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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

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

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THE TIMELINE

2013	**January 20th**	Start of President Obama's second term.
	June 25th	President Obama announces Climate Action Plan.
	September 20th	EPA proposes carbon pollution standards for future power plants.
2014	**May 9th**	End of public comment period for future power plant proposal.
	June 1st	EPA to propose guideline for carbon pollution standards for existing power plants.
	June-September	Public comment period on existing power plant proposal.
2015	**June 1st**	EPA to finalize power plant carbon pollution standards.
2016	**June 30th**	States to submit implementation plans for existing power plants to EPA.
	July-December	EPA reviews state plans for compliance with its guideline.
2017	**January 20th**	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 fenceline" (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

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NRDC PROPOSAL

SYSTEM-BASED, STATE SPECIFIC STANDARDS

State-specific fossil-fleet average CO2 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

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FLEXIBLE COMPLIANCE OPTIONS

Heat rate reductions

Cleaner power sources

More renewables

Investments in efficiency

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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

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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

Table 2. Nominal Emission Rate Targets (lbs/MWh)

	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

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NRDC SPECIFICATIONS

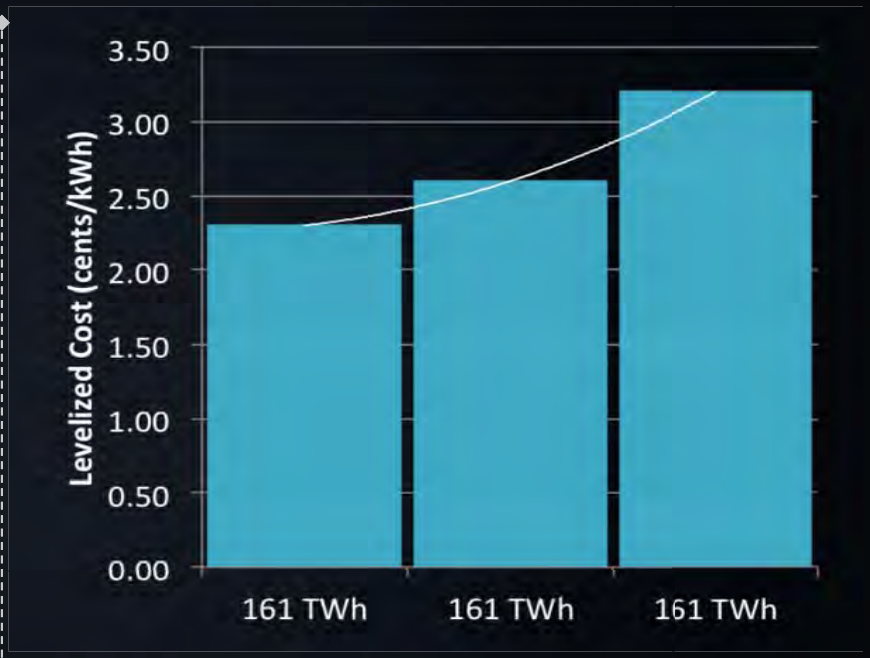
SIMPLE ENERGY EFFICIENCY SUPPLY CURVE

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

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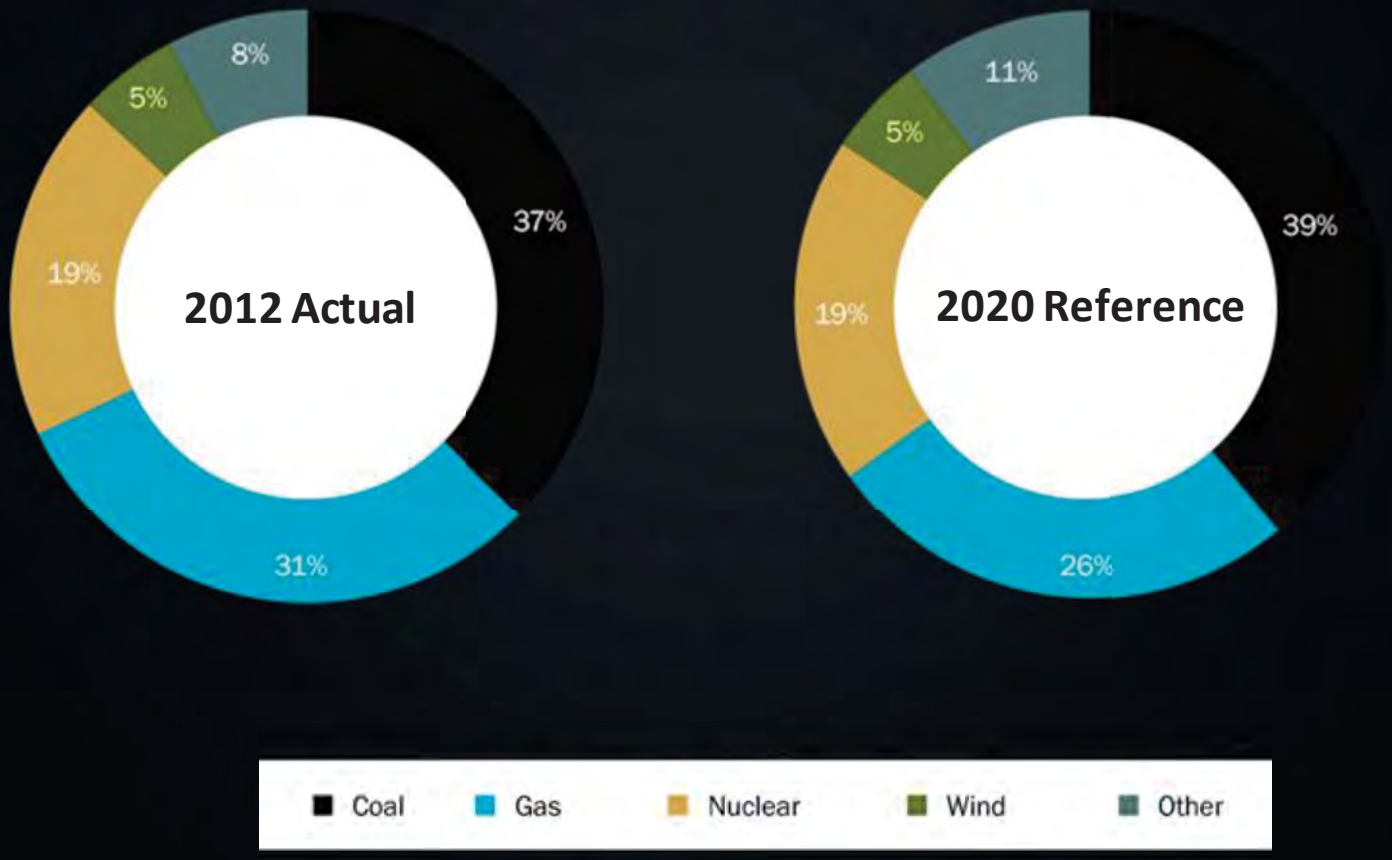
NRDC POLICY CASES vs REFERENCE CASE

GENERATION MIX: 2012 vs. 2020 REFERENCE CASE



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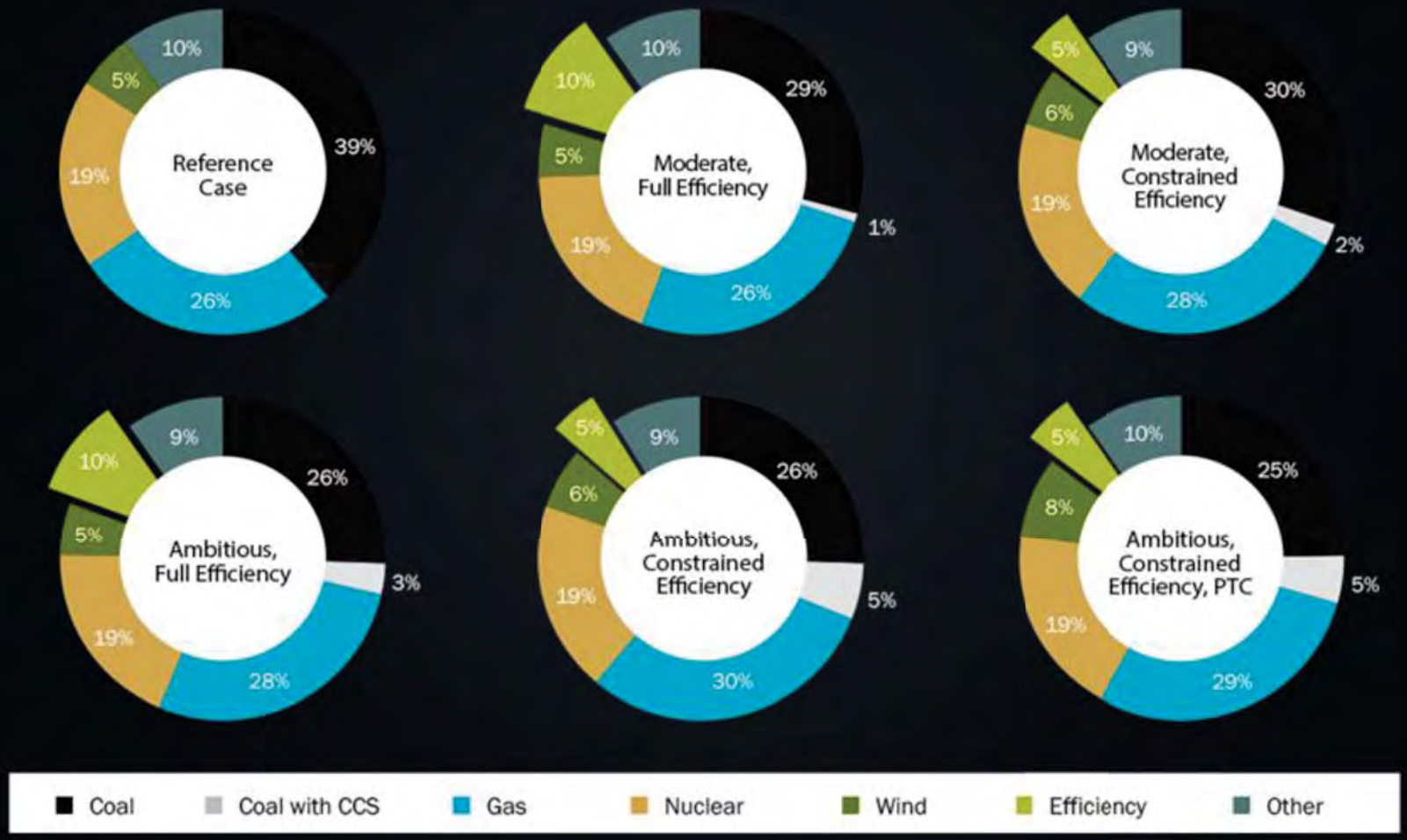
NRDC POLICY CASES vs REFERENCE CASE

PROJECTED GENERATION MIX IN 2020



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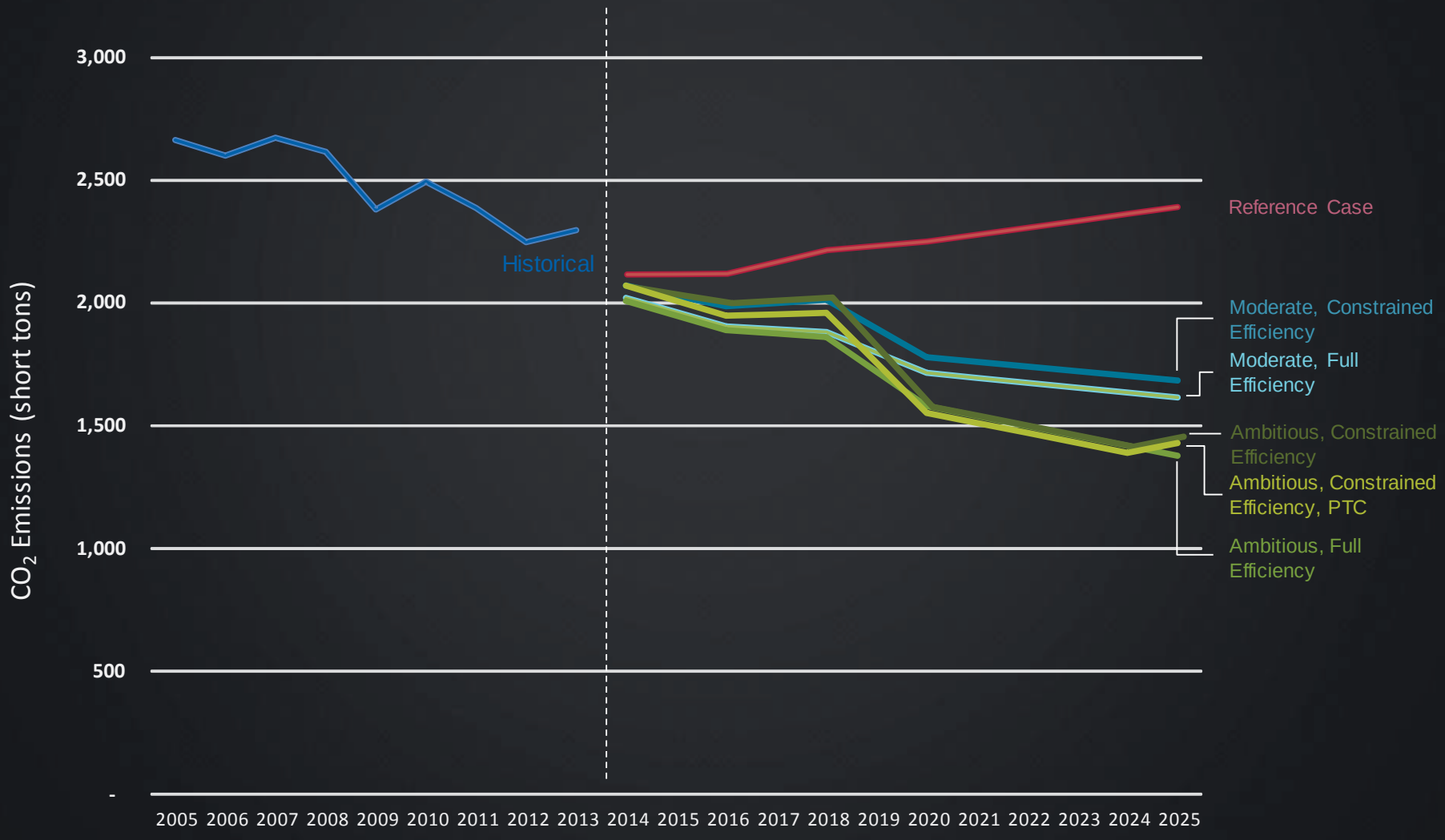
NRDC POLICY CASES vs REFERENCE CASE

EMISSIONS 2014-2025



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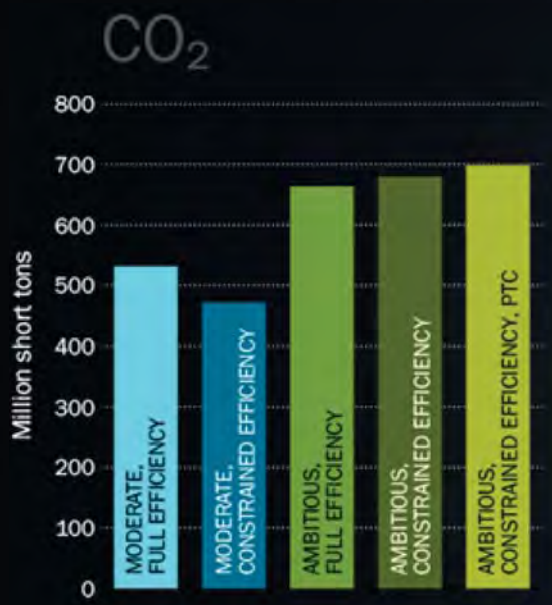
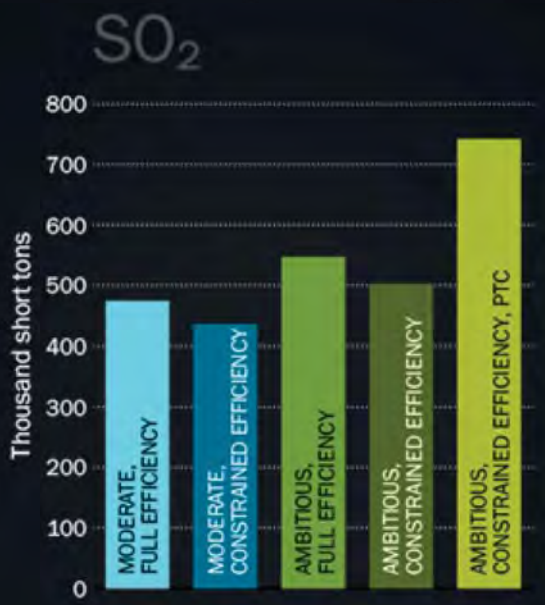
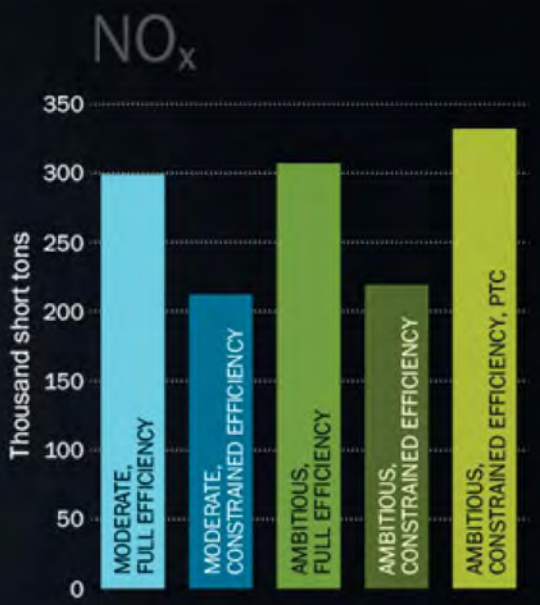
EMISSIONS REDUCTIONS IN 2020: CO_2 SO_2 NO_x



CO_2 reductions are more than double those from EPA's vehicle emission standards.



SO_2 reductions add one-third to reductions from MATS.



Nox reductions are comparable to Tier 3 vehicle reductions.

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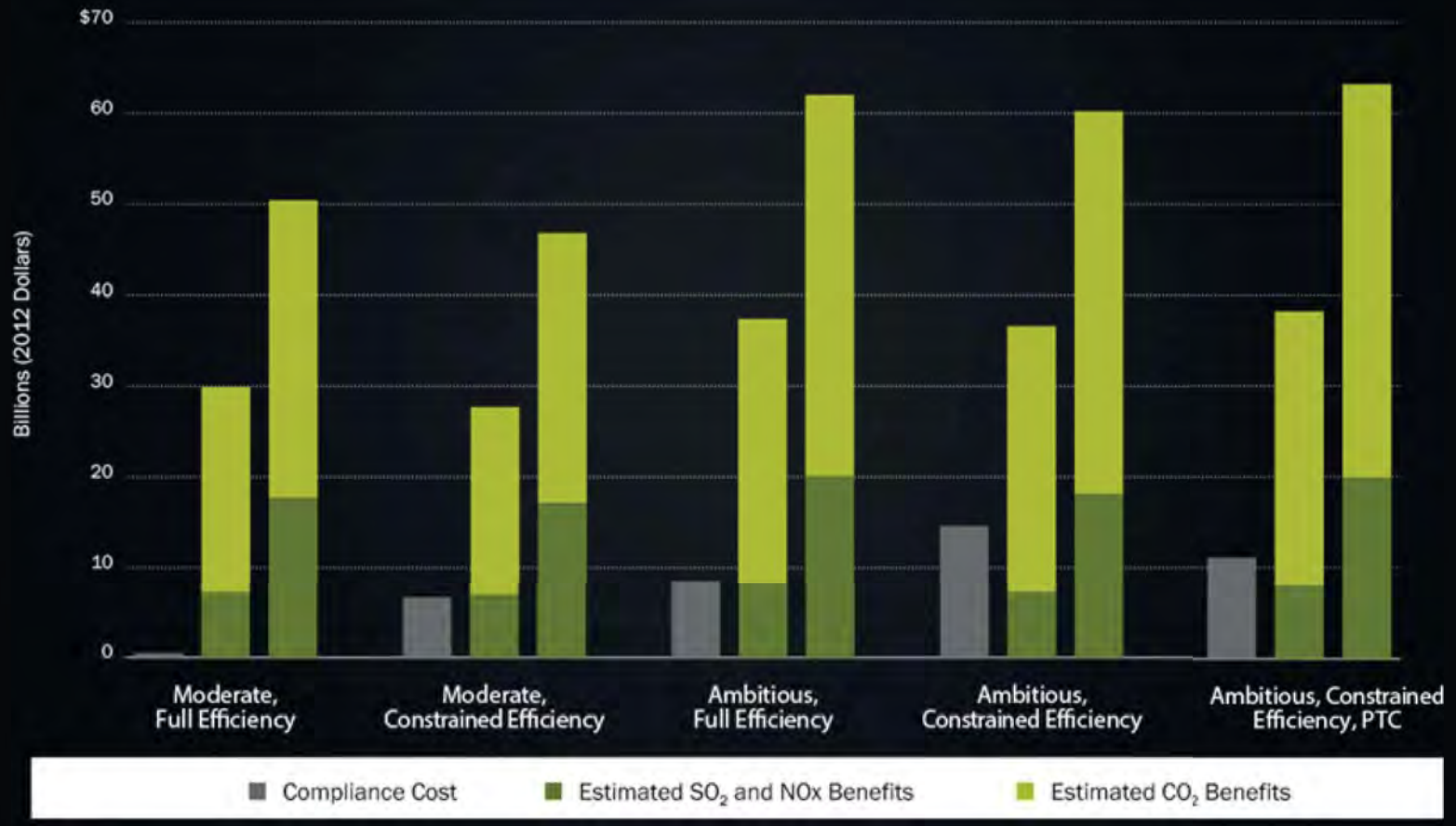
NRDC POLICY CASES vs REFERENCE CASE

COSTS AND BENEFITS FROM REDUCED EMISSIONS IN 2020



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