









Who is your employer?

- E&P Company
- NOC
- Government
- Academia
- Consultant
- Non-governmental Organization
- Environmental Organization



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How many years of experience do you have?

0-5
6-10
11-15
16-20
20+



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Overview

- International Considerations
- National/Federal Regulations
- Regional Approaches
- State Laws and Regulations
- Climate-Related Litigation
- Closing Thoughts



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International



United Nations
Framework Convention on
Climate Change

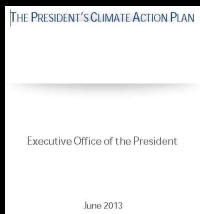
2015 → 2020



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President Obama's June 21, 2013
Climate Change Action Plan



THE PRESIDENT'S CLIMATE ACTION PLAN

Executive Office of the President

June 2013

- Impose CO₂ emission controls on new and existing power plants
- Promote fuel switching to natural gas
- Encourage development of global market for natural gas
- Encourage adoption of heavy-duty natural gas vehicles
- Develop post-MY2018 GHG fuel economy standards for heavy-duty vehicles
- Promote energy efficiency through various means
- Reduce other GHGs (HFCs, fugitive methane)
- Forest restoration
- Infrastructure resiliency



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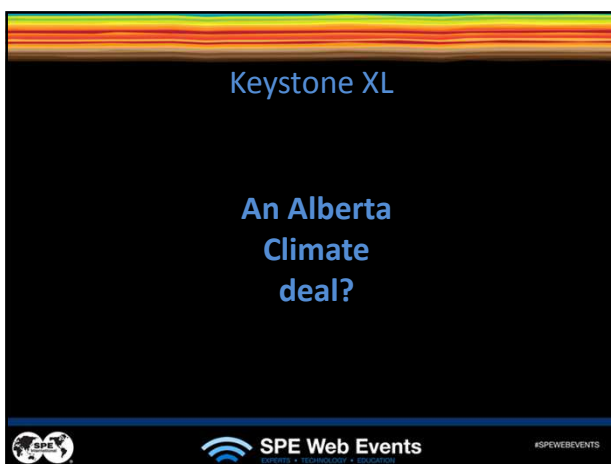
U.S./China Climate Change
Announcement: July 2013

- Reduce emissions from heavy-duty and other vehicles
- Increase carbon capture, utilization and storage technology
- Increase energy efficiency in buildings, industry and transport
- Improve GHG data collection and management
- Promote smart grids



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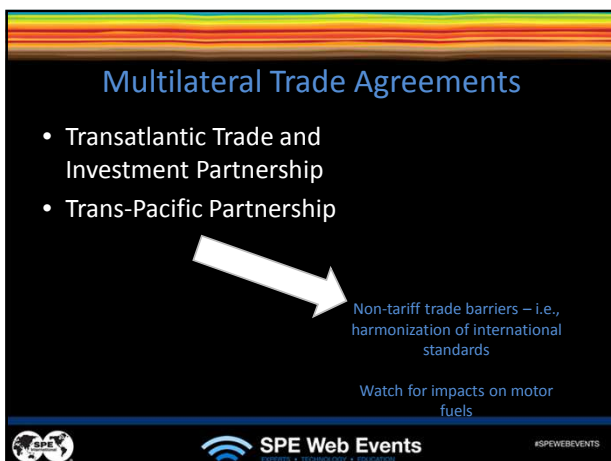


Keystone XL

An Alberta Climate deal?

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Multilateral Trade Agreements

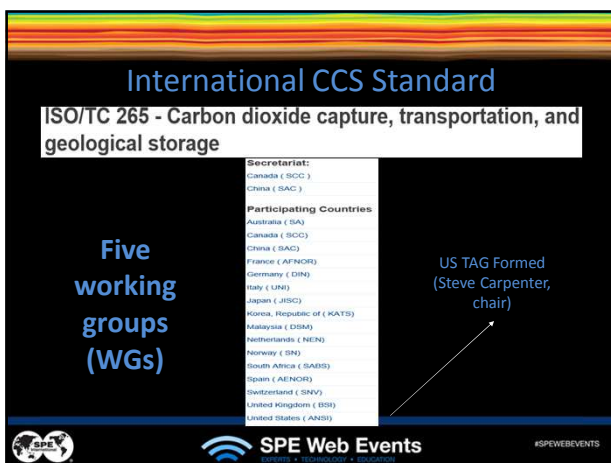
- Transatlantic Trade and Investment Partnership
- Trans-Pacific Partnership

 Non-tariff trade barriers – i.e., harmonization of international standards

Watch for impacts on motor fuels

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International CCS Standard

ISO/TC 265 - Carbon dioxide capture, transportation, and geological storage

Five working groups (WGs)

Secretariat:
Canada (SCC)
China (SAC)
Participating Countries
Australia (SA)
Canada (SCC)
China (SAC)
France (AFNOR)
Germany (DIN)
Italy (UNI)
Japan (JISC)
Korea, Republic of (KATS)
Malaysia (DSK)
Netherlands (NEN)
Norway (SIN)
South Africa (SABS)
Spain (AENOR)
Switzerland (SNV)
United Kingdom (BSI)
United States (ANSI)

US TAG Formed (Steve Carpenter, chair)

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Federal Regulation of GHG Emissions



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Overview of GHG Permitting & Related Topics

- GHG Preconstruction Permitting for Major Stationary Sources (and certain modifications): Prevention of Significant Deterioration (PSD)
 - Best Available Control Technology (BACT) requirement
- Regulation of Oil & Gas Production (NSPS for VOCs and NESHAP)
- GHG New Source Performance Standards for EGUs (Sec. 111(b) and (d))
- Federal GHG Emissions Reporting
- CO₂ Injection Standards
- Related GHG Topics



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PSD Permitting: Definition of “Best Available Control Technology”

“[A]n emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant.”



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EPA's Five-Step Test to Determine BACT

- Step 1: Identify all available control technologies
- Step 2: Eliminate technically infeasible options
- Step 3: Rank remaining control technologies
- Step 4: Evaluate economic, energy and environmental impacts
- Step 5: Select BACT



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CCS is "Available" Under BACT Step 1

- Step 1: Identify all available control technologies
 - CCS is an "available" technology for certain types of facilities, including oil & gas
- Step 2: Eliminate technically infeasible options
- Step 3: Rank remaining control technologies
- Step 4: Evaluate economic, energy and environmental impacts
- Step 5: Select BACT



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EPA Identifies the Types of Oil & Gas Facilities That May Be Suitable for CCS

For the purposes of a BACT analysis for GHGs, EPA classifies CCS as an add-on pollution control technology⁸⁶ that is "available"⁸⁷ for facilities emitting CO₂ in large amounts, including fossil fuel-fired power plants, and for industrial facilities with high-purity CO₂ streams (e.g., hydrogen production, ammonia production, natural gas processing, ethanol production, ethylene oxide production, cement production, and iron and steel manufacturing). For these types of facilities, CCS should be listed in Step 1 of a top-down BACT analysis for GHGs. This

Source: "PSD and Title V Permitting Guidance for Greenhouse Gases," p. 32 (EPA, March 2011) (emphasis added)



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CCS May Be Technically Infeasible Under BACT Step 2

- Step 1: Identify all available control technologies
 - CCS is an “available” technology for certain types of facilities, including oil & gas
- Step 2: Eliminate technically infeasible options
 - CCS may be technically infeasible
- Step 3: Rank remaining control technologies
- Step 4: Evaluate economic, energy and environmental impacts
- Step 5: Select BACT



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Economic, Energy and Environmental Impacts Under BACT Step 4

- Step 1: Identify all available control technologies
 - CCS is an “available” technology for certain types of facilities, including oil & gas
- Step 2: Eliminate technically infeasible options
 - CCS may be technically infeasible
- Step 3: Rank remaining control technologies
- Step 4: Evaluate economic, energy and environmental impacts
 - CCS may raise unique impacts
- Step 5: Select BACT



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Observations from PSD Permitting Proceedings to Date

- Does your facility have a “high purity” CO₂ stream(s)?
- Is your facility in reasonable proximity to CO₂ pipeline infrastructure?
- In your facility in reasonable proximity to existing EOR operations?

Oil & Gas Operations Are Not Immune from CCS and Related Climate Control Considerations under PSD Permitting!



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Regulation of Oil & Gas Production (April 2012)

- Natural Gas Well Sites
- Natural Gas Gathering and Boosting Stations
- Gas Processing Plants
- Natural Gas Transmission
- Natural Gas Compressor Stations



Primarily targeting VOCs; methane reductions claimed as co-benefits



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What About Methane Emissions?

Response: In this rule, we are not taking final action with respect to regulation of methane. Rather, we intend to continue to evaluate the appropriateness of regulating methane with an eye toward taking additional steps if appropriate. On November 8,

Source: 77 Fed. Reg. 49513 (Aug. 16, 2012) (emphasis added)



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GHG Controls for Refineries?

- Final GHG NSPS for refineries were due November 10, 2012 via court order
- Lisa Jackson, 2012: We have no rules under development on this issue
- Current Status?: Anybody's guess
- Likely remain in the queue but EPA will address new and existing power plants first

Source: "EPA Puts Greenhouse Gas Rules for Oil Refineries on Backburner," Inside Climate News (Mar. 8, 2012)



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GHG New Source Performance Standards for New & Existing EGUs

- For New Power Plants (section 111(b))
 - Proposed September 20, 2013
 - Two standards for natural-gas fired stationary combustion units
 - 1,000 lbs CO₂/MWh gross (> 850 mmBtu/hr)
 - 1,100 lbs CO₂/MWh gross (≤ 850 mmBtu/hr)
 - Separate, more stringent standards proposed for coal-fired units, including IGCC
 - 1,100 lbs CO₂/MWh gross over 12-month period; or
 - 1,000 – 1,050 lbs CO₂/MWh gross over 84-month period
- For Existing Power Plants (section 111(d))
 - Expected to be proposed in 2014
 - Outreach underway now



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Why You Should Care About the Standards for New & Existing EGUs

Effective CCS
Mandate on New
Coal means ...

↘

... possible impacts on
CO₂-EOR, at
minimum, and ...

... this proposal will
have broad oil & gas
regulatory impacts, too

↗

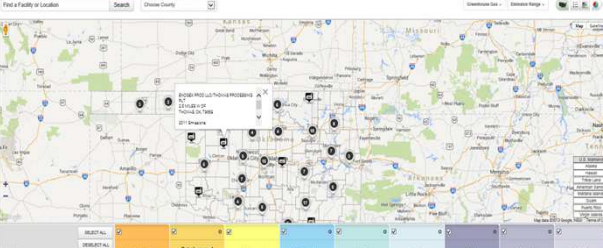


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Federal GHG Emissions Reporting

Find a Facility or Location: Search

Download Data



Facility	Power Plants	Petroleum and Natural Gas Systems	Refineries	Chemicals	Other	Waste	Blends	Minerals	Pulp and Paper
2012 GHG Emissions (million metric tons CO ₂ e)	91	5.7	4.2	7.6	0.6	1.9	0	2	1.8
# of Reporting Facilities	27	88	6	2	9	29	1	12	5



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EPA Use of Federal GHG Emissions Data

Subpart W (Petroleum & Natural Gas Systems)

Subpart PP (Suppliers of Carbon Dioxide)

Subpart RR (Geologic Sequestration)

Subpart UU (Injection of CO₂ – EOR)

➔ Will fugitive methane emissions be regulated in the future?

➔ What constitutes geologic sequestration? Will future GTL plants, LNG terminals and other oil & gas infrastructure be required to comply with UIC Class VI?

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Why You Should Care About Subpart RR

If you (or your CO₂ source) is engaged in "sequestration," EPA has proposed that the oil & gas company must opt into subpart RR, which includes preparation of an EPA-approved and publicly challengeable MRV plan

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CO₂ Injection Standards Under the Safe Drinking Water Act

Class II
v.
Class VI

➔ Salient Class VI features: (1) 50-year default post-injection site care period; (2) no transfer of ultimate liability; (3) other

➔ EPA's Proposed NSPS for New EGUs only references Class II-based projects (Mississippi Power, etc.)

Curious! ➔

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Pending Guidance on Transitioning from Class II to Class VI

– 40 CFR § 144.19

- (a) “Owners or operators that are injecting [CO₂] for the primary purpose of long-term storage into an oil and gas reservoir must ... obtain a Class VI ... permit when there is an increased risk to USDWs compared to Class II operations.”
 - Two fundamental considerations:
 - » What is the meaning of “primary purpose of long-term storage”?
 - » Who assesses potential increased risk, and what factors are to be considered?



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Assessing Potential Increased Risk

- “The Director shall determine when there is an increased risk to USDWs compared to Class II operations and a Class VI permit is required.” (40 CFR § 144.19(b))
- “The Director must consider the following (id.):
 - “Increase in reservoir pressure within the injection zone(s);
 - “Increase in [CO₂] injection rates;
 - “Decrease in reservoir production rates;
 - “Distance between the injection zone(s) and USDWs;
 - “Suitability of the Class II area of review delineation;
 - “Quality of abandoned well plugs within the area of review;
 - “The ... plan for recovery of [CO₂] at the cessation of injection;
 - “The source and properties of injected [CO₂];
 - “Any additional site-specific factors as determined by the Director.”



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Commercial Considerations of 40 CFR § 144.19

– Uncertainties

- Open-ended inquiry
 - “Any additional site-specific factors”
- When is the determination made? Can it be made retroactively?
 - “Decrease in reservoir production rates”
- Commercial differences between upstream source and EOR operator
 - “Increase in [CO₂] injection rates”
- If the upstream source is engaged in “sequestration,” then ...
 - “[S]ource and properties of injected [CO₂].”
- What happens when injections cease?
 - “[P]lan for recovery of [CO₂] at the cessation of injection”
- Proceed with caution when negotiating deal documents, including CO₂ offtake agreement
 - Lessons learned from early years of the Clean Development Mechanism



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CO2 Regulation Spreading to Other Federal Statutes: Next Up, RCRA

Hazardous Waste Management System: Conditional Exclusion for Carbon Dioxide (CO2) Streams in Geological Sequestration Activities

RCRA citizen suit liability applies to both solid and hazardous wastes: "any person may commence a civil action on his own behalf ... against any person ... including any past or present generator, past or present transporter, or past or present owner or operator of a treatment, storage, or disposal facility ... who has contributed or who is contributing to the past or present handling, storage, treatment, transportation, or disposal of any solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment" (42 U.S.C. § 6972(a)(1)(B)(emphasis added))

Final Rule
Cleared
White
House
Review on
September
30, 2013



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U.S. Treasury: 45Q CCS Tax Credit

- IRS published interim guidance in 2009 (Notice 2009-83, Nov. 2, 2009)
- Meaning of "secure geological storage"
- "In the event that a taxpayer disposes of the qualified CO₂ contractually, the taxpayer must ensure that the contracting party complies with the requirements of this section of the notice at all times, and the taxpayer must be able to provide documentation of such compliance" (IRS Notice 2009-83, § 5.01 (Nov. 2, 2009))
- IRS re-examining what is required



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Regional Greenhouse Gas Initiative

- Power plant emissions only
- Recently concluded its 3-year program review
- Based on that review, RGGI will lower its CO₂ cap by 45% between now and 2020, and will also address leakage



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California Climate Regulation

– Cap-and-trade compliance obligations took effect January 1, 2013

- Recent analyses concluded the program had increased electricity prices by 20% and the cost of refining a barrel of oil by \$0.78*
- Program currently only applies to: (1) electricity generators and importers; (2) refiners; and (3) other industry/manufacturing. In 2015, the program coverage more than doubles with the addition of transportation fuels and natural gas deliveries
- Program will link to Quebec's in January 2014
- CCS not yet recognized

– Low Carbon Fuel Standard

- Requires reduction in carbon intensity of fuel mix by at least 10% by 2020; sets declining annual targets
- Remains subject to litigation
- Oregon recently pulled back its comparable program

* Source: Belden, Tim. AARGH Matey! Cap'n Trade Sails on in California – Part II (RBN Energy LLC, Feb. 24, 2013)



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Three Climate-Related Litigations of Note (Case #1)

Does EPA's climate regulatory program violate the Clean Air Act?

Coalition for Responsible Regulation v. EPA, No. 12-1253 (petitions for cert. pending)



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Three Climate-Related Litigations of Note (Case #2)

- (1) Is CO₂ sold for EOR from a Clean Air Act regulated source (here, a coal-to-SNG plant) a commodity; and
- (2) can EOR continue to be conducted under Class II under these facts?

Petition for Objection to a Title V Permit for Indiana Gasification, LLC, before the EPA Administrator (August 30, 2012) (pending)



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Three Climate-Related Litigations of Note (Case #3)

What constitutes the single stationary source for purposes of permitting oil & natural gas operations?

Summit Petroleum Corp. v. EPA, 690 F.3d 733 (6th Cir. 2012); EPA Policy Memo, December 21, 2012



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Conclusion

- Federal cap & trade is dead ... but climate regulation is robust
- Natural gas related infrastructure will have to clear GHG permitting under PSD/title V (GTL, LNG, etc.)
- Unique concerns for CO₂-EOR and other entities managing physical CO₂ streams (e.g., refineries)
- For the time being, EPA has focused its attention on coal, with the Administration making pro-natural gas statements ... yet in all moments ...



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Don't Let Your Guard Down



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