

CCPG Update

U.S. Department Of Energy

2012 National Electric Transmission Congestion
Study Workshop – Portland, OR

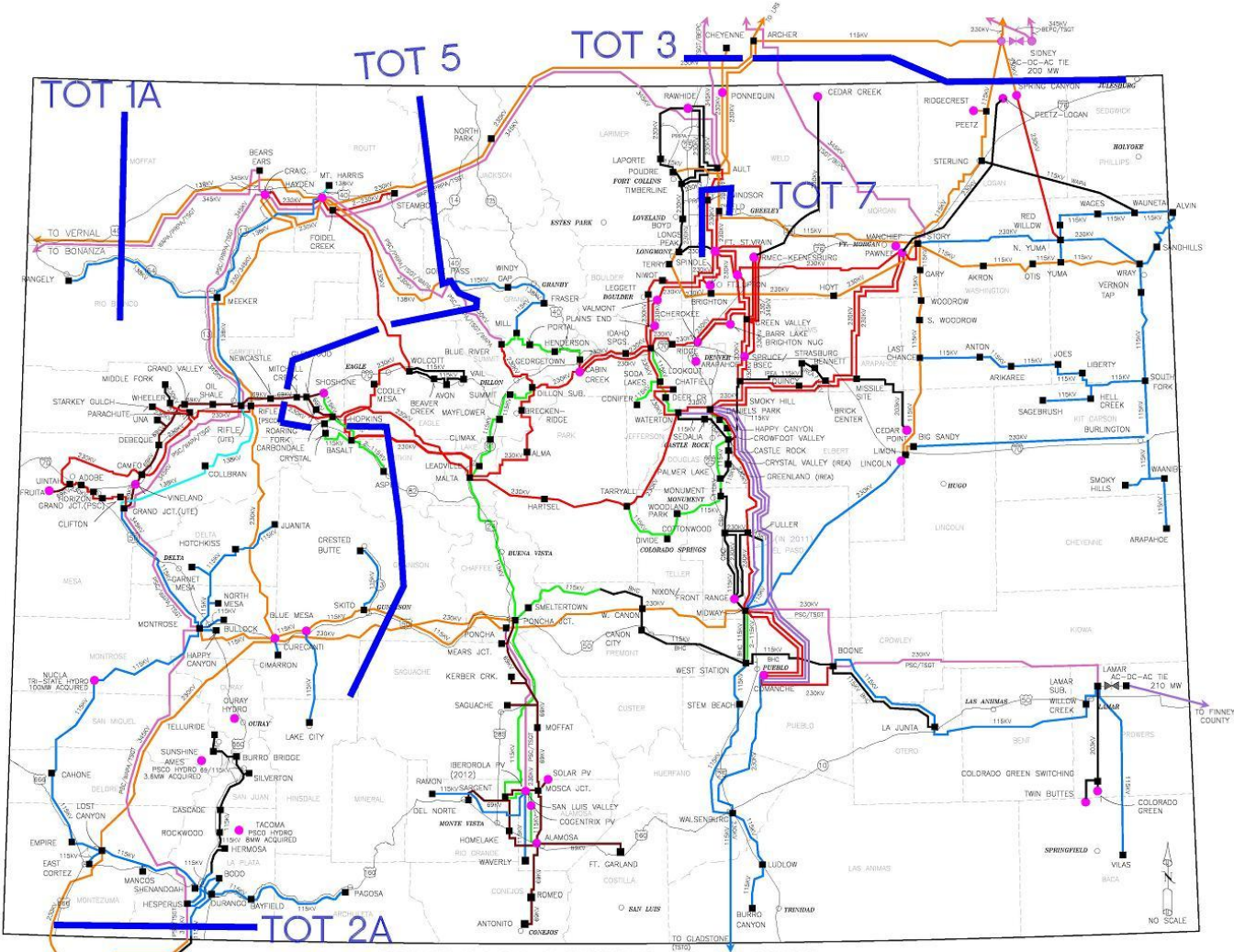
December 13, 2011

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Xcel Energy

Path/TOT Ratings



TOT MAP



- TOT 1A E-W 650 MW Max
W-E Undefined
- TOT 2A N-S 690 MW Max
S-N Undefined
- TOT 3 N-S 1680 MW MAX
S-N Undefined

LEGEND

- PSCO 345KV TRANSMISSION LINES
- PSCO 230KV TRANSMISSION LINES
- PSCO 138KV TRANSMISSION LINES
- PSCO 115KV TRANSMISSION LINES
- PSCO 69KV TRANSMISSION LINES
- TRI-STATE TRANSMISSION LINES
- WAPA TRANSMISSION LINES
- JOINT TRANSMISSION LINES
- MEMBERS TRANSMISSION LINES
- OTHER TRANSMISSION LINES
- SUBSTATION OR SWITCHING STATION
- POWER PLANT

TRANSMISSION OWNERSHIP OF COLORADO
2011

TOTs Revised: 05 December 2011 by K. Houston

REVISION DATE: 06/24/2010
SOURCE: PUBLIC SERVICE
REVISED BY: KIM HOUSTON
DRAWING NAME: TRANSOWN-SERV2010.DWG

Planned Projects w/Path Impact)

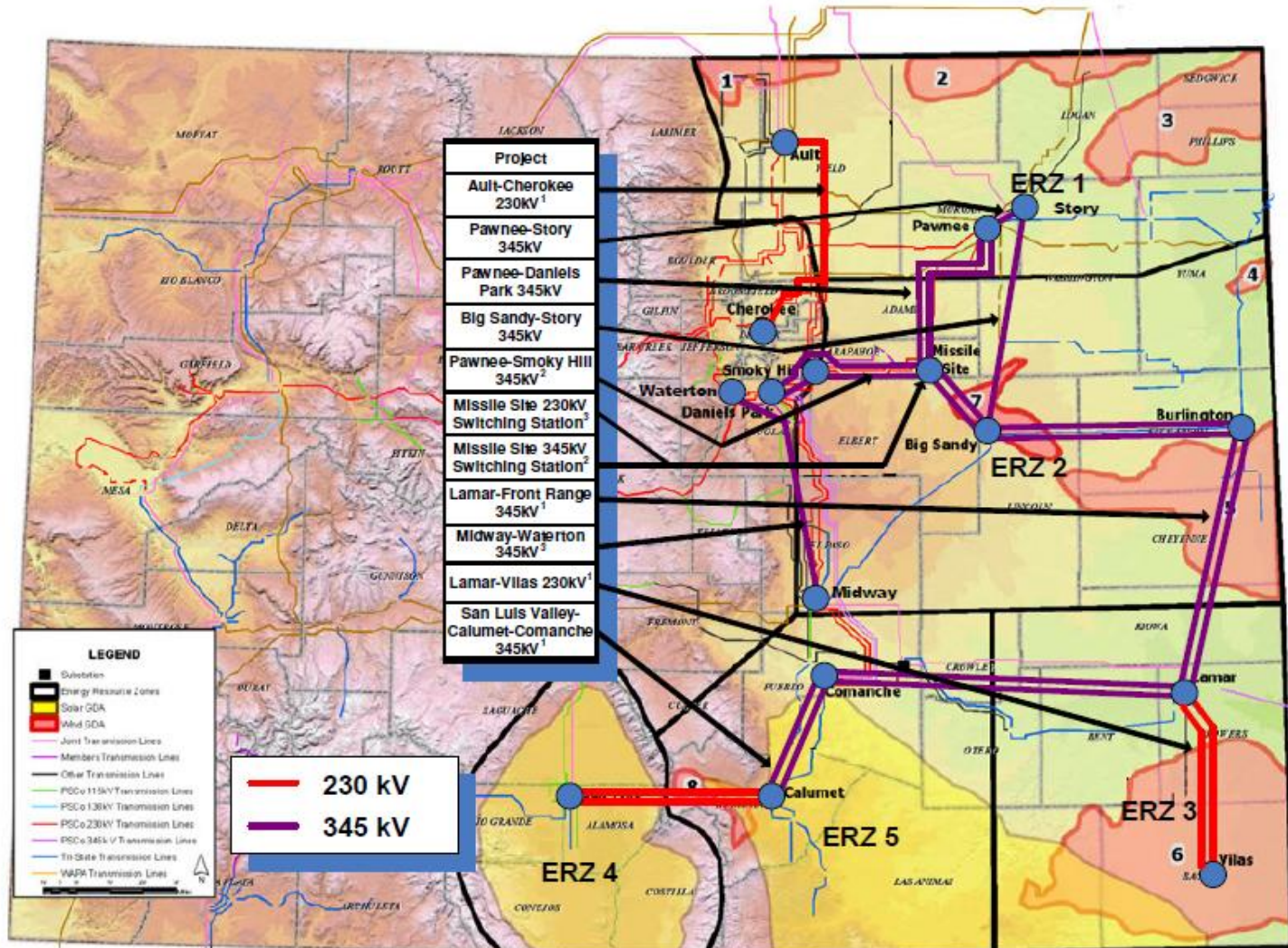
- ▶ TOT 1A – none
- ▶ TOT 2A – none
- ▶ TOT 3
 - Archer–Wayne Child Interconnection (150MW, 345kV)
 - High Plains Express (500kV, 1600–8000MW)
 - Zephyr (500kV DC, 3000MW)
 - TransWest Express (600kV DC, 3000MW)
 - Colorado–Wyoming Intertie (345kV, 800MW)
- ▶ Reference: WECC Path Reports & Rating Catalog

System Status Today & Future

- ▶ TOTs 1A, 2A, and 3 are historically congested, however this is changing with new resources added along front range.
- ▶ WECC 2019 & 2020 studies show no congestion issues along these paths – unless a large build out of WY wind (without added transmission).
- ▶ References:
 - WECC 10-year Regional Plan and Path Reports, and transmission project portal – <http://www.wecc.biz/library/StudyReport/Wiki%20Pages/Home.aspx> and <http://www.wecc.biz/Planning/TransmissionExpansion/Map/Pages/default.aspx>
 - <http://www.highplainsexpress.com/>
 - <http://wyia.org/projects/transmission-projects/zephyr-project-ztp/>
 - <http://www.transwestexpress.net/>
 - <http://www.wcintertie.com/>
 - www.westconnect.com and http://www.westconnect.com/planning_ccpg.php

CO Senate Bill 07-100 Transmission Projects

- Public policy driven transmission projects to energy resources.



¹Actual routing has not been determined

²Currently under construction

³In Service

CO Senate Bill 07-100 Projects

Item	Project	In Service Date*	Project Status
1.	Missile Site 230kV Switching Station	In service	Project completed. 250 MW wind project (Cedar Point) interconnected in 2011
2.	Midway-Waterton 345kV Transmission Project	In service	Modification of CPCN filed on April 20, 2009, and approved May 2009
3.	Pawnee-Smoky Hill 345kV Transmission project	January 2013	CPCN approved by the CPUC on Feb. 27, 2009
4.	Missile Site 345kV Switching Station	January 2013	CPCN issued June 2010. Two 200 MW wind project (Limon I & Limon II) interconnected in 2012
5.	San Luis Valley-Calumet-Comanche 345kV Transmission Project	Undetermined	CPCN Granted Sept 2011.
6.	Lamar-Front Range 345kV	2018-2019	Studies in process CPCN may be filed in 2012
7.	Pawnee-Daniels Park 345kV Transmission Project	2019	Plan to start technical studies in 2012
8.	Lamar-Vilas 230/345kV transmission Project	TBD*	
9.	Ault-Cherokee 230kV Transmission Project	TBD*	

*Project status and dates subject to change

Response to DOE Questions:

- ▶ Q1: WECC 2020 studies show CCPG area (TOTs 1A, 2A, 3) is becoming less congested. (Most likely due to decreased load projections, and generation resources added along the front range.)
- ▶ Q2: Depends greatly upon return of demand/load growth, potential ramification(s) of Order 1000, and possible shift on development of renewables.
- ▶ Q3 & 4: There is conditional congestion out of Wyoming if the potential wind were developed (12,000MW has been studied) without adequate transmission additions. (See wyia.org and WECC 2019 case for studies.)
- ▶ Q5: Application of appropriate technologies (series compensation, power flow controllers, etc.).
- ▶ Q6: See references identified previously & contact me.

Questions?