

Independence & Energy Efficiency

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Economist

Missouri Office of Public Counsel



Missouri

Office of the Public Counsel

Fighting for Fair Utility Rates

- Consumer advocate office established in 1975
- Electric, Natural Gas, Telephone, Water, Sewer
- 4 attorneys
- 3 accountants
- 2 economists
- 2 staff
- 1 financial analyst



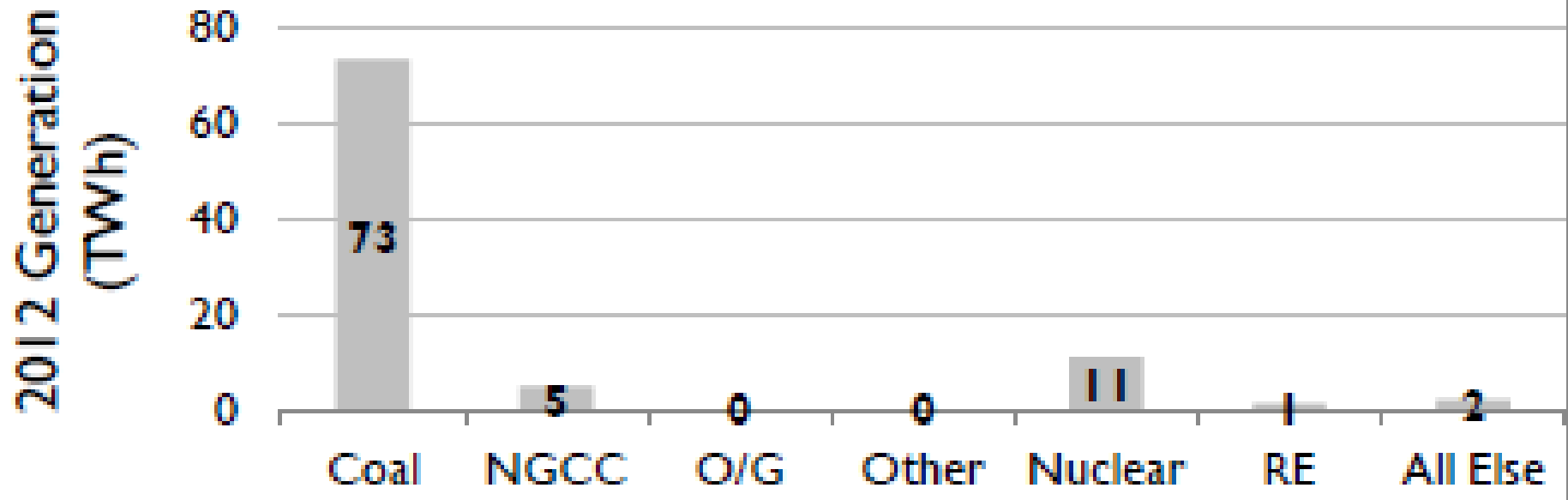
THE *STATE* OF MISSOURI

Missouri is a net energy importer



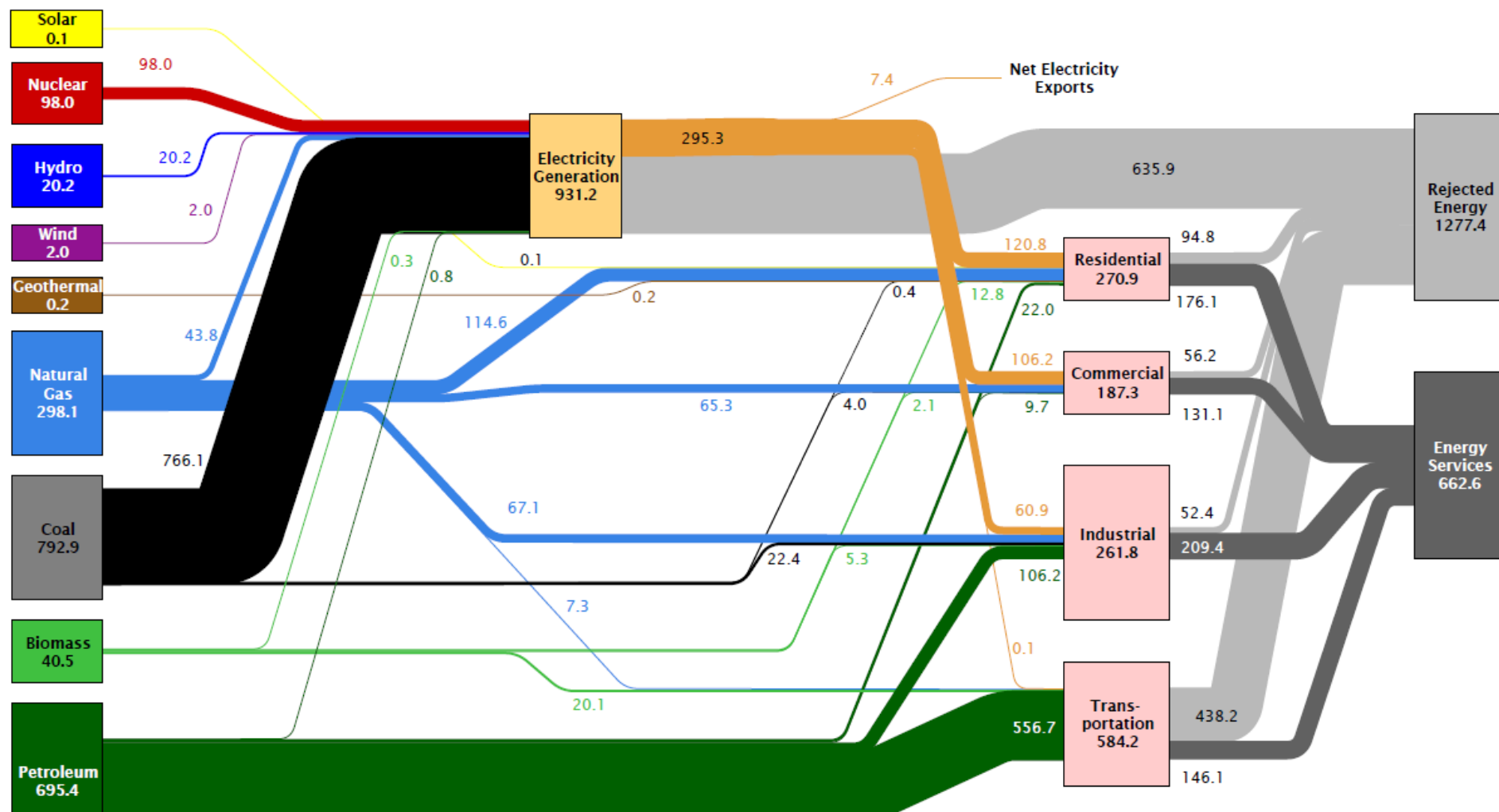
Missouri

2012 Generation by Resource Type



| | |
|----------------------|-----------------------------------|
| % of U.S. Population | % of U.S. Electricity Consumption |
| 1.9% | 2.2% |

Estimated Missouri Energy Use In 2008 ~1947.4 Trillion BTU



Energy Efficiency = First Fuel

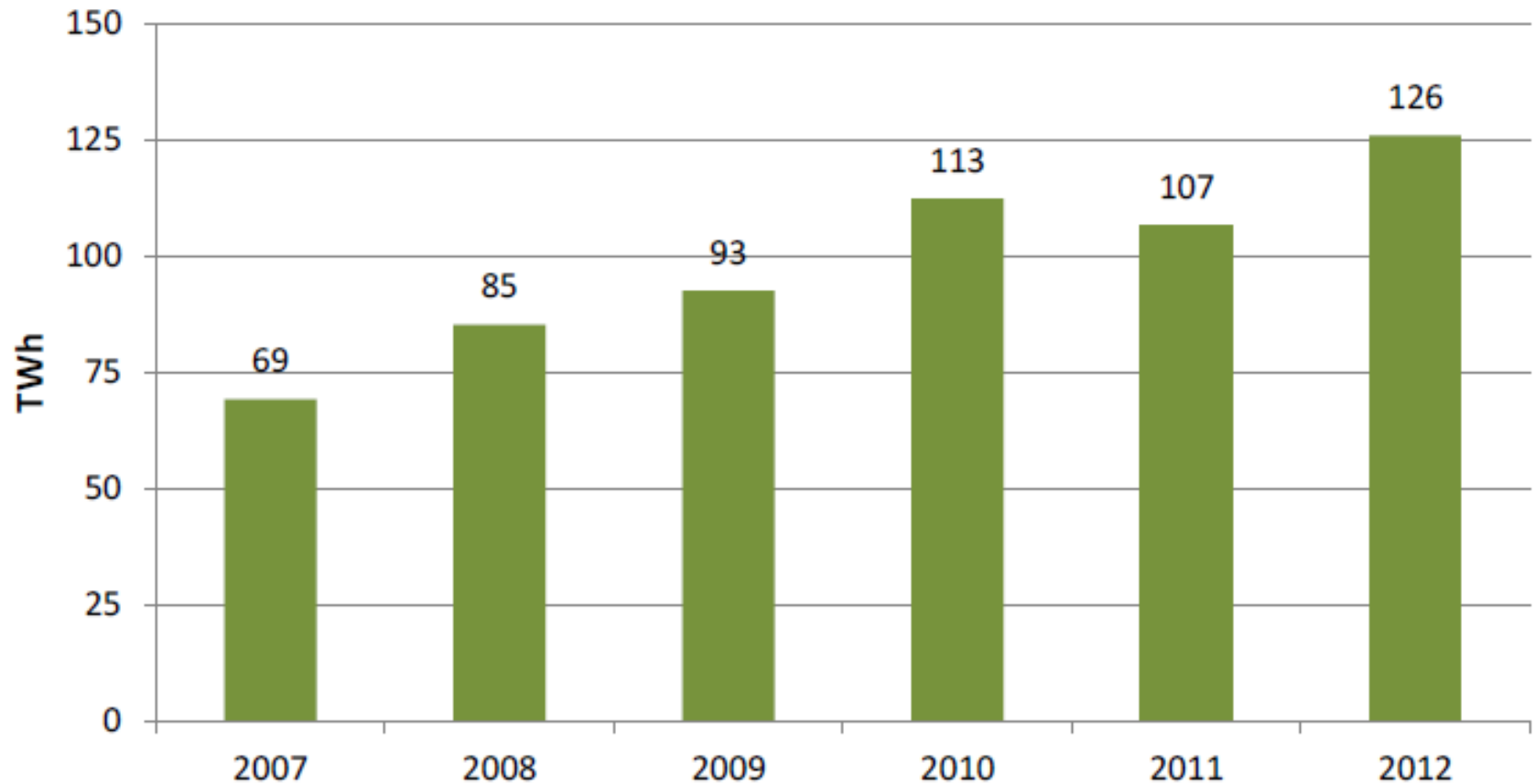
- Fastest to deploy
- Cheapest per unit
- Cleanest environmental impact



WHAT IS ENERGY EFFICIENCY?

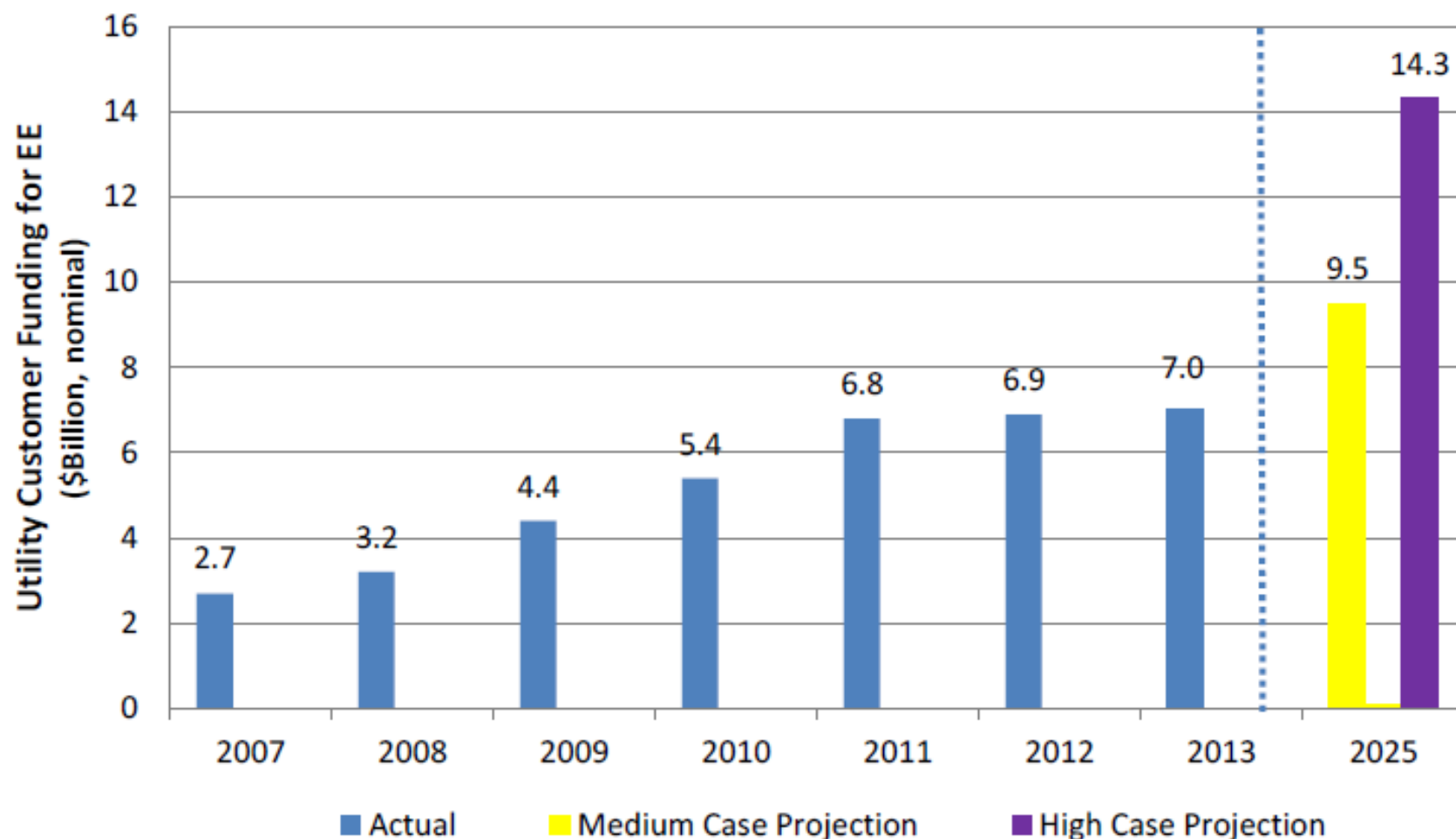
- **Energy efficiency** is a way of managing and restraining the growth in energy consumption. Something is more energy efficient if it delivers more services for the same energy input, or the same services for less energy input.

U.S. Electric Efficiency Savings (2007-2012)



Overall, electric efficiency programs saved 126 TWh in 2012, enough to power 12.2 million homes for one year, and avoided the generation of 89 million metric tons of carbon dioxide.⁷

Electric Efficiency Budgets: 2007-2013 and 2025 Forecast

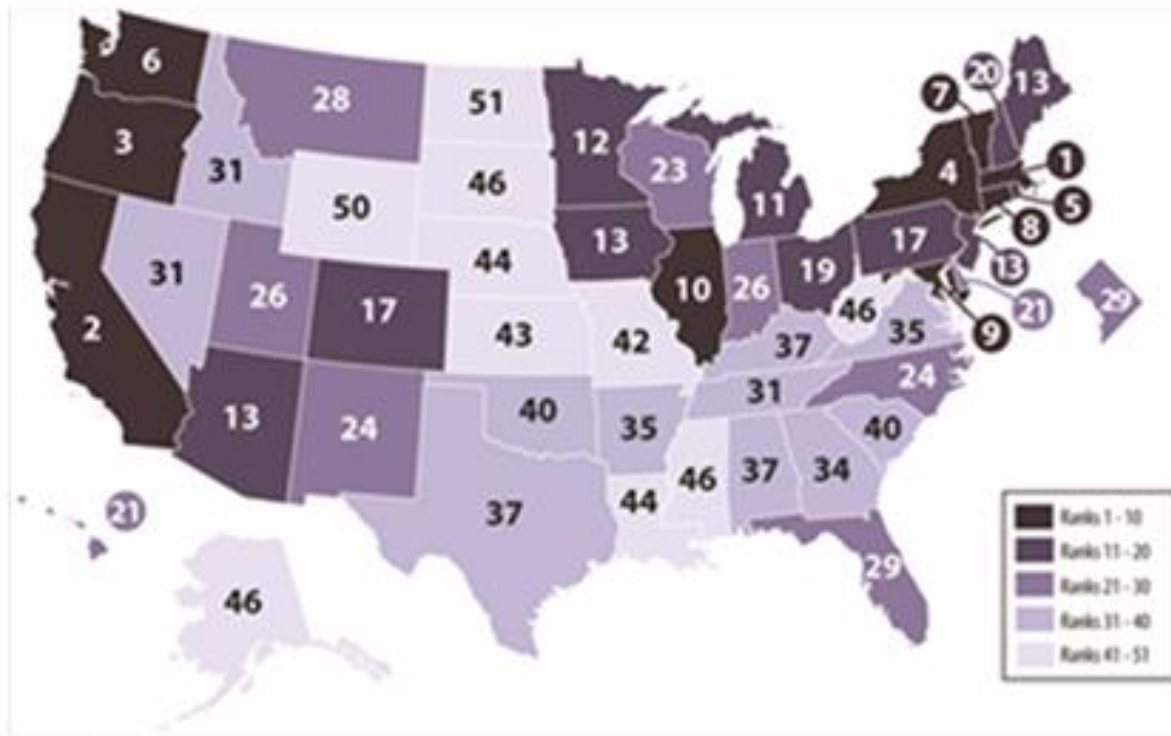


Source: LBNL (2013) with modifications by the Institute for Electric Innovation.

WHAT MISSOURI HAS DONE WITH ENERGY EFFICIENCY TO DATE

ACEEE Comparison

2013 State Scorecard Rankings Map



| YEAR | US Rank |
|-------------|------------|
| 2010 | #43 |
| 2011 | #44 |
| 2012 | #43 |
| 2013 | #42 |
| 2014 | #44 |

ACEEE Overall Breakdown of Scores 2012-13

2012 Highlights

| Rank | State | Utility & Public Benefits Program & Policies (20 pts) | Transportation (9 pts) | Building Energy Codes (7pts) | Combined Heat & Power (5 pts) | State Government Initiatives (7 pts) | Appliance Efficiency Standards (2 pts) | Total Score (50 pts) | Change in rank from 2011 |
|------|-------|---|------------------------|------------------------------|-------------------------------|--------------------------------------|--|----------------------|--------------------------|
| #43 | MO. | 3.5 | 0 | 2.5 | 0.5 | 2.0 | 0 | 9.0 | +1 (was #44) |

2013 Highlights

| Rank | State | Utility & Public Benefits Program & Policies (20 pts) | Transportation (9 pts) | Building Energy Codes (7pts) | Combined Heat & Power (5 pts) | State Government Initiatives (7 pts) | Appliance Efficiency Standards (2 pts) | Total Score (50 pts) | Change in rank from 2012 |
|------|-------|---|------------------------|------------------------------|-------------------------------|--------------------------------------|--|----------------------|--------------------------|
| #42 | MO. | 4.0 | 0 | 3.0 | 0.5 | 3.0 | 0 | 10.5 | +1 |

Overall Change

| Rank | State | Utility & Public Benefits Program & Policies (20 pts) | Transportation (9 pts) | Building Energy Codes (7pts) | Combined Heat & Power (5 pts) | State Government Initiatives (7 pts) | Appliance Efficiency Standards (2 pts) | Total Score (50 pts) | Change in rank from 2012 |
|------|-------|---|------------------------|------------------------------|-------------------------------|--------------------------------------|--|----------------------|--------------------------|
| #42 | MO. | +0.5 | - | +0.5 | - | +1.0 | - | +1.5 | +1 |

Energy Efficiency Regulatory Framework

| | | | Fixed Cost Recovery* | | | |
|----------------|-----------------|----------------|----------------------|------------------------|-----------------------|-------------------------------------|
| Rank by budget | State | 2013 EE Budget | Decoupling | Lost Revenue Mechanism | Performance Incentive | Energy Efficiency Resource Standard |
| 1 | California | \$1.5 Billion | Yes | | Yes | Yes |
| 25 | Georgia | \$71.5 Million | | Yes | Yes | |
| 30 | <i>Missouri</i> | \$50.5 Million | | Yes | Yes | |
| 50 | Virginia | \$868,786 | Pending | | | Pending |

WHAT TO EXPECT MOVING FORWARD

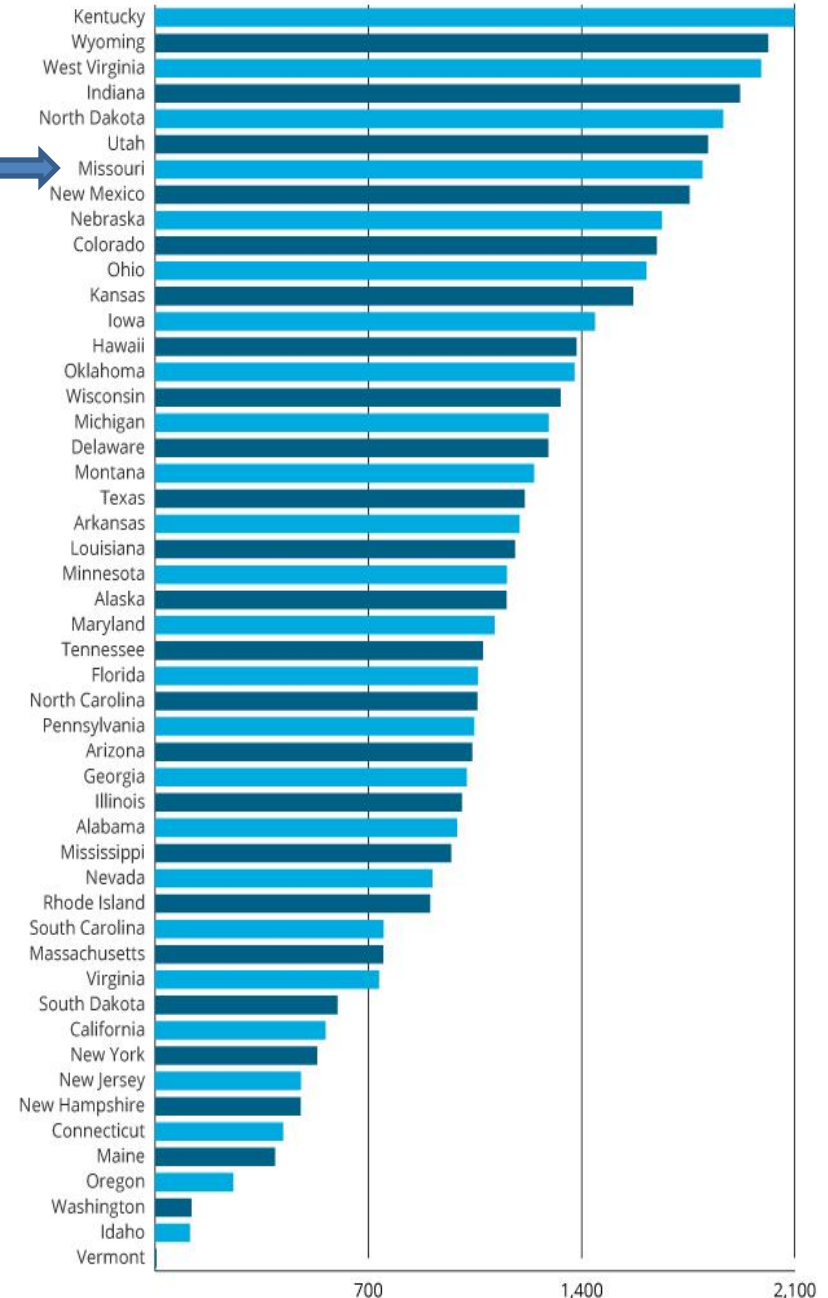
Expect for rates to go up

- Disclaimer: Variables are in-flux
 - Technological
 - Demographic
 - Economic
 - **Environmental**
 - Political
 - Black Swan

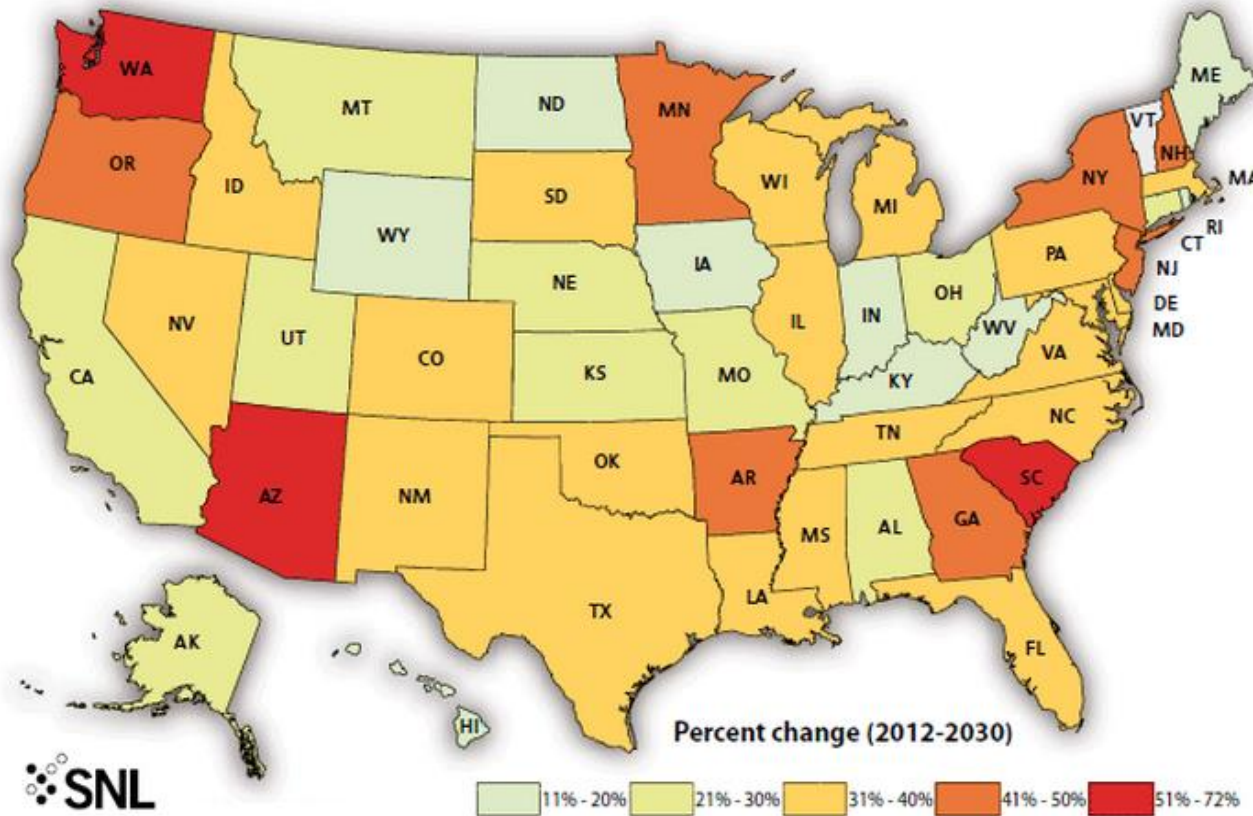
Which States Have the Dirtiest Energy?

Carbon emissions rates vary widely across the country.

Pounds of CO₂ per megawatt-hour of electricity produced, 2012



- EPA's 111(D) guidelines for a 30% national reduction



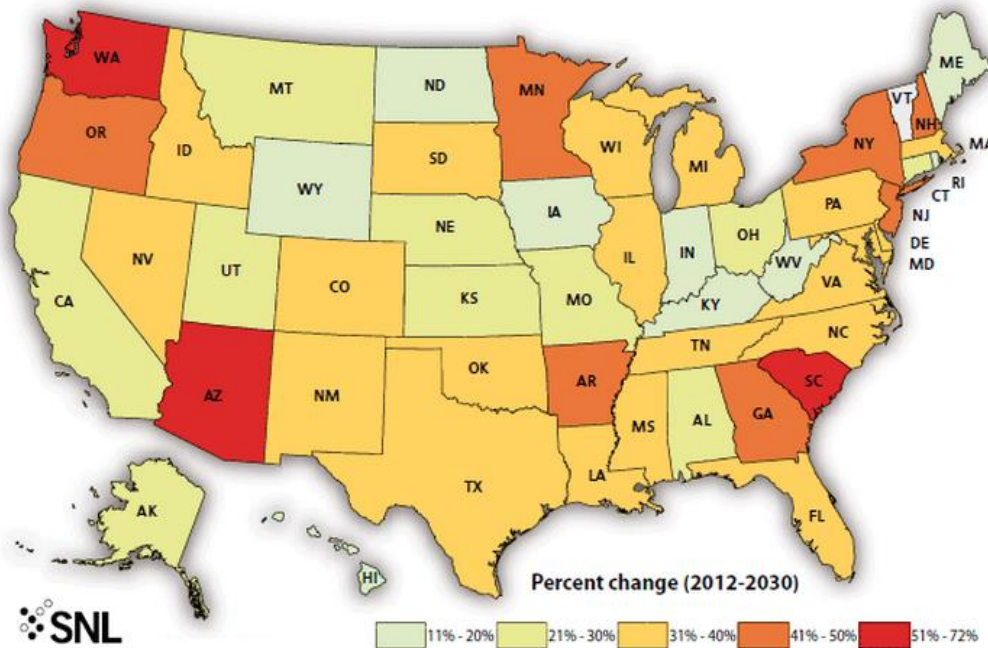
| | Historical Emissions Rate (2012) | Avg. Interim Emissions Rate (2020-2029) | Final Emissions Rate Goal (2030+) | Required Change (2012 – 2030) |
|----------|--|---|---|-------------------------------------|
| Missouri | 1,963 | 1,621 | 1,544 | 21% |

Which States Have the Dirtiest Energy?

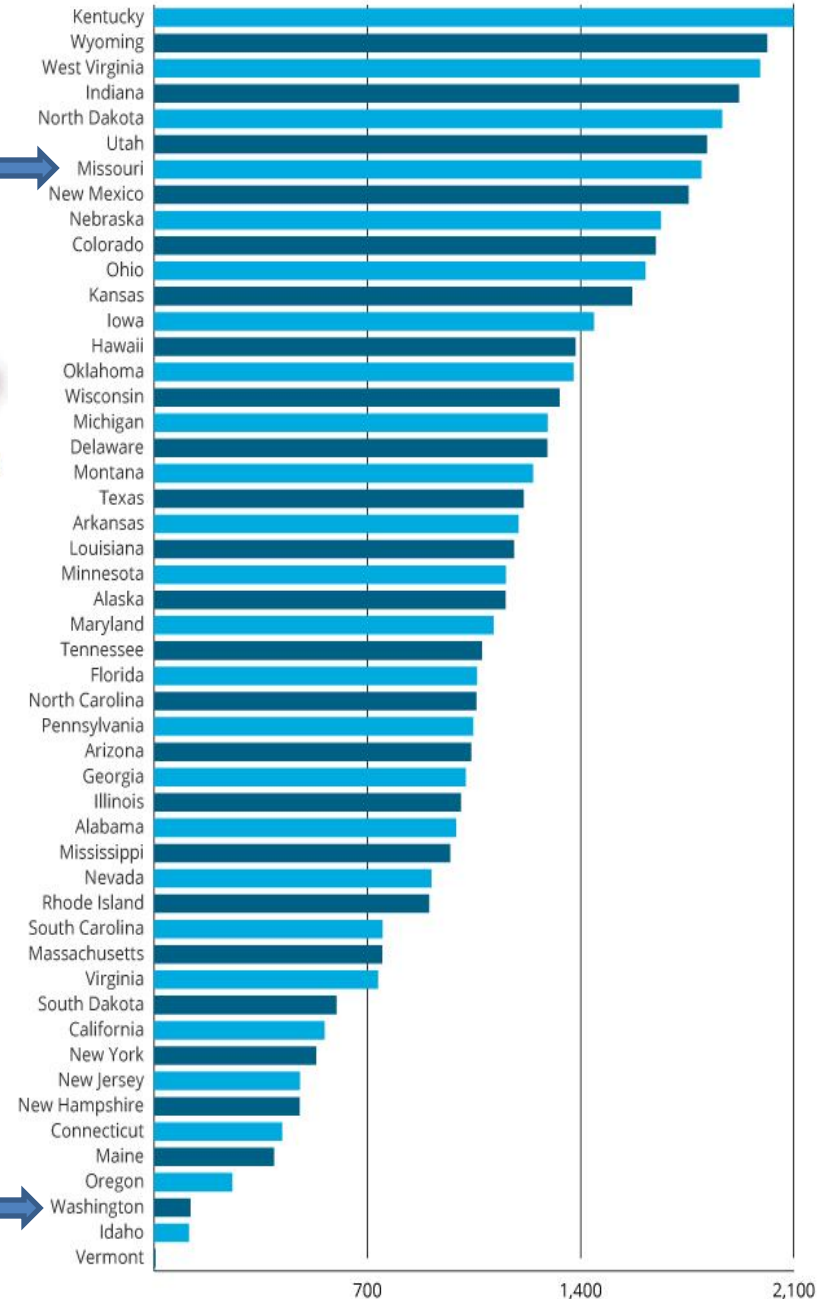
Carbon emissions rates vary widely across the country.

Pounds of CO₂ per megawatt-hour of electricity produced, 2012

- 21% reduction
Missouri



- 72% reduction
Washington



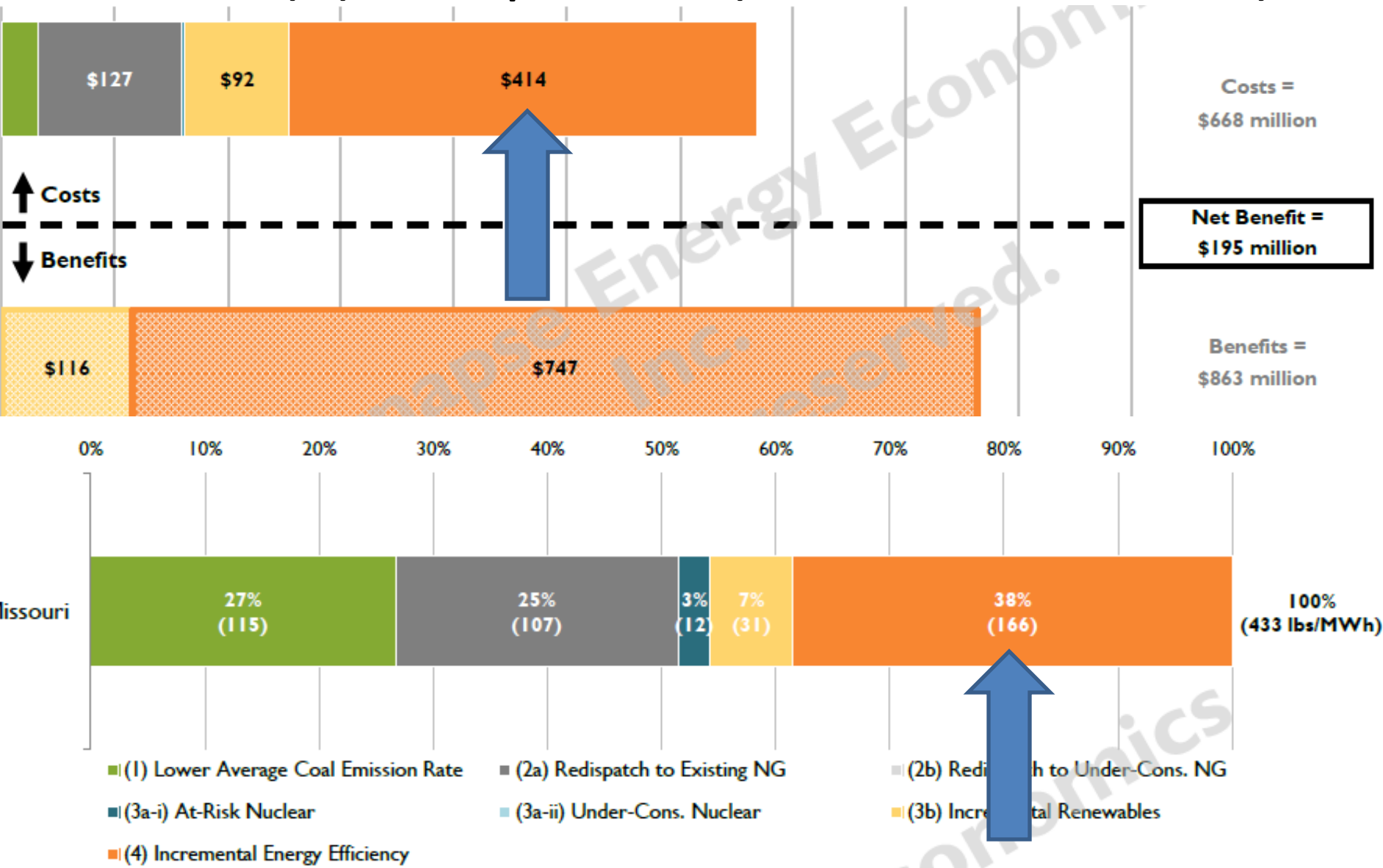
4 Building Blocks

Best System of Emission Reductions (BSER)

- More efficient coal plants
- Switch to natural gas
- Renewable energy
- Energy efficiency



2030 Missouri Electric Sector Costs and Benefits of 111(d) Compliance (millions of 2011 \$)



**WHAT'S THE IMPACT ON MY
ELECTRIC BILL?**

Energy Efficiency and 111(D) Impacts

Impacts on **Participants**

- Higher rates but lower bills because of reduced energy consumption, as well as reduced wholesale market costs

Impacts on **Non-Participants**

- Higher rates, no change in usage; thus higher bills

Over time...

- Downward pressure on rates
 - Wholesale market price suppression
 - Avoided T&D
 - Increased Reliability
 - Avoided Risk
 - Non-energy benefits
 - Estimated electric sector benefits are 25% higher than costs*

WHAT DO WE GET?

Increased Spending on Residential Programs

GET PAID TO SAVE.



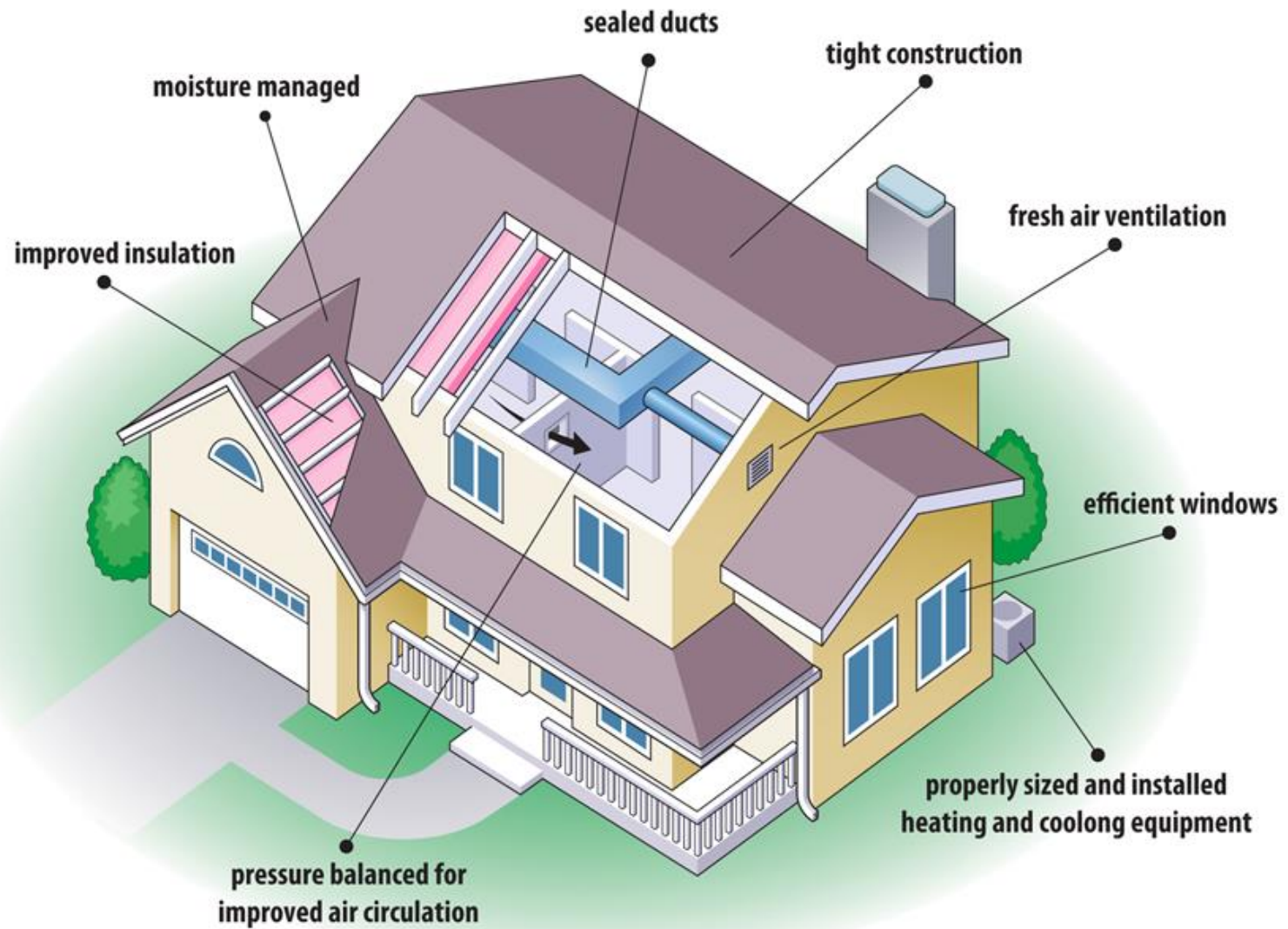
Let us pick up
and recycle your
working fridge or
freezer and we'll
give you a cool

\$50 reward!

See website for program requirements.
Details vary by state.



ActOnEnergy.com



Increased Spending on Commercial and Industrial Programs

KCP&L *Business Energy Efficiency Rebates*



There's money hiding in your business.
We'll help you find it.

Home Energy Audits/Scores

Columbia Water & Light's **EFFICIENCY SCORE**

95%



Percentage of your home's energy efficiency potential with 100% being the most efficient.

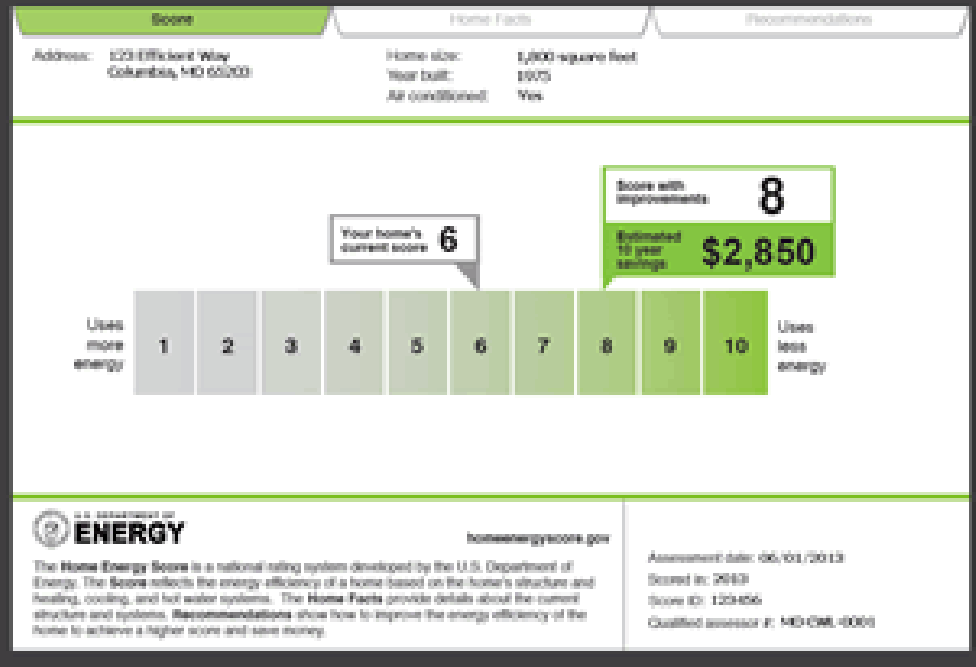
ESTIMATED ANNUAL ENERGY COSTS
\$1108 - \$1500

ADDRESS 123 Efficient Way

HOME SIZE (square feet) 1,800 YEAR BUILT 1975

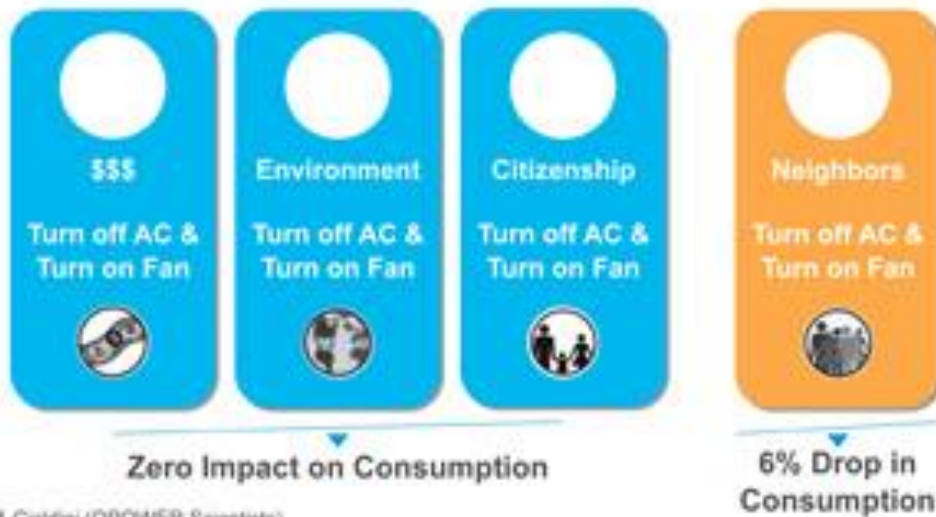
ASSESSMENT DATE 06/01/2013

Home Energy Score



Behavioral Mechanism

Conservation messages printed on door hangers and left on homes



Schultz & Gaidini (OPOWER Scientists)
Hewlett Foundation San Marcos Study

OPOWER



Headline from *The Onion*

June 2, 2014

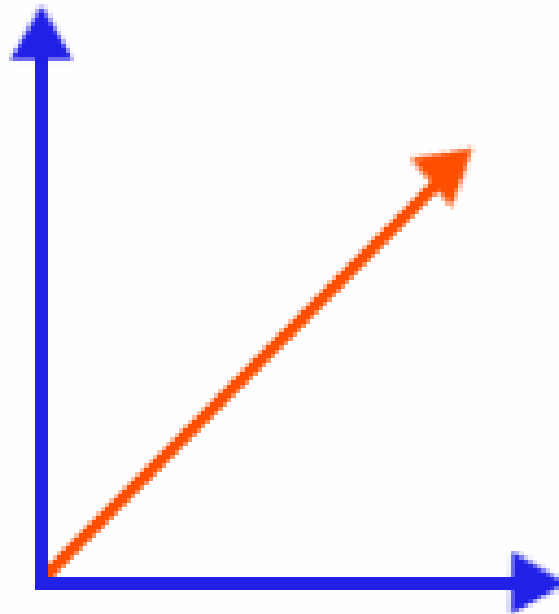
New EPA Regulations Would Force
Power Plants To Find 30% More
Loopholes By 2030

BUT IF NOT...

IF 111(D) DOES NOT MOVE FORWARD

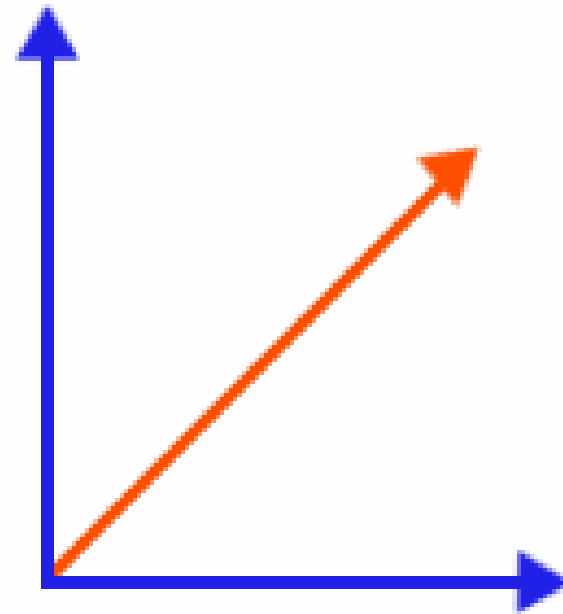
Energy Efficiency programs and spending/saving will continue...

MASS



MOMENTUM

VELOCITY

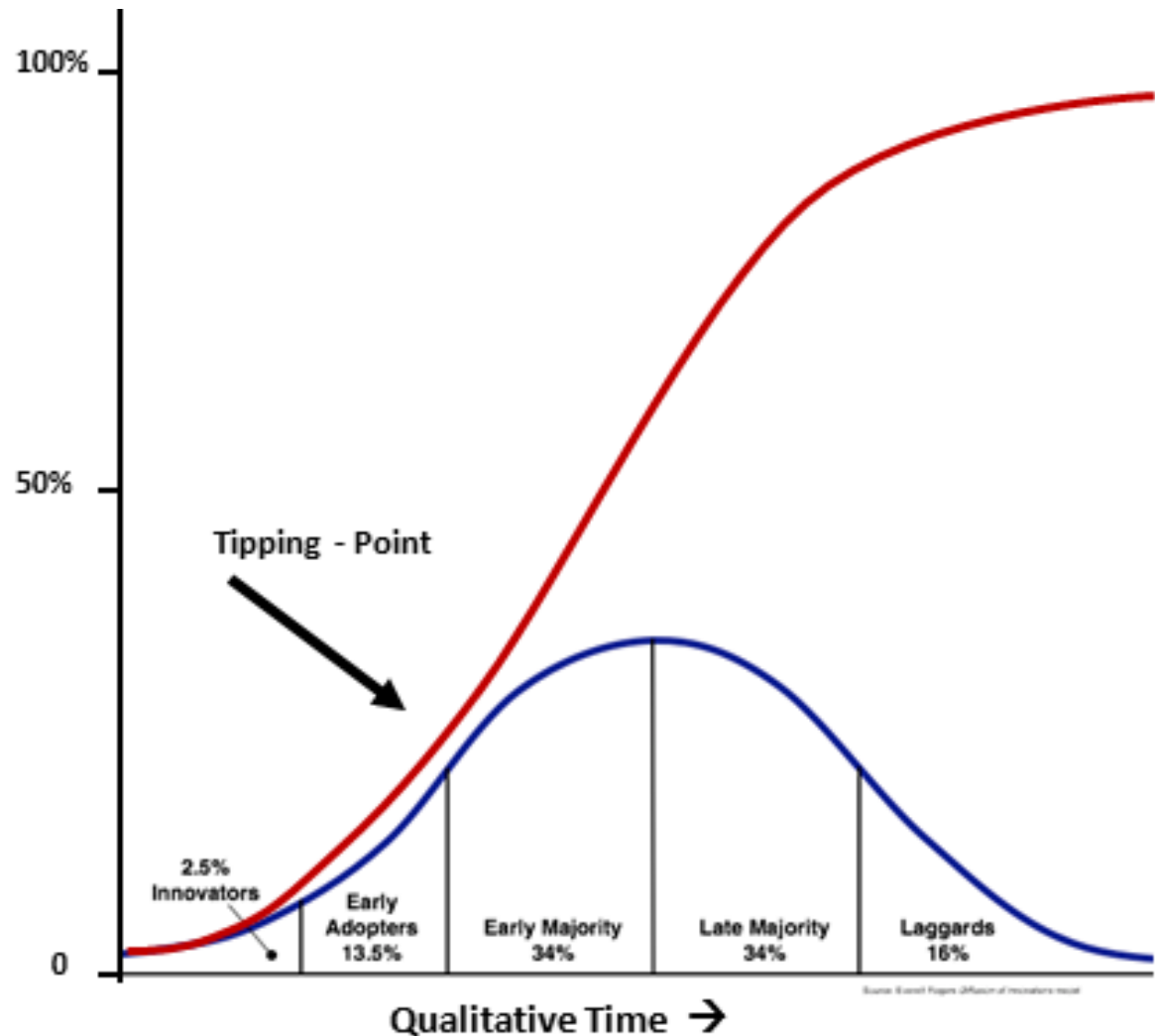


MOMENTUM

**MOMENTUM INCREASES WHEN EITHER
MASS OR VELOCITY INCREASES**

The Appropriate Policy Tools

- Program design and execution
 - Market-driven Vs. Utility-driven Vs. Policy-driven
- Mitigate Negative Externalities
- Equitable Participation



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QUESTIONS?