



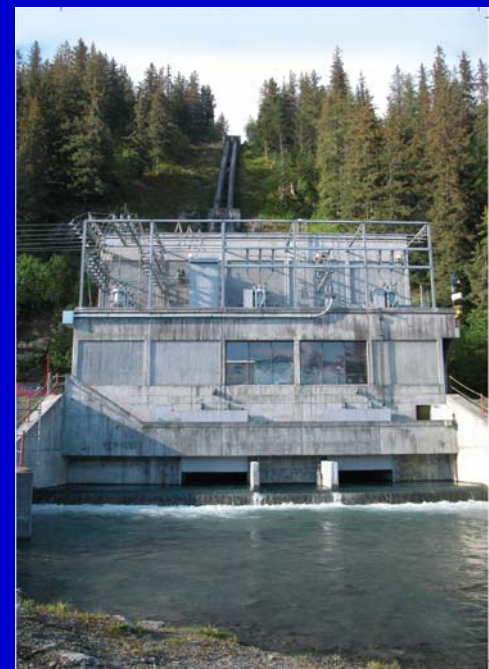
Briefing on the
**Colorado Coordinated Planning Group's
Long Range Transmission Planning Group**



Presented to the
**Colorado Clean Energy
Development Authority**

by
Morey Wolfson
Utilities Program Manager
Governor's Energy Office

February 11, 2008



Colorado Coordinated Planning Group (CCPG)



MISSION STATEMENT:

The CCPG is a joint, high voltage transmission system planning forum for the purpose of assuring a high degree of reliability in the planning, development, and operation of the high voltage transmission system in the Rocky Mountain Region.

The CCPG provides the technical forum required to complete reliability assessments, develop joint business opportunities, and accomplish coordinated planning, under the single-system planning concept in the Rocky Mountain Region of the Western Electricity Coordinating Council.

The Colorado Long Range Transmission Planning Study Group (CLRTPG) is a sub-set of the CCPG.

The CLRTPG is currently analyzing the Colorado and Eastern Wyoming high voltage transmission system for two time frames: 2013 and 2018.

The CLRTPG planning exercise is required pursuant to the 1991 Colorado-Ute bankruptcy agreement.

The primary CLRTPG participants are transmission-owning entities in the region:

Aquila Networks

Colorado Springs Utilities

Platte River Power Authority

Public Service Company of Colorado (Xcel Energy)

Tri-State Generation and Transmission

Western Area Power Administration

The group is led by utility company transmission planning engineering personnel.

Other stakeholders are also participating.

Meetings are held at Tri-State's headquarters every Tuesday afternoon.

A sample of CLRTPG attendees:

Mike Mendelson – Western Resource Advocates

Jeff Hein, Inez Dominguez- Colorado Public Utilities Commission

Eric John - SkyFuel

Gerry Stellern, Shane Gutierrez, Joe Taylor, Tom Green - Xcel Energy

Chuck Sisk – Colorado Springs Utilities

Mark Graham, David Gustad, Andy Leoni – Tri-State G&T

Dan Lyons – Aquila Networks

Morey Wolfson – Colorado Governor's Energy Office

Billy Cutsor – Municipal Energy Agency of Nebraska

Wes Wingen, Eric Egge – Black Hills Power

Ron Lehr – American Wind Energy Association

Shawn Carlson, Matt Stoltz – Basin Electric

Bob Easton, Jared Griffiths – Western Area Power Authority

John Collins – Platte River Power Authority

TJ Deora - Horizon Wind

Jerry Vaninetti, Bill Pascoe - Trans-Elect

At present, these **four transmission scenarios are the primary candidates for consideration** to be modeled for the years 2013 and 2018. These are preliminary ideas, and other scenarios may also be considered.

Scenarios

1. Assume that the transmission system accommodates Colorado and Wyoming utilities' loads and resource plans., This includes the minimum requirements contained in Colorado's Renewable Portfolio Standard.
2. Assume that significant Wyoming generation resources are injected into the proposed Wyoming-Colorado Intertie Project.
3. Assume a Clean Energy scenario where 5% of the capacity in Colorado's Wind GDAs are developed, plus 2000 MW from Colorado's Central Solar Power GDAs.
This would equal ~4,800 MW by 2018.
4. A Clean Energy Export scenario - assume that 10% of the capacity in the Wind GDAs are developed, plus 4000 MW of Central Solar Power.
This would equal ~9,600 MW by 2018.

Scenario One (utilities' loads and resource plans)
assumes the following generation additions, **to the year 2013**

<u>Company</u>	<u>Type</u>	<u>MW</u>
PSCo	Wind	400
PSCo	Solar	25
PSCo	Arapahoe CC	480
Aquila	Wind	61
Aquila	Solar	1.3
Tri-State	Wind	100
PRPA	Wind	30
CO Springs	Wind	45
M E A Nebraska	Wind	<u>13</u>
		1,152.3

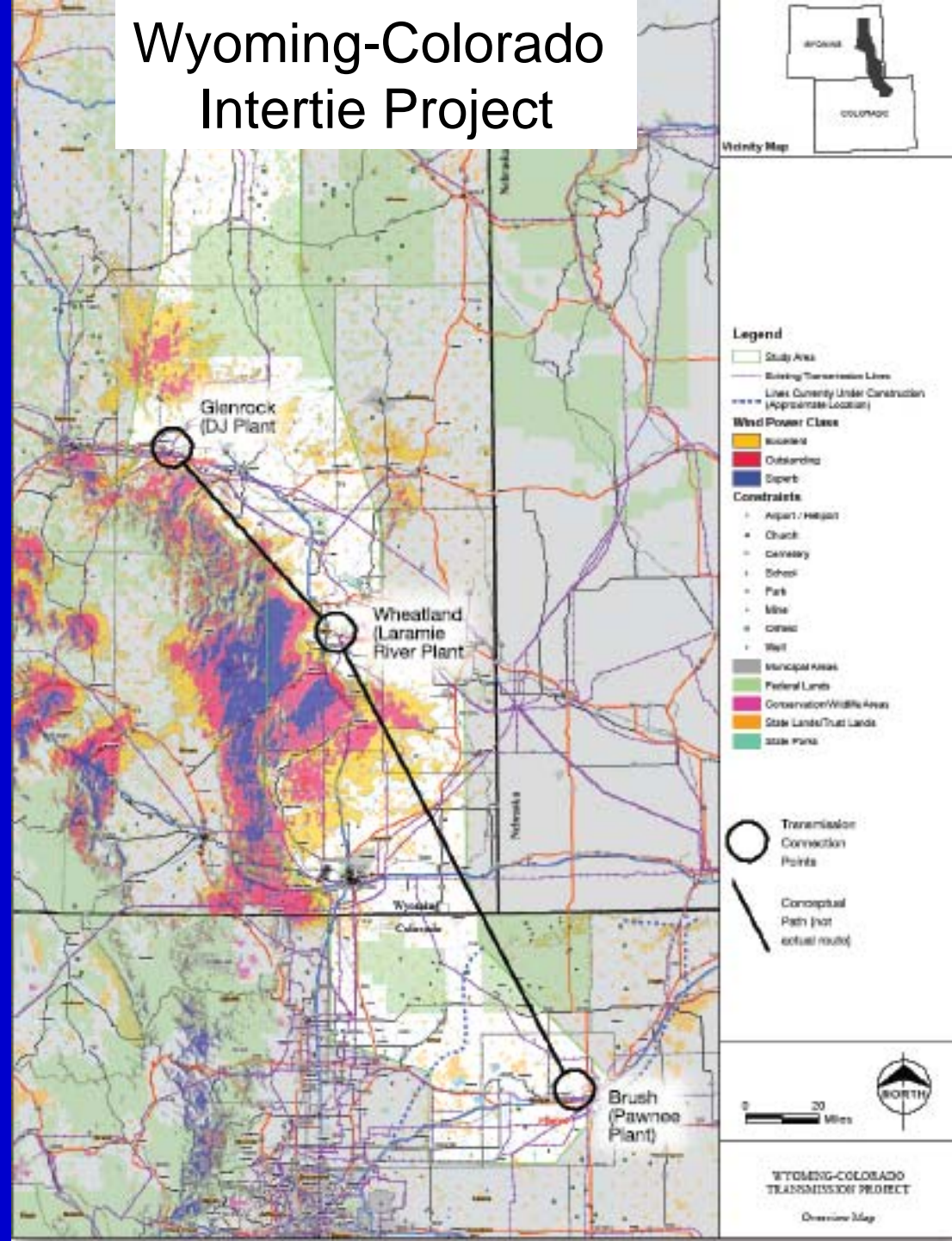
Scenario One (utilities' loads and resource plans)
assumes these generation additions, **to the year 2018.**

		<u>Cumulative MW from 2013</u>
PSCo	Wind	1000
PSCo	Solar	400
PSCo	Geothermal	20
PSCo	CTs	130
PSCo	CC	470
PSCo	IGCC	150
Aquila	Wind	42
Aquila	Solar	0.7
Tri-State	Wind	123
PRPA	Wind	35
CO Springs	Wind	52
MEA Nebraska	Wind	<u>16</u>
		2,438.7

Scenario 2 assumes that significant Wyoming generation resources are injected into the proposed Wyoming-Colorado Intertie Project.

Data for the proposed scenario data should be available within the next week or two.

Wyoming-Colorado Intertie Project



For proposed Scenarios 3 and 4, the CLRTPG will reference data from the SB07-091 Report

The image shows the cover of a report titled "connecting colorado's renewable resources to the market". The title is written in a large, stylized font, with "connecting" and "renewable" in red, "colorado's" in white, and "resources to the market" in black. The background is a photograph of a utility pole with power lines against a blue sky. At the bottom of the cover, there is a row of six small images representing different renewable energy sources: wind turbines, solar panels, a hydroelectric dam, a geothermal geyser, a pile of wood chips, and a field of corn. Above each image is a vertical label: WIND, SOLAR, HYDROELECTRIC, GEOTHERMAL, BIOMASS, and ETHANOL. On the left side of the cover, the following text is printed: "Report of the Colorado Senate Bill 07-091 Renewable Resource Generation Development Areas Task Force".

connecting colorado's
renewable resources to the market

Report of the
Colorado Senate Bill 07-091
Renewable Resource Generation
Development Areas
Task Force

WIND
SOLAR
HYDROELECTRIC
GEOTHERMAL
BIOMASS
ETHANOL

Scenario 3 and Scenario 4

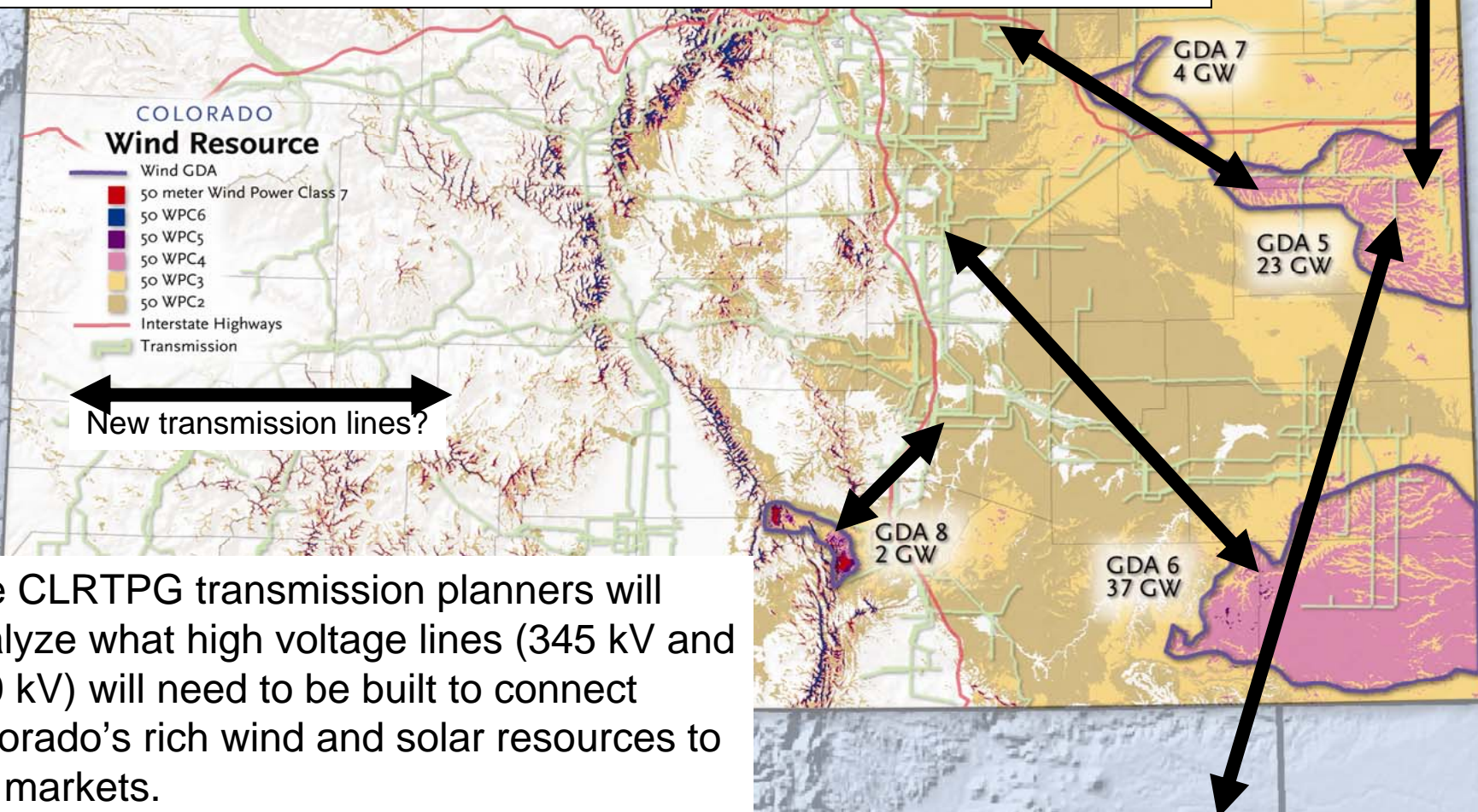
There are 96,000 MW of Wind capacity in the 8 Colorado Wind GDAs.

Scenario 3: Assume that 5% of the capacity in the Wind GDAs will be injected.

This equals 4,800 MW.

Scenario 4 (export): Assume that 10% of the capacity in the Wind GDAs will be injected.

This equals 9,600 MW.

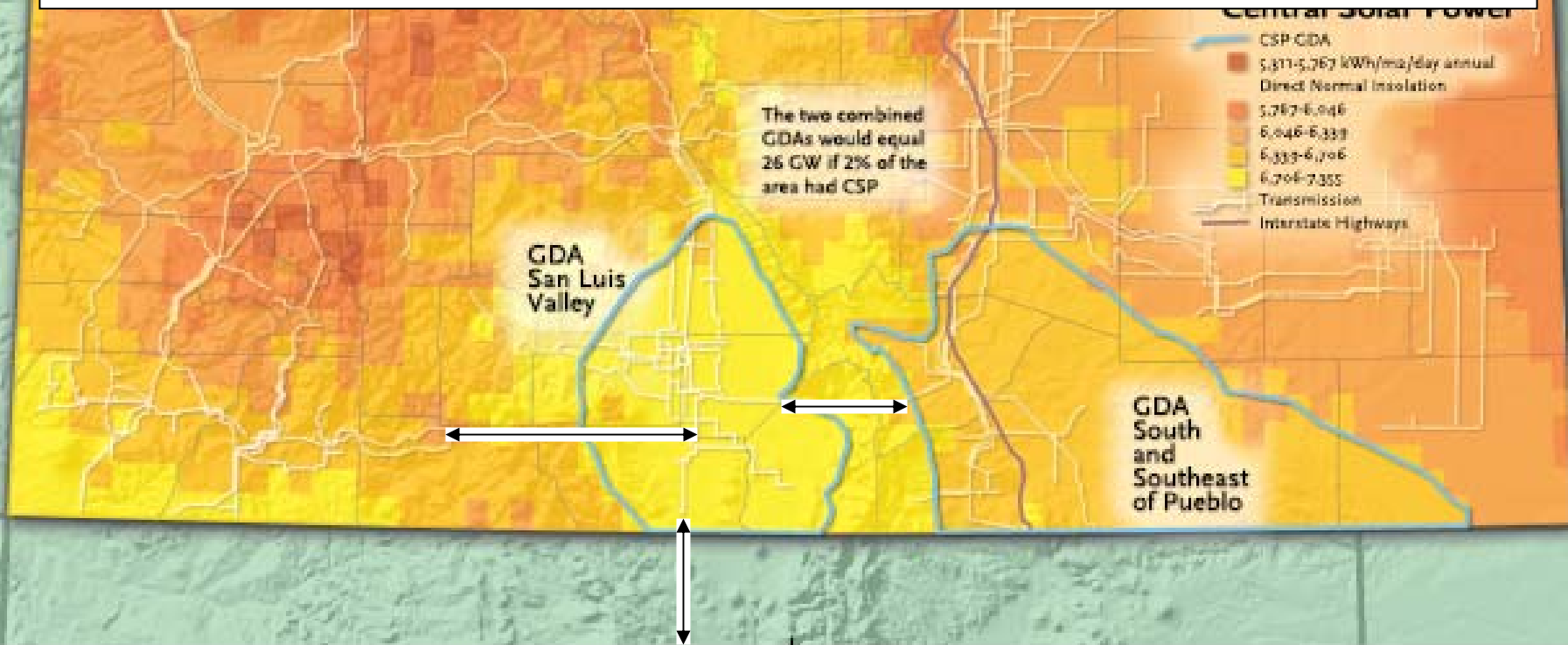


The CLRTPG transmission planners will analyze what high voltage lines (345 kV and 500 kV) will need to be built to connect Colorado's rich wind and solar resources to the markets.

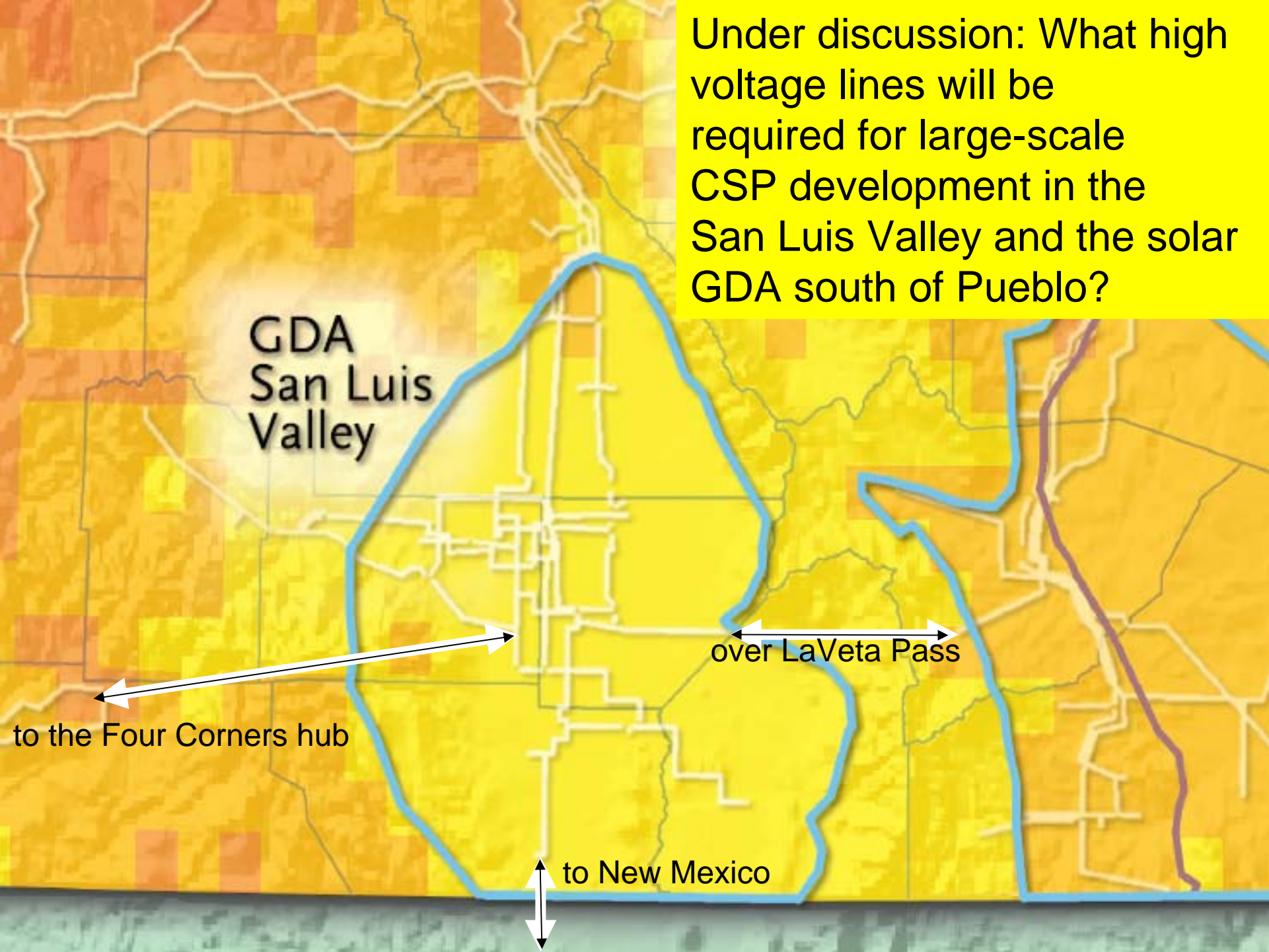
The SB91 report identified 26,000 MW of CSP potential in Colorado's two Solar GDAs (assuming that CSP is put into service on 2% of the GDA land).

GEO request as part of Scenario 3 (clean energy): Assume that 1,000 MW is injected from the San Luis Valley GDA and 1,000 MW is injected from the GDA located south of Pueblo. What transmission options would stem from this scenario?

GEO request as part of Scenario 4 (clean energy export): Assume that 2,000 MW is injected from the San Luis Valley GDA and 2,000 MW is injected from the GDA south of Pueblo. What transmission options would stem from this scenario?



Under discussion: What high voltage lines will be required for large-scale CSP development in the San Luis Valley and the solar GDA south of Pueblo?



GDA
San Luis
Valley

over LaVeta Pass

to the Four Corners hub

to New Mexico

Scenario 3: Clean Energy

Assume that 5% of the wind capacity from the eight Wind GDAs are injected in and assume that 2000 MW of Central Solar Power is injected.

<u>Wind GDA #</u>	<u>Location</u>	<u>MW of capacity</u>
1	North-central	200
2	North-west	300
3	North-east	750
4	East-central	100
5	East-central	1150
6	South-east	1850
7	Front Range- east	200
8	Walsenburg area	<u>100</u>
	Wind Subtotal	4650
<u>Solar GDA</u>	<u>Location</u>	<u>MW of capacity</u>
1	San Luis Valley	1000
2	South and SE of Pueblo	<u>1000</u>
	Solar Subtotal	2000
Total minimum Clean Energy scenario		6650 MW

Scenario 4: Clean Energy Export

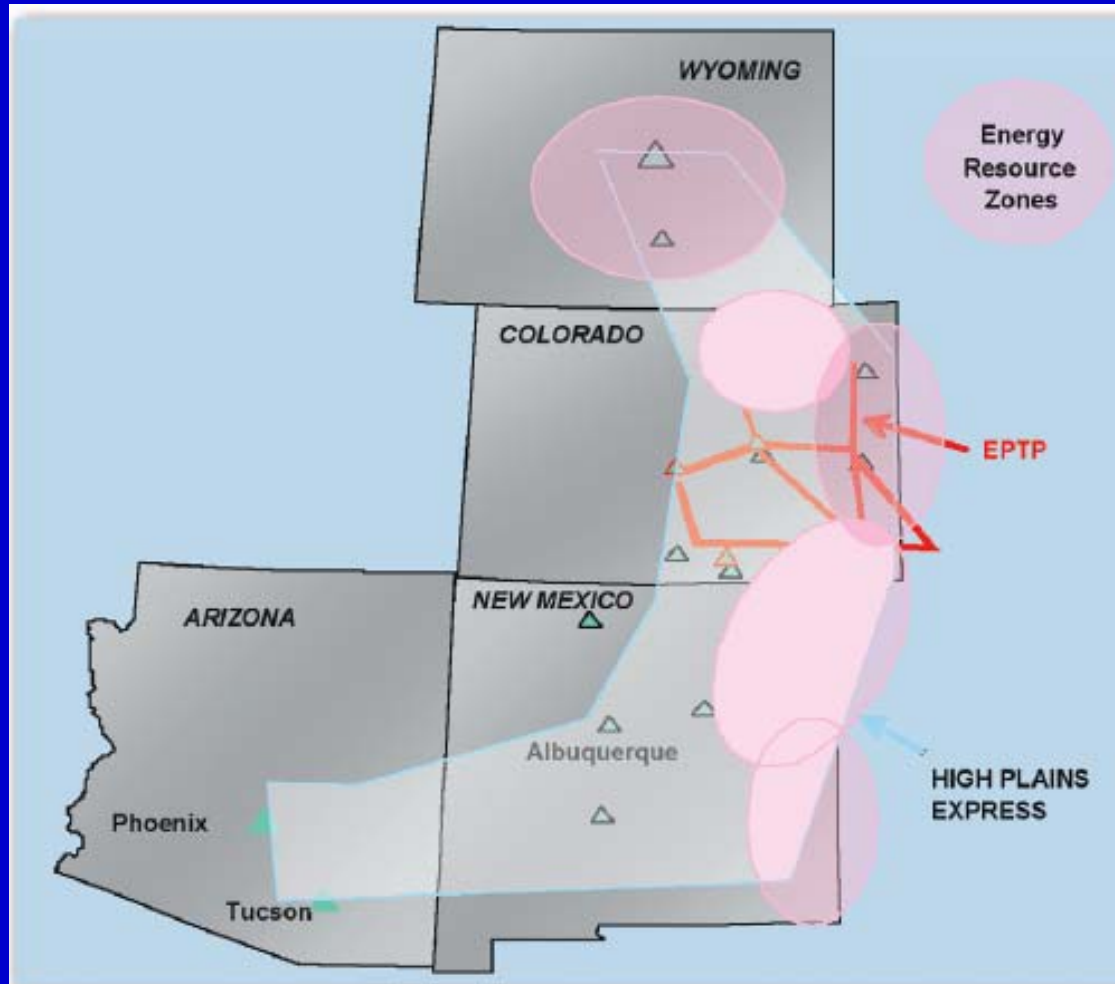
Inject twice the Wind and Solar MWs that were injected in Scenario 3

<u>Wind GDA #</u>	<u>Location</u>	<u>MW of capacity</u>
1	North-central	400
2	North-west	600
3	North-east	1500
4	East-central	200
5	East-central	2250
6	South-east	3700
7	Front Range- east	400
8	Walsenburg area	<u>200</u>
	Wind Subtotal	9300
<u>Solar GDA</u>	<u>Location</u>	<u>MW of capacity</u>
1	San Luis Valley	2000
2	South and SE of Pueblo	<u>2000</u>
	Solar Subtotal	4000
	Total Clean Energy Export scenario	13300 MW

Recommendation to CEDA

Once the transmission study results are completed, anticipated by June, CEDA could consider a representative of the CLRTPG to brief the Board on the results.

CLRTPG and the High Plains Express (HPX)



The CLRTPG and the High Plains Express (HPX)

- The HPX initiative includes participation from regional utilities, state transmission authorities, and independent transmission developers.
- The HPX Phase 1 Feasibility Study has been completed.
- Many of the parties involved in HPX are separately developing transmission projects within the HPX footprint that might ultimately be linked by or included within the HPX initiative. As such, the following parties have expressed a desire to define their potential role in the HPX initiative's development by collaborating in the following activities:

detailed transmission studies, siting and economic analysis, public policy development, stakeholder outreach, and business/ownership structure analysis

The CLRTPG and Xcel's requirements to SB100 and the FERC

DRAFT AGENDA
Stakeholder Meeting for Transmission Planning
FERC 890 1st Quarter meeting
Public Service Company of Colorado, Transmission Reliability and Assessment
March 11, 2008 8:30 a.m. – noon
PSCo Technical Services Building, 550 15th Street

PSCo Planning Process

Calendar, Methodology, Reporting, Regulatory Interaction

2008 Studies

Capital Budget (5 year studies), Interconnection Requests

- a) **Generator**
- b) **Load Service**

**Transmission Service Requests, Senate Bill 07-100, Resource Plan (CRP),
High Plains Express, Special Studies**

Regional (WECC) Update

**Planning Coordination Committee, Technical Studies Subcommittee,
System Review Work Group**

Transmission Expansion Planning Policy Committee

Subregional Update

CCPG, WestConnect

Stakeholder Questions / Comments

Action Items

There is a potential of a second COPUC Transmission Summit

- Last July the COPUC sponsored an all-day Transmission Summit in the Old Supreme Court Chamber. The meeting was jointly convened by the Colorado PUC, the Wyoming PUC, and the New Mexico PUC.
- The PUC may be considering a follow-up Transmission Summit to be held as either a one or two day event this summer.
- If the PUC decides to sponsor a Summit, GEO will discuss with the COPUC what may be an appropriate role for CEDA.



Thank You

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