

Methane Abatement and the Role of the Private Sector

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For most of my career as an environmental lawyer, I was focused upon regulations – regulations under the Clean Air Act Amendments, the Clean Water Act, RCRA, CERCLA, NEPA, the Endangered Species Act. It was about reading and understanding and applying these regulations to various fact situations. And while statutes and regulations are still a major aspect of environmental practice, the practice of climate change environmental law is quite different and likely will remain so for some time.

At this time, there is no comprehensive federal statute or regulatory structure that addresses climate change. There have been efforts to bring partial regulation forward by various regulatory entities within the scope of their prior existing authority, although the *West Virginia*¹ and *Loper*² decisions of the Supreme Court may significantly curtail the extent of regulation by agencies lacking specific authorization to regulate climate change.

On the other hand, there have been significant climate change responses by the business community even though a comprehensive regulatory structure does not exist. This is one of the more interesting aspects of 21st century environmental law – the voluntary compliance program by the private sector that has evolved to date and continues to evolve. In my career, I have never encountered anything like this.

In the remainder of this paper, this voluntary climate change response will be discussed in the context of the methane regulatory program recently proposed by the U.S. Environmental Protection Agency. Here, EPA has set out a program specifically aimed at methane control rather than more generally at carbon dioxide, the largest greenhouse gas contributor. However, the program that they established omitted a large number of orphan and idle wells, and the private sector has the ability to act to address this deficiency in a way that makes commercial sense.

The Voluntary Climate Compliance Phenomenon

Concern about climate change has long been present at the International Level. The first international treaty on climate known as the United Nations Framework Convention on Climate Change was adopted by most nations of the world, including the United States, in 1992.³ Subsequently, the Kyoto Protocol was adopted but never implemented by the United States.⁴

¹ *West Virginia v. EPA*, 597 U.S. 697 (2022).

² *Loper Bright Enterprises et al. v. Raimondo, Secretary of Commerce, et al.*, 603 U.S. ____ (slip op.) (2024).

³ United Nations, *History of the Convention*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, <https://unfccc.int/process/the-convention/history-of-the-convention#Essential-background> (last visited July 5, 2024).

⁴ United Nations, *What is the Kyoto Protocol?*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, https://unfccc.int/kyoto_protocol (last visited July 5, 2024).

And then the Paris Accord was signed by 196 nations in 2016.⁵ This agreement was accepted by the United States under the Obama Administration, and the U.S. subsequently withdrew under the Trump Administration and then rejoined under the Biden Administration. However, there has never been comprehensive statutory implementation through Congressional action.

The purpose of the Paris Accord was to set programs in motion to stop the rise of our global temperature at 1.5 degrees Celsius. To reach this goal, the global community would have to reach net zero emissions by 2050 as shown in Figure 1, a reduction from the current 40 billion tons per year of carbon dioxide that is emitted around the world.

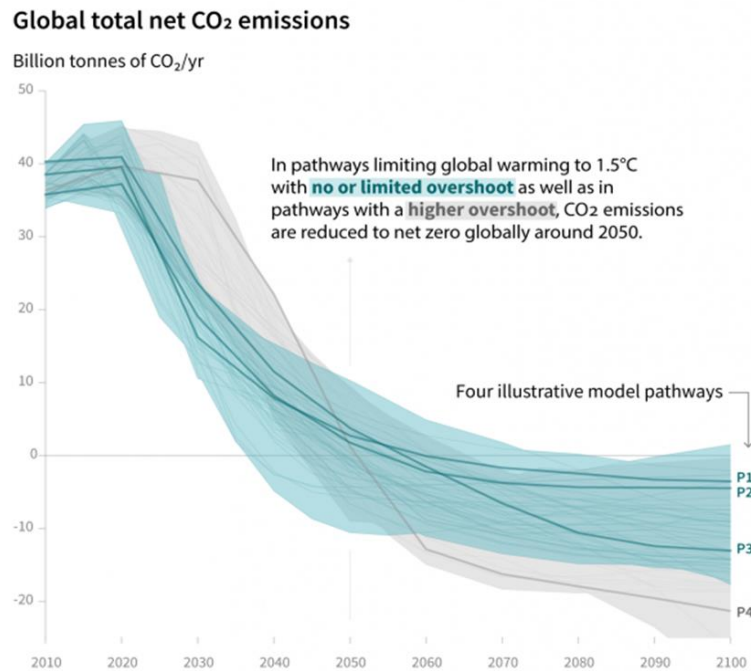


Figure 1. Pathway to reducing global carbon dioxide emissions to zero and beyond by 2050. Source: Intergovernmental Panel on Climate Change (IPCC).⁶

After the Paris Accord was signed, two significant events occurred. First, companies involved in international trade began to encounter implementation rules affecting overseas sales in other countries such as the members of the European Union who were implementing carbon dioxide controls under the Paris Accord. And second, the financial community began to believe that companies with excellent climate policies would perform better financially than those without.

⁵ United Nations, *The Paris Agreement*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, <https://unfccc.int/process-and-meetings/the-paris-agreement> (last visited July 5, 2024).

⁶ United Nations, *Special Report – Global Warming of 1.5 °C*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, https://www.ipcc.ch/sr15/graphics/#cid_6333 (last visited July 5, 2024).

This concern came to the forefront in January 2020 when Blackrock Financial announced that it would start voting its corporate shares for climate smart policies and management, that they would begin to rethink their support of the coal-fired market and that they would introduce green investment funds into the market. That in turn led to many more financial institutions taking an interest in the carbon policies of the various borrowers as well as their investments and led to widespread interest in what is now known as the ESG issue.

ESG is a term that is widely discussed in Texas in 2024. It stands for environmental, social and governance. It emerged from thinking regarding sustainable development which is focused on social, ecological, and economic concepts and has its origins in a book called *Our Common Future* prepared by the World Commission on Environment and Development in the 1980s. This book led to the signing of the Rio Declaration on Sustainable Development in 1992 at the United Nations Conference on Environment and Development (UNCED) or the Rio Conference. Notably, the United Nations Framework Convention on Climate Change (UNFCCC) was also signed at this conference.

Sustainable development has evolved to be associated with national and international strategies for growth and development whereas ESG, which first appeared as a phrase in about 2005, has evolved to refer more to corporate financial strategies that incorporate many of the principles of sustainability. Regardless of whether it is called ESG, or sustainability or corporate social responsibility, most corporations are now treating these issues very differently than was the case a decade or two ago. And this has all occurred beyond the reach of regulation.

Today, all big corporations are not at the same place in this transition to the future. There's a wide array of goals and policies, but the conceptual framework is both similar and important. This is not fiction. This conversation is taking place in every industry, every retail company in the United States. They're all having these conversations.

Consider figure 2 created by Dr. Henk Mooiweer. It is a wonderful image of where business is heading and where the future of business will be heading. The black box at the bottom - business as usual circa 2000 - just about doesn't exist anymore. The old business as usual examples of 2005, 2010 and 2015 are obsolete. Every corporation has some plan for a lower carbon footprint. Less harm. That is the least that is occurring today – less greenhouse gas emissions.

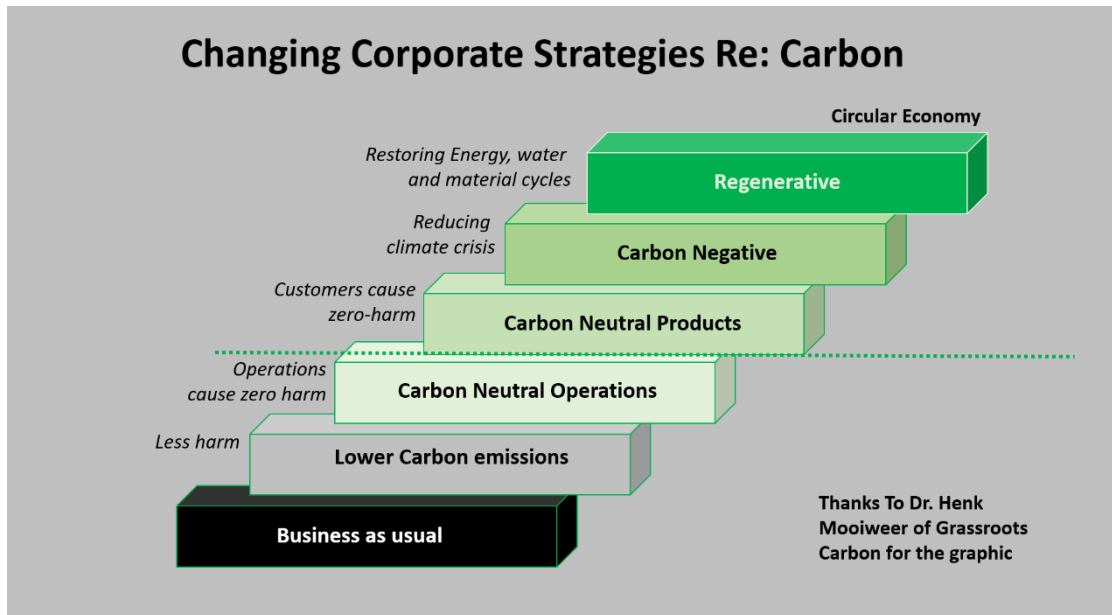


Figure 2. The stairstep of corporate climate strategies. Graphic courtesy of Dr. Henk Mooiweer, Grassroots Carbon.

Next, consider carbon neutral operations. Scope one emissions are direct emissions. If you're a refinery, it's what comes out of your smokestacks. It's what comes out of your co-gen facilities where you make your own electricity. Scope two emissions are those from the electricity you buy. Scope one and scope two are a company's direct carbon footprint. If you made those carbon neutral, you would have carbon neutral operations, and today that is a goal of major Texas facilities.

Scope 3 carbon emissions are from the products and materials you buy and the end use of the products that you sell. These are also known as supply chain emissions. To move to carbon neutral products involves addressing scope 3 emissions. When reviewing corporate commitments to net-zero, be sure and check whether the commitment is to net-zero direct emissions or to net-zero emissions across Scopes 1, 2, and 3.

Beyond carbon neutral is carbon negative. There are companies today that have plans to take more carbon dioxide out of the atmosphere than they're putting into it. This will likely become the norm in another decade if not sooner, and there are not many ways today to remove carbon dioxide from the atmosphere except for nature-based carbon capture solutions and direct air capture.

The regenerative corporation is the top of the staircase - the penultimate - and that is where the corporate world is headed. To my mind, the regenerative corporation is part of the evolution of

a new economic system often referred to as the circular economy, a concept popularized by the Ellen MacArthur Foundation. It is in the process of being adopted by the plastics industry, and it is in the future of all industries as the end point of the ESG discussion.

The goal of the circular economy is to reuse and recycle as much as is possible. We can eliminate much of our current waste and emissions. Plastics are generating global attention for the pollution that they're generating on land, in our creeks, bayous, rivers, and particularly in the oceans of the world, the end repository for many plastic products. We've all seen the images.

The regenerative corporation is the top stairstep in the future of every corporation. All will be moving toward carbon neutral products by 2050, if not carbon negative. This is the ESG future, and it will be financially sound, driven by the profit motive.

Every corporation – every activity – in the United States has a carbon footprint. Here, the carbon footprint refers to the various types of carbon dioxide emissions or its equivalent (CO₂e) that are emitted by various phases of the corporate activities. The three scopes are shown in Figure 3.

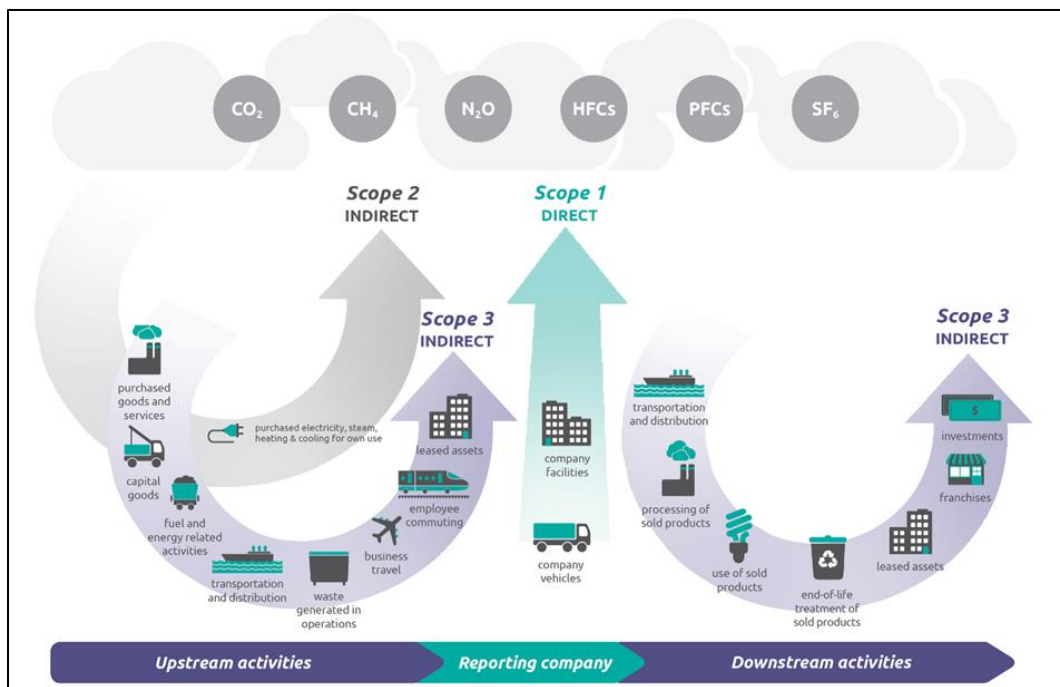


Figure 3. Diagram of Scopes 1, 2 and 3. Source: U.S. Environmental Protection Agency.⁷

As previously discussed, each company must determine their scopes 1, 2 and 3 emissions and compile a footprint. As shown in Figure 3, the Scope 3 emissions are significant, often contributing by far the most to a carbon footprint. They are also a continuing source of controversy

⁷ Environmental Protection Agency, *Scope 1 and Scope 2 Inventory Guidance*, EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP, <https://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance> (last visited July 5, 2024).

over responsibility for reductions, as one company's Scope 1 emission becomes another's Scope 3, for example.

Once a carbon footprint has been calculated, the next step is to determine if and how to reduce that footprint. Many corporations have made public representations about their intended actions to reduce their carbon footprint. Here, companies will try to totally avoid emissions by replacing carbon sources such as hydrocarbon combustion with renewables, and they will also try to become much more efficient when they do emit carbon, either by changing processes or perhaps fuel or perhaps by using technology at the stack to reduce carbon emissions, otherwise known as carbon capture.

Once the company has tried to avoid and minimize emissions, the third alternative is to mitigate released emissions by removing carbon from the atmosphere directly or by reducing other sources of emissions. This technique is called carbon offsetting. As a general proposition, there are two types of carbon removal from the atmosphere – technological direct air capture and removal by photosynthesis, or natural processes. There are also offsets provided by reducing other sources such as plugging idle and abandoned wells that are leaking methane, a very potent greenhouse gas. These voluntary methane reduction credits will be the focus on the remainder of this paper.

Methane Regulation and Carbon Credits

Although there are no legally binding requirements for carbon credits except in California, there are a set of rules that are generally adhered to relative to the issuance of carbon credits. One of the fundamental principles is that the activity generating the carbon credits cannot otherwise be required to be undertaken due to legal requirements.

This restriction is important in the context of methane regulation and the generation of carbon credits for abating methane sources by plugging the wells and stopping leakage. Most active wells have a legally binding requirement for the well to be plugged at the end of production. These rules vary from state to state but are generally uniform in that requirement.

There are, however, at least two classes of oil and gas wells that are officially not active and are not under a plugging requirement. The first of these is called “orphan wells” and the second of these are called “idle” or “abandoned” wells. As can be seen on Figure 4, there are about 3.5 million orphaned and abandoned wells in the United States today.

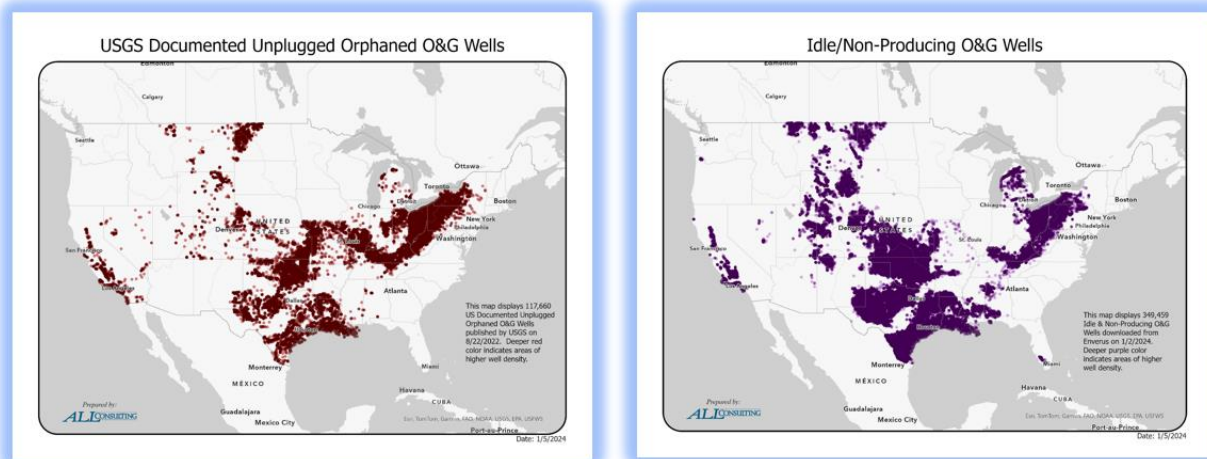


Figure 4. Map of the distribution of Orphaned and Idle/Non-producing wells in the United States. Source: United States Geological Survey from Dan Arthur at All-Consulting.

Orphan wells are legally without ownership and are no longer hooked into production facilities. There is no “responsible” party for these wells, many of which are leaking. There is both federal and state money available to assist plugging but there is nowhere near enough money to plug the known inventory of leaking wells. For those wells that cannot be funded with federal or state money, carbon credits may be issued for voluntary plugging of these wells. With regard to idle/non-producing wells, most states allow the payment of a registration fee to keep wells operating and therefore not subject to the plugging requirements. These wells may be kept in this status of regulatory abeyance for decades, as long as the registration is current regardless of whether they are leaking methane or not.

Recently, the U.S. Environmental Protection Agency proposed to regulate methane from gas wells under a comprehensive regulatory program under Section 111(d) of the Clean Air Act. Section 111(d)(1) states:

(d) STANDARDS OF PERFORMANCE FOR EXISTING SOURCES; REMAINING USEFUL LIFE OF SOURCE

(1) The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from a source category which is regulated under section 7412 of this title but (ii) to which a standard of performance under this section would

apply if such existing source were a new source, and (B) provides for the implementation and enforcement of such standards of performance. Regulations of the Administrator under this paragraph shall permit the State in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.

By its clear language, Section 111(d) (1) establishes standards of performance under the same process as set out in Section 110, which is the requirement to develop a State Implementation Plan (SIP). Section 111(d) applies to any pollutant for which air quality criteria have not been issued under Section 108 of the Act.

Pursuant to this authority, the U.S. Environmental Protection Agency proposed to regulate methane emissions from oil and gas wells when they issued regulations on December 2, 2023, to regulate methane emissions from new and existing oil and gas wells.⁸

From the perspective of the methane plugging carbon credit market, the key question is – “Did this EPA regulation require the plugging of orphaned and abandoned wells?”

This regulation clearly created two classes of wells – new ones and existing ones. These orphaned and abandoned wells are classified as existing and not new, so only provisions applicable to existing wells apply. Existing wells are defined as those in existence before December 6, 2022, and orphaning is specifically banned for new wells going forward because the rule requires the existence of a closure plan for new wells.

This regulation does not directly address orphaned and idle wells even though numerous commenters requested clarity on this issue. Instead, one is left with the definitions. First, the rule applies to “designated facilities” which are “any existing facility which emits a designated pollutant, and which would be subject to a standard of performance for that pollutant if the existing facility were an affected facility.”⁹ Then affected facility is defined as- “each existing well that produces associated gas which commenced construction before December 6, 2022.”¹⁰ And “Associated gas” is defined as the “natural gas from wells operated primarily for oil production that is released from the liquid hydrocarbon during the initial state of separation after the wellhead. The associated gas product begins at the startup of production after the flow back period ends. Gas from wildcat or delineation wells is not associated gas.”¹¹

In the case of leaking orphaned or idle wells, any leakage is from the wellhead. The clear terms of the definition of associated gas state that the release is “after the wellhead”. On the basis

⁸ Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, 89 Fed. Reg. 16820 (Mar. 8, 2024).

⁹ 40 C.F.R. § 60.21(b).

¹⁰ 40 C.F.R. § 60.20.

¹¹ 40 C.F.R. § 60.5430(c).

of these definitions, it appears that the methane rule does not apply to leaking orphaned and idle/non-producing wells.

The Carbon Credit Market

From the foregoing, the conclusion is warranted that carbon credits may be issued to plug orphaned and abandoned wells that are leaking methane. This brings us to a discussion of the structure of the carbon credit market. A diagram of the structure of the carbon credit market is shown in Figure 5.

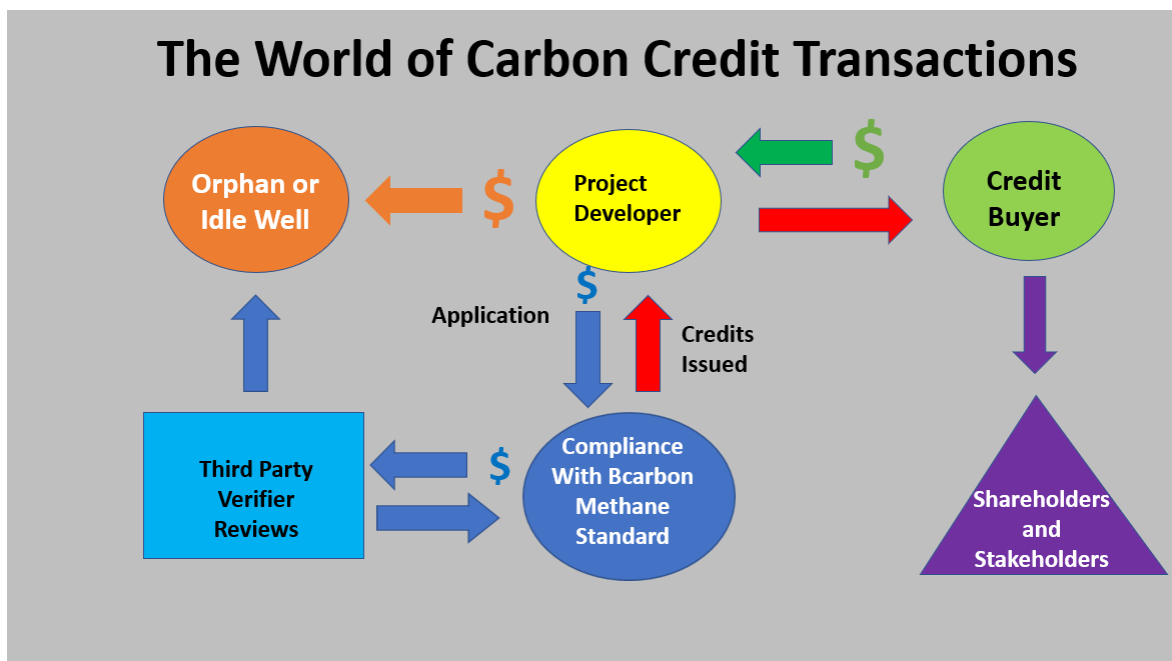


Figure 5. Diagram of the carbon credit market for plugging leaking methane wells. Diagram by Jim Blackburn, BCarbon.

As shown above, there are several key participants in the carbon credit market. In blue is shown the registry which in this case is the author’s company BCarbon. BCarbon is a non-profit formed out of a stakeholder group at the Baker Institute at Rice University for the express purpose of developing protocols for the issuance of carbon credits in the voluntary carbon market. BCarbon has developed a protocol for issuing credits for plugging wells leaking methane.¹² All credits issued by BCarbon must conform with the rules as set out in the protocol.

All carbon credit transactions are initiated by a project developer who puts up the capital to plug the well. In order to accomplish this, they must interact with an entity with authority over the well (shown in orange) which may be a state agency in the case of orphan wells or the well owner in the case of idle wells. An application for credits is submitted to the registry which retains

¹² *Methane Capture & Reclamation*, BCarbon, <https://bcarbon.org/methane> (last visited July 5, 2024).

an independent third party to verify the facts and analyses submitted in the application for compliance with the protocol.

Once a determination of compliance with the protocol is completed by the registry, carbon credits may be issued by the registry to the project developer. Under the BCarbon registry system, these credits are enrolled in a blockchain record-keeping system and issued to the project developer who may then sell these credits to a buyer such as a company seeking to reduce its carbon footprint. This transaction is most likely an “over the counter” transaction that is recorded in blockchain as transfer from project developer to the buyer. The buyer then may either hold these credits or “retire” them to cover some or all of the carbon footprint of that entity.

If the buyer is a public corporation, there will be review and oversight by both the board of directors and by the shareholders. This is one of the checks and balances in this voluntary carbon market.

Relative to credit issuance, the process is both detailed and scientific. To plug a well and receive credits, the BCarbon protocol requires that a certain process be followed as set out in Figure 6.

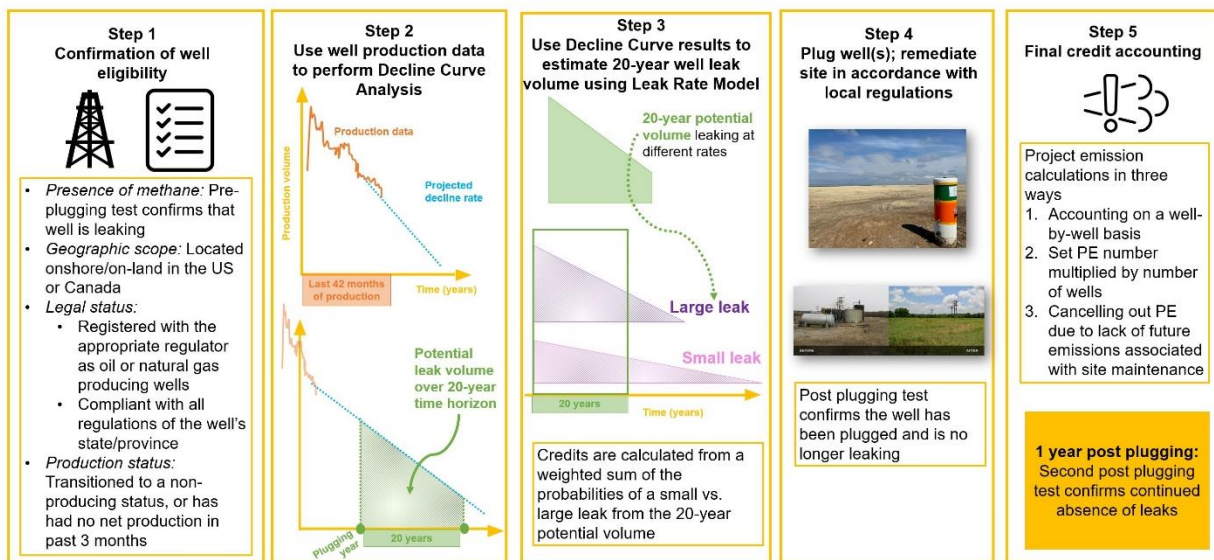


Figure 6. Steps in the methane abatement carbon credit issuance process.¹³ Diagram from BCarbon.

As shown in Figure 6, there are several steps involved in evaluating an application for credits under the BCarbon methodology. First, the application is vetted to determine that the correct information is present. That would include proof of methane leakage, that the well is in the U.S. or Canada and its regulatory status. Step 2 involves understanding the leakage potential using decline curve analytics. Step 3 involves the actual calculation of the leakage rate and the potential number of credits to be offered. Step 4 involves plugging and post plugging proof that

¹³ *Id.*

the leakage has stopped. Step 5 involves the actual award of credits after deducting emissions from the plugging project. 80% of credits will be issued initially with the remaining 20% to be issued after a second round of post-plugging testing to confirm well is still not leaking.

The bottom line is that BCarbon and other registries such as ACR¹⁴ have methodologies that allow for these carbon credits to be issued for doing what is beyond the reach of the proposed regulatory structure.

Conclusion

What has been presented in this paper is the voluntary compliance side of climate using a third-party registry to verify emission reductions. This is a new arena that is both unprecedented and exciting. It will create many new legal issues and practice areas, particularly if the sweep of regulation is restricted by the current direction of the federal court system.

One potential outcome of this type of thinking is the potential to create partnerships between the regulatory system and the voluntary system. So far they are relatively detached. However, a proposal is being vetted whereby a state agency might coordinate with the voluntary market to identify and maintain information about the progress being made in the private sector voluntary market. And to the extent that a State Implementation Plan may be required under the methane regulations recently issued by the U.S. EPA, there might be a voluntary addendum to the SIP that included voluntary reductions as part of the SIP process.

The bottom line is that there is an emerging voluntary compliance market that will help plug thousands if not millions of leaking methane wells. The idea of a non-governmental entity as a voluntary compliance partner of major corporations is fast becoming a reality and a key aspect of climate policy going forward.

¹⁴ American Carbon Registry, *Plugging Orphaned Oil and Gas Wells*, ACR AT WINROCK INTERNATIONAL, <https://acrcarbon.org/methodology/plugging-orphaned-oil-and-gas-wells/> (last visited July 5, 2024).