

Incentives for CMM/AMM Projects in the United States

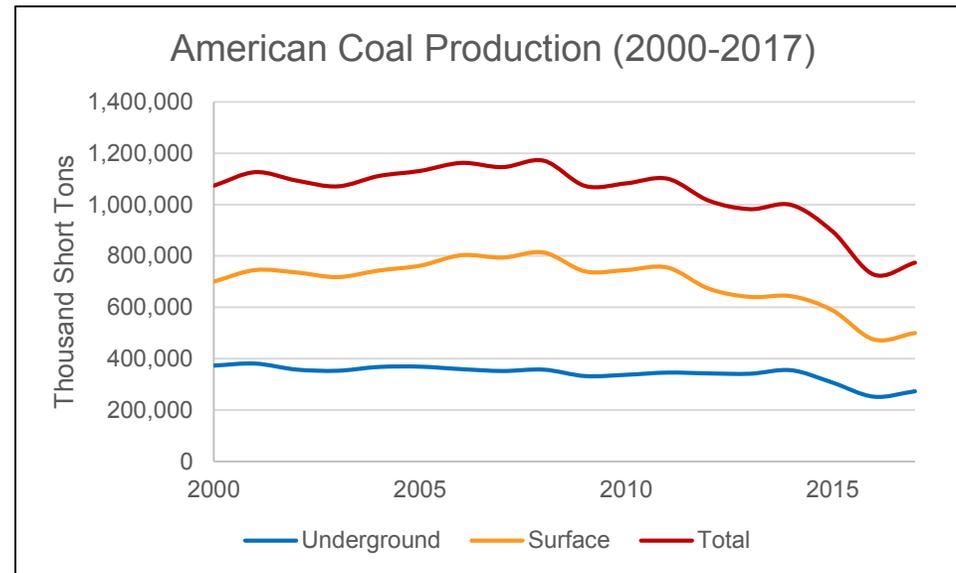
Kyeong Pil Kong
Advanced Resources International

GMI Coal Mines Subcommittee Meeting
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The United States Coal Industry

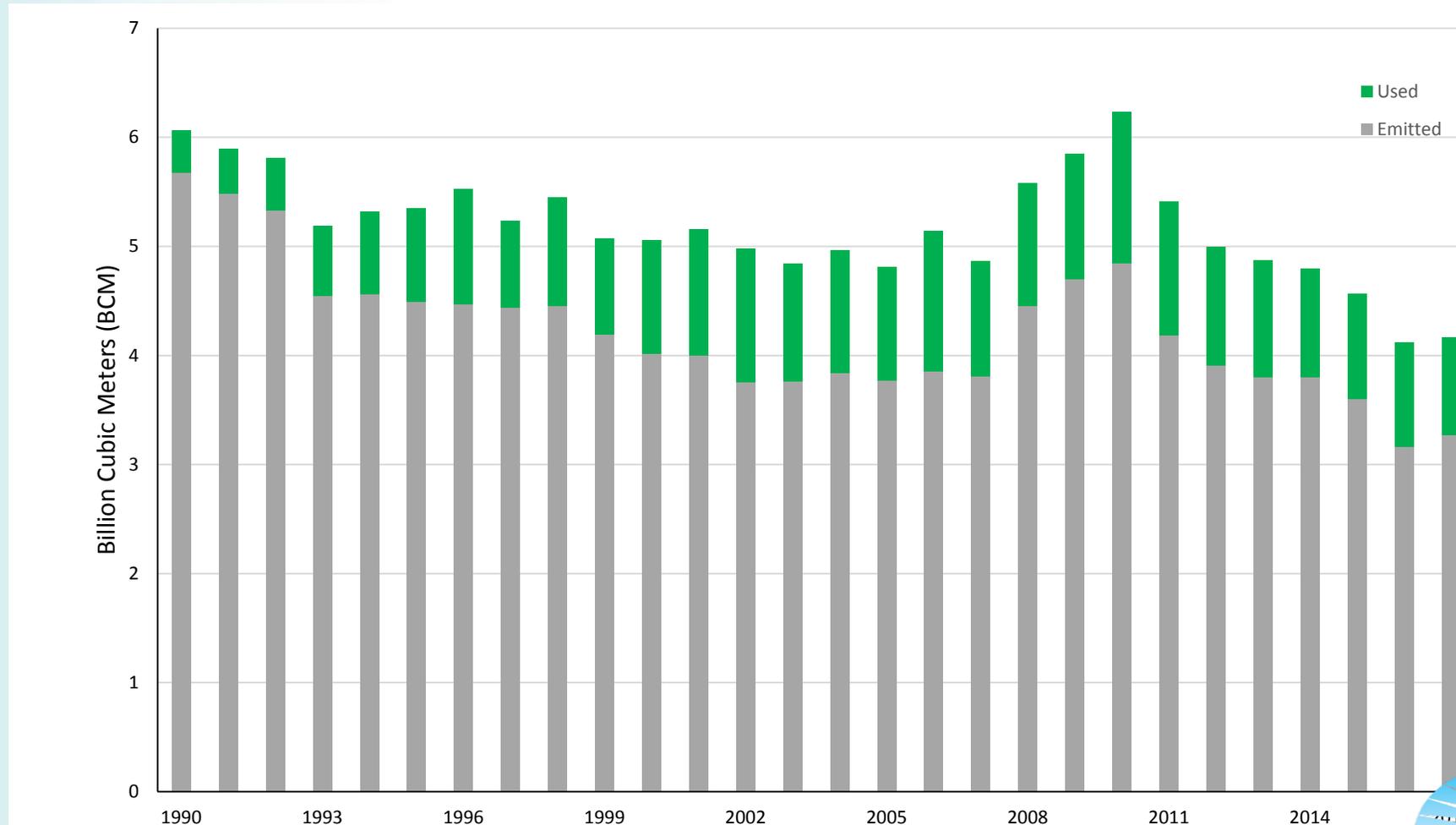
- Coal accounted for 14% of U.S. energy consumption in 2018.
- Total coal consumption has dropped 29% in the past decade; similarly, production has dropped 28%.
- Since 2009, number of active mines has decreased 51%; number of underground mines has decreased 56% from 540 to 236.



Sources: [EIA](#), [BP 2019 Statistical Review](#), Greenhouse Gas Inventory

Underground CMM Emissions

CMM emissions from active coal mines in the U.S., 2000–2017



Source: [EPA](#)

Incentives for CMM/AMM projects



Institutional development
Informational support



Carbon markets



State-level RECs
Project financing assistance



Greenhouse Gas Markets

- Two market types:
 - Voluntary Markets
 - Compliance Markets
- Projects listed on registries:
 - California Cap-and-Trade

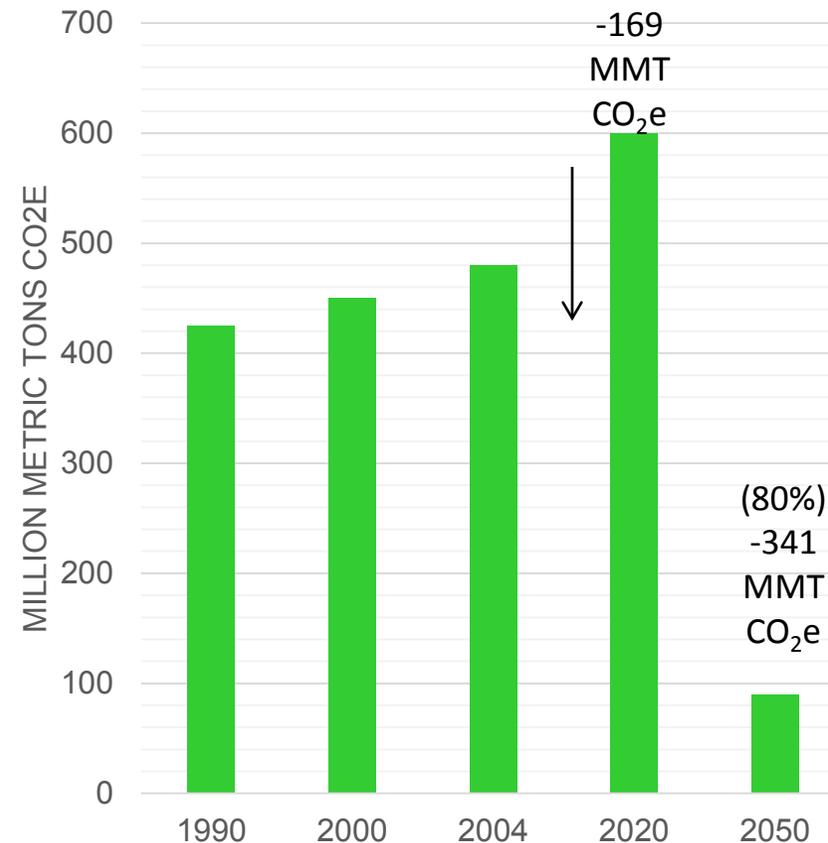


CLIMATE
ACTION
RESERVE

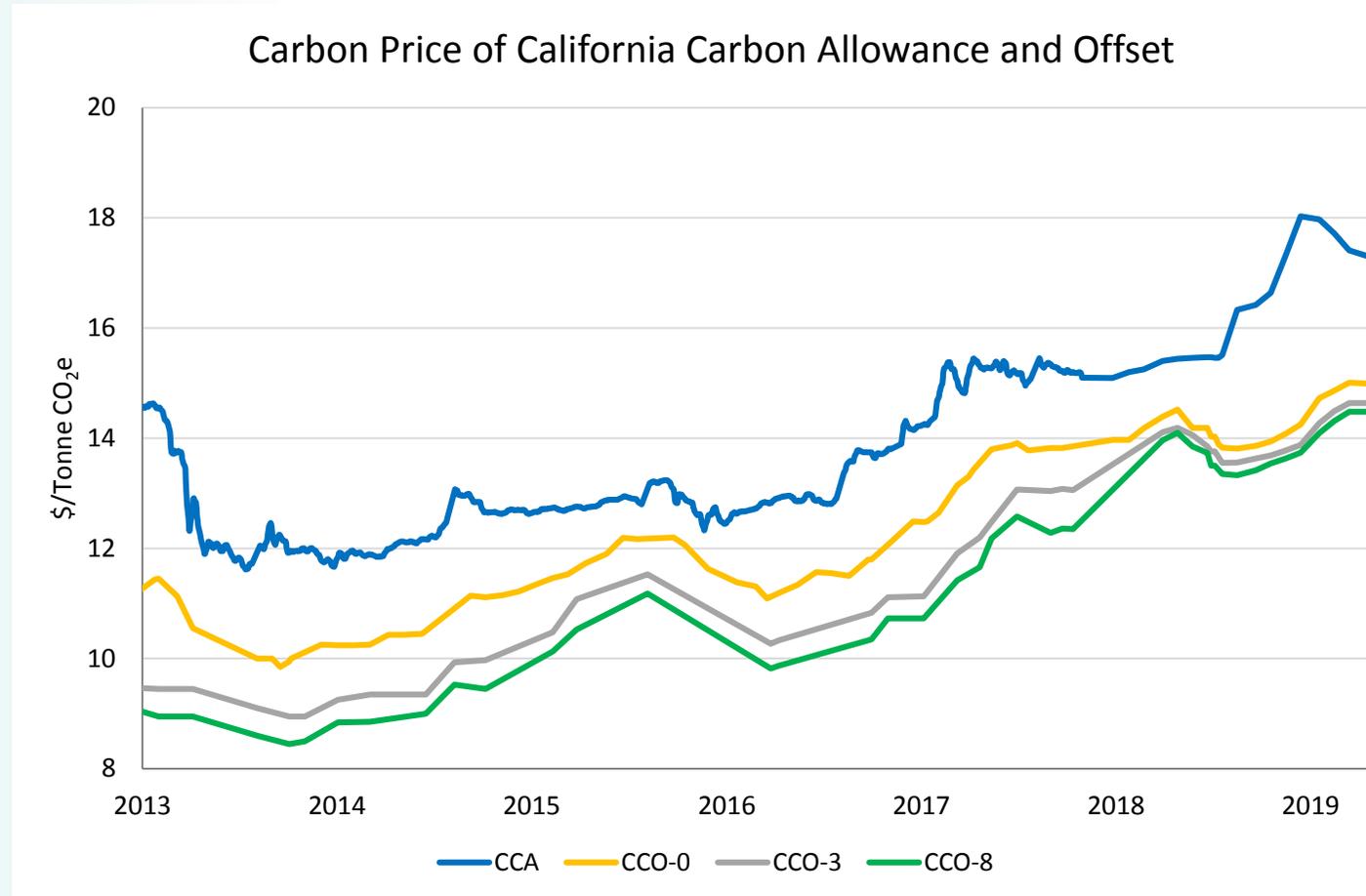


California Regulated Carbon Market

- Reduce 2020 emissions to 1990 levels
 - target of reducing 2050 emission to 80% below 1990
- Regulated entities must deliver allowances (tradable permits = 1 tonne CO₂) or offsets (up to 8% of emissions) equal to annual emissions.
- Mine methane capture projects can generate offset credits



Historical Carbon Prices



US CMM/AMM Projects

- Generation of offset credits from methane destruction/use:
 - Marshall County VAM Abatement Project (WV)
 - Previously named Verdeo McElroy VAM Project
 - Corinth AMM Recovery Project (IL): AMM pipeline
 - Elk Creek Mine (CO): Onsite power generation



Operating Flare Elk Creek Mine, Colorado, USA (Courtesy of Vessels Coal Gas)

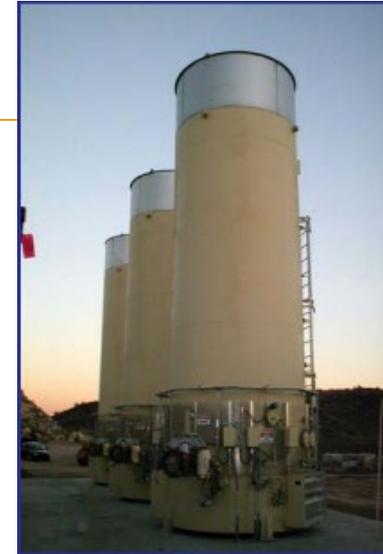
CA Cap-and-Trade Emission Reductions

Project Name	Project Type	Location	Credit Type	Credits Issued	Start Date	End Date
Verdeo Marshall County VAM Abatement Project	VAM	WV	Early action	197,411	5/4/2012	10/31/2013
			Compliance	1,045,923	11/1/2013	12/31/2017
Vamox® Demonstration Project at JWR Shaft No. 4-9	VAM	AL	Early action	80,766	3/6/2009	2/28/2013
Elk Creek Coal Mine Methane Destruction and Utilization Project	CMM	CO	Early action	432,609	1/1/2014	12/31/2014
			Compliance	266,263	1/1/2015	1/31/2016
Elk Creek Permit Area Abandoned Mine Project	AMM	CO	Compliance	420,398	2/1/2016	1/31/2018
Solvay Chemicals, Inc. Waste Mine Methane Project	CMM	WY	Early action	498,654	8/13/2010	12/31/2014
			Compliance	744,290	1/1/2015	12/31/2017
Cambria 33 Abandoned Mine Methane Capture and Use Project	AMM	PA	Early action	107,064	1/1/2011	12/31/2014
Corinth Abandoned Mine Methane Recovery Project		IL	Early action	490,456	1/1/2010	12/31/2014
			Compliance	504,214	1/1/2015	12/31/2017
Baker Mine AMM Project		KY	Compliance	2,236	4/4/2016	10/4/2016
North Antelope Rochelle Coal Mine Project	SMM	WY	Early action	1,072,724	3/28/2006	3/31/2009
Total CARB credits issued for MMC as of October 2018			Early action	2,879,684	3/6/2009	12/31/2014
			Compliance	2,983,324	1/1/2013	10/24/2018
			Total	5,863,008		

Source: EPA CMM Developments in the US

New Projects

- Bailey Mine Flare (WV/PA)
- Baker Mine AMM Flare (KY)
- WMMC AMM Flare (WV)
- Bear Canyon AMM Flare (UT)
- Marshall County Mine Flare (WV)
 - Project commenced June 2019
- Perennial CMM, LLC Projects (WV)
 - Pursglove No. 15 Mine Project
 - Osage No 3. Mine
 - Consol No. 9 Mine Project
 - Project commenced January 2018



Source:
Perennial
Energy

Source:
[ACR](#)

Renewable Energy Credits

Several major coal producing states have alternative energy and renewable energy programs that include CMM as a targeted renewable or clean energy source

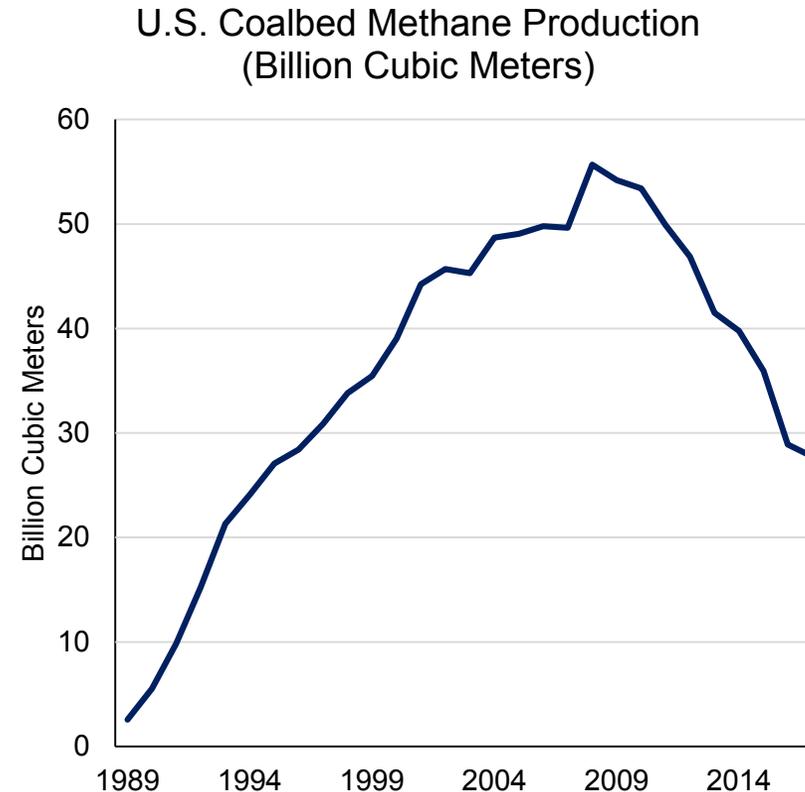
State CMM Incentives		
State	Definition of CMM	Incentives and Programs
Colorado	CMM is a renewable energy resource if the end-use electricity is GHG-neutral	Renewable Energy Standard • RECs
Indiana	CBM (coalbed methane) is defined as an alternative energy source and clean energy resource	Voluntary Clean Energy Portfolio Standard • Incentives to help pay for compliance projects
Ohio	CMM/AMM is a renewable energy resource	Alternative Energy Resource Standard • Renewable energy certificates (RECs) Advanced Energy Program • Forgivable and non-forgivable loans
Pennsylvania	CMM is an alternative energy resource	Alternative Energy Portfolio Standard • Alternative energy credits
Utah	CMM is a renewable energy resource	Renewable Portfolio Standard • RECs

Other Incentives for Energy Projects

- Accelerated depreciation
- Regulatory incentives
 - Royalty relief in CO, UT, WY
 - Lease amendments in CO, UT
- Previous tax credits
 - Section 29 Tax Credit

Tax Credits: Section 29

- Tax credit to owners/operators of wells recovering unconventional gas (CMM included)
- Encourage domestic energy technology (enacted 1980)
 - Wells drilled before 1993
 - Production Value = US\$1/Mcf (US\$35/ m³), a value equal to nearly half of prevailing wellhead gas prices.



Source: EIA

Acknowledgements

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Thank You!

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