

WELCOME



PUC Rule 3627 Stakeholder Participation

August 2015



Meeting Logistics – Webinar Participants

- Due to feedback problems that prevent webinar participants from hearing the presentation clearly, we have muted all call in lines
- If you are attending via webinar and would like to submit a question or comment, please do so using the typewritten comment box available to you
- Staff is monitoring these written comments and we will address them during the meeting



Today's Presentation

- Introduction and overview
- Transmission planning basics
 - Overview of the planning process
- ► 10-year plans
 - High-level review of plans
 - More specific review of the projects



Xcel Energy Inc.



- No. 1 wind energy provider
- No. 5 in utility solar capacity
- Top 5 in Energy Efficiency programs
- Industry-leading voluntary emission reductions
- Leader in pursuit of new technologies

Gas Customers	1.9 M
Electric Customers	3.4 M



Xcel Energy Transmission

- Nearly 20,000 transmission line miles
- 1,200 substations
- Assets in 10 states
- 3 NERC Regions; 2 RTOs; Non-RTO west
- \$4.5 billion investment 2015 2019





CPUC Rule 3627

Adopted by the Colorado Public Utilities Commission

- Two-Year Cycle
 - **File in February of Even Years**
- List All Projects > 100 kV
- Report 10-Year Plans & 20-Year Scenarios
- Stakeholder Opportunities for Participation
- Commission Determines Adequacy



Webinar Objectives

- Provide an overview of transmission planning
- Review 10-Year plans
- Solicit Stakeholder Feedback



Feedback Requested

- Alternative Solutions
- Termination points
- Public Policy Concerns
- Environmental / Societal
- Renewable Energy Policies
- Significant Load Impacts



Power is generated and transmitted over transmission lines to distribution lines to customers. Voltage is changed at substations to efficiently deliver electricity to customers



9



Timeframe takes 7 to 10 years to plan, develop and construct



Balancing Act



Transmission planning is the art of identifying future transmission infrastructure for delivery from forecasted resources to forecasted load centers without violating mandatory compliance standards.

11

Transmission Planning Process



Transmission Ownership Colorado – 2015



Transmission Planning Drivers

- Load Service / Reliability
 - Near-Term (1-5 years)
 - "Core" Studies (5 year capital budget)
 - Longer-Term (5-10 years)
 - WestConnect, CCPG
- Resource Accommodation
 - ERP
 - Generator Interconnection
- Public Policy
 - Senate Bill 07-100 (SB-100)
 - Clean Air Clean Jobs Act (CACJA)
- Other
 - Tariff Studies
 - Transmission Service

10-Year Transmission Plans

New Substations

2016

- Happy Canyon (IREA Wholesale Load)
- Pleasant Valley (Retail Load)

TBD

- Greeley Improvements:
 - Beebe Draw (LaSalle Replacement)
 - **Box Elder Replacement**
 - Ault Replacement
 - Eaton Replacement
- Retail Load Requests:
 - Barnesville (retail load)
 - Severance (retail load)
- Reliability:
 - Bluestone Valley

Distribution

- Avery (2017)
- Thornton (2017)
- Moon Gulch (2018)
- New Castle (TBD)
- Wilson (TBD)
- Barker (TBD)
- Conceptual:
 - National Western (TBD)

16

- Sterling Ranch (TBD)
- Surrey Ridge (TBD)

New Transmission

2016

- Rifle Parachute 230 kV #2 (2017)
- Southwest Weld Transmission Project (SWEP)

2019

- Avon Gilman 115 kV
- Milton Rosedale 230 kV
- Rosedale Weld 230
- **2022**
 - Pawnee Daniels Park 345 kV

TBD

- San Luis Valley
- New Ault Monfort 115 kV
- DCP Lucerne 2 Barnesville 115 kV
- Glenwood Rifle Upgrade
- Parachute Cameo 230 kV
- Lamar Front Range
- Weld County Expansion
- Hayden Foidel Gore Pass 230 kV Loop

Denver/Boulder

Project	Comments	ISD*	Drivers
Moon Gulch Substation	Proposed new Distribution Substation in either the City of Arvada or Jefferson County to serve distribution loads	2018	Distribution
Pawnee – Daniels Park 345 kV Transmission Line	Add an additional 345 kV line between the Pawnee and Daniels Park substations.	2022	Reliability
Cherokee- Arvada-Ridge 230kV Conversion	Convert the existing 115kV line between the Cherokee and Ridge substations to a 230kV line.	2016	Reliability and Distribution
Thornton Substation	New substation in Thornton to serve distribution loads. Replaces the Brantner Substation project.	2017	Distribution
Barker Substation	New Substation in Denver Area to serve distribution load growth in Historic Ballpark Area	TBD	Distribution

Foothills/Greeley Area

#	Project	Comments	ISD*	Drivers
	Southwest Weld Transmission Project (SWEP)	Expand the lower Weld county area to serve growing loads.	2017	Reliability
	Milton –Rosedale 230 kV Build a line from the Rosedale substation to the planned Milton substation to create a 230 kV loop in conjunction with the Weld – Rosedale 230 kV line. This line will alleviate overloading of the Greeley area under projected loads and increase capacity for the area.		2019	Reliability
	Rosedale – Weld 230 kV / Beebe Draw Substation (La Salle Replacement	Expand the Rosedale substation to include a 230kV yard. Build a new 230 kV substation (Beebe Draw) to replace the existing 44kV La Salle Substation. Build a line from the Weld 230 kV substation to the new Rosedale 230kV substation to provide a second 230kV point of interjection to the town of Greeley, alleviating potential overloading of the Weld transformers. Tie in Beebe Draw substation to this line	2019 (line) TBD (substation)	Reliability
	Weld County Expansion	Add in secondary loop and have another point of interjection to the Greeley area. Increase capacity for the city and surrounding area	TBD	Reliability
	Avery Substation	Add in a new distribution substation to service loads in the area	2017	Distribution
	Wilson Substation	Add in a new 115kV substation to serve distribution loads. This project will tap PRPA's 115kV Horseshoe – West transmission line	TBD	Distribution
	New Ault – Monfort 115 kV / Eaton Replacement / Ault Replacement / Cloverly Substation / Pleasant Valley Replacement	Convert both the existing Eaton and Pleasant Valley substations from 44 kV to 115 kV; Add in a new 115 kV Substation (Cloverly) to service a retail load. Add a new 115 kV line from the new Ault substation, tie in the Eaton and Cloverly substation and terminate at the Monfort 115kV substation.	TBD (line) 2016 (Cloverly) TBD (other substations)	Reliability / Load Growth
	Severence Substation	Add in a new 230 kV substation by tapping the Weld Ft. St. Vrain line to service a retail customer	TBD	Retail Load
	Barnesville Substation / DCP Lucerne 2 – Barnesville 115 kV	Add in a new 115 kV Substation via a new line from DCP Lucerne to the Barnesville Substation to service a retail load	TBD	Retail Load
D	Box Elder Replacement	Convert the existing 44kV Box Elder Substation to a 115kV substation to service growing loads in the area. Tie into Tri-State's Southwest Weld Expansion Project (SWEP) via the Neres Canal 115 kV Substation	TBD	Load Growth

Western Slope / Mountain Area

20

South Denver/CO Springs Area

#	Project	Comments	ISD*	Drivers
1	IREA Happy Canyon	Construct a new 115 kV substation for IREA	2016	Wholesale Customer

21

South Metro Conceptual Distribution

Public Policy Planning * Senate Bill 07–100

Public Service Company of Colorado SB-100 projects

24

Senate Bill 100 Project List

ltem	Project	Zone	In Service Date*	Project Status
1.	Missile Site 230kV Switching Station	2	Nov 2010	In Service; No CPCN Required
2.	Midway-Waterton 345kV Transmission Project	3,4,5	Jun 2011	In Service; CPCN Granted July 2009
3.	Missile Site 345kV Switching Station	2	October 2012	In service CPCN Granted June 2010
4.	Pawnee-Smoky Hill 345kV Transmission Project	1	May 2013	CPCN Granted Feb 2009 Under Construction
5.	Weld County Expansion (Formerly TOT 7 Expansion Project)	1	TBD	Studies Ongoing
6	Pawnee-Daniels Park 345kV Transmission Project	1	2022	CPCN Granted March 2015 ISD Delayed 3 years by PUC
7.	Lamar-Front Range 345kV Transmission Project	2, 3	TBD	Studies Complete. Project Deferred
8.	Lamar-Vilas 230kV Transmission Project	3	TBD	Studies Completed with LFR
9.	San Luis Valley	4	TBD	Studies Ongoing

25

Pawnee to Daniels Park

- Cost \$152 million
- In-service date: 2022
- Purpose: Reliability, SB 07-100;
- Infrastructure: 124-mile transmission from
 Pawnee Substation to
 Daniels Park Substation and from Smoky Hill
 Substation to Daniels
 Park Substation
- Open House Meetings in September

Northeast Colorado

Northeast Colorado Planning Objectives

- Facilitate Load Growth Related to Oil & Gas Development
- Coordinate with Reliability Improvements in the Greeley Area
- Complement Longer-term Transmission Projects in NE Colorado
- Improve TOT 7 Capability

Southwest Weld Expansion Project (SWEP)
SWEP Expansion
Greeley Master Plan
Weld County Expansion

Southwest Weld Expansion Project

To Ault Weld Greeley Monfort 230 kV 115 kV UNC / Leprino Arrowhead Lake Kersey West - -> To Willoby Rosedale South Kersey Boomerang Milton / Neres Canal Ft Lupton Rattlesnake JM Shaffer Davis Greenhouse Colfer 4 Ennis

30

Weld County / Greeley Improvements

Weld County / Greeley Improvements

32

Weld County Expansion – Conceptual Plan

33

San Luis Valley

San Luis Valley Planning Objectives

Reliability

- Sustainability
- **Export Capacity**

Alternative 3: New 230

Alternative 4: 115 -> 230 & 69 -> 115

38

Southeast Colorado

Lamar – Front Range Planning Objectives

SB100: Serve ERZs 2, 3
Facilitate Resource Needs
Improve reliability in SE Colorado

Lamar – Front Range Alternatives

LFR Conceptual Plan

Transmission

- Two 345 kV transmission circuits between Lamar and Avondale/Boone
- Two 345 kV transmission circuits between Lamar and Energy Center
- Two 345 kV transmission circuits between Energy Center and Burlington
- Two 345 kV transmission circuits between Burlington and Big Sandy
- One 345 kV transmission line between Big Sandy and Missile Site
- One 345 kV transmission line between Big Sandy and Story
- One 345 kV transmission line between Story and Pawnee

Substations

- New Energy Center Substation
- New Avondale Substation
- Modifications to Boone, Lamar, Burlington, Big Sandy, Missile Site, Story, and Pawnee

Other

- CSU Overload Mitigation
- Other facilities to support O&M of the Project

COST: approximately \$900 Million

Discussion/Feedback/Questions

PSCo PUC Rule 3627 Information

On the Xcel Energy website at:

www.xcelenergy.com/About_Us/Transmission

WestConnect website for all regional projects:

www.westconnect.com/planning_ccpg.php

Email questions and comments to:

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