

Carbon Credit Token Creation via the Permanent Plugging & Abandonment of Oil and Natural Gas Wells



CARBON PATH

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CarbonPath's mission is to eliminate significant quantities of greenhouse gas (GHG) emissions by stopping the release of these climate change causing compounds at their source - oil and natural gas wells. CarbonPath's unique solution will keep carbon dioxide (CO₂) and methane (CH₄) from oil and natural gas production sites permanently sequestered in the ground.

CarbonPath has authored a proprietary carbon credit token methodology that provides the financial incentive that encourages the early retirement of low-producing oil and natural gas wells and the shutdown of abandoned and orphaned wells. Permanently shutting down oil and natural gas wells, a process known as plug and abandonment (P&A), removes significant amounts of carbon from entering the industrial supply chain and atmospheric feedback loop.

The CarbonPath methodology is highly scalable and hugely impactful. Applying this methodology to the estimated 400,000 low-producing wells in the United States that are actively producing 1-15 barrels of oil equivalent per day (boepd) would result in 1.4 million boepd (or approximately 500,000 tonnes CO₂e/day) being removed from U.S. production. For context, removing 500,000 tonnes of CO₂e/day for one year is equivalent to the amount of carbon sequestered by 216 million acres (about twice the area of California) of U.S. forests for a year which is 15% more than all U.S. National Forests combined! These low-producing wells are also responsible for as much as 60% of the methane emissions from the oil and gas sector each year while only contributing 5% to total U.S. production. Together, these wells, along with the more than 2.2 million abandoned/orphaned wells in the U.S., emit an estimated 4,400,000 tonnes of CH₄ directly into the atmosphere each year! With a global warming potential (GWP) as high as 80x that of CO₂, methane emissions equivalent to the annual emissions of 30 coal-fired power plants can be addressed and significantly reduced because of the financial incentive created by CarbonPath's carbon credit token. Furthermore, applying CarbonPath's methodology on a global scale would result in an opportunity set that is estimated to be 5-7x greater than the U.S. domestic opportunity alone.

CarbonPath's methodology subscribes to the ICROA (International Carbon Reduction & Offset Alliance) standards for carbon offsets:

- **Real:** Carbon credits are only issued upon project completion when plug and abandonment certifications are received from the applicable governmental regulatory bodies.
- **Permanent:** Once a well has been properly plugged and abandoned (P&A), they will no longer emit methane and market prices approaching \$1,000/barrel of oil would be required for another oil and gas operator to access those sequestered hydrocarbon reserves thus permanently sequestering the carbon.
- **Quantifiable:** There are long-standing, widely accepted engineering standards, the Petroleum Resources Management System (PRMS), by which future oil and natural gas reserve volumes and their intrinsic value are estimated and published. In addition, there are scientific measurement standards and equations to determine the chemical properties of oil and natural gas which can then be used to calculate the carbon dioxide equivalent for sequestered oil and natural gas volumes. The U.S. Environmental Protection Agency (EPA) uses an estimate of 0.43 tonnes of CO₂ generated from a typical barrel of oil produced in the US.
- **Additional:** Without the CarbonPath carbon credit token financial incentive, the oil producer will continue to produce oil out of the well or sell it to someone who will until it reaches the end of its productive life (often much less than 1 barrel of oil per day).

- **Unique:** CarbonPath uses a proof of stake (POS) consensus mechanism on the Celo blockchain to create a unique non-fungible token (NFT) for each well. Once the number of tonnes has been calculated and verified, ERC-20 tokens are airdropped from the well NFT. Each ERC-20 token represents one (1) tonne of carbon emission removed thereby preserving the unique nature, open transparency, and invulnerability to fraud for the credits while allowing them to be bought sold or retired as a fungible token.
- **Verifiable:** CarbonPath will rely on a two-step independent certification of the oil and natural gas reserve volumes and their carbon dioxide equivalency impact for each project by licensed and experienced 3rd party petroleum reserves auditors and chemical laboratories.

Initially, it is estimated that the cost per tonne of CO₂ equivalent for a CarbonPath carbon credit token will range between \$30-\$50/tonne. This price range will provide just enough incentive for well operators to shut down their most marginal wells. Given the high quality of a CarbonPath carbon credit token, the price point compares favorably to other types of carbon credits that range from \$5/tonne (nature-based conservation) - \$1,000/tonne (direct air capture).

The CarbonPath carbon credit token will provide a market driven price for carbon at its base equivalency to oil and natural gas. The vast size of the carbon credit token opportunity that CarbonPath addresses, and its market driven solution, will encourage broad acceptance and effect meaningful impact on the carbon market by bringing together parties concerned with offsetting their emissions and the largest source of greenhouse gas emissions: fossil fuels.

By creating a serialized unique NFT for each well, ERC-20 tokens (CarbonPath carbon credit tokens) can be minted that each represent one (1) tonne of sequestered emissions in each specific well that is permanently shut down. This process and these tokens will accelerate a true market for carbon, further incentivizing market solutions to tackle climate change at an increased pace.

Selling the CarbonPath carbon credit tokens from CarbonPath's upcoming pilot project, the permanent shut down of two oil and natural gas wells (in accordance with Montana state regulations), will jump start the market and begin to bring about the hugely beneficial environmental impacts that can be achieved by the plugging and abandoning of the more than 400,000 marginally productive and 2,200,000 abandoned/orphaned wells in the United States alone. These wells provide little or no economic benefit but will produce significant amounts of emissions over the coming decades if not plugged and abandoned, starting today.