



Office of Energy Projects Energy Infrastructure Update For July 2019

Natural Gas Highlights

- Cameron LNG received authorization to place in service the 0.71 MMcf/d Train 1 at its liquefaction project in Hackberry, LA.
- PNGTS received authorization to increase the certificated capacity on its system from Pittsburg, New Hampshire, to Westbrook, Maine, by 42,482 Mcf/d.
- National Fuel received authorization for its Brockway Modernization Project, which includes replacing 9.6 miles of pipeline with 10.1 miles of new pipeline in Jefferson and Elk Counties, PA.
- Equitrans received authorization to abandon in place 3.82 miles of its TP-4555 pipeline, part of its Allegheny Valley Connector System, and replace it with 9.92 miles of new pipeline. This project is in Westmoreland County, PA.
- Centerpoint Energy received a determination for a service area within which it may, without further Commission authorization, enlarge or expand its natural gas distribution facilities. These facilities consist of small diameter pipelines used to make deliveries to customers in various counties in Arkansas, Texas, and Louisiana.
- Texas Eastern received authorization to abandon, in place and by removal, its Cameron System, located onshore Louisiana and Offshore in State and Federal waters.
- Gulf South received authorization for its Willis Lateral Project, which consists of 19 miles of pipeline and 15,876 HP of new compression in Montgomery and San Jacinto Counties, TX, to supply 200 MMcf/d of natural gas to a proposed new power plant.
- Tennessee Gas received authorization for its Compressor Station 321 Turbine Replacement Project in Susquehanna County, PA, which involves replacing one turbine engine with a lower emissions model that will add 800 HP of compression and increase transportation capacity by 10 MMcf/d.
- Gulf South received authorization to construct two 5,000 horsepower compressors within its existing Petal III Compressor Station, a dehydration unit, a thermal oxidizer, and other appurtenant facilities in order to increase operational flexibility at its Petal Gas Storage Facility in Forrest County, MS.
- Gulf LNG received authorization to construct and operate an LNG export terminal in Jackson County, MS. The proposed export terminal would provide 1.5 Bcf/d of export capacity.
- Columbia Gulf requests authorization for its Louisiana XPress Project, which consists of three new compressor stations and modifications to an existing compressor station. The project would create 493 MMcf/d of new incremental capacity on a north-south path from Columbia Gulf's Mainline Pool to a delivery point with Kinder Morgan Louisiana Pipeline in Evangeline County, LA.
- El Paso requests authorization for its Waha Compressor Station Upgrade, which includes installing a new Electric Motor Drive at the existing Waha Compressor Station in Reeves County, TX. The project will provide 10,000 HP of additional compression.
- National Fuel requests authorization for its FM100 Project, which includes installing 30.9 miles of pipeline, a 37,385 HP compressor station, and a new overpressure protection station, as well as abandoning 44.9 miles of older pipeline and a compressor station. The project would take place in Potter, McKean, and Elk Counties, PA, and provide up to 330 MMcf/d of firm capacity to transport gas to Transco at Leidy.
- Equitrans requests authorization to abandon by sale to Peoples Natural Gas, 4,287 feet of its TP-7575 pipeline in Allegheny County, PA.
- Transco requests authorization for its Leidy South Project, including 12.2 miles of new pipeline and 125,672 HP of new compression in order to provide 582 MMcf/d of incremental transportation capacity along two paths in Transco Zone 6 in Pennsylvania.
- Double E requests authorization for its Double E Pipeline Project, which consists of 133 miles of new pipeline that would provide up to 1.3 Bcf/d of firm takeaway capacity from the Delaware Basin in Eastern New Mexico and Western Texas, to delivery points near Waha in Reeves and Pecos Counties, TX.
- Columbia Gas requests authorization for its Lucas and Weaver Wells Abandonment Project, which involves abandoning six underperforming injection/withdrawal wells and associated pipelines and appurtenances at its Lucas and Weaver Storage Fields in Ashland County, OH. The abandonment will not affect service to its customers.
- Columbia Gas requests authorization for its Brinker Wells Abandonment Project, which involves abandoning three injection/withdrawal wells and associated pipelines and appurtenances at its Brinker Storage Field in Columbiana County, OH. This project would have no impact on existing customers or storage operations.
- Columbia Gas requests authorization for its Laurel Wells Abandonment Project, including the abandonment of three injection/withdrawal wells and associated pipelines and appurtenances at its Laurel Storage Field in Hocking County, OH. This project would have no impact on existing customers or operations.



Office of Energy Projects Energy Infrastructure Update For July 2019

Natural Gas Activities in July 2019

| Status | No. of Projects | Storage Capacity (Bcf) | Deliverability (MMcf/d) | Capacity (MMcf/d) | Miles of Pipeline | Compression (HP) |
|----------------------------------|-----------------|------------------------|-------------------------|-------------------|-------------------|------------------|
| Pipeline | | | | | | |
| Placed in Service | 0 | | | 0 | 0 | 0 |
| Certificated | 5 | | | 253 | 33 | 16,676 |
| Proposed | 5 | | | 2,755 | 176 | 312,877 |
| Storage | | | | | | |
| Placed in Service | 0 | 0 | 0 | | | 0 |
| Certificated | 1 | 0 | 350 | | | 10,000 |
| Proposed | 0 | 0 | 0 | | | 0 |
| LNG (Import & Export) | | | | | | |
| Placed in Service (Export) | 1 | 3.4 | 713 | | | 0 |
| Certificated (Import/Export) | 1 | 0 | 1,500 | | | 0 |
| Proposed (Import/Export) | 0 | 0 | 0 | | | 0 |

Source: Staff Database

Natural Gas Activities through July 31, 2019 January through July 31, 2018

| Status | No. of Projects | Storage Capacity (BCF) | Deliverability (MMcf/d) | Capacity (MMcf/d) | Miles of Pipeline | Compression (HP) |
|----------------------------------|-----------------|------------------------|-------------------------|-------------------|-------------------|------------------|
| Pipeline | | | | | | |
| Placed in Service | 5 | | | 4,101.0 | 1.4 | 282,400 |
| through July 31, 2018 | 6 | | | 3,671.2 | 93.6 | 134,020 |
| Certificated | 19 | | | 10,240.9 | 426.6 | 601,211 |
| through July 31, 2018 | 31 | | | 5,864.1 | 296.4 | 152,195 |
| Storage | | | | | | |
| Placed in Service | 0 | 0.0 | 0.0 | | | 0 |
| through July 31, 2018 | 0 | 0.0 | 0.0 | | | 0 |
| Certificated | 3 | 1.0 | 429.0 | | | 10,000 |
| through July 31, 2018 | 4 | 3,600.3 | 152.0 | | | 0 |
| LNG (Import & Export) | | | | | | |
| Placed in Service (Export) | 3 | 13.5 | 2,126.0 | | | 0 |
| through July 31, 2018 | 1 | 0.0 | 825.0 | | | 0 |
| Certificated (Import/Export) | 5 | 34.3 | 8,779.0 | | | 0 |
| through July 31, 2018 | 0 | 0.0 | 0.0 | | | 0 |

Source: Staff Database



Office of Energy Projects Energy Infrastructure Update For July 2019

Hydropower Highlights (nonfederal)

- Lock 13 Hydro Partners filed an application for an original license for the proposed 2.800 MW Evelyn Project No. 14799. The project is located on the Kentucky River, in Lee and Estill Counties, KY.
- Blackstone Hydro Associates filed an application for an relicense with a net increase in capacity of 0.114 MW for the existing Central Falls Hydroelectric Project No. 3063. The project is located on the Blackstone River, in Providence County, RI.

Hydropower Project Activities in July 2019

| Status | Conventional | | Pumped Storage | | Hydrokinetic | | Total No. of Projects | Total Capacity (MW) |
|--------------------------|--------------|---------------|----------------|---------------|--------------|---------------|-----------------------|---------------------|
| | No. | Capacity (MW) | No. | Capacity (MW) | No. | Capacity (MW) | | |
| Filed | | | | | | | | |
| License | 2 | 2.914 | 0 | 0 | 0 | 0 | 2 | 2.914 |
| 10-MW Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capacity Amendment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conduit Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Issued | | | | | | | | |
| License | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10-MW Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capacity Amendment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conduit Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Placed in Service | | | | | | | | |
| License | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10-MW Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capacity Amendment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conduit Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: Staff Database

Hydropower Project Activities Year to Date (through July 31, 2019)

| Status | Conventional | | Pumped Storage | | Hydrokinetic | | Total No. of Projects | Total Capacity (MW) |
|--------------------------|--------------|---------------|----------------|---------------|--------------|---------------|-----------------------|---------------------|
| | No. | Capacity (MW) | No. | Capacity (MW) | No. | Capacity (MW) | | |
| Filed | | | | | | | | |
| License | 3 | 3.764 | 0 | 0 | 1 | 20.000 | 4 | 23.764 |
| 10-MW Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capacity Amendment | 2 | 3.900 | 0 | 0 | 0 | 0 | 2 | 3.900 |
| Conduit Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Issued | | | | | | | | |
| License | 0 | 0 | 1 | 393.300 | 1 | 0.070 | 2 | 393.370 |
| 10-MW Exemption | 1 | 0.140 | 0 | 0 | 0 | 0 | 1 | 0.140 |
| Capacity Amendment | 1 | 3.640 | 0 | 0 | 0 | 0 | 1 | 3.640 |
| Conduit Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Placed in Service | | | | | | | | |
| License | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10-MW Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capacity Amendment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conduit Exemption | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: Staff Database



Office of Energy Projects Energy Infrastructure Update For July 2019

Electric Generation Highlights

- Hale Wind Energy LLC's 478.0 MW Hale County Wind Energy Project in Hale County, TX is online.
- Lockett Wind Farm LLC's 184 MW Electra Wind Farm Phase 2 in Wilbarger County, TX is online.
- Santa Rita East Wind Energy LLC's 200.0 MW Santa Rita Wind East Project in Irion County, TX is online. The power generated is sold to Merck & Co. Inc. and Grupo Bimbo under long-term contracts.
- Synergen Panorama LLC's 6.6 MW Panorama Solar Electric Facility in Prince Georges County, MD is online. The power generated is sold to Pepco under long-term contract.

New Generation In-Service (New Build and Expansion)

| Primary Fuel Type | July 2019 | | January – July 2019 Cumulative | | January – July 2018 Cumulative | |
|-------------------|--------------|-------------------------|-----------------------------------|-------------------------|-----------------------------------|-------------------------|
| | No. of Units | Installed Capacity (MW) | No. of Units | Installed Capacity (MW) | No. of Units | Installed Capacity (MW) |
| Coal | 0 | 0 | 2 | 45 | 4 | 10 |
| Natural Gas | 0 | 0 | 65 | 7,268 | 75 | 10,469 |
| Nuclear | 0 | 0 | 1 | 155 | 3 | 30 |
| Oil | 0 | 0 | 14 | 74 | 24 | 44 |
| Water | 0 | 0 | 10 | 47 | 10 | 115 |
| Wind | 3 | 862 | 25 | 2,863 | 27 | 1,991 |
| Biomass | 0 | 0 | 2 | 18 | 12 | 101 |
| Geothermal Steam | 0 | 0 | 0 | 0 | 3 | 36 |
| Solar | 3 | 10 | 207 | 2,052 | 345 | 2,872 |
| Waste Heat | 0 | 0 | 0 | 0 | 1 | 50 |
| Other * | 0 | 0 | 18 | 0 | 18 | 2 |
| Total | 6 | 872 | 344 | 12,522 | 522 | 15,720 |

Total Available Installed Generating Capacity

| | Installed Capacity (GW) | % of Total Capacity |
|------------------|-------------------------|---------------------|
| Coal | 256.59 | 21.38% |
| Natural Gas | 534.57 | 44.54% |
| Nuclear | 107.31 | 8.94% |
| Oil | 39.87 | 3.32% |
| Water | 100.72 | 8.39% |
| Wind | 99.95 | 8.33% |
| Biomass | 16.00 | 1.33% |
| Geothermal Steam | 3.84 | 0.32% |
| Solar | 39.33 | 3.28% |
| Waste Heat | 1.32 | 0.11% |
| Other* | 0.77 | 0.06% |
| Total | 1,200.26 | 100.00% |

Sources: Data derived from Velocity Suite, ABB Inc. and The C Three Group LLC. The data may be subject to update.

* "Other" includes purchased steam, tires, and miscellaneous technology such as batteries, fuel cells, energy storage, and fly wheel.



Office of Energy Projects Energy Infrastructure Update For July 2019

Generation Capacity Additions and Retirements (August 2019 – July 2022) From ABB Velocity Suite's Generating Unit Capacity Dataset

| Primary Fuel Type | All Proposed Additions | | Proposed Additions Under Construction** | | Proposed Retirements | |
|-------------------|------------------------|-------------------------|---|-------------------------|----------------------|-------------------------|
| | No. of Units | Installed Capacity (MW) | No. of Units | Installed Capacity (MW) | No. of Units | Installed Capacity (MW) |
| Coal | 2 | 94 | 1 | 17 | 57 | 18,517 |
| Natural Gas | 224 | 60,622 | 100 | 31,151 | 109 | 11,316 |
| Nuclear | 9 | 7,781 | 1 | 1,100 | 9 | 9,209 |
| Oil | 12 | 685 | 2 | 5 | 26 | 1,295 |
| Water | 220 | 14,595 | 84 | 1,900 | 20 | 621 |
| Wind | 550 | 99,434 | 172 | 27,153 | 2 | 320 |
| Biomass | 59 | 568 | 28 | 472 | 38 | 118 |
| Geothermal Steam | 18 | 860 | 6 | 280 | 0 | 0 |
| Solar | 2,622 | 113,118 | 580 | 17,041 | 1 | 1 |
| Waste Heat | 4 | 54 | 2 | 29 | 0 | 0 |
| Other * | 142 | 475 | 34 | 15 | 1 | 2 |
| Total | 3,862 | 298,286 | 1,010 | 79,163 | 263 | 41,399 |

Sources: Data derived from Velocity Suite, ABB Inc. and The C Three Group LLC. The data may be subject to update.

* "Other" includes purchased steam, tires, and miscellaneous technology such as batteries, fuel cells, energy storage, and fly wheel.

** Under Constructions includes units that have started site preparation or construction. It also includes units that are in the testing phase.

Electric Transmission Highlights

- ITC Midwest has completed the 9.5 mile, 345 kV Quinn – J426 Project in IA.

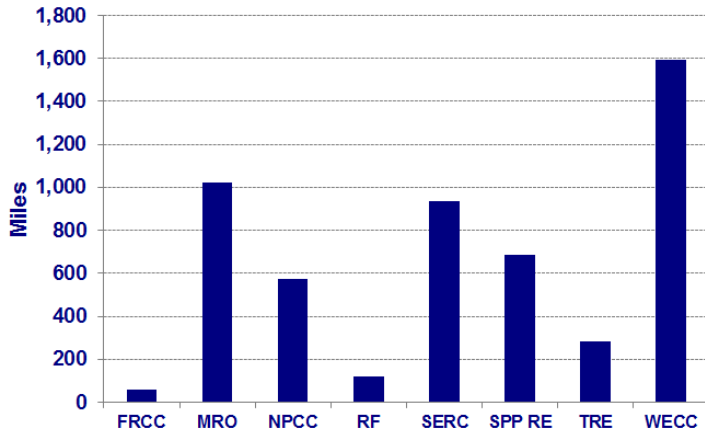
| Voltage (kV) | Transmission Projects Completed | | | | Proposed Transmission Projects In-Service by August 2021 | |
|-------------------|---------------------------------|-------------|--------------------------------|------------------------------------|--|----------------|
| | July 2019 | July 2018 | January – July 2019 Cumulative | January – December 2018 Cumulative | Planned and Under Construction | All |
| | Line Length (miles) | | | | | |
| ≤230 | 0.0 | 32.0 | 122.6 | 481.7 | 540.0 | 1,292.8 |
| 345 | 9.5 | 39.0 | 299.5 | 847.2 | 752.4 | 2,129.1 |
| 500 | 0.0 | 0.0 | 7.4 | 69.4 | 670.0 | 1,859.0 |
| Total U.S. | 9.5 | 71.0 | 429.5 | 1,398.3 | 1,962.4 | 5,280.9 |

Sources: Data derived from North American Electric Reliability Corporation (NERC) Electricity Supply and Demand (ES&D) and U.S. Electric Transmission Projects ©The C Three Group, LLC.

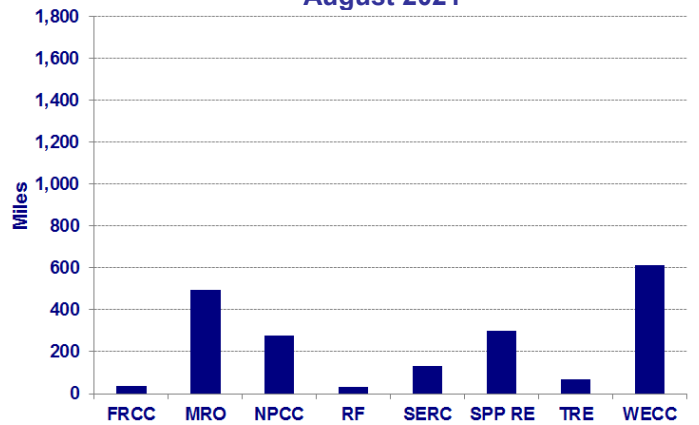


Office of Energy Projects Energy Infrastructure Update For July 2019

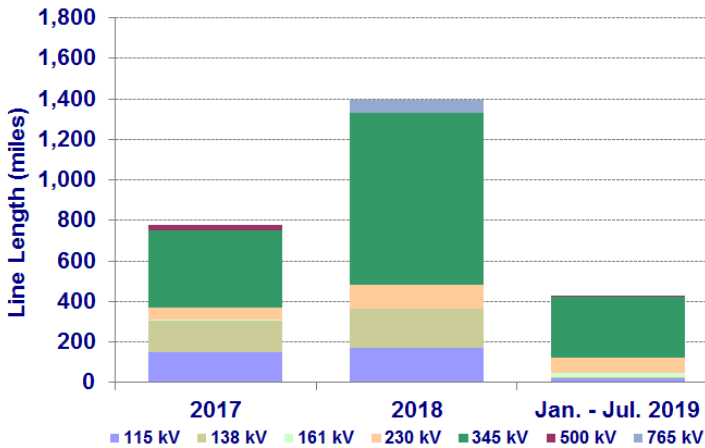
All Transmission Projects with a Proposed In-Service Date by August 2021



Planned and Under Construction Transmission Projects with a Proposed In-Service Date by August 2021



New Transmission Projects by Voltage



Sources: Data derived from North American Electric Reliability Corporation (NERC) Electricity Supply and Demand (ES&D) and U.S. Electric Transmission Projects ©The C Three Group, LLC.

Disclaimer: This Report contains analyses, presentations, and conclusions that may be based on or derived from the data sources cited, but do not necessarily reflect the positions or recommendations of the data providers.