Methane Regulation – Marginal Wells

Industry Background

- There are approximately one million oil and natural gas wells producing in the United States with roughly 20,000 added each year.
- All oil and natural gas wells deplete over time with their production dropping as they age; essentially, all wells will become marginal wells if they operate long enough.
- Approximately 750,000 American wells are marginal wells (producing 15 boe/d or less) and are roughly equally divided between oil and natural gas.
    - Of these about 600,000 are 6 boe/d and less; 330,000 are one boe/d and less.
- The industry is divided between larger companies that produce the bigger wells and the larger share of production and thousands of smaller producers of these marginal wells. Marginal wells account for about 7-8 percent of US production of both oil and natural gas.
    - The economics of production differ significantly. Newer wells are now generally sites with multiple well using hydraulic fracturing while most marginal wells are small with one or two wells per site in conventional formations.
    - The smaller marginal oil wells do not consistently operate continuously; some operate several hours per day, some several days per week, some one day per week.
    - Many of the smallest natural gas wells need compressors to pull the gas from the well.
    - These differences affect marginal wells emissions profiles.

EPA Methane Regulations

- New Source Performance Standards (NSPS)/Existing Source Emissions Guidelines (EG) – the Clean Air Act (CAA) requires EPA to develop NSPS for significant industry categories.
    - EPA has created NSPS for oil and natural gas production facilities in 2012 (Subpart OOOO) and 2016/2020 (Subpart OOOOa)
    - The 2021 Congressional Review Act resolution mandates that EPA regulate methane emissions for oil and natural gas facilities using NSPS/EG.
        - This Congressional mandate separates oil and natural gas production regulation from other Greenhouse Gas programs derived from an endangerment finding.

- EPA promulgated Subpart OOOOb (NSPS) and Subpart OOOOc (EG) in 2024.
    - Subpart OOOOc is the first time that the EPA NSPS regulatory program addresses existing sources.
- NSPS becomes effective on a schedule in the regulations; EG requires states to develop implementation plans in 24 months and implement them in 36 months thereafter.

- EPA's use of its authority in developing the regulations in key areas produces the regulatory threats for marginal wells.
    - Facility Definition – oil and natural gas producers generally consider a well site or a well site with storage tanks as a facility. EPA in Subpart OOOOb divides the well site into five separate facilities – wells, controllers, pumps, storage vessels and well sites (only for LDAR[1]). It uses these same definitions for Subpart OOOOc. This allows EPA to assess the cost benefits of the controls for each type of facility without considering the collective impacts.
    - Best System of Emissions Reductions (BSER) – EPA is charged with determining the technology that meets the requirements of the NSPS, a task that should require EPA to identify and validate technologies. Instead, EPA has relied on studies by others, primarily environmental advocacy groups, and assumed they are valid.
    - Emissions Guidelines – In developing its BSER for existing sources, EPA has the flexibility to distinguish between different types of sources based on the nature of the industry, such as marginal wells differing from large, fractured wells, but it has not created a subcategory. More significantly, it should be making its technology decisions on existing sources, not applying the new source requirements. By dividing the well site into multiple facilities, EPA argues that the existing source technology is the same as the new sources.
    - State Plans under Section 111(d) – The CAA provides that states regulate existing sources through plans approved by EPA.
        - The framework of Section 111(d) was designed for a regulatory action that might affect two or three sources in a state, not the thousands of oil and natural gas wells that these regulations cover.

[1] Leak Detection and Repair

        - The CAA also provides flexibility to states to consider unique factors; a key element is consideration of "remaining useful life and other factors" (RULOF).
        - EPA's revisions to the Section 111(d) process are designed to limit the states' statutory authority to develop a flexible plan to address marginal wells. For example, EPA asserts that RULOF should not be available unless significant capital costs are required knowing that its LDAR requirements are the most threatening regulations and LDAR essentially increases operating costs not capital expenditures.
- Marginal Well Issues
    - Because of EPA's action to divide the well site into multiple facilities, the aggregate economic impact on marginal wells is disguised.
    - Because marginal wells are older, they have depleted not only their production, but the internal forces that would drive emissions.
    - Studies of marginal well emissions, notably one by the Department of Energy, show that the dominant emissions sources are tanks (where hatches have been left open or seals leak), pneumatic controllers that have not been maintained, and vents that have been left open.
        - All of these can be addressed through cost effective LDAR actions.
    - EPA's requirements do not reflect the differences between new and marginal wells.
        - LDAR – EPA is fixated on developing its LDAR regulations based on facility component counts while industry believes that production throughput should be a significant factor.
            - EPA use of component counts is partly driven by its focus on Super-Emitters (well sites emitting over 130 mcfd).
            - EPA uses two forms of LDAR – AVO (Audio-Visual-Olfactory) which is inexpensive and OGI (Optical Gas Imaging) which is expensive.
            - EPA created four LDAR categories. Using its component count approach that requires OGI for "large" well sites, 70 to 90 percent of marginal well sites will fall into the large category, compelled to quarterly OGI LDAR. (The largest marginal natural gas well is 90 mcfd; the average is 22 mcfd – they cannot be Super-Emitters.)

        - Controllers – Historically, process controllers have been operated using a slip stream of produced gas. EPA bans this technology for new sources and applies that ban to existing sources. It would require marginal wells to replace their controllers at substantial cost for limited environmental benefit.
            - Emissions estimates for pneumatic controllers have shown that proper maintenance can minimize their emissions.
        - Associated Gas Controls – EPA wants to terminate emissions from gas generated as a part of crude oil production by forcing it to sales, use at the site, or injection back into the formation. If these are infeasible, EPA requires flaring.
            - In developing its requirements, EPA never considered that marginal wells do not operate continuously – and do not generate gas continuously. Without continuous gas, flares shut down.
        - Storage Tanks – EPA generally requires new and modified storage tanks to recover vapors but recognizes that existing ones may not be structurally capable of adding controls. However, its definition of modification opens the potential that existing tanks could be covered.
        - Compressors – EPA requires compressor controls at centralized production facilities but not at well sites, but its definitions for these facilities are confounding and can capture small compressors used to produce natural gas that are separated from the well site to be considered as centralized production facilities.
        - Recordkeeping – EPA's recordkeeping requirements are extensive and excessive for marginal wells.
- Marginal Well Alternatives
    - EPA should use its authority under the CAA to create a subcategory for marginal wells and establish EG that reflect their differences from new sources.
    - EPA should alter its Section 111(d) regulations to give states adequate flexibility to design regulations reflecting the differences between new and marginal wells.
    - Minimum changes to the EG should include:
        - LDAR – AVO should be the LDAR requirements for marginal wells.
            - EPA's quarterly AVO requirements should be applied to all marginal wells producing 6 boe/d or less.

        - As existing wells deplete to this production rate, the LDAR requirement should be revised accordingly.
    - Controllers – Existing well pneumatic controllers should be allowed with these controllers included in the scope of the AVO LDAR program to assure proper maintenance.
    - Associated Gas Controls – EPA needs to recognize the intermittent operation of marginal wells allowing venting of associated gas where it is technologically and economically infeasible to recover or flare it.
    - Storage Tanks – EPA needs to assure that normal business operations such as consolidating production into fewer tanks does not trigger a modification under the regulations.
    - Compressors – EPA needs to assure that small compressors essential to producing marginal well natural gas are considered part of the well site.
    - Recordkeeping – EPA needs to limit recordkeeping requirements on small business producers.

EPA Methane Tax

- Congress passed a Methane Tax in 2022 to single out and punish the oil and natural gas industry despite its already burdensome EPA regulatory framework.
    - This tax is based on the Greenhouse Gas Reporting Program (GHGRP) that requires producers to report emissions under Subpart W of the Code of Federal Regulations.
        - Subpart W was never designed to accurately estimate emissions; it utilizes general emissions factors to develop emissions estimates.
        - The Methane Tax elevates this reporting tool beyond its capabilities and makes it the basis for collecting taxes.
        - EPA was directed to improve Subpart W and make it more empirically based but EPA did little more than revise the emissions factors to higher numbers without validating their accuracy.
    - A key component of the calculation is the facility definition used in tax.
        - Subpart W uses a facility definition that is inconsistent with the CAA.
            - Subpart W defines a facility as all the producer's operations in a petroleum basin; for states like West Virginia or Michigan, the basin is the entire state.
                - Marginal well producers that frequently own hundreds of small wells must aggregate all of them as one facility.

        - Conversely, in the CAA an oil and natural gas facility is typically a single well site or adjacent well sites under common control.
    - While Congress stated it did not intend to tax small facilities, if EPA uses the Subpart W GHGRP facility definition, these marginal wells will be at risk of being taxed.
  - A second impact of the Methane Tax relates to its inclusion as part of the CAA. This gives EPA's Office of Enforcement and Compliance Assurance (OECA) essentially unfettered authority to harass small businesses by auditing their calculations of emissions and threatening them with huge daily fines.
- Marginal Well Alternatives
  - EPA should use a facility definition comparable to its other definitions in the CAA for oil and natural gas production operations that would exclude marginal wells from the definition.
  - EPA needs to establish clear constraints on OECA to assure it does not harass small producers.