



2024 SPP TRANSMISSION EXPANSION PLAN REPORT

By SPP Engineering

Published on February 6, 2024

Version 1

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
1/16/2024	SPP Staff	Submitted to MOPC	

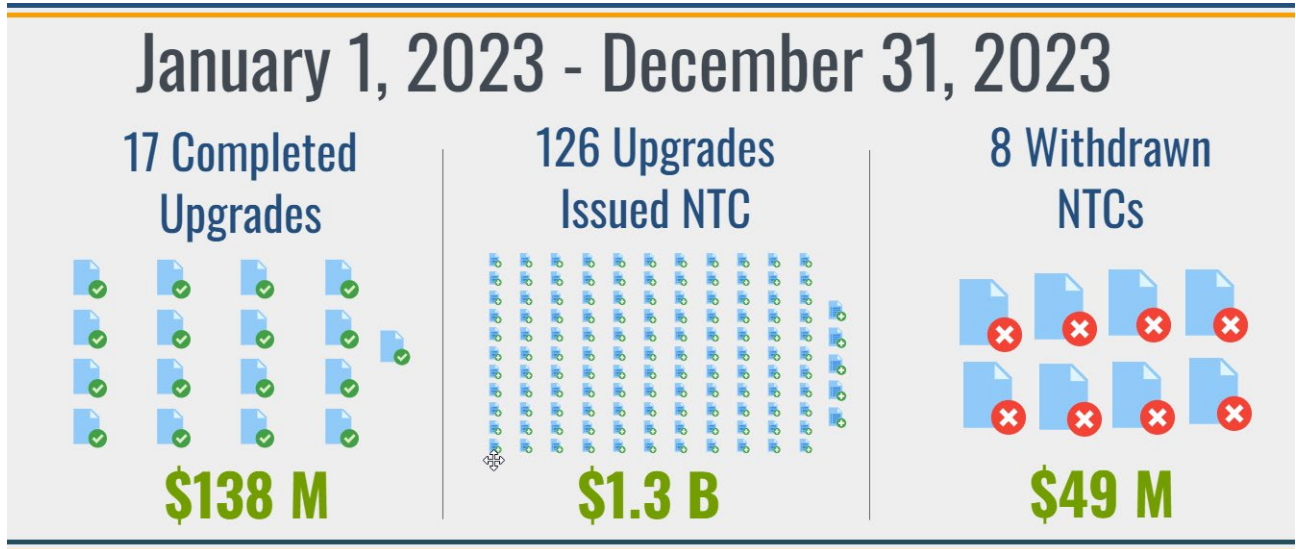
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EXECUTIVE SUMMARY



The SPP Transmission Expansion Plan (STEP) is a comprehensive listing of all transmission projects in SPP for the 20-year planning horizon. Projects in the current portfolio include all Network Upgrades for which construction activities are ongoing or those for which construction has completed but not all closeout requirements have been fulfilled in accordance with Section 13 in Business Practice 7060.¹ Projects in the STEP portfolio include:

1. Upgrades required to satisfy requests for transmission service (TS)
2. Upgrades required to satisfy requests for generator interconnection (GI)
3. Requests pursuant to Attachment AQ of this Tariff (AQ)²
4. Approved projects from the Integrated Transmission Planning Assessment (ITP)
5. Upgrades within approved Balanced Portfolios (BP)³
6. Approved high priority upgrades (HP)
7. Endorsed Sponsored Upgrades (SP)
8. Approved Interregional Projects (IR)³
9. Approved projects from Generator Retirement Process (GR)³

¹ [SPP OATT Business Practices](#)

² Pursuant to RR 467, all Upgrades resulting from under attachment AQ are tracked independently of transmission service upgrades as of 6/1/2022

³ There are no Generator Retirement, Balanced Portfolio or Interregional projects included in the STEP report.

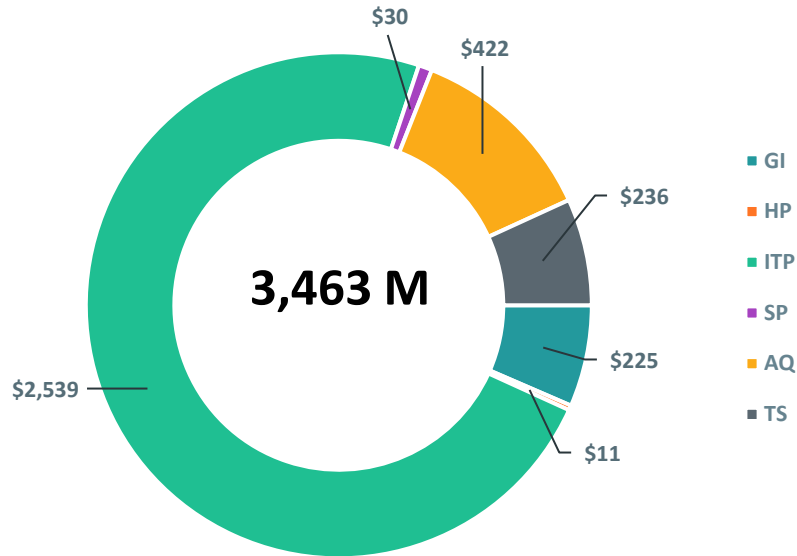


Figure 1: STEP Upgrades by Type (\$ Millions)

SPP actively monitors and supports the progress of transmission expansion projects, emphasizing the importance of maintaining accountability for areas such as regional grid reliability standards, firm transmission commitments, and SPP Open Access Transmission Tariff (tariff) cost recovery. SPP staff solicits quarterly feedback from the project owners to determine the progress of each approved transmission project. This report charts the progress of all SPP transmission projects approved by the SPP Board of Directors (Board) or through a Federal Energy Regulatory Commission (FERC)-filed service agreement under the tariff. A summary of the project portfolio is also included.

Stakeholder Action Requested. We invite stakeholders and all interested parties to submit any written comments on the projects included in the STEP via the SPP Request Management System ([RMS](#)). SPP solicits feedback on proposed solutions to transmission needs through stakeholder working groups and planning summits, as well as through meetings, teleconferences, web conferences, and via email or secure web-based workspaces. These meetings provide an open forum where all stakeholders have an opportunity to provide advice and recommendations to SPP to aid in the development of the STEP. In addition to these opportunities, we also invite stakeholders to provide SPP with any transmission needs they deem to be beneficial to the transmission planning process through our website or [RMS](#).

PORTFOLIO SUMMARY

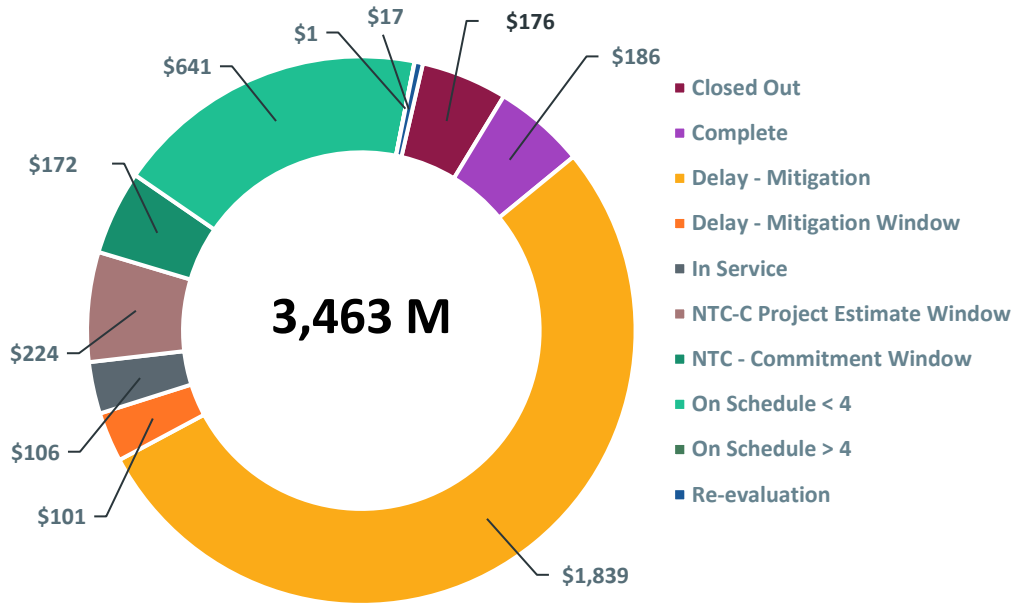


Figure 2: STEP Upgrades by Status (\$ Millions)

SPP assigns a project status to all network upgrades based on the projected in-service dates provided by the Designated Transmission Owner (DTO) relative to the Need Date determined for the project. Project status definitions are provided below:

- **Closed Out:** Construction complete and in-service; all close-out requirements fulfilled. Upgrades are reported as Closed Out for one quarter and then removed from the active portfolio
- **Complete:** Construction complete and in-service
- **Delay - Mitigation:** Projected In-Service Date beyond Need Date; interim mitigation provided or project may change but time permits the implementation of project
- **Delay - Mitigation Window:** Behind schedule, interim mitigation pending or project may change but time permits the implementation of project
- **Identified:** Upgrade identified and included in Board-approved study results
- **In Service:** Upgrade is operational, but not all construction activities are complete
- **Notification to Construct with Conditions (NTC-C) Project Estimate Window:** Within the NTC-C Project Estimate (CPE) window
- **Notification to Construct (NTC) Commitment Window:** NTC/NTC-C issued, still within the 90-day written commitment to construct window and no commitment received
- **On Schedule < 4:** On Schedule within four-year horizon
- **On Schedule > 4:** On Schedule beyond four-year horizon
- **Re-evaluation:** Project active; pending re-evaluation
- **RFP Issued:** Responses for competitive upgrades are being submitted and/or reviewed
- **Suspended:** NTC/GIA suspended

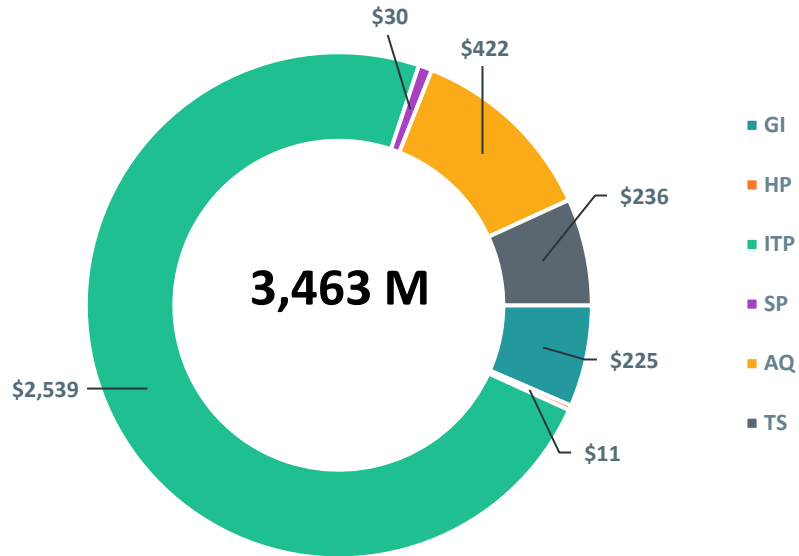


Figure 3: STEP Upgrades by Type (\$ Millions)

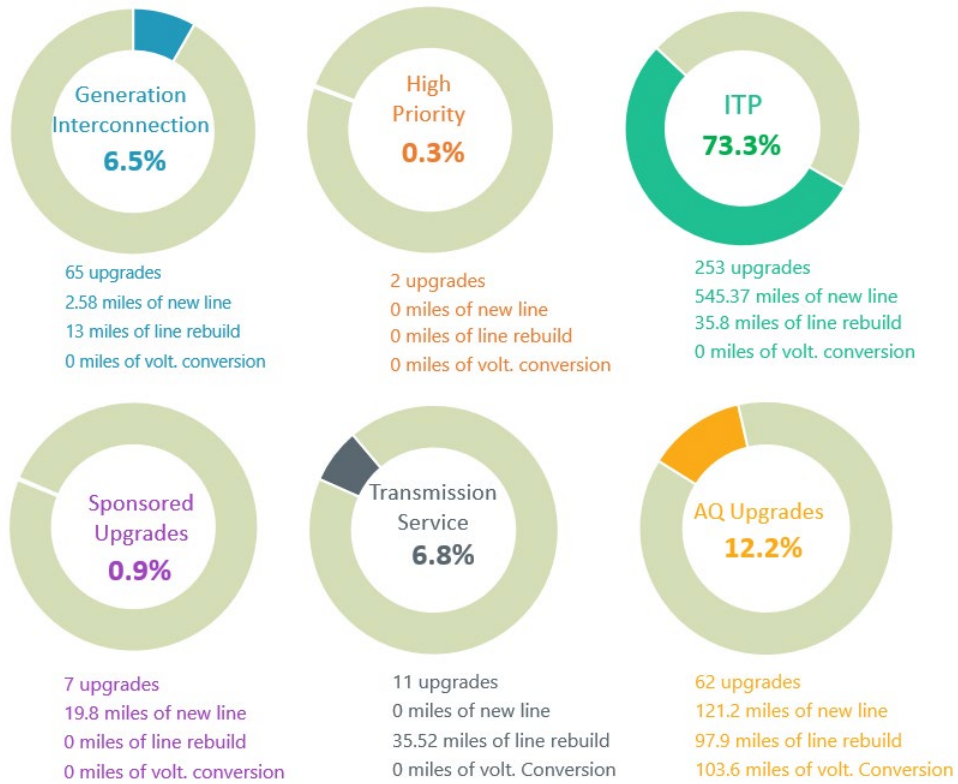


Figure 4: Upgrade Summary by Type⁴

⁴ Mileage not available for all upgrade categories.

PROJECT SUMMARY

In adherence to the tariff and SPP Business Practice 7060 (BP 7060), SPP issues NTCs to DTOs to begin work on network upgrades that have been approved or endorsed by the SPP Board to meet the construction needs of the STEP, tariff, or RTO.

Figure 5 shows the estimated cost by in-service year for all network upgrades resulting from studies identified in Attachment O of the tariff. Table 1 shows all upgrade costs by upgrade status in each study. Note: Figure 5 and Table 1 provide data for all projects issued an NTC or NTC-C, included in an active Generator Interconnection Agreement (GIA), or identified in the tariff as a base plan upgrade. This chart includes costs for network upgrades no longer included in the active Project Tracking Portfolio.



Figure 5: Upgrade Cost by In-Service Year (\$ Millions)

Source Study	Complete	Closed Out	Delay	In Service	Commitment Window	On Schedule	Re-evaluation	Total
2006 STEP	\$0	\$189	\$0	\$0	\$0	\$0	\$0	\$189
2007 STEP	\$0	\$494	\$0	\$0	\$0	\$0	\$0	\$494
2008 STEP	\$0	\$413	\$0	\$0	\$0	\$0	\$0	\$413
2009 STEP	\$0	\$550	\$0	\$0	\$0	\$0	\$0	\$550
2010 STEP	\$0	\$116	\$0	\$0	\$0	\$0	\$0	\$116
2012 ITP10	\$0	\$365	\$451	\$0	\$0	\$0	\$0	\$816
2012 ITPNT	\$0	\$185	\$0	\$0	\$0	\$0	\$0	\$185
2013 ITPNT	\$0	\$489	\$0	\$0	\$0	\$0	\$0	\$489
2014 ITPNT	\$0	\$439	\$0	\$0	\$0	\$0	\$0	\$439
2015 ITP10	\$0	\$44	\$0	\$0	\$0	\$0	\$0	\$44
2015 ITPNT	\$0	\$196	\$0	\$0	\$0	\$0	\$0	\$196
2016 ITPNT	\$0	\$408	\$36	\$0	\$0	\$0	\$2	\$446
2017 ITP10	\$0	\$10	\$0	\$0	\$0	\$0	\$0	\$11
2017 ITPNT	\$0	\$53	\$0	\$0	\$0	\$0	\$0	\$53
2018 ITPNT	\$0	\$30	\$24	\$0	\$0	\$0	\$0	\$54
2019 ITP	\$36	\$10	\$62	\$0	\$0	\$226	\$0	\$333
2020 ITP	\$10	\$35	\$115	\$0	\$0	\$138	\$14	\$313

Source Study	Complete	Closed Out	Delay	In Service	Commitment Window	On Schedule	Re-evaluation	Total
2021 ITP	\$1	\$0	\$694	\$1	\$0	\$300	\$0	\$995
2022 ITP	\$0	\$0	\$10	\$1	\$0	\$9	\$0	\$20
2023 ITP	\$0	\$0	\$0	\$0	\$396	\$0	\$0	\$396
AG Studies	\$75	\$885	\$1	\$0	\$0	\$150	\$0	\$1,112
Balanced Portfolio	\$0	\$823	\$0	\$0	\$0	\$0	\$0	\$823
DPA Studies	\$59	\$496	\$207	\$0	\$0	\$4	\$0	\$765
GI Studies	\$469	\$319	\$30	\$104	\$0	\$91	\$0	\$1,013
HPILS	\$0	\$569	\$11	\$0	\$0	\$0	\$0	\$580
IS Integration	\$0	\$272	\$0	\$0	\$0	\$0	\$0	\$272
Priority Projects	\$0	\$1,318	\$0	\$0	\$0	\$0	\$0	\$1,318
Sponsored Upgrade	\$6	\$14	\$8	\$0	\$0	\$16	\$0	\$44
Grand Total	\$655	\$8,721	\$1,649	\$106	\$396	\$933	\$17	\$12,476

Table 1: Upgrade Cost by Study and Status (\$ Millions)

NTC AND UPGRADE ACTIVITY

In adherence with the tariff and BP 7060, SPP issues NTCs to DTOs to begin work on network upgrades that have been approved or endorsed by the Board to meet the construction needs of the tariff or RTO. Figure 6 and Table 2 show completed upgrades. Figure 7 and Table 3 show upgrades issued NTCs. Figure 8 and Table 4 show upgrades where the NTC was withdrawn during the reporting period.

COMPLETED UPGRADES

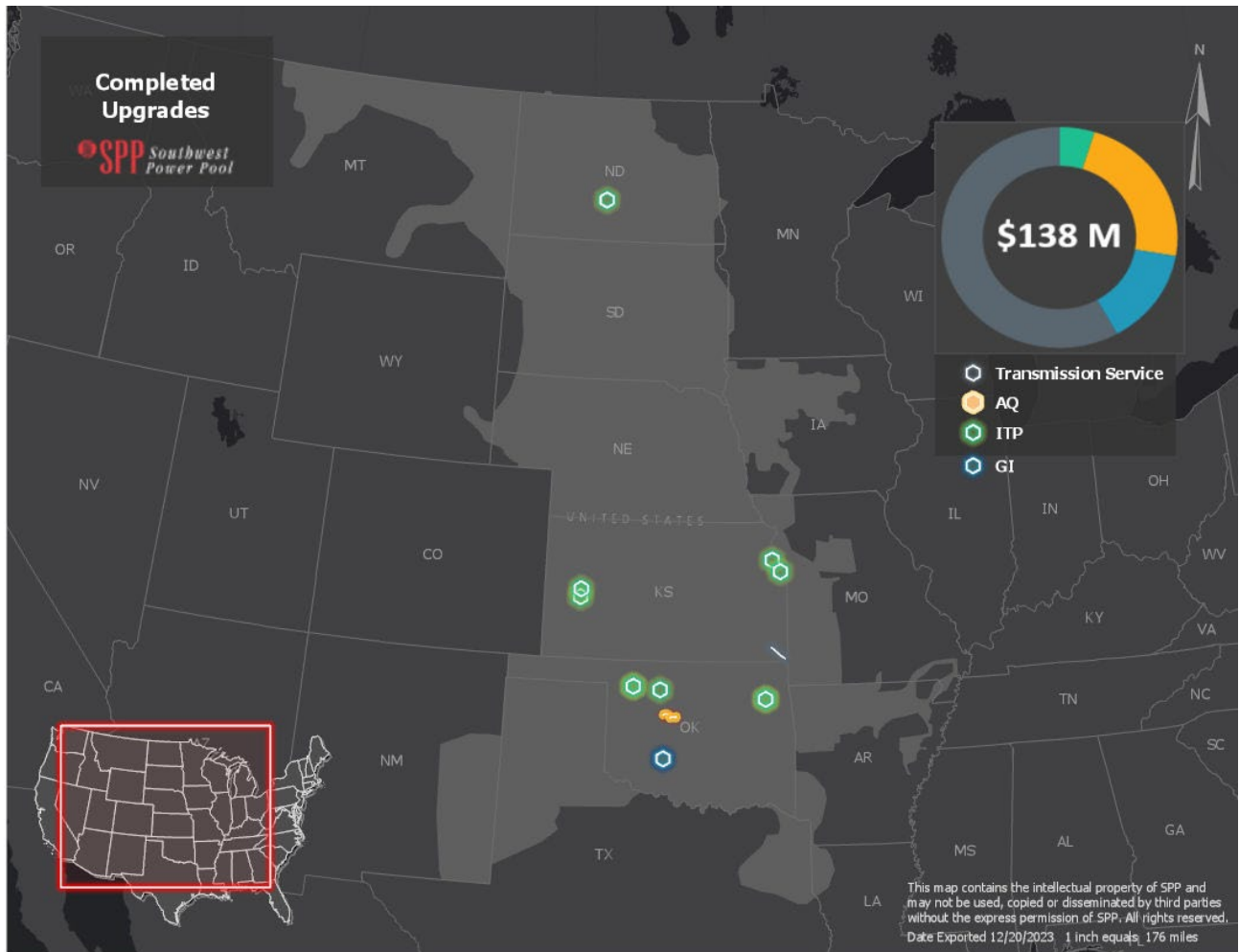


Figure 6: Completed Upgrades

NTC ID	IN SERVICE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE
210543	10/25/2023	112452	SEPC	Pile - Scott City 115kV Terminal Upgrades	2019 ITP	\$130,000

NTC ID	IN SERVICE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE
210543	10/11/2023	112453	SEPC	Scott City - Setab 115kV Terminal Upgrades	2019 ITP	\$144,495
210578	1/31/2023	122717	GRDA	GRDA1 345 kV Terminal Upgrades Transformer Ckt 1	2020 ITP	\$374,400
210578	1/31/2023	122718	GRDA	GRDA1 161 kV Terminal Upgrades Transformer Ckt 1	2020 ITP	\$453,000
210579	11/30/2023	143157	WAPA	Bismarck 12.47 kV Reactors	2020 ITP	\$4,309,263
210586	2/23/2023	122865	WFEC	Mooreland - Aspen 138 kV Terminal Upgrades	2020 ITP	\$202,500
210586	2/23/2023	122866	WFEC	Mooreland - Pic 138 kV Terminal Upgrades	2020 ITP	\$405,000
210637	2/10/2023	143663	EKC	Jarbalo Junction 115 kV Breaker	2021 ITP	\$195,694
210647	5/1/2023	143666	EM	Craig 161 kV Breaker #2	2021 ITP	\$267,643
210656	3/1/2023	143786	OGE	Cleo Corner 69 kV Terminal Upgrades	2021 ITP	\$168,228
210483	5/31/2023	72015	WFEC	Omega - Watonga SW 138 kV Ckt 1 Voltage Conversion	DPA-2017-August-767-774-776	\$12,428,000
210483	5/31/2023	72029	WFEC	Kingfisher SW - Park Community 138 kV Ckt 1 New Line	DPA-2017-August-767-774-776	\$6,141,513
210560	1/18/2023	122575	BEPC	Northshore 230 kV Substation	DPA-2018-August-918	\$12,877,495
	5/1/2023	112333	AEP	Gracemont - Lawton East Side 345 kV Substation GEN-2016-091 (TOIF) (AEPW)	Generation Interconnection	\$1,704,279
	5/1/2023	112334	AEP	Gracemont - Lawton East Side 345 kV Substation GEN-2016-091 (NU) (AEPW)	Generation Interconnection	\$17,798,882
210569	1/13/2023	112457	EKC	Neosho - Riverton 161kV Rebuild (EKC)	SPP-2019-AG1-AFS-2	\$7,612,143
210570	1/13/2023	112456	EDE	Neosho - Riverton 161kV Rebuild (EDE)	SPP-2019-AG1-AFS-2	\$72,381,260
17 Upgrade(s) Completed						\$137,593,795

Table 2: Completed Upgrades

UPGRADES APPROVED FOR CONSTRUCTION

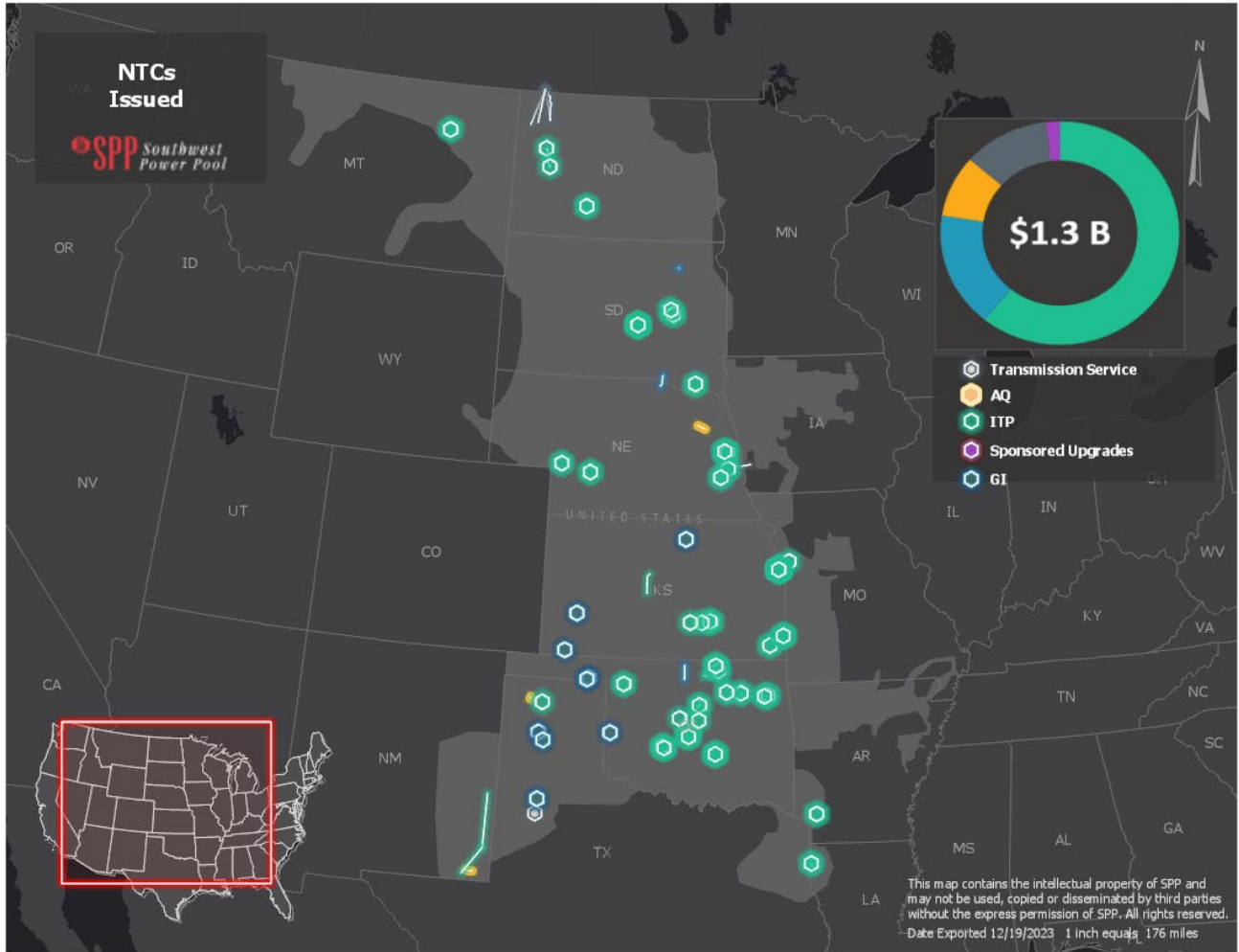


Figure 7: NTCs Issued

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220754	12/15/2023	122754	WFEC	Anadarko - Gracemont 138 kV Ckt3 (WFEC)	2023 ITP	\$19,500,000	\$0
220754	12/15/2023	122756	WFEC	Anadarko 138 kV Substation	2023 ITP	\$20,000,000	\$0
220739	12/15/2023	122761	OGE	Czech Hall 138 kV Terminal Upgrade	2023 ITP	\$69,476	\$0
220720	3/16/2023	143588	BEPC	Kummer Ridge - Round Up 345 kV	2021 ITP	\$0	\$78,293,357

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220720	3/16/2023	143589	BEPC	Kummer Ridge 345 kV Terminal Upgrades	2021 ITP	\$0	\$342,000
220720	3/16/2023	143590	BEPC	Round Up 345 kV Terminal Upgrades	2021 ITP	\$0	\$342,000
220727	8/24/2023	144206	SPS	Twist 115 kV Substation	DPA-2021-Feb-1279-1280	\$0	\$9,087,788
220727	8/24/2023	144207	SPS	RB-Exum - Hilmar Cheese Ckt 1, Twist 115 kV New Lines, north side.	DPA-2021-Feb-1279-1280	\$0	\$3,909,647
220727	8/24/2023	144208	SPS	RB-Kemp - Moore County Ckt 1, Twist 115 kV New Lines, south side.	DPA-2021-Feb-1279-1280	\$0	\$3,561,243
210697	1/12/2023	144326	OGE	Badger 345 kV Substation Reconfiguration North	DISIS-2017-001	\$8,500,000	\$0
220722	5/24/2023	156240	BEPC	Dakota/Saskatchewan Border (Tableland) - Tande 230 kV Ckt 1	SPP-2021-AG2	\$78,880,406	\$0
220722	5/24/2023	156241	BEPC	Tande 230 kV Terminal Equipment North	SPP-2021-AG2	\$2,562,090	\$0
220722	5/24/2023	156248	BEPC	Dakota/Saskatchewan Border (Tableland) - Wheelock 230 kV Ckt 1	SPP-2021-AG2	\$65,123,051	\$0
220722	5/24/2023	156249	BEPC	Wheelock 230 kV Terminal Upgrade	SPP-2021-AG2	\$2,476,563	\$0
220741	11/15/2023	156301	GRDA	Kerr - Maid 161 kV Ckt 1 Rebuild #2	2023 ITP	\$8,440,000	\$0

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220741	11/15/2023	156302	GRDA	Kerr 161 kV Terminal Equipment	2023 ITP	\$730,199	\$0
220741	11/15/2023	156303	GRDA	Maid 161 kV Terminal Equipment	2023 ITP	\$1,107,600	\$0
220741	11/15/2023	156304	GRDA	Kerr - Maid 161 kV Ckt 2 Rebuild	2023 ITP	\$8,440,000	\$0
220741	11/15/2023	156305	GRDA	Kerr 161 kV Terminal Equipment Ckt 2	2023 ITP	\$730,200	\$0
220741	11/15/2023	156306	GRDA	Maid 161 kV Terminal Upgrade Ckt 2	2023 ITP	\$1,107,600	\$0
220726	10/3/2023	156411	NEET	Crossroads - Hobbs 345 kV ckts 1 & 2	2021 ITP	\$196,135,073	\$0
220726	10/3/2023	156412	NEET	Hobbs - Phantom 345 kV ckts 1 & 2	2021 ITP	\$95,479,502	\$0
220734	12/12/2023	156454	SEPC	Concordia West 230/115 kV Transformer	DISIS-2017-002	\$7,720,372	\$0
220735	12/12/2023	156469	WAPA	Groton South - Groton BE7 115kV CKT2 New Line	DISIS-2017-002	\$2,800,000	\$0
220729	10/6/2023	156471	EKC	Viola to Renfrow 345 kV Rebuild	DISIS-2017-002	\$47,418,633	\$0
220732	10/24/2023	156493	SPS	Carpentier 345 kV Line Reactor	DISIS-2017-002	\$836,245	\$0
220732	10/24/2023	156494	SPS	Potter County 345 kV Line Reactor	DISIS-2017-002	\$1,228,089	\$0
220732	10/24/2023	156495	SPS	Carpenter 345 kV- Finney 345 kV Line Reactors	DISIS-2017-002	\$1,884,762	\$0
220732	10/24/2023	156497	SPS	Border 345 kV- Tuco 345 kV Line Reactors	DISIS-2017-002	\$2,316,446	\$0
220724	9/13/2023	156850	WAPA	Ft Randall - Spencer 115 kV Ckt 1 Rebuild	DISIS-2017-002	\$14,216,800	\$0

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220732	10/24/2023	156857	SPS	Randall 230 kV Reactive Support	DISIS-2017-002	\$66,361,449	\$0
220733	10/25/2023	156858	AEP	Sweetwater 230 kV Reactive Support	DISIS-2017-002	\$58,762,790	\$0
220751	11/19/2023	157186	SEPC	Ellsworth Tap - Great Bend 115 kV Ckt 1 Structure Upgrade	2023 ITP	\$750,000	\$0
220746	12/15/2023	157202	EM	Craig 161 kV Ckt 2 Terminal Upgrade	2023 ITP	\$1,329,162	\$0
220746	12/15/2023	157203	EM	Lenexa South 161 kV Ckt 2 Terminal Upgrade	2023 ITP	\$1,329,161	\$0
220739	12/15/2023	157241	OGE	Seminole 345/138 kV Transformer Ckt 3 (138 kV)	2023 ITP	\$3,415,129	\$0
220739	12/15/2023	157242	OGE	Seminole 345/138 kV Transformer Ckt 3 (345 kV)	2023 ITP	\$4,891,214	\$0
220739	12/15/2023	157254	OGE	Lightning Creek 138 kV Breaker #1	2023 ITP	\$1,418,348	\$0
220746	12/15/2023	157255	EM	Blue Valley 161 kV Breaker #1	2023 ITP	\$310,000	\$0
220746	12/15/2023	157256	EM	Craig 161 kV Breaker #1	2023 ITP	\$609,491	\$0
220746	12/15/2023	157257	EM	Craig 161 kV Breaker #3	2023 ITP	\$609,490	\$0
220746	12/15/2023	157258	EM	Craig 161 kV Breaker #4	2023 ITP	\$609,491	\$0
220746	12/15/2023	157259	EM	Craig 161 kV Breaker #5	2023 ITP	\$609,491	\$0
220737	12/15/2023	157263	AEP	Longwood - Oak Pan-Harr 138 kV Ckt 1 Rebuild	2023 ITP	\$4,070,000	\$0
220737	12/15/2023	157264	AEP	Longwood 138 kV Terminal Upgrade	2023 ITP	\$150,000	\$0
220737	12/15/2023	157266	AEP	Flournoy - Oak Pan-Harr 138 kV Ckt 1 Rebuild	2023 ITP	\$15,260,000	\$0

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220737	12/15/2023	157268	AEP	Turk 138/115 kV Transformer Ckt 1 (138 kV)	2023 ITP	\$5,250,000	\$0
220739	12/15/2023	157274	OGE	Woodward Nitrogen 69 kV Terminal Upgrade	2023 ITP	\$815,000	\$0
220748	12/15/2023	157280	WAPA	Dawson County-Fort Peck 230 kV Line Reactor	2023 ITP	\$4,007,750	\$0
220760	12/5/2023	157296	SPS	XFR - Phantom 345/115 kV Transformer	DPA-2022-March-1564	\$13,713,562	\$0
220760	12/5/2023	157302	SPS	Road Runner - Red Bluff 115 kV Reconductor	DPA-2022-March-1564	\$7,627,279	\$0
220760	12/5/2023	157303	SPS	Phantom 115 kV New Cap Bank (72 MVAR)	DPA-2022-March-1564	\$7,675,058	\$0
220760	12/5/2023	157304	SPS	Livingston Ridge 115 kV New Cap Bank (57.6 MVAR)	DPA-2022-March-1564	\$3,481,978	\$0
220760	12/5/2023	157305	SPS	Lynch 115 kV New Cap Bank (14.4 MVAR)	DPA-2022-March-1564	\$2,746,172	\$0
220760	12/5/2023	157307	SPS	Phantom 345 kV New Cap Bank (200 MVAR)	DPA-2022-March-1564	\$18,426,313	\$0
220760	12/5/2023	157308	SPS	Malaga Bend 115 kV New Cap Bank (28.8 MVAR)	DPA-2022-March-1564	\$3,032,336	\$0
220760	12/5/2023	157309	SPS	North Loving 345 kV New Cap Bank (100 MVAR)	DPA-2022-March-1564	\$12,183,265	\$0

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE	COST ESTIMATE
						OF NEW UPGRADES	OF PREVIOUSLY APPROVED UPGRADES
220760	12/5/2023	157310	SPS	North Loving 115 kV New Cap Bank (28.8 MVAR)	DPA-2022-March-1564	\$3,032,765	\$0
220747	12/15/2023	157375	BEPC	Broadland 345 kV Reactor	2023 ITP	\$5,445,170	\$0
220750	12/15/2023	157377	SPS	Moore Co 115 kV Terminal Upgrade	2023 ITP	\$210,000	\$0
220758	12/15/2023	157382	WFEC	Anadarko 138 kV Terminal Upgrade Ckt 1	2023 ITP	\$1,000,000	\$0
220743	12/15/2023	157383	NPPD	Sub 976 115/69 kV Transformer Ckt 2 (69 kV)	2023 ITP	\$5,600,000	\$0
220743	12/15/2023	157384	NPPD	Fremont 115/69 kV Transformer Ckt 2 (115 kV)	2023 ITP	\$300,000	\$0
220745	12/15/2023	157385	LES	Sub 1214 - 70th & Bluff 161 kV Ckt 1 Rebuild (LES)	2023 ITP	\$1,200,000	\$0
220744	12/15/2023	157386	OPPD	Sub 1214 161 kV Terminal Upgrade	2023 ITP	\$114,179	\$0
220745	12/15/2023	157387	LES	70th & Bluff 161 kV Terminal Upgrade	2023 ITP	\$2,700,000	\$0
220739	12/15/2023	157390	OGE	Southgate - Westmoore Tap 138 kV Extend Line	2023 ITP	\$6,470,000	\$0
220739	12/15/2023	157392	OGE	Westmoore 138 kV Terminal Upgrade #2	2023 ITP	\$4,790,000	\$0
220739	12/15/2023	157393	OGE	Pennsylvania 138 kV Terminal Upgrade	2023 ITP	\$200,000	\$0
220738	12/15/2023	157395	OGE	Gracemont 138 kV Ck 2 Terminal Upgrade	2023 ITP	\$2,171,478	\$0
220754	12/15/2023	157396	WFEC	Anadarko 138 kV Ckt 3 Terminal Upgrade	2023 ITP	\$2,500,000	\$0

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220745	12/15/2023	157397	LES	70th & Bluff 161/115 kV Transformer Ckt 1 (115 kV)	2023 ITP	\$4,900,000	\$0
220749	12/15/2023	157403	EKC	Neosho 345 kV Terminal Upgrade	2023 ITP	\$3,415,129	\$0
220749	12/15/2023	157405	EKC	Butler 138 kV Terminal Upgrade	2023 ITP	\$1,329,161	\$0
220749	12/15/2023	157406	EKC	Midian 138 kV Ckt 1 Terminal Upgrade	2023 ITP	\$1,329,161	\$0
220737	12/15/2023	157475	AEP	Pine & Peoria Tap - 46Th Street Tap 138 kV Ckt 1 Rebuild	2023 ITP	\$1,481,809	\$0
220737	12/15/2023	157517	AEP	Tulsa North - 46Th Street Tap 138 kV Ckt 1 Rebuild	2023 ITP	\$14,714,997	\$0
220737	12/15/2023	157518	AEP	Tulsa North 138 kV Terminal Upgrade	2023 ITP	\$150,000	\$0
220736	12/15/2023	157526	AEP	Shidler - Webb City Tap 138 kV Ckt 1 Rebuild	2023 ITP	\$4,718,963	\$0
220736	12/15/2023	157527	AEP	Webb City Tap 138 kV Terminal Upgrade	2023 ITP	\$902,559	\$0
220736	12/15/2023	157528	AEP	Shidler 138 kV Terminal Upgrade	2023 ITP	\$150,000	\$0
220736	12/15/2023	157529	AEP	Webb City Tap - Osage 138 kV Ckt 1 Rebuild (AEP)	2023 ITP	\$4,765,631	\$0
220738	12/15/2023	157530	OGE	Osage 138 kV Terminal Upgrade	2023 ITP	\$4,500,000	\$0
220736	12/15/2023	157534	AEP	Webb City Tap 138 kV Terminal Upgrade #2	2023 ITP	\$902,559	\$0
220753	12/15/2023	157551	WAPA	Fort Thompson 345/230 kV Transformer Ckt 1 (345 kV)	2023 ITP	\$12,963,375	\$0

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220753	12/15/2023	157552	WAPA	Fort Thompson 345/230 kV Transformer Ckt 2 (230 kV)	2023 ITP	\$4,891,214	\$0
220753	12/15/2023	157553	WAPA	Fort Thompson 345/230 kV Transformer Ckt 2 (345 kV)	2023 ITP	\$12,963,375	\$0
220753	12/15/2023	157554	WAPA	Fort Thompson 345/230 kV Transformer Ckt 1 (230 kV)	2023 ITP	\$2,728,949	\$0
220743	12/15/2023	157594	NPPD	Gerald Gentleman Station - Ogallala 230 kV Line & Terminal Upgrades	2023 ITP	\$1,600,000	\$0
220743	12/15/2023	157595	NPPD	Ogallala 230 kV Terminal Upgrade	2023 ITP	\$100,000	\$0
220749	12/15/2023	157620	EKC	Franklin 161/69 kV Transformer Ckt 2 (69 kV)	2023 ITP	\$1,661,885	\$0
220749	12/15/2023	157621	EKC	Franklin 161/69 kV Transformer Ckt 2 (161 kV)	2023 ITP	\$1,661,884	\$0
220739	12/15/2023	157644	OGE	Fitzgerald Creek - Kinze 138 kV Line Tap	2023 ITP	\$10,016,640	\$0
220739	12/15/2023	157650	OGE	Valley 138 kV Terminal Equipment	2023 ITP	\$483,360	\$0
220742	12/15/2023	157721	NWE	Huron West Park 115 kV Terminal Upgrade	2023 ITP	\$393,298	\$0
220742	12/15/2023	157724	NWE	Huron B Tap 115 kV Terminal Upgrade	2023 ITP	\$393,298	\$0
220755	12/15/2023	157736	MSG	Devaul 115 kV Reactor	2023 ITP	\$1,671,705	\$0
220738	12/15/2023	157879	OGE	Anadarko - Gracemont 138 kV Ckt 3 New Line (OGE)	2023 ITP	\$22,081,965	\$0

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220738	12/15/2023	157880	OGE	Webb City Tap - Osage 138 kV Ckt 1 Rebuild (OGE)	2023 ITP	\$28,250,000	\$0
220742	12/15/2023	157891	NWE	Huron - Huron West Park 115 kV Ckt 1 Rebuild (NWE)	2023 ITP	\$11,554,745	\$0
220742	12/15/2023	157892	NWE	Huron - Huron 'B' Tap 115 kV Ckt 1 Rebuild (NWE)	2023 ITP	\$207,080	\$0
220738	12/15/2023	157897	OGE	Anadarko - Gracemont 138kV Ckt 2 New Line (OGE)	2023 ITP	\$22,081,965	\$0
220754	12/15/2023	157899	WFEC	Anadarko - Gracemont 138kV Ckt 2 New Line (WFEC)	2023 ITP	\$19,500,000	\$0
220748	12/15/2023	157946	WAPA	Gavins Point - Yankton Junction 115 kV Ckt 1 Rebuild (WAPA)	2023 ITP	\$4,000,000	\$0
220748	12/15/2023	157948	WAPA	Gavins Point 115 kV Terminal Upgrade	2023 ITP	\$264,000	\$0
220742	12/15/2023	157949	NWE	Yankton Junction 115 kV Ckt 1 Terminal Upgrade	2023 ITP	\$393,298	\$0
220747	12/15/2023	158019	BEPC	Groton 345 kV Reactor	2023 ITP	\$5,162,152	\$0
220762	12/20/2023	158042	NPPD	Norfolk - Stanton North 115 kV line	DPA-2021-October-1442	\$14,436,071	\$0
220762	12/20/2023	158043	NPPD	Hoskins 230/115 kV Transformer	DPA-2021-October-1442	\$11,617,895	\$0
220746	12/15/2023	158045	EM	Craig 161 kV Breaker #6	2023 ITP	\$609,492	\$0
220744	12/15/2023	158445	OPPD	Sub 976 69 kV Terminal Equipment	2023 ITP	\$165,695	\$0

NTC ID	NTC ISSUE DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF NEW UPGRADES	COST ESTIMATE OF PREVIOUSLY APPROVED UPGRADES
220723	10/3/2023	158446	OPPD	S1363 - S1362 161 kV	SUS-038	\$7,754,624	\$0
220723	10/3/2023	158447	OPPD	S1281 - S1361 161 kV	SUS-038	\$3,111,647	\$0
220723	10/3/2023	158448	OPPD	Tap S1345 - S1236 161 kV	SUS-038	\$13,199,959	\$0
220749	12/15/2023	158452	EKC	Benton 345 kV Terminal Upgrade	2023 ITP	\$3,415,129	\$0
220749	12/15/2023	158453	EKC	Wichita 345 kV Terminal Upgrade	2023 ITP	\$3,415,129	\$0
220738	12/15/2023	158573	OGE	Redbud 345 kV Terminal Upgrade	2023 ITP	\$3,415,129	\$0
220738	12/15/2023	158574	OGE	Matthewson 345 kV Terminal Equipment #2	2023 ITP	\$3,415,129	\$0
220761	12/15/2023	158629	SPS	Potter County 345/230 kV Transformer Ckt 2 (345 kV)	2023 ITP	\$7,500,000	\$0
220761	12/15/2023	158630	SPS	Potter County 345/230 kV Transformer Ckt 1 (230 kV)	2023 ITP	\$7,500,000	\$0
220761	12/15/2023	158631	SPS	Potter County 345/230 kV Transformer Ckt 1	2023 ITP	\$7,500,000	\$0
220761	12/15/2023	158632	SPS	Potter County 345 kV Substation Expansion	2023 ITP	\$7,500,000	\$0
220738	12/15/2023	158637	OGE	Gracemont 138 kV Ckt 3 Terminal Equipment	2023 ITP	\$2,171,478	\$0
220754	12/15/2023	158638	WFEC	Anadarko 138 kV Ckt 3 Terminal Equipment	2023 ITP	\$2,500,000	\$0
220749	12/15/2023	158653	EKC	87th St. Terminal Equipment Ckt 2	2023 ITP	\$5,100,000	\$0
220749	12/15/2023	158654	EKC	87th St. 345/115 kV Transformer	2023 ITP	\$5,100,000	\$0
126 Upgrade(s) Issued						\$1,180,592,162	\$95,536,035

Table 3: NTCs Issued

NTCS WITHDRAWN

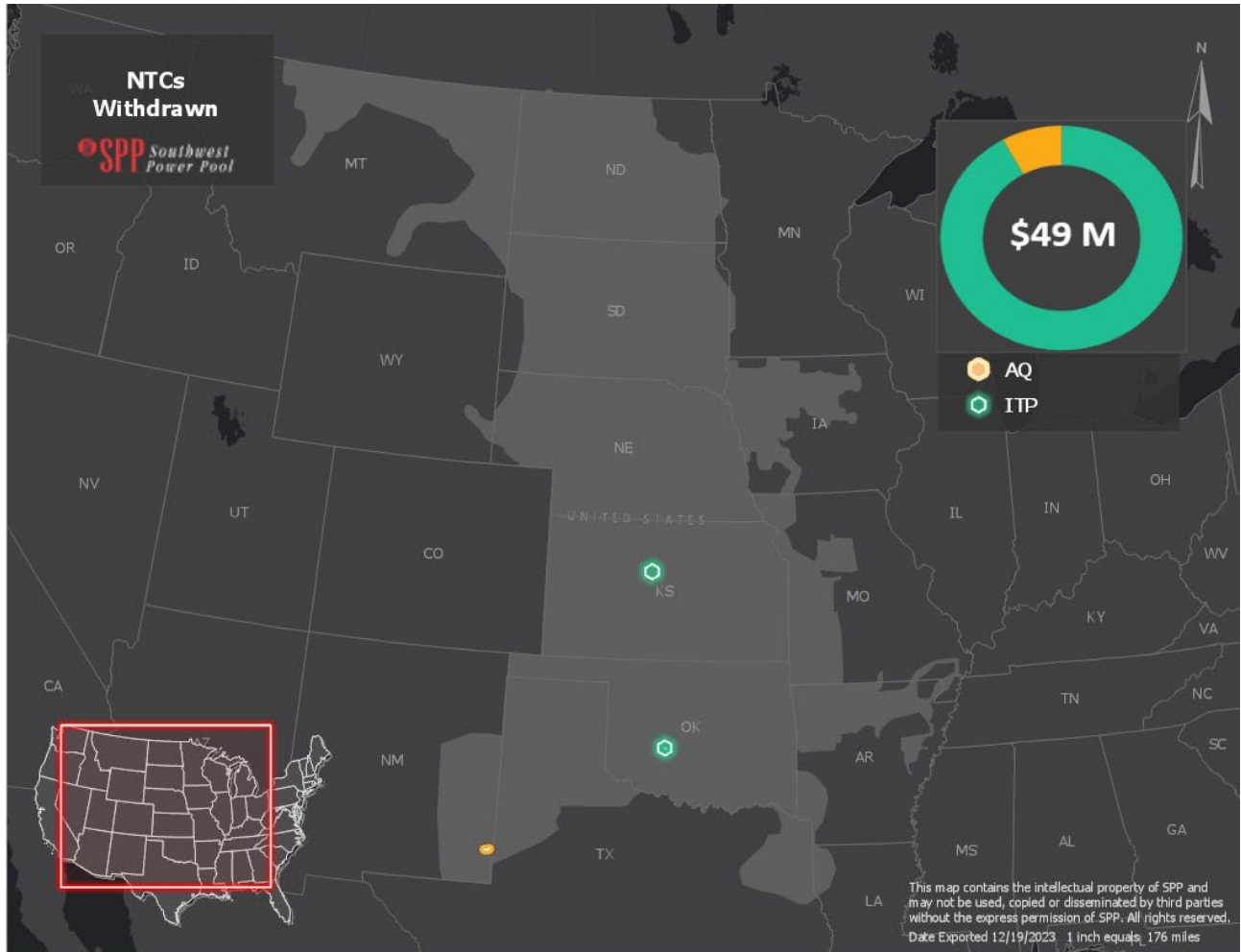


Figure 8: NTCs Withdrawn

NTC ID	NTC WITHDRAWN DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF WITHDRAWN UPGRADES
210719	2/27/2023	122803	SEPC	Russell 115 kV Capacitor Bank	2020 ITP	\$7,172,538
220756	11/29/2023	122755	OGE	Gracemont 138 kV Ckt 2 Terminal Equipment	2020 ITP	\$1,124,593
220757	11/29/2023	122577	WFEC	Anadarko - Gracemont 138 kV Ckt 1 Rebuild	2020 ITP	\$5,750,000

NTC ID	NTC WITHDRAWN DATE	UID	OWNER	UPGRADE NAME	SOURCE STUDY	COST ESTIMATE OF WITHDRAWN UPGRADES
220757	11/29/2023	122753	WFEC	Anadarko - Gracemont 138 kV Ckt 2 Rebuild	2020 ITP	\$30,712,664
210720	3/16/2023	50600	WFEC	Hazelton 69 kV Capacitor	DPA-2012- MAR-143- 147	\$735,000
210721	3/16/2023	50628	WFEC	Hazelton Capacitor 69 kV #2	DPA-2012- MAR-151- 154-161- JUL-218- SEP-243	\$0
220725	8/3/2023	112510	SPS	Hobbs Interchange to Millen Rebuild 115 kV Ckt1	DPA-2018- Mar-854	\$3,165,684
220725	8/3/2023	122510	SPS	Johnson Draw 115 kV Capacitor Bank	DPA-2018- Mar-854	\$0
8 Upgrade(s) Withdrawn						\$48,660,479

Table 4: NTCs Withdrawn

STUDY OVERVIEWS

TRANSMISSION SERVICE STUDIES

The Transmission Services department evaluates long-term requests for network integration and point-to-point transmission service through various processes, including the Aggregate Transmission Service Study (ATSS) process under Attachment Z1 of the tariff, performs screening studies through the Delivery Point Transfer (DPT) and Long-Term Service Request (LTSR) processes under Attachment AR of the tariff and Delivery Point Addition (DPA) studies under Attachment AQ of the tariff. Links to studies posted during the reporting period are below.

COMPLETED AGGREGATE FACILITY STUDIES

2023-AG1-AFS-2	Report Tables	Facility Log
2022-AG2-AFS-2	Report Tables	Facility Log
2022-AG1-AFS-2	Report Tables	Facility Log
2021-AG1-AFS-1	Report Tables	Facility Log

ATTACHMENT AR STUDIES

2023 Delivery Point Transfer Request

[SPP-DPT-2023-001](#)

2022 Delivery Point Transfer Request

[SPP-DPT-2022-001](#)

[SPP-DPT-2022-002](#)

2023 Long Term Service Request

[LTSR-2023-001](#)

[LTSR-2023-002](#)

2022 Long Term Service Request

[LTSR-2022-001](#)

[LTSR-2022-002](#)

[LTSR-2022-003](#)

[LTSR-2022-004](#)

[LTSR-2022-005](#)

ATTACHMENT AQ REQUESTS

[2023 Delivery Point Addition Studies](#)

[2022 Delivery Point Addition Studies](#)

[2021 Delivery Point Addition Studies](#)

[2020 Delivery Point Addition Studies](#)

GENERATOR INTERCONNECTION STUDIES

SPP’s Generator Interconnection team creates stakeholder value by evaluating impacts of connecting new power sources to the existing transmission system. We facilitate agreements between generation producers and transmission owners while ensuring positive outcomes for the regional power grid. Links to studies posted during the reporting period are below.

[Generator Interconnection Studies](#)

TRANSMISSION PLANNING (ITP)

SPP Board approved the 2022 ITP Assessment reports and portfolios on October 31, 2023.

[2023 ITP Assessment Report v1.0](#)

BALANCED PORTFOLIO

SPP did not perform a Balanced Portfolio study during the reporting period.

HIGH PRIORITY STUDIES

SPP did not perform a High Priority study during the reporting period.

SPONSORED UPGRADE STUDIES

Study Name	ILTCRs Studied	Study Report Final	Board Approval
SUS-035 Cimarron XFMR	Yes ⁵	12/6/2022	1/31/2023
SUS-036 Franklin	Yes ⁵	1/20/2023	4/25/2023
SUS-038 Omaha Metro Area 161kV	No	6/16/2023	7/25/2023

Table 5: 2023 Sponsored Upgrades

⁵ Documents contains ILTCR information

INTERREGIONAL STUDIES

SPP coordinates interregional transmission planning activities with neighboring Planning Regions as approved by the FERC for purposes of Order 1000. Furthermore, SPP coordinates interregional planning and operations activities across all applicable areas of the organization in accordance with SPP's Joint Operating Agreements (JOAs) and other similar coordination arrangements that may not be required by FERC Order 1000.

Throughout 2023, SPP continued collaboration with Midcontinent Independent System Operator (MISO) through refining the Joint Targeted Interconnection Queue (JTIQ) project proposal. Key takeaways were a revised portfolio with cost allocation updates, as well as JTIQ being awarded \$464 million from the Department of Energy's Grid Resilience and Innovation Partnership Program (GRIP). Staff also initiated the SPP Stakeholder process with education presentation as well as began updating Tariff language to begin the RR process in 2024.

MISO-SPP did not propose performing a Coordinated System Plan (CSP) study since a CSP was completed in 2022. Although not part of the CSP process, significant time and resources were dedicated to Long Range Transmission Plan in MISO as well as toward the Interregional NOPR, FERC Order 2023 and other Common Seams Initiatives. In 2023, the MISO-SPP JOA had revisions to clarify various Affected Systems coordination processes and the enhancement of study tie line improvements. However, the Targeted Market Efficiency Project's process, an effort to identify mutually beneficial transmission improvements within MISO and SPP's transmission systems that address historical market-to-market (M2M) congestion has been delayed and is now targeted to be included in the MISO-SPP JOA in the last half of 2024.

Furthermore, SPP and Associated Electric Cooperative, Inc. (AECI) did not perform a Joint Coordinated System Plan (JCSP) in 2023 in accordance with the AECI-SPP JOA in which the JCSP is performed every other year. The 2024 JCSP study process has started early evaluating the reliability and robustness of the SPP and AECI transmission system and due to more frequent extreme winter weather conditions will include the extreme weather analysis from the 2024 ITP Assessment and AECI will include extreme winter weather analysis with power transfers in the 2024 AECI Long Range Plan Assessment.

In addition to work with MISO and AECI, SPP also participated in planning coordination the Southeastern Regional Transmission Planning (SERTP) group in accordance with Addendum 4 to Attachment O of the SPP Tariff.

20-YEAR ASSESSMENT

The goal of the 2022 20-Year Assessment (20YA) is to develop a collection of extra high voltage (EHV) transmission projects for the SPP region to leverage in its integrated transmission planning process. The 20YA identifies economic and public policy EHV transmission projects further into the future that are needed to provide a grid flexible enough to provide benefits to the region across multiple scenarios. The assessment results in the identification of projects that economically deliver energy within the SPP region while addressing a reasonable range of future industry uncertainty.

The resulting library of projects from the 20YA will provide a source of candidate projects that will inform the shorter-term ITP assessments for the purpose of injecting longer-term vision into those assessments. There are no Notifications to Construct (NTCs) requested for issuance from the 20YA.

[2022 20-YR Assessment Report v1.0](#)

ITP20 UPGRADES

ITP20 assessments were performed in 2010, 2013, and 2022. While the projects proposed by those studies are incorporated into the STEP Project List, they were not included in SPP’s project tracking effort as part of the Quarterly Tracking Report prior to Q1 2019. A list of active ITP20 projects will be maintained in the STEP Report and Quarterly Project Tracking Report lists going forward. The 2013 ITP20 projects are listed below in Table 6. The 2022 ITP20 projects are listed below in Table 7.

Project ID	Upgrade ID	Owner	Upgrade Name	Study	RTO Determined Need Date	Latest Cost Estimate
30401	50492	TBD	Cass Co. - S.W. Omaha (aka S3454) 345 kV Ckt1	2013 ITP20	1/1/2033	\$33,126,800
30599	50769	AEP	South Fayetteville 345/161 kV Transformer Ckt1	2013 ITP20	1/1/2033	\$12,600,000
30599	50770	TBD	Chamber Springs - South Fayetteville 345 kV Ckt1	2013 ITP20	1/1/2033	\$21,295,800
30600	50771	EMW	Maryville 345/161 kV Transformer Ckt1	2013 ITP20	1/1/2033	\$12,600,000
30602	50773	TBD	Keystone - Red Willow 345 kV Ckt1	2013 ITP20	1/1/2033	\$130,141,000
30603	50774	TBD	Tolk - Tuco 345 kV Ckt1	2013 ITP20	1/1/2033	\$75,718,400
30604	50775	SEPC	Holcomb 345/115 kV Transformer Ckt2	2013 ITP20	1/1/2033	\$12,600,000
30605	50776	TBD	Neosho - Wolf Creek 345 kV Ckt1	2013 ITP20	1/1/2033	\$117,126,900
30606	50777	TBD	Clinton - Truman 161 kV Ckt1 Reconductor	2013 ITP20	1/1/2033	\$15,701,325
30606	50778	TBD	North Warsaw - Truman 161 kV Ckt1 Reconductor	2013 ITP20	1/1/2033	\$1,082,850
30608	50779	EKC	Auburn 345/115 kV Transformer Ckt2	2013 ITP20	1/1/2033	\$12,600,000
30608	50780	TBD	Auburn - Swissvale 345 kV Ckt1 Voltage Conversion	2013 ITP20	1/1/2033	\$20,112,700
30608	50781	TBD	Auburn - Jeffrey EC 345 kV Ckt1 Voltage Conversion	2013 ITP20	1/1/2033	\$35,493,000

Project ID	Upgrade ID	Owner	Upgrade Name	Study	RTO Determined Need Date	Latest Cost Estimate
30607	50782	OGE	Muskogee/Pecan Creek 345 kV Terminal Upgrades	2013 ITP20	1/1/2033	\$34,605,675
14 Total Projects						\$534,804,450

Table 6: 2013 ITP20 Upgrades

Project ID	Upgrade ID	Owner	Upgrade Name	Study	RTO Determined Need Date	Latest Cost Estimate
93109	157811	TBD	Ft. Smith - Thistle 345 kV CKT 1	2022 20 Year Assessment	1/1/2042	\$461,160,280
93109	158510	OGE	Ft. Smith 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93109	158511	SEPC	Thistle 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93110	157812	TBD	Flint Creek - Buffalo Flats 345 kV	2022 20 Year Assessment	1/1/2042	\$349,831,855
93110	158512	EM	Buffalo Flats 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93110	158513	AEP	Flint Creek 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93111	157813	OGE	Ft Smith - Sooner 345 kV CKT 1	2022 20 Year Assessment	1/1/2042	\$290,563,847
93111	158514	OGE	Ft. Smith 345 kV Terminal Equipment #2	2022 20 Year Assessment	1/1/2042	\$2,428,753
93111	158515	OGE	Sooner 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93113	157905	TBD	Huben - Lacygne 345 kV Ckt 1 New Line	2022 20 Year Assessment	1/1/2042	\$198,791,206
93113	158520	AECI	Huben 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753

Project ID	Upgrade ID	Owner	Upgrade Name	Study	RTO	Latest Cost Estimate
					Determined Need Date	
93113	158521	EM	Lacygne 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93114	157824	TBD	Riverside Station - Matthewson 345 kV (OGE)	2022 20 Year Assessment	1/1/2042	\$180,577,999
93114	158522	OGE	Matthewson 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93114	158523	AEP	Riverside Station 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93115	157825	SPS	Potter County Interchange - Tolk Station 345 kV	2022 20 Year Assessment	1/1/2042	\$147,667,045
93115	158524	SPS	Potter County Interchange 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93115	158525	SPS	Tolk Station 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93116	157826	MDU	Twin Brooks 3 to Ellendale 3 345 kV Tap	2022 20 Year Assessment	1/1/2042	\$16,467,621
93116	157827	WAPA	Groton Tap - Groton 345 kV	2022 20 Year Assessment	1/1/2042	\$32,935,242
93116	157828	WAPA	Broadland - Groton 345 kV	2022 20 Year Assessment	1/1/2042	\$32,935,242
93116	157873	TBD	Twin Brooks 3 to Ellendale 3 345 kV Tap (OTP)	2022 20 Year Assessment	1/1/2042	\$16,467,621
93116	157875	WAPA	Groton Tap 345 kV Sub	2022 20 Year Assessment	1/1/2042	\$0
93117	157829	EM	Sibley - Nashua 345 kV	2022 20 Year Assessment	1/1/2042	\$43,969,609
93117	158526	EM	Nashua 345 kV terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93117	158527	EM	Sibley 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753

Project ID	Upgrade ID	Owner	Upgrade Name	Study	RTO Determined Need Date	Latest Cost Estimate
93120	157846	TBD	Sibley - Hawthorn 345 kV CKT 2	2022 20 Year Assessment	1/1/2042	\$25,368,257
93120	158530	AEP	Hawthorn 345 kV Terminal Equipment #2	2022 20 Year Assessment	1/1/2042	\$2,428,753
93120	158531	EM	Sibley 345 kV Terminal Equipment #2	2022 20 Year Assessment	1/1/2042	\$2,428,753
93121	157847	WFEC	Anadarko 345/138 kV Transformer	2022 20 Year Assessment	1/1/2042	\$4,891,214
93121	157848	TBD	Anadarko - Gracemont 345 kV	2022 20 Year Assessment	1/1/2042	\$5,619,548
93121	157849	WFEC	Anadarko - Gracemont 345 kV (WFEC)	2022 20 Year Assessment	1/1/2042	\$5,619,547
93121	157850	WFEC	Anadarko 345 kV Substation	2022 20 Year Assessment	1/1/2042	\$13,972,613
93121	122591	OGE	Gracemont 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$0
93122	157851	TBD	Cimarron - Norman Hill 345 kV CKT 2	2022 20 Year Assessment	1/1/2042	\$20,616,250
93122	158532	OGE	Cimarron 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
93122	158533	OGE	Norman Hill 345 kV Terminal Equipment	2022 20 Year Assessment	1/1/2042	\$2,428,753
37 Total Projects						\$1,891,172,550

Table 7: 2022 ITP20 Upgrades

APPENDIX 1

(See accompanying list of STEP Projects)