



Governor's
Energy Office

Presentation to the
**Colorado Public Utilities Commission's
Information Meeting
Regarding
SB07-100**

Morey Wolfson,
Utilities Program Manager, Governor's Energy Office

January 12, 2009

Update and Briefing

- The REDI Project
 - Organizational Structure
 - Contractors
 - Advisory Board
 - Research Inputs, Research Topics
 - Timeline

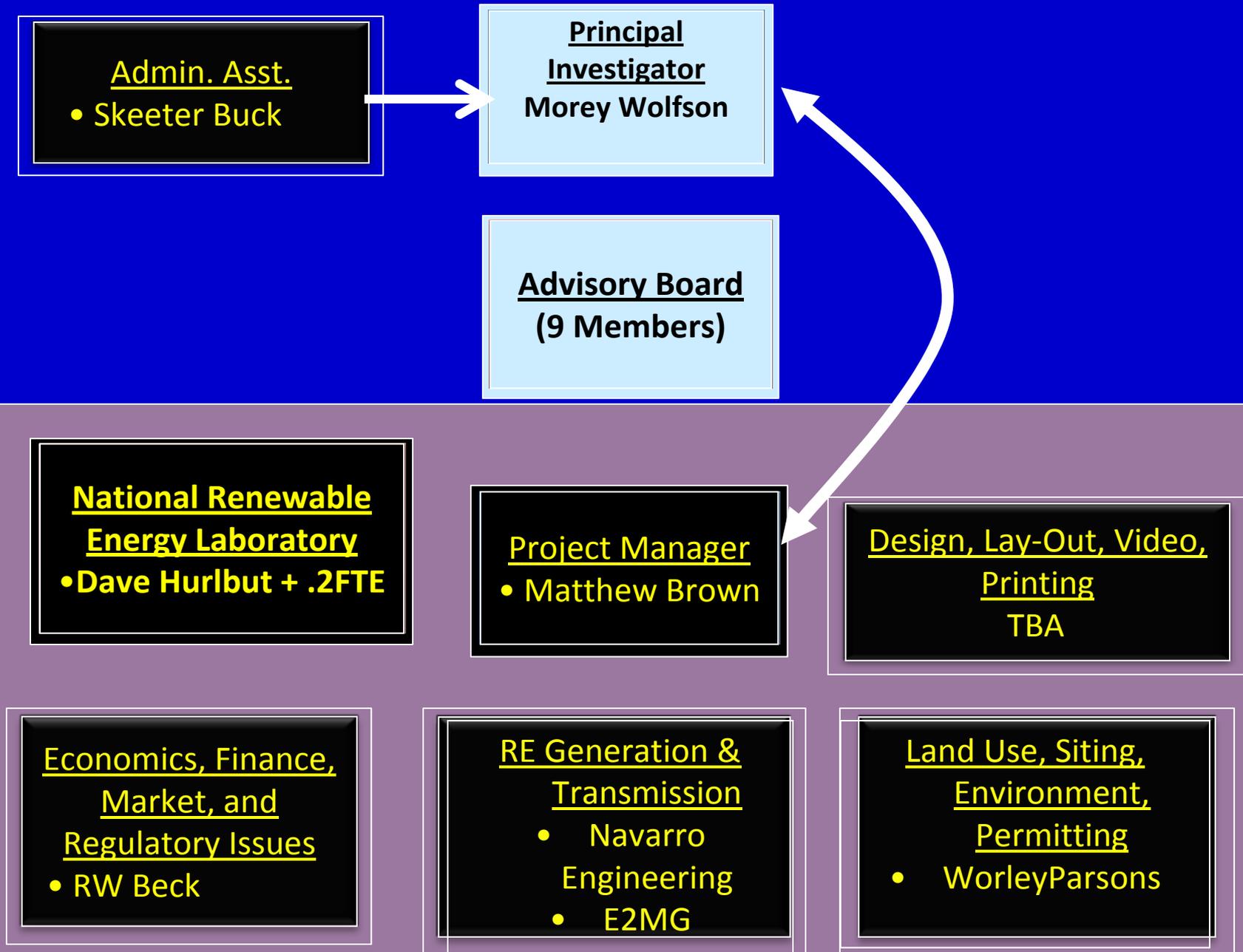
REDI – Renewable Energy Development Infrastructure

The DOE's Office of Electricity Delivery and Energy Reliability has granted the GEO an award of \$397,700.

GEO will produce a report (and potentially other media) with recommendations that will lead to the expansion of a minimum of 1,000 MW of new renewable energy in Colorado.



REDI Organizational Structure



Project Team

Project Manager - InterEnergySolutions

Matthew Brown

Technical Services Agreement: National Renewable Energy Lab

Dave Hurlbut

Economics, Markets, Regulatory, etc. – RW Beck

Bahman Daryanian

Environment, Land Use, Permitting, etc. – WorleyParsons

Loren Hettinger

Nat Beal

Mark Lunsford

Generation and Transmission – Navarro Engineering; E2MG

Saeed Barhaghi

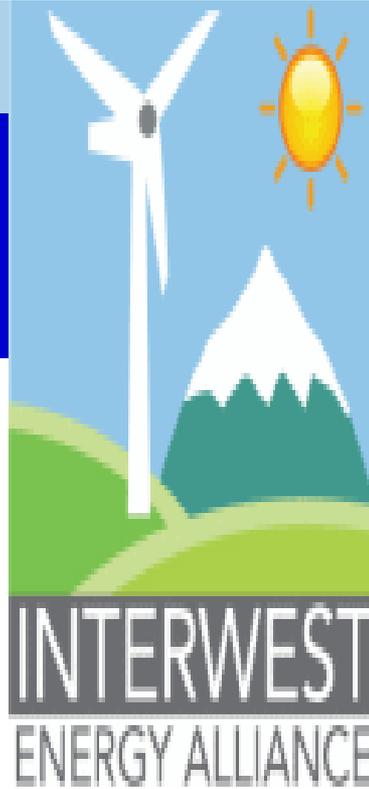
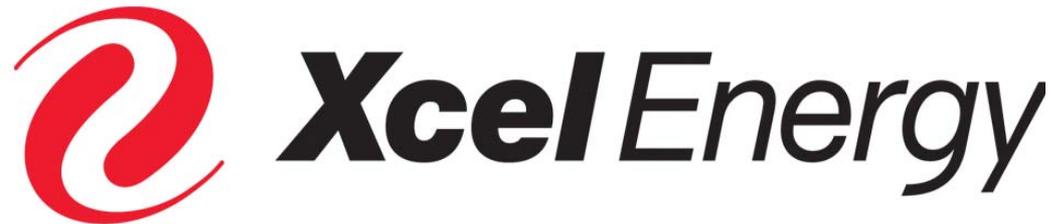
Mike Roluti

The REDI Advisory Board

**WESTERN RESOURCE
ADVOCATES**

**Colorado Clean Energy
Development Authority**

Colorado
Public
Utilities
Commission Staff



REDI Advisory Board

Eugene Camp, representing the Staff of the
Colorado Public Utilities Commission

Craig Cox, representing Interwest Energy Alliance

Tom Darin, representing Western Resource Advocates

Tony Frank, representing the Rocky Mountain Farmers
Union

Rick Gilliam, representing the Solar Alliance

Ethnie Groves, representing Xcel Energy

Ron Lehr, representing the American Wind Energy
Association

Dill Ramsay, representing Tri-State Generation and
Transmission Association

Lee White, representing
the CO Clean Energy Development Authority

Research Inputs

The report will build upon existing activities and products, including, but not limited to:

- Colorado Public Utilities Commission's Transmission Investigatory Docket
- WGA's Transmission Permitting Protocol
- Colorado Senate Bill 2007-100 Process
- Colorado Senate Bill 2007-091 Report
- Interwest Energy Alliance analyses
- American Wind Energy Association

Research Inputs

- WGA's Western Renewable Energy Zones Initiative
- **CCPG Long Range Transmission Planning Study**
- NREL's Western Wind and Solar Integration Study
- High Plains Express Phase I and II Analyses
- DOE's Transmission Reliability Program
- Western Resource Advocates "Smart Lines"

REDI- Research Topics

■ **Baseline Assessments**

Summarize and analyze financial, regulatory, market, and policy frameworks that define and influence Colorado's renewable energy and transmission structure.

REDI- Research Topics

■ Renewable Energy Generation and Transmission

Define existing infrastructure, review long range plans, propose optimum approaches to achieve REDI's primary goal of maximizing the amount of renewable generated power on the grid.

REDI –Research Projects

■ Financial, market analysis

Define and analyze existing approaches to financing transmission projects, investigate viability of new opportunities, including increased cost sharing and the potential role of CEDDA or federal financing and/or refinancing.

REDI –Research Projects

- Regulatory policies and utility practices

Analyze existing regulatory and utility policy frameworks.

Determine whether new opportunities may be available that could expedite cost-effective transmission optimization in Colorado.

- Siting, permitting

Analyze existing frameworks, offer recommendations for streamlined review and permitting processes.

National Transmission Grid Study

The Honorable Spencer Abraham
Secretary of Energy



U.S. Department
of Energy

May 2002

USDOE

National Transmission
Grid Study

May 2002

108 pages

Clean and Diversified
Energy Initiative

Western Governors'
Association's

Wind Task Force Report

March 2006

131 pages



WESTERN GOVERNORS' ASSOCIATION



Wind Task Force Report

March 2006

Integrating Wind into Transmission Planning: The Rocky Mountain Area Transmission Study (RMATS)

Preprint

Roger Hamilton
West Wind Wires

Ron Lehr
American Wind Energy Association

Dave Olsen
Center for Energy Efficiency and Renewable Technologies

John Nielsen
Western Resource Advocates

Tom Acker and Michael Milligan (Consultant)
National Renewable Energy Laboratory

Howard Geller
Southwest Energy Efficiency Project

*To be presented at the Global WindPower Conference
Chicago, Illinois
March 29–31, 2004*



NREL

National Renewable Energy Laboratory
1617 Cole Boulevard, Golden, Colorado 80401-3393
303-275-3000 • www.nrel.gov

Operated for the U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
by Midwest Research Institute • Battelle

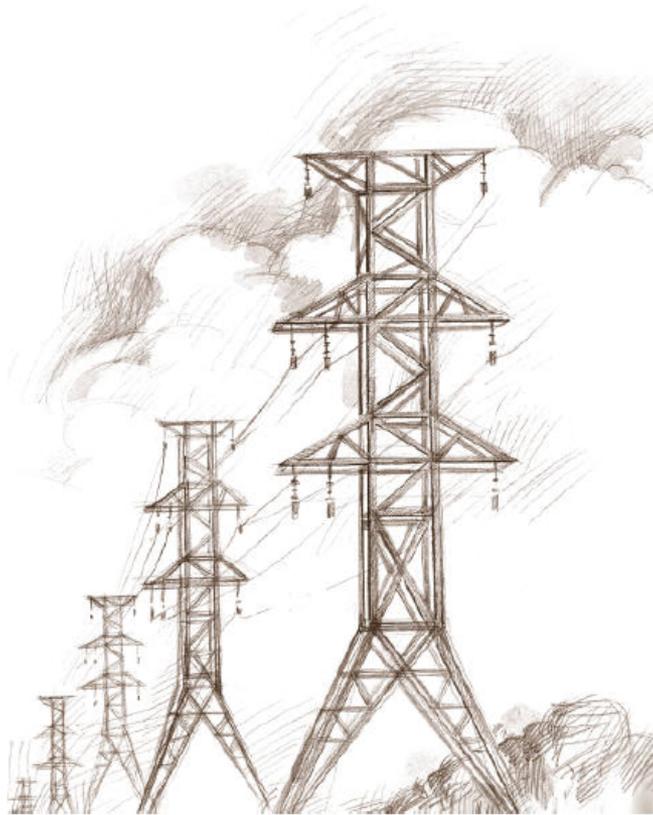
Contract No. DE-AC36-99-GO10337

The Rocky Mountain Area
Transmission Study

March 2004

26 pages

**Report of the Task Force on Reliable Electricity
Infrastructure**



November 1, 2006

Colorado Public
Utilities Commission

Report to the
Colorado General Assembly

November 2006

35 pages



Report of the
Transmission Task Force

May 2006

Western Governors' Association
Clean and Diversified
Energy Initiative



Western Governors'
Association's

Transmission Task Force
Report

May 2006

85 pages



U.S. Department of Energy

Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy
is clean, abundant, reliable, and affordable



20% Wind Energy by 2030

Increasing Wind Energy's Contribution to
U.S. Electricity Supply

July 2008

USDOE Report

20% Wind Energy by 2030

July 2008

248 pages

SMART LINES

Transmission for the
Renewable Energy Economy



Western Resource Advocates

2008

24 page report

COLORADO Wind Resource

- Wind GDA
- 50 meter Wind Power Class 7
- 50 WPC6
- 50 WPC5
- 50 WPC4
- 50 WPC3
- 50 WPC2
- Interstate Highways
- Transmission

GDA 1
4 GW

GDA 2
6 GW

GDA 3
15 GW

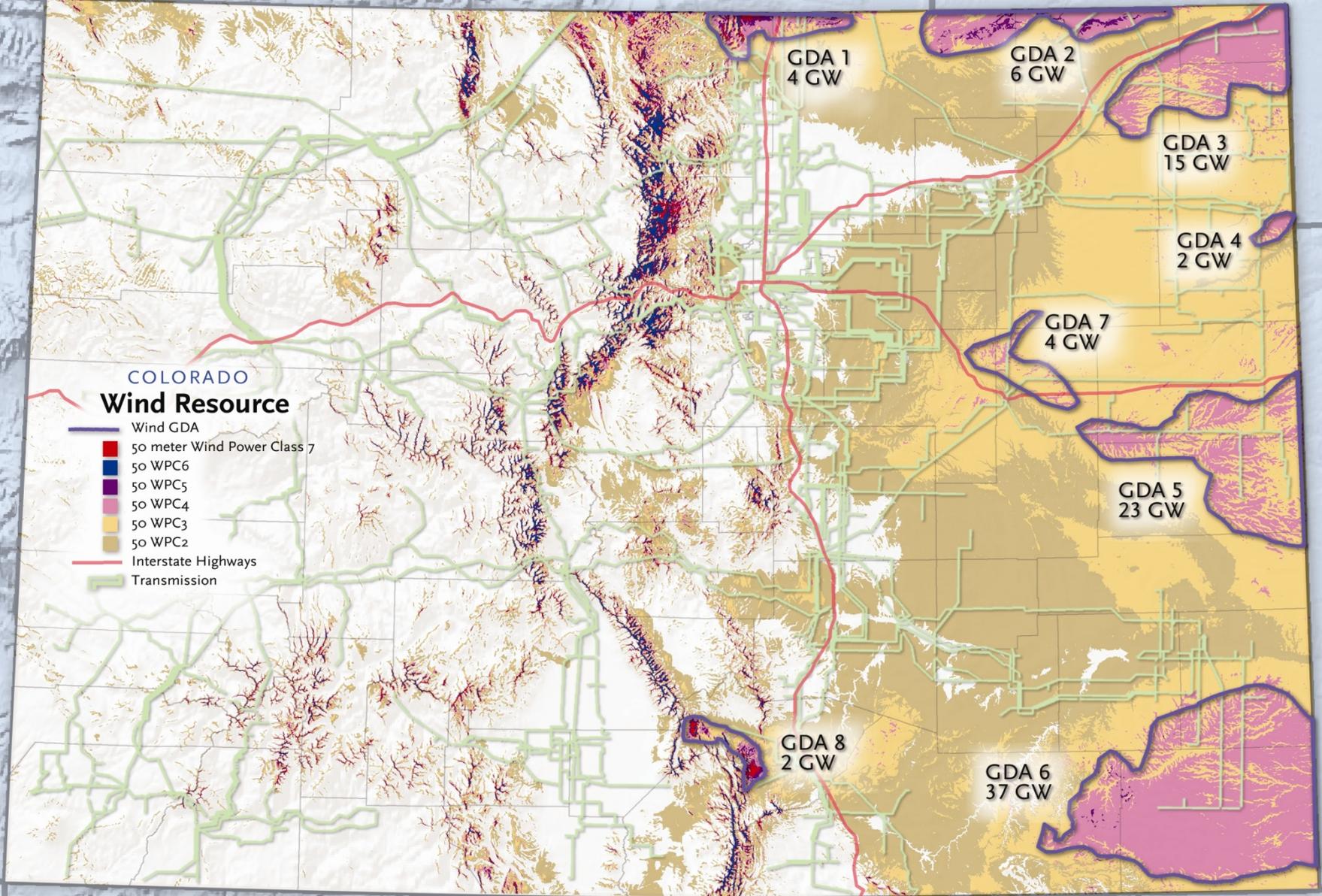
GDA 4
2 GW

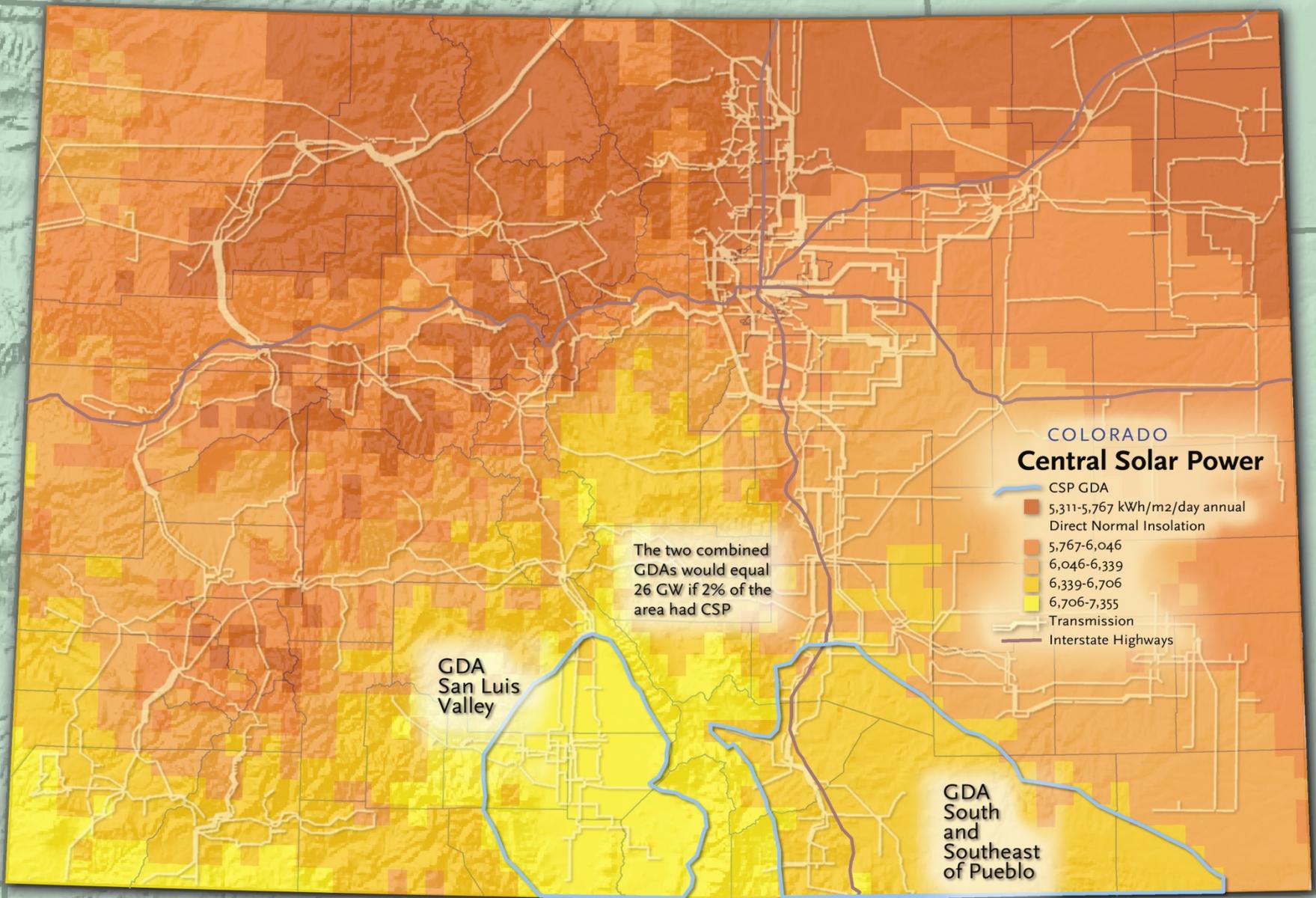
GDA 7
4 GW

GDA 5
23 GW

GDA 8
2 GW

GDA 6
37 GW





COLORADO
Central Solar Power

- CSP GDA
- 5,311-5,767 kWh/m²/day annual Direct Normal Insolation
- 5,767-6,046
- 6,046-6,339
- 6,339-6,706
- 6,706-7,355
- Transmission
- Interstate Highways

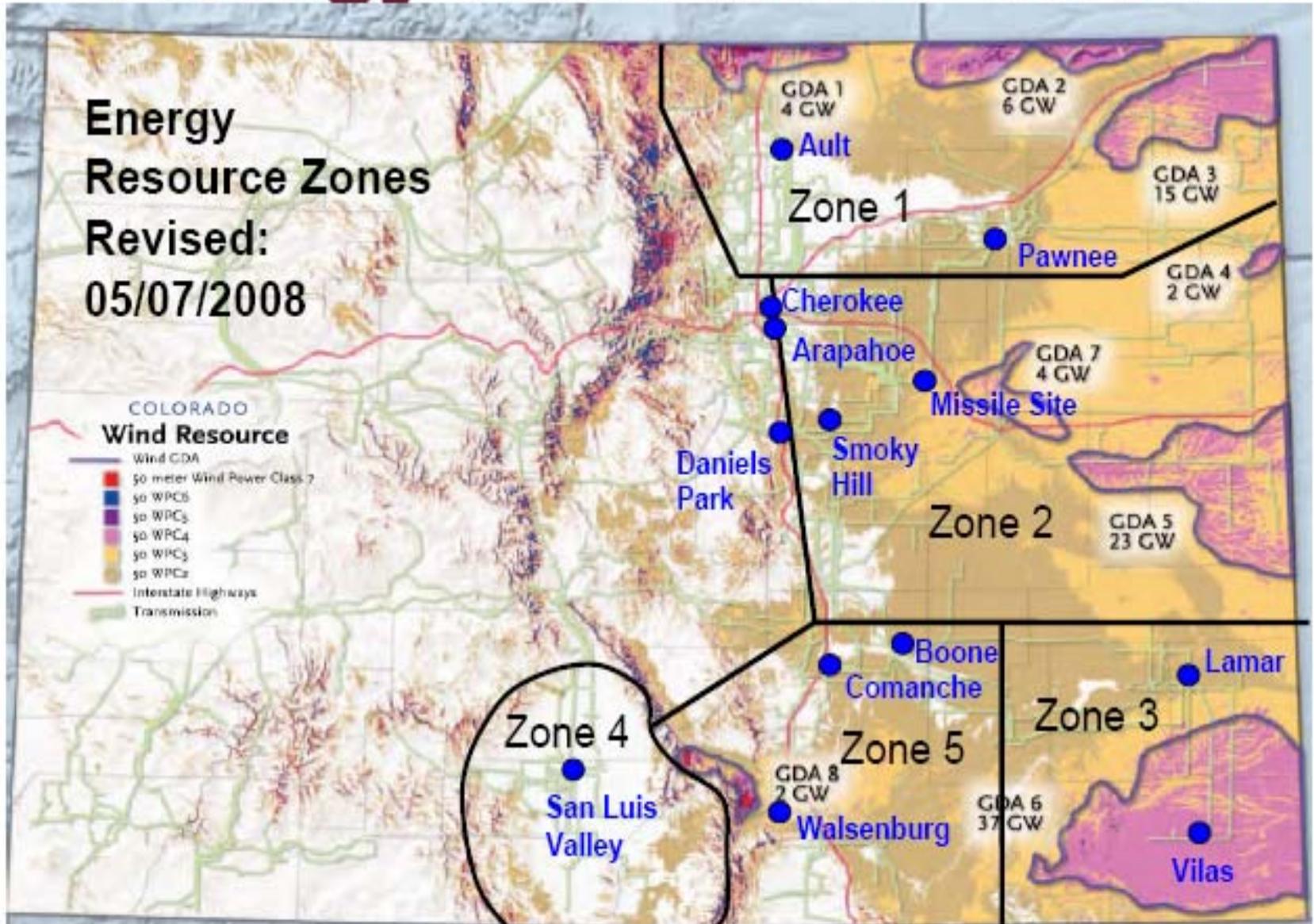
The two combined GDAs would equal 26 GW if 2% of the area had CSP

GDA San Luis Valley

GDA South and Southeast of Pueblo

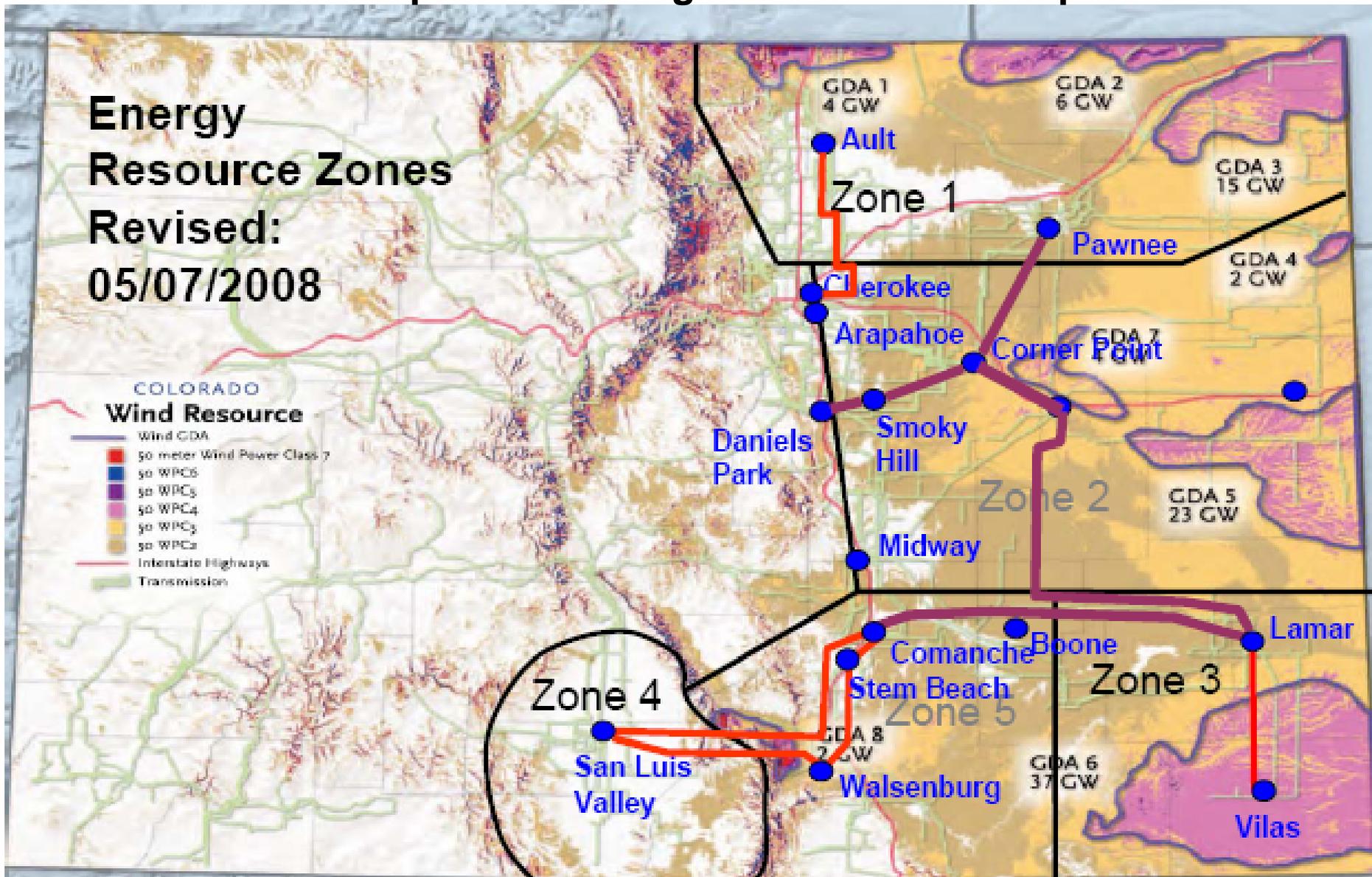
Xcel Energy's SB100 Preliminary Approach

Energy Resource Zones



Overall Plan

Xcel Energy's SB100 Preliminary Approach
- incorporates findings from the SB91 Report



Primary Audiences

Members of the Colorado General Assembly
Colorado local elected officials (including county commissioners and local governments)
The Colorado Clean Energy Development Authority
Colorado investor-owned and public utilities
Renewable energy developers
The Colorado Public Utilities Commission
The Western Governors' Association's Western Renewable Energy Zone Project
The U.S. Department of Energy
The general public

REDI – Timeline

- **November 2008**

Principle Investigator

- convened Advisory Board
- retained Project Team
- developed Scope of Work

- **December 2008**

- Presented overview to the CO Coordinated Planning Group
- Central Desktop operational
- Project Team meetings held
- PT meets with PUC Staff
- Research initiated

REDI – Timeline

- **January**

1/5/-8 - PI and PM met individually with contractors to refine scope of work

1/8: PT met as a group

1/12: Advisory Board meets

1/12: PT attends PUC meeting re SB100

1/20: PT will meet, prepare for 1/22

1/22: REDI presents to CEDA Board

REDI – Timeline

• February

- Contractors conduct interviews, research, preparing preliminary drafts.
- Advisory Board meets either Feb. 9 or 16.
 - Reviews preliminary drafts.

REDI – Timeline

• March

- Contractors conduct interviews, research, preparing preliminary drafts
- Advisory Board meets – date TBD
 - Reviews preliminary drafts.

REDI – Timeline

- April

- Project Team completes preliminary final draft

- Advisory Board meets
 - date TBD

- Reviews preliminary drafts.

- **Early May**

- Advisory Board reviews preliminary draft, recommends changes

REDI – Timeline

- Until the end of June 2009

Project Team works on changes, finalizes drafts.

Program Manager and Principle Investigator produce final draft

REDI – Timeline

- **Early July**

Advisory Board provides final review of the report.

Report sent to graphic lay out and printer

REDI – Timeline

- July 30

Report is published,
submitted to DOE,
distributed to key
stakeholders

- Summer

Other media
prepared

(PPTs, DVD)



Governor's
Energy Office

Thank you for your help

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