



## **CHEAPER AND CLEANER:**

Using the Clean Air Act to Sharply Reduce Carbon Pollution from Existing Power Plants, Delivering Health, Environmental and Economic Benefits

March 2014 Update



THE EARTH'S BEST DEFENSE



## **CLOSING THE POWER PLANT CARBON POLLUTION LOOPHOLE: SMART WAYS THE CLEAN AIR ACT CAN CLEAN UP AMERICA'S BIGGEST CLIMATE POLLUTERS**

“We limit the amount of toxic chemicals like mercury and sulfur and arsenic in our air or our water, but power plants can still dump unlimited amounts of carbon pollution into the air for free. That’s not right, that’s not safe, and it needs to stop.”

-President Obama, June 25th, 2013

## THE TIMELINE

2013

**January 20<sup>th</sup>**  
**June 25<sup>th</sup>**  
**September 20<sup>th</sup>**

Start of President Obama's second term.  
President Obama announces Climate Action Plan.  
EPA proposes carbon pollution standards for future power plants.

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2014

**May 9<sup>th</sup>**  
**June 1<sup>st</sup>**  
**June-September**

End of public comment period for future power plant proposal.  
EPA to propose guideline for carbon pollution standards for existing power plants.  
Public comment period on existing power plant proposal.

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2015

**June 1<sup>st</sup>**

EPA to finalize power plant carbon pollution standards.

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2016

**June 30<sup>th</sup>**  
**July-December**

States to submit implementation plans for existing power plants to EPA.  
EPA reviews state plans for compliance with its guideline.

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2017

**January 20<sup>th</sup>**

End of President Obama's second term.

# THE CLEAN AIR ACT AND EXISTING POWER PLANTS

## THE “101” ON 111 (d)

### EPA CO2 Emissions Guideline & State Plans

- ✓ EPA proposes “emission guideline” June 2014, final June 2015.
- ✓ Guideline includes performance standard and compliance provisions.
- ✓ States have until June 2016 to adopt and submit state plans. If a state submits no plan, or one EPA cannot approve, EPA must issue a federal plan.

### “Best System of Emission Reduction”

- ✓ “Source-based” approach limited to options plants can do “within the fence line” (e.g. heat-rate improvements) – yields limited reductions, higher costs
- ✓ “System-based” approach includes all options that reduce emissions – yields deeper reductions, lower costs
  - Heat-rate improvements
  - Shifting generation from coal to gas
  - Increasing zero -emission power (renewables and nuclear)
  - Increasing energy efficiency

## NRDC PROPOSAL

### SYSTEM-BASED, STATE SPECIFIC STANDARDS

**State-specific** fossil-fleet average CO<sub>2</sub> emission rates (lbs/MWh) for 2020 and 2025

**Calculated** by applying benchmark coal and gas rates to each state's baseline (2008-2010) fossil generation mix

**Averaging** allowed among all fossil units in state (including new units subject to the 111(b) standard)

**Credit for incremental** renewables and energy efficiency (equivalent to adding MWhs to denominator in calculating emission rate for compliance purposes)

States may opt in to **interstate averaging** or credit trading

States may adopt **alternative plans**, including **mass-based** standards, provided they achieve equivalent emission reductions



# FLEXIBLE COMPLIANCE OPTIONS



Heat rate reductions



Cleaner power sources



More renewables



Investments in efficiency

# NRDC SPECIFICATIONS

## LIST OF SCENARIOS



Reference Case



Moderate Case,  
Full Efficiency



Moderate Case,  
Constrained Efficiency



Ambitious Case,  
Full Efficiency



Ambitious Case,  
Constrained Efficiency



Ambitious Case,  
Constrained Efficiency, PTC

# NRDC SPECIFICATIONS

## LIST OF SCENARIOS

### All Cases

- ✓ AEO 2013 demand projections
- ✓ Onshore wind costs: DOE/LBL 2012 Wind Technologies Report
- ✓ Nuclear units re-licensed

### Efficiency Assumptions

- ✓ Full Efficiency Cases: 482 TWh available in 2020 (Synapse)
- ✓ Constrained Efficiency Cases: 241 TWh available in 2020

### Ambition Assumptions

	2020	2025	2030
Moderate cases	Coal: 1,500 Gas: 1,000	Coal: 1,200 Gas: 1,000	Coal: 1,200 Gas: 1,000
Ambitious cases	Coal: 1,400 Gas: 700	Coal: 1,150 Gas: 600	Coal: 900 Gas: 500



# NRDC SPECIFICATIONS

## SIMPLE ENERGY EFFICIENCY SUPPLY CURVE

### Energy Efficiency Quantity

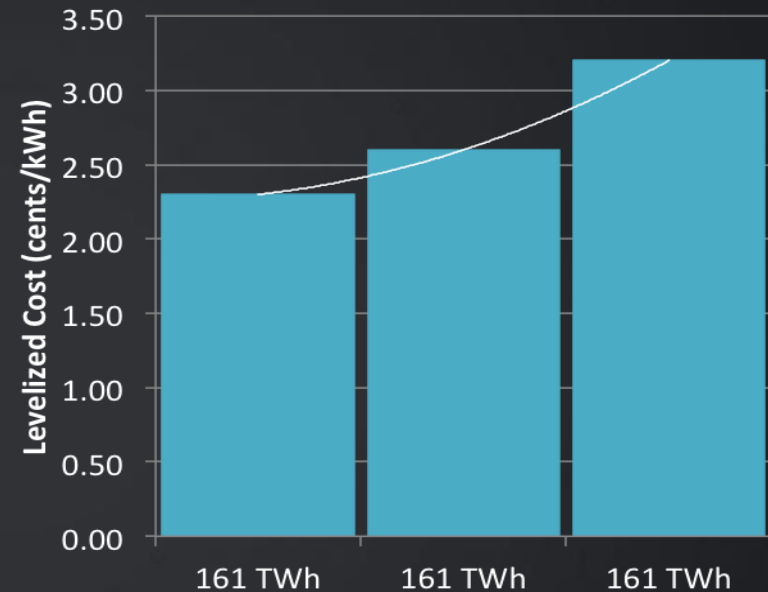
#### Assumptions

- ✓ Same energy efficiency potential (maximum MWhs saved) as in 2012 analysis
- ✓ Divided evenly into three cost blocks in each region, 482 TWh in total

### Energy Efficiency Cost

#### Assumptions

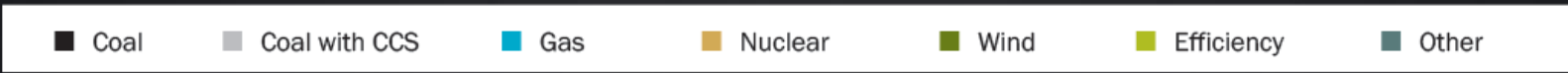
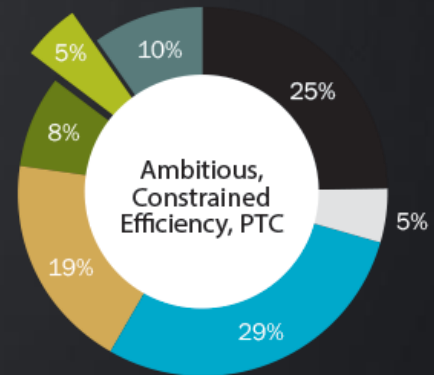
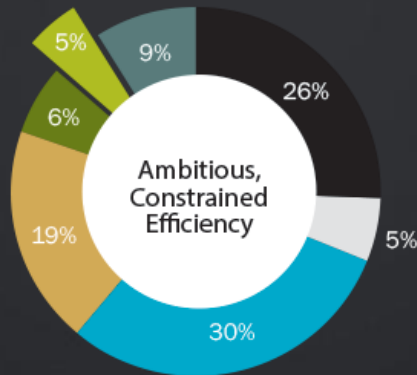
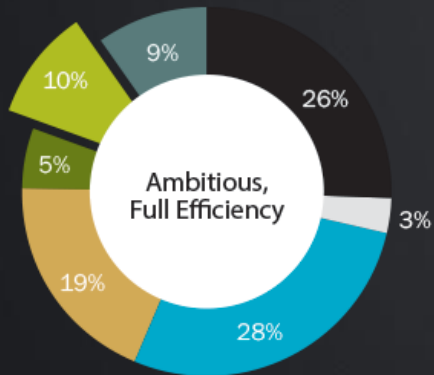
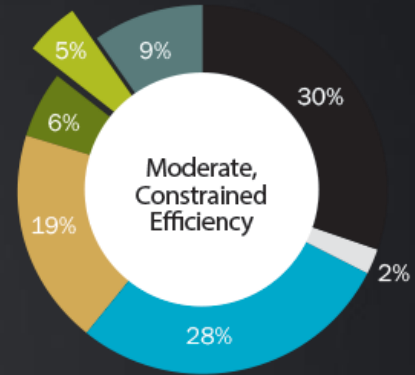
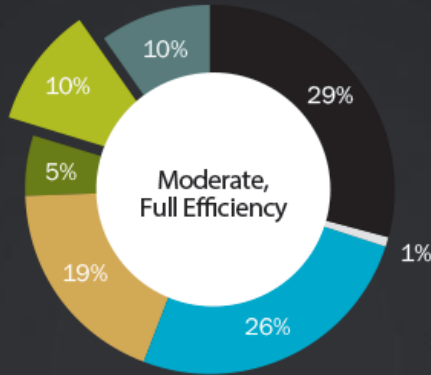
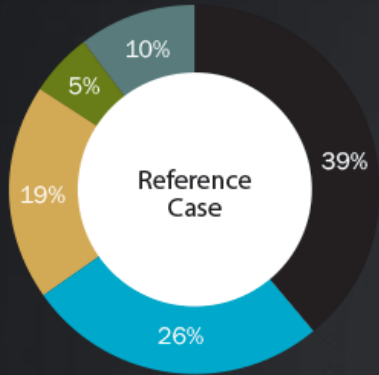
- ✓ Costs apply nationwide, do not vary across regions
- ✓ Derived based on utility program costs from Synapse and relative values from LBNL cost curve to estimate costs of each block
- ✓ Middle cost block is equal to the Synapse utility program cost
- ✓ Customer contribution at 45% of total cost is included in cost-benefit calculations



EE Program Costs (cents/kWh)	2013-2020	2021-2030
Low	2.3	2.6
Middle	2.6	2.9
High	3.2	3.5

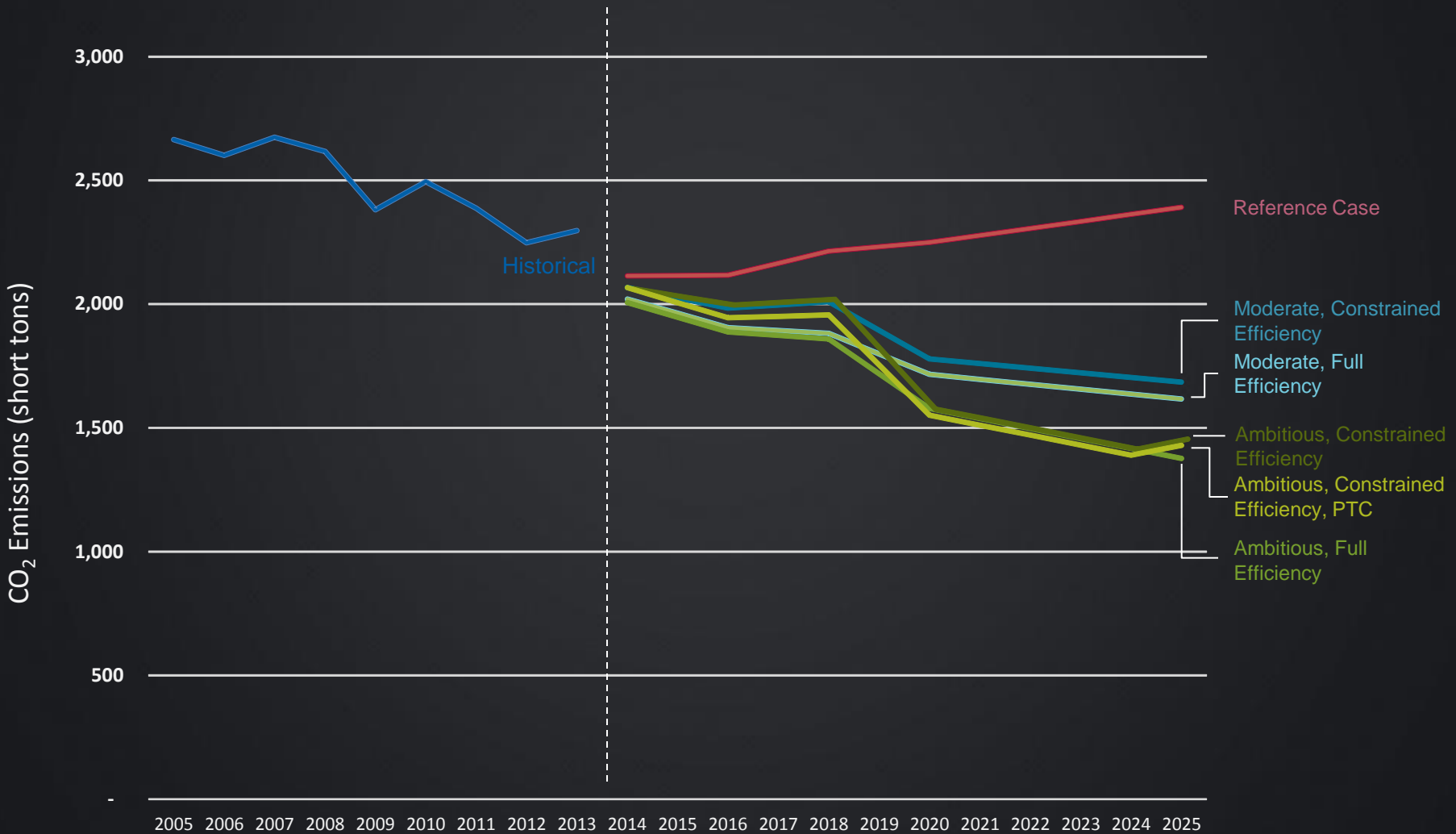
# NRDC POLICY CASES vs REFERENCE CASE

## PROJECTED GENERATION MIX IN 2020



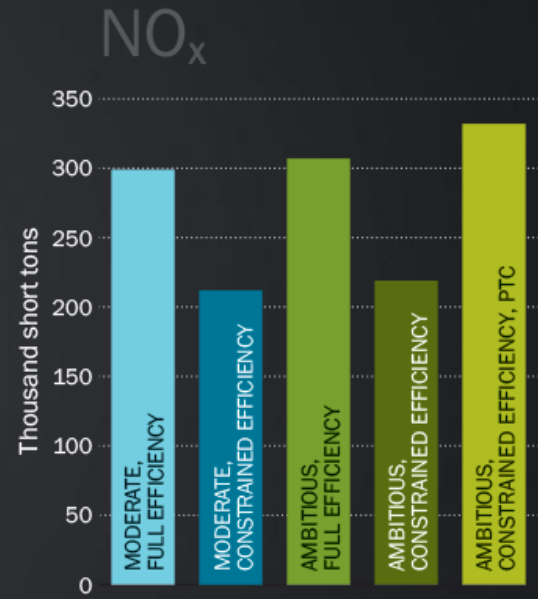
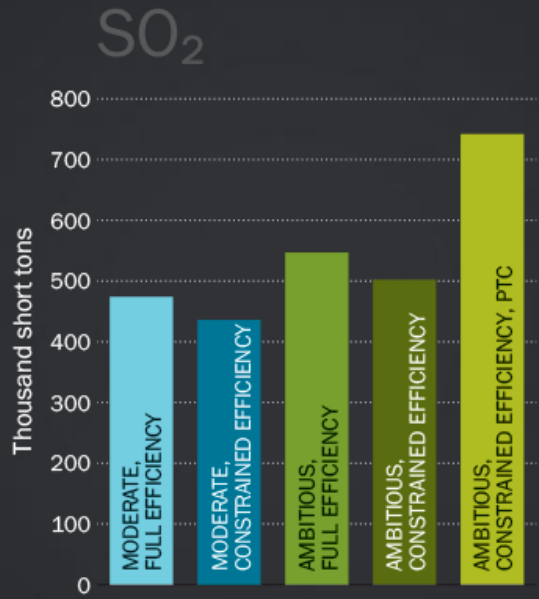
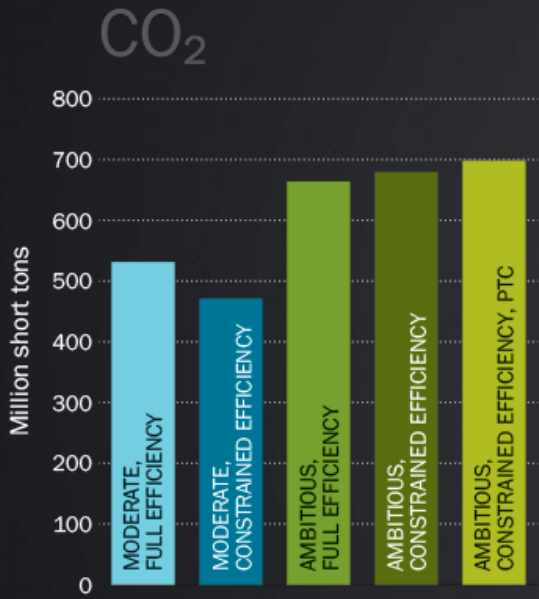
# NRDC POLICY CASES vs REFERENCE CASE

## EMISSIONS 2014-2025



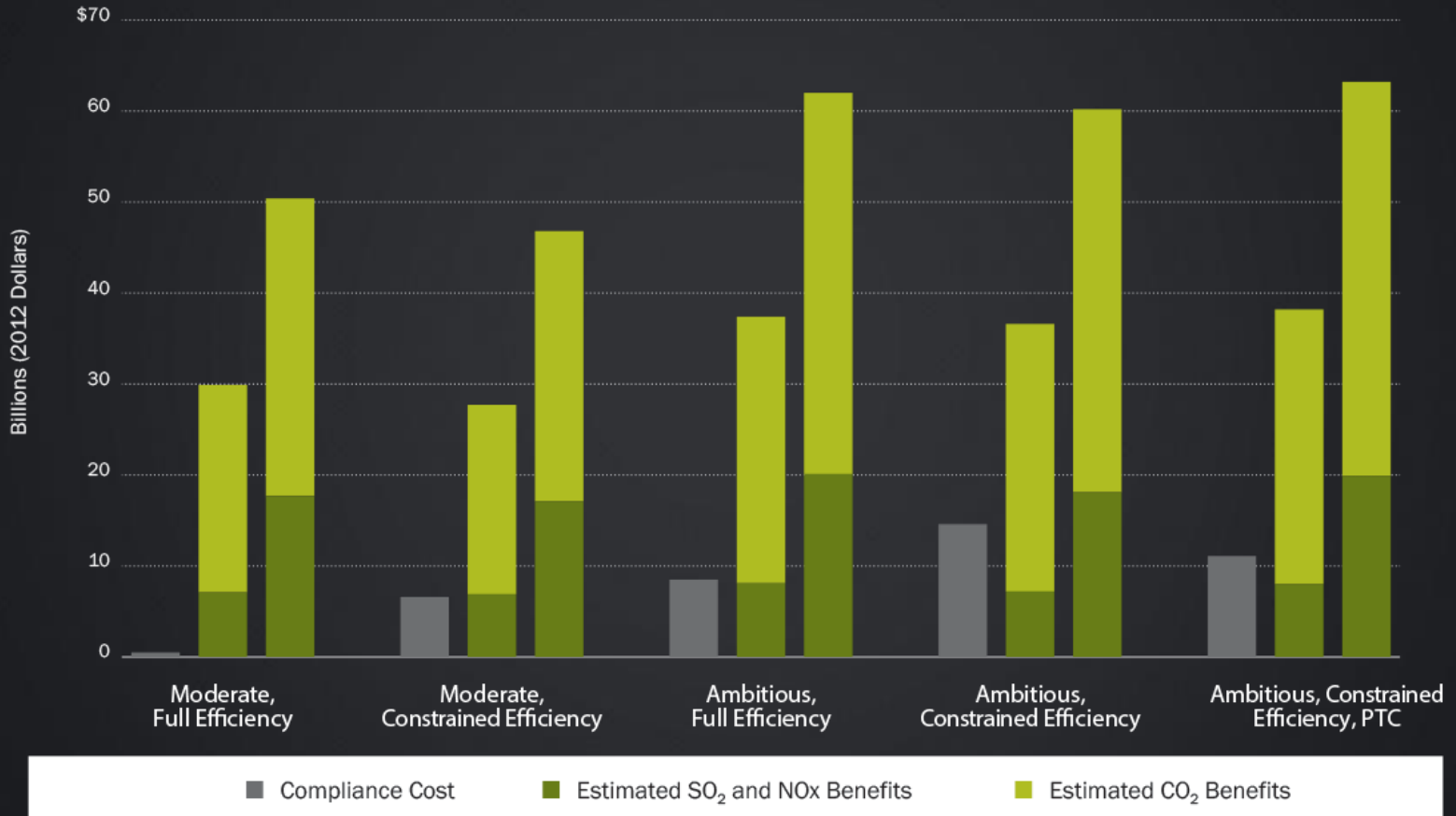
# NRDC POLICY CASES vs REFERENCE CASE

## EMISSIONS REDUCTIONS IN 2020: CO<sub>2</sub> SO<sub>2</sub> NO<sub>x</sub>



# NRDC POLICY CASES vs REFERENCE CASE

## COSTS AND BENEFITS FROM REDUCED EMISSIONS IN 2020





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