

Clean Energy Hybrids More Cost-Effective Than New Gas

September 17, 2019 - Projects featuring a combination of wind, solar and other clean energy sources are more economical than most proposed natural gas projects. Companies could save ratepayers \$29 billion by replacing proposed gas projects with clean energy ones, the report says. The economics guiding U.S. investments in electricity generation have reached a historic tipping point: Combinations of solar, wind, storage, efficiency and demand response are now less expensive than most proposed gas power plant projects, claims new research from the quasi-non-profit Rocky Mountain Institute.

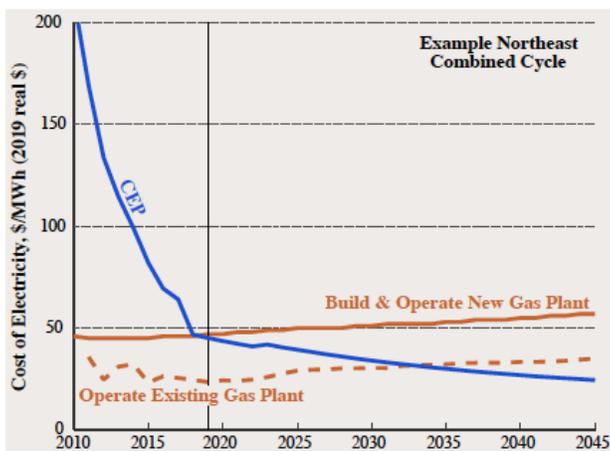
According to their report, *The Growing Market for Clean Energy Portfolios*, portfolios of these clean energy resources can provide the same energy and reliability services as traditional gas power plants; the difference is they cost less. Currently, there is an estimated \$90B of planned investment in new gas-fired plants and over \$30B of planned investment in proposed gas pipelines. If clean energy replaces the proposed gas plants, consumers could save \$29B, according to the report. For investors, the report highlights the significant risk that proceeding with announced projects will result in stranded costs. By the mid-2030s, as clean energy prices continue to fall, a new portfolio of clean energy resources will become less costly than continuing to pay the operating costs of a combined-cycle gas plant, and such a portfolio will provide the same level of energy, capacity and reliability services.

These cost trends could lead to the economic retirement of plants representing over 90% of currently proposed new combined-cycle gas capacity by 2035, resulting in a significant risk of investment capital becoming stranded. Just as coal plants have retired due to competition from low-priced natural gas in the past 10 years, the ongoing cost declines in wind, solar and battery technologies threaten to do the same to natural gas plants by the mid-2030s, the report says. It notes examples from Colorado, Michigan, Indiana, California and other states where this trend is already on display, causing industry leaders to prioritize investment in clean energy instead of new gas infrastructure.

A companion study examines the implications of this dynamic on the economics of new gas pipelines. This report, *Prospects for Gas Pipelines in the Era of Clean Energy*, shows that power plant gas use has driven the overall increase in U.S. natural gas consumption over the past 20 years – expectations that this growth will continue to underpin the economics of proposed new pipelines.

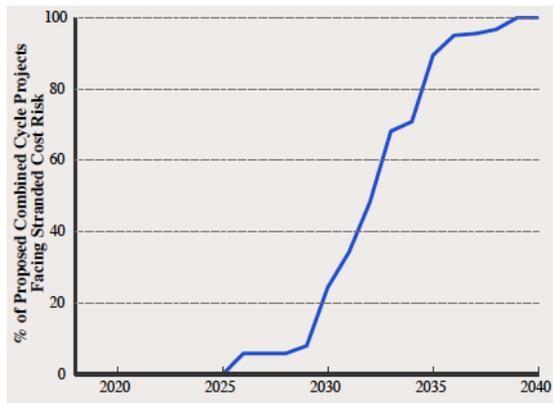
Report Summary: Over the past 20 years, the United States has expanded natural gas use dramatically for electricity generation. With persistent low gas prices, the industry continues to plan new gas infrastructure, including both new power plants and new pipelines. But even as gas use has expanded, wind, solar, and energy storage technologies have improved and dropped precipitously in price. Research shows that “clean energy portfolios” (CEPs) comprised of these technologies are now cost-competitive with new natural gas power plants, while providing the same grid reliability services.

Figure 1: Historical and projected evolution of clean energy portfolio costs



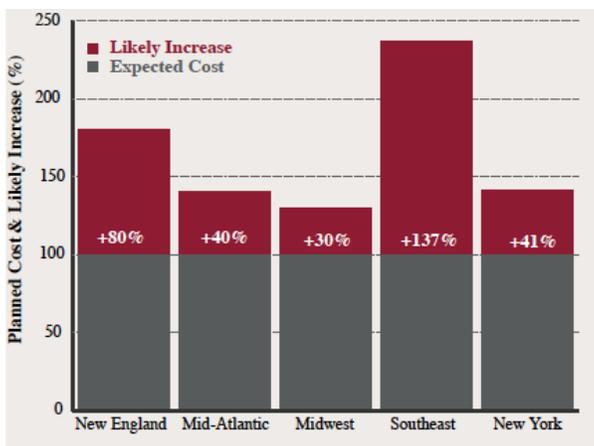
Even as clean energy costs continue to fall, utilities and other investors have announced plans for over \$70 billion in new gas-fired power plant construction through 2025. RMI research finds that 90% of this proposed capacity is more costly than equivalent CEPs and, if those plants are built anyway, they would be uneconomic to continue operating in 2035, well ahead of the ends of their planned economic lifetime. Continued investments in these power plants will present stranded cost risk for customers, shareholders, and society, while locking in 100 million tons of CO emissions each year.

Figure 2: Percentage of proposed combined-cycle gas plants facing stranded cost risks, 2020–2040



Motivated in part by the increase in natural gas use for electricity generation, the industry has announced plans to invest an additional \$30 billion in new interstate pipelines through 2024. But as the economic case weakens for gas power plants, new pipelines that would deliver gas to power plants will see their utilization fall dramatically. As utilization of pipelines falls, the average cost of delivered gas will increase by 30%–140% from expected levels, imposing significant costs on customers and investors.

Figure 3: Likely cost increases for new gas pipelines due to competition from clean energy



RMI’s research highlights the implications of gas infrastructure investment in the context of falling clean energy costs, and the reports make recommendations for regulators, investors, and utilities to capture the opportunity at hand while avoiding the stranded cost risks of continued gas investment in the US power sector.

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But because clean energy already outcompetes gas power plants and will soon lead to their early retirement, the underlying economic justification for new pipelines is now in question, says RMI. The report finds that over 95% of gas use in proposed gas-fired power plants across much of the Eastern U.S. could be economically offset by clean energy by 2035, reducing the use of proposed new gas pipelines by between 20% and 60%.

This reduction in gas flowing through new pipelines would, in turn, dramatically increase the costs that customers or shareholders will face in continuing to operate these pipelines. The report identifies the risk of a “death spiral,” where declining sales volume leads to higher prices, which, in turn, leads to further

declines in sales. This reinforcing feedback loop would only end when pipeline projects go bankrupt and/or cease operations altogether, according to RMI.

The RMI reports highlight the fact that replacing proposed gas plants with clean energy is an opportunity to avoid 100 million tons per year of CO₂ emissions, equivalent to 5% of total annual U.S. electricity sector emissions. While representing a small fraction of total grid emissions today, these avoided emissions are equivalent to over 20% of the U.S. grid's emissions budget under 80% emissions-reduction scenarios. Thus, by cost-effectively replacing new gas with clean energy today, the country can make meaningful progress on long-term decarbonization efforts, the report says.

"The economics driving clean energy deployment are strengthening at a speed that has transformed what was a relatively abstract thought exercise only years ago to a present-day reality. This new reality requires careful analysis by policymakers and system operators who are planning for an increasingly low-carbon grid," comments Mark Dyson, a principal at RMI and the lead author of both reports. "The inflection point we identify in this study signals a historic opportunity for the energy industry to capture the valuable benefits clean energy provides while greatly improving environmental performance and protecting customers from the risks of stranded investments."

The reports conclude with implications and recommendations for investors, regulators and planners, suggesting ways to capture the opportunities at hand and avoid the risks of uneconomic gas investments. In particular, the reports recommend that regulators and utilities carefully assess their systems' needs and use open, technology-neutral planning processes to guide investment in the most economic solutions. Source: North American WINDPOWER.