

# Getting it Right: Policies that Provide a Solid Foundation for the Development of CMM/AMM and VAM Projects

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**Coal Mine Methane as a Valuable Energy Resource**

XXVIII School of Underground Mining

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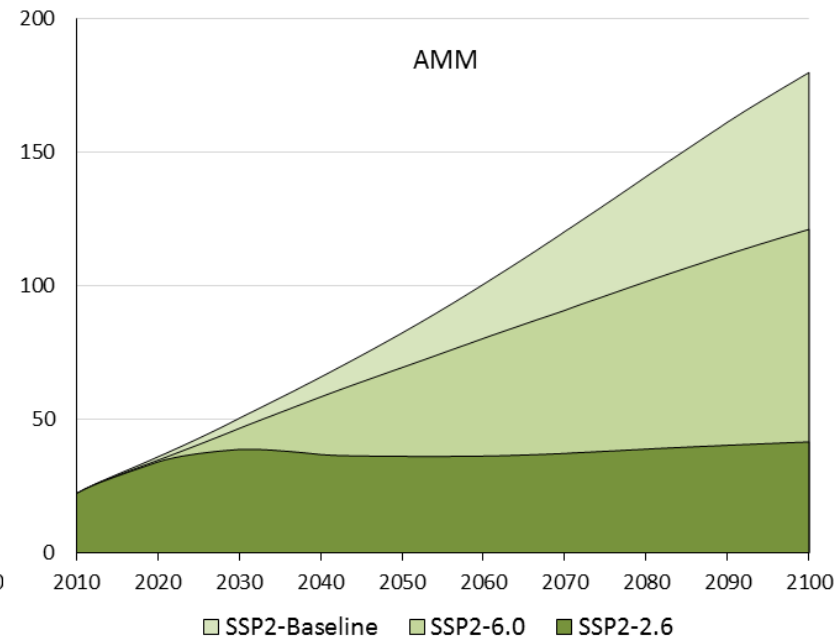
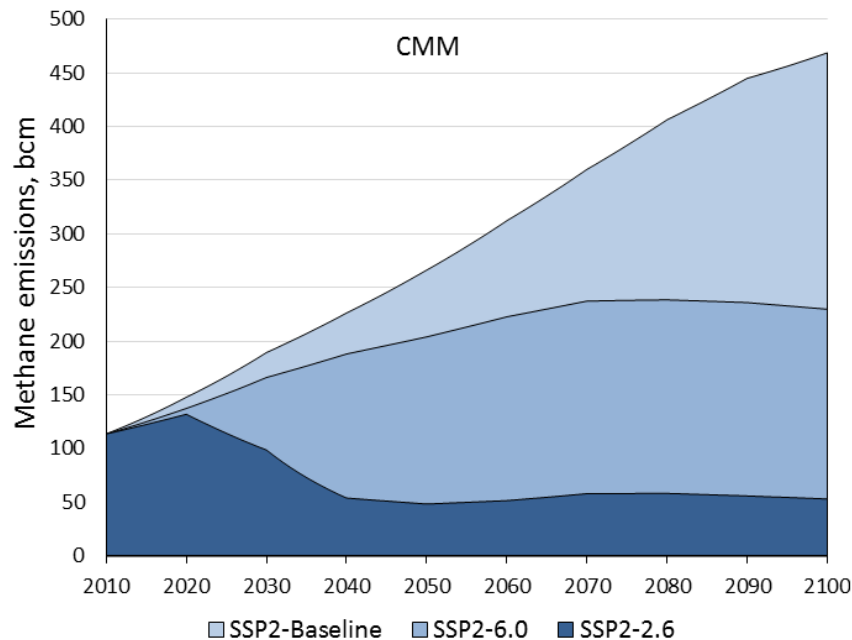
# Outline

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- Range of policy options for Coal Mine Methane (CMM): ownership rights, incentives and carbon policy
- Policies for VAM (Ventilation air methane) and AMM (Abandoned Mine Methane)
- Two country examples
- Conclusions

# Policy is Important to Address Growth in Emissions

- CMM emissions follow the coal production
- AMM emissions grow even if coal production and CMM decline



# Range of Policy Options

- Less supportive enabling conditions require more policy support for to make CMM projects feasible

## MORE TARGETED POLICY SUPPORT NEEDED

Specific CMM policies  
Subsidies  
Feed-in tariffs and obligations  
Tax incentives  
Environmental taxes



VS.



Underlying policy framework and conditions

Strict safety requirements and implementation ✓  
Access to energy markets ✓  
Cost-reflective prices for natural gas and electricity ✓  
Clearly defined property rights ✓  
Composition of gas flows ✓  
Mine gassiness ✓

## LESS TARGETED POLICY SUPPORT NEEDED

# The Importance of Clear Rights in CMM/AMM Utilization

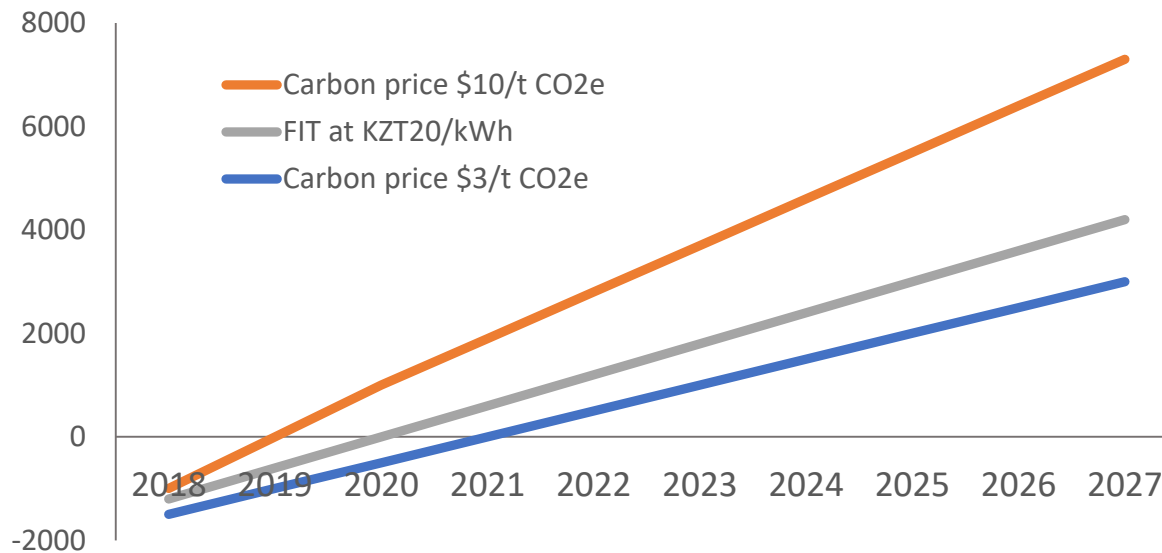
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- Ownership is a form of incentive for CMM
  - Poorly defined ownership and leasing rights can create conflicts and obstacles to utilization
- Clear rights reduce uncertainty, risks and costs
  - Basis for producing and selling CMM-based electricity
  - Clear rights is key to multi-party projects

# Incentives Can Speed Project Implementation

- Examples:
  - Carbon price
  - Feed-in tariff (FIT)
  - Reduced taxes or royalties

Illustrative example:  
Impact of carbon price and FIT on project economics



# VAM Projects Have Specific Policy Needs

- Majority of CMM is VAM (60~70% of CMM emissions)
- At least 6 projects in Australia, China and the U.S.
- Projects usually not self-financing from energy
- Carbon price or offsets are important (only one known project did not use carbon credits)
- Permitting rules affected initial VAM timelines and costs

Blue Creek Mine #4 Mine, Alabama, USA  
2009-2013



Marshall County Mine, West Virginia, USA  
First commercial-scale project, commissioned in 2012



# Key AMM Policy Actions for Success





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- Enact clear procedures for obtaining AMM ownership rights
- Allow for transfer of methane rights from the mine to the gas developer
- Set royalties at a low level to encourage investments
- Offer reduced taxes or other incentives to support AMM projects
- Consider including AMM as a renewable energy resource

Based on draft paper on AMM policies, scheduled for release later this year



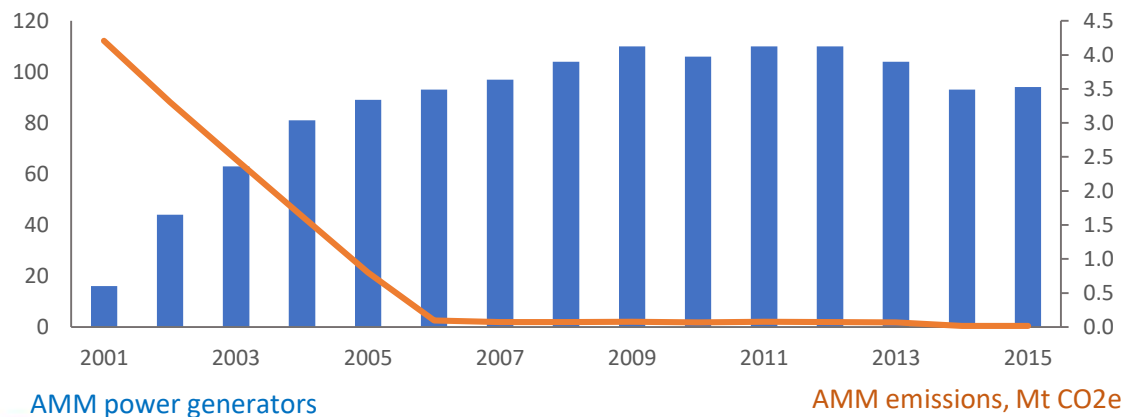
# AMM Case Studies: Key Findings

Country	AMM utiliz. rate	Royalties	Key Policies
Germany 	99%	10%	<ul style="list-style-type: none"> <li>• Clear gas rights and licensing process</li> <li>• Feed-in tariffs/market premium for AMM</li> </ul>
UK 	58%	Taxes instead	<ul style="list-style-type: none"> <li>• Clear rights and licensing procedures</li> <li>• Fairly high taxes</li> <li>• AMM exempted from climate change levy</li> </ul>
Australia 	31%	10%	<ul style="list-style-type: none"> <li>• AMM is not defined as a resource</li> <li>• Flaring is prohibited</li> </ul>
US 	29%	12.5%	<ul style="list-style-type: none"> <li>• Royalty relief (some states)</li> <li>• AMM in Renewable Portfolio Standards (some states)</li> <li>• Carbon offsets</li> </ul>

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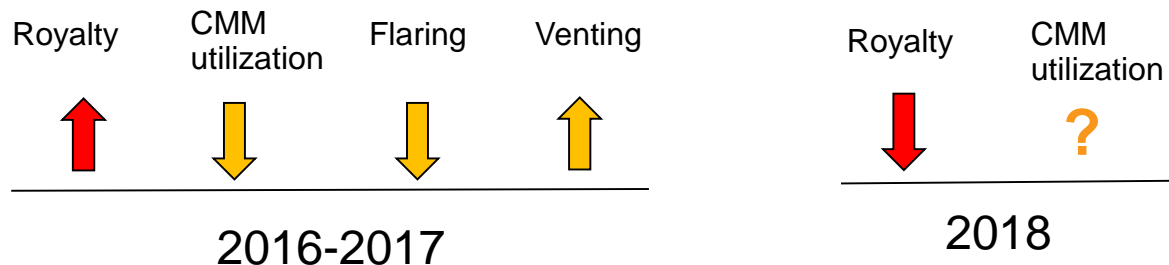
# Case Study 1: Germany

- Rights to CMM are provided to coal companies
- Feed-in-tariff (and later market premium incentives) for CMM and AMM
  - Primary factor driving active project development
- As of December 2017, active AMM projects utilized up to 99% of AMM



# Case Study 2: Ukraine

- Variable tax policies : royalties
  - 29% of royalty tax for CMM capture (July 2016)
  - Revenues (savings) from CMM utilization became taxable
  - Mines stopped flaring
  - CMM utilization decreased by one third
- Tax Code was amended in December 2017
  - No royalty tax
  - No income tax by 2020
  - Penalties for venting have been increased



# Conclusions

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- AMM /CMM emissions will likely grow in the future
- Countries use a mix of policy instruments to encourage coal methane projects
- Clearly defined property rights reduce risks
- Projects can be profitable but incentives are important
- Consistent policies are critical to project success

# Thanks and Contact Information

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Contacts:

Global Methane Initiative

<https://www.globalmethane.org>

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# Backup slides

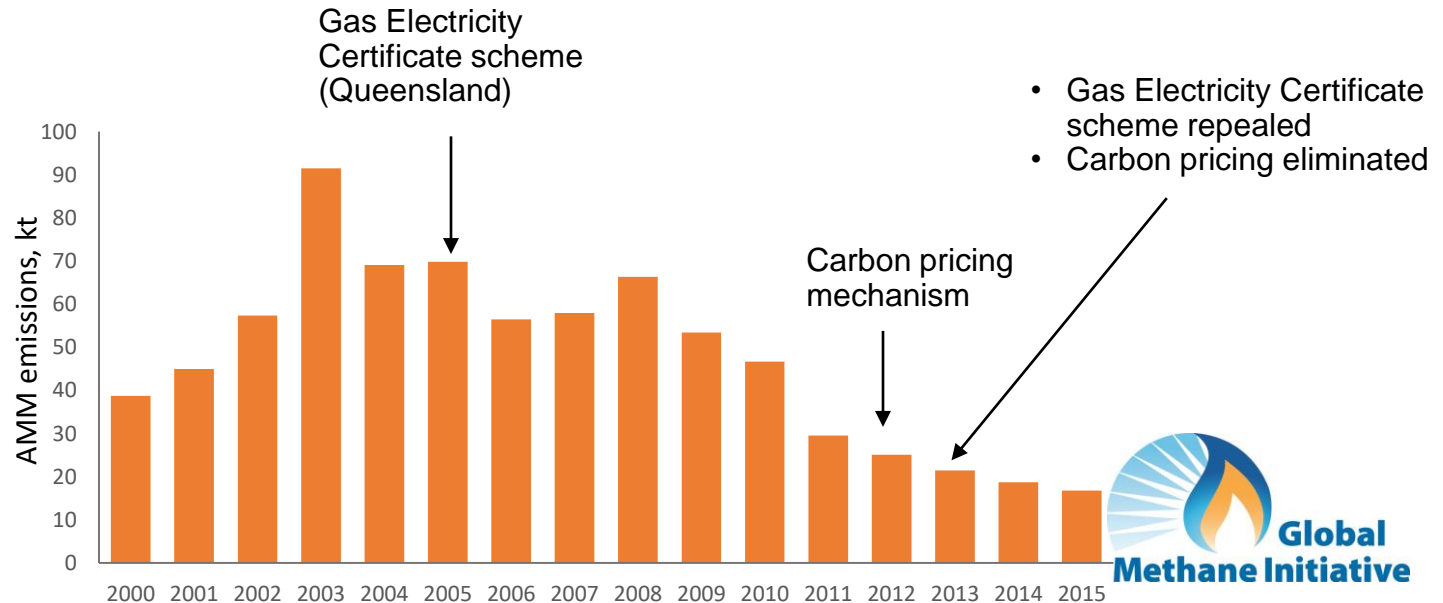
# Australia

- Each state sets its own regulation
- Companies should apply for a petroleum title
- Royalty rate is 10%
- Australia utilizes 31% AMM emissions

Mining Act 1992  
(New South Wales)

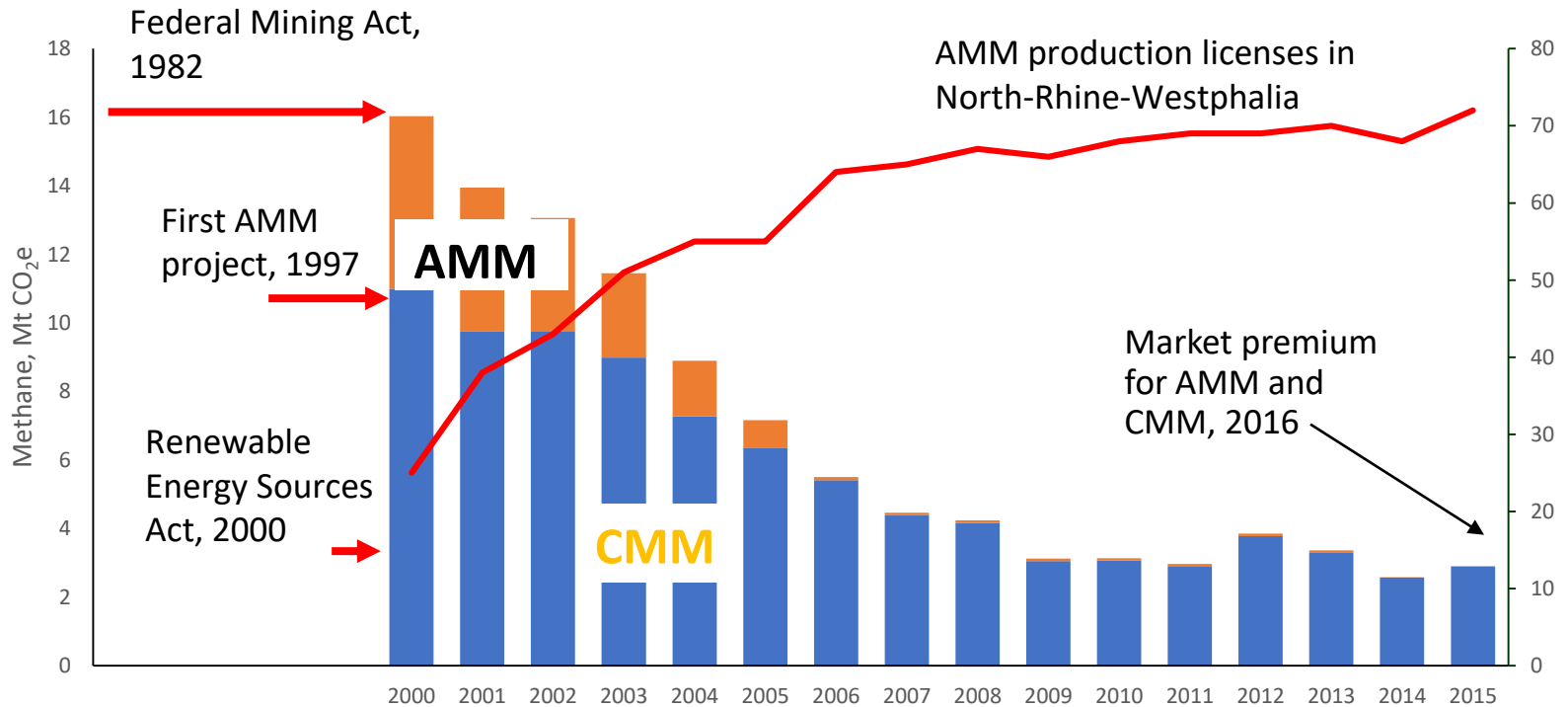


Mineral Resources  
Act 1989  
(Queensland)



# Germany

- Policy is important!

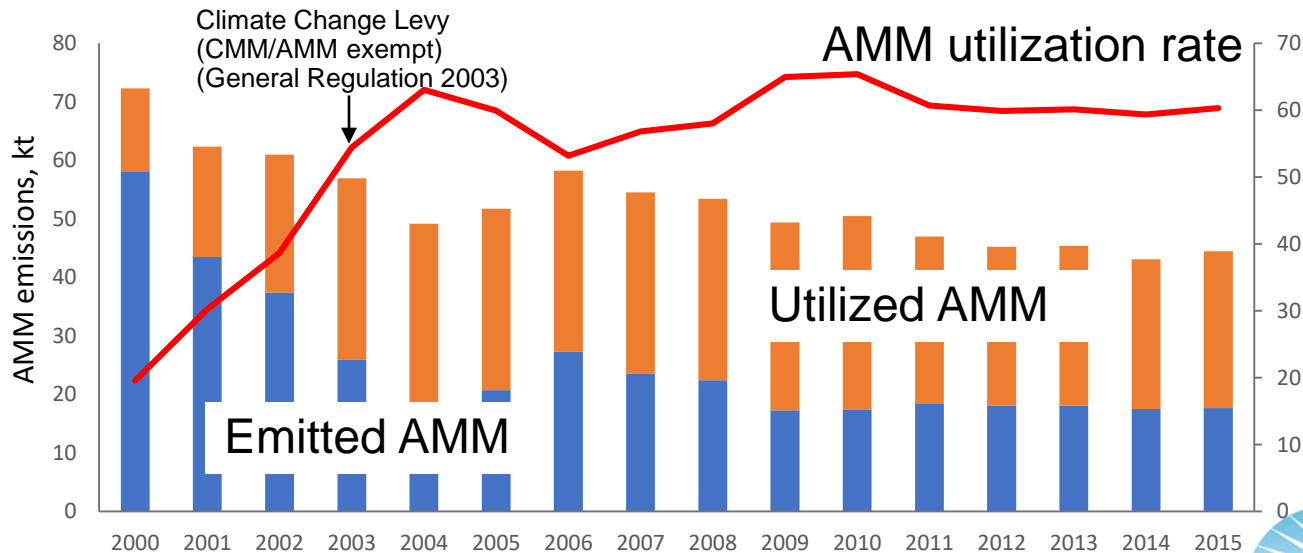


- Germany utilizes 99% of AMM



# United Kingdom

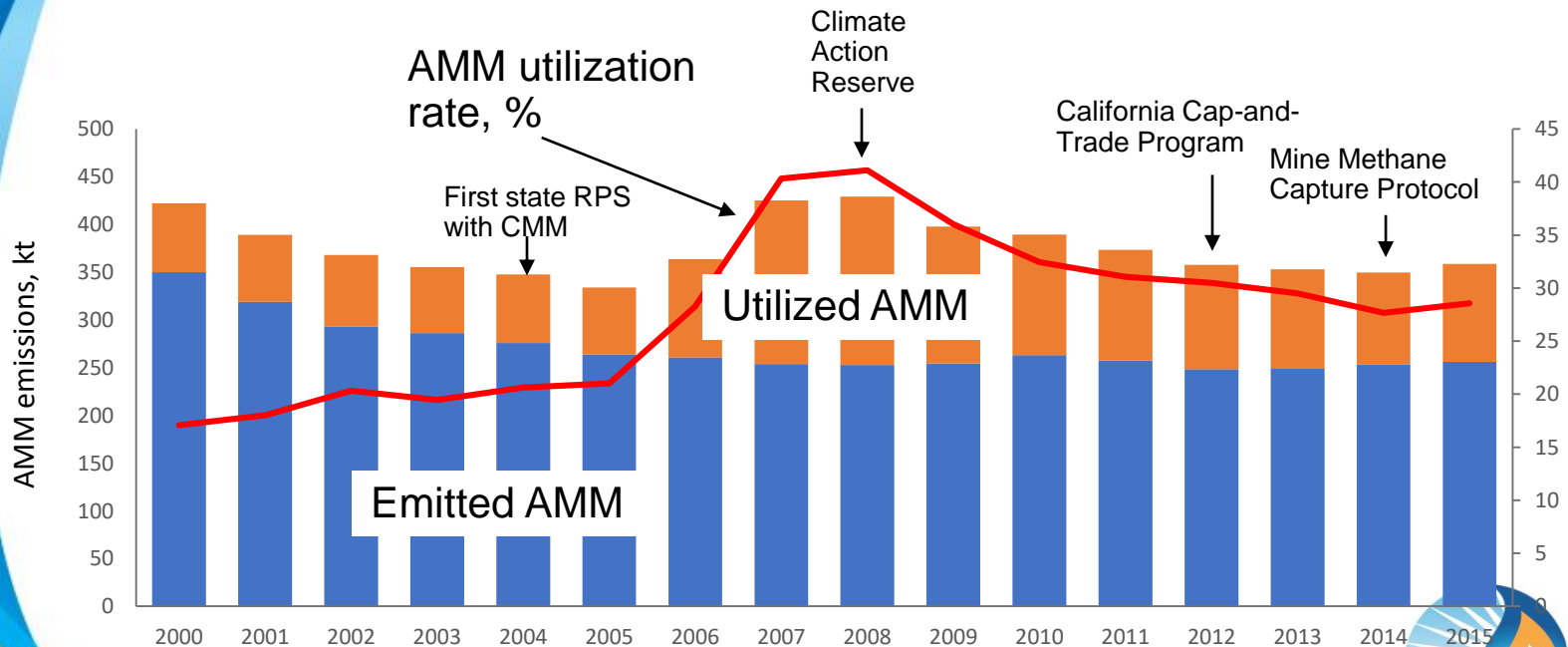
- Clear defined property rights
  - Petroleum Act of 1998
  - License fees are relatively low
- Little tax incentive for AMM
- No royalties for extracting AMM



- AMM utilization rate is about 60%

# United States

- No federal incentives
- Some states provide royalty relief
- Some states included AMM in Renewable Portfolio Standards



# United States: AMM projects

