

# DATA EVOLUTION IN THE CLOUD

## Data Powers Insights in the Energy Industry

### LIGHTING THE WAY FORWARD

Data is the fuel of the energy sector. It powers new technologies such as artificial intelligence (AI) and machine learning (ML) enabling smart supply and demand management, predictive analytics and maintenance of equipment, protection against cyberattacks, and regulatory compliance. Energy companies are increasingly turning to digital transformation to leverage these capabilities. In a poll taken after the U.S. 2020 presidential election, Deloitte found that most power and utility industry executives surveyed said utilities should primarily focus on decarbonization and digital strategies over the next year.<sup>1</sup> According to an MIT study, “For oil and gas companies, digital transformation is a priority—not only as a way to modernize the enterprise, but also to secure the entire energy ecosystem.”<sup>2</sup>

At the same time, the COVID-19 pandemic continues to present challenges for energy companies involved in producing or supplying energy that is non-renewable (oil, gas, nuclear) as well as renewable (solar, wind, hydropower). Energy consumption in the U.S. fell faster than gross domestic product in 2020, and returning to 2019 levels of energy consumption will take years.<sup>3</sup> A recent PwC survey revealed that the top three concerns of energy sector finance executives with respect to COVID were financial impact, including effects on operations, future periods, and liquidity and capital resources (71%); a potential global recession (64%); and the effects on the workforce and productivity (41%).<sup>4</sup>

Energy companies that can successfully leverage data and digital capabilities to face the industry’s financial challenges have a great chance of success. According to the Atlantic Council, “The way companies handle the rapid transformation caused by digitalization across their value chains—and their resilience and security against cyberattacks—will become a major market differentiator.”

The future data landscape is the focus of a recent survey, conducted by The Economist Intelligence Unit and sponsored by Snowflake, of 914 global executives across eight industries, including 112 from the energy sector. Energy industry respondents ranked highest among industries citing **operational efficiency** as being most critical to their organization’s success over the next three years (31% versus a survey average of 25%). Within the energy industry, respondents are most likely to cite **digital transformation** (38%) **followed by innovation in products/services** (34%) as critical success factors. The biggest opportunities for utilizing data-driven insights for strategic purposes are **developing or improving new products or services** (33%), followed by **increasing customer/client satisfaction and experience** (28%) and **expanding the customer base** (28%). Energy executives are focusing on data to aid them in all areas of the business, from product development and operations to customer experience and marketing.

# 38%

of energy industry respondents cite digital transformation as the priority that is most critical to their organization’s success over the next three years.

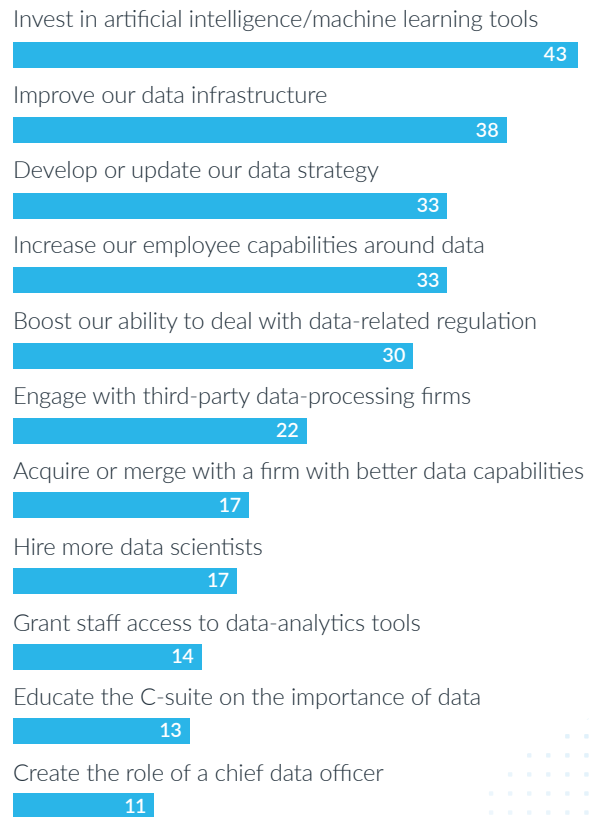
## INSIGHTS FROM AI AND MACHINE LEARNING

AI and machine learning are major components of the energy industry’s digitalization trend. More and more, companies are using these advanced technologies to gain a business advantage. Data analytics can help determine energy consumption, set pricing according to peak times, and forecast outages. Data science can help drive distribution processes and meet market demand in real time. Advanced analytics can also detect equipment failures and cyberattacks. According to MIT’s study, adopting and scaling AI will increase in the sector: “There will be a growing need for companies to further automation, machine learning, and AI capabilities to not just compete but make the best use of the immense amount of data now captured because of digital transformation efforts.”<sup>5</sup>

Energy industry executives affirmed these trends in our survey. They are most likely to use AI or machine learning for **drawing insights from data** (88% versus a survey average of 80%) and for **managing risks around their data strategy** (88% versus a survey average of 79%). They are also most likely to say the top priority to enhance their data capabilities is to **invest in AI/machine learning tools** (by 43%, versus a survey average of 38%), and to **boost their ability to deal with data-related regulation** (by 30% versus a survey average of 25%). Another major use case for AI and machine learning is the development of new products and services. For example, GE Power is innovating with AI in several areas, including building smarter wind turbines and creating digital models of industrial assets.<sup>6</sup>

## FIGURE 1: Looking ahead three years, which of the following should be the top priority for your organization to enhance its data capabilities?

(% of respondents selecting each option)



Source: The Economist Intelligence Unit



Snowflake Customer:

Global energy supply company Uniper chose Snowflake to utilize AI and machine learning for better business insights and data-driven decision-making.

**“With Snowflake, we are much faster in developing and recalibrating models and algorithms, and we are able to leverage all of our data with state-of-the-art AI/ML tools to address business challenges and realize new opportunities.”**

—VOLODYMYR SOROKOUMOV,  
Data Innovation Lead, Uniper

(For more information, see [Uniper Boosts Performance by 10x and Enables AI-Powered Commodity Trading with Snowflake.](#))

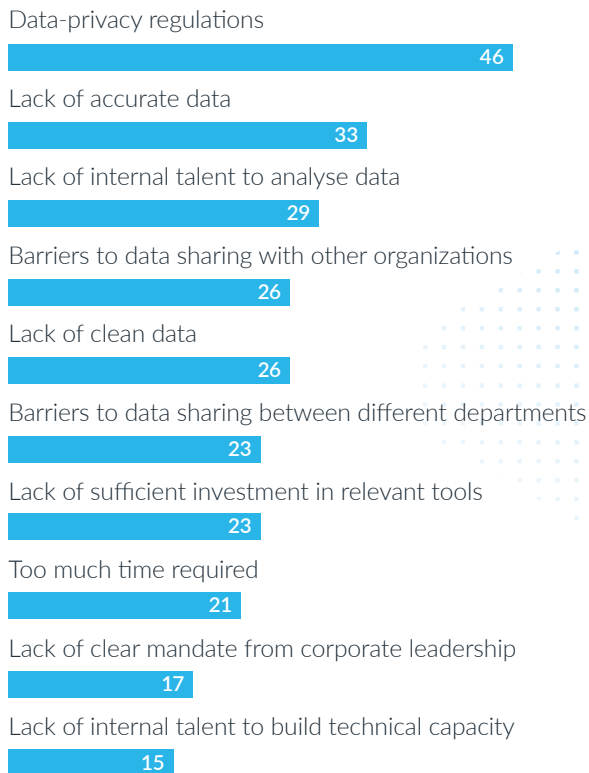
## MANAGING REGULATORY COMPLIANCE

In the fast-paced global market, energy companies are constantly managing cybersecurity risks as well as new regulations. Utility companies, for example, handle millions of cyberattacks per day.<sup>7</sup> And companies must comply with constantly shifting regulations relating to a range of issues, from environmental protection to pricing. According to a 2020 Deloitte report, “digital enablement of energy regulatory and compliance monitoring processes can help address those problems and issues through a unified solution.”<sup>8</sup> The solution includes automation and advanced analytics, using historical and real-time data to monitor and detect security and compliance issues.

Energy sector executives also face challenges from data regulations. They say the biggest challenge with exchanging data externally is the **risk that confidential information will be leaked** (48%), followed by the **risk of data being used for unintended purposes** (38%) and **regulations** (27%). They rank highest among industries citing **data privacy regulations** as the biggest challenge to their ability to draw insights from data (by 46% versus a survey average of 41%), followed by **lack of accurate data** (33%), and **lack of internal talent to analyze data** (29%). Both security and compliance are top of mind for energy executives trying to stay ahead of the competition.

**FIGURE 2: Which of the following presents the biggest challenge to your organization’s ability to draw insights from data?**

(% of respondents selecting each option)



Source: The Economist Intelligence Unit

**88%**  
of energy sector respondents are most likely to use AI or machine learning to draw insights from data and manage risks around their data strategy.




**Snowflake Customer:**

Snowflake helps Portland General Electric share data seamlessly, securely, and compliantly with internal teams and external partners.

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**“Our data science team works with a lot of data. In the past, providing them a copy of our production data required the work of a full-time DBA. With Snowflake Secure Data Sharing, it’s as easy as the click of a button. We securely share production data without doing any copying.”**

—**ARAVIND MURUGESH,**  
Principal Data Architect, Portland General Electric

(For more information, see [Annual Cost Savings for Portland General Electric with the Snowflake Data Cloud.](#))

## CONCLUSION

As the COVID-19 pandemic forced the slowdown of transportation, trade, and economic activity throughout the world, the energy sector was severely impacted. At the same time, energy security is a “cornerstone of our economies especially during turbulent times, according to IEA.”<sup>9</sup> The way forward for energy companies will be to embrace digital transformation so they can leverage data and new technologies. With a modernized data infrastructure, they can be agile in both tempering the risks ahead and taking advantage of the opportunities.

<sup>1</sup> [deloitte.com/us/en/pages/energy-and-resources/articles/power-and-utilities-industry-outlook.html](https://deloitte.com/us/en/pages/energy-and-resources/articles/power-and-utilities-industry-outlook.html)

<sup>2</sup> [technologyreview.com/2021/01/21/1016460/transforming-the-energy-industry-with-ai](https://technologyreview.com/2021/01/21/1016460/transforming-the-energy-industry-with-ai)

<sup>3</sup> [eia.gov/outlooks/aeo/narrative/introduction.php](https://eia.gov/outlooks/aeo/narrative/introduction.php)

<sup>4</sup> [pwc.com/us/en/library/covid-19/coronavirus-energy-industry-impact.html](https://pwc.com/us/en/library/covid-19/coronavirus-energy-industry-impact.html)

<sup>5</sup> [technologyreview.com/2021/01/21/1016460/transforming-the-energy-industry-with-ai](https://technologyreview.com/2021/01/21/1016460/transforming-the-energy-industry-with-ai)

<sup>6</sup> [ge.com/research/initiative/industrial-ai](https://ge.com/research/initiative/industrial-ai)

<sup>7</sup> [bit.ly/3qpW2RI](https://bit.ly/3qpW2RI)

<sup>8</sup> [deloitte.com/us/en/pages/regulatory/articles/energy-regulatory-outlook.html](https://deloitte.com/us/en/pages/regulatory/articles/energy-regulatory-outlook.html)

<sup>9</sup> [iea.org/topics/covid-19](https://iea.org/topics/covid-19)