Natural Gas TODAY

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The Importance of Infrastructure Investment

By Aubrey Hilliard, Texican

Imagine the owner of a metal fabricating company sitting up at night pondering the prospect of telling his 300 employees that they should plan on spending less on Christmas this year. He will have to close the plant in January and February because he cannot afford to pay for the natural gas they need to operate. Meanwhile, a brick manufacturer makes the decision to close the kilns in January and February because of the high cost of gas. A large textile manufacturer decides to build its new plant elsewhere than the Southeast due to the high cost of electricity, which is mainly produced by natural gas that has become exceedingly expensive. A Northeast economic development office continues to lose out on new manufacturing facilities with high-paying jobs because of the lack of natural gas. A "fintech" company decides against locating in the Midwest because they can't get the solar energy transported to them. New transmission lines can't be approved, and high-paying jobs are lost again.

These potential scenarios represent the human face of a lack of infrastructure investment that goes on day after day. In each case, the problem isn't the price of natural gas, but it is how that cost is impacted by energy infrastructure transportation that is already over burdened. The irony is that we have plenty of clean natural gas that can be a useful fuel, as we continue to lower our greenhouse gas emissions. While America needs to build 20,000 miles of new pipeline, it is incredibly difficult to build any in areas where it is needed due to regulatory and environmental interventions, and power transmission line projects' sit in regulatory offices and courtrooms for years awaiting approval.

In a recent Financial Times interview, Chevron CEO Mike Wirth stated that the premature transition from fossil fuels to green energy, like solar panels and windmills, has sparked "unintended consequences," such as energy supply issues that are already widespread in Europe and emerging in California and New England, adding that "Politicians really need to hold an honest conversation about the energy crunch before things worsen." Wirth outlined years of underinvestment causing the global energy crunch that predated Russia's invasion of Ukraine. "This has given way to limited spare capacity by oil-producing countries." Wirth squarely blamed Western governments for the energy crunch and also included "Wall Street banks like BlackRock, tech companies, corporate elites, and other progressive organizations, such as The World Economic Forum," that have worked together to push a green energy agenda without regard to technological capabilities. He concluded with a warning to U.S. households to brace for soaring natural gas prices this winter.

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Stampede

Robert Carpenter, Editor-in-Chief

Have you rushed out and purchased your outerspace-esque designed, super sleek, high-priced electric car/SUV that's going to save the environment?

If you've seen the plethora of new car ads these days, it makes one wonder why we're not all jumping on the electric vehicle (EV) bandwagon, joining the mad stampede being whipped up for misguided, single-minded and heavily biased political motives. The effort is geared to make the American public enthusiastically ditch carbon cars and shell out thousands of extra dollars for an electric car or SUV. Even a major pizza delivery chain has been swept up in the movement, apparently believing that electric car pizza delivery equals better pizza sales.

The President Biden Administration's narrative has been to mercilessly shun, blame and attack "big-oil" companies, gas companies and any pipeline ever built as the root of environmental evil. The President has used his bully pulpit to supplement his unending rules and regulations against oil and gas, as the way to achieve the "carbon-free" goal of his zealous backers.

Shockingly, I'm in favor of EVs. But all in good time. I am dead-set against this rush to abandon our carbon energy programs without adequate solutions in place. This destroy-oil-and-gas scenario is taking us down a disastrous path that is dangerous, ill-conceived and, in the long-run, not practical. And to an open mind, it is also unnecessary.

Several years ago, some of us were defining natural gas as a bridge or transition fuel - an economical, plentiful source that generated up to 80-percent less emissions than other carbon fuels. Research showed that if just heavy trucks converted to compressed natural gas from diesel (a relatively cheap and easy conversion, as the technology was already available), within just a few short months, air pollution as we know it would cease to exist. The infrastructure for CNG refilling stations in the U.S. was already growing. What an awesome, effective and elegant solution to an immediate problem.

Sadly, under the Obama/Biden administration, support for progress in

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Clean Hydrogen Tax Incentives in the Inflation Reduction Act of 2022

By Clean Hydrogen Future Coalition

On August 16, President Biden signed H.R. 5376, a bill commonly referred to as The Inflation Reduction Act of 2022, into law as Public Law 117-169. The law creates a new tax credit, §45V of the Internal Revenue code, for qualified clean hydrogen production. Qualified clean hydrogen is defined as hydrogen that is produced with a lifecycle greenhouse gas emissions rate of not greater than 4 kilograms of CO_2e per kilogram (kg) of hydrogen. The definition of lifecycle greenhouse gas emissions currently in the Clean Air Act will be used to determine the level of emissions from the clean hydrogen prediction process. The lifecycle greenhouse gas emissions only include emissions through the point of production (well to gate) using the most recent GREET model developed by Argonne National Laboratory. The hydrogen must be produced in the United States, in the ordinary course of a trade or business of the taxpayer, and for sale or use by the taxpayer.

The new credit is effective for clean hydrogen produced at a qualified clean hydrogen production facility after December 31, 2022, and during the 10-year period beginning on the date the qualified facility was/is placed in service. A qualified clean hydrogen production facility is a facility owned by the taxpayer, which produces qualified clean hydrogen, and the construction of which begins before January 1, 2033.

The maximum credit value has a base rate of 60 cents per kg for clean hydrogen produced at a facility that does not meet new labor require ments. The maximum credit value is increased to $3.00 per kg of clean hydrogen, if the hydrogen production facility meets the labor requirements. The credit value is reduced below the 60 cent or $3.00 maximum credit values based on the carbon intensity of the clean hydrogen and the value is adjusted for inflation beginning in 2024. The government utilizes a table that outlines the credit values (assuming the labor requirements are met) based on the carbon intensity of the clean hydrogen.

The new law includes a provision to preclude the owner of the qualified facility from using both the 45Q, carbon oxide sequestration credit, and the new 45V, clean hydrogen production credit. In addition, the credit amount will be reduced by the lesser of 15 percent (50 percent for projects that began construction prior to August 17, 2022) or the fraction of the proceeds of a tax-exempt obligation used to finance the facility over the total cost of the facility.

The new labor requirements include the payment of prevailing wages and using a minimum number of apprentices based on the number of laborers involved in the construction of the project. These new requirements apply to projects that begin construction on or after the 60th day after the regulations on these new requirements are published and to any alteration or repair of any qualified facility after it is originally placed in service.

The new law also adds clean hydrogen production facilities (as defined in the clean hydrogen PTC) to the list of qualifying property for the §48 investment tax credit (ITC). This allows clean hydrogen facilities to elect to take the ITC in place of the PTC. The maximum base rate of the ITC is 6 percent for projects that do not meet the labor requirements and 30 percent for projects that meet those requirements and are reduced depending on the lifecycle GHG emissions of the facility.

The new law includes a narrow version of direct pay (full refundability of the tax credits). Projects placed in service by an organization exempt from federal income tax, any state or local government or subdivision thereof, the TVA, an Indian tribal government, or any Alaska Native Corporation may elect direct pay for the entire 10-year credit period. An owner of a qualified clean hydrogen facility placed in service after December 31, 2022, that is not one of the entities listed above are allowed to make an election to use direct pay for the first five years after the project is placed in service and to transfer (sell) their tax credits to any other taxpayer for the last five years. The cash payments received in transferring the tax credits are not included in taxable income.

This new credit will require the Internal Revenue Service (IRS) tax to issue regulatory guidance to provide a framework for the implementation of this credit and assist taxpayers to comply with the statutory requirements. The new prevailing wage and apprenticeship requirements and the direct pay opportunity are included in almost all of the new clean energy provisions and will require extensive guidance to implement. For the hydrogen PTC, the Department of the Treasury/IRS will have to work with the Environmental Protection Agency and Department of Energy to develop detailed guidance for the implementation of the lifecycle analysis required to determine the carbon intensity of the clean hydrogen.

Stampede

Continued from page 1.

this direction quietly and quickly diminished. It was still considered a carbon-based solution that was unacceptable.

For our current "electric generation," batteries are key to current EV car designs, yet still provide extreme challenges for manufacturers. Providing enough power for travel is often not possible. Further, range for electric cars costs a lot of money. An often-used example is that the Nissan Leaf with 226 miles of range costs $6,600 more than the same trim level with a 149-mile range.

EVs utilize a technology called regenerative charging, where breaking in the stop-and-go traffic of cities supplements the battery charge. However, that's not applicable on longer distances of travel. If a car has a mileage range of 300 miles, you will probably only get half that when it's not necessary to brake frequently or you're driving on open highways. That explains why 90 percent of people with an EV also own a conventional gasoline engine car. So much for the Progressives dreams of everyone driving only electric cars.

Also, the more range of an EV, the heavier the batteries become. Even low-range battery packs add roughly 800 pounds to the overall weight of a car; extended-range EVs can be 2,000 pounds heavier. Compare that to a gas car, with an average added weight in gasoline of 100 pounds that decreases as consumed. EVs' weight is constant and maintains a steady drain on batteries.

With that extra weight, additional risks to highway safety, unfortunately, but predictably, emerge. Researchers from the University of California, Berkeley found that impacts from a vehicle that is 1,000 pounds heavier (due to electric battery packs) generate a 40-to-50-percent higher fatality risk. Further, the researchers suggested that factor generated a societal cost equivalent to 97-cents-per-gallon gas tax.

When these battery packs have to be replaces, there are limited options. Ultimately, they will either have to be discarded or recycled. Discarded batteries have already proven too dangerous for landfills. Cost-effective and practical methods of recycling these massive batteries don't exist yet - the only workable recycling process is extremely expensive and impractical. Several major companies, including Argonne National Labs and former Tesla Co-Founder JB Straubel, are trying to solve this elusive problem. Straubel, most notably, has partnered with Ford.

It's also important to note that not all EV batteries can be recycled. Virtually all experts and scientists agree that improper disposal of electric car batteries will have a major adverse effect on the world environment.

All these issues, and more, present clear evidence that any stampede to EVs should be blunted and allow reason to flourish. An EV future could be a good thing. Alternative batteries are in the conception stage that would supply better power with fewer environmental risks. But such science needs time.

The most damning obstacle for EVs is the hypocrisy of the entire movement of an electric-only environment, whether it be cars, cooking stoves, heaters, etc. All are reliant on other fuel sources and the most cost-effective, proven, established and plentiful one remains natural gas. If given the opportunity, gas is our low-carbon-impact, high-efficiency transition energy source, while the world solves the ultimate environmental and alternative fuel challenges.

Simply allowing gas to do its job will make EVs practical.

The Importance of Infrastructure Investment

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Setting arbitrary dates to eliminate hydrocarbons from the energy mix flies in the face of our current technological possibilities.

I am a grandfather and I want my grandchildren's grandchildren to have a cleaner environment, but I recognize that it is also important that we make this transition in a way that does not endanger our well-being and dislocate the economy. Setting arbitrary dates to eliminate hydrocarbons from the energy mix flies in the face of our current technological possibilities. The failure to build natural gas pipelines into the Northeast caused that market to have a greater green house gas footprint last winter because they had to burn fuel oil and coal instead of natural gas. This winter, the Northeast will pay exorbitant prices for liquefied natural gas (LNG) when they are a stone's throw away from the largest natural gas reserves in the United Stated via the Marcellus.

Companies like Duke Energy continue to close coal plants and replace them with natural gas plants, which are necessary when solar and wind do not provide enough energy. Yet, companies like Duke have been unable to build new pipelines to serve new plants, resulting in shortage which makes incremental capacity very expensive. This puts unnecessary costs on consumers and industries. Clean, inexpensive, and reliable natural gas has given America a competitive advantage to our industries and households, but a lack of infrastructure is taking our edge away.

Modular nuclear power generation

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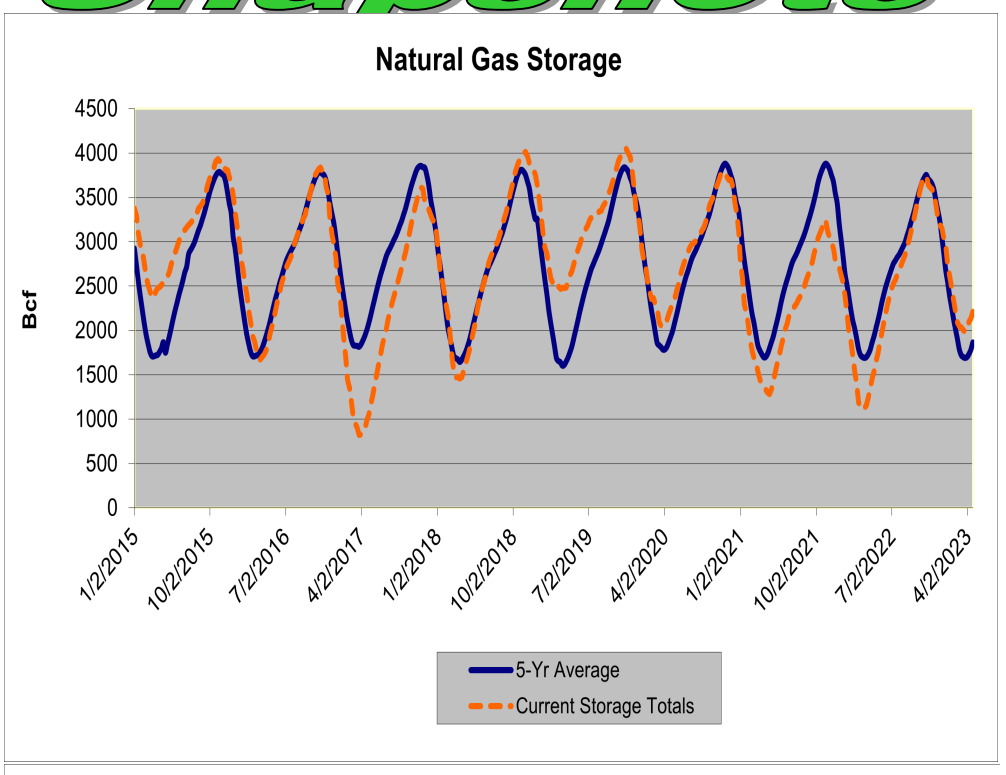
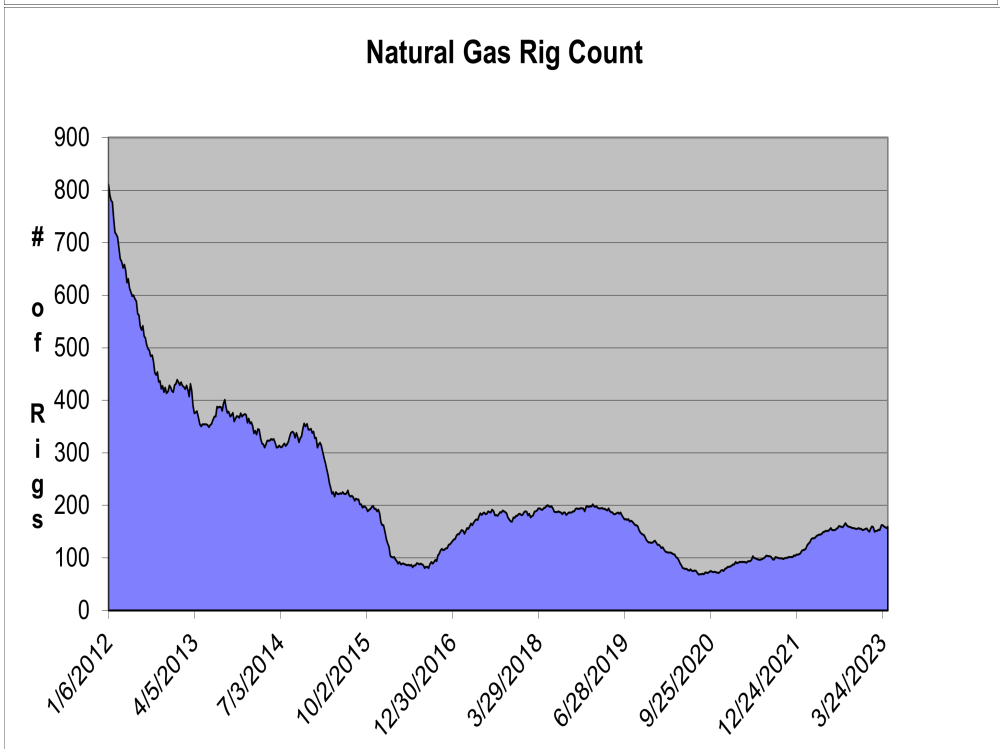
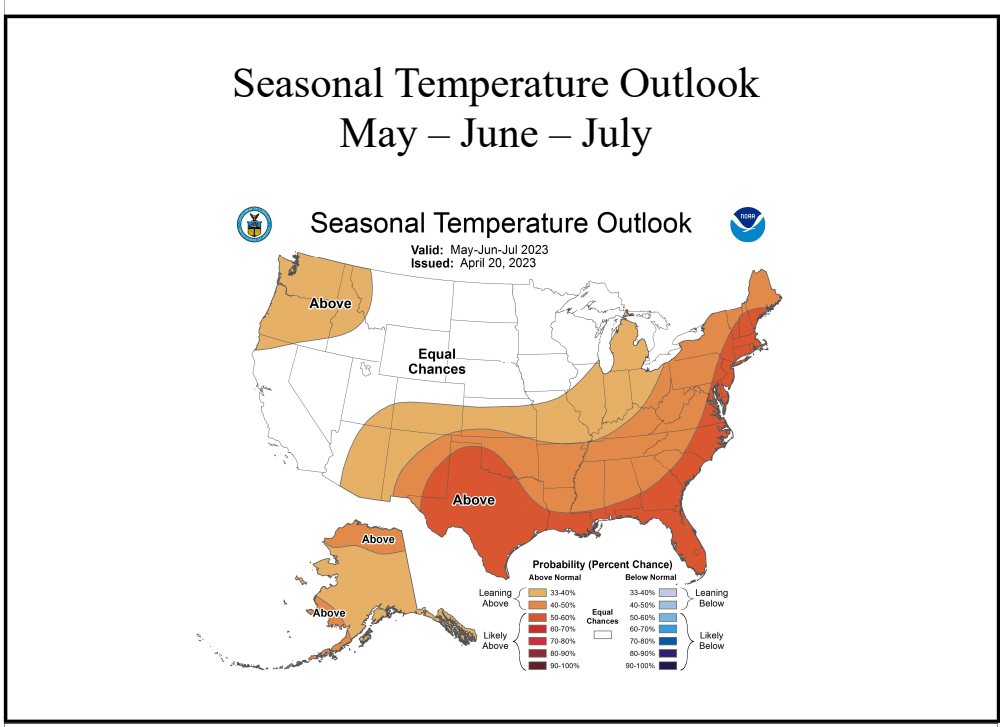
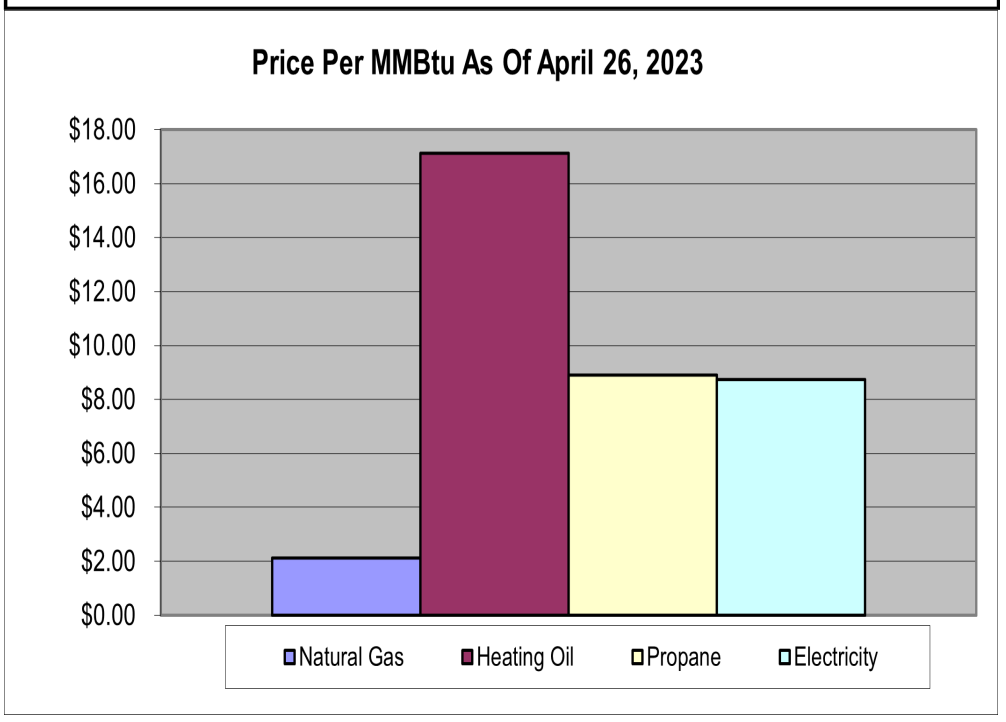
Snapshots









Renewable Natural Gas

U.S. Environmental Protection Agency

Basic Information about RNG

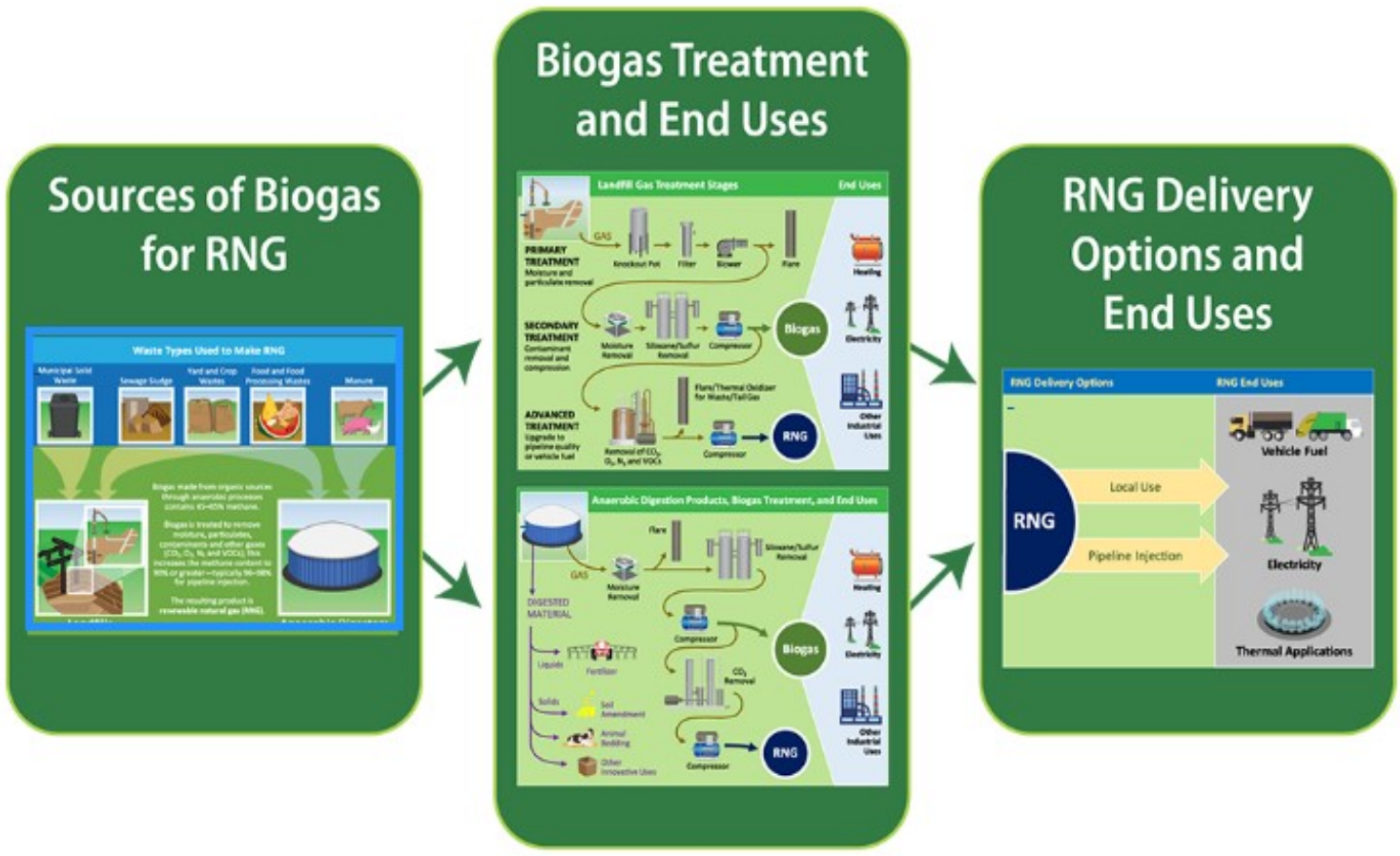
Renewable natural gas (RNG) is a term used to describe biogas that has been upgraded for use in place of fossil natural gas. The biogas used to produce RNG comes from a variety of sources, including municipal solid waste landfills, digesters at water resource recovery facilities (wastewater treatment plants), livestock farms, food production facilities and organic waste management operations.

As a substitute for natural gas, RNG has many end uses:

- In thermal applications,
- To generate electricity,
- For vehicle fuel or
- As a bio-product feedstock.

RNG can be used locally at the site where the gas is created or it can be injected into natural gas transmission or distribution pipelines.

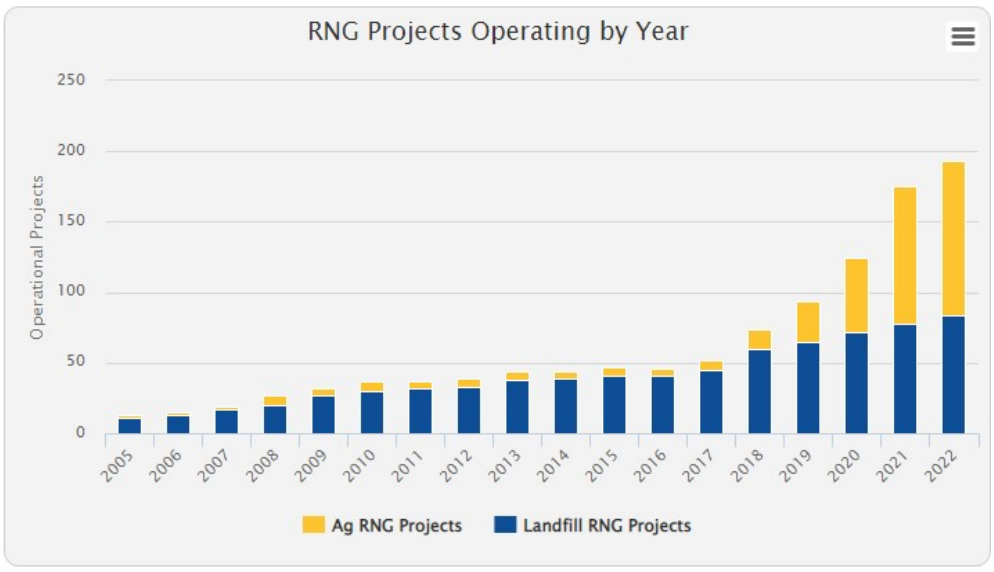
RNG Sources, Gas Treatment and End Uses



RNG Project Map

Biogas from a variety of sources is being upgraded into RNG across the United States. The map above shows operational RNG projects in the United States where the biogas is generated from landfills or livestock waste anaerobic digesters. For more detail, visit www.epa.gov/lmop/renewable-natural-gas.

Landfill and Agriculture RNG Projects in the United States (2005-2022)



Raw biogas has a methane content between 45 and 65 percent, depending on the source of the feedstock, and must go through a series of steps to be converted into RNG. Treatment includes removing moisture, carbon dioxide (CO_2) and trace level contaminants (including siloxanes, volatile organic compounds, or VOCs, and hydrogen sulfide), as well as reducing the nitrogen and oxygen content. Once upgraded, the gas has a methane content of 90 percent or greater. Typically, RNG injected into a natural gas pipeline has a methane content between 96 and 98 percent.

Benefits

Use of RNG can provide benefits in terms of fuel security, economic revenues or savings, local air quality and greenhouse gas emission reductions.

Fuel diversity benefits

Use of RNG increases and diversifies domestic energy production, RNG can be used as a baseload fuel source with high availability rates. It leverages existing infrastructure such as pipelines and heavy-duty vehicles. Biogas feedstocks for RNG are generated continuously from a variety of sources.

Economic benefits

The development of RNG projects can benefit the local economy through the construction of RNG processing and fueling station infrastructure and sale of natural gas-powered vehicles. National, state and local incentives may be available depending on the end use, such as credits for production of RNG used for vehicle fuel. These financial incentives can provide additional economic drivers for project development.

Local air quality benefits

Replacing traditional diesel or gasoline with RNG can significantly reduce emissions of nitrogen oxides and particulate matter, resulting in local air quality benefits. RNG is comprised primarily of methane; compared to fossil natural gas, RNG contains zero to very low levels of constituents, such as ethane, propane, butane, pentane or other trace hydrocarbons.

Greenhouse gas emission reductions

RNG projects capture and recover methane produced at a landfill or anaerobic digestion (AD) facility. Methane has global warming potential more than 25 times greater than CO_2 and a relatively short (12-year) atmospheric life, so reducing these emissions can achieve near-term beneficial impacts in mitigating global climate change. For facilities that are not already required to mitigate such emissions, an RNG project can reduce methane emissions. significantly.

The Importance of Infrastructure Investment

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and industrial scale battery storage are technologies that will contribute to a lower greenhouse gas future. But in the meantime, we must build infrastructure for gas and power distribution to bring cleaner energy to the consumer.

Today, approximately 15 percent of all consumers are delinquent on their monthly electric and gas bills. As we look at new infrastructure and energy sources, we must keep in mind the cost to consumers and move forward in a way that makes economic sense.

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