

# Colorado Coordinated Planning Group Colorado Energy Plan Task Force



Public Service Company of Colorado  
March 8, 2018

# Agenda

- Introductions
- Antitrust Reminder
- CEP/ERP Update
- 2017 Study Review
- Recent Study Discussion
- Schedule
- Next Steps

# Antitrust Reminder

It should be the policy and practice (Policy) of the parties participating in the Colorado Coordinated Planning Group to obey the antitrust laws and avoid all conduct that unreasonably restrains competition. Under this Policy, participants should avoid any conduct or behavior that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

# Assessment Update



# Background

## ➤ CEP Filed August 2017

- Retire Comanche 1 (335 MW) by end of 2022
- Retire Comanche 2 (325 MW) by end of 2025
- New Switching Station in Energy Resource Zone 5

## ➤ CCPG CEP Task Force (CEPTF)

- Southern Reliability Assessment
  - ▶ Evaluate Retirement of Comanche 1 & 2
- Generation Capacity Assessment
  - ▶ 3 Injection Areas

## ➤ Documentation

- [http://regplanning.westconnect.com/ccpg\\_ceptf.htm](http://regplanning.westconnect.com/ccpg_ceptf.htm)

# Background

- **PSCo 2016 Electric Resource Plan (ERP)**
  - ▶ Filed May 2016
  - ▶ 450 MW by 2023
- **PSCo Colorado Energy Plan (CEP)**
  - ▶ Filed August 2017
  - ▶ Retire Comanche 1 (335 MW) by end of 2022
  - ▶ Retire Comanche 2 (325 MW) by end of 2025
    - Additional 660 MW Resource Need
  - ▶ **New Badger Hills Substation**
- **Formed CEPTF**
  - ▶ Met November 1 and 21

# Scope

## 1. Reliability

- Ensure there are no system performance or reliability issues due to the retirement of Comanche 1&2 generating units. If necessary, recommend transmission upgrades or other mitigation measures.

## 2. Capacity

- Determine Approximate Generation Injection Capability of Specific regions of PSCo system.

## 3. Portfolio Analysis

# Reliability Status

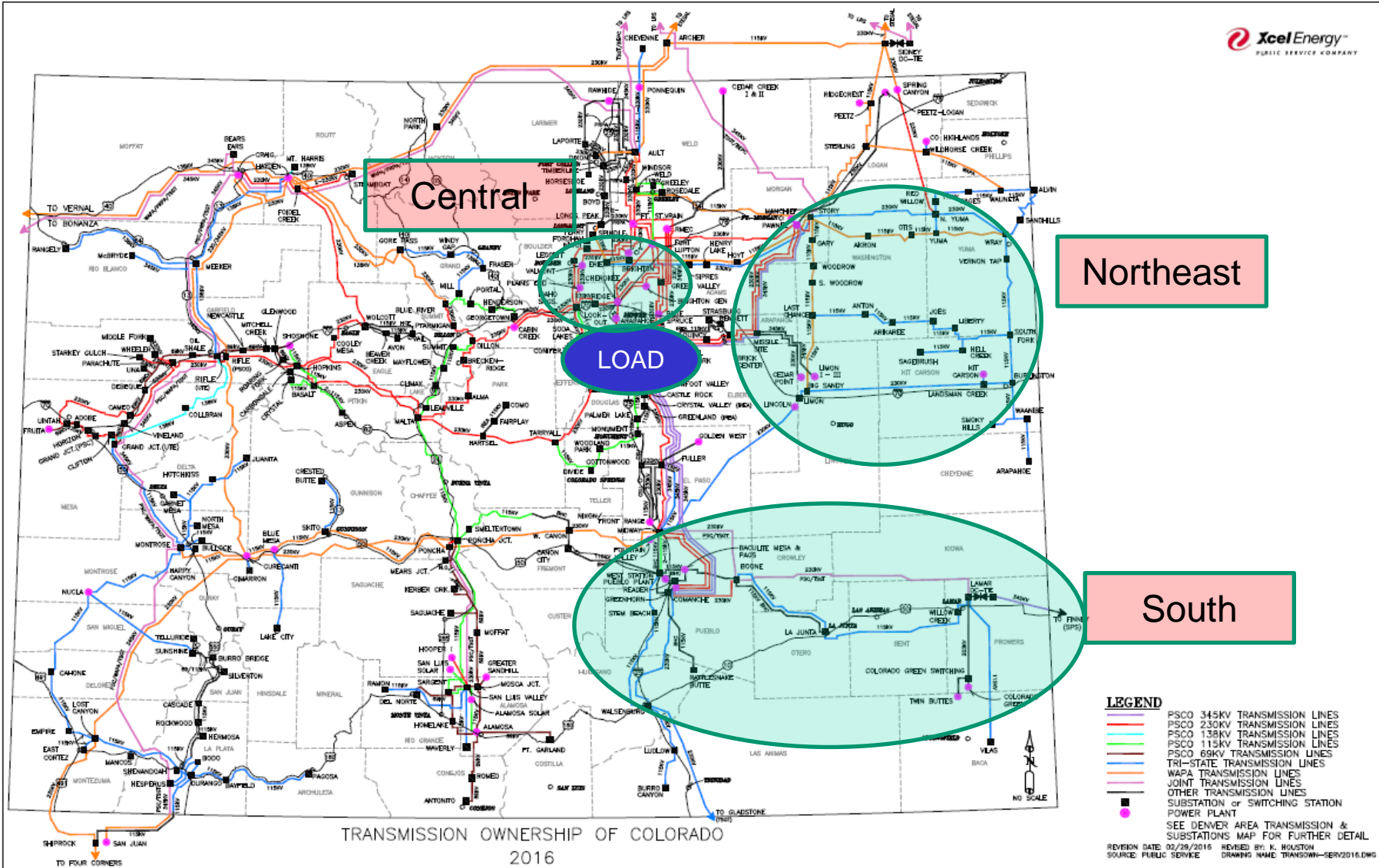
- **Powerflow and Stability Studies Complete**
  - **Steady State:**
    - ▶ Benchmarking, Peak, Off-Peak
    - ▶ No Performance Issues (Voltage or Loading)
  - **Transient Stability:**
    - ▶ Select Disturbances Modeled
    - ▶ System Stable
- **Short Circuit:**
  - Preliminary Analysis Performed
  - Evaluating Results
  - **Flicker**
    - ongoing



# Capacity Status

- **Northeast (Based on RCTF Studies):**
  - **550 MW – No Upgrades**
    - ▶ **Limit: Denver-Metro**
  - **850 MW – Metro Upgrades**
- **South:**
  - **250 MW – No Upgrades (PSCo/CSU Operating Procedure)**
  - **Limit: CSU**
- **Central (Gas):**
  - **400 MW (2 x 200) @ Ft. St. Vrain, Spruce, Cherokee 230**
  - **250 MW @ Spindle, Cherokee 115**
  - **100 MW @ RMEC**
  - **All with No Upgrades**
- **Each Area Studied “Stand-Alone”**

# Injection Areas



# Badger Hills Substation

## ➤ **Concept:**

- **Electrically Equivalent to Comanche**
- **Allow Additional Generation Interconnections**
- **Similar Concept as Missile Site Substation**
- **Flexibility for Future Expansion**

## ➤ **Planned Configuration (CEP)**

- **Bisect one 345 kV, one 230 kV Com-DP**
- **One 345/230 kV transformer**
- **CPCN Required**

# Recent Studies (2018)

- **Preliminary Portfolio Analysis**
- **Revised Assumptions for Wind and Gas**
  - ▶ **Coal at or Near Max**
  - ▶ **Fountain Valley & Manchief at 50%**
  - ▶ **Wind at 80%, 60%, 40%**
  - ▶ **“Central” Gas Used for Balance**
  - ▶ **CSU Limitation Fixed by Phase Shifter**
- **Assume New Generation in Each Injection Area**
- **Results:**
  - ▶ **Upgrades Depend on Portfolio and Wind Level**

# Revised Northern Dispatch

Type	Generation Name	Nameplate MW	2017 Levels	% NP1	2018 Levels	% NP2
Wind	Peetz Logan	575	230	40%	345	60%
	Limon	600	480	80%	360	60%
	Cedar Point	250	200	80%	150	60%
	Rush Creek	600	600	100%	360	60%
<b>Total Wind</b>		<b>2025</b>	<b>1510</b>	<b>75%</b>	<b>1215</b>	<b>60%</b>
Coal	Pawnee	530	530	100%	505	95%
Gas	Manchief	280	280	100%	140	50%
<b>Total</b>		<b>2835</b>	<b>2320</b>	<b>82%</b>	<b>1860</b>	<b>66%</b>

# Revised Southern Dispatch

Type	Generation Name	Nameplate MW	2017	% NP1	2018 New	% NP2
DC Tie	Lamar	210	101	48%	0	0%
Wind	Colorado Green	162	130	80%	98	60%
	Twin Buttes	75	60	80%	45	60%
	Golden West	250	200	80%	150	60%
<b>Total Wind</b>		<b>487</b>	<b>390</b>	<b>80%</b>	<b>293</b>	<b>60%</b>
Solar	Comanche	120	102	85%	102	85%
Coal	Comanche 1&2	725	703	97%	703	97%
	Comanche 3	805	805	100%	805	100%
<b>Total Coal</b>		<b>1530</b>	<b>1508</b>	<b>99%</b>	<b>1508</b>	<b>99%</b>
Gas	Fountain Valley	240	0	0%	120	50%
<b>Total</b>		<b>2587</b>	<b>2101</b>	<b>81%</b>	<b>2023</b>	<b>78%</b>
North					1860	
<b>Total N+S</b>					<b>3883</b>	

# Results

- **Upgrades Depend on Portfolio Generation and Wind Level**
- **345 kV Backbone Allows Flexibility for New Gen**
  - “If 60% Wind,
    - Backbone” Gen Can Accommodate about 4300-4400 MW
    - Incremental 500-600 MW Injection Capability w/o Upgrades
  - If 80% Wind, Incremental Capability is Lower by 500 MW
- **Limitations → Denver-metro System**
- **Upgrades**
  - Greenwood-Monaco 230 kV FAC-008
  - Monaco-Leetsdale 230 kV OH (+200 MW)
  - Leetsdale-Monroe 230 kV UG (+ 300 MW)
  - Greenwood-Monaco-Leetsdale UG/OH (+100 MW)
  - Monroe-Elati 230 kV UG & Smoky-Tollgate 230 kV (+200 MW)
  - Leetsdale-Harrison 115 kV UG (+100 MW)

# Next Steps

- **Continue Studies**
- **Cost & Schedule Estimates of Transmission Upgrades**
- **Actual Portfolio Studies**
- **Coordinate with CCPG / DEEP**



# Regulatory Schedule

Date	Deadline
<i>March 21, 2018</i>	<i>PUC Decides on Stipulation</i>
<i>April 27, 2018</i>	<i>120-Day Report</i>
May 29, 2018	Independent Evaluator Report*
June 11, 2018	Intervenor's Comments*
June 26, 2018	Company's Comments*
July 26, 2018	Commission Decision on Phase II*

# Resources

## ➤ Links:

### ➤ **CCPG**

- ▶ <http://regplanning.westconnect.com/ccpg.htm>

### ➤ **CEPTF**

- ▶ [http://regplanning.westconnect.com/ccpg\\_ceptf.htm](http://regplanning.westconnect.com/ccpg_ceptf.htm)

### ➤ **Rush Creek Task Force**

- ▶ [http://regplanning.westconnect.com/ccpg\\_rush\\_creek\\_tf.htm](http://regplanning.westconnect.com/ccpg_rush_creek_tf.htm)

### ➤ **ERP / CEP Information**

- ▶ [https://www.xcelenergy.com/company/rates\\_and\\_regulations/resource\\_plans](https://www.xcelenergy.com/company/rates_and_regulations/resource_plans)

## ➤ **Email:**

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### ➤ **ERP/CEP/RFP:**

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## QUESTIONS