



ICF QUICK TAKE

# Finding Value in the Marcellus

By Kevin Petak, Hua Fang, and Anthony Ciatto

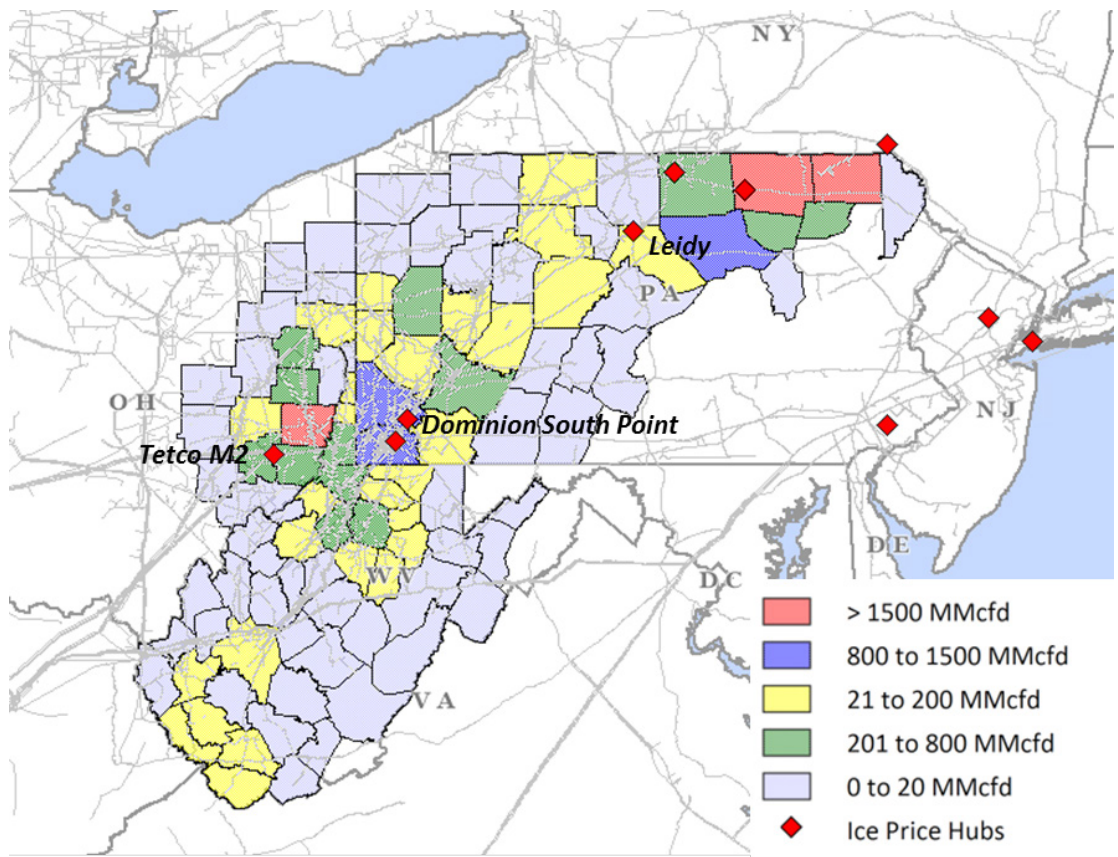
## Location, Location, Location...

As indicated by the ICF quick take “Marcellus Juggernaut” dated December 2015, the Marcellus and Utica shale gas plays are currently producing 20 percent of total North American supply and are projected to reach 35 Bcf/d by 2025.

However, the distribution of gas resources and their characteristics are not homogenous within the basin. As shown in Exhibit 1, production within the Marcellus and Utica shale plays is geographically concentrated in two major areas. The tristate border region of Pennsylvania, Ohio, and West Virginia currently produce more than half of the total production in the area, while Northeast Pennsylvania counties account for more than 40 percent of the remaining production.

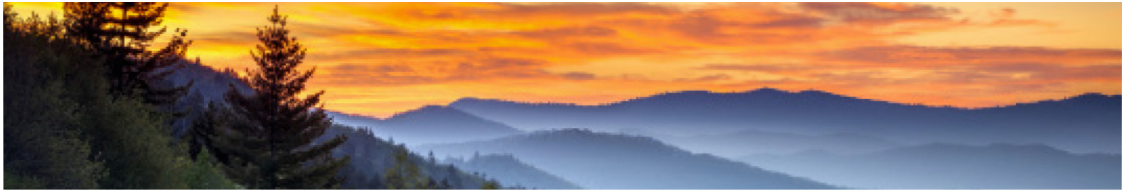
Regional demand, accessible infrastructure, market outreach, and commercial value of the production are all differentiated within the basin.

Exhibit 1: Marcellus/Utica Production Levels



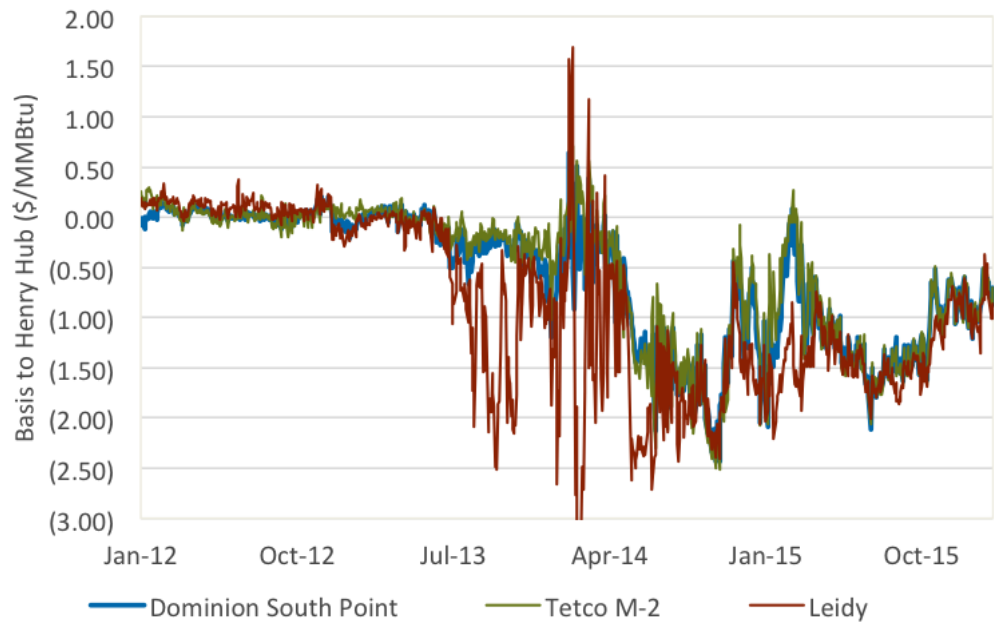
Source: ABB Velocity Suite, State Governments



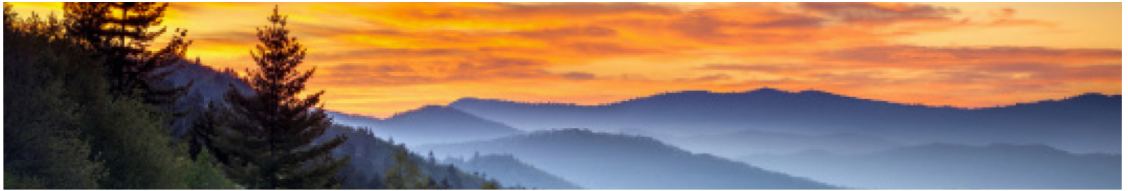


As shown in Exhibit 2, three pricing points located within the Marcellus/Utica basin exhibit dramatically different trajectories. The regional pricing proxy for Northeast Pennsylvania production, the Leidy hub, is extremely volatile and has recently traded at significant discount to Henry Hub. However, due to its proximity to the weather-sensitive downstate New York and New England markets, it traded at a substantial premium for a short period of time, the winter of 2013–2014. Dominion South Point and Tetco M-2, are closer to the Southwest Marcellus production region, with Tetco M-2 trading at a steady premium due to its additional access to consumption markets in the south.

**Exhibit 2: Representative Marcellus/Utica Region Pricing Points**



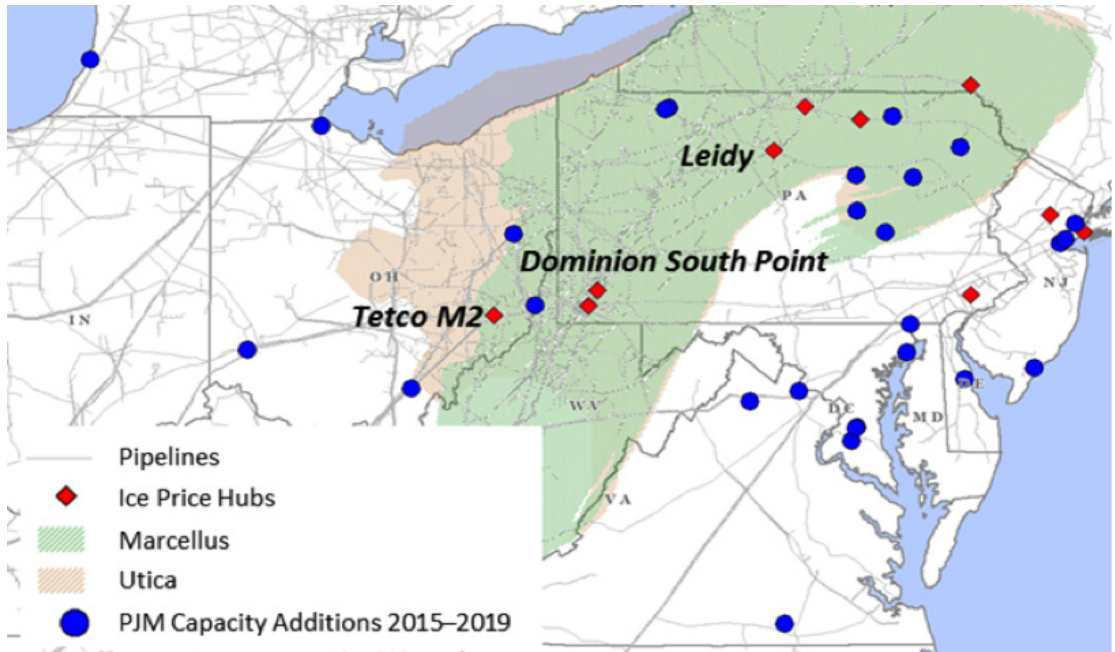
Source: PJM, ABB Velocity Suite



## Market Growth and Infrastructure Buildouts

Demand growth within the Marcellus/Utica region is projected to grow at a rate of more than 4 percent per year between 2015 and 2035, largely attributed to estimated growth from the power sector. In 2014, 43 percent of generation in the PJM region was from coal. Environmental regulations and the increased availability of natural gas in the region ensure that a significant slice of that coal generation will be replaced with natural gas. Exhibit 3 shows the location of the new gas-fired power generators that recently cleared the auction in PJM for 2015 to 2019 capacity additions, totaling more than 19 GW of incremental natural gas-fired generation.

**Exhibit 3: Approved PJM Gas-Fired Capacity Additions (2015–2019)**



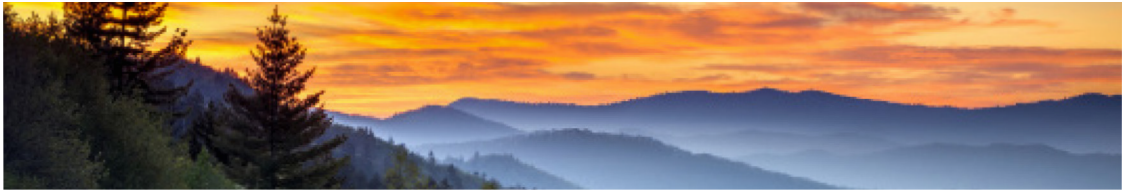
Source: PJM, ABB Velocity Suite

There are several dozen proposed pipeline projects in various stages of development that are aimed at getting Marcellus/Utica supplies to markets.

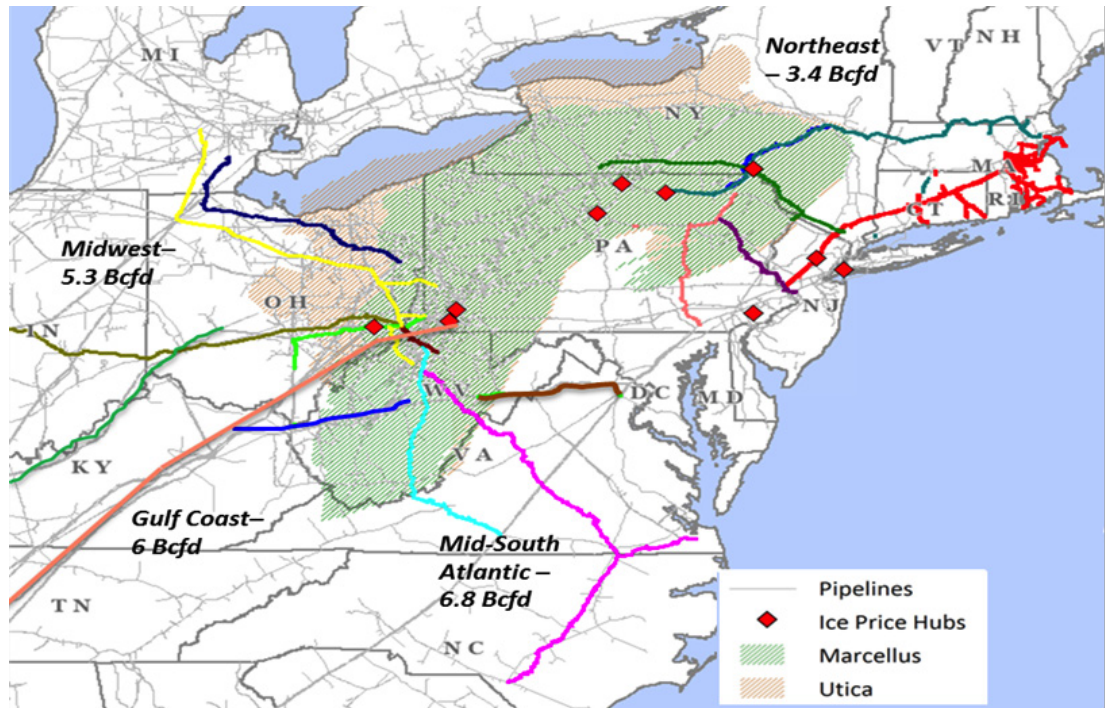
Currently, there are 11 projects aimed at serving the northeast market (New York, New Jersey, and New England), totaling a projected 3.4 Bcfd of incremental capacity from the Marcellus.

Projected incremental capacity is greatest for the Mid and South Atlantic, nearing 7 Bcfd over the next 5 years. The major projects comprising this capacity are the Atlantic Coast Pipeline, Atlantic Sunrise, WB Express, and Mountain Valley, which are largely underpinned by firm contracts held by natural gas and power utilities.





**Exhibit 4: Major Marcellus/Utica Projected Supply to Market Infrastructure Projects**



Source: ICF, ABB Velocity Suite, Company Websites

Outlets to the Midwest and Ontario via the Midwest make up 5.3 Bcfd of projected incremental capacity in the next few years. Growth in Ontario gas demand is expected to be increasingly met with gas from the Marcellus/Utica shale, as TransCanada is proposing to convert certain segments of the TransCanada mainline to oil service pipeline.

Multiple pipeline reversals from the Gulf Coast to the Marcellus have been proposed, totaling nearly 6 Bcfd by 2020. The Gulf Coast market is poised for considerable growth due largely to anticipated Liquefied Natural Gas (LNG) exports, which are projected to reach 6 Bcfd of capacity by 2020.

Under the current market environment, it is not likely that all announced infrastructure will be built on schedule. Local Distribution Companies (LDCs) and power utility-sponsored pipelines are likely to be built once they clear the environmental and regulatory hurdles. Producer-sponsored projects face a higher risk of being delayed or cancelled.



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### Impacts on Regional Price and Basis

The future dynamics in the Marcellus/Utica region are determined by interactions of these market drivers. Location of production, demand growth, and existing and proposed infrastructure are expected to continue to differentiate the value of upstream and midstream gas assets and power generation assets. The latest ICF projections indicate that basis for both the Northeast and Southwest regions will improve from the current levels. However, continued production growth limits future basis potential in the region. On the other hand, as production in the Southwest Marcellus/Utica shale have more diversified market alternatives, the basis improvement will continue, as shown in Table 1.

These trends are creating opportunities for developers, investors, and electric and gas utilities and end users. With unrivaled markets expertise and sophisticated modeling tools, ICF's oil and gas team is ready to provide commercial strategy, due diligence, and asset valuation services built upon a framework that carefully evaluates risks and uncertainties.

**Table 1: ICF Projected Marcellus/Utica Basis Trends (2014\$/MMBtu)**

Year	Dominion South Point	Leidy
2015	(1.06)	(1.11)
2020	(0.49)	(0.65)
2025	(0.57)	(1.04)

Source: ICF

ICF's projected outlook for the future reflects market equilibriums under normal weather conditions and underlying market assumptions. Actual price and basis could fluctuate greatly based on short-term market conditions, such as weather, storage availability, and temporary supply disruptions. In addition, long-term uncertainties include the following factors:

- Path for oil price recovery, which determines the amount of associated gas production and the costs for drilling and well development
- Implementation and responses from CPP's power sector
- Environmental and regulatory hurdles for certain proposed pipeline projects, such as the Constitution pipeline

Actual LNG export volumes, which determine how much incremental production will be needed from the United States to meet market demand.

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