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Inside FERC

News; Renewables

ISOs aid green power growth beyond state RPS targets but politics make future unsure

Mark Watson

1,310 words

19 December 2016

Platts Inside F.E.R.C.

FERC

ISSN: 0163-948X

English

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ANALYSIS Independent system operators facilitate renewables development more effectively than other power market structures, a new study concludes, but experts say other coincidental factors may also be relevant, and renewables' future may depend more on politics and global energy economics.

In a report issued December 8, The Brattle Group, an economics and finance consultancy based in Cambridge, Massachusetts, concluded that "investment in renewable generation significantly exceeds state [renewable portfolio standards] in some regions."

"The majority of these 'beyond-RPS' renewable generation investments have occurred in regions" with low-cost renewable resource potential and organized regional transmission organization/ISO markets "that provide transparent and liquid trading for both the 'energy' and 'green' attributes generated by the resources," the report states.

An analysis of the American Wind Energy Association's market report for the third quarter of 2016 shows that of the top 20 states, representing 70,383 MW of the nation's 75,716 MW of nameplate wind capacity, 14 of those states are mostly or totally within the boundaries of an ISO, and another two have some of their land area within an ISO footprint. Of those top 20 states, only 11 have RPSs.

ISOs' real-time energy market, lower-cost ancillary service management and easier transmission access and interconnection process facilitate renewable power development, Brattle said.

The Electric Power Supply Association "has long argued that the independent operation of the transmission system, larger geographic footprints, and economic dispatch in organized markets combine to facilitate better access for new resources including renewables," said EPSA President and CEO John Shelk.

"To be fair, there may also be other factors at work, though the advantages of organized markets are the dominant driver," Shelk said in an email December 9. "For example, organized markets, as a general rule with some exceptions, tend to be in areas of the country with both renewable resource potential and public support for the environmental benefits of renewables. Examples include the Northeast, Mid-Atlantic, Texas and California. But even in these areas, the tool of organized markets is central to achieving desired public policy goals."

And some of the largest companies in those areas, such as Google and Amazon in California, have made commitments to obtain most or all of their electricity from renewable resources.

"Corporate demand for clean energy is part of what is driving growth," said Robert King, president of Good Company Associates, an energy market consultancy. "The Fortune 500 controls 39% of world [gross domestic product], and many of them have adopted commitments to clean power. They are now pushing for direct access or indirect access even in vertically integrated markets."

Matthew Cordaro, former MISO president and CEO, said he concurs with The Brattle Group's conclusion, "but its findings are not surprising."

While ISOs' cost incentives and scale factors make renewables growth relatively quick and inexpensive, "RTO/ISOs further facilitate their integration because of geographic reach, and the interconnection and transmission support inherent in the concept of a grid manager and reliability steward," Cordaro said in an email December 8.

As wind and solar lack a need for fuel and therefore have very little marginal cost, they benefit from the fact that ISOs work on marginal pricing, rather than on a regulated return on capital and variable cost recovery elements established by rate tariffs that grant local monopolies.

Another factor is how the federal production tax credit works with real-time spot markets, said an economist who asked to remain unidentified.

"The PTC creates a 'wedge' between the market price and the effective price received by a specific class of generators," the economist said in an email December 9. "A real-time spot market then provides an opportunity for these generators to dump their power on the grid at prices that would be uneconomic but for the PTC."

Another factor is that the cost of ancillary services — e.g., frequency regulation, ready reserves — is charged by ISOs to the "beneficiaries" rather than to those who caused the cost, the economist said.

"Thus intermittent renewable resources do not see/pay the true cost of their effects to the network in terms of reserves, operating procedures, or other mechanisms," the economist said.

Eric Smith, Tulane Energy Institute associate director, said, "Over the last five years, much of the renewable power sold in the West and in Texas has been 'free riding' on existing, gas-fired, dispatchable capacity."

"Going forward, as more existing gas capacity is devoted to replacing baseload coal and nuclear generation, there may be a much higher premium on providing dispatchable capacity in order to make intermittent renewable power generation economically viable," Smith said in an email December 8.

"Interminable delays in getting new gas pipelines approved" limit the ability of natural gas-fired generation to facilitate the growth of renewable power, Smith said.

Joshua Rhodes, a University of Texas Energy Institute postdoctoral fellow, said renewables' developers benefit from the low cost of capital frequently ensured by power purchase agreements with local load-serving entities, such as Georgetown, Texas, an Austin suburb with a strong bond rating and which recently announced a commitment to 100% renewable power.

"A bank will throw 2.5% to 3% money at that all day long," Rhodes said December 9.

But perhaps a more significant factor in the growth of renewable generation in those states that happen to be in ISOs is those states' geographic characteristics, with strong wind and solar resources, Rhodes said.

A UT Energy Institute study released December 8 shows that for 1,347 of the nation's 3,110 counties, mostly in the nation's midsection, wind is the cheapest option for new generation, but Rhodes said ISOs do make a difference.

"Allowing those resources to connect to the grid can be a nontrivial cost," Rhodes said, and ISOs make that process easier and faster, and they also tend to facilitate the development of a more robust transmission system.

But the unidentified economist mentioned earlier said a regional transmission tariff "allows for the costs of the transmission upgrades necessary to bring remote generation from intermittent resources to be spread over a much wider base."

"The design and structure of RTOs and ISOs have largely allowed intermittent resources to privatize the gains and socialize the costs," the economist said.

Michelle Foss, UT Bureau of Economic Geology chief energy economist, said that if President-elect Donald Trump succeeds in dropping the corporate tax rate from 35% to 15%, it is likely that only the mortgage tax deduction would be allowed to continue, eliminating other tax credits, including those for renewables.

As fuel and other marginal costs have decreased at the wholesale level, retail energy rates have generally increased, Foss said December 9. "Retail customers are only just now beginning to see the effect of cheap natural gas prices," she said.

At least part of the difference between falling fuel costs and rising retail power costs is the ancillary service cost of providing renewable power to the grid, although that number is hard to calculate and retail customers never see it, Foss said.

With the likely low fuel costs resulting from Trump's promised ramp up of domestic energy production and elimination of carbon regulation, the revenue that renewable power might derive from continued low power prices likely would diminish renewable power's financial allure, according to Foss, and with no federal tax credits renewable power developers "simply can't get financing."

Renewable power providers need "either tax credits in order to be whole or higher natural gas prices in order to be whole, which would bring higher wholesale power prices, which will help balance the books for renewables developers," Foss said.

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Top 20 states in wind capacity*, ISO status**, RPS status|graph Source: American Wind Energy Association
Document FERC000020170102eccj00001