

TOGETHER WE DELIVER



WEST TEXAS UPDATE

September 24, 2013

Presentation to ERCOT Regional Planning Group
Austin, TX

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GENERAL LOCATION OF ONCOR WEST TEXAS PROJECTS



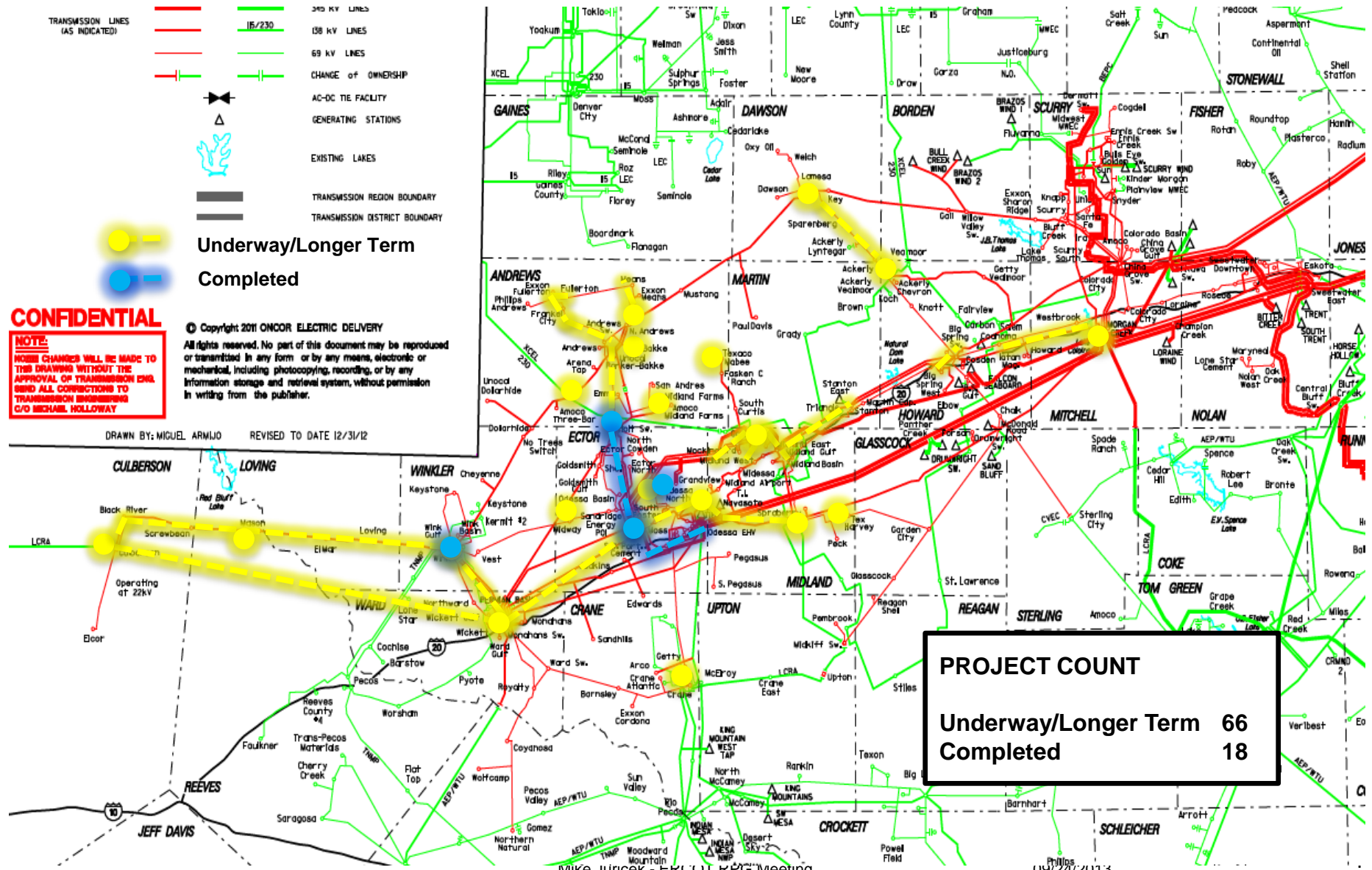
- TRANSMISSION LINES (AS INDICATED)
- 345 KV LINES
- 15/230
- 138 KV LINES
- 69 KV LINES
- CHANGE OF OWNERSHIP
- AC-DC TIE FACILITY
- GENERATING STATIONS
- EXISTING LAKES
- TRANSMISSION REGION BOUNDARY
- TRANSMISSION DISTRICT BOUNDARY
- Underway/Longer Term
- Completed

CONFIDENTIAL

NOTE:
 POSSIBLE CHANGES WILL BE MADE TO THIS DRAWING WITHOUT THE APPROVAL OF TRANSMISSION ENR. SEND ALL CORRECTIONS TO TRANSMISSION ENGINEERING C/O MICHAEL HOLLOWAY

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DRAWN BY: MIGUEL ARMUJO REVISED TO DATE 12/31/12



PROJECT COUNT	
Underway/Longer Term	66
Completed	18

COMBINED WEST TEXAS PROJECT SET



- **Sept 16th ERCOT posted West Texas Sensitivity (WTS) Study report**
 - identifies 65 TSP projects with 22 projects in the Oncor footprint
- **Nine WTS projects extend 345 kV northwest of Midland/Odessa**
 - provides additional 345/138 kV autotransformer capacity for energy delivery and voltage support to 138 kV system
- **Remaining thirteen WTS projects are in Oncor's footprint address issues previously identified by Oncor and projects are under development**
- **Six of the thirteen WTS projects under engineering review to potentially complete in the 2014 timeframe, ahead of ERCOT expectations**
- **WTS projects may defer some Oncor planned projects**
 - Continual review in our planning process
 - Will determine impacts of WTS projects with next major Oncor planning cycle starting in October using the updated base cases (SSWG Data Set B)
- **Base case data changes being developed and will submit updates**
- **TPIT update underway and provided with next cycle**
- **Updated West Texas load review and load projections**
 - Early November

ERCOT WTS PROJECT SET (ONCOR FOOTPRINT)



West Texas Projects	(ERCOT/Oncor) Timing
(R1) Construct a new 345/138 kV substation near the existing Gardendale substation	2015/May-15
(R2) Loop the existing Moss – Midland East 345 kV line into the new 345/138 kV substation near the Gardendale substation	2015/May-15
(R3) Install a new 500 MVA 345/138 kV transformer at the new 345/138 kV substation near Gardendale substation	2015/May-15
(R4) Loop the existing double circuit 138 kV line (Grandview – Mockingbird and Texaco Mabee Tap – Ector Hillmont)	2015/May-15
(R5) Construct a new 138 kV line from Gardendale to Midessa (~7.2 miles)	2015/2017
(R6) Construct a new 345/138 kV substation adjacent to the existing Amoco – Arena 138 kV line in Andrews County	2015/May-15
(R7) Connect a 345 kV line from the new 345/138 kV substation near Gardendale to the new 345/138 kV substation adjacent to the existing Amoco – Arena 138 kV line	2015/May-15
(R8) Loop the existing Amoco – Arena 138 kV line into the new 345/138 kV substation	2015/May-15
(R9) Install a new 500 MVA 345/138 kV transformer at the new 345/138 kV substation adjacent to the existing Amoco – Arena 138 kV line	2015/May-15

ERCOT WTS PROJECT SET (ONCOR FOOTPRINT)



West Texas Projects	(ERCOT/Oncor) Timing
(R10) Upgrade Midland East – Windwood 138 kV line	2015/TBD
(R11) Upgrade Westover – Amoco South Foster 138 kV line	2015/2015
(R12) Upgrade Odessa North – Amoco South Foster 138 kV line	2015/2015
(R13) Upgrade Fullerton – Exxon Fullerton 69 kV line	2015/Jul-13
(R14) Upgrade CRMWD 8 Tap – Glenhaven 138 kV line	2015/2015
(R15) Upgrade CRMWD 8 Tap – Midland Airport 138 kV line	2015/2015
(R16) Upgrade Odessa EHV Switch – Odessa 138 kV line	2015/Dec-14
(R17) Install 36.8 Mvar capacitor bank at North Andrews 138 kV substation	2015/2015
(R33) Upgrade the existing 138/69 kV transformer at Crane	2015/TBD
(R34) Upgrade the existing 69 kV bus tie at Crane	2015/TBD
(R46) Upgrade the existing Morgan Creek 138/69 kV transformer	2015/TBD
(R47) Upgrade the two existing Morgan Creek – Barber Lake 138 kV lines	2017/2015
(E1) Upgrade the existing 138/69 kV transformer #1 at North Andrews	2017/2015

ONCOR ACTIONS & IMPROVEMENTS (COMPLETED)



2011

Rebuild Holt South – Goldsmith 69 kV Line as Double-Circuit 138 & 69 kV Line and Convert Goldsmith to 138 kV **Jun 2011**

2012

Inspected Odessa North 138/69 kV Autotransformer and Critical Contingency Lines **Aug 2012**

Installed Online Temperature Monitoring and Auxiliary Oil Cooling on the Odessa North 138/69 kV Autotransformer Rating to 99 MVA (Nameplate 75 MVA) **Sep 2012**

Implemented Changes in System Configuration to Limit Flow through the Odessa North Autotransformer **Sep 2012**

Upgraded Terminal Equipment on Moss – Westover 138 kV Line **Sep 2012**

Upgraded Terminal Equipment Odessa North – Holt 69 kV Line **Sep 2012**

Upgraded Terminal Equipment Odessa North – Cowden North 69 kV Line **Sep 2012**

Increased Emergency Rating of Switches at Judkins on Permian Basin – Odessa EHV 138 kV Line **Sep 2012**

Convert Goldsmith Gulf to 138 kV (Approx 6 MW of load when converted) **Oct 2012**

Replace Odessa North 138 kV/69 kV Autotransformer with 100 MVA Nameplate (Rated 125 MVA Emergency) **Nov 2012**

~~Increase rating (operating temp) of Moss – Holt 138 kV Line **Dec 2012** (Operating temperature could not be increased due to clearance issues)~~

Increase rating (operating temp) of Moss – Odessa EHV 138 kV Line **Dec 2012**

ONCOR ACTIONS & IMPROVEMENTS (UNDERWAY)



(Blue Indicates ERCOT WTS Projects)

2013 (Completed)

Create New 138 kV circuit from Moss to Goldsmith Junction to Holt by:

Rebuilding Goldsmith – Goldsmith South 69 kV Line as Double-Circuit 138 & 69 kV Line and Converting Goldsmith South to 138 kV Approx 31 MW **Mar 2013**

Complete Holt – Goldsmith 138 kV Connection **Jun 2013**

Connecting Goldsmith Junction to Moss – Ector County North 138 kV Line **Jun 2013**

Install Goldsmith South – Goldsmith Junction 138 kV Line **Jun 2013**

Increase rating (operating temp) of Moss – Holt 138 kV Line to 100 C **Jun 2013**

Upgrade terminal equipment at Wink on 138 kV line to Permian Basin **Jun 2013**

Deploy Dynamic Line Rating technology (Conductor Monitored Ratings) to 5 circuits **Jun 2013**

Upgrade Fullerton – Exxon Fullerton 69 kV Line **Jul 2013**

Install 345/138 kV Autotransformer at Willow Valley **Sept 2013**

2013 (Underway)

Rebuild Goldsmith South – Goldsmith Junction 69 kV Line as a Double-Circuit 138 & 69 kV Line by completing the remaining 69 kV circuit **Dec 2013**

Construct Barber Lake 138 kV Switching Station **Dec 2013**

Construct Polecat Creek 138 kV Switching Station **Dec 2013**

Reconductor Odessa – Odessa North 138 kV Line with ACCC Conductor **Dec 2013**

ONCOR ACTIONS & IMPROVEMENTS (UNDERWAY)



(Blue Indicates ERCOT WTS Projects)

2014

Reconductor Moss – Holt 138 kV Line with ACSS/TW Conductor **Jan 2014**

Add 345 kV Breakers at Moss Switching Station **May 2014**

Convert Bakke Substation to 138 kV Operation **May 2014**

Convert Midland Farms Substation to 138 kV **May 2014**

Establish Odessa North 138 kV Switching Station **May 2014**

Install Ennis Creek 69 kV Capacitor **May 2014**

Install Mason 138 kV Capacitor **May 2014**

Install Spraberry 69 kV Capacitor **May 2014**

Install Texaco Harvey 69 kV Capacitor **May 2014**

Rebuild Odessa North – Goldsmith Junction 69 kV Line as a Double-Circuit 138 & 69 kV Line (disconnect from Moss – Ector County North 138 kV Line) **May 2014**

Upgrade Odessa EHV – Big 3 Tap – Odessa Southwest – Moss 138 kV Line **May 2014**

Rebuild Wink – Mason 138 kV Line;

Wink – Loving **Nov 2013**, Loving – El Mar **Jun 2014**, and El Mar – Mason **Dec 2014**

Add Lamesa – Ackerly Vealmoor Second 138 kV Circuit **Dec 2014**

Rebuild Stanton East – Triangle (SU) – Midland East 138 kV Line **Dec 2014**

Reconductor Wink – Permian Basin 138 kV Line **Dec 2014**

Reconductor Odessa – Odessa EHV 138 kV Line Dec 2014

Upgrade Moss – Westover 138 kV Line **Dec 2014**

ONCOR LONGER TERM PROJECTS

(Blue Indicates ERCOT WTS Projects)

2015 Preliminary

Upgrade Andrews Switch – Frankel City 69 kV Line

Install Midway 69 kV Line Capacitors

Upgrade North Andrews – Means 69 kV Line

Install Oak Creek 69 kV Capacitors

Upgrade Permian Basin – Ward Gulf Tap – Wink 138 kV Lines

Upgrade Big Springs Switch – Big Springs West 138 kV Lines

Install Mockingbird 138 kV Capacitors

Upgrade Morgan Creek – Barber Lake – China Grove 138 kV Lines (R47)

Replace North Andrews 138/69 kV Autotransformers (E1)

Install Odessa 138 kV Capacitors

Upgrade Odessa EHV – Glenhaven – CRMWD & Tap – Midland Airport – Midessa 138 kV Line (R14 & R15)

Upgrade Midland East – Windwood – Midessa 138 kV Line (R10)

Install Texaco Mabee 138 kV Capacitors

Upgrade Odessa North – Amoco South Foster – Westover 138 kV Line (R11 & R12)

Install North Andrews 138 kV Capacitors (R17)

Replace Morgan Creek 138/69 kV Autotransformer (R46)

Construct New 345/138 kV Switching Station near Gardendale (R1, R2, R3, & R4)

Construct New 345/138 kV Switching Station between Amoco Three Bar Tap and Arena Tap (R6, R8, & R9)

Install Getty Vealmoor 138 kV Capacitors

ONCOR LONGER TERM PROJECTS

(Blue Indicates ERCOT WTS Projects)

2016 Preliminary

Construct Permian Basin – Culberson 138 kV Line (RPG Review & CCN Required)

Construct Moss – Permian Basin Double-Circuit 345 kV Line (RPG Review & CCN Required)

Construct Odessa EHV – Moss (connect to one Permian Basin circuit) 345 kV Circuit on Existing Structures

Add Additional 345 kV Breakers at Moss Switching Station to support new circuit to Permian Basin

Establish 345 kV Switching Station and Install 600 MVA 345/138 kV Autotransformer at Permian Basin

Upgrade Andrews Switch – Emma Tap 69 kV Line

Upgrade Frankel City – Exxon Fullerton 69 kV Line

Install Midland East 138 kV Capacitors

Upgrade Midland East – Spraberry 138 kV Line

Rebuild Culberson – Mason 138 kV Line

2017 Preliminary

Replace Ennis Creek Switch 138/69 kV Autotransformer

Replace Spraberry 138/69 kV Autotransformer

Replace Wink 138/69 kV Autotransformer

Construct 138 kV Line from New Station Near Gardendale to Midessa (R5) (RPG Review and CCN Required)

- **Perform Engineering, Operations, System Protection and Construction Management review of projects**
 - Includes land and right of way review
 - Integrate comments into any design revision and timing
- **Coordinate with ERCOT on review of projects as part of development of 2013 Regional Transmission Plan**
- **Perform coordinated study of Crane area with AEP**
- **Review possible TNMP & other TSP interconnections**
- **Submit projects to RPG for review if needed**
- **Continue monitoring actual load and load forecast for West Texas**
 - Includes input from customers and information from oil and natural gas industry sources

Questions