



Designing policies to promote the commercialization of carbon-free ammonia energy

45Q tax credits as a model?

Jonathan Lewis | Clean Air Task Force
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Thank you for including CATF



- Overview: why I'm here
- Background on CATF and our approach to advocacy
- Summary of 2018 FUTURE Act – possibly a useful model for accelerating the commercialization of ammonia fuel?

How can CATF help?



- CATF works with state, local, regional, and national organizations to educate the public, media, industry, and policymakers on the science and economics of a variety of climate and clean air policies, through fact-based and locally appropriate advocacy.
 - Nonpartisan, tech agnostic, data-driven
- CATF collaborates with private sector technology, finance, and energy companies to develop and implement strategies for bringing clean energy to market.
- CATF thinks ammonia is likely to be an important tool in energy decarbonization.
 - *How can we help you make that happen?*

Clean Air Task Force



- Nonprofit environmental organization founded in 1996.
- Composed of ~25 engineers, senior scientists, lawyers, MBAs, economists, public policy analysts, and public outreach professionals.
- Headquartered in Boston; offices in the Northeast, Washington DC, the Midwest, and California; works with partners in China and India.

CATF focus areas



Conventional pollution from coal-fired power (1996-present)

CO₂ pollution from electric power sector (2000-present)

Carbon capture utilization & storage (2000-present)



High-emitting diesels (2003-2012)



Short-lived climate forcers (especially BC and CH₄) (2000-present)



Negative climate impacts of bioenergy (2006-present)



CH₄ emissions from O&G sector (2009-present)



Advanced nuclear technologies (2007-present)



Zero-carbon fuels (2013-present)

CATF's approach



Policy usually trails technology

- US policymakers are unlikely to establish meaningful GHG restrictions until they're convinced mitigation is workable and affordable.

Climate-beneficial policy development is possible...

- *As long as* it also creates benefits for other constituencies.

Network development

- Big decarbonization challenges sit at the intersection of technology, finance, business, and policy—but these worlds are frequently siloed and do little to productively reinforce each other's efforts.
- CATF serves as network hub and/or network participant.

FUTURE Act as policy template?



- CATF helped foster broad-base support for CCUS among key US policymakers
- "Something for everyone"
 - Reduction in CO₂ emissions
 - Jobs in coal, gas, oil, and industrial sectors
 - Increased domestic oil production
- FUTURE Act* had 24 co-sponsors in Senate
 - "CCUS Quartet": Whitehouse (D-RI), Heitkamp (D-ND), Capito (R-WV), Barrasso (R-WY)
- Carbon Capture Coalition includes over 40 NGOs, industry, and labor unions



*Furthering carbon capture, Utilization, Technology, Underground Storage, and Reduced Emissions Act of 2018

FUTURE Act: key features



- Adopted by Congress in February 2018, amends section 45Q of US tax code.
- Facilities that capture CO₂, utilize it (e.g. EOR), and then dispose of it in secure geological storage: tax credit ramps up from from \$12.83/ton in 2017 to \$35/ton in 2026, and then increases at inflation rate.
- Facilities that capture CO₂ and directly dispose of it in secure geological storage formations: tax credit ramps up from \$22.66/ton in 2017 to \$50/ton in 2026, and then increases at inflation rate.
- Eligibility:
 - Coal and gas power plants that capture at least 500,000MT CO₂/yr
 - Industrial sources & direct air capture facilities that capture at least 100,000MT CO₂/yr
 - US facilities only; construction must begin before Jan 1, 2024
- Credit is assigned to owner of carbon capture equipment; can be transferred to storage operator.
- Each eligible project can receive the tax credit for a 12-year period.

FUTURE looks rosy

- International Energy Agency: 45Q will result in 10-30 million MT of increased CO₂ capture capacity at industrial sources by 2030
- US Department of Energy: 45Q will reduce CO₂ emissions by 10-30 million MT of CO₂ by 2030 (mostly from industrial sources)
- June 2018: White Energy (would capture EtOH CO₂, gain LCFS benefit) → Occidental (EOR)



@qz

Following

This could be the first emissions-reductions project (inadvertently) supported by Trump



This could be the first emissions-reductions project (inadvertently) supported...

The project will see carbon emissions captured from a biofuel factory buried into an oil field.

qz.com

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A 45Q-type policy for ammonia?



- Would a tax credit for the production of low/zero-C ammonia help accelerate commercialization of your technologies?
 - Assignable to ammonia wholesalers, fuel distributors, others?
 - Larger credit for green ammonia used as fuel?
- What about a tax credit to support the build-out of a fuel distribution network?
- Network development:
 - What constituencies would benefit from the production of green ammonia (even if they don't yet know it)?
 - Who represents those constituencies at local, state, federal levels?

Other kinds of support?

- Other policies
 - LCFS, CES eligibility?
 - Incentives for ammonia co-firing at fossil-based power plants?
- Reports
 - CATF and/or academic partners as 3rd party observers/validators
 - What kinds of analyses, stories, etc would be most useful?
 - What audiences matter most to your business development?
 - E.g., Marine: port-specific roadmaps, safety analyses

Thanks



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