IHS Markit Study: Eroding Cost-Effective Diversity in U.S. Power Grid Will Result in Greater Price Fluctuations, Higher Power Bills and Create Negative Impacts Throughout the Economy

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WASHINGTON--(BUSINESS WIRE)--The U.S. power grid is on track to lose cost effective power supply diversity, a trend that will raise the cost and variability of power bills and create negative macroeconomic impacts that would ripple out through the broader U.S. economy, a new study by IHS Markit (Nasdaq: INFO), a world leader in critical information, analytics and solutions says.

The new study, titled Ensuring Resilient and Efficient Electricity Generation: The Value of the Current Diverse U.S. Power Supply Portfolio says that current policy-driven market distortions will precipitate a less efficient diversity portfolio where some U.S. power systems could have no meaningful contributions from coal or nuclear resources and a smaller contribution from hydroelectric resources. They will rely on a tripling of the current 7 percent reliance on wind, solar and other intermittent resources, and on natural gas-fired resources to supply the majority of generation.

To illustrate what is at stake if nothing is done to arrest the erosion in the cost-effectiveness, resilience and reliability of the current U.S. power supply mix, the study compares the actual industry performance of recent years (2014 to 2016) with that of a less efficient diversity portfolio case over the same time period.

The comparison between the two portfolios found that the current diversified U.S. electric supply portfolio:

- Lowers the cost of electricity production by around \$114 billion per year;
- Lowers the average retail price of electricity by 27 percent;
- Avoids an annual loss of \$98 billion in consumer net-benefits from electricity consumption;
- Reduces the variability of monthly consumer electricity bills by around 22 percent; and
- Mitigates an additional \$75 billion per hour cost associated with more frequent power supply outages.

Comparing the broader economic impacts of the less efficient diversity case to the IHS Markit baseline simulations for the U.S. economy indicates the following macroeconomic impacts from the resulting increase in retail power prices:

- A decline of real U.S. gross domestic product (GDP) by \$158 billion (0.8 percent in 2016 chain-weighted dollars);
- A reduction in 1 million jobs; and
- \$845 less in real disposable income annually per household.

"It is easy to take the cost-effective diversity of the current U.S. electric supply portfolio for granted," said Lawrence Makovich, IHS Markit chief power strategist and the study's lead author. "But a comparison of the two cases in our analysis shows that increasing exposure to the challenge of managing the misalignment of intermittent generation with consumer demands—plus the price volatility and deliverability constraints of natural gas—reduces benefits to households and reduces the competitive position of U.S. businesses in the global marketplace."

"Diversity of supply is an essential bedrock for security and reliability for an electric power system that is as big and diverse—and as crucially important—as that of the United States," Makovich said.

The study also found that the less efficient diversity portfolio case likely results in little to no reduction in the level of electric sector CO₂ emissions.

"Ironically, addressing climate change concerns with federal and state policies to subsidize and mandate wind and solar
electric generation produced the unintended consequence of distorting wholesale electricity market clearing prices and driving the uneconomic closure of nuclear power plants—a zero-emitting source. The result has been some power system CO₂ emissions remaining constant or increasing," Makovich said.

The study says that actions to preserve the consumer net-benefits of grid-based power supply range from reforming market rules along with either eliminating or phasing out the root causes of market distortions or implementing market interventions to offset the impacts of the ongoing market distortions.

Eliminating market distortions—the most straightforward option—may not be politically feasible, the study notes.

Therefore, an alternative approach would involve regulatory approval and implementation of offsetting market interventions such as:

- Market rule changes to align security-constrained price formation with power system marginal generating costs to accurately reflect in market-clearing prices the cost of reliability and resilience
- Payments for cost-effective generation attributes such as the value of contributions to power system resiliency and the value of environmental attributes.

To do this requires appropriate changes in operating and planning rules and standards at the federal, state and RTO/ISO* levels, the study finds.

"The U.S. power sector is at a critical juncture," Makovich added. "Altogether, harmonizing policy initiatives and market operations can help preserve the net-benefits to U.S. consumers of a more cost-effective power supply portfolio. Doing nothing likely results in higher and more varied monthly power bills in the decades ahead compared to doing something that preserves a more reliable, resilient and cost-effective U.S. electric supply portfolio for consumers in the future."

* Regional Transmission Organizations/Independent System Operators

About The Report

Download the complete report at http://ihsmark.it/FezQ30feH62.

Ensuring Resilient and Efficient Electricity Generation: The Value of the Current Diverse U.S. Power Supply Portfolio from IHS Markit utilizes the company’s extensive knowledge and proprietary models of the interaction between regional power system demand and supply to assess the impact on consumers and the U.S. economy of current trends moving the U.S. power sector toward a significantly less efficient mix of fuels and technologies for power production. The retail price impacts from wholesale power market distortions provide the inputs into IHS Markit macroeconomic models to generate the national impacts to U.S. household disposable income, employment, and GDP growth. This research was supported by the Edison Electric Institute, the Nuclear Energy Institute and the Global Energy Institute at the U.S. Chamber of Commerce.

IHS Markit is exclusively responsible for all of the analysis and content.

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