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High-Risk Carbon-Capture Deal Is Not in New Mexico City's Best Interest

Municipal Policy Reversal Overlooks Barriers to Market for Captured C02; Partnership Would Create Exposure to Long-Term Liabilities and Potential Credit-Rating Reviews

Executive Summary

On Aug. 13 in a closed-door session, the City Council of Farmington, N.M., will consider a questionable proposal from Enchant Energy Corp. to partner with the municipal government in a deal to take over the failing San Juan Generating Station.

Enchant purports to be offering a way to profitably retrofit the aging coal-fired power plant with carbon-capture technology under a business model that would depend on selling carbon dioxide (CO2) emissions for enhanced oil recovery (EOR) in the distant Permian Basin.

It is not a viable proposition. This brief highlights three of many issues the deal raises:

- It would be a hard reversal of established Farmington policy that calls for modernization of how the city's utility produces electricity;
- It would depend on sales of C02 via pipeline that lack market support and that are freighted with regulatory hurdles; and
- It would leave Farmington exposed to long-term plant-ownership liabilities and brand it a potential credit risk, as well as turning it into an outlier on local, regional, and national trends in electricity generation.

IEEFA believes the City of Farmington would do well instead to acknowledge and follow more sensible regional business transition examples as seen in the Navajo Nation's refusal to take on high-risk ownership of Navajo Generating Station; Public Service Company of New Mexico's stated aims to modernize generally statewide and specifically in northwestern New Mexico; and Kit Carson Electric Cooperative's success at transitioning from coal to solar while keeping costs under control.

A Reversal of Municipal Policy

'Least-Cost, Responsive, Low-Risk and Environmentally Responsible'

Enchant Energy's proposal directly contradicts the 2017 integrated resource plan prepared by Farmington's municipal utility and subsequently adopted by the city council.[1, 2] The IRP, completed in late 2016, was prepared by Pace Global, a subsidiary of the multinational company Siemens.

The City of Farmington owns just under 8.5% of Unit 4 at the San Juan Generating Station, providing it with 43 megawatts of capacity. This, in turn, represents about a third of the city's owned generation capacity. The Pace Global-prepared IRP examined power supply options for the city assuming that the coal plant would retire either in 2022 or 2027, focusing on the lowest-cost supply options available as a means of minimizing the rate impact on the city utility's customers. The report also called for a "flexible" electricity-generation plan.

However, the CCS project promoted by Enchant Energy is not the lowest-cost solution going forward. Nor is it flexible. Rather, as detailed in an IEEFA report published in July, the Enchant Energy plan appears at its heart to be a scheme to provide its proponents with short-term DOE research subsidies.[3]

Specifically:

- It overlooks how the deployment of carbon-capture technology around coal-fired generation remains an expensive proposition with few successful commercial examples;
- It presents an unrealistic assessment of the regulatory and public hurdles such a project would face;
- It banks on being able to transport and sell the captured CO2;
- It does not say where long-term project liabilities would lie;
- It does not address the absence of contracted customers for the plant's electric output, the likelihood that it will have only limited access to local transmission lines and the inevitable rise in electricity costs owing to the parasitic load created by the installation of carbon capture equipment;

[1] City of Farmington/Pace Global/Siemens, "2016 Integrated Resource Plan Report Prepared for: City of Farmington," December 2016.
[2] http://www.sjsci.org/single-post/2017/07/30/Farmington-Electric-Utility-Systems-Integrated-Resource-Plan
[3] IEEFA, "Novice Company's Carbon Capture Pitch Offers False Hope, Fiscal Risk to Farmington, N.M.," July 2019.

- It plays up using newly expanded tax credits for carbon capture to finance the project, although the credits would be available only if and when the project is operational, a highly unlikely outcome.

Further, as Pace Global pointed out, the Farmington municipal utility has a peak demand of just roughly 200 MW and a third of that need is already supplied via an efficient natural gas-fired combined cycle unit owned by the city. In other words, the utility has no need for the 800 MW of capacity that Enchant Energy says the San Juan retrofit proposal would generate. In addition, the Enchant proposal is directly at odds with the goals adopted by the city in the 2017 IRP, which center around "finding a least-cost, responsive, low-risk and environmentally responsible plan to meets its load requirements."[4]

Indeed, the Pace Global report does not even raise the possibility of continuing to operate San Juan, much less retrofitting it with costly CCS equipment. Instead, it recommended a staged new build, including a second CCGT unit, as the best means of satisfying the city's "cost, risk, environmental and operational objectives." In addition to the new gas unit, the proposal included some new utility-scale solar and two small gas-fired reciprocating engines. In sum, it was just what the city needed, a measured means of replacing lost generation while keeping costs in line and also bringing new options, particularly solar, into the mix.

In contrast, the Enchant Energy proposal is full of risks, demonstrably not least cost and completely unresponsive since it would lock the city into a long-term deal with one resource and undercut its ability to adopt cleaner, cheaper technology options going forward.

It is worth noting, too, that where Pace Global/Siemens has vast electricity-sector experience, Enchant Energy by all indications has none.

One of Many Defects: The Pipeline Piece of Deal

The key component of Enchant Energy's pitch is its plan to sell the captured CO2 for use in EOR activities in the Permian Basin in southeastern New Mexico and West Texas.

That part of the proposal would require construction of a feeder pipeline stretching some 20 miles or more from the plant to the existing Cortez CO2 pipeline running from southwestern Colorado down into Texas.

Unworkable Financials

The industry literature details the difficulties that surround the buildout of CO2 pipelines.

[4] Pace Global IRP, p. 5.

As explained in a 2015 Department of Energy report:[5]

> *"The process of designing and constructing a CO2 pipeline is a significant task, requiring the involvement of numerous agencies and stakeholders. Based on discussions with industry and information from the 2013 Global CCS Institute survey of large-scale integrated CO2 capture, transportation and utilization; it takes between one and two years for a project to navigate the necessary permits for construction to begin on a CO2 pipeline."*

The DOE report held out theoretical hope for such initiatives but acknowledged also the harsh economic realities that hamper CO2 pipeline buildout.

> *"A number of industrial CO2-capture facilities have been proposed and partially developed for delivering CO2 to EOR fields over the past several decades," the report stated. "However, the significant amount of capital required by many of these projects has inhibited a number of them from meeting their announced CO2-capture goals on time, or coming online entirely."*

CO2 pipeline buildout seems only to have grown more challenging, complicated by growing public opposition to such projects and undermined by weak market support for the very type of CO2 shipment proposal Enchant Energy is pushing Farmington officials to buy into.

An IEEFA report last year noted the overarching impediments to CO2 pipeline buildout:[6]

> "*Widescale use of CCS would require a huge network of pipelines (and associated infrastructure) to transport captured CO2 to sequestration sites, an issue given scant attention in CCS development discussions. Such a network would be enormously costly and extremely time-consuming to permit and build. Further, Capturing CO2, piping it to distant sequestration sites and injecting it into the ground would require an exorbitant amount of water."*

The larger industry problems around CO2 are magnified locally in Enchant Energy's pitch.

Case History: The Abandoned Lobos Pipeline

Kinder Morgan, which operates the Cortez Pipeline, with which the San Juan CCS project would purportedly connect, has little or no capacity on the pipeline,[7] and the company four years ago abandoned a plan to build a similar pipeline across New Mexico after having invested significantly in it.

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[5] DOE, "A Review of the CO2 Pipeline Infrastructure in the U.S.," April 2015.
[6] IEEFA, "Holy Grail of Carbon Capture Continues to Elude Coal Industry," November 2018.
[7] Colorado CO2 Resource Study, Leonardo Technologies, Inc., November 2018, pp. 5-6.

That project, called the Lobos Pipeline, was originally proposed by Kinder Morgan in 2013 as a $1 billion initiative that would pipe CO2 along a 216-mile-long 100-foot-wide easement from northeastern Arizona across New Mexico into the Permian Basin oil patch in southeastern New Mexico and southwest Texas. The project was to have tied into the same CO2 market the Cortez Pipeline services.

An undated,45-part part Q-and-A published by the company at the time spoke volumes about the hurdles such projects face, noting issues that included effects on electricity ratepayers, impacts on livestock and water supplies, earthquakes, pipeline safety, power lines, project herbicides, impacts on wildlife, river crossings, light pollution, noise pollution, landscape scarring and fire risk.[8]

A likely additional complication: "Unlike natural gas pipelines crossing one or more U.S. states, which are regulated by the Federal Energy Regulatory Commission ("FERC"),[4] there is no federal government agency authorized to oversee the routing of proposed new CO_2 pipeline corridors in the U.S. and no federal authorization exists to condemn privately-owned land for a CO_2 corridor."[9]

This specific hindrance to CO2 pipelines—rights-of-way acquisition—could well have been a driving factor in Kinder Morgan's decision, as the company faced opposition from property owners along the proposed route of the pipeline. But the Lobos project had its underlying business issues, too, evidently including a dearth of demand, and in March 2014—10 months after announcing plans for the Lobos Pipeline—Kinder Morgan dropped the project, doing so quietly in the depths of a lengthy quarterly earnings-report press release.[10]

While the company said at the time that it had only "delayed"[11] the project, it has not—nearly five years on—spoken of it since, and a few weeks after its announcement closed the project's field office, in Durango, Colo.[12]

One likely factor in the scuttling of the Lobos Pipeline, in addition to its market issues, was skepticism by local communities. "The project offered few if any benefits to the health, well-being and economy of the county," concluded a report published by activists in Torrance County, N.M., with the New Mexico Department of Health soon after Kinder Morgan pulled the plug.[13]

Of note too on the Lobos Pipeline saga: Kinder Morgan walked away from it having all but completed an exhaustive environmental impact assessment only to withdraw its project application with the Bureau of Land Management (BLM). The BLM supervisor on the project said if the company were to revisit the project, it "would

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[8] Kinder Morgan, "Lobos Pipeline Project Frequently Asked Questions," undated.
[9] Pillsbury Law, "Securing Rights-of-Way to CO_2Pipeline Corridors in the United States," December 2016.
[10] Kinder Morgan, "Kinder Morgan Increases Quarterly Dividend to $0.45 Per Share, up 10%," January 2015.
[11] Albuquerque Journal, "Kinder Morgan withdraws CO2 pipeline application," January 2015.
[12] Cortez Journal, "Kinder Morgan to close office," April 2015.
[13] Human Impact Partners, "Health Impacts of a CO2 Pipeline: A Case Story," June 2015.

have to start from scratch" on its regulatory clearances, sinking time and costs anew into the proposal.[14]

Inheriting a Stranded Asset, Creating the Likelihood of Being Left Behind in Broader Energy Transition

If the city of Farmington signs a deal with Enchant Energy to retrofit the San Juan Generating Station with carbon-capture experiment it will be courting two significant risks.

- First, reputational and credit-rating risks associated with going into business with a partner that has shown no evidence of having deep enough pockets to absorb liabilities around a deal that in all likelihood will end up being anchored to a stranded asset.

- Second, risks of economic-development losses from missing out on the electricity-generation modernization trends sweeping New Mexico and the rest of the country.

The city already is said to have sunk hundreds of thousands of dollars into lawyer fees in considering the Enchant Energy pitch, which—in truth—may very well go nowhere.[15]

Exactly how a transfer would occur has not been explained yet, and whether and when the state's Public Regulation Commission—and PNM, for that matter—will even play ball remains to be seen. Legal costs to Farmington will only mount along the way.

Related Case: Navajo Generating Station

The parallels between Enchant Energy's campaign in Farmington and the now-defunct campaign by the coal industry to keep Navajo Generating Station (NGS) online in Page, Ariz., are notable.[16]

In brief, they boil down to questions of liability. Who—if Farmington and Enchant Energy go into business together to take over the San Juan Generating Station—will be on the hook for tens if not hundreds of millions of dollars in plant cleanup liabilities? More to the point, what happens if the project flops, as is likely. Were Enchant Energy to go belly-up and leave town, who would be left holding the liability-cleanup bag?

The Navajo Nation had an opportunity this year to take over ownership of NGS from its utility-company owners. The tribal government wisely chose not to because of

[14] Albuquerque Journal, "Kinder Morgan withdraws CO2 pipeline application," January 2015.
[15] Farmington Daily Times, "PNM official explains why the utility did not pursue carbon capture technology," July 2019.
[16] IEEFA, "Novice Company's Carbon Capture Pitch Offers False Hope, Fiscal Risk to Farmington, N.M.," July 2019.

the liabilities that came with the deal.

Related Case: Public Service Company of New Mexico (PNM)

In a presentation in late July in Farmington, a PNM executive noted that the utility, which is the largest current owner of the plant, considered retrofitting it with carbon capture technology but concluded such a move would be prohibitively expensive.

"There are much better options and we would be betting far too much on unproven, costly technology that wouldn't benefit the communities we work in, the environment we vowed to protect or the customers we serve," the executive said. "At the end of the day, this technology would cost well over $1.5 billion, would need 80 percent more water than what we currently use and would need 25 percent of the power it generates to be fed back into the operation to run the machinery."[17]

The PNM executive cited a study by Sargent & Lundy, a prominent engineering firm that concluded in 2010 that carbon capture was unviable. While Enchant Energy has since paid Sargent & Lundy to explore the issue further, the fundamentals of carbon capture in the years since 2010 have not changed.[18]

PNM, the predominant power company in New Mexico, has endorsed new state policies toward closing older plants like San Juan and investing heavily in renewables.

As detailed in IEEFA's July report:[19]

> *"Full-closure plans follow recent enactment of a state law that aims to remake New Mexico's electricity sector, as PNM noted in filings this month with the New Mexico Public Regulation Commission1 in which it aims "to replace coal plants with proven resources such as wind, solar and cleaner natural gas, as well as cutting-edge energy storage technologies."*
>
> *"PNM is asking specifically for approval of a plan to replace most of San Juan Generating Station's capacity with 760MW of new generation that would consist of 480MW from utility-scale solar farms and battery-storage arrays outside San Juan County (70MW in adjacent Rio Arriba County, 340MW in adjacent McKinley County, 70MW in Bernalillo County where the city of Albuquerque is located) and 280MW of new gas-fired generation at the current plant site. PNM had previously sought approval to build a 456MW gas plant at the site but has since scaled back that portion of its proposal."*

[17] Farmington Daily News, "PNM official explains why the utility did not pursue carbon capture technology," August 2019.
[18] IEEFA, "Holy Grail of Carbon Capture Continues to Elude Coal Industry," November 2018.
[19] IEEFA, "Novice Company's Carbon Capture Pitch Offers False Hope, Fiscal Risk to Farmington, N.M.," July 2019.

Related Case: Kit Carson Electric Co-Op

Roughly 200 miles east of Farmington, an electric co-op in New Mexico has broken ranks with outdated power-generation businesses and established a post-coal business model that has proven already to be in the best interest of its community and customers.

The co-op, Kit Carson Electric Cooperative, makes a suitable comparison because it has a small footprint similar to that of Farmington Electric.

Under its news business model, KCEC has realized at least three major gains:

- Pricing predictably—its new provider contract runs for 10 years and guarantees a set wholesale price for power through the life of the contract.
- Hometown freedom to meet its goal of being a solar-driven co-op within a few years' time.
- Local economic benefits tied to lower long-term electric rates and to job creation from KCEC's solar buildout.

Kit Carson Electric Cooperative has embraced changes under way in the electric power industry and found cost-effective ways to serve its customers while also meeting its environmental goals. Farmington could follow a similar approach by striving for the goals outlined in its 2017 IRP: Providing low-cost, reliable and environmentally sensible power supplies to city residents.

Conclusion/Recommendation

The Farmington City Council, as overseers of the Farmington Electric Utility System and elected representatives of city residents, should in the public interest reject the high-risk partnership being offered by Enchant Energy. Instead, the city would do well to focus on the economic benefits afforded the community by the state's new Energy Transition Act and to consider the benefits especially of broader adoption of solar power generation and storage options, including utility-scale facilities, residential rooftop installations and community-wide programs for apartment units and commercial operations.

About IEEFA

The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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