



Webinar: Moving Towards a Green Gas Market

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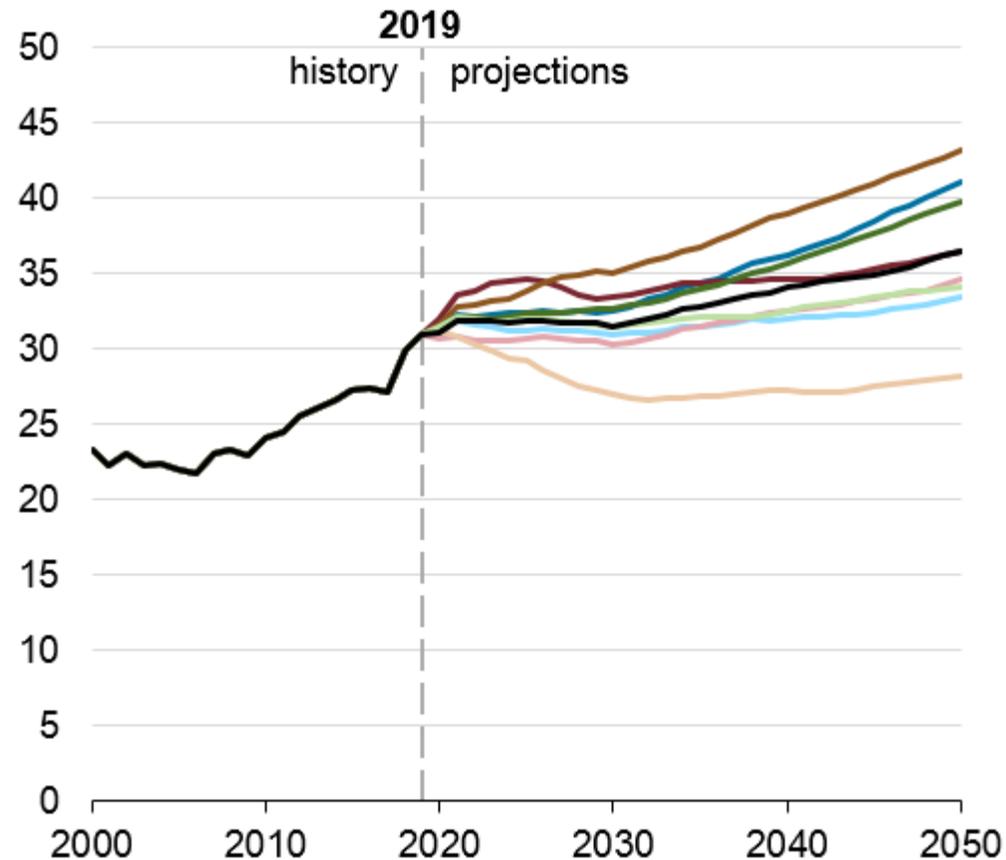
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Motivation

- Projections of economic activity feature continued heavy reliance on natural gas over the next several decades.

AEO2020 U.S. natural gas consumption
trillion cubic feet



Motivation #2

- Methane emitted throughout the natural gas lifecycle is a major component of natural gas CO₂e emissions because methane is such a powerful greenhouse gas.
- We import very little; so the U.S. lifecycle is responsible for emissions
- So, to decarbonize the economy in the short-medium term, methane emissions need to come down
- Provide incentives throughout the lifecycle to do that, particularly in a policy environment that lacks a carbon (or CO₂e) tax to comprehensively and efficiently address methane emissions (see Munnings and Krupnick 2016)



What kind of incentives?

- Regulations
- Voluntary emissions reductions -- with recognition: One Future, OGCI, EPA's voluntary programs (e.g., Methane Challenge)
- EPA reporting requirement and Industry-led reporting requirements – Methane intensity standards in the Natural Gas Sustainability Initiative (Pam Lacey, AGA)
- Investors and rating companies (Trustwell)
- Activities from buyers for low methane-intensity gas
 - One-off transactions – NJ Natural Gas (Roy Hartstein, Responsible Energy Solutions)
 - Buyer programs: Potentially EC, Cheniere (Fiji George, Cheniere)
 - CES legislation extending extra credit – Rep. Diana DeGette (D-CO) bill (Nikki Roy, DeGette staff)
- Markets: Krupnick/Munnings paper, RMI effort, digital platforms in development (Cameron Prell, Coefficient; Jason Libersky, Quantigy)



Krupnick and Munnings (2020)

- We examine the feasibility of and potential issues surrounding the creation of a market for green gas – price premium over “regular” natural gas.
- We focus exclusively on the climate performance of natural gas in terms of methane emissions.
- For each potential issue, we outline options for designing the market that would ameliorate the underlying concerns. In some cases, we prefer a certain option, in other cases, we do not.



Overarching

- Why a market: markets are efficient allocators of effort and, through prices, convey appropriate signals to both suppliers and demanders. Markets spontaneously create all the time, as well, so they needn't involve a heavy government hand.
- Some hopeful elements for a green gas market
 - Heterogeneity in leakage rates → much to incentivize
 - Some evidence of early sales and success in other similar markets (like voluntary RECs)
 - there's likely to be significant demand,
 - Caution with environmental groups – keep it in the ground



Outline

- Economic considerations
- Certification
- Technical Design
- Governance



Economic Considerations

- Demand
 - Analogies with green electricity: 6 million purchasers of renewable energy credits (7% of electricity consumed)
 - ➔ 307 bcf annually for retail gas consumption (4.8 million customers)
 - ➔ Green electricity premiums range from \$100-\$260 per year, 8 percent of a monthly bill; 2.5 cents/kWh.
- Avoiding perverse incentives and unintended consequences: moral hazard (performance manipulation to obtain certification) and adverse selection (type I and II errors);
 - strike a balance between credit for early action and for performance going forward.
- Information asymmetry ➔ requires certification/labeling



Certification

- Makes the market work
- Certification can also incentivize improved monitoring, repair and verification (MRV)
- From the literature: multi-tiered pricing best – premium depends on degree of methane intensity
- A more expensive certification process can increase social welfare by screening out “brown” sellers and raising “green” seller profits. (Mason)



Technical Design Issues

- Defining superior performance: benchmark rate with Y/N or something else? Vary by play, by state (different regulations), industry practice (top 10%?), organization recommendations (OneFuture, OGCI), firm-specific; facility specific.
- Measuring performance: defaults (widely suspected underestimates in the GHGRP), defaults with measurement updating, embed or not in digital platforms for continuous updating; frequency? Catching super emissions.
- Scope of the market:
 - just producers or more of the value chain → progression down the chain over time;
 - Geographic: national market, play by play; state by state
- Addressing non-participants: higher premiums; do nothing; buyer mandates/requirements; poor ratings in a mandatory reporting system



Governance

- Who creates market? Fastest is industry and voluntary; government justified to boost social value through defining benchmarks, certifying certifiers/auditors
- Who makes design decisions? Broad participation better in the long-run, but not for speed and simplicity
- Who certifies/audits? Research suggests that market participants should not self-certify or even directly pay certifiers/auditors → pooled funds? Trump administration going the other way – eliminating government's role in certifying the certifiers
- How frequently? Need to provide assurance that super emitters are identified



Conclusions

- We suspect a price premium could be sustained
- Design for improving performance not rewarding it (although that may be a necessary feature)
- Must handle the measurement issue
- Need platform to create a market and price disclosure to some degree

