

BOB ANTHONY
Commissioner

DANA MURPHY
Commissioner

TODD HIETT
Commissioner

OKLAHOMA
CORPORATION COMMISSION
P.O. BOX 52000
OKLAHOMA CITY, OKLAHOMA 73152-2000

580 Jim Thorpe Building
Telephone: (405) 521-4114
www.occeweb.com



January 1, 2020

**THE OKLAHOMA CORPORATION COMMISSION'S
2020 FINAL REPORT ON OKLAHOMA'S
TRANSMISSION CAPACITY
17 O.S. §287 (2010)**

Executive Summary

Title 17, Section 287 can be found at the following site:

<http://www.oscn.net/applications/oscn/DeliverDocument.asp?CiteID=459320>

In 2010, the Oklahoma Legislature declared it to be in the public interest to promote the development of a robust transmission grid to facilitate delivery of renewable energy, to improve reliability of the transmission system, and to promote wind-energy development in Oklahoma. Additionally, the Legislature tasked the Oklahoma Corporation Commission (Commission) to develop a plan, in cooperation with the Southwest Power Pool (SPP), to expand transmission capacity in the state and monitor the construction of new transmission facilities. Since 2010, the SPP has approved approximately \$10 billion in total transmission upgrades. Of this amount, approximately \$2.3 billion was built in Oklahoma.

This final report covers SPP transmission upgrades approved for construction and/or placed in service for calendar years 2009 through 2019. As of the date of this final report, 44 wind energy facilities are currently operating in the state, and an additional 48 wind energy facilities have provided notice of intent to construct to the Commission. As a result 17 O.S. § 287, in 2018, Oklahoma ranked second in the nation for total wind energy generation, third for installed wind capacity, and fourth in number of wind turbines installed. This amount of wind generation provides enough electricity to power the equivalent of 2.6 million U.S. homes. Further, investment in wind generation has also provided significant economic development in Oklahoma with capital investment in wind projects of approximately \$14.7 billion, \$23.5 million annually in state and local tax payments, \$20 - \$30 million in annual land lease payments, and over 7,000 jobs as of 2018.

Southwest Power Pool Overview

The SPP is one of nine Independent System Operators/Regional Transmission Organizations (ISOs/RTOs) that the Federal Energy Regulatory Commission (FERC)

THE OKLAHOMA CORPORATION COMMISSION'S 2020 REPORT ON THE STATE'S TRANSMISSION CAPACITY

mandated to ensure reliable power supply, adequate transmission infrastructure, and competitive wholesale electricity prices. The states comprising the footprint of the SPP can be found on page 32 at: <https://www.spp.org/documents/31587/spp101%20-%20an%20introduction%20to%20spp%20-%20all%20slides%20for%20print.pdf>

Responsibilities for the SPP as an RTO include the following:

- Reliability Coordination
- Balancing Authority
- Transmission Service/Tariff Administration
- Transmission Planning
- Market Operation
- Facilitation
- Training

An organizational chart, which sets out the structure and governing bodies of the SPP, can be found on page 51 at: <https://www.spp.org/documents/31587/spp101%20-%20an%20introduction%20to%20spp%20-%20all%20slides%20for%20print.pdf>

The SPP is a non-profit entity, which is operated according to FERC-approved tariffs and bylaws and is governed by an independent board of directors selected by its members. The SPP Board of Directors receives input from various standing committees, including the Regional State Committee (RSC).

The RSC provides collective state regulatory agency input on matters of regional importance related to the development and cost allocation of portions of the bulk electric system. The RSC is comprised of regulatory commissioners from agencies in the states of Arkansas, Iowa, Kansas, Louisiana, Missouri, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, and Texas. Current members of the SPP RSC can be found on page 53 at: <https://www.spp.org/documents/31587/spp101%20-%20an%20introduction%20to%20spp%20-%20all%20slides%20for%20print.pdf>

Oklahoma's Involvement in SPP

Oklahoma's regulated energy electric companies, as well as other electric energy-related companies doing business in Oklahoma, are members of the SPP. The Commission's Public Utility Division (PUD) has assigned two of its employees to coordinate SPP-related activity. These employees actively participate in numerous ongoing SPP committees, working groups, and task force meetings. The assigned staff provide updates and recommendations to the Commissioners and interested stakeholders that help best serve the public interest of Oklahoma's transmission and electricity-related matters.

In addition to PUD's role in the SPP, Commissioner Dana Murphy also serves as an active member on the RSC. Commissioner Murphy was selected as the designated Oklahoma regulator to serve in this capacity in October 2011. Commissioner Murphy's position furthers Oklahoma's involvement by serving in a leadership role on a key SPP committee. This committee's primary responsibilities include resource adequacy, financial transmission rights, and cost allocation matters related to SPP transmission upgrades. Additionally, Commissioner Murphy has served as the Secretary, the Vice-

THE OKLAHOMA CORPORATION COMMISSION'S 2020 REPORT ON THE STATE'S TRANSMISSION CAPACITY

President, and the President of SPP's RSC.

SPP Integrated Marketplace

The Integrated Marketplace was successfully launched on March 1, 2014. This market expansion is the most complex step in SPP's approach to adding market functionality. The market coordinates next-day generation across the region to maximize cost-effectiveness, provide participants with greater access to reserve energy, improves regional balancing of electricity supply and demand, and facilitates the integration of renewable resources. Specifically, the Integrated Marketplace includes:

- A Day-Ahead Market with Transmission Congestion Rights
- A Reliability Unit Commitment process
- A Real-Time Balancing Market replacing the Energy Imbalance Service Market
- Incorporation of a price-based Operating Reserve Market
- Combining current Balancing Authorities into a single SPP Balancing Authority

Consistent with SPP's approach of being a member-driven organization, several enhancements were implemented one year after the Integrated Marketplace's go-live date. These improvements included three FERC-mandated and several member-requested projects. Specifically, improvements include:

- Market-to-Market (FERC)
- Long-Term Congestion Rights (FERC)
- Regulation Compensation (FERC)
- Pseudo-Tie Out (Member)
- Environment Build-Out (Member)

SPP Transmission Expansion Plan, Processes, and Projects

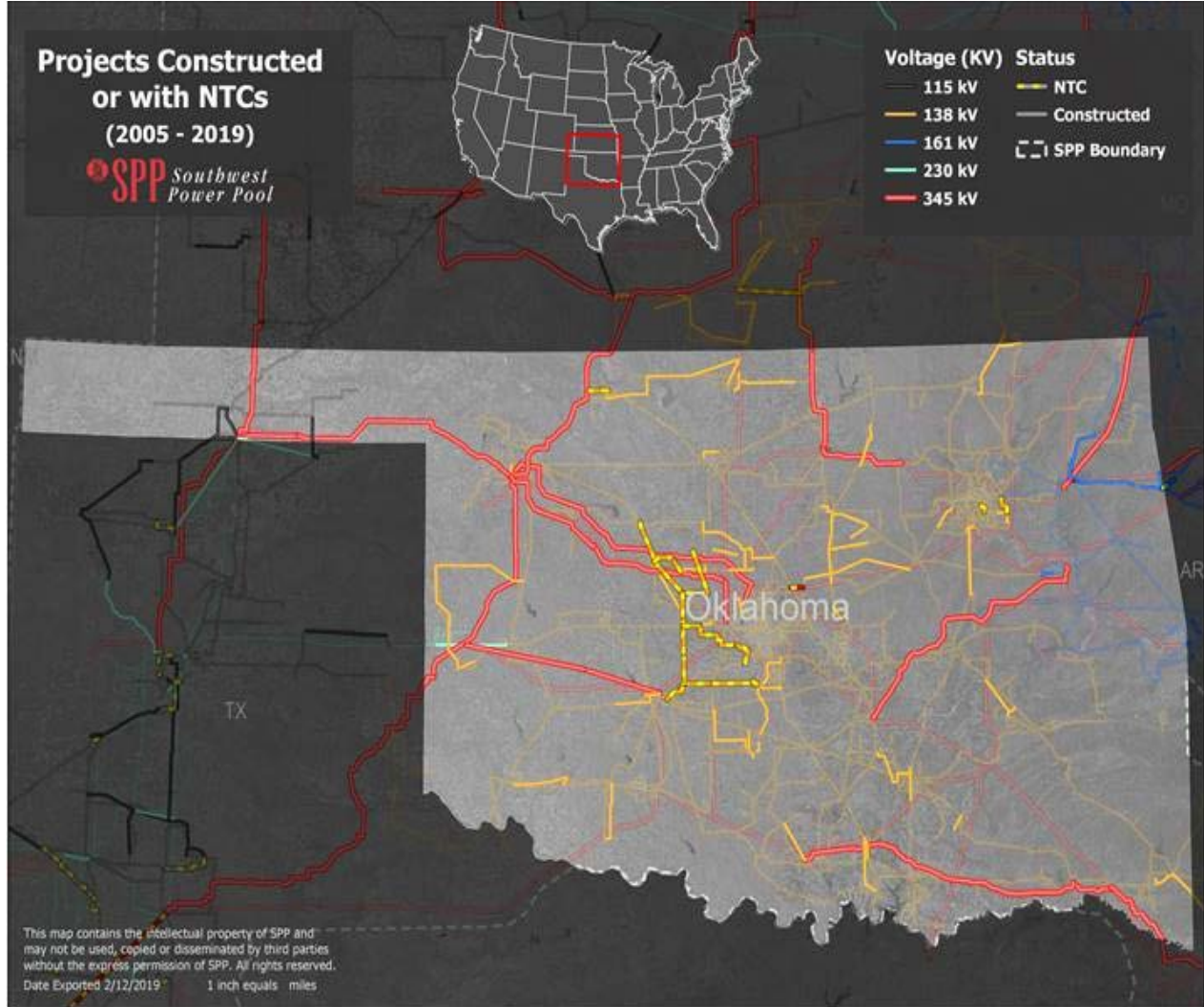
The SPP Transmission Expansion Plan (STEP) is a comprehensive listing of all transmission projects in SPP for the 20-year planning horizon that are developed on a yearly basis. Projects included in the STEP are:

- Upgrades required to satisfy requests for Generation Interconnection
- Upgrades required to satisfy requests for Transmission Service
- Approved projects from the Integrated Transmission Planning (ITP) 20-Year, 10-Year, and Near-Term Assessments
- Approved Balanced Portfolio Upgrades
- Approved High Priority Upgrades
- Endorsed Sponsored Upgrades
- Approved Interregional Projects

SPP plans for renewable generation in its Generation Interconnection, Transmission Service, ITP, and High Priority assessments. The items below give an overview of projects that advanced or helped advance Oklahoma's initiative to promote renewable energy, develop a robust transmission grid to facilitate delivery of renewable energy,

THE OKLAHOMA CORPORATION COMMISSION'S 2020 REPORT ON THE STATE'S TRANSMISSION CAPACITY

and improve the reliability of the electric transmission system.¹ Information received from SPP and other transmission owners, operators, and developers indicate that around 275 transmission upgrades have been approved and/or placed in service in Oklahoma since enactment of the legislation, with an approximate cost of \$2.3 billion. In total, SPP has approved approximately \$10 billion in transmission upgrades since 2009.



Generation Interconnection Process and Upgrades

The SPP Generation Interconnection (GI) process provides a means for generation planners and developers to submit new generation interconnection projects for validation, study, analysis, and ultimately execution of a Generation Interconnection Agreement. The GI Study Process involves a progressive cluster-study methodology affording participants several windows of opportunity throughout the calendar year to submit their generation interconnection requests for validation and study. GI studies are conducted by SPP in collaboration with affected Transmission Owners and neighboring Transmission Providers to determine the required modifications to the transmission

¹ In response to a request from PUD, SPP created a spreadsheet that contained data from studies consisting of projects with wind-related benefits. This report also contained cost estimates submitted by the utilities that will build the projects.

THE OKLAHOMA CORPORATION COMMISSION'S 2020 REPORT ON THE STATE'S TRANSMISSION CAPACITY

system, including cost and scheduled completion dates required to provide the service.

Generation Interconnection Upgrades in Oklahoma from 2009 – 2019:

- 87 transmission upgrades have been issued by SPP in Oklahoma with an approximate cost of \$215,850,251

Transmission Service Study Process and Upgrades

SPP conducts the Aggregate Transmission Service Study (ATSS) process to determine if the SPP transmission system and neighboring Transmission Providers can accommodate requests for long-term firm Transmission Service. SPP combines all long-term point-to-point and long-term network integration transmission service requests received during a specified period of time into a single ATSS to develop a more efficient expansion of the transmission system that provides the necessary Available Transfer Capability to accommodate all such requests at the minimum total cost.

Transmission Service Upgrades in Oklahoma from 2009 – 2019:

- 72 transmission upgrades have been issued by SPP with an approximate cost of \$303,070,276

Integrated Transmission Planning (ITP) Process and Projects

The ITP is an annual planning cycle that assesses near and long-term economic and reliability transmission needs. The ITP produces a 10-year transmission expansion plan each year, combining near-term, 10-year, and NERC transmission planning assessments into one study. The 20-year assessment is performed once every five years. The process seeks to target a reasonable balance between long-term transmission investments and congestion costs to customers. The ITP works in concert with SPP's existing sub regional planning stakeholder process and continues in parallel with the NERC TPL-001-4 compliance process.

Along with the Highway/Byway cost allocation methodology,² the ITP process promotes transmission investment that will meet reliability, economic, and public policy needs³ intended to create a cost-effective, flexible, and robust transmission.

ITP Projects approved in Oklahoma from 2009 – 2019:

- 79 ITP projects have been approved with an approximate cost of \$547,658,866

² SPP analyses demonstrated that large-scale, extra high voltage "highways" provide benefits across a wider region; thus, costs will be assigned to electric utilities across the SPP footprint based on their load percentage of the region's transmission system. Lower-voltage "byways" benefit smaller areas within the region; a formula is used to assign costs more directly to the utility in whose service territory (zone) the project is located and that will receive the most benefit from the project.

³ The Highway/Byway cost allocation approving order is Sw. Power Pool, Inc., 131 FERC ¶ 61,252 (2010). The approving order for ITP is Sw. Power Pool, Inc., 132 FERC ¶ 61,042 (2010).

THE OKLAHOMA CORPORATION COMMISSION'S 2020 REPORT ON THE STATE'S TRANSMISSION CAPACITY

Balanced Portfolio Process and Upgrades

The Balanced Portfolio (BP), approved for construction in April 2009, was an initiative to develop a group of economic transmission upgrades (345 kV) to benefit the entire SPP region and to allocate those project costs regionally. End-use customer savings are realized when transmission upgrades reduce congestion on SPP's transmission system, thus lowering generation production costs. Economic upgrades may provide other benefits to the power grid such as increasing reliability, lowering required reserve margins, deferring reliability upgrades, lowering end-use consumer costs, and providing environmental benefits due to more efficient operation of assets and greater utilization of renewable resources. The BP consisted of seven upgrades for a total cost of \$831 million, with all seven upgrades placed in service by mid-year 2015. Four of the seven BP upgrades are completely or partially in Oklahoma and are listed below. For more information regarding the BP, please refer to the SPP website at the following link: <https://www.spp.org/engineering/transmission-planning/balanced-portfolio/>

- 250-mile 345 kV "Woodward-Tuco" line between Woodward County, Okla., and Hale County, Texas, with an approximate cost \$330,158,871
- 100-mile 345 kV "Seminole-Muskogee" line between Seminole County and Muskogee County, Okla., with an approximate cost \$163,456,250
- 36-mile 345 kV "Sooner-Cleveland" line between Noble County and Cleveland County, Okla., with an approximate cost \$50,269,871
- 345 kV "Gracemont Substation" in Anadarko, Okla., with an approximate cost \$14,859,014

Balanced Portfolio approved projects in Oklahoma:

- Four Balanced Portfolio upgrades were approved by SPP with an approximate proportional cost to Oklahoma of \$342,986,558

High Priority Study Process and Upgrades 2009 – 2019

SPP conducts High Priority Studies (up to three per year) based on stakeholder requests. These studies assess the reliability and/or economic impacts for proposed changes to the transmission system. SPP's High Priority Incremental Load Study (HPILS) evaluate transmission needs resulting from significant incremental load growth expectations in certain parts of the SPP footprint.

Priority Projects Portfolio

In April 2010 the SPP Board of Directors approved for construction a group of "priority" high voltage electric transmission projects estimated to bring benefits of at least \$3.7 billion to the SPP region over 40 years with an approximate total cost of \$1.37 billion. The Priority Projects (PP) Portfolio consists of six projects placed in service by year end 2016. Four of the six PP upgrades are located all or part in Oklahoma and are listed below. For more information regarding the PP, please refer to the SPP website at the following link: <https://www.spp.org/engineering/transmission-planning/priority-projects/>

THE OKLAHOMA CORPORATION COMMISSION'S 2020 REPORT ON THE STATE'S TRANSMISSION CAPACITY

- Double-circuit 345 kV line from Medicine Lodge, Kansas, to Woodward, Oklahoma,⁴ with an approximate cost \$185,315,142
- Double-circuit 345 kV line from Woodward, Oklahoma, to Hitchland, Texas, with an approximate cost \$229,667,207
- 345 kV line from Valliant, Oklahoma, to Texarkana, Texas, with an approximate cost \$185,751,250
- Tulsa Power Station 138 kV Reactor in Tulsa, Oklahoma, with an approximate cost \$614,753

High Priority Upgrades in Oklahoma from 2009 – 2019:

- 21 High Priority Upgrades were approved with an approximate cost of \$645,122,088

Sponsored Upgrades

The Sponsored Upgrade process provides a path for an entity to pursue new transmission facilities not previously identified in any other SPP planning processes to be constructed, so long as the transmission facilities do not adversely impact the reliability of the transmission system and the requesting entity assumes the cost of the new facilities.

Sponsored Upgrades in Oklahoma from 2009 – 2019:

- 5 Sponsored Upgrades have been approved for construction with an approximate cost of \$250,000,000

Results of Oklahoma's Transmission Capacity Legislation

In total, approximately \$2.3 billion in transmission upgrades were issued or approved by SPP in Oklahoma since 2010. In 2018, Oklahoma ranked second in the nation for total wind energy generation, third for installed wind capacity, and fourth in number of wind turbines installed. As of the date of this final report, 44 wind energy facilities are currently operating in the state, and an additional 48 wind energy facilities have provided notice of intent to construct to the Commission. According to the American Wind Energy Association, this amount of wind generation provides enough electricity to power the equivalent of 2.6 million U.S. homes and also provides significant economic development in Oklahoma, with capital investment in wind projects of approximately \$14.7 billion through 2018, \$23.5 million annually in state and local tax payments, \$20 - \$30 million in annual land lease payments, and over 7,000 jobs as of 2018.

As a result of the active involvement of Oklahoma's regulated electric utilities, PUD, interested stakeholders, and Commissioner Dana Murphy, as Oklahoma's RSC member, wind energy development and expansion of transmission capacity has occurred and is continuing to occur as contemplated under 17 O.S. §287.

⁴ This line was originally planned to be built from Comanche County, Kansas, to Woodward, Oklahoma. This line modification was approved by SPP's Board of Directors in October 2010.