CCUS and Natural Gas: Why we need policy parity

CSG Natural Gas Policy Academy
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What is CCS?

- CCS= Carbon Capture and Storage (or Sequestration)
- CCUS= Carbon Capture, Utilization, and Storage (or Sequestration)

Capture Types:

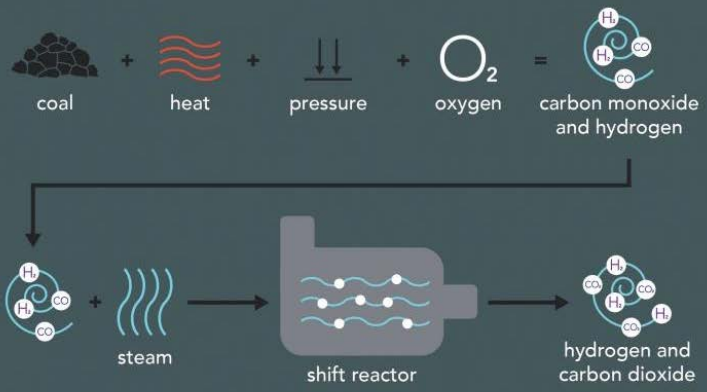
- Pre-Combustion
- Post-Combustion
- Oxy-Combustion

Storage Types:

- Geological/Saline Aquifer
- Enhanced Hydrocarbon Recovery

PRE-COMBUSTION

Pre-combustion captures CO_2 through a series of chemical reactions before the fossil fuel is burned.



This type of carbon capture is used on power plants where solid fuel like coal is turned into its gaseous components by applying heat under pressure with steam and oxygen.

POST-COMBUSTION

This type of carbon capture happens in power plants where fossil fuel is burned with air in a boiler.

This produces steam, which drives a turbine or generator to produce electricity.

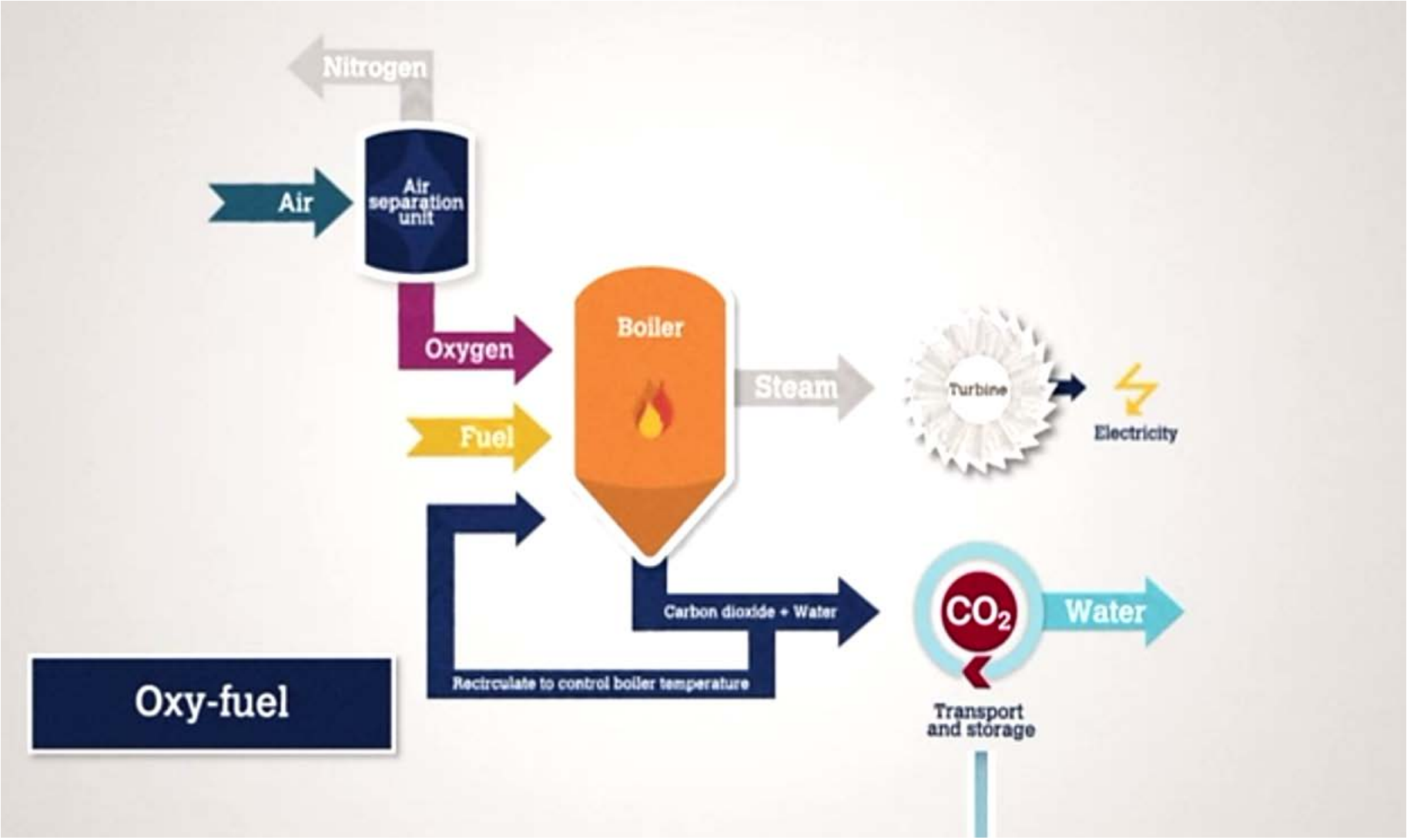
But in addition to the steam, these power plants give off flue gas, including sulfur dioxides, nitrogen oxides and large amounts of CO_2.

Post-combustion uses a process that captures and stores CO_2 before it is released into the chimney.

The best part? Post-combustion carbon capture can be retrofitted onto existing power plants!

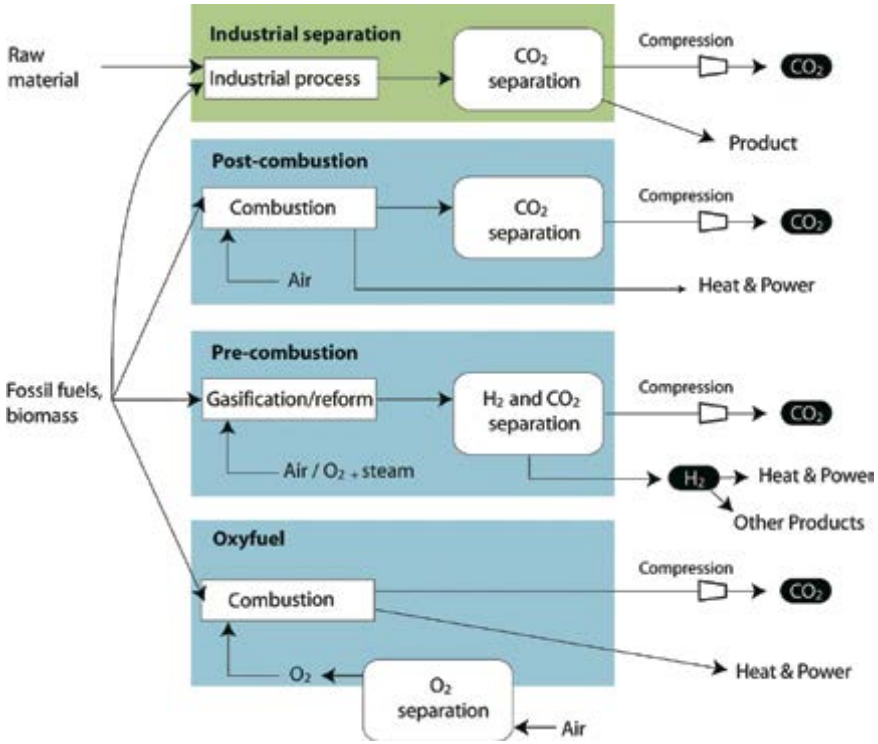
Source: http://energy.gov/articles/infographic-carbon-capture-101

Oxy-Combustion



Source:http://www.ccsassociation.org/what-is-ccs/capture/oxy-fuel-combustion-systems/

What is CCS/CCUS?



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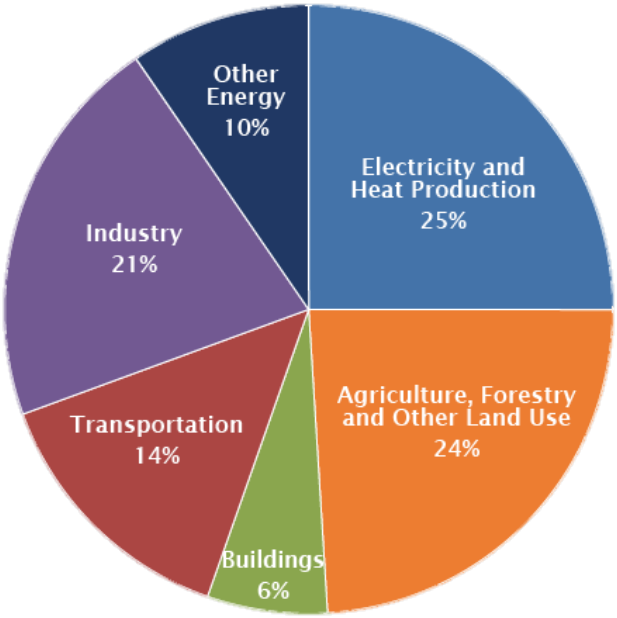
Source: IPCC Special Report on Carbon Dioxide Capture and Storage (2005)

Why is CCS critical?

- Carbon, Capture and Storage is a crucial tool against climate change which:
  - Provides an affordable method of decarbonizing the electricity sector,
  - Delivers economic growth and regional prosperity, and
  - Decarbonizes industrial processes such as cement, steel, fertilizer, and ethanol.



Global Greenhouse Gas Emissions by Economic Sector

Source: IPCC (2014)

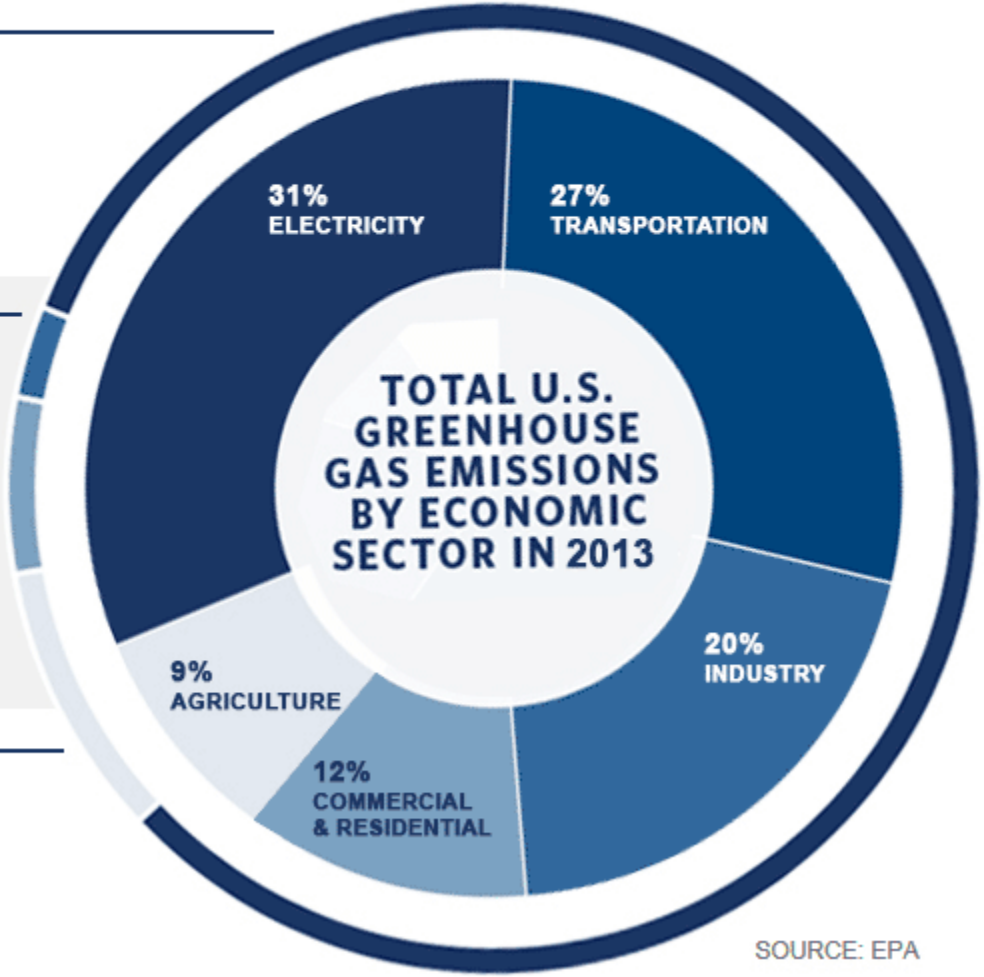
POWER PLANTS ARE THE SINGLE LARGEST SOURCE OF CARBON POLLUTION

CARBON DIOXIDE (CO_2) 82%

FLUORINATED GASES 3%

NITROUS OXIDE (N_2O) 5%

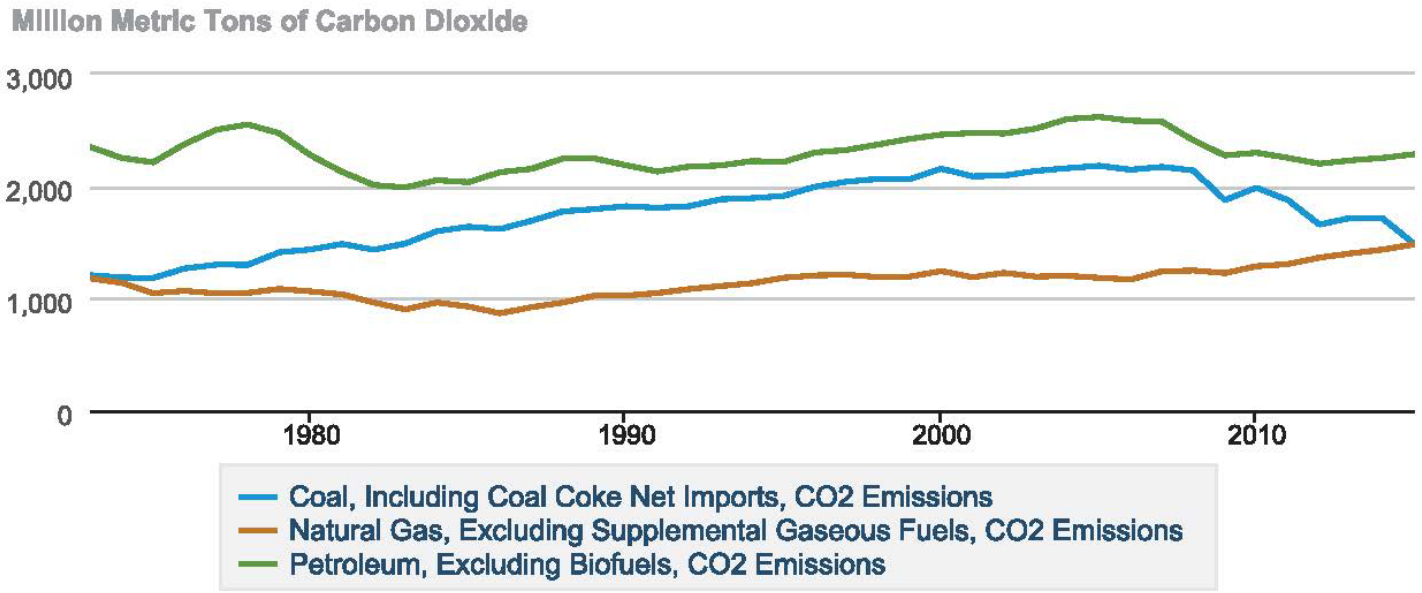
METHANE (CH_4) 10%



SOURCE: EPA

Why capture on gas?

Decarbonization of global energy systems while doubling our energy services to a growing populations and to serve those underserved.



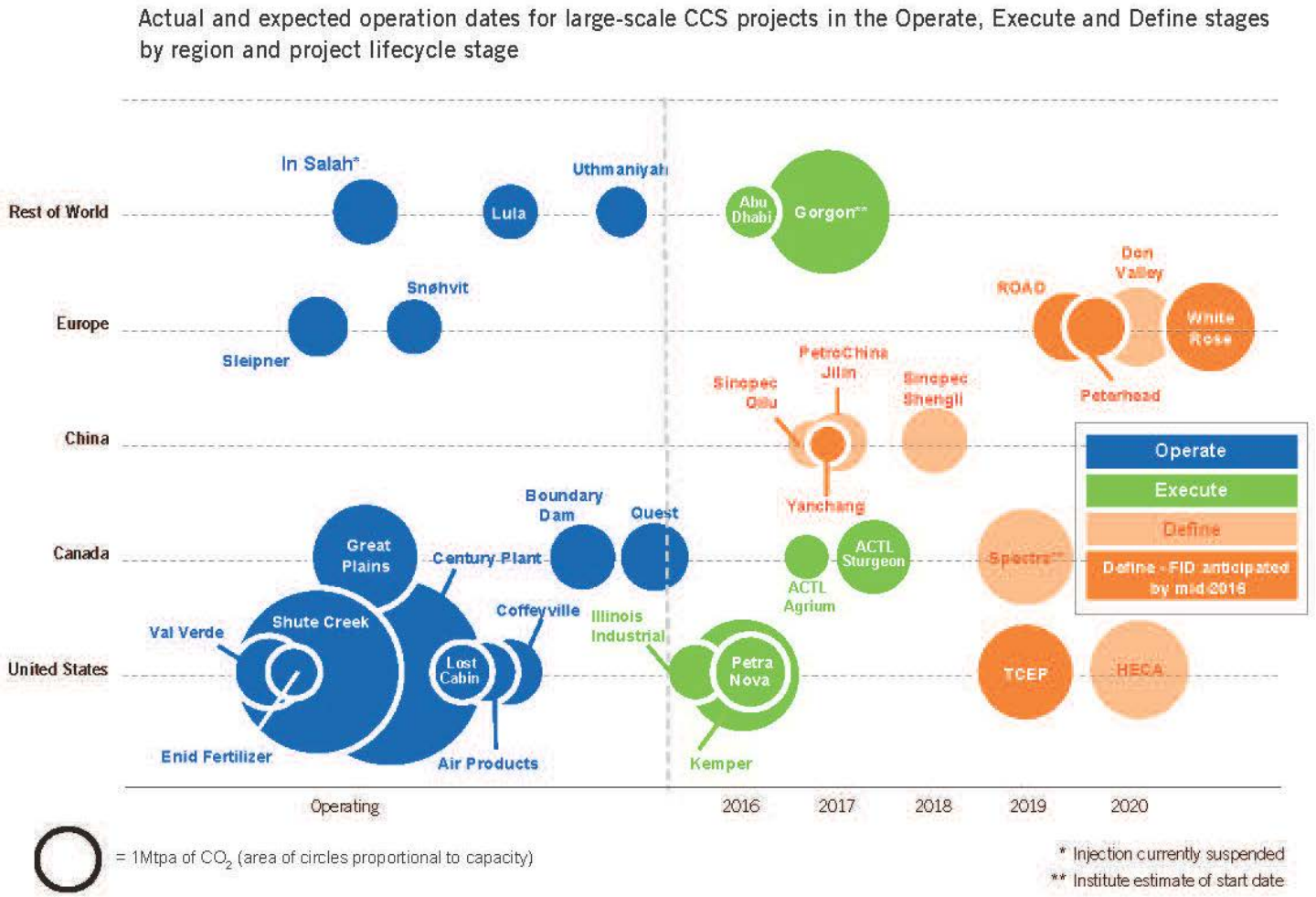
CO_2 Emissions From Energy Consumption by Source

Source: U.S. Energy Information Administration

EPA Clean Power Plan/President's Paris Agreement

- By 2030, carbon emissions will be reduced by 32% below 2005 levels
- By 2050, carbon emissions will be reduced by 80%

Number of CCS Projects



Source: Global CCS Institute, The Global Status of CCS (2015)

CCUS Policy Disparity in US

INCENTIVE	RENEWABLES	CCS
DOE Budget (2012-2016)[13]		
FY 2016 (Requested)	$645 Million	$224 Million
FY 2015	$456 Million	$188 Million
FY 2014	$450 Million	$200 Million
FY 2013	$480 Million	$186 Million
FY 2012	$480 Million	$182 Million
Total DOE Budgets:	***$2.5 Billion***	***$980 Million (CCS Demonstration: $0)***
Tax Credits (2010-2014)[14]		
Investment Tax Credit	$2.1 Billion	$1 Billion
Production Tax Credit	$7.6 Billion	$0[15]
ARRA §1603 Grants in Lieu of Credit	$24 Billion	$0
Investment in Advanced Energy Property	$2.1 Billion	$0
Accelerated Depreciation for Energy Property	$1.5 Billion	$0
Total Revenue Cost:	***$37.3 Billion***	***$1 Billion***
Other Federal Programs		
Loan Guarantees (EPAct '05 §1703)	Yes ($13.9 billion)	Yes ($0)
Mandatory Purchase Requirement (PURPA § 210)	Yes	No
Siting and Interconnection Preferences (*e.g.*, FERC Order 792)	Yes	No
Clean Energy Credits (EPA, 111(d) Existing Power Plant Rule)	Yes	No
State Programs		
Net Metering	44 States	0 States
Renewable Energy Standards	29 States	5 States (CCS applied to standard: 0)

NOTE: DOE issued a solicitation for up to $8 billion in loan guarantees for advanced fossil energy projects on December 12, 2013. To date, no loan guarantees have been made for an advanced fossil energy project. It is unclear whether any applications have been submitted.

Source: Leveling the Playing Field, National Coal Council, 2015

The financial community favors technologies that are picked by government policy makers as “winners” versus the perception of “losers”.

Without fair and equal treatment, CCUS will not pass the minimum threshold for major investments by the private sector.

Policy Parity

Fiscal tools distort the market place, favoring one technology over other. Providing identical fiscal tools for all no-carbon/low-carbon technologies reduces market distortion.

CCUS should benefit from policy choices that are available to other low-carbon/no-carbon emitting technologies.

A level playing field is critical to adequately demonstrate CCUS.

Many national policies and global agreements do not create a policy push for CCUS nor will they drive new projects. We must seek a policy push and parity through alternative mechanisms.

Examples include:

- Accelerated depreciation
- Carbon valuation
- Clean development mechanism
- Contracts for differences
- Feed-in-tariffs
- Grants
- Tax-Preferred or Green bonds
- Private activity bonds
- Green climate fund
- Investment tax credits
- Portfolio standards
- Preferential dispatch for electricity production
- Production tax credits
- Public-private partnership
- Loan guarantees

In conclusion, we ask you to carry this message of policy parity back to your governments and work to adopt fiscal policy that supports private sector investment in CCS and CCUS.

Thanks you for your kind attention.

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