

# Pipeline & Gas Journal

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## Data-Driven Strategies for Prospering in a Changing Energy Landscape

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The energy landscape is undergoing a fast transformation, and the hydrocarbon value chain's very fabric is being tested as it will continue to be over the coming years.

To help make sense of the changing energy landscape, Siemens prefers to explain the main drivers behind energy transformation using the 4-D model of "Decentralization, Digitalization, Decarbonization and Democratization"

Decentralization affects the midstream sector at both ends of the pipeline. Growth in unconventional upstream E&P has broadened the geographical dispersion of producing assets, and shorter production life cycles make determining the economics of serving new oil fields far more complex.

At the other end of the pipeline, decentralization means less utility-scale generating assets and more distributed energy systems that employ a mix of renewables, energy storage and smaller gas-powered generation units.

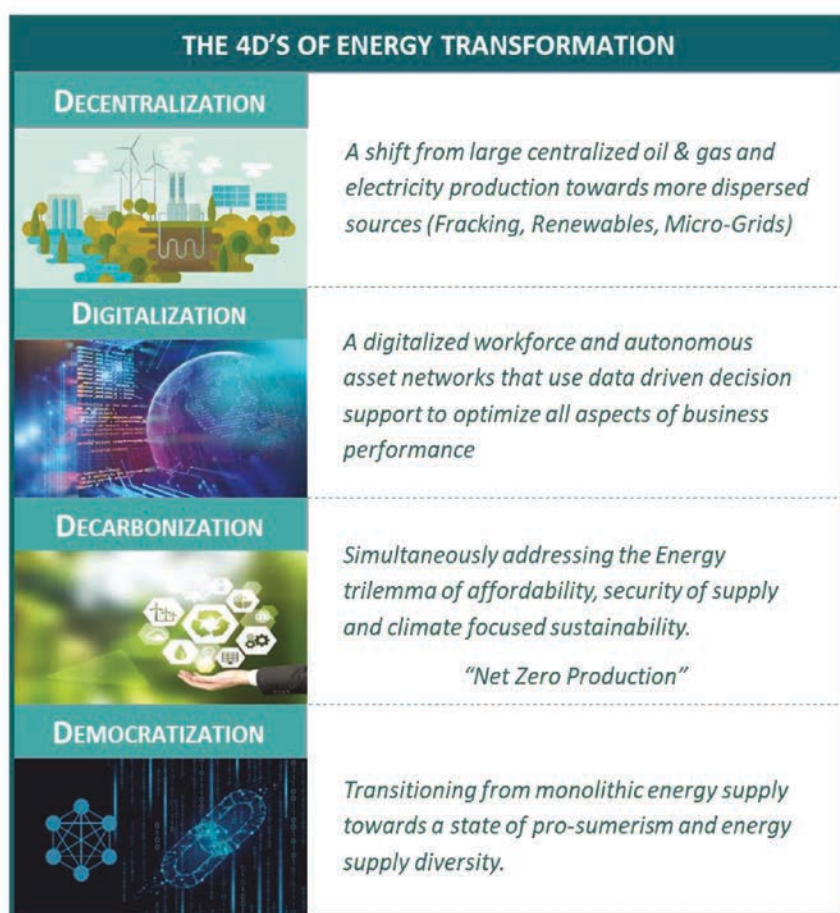
The demand for high-pressure pipeline gas is far more dynamic than ever before and continuous electrification of end-users applications at all scales of usage is weakening reliance on pipeline gas.

### Decarbonization

A movement toward decarbonization has affected all industries, as the results of climate change are no longer seen as isolated events – floods, droughts and forest fires – suffered only by their impacted communities.

It's now a global issue with effects playing out in the halls of government, on the financial trading floor, and in the boardroom. An inflection point has been realized: Industry is collectively being held to account, and industry leaders must address the challenge or risk serious repercussions.

Democratization has the potential to drastically disrupt the transactional conventions that have underpinned the energy industry for



over a century. Diversity in energy supply – enabled in large part through advancements in peer-to-peer trading, generating and storage technologies and customer buying behavior – is creating new forms of energy independence that will impact the entire energy value chain.

Digitalization is the glue that will hold together and enable the energy transformation. After years of slow adoption, the oil price drop of 2014 catalyzed digitalization in the energy sector. Currently, it is recognized as an essential capability to keep companies relevant, profitable and sustainable.

To date, the industry has mostly applied digitalization to improve operational performance, reduce O&M costs, optimize production outputs and enhance environmental health and safety (EHS) safeguards. But companies rarely use digitalization to challenge and innovate their underlying business models. This significant oversight requires deeper examination.

### Status Quo Models

For nearly 80 years, since pipelines were deemed a safer and more secure alterna-

tive to cargo ships traveling the U.S. East Coast and vulnerable to U-boats attacks, the transmission pipeline sector has had no reason to feel threatened by disruption. Supply shortages, demand uncertainty during contract capacity roll-off periods and hyper-competition in over-served markets are all challenges the conventional business model faced and overcame intact.

So why should the current dynamics of the energy market result in a different outcome? Because this period of energy transformation is creating a new challenge unlike any other before: the economic viability of alternative means of energy supply combined with end-user sentiment towards decarbonization and democratization. Pipelines will no longer be the only means of meeting such high levels of energy demand.

With regulated transmission pipelines and within the context of these new challenges, the existing mechanisms of the conventional business model – those that are designed to share the risk of large CAPEX invest – do create a latent vulnerability that, at some inflection point, could accelerate the decline of pipeline dependency.

This won't materialize overnight, nor will it be immediately apparent. But as is already being witnessed in some parts of Europe, alternative means of supply are reaching price parity to gas and end-users are switching.

For pipeline companies affected by this wholesale shift, when the decline in demand cannot be met with new customers or increased demand from existing ones, the inelastic cost of pipeline OPEX relative to capacity utilization means revenue losses transpose directly to the bottom-line.

As demand shrinks, the option to increase rates merely serves to exacerbate the shift. Remaining end-users threatened by higher rates and incentivized by other factors such as energy independence, green corporate image and attractive government funding, are exiting the pipeline. Many end-users such as peaker plants are exiting the value chain altogether.

## Solutions

Although pipelines will remain vital to

the energy value chain for years to come, midstream companies must consider how their position within market – especially in energy logistics – can generate new revenue streams and protect existing ones via enhanced end-customer value.

One midstream business-model innovation strategy is to diversify asset portfolios to compensate for diminishing revenues from existing and new transmission assets. Last year, for example, TransCanada, founded in 1951 as Trans-Canada Pipe Lines, became TC Energy. Although 93% of its 2019 revenue came from long-term, take-or-pay contracts, its new name reflects the growth in its distributed power generation and storage operations – now 8% of its EBIDTA, according to the company's corporate profile.

An alternative is to find synergies in the existing asset portfolio. Consider how the Williams Companies, more than two decades ago as the Internet boom ramped up, decided to run fiber-optic cables through its decommissioned pipelines to generate additional revenue from otherwise non-performing assets. Eventually it sold its network for \$2.5 billion and, a decade later, the rest of its telecom operations for \$680 million.

While the latter instance was purely opportunistic and not reflective of today's fast-evolving energy landscape, both examples show how diversification and synergy can be reasonable growth strategies.

Whichever strategy midstream operators pursue, we suggest they should seek unseen connections where opportunities to leverage their incumbent assets, capabilities, and key strengths in energy logistics exist. They should consider using a combination of digitalization and domain expertise from across the energy value chain to better identify, quantify, and critically assess the strategic opportunities that are the best fit for their business.

To this end, Siemens is pioneering new approaches through its customer value co-creation (CVCC) methodology. CVCC involves operators, end-users, and ecosystem partners jointly addressing these industry challenges, creating solutions, and then, crucially, designing business models which unlock value for all parties.

The company is working with transmission pipeline customers keen to explore new business model options that address their pain points of declining gas demand due to energy decentralization in a regulated environment.

Using our consultancy and domain know-how across adjacent and distant sectors of the energy value chain, we critically assess the inter-dynamics of new technologies and business models, to enable new ways of addressing those pain points.

In evaluating the various strategic pathways, a data-driven approach is employed to evaluate and score economic attractiveness (cost vs. potential) and business affinity (ease of implementation vs. leveraging current capabilities) to determine those options with the right strategic fit for the customer.

## Conclusion

“It is not the strongest of the species that survives, nor the most intelligent ... it is the one most adaptable to change.”

This paraphrased quote from professor Leon C. Meggison as he commented on the observations of Charles Darwin, resonates particularly well with the current situation faced by the Energy sector as a whole.

The Energy Transformation is going to have a resounding impact on all companies and for midstream companies, adaptation will be the key to ensuring long-term business sustainability.

Opportunities to adapt, expand and write one's own destiny exist now, but the doors to them will close as other players move to capitalize on them. Competitively, what might provide midstream operators with a clear advantage today may be industry table stakes tomorrow. **PE&GJ**



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### New Technologies

- Advanced gas turbine, electrical and automation technology
- New fuels (i.e., Hydrogen) and Energy storage solutions
- Blockchain and Peer to Peer energy trading platforms
- IoT, artificial intelligence and data analytics

### New Business Models Partnerships

- Energy eco-system collaboration
- Risk/reward sharing
- Digitally enabled CAPEX/OPEX models

**Figure 2:** New technology and business model fields.