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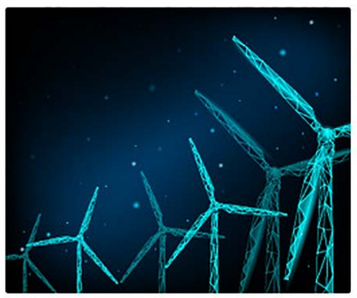

Windfarm Repower Projects Mean $3.5 Billion in Potential U.S. Spending

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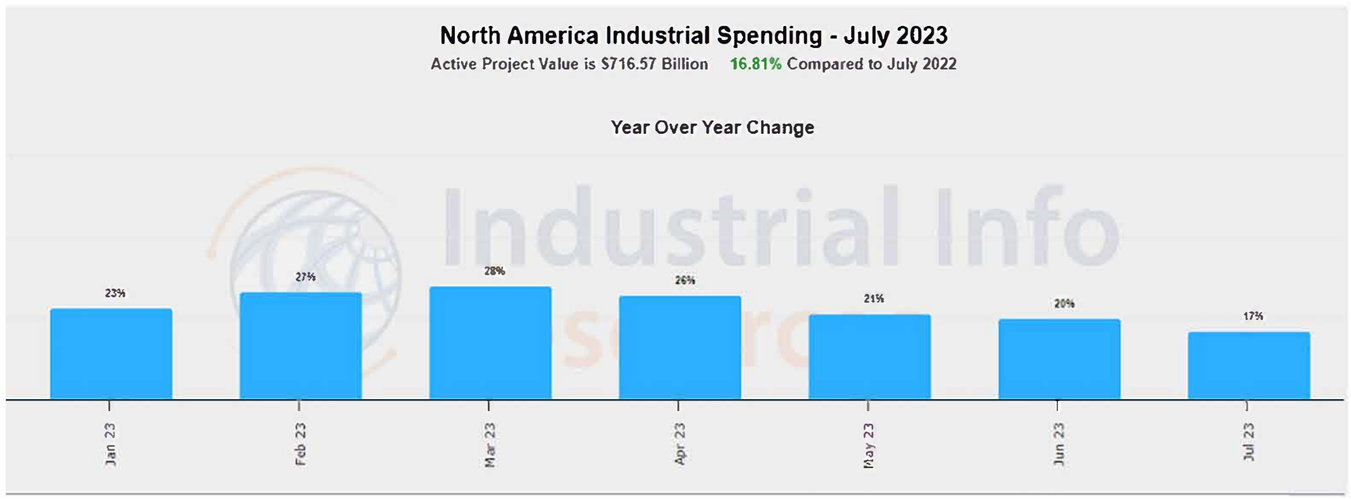
North American Industrial Project Spending Up Nearly 17% in July Year-over-Year

Industrial Info's most recent North American Industrial Project Spending Index shows active project spending in the U.S. in July increased 16.81% year-over-year, continuing a positive trend that began in January 2021. July marks the lowest year-over-year increase so far this year

The active project value for July was $716.57 billion. The Project Spending Index is a monthly indicator that compares active spending rates with the same month in the previous year to get a measure of growth or contraction in the industrial market. The index provides spending details by industry and market region.



For July, all but four of the 12 industries tracked by Industrial Info posted year-over-year increases in active project spending.

One of the largest gains in July was seen in the Power Industry, which recorded a $20.45 billion (15.34%) jump to $153.76 billion.

According to a recent report from the U.S. Energy Information Administration (EIA), developers added 16.8 gigawatts (GW) of utility-scale power generation in the U.S. in the first half of this year. However, about 8.2 GW of power generation was retired in the same period, mostly in the form of coal- and natural gas-fired plants.

Solar power, with 5.9 GW added to the grid from January through June, led the U.S. in the capacity of newly installed power, accounting for about 35% of U.S. power additions. Natural gas came just behind solar in newly added capacity, at 5.7 GW. For more information, see August 9, 2023, article - EIA: U.S. Installs 16.8 Gigawatts of Power in First Half of 2023.

Onshore Oil & Gas Production, including liquefied natural gas (LNG) projects, saw an 18.6% year-over-year increase to $88.9 billion in total investment value for July. On a global scale, LNG development is strong and growing, according to a recent Industrial Info webinar.

Industrial Info is tracking $57 billion of LNG liquefaction capacity set to be brought online in 2023-24, coming from 36 trains and accounting for 64 million tonnes per annum (MTPA). Industrial Info is tracking several LNG projects in the U.S. that are set to be brought online in this period, including the remaining six production modules, each with approximately 1.25 million metric tons per year of capacity, at Venture Global LNG's (Arlington, Virginia) **Calcasieu Pass facility in Louisiana**. Subscribers to Industrial Info's Production Project Database can click here for the project report. For more information, see August 17, 2023 article - IIR Webinar: Global LNG Development Strong and Growing.

Industrial Manufacturing saw an 11.62% year-over-year increase to $235.93 billion. U.S. manufacturing activity improved marginally in July when compared with June, according to a survey by the Institute for Supply Management (ISM), amid improvement in new orders. However, the reading for employment reached its lowest level in three years, indicating slower hiring and ongoing layoffs. For more information, see August 3, 2023, article - ISM: U.S. Manufacturing Activity Improves Slightly in July.

Construction Starts Down

The North American Construction Starts Index for July, meanwhile, was down 12% compared with July 2022. Construction starts spending for July totaled $260.11 billion. Spending was down in seven of the 12 industries tracked by Industrial Info.

According to the U.S. Federal Reserve's Beige Book of economic activity released in July, overall activity increased slightly since May, with five districts reporting growth, five reporting no change, and two reporting slight and modest declines. The Dallas, Texas-based reserve district reported modest expansion buoyed by gains in the service sector and single-family housing, but factory output, oil and gas drilling activity, and loan demand all declined.

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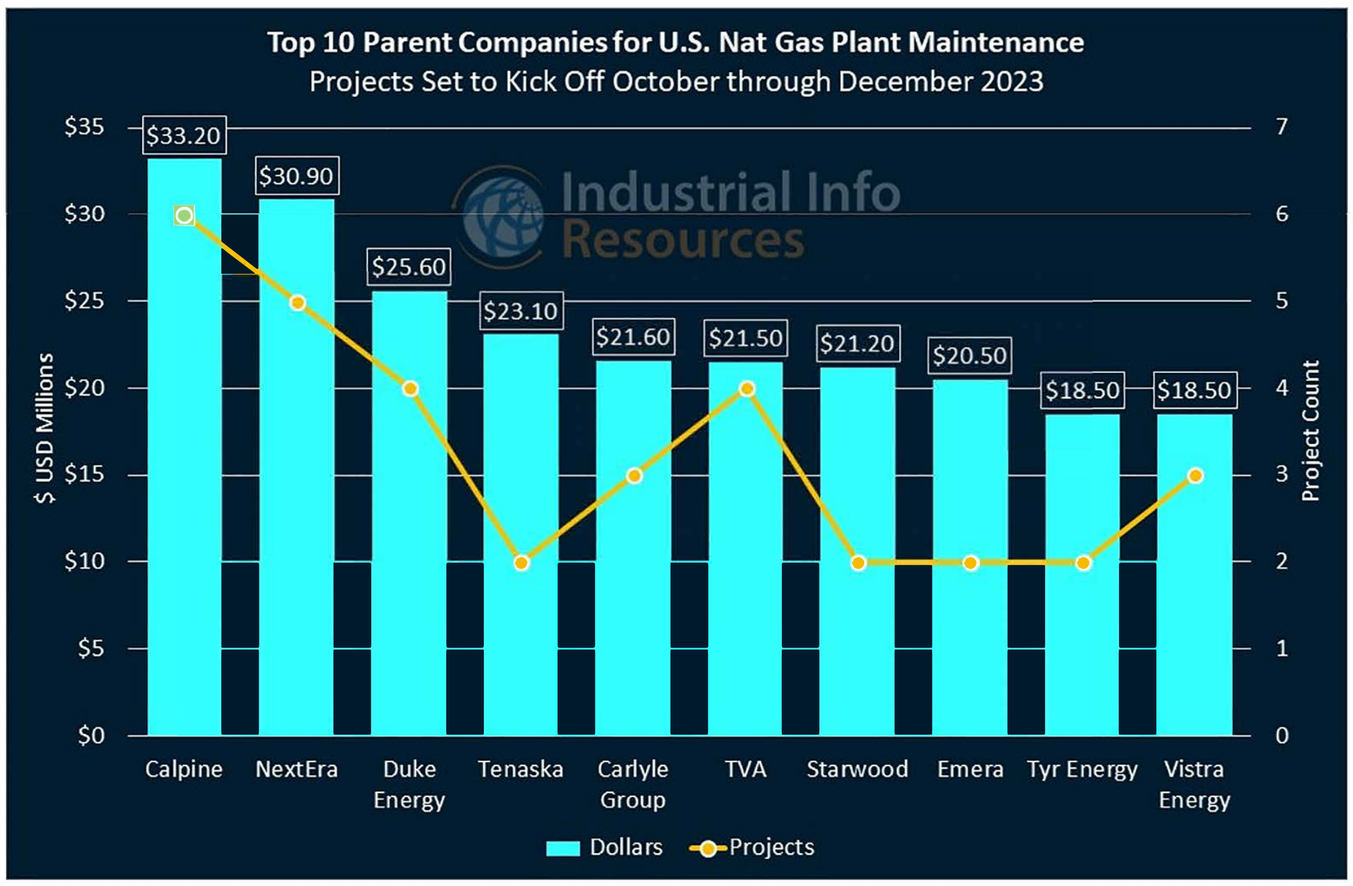
U.S. Natural Gas Plants Feel the Heat, Prep for Maintenance

You've noticed it's hot outside, right? With a massive heat dome blanketing much of the U.S. and keeping temperatures for tens of millions of Americans in the triple-digit range, natural gas-fired power plants--which account for about 40% of domestic power generation--have their work cut out for them. With summers like these, run-time hours at these power plants stack up quickly, which could hasten the need for maintenance activity like hot gas path inspections and major overhauls. Industrial Info is tracking roughly 100 maintenance-related projects, totaling more than $565 million in value, at U.S. gas-fired power plants that are set to kick off from October through December.



Calpine Corporation (Houston, Texas) leads all other companies in its total investment in fourth-quarter maintenance kickoffs, with projects planned for two of the three U.S. states with the most activity. On the Texas Gulf Coast, **Block 1 at the Channel Energy Center in Pasadena**--which is a 769-megawatt (MW), natural gas-fired, combined-cycle (NGCC) unit--is set for a 30-day outage for a hot gas path inspection and repairs, while Calpine's 612-MW **Unit 1 at the Jack Fusco Energy Center in Richmond**, another NGCC unit, is preparing for 35 days of turbine inspections and repairs.

Both of Calpine's outages in Texas are set to begin in October and finish in mid-to-late November. Subscribers to Industrial Info's Global Market Intelligence (GMI) Power Project Database can learn more from detailed reports on the Pasadena and Richmond projects.

In Pennsylvania, which trails only Texas and Florida in its total investment in fourth-quarter maintenance kickoffs at gas-fired plants, Calpine is preparing to begin outages on the 666-MW **Block 1 at the York Energy Center in Delta**, as well as **blocks 1 and 2 at its power plant in Bethlehem**, which have a combined output of 1,152 MW. All three are NGCC units; the Bethlehem facility is a "mid-merit" power-generation plant, which adjusts its output as demand for electricity fluctuates throughout the day. Subscribers can read detailed reports on the Delta and Bethlehem projects.

NextEra Energy Incorporated (NYSE:NEE) (Juno Beach, Florida) is preparing for a series of maintenance kickoffs across Florida, where its subsidiary Florida Power & Light Company (FPL) services more than half of the state. FPL is planning for outages at four of its NGCC plants:

- **units 8C and 8D at the Martin County Power Station in Indiantown**, which have a total output of 376 MW; see project report
- the 436-MW **Unit 5 at the Sanford Power Station in Debary**; see project report
- the 1,326-MW **Block 5 at the Clean Energy Center in Riviera Beach**; see project report
- the 721-MW **Unit 2 at the power station in Fort Myers**; see project report

Duke Energy Corporation (NYSE:DUK) (Charlotte, North Carolina), the largest energy provider in North Carolina, is preparing for three outages in its home state, two of which are NGCC units: the 295-MW **Unit 3 at the Asheville Power Station in Arden**, which is expected to take 24 days, and the single-unit, 691-MW **Dan River Power Station in Eden**, which is expected to take 21 days. Both NGCC outages are expected to take place within October. Subscribers can learn more from detailed reports on the Arden and Eden projects.

Duke also is preparing for an outage at the 162-MW **Unit 5 at the Rockingham County Power Station in Reidsville, North Carolina**, which is a simple-cycle combustion turbine unit. At a projected 20 days, it has the shortest downtime slated for any of Duke's fourth-quarter maintenance kickoffs. Subscribers can learn more from Industrial Info's project report.

"We do expect to see healthy investment toward scheduled maintenance of gas turbines later this year, and I believe we can expect this to continue for the next few years," said Britt Burt, Industrial Info's vice president of research for the Global Power Industry. "This uptick in maintenance spending is due primarily to the number of gas turbines built in recent years that are coming due for maintenance. Just since the end of 2019, we have seen 201 units and more than 26 GW of natural gas-fired combustion turbines start commercial operation. This is just a fraction of the 597 units and 70 GW that have started operation since the end of 2012. These figures only represent capacity from combustion turbines, and do not include associated capacity from steam turbines in combined cycle operation."

Subscribers to Industrial Info's GMI Project Database can click here for a full list of detailed reports for projects mentioned in this article, and click here for a full list of related plant profiles.

Subscribers can click here for a full list of reports for maintenance-related projects at U.S. gas-fired power plants that are set to kick off in fourth-quarter 2023.

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Windfarm Repower Projects Mean $3.5 Billion in Potential U.S. Spending

As aging wind turbines approach the end of their operational lives, the concept of windfarm repowering is gaining traction. Repowering involves revitalization of existing windfarms through the replacement, upgrading or reconfiguration of their components, with the goal of enhancing energy production efficiency and reliability, and often increasing generation capacity. As the hundreds of wind turbines that have been installed throughout the U.S. in recent years begin aging, repowering projects are expected to become more prevalent. The repower segment already represents a strong pool of projects, with Industrial Info tracking more than $3.5 billion worth of active projects.

It should come as no surprise that the highest concentration of wind repower projects is occurring in an area that has been home to windfarms for many years and has many of them: the U.S. Midwest. Examples of projects in this region include Greenbacker Renewable Energy Company's (New York, New York) repower of the 40-megawatt Elk Windfarm in Greeley, Iowa. The existing Nordex (Rostock, Germany) blades, nacelles and rotors on 17 turbines will be replaced with General Electric (NYSE:GE) (GE) (Boston, Massachusetts) components. Engineering, procurement and construction contractor M.A. Mortenson Company (Minneapolis, Minnesota) is expected to complete the repower by the end of this year. Subscribers to Industrial Info's Global Market Intelligence (GMI) Power Project Database can click here for more details.

One of the biggest active repower projects is being planned for BP plc's (NYSE:BP) (London, England) Fowler Ridge Windfarm in Fowler, Indiana. As early as next year, BP could begin replacing 182 Vestas turbines with new equipment. The repower is expected to take about a year, finishing in 2025, when BP could begin a repower at another site of the complex, Fowler Ridge II, replacing 133 1.5-MW GE turbines with 100 turbines rated between 1.8 and 2 MW. This portion of the repower could be completed in 2026. Subscribers can learn more by viewing the reports on the projects at the Fowler Ridge I and Fowler Ridge II sites.

On a company-by-company basis, AES Corporation (NYSE:AES) (Arlington, Virginia) has both the highest number of planned repower projects (six) and the highest planned spending ($602 million). All of AES' planned repower projects are in New York state. Examples of AES projects include the repower of its wind facility in Altona, New York. The blades, drive trains and hubs of the 65 existing GE turbines, each rated at 1.5 MW, will be replaced with newer components rated at 1.62 MW, increasing the windfarm's total generation capacity by a few megawatts. The project is expected to be completed next summer. Subscribers can click here for more details.

Next year, AES plans to kick off similar projects at its two wind facilities near Churubusco, New York. The Noble Clinton Windfarm will see 67 1.5-MW turbines uprated to 1.6-MW equipment, while the Valcour Ellenburg Windfarm will see 56 turbines uprated from 1.5 MW to 1.6 MW. Subscribers can learn more by viewing the project reports on the Noble Clinton and Valcour Ellenburg projects.

Among the largest repower projects currently underway is Xcel Energy Incorporated's (NASDAQ:XEL) (Minneapolis, Minnesota) project at its Grand Meadow Windfarm near Dexter, Minnesota. The project kicked off in 2022 and entails replacing 67 turbines rated at 1.5 MW with 1.6 MW turbines featuring larger rotors, upgraded gearboxes and other associated components. The project is expected to be completed by the end of this year. Subscribers can click here to learn more.

The windfarms set for repower projects in the immediate future have been operating for a number of years. As the recent wave of U.S. wind installations begins aging in the coming years, the value and frequency of such projects is expected to increase accordingly.

Subscribers to Industrial Info's GMI Power Database can click here to view reports for all of the projects discussed in this article and click here for the related plant profiles.

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Join IIR for an Outlook of the Global Oil & Gas Sector in the Energy-Transition Era

Industrial Info is pleased to be presenting a complimentary webinar on the outlook for the global oil and gas sector in relation to the energy transition. The webinar will be held Wednesday, September 20, at 10 a.m. CDT (11 a.m. EDT) and will be repeated for audiences in the Asia-Pacific region and Europe.

As economies around the world have reopened, demand for natural gas has rebounded and stretched available supply. European natural gas stocks began the winter at lower levels, which have been worsened by colder weather, the conflict in Ukraine and higher prices as cargoes are diverted from Asia to fill the supply gas throughout Europe. Despite the exorbitant list of projects in the planning process, the number of projects moving to final investment decisions is shrinking as the future role of natural gas, along with all other fossil fuels, is in question due to greenhouse gas-reduction efforts.

During this webinar, Industrial Info's industry experts will provide the latest information on global trends related to liquefied natural gas (LNG) regasification and liquefaction project development. IIR also will provide an overview of improved data analytics that will help you track the constantly evolving market.

Topics to be covered in the webinar include:

- The current state of LNG supply and demand
- An intro to IIR data analytics that will help you stay on top of the LNG installed base buildout
- The operating status of U.S. LNG liquefaction capacity
- Expectations for new-capacity project executions

We hope that you are able to join us for this timely and informative webinar! Click here to learn more and to RSVP.