kV upgrades.

Map Index	Completed Improvement	In-Service	Voltage (kV)	New (miles)	Upgrade (miles)
1	Paducah Auto Replacement	Nov-09	138	0.0	0.0
2	West Childress - Henry Dbl Ckt Line Rebuild	Dec-09	138/69	1.0	0.0
3	Childress 20th St - Henry Dbl Ckt Line Rebuild	Mar-10	138/69	1.0	0.0
4	Bowman - Jacksboro Switch Line Rebuild	Jun-10	345	0.0	46.7

8.4.5 Planned Improvements Map – North Weather Zone

The map below identifies the location of the planned improvements for the North weather zone.



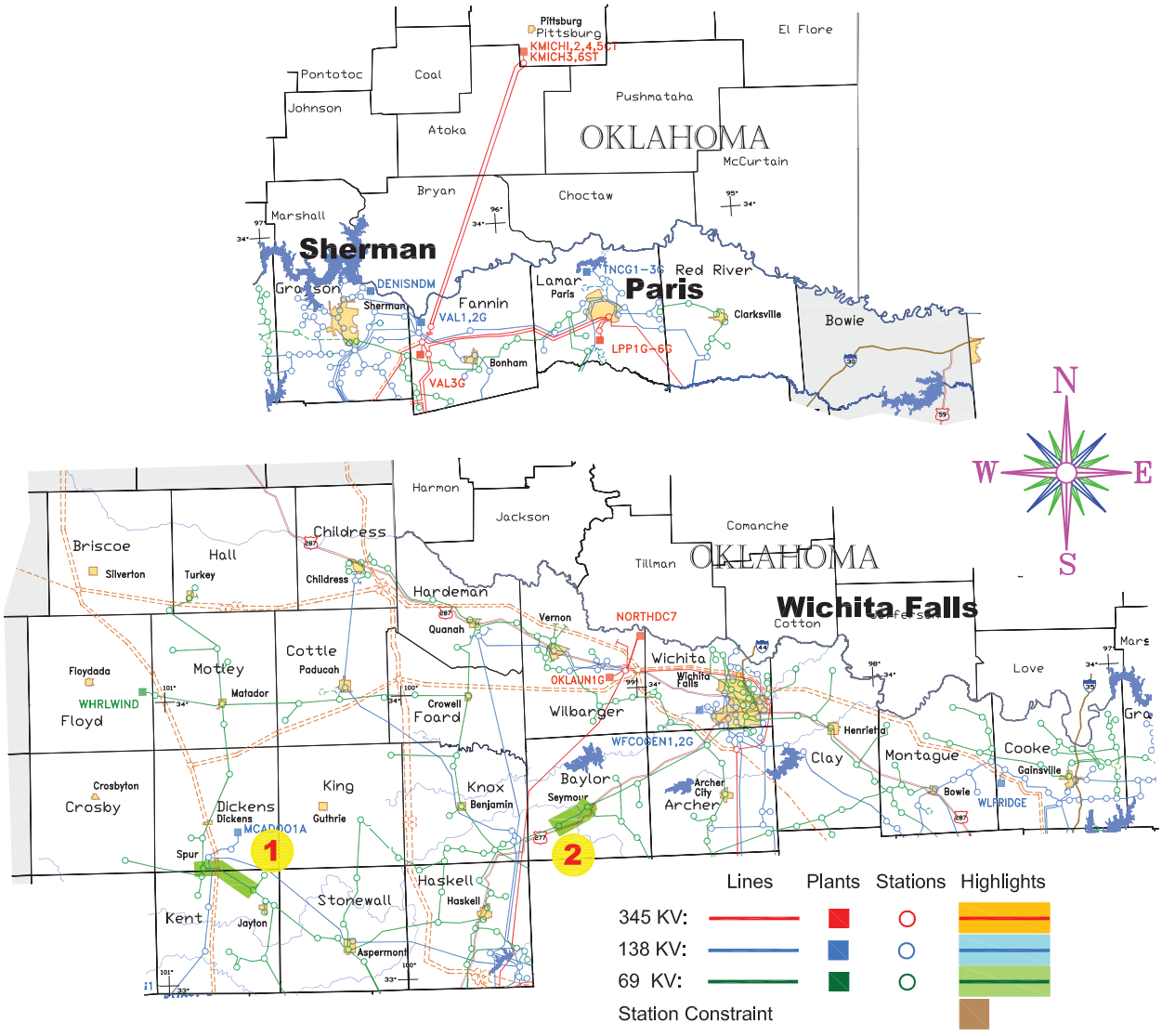
8.4.6 Planned Improvements – North Weather Zone

Planned system improvements in the North weather zone include the upgrade of the Matador substation to Paducah Clare substation 69 kV line. This upgrade will allow for the exit of a Special Protection Scheme at a nearby wind generation plant and improve the reliability for customers served by this line, which was originally constructed in 1927. In addition, other improvements in the area are planned to address reliability needs.

Map Index	Planned Element	Voltage (kV)	Year in Service
1	Matador - Paducah Clare - Paducah City Upgrade	69	2012
2	Pleasant Valley Second Autotransformer	138/69	2013
3	Muenster - St. Jo Upgrade	69	2014

8.4.7 Projected Constraints Map – North Weather Zone

The map below identifies the location of the projected constraints for the North weather zone.



8.4.8 Projected Constraints – North Weather Zone

Most of the projected congestion in the North weather zone is due to generation connected to the transmission system in areas that were originally designed to serve a relatively small load at the edge of the ERCOT Region. Substantial improvements may be required in order to relieve the congestion in the area. With the rebuilding of the Matador to Paducah Clare to Paducah City 69 kV line in 2012, the congestion in that area will be partly relieved. But the Spur to Girard Tap 69 kV line will still be heavily congested due to the recent addition of wind generation plants. The Seymour to Bomarton 69 kV line will be congested until the CREZ facilities are in service.

Index	Projected Constraining Element	Voltage (kV)	2011	2012	2013	2014	2015
1	Spur - Girard Tap	69					
2	Seymour - Bomarton	69					

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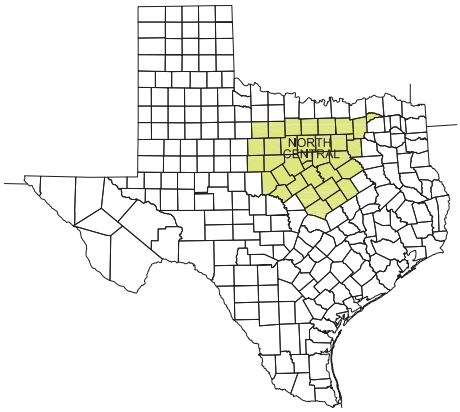
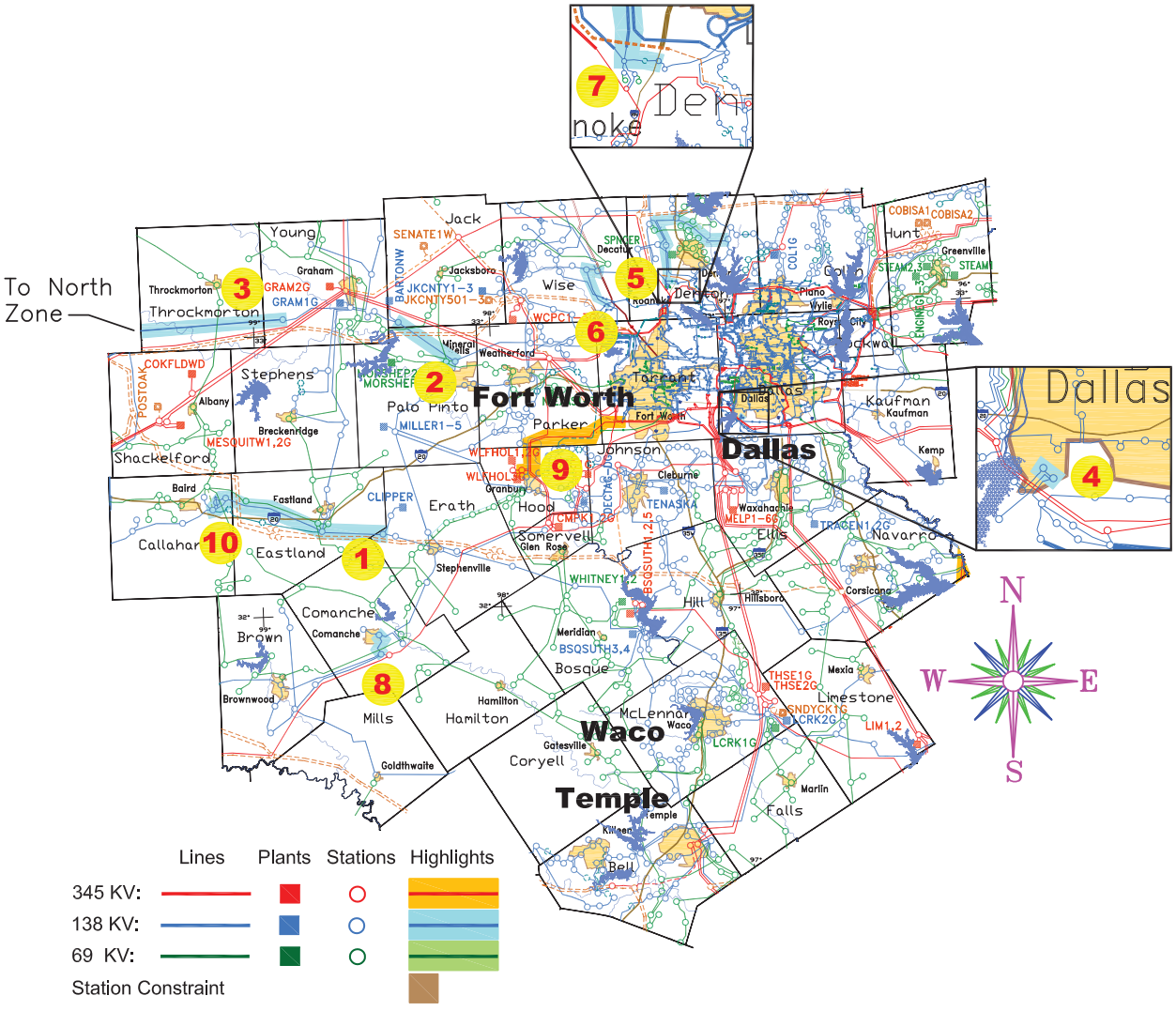
8.5 Area Constraints and Improvements – North Central Weather Zone



The North Central weather zone is comprised of the Dallas/ Fort Worth (DFW) metroplex, Waco, Temple and Killeen. This zone also extends west to the eastern edge of Abilene. The map below highlights the counties included in the North Central weather zone.

8.5.1 Recent Constraints Map – North Central Weather Zone

The map below identifies the location of the recent constraints for the North Central weather zone.



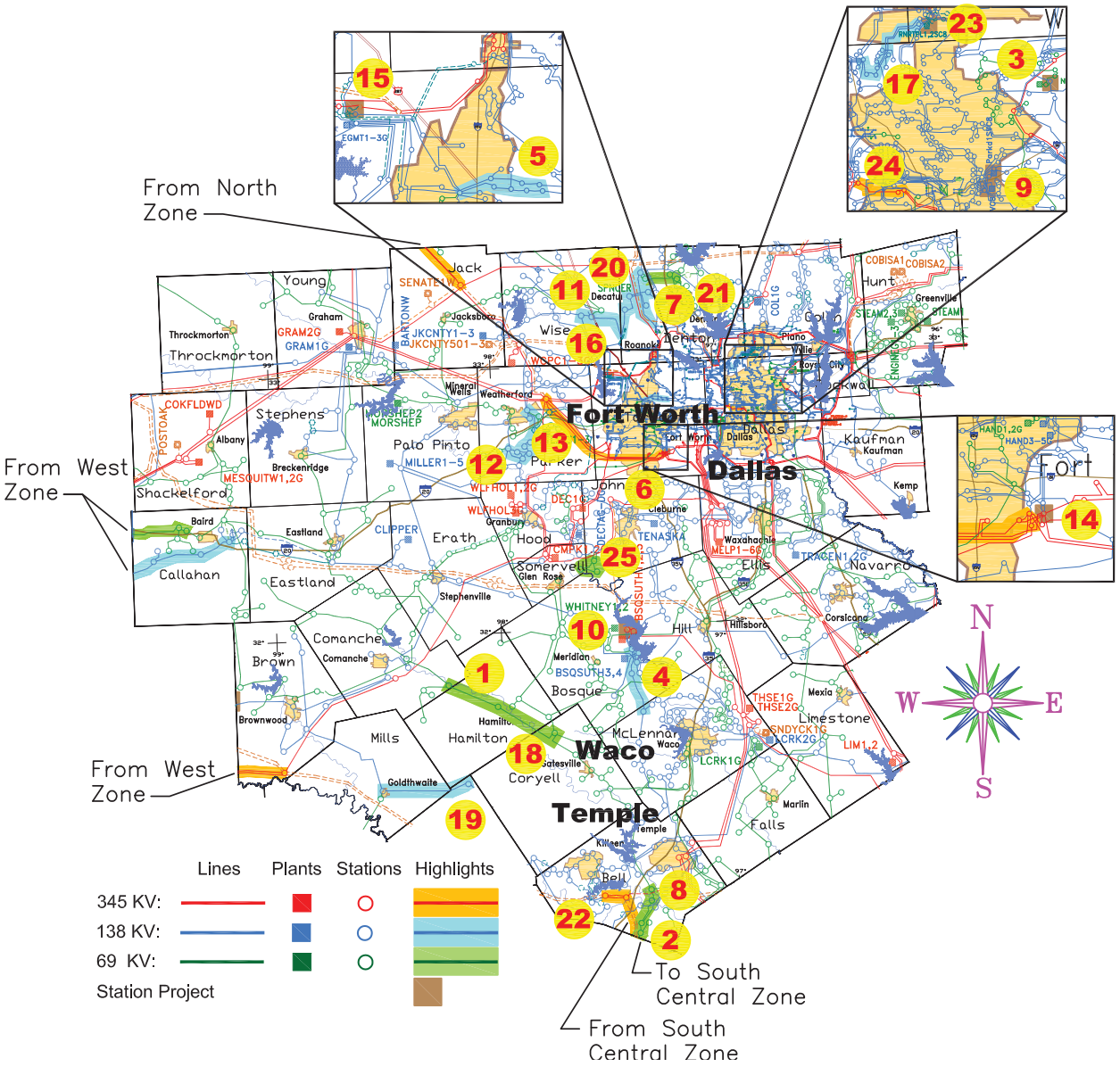
8.5.2 Recent Constraints – North Central Weather Zone

This zone has moderate load growth, particularly in the Dallas/Fort Worth (DFW) area. The combination of decreased local generation and the significant increase in load in the areas surrounding the DFW area led to congestion on the lines and transformers delivering power from remote generation into the area. Additionally, power transfers from west Texas have caused transmission constraints in the western part of the zone.

Map Index	Constraining Element	Voltage (kV)
1	Flat Creek - Leon Switch	138
2	Barton Switch - Oran	138
3	Paint Creek - Murray	138
4	Duncanville South - Cedar Hill	138
5	West Denton - Airport	138
6	Rhome - Decater Tap	138
7	West Denton - Teasley	138
8	Comanche Switch - Comanche Tap	138
9	Wolf Hollow - Rocky Creeek	345
10	Putnam - Leon Switch	138

8.5.3 Completed Improvements Map – North Central Weather Zone

The map below identifies the location of the completed improvements for the North Central weather zone.



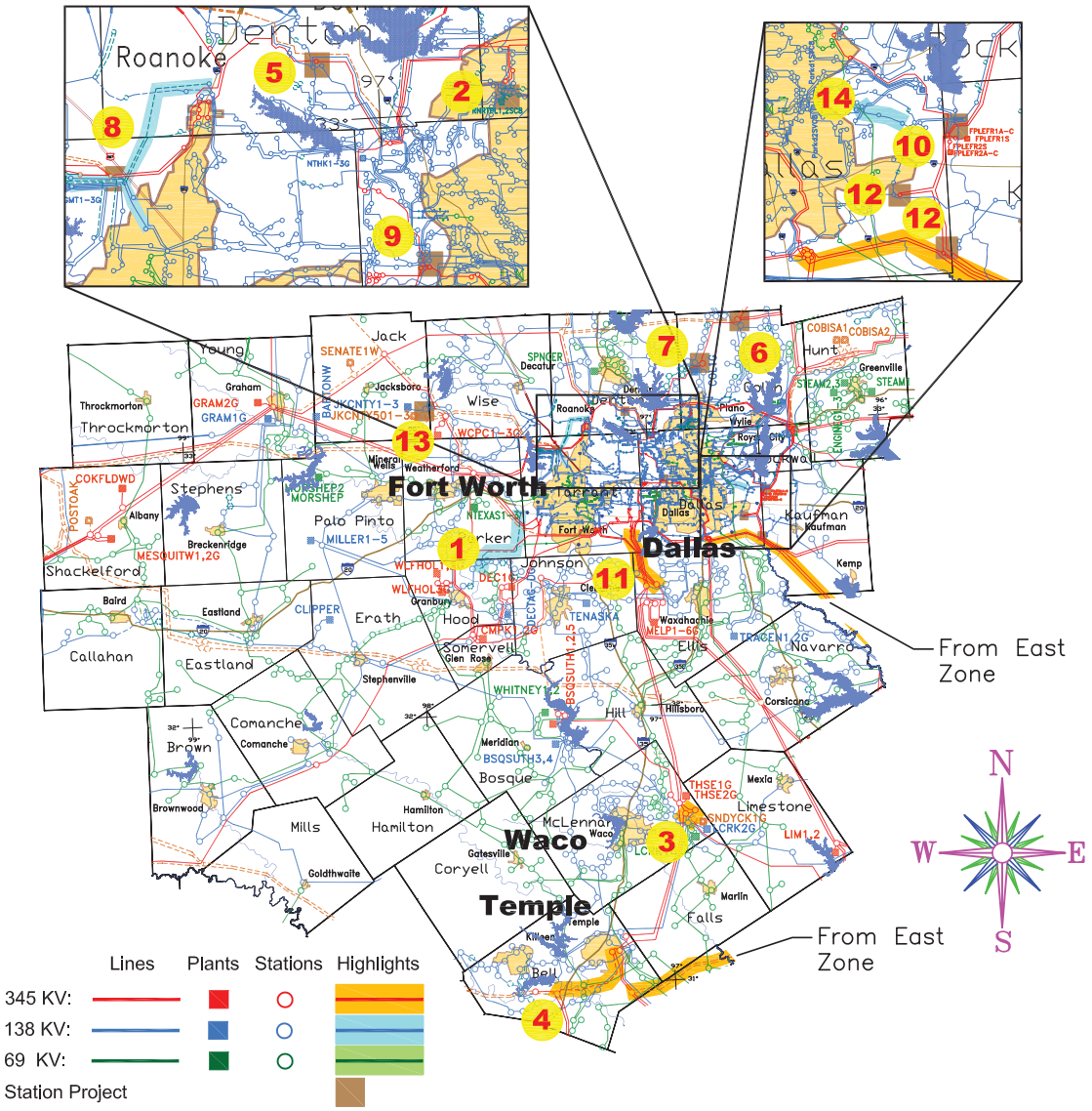
8.5.4 Completed Improvements – North Central Weather Zone

The map shows the most significant new and upgraded elements that were completed in 2009 and 2010 in the North Central weather zone. The elements consist of approximately 350 miles of transmission, three new substations, five new autotransformers, as well as several capacitors, reactors and static VAr compensators (SVC). There were over 108 miles of new transmission lines at 345 kV. In addition, there were 217 miles of upgraded lines. In addition there were over 165 miles of upgraded lines shown below. Of this, 97 miles were at 138 kV and 68 miles were at 69 kV. Many of these upgrades were accomplished by upgrading the limiting 138 kV equipment, installing new auto transformers, installing reactive components or by replacing the existing conductor. The new and upgraded lines help bring power from the west Texas wind generation to the Dallas/Fort Worth area, relieve local and zonal congestion, and serve the growing load in the region more reliably

Map Index	Completed Improvement	In-Service	Voltage (kV)	New (miles)	Upgrade (miles)
1	Gustine - Hamilton Rebuild	Jan-09	69	0.0	17.1
2	Bell County - Schwertner Rebuild	Jan-09	69	0.0	13.7
3	Newman New Switching Station and New Autotransformer	Mar-09	138/69	0.0	0.0
4	Whitney - Bosque Reconductor	Apr-09	138	0.0	13.4
5	Saginaw - Euless/Roanoke Switch Line Upgrade	Apr-09	138	0.0	17.4
6	Concord New Autotransformer	May-09	345/138	0.0	0.0
7	Denton West - RD Wells New Line	Jun-09	138	4.6	0.0
8	Poage - Temple Taylors Valley - Bell County Line Upgrade	Jun-09	69	0.0	3.4
9	Parkdale New SVC Installation	Jun-09	138	0.0	0.0
10	Whitney New Autotransformer	Oct-09	345/138	0.0	0.0
11	Decatur - Bennett Rd - Wise County Line Rebuild	Oct-09	138	0.0	12.6
12	Fox - Hilltop Line Upgrade	Nov-09	138	0.0	3.7
13	Parker Switch - Everman New Line	Nov-09	345	86.3	0.0
14	Everman Switch	Nov-09	345	0.0	0.0
15	Eagle Mountain New Autotransformer	Dec-09	345/138	0.0	0.0
16	Krum - Allison - Decatur Line Rebuild	Dec-09	138	0.0	19.0
17	Carrollton East - Renner Line Upgrade	Jan-10	138	0.0	6.9
18	Hamilton - Pancake Line Rebuild	Mar-10	69	0.0	21.9
19	Goldthwaite - Evant Line Rebuild	May-10	138	0.0	24.0
20	RD Wells - Hickory New Line	May-10	69	1.6	0.0
21	Hickory - North Lakes Line Rebuild	May-10	69	0.0	1.2
22	Killeen Switch - Salado Switch New Line	Jun-10	345	15.7	0.0
23	Renner New SVC Installation	Jun-10	138	0.0	0.0
24	W. Levee - Norwood New Line	Jun-10	345	6.5	0.0
25	Spunky - Georges Creek and Spunky - New Hope Line Rebuild	Jul-10	69	0.0	10.2

8.5.5 Planned Improvements Map – North Central Weather Zone

The map below identifies the location of the planned improvements for the North Central weather zone.



8.5.6 Planned Improvements – North Central Weather Zone

Planned improvements in the North Central weather zone include new 345/138 kV autotransformer additions at Lewisville switching station, Collin switching station, Hicks switching station, Forney switching station and at the Jack County plant. In addition 345/138 kV autotransformer upgrades are planned at Anna switching station and Norwood switching station. These autotransformer improvements are planned in order to keep up with load growth in the Dallas/Fort Worth metropolitan area.

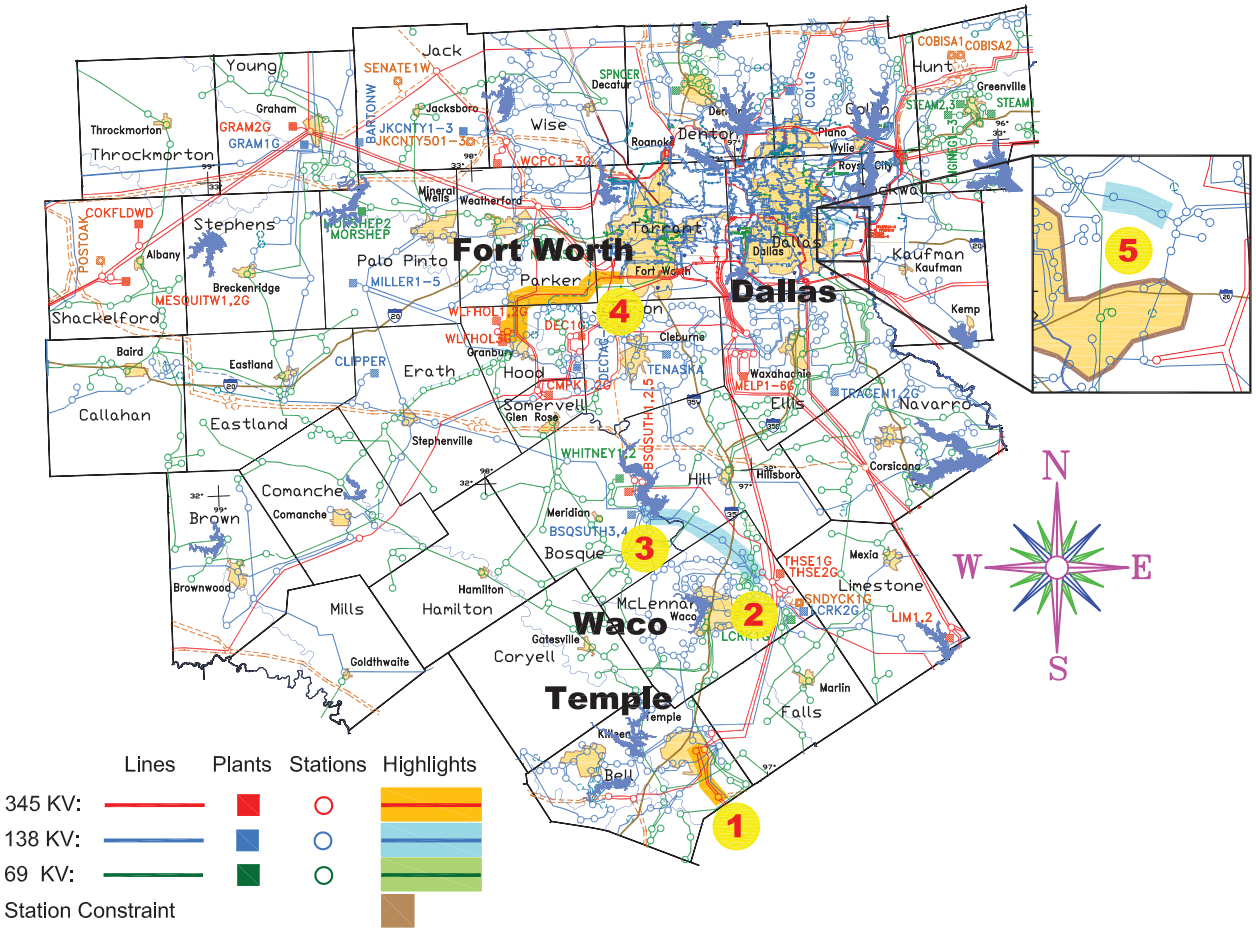
In addition to the previously installed static VAr compensator (SVC) in this area, a second phase of 300 MVAr SVC is still planned for Renner substation, in order to maintain voltage stability in the Dallas/Fort Worth area due to increasing power imports. The power imports into the area have increased due to the demand growth and a reduction of total generation due to the retirement of older, less efficient plants in the area.

The 345 kV upgrades from Rattlesnake Road switching station to Lake Creek switching station and from the Temple switching station to Salado switching station are planned because of new generation plants being constructed in the southern portion of the North Central weather zone.

Map Index	Planned Element	Voltage (kV)	Year in Service
1	Fairview - Aledo Upgrade	138	2011
2	Renner Static Var Compensators Phase II	138	2011
3	Rattlesnake Road Switch - Lake Creek Upgrade	345	2011
4	Temple Switch - Salado Switch Upgrade	345	2012
5	Lewisville Switch Second Autotransformer	345/138	2012
6	Anna Switch Autotransformer Upgrade	345/138	2013
7	Collin Switch Second Autotransformer	345/138	2013
8	Hicks Autotransformer and Hicks - Elizabeth Creek Double Circuit Line Addition	345/138	2014
9	Norwood Switch Autotransformer Upgrade	345/138	2014
10	Forney Switch Second Autotransformer	345/138	2014
11	Venus - Webb Upgrade	345	2014
12	Tricorner - Seagoville Switch Upgrade	345	2014
13	Jack County Autotransformer Addition	345/138	2015
14	West Mesquite - Prairie Creek Upgrade	138	2014

8.5.7 Projected Constraints Map– North Central Weather Zone

The map below identifies the location of the projected constraints for the North Central weather zone.



8.5.8 Projected Constraints – North Central Weather Zone

The majority of the congestion in the North Central weather zone is due to the large demand in the area. The congestion will be significantly reduced with the planned improvements, including CREZ facility additions. Congestion in the Mesquite area will persist until the implementation of planned area improvements.

Index	Projected Constraining Element	Voltage (kV)	2011	2012	2013	2014	2015
1	Temple SS - Bell County East	345					
2	Elm Mott - Rogers	138					
3	Bosque Switch - Rogers	138					
4	Wolf Hollow - Rocky Creek	345					
5	Mesquite West - Mesquite Western Electric	138					

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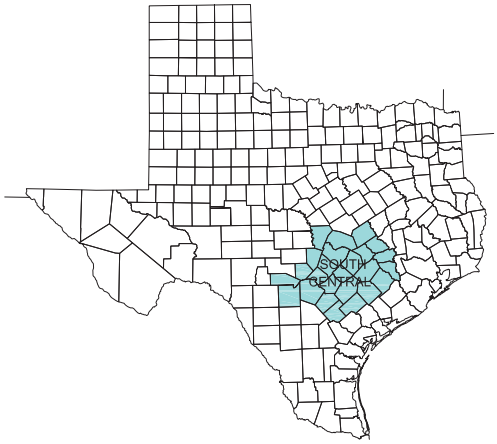
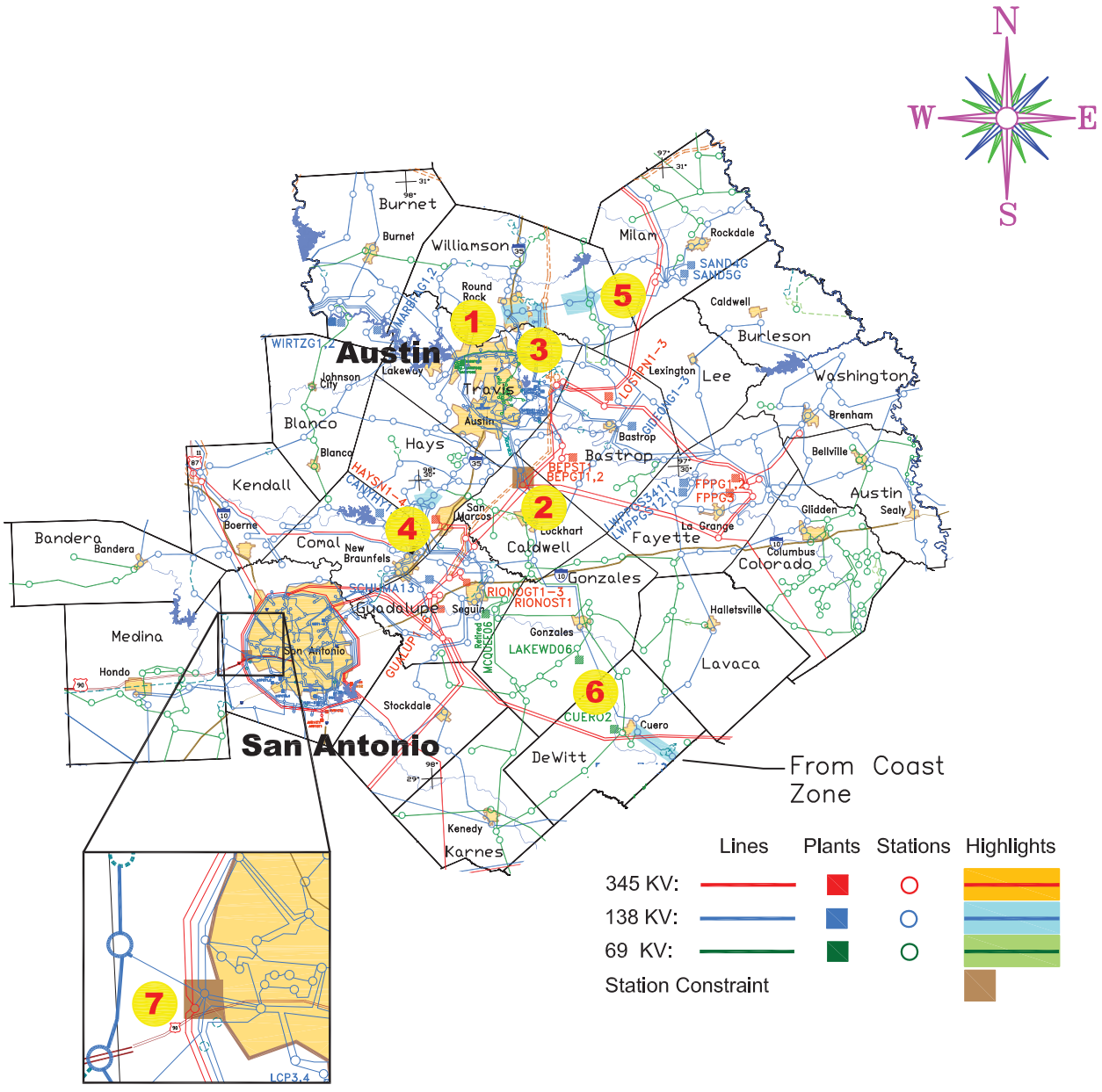
8.6 Area Constraints and Improvements – South Central Weather Zone



Austin, San Antonio, and the surrounding counties and suburbs make up the South Central weather zone. The map below highlights the counties included in the South Central weather zone.

8.6.1 Recent Constraints Map – South Central Weather Zone

The map below identifies the location of the recent constraints for the South Central weather zone.



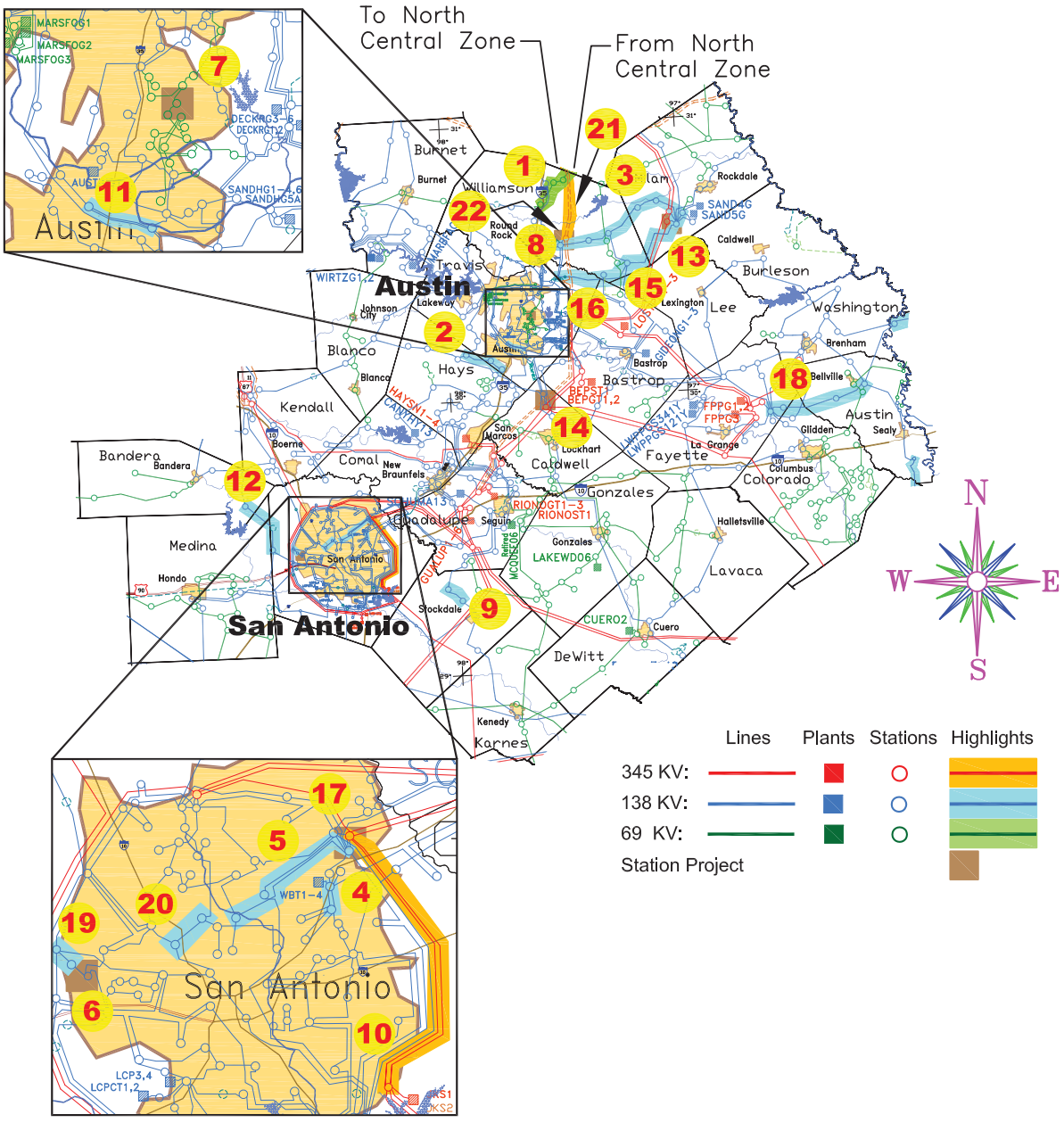
8.6.2 Recent Constraints – South Central Weather Zone

Transmission congestion in the South Central weather zone is due to a variety of factors including high load growth, which has resulted in transmission constraints. Congestion in this zone is also the result of construction outages on the transmission system.

Map Index	Constraining Element	Voltage (kV)
1	Round Rock - Round Rock Northeast	138
2	Lytton Springs Autotransformer	345/138
3	Hutto - Round Rock Southeast	138
4	Mccarty Lane - Redwood	138
5	Taylor West - Taylor	138
6	Thomaston - Cuero	138
7	Cagnon Autotransformer #4	345/138

8.6.3 Completed Improvements Map – South Central Weather Zone

The map below identifies the location of the completed improvements for the South Central weather zone.



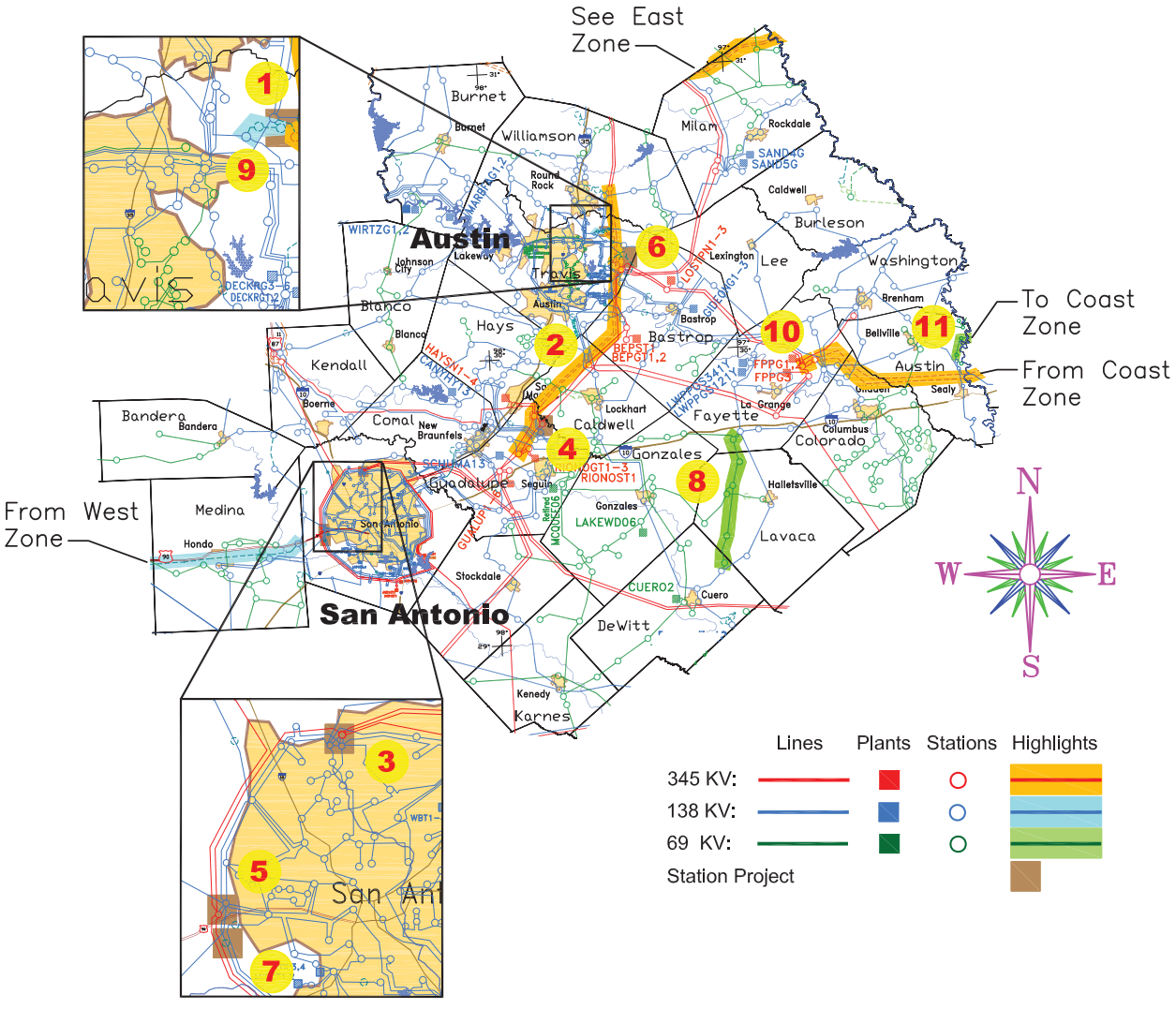
8.6.4 Completed Improvements – South Central Weather Zone

The map shows the most significant new and upgraded elements that were completed in 2009 and 2010 in the South Central weather zone. The elements consist of 257 miles of transmission, several stations and autotransformers. There were over 140 miles of new transmission consisting of 95 miles at 345 kV and 46 miles at 138 kV. Additionally, over 116 miles of upgrades consisted of 7 miles at 345 kV, 100 miles at 138 kV, and 26 miles at 69 kV. Many of these upgrades were accomplished by raising the voltage of the circuit or replacing the existing conductor. Most of the upgrades were carried out to serve the growing load in the region more reliably.

Map Index	Completed Improvement	In-Service	Voltage (kV)	New (miles)	Upgrade (miles)
1	Gabriel - Schwertner Line Rebuild	Feb-09	69	0.0	9.4
2	Friendship-Escarpment-Manchaca New Line	Mar-09	138	8.0	0.0
3	Sandow Switch - Salty - Thorndale North - Taylor Line Upgrade	Apr-09	138	0.0	21.9
4	Austin - Tuttle Line Rebuild	May-09	138	0.0	2.0
5	Skyline - Dresden Line Upgrade	May-09	138	0.0	1.0
6	Westover Hills New Substation	May-09	138	1.7	0.0
7	Justin Lane New Switching Station	Jun-09	138	0.5	0.0
8	Taylor - Taylor West - Hutto Switch Line Upgrade	Jun-09	138	0.0	10.1
9	Wilson - Sutherland Springs New Line	Jun-09	138	11.0	0.0
10	Spruce - Skyline New Line	Nov-09	345	20.8	0.0
11	HiCross - Slaughter Lane New Line	Dec-09	138	2.2	0.0
12	Medina Lake - Texas Research New Line	Jan-10	138	20.7	0.0
13	Sandow Switch New Autotransformer	Mar-10	345/138	0.0	0.0
14	Lytton Springs New Autotransformer	Apr-10	345/138	0.0	7.0
15	Sandow Switch - Elgin Switch Line Rebuild	Apr-10	138	0.0	21.8
16	Elgin - Gilleland Creek Line Upgrade	May-10	138	0.0	12.9
17	Skyline New Autotransformer	May-10	345/138	0.0	0.0
18	Fayetteville - Willow Springs - New Bremen - Bellville South Line Rebuild	Jun-10	138	0.0	28.2
19	Anderson - Westover Hills New Line	Jun-10	138	1.8	0.0
20	Broadview - Fredericksburg Rd Line Upgrade	Jun-10	138	0.0	2.3
21	Hutto Switch - Salado Switch New Line	Jun-10	345	73.8	0.0
22	Hutto New Switching Station and New Autotransformer	Jun-10	345/138	0.0	0.0

8.6.5 Planned Improvements Map – South Central Weather Zone

The map below identifies the location of the planned improvements for the South Central weather zone.



8.6.6 Planned Improvements – South Central Weather Zone

The most substantial system improvement planned for the South Central weather zone will be the completion of the Clear Springs to Hutto to Salado 345 kV double circuit line. The northern portion of this new line went into service in 2010 and the southern portion from Clear Springs to Hutto is expected to be completed in 2011. This new line, along with associated improvements like the Dunlap 345/138 kV autotransformer addition, the Gilleland Creek 345/138 kV autotransformer, and the Gilleland Creek to Tech Ridge 138 kV line addition will provide significant reliability and economic benefits for the system in central Texas.

There are several projects designed to meet growing demand in the San Antonio area. These include 345/138 kV autotransformer additions at the Cagnon and Hill Country substations and a 138 kV line addition from Cagnon substation to Masterson Road substation to Valley Road substation.

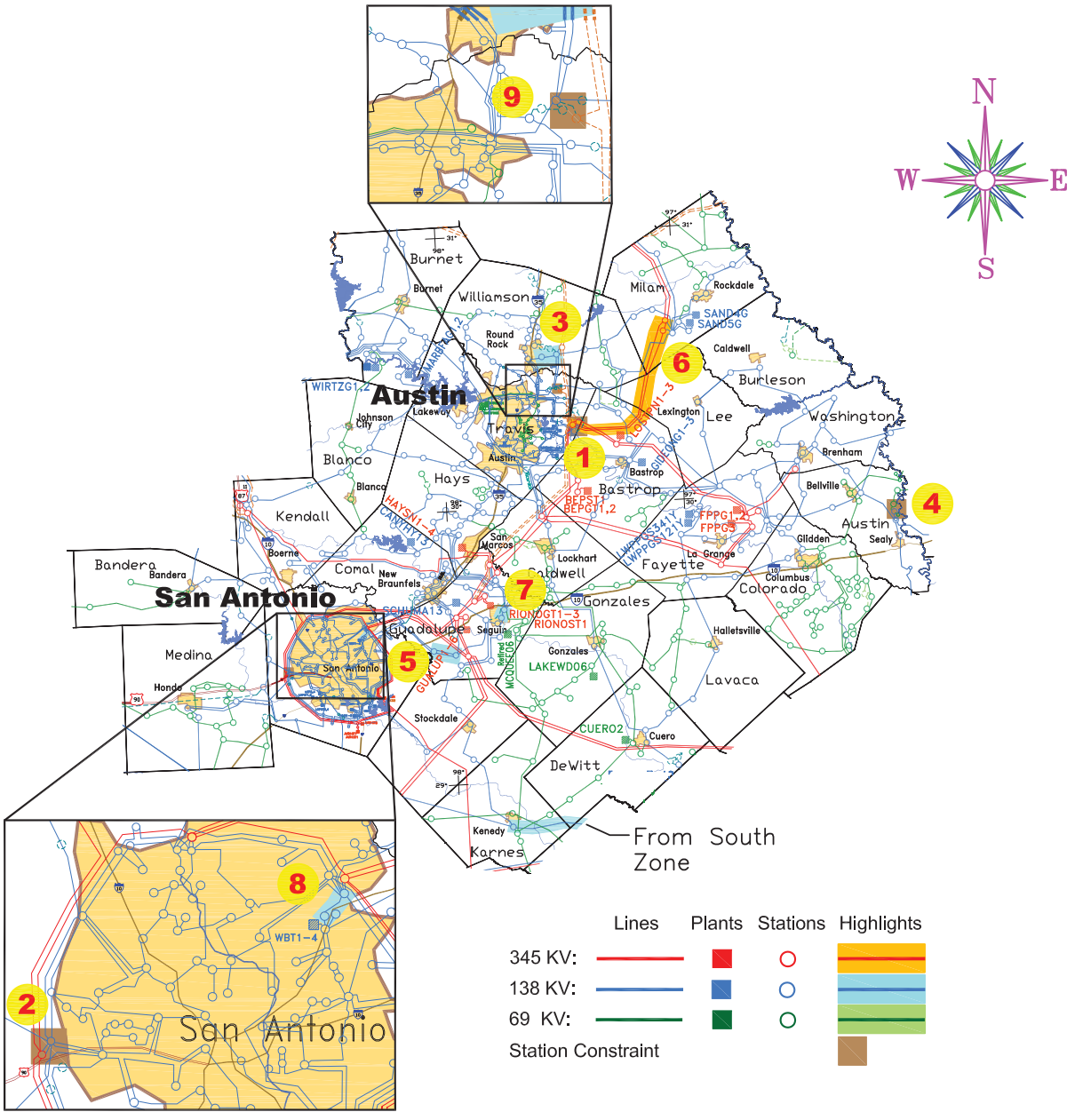
The Peters substation to Hockley substation 69 kV line will be converted to 138 kV service in order to meet growing demand in the western portion of the Houston metropolitan area.

Other major improvements in the South Central weather zone include the conversion of the Flatonia to Yoakum Gartner Road substation 69 kV line to 138 kV service and the upgrade of the Fayette Power Project to Fayetteville 345 kV double circuit line.

Map Index	Planned Element	Voltage (kV)	Year in Service
1	Gilleland Creek Autotransformer Addition	345/138	2011
2	Zorn/Clear Springs - Gilleland Creek - Hutto Switch Double Circuit Line Addition	345	2011
3	Hill Country Fourth Autotransformer Addition	345 /138	2012
4	Zorn Third Autotransformer Addition	345/138	2012
5	Cagnon Third Autotransformer Addition	345/138	2013
6	Dunlap Autotransformer Addition	345/138	2013
7	Cagnon - Masterson Road - Valley Road Line Addition	138	2013
8	Flatonia - Yoakum Gartner Road 138 kV Conversion	138/69	2013
9	Gilleland Creek - Techridge Line Addition	138	2015
10	Fayette Power Project - Fayetteville Double Circuit Line Upgrade	345	2015
11	Peters - Hockley 138 kV Conversion	138/69	2013

8.6.7 Projected Constraints Map – South Central Weather Zone

The map below identifies the location of the projected constraints for the South Central weather zone.



8.6.8 Projected Constraints – South Central Weather Zone

Load growth in the Austin and San Antonio metropolitan areas is the main cause of congestion in the South Central weather zone. The increased demand in east Austin is expected to cause congestion on the Sandow to Austrop 345 kV line and the Gilleland Creek 345/138 kV autotransformer. Congestion is expected on several 138 kV lines in the northwest San Antonio area. Congestion in the Round Rock area north of Austin is expected on the Hutto to Round Rock Northeast 138 kV line. The Austrop and Cagnon 345/138 kV autotransformers are projected to experience some congestion before new autotransformers are added to each area in 2012.

Index	Projected Constraining Element	Voltage (kV)	2011	2012	2013	2014	2015
1	Austrop Autotransformers	345/138					
2	Cagnon Autotransformers	345/138					
3	Hutto – Round Rock Northeast	138					
4	Peters Autotransformer	138/69					
5	Cibolo – Schertz	138					
6	Sandow – Austrop	345					
7	Seguin – Seguin West	138					
8	Nacogdoches – Skyline South	138					
9	Gilleland Creek Autotransformer	345/138					

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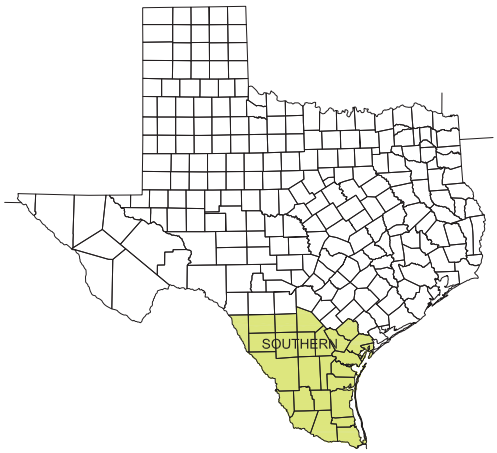
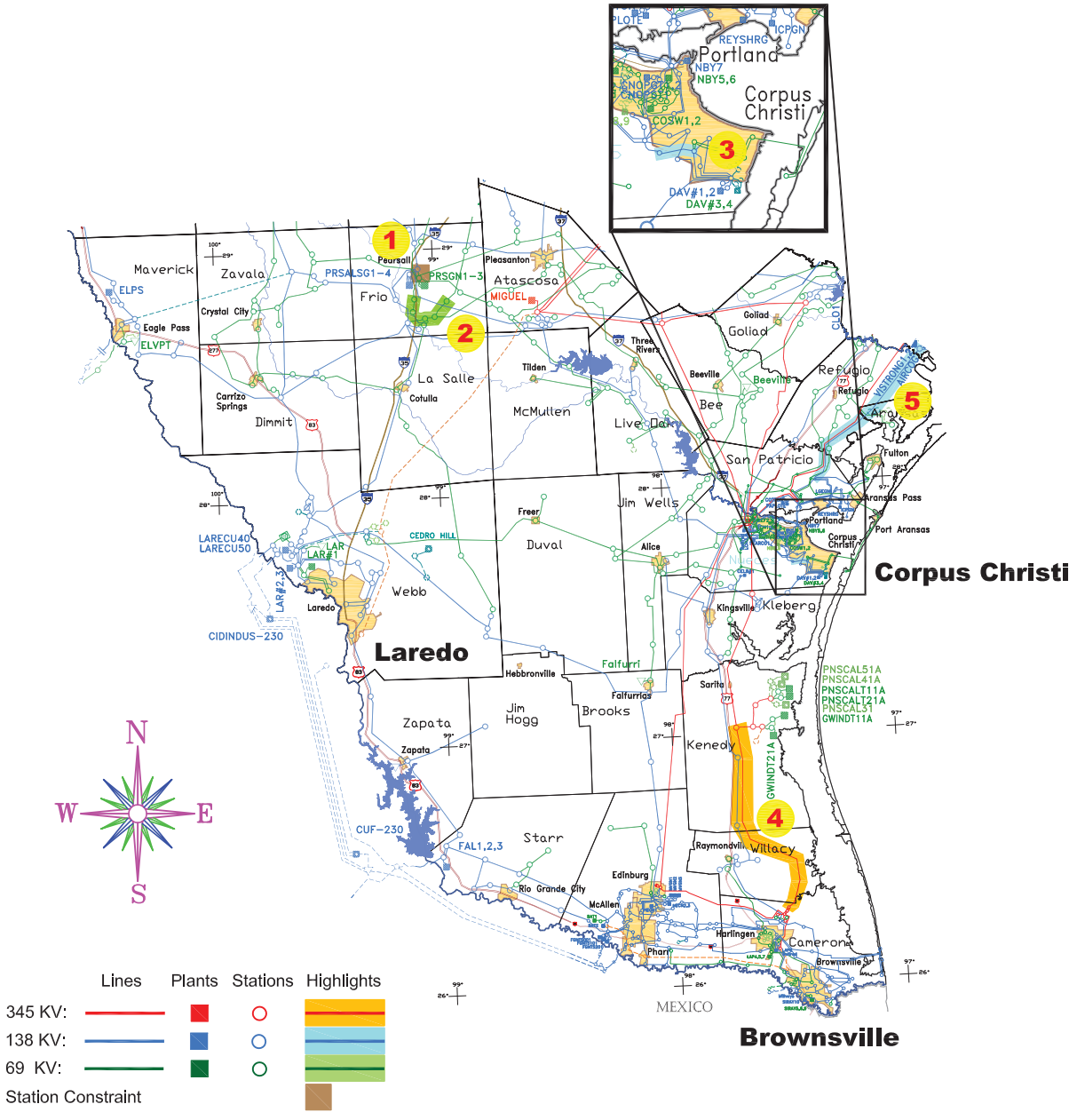
8.7 Area Constraints and Improvements – Southern Weather Zone



The Southern weather zone covers the south Texas plains and contains the cities of Laredo, Corpus Christi, McAllen, and Brownsville. The map below highlights the counties included in the Southern weather zone.

8.7.1 Recent Constraints Map – Southern Weather Zone

The map below identifies the location of the recent constraints for the Southern weather zone.



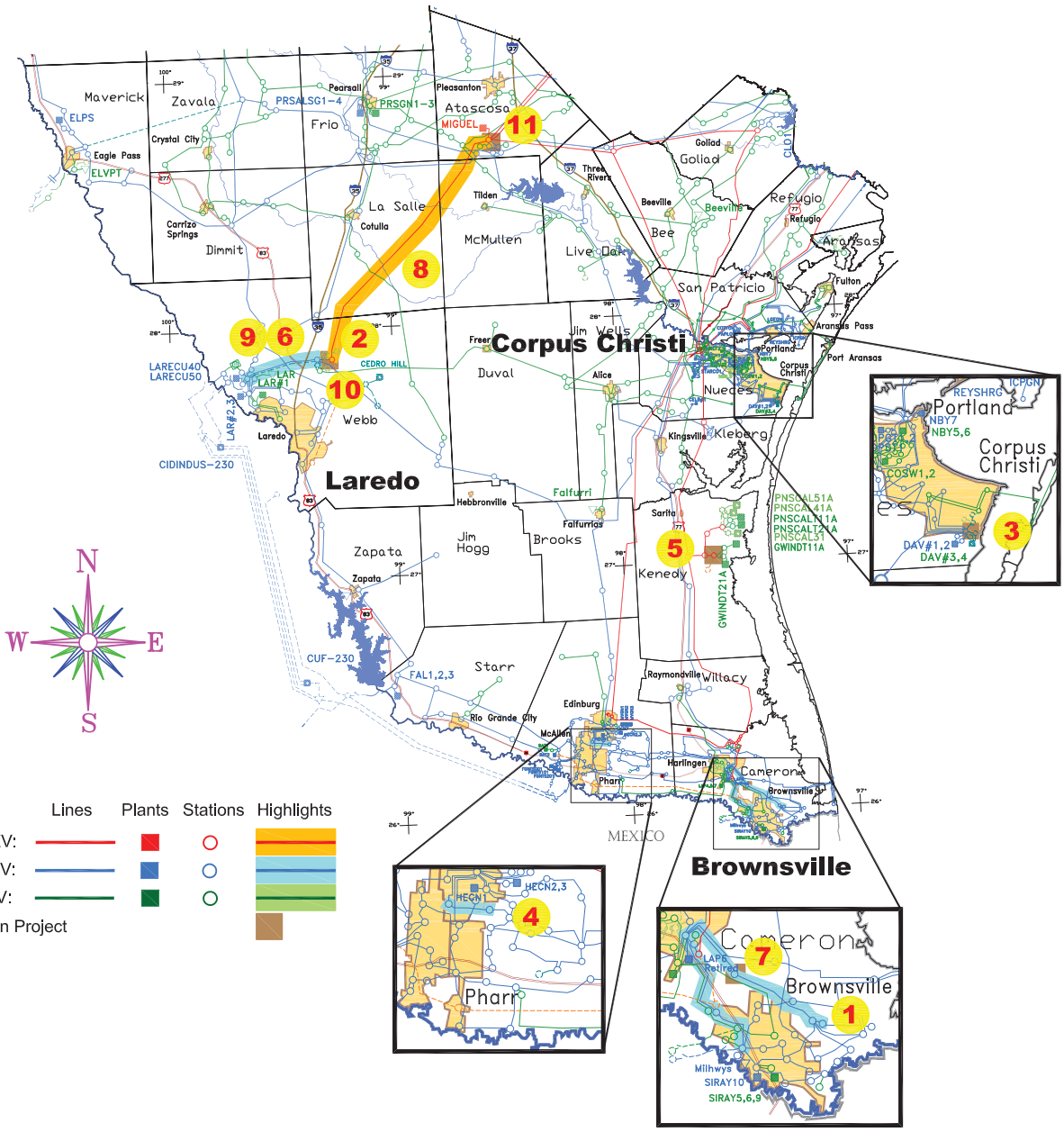
8.7.2 Recent Constraints – Southern Weather Zone

The primary causes for congestion in the Southern weather zone are sizeable load growth and recent generation additions.

Map Index	Constraining Element	Voltage (kV)
1	Pearsall Autotransformer	138/69
2	Derby - Pearsall	69
3	Airline - Cabaniss	138
4	Ajo - Rio Hondo	345
5	Rincon - Airco	138

8.7.3 Completed Improvements Map – Southern Weather Zone

The map below identifies the location of the completed improvements for the Southern weather zone.



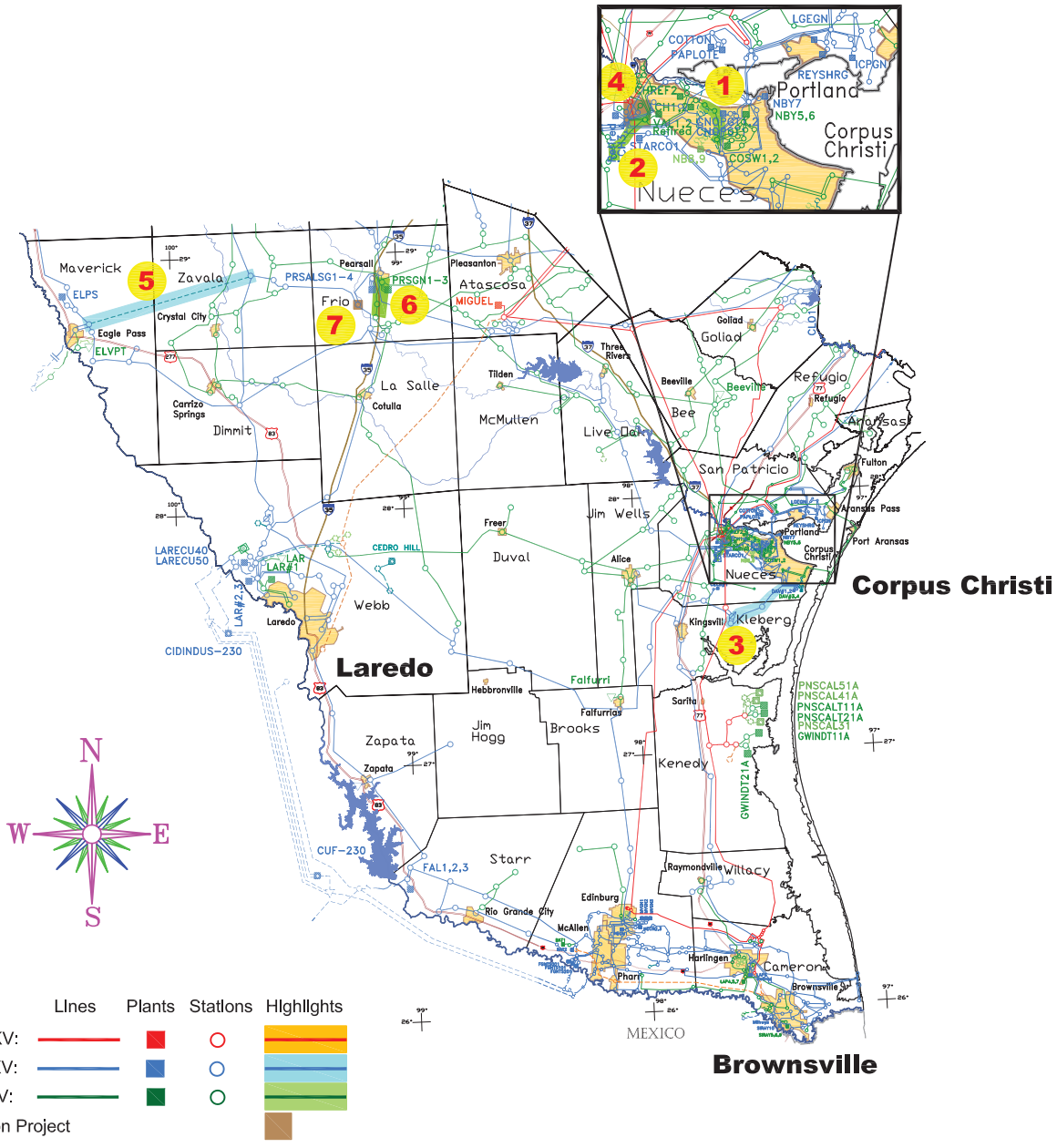
8.7.4 Completed Improvements – Southern Weather Zone

The map shows the most significant new and upgraded elements that were completed in 2009 and 2010 in the Southern weather zone. The elements consist of almost 150 miles of transmission, one new station, and two new autotransformers. There were over 113 miles of new transmission at 345 kV and over 35 miles of upgraded lines at 138 kV. Many of these improvements were accomplished by replacing the existing conductor, building new lines or raising the voltage of the circuit. In addition, Barney Davis switching station was expanded to connect new generation.

Map Index	Completed Improvement	In-Service	Voltage (kV)	New (miles)	Upgrade (miles)
1	La Palma - Military Highway Line Modification	May-09	138	0.1	0.0
2	Lobo New Switching Station	Jun-09	138	0.0	0.0
3	Barney Davis Switching Station Expansion	Jul-09	138	0.0	0.0
4	Palmhurst - Merett Line Rebuild	Jul-09	138	0.0	4.2
5	Zorillo New Switching Station	Sep-09	345	0.0	0.0
6	Laredo Plant - Lobo Line Upgrade	Nov-09	138	0.0	16.5
7	Los Fresnos Switching Station Upgrade	Dec-09	138	0.0	0.0
8	Lobo - San Miguel New Line	Mar-10	345	113.8	0.0
9	Laredo Plant - Lobo Line Rebuild	Mar-10	138	0.0	15.0
10	Lobo New Autotransformer	Mar-10	345/138	0.0	0.0
11	San Miguel Switching Station Equipment	Mar-10	345	0.0	0.0

8.7.5 Planned Improvements Map – Southern Weather Zone

The map below identifies the location of the planned improvements for the Southern weather zone.



8.7.6 Planned Improvements – Southern Weather Zone

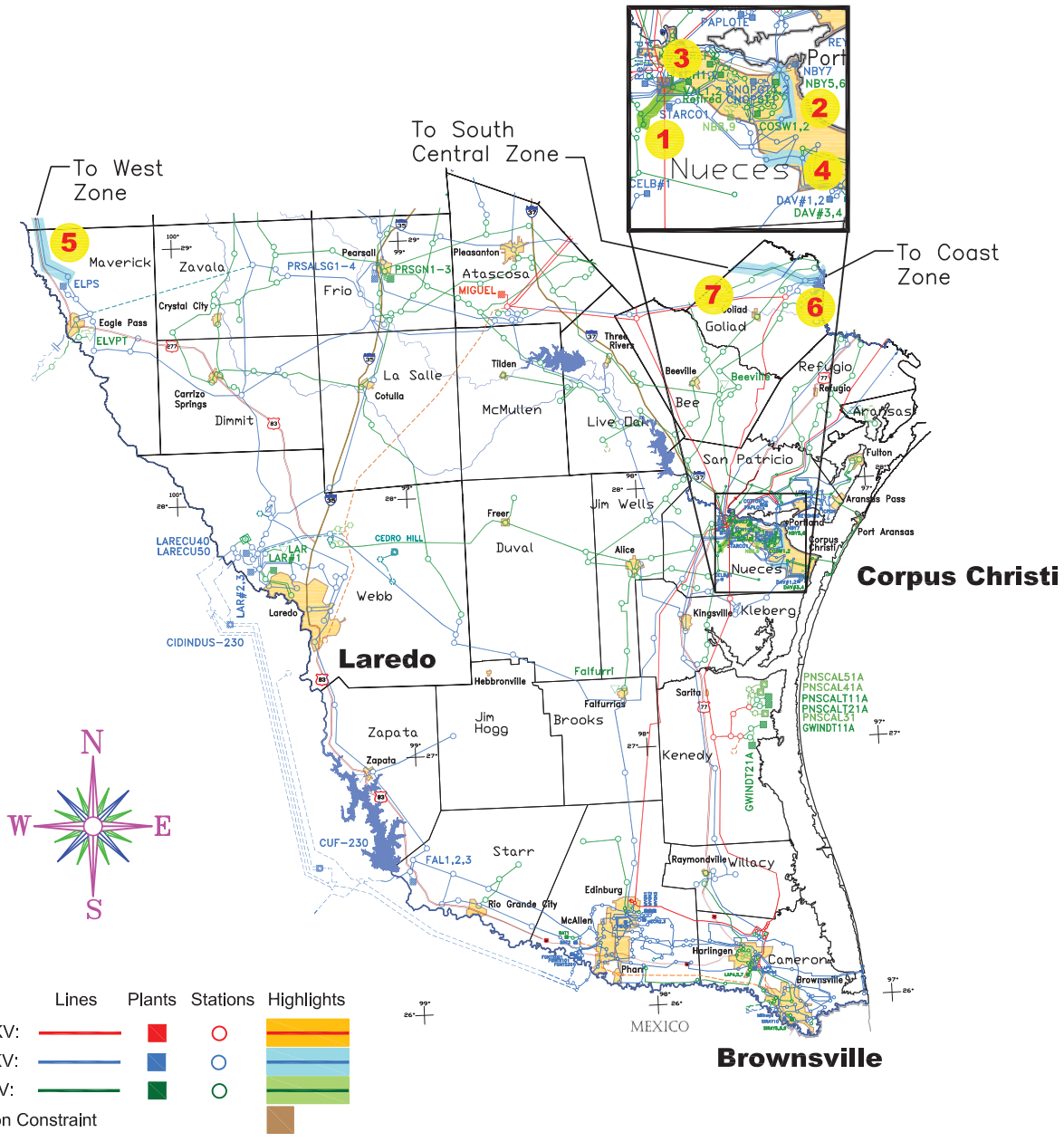
In the Southern weather zone there are several planned improvements in and around the Corpus Christi area that are due to the repowering of two power plants, as well as load growth. These include the Barney Davis switching station to Nelson Sharpe switching station line rebuild, the Highway 9 substation to Valero East substation line upgrade, the upgrade of both Lon Hill switching station 138/69 kV autotransformers, and the Lon Hill switching station to Robstown substation line upgrade.

Elsewhere, a new Escondido substation to West Batesville 138 kV line is planned to meet long term needs in the Southern weather zone.

Map Index	Planned Element	Voltage (kV)	Year in Service
1	Highway 9 - Valero East Upgrade	69	2011
2	Lon Hill - Robstown Upgrade	69	2012
3	Barney Davis - Nelson Sharpe Upgrade	138	2012
4	Lon Hill Autotransformers Upgrade	138/69	2014
5	Escondido - West Batesville Line Addition	138	2014
6	Pearsall to Dilley	69	2011
7	Palo Duro New Switching Station	138	2011

8.7.7 Projected Constraints Map – Southern Weather Zone

The map below identifies the location of the projected constraints for the Southern weather zone.



8.7.8 Projected Constraints – Southern Weather Zone

The majority of the projected congestion in the Southern weather zone is expected in the Corpus Christi area ahead of several transmission improvements in the area. This is a result of increased capacity at the Barney Davis and Nueces Bay power plants due to repowering the facilities. Congestion is also expected on the Hamilton Road to Maverick 138 kV line.

Index	Projected Constraining Element	Voltage (kV)	2011	2012	2013	2014	2015
1	Lon Hill – Robstown	69					
2	Nueces Bay – Morris Street	138					
3	Lon Hill Autotransformers	138/69					
4	Airline – Cabaniss	138					
5	Hamilton Road – Maverick	138					
6	Coleto Creek – Victoria Plant	138					
7	Coleto Creek – Kenedy Switching Station	138					

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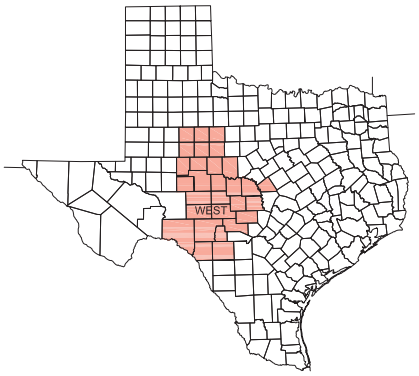
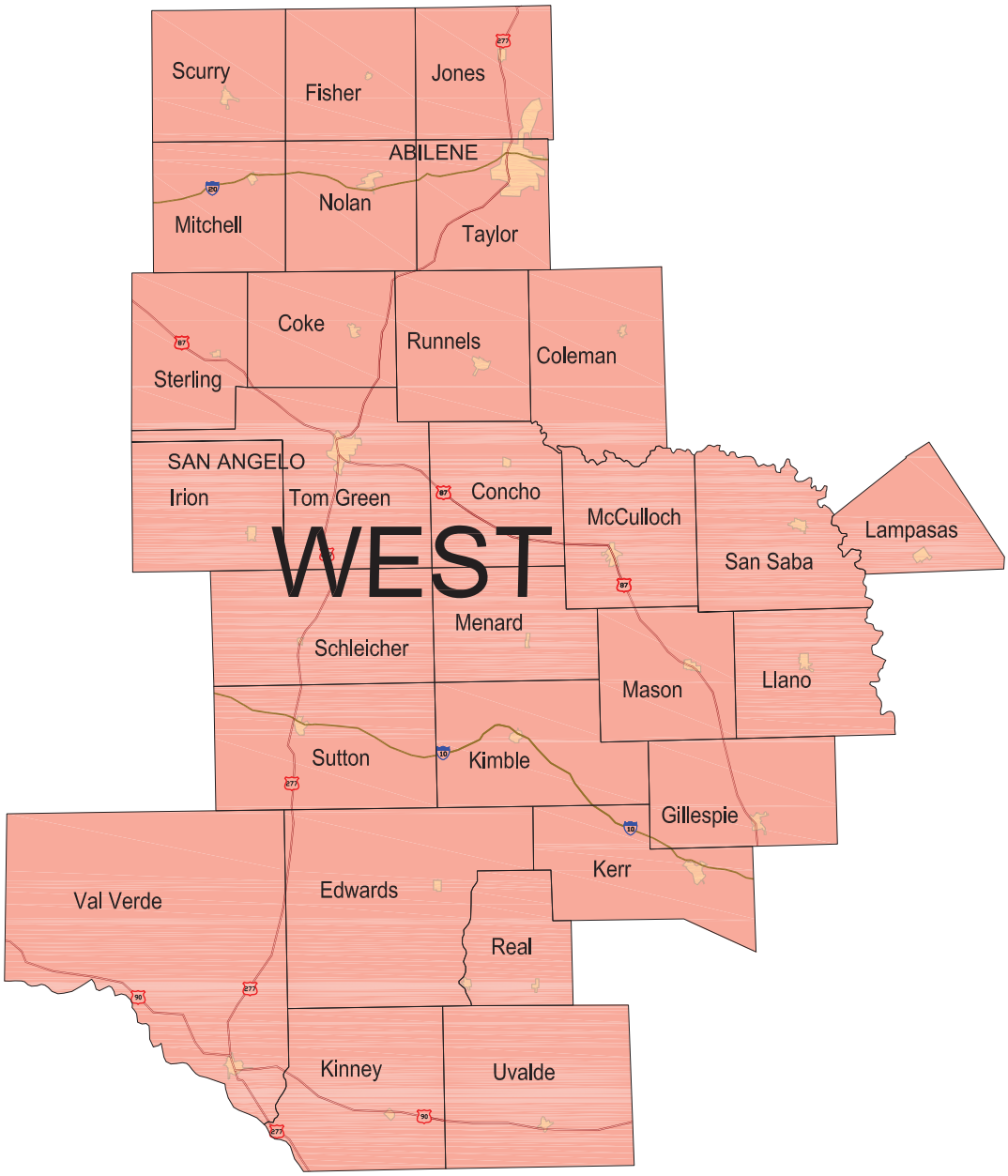
8.8 Area Constraints and Improvements – West Weather Zone

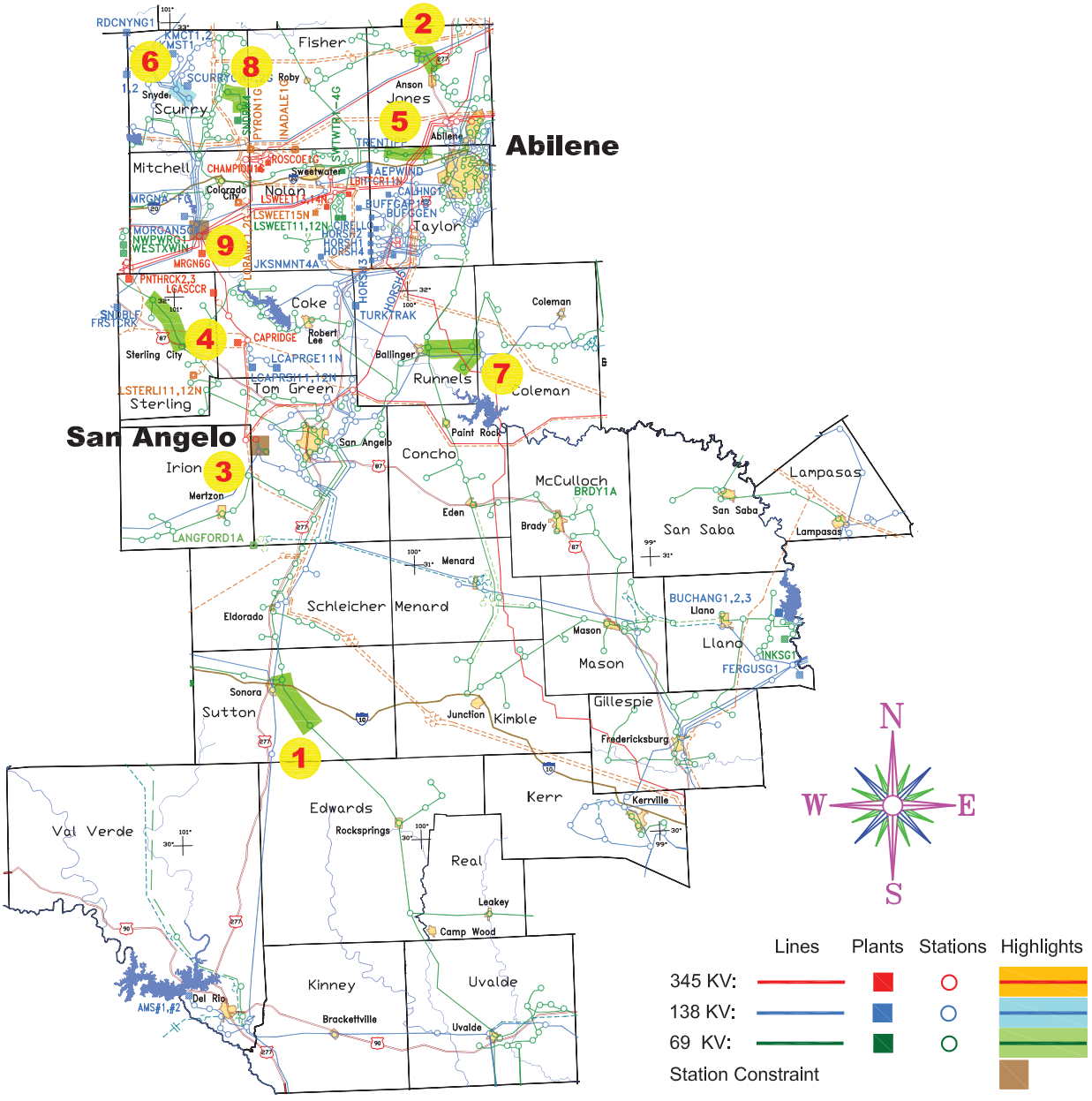


The West weather zone includes Del Rio, Abilene, San Angelo, and the western part of the Texas hill country. The map below highlights the counties included in the West weather zone.



8.8.1 Recent Constraints Map – West Weather Zone

The map below identifies the location of the recent constraints for the West weather zone.



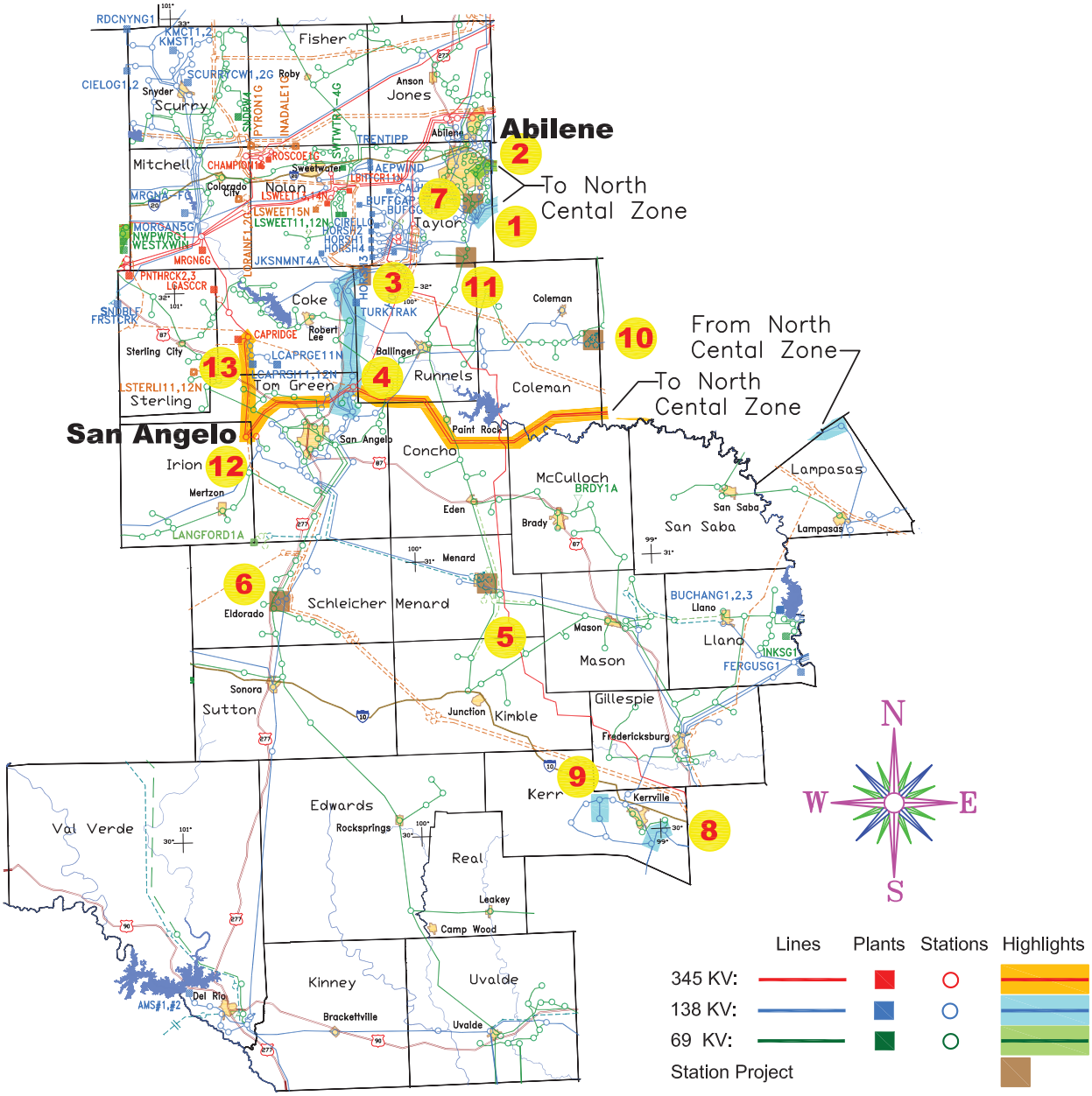
8.8.2 Recent Constraints – West Weather Zone

Congestion in the West weather zone is due to the large amount of wind generation capacity with limited transmission capacity to the high load growth central Texas area.

Map Index	Constraining Element	Voltage (kV)
1	Sonora - Friess Ranch	69
2	Anson - Radium	69
3	Twin Butte Autotransformer	345/138
4	Sterling County - Sterling City	69
5	Merkel - Trent	69
6	Sun Switch - Sacroc	138
7	Ballinger - Humble	69
8	Plainview - WKN Breaker	69
9	Morgan Creek SES Autotransformer	345/138

8.8.3 Completed Improvements Map – West Weather Zone

The map below identifies the location of the completed improvements for the West weather zone.



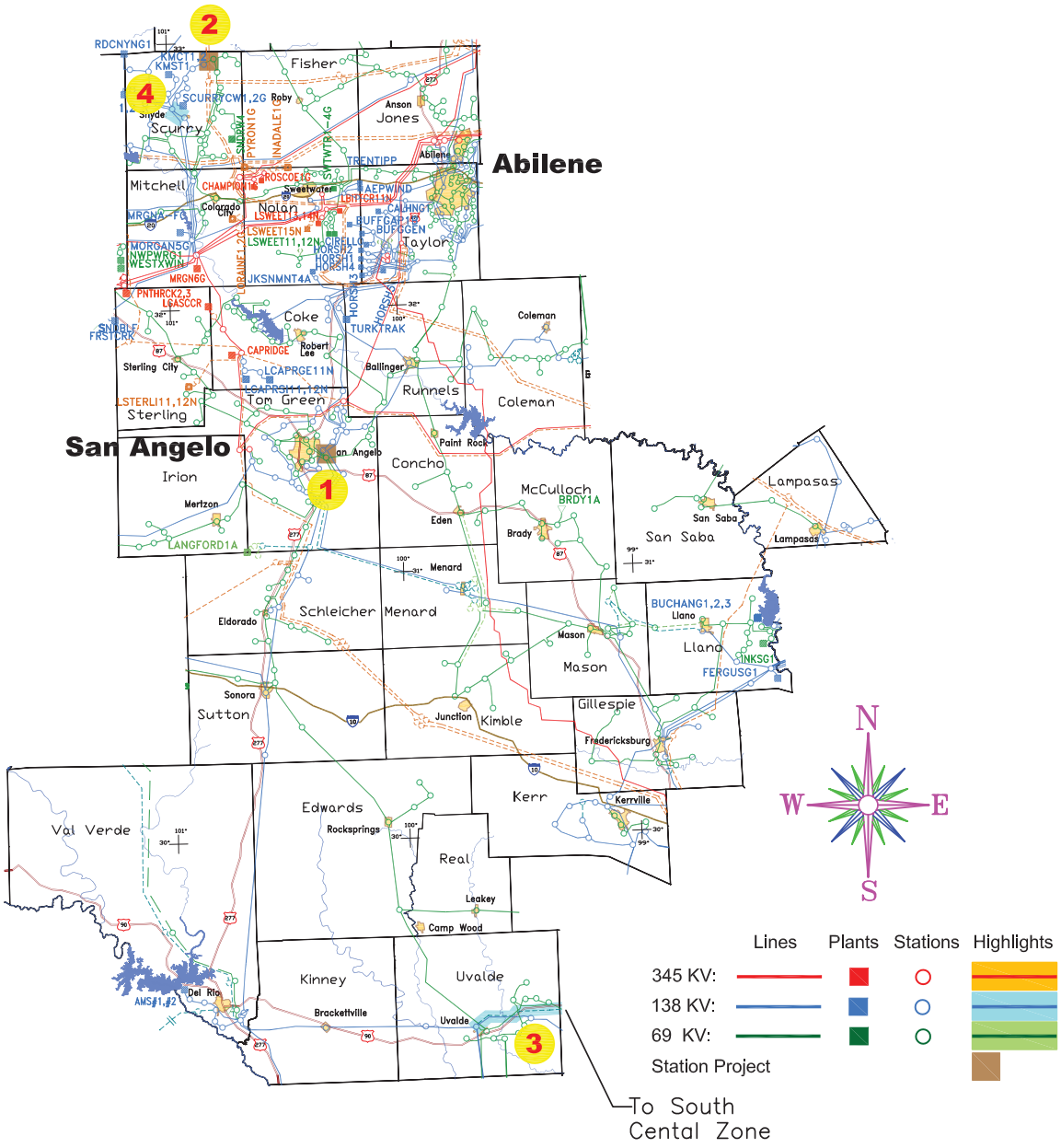
8.8.4 Completed Improvements – West Weather Zone

The map shows the most significant new and upgraded elements that were completed in 2009 and 2010 in the West weather zone. The elements consist of almost 217 miles of transmission, two new substations, and several new autotransformers and phase shifting transformers. Of the transmission lines, there were approximately 119 miles of new 345 kV and 46 miles of new 138 kV. Upgraded lines consisted of 75 miles of 138 kV and 13 miles of 69 kV. The transmission improvements were accomplished by building a new line or rebuilding or replacing the existing line. The new station and the upgraded circuits were necessary to ease congestion and increase the ability to export wind power.

Map Index	Completed Improvement	In-Service	Voltage (kV)	New (miles)	Upgrade (miles)
1	Abilene South - Putnam Line Upgrade	Mar-09	138	0.0	35.3
2	Abilene Plant - Clyde Line Rebuild	May-09	69	0.0	13.0
3	Nicole Four Position Ring	Jun-09	138	0.0	0.0
4	Red Creek - Nicole Line Modification	Jun-09	138	0.0	38.0
5	Yellowjacket New Switching Station, Autotransformer, and Phase-Shifting Transformer	Jan-10	138/69	2.0	0.0
6	Live Oak New Autotransformer	Jul-09	138/69	0.0	0.0
7	Abilene South New Autotransformer	Oct-09	138/69	0.0	0.0
8	Raymond Barker - Verde Creek Line Rebuild	Dec-09	138	0.0	1.9
9	Rim Rock - Jack Furman New Line	Mar-10	138	7.5	0.0
10	Firerock New Phase Shifting Transformer	Mar-10	138	0.0	0.0
11	Streamboat New Switching Station	Mar-10	69	0.0	0.0
12	Twin Buttes - Coleman/Brown County New Line	Jun-10	345	88.0	0.0
13	Divide - Twin Buttes New Line	Jun-10	345	31.0	0.0

8.8.5 Planned Improvements Map – West Weather Zone

The map below identifies the location of the planned improvements for the West weather zone.



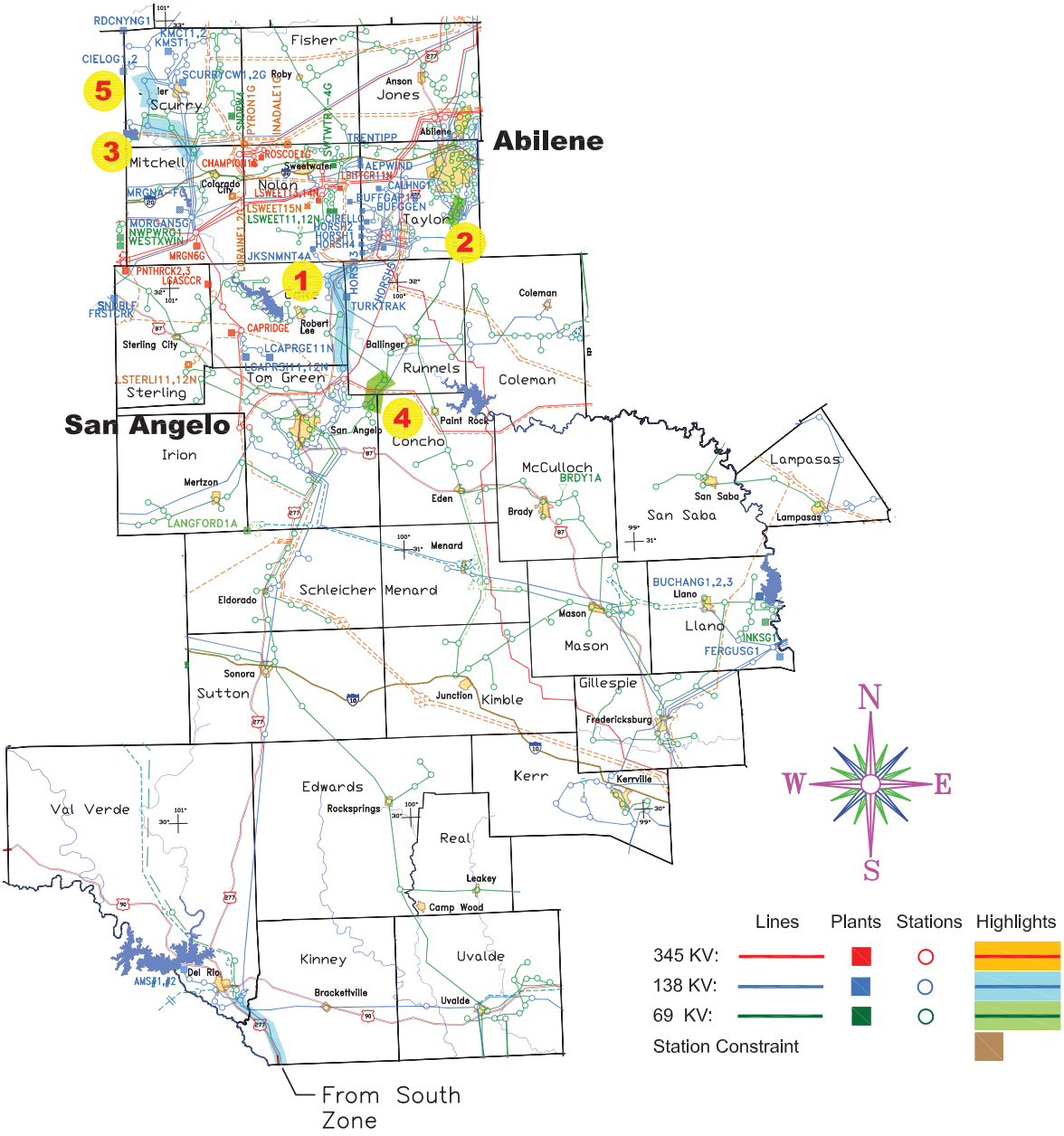
8.8.6 Planned Improvements – West Weather Zone

Moderate load growth in the West weather zone has driven the need for several planned improvements. In order to maintain system reliability in the San Angelo area, the San Angelo Concho substation 138/69 kV autotransformer is planned to be upgraded. Further north, the Ennis Creek 138/69 kV autotransformer is also planned to be upgraded. In addition, a new 138 kV line is planned from the Uvalde substation to the Castroville substation.

Map Index	Planned Element	Voltage (kV)	Year in Service
1	San Angelo Concho Autotransformer Upgrade	138/69	2011
2	Ennis Creek Autotransformer Upgrade	138/69	2012
3	Uvalde - Castroville Line Addition	138	2012
4	Sun - Sacroc Line Upgrade	138	2013

8.8.7 Projected Constraints Map – West Weather Zone

The map below identifies the location of the projected constraints for the West weather zone.



8.8.8 Projected Constraints – West Weather Zone

The congestion in the West weather zone is mainly associated with the large increase in wind generation in west Texas. The CREZ transmission upgrades will be able to relieve some of these constraints when the new lines come into service by 2012 through 2013.

The transfer of power from west Texas is mainly limited by the congestion on the West to North Transient Stability Limit in the years 2011 and 2012. This constraint is expected to be mitigated with the CREZ projects. The power output from some wind generation units in the area will continue to be somewhat constrained due to local congestion.

Index	Projected Constraining Element	Voltage (kV)	2011	2012	2013	2014	2015
1	Nicole - Orient	138					
2	Abilene South - Cedar Gap	69					
3	Bluff Creek - China Grove	138					
4	Miles - Harriet REA	69					
5	Knapp - Scurry Chevron	138					

Non-specific element

na	West to North Transient Stability Limit	345					

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9. Summary of CREZ Report

In 2005, the Texas Legislature passed Senate Bill 20, which instructed the Public Utility Commission of Texas (PUC) to establish Competitive Renewable Energy Zones (CREZ) and to designate new transmission projects to serve these zones and to move electricity generation, primarily wind, from west Texas to the population centers such as Austin, Dallas/Fort Worth, and San Antonio. To fulfill the requirements of Senate Bill 20, the PUC requested that ERCOT complete a study of wind generation potential throughout the State and develop options for transmission improvements to connect the wind generation to load. As a result of this study, the PUC, through Docket No. 33672, established five CREZ and instructed ERCOT to conduct a CREZ Transmission Optimization (CTO) study to identify transmission proposals that would allow integration of wind resources from the CREZ in the most cost-effective manner. In August, 2008, the PUC issued an order selecting the CREZ Transmission Plan (CTP) that would provide transmission capacity for 18,456 MW of renewable resources. This order also identified priority projects critical to relieving current congestion.

In order to implement the CTP, Docket No. 35665 established the Transmission Service Providers (TSP) responsible to construct and operate the transmission facilities identified in the CTP (the CREZ TSPs). This docket also assigned the priority projects and subsequent projects (new lines not selected as priority) of the CTP to the CREZ TSPs.

ERCOT and the CREZ TSPs contracted with ABB, Inc. to conduct a study to optimize the design considerations of the series compensation equipment included in the CTP; verify the location, size, and response characteristics of shunt reactive equipment included in the CTP; and to evaluate the implications of sub-synchronous interactions between the recommended reactive devices and generation equipment. This study was completed in October 2010 and a report documenting the results is available on the ERCOT website[5] entitled CREZ Reactive Power Compensation Study. Consistent with the findings of this study, ERCOT is recommending the installation of reactive equipment that will provide sufficient dynamic and static reactive capability to reliably operate the CREZ transmission circuits, while maintaining sufficient flexibility to expand reactive capability to meet growing system needs (listed in Tables S – 2 through S – 5 of the report).

By the end of 2010, almost all of the certificates of convenience and necessity (CCNs) for the CREZ transmission line projects had been submitted to the PUC for routing approval. Many of these projects have been approved, while two of the projects were denied (the proposed CREZ circuits from Kendall to Gillespie, and from Gillespie to Newton). These denied projects comprised the "Hill Country Loop," traversing the area west of Austin from northwest San Antonio to the Lampasas area, and were replaced, through another PUC docket, with lower-cost projects including rebuilding of existing 138-kV transmission circuits and additional autotransformer capacity. Based on current construction schedules[6] provided by the CREZ TSPs, it is expected that the CREZ circuits will be operational by the end of 2013.

5 This report is available at: http://www.ercot.com/news/presentations

6 Additional CREZ details, including construction schedules, can be found at http://www.texascrezprojects.com.

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10. Long Term System Assessment Summary

Senate Bill 20 requires that the Public Utility Commission of Texas (PUC) and the Electric Reliability Council of Texas, Inc. (ERCOT) study the need for increased transmission and generation capacity throughout the state of Texas and report on these needs to the Legislature. A report documenting this study must be filed with the legislature each even-numbered year.

In order to meet this requirement, ERCOT completes a Long-Term System Assessment (LTSA) every other year. The LTSA provides a 10-year-out assessment of transmission needs. This assessment is not conducted to provide specific recommendations for transmission projects. Rather it is used to inform the five-year transmission planning process by providing a longer term view of system reliability needs, and by indicating system needs that require solutions that will take longer than 5 years to implement.

The analysis conducted for the 2010 LTSA leads to the following conclusions:

- Numerous transmission system upgrades will be needed, particularly in the DFW and Houston areas, due to expected load growth over the next ten years. These projects are not expected to require long lead times and will be fully evaluated as a part of the five-year transmission plan.

- As with the previous LTSA, there is a potential need for new transmission import capacity into the Houston metropolitan area. This need was noted through analysis of under-voltage excursions in steady-state contingency analysis, and through PV analysis. Several projects were analyzed, although the need for and choice of the most cost-effective solution will be dependent upon the amount and location of new generation resources. The installation of dynamic reactive equipment could also delay the need for additional import capacity.

- Load growth in areas north and west of DFW may require additional transmission infrastructure in the next ten years. Specific projects were developed and analyzed in this study in conjunction with the local transmission service provider.

- While certain projects were found to be economically viable in specific future scenarios, no projects were viable across a broad range of future scenarios. This overall result is likely due to reductions in expected future loads due to the lingering impacts of recent economic conditions, as well as the diversity of potential future generation outcomes that may develop.

The above conclusions are based on high-level assumptions and are intended to inform the five-year transmission planning process, which provides a more detailed review of specific transmission projects. The technologies and locations of generation projects assumed in the analyses that support the above conclusions may not reflect all issues that necessarily must be considered and/or affect generation development decisions. Accordingly, the results of the LTSA are intended to provide guidance to ERCOT and ERCOT market participants in evaluating system needs, and is not intended to suggest changes to market policy or support changes to market activities.

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11. Contacts and Links

11.1 Contacts and Information

For general communications and queries, the public can submit a request for information at: http://www.ercot.com/about/contact/inforequest.cfm

Media:	Regulatory:	Government Relations:
Dottie Roark	Matt Morais	Theresa Gage
512-225-7024	512-248-4577	512-225-7074

11.2 Internet Links

ERCOT Home Page: http://www.ercot.com

Operations and System Planning Data Area: http://planning.ercot.com

Users must register for access to this area. Folders in this area include data, procedures, reports and maps for both operations and planning purposes. Helpful information that can be found on this site includes:

- Capacity, Demand, and Reserves Reports
- Demand and Energy Reports (D&E) Monthly Actuals
- Generation Project Interconnection Information
- Regional Planning Group information
- Steady-State Base Cases
- System Protection Data
- Transmission Project and Information Tracking (TPIT)

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12. Disclaimer

This report was prepared by the Electric Reliability Council of Texas (ERCOT) staff. It is intended to be a report of the status of the transmission system in the ERCOT Region and ERCOT's recommendations to address transmission constraints. Transmission system planning is a continuous process. Conclusions reached in this report can change with the addition (or elimination) of plans for new generation, transmission facilities, equipment, or loads.

Information on congestion costs presented herein is based on the most recent settlement calculations at the time of the development of this report. Future settlements as well as ERCOT Board of Directors and Public Utility Commission of Texas directives may change the figures presented herein.

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