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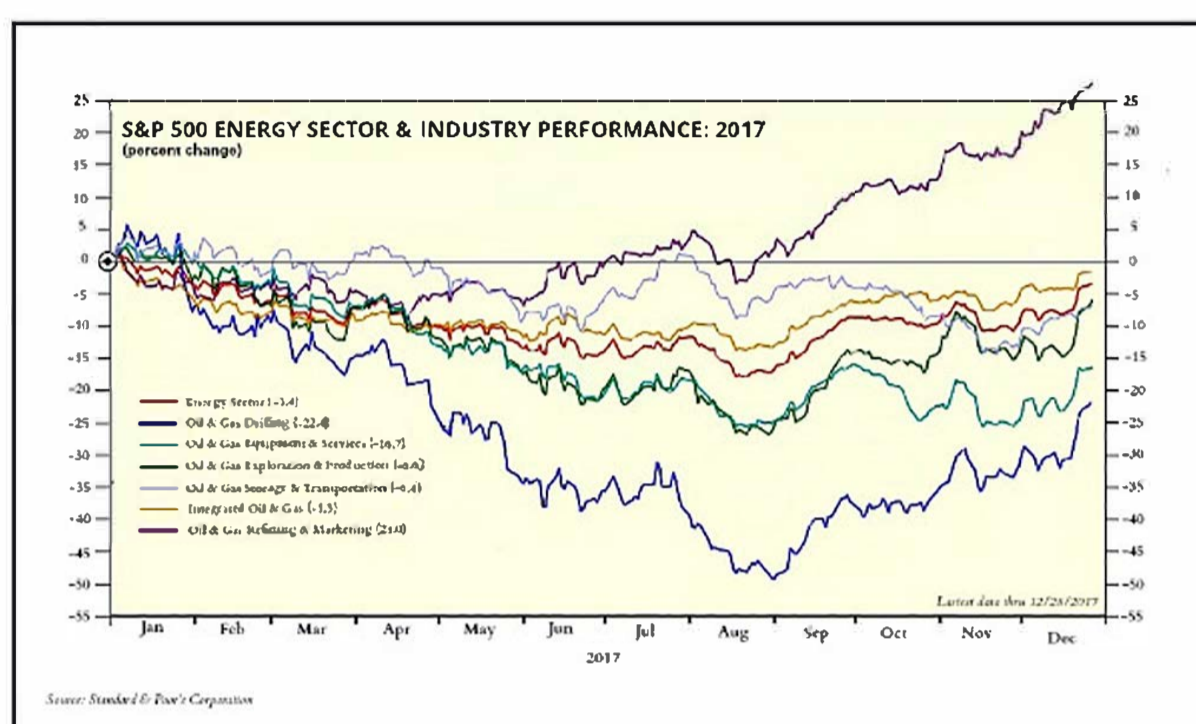


U.S. Refiners to Benefit Most From Tax Code Rewrite

While there appear to be a number of winners within the domestic energy sector itself, U.S. refiners look to be to be the standout gainers from the most sweeping rewrite of the U.S. tax code in 30 years and may launch a capital spending spree in 2018.

The long-running debate over tax reform finally came to an end December 20 as the U.S. House and Senate voted along party lines to pass the largest overhaul of the nation's tax bill in 30 years. The Republican tax reform, which President Donald Trump signed into law two days later, lowers the corporate income tax rate from 35% to 21%, rewards investment in new projects and is widely seen as benefitting the [oil and gas](#) industry - refining companies in particular. Industrial Info is tracking \$10 billion in project kickoff activity involving refiners in 2018.

The S&P Oil and Gas Refining Marketing Index was up 28% as of December 28, and hit a record last week on optimism over the bill's passage, data from Standard & Poor's Corporation (New York, New York) shows. According to the corporate tax calculator at MarketWatch, the energy sector's median tax rate for the past 11 years was 36.8% - far above the 30% average tax rate for all S&P 500 companies.



(Click to enlarge)

With \$5.6 billion in [Petroleum Refining](#) projects that are planned to kick off in 2018, the Rocky Mountains is the leading U.S. region in terms of project value, totaling \$5.74 billion. Some projects will be delayed or cancelled, but other projects likely will be added as the year progresses. The Rocky Mountains market region includes Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah and Wyoming. In terms of the number of planned kickoffs in the next year, the Southwest market region, which includes Arkansas, Louisiana, Oklahoma and Texas, dominates with more than 30 projects valued at \$1.5 billion. One of the largest projects with a substantial price tag set to kick off construction in the Rocky Mountains region is Andeavor's (NYSE:ANDV) (San Antonio, Texas) \$100 million gasoline hydrotreater unit addition at its 63,000-BBL/d Salt Lake City refinery in Utah. The 8,000-BBL/d unit revamp to reduce sulfur levels to 10 parts per million would meet Tier 3 low-sulfur gasoline requirements. Industrial Info forecasts the condensate splitter project has a medium probability (70-80%) of being completed by June 2019. See Industrial Info's [project report](#) for more information.

Andeavor is also planning a \$67 million revamp of a 4,500-BBL/d hydrofluoric alkylation unit at the Salt Lake City facility. Often referred to as HF alky units, they are used to convert isobutane and alkenes-primarily propylene or butylene-into alkylate, which is then used to make gasoline. Industrial Info forecasts the condensate splitter project has a high probability (81-99%) of being completed by March 2020. For more information, see Industrial Info's [project report](#).

Andeavor is formerly known as the Tesoro Corporation. Tesoro changed its name following the acquisition of Western Refining Incorporated (El Paso, Texas) in a \$4.1 billion deal that closed June 1. Western Refining assets include refineries in El Paso, Gallup, New Mexico and St. Paul Park, Minnesota.

In the Southwest market region, one of the biggest 2018 project kickoffs is Centurion Midstream Group LLC's (Houston, Texas) \$100 million grassroot condensate splitter in Brownsville, Texas. The proposed splitter will be constructed next to Centurion's 280-acre export terminal and receive rail shipments of up to 160,000 BBL/d of Delaware Basin-produced condensate. Centurion unveiled its Delaware Basin Express project in 2016 to gather crude and condensate at a Permian Basin terminal in Orla, Texas, and ship it by rail to Brownsville for export or processing.

Initially, the splitter will be capable of processing up to 50,000 BBL/d into diesel, kerosene, jet fuel, liquefied petroleum gas and naphtha, a building block for gasoline. Industrial Info assesses the condensate splitter project as having a high probability (81-99%) of being completed by April 2019. For more information, see Industrial Info's [project report](#).

Unlike crude producers and equipment makers who have been victims of the sustained low oil-price environment and have struggled to generate positive cash flows, refiners have been among the handful of energy subindustries that showed strength following the oil-price collapse that began in June 2014. Since the business of downstream players is negatively correlated with oil prices, refiners have enjoyed wider refining margins, been able to generate positive income before taxes and thus, are in much better shape to take advantage of the lower corporate tax burden.

The immediate expensing of capital costs will make less financially-attractive projects more viable and free up capital for stock buybacks and increased dividends. The benefit begins to phase out in 2023, which means companies could look to advance projects to take advantage, energy industry lobbyists and analysts told Reuters in a recent report.

"Every major refining company has a list of projects they want to get approved that are ranked by profitability and risk," Charles Kemp, vice president of Baker & O'Brien Incorporated (Houston, Texas), told Reuters.

Kemp said the bill will motivate companies to look further down those lists, "and noticeably increase capital budgets," according to the report.

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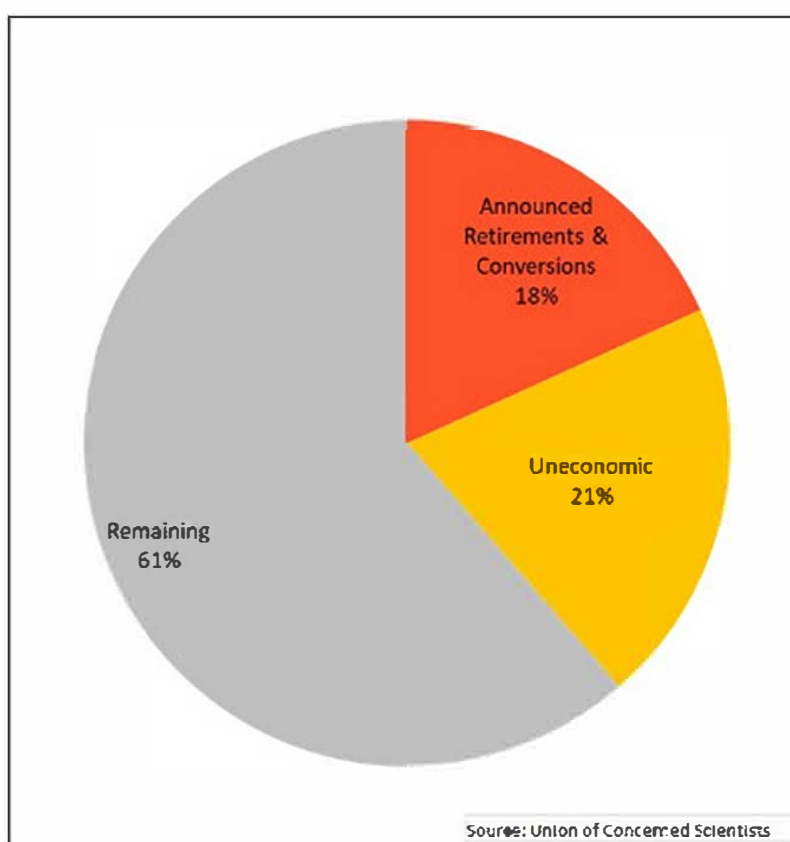
UCS Report Claims 21% of Existing U.S. Coal Units are Uneconomic

Written by John Egan for Industrial Info Resources (Sugar Land, Texas)--Roughly 21% of the nation's existing coal-fired [generation](#), about 57,000 megawatts (MW), is uneconomic compared with currently operating gas-fired generation, according to a recent study from the Union of Concerned Scientists (UCS) (Cambridge, Massachusetts). The group's recent report, "A Dwindling Role for Coal," observed "the closure of many more coal-fired power plants seems inevitable," as economics and environmental issues are expected to continue to exert a one-two punch on coal-fired generation.

Between 2008 and 2016, roughly 59,300 MW of coal-fired generation, about 17% of the nation's generating capacity, were retired and an additional 13,400 MW, or roughly 4%, of coal-fired power plants were converted to burn natural gas or other fuels, according to the UCS report, which was released October 10. The group estimated those closures and conversions led to an 80% reduction in sulfur dioxide (SO2) emissions, a 64% reduction in oxides of nitrogen (NOx) emissions and a 34% reduction in carbon dioxide (CO2) emissions. The states with the largest number of unit retirements over the 2008-2016 period were Ohio (50 units), Indiana (30 units) Michigan and North Carolina (28 units each), Pennsylvania (27 units) and Wisconsin (23 units).

Looking to the future, the group identified 128 coal-fired units, representing about 38,100 MW, that are already slated for retirement, and another 35 units with a total capacity of about 12,800 MW that are slated to convert to another fuel, mostly natural gas. That represents 51,000 MW, or about 18%, of the coal-fired generating capacity as of yearend 2016.

The group applied what it termed an "economic stress test" on coal-burning generating units operating at yearend 2016 and found about 21% of the fleet, approximately 57,000 MW, were uneconomic compared with an equivalently sized natural gas combined-cycle (NGCC) plant operating at the same capacity factor. The states with the greatest number of uneconomic units at yearend 2016 were: Florida (16 units), Georgia (15 units), Virginia (13 units), West Virginia and South Carolina (12 units each) and North Carolina (11 units).



The report was written by Jeremy Richardson, a senior energy analyst in UCS' climate and energy program, Sam Gomberg, another senior energy analyst in that program, and Julie McNamara, an energy analyst in that program.

"Our analysis shows that the transition away from coal over the past decade is poised to continue - thanks primarily to market forces," Richardson said in a statement. "Without factoring the cost of installing missing modern pollution controls into the calculations, a large portion of today's coal fleet can't compete economically with cleaner energy options, such as natural gas and, in some cases, renewables. This is particularly true in the Southeast, where most coal units operate at a higher cost than cleaner energy options, causing them to fail our economic stress test."

In preparing the report, UCS noted research by Lazard Limited (NYSE:LAZ) (Hamilton, Bermuda) and other organizations on the growing cost-effectiveness of renewable energy. For more on that, see December 5, 2017, article - [Study: Renewable Energy Costs Stay on Downward Trajectory, Nuclear Up, Coal Flat](#).

"With advance planning, and investment, the nation can take advantage of many cost-effective clean energy options - such as renewable energy and energy efficiency - to replace retiring coal plants, while maintaining an affordable and reliable electric supply," the UCS authors wrote.

The report highlights what communities in Michigan, Illinois, North Carolina and West Virginia have done and are doing to transition away from coal-fired power.

While the UCS energy analysts are happy with the declining reliance on coal-fired generation, they are concerned about the industry's rising reliance on gas-fired generation. "In states where a large portion of the existing coal fleet is likely to be shuttered, a wholesale shift from one fossil fuel to another puts consumers at risk," report co-author Sam Gomberg said. "In Florida, for example, natural gas has become the de-facto substitute for retired coal and already makes up the majority of the state's electricity mix. This could cost consumers dearly in the form of price spikes or obsolete infrastructure. Instead, states should be seeking to take advantage of the opportunity to diversify their energy mix with renewables, energy efficiency, and emerging technologies such as battery storage and smart meters."

"Our analysis and the experiences of communities underscores the need for policies that enable planning for and investment in cost-effective, reliable and just transition to a clean energy economy," the report authors urged. "Policymakers should incentivize investments in renewable energy and energy efficiency to create jobs and diversify local economies, ensure that public-health benefits and clean-energy opportunities flow to all communities in an equitable way and help struggling coal-dependent communities with job transition assistance and economic development."

While the UCS report may not gain a lot of traction with the Trump administration, which is pushing for a revitalization of coal mining and coal-fired power, it may be better received among coal-burning utilities. Both as a presidential candidate and as president, Trump has been sharply critical of the energy and environmental policies of his predecessor, Barack Obama, alleging those policies killed jobs and unfairly constrained U.S. energy firms. And while coal-mining companies have welcomed the administration's pro-coal approach to energy and the environment, utilities have been unwilling to invest in new coal-fired generation. For more on that, see Industrial Info's April 20, 2017, article - [Trump, Utilities Disagree Over the Future of Coal-Fired Generation](#).

"We're not waiting" for resolution of legal challenges to the Clean Power Plan, one Coal Country utility executive told Industrial Info recently. "We're moving ahead and closing uneconomic coal plants. Our investments in energy efficiency have been so successful that we won't have to build new gas plants or renewable energy facilities for years to come."

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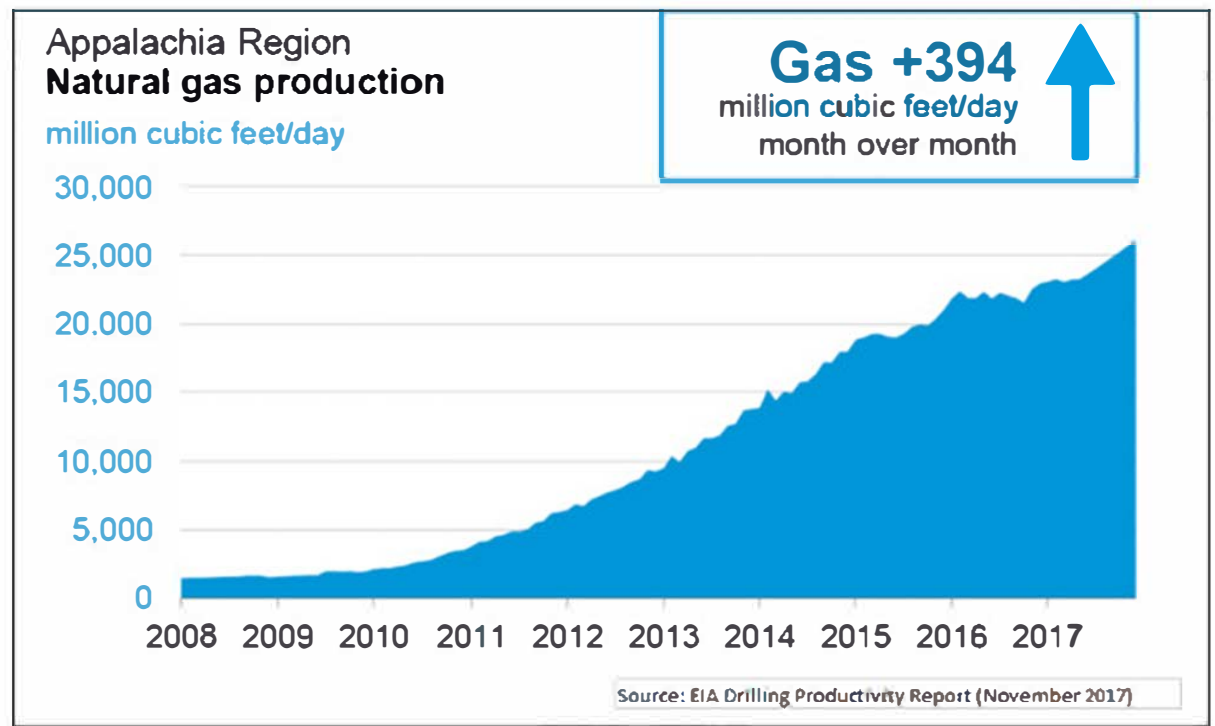


Ohio Gas-Fired Power-Plant Buildout Underway

Written by John Egan for Industrial Info Resources (Sugar Land, Texas)--Five large gas-fired [power](#) projects valued at about \$4.9 billion are scheduled to kick off in Ohio over the next nine months, according to Industrial Info's North American Industrial Project Platform. The aggregate generating capacity of these projects is about 5,130 megawatts (MW). These future plants follow the recent completion of an 870-MW unit at the Oregon Clean Energy Center, a grassroots natural gas plant in northwest Ohio.

Ohio power-plant owners have closed 50 coal-fired units since 2008, according to a recent report from the Union of Concerned Scientists (UCS) (Cambridge, Massachusetts). For more information, see December 11, 2017, article - [UCS Report Claims 21% of Existing U.S. Coal Units is Uneconomic](#). The new crop of generators slated for construction in Ohio, which are expected to be fueled in part by gas extracted from the Buckeye State's Utica Shale, will replace some of that state's shuttered coal-fired generation. And if Ohio lawmakers don't find a way to extend aid to the financially ailing nuclear power plants operated by FirstEnergy Corporation (NYSE:FE) (Akron, Ohio), new gas units could replace nuclear generation that may be closed in that state. For more on FirstEnergy's effort to win financial support for its nuclear plants, see October 4, 2017, article - [Electricity Scrum Set to Resume in Ohio Legislature](#).

Despite relatively low natural gas prices, the Appalachian region, which includes the Marcellus and Utica shale formations, produces about 25 billion cubic of gas per day -- roughly 33% of the natural gas produced in the U.S., according to the U.S. Energy Information Administration (Washington, D.C.). Many industry experts expect production there to continue rising in 2018 and beyond.



(Click to enlarge)

Leading off construction activities is the \$1.5 billion Guernsey Power Station being developed by Apex Power Group LLC (Plainfield, Indiana) and Caithness Energy LLC (New York, New York). The 1,650-MW project will be built in Guernsey County, in southeastern Ohio. Construction is scheduled to begin in April 2018, and the facility is scheduled to begin generating electricity in the second half of 2020. View Industrial Info's project report [here](#) for more information.

Following the Guernsey project, contractors are scheduled to break ground on the Hannibal Port Power Station, a 485-MW, \$550 million brownfield project also located in southeastern Ohio. That combined-cycle project, developed by private equity firm Fortress Investment Group LLC (NYSE:FIG) (New York, New York), will sit atop an abandoned aluminum smelter. The developer has scheduled construction to start in May 2018 and finish in September 2020. For more information, see Industrial Info's [project report](#).

Construction also is slated to begin next May on the Trumbull Energy Center, a 940-MW combined-cycle generator valued at \$860 million. CME Energy LLC (Boston, Massachusetts) is developing the Trumbull project, which is scheduled to be completed in November 2020. Fluor Corporation (NYSE:FLR) (Irving, Texas) will provide engineering, procurement and construction (EPC) services, and a unit of Siemens Energy Incorporated (Orlando, Florida) will provide design-build services. For more information, see Industrial Info's project report [here](#).

Next July, construction is expected to begin on the South Field Energy Center, a 1,100-MW, \$1.1 billion grassroots combined-cycle generator in northeastern Ohio. The project, which is being developed by Advanced Power AG (Zug, Switzerland), is scheduled for completion in October 2020. Bechtel (San Francisco, California) will provide EPC services to this project. For more information, see Industrial Info's [project report](#).

Dirt is scheduled to be turned next August on Unit 2 of the Oregon Clean Energy Center. A 955-MW plant valued at about \$860 million, this plant is expected to begin generating electricity by August 2020. CME Energy also owns this project, and Fluor will provide EPC services. The power plant will be built in Lucas County in northwestern Ohio. View Industrial Info's project report [here](#) for more on the Oregon facility.

"In some ways, Ohio is a mirror reflection of the U.S. [power](#) business right now," said Britt Burt, Industrial Info's vice president of research for the Global Power Industry. "Older, less efficient coal-fired units are closing. Nuclear power remains challenged. The new high-efficiency gas-fired units being constructed will burn gas extracted from unconventional formations. And as renewable generation becomes more competitive, more of those projects are being developed."

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Permian-to-Gulf Coast Pipeline Routes En Vogue, But Are They All Needed?

Researched by Industrial Info Resources (Sugar Land, Texas)—Crude oil midstream is a demand-sensitive business. [Pipelines](#) do not get built unless there is demand, whether it is from [suppliers](#) looking to move product, or [refiners](#) looking to get product less expensively. However, refiners can only handle so much crude, and producers can only pull out so much at a time, meaning pipeline projects linking the two must not only provide significant value to one or the other to warrant construction, but also beat their competitors to completion in order to claim that market share.

Industrial Info is tracking eight different projects that will provide takeaway capacity to the Permian Basin. Most of these projects have been announced in the past year and have not secured full funding, let alone started construction. While more than one may see completion, which one(s) will it be?

Since May 2016, the Permian Basin has seen a steady growth in production, up from 1.9 million barrels per day (BBL/d) to nearly 2.8 million BBL/d. The Permian Basin has roughly 2.0 million BBL/d of pipeline takeaway capacity. While the basin does have some local refining capability, production outweighs takeaway by a significant margin. It is significant enough that many development projects have been announced to carry Permian crude oil to market. Major players such as Magellan Midstream Partners LP (NYSE:MMP) (Tulsa, Oklahoma), Phillips 66 (NYSE:PSX) (Houston, Texas), Buckeye Partners, L.P. (NYSE:BPL) (Houston) and Enterprise Products Partners LP (NYSE:EPD) (Houston) have each announced and/or begun open seasons on new pipeline capacity projects. Magellan's [350,000-BBL/d Permian-to-Corpus/Houston pipeline](#), Phillips 66's joint-venture project, the [385,000-BBL/d Gray Oak pipeline](#), Enterprise Products' [preliminary concept to repurpose existing natural gas liquids \(NGL\) lines](#) out of the region to transport as much as 200,000 BBL/d, and Buckeye's [up-to-600,000-BBL/d South Texas Gateway pipeline](#) are massive projects by big names.

Smaller, newer players have also thrown their hats in the ring, as is common when demand is high and the race to the finish is on. One such player, EPIC (San Antonio, Texas, is planning two massive pipelines out of the Permian, one of which is for [590,000 BBL/d of crude oil transmission](#), and the [other for NGL](#).

The completion dates for these projects fall in or around 2019, and all have similar scopes. For the most part, they follow a similar route out of the Permian Basin, diverging in the Eagle Ford area to service diverse markets. Right now, it's a challenge of who will get enough interest, funding and permission to build first. With a combined takeaway capacity of well over two million BBL/d across all the newly announced projects, not all will be necessary to meet the demands of shippers and refiners, so only time will tell which of these projects gets voted off the proverbial island.

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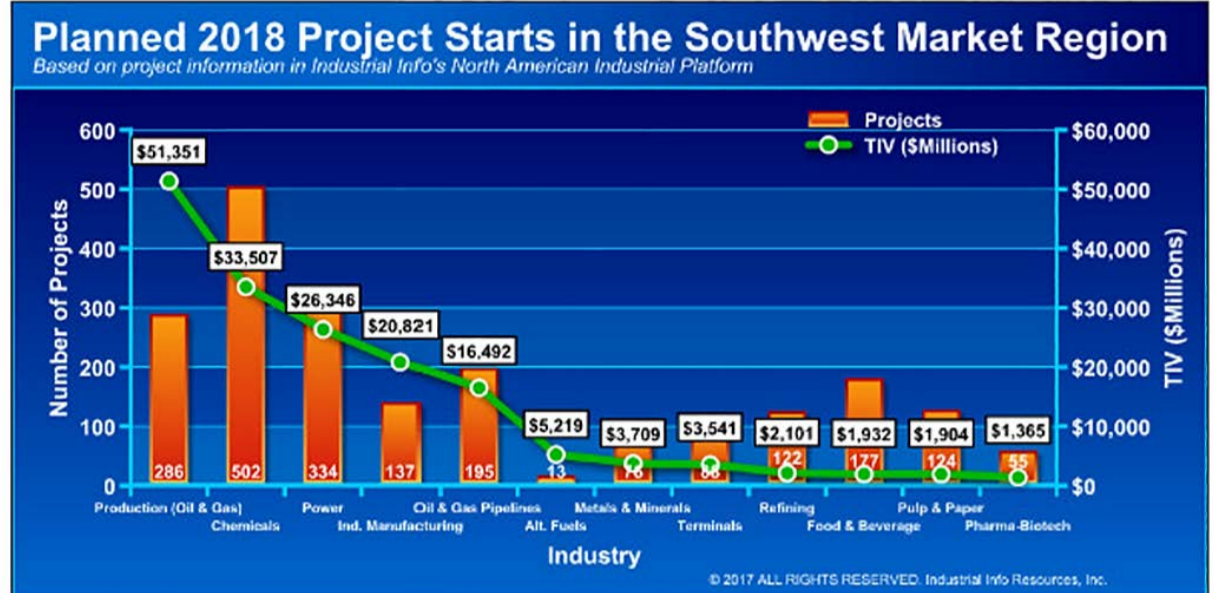


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Southwest Region Leads U.S. for Value of 2018 Project Starts

Researched by Industrial Info Resources (Sugar Land, Texas)--The Southwest market region, which includes Arkansas, Louisiana, Oklahoma and Texas, has more than \$168 billion in industrial projects that are planned to kick off in 2018, making it the leading U.S. region in terms of project value. While some of these projects will be cancelled or pushed out to further dates, other projects will be added to the region throughout the year. The [Oil & Gas Production Industry](#) with \$51.4 billion in planned project starts, leads in terms of project value, followed by the [Chemical Processing Industry](#) with \$33.5 billion, and the [Power Industry](#) with \$26.3 billion.



(Click to enlarge)

Liquefied natural gas (LNG) production projects help bring the Oil & Gas Production Industry into the leading position in the region. Among these is Tellurian Incorporated's (NASDAQ:TELL) (Houston, Texas) planned Driftwood LNG production and export terminal near Lake Charles, Louisiana. The initial phase of the project has an estimated total investment value (TIV) of \$5 billion and will produce 5.2 million metric tons per year of LNG. The project would take about four years to complete. Bechtel Group Incorporated (San Francisco, California) is providing engineering, procurement and construction (EPC). For more information, see Industrial Info's [project report](#).

In Corpus Christi, Texas, Cheniere Energy Incorporated (NYSE:LNG) (Houston) plans to begin construction of a third train at its LNG facility. Construction on trains 1 and 2 commenced in 2015, and completion is set for 2018 and 2019. The third train would take about three years to construct, with completion in 2021. Each train will produce 4.5 million tons per year of LNG for a total production capacity of 13.5 million tons per year. Bechtel Group is performing EPC work on all trains. For more information, see Industrial Info's project reports on [Train 1](#), [Train 2](#) and [Train 3](#).

Offshore in the Gulf of Mexico, Royal Dutch Shell plc (NYSE:RDSA) (The Hague, Netherlands) plans to begin construction of its \$4 billion Vito crude oil and natural gas production platform. The semisubmersible platform will be constructed in water depths of more than 4,000 feet. The Vito field could potentially contain 300 million barrels of oil equivalent. Jacobs Engineering Group Incorporated (NYSE:JEC) (Dallas, Texas) is performing front-end engineering and design on the project, which could be completed in early 2021. For more information, see Industrial Info's [project report](#).

In the Chemical Processing Industry, Exxon Mobil Corporation (NYSE:XOM) (Irving, Texas) and Saudi Basic Industries Corporation (Riyadh, Saudi Arabia) plan to begin construction of a grassroots petrochemical complex near Portland, Texas. The complex would include an ethylene plant, monoethylene glycol (MEG) unit, a linear low-density polyethylene (LLDPE) unit and a high-density polyethylene (HDPE) unit. The facility will would take approximately three years to construct. The ethylene unit would produce an estimated 3.96 billion pounds per year of ethylene, which would feed the downstream units. For more information, see Industrial Info's project reports on the [ethylene unit](#), [MEG unit](#), [LLDPE unit](#) and [HDPE unit](#).

While the Power projects may not be quite as large, they collectively represent a large portion of the planned project starts in the Southwest region in 2018. Among these is a 746-megawatt (MW) natural gas-fired, combined-cycle project near Westbrook, Texas. FGE Power LLC (Houston, Texas) is developing the project in collaboration with EPC firm SNC-Lavalin Constructors Incorporated (Bothell, Washington). The project has an estimated total investment value of \$800 million and is expected to be completed in late 2020. For more information, see Industrial Info's [project report](#).

Wind plays a major role in the region's planned projects. Texas continues leading the nation for the volume of wind power generated. In Tahoka, Texas, Lincoln Clean Energy LLC (Chicago, Illinois) is developing a 300-MW windfarm. The facility is being developed on 55,000 acres of privately owned land and will use 120 2.5-MW wind turbine-generators. Construction on the \$495 million project is planned to kick off early next year and be completed in the fourth quarter. Blattner Energy Incorporated (Avon, Minnesota) is performing EPC work. For more information, see Industrial Info's [project report](#).

In Bovina, Texas, First Reserve Corporation (Greenwich, Connecticut) is developing a 230-MW expansion of the Mariah del Este Windfarm. Construction entails the installation of 100 2.3-MW wind turbine-generators. Brightman Energy (Austin, Texas) is project director. The \$460 million project is planned to kick off later in 2018 for completion in summer 2019. The Marian del Este windfarm has a current capacity of 230 MW and could eventually rise as high as 1,200 MW through continued expansions. For more information, see Industrial Info's [project report](#).

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