



How Much Energy Infrastructure Does North America Still Need?

When we aren't being asked about topics like distribution growth, self-funding, restructurings, and the FERC policy revisions, investors often ask about the runway of growth for energy infrastructure. The impressive build out of pipelines, not to mention pipeline reversals and conversions, completed in the wake of the shale boom left some investors wondering how much more midstream infrastructure is really needed. While we can qualitatively discuss the need for additional infrastructure, it's helpful to have quantitative data around the required investment in infrastructure. Last week, the Interstate Natural Gas Association of America (INGAA) released its latest study prepared by ICF on estimated energy infrastructure investment required in the US and Canada through 2035. In today's post, we'll delve into the near-term and long-term takeaways from the report and look at how the 2018 study compares to the 2016 report.

\$521 billion in midstream infrastructure investment needed through 2035.

The 2018 study includes two scenarios – one with constant unit costs and one with escalating unit costs¹. The study estimates a total of \$791 billion will be needed for investment in oil and gas infrastructure from 2018 to 2035, representing an average of the two scenarios. The headline number includes investment in surface and lease equipment – the equipment necessary for onshore wells and production platforms in the Gulf of Mexico. We strip out surface and lease equipment to get to \$521 billion (\$29 billion per year) of midstream investments² as shown below. For reference, the total North American energy infrastructure market cap was \$710 billion as of May 31, 2018.

	2018 Study 2018-2035 Timeframe		2016 Study* 2015-2035 Timeframe	
	Escalating Cost	Constant Cost	High Case	Low Case
Total Estimated Investment	\$898	\$685	\$597	\$447
Surface & Lease Equipment	\$319	\$222	\$171	\$140
Total Excluding Surface & Lease Equipment (midstream infrastructure investment required)	\$579	\$463	\$426	\$307
Average of two cases	\$521		\$367	

Note: In Billions.

*Excludes \$24 billion for integrity management and emissions control.

Source: INGAA, Design: Alerian

How does the 2018 study compare to the 2016 study? For context, the prior study was released in April 2016, shortly after WTI oil prices had hit a relative bottom at ~\$26/Bbl in February. In other words, energy land was looking fairly glum at that time. With the improvement in WTI oil prices to the mid-\$60's/Bbl recently, the estimated investment in oil and gas infrastructure has not surprisingly increased with the 2018 report. The average case for 2018-2035 of \$521 billion is greater than even the high case from the 2016 study. Keep in mind the 2016 report covers three additional years. To even the playing field, the updated run rate of \$29 billion per year in spending is well above the 2016 high case run rate of \$20 billion per year.

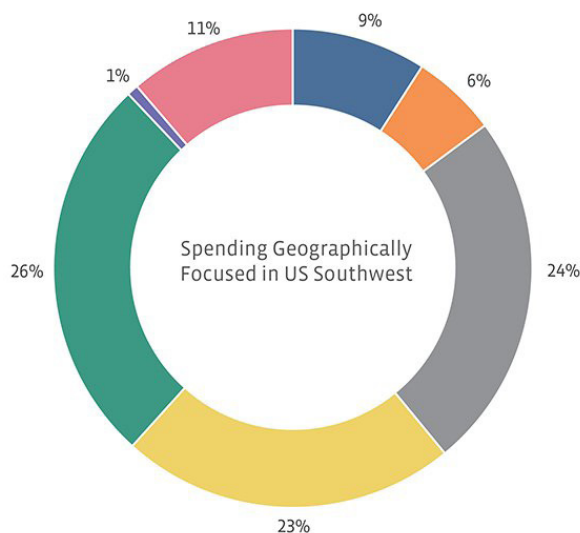
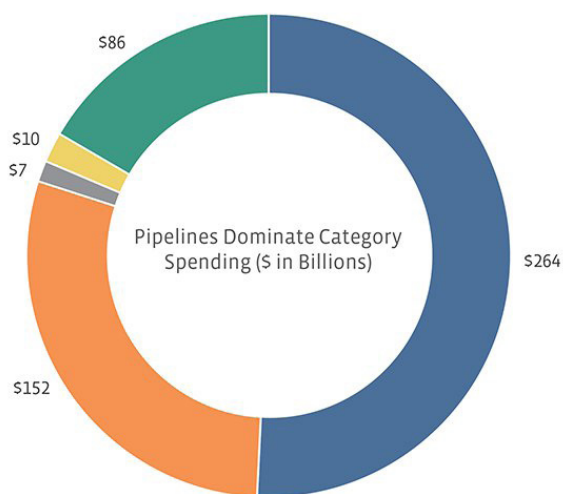
¹The constant unit cost scenario assumes constant costs in real terms through 2035. In the escalating unit cost scenario, unit costs rise in real terms through 2035. ICF used these two scenarios because the cost of pipeline construction has increased significantly over recent years.

²The "Refining and Oil Products Transport" category mostly includes investment in oil product pipelines and rail transport.



Where are all those billions going?

Of the \$521 billion expected to be invested in US and Canadian midstream infrastructure through 2035, approximately half is allocated to oil, gas and NGL pipelines at a rate of ~\$14.7 billion per year. Almost a third will be related to gathering and processing investments, equating to over \$8 billion per year. Export terminals are expected to account for the third largest spending category, representing 17% of the total. Geographically, of the \$521 billion, approximately a quarter of the total spending is expected to be concentrated in the Southwest US (TX, OK, LA, AR, NM). Canada represents 11% or \$59 billion of the total estimated midstream spend.



Oil, Gas and NGL Pipelines Gathering and Processing Oil and Gas Storage
Refining and Oil Products Transport Export Terminals

Central Midwest Northeast Southeast
Southwest West Canada

Source: INGAA, Design: Alerian

Note: Alaska and Offshore excluded based on their de minimis midstream infrastructure spending requirements.
Source: INGAA, Design: Alerian

What is the spending trend relative to recent years?

Infrastructure spending has been robust in recent years, as US oil production increased by 2.9 million barrels per day (44.0%) and natural gas production increased by 10 billion cubic feet per day (12.3%) from 2012 to 2017. For the five-year period of 2013-2017, spending (excluding surface and lease equipment) averaged \$42 billion per year. Though more moderate, the \$29 billion annualized spend for 2018-2035 is still robust. As shown in the table below, export terminals are the only category expected to see a pick-up in annualized spending relative to the prior five years. We've discussed in past posts how rising exports will create growth opportunities for MLPs and energy infrastructure companies.

	Total		Annualized	
	2018-2035	2013-2017	2018-2035	2013-2017
Oil, Gas and NGL Pipelines	\$264	\$115	\$14.7	\$23.0
Gathering and Processing	\$152	\$64	\$8.5	\$12.8
Oil and Gas Storage	\$7	\$5	\$0.4	\$1.0
Refining and Oil Products Transport	\$10	\$17	\$0.6	\$3.4
Export Terminals	\$86	\$10	\$4.8	\$2.0
Total	\$521	\$211	\$28.9	\$42.2

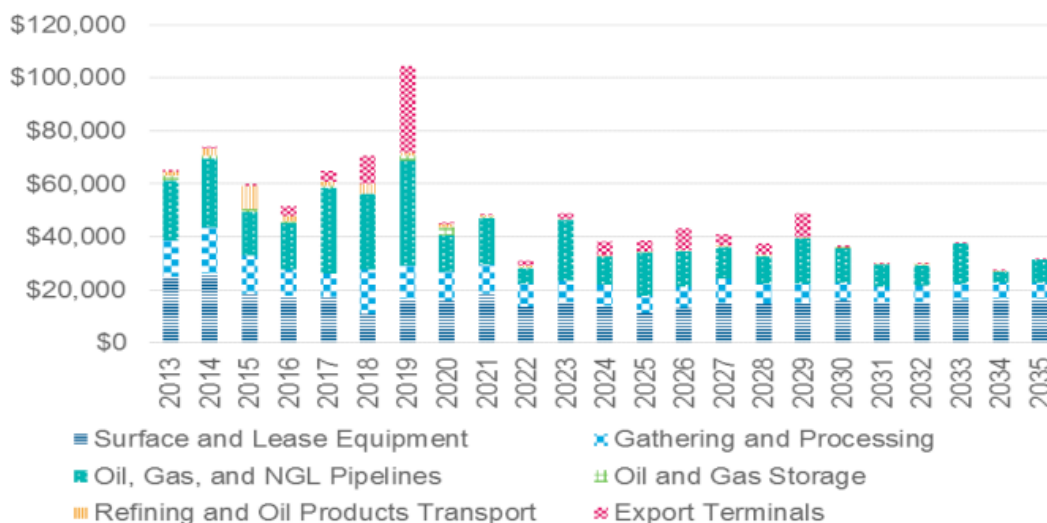
Note: In Billions. Source: INGAA, Design: Alerian



Spending forecasted to peak in 2019, but we've seen false peaks before.

The 2018 study forecasts that infrastructure investment in the US and Canada will peak next year at over \$100 billion (including surface and lease equipment) – topping the \$74 billion spend from 2014 as shown in the graphic below. Relative to other years, outsized spending on export terminals and pipelines drives the heightened spending in 2019. Examples of additional LNG capacity expected to be completed in 2019 include trains 1 and 2 from Cheniere's (LNG) Corpus Christi terminal and train 5 from its Sabine Pass terminal, train 1 from Semptra's (SRE) joint venture Cameron LNG terminal, and units at Kinder Morgan's (KMI) Elba Island terminal. There should be good visibility for 2019 spending at this point in 2018, meaning the \$100+ billion estimate should include less guesswork than outyear forecasts. Only time will tell if 2019 will really represent the peak for infrastructure spending. For reference, the 2016 study expected spending to peak in 2016 under the high case and to have already peaked in 2014 under the low case.

Exhibit ES-3: Average Annual Oil and Gas Infrastructure CAPEX by Category (Million 2016\$)



Bottom Line

With most oil and gas forecasts, any projection beyond five years should probably be taken with some degree of caution. Predicting the future is difficult as things constantly change — just look at the differences in projections from the 2016 study to the 2018 study. That said, the updated INGAA study is still informative for midstream investors, providing useful information on what categories will see investment and what geographic regions will see investment. The expectation for robust infrastructure investment in 2018-19, relative to the already high spend in the last five years, is particularly noteworthy, as is the expected investment in exports. While the study provides comfort around long-term growth prospects, the expected investments in the near-term may be more exciting to today's investors.



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