

INSTITUTE FOR  
**Electric Efficiency**

# Federal Climate Change Policy: Implications for Electric Utility Industry

Lisa Wood  
Executive Director

“Calm Before the Storm”  
Institute for Regulatory Policy Studies, Illinois State University

December 10, 2009

# Talking Points

- Federal climate legislation: components impacting electric utilities
- Impact on consumers
- Impact on electric generation mix
- Implications for electric rates
- Implications for state policies

# Proposed federal climate legislation includes carbon reductions, renewables, & efficiency

- Waxman-Markey climate change bill – HR 2454 (passed June, 2009)
  - Major carbon reduction goals
    - 17% below 2005 by 2020
  - Combined efficiency and renewable electricity standard (CERES): 20% by 2020
    - 1/4 can be met by energy efficiency (5% of the 20%)
    - Governors can petition for 8% of the 20% to be met by EE
    - 18 states already have energy efficiency resource standards (EERS). Number expected to grow.
    - 31 states (including DC) have RPS.



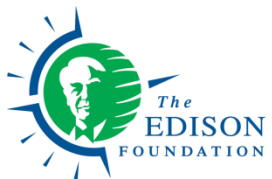
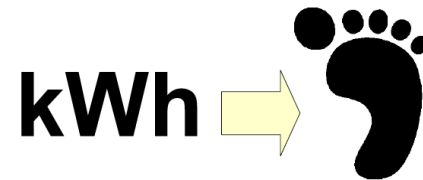
# Proposed federal climate legislation: comparison of carbon reduction goals

- **H.R. 2454 (Waxman-Markey) – June 2009**
  - 3% below 2005 by 2012
  - 17% below 2005 by 2020
  - 42% below 2005 by 2030
  - 83% below 2005 by 2050
- **S. 1733 (Kerry-Boxer) – under discussion**
  - 3% below 2005 by 2012
  - 20% below 2005 by 2020
  - 42% below 2005 by 2030
  - 83% below 2005 by 2050



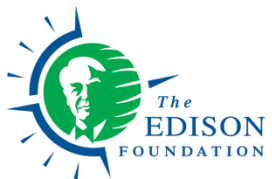
# Climate legislation: carbon allowances and energy efficiency will help protect the consumer

- In US, 40% of CO<sub>2</sub> emissions come from electric generation sector.
- Impact on consumers
  - Carbon allowances will mitigate cost to consumers. Under W-M, electric utilities receive 32% of allowances.
  - Energy efficiency will mitigate cost to consumers (approximately \$0.035 per kWh saved today)
  - Demand response will mitigate cost to consumers
  - Renewable electricity standard will increase cost to consumers

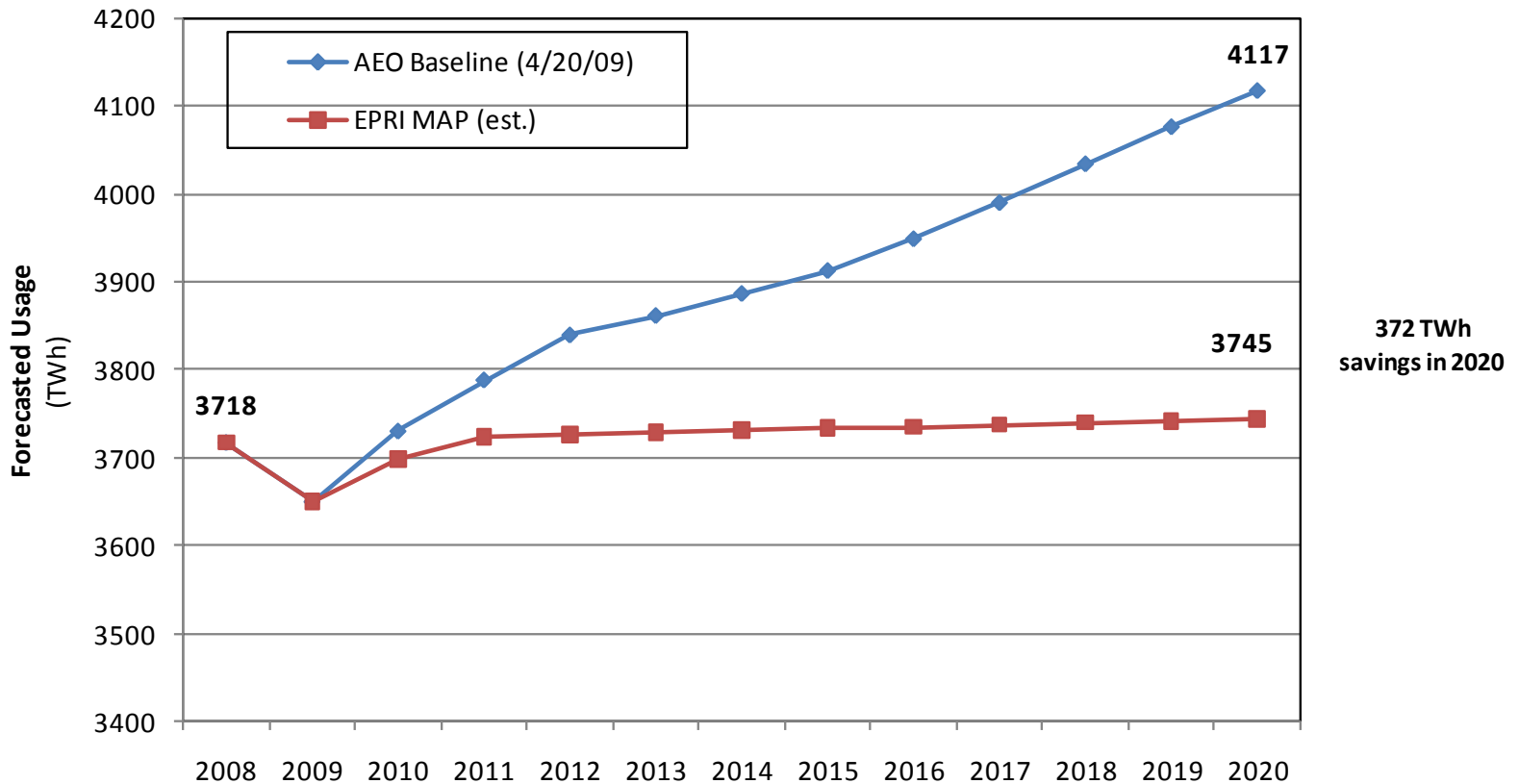


# Electric power sector's investments in energy sources will change over time

- Short run response (2010-2020)
  - energy efficiency (372 TWh potential by 2020, EPRI)
  - renewable energy, and
  - natural gas.
- Long run response (2020+)
  - commercial deployment of advanced coal technologies,
  - carbon capture and storage, and
  - nuclear energy.

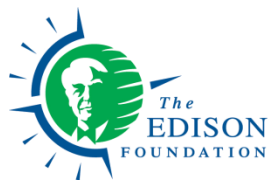


# EPRI “maximum achievable potential” forecast by 2020 relative to AEO baseline forecast



# Reducing emissions in response to H.R. 2454: U.S. generation mix in 2020 under alternative EIA scenarios

	Generation Mix in 2007	Projected Generation Mix in 2020*		
	EIA	EIA Reference Case	EIA H.R. 2454 Basic Case	EIA H.R. 2454 No International/Limited Case
<b>Renewables</b>	<b>9%</b>	<b>16%</b>	<b>20%</b>	<b>26%</b>
<b>Petroleum</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>
<b>Natural Gas</b>	<b>21%</b>	<b>16%</b>	<b>16%</b>	<b>31%</b>
<b>Coal</b>	<b>49%</b>	<b>48%</b>	<b>42%</b>	<b>22%</b>
<b>Nuclear</b>	<b>19%</b>	<b>19%</b>	<b>21%</b>	<b>20%</b>
<b>Reduced Consumption</b>			<b>111 TWH</b>	<b>271 TWH</b>





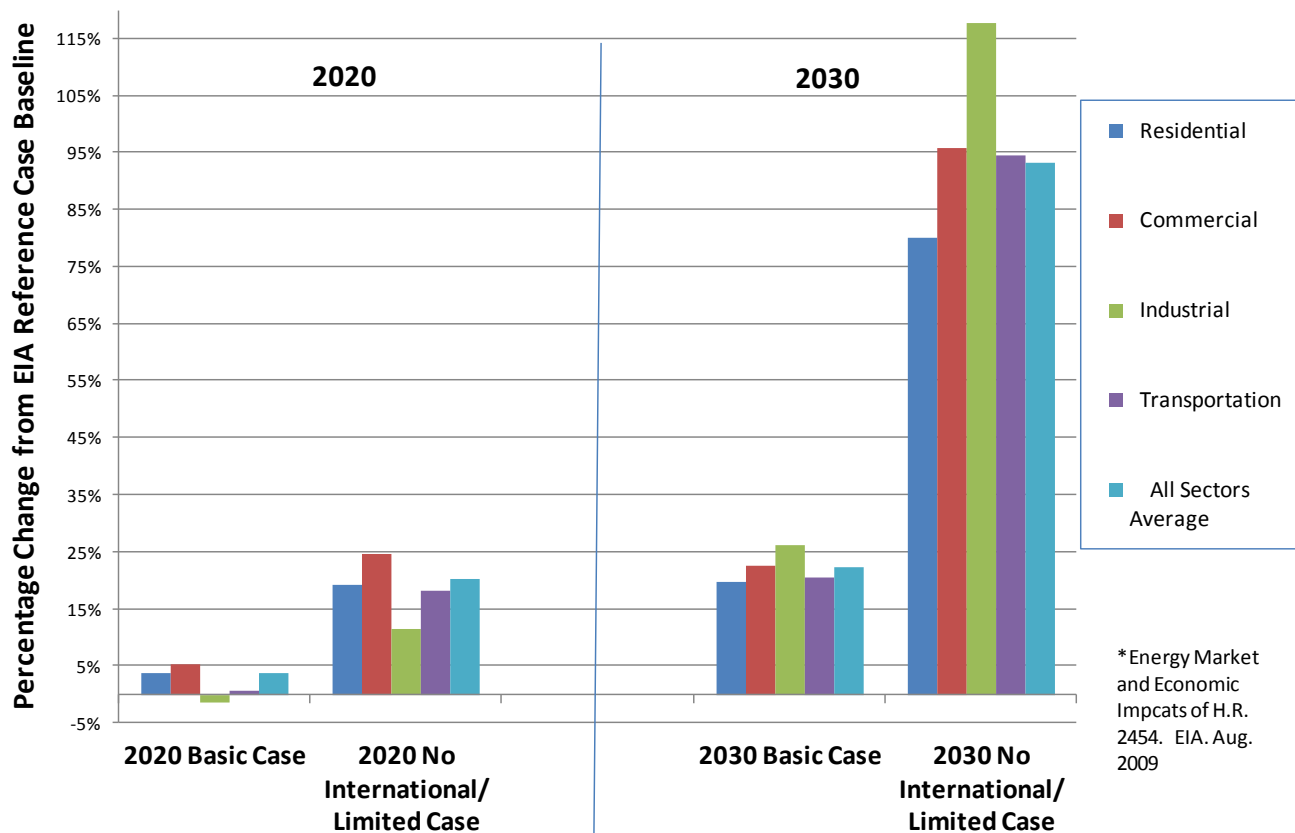
# Reducing emissions in response to H.R. 2454: U.S. generation mix in 2030 under alternative EIA scenarios

	Generation Mix in 2007	Projected Generation Mix in 2030*		
	EIA	EIA Reference Case	EIA H.R. 2454 Basic Case	EIA H.R. 2454 No International/Limited Case
<b>Renewables</b>	<b>9%</b>	<b>16%</b>	<b>22%</b>	<b>32%</b>
<b>Petroleum</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>
<b>Natural Gas</b>	<b>21%</b>	<b>19%</b>	<b>15%</b>	<b>39%</b>
<b>Coal</b>	<b>49%</b>	<b>46%</b>	<b>29%</b>	<b>7%</b>
<b>Nuclear</b>	<b>19%</b>	<b>18%</b>	<b>33%</b>	<b>21%</b>
<b>Reduced Consumption</b>			<b>357 TWh</b>	<b>837 TWh</b>

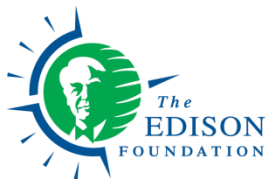


# Average electricity rate impacts of H.R. 2454 in 2020 and 2030 (EIA analysis)

EIA HR 2454 Analysis: Retail Electricity Price Increase Scenarios\*



\*Energy Market and Economic Impacts of H.R. 2454. EIA. Aug. 2009



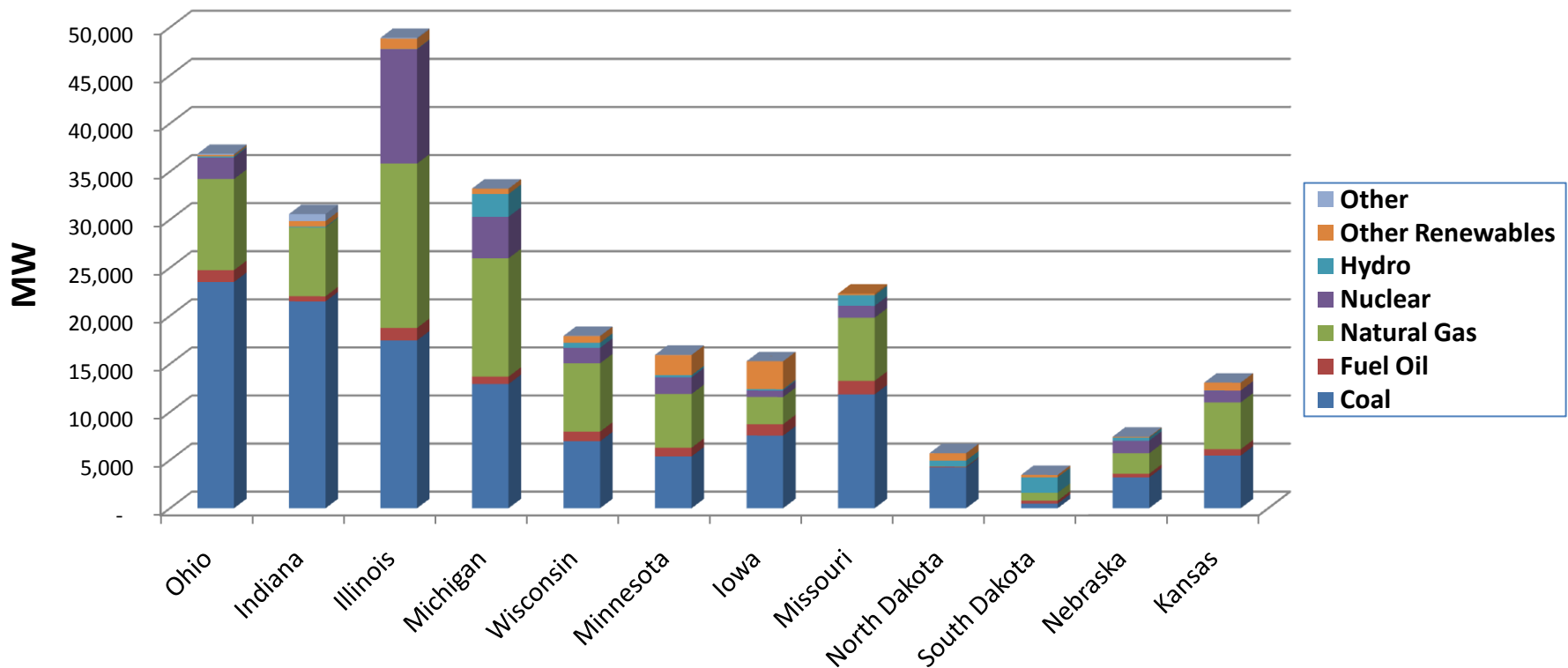
# Economic impacts of H.R. 2454 in 2030 (assumes nuclear and clean coal)

Impacts in 2030	Energy Information Administration	Environmental Protection Agency	Charles River Associates	Heritage Foundation
<b>GDP Loss</b>	0.8%	0.37% – 1.06%	1.3%	2.8%
<b>Employment Loss</b>	0.6 million (0.4%)	1.0 million (0.6%)	2.5 million (1.5%)	1.9 million (1.2%)
<b>Cost per Household</b>	\$288	\$277 - \$366	\$830	N/A
<b>CO<sub>2</sub> Allowance Price (2008\$)</b>	\$66.22	\$28.74	\$46.00	N/A
<b>Electricity Price (% over Baseline)</b>	20%	13%	22%	N/A



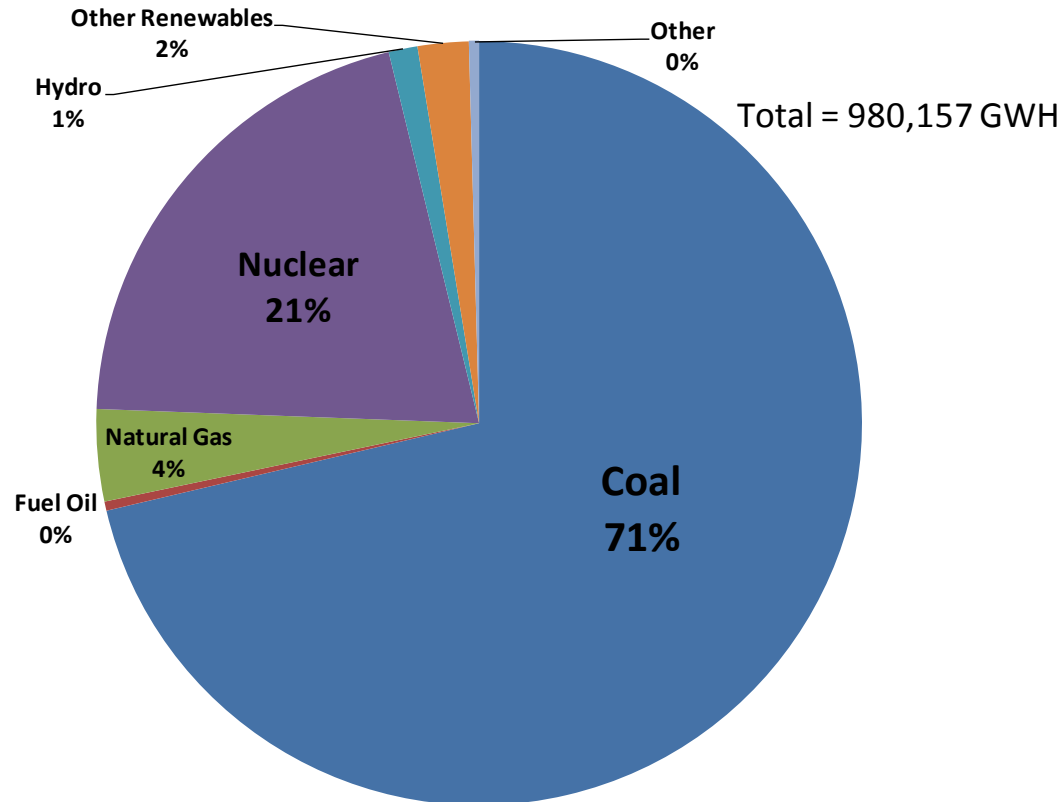
# Installed generation capacity primarily coal, gas, and nuclear in the Midwest

## Installed Generation Capacity in the Midwest by State & Energy Source 2008



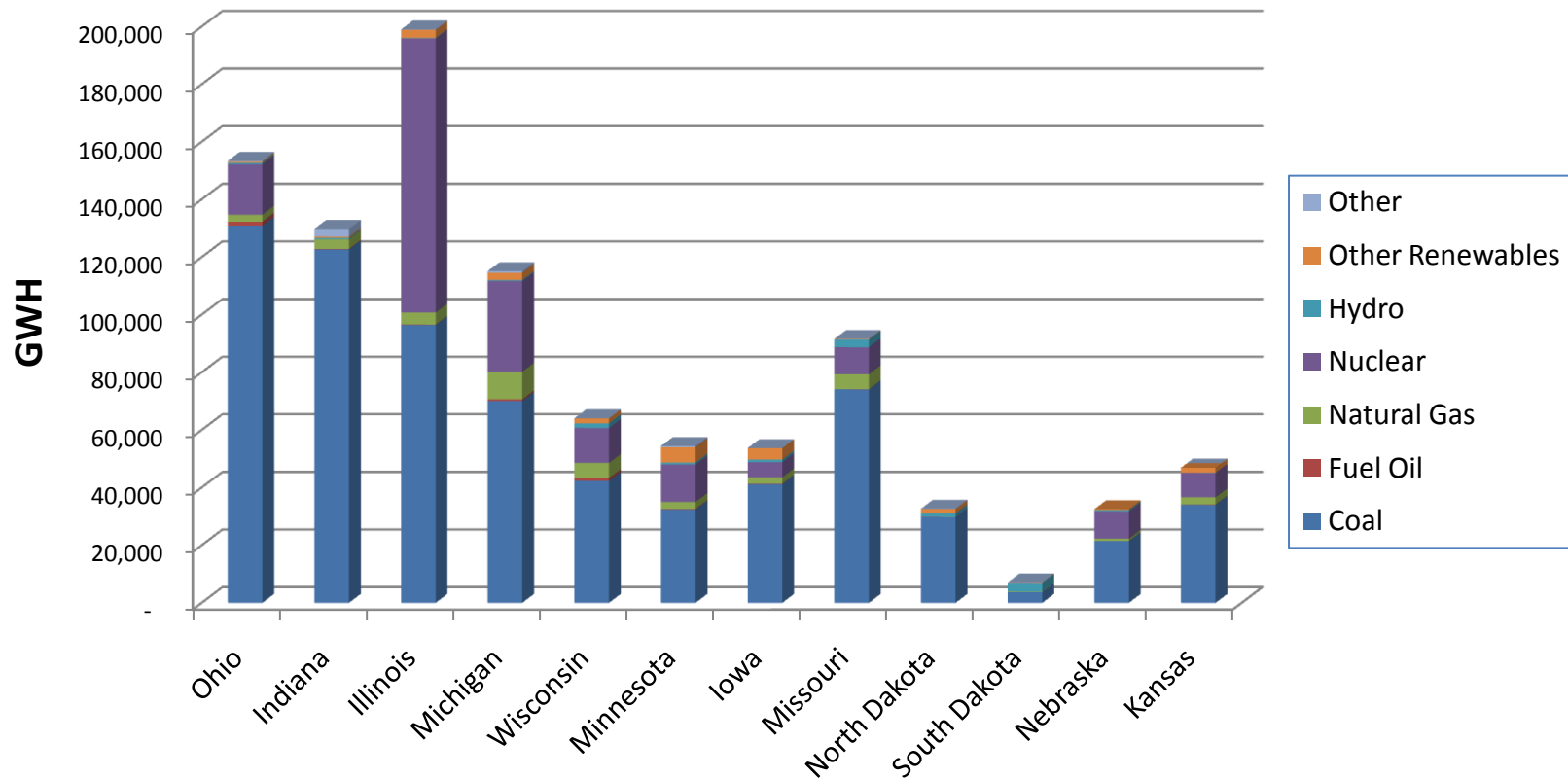
# Coal dominates energy generated in Midwest (net generation)

Total Midwest Generation by Energy Source 2008



# Illinois much less coal intensive than other Midwesternern states (2008)

## Net Energy Generation by State & Energy Source 2008

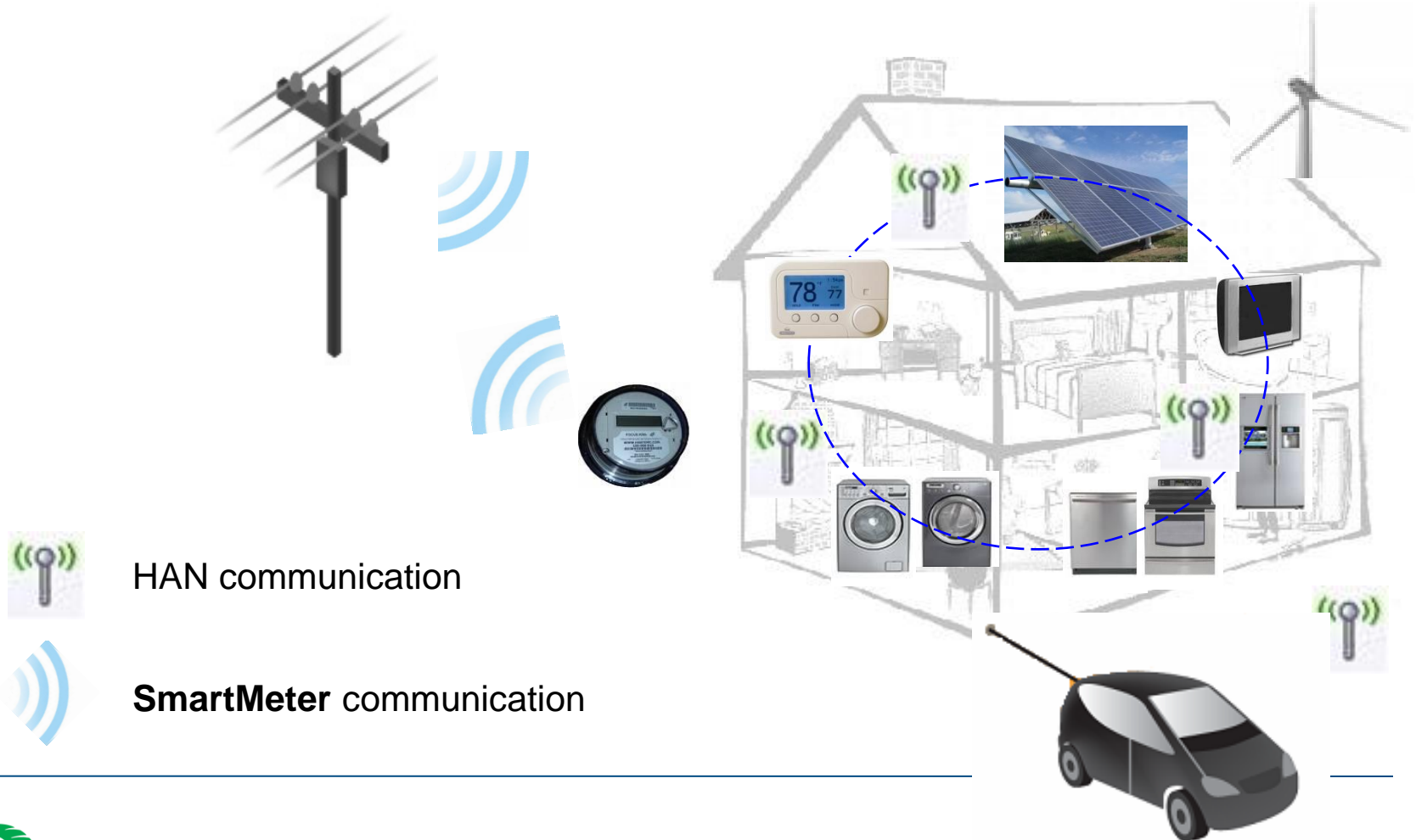


# Summary I

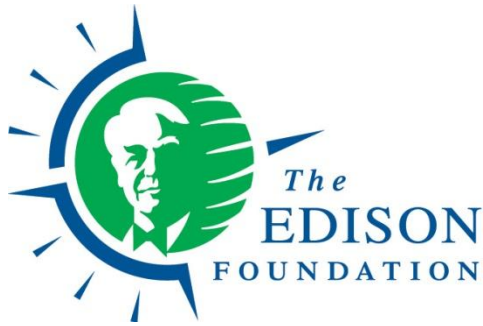
- Federal carbon legislation will change the future of electricity generation
    - Federal carbon legislation will result in higher electricity prices, particularly after 2020 (when allowances phase out)
    - Electric utilities will turn to efficiency, renewable energy, and natural gas between now and 2020
    - Clean coal and nuclear are critical to keeping prices down after 2020. Particularly important in the Midwest.
  - State policies
    - RPSs will change the electric power generation mix and lower carbon, but increase electric prices.
    - Energy efficiency will lower carbon and decrease prices.
- 



# Summary II: Giving customers the tools and know-how to be smarter energy consumers is critical!







INSTITUTE FOR  
**Electric Efficiency**

*For more information, contact:*

**Lisa Wood**

Executive Director

Institute for Electric Efficiency

The Edison Foundation

701 Pennsylvania Ave., N.W.

Washington, D.C. 20004-2696

202.508.5550

[lwood@edisonfoundation.net](mailto:lwood@edisonfoundation.net)

[www.edisonfoundation.net/IEE](http://www.edisonfoundation.net/IEE)