

Colorado Public Utilities Commission

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Colorado Public Utilities Commission

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Greetings to our friends in Jordan

Thank you for
hosting us on
this visit.



PUC Structure: Commissioners

- Three Commissioners
- Appointed by the Governor
- Confirmed by majority vote of State Senate
- Serve four-year teams – may be reappointed
- No more than two Commissioners from one political party
- Judicial functions and legislative functions



Predecessor Agency: The Railroad Commissioner



The Commissioners



Matt Baker



Ron Binz



Jim Tarpey

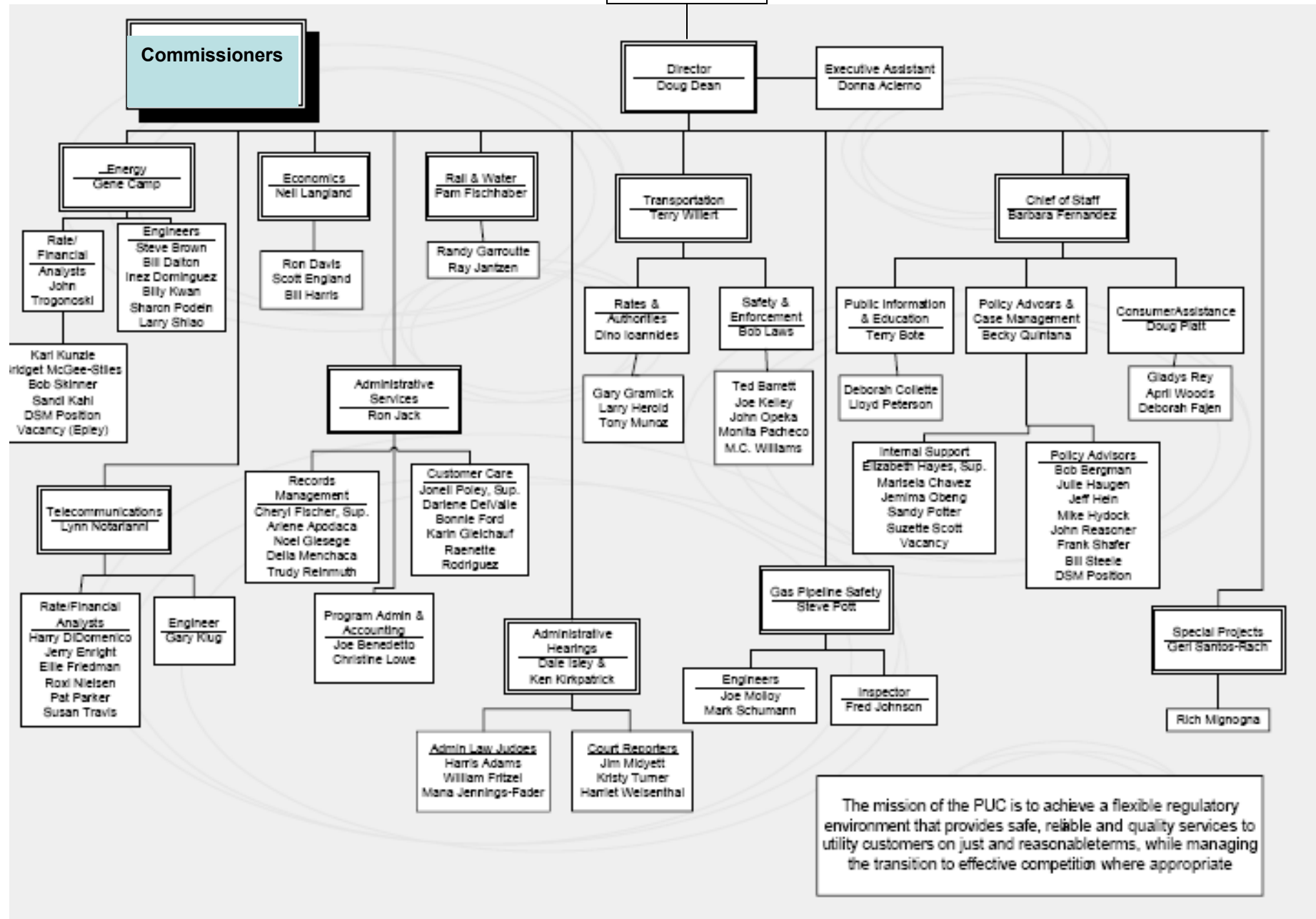


PUC Structure: 10 Sections

- Policy Advisors & External Affairs
- Energy
- Telecommunications
- Transportation
- Research & Emerging Issues
- Economics
- Rail Safety & Water
- Gas Pipeline Safety
- Administrative Hearings
- Administrative Services



DORA

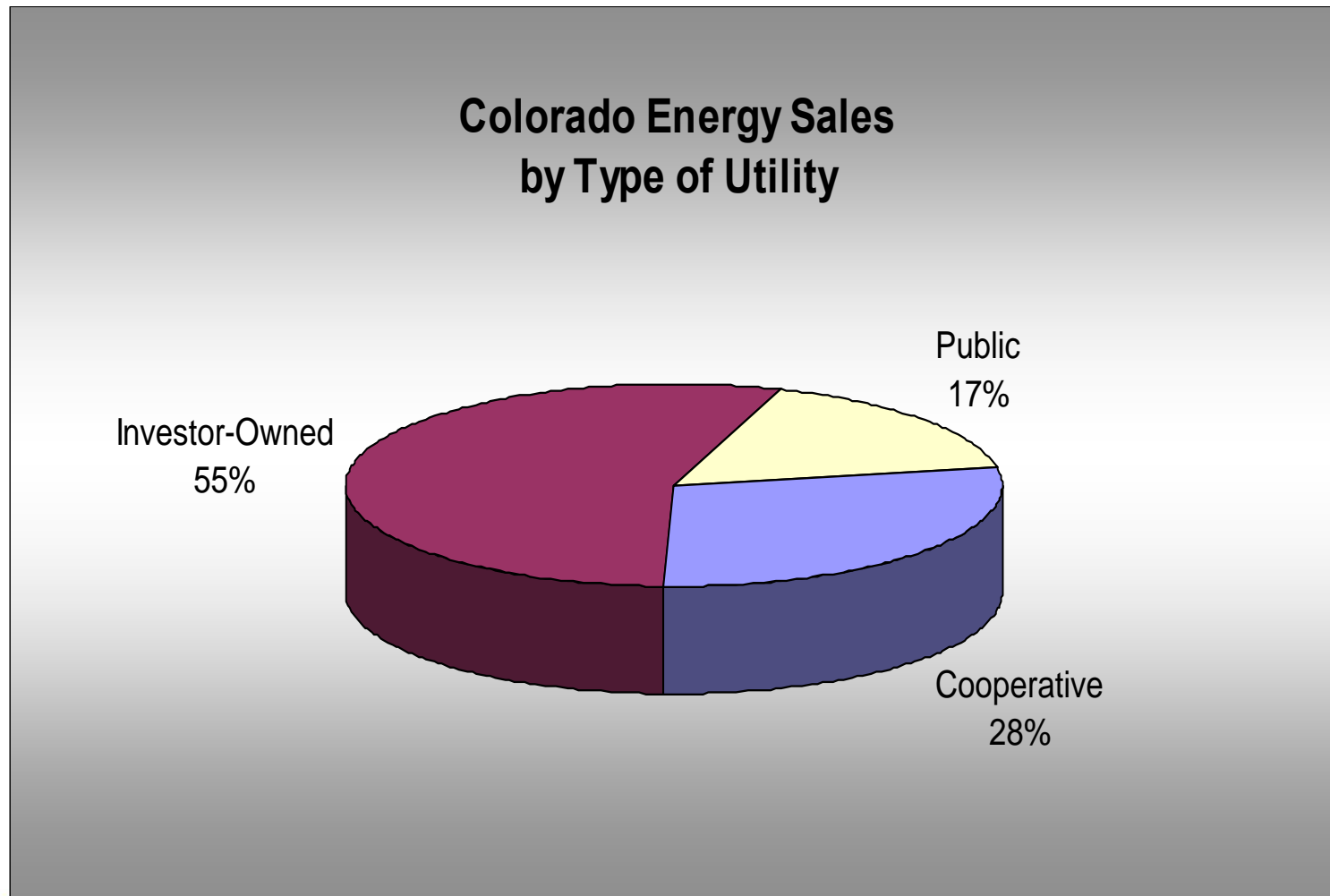


What Do We Regulate?

- Investor-owned electric utilities **60%**
 - Investor-owned natural gas utilities **15%**
 - Intrastate natural gas pipelines **1%**
 -
 - Some telecommunications carriers & services **10%**
 - Passenger transportation **10%**
 - Railroad crossings
 - Investor-owned water utilities
 - Pipeline safety
 - Relay Service for the hearing impaired
- } **4%**



Types of Colorado Electric Utilities



The Challenges We Face

- Energy Supply
- Energy Efficiency
- Consumer Prices
- Climate Change



Our State Energy Strategy

- **Boost Energy Efficiency**
 - Customer: education
 - Utility: engagement
 - Rate structure changes
 - Smart grid test bed in Boulder, Colorado
- **Stress renewable resources**
 - State Renewable Portfolio Standard
 - Regulators and utilities with a commitment to addressing climate change
 - Progressive resource planning at Commission
 - Healthy renewables industry
- **Advanced generation development**
 - Research and demonstration for carbon sequestration
 - CAES and other storage strategies

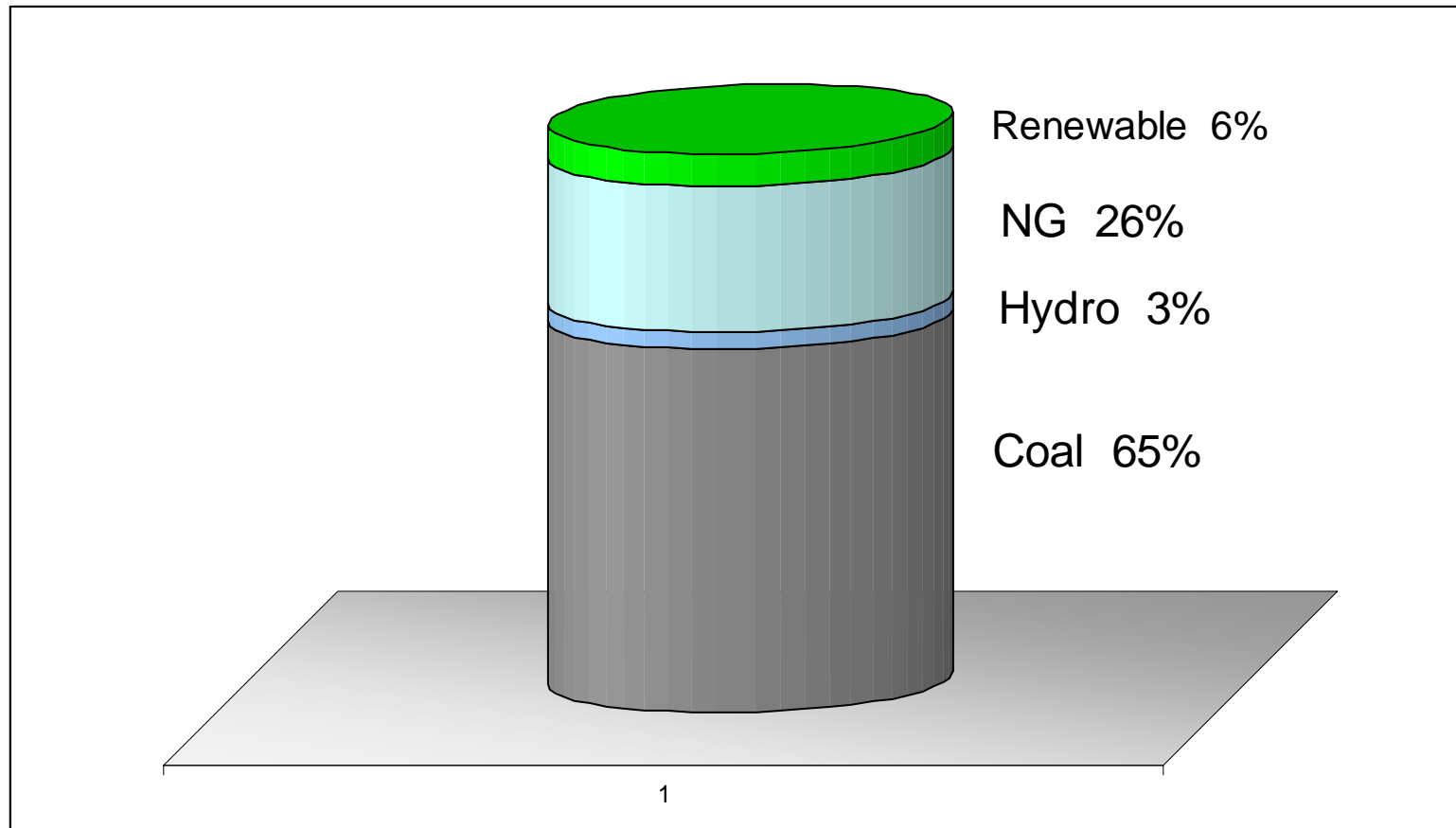


Colorado's Balanced Approach

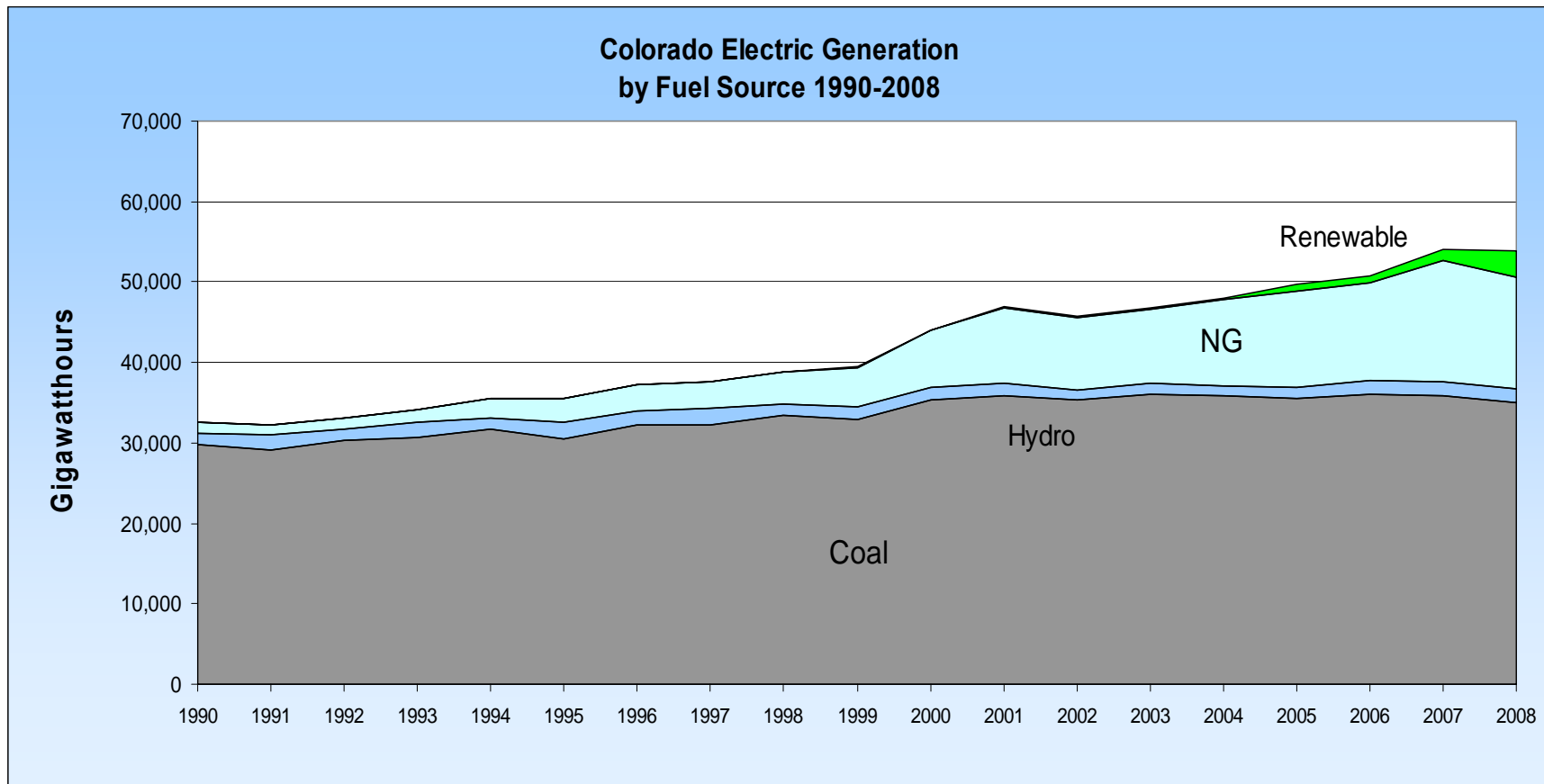
- Coal producing state (#8 of 50 states in US)
- Natural gas producing state (#7 of 50 states)
- Substantial wind and solar resources
- Moderate electric rates
- Governor with a focus on the "New Energy Economy"



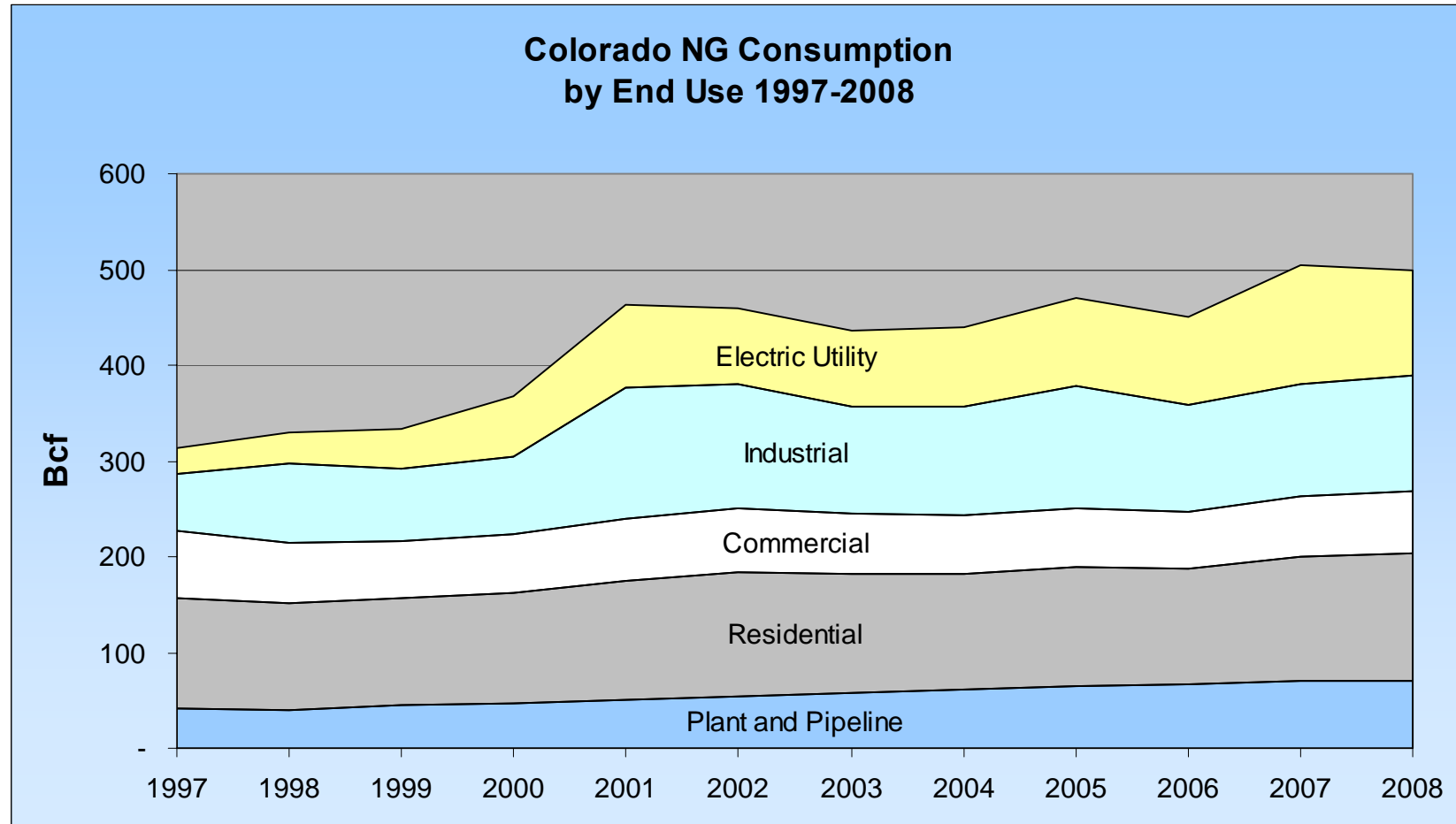
How Colorado Generates Electricity (2007)



Electric Generation Fuels in Colorado 1990-2008

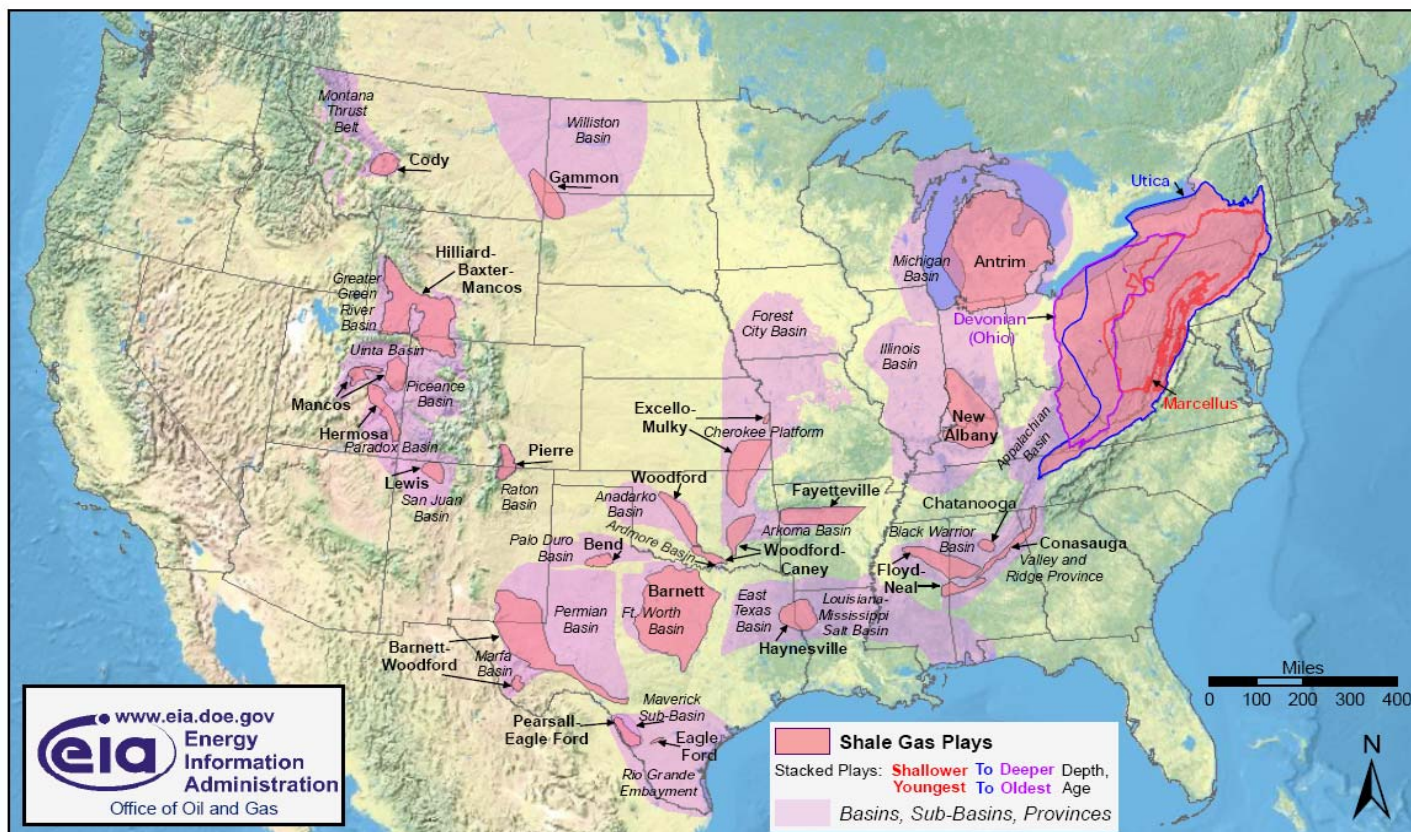


How Colorado Uses Natural Gas



Potential New Natural Gas Supplies

Shale Gas Plays, Lower 48 States



Map Date: March 16, 2009 Data Sources: Published studies



Colorado Approach to Electric Resource Planning

-- Resource Planning --

Old Rule

- ~~“Least Cost Planning”~~
- ~~Fuel Neutrality~~
- ~~Utility models new portfolio~~
- ~~Utility selects bid resources~~

New Rule

- “Resource Planning”
- Clean Energy Preference
- Independent Evaluator
- Optional Post-bid Review
- New DSM emphasis



The Challenges We Face

- Energy Supply
- Energy Efficiency
- Consumer Prices
- Climate Change



Boosting Energy Efficiency

- Utility: Engagement
- Customer: Education
- Regulation: Make rate structure changes
- New Development: “Smart grid”



Utility Engagement

- Energy Efficiency goals in legislation
- Recent Commission rules establishing:
 - Bonus mechanism
 - Expedited cost recovery
- Tie-in EE to utility resource planning
- Overall: utility should make efficiency a business



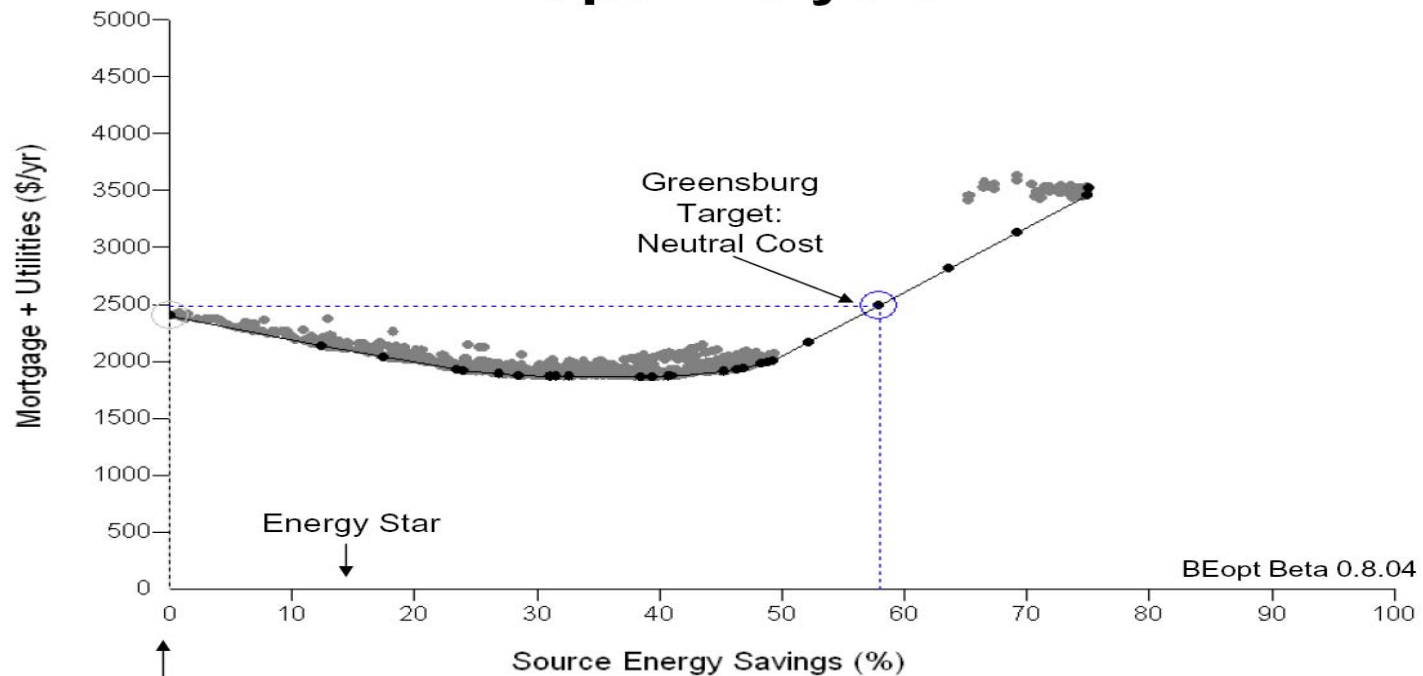
Customer Education

**Two 75-watt Compact Fluorescent Lights
will reduce CO₂ emissions by
One Metric Ton over their lifetime**



Energy Efficiency in Housing

Neutral Cost Point: Greensburg BEopt Analysis

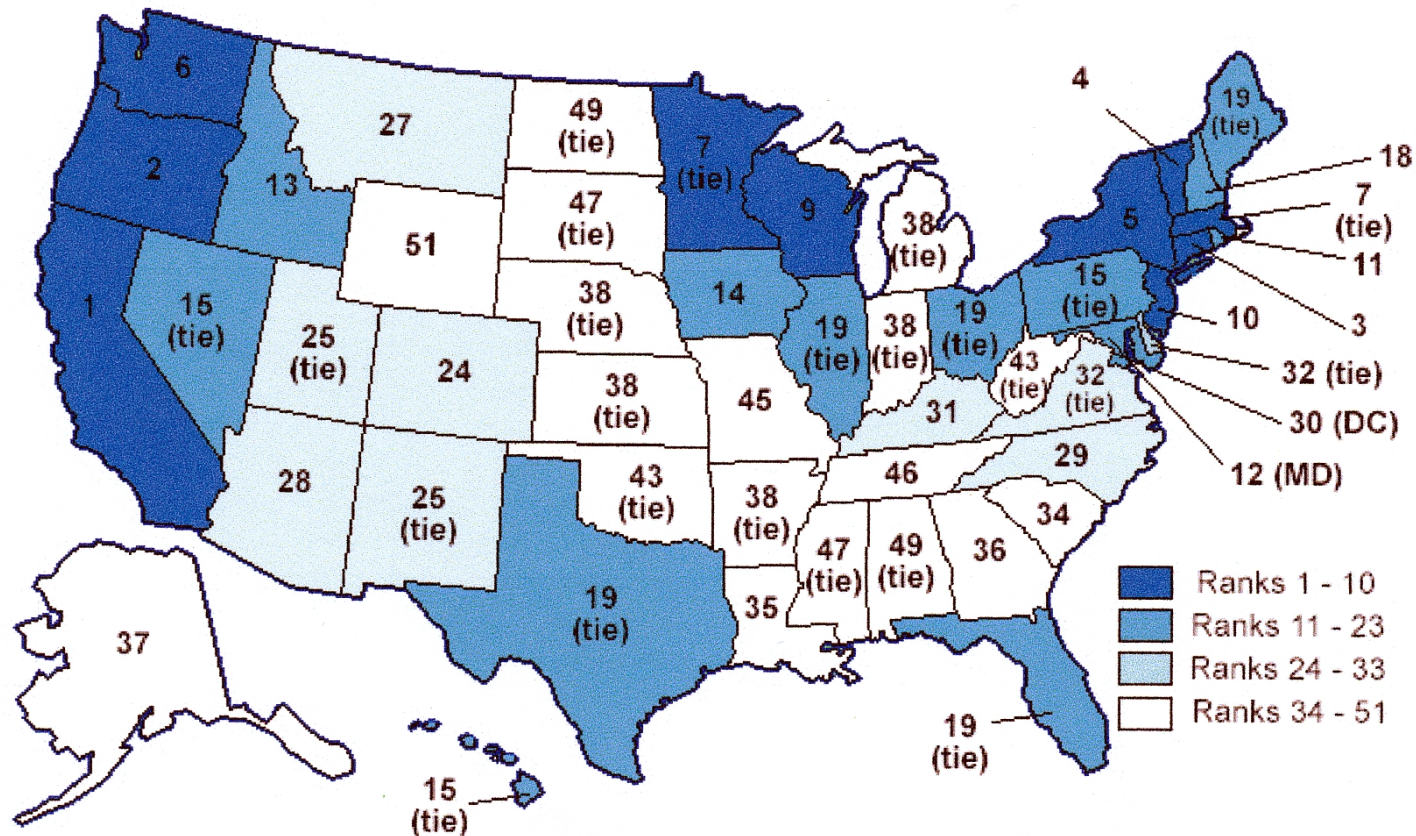


IECC 2003
(2000 ft², 2-story, 16% window to floor area ratio, unconditioned basement)

 **NREL** National Renewable Energy Laboratory



Colorado's Energy Efficiency Ranking



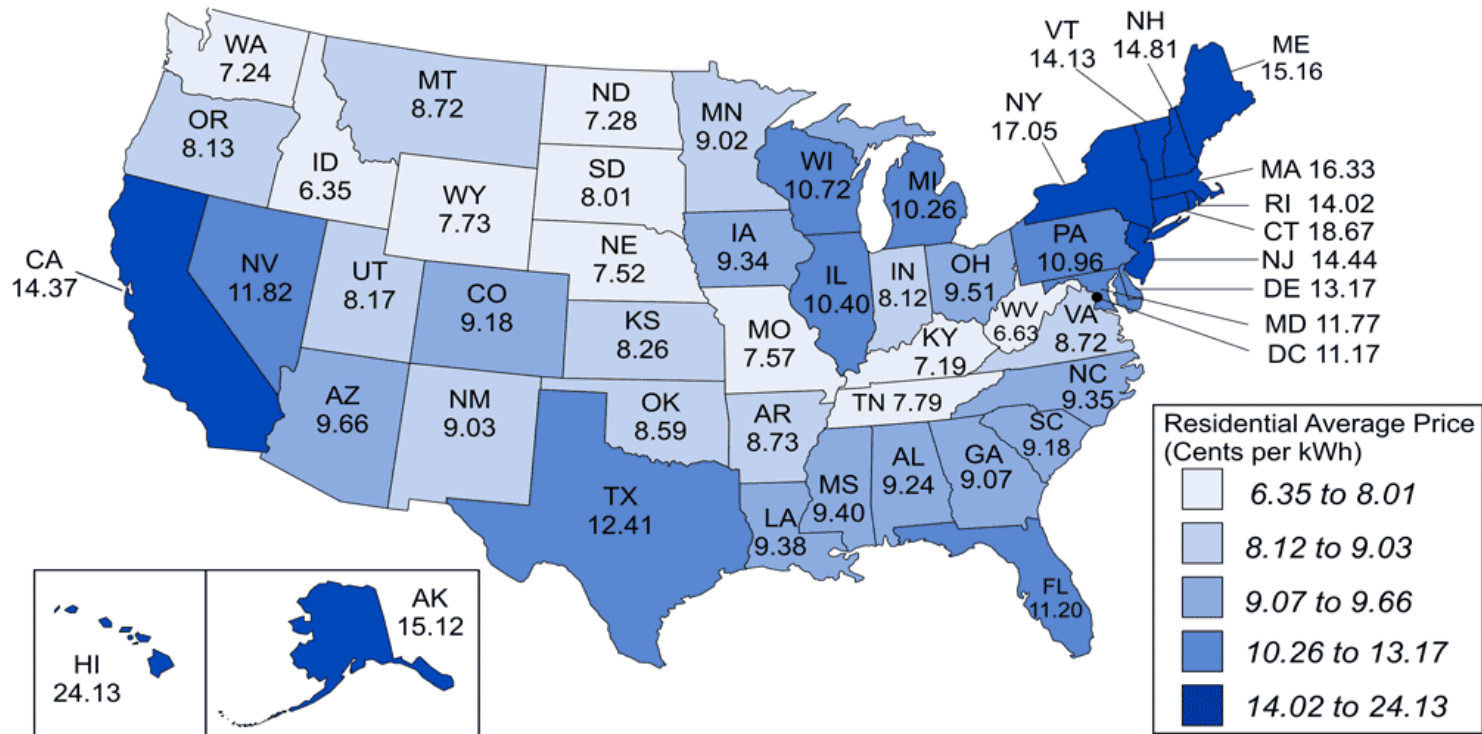
The Challenges We Face

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U.S. Residential Electric Rates

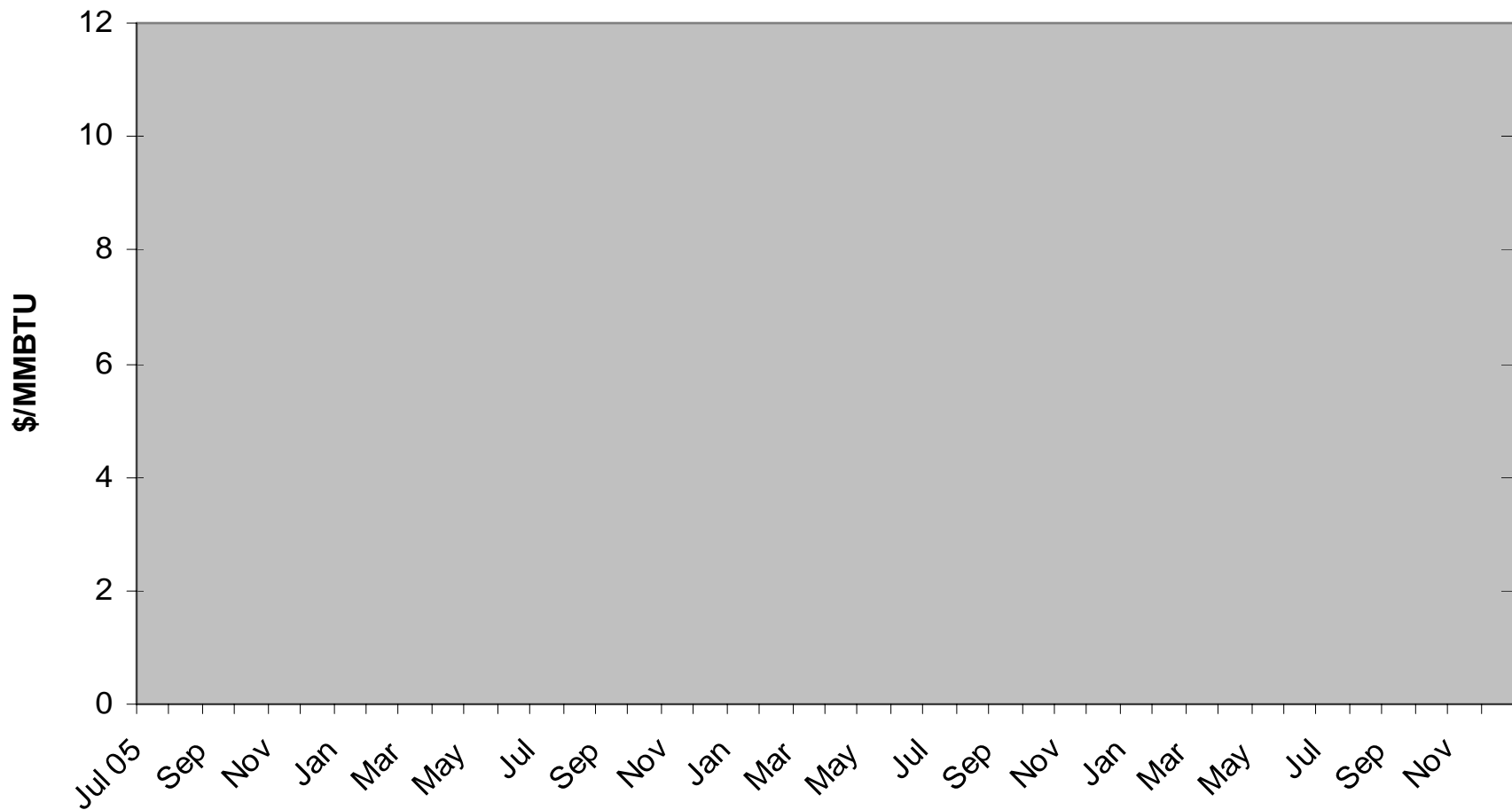
The U.S. average residential retail price of electricity was **10.64 cents per kilowatthour in 2007.**



Source: Energy Information Administration, Form EIA-826, "Monthly Electric Sales and Revenue with State Distributions Report."



NG Delivered for Electric Generation Colorado 7/05 to 12/08



The Challenges We Face

- Energy Supply
- Energy Efficiency
- Consumer Prices
- Climate Change

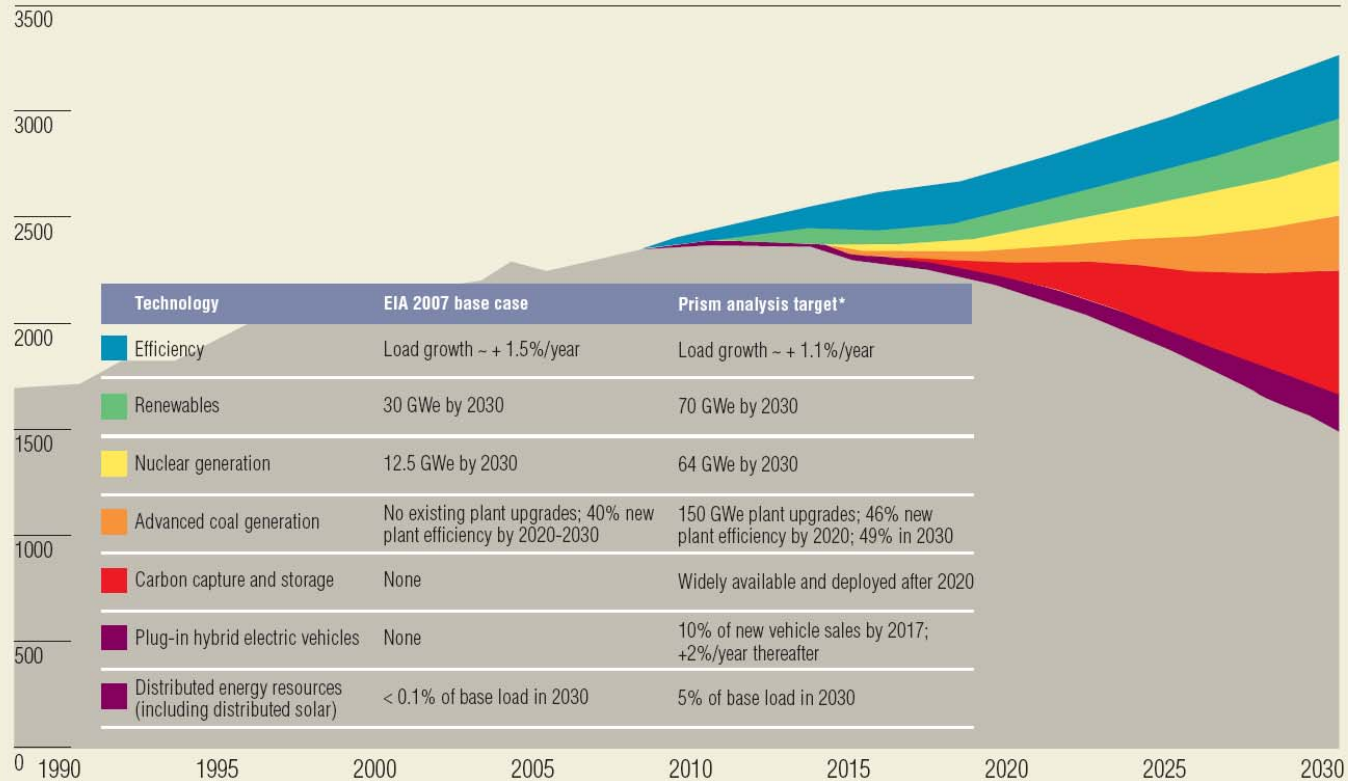


- 
- Reduce Colorado's carbon emissions by 20% below 2005 levels by 2020
 - Reduce Colorado's carbon emissions by 80% below 2005 levels by 2050

EPRI Prism Analysis (2008)

TABLE 1
U.S. ELECTRIC SECTOR

CO₂ emissions
(million metric tons)



* Prism analysis targets do not reflect economic or potential regulatory and siting constraints.



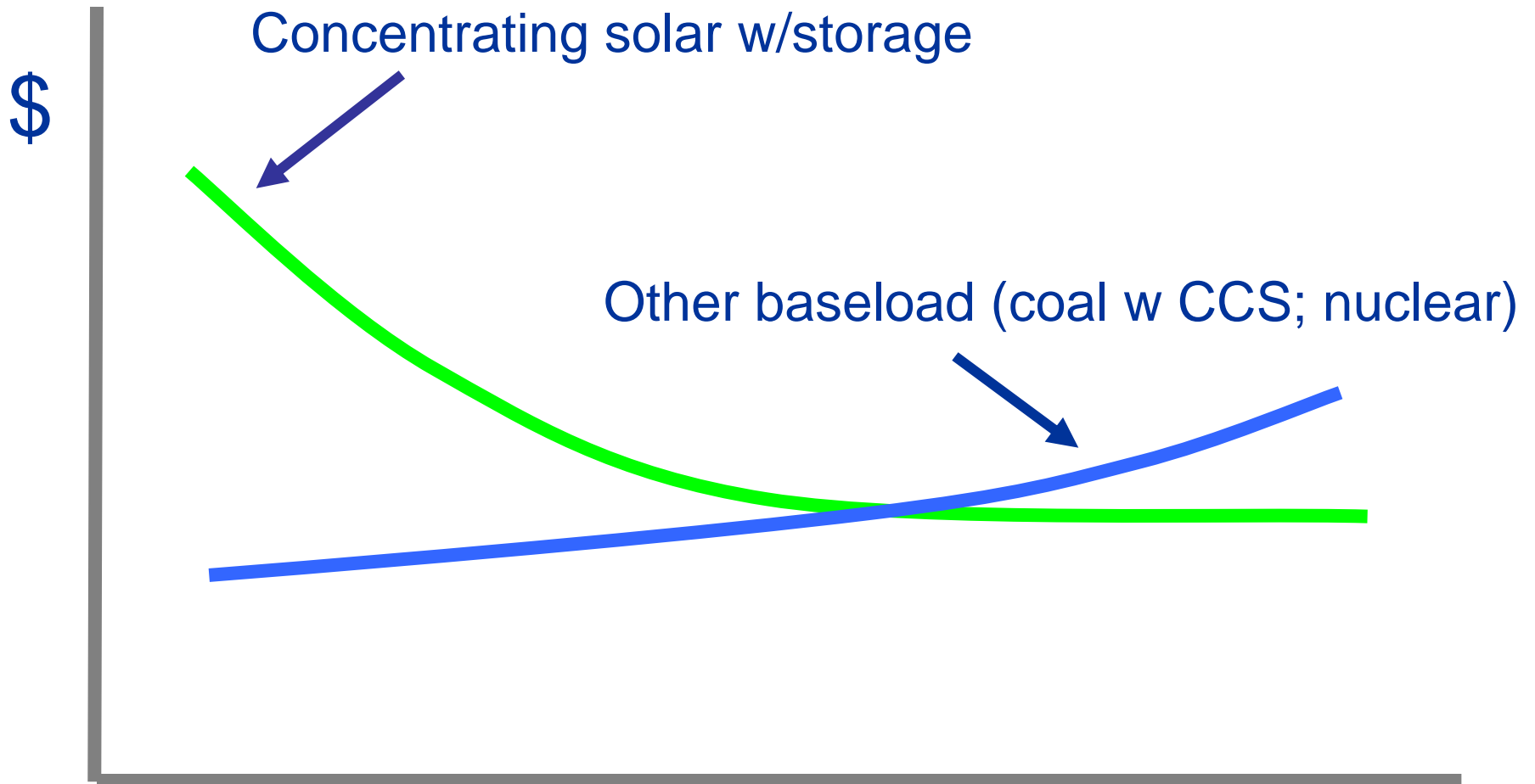
PUC's 2008 ERP Decision for XcelEnergy

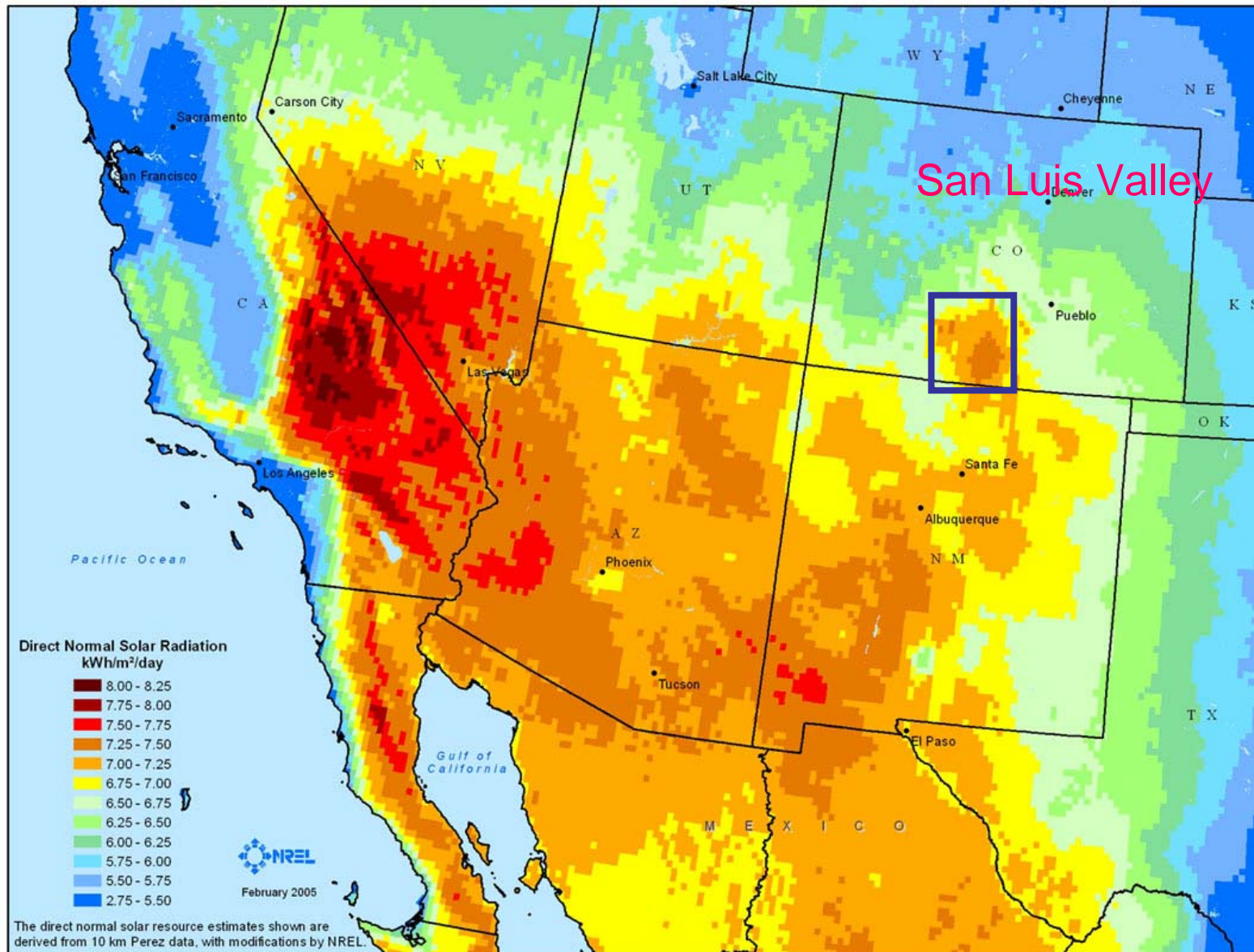
Major Decision Items

- Affirmed commitment to competitive bidding for resources
- Approved closure of two coal plants
- Approved large solar projects (200 - 600 MW)
- Continued growth of wind
- Assumed future CO₂ price in modeling (\$20/ton + 7% growth)



Concentrating Solar in Colorado

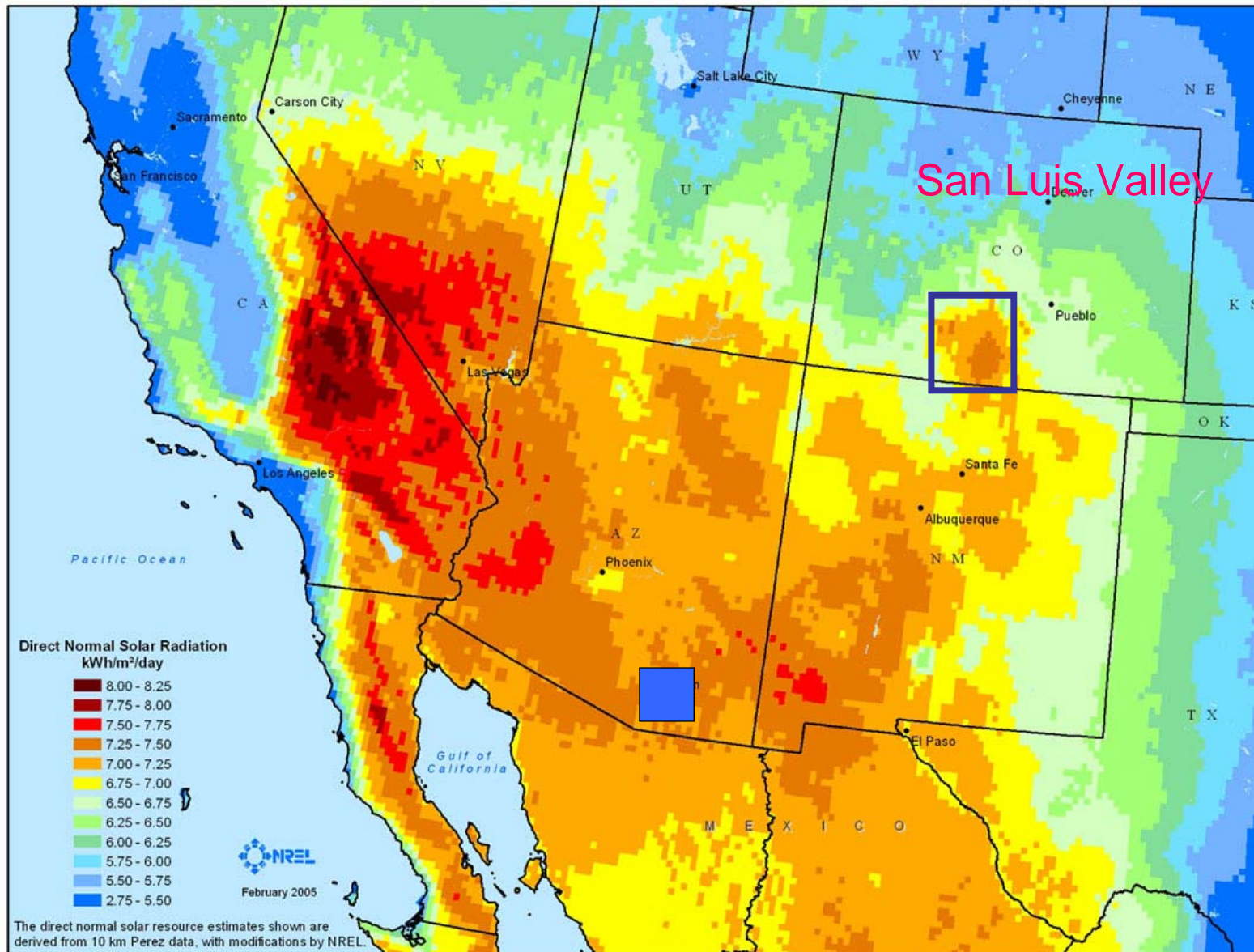




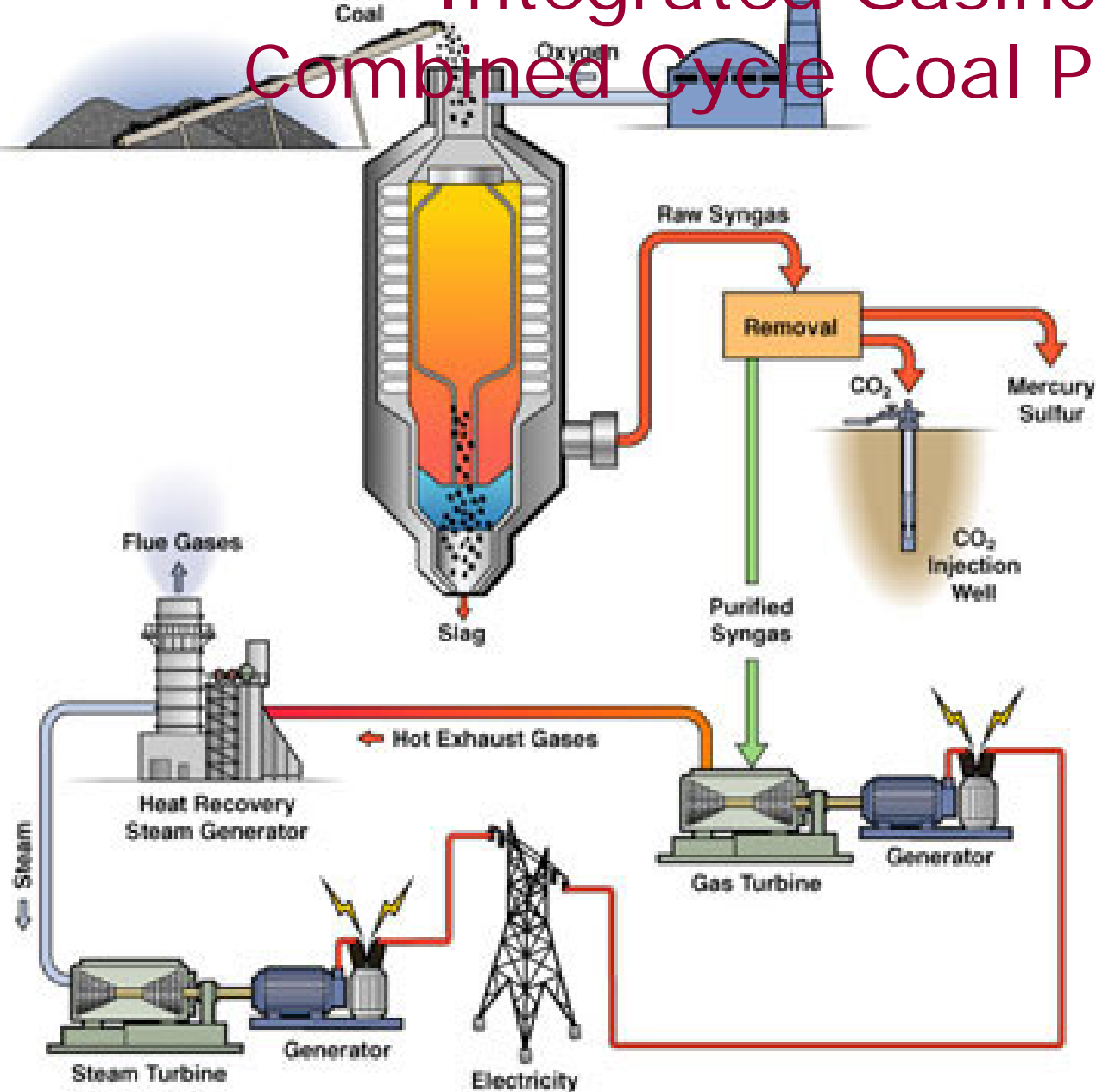
Solar Thermal Electric Density

- Use: 100 MW(ac)/mile²
- Colorado Peak Integrated Demand: 11GW
- Result: 110 mile² required land area

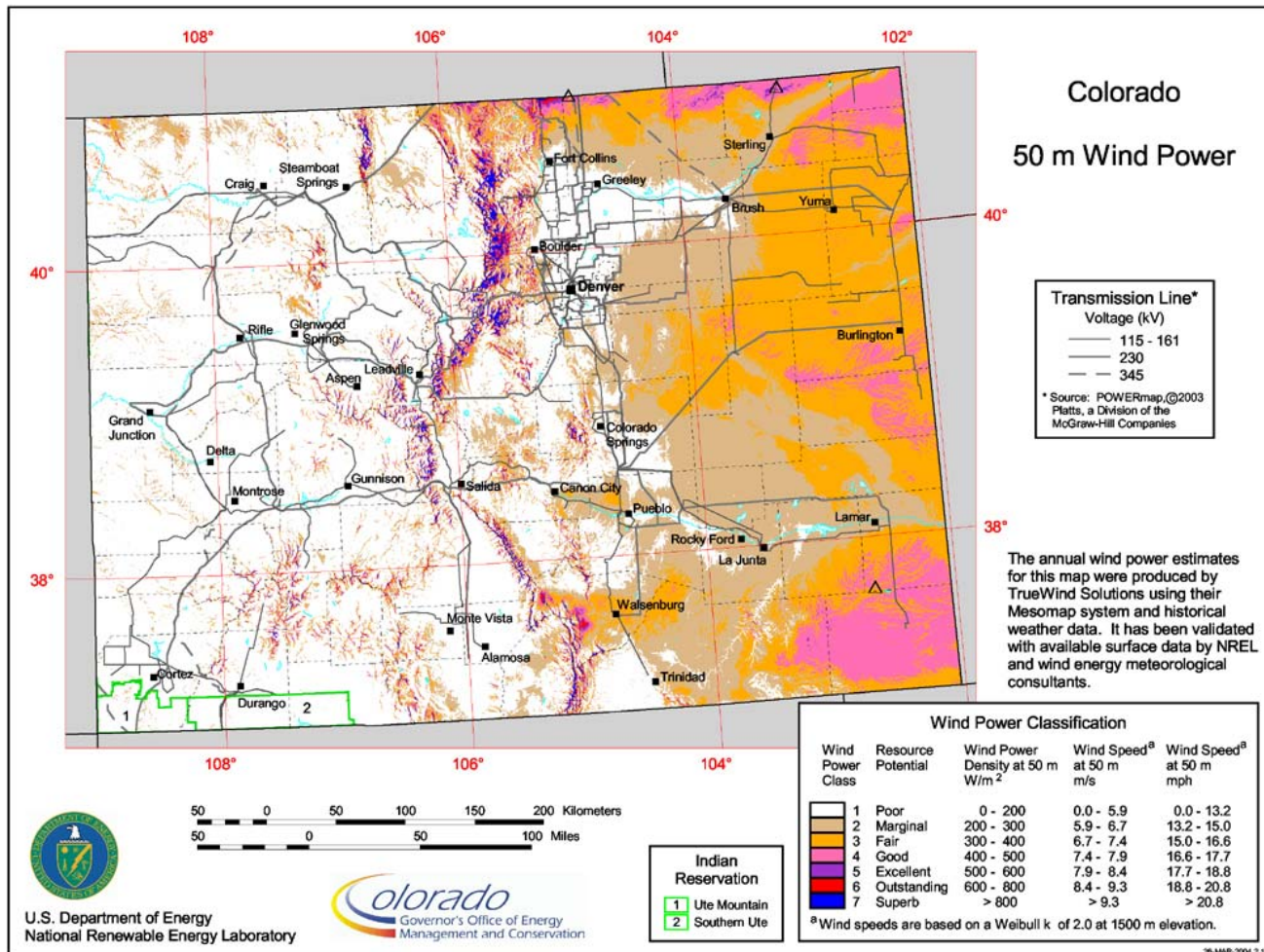


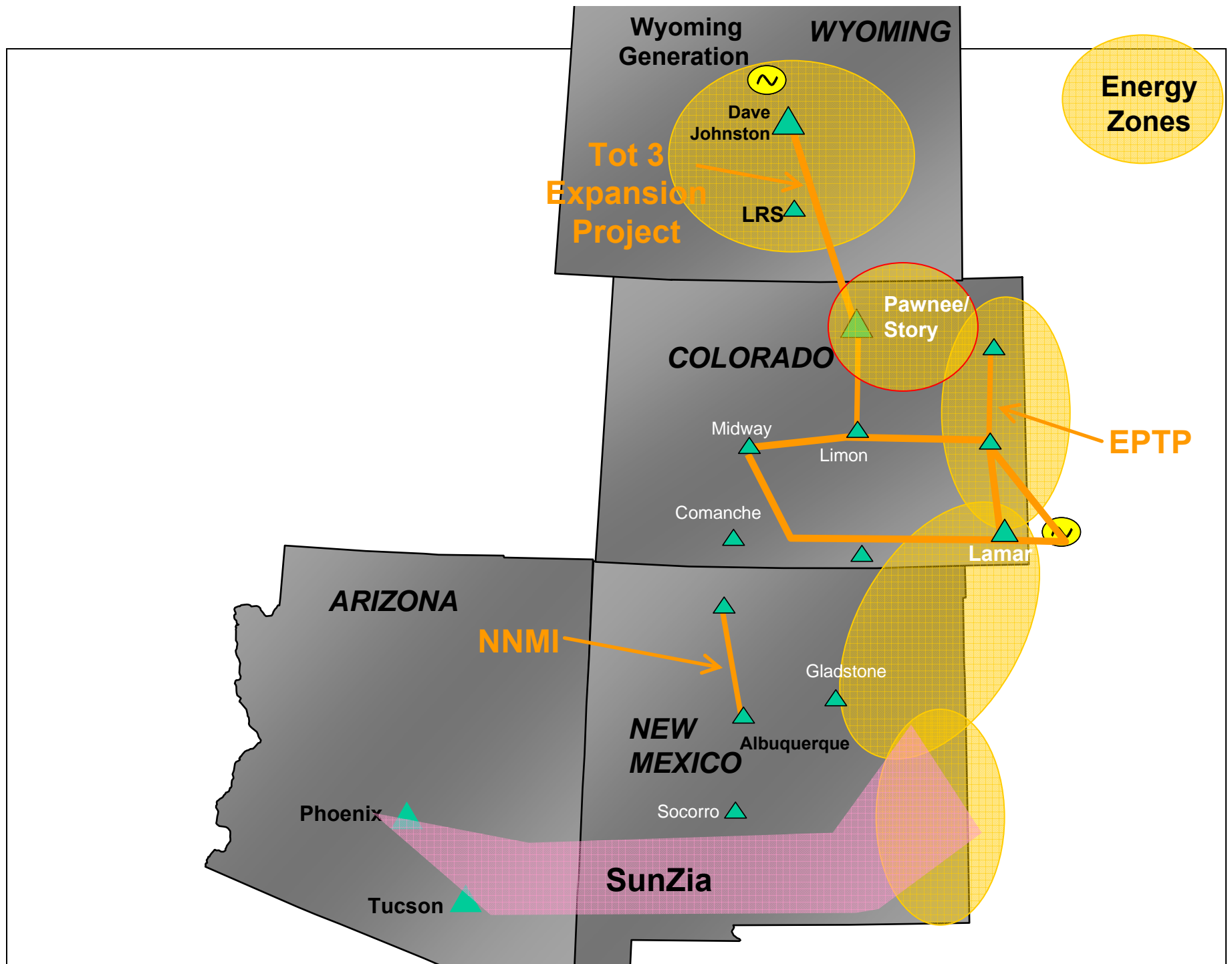


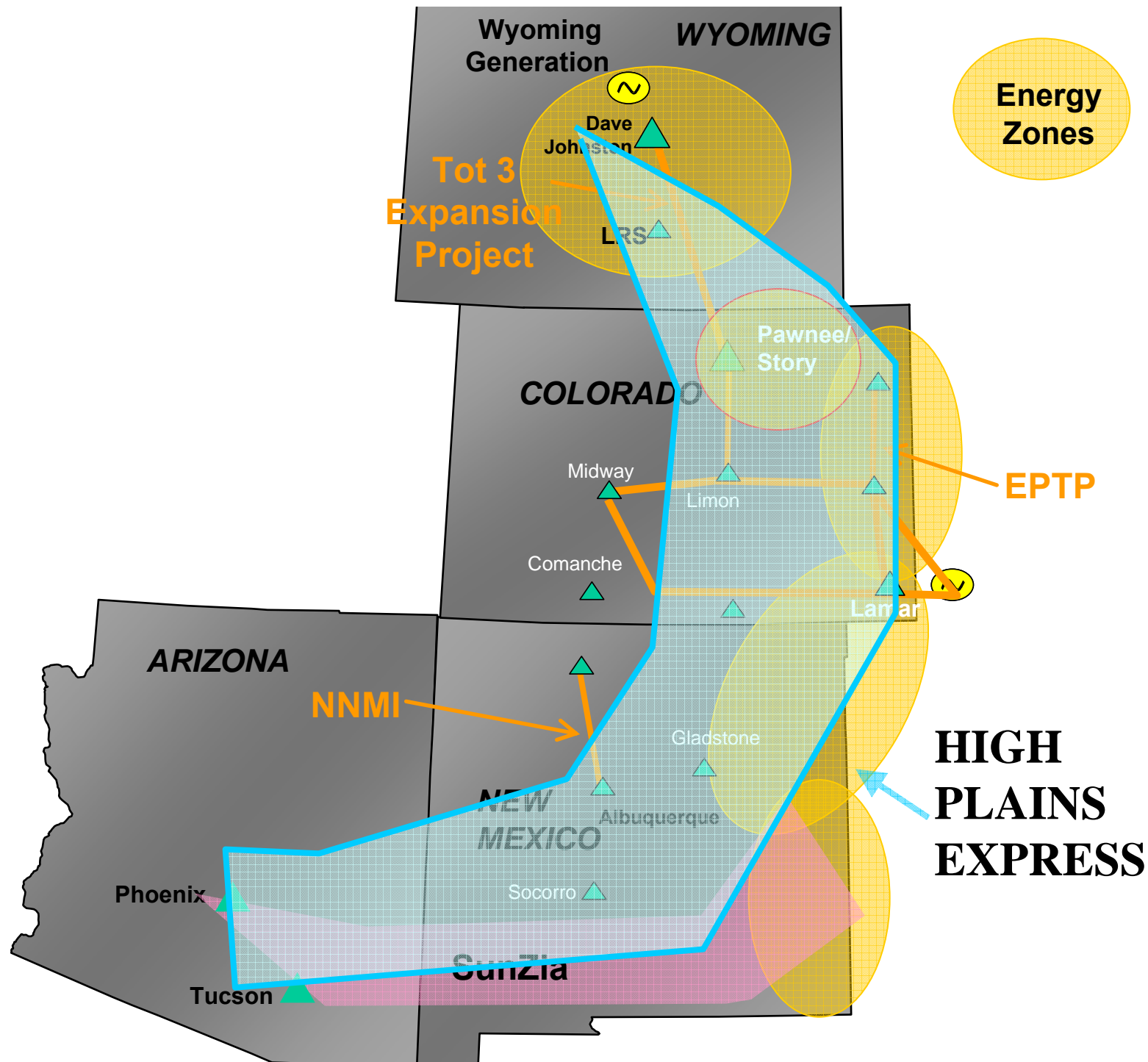
Integrated Gasification Combined Cycle Coal Plant



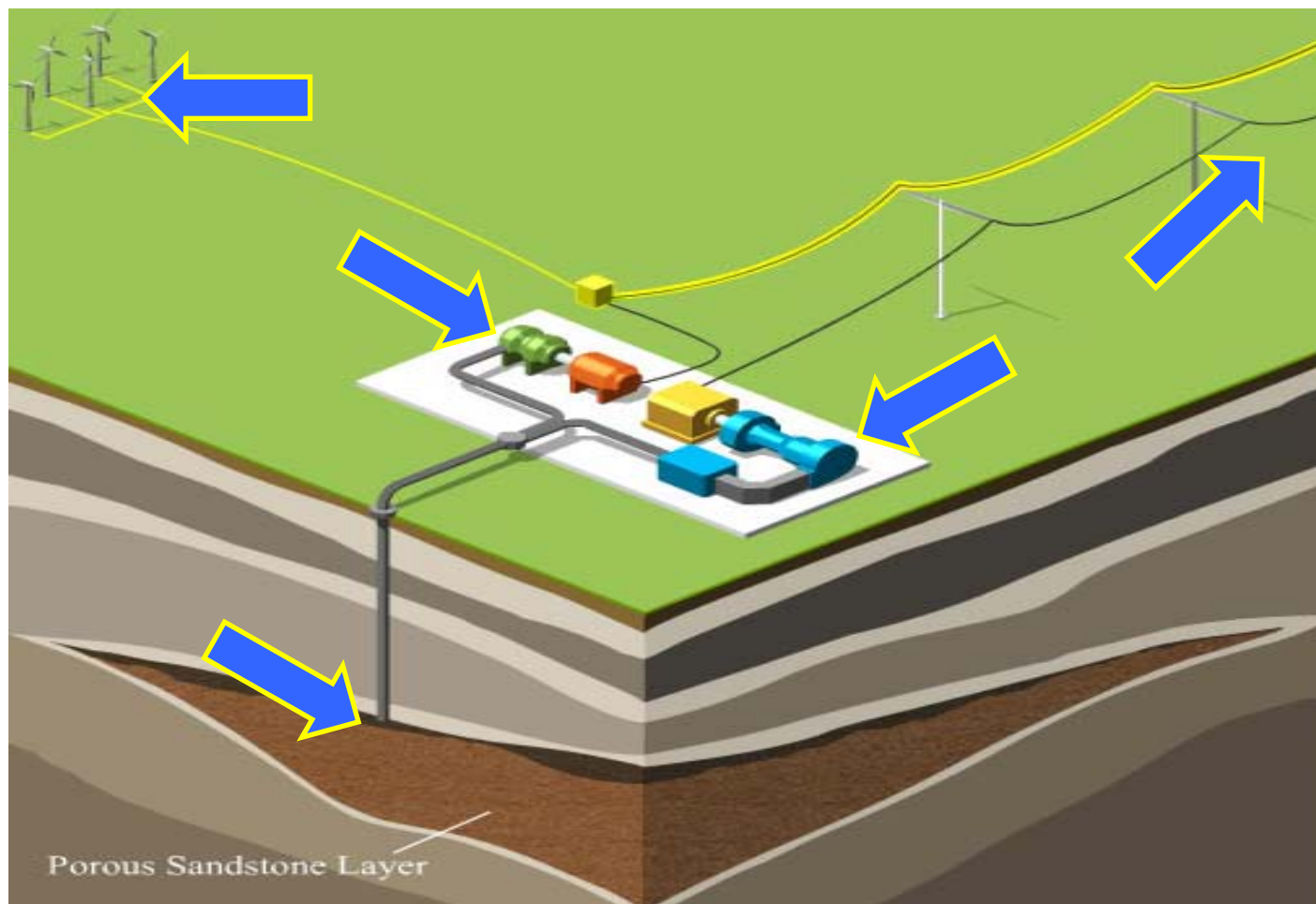
NREL Wind Resource Map







Compressed Air Energy Storage (CAES)



**Thank you again for hosting
this meeting.**

**We look forward to our
continuing discussions.**




Industry Name	Number of Firms	Aggregate Market Cap/ Aggregate Net Income	Price/Curent EPS	Price/Trailing EPS	Price/Forward PE	Expected Growth	Payout	Beta
Advertising	30	8.32	10.31	9.39	11.67	18.44%	7.17%	1.43
Aerospace/Defense	66	10.03	13.86	12.18	14.6	15.52%	12.42%	1.27
Air Transport	44	8.69	11.37	8.94	13.29	13.59%	9.33%	1.15
Apparel	53	8.68	7.91	7.06	9.5	11.83%	8.42%	1.14
Auto & Truck	20	10.31	8.01	8.61	9.24	11.80%	8.71%	1.49
Auto Parts	54	11.34	11.48	8.93	14.63	13.22%	17.95%	1.56
Bank	477	14.52	13.47	15.4	25.43	8.77%	36.07%	0.71
Bank (Canadian)	8	13.94	7.05	7.45	7.41	5.33%	46.75%	0.86
Bank (Midwest)	39	20.04	12.22	16.57	15.61	5.03%	54.64%	0.91
Beverage	41	15.49	13.14	12.24	12.98	11.77%	23.38%	0.95
Biotechnology	108	46.24	29.26	27.49	65.5	20.96%	0.49%	1.25
Building Materials	52	7.22	12.09	32.75	47.37	7.68%	14.30%	1.39
Cable TV	25	23.63	24.99	15.67	21.96	19.43%	11.78%	1.56
Canadian Energy	12	8.25	9.59	7.3	9.01	10.23%	11.45%	1.22
Chemical (Basic)	19	8.45	9.36	6.21	5.5	24.21%	16.37%	1.26
(Diversified)	33	11.11	12.15	10.58	17.02	12.78%	19.75%	1.21
Chemical (Specialty)	88	12.79	12.7	11.28	13.88	11.12%	17.73%	1.18
Coal	18	17.44	14.43	9.23	6.39	20.83%	20.71%	1.98
Computer Software/Svcs	322	14.16	46.79	21.06	30.24	18.83%	10.17%	1.22
Computers/Peripherals	125	11.39	14.58	14.26	22.42	20.79%	6.33%	1.29
Diversified Co.	113	8.65	15.13	15.36	11.36	13.46%	20.12%	1.25
Drug	342	15.38	17.22	40	26.04	18.46%	25.99%	1.16
E-Commerce	54	46.45	87.58	37.4	58.87	20.51%	1.20%	
Education Services	34	30.85	36.54	29.29	29.97	23.73%	2.31%	
Electric Util. (Central)	24	12.55	13.7	12.29	12.32	6.95%	31.65%	0.82
Electric Util. (East)	24	12.64	12.68	12.22	14.22	7.25%	28.52%	0.74

(Integrated)	14	4.14	5.08	3.65	4.21	8.54%	6.35%	1.96
Telecom. Equipment	110	12.3	17.07	10.96	50.17	15.00%	13.06%	1.49
Telecom. Services	140	10.84	24.12	16.3	27.16	14.60%	21.11%	1.43
Thrift	234	42.7	19.92	25.82	35.1	9.60%	64.16%	0.66
Tobacco	12	24.28	12.99	11.42	10.54	4.70%	32.09%	0.71
Toiletries/Cosmetics	23	14.96	11.4	11.33	10.65	10.50%	16.72%	0.95
Trucking	33	12.3	13.73	15.64	15.91	12.06%	8.06%	1.17
Utility (Foreign)	5	25.88	17.35	21.15	24.51	20.00%	0.00%	1.23
Water Utility	16	226.87	36.04	20.9	18.93	10.50%	274.15%	0.86
Wireless Networking	57	48.33	20.13	18.43	24.77	17.02%	1.53%	1.54
Public/Private Equity	10	1.28	2.6	4.69	8.45	1.25%	23.46%	2.08
Funeral Services	6	10.84	16.63	28.51	11.08	14.13%	17.83%	1.41
Total Market	6870	12.42	18.91	17.48	20.04	13.46%	16.22%	1.19

<i>Number of Firms</i>	<i>Aggregate Market Cap/ Aggregate Net Income</i>	<i>Price/Current EPS</i>	<i>Price/Trailing EPS</i>	<i>Price/Forward PE</i>	<i>Expected Growth</i>	<i>Payout</i>	<i>Beta</i>
66	12.17	13.61	15.55	13.18	0.07	0.29	0.78
6870	12.42	18.91	17.48	20.04	13.46%	16.22%	1.19



$$\boxed{\text{RevR}_t} = \boxed{\text{Approved Cost}} + \boxed{(\text{RAB}_t \times \text{ROR}_i)} - \boxed{\text{Financial penalties}} + \boxed{\text{Shortfall (excess)}}$$


A B

If $\text{abs}(\text{Shortfall/excess}) < (5\%)*A$ then $B = 0$

If $\text{abs}(\text{Shortfall/excess}) \geq (5\%)*A$, then $B = (\text{Shortfall/excess} \pm (5\%)*A)$

Examples

$A = 1000$, Shortfall = -30, $.05*A = 50$, then $B = 0$

$A = 1000$, Shortfall = -75, then $B = -25$

$A = 1000$, Excess = 60, then $B = 10$