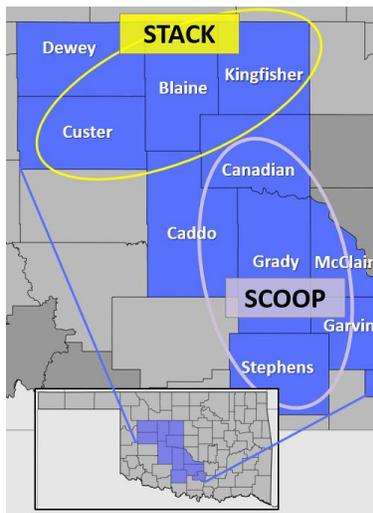


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## Will Natural Gas Production in the SCOOP/STACK be OK?

### *Implications of Oklahoma's Prolific Crude Oil Plays for Natural Gas Midstream Infrastructure*



- Production growth in the SCOOP/STACK plays is driving the need for new natural gas midstream processing and pipeline takeaway infrastructure.
- Traditional markets for Oklahoma gas (Midwest, West) are less attractive today than in the past due to competition from other basins, including the Marcellus/Utica and the Permian.
- Routes eastward out of the state are constrained due to pipeline capacity limitations and/or lack of connectivity between SCOOP/STACK and pipelines with capacity to handle the gas.
- SCOOP/STACK production is also constrained by local processing and pipeline capacity out of the five counties expected to see the most production growth over the next few years.
- A number of projects have been announced to address these constraints, but some have been delayed or suspended.
- Based on RBN's Growth Scenario, constraints could impact the SCOOP/STACK market as a whole by 2020.

### 1. Introduction

The South Central Oklahoma Oil Province and Sooner Trend Anadarko Canadian Kingfisher plays in central Oklahoma—better known as SCOOP and STACK—have emerged as two of the most prolific and attractive shale producing regions in the U.S. Although much smaller than the Permian Basin, the core of the SCOOP/STACK region has similar characteristics: SCOOP and STACK are primarily oil plays but with significant volumes of associated gas and NGLs, very attractive producer economics in core areas, resilient and increasing rig counts in those areas, and a robust outlook for future production. That means more midstream infrastructure will be needed to support the production growth, and if it does not come on fast enough, the possibility of takeaway capacity constraints with dire consequences for commodity prices within the region.

The potential for natural gas takeaway capacity constraints resulting in the curtailment of drilling programs is particularly onerous for plays like the SCOOP and STACK where the attractive production economics are heavily dependent on crude oil production. The gas comes out of the ground with the oil, and must be processed to extract NGLs and move to market via pipeline or the oil cannot be produced. No producer wants to be placed in the position of cutting back an attractive oil development program because there is not enough processing and pipeline capacity to get their associated gas to market.

But could there really be a problem getting Oklahoma gas to market? After all, the state has been producing oil and gas for more than 100 years, it has been a leader in natural gas processing for decades, and long-line interstate natural gas takeaway pipelines exit the state in every direction, providing access to almost all U.S. natural gas markets. All of that is true, but over the past few years those markets have changed.

The potential problem for Oklahoma gas is two-fold. First, some traditional markets for Oklahoma gas may no longer be nearly as attractive as they have been in the past. Historically the largest single market for gas produced in the Sooner State has been the Midwest, including Chicago. But today, with the onslaught of Marcellus/Utica gas production and the reversal of Rockies Express (REX) and other pipelines to bring significant volumes of that gas to the Midwest, Oklahoma is increasingly finding itself boxed out of that market. It is a similar story going west, where some Oklahoma gas also moved in the past. Now, with Permian gas production ramping up rapidly and the West Coast increasingly displacing gas with wind and solar for power generation, Oklahoma gas is being pushed out of that market as well.

Although Mexico has emerged as an attractive market for supplies, the Permian and Eagle Ford are better positioned to take most of that incremental demand. Oklahoma gas can also move east, and that market has generally offered higher netbacks than those in the West and Midwest. However, capacity to move gas to the east out of SCOOP/STACK is constrained much of the time, and increasingly Oklahoma gas will compete with Marcellus/Utica gas coming into East Texas and Northern Louisiana via a number of pipeline reversals targeting the market in and around Perryville, LA. Thus, there is gas-on-gas competition in every direction.

Another problem is much more localized. Although there is more than enough natural gas pipeline capacity out of the Midcontinent region as a whole over the next few years, and even adequate capacity out of Oklahoma, potential capacity constraints out of the local SCOOP/STACK region are not that far into the future. Based on RBN's "Growth" price scenario, in which crude oil prices increase to \$67/bbl in 2022, production in the Cana Woodford (for our purposes, essentially synonymous with SCOOP/STACK) is expected to increase to almost 4.5 Bcf/d in that year. As shown in Figure 1 below, most growth production from the SCOOP/STACK is confined to the top five counties: Grady (navy blue area), Blaine (light blue), Canadian (purple), Custer (red) and Stephens (maroon).

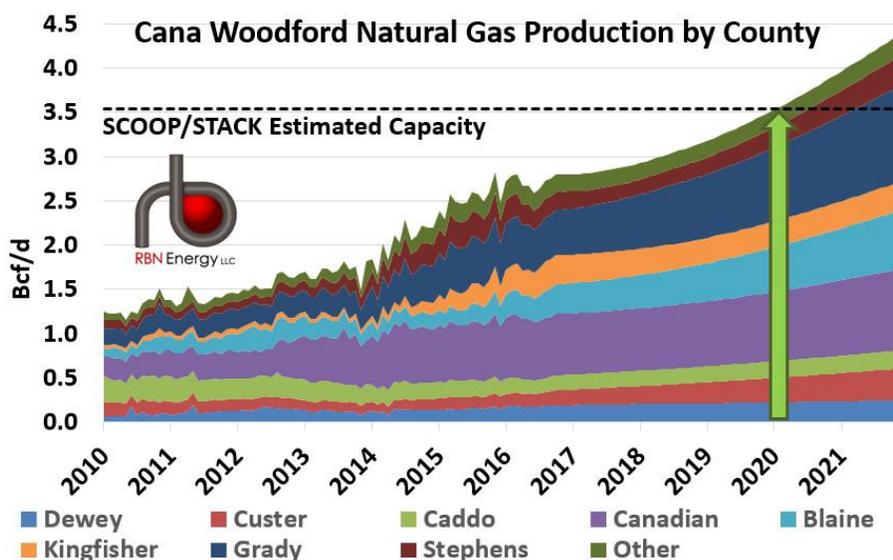


Figure 1 – Cana Woodford Gas Production; Source: PointLogic (history), RBN (forecast)

The dashed line shows estimated processing and pipeline takeaway capacity available to move that gas to market—approximately 3.6 Bcf/d on average. So, based on this production scenario, constraints should impact the market as a whole by 2020. This analysis is a generalization that assumes all gas in these counties can access processing and takeaway capacity in all other counties. Since that is frequently not the case, some of the fastest growing parts of the SCOOP and STACK are already experiencing constraints.

A number of projects have been proposed to address potential constraints out of the SCOOP/STACK, including new gas processing plants and pipeline takeaway projects such as Cheniere Midstream's Midcontinent Supply Header Interstate Pipeline (MIDSHIP), Enable Midstream Partners' Cana and STACK Expansion Project (CaSE), the Sooner Trails Pipeline (originally to be a joint venture between NextEra Energy and Southern Star), and EnLink Midstream Partners' Oklahoma Express. Some of these projects have failed to advance. MIDSHIP appears to be making the most progress: Cheniere started the project's pre-filing process with the Federal Energy Regulatory Commission (FERC) in November 2016 and plans to file the project application at FERC in May 2017.

In this Drill Down Report, we look at the geography of the SCOOP and STACK, assess natural gas production growth for Oklahoma as a whole and at the county level for SCOOP/STACK, examine pipeline flow and capacity takeaway trends over the past three years, and then pull the analysis together with an assessment of when capacity constraints may be expected to impact the market—assuming no projects are built to address the issues. Then we summarize some of the projects on the drawing boards today that are targeted toward these constraints, and conclude with an overall view of the SCOOP/STACK natural gas market.

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