



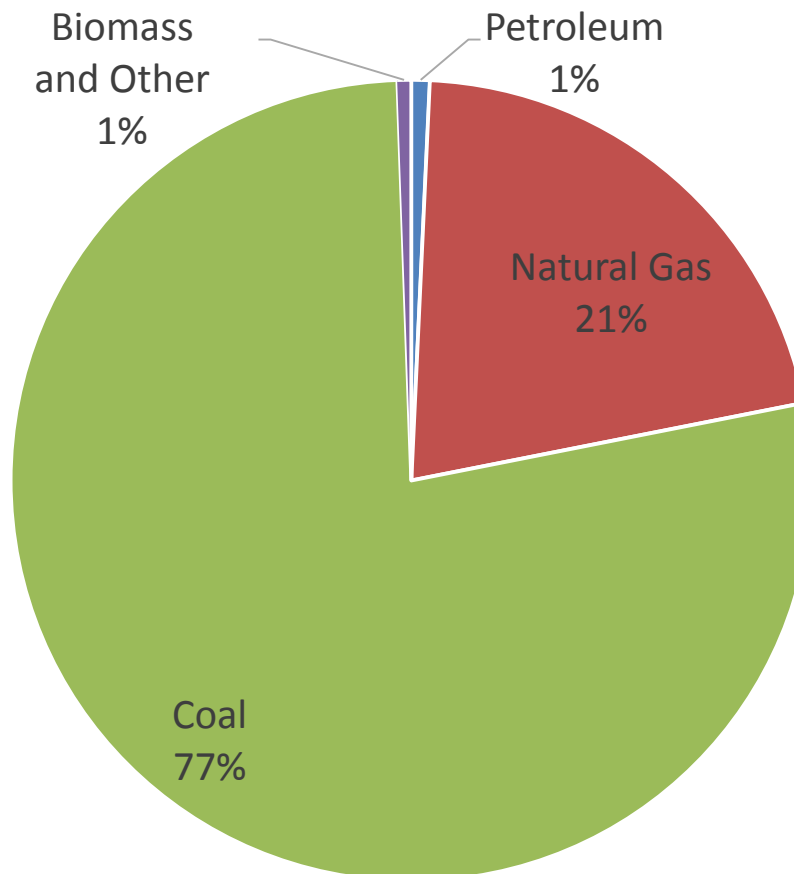
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# **Beyond Coal and Gas in the Electric Sector**

**NYU Institute for Policy Integrity  
The Future of U.S. Climate Policy**

*October 28, 2014*

## CO<sub>2</sub> Emissions from the Electric Power Sector (2013)



# Greenhouse Gases Performance Standards for Power Plants

## Carbon Pollution Standard for New Plants

- Coal plant standard internationally significant
- Gas plant standard is too weak

## Clean Power Plan for Existing Plants

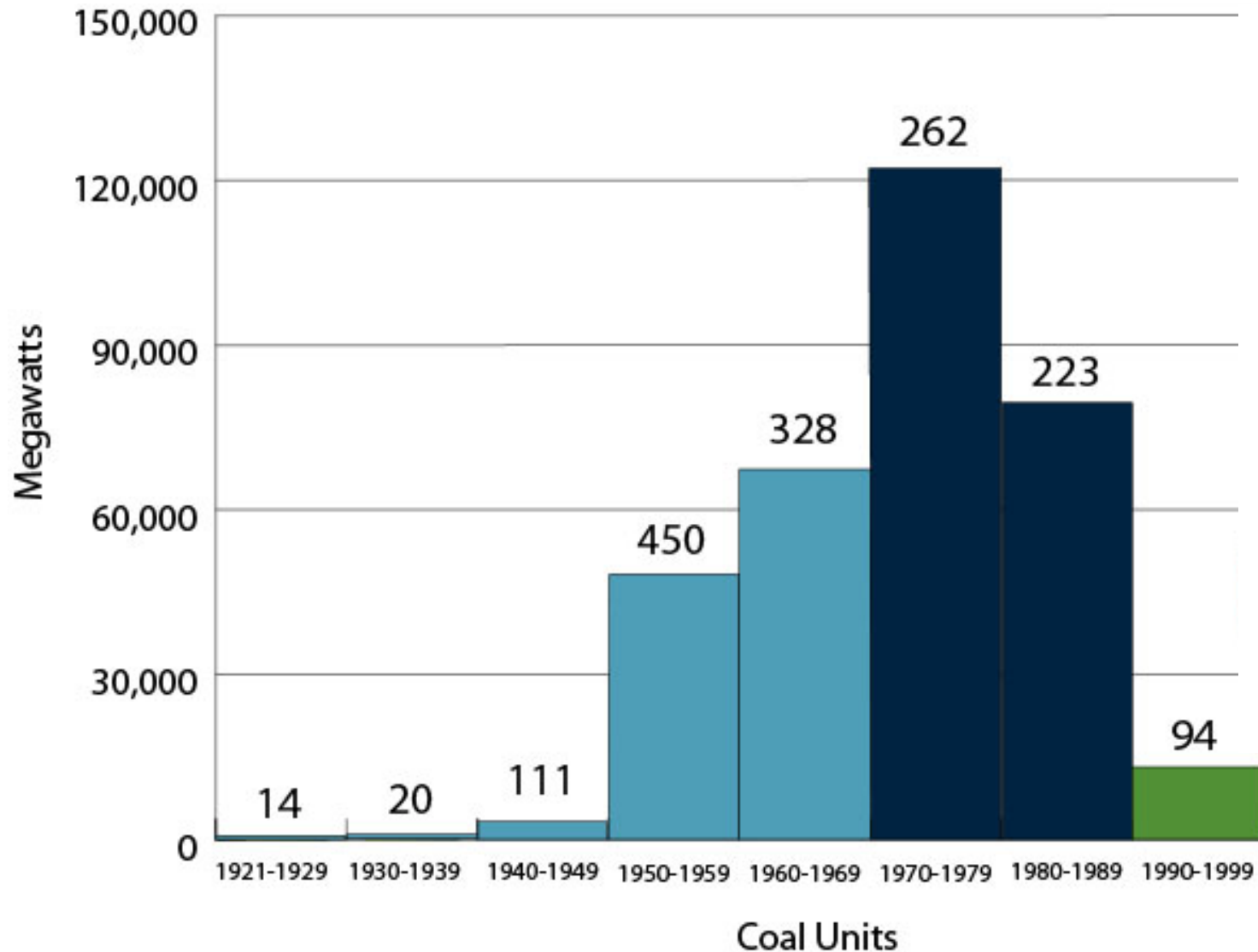
- Robust structure
- Numerous ways to improve targets
- Opportunities to advocate clean power in states

# Coal impacts

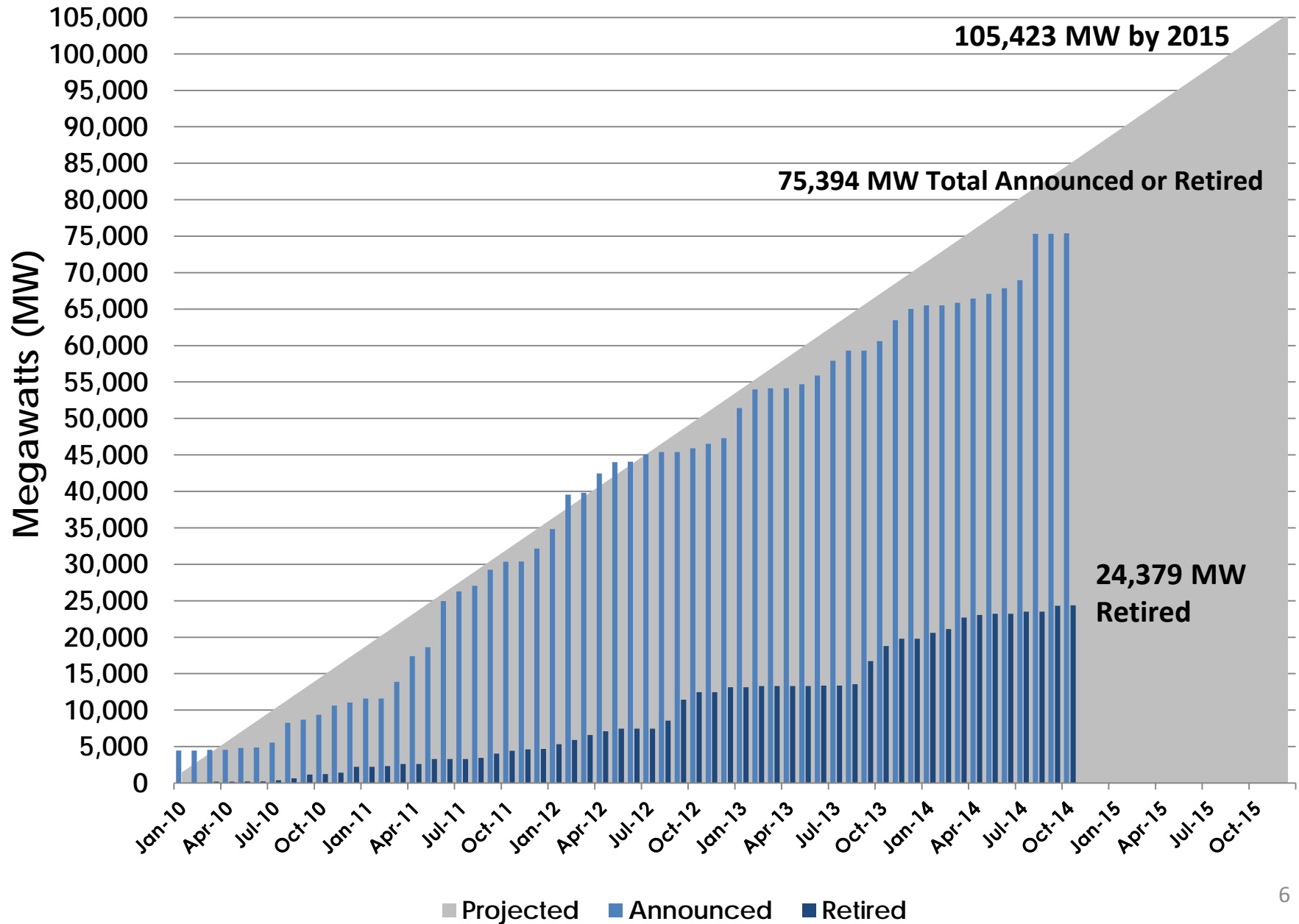


Photo courtesy of Scott Smithson

## Age of Coal Power Plants in United States



# Closing in on 105,423 MW by 2015

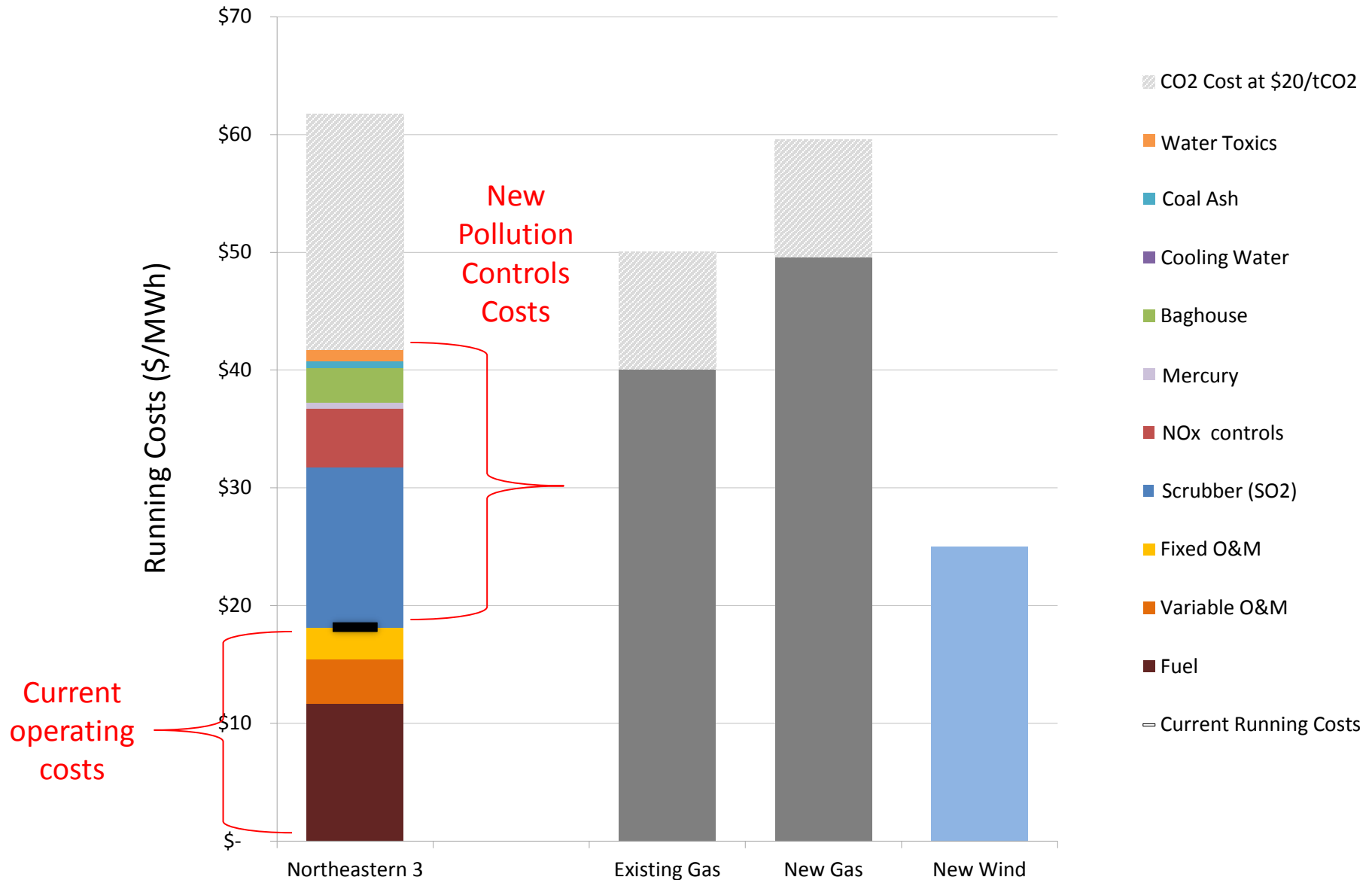




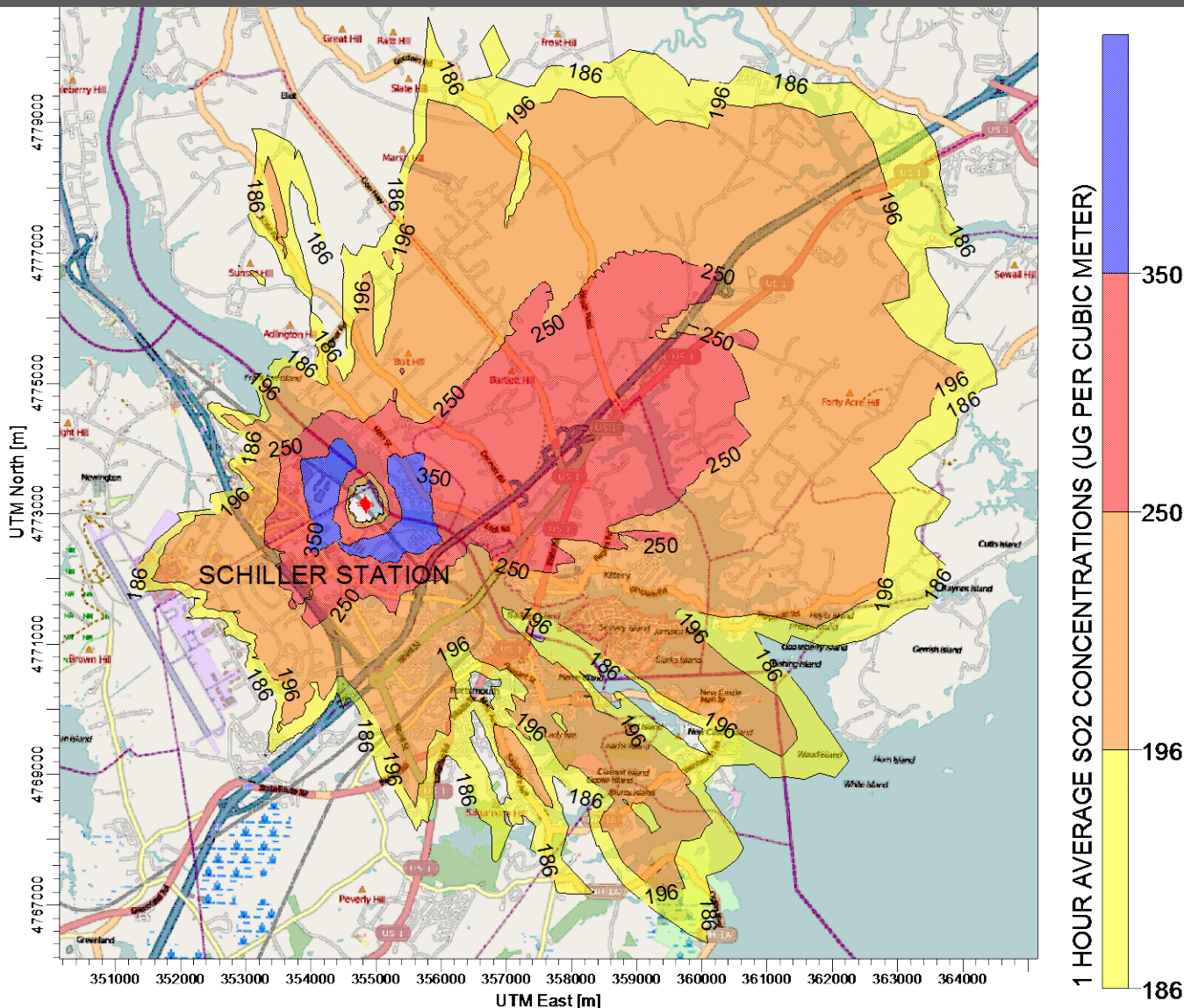
# EPA Rules Affecting Coal Plants

Rule	Action	Date
Power Plant New Source Performance Standards (NSPS) for Greenhouse Gases – New Sources	Final Rule	January 2015 (likely delayed to June 2015)
Power Plant New Source Performance Standards (NSPS) for Greenhouse Gases – Existing and Modified Sources	Draft Rule Final Rule	June 2014 June 2015
Ozone Air Quality Standards (NAAQS)	Draft Rule Final Rule	December 2014 October 2015
Startup, Shutdown, Malfunction	Final Rule	May 2015
Water Toxics –Effluent Limitation Guidelines for Wastewater Discharges	Final Rule	September 2015
Coal Ash	Final Rule	December 2014

# Example: Northeastern 3, OK (473 MW)



# Sulfur Dioxide Standard



## Towns/ Points of Interest

1. Kittery, ME
2. South Eliot, ME
3. Eliot, ME
4. York, ME
5. Kittery Town Government Buildings; Kittery Historical and Naval Museum
6. Kittery Recreation Dept.
7. Rice Public Library

## Schools

8. Robert W. Traip Academy
9. Shapleigh Middle School
10. Mitchell Primary School
11. Eliot Elementary School
12. Marshwood Middle School
13. Tidewater School
14. Rainbow Country Day Learning

## Parks

15. Ft. McClary State Park
16. Kenneth R. Emery Rec. Area
17. Rogers Park
18. Old Post Rd. Baseball Fields
19. Frost Tufts Park and Ballpark

## The Schiller Plant SO<sub>2</sub> Plume and Maine Points of Interest

186 ug/m<sup>3</sup> exceeds NAAQS with Maine background.

All colored areas represent NAAQS violations

# Portland Press Herald

MONDAY, MARCH 3, 2014

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*November 24, 2013*

## Eliot wants EPA probe of emissions from plant

**While some residents are blaming respiratory problems on air pollution, Schiller Station says it's in compliance.**

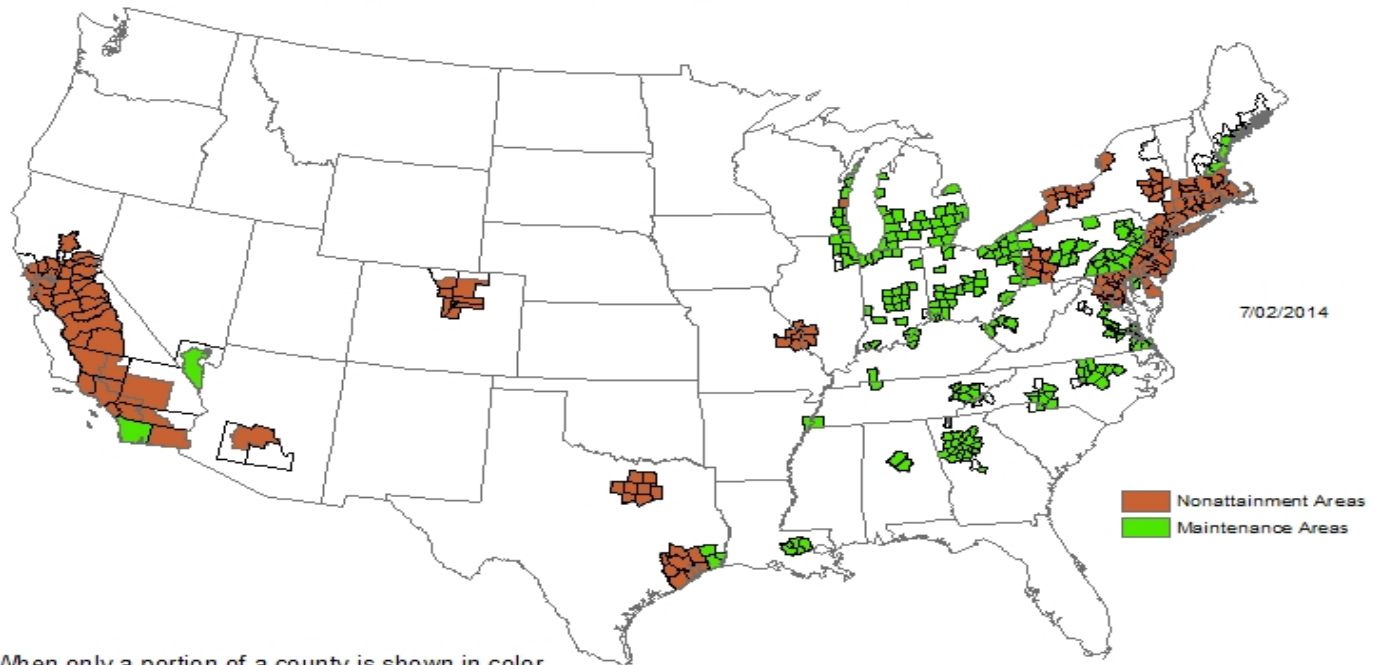
*By North Caim [ncaim@pressherald.com](mailto:ncaim@pressherald.com)*

*Staff Writer*

Kimberly Richards still remembers how it felt, back in the sixth grade, when she suffered her first episode of bronchitis.

# 1997 Ozone Standard: 85 ppb, 8 hr

## 8-Hour Ozone Nonattainment and Maintenance Areas (1997 Standard)



When only a portion of a county is shown in color, it indicates that only that part of the county is within an area boundary.

The Illinois portion of the St. Louis, MO-IL 8-hr Ozone (1997 Standard) nonattainment area was redesignated on June 12, 2012, while the Missouri portion has not. The entire area is not considered in maintenance until all states in a multi-state area are redesignated.

1998: NO<sub>x</sub> SIP Call

2000: *Michigan v. EPA*, 213 F.3d 663

2005: Clean Air Interstate Rule (CAIR)

2008: *North Carolina v. EPA*, 531 F.3d 896,  
reh'g, 550 F.3d 1176

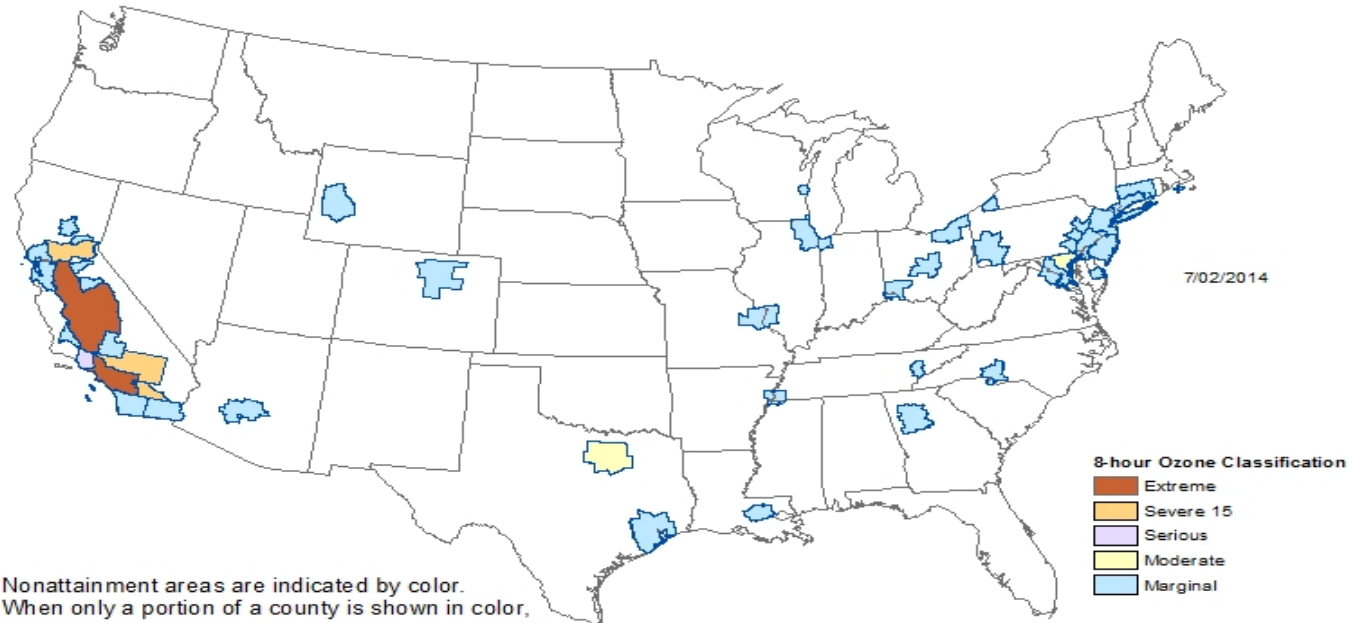
2011: Cross-State Air Pollution Rule (CSAPR)

2012: *EME Homer City v. EPA*, 696 F.3d 7

2014: *EPA v. EME Homer City*, 134 S. Ct. 1584

# 2008 Ozone Standard: 75 ppb, 8 hr

8-Hour Ozone Nonattainment Areas (2008 Standard)



Nonattainment areas are indicated by color.  
When only a portion of a county is shown in color,  
it indicates that only that part of the county is within  
a nonattainment area boundary.

## Coal Plants Are Turning Down Their SCRs

119,622.7 MW of plants are not operating w/in 25% of lowest demonstrated rate:

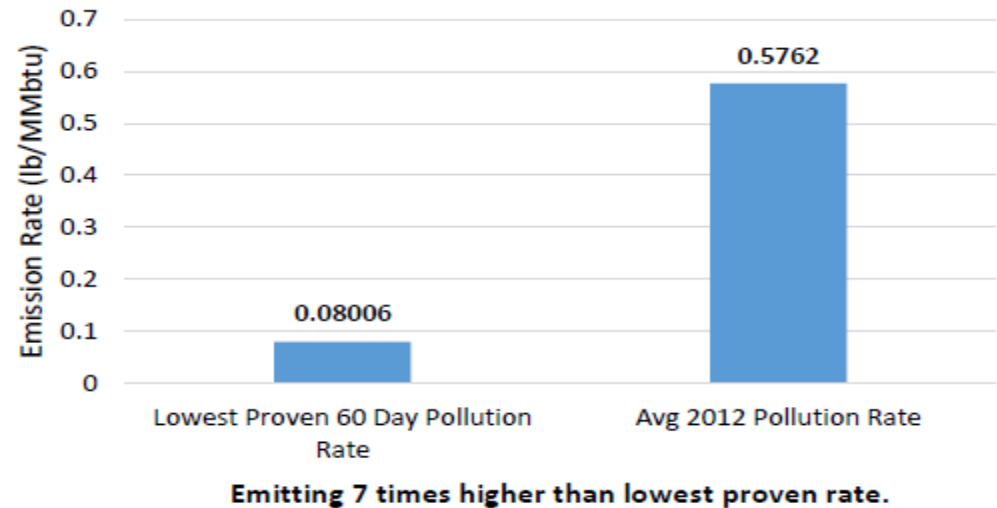
Total tons of NOx from these plants:  
489,870.5 tons

### Coal Plants Turn Down Their SCR To Increase Profits And Dispatch:

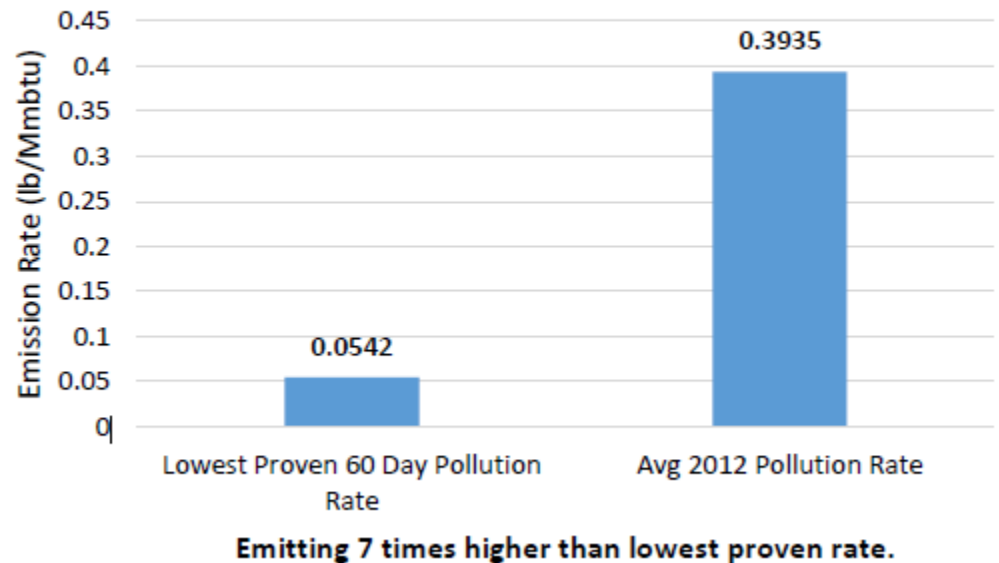
- SCRs Use Large Amounts Of Reagents
- SCRs Catalytic Sheets Clog And Degrade
- SCRs Have High Parasitic Loads

Driving SCR Use Improves Public Health And Drives Down Dispatch

### MO - New Madrid 1

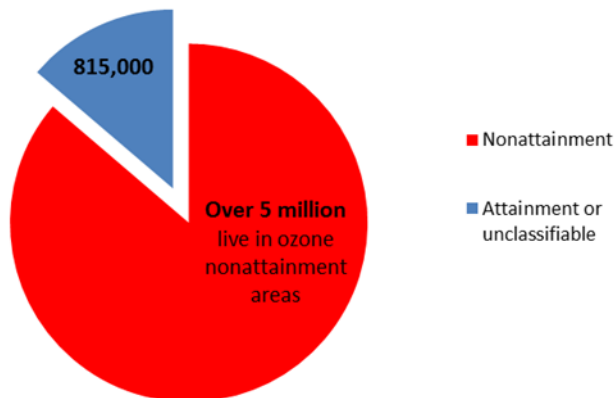


### IL - Kincaid 1



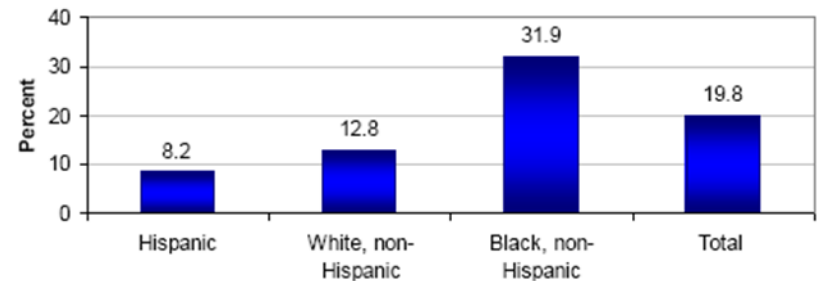
# Ozone: A Huge Public Health And EJ Issue In Maryland

86% of Marylanders Live in Areas with Unsafe Air

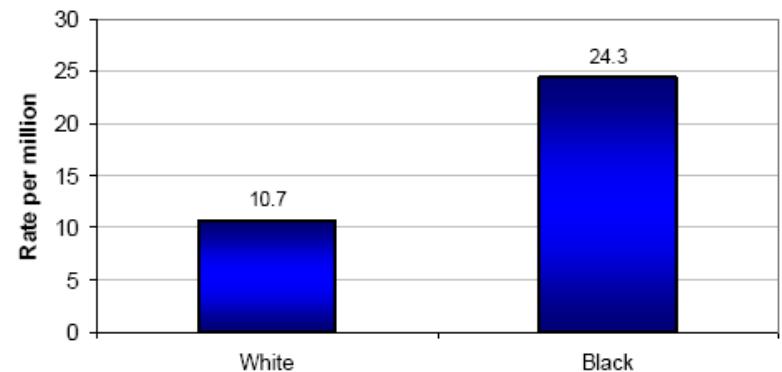


- Baltimore, MD: Fifth Highest Ozone Level In Country At 93 ppb

Asthma Hospitalization Rates by Race/Ethnicity  
Maryland, 2009

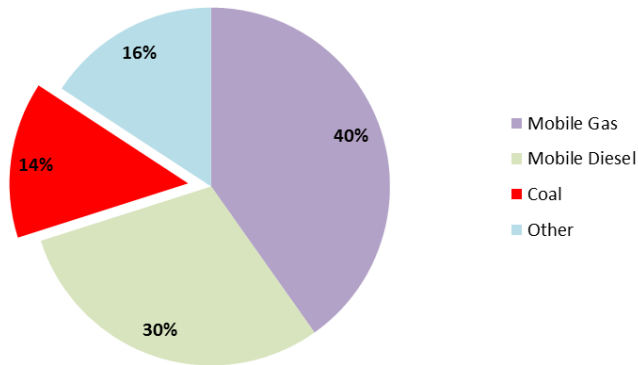


Average Asthma Mortality Rates Among Adults by Race  
Maryland, 2005-2009



# Maryland's Poorly Controlled Coal Plants Are A Big Part Of The Problem

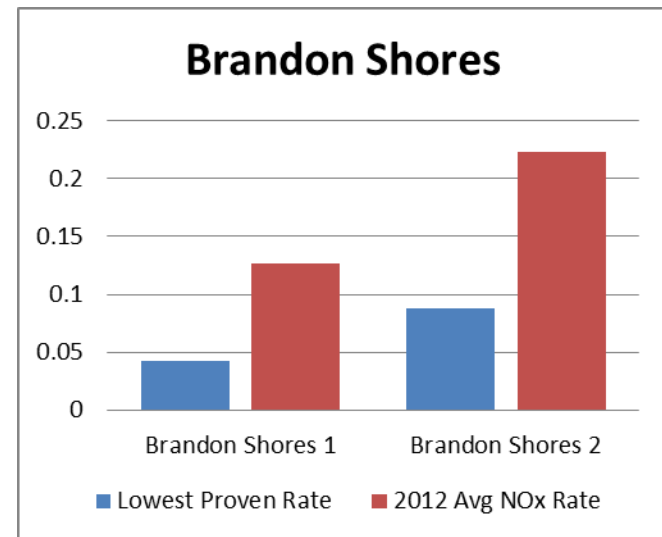
NOx Emissions, by Sector, in Maryland (2011)



- Only 44% of MD coal units have SCR.
- Md Compares Poorly To National Control Rates
  - 56% of coal units have SCR
- Md Compares Poorly To Sister East Coast States
  - PA: 72% units have SCR
  - NJ: 100% units have SCR
  - WV: 88% units have SCR
  - VA: 60% units have SCR
  - AL: 65% units have SCR

# Maryland's Coal Plants Are Turning Down Their SCRs For Profit

- 54% Of The Coal Plants In Maryland That Have SCRs Are Not Operating Them At Full Capacity



# Waged A Media, Organizing, Legal And Lobbying Campaign



**The Frederick News-Post**

**“O'Malley needs to lead on clean air”**

**BALTIMORE RESIDENTS KNOW THERE'S NOTHING CHARMING ABOUT BEING ONE OF THE TOP 10 MOST POLLUTED CITIES IN THE COUNTRY.**

# 150<sup>th</sup> coal plant announced: *Brayton Point*



# Public health benefits of retirements to date



**4,900**

lives saved

**7,500**

heart attacks  
prevented

**\$2.3 billion**

in health care  
costs saved

**31 percent**

reductions in  
SO<sub>2</sub> emissions

**287 million**

metric tons in  
carbon  
reductions

**24 percent**

reductions  
in NO<sub>x</sub>

# BEYOND FOSSIL FUELS



**BEYOND**



**NATURAL GAS**

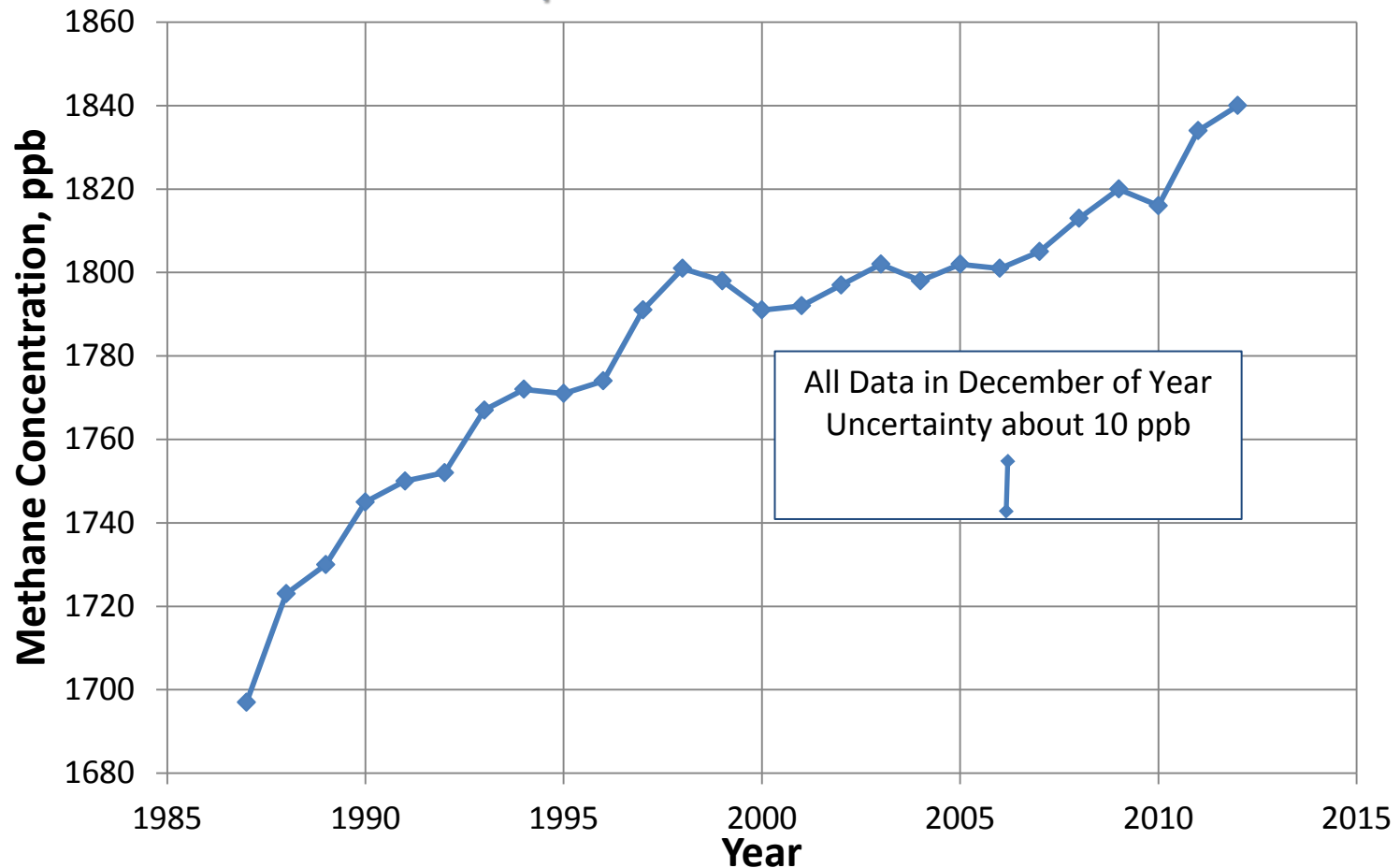


# THE METHANE PROBLEM



# NO ANSWER TO CLIMATE DISRUPTION

## Measured **Methane** Concentration in the Atmosphere: Recent Record



DATA FROM NOAA: <http://www.esrl.noaa.gov/gmd/dv/iadv/graph.php?code=MLO&program=ccgg&type=ts>

# CLEAN ENERGY, NOT GAS



“Natural Gas is not a bridge, it’s a gangplank”

- Michael Brune, Executive Director, Sierra Club

# CLEAN ENERGY



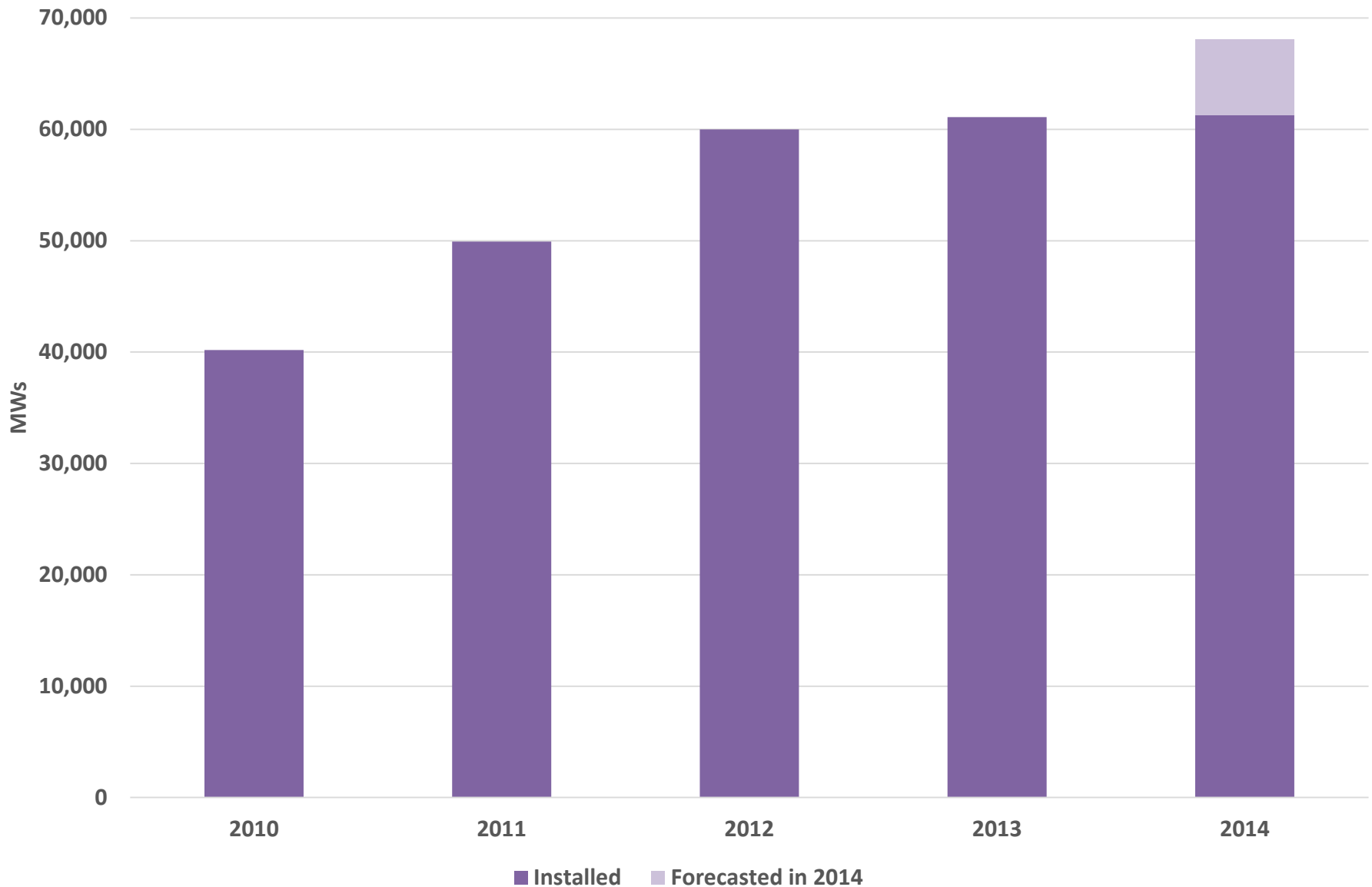
## North Omaha, Nebraska



- Announced for retirement June 2014
- 645 MW coal retiring
- 600 MW wind added
- 300 MW EE added
- 85% reduction in mercury
- 180 fewer asthma attacks (each year)

# Cumulative Wind Installed – 61.3 GWs

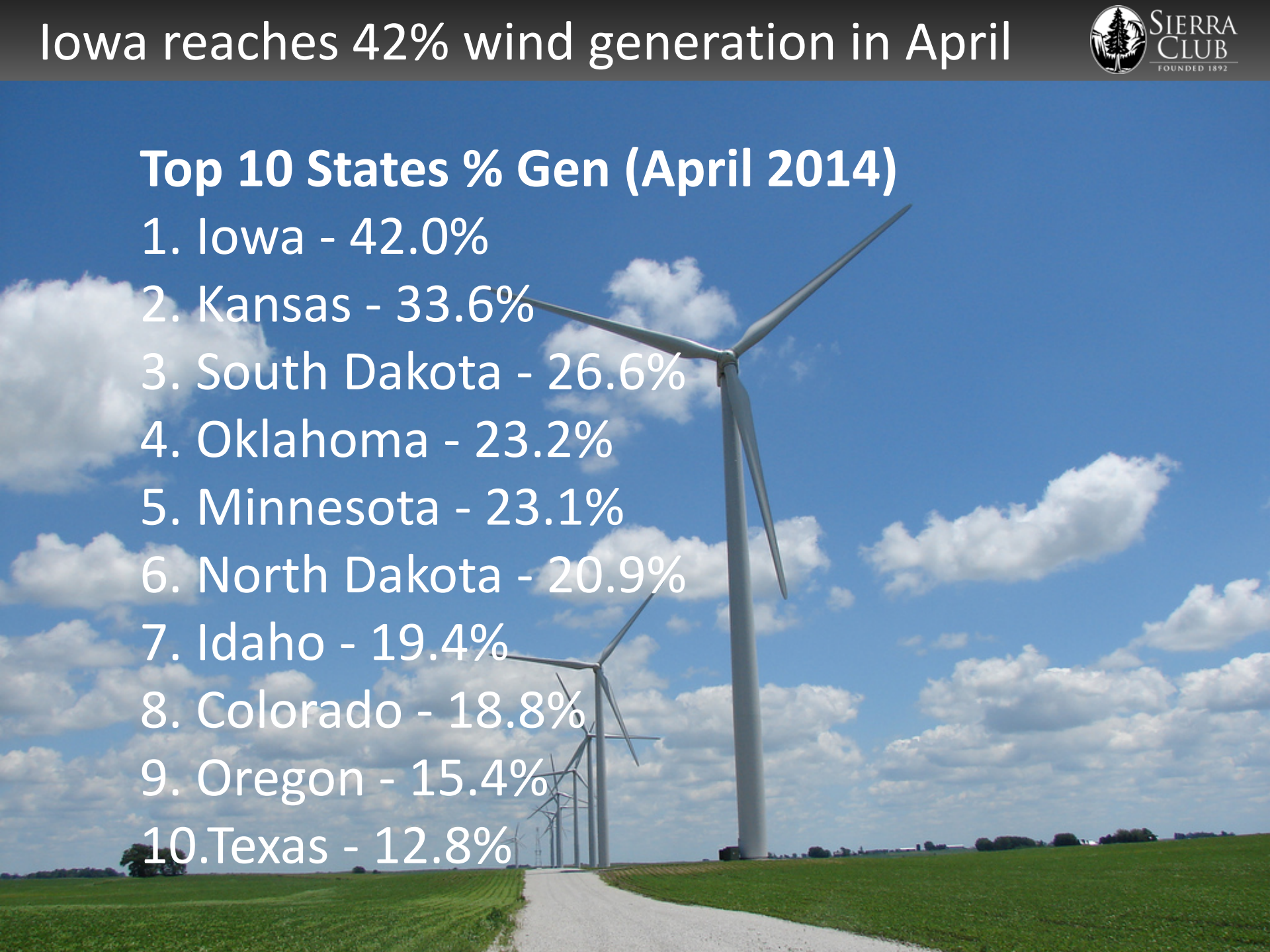
Cumulative Wind Installed Capacity



# Iowa reaches 42% wind generation in April

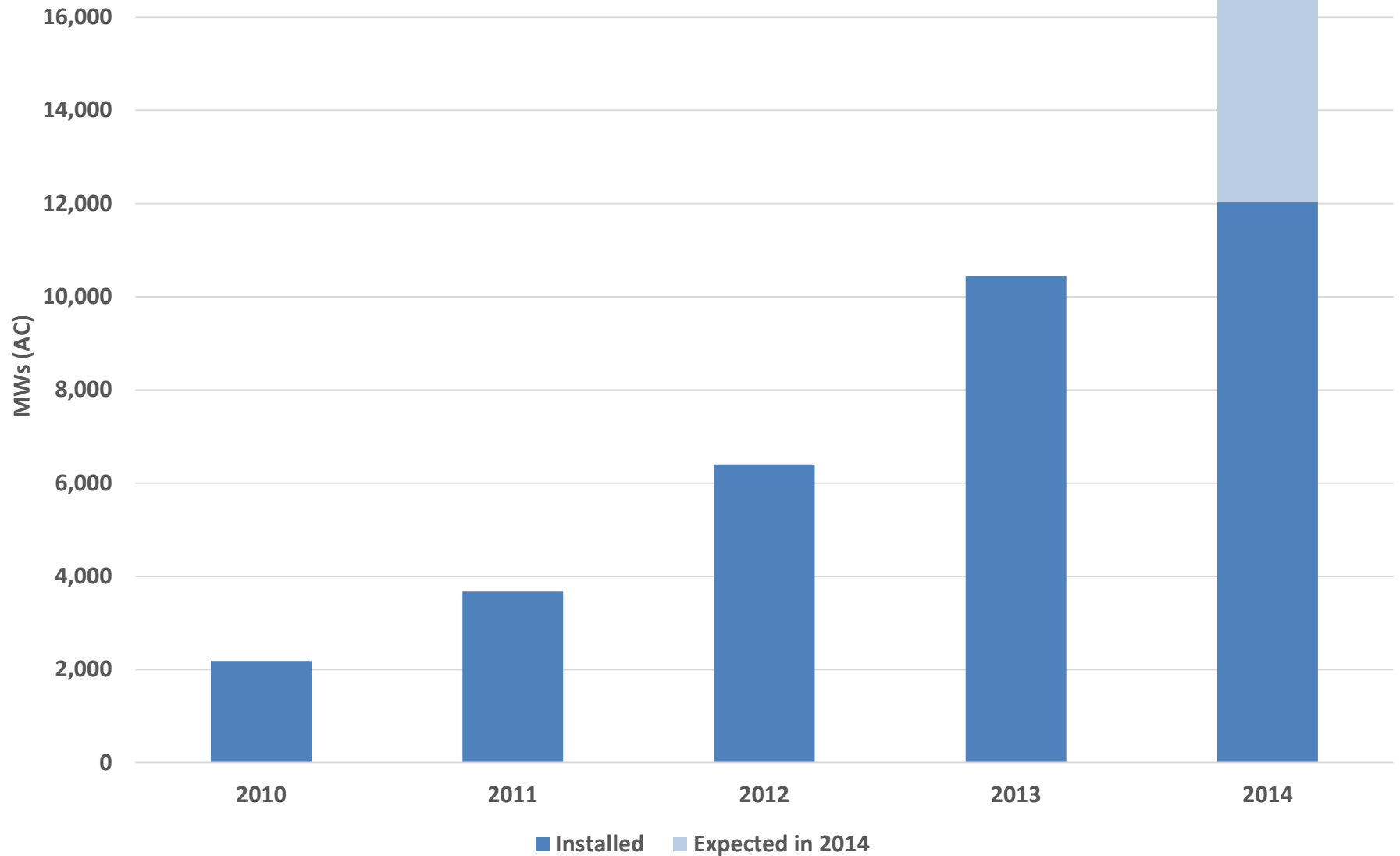
## Top 10 States % Gen (April 2014)

1. Iowa - 42.0%
2. Kansas - 33.6%
3. South Dakota - 26.6%
4. Oklahoma - 23.2%
5. Minnesota - 23.1%
6. North Dakota - 20.9%
7. Idaho - 19.4%
8. Colorado - 18.8%
9. Oregon - 15.4%
10. Texas - 12.8%



# Cumulative Solar Installed - 12.1 GWs

Cumulative Solar Capacity



# Levelized Cost of Electricity Trends





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