

2016 Global Methane Forum

Coal Session: Linking Policy to Changing Conditions: Framework for Stimulating Investments

U.S. CMM EMISSION REDUCTION PROJECTS: PUBLIC POLICIES, MAJOR BARRIERS, AND KEY INCENTIVES – A STUDY OF CONTRASTS

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FOR

U.S. EPA COALBED METHANE OUTREACH PROGRAM

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Discussion

OVERVIEW: U.S. COAL/CMM FACTS & PUBLIC POLICY

-Status Of CMM Emission Reduction (ER) Projects

CMM OPPORTUNITIES IN A CHANGING ENERGY ENVIRONMENT

-Major U.S. Coal Industry Contraction

U.S. CMM POLICY

-Over 200 Years In The Making... And Still Evolving

U.S. CMM PROJECT BARRIERS & INCENTIVES

-Industry Inertia But An Improving Carbon Offset Market

U.S. CMM PROJECTS: NEXT GENERATION

-Issues & Policy Challenges

Overview

CMM ER PROJECTS: PRODUCT OF GOOD POLICY & STEWARDSHIP

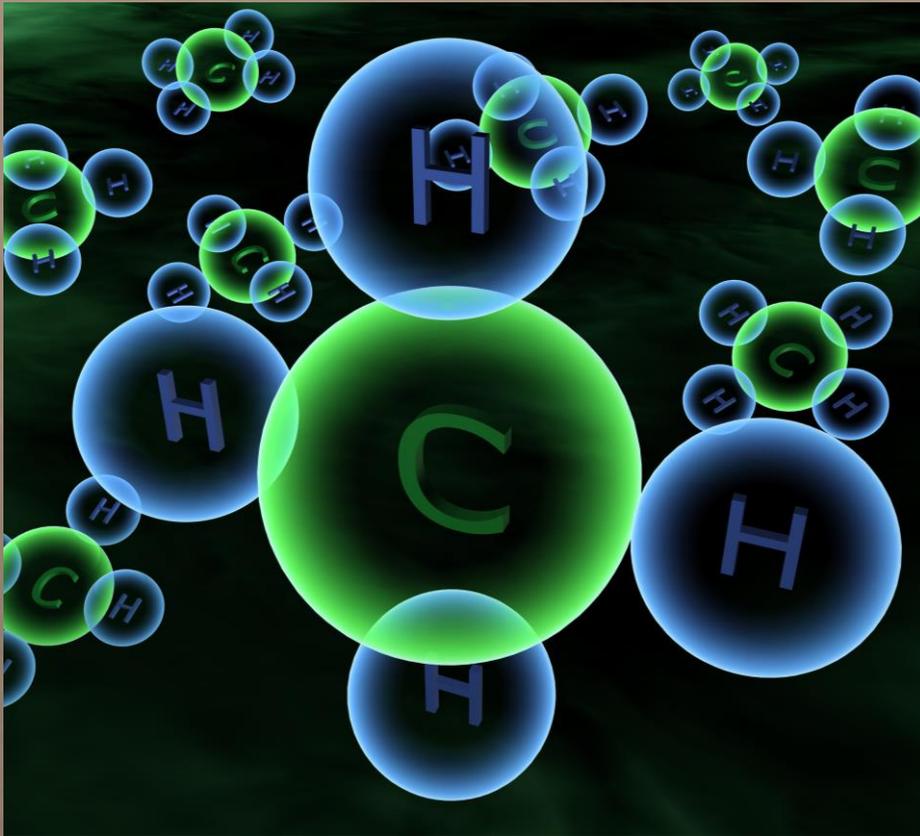
U.S. COAL & CMM FACTS



- 2015:
 - Over 900 active underground and surface coal mines
 - Mine Safety and Health Administration (MSHA) identified 115 U.S. gassy coal mines
 - Coal industry undergoing major restructuring due to rapidly changing U.S. energy market
- Total CMM ER projects (sale, use, or destruction) (2012):
 - Active Mines: 16 with 22 projects
 - Abandoned Mines: 38 with 16 projects
- SO....HOW DO WE ACCELERATE NEXT GENERATION OF CMM ER PROJECTS?

U.S. Public Policy

CMM AT INTERSECTION OF MAJOR POLICY & LEGAL ISSUES

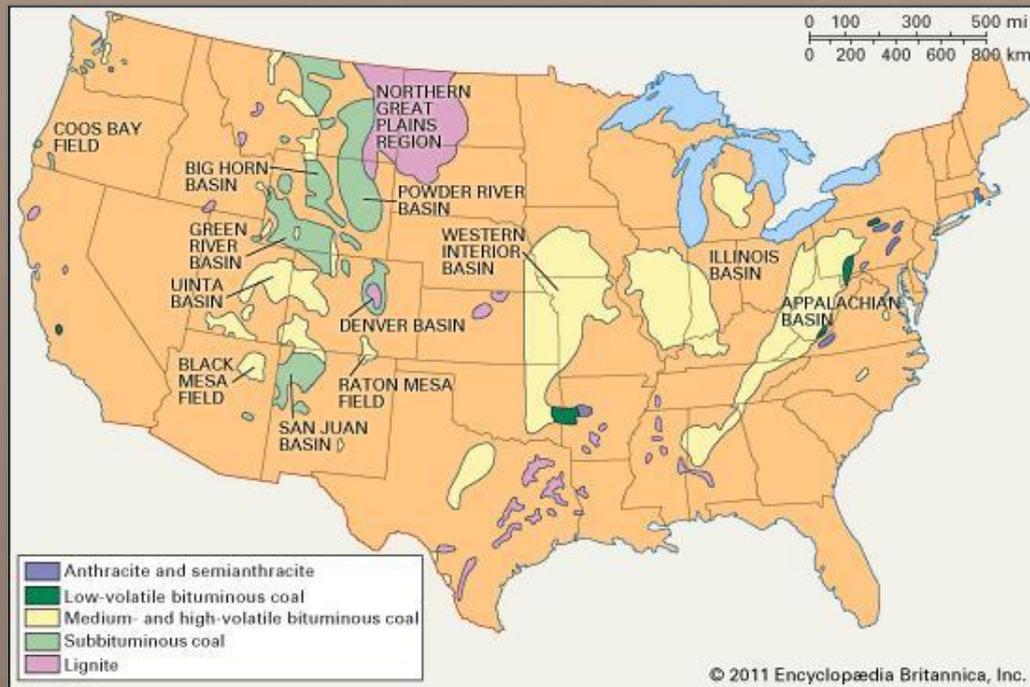


- “**Public policy**” - Governmental action taken to maintain order or address needs of its citizens
- “**Public policy**” represents laws, orders, and regulations established through a political process
- **Major CMM policy & legal issues primarily focus on:**
 - Ownership/Control
 - Safety
 - Alternative/Eligible Energy Resources/Carbon Market
 - Environment (greenhouse gas (GHG) inventory & impact analysis)

U.S. Coal Regions

CMM OWNERSHIP DIFFERENT EAST & WEST OF MISSISSIPPI RIVER

2013 COAL PRODUCTION BY REGION (MMst)



➤ FIVE (5) MAJOR U.S. COAL BASINS

- Northern Appalachian Basin
- Central Appalachian Basin
- Illinois Basin
- Powder River Basin (PRB)
- Rocky Mountain Region

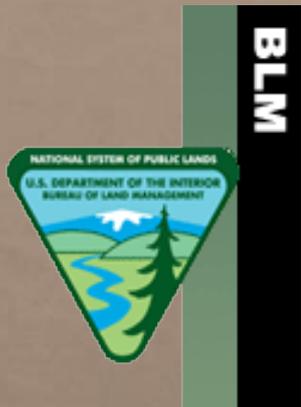
➤ Federal government owns about 47% of land in western U.S. and separately leases surface & mineral rights to private parties

➤ About 40% of U.S. coal is produced from federal lands

Source: <http://pubs.usgs.gov/of/1996/of96-092/index.htm>, Public Domain,
<https://commons.wikimedia.org/w/index.php?curid=15552466>

Federal Coal Program: Key Agencies

Responsible for Coal Leasing



2014

- 570 million coal acs.
- 308 Coal Leases
- 475,171 acs.
- Royalties: \$775 million+

National Forests & Parks (surface)



2014

- 192 million surface acs. for multiple use & sustained yield – timber, recreation, grazing, fish & wildlife habitat, watershed protection

Environmental Compliance



Mining, Safety & Health



Changing U.S. Energy Landscape

OIL & GAS INDUSTRY

2014: U.S. world's largest oil/gas producer

- 14.44 Tcf unconventional gas (shale/CBM)

MMBtu natural gas spot (Henry Hub LA):

- 2014: \$4.38
- 2015: \$2.61
- 2016: \$1.99 (2/16)

UTILITY INDUSTRY

2015: 4.6% of coal fired capacity retired coincides with EPA's *Mercury & Air Toxic Standards* regs

- **Av. Age: 54 yrs.**

2012-2020: Est. 60 GWs of coal-fired power projected to retire

COAL INDUSTRY

2015: Production 890 MMst (est.)

- 10% decline from 2014 – lowest since 1986

2016: EIA forecasts continued decline

Appalachian	- 9%
Interior	- 4%
Western	-17%

U.S. COAL INDUSTRY FACING STRONG HEADWINDS

U.S. CMM Policy Cornerstones

LEGAL AND ECONOMIC FRAMEWORK SHAPING POLICY

PRIVATE PROPERTY RIGHTS

PROTECT PUBLIC SAFETY,
HEALTH & WELFARE

U.S. ENERGY &
ENVIRONMENTAL
POLICIES

FREE ENTERPRISE SYSTEM
MARKET BASED ECONOMY

FEDERALISM/
SEPARATION OF POWERS

WHERE DID THE CORNERSTONES COME FROM?

U.S. Constitution (September 1787)

Private Property Rights

(Fifth Amend.)

- Government cannot take property for “public use” without “due process of law” and payment of “just compensation” (market value)

Public Safety, Health & Welfare

(Art. I Sec. 8 & Tenth Amend.)

- Power of government (federal, state or local) to make laws to protect communities they serve

Federalism / Separation of Powers

(Preamble, Art. I Sec. 8, Tenth Amendment/ Arts. I, II & III)

- **Fragmented Authority** – allocates power between national and state/local governments
- **Federal Government - Separation of Powers** – Art. I – legislative powers (Congress); Art. II – executive powers (Pres.); Art. III – judicial power (Courts)

Federal Policies Impacting CMM

1960 - 2003

1960s

1963 Clear Air Act (CAA)

1964 Wilderness Act – National Wilderness Preservation System (NWPS)

1969 Coal Mine Safety and Health Act (Coal Act)

1970s

1970 National Environmental Protection Act (NEPA)

1976 Federal Land Policy and Management Act (FLPMA)

1977 Mine Safety and Health Act

1978 Natural Gas Policy Act/National Energy Act/PURPA

1980s

1980 Crude Oil Windfall Profits Tax (Sec. 29 Tax Credits for nonconventional fuel)

1989 Natural Gas Wellhead Decontrol Act (repealed gas price ceilings)

1990s - 2003

1999 U.S. S. Ct. *AMOCO Production Co. v. Southern Ute Tribe*

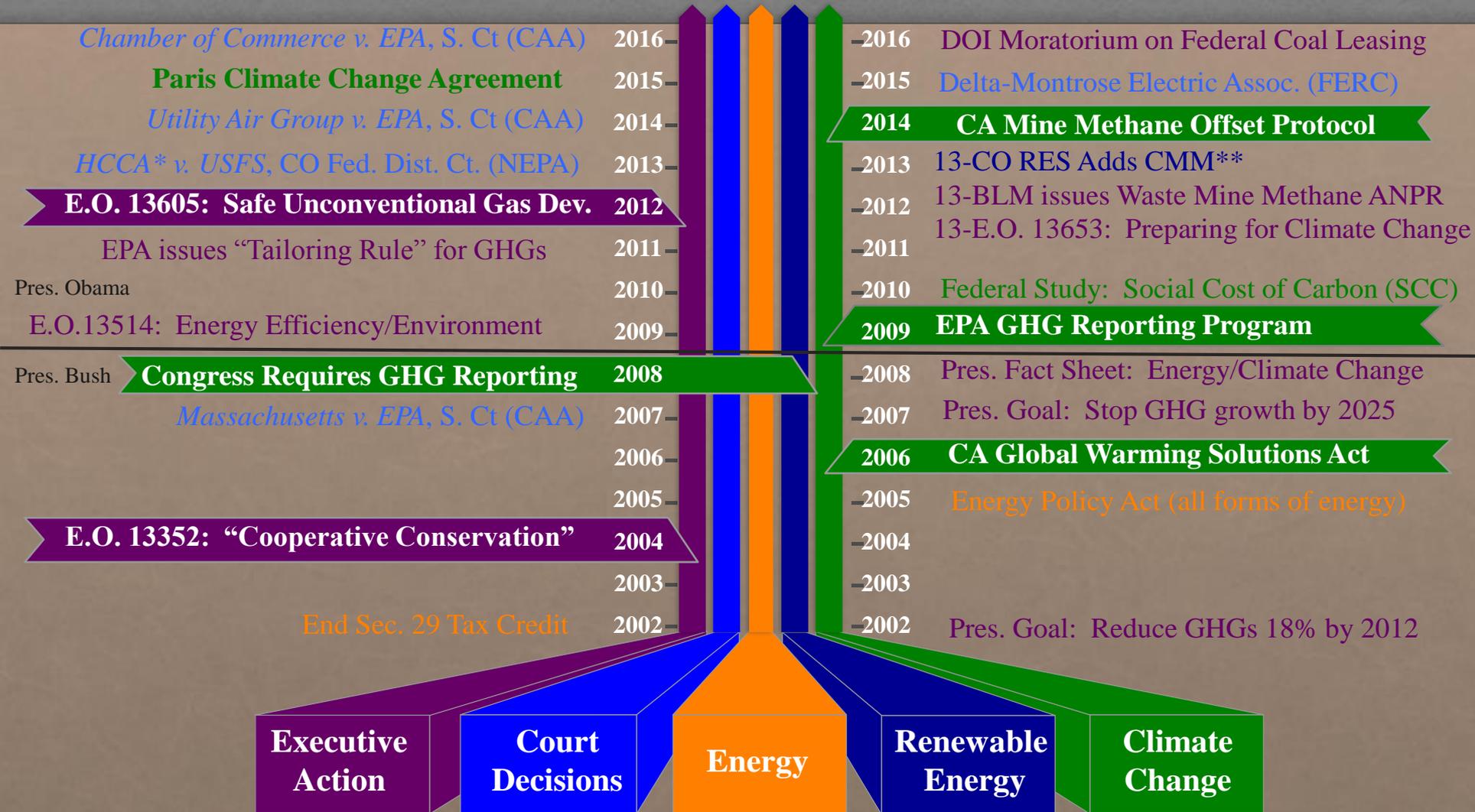
- Gas in coal part of oil & gas estate
- Mine has right to vent CMM to protect miners

2001 Pres. Clinton issues **Roadless Area Conservation Policy**

Public/Private R & D Partnerships

- Focused on developing unconventional gas technology & innovation including fracking

CMM Policy.... Still Evolving



Contrasting Federal CMM Policies

DEVELOPMENT POLICIES	AGENCIES' DECISION PROCESSES & PROCEDURES	ENVIRONMENTAL/ SAFETY POLICIES
<p>Mineral Leasing Act of 1920: Grants private parties right to lease federal coal (creating "Property Right")</p> <p>FLPMA: Establishes "multiple use" principle</p> <p>PURPA: Promotes small scale waste fuel power generation</p> <p>E.O. Support economic growth</p>	<p>Assist in resolving property rights disputes with oil, gas, other minerals & surface estates</p> <p>NEPA: A process to assess impacts of federal actions on environment (coal leasing) that:</p> <ul style="list-style-type: none"> • Identifies potentially significant impacts on environment • Provides opportunity for public comment <p>E.O. Improve permitting efficiency</p>	<p>CAA: Monitor and control air pollution</p> <p>Coal Act: Developed mine ventilation standards</p> <p>NWPS/Roadless Rule: Protects wilderness and undeveloped areas</p> <p>E.O. Reduce pollution</p>

CMM Projects: Barriers & Incentives

Barriers: Active coal mines are reluctant to develop CMM ER Projects due to:

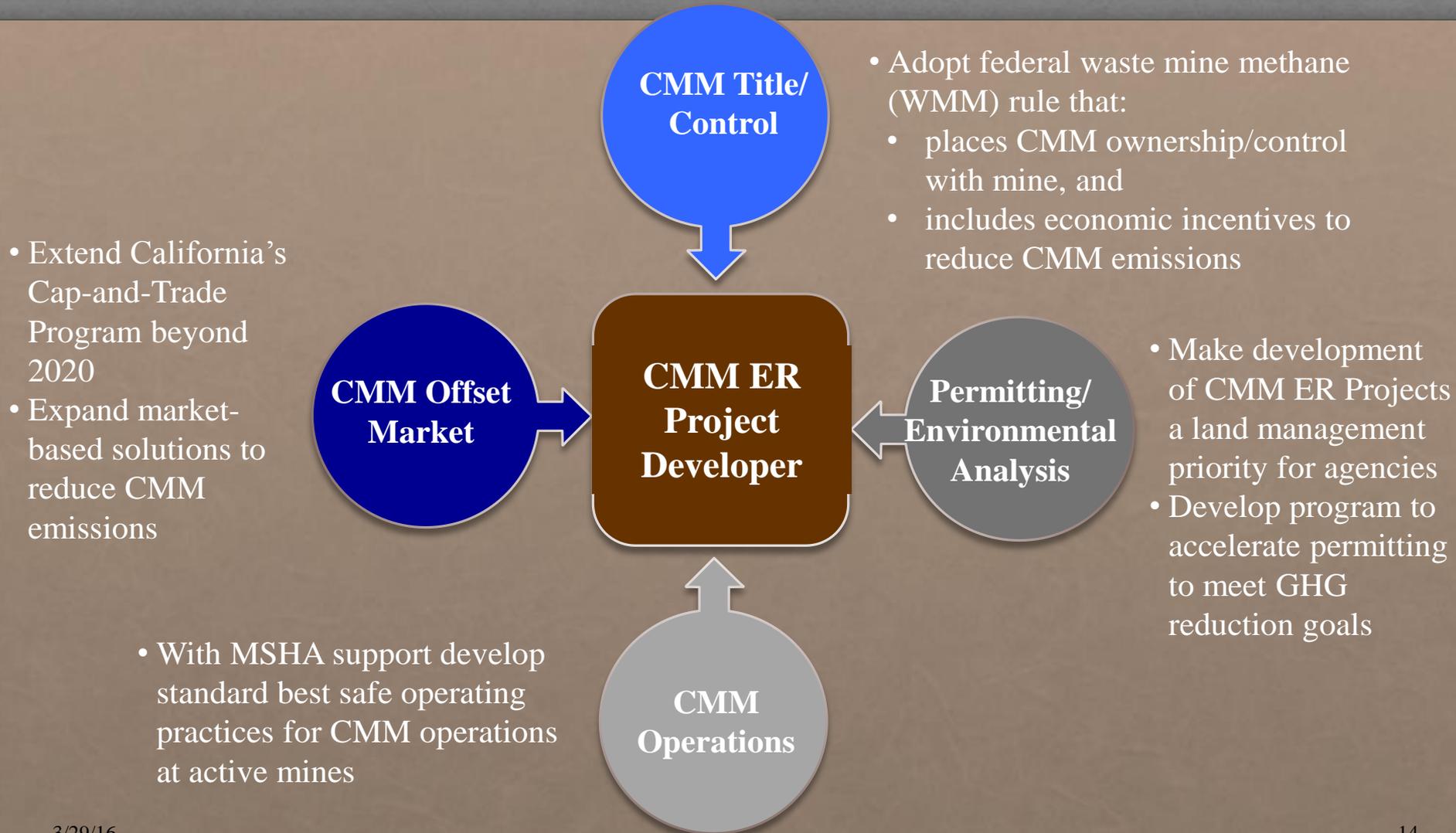
- Insufficient gas at most mines
- Safety is Job One! CMM venting considered safe mining practice
- Depressed coal market
- CMM title uncertainty
- Lack of sustainable carbon market
- Desire to avoid conflating good environmental stewardship with support for climate change

Incentives: Market solutions to reduce GHG emissions include:

- Coal Mine Methane Project Protocol approved by California's Air Resources Board (ARB)
- Price stability in carbon markets; now \$12.00+ per CO₂e ton (Climate Reserve Tonnes (CRT))
- Growing public & private sector commitment to “voluntarily” reduce GHG emissions
- Utility industry shifting from large scale power plants to small scale renewable & waste fuel generation

CMM ER Projects: Next Generation

Issues & Policy Challenges



Conclusions

- U.S. coal industry is engaged in major restructuring & downsizing due to market conditions and retirement of 60 GWs (est.) of older coal-fired power generation capacity
- With no major U.S. coal sector growth on horizon next generation of CMM ER Projects will likely be smaller scale/lower cost operations focused on abandoned mines
- To help meet national GHG reduction goals for 2020 and beyond refinement of existing CMM policies is required to:
 - resolve ownership/control issues
 - extend and increase carbon market financial incentives
 - accelerate ER Project development permitting

Global Methane Forum

Coal Session: U.S. CMM Policy

QUESTIONS?

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