



Economics and Electricity 101

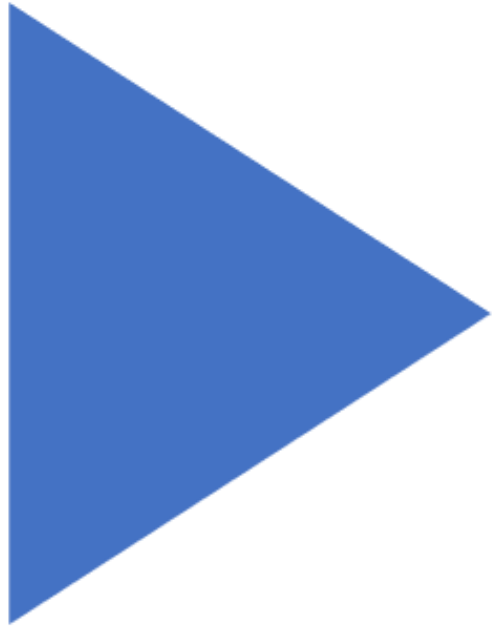
33rd Annual Lignite Education Seminar

Bismarck, ND

June 12, 2018

Commissioner Brian Kroshus

North Dakota Public Service Commission



OVERVIEW

- **My Background**
- **Opportunities in North Dakota**
- **Cost of Energy in North Dakota**
- **Lignite Coal, Energy Security, and Reliability**
- **Path Forward**



BACKGROUND

- Born in Fargo, North Dakota
- Graduate of North Dakota State University
- 30-years private-sector business experience
- Appointed to ND Public Service Commission in March 2017 by Governor Doug Burgum
- Serve on numerous non-profit boards, runner and cyclist and overall outdoor enthusiast
- Landowner, small grain and cattle operation in western ND

WHERE IS NORTH DAKOTA IN THE GRID?



ENERGY
OPPORTUNITIES IN
NORTH DAKOTA



ENERGY SITUATION

Coal Generation is on the range of 4300 MW

Hydroelectric Power (Garrison Dam) 510 MW

Wind Power (PSC approved almost 3,000 MW built) ... more proposed

Natural Gas (PSC approved over 700 MW)... 400 MW built

ND “needs” another 2500–3000 MW in next 20 years

Power must be reliable and affordable!

ENERGY SITUATION

MISO and SPP are the RTO's in our area.

2nd largest oil producer in the U.S. (1.2 Million Barrels a day)

N.D. has a “strategic resource” - i.e. Lignite Coal!

Natural Gas processing plants (by product of the oil wells) – Growing segment

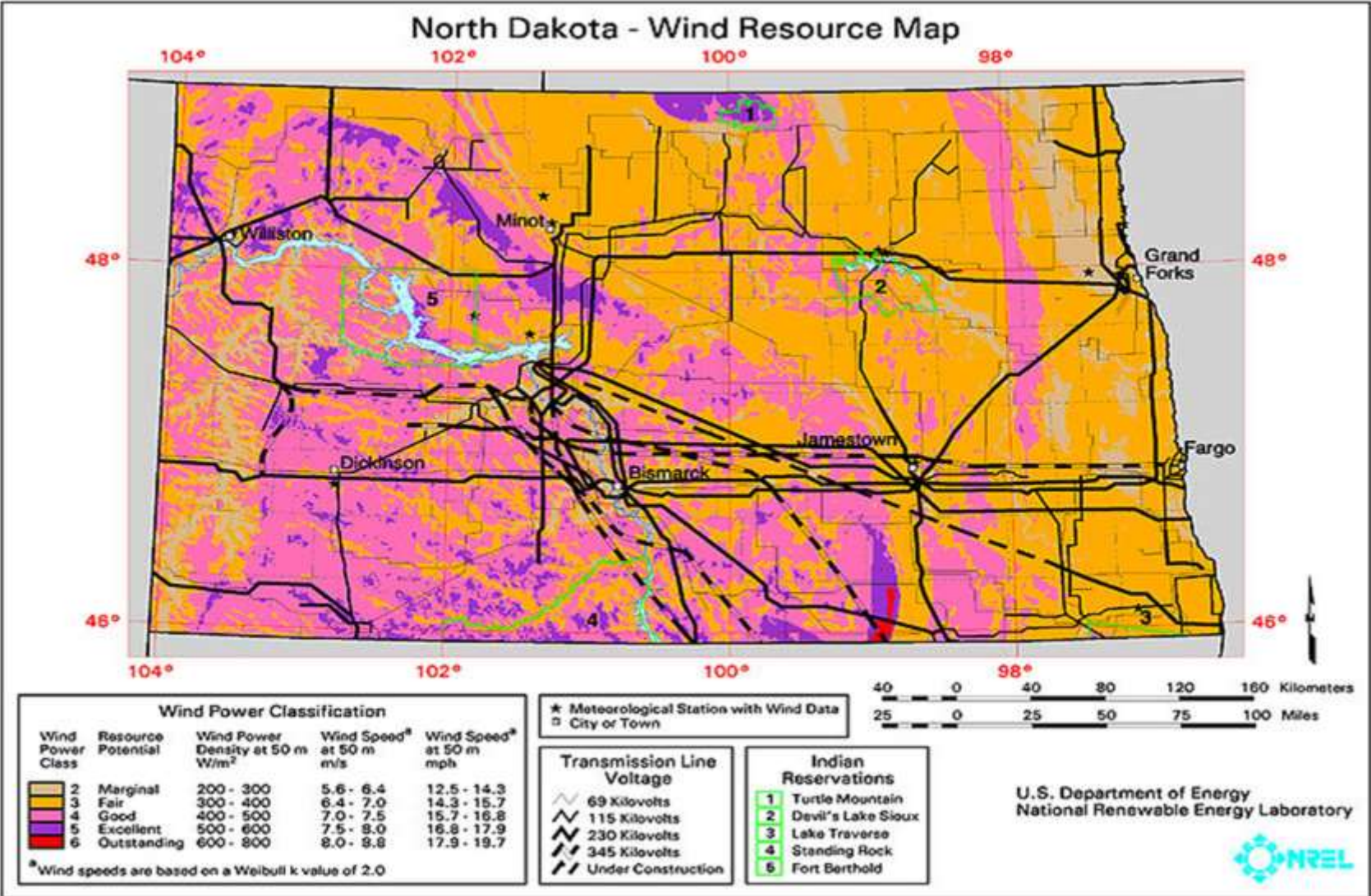
CO₂ has been used for EOR in our region for 30 years.

Several companies are exploring how to expand CO₂ use.

COMPARING
DIFFERENT
SOURCES

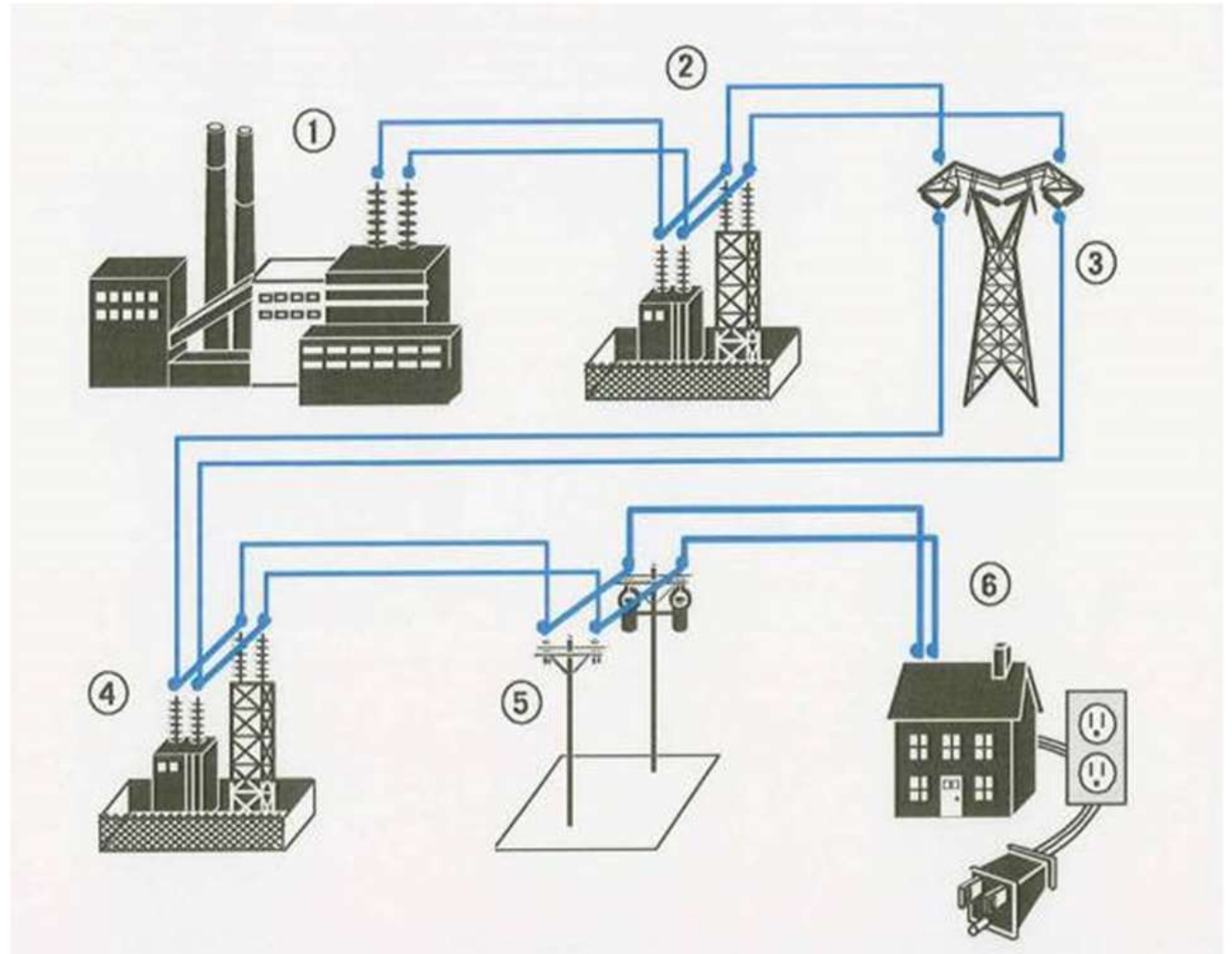
Type	Examples	Cost	Reliability
Baseload	Coal Nuclear	Low	Very High
Peaking	Hydro Natural Gas Oil	Low to Medium	High
Intermittent	Wind Solar	Varies	Low

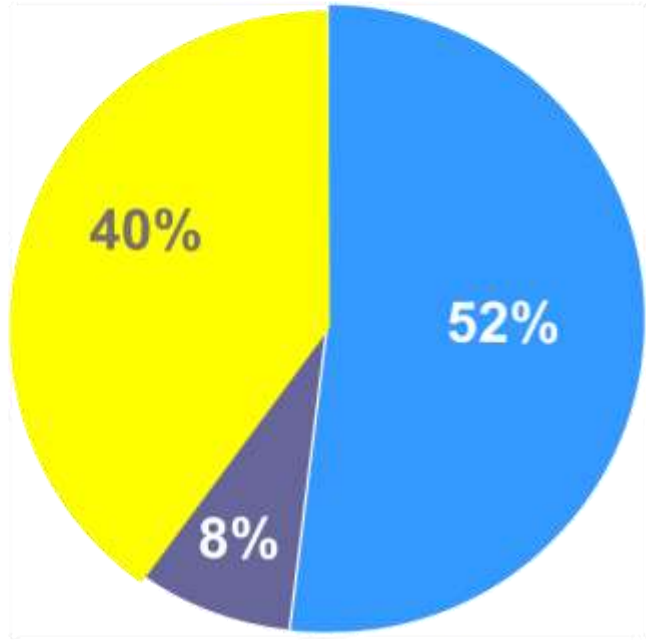
ENERGY PRODUCTION AND TRANSMISSION LINES



How does the System Work -
where power comes from
and how it gets to me

Simple model showing
how electricity reaches a
home or business – Note
that model requires
three distinct functions
to deliver power to
consumer: (1)
generation; (3)
transmission; and (5)
distribution

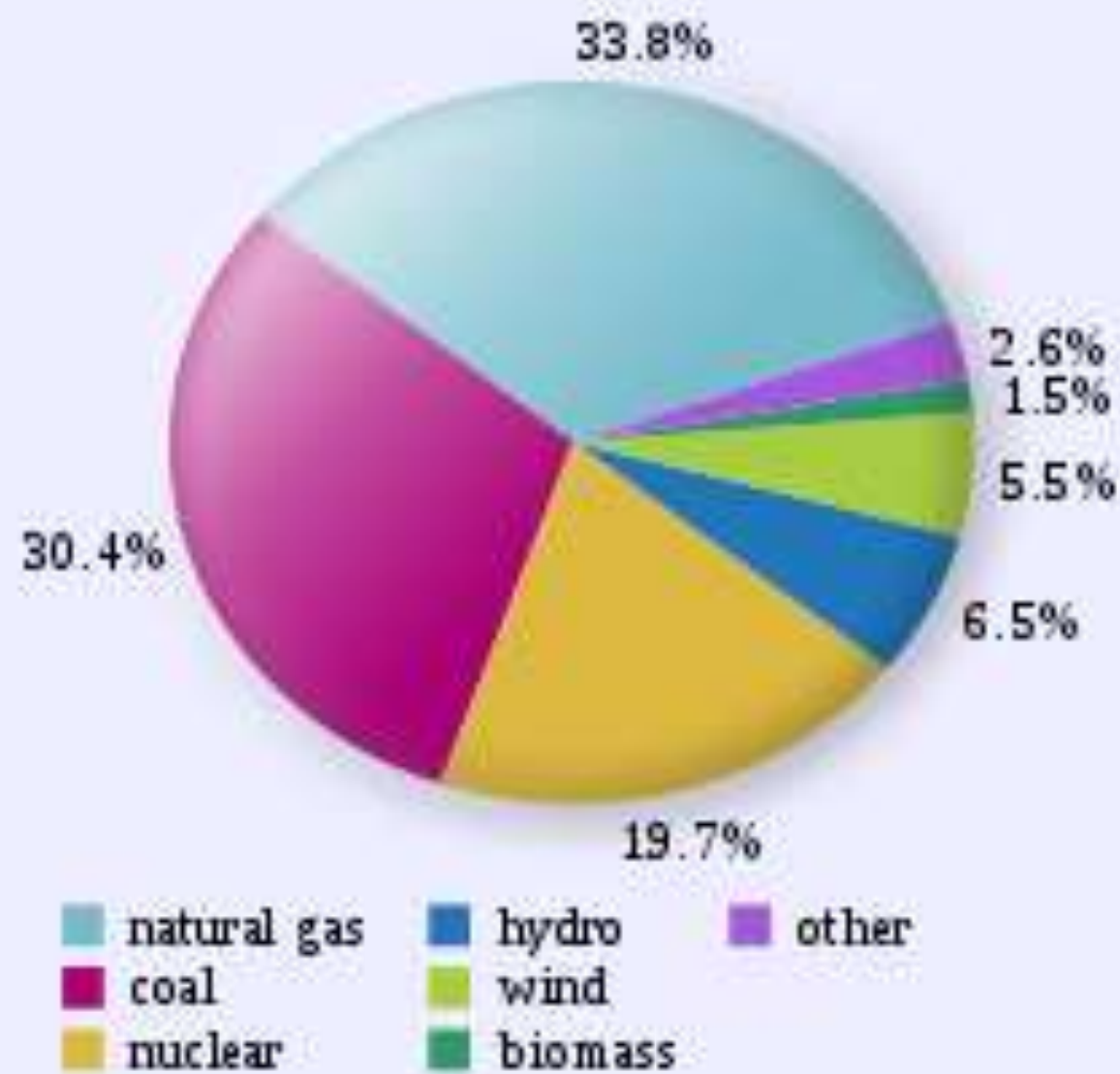




- **Production**
- **Transmission**
- **Distribution**

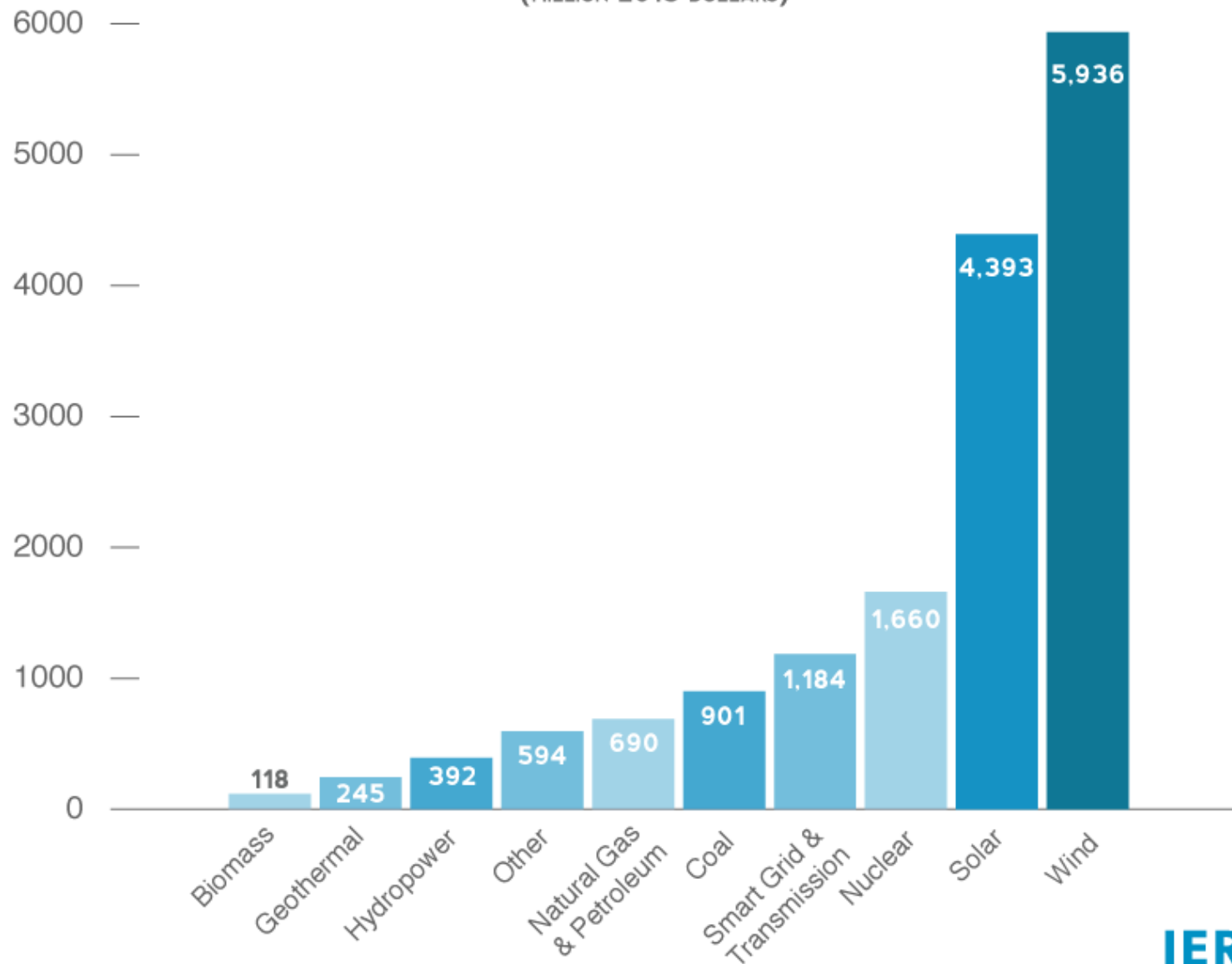
Residential Customer's Functionalized Cost

Sources of Electricity Generation United States - 2016



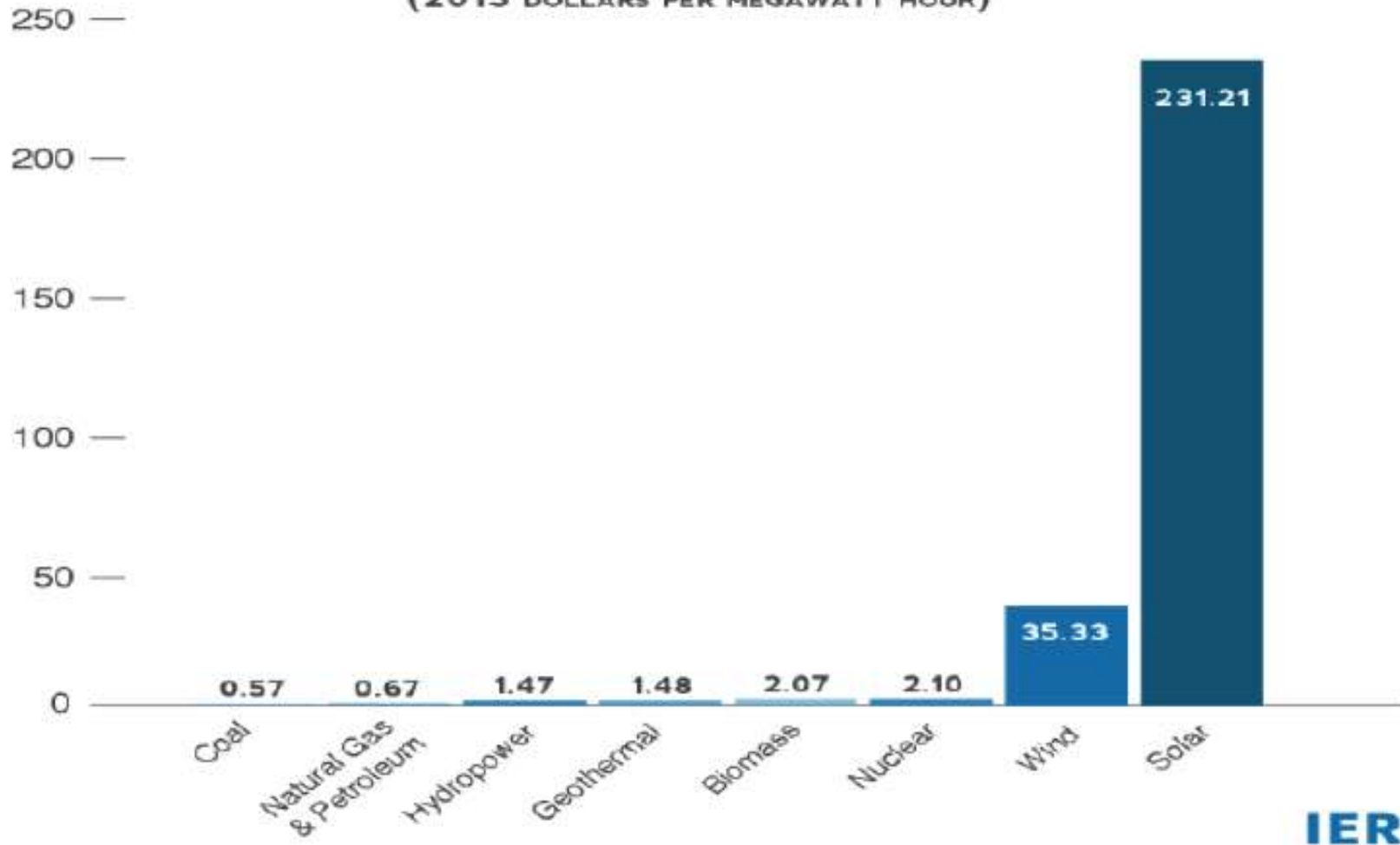
FEDERAL SUBSIDIES AND SUPPORT FOR ELECTRICITY PRODUCTION, FY 2013

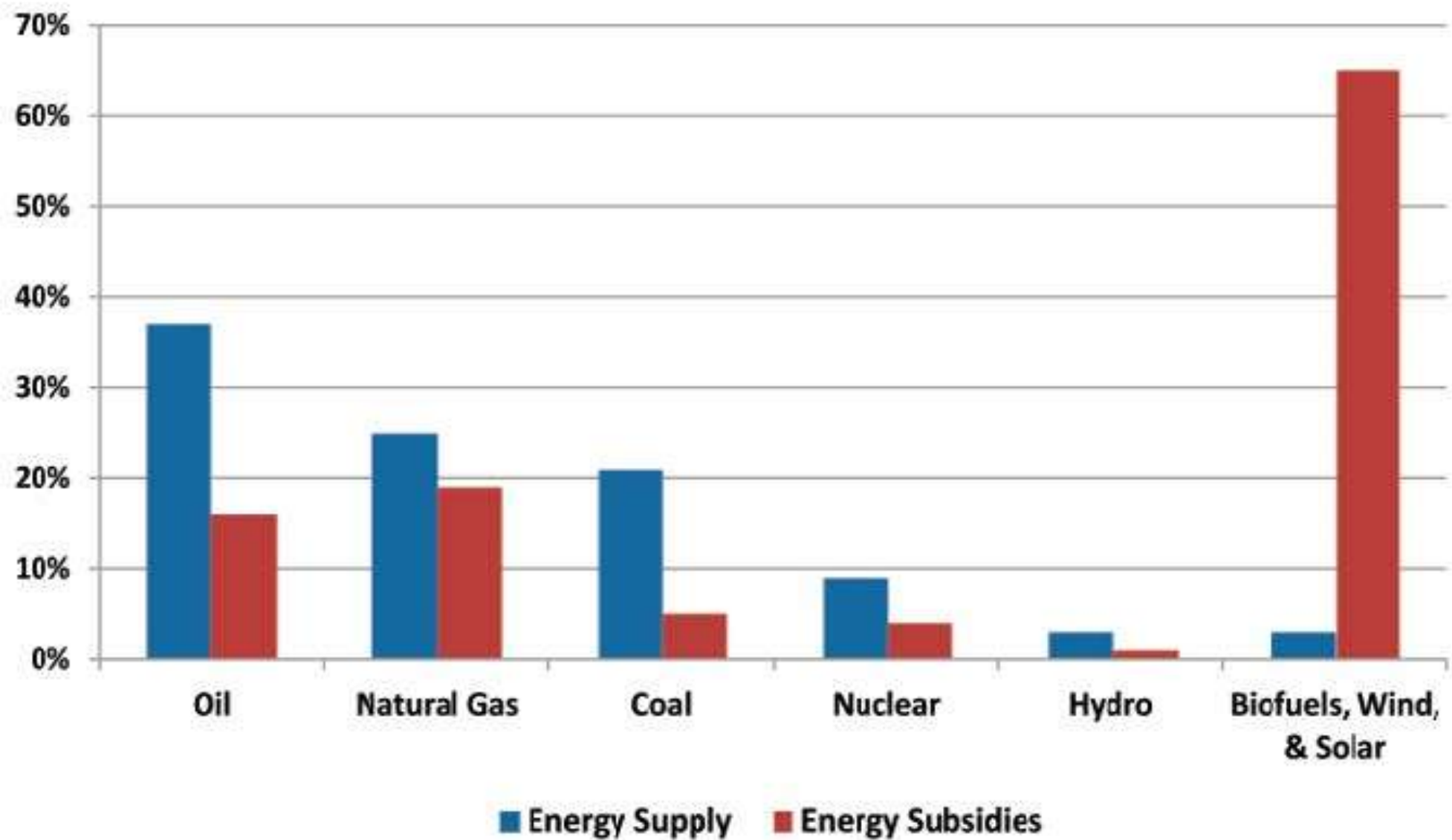
(MILLION 2013 DOLLARS)



FEDERAL ELECTRIC SUBSIDIES PER UNIT OF PRODUCTION, FY 2013

(2013 DOLLARS PER MEGAWATT HOUR)





TYPES OF ELECTRICITY PROVIDERS IN ND



Investor-Owned Utilities (IOUs)

* MDU, Ottertail, & Xcel

Cooperatively-Owned Utilities

* Basin Electric, Capital Electric, North Central, etc.

Government-Owned Utilities

* Valley City, Western Area Power

1

**Prevent market
abuses**

2

**Assure adequate
earnings so that
utilities can compete
for investors**

3

**Ensure maximum
public safety and
reasonable quality
of service**

ROLE OF REGULATORS

RATEMAKING CONSIDERATIONS TO ENSURE FAIRNESS



- Rates should reflect cost of service (i.e., avoid cross-subsidization between customer classes)
- New rates should not be significantly different from old rates (i.e., avoid “rate shock”)
- Rates should not drive customers away (i.e., through fuel-switching or moving)

COAL IS IMPORTANT TO NORTH DAKOTA

**Provides for 15,000 direct and indirect jobs;
supported by both political parties.**

**2 million people in the upper plains states
depend on North Dakota-generated electricity
for their low-cost, dependable power**

**Fifth largest industry in the state; \$100 million
annually paid in state taxes**

**Diverse Resource (Syn-Fuels Plant, Urea, Rare
Earth Metals)**

EFFECT ON FAMILY BUDGETS

Changes in energy prices typically affect young families and the elderly the most

Average cost breakout

- 1. Housing**
- 2. Transportation**
- 3. Food**
- 4. Insurances**
- 5. Other**

ADDITIONAL PSC ROLES

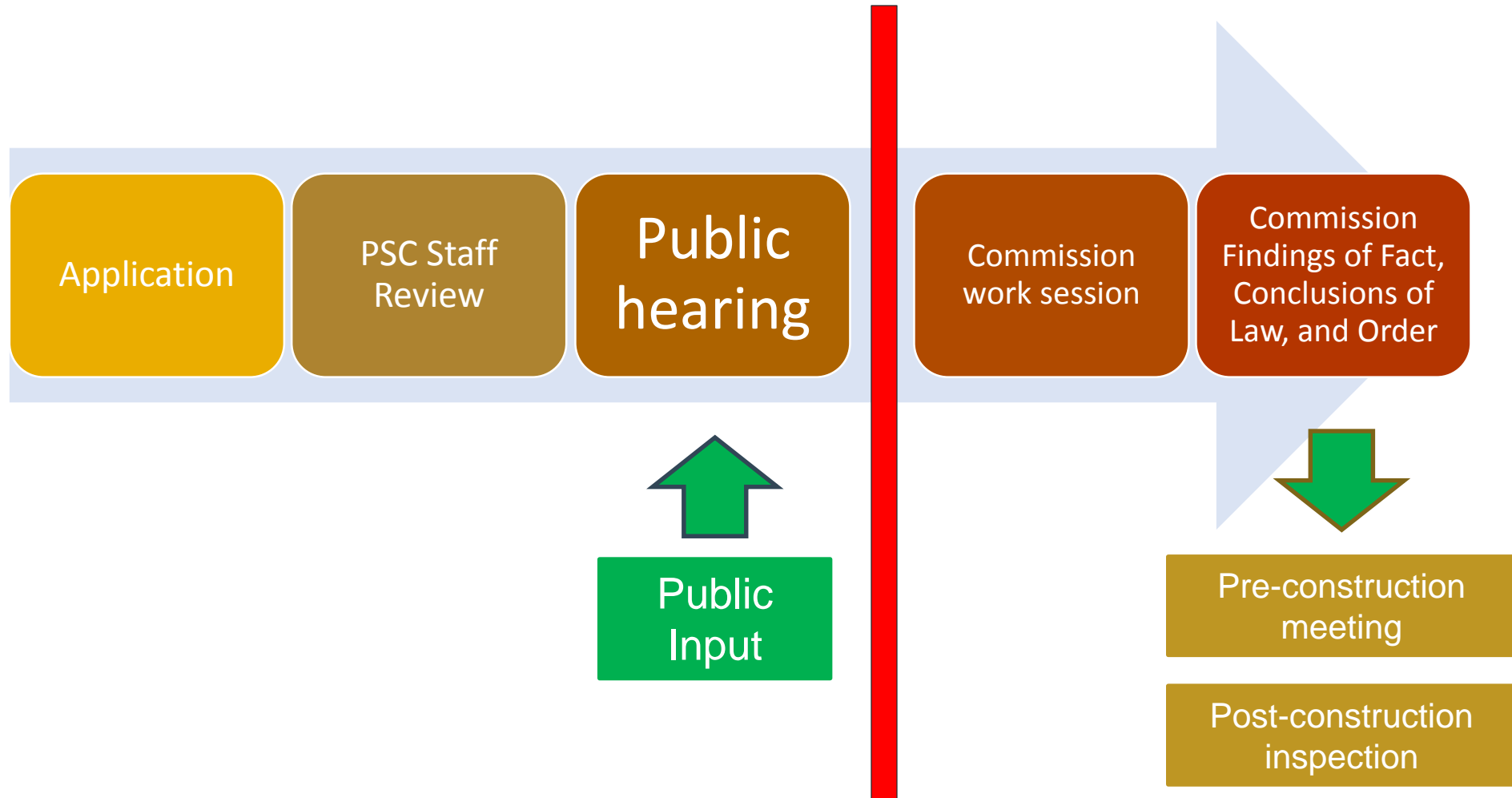
“Siting” of jurisdictional energy facilities

- Electricity Transmission Lines
- Wind Farms
- Coal Mines
- Natural Gas Facilities
- Pipelines

Land Reclamation for coal mines

- ND First in the nation on rules
- Excellent program

Public Service Commission (PSC) Jurisdictional Project Siting Process Flow Chart



FINAL THOUGHTS



- **We need more baseload power**
- **Rising energy costs affect young families and elderly the most**
- **N.D. leads the nation in coal land reclamation procedures**
- **Ratepayers & Policy Makers need to “ensure” coal generation continues; ensuring reliability in the power grid**
- **Coal is a strategic resource that must be used, if we are ever going to truly have energy security**

CONTACT INFORMATION

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North Dakota
LEGENDARY
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