

SDEIA Board Educational Meeting

June 9, 2006

Overview of the South Dakota Generation and Transmission Facilities

Greg Rislov- Commission Advisor



Public Utilities Commission

www.puc.sd.gov

South Dakota's Electric Utilities

- Six vertically integrated, investor owned
- 35 municipally-owned distribution systems
- 29 rural electric distribution systems
- Two cooperative transmission systems
- One cooperative generation provider
- Nebraska Public Power District

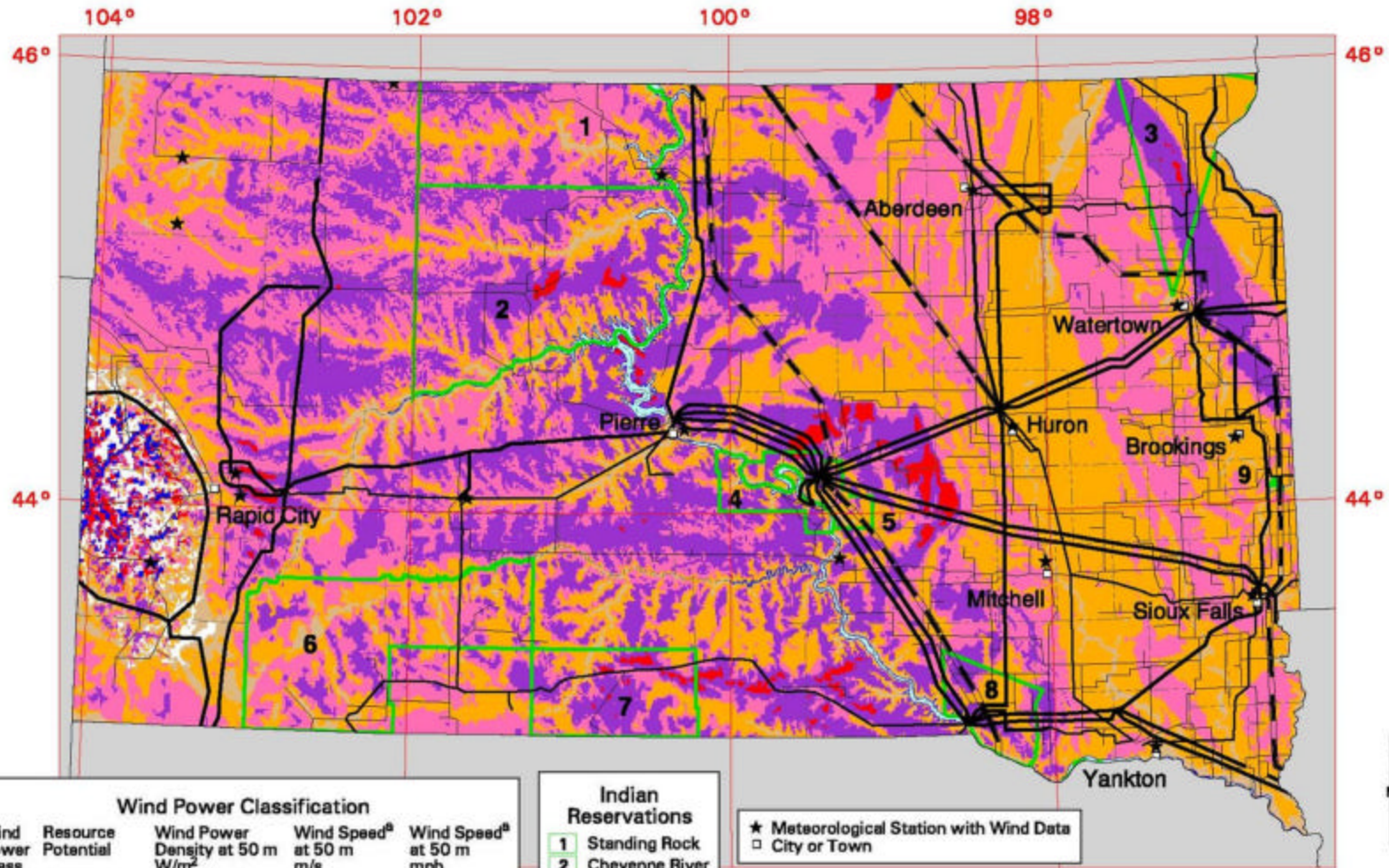
**Confused about who
is providing the
electricity?**

Major SD Generation Facilities

<u>Name</u>	<u>Nameplate (mW)</u>	<u>Summer (mW)</u>	<u>Category</u>	<u>Operator</u>
Oahe	786.00	556.00	Hydro	WAPA
Big Bend	494.00	482.00	Hydro	WAPA
Big Stone I	455.78	453.59	ST Coal	OTP, Others
Fort Randall	320.00	361.00	Hydro	WAPA
Angus Anson #3	165.00	158.00	CT Gas	Xcel
Gavins Point	132.00	109.00	Hydro	WAPA
Angus Anson #2	120.00	107.00	CT Gas	Xcel
Angus Anson #1	120.00	101.00	CT Gas	Xcel
Ben French	100.00	100.00	CT Gas/Oil	BHP
Spirit Mound	104.00	96.00	CT Oil	BEPC

Major Transmission Lines in SD

South Dakota - Wind Resource Map



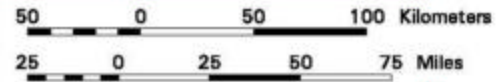
Wind Power Classification				
Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m ²	Wind Speed ^a at 50 m m/s	Wind Speed ^a at 50 m mph
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8

^a Wind speeds are based on a Weibull k value of 2.0

- Indian Reservations**
- 1 Standing Rock
 - 2 Cheyenne River
 - 3 Lake Traverse
 - 4 Lower Brule
 - 5 Crow Creek
 - 6 Pine Ridge
 - 7 Rosebud
 - 8 Yankton
 - 9 Flandreau

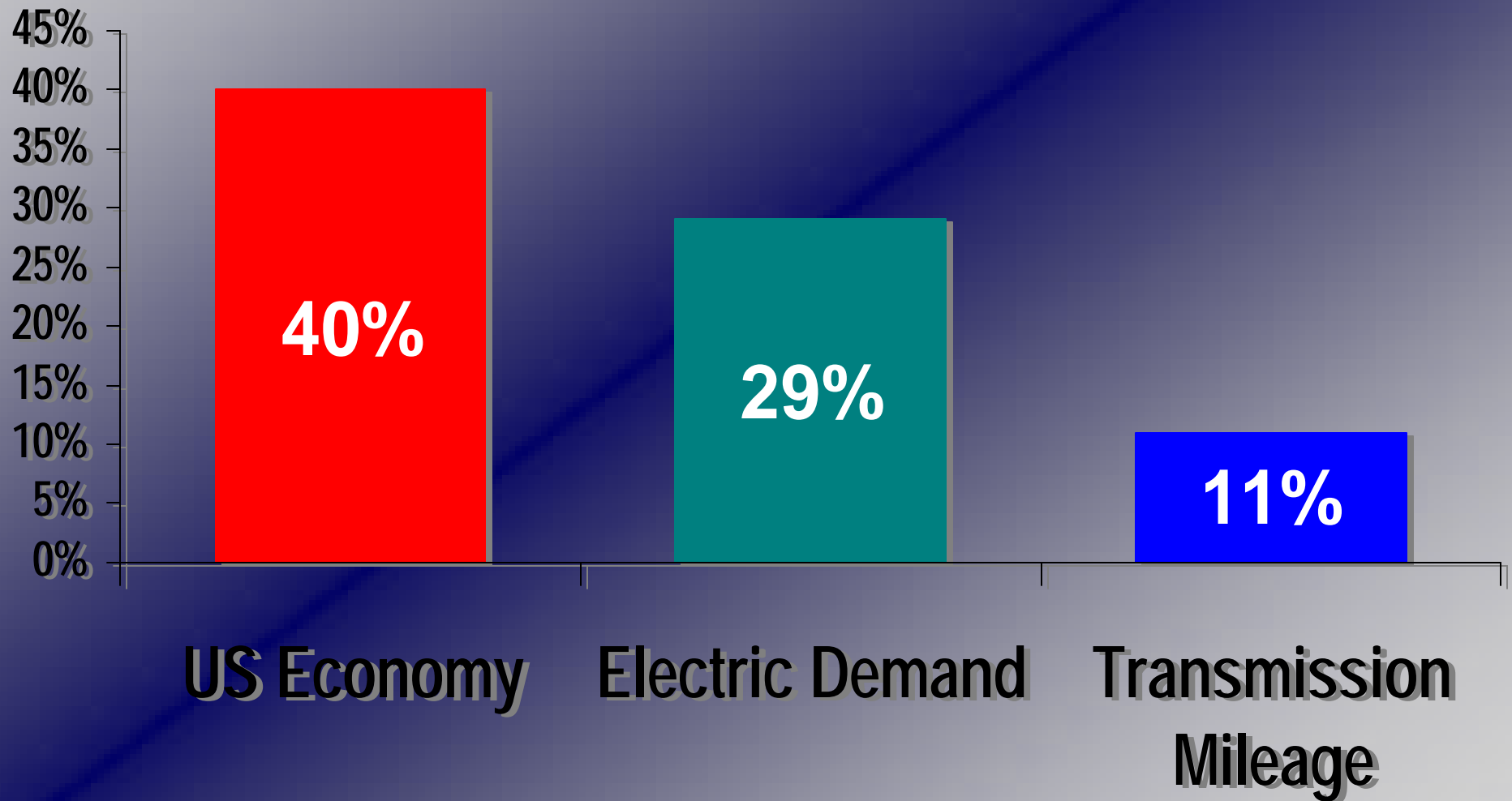
★ Meteorological Station with Wind Data
 □ City or Town

- Transmission Line Voltage**
- 69 Kilovolts
 - 115 Kilovolts
 - 230 Kilovolts
 - 345 Kilovolts



Transmission is not being built...

Growth from 1989-2000



Transmission Costs....

- 345 kV ~ \$350,000-\$500,000/mile
- Substations ~ \$3-5 Million Each
- 500 miles of line ~ \$200-\$250 million

Is it "buildable?"

Wind can help right-of-way acquisition...



Energy Overview

- Population: 770,883 (2004) ranked 46th
- **Total Energy Consumption:** 0.3 quadrillion Btu (2001), **ranked 48th**
- **Per Capita Energy Consumption:** 327 million Btu (2001), ranked 28th
- **Gasoline Consumption:** 1.2 million gallons per day (2002), ranked 43rd

Source: <http://tonto.eia.doe.gov/oop/info/state.sd.html>

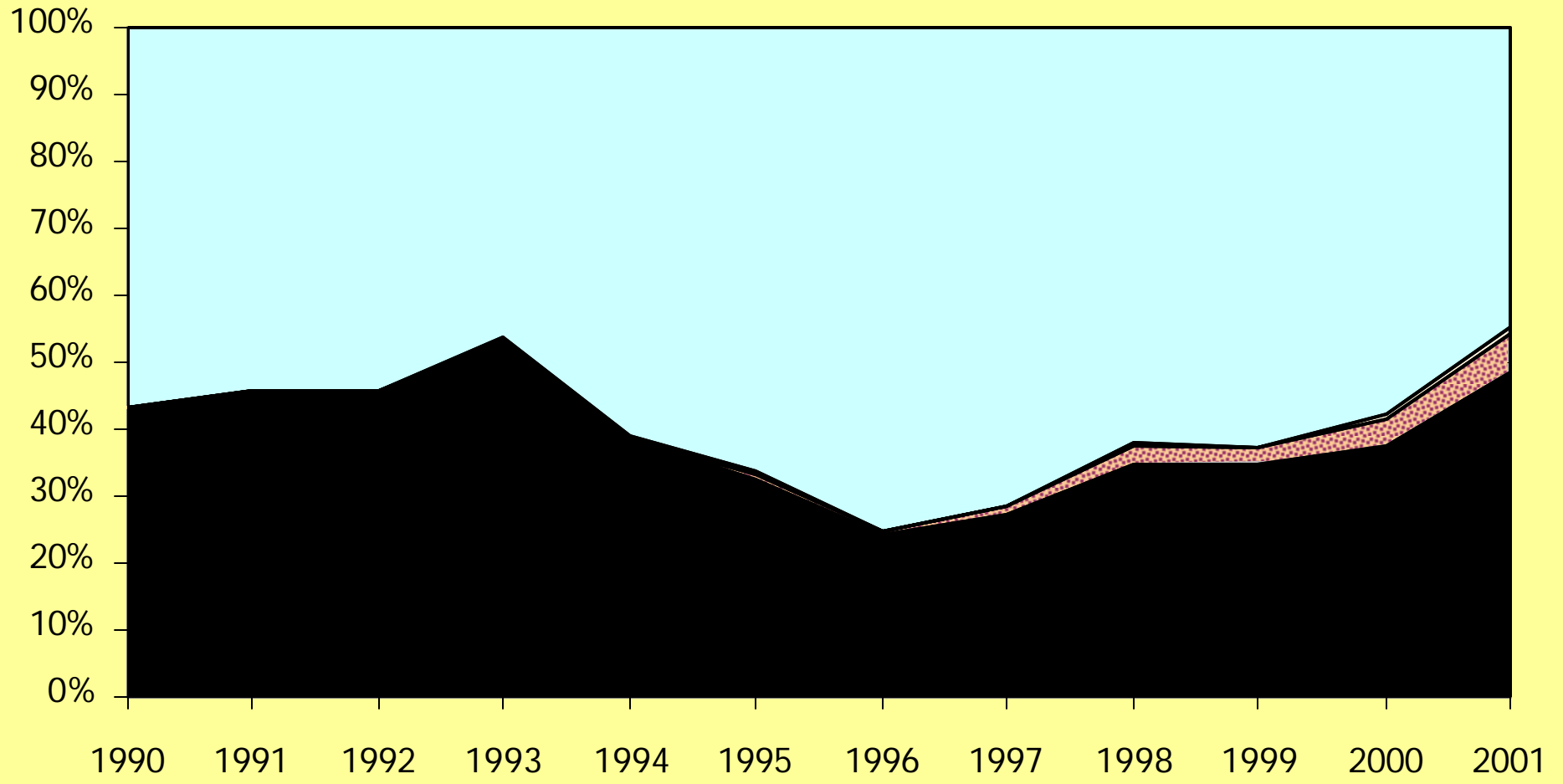
South Dakota Estimated Peak Loads*

	<u>mW</u>	<u>%</u>
Xcel	429	21%
BHP**	401	19.6%
East River***	398	19.5%
NWE	295	14.4%
Cities	271	13.2%
Rushmore	125	6.1%
State	30	1.5%
EAFB	15	0.7%
OTP	35	1.7%
MDU	25	1.2%
MEC	20	1.0%

*Estimate was quickly prepared for today. It should not be reused absent further corroboration; **includes WY service territory; ***Winter peak

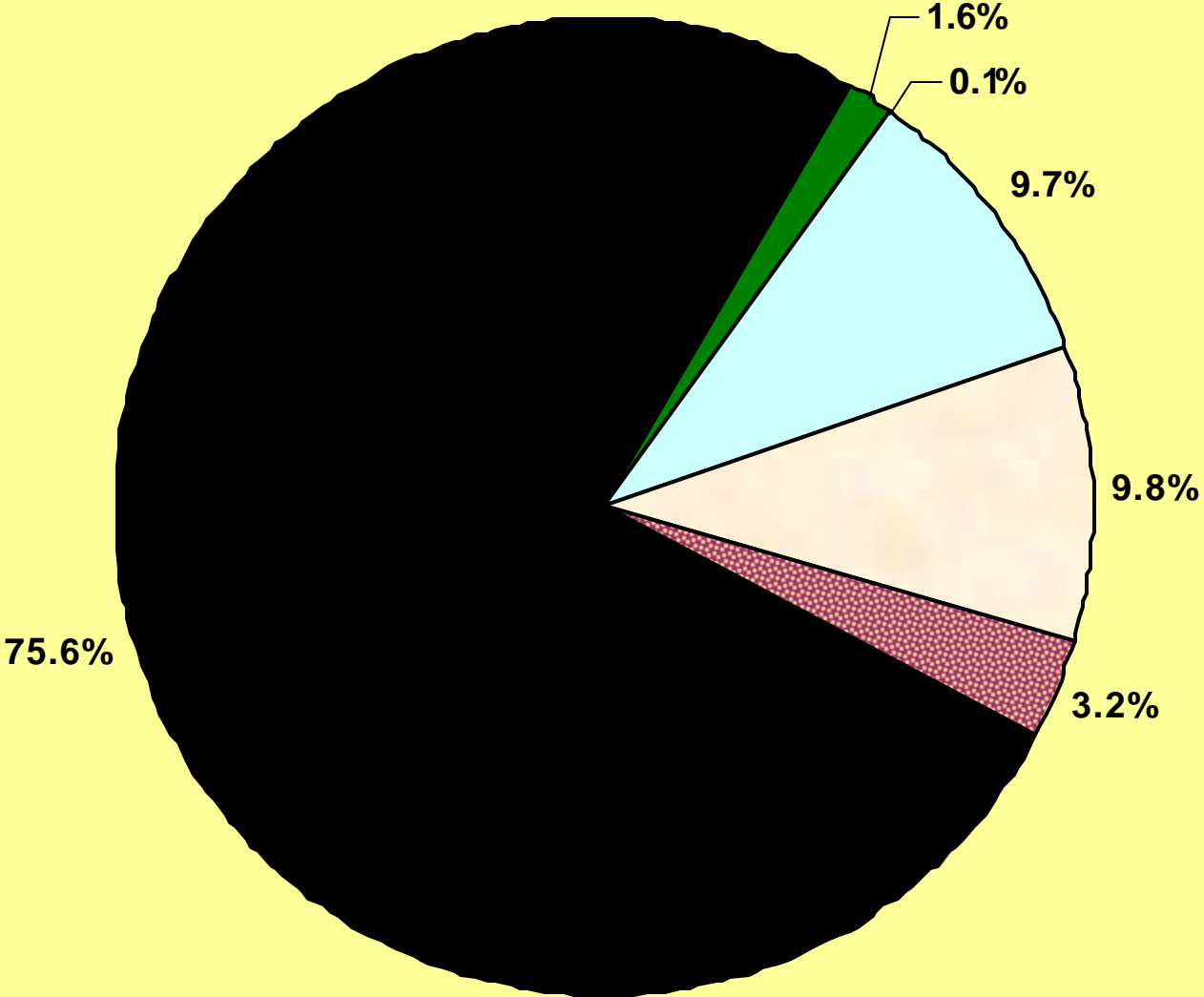
**The significance of
adequate
transmission.**

Electricity Generation in South Dakota by Source



■ Coal ■ Natural Gas □ Petroleum □ Hydro

Electricity Use in South Dakota by Source (2005)



■ Non-Hydro Renewable ■ Oil ■ Hydro ■ Nuclear ■ Natural Gas ■ Coal

Thank you!

Greg Rislov- Commission Advisor



Public Utilities Commission

www.puc.sd.gov