

2019



**EL PASO ELECTRIC COMPANY  
SYSTEM EXPANSION PLAN  
2020-2029**



**PREPARED BY  
TRANSMISSION  
SYSTEM PLANNING**

Formatting adjustments and minor  
corrections incorporated August  
12th, 2019

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# **GENERAL**

**El Paso Electric Company  
System Planning Department**

P.O. Box 982  
El Paso, Texas  
79960

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**MEMORANDUM**

**TO:** David C Hawkins  
VP – Power Generation, System Planning, Dispatch.

June 28, 2019

**FROM:** David Tovar  
Manager – System Planning

**SUBJECT: EPE 2020-2029 System Expansion Plan**


Enclosed is the El Paso Electric Company (“EPE”) 2020-2029 System Expansion Plan (“The Plan”). The Plan is a forecast of recommended electrical transmission and substation capital additions and/or modifications which, from an internal system planning perspective, are deemed necessary for maintaining adequate system reliability.

The Plan has been prepared by System Planning in collaboration and coordination with multiple EPE departments and is presented here to provide formal recommendations to appropriate management, engineering, and operational personnel for implementation in an economical and timely fashion. System expansion projects have been identified with regards to implementation dates, costs, descriptions, and justifications.

Please acknowledge through your signature your approval for dissemination of the Plan to all internal stakeholders.

Approved

Date



6/28/2019

David C Hawkins  
VP-Generation, System Planning, Dispatch

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**Executive Summary**

El Paso Electric Company's ("EPE") System Planning Department performs System Expansion Plan ("Plan") studies annually as described in EPE's Open Access Transmission Tariff ("OATT") Attachment K ("Attachment K"). This process is a technical evaluation of EPE's Bulk Electric System performed for a ten-year planning horizon (currently from 2020 through 2029). The Plan determines system facility additions and upgrades necessary to comply with Western Electricity Coordinating Council ("WECC") and the North American Electric Reliability Corporation ("NERC") reliability requirements under the following conditions: 1) loading within normal facility limits for All Lines In Service (ALIS) and 2) loading within emergency facility limits for any single-element ("N-1") contingency while continuing operation without impact to any EPE customers 3) operational violations identified as a result of operational contingencies in conformance with EPE's Reliability Coordinator requirements, and 4) NERC standard TPL-001-4 criteria violations for P1, P2 and P4 planning events. The criteria also include maintaining voltages within defined limits.

Native system peak demand projections for this Plan were based on EPE's 2018 Long-Term Forecast Report as detailed below. In summary, the 2018 Forecast predicts a ten-year Compounded Annual Growth Rate (CAGR) is 1.3% for native system peak demand. Future local generation resources to serve native load were identified in the latest Loads & Resources ("L&R") as detailed in the Generation Resources section below and summarized in Table 2. This section also describes modeling based on a December 2013 preliminary draft of a New Generation Power Plant Siting Study.

Incorporated within the 2018 Load Forecast and the 2018 L&R are EPE Public Policy requirements. It is in this manner that Public Policy requirements are taken into account in the Plan.

Table 3 identifies expansion projects that were called for and budgeted in previous plans and have not been completed as of this Plan. It is assumed that these projects will be completed before the peak of 2019. New or modified projects in this Plan are summarized in Tables 4A and 4B and explained in each year's project descriptions.

The results of this evaluation are published by System Planning in this document titled "El Paso Electric Company System Expansion Plan 2020-2029." This new Plan updates and replaces EPE's previous 2019-2028 System Expansion Plan.

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**Load Projections**

Native load and system losses modeled for future years were determined using the Expected Forecasted demand plus  $\frac{1}{4}$  of the difference between the High Forecasted demand and the Expected Forecasted demand. The forecasted native system peak demand values were obtained from EPE's 2018 Long-term Forecast report ("Forecast"), published by the Economic Research department on March 29, 2018. This resulted in a CAGR of 1.3% for native system peak demand over the ten-year Plan horizon (2020-2029). The Forecast includes demand side management and energy efficiency programs as detailed in the next section.

Each substation load was projected for the planning years based on available historical 2018 coincident peak loads; Distribution System's monthly (non-coincident) load reports; load projections in the April 2018 Distribution Expansion Plan; and input from EPE's Load Forecasting and Commercial Services departments.

The 2018 Forecast predicts native system energy increase for 2019 of 1.04% compared to year 2018. The Forecast also predicts peak demand in 2019 will increase 1.22% compared to last year's peak.

**Demand Side Management**

In Attachment K (posted on EPE's website -- [www.epelectric.com](http://www.epelectric.com)), EPE includes demand side resources through energy efficiency programs to mitigate the need for new transmission. Mandated energy efficiency goals accounted for in the Forecast are shown in Table 1. EPE expects an increase to its total cumulative energy efficiency load adjustments compared to the previous forecast. The new forecast shows a continuous increase in energy efficiency with a projected peak of 46.9 MW in 2027.

Demand savings achieved through the Energy Efficiency Programs are across all customer classes and across the whole transmission system. No one project or customer provides a significant amount of demand savings to dramatically impact the transmission system.

**Generation Resources**

EPE's Resource & Delivery Planning department (R&DP) identified future generation resources and purchased power to serve native load in its Loads & Resources 2019-2028 document ("L&R") dated September 7, 2018. It compares owned resources and power purchases against forecasted load to determine new resources that may be needed. System Planning modeled generation based on this L&R while developing the Plan. Table 2 shows EPE's local generation resources (including additions and retirements) used in

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the Plan.

**New Generation Siting Study**

The following new generation was assumed in the System Expansion Plan modeling and is reflected on Table 2. The 2018 L&R identifies 350 MW of Solar (87.5 MW at peak in 2022) and a Battery Storage Facility for 15 MW also in 2022; 103 MW (88+15 MW) of Photovoltaic & Storage as shown on Table 2. The selection of the projects is still under negotiations under an RFP process managed by EPE's Resource Planning department. In 2023, a resource addition consisting of a 1x1 combined-cycle (CC) generating unit of 320MW was identified and modeled at the Newman site. The specific project type, size and locations will be identified in the following System Expansion Plan once negotiations conclude. The next set of generation resource additions in the L&R document are reflected in year 2027. The generating resources identified include 100 MW of solar (25 MW at peak in 2027), two 100 MW combustion Turbines, a 100 MW Reciprocating Engine, and 50 MW of Battery Storage. EPE is currently evaluating their geographical placement based on Black & Veach's recent *New Generation Power Plant Siting Study*. Based on a preliminary draft of this study (dated December 13, 2013), System Planning placed the 1x1 combined cycle unit (from 2023) as well as the Combustion turbines and Reciprocating Engine approximately 2 miles east of the existing Newman power plant referred to in this Plan as *Newman East*. In addition, the Plan models four 115 kV, 954 ACSS (or equivalent capacity conductor), transmission lines connecting Newman East to the Newman 115 kV bus network.

**Reliability Criteria**

The Plan follows Good Utility Practice and planning as described in EPE's Attachment K. It uses a deterministic approach for transmission system planning. Each annual review verifies that modeling, assumptions, and planned facilities meet WECC and NERC compliance requirements under normal (N-0), and single contingency (N-1) conditions for EPE's transmission area. Under these two conditions, the network must be operated within WECC, NERC and EPE criteria (see next section) to supply projected customer loads and firm transmission services over the ten-year planning horizon. The Plan uses steady-state powerflow analyses to identify transmission projects (facility upgrades and/or additions) required to mitigate any criteria violations with the goal of providing sufficient lead time to incorporate them. The Plan summarizes each individual expansion project's scope, in-service date, justification and purpose. Additionally, EPE reviews operational planning cases and determine transmission line loading conditions, mitigation practices and the need to upgrade transmission lines to facilitate operational needs and practices.

The Plan focuses on facilities under coincidental peak demand Heavy Summer conditions

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-- usually considered worst case scenarios for EPE's system. Light Winter cases are examined as well.

EPE strives to complete all system improvements in a prudent, safe, and timely fashion. Nevertheless, scheduling factors may delay projects forcing EPE to apply temporary alternatives or measures to mitigate potential overloads. These range from altering generation dispatch up to and including shedding load to lessen the equipment impact or damage. Therefore, projects identified in this Plan should be completed as scheduled or as soon as possible thereafter.

**SOL Methodology for the Operating Horizon**

On February 24, 2017, revision 8.1 of the Reliability Coordinator's *System Operating Limits Methodology for the Operations Horizon* went into effect. It requires that EPE operate its system in the pre-contingency state (ALIS) so that all facilities are within their continuous (normal) thermal ratings; that for any single-element (N-1) post contingency, no facilities operate above their short-term (emergency) thermal ratings. In addition, manual and automatic system adjustments must be made so that all facilities return to their continuous thermal ratings within the time limits allowed in their short-term ratings.

**Open Planning Meetings**

The transmission planning process, per Attachment K, includes Open Planning meetings while developing this Plan. Two meetings were held -- one in September 2018 and the second in March 2019 -- to allow third party participants to review or submit data and request studies of potential Stakeholder needs. Stakeholders are allowed to submit data up to posted due dates to be incorporated into EPE's Plan case models. Data submitted after the due dates will not be incorporated into the current Plan -- although they will be considered in the next year's planning cycle if applicable. To date, no applicable Stakeholder data were submitted to EPE that was incorporated into the Plan. The purpose of the Plan is to identify and evaluate, on a regular basis, future electric transmission system modifications and additions or alternatives that may be required to serve the anticipated area load growth, existing third-party customers' transmission needs, Public Policy requirements and NERC/WECC reliability requirements in the EPE service territory for a ten-year planning horizon.

**Plan Case System Assumptions**

System expansion analyses utilize power flow studies and stability studies for each Plan year from 2020 through 2029. These analyses incorporated in-progress system expansion projects assumed to be completed before the peak of 2020. System modeling also includes the following assumptions:

- The forecasted substation load for each Plan year was adjusted to projected



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coincidental peak loads using the Forecast (dated March 29, 2018) and historical load data.

- Generation, system configuration, imports, and interchange schedules -- including contractual agreements with third-party entities -- were set according to load demand in each Plan case.
- EPE load power factor was set to 0.98 per unit (lagging) in each Plan case.
- Plan cases were modeled with an Arroyo Phase Shifting Transformer ("PST") in service with a 400 MVA normal and a 500 MVA emergency rating.
- The Luna to Diablo 345 kV line will be tapped (In and Out) to the Afton 345 kV bus in coordination with the Southline project. Southline is expected to acquire the right of way and build the line which will be owned and operated by EPE.
- Plan cases modeled Afton G1 and Afton S1 as "Off" when the Arroyo PST power flow was set to 151 MW north to south.
- Sensitivity analyses were performed on Plan cases with PST power flow set to 10 MW north to south and with Afton G1 at 141 MW output, per the EPE/PNM Settlement Agreement, and Afton S1 (combined cycle HRSG) set at 87 MW with its flow directed to Springerville via the Luna-Macho Springs-Springerville 345 kV transmission path.
- Montana Power Station (MPS) generation sensitivity analyses were performed in this Plan by increasing MPS generation to 88 MW for each MPS generating unit (in every year where units are available) and reducing Newman plant output by an equivalent amount.
- Eddy County flow from the DC tie was modeled at zero (0) MW open ended at the Artesia bus in each of the Plan cases.
- EPE's share of Southern New Mexico Imports ("SNMI") was set at a schedule of 645 MW (per contractual rights) and EPE imports ("EPI") at 747 MW in all Plan cases.
- No on-line generation was modeled at Lordsburg. Luna Energy Facility ("LEF") was set to 570 MW output with 100 MW scheduled to EPE under the Phelps Dodge (Freeport McMoran) Exchange Agreement and additional power from LEF to EPE, if needed, to meet EPI of 747 MW.
- The 59 MVAR line reactor at the Hidalgo 345 kV Substation bus end of the Hidalgo-Greenlee 345 kV line and the 49 MVAR line reactor at the Macho Springs 345 kV

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Substation bus end of the Macho-Springerville 345 kV line are “must-on” line reactors for every Plan case. However, the Luna 345 kV line reactors were modeled on or off as needed. These reactors can be switched off during an outage of a Path 47 345 kV line.

- A 103 MW solar PV facility was modeled in 2022 in the Rio Grande Generation area until results from the RFP identify the location of the new generation.
- Two 1x1 combined cycle units (640 MW total) were phased in from 2023 to 2027 at the newly modeled Newman East power plant -- approximately 2 miles east of the existing Newman power plant. Four 115 kV, 954 ACSS, or equivalent capacity conductor, transmission lines were modeled in 2022 and beyond to connect Newman East plant to the Newman 115 kV bus network (see Generation Resources section). These generation assumptions will be updated in the next System Expansion Plan.
- Plan cases include lowered capacity ratings on several transmission lines based on updated field conditions.
- “To be determined” shall be abbreviated as TBD throughout the document.

Please note that the final generation site(s) have not yet been determined for the two combined cycle units called for in the L&R to be phased in from 2023 to 2027. Therefore, the transmission configuration used in the Plan studies may change requiring different upgrades by future interconnection and facility studies, per FERC’s Large Generator Interconnection Procedures (LGIP).

### **Case Development**

#### **WECC-Approved Cases**

Plan cases were developed with the General Electric Positive Sequence Load Flow (“GE-PSLF”) program which was used for the numerous power flow and contingency studies. Each case is a “database” of the WECC transmission system -- originating from the latest “WECC cases” for the appropriate year. These WECC-approved Heavy Summer and Light Winter base cases contain system configurations and conditions from other nearby Transmission Planners. System Planning then incorporates EPE’s latest forecasted loads, expected generation resources, both of which incorporate EPE’s Public Policy requirements, and any topology changes not already included in the WECC-supplied cases. Many projects listed in the previous plan are removed (or reverted to the existing topology) to re-verify their need and schedule in the current Plan.

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**Topology Changes**

Besides the latest load and generation updates, System Planning also incorporates topology changes not already included in the WECC-supplied cases such as planned substation-level and transmission changes. Substation changes, such as those detailed in EPE's latest Distribution Expansion Plan, include capacity upgrades, additions, deletions, location changes, and postponements. Planned transmission changes typically include capacity upgrades, additions, deletions, location changes, and postponements that are usually driven by the substation-level changes, generation changes, other studies (e.g. those in the LGIP), or routing changes due to regulatory orders or right-of-way issues.

If a newly planned substation is postponed, any transmission changes associated with that substation may also be postponed. This may affect study results since many future projects depend on previously identified improvements. If system improvements scheduled for completion before the system peak of 2020 are not completed and the 2020 load forecast is met or surpassed, EPE may violate NERC/WECC reliability criteria and/or risk damaging existing high-voltage equipment unless alternative short-term corrective measures are taken.

Table 3 shows delayed expansion projects that were called for and budgeted in the last plan (2019-2028) but are now re-scheduled to be completed before the peak of 2020. These projects have been modeled in the 2020 Plan cases and beyond to help mitigate potential contingency overloads. New or modified Plan projects are summarized in Tables 4A & 4B and detailed in each year's project descriptions.

**System Improvement Methodology**

After Plan cases were modified as outlined above, contingency analyses are performed for each Plan year to identify reliability criteria violations on EPE facilities within EPE's service area. If violations were identified, mitigating improvements were added to EPE's transmission system. Each year's Plan cases carried over the previous year's system improvements. Not included in the plan cases, due to its recent identification, are the newly identified project improvements derived as a result of operational assessments. These upgrades will be reflected in the following year's assessment.

Some system expansion projects are a result of studies performed outside of System Planning, such as those from the LGIP, third-party generators or Transmission Service Requests (TSR) while others are incorporated from the latest EPE capital budget. Projects listed in the Plan are specific to the expansion of the EPE internal electrical transmission system. Any projects outside the local electrical system planning area may be evaluated in separate studies.

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Additionally, the Plan does not normally include maintenance projects nor external system expansion projects other than those in the WECC-approved base cases. Furthermore, projects associated with non-EPE large generator interconnections are not included unless a large generator interconnection agreement (LGIA) has been executed.

Additional analyses were performed on each of the Plan years to verify that the EPE transmission system meets the required WECC volt-ampere-reactive (“VAR”) margin under normal and single contingency conditions. In cases where the VAR margin or other voltage criterion was not met, additions to the system in the form of static reactive compensation (“capacitors”) were included as Plan projects to correct them.

**Project’s Cost Summary Explained**

Tables 4A and 4B identify each year’s system improvements and their estimated costs (see tab 2). It also includes generic projects as “Additional Future Capital Improvements” added in each year to cover possible unforeseen projects in high-growth areas where timing and physical area growth of the EPE electrical system is currently unknown. EPE Asset Management Services Department provided the cost figures with contributions from Transmission, Substations & Relay (TSR) Engineering in 2019 year dollars for these accounts and the project amounts budgeted for each year.

Cost summaries do not include maintenance projects, upgraded distribution substation transformers, new distribution substations, nor capital expenditures outside the native transmission network. It also does not include the costs developed for third party generation projects or transmission requests under the EPE OATT. In most cases, System Planning recommends a completion date by May of the given year (unless otherwise noted), to support peak summer load.

The Plan also contains a brief description and justification for each planned system improvement along with basic one-line diagrams illustrating new additions broken down by year (included in tabs 2020 through 2029). The planned in-service date of the recommended system improvement projects reflects the date the project was modeled to meet planning requirements and it does not represent the construction completion date of the project. Furthermore, deferred projects identified in prior expansion plans are also not included in tabs 2020-2029. Deferred projects from prior expansion plans are listed on Table 3.

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**Acknowledgements**

This document was prepared by EPE System Planning in collaboration with contributions from the following EPE departments: Distribution Systems, TSR Engineering, Asset Management Services, and Resource & Delivery Planning

Supporting documentation for the numerous studies is not included in this document due to space constraints but is available from System Planning. The photographs shown in the front of this report are courtesy of Armando Reyes.

# **TABLES**

**Table 1. Yearly Peak Energy Efficiency Adjustment**

Calendar Year	Total Energy Efficiency Adjustment (MW)	Calendar Year	Total Energy Efficiency Adjustment (MW)
2020	14.1	2025	37.5
2021	18.8	2026	42.2
2022	23.5	2027	46.9
2023	28.1	2028	51.6
2024	32.8	2029	56.3

**Table 2. EPE Local Generation**

Generator	Type	Capacity (MW) (1)	Planned Dates		Notes
			In Service	Retirement (4)	
Airport PV	Photovoltaic	12	Pre-2015		(2)
Chaparral PV	Photovoltaic	10	Pre-2015		(2)
Copper	Gas Combustion Turbine	69	Pre-2015		
Hatch PV	Photovoltaic	5	Pre-2015		(2)
Macho Springs 2	Photovoltaic	50	Pre-2015		
MPS 1	Gas Combustion Turbine	88	Jan. 2015		
MPS 2	Gas Combustion Turbine	88	Jan. 2015		
MPS 3	Gas Combustion Turbine	88	Jan. 2016		
MPS 4	Gas Combustion Turbine	88	Jan. 2017		
Newman 4 G1	Gas Combustion Turbine	72	Pre-2015	Dec. 2026	
Newman 4 G2	Gas Combustion Turbine	72	Pre-2015	Dec. 2026	
Newman 4 S1	Combined Cycle HRSG	83	Pre-2015	Dec. 2026	
Newman 5 G1	Gas Combustion Turbine	70	Pre-2015		
Newman 5 G2	Gas Combustion Turbine	70	Pre-2015		
Newman 5 S1	Combined Cycle HRSG	148	Pre-2015		
Newman 6 1 X 1 CC	1 x 1 Combined Cycle (CC) Unit	320	Jan. 2023		(3) (5)
Newman 7 CT /Recip	Gas CT and Recip. Engine	200	Jan. 2027		(3) (5)
Newman 7 CT2	Gas CT	100	Jan 2028		(3) (5)
Newman G1	Gas-fired Steam Turbine	74	Pre-2015	Dec. 2022	
Newman G2	Gas-fired Steam Turbine	76	Pre-2015	Dec. 2022	
Newman G3	Gas-fired Steam Turbine	97	Pre-2015	Dec. 2026	
Patriot PV	Photovoltaic	10	Jan. 2015		(2)
Rio Grande 7	Gas-fired Steam Turbine	46	Pre-2015	Dec. 2022	
Rio Grande 8	Gas-fired Steam Turbine	150	Pre-2015		
Rio Grande 9	Gas Combustion Turbine	88	Pre-2015		
Rio Grande 10	Photovoltaic & Storage	103	May 2022		(5)
Santa Teresa PV	Photovoltaic & Storage	75	May 2027		(5)

Notes:

- (1) Available capacity used in Plan cases may differ from those published in other documents -- often being more conservative.
- (2) This Photovoltaic generation flows into EPE's distribution system.
- (3) Plan places new "NEWMAN6" & "NEWMAN7" generation at a location referred to as "Newman East" -- approximately 2 miles east of the existing Newman Generation Station.
- (4) No listing if planned retirement date is after the peak of 2026. Retirements taken from L&R.
- (5) Pending studies to determine location of facilities.

**Table 3. System Expansion Projects Scheduled for Completion before Peak of 2020**

(All projects below are modeled in the 2020 Plan Case)

SYSTEM UPGRADE NEEDED	LOCATION OF UPGRADE	IMPROVEMENT IDENTIFICATION
Reconductor line to 954 ACSR	DURAZNO - ASCARATE 115 kV Line	Relieves Line Overloading
Reconductor line to 954 ACSR	SANTA FE - SUNSET 69 kV Line	Relieves Line Overloading
Add 2 x 15 MVAR capacitors	Nuway Substation 115 kV bus	Var Support



**Table 4A. Project Schedule & Cost Summary**  
**(2020 - 2023) EPE 2020-2029 System Expansion Plan**

Year	Project #	Project Descriptions	Recommended Completion Dates Month-Year	
2020		Afton North Substation (2020) and Afton North 345/115 kV Autotransformer (2024)	Dec-20	
		Wrangler-Sparks Line 115 kV 3.3 miles of Line reconductor from 336 ACSR to 954	Dec-20	
		Afton - Afton North 345 kV Transmission Line (1 mile of double-bundled 954 ACSR)	Dec-20	
			<b>2020 Total</b>	
2021		Eastside Loop Expansion Project (ELEP): Upgrade Sparks to Felipe 69 kV Line, to 115 kV 954 ACSR conductor, 12.87 miles	May-21	
		ELEP: Upgrade Felipe Substation to include a 115 kV bus and relocate Sparks 115/69 kV Autotransformer to Felipe Substation	May-21	
		Moongate to Jornada 115 kV Line	May-21	
		Rio Grande-Sunset 5500/5600 69 kV Line upgrades	May-21	
			<b>2021 Total</b>	
2022		ELEP: 954 ACSR transmission line from E2 to Felipe 115 kV, approximately 12 miles long	Dec-22	
		ELEP: Add 115 kV Substation E2, 18 miles south of E1 Substation	Dec-22	
		ELEP: 954 ACSR transmission line from E2 to Horizon 115 kV, approximately 4.3 miles long	Dec-22	
		115 kV transmission lines from Newman East to Newman, 4 circuits (2 miles)	May-22	
		Jornada to Arroyo 115 kV Line upgrade to 954 ACSR	Oct-22	
		Moongate to Arroyo 69 kV to 115 kV Line Conversion & Line upgrade	May-22	
			<b>2022 Total</b>	
2023		ELEP: Re-conductor 7.33 miles of Coyote to E1 115 kV from 4/0 ACSR to 954 ACSR wire	Dec-23	
		ELEP: Add 115 kV Substation E1, 7.33 miles east of Coyote Substation	May-23	
		Tap In-And-Out into Picante 345 kV Substation, from Caliente - Amrad 345 kV Transmission Line	May-23	
			<b>2023 Total</b>	

**Table 4B. Project Schedule & Cost Summary**

**(2024 - 2029) EPE 2020-2029 System Expansion Plan**

Year	Project #	Project Descriptions	Recommended Completion Dates Month-Year	
2024		New double-bundled 954 ACSR Afton North to Vado 115 kV Line (12 miles)	May-24	
		Afton North 345/115 kV Autotransformer (earmarked in 2020)	May-24	
		Vado 115 kV Substation	May-24	
		ELEP: 954 ACSR Transmission Line from E1 to E2 115 kV, approximately 9 miles long	May-24	
			<b>2024 Total</b>	
2025		Afton North - Airport 115 kV 954 ACSR Transmission Line Addition, approximately 14 miles	May-25	
			<b>2025 Total</b>	
2026		New 8-mile Vado to Anthony 115 kV Line or Line Upgrade of Existing Line.	May-26	
		New 9-mile Vado to Salopek 115 kV Line or Line Upgrade of Existing Line.	May-26	
			<b>2026 Total</b>	
2027		No specific facilities or improvements were identified by System Planning in year 2027	None	
			<b>2027 Total</b>	
2028		Tap in-and-out of Vado 345 kV to Afton North - Newman 345 kV Line	May-28	
		Vado 345/115 kV 224 MVA Autotransformer	May-28	
			<b>2028 Total</b>	
2029		No specific facilities or improvements were identified by System Planning in year 2029	None	
			<b>2029 Total</b>	

<b>EPE 2020-2029 TEN-YEAR SYSTEM EXPANSION PLAN PROJECT'S --&gt;</b>	<b>GRAND TOTAL</b>	
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**MAPS**

**NO MAPS AVAILABLE.**

## PROJECT DETAILS STANDARD FORMAT

### PLANNED PROJECTS

YEAR XXXX

### DEFINITIONS

**Project Name:** The commonly used name at El Paso Electric Company for a transmission or substation system expansion capital project. Projects of a normal maintenance nature and those located outside the native transmission network are normally not included here.

**Operating Voltage:** The operational voltage level(s) of the system element(s).

**Project Number:** Project number as per the Projected Capital Expenditure Report.

**Project Cost:** Total (unless otherwise stated) project costs per the Projected Capital Expenditure Report.

### **Planned**

**In Service Date:** The System Planning recommended project completion date based on study results to meet reliability criteria. In general, System Planning recommends that projects be completed by May of the year in question, in time to meet the anticipated system peak load demand.

**Project Description:** A general description of the project.

**Project Justification:** A brief description of project need.

**Year 2020**

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**PLANNED PROJECTS  
YEAR 2020**

**Project Name:** Wrangler-Sparks 115 kV Line Upgrade

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** December 2020

**Project Description:** This project requires an upgrade to a minimum rating of at least 185 MVA normal, 246 MVA emergency.

**Project Justification:** The increased capacity of this line will mitigate overloads under various N-1 contingencies.

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**PLANNED PROJECTS  
YEAR 2020**

**Project Name:** Afton North Substation

**Operating Voltage:** 345/115 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** December 2020

**Project Description:** A 345/115 kV substation is planned in southern New Mexico for the purpose of enhancing system reliability. The new substation will have a future (2024) 345/115 kV autotransformer (part of TH171) that will connect a new 115 kV radial line from Afton North Substation to Airport Substation. This will also connect a 115 kV line from Afton North Substation to the proposed Vado Substation in 2024.

**Project Justification:** This project is part of the Afton-Afton North-Vado projects, scheduled for completion by 2026, that could collectively increase El Paso Import Capability (EPIC) by 80-120 MW. It will serve Las Cruces Airport Substation increasing reliability to the area. The future autotransformer, planned for 2024, is part of a plan to incorporate a 115 kV feed from the Afton North 115 kV bus to the Airport Substation, and to a new Vado Substation via a new 115 kV line.



**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2020**

**Project Name:** Afton 345 kV to Afton North 345 kV Transmission Line

**Operating Voltage:** 345 kV

**Project Number:**

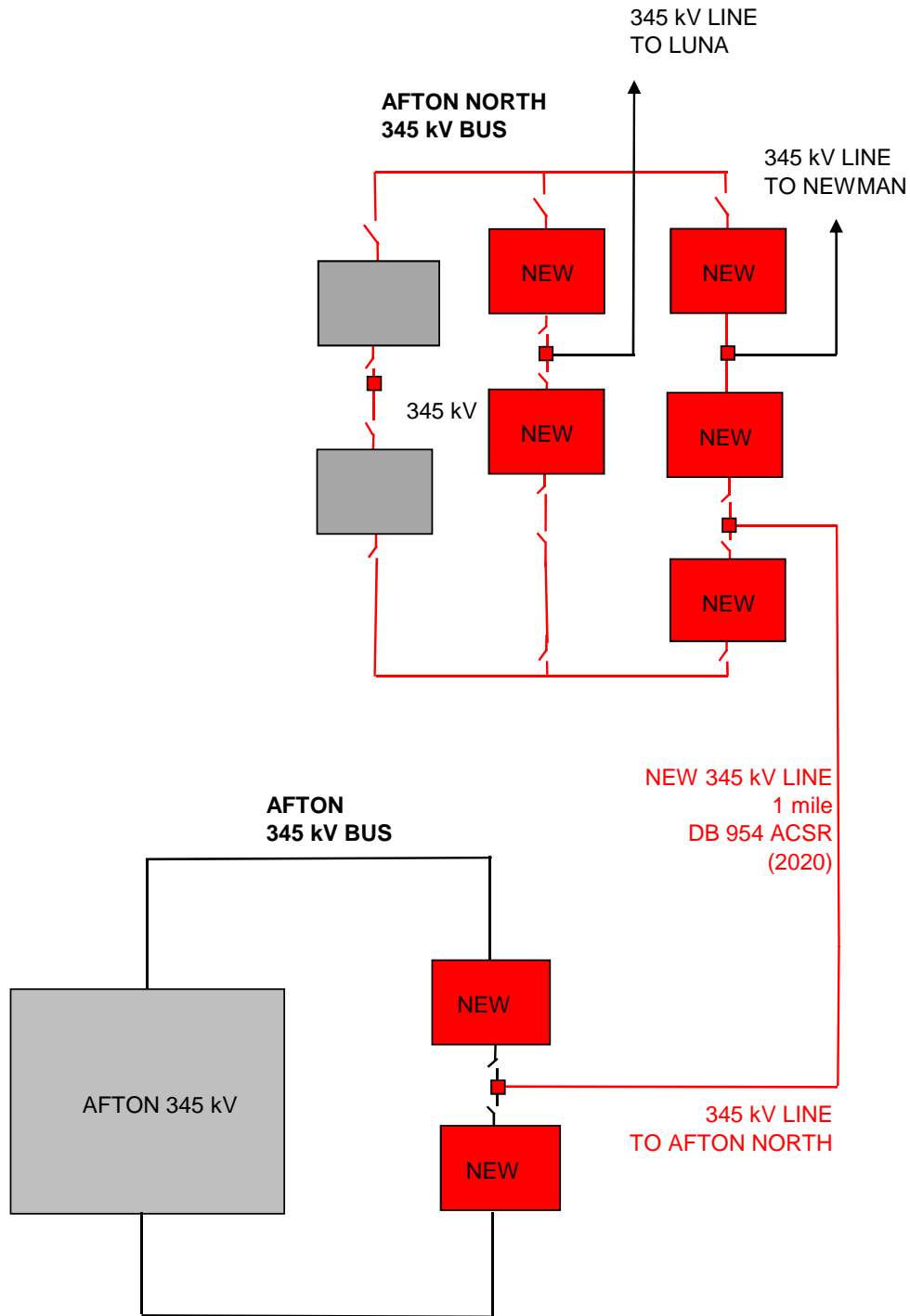
**Project Cost:**

**Planned  
In Service Date:** December 2020

**Project Description:** A new, one-mile, 345 kV double bundled 954 ACSR transmission line is planned to connect the Afton Substation to the new Afton North Substation in southern New Mexico. This project will enhance system reliability and will help EPE meet load growth needs.

**Project Justification:** This project, as part of the Afton-Afton North-Vado projects scheduled for completion by 2026, could collectively increase El Paso Import Capability (EPIC) by 80-120 MW. It will also increase reliability to the area.

**NEW AFTON NORTH SUBSTATION,  
and 1 mile AFTON TO AFTON NORTH 345 kV TRANSMISSION LINE  
2020**



NOTE:  
FOR ILLUSTRATION PURPOSES ONLY.  
FINAL DESIGN WILL BE COMPLETED  
BY TRANSMISSION LINE DESIGN  
AND SR ENGINEERING

**Year 2021**

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

# **Eastside Loop Expansion Project**

- The following pages describe project segments associated with the Eastside Loop Expansion Project that is designed to serve future growth in the El Paso area.

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2021**

**Project Name:** Eastside Loop Expansion Project: Upgrade Sparks to Felipe 69 kV Line to 115 kV and re-conductor to 954 ACSR wire.

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**In Service Date:** May 2021

**Project Description:** This project will upgrade the Sparks to Felipe 69 kV Line to 115 kV and re-conductor the 12.87 mile line to 954 ACSR conductor.

**Project Justification:** This project will extend the 115 kV transmission system from Sparks Substation to Felipe Substation enabling the construction of the Eastside Loop Expansion Project and improving voltage in the area. Once the Eastside Loop Expansion Project is complete, the East to West power flow will help defer the need to re-conductor transmission lines in the downtown area and will help lay the foundation for serving future load growth east of El Paso. In addition, the Eastside Loop Expansion Project will provide alternate flow path capability from Montana Power Station which will make the system more reliable.

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2021**

**Project Name:** Eastside Loop Expansion Project: Move Sparks 115/69 kV autotransformer to Felipe Substation and add a 115 kV bus to Felipe Substation.

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

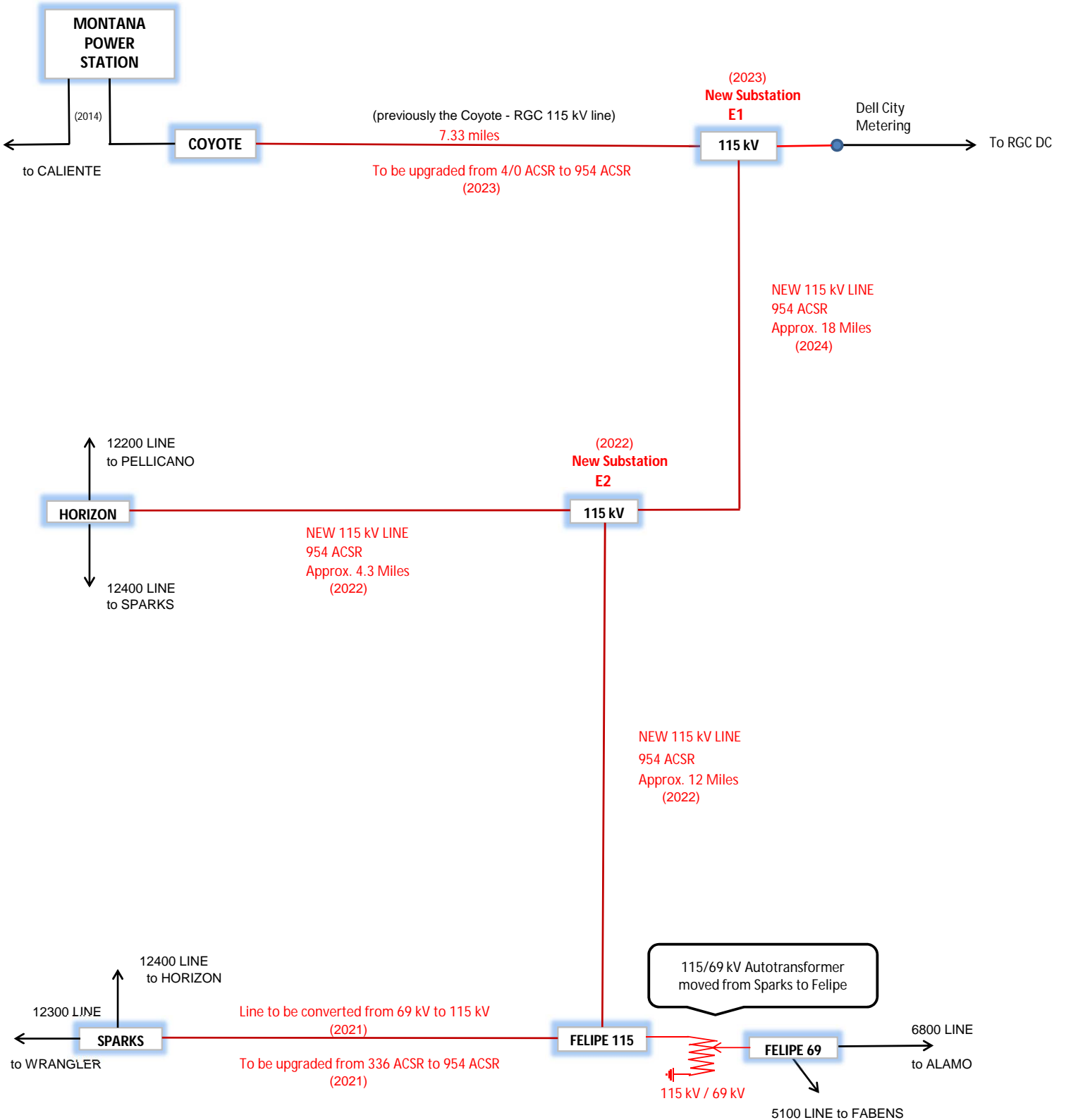
**In Service Date:** May 2021

**Project Description:** This project will move the Sparks 115/69 kV autotransformer to Felipe Substation and upgrade Felipe Substation to include a 115 kV bus.

**Project Justification:** This project will extend the 115 kV transmission system from Sparks Substation to Felipe Substation enabling the construction of the Eastside Loop Expansion Project and improving voltages in the area. Once the Eastside Loop Expansion Project is complete, the East to West power flow will help defer the need to re-conductor transmission lines in the downtown area and will help lay the foundation for serving future load growth east of El Paso. In addition, the Eastside Loop Expansion Project will provide alternate flow path capability from Montana Power Station making the system more reliable.

# EASTSIDE LOOP EXPANSION PROJECT

## 2021-2024



**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2021**

**Project Name:** Moongate Substation and Jornada to Moongate 115 kV Line.

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

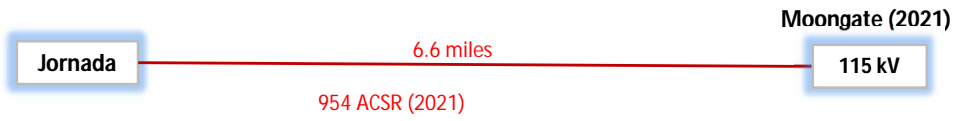
**Planned  
In Service Date:** May 2021

**Project Description:** This project consists of constructing a new Moongate Substation and adding an approximately 7 mile 954 ACSR conductor 115 kV line from Jornada Substation to the new Moongate Substation.

**Project Justification:** Moongate Substation will be constructed to meet load growth while the transmission line will provide connectivity.



# New MOONGATE-JORNADA 115 KV LINE 2021



**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2021**

**Project Name:** Rio Grande – Sunset (5500/5600) 69 kV Line Upgrades.

**Operating Voltage:** 69 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** May 2021

**Project Description:** This project requires the re-conductoring of two 69 kV lines that traverse mountainous terrain and extend through the UTEP campus area. The lines connect Rio Grande Substation and Sunset Substation. The capacity of the lines require an upgrade to meet a minimum of 104 MVA loading under normal conditions and 152 MVA under emergency conditions.

**Project Justification:** These lines experience increased loading during the summer peak season, a condition that is difficult to mitigate. The increase in line capacity will relieve the need to exercise operational procedures as a mitigation measure.

**Year 2022**

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Eastside Loop Expansion Project. New E2 Substation

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** December 2022

**Project Description:** This project will add a new substation, E2, approximately 18 miles south of the new E1 Substation. The new E2 Substation will connect to the existing Horizon 115 kV Substation.

**Project Justification:** This new substation is part of the Eastside Loop Expansion Project. Once the Eastside Loop Expansion Project is complete, the East to West generation flow helps defer the need to re-conductor transmission lines in the downtown area. It will lay the foundation for serving future load growth in east El Paso. In addition, the Eastside Loop Expansion Project provides alternate flow paths from Montana Power Station making the system more reliable.

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Eastside Loop Expansion Project: New E2 to Horizon 115 kV line.

**Operating Voltage:** 115 kV

**Project Number:**

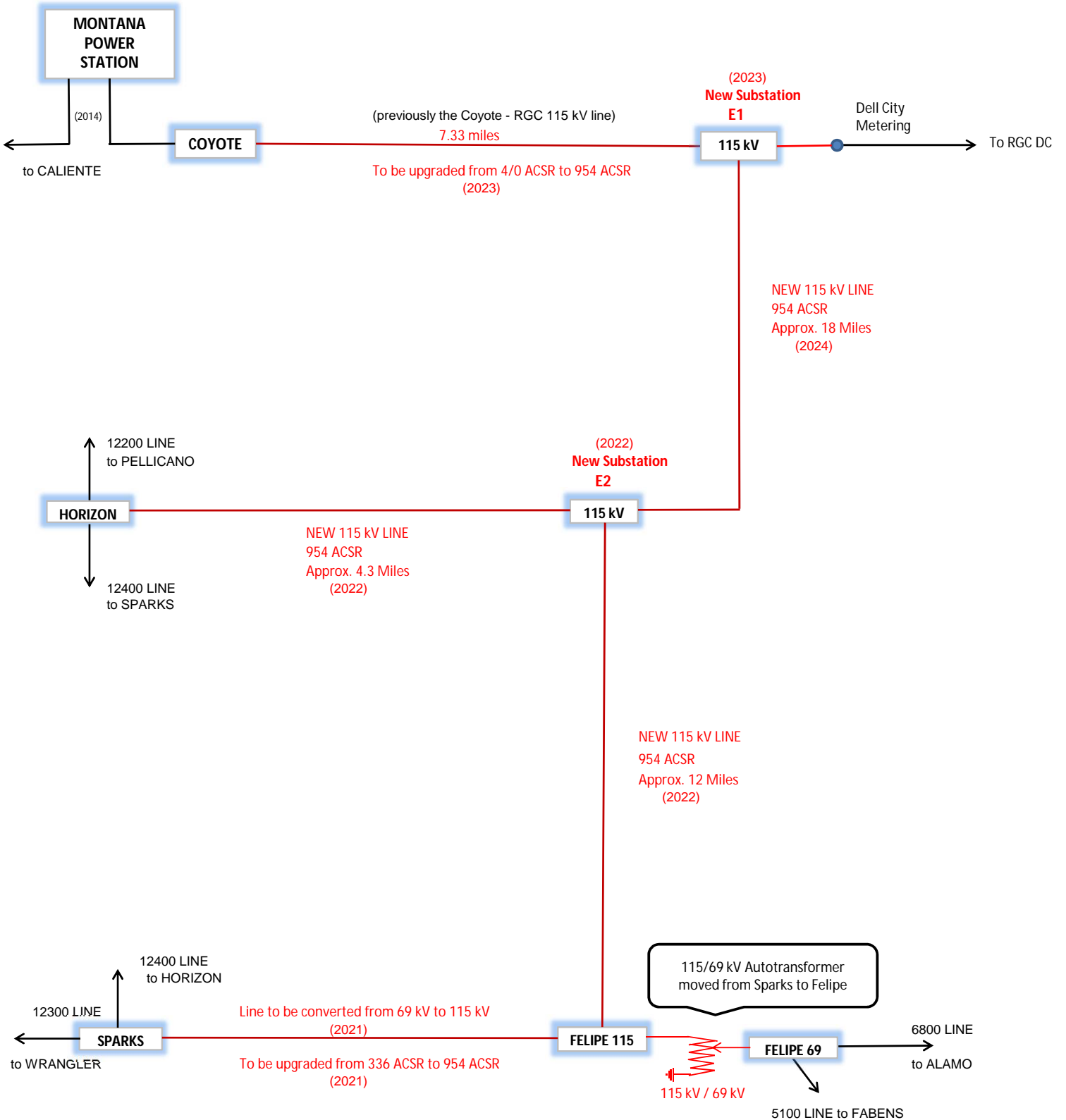
**Project Cost:**

**Planned  
In Service Date:** December 2022

**Project Description:** As part of the Eastside Loop Expansion Project, this project will add a new 4.3 mile, 954 ACSR transmission line west from E2 to Horizon.

**Project Justification:** This new line addition is part of the Eastside Loop Expansion Project. Once the Eastside Loop Expansion Project is complete, the East to West generation flow helps defer the need to re-conductor transmission lines in the downtown area. It will lay the foundation for serving future load growth on east El Paso. In addition, the project provides alternate flow paths from Montana Power Station making the system more reliable.

# EASTSIDE LOOP EXPANSION PROJECT 2021-2024



**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Eastside Loop Expansion Project: New 954 ACSR transmission line connects a new E2 115 kV Substation to Felipe 115 kV Substation.

**Operating Voltage:** 115 kV

**Project Number:**

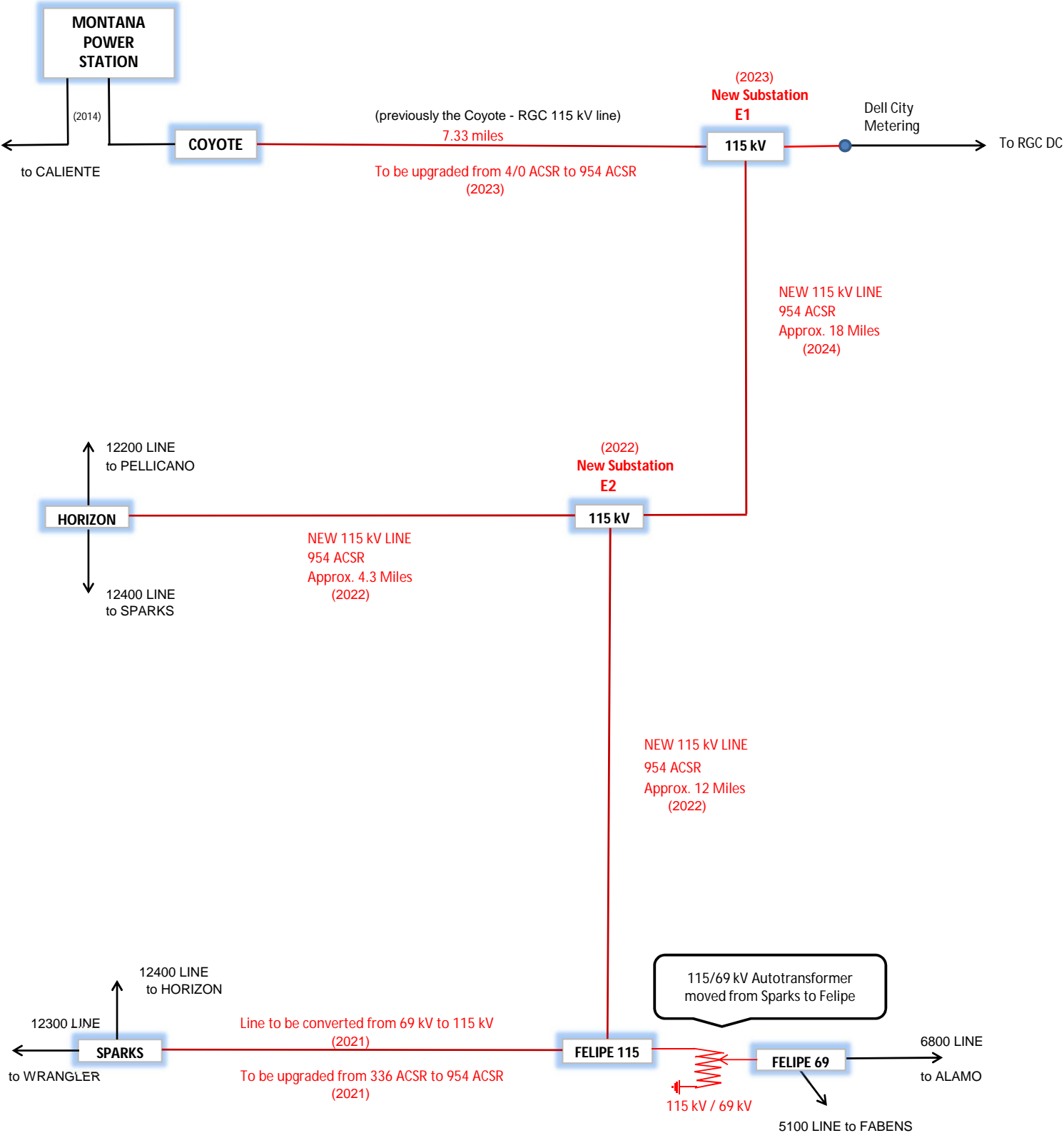
**Project Cost:**

**Planned  
In Service Date:** December 2022

**Project Description:** This project connects the proposed E2 115kV Substation to Felipe Substation at the 115 kV voltage level. The new line will consist of approximately 12 miles of 954 ACSR conductor.

**Project Justification:** The E2 Substation and the E2 to Felipe 115 kV line are part of the East side Loop Expansion Project. This project helps defer the need to re-conductor transmission lines that were scheduled in earlier System Expansion Plan reports. It will help lay the foundation for serving future load growth in east El Paso. In addition, the project provides alternate flow paths from Montana Power Station.

# EASTSIDE LOOP EXPANSION PROJECT 2021-2024





**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Moongate to Arroyo 69 kV to 115 kV Line Conversion and Line Upgrade

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** May 2022

**Project Description:** This project consists of converting and upgrading the former Arroyo-Cox-Apollo 69 kV, which will become the Moongate to Arroyo 115 kV Line (and Moongate to Apollo 115 kV Line) to increase the capacity of the line.

**Project Justification:** This line is needed to complete the East Las Cruces Loop from Moongate Substation to Arroyo Substation, increasing system reliability.

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** NEWMAN EAST 115 kV to NEWMAN 115 kV transmission lines  
(Place holder project to serve Newman East Power Station)

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**In Service Date:** May 2022

**Project Description:** Four (4) two mile, 115 kV transmission lines with a line rating of at least 1823 amps each (pending results from LGIP) are planned for connecting Newman East Substation to Newman Substation. This will connect two new combined cycle generators to the Newman bus, enhance system reliability, and help meet load growth needs.

**Project Justification:** This project is part of EPE's generation expansion efforts that include two new 1 x 1 combined cycle generator additions (640 MW total) projected to be installed in 2023 and 2027 respectively. A tentative site (EPC-1), referred to as Newman East, has been selected for this study pending final site selection.

For plan purposes only and pending results from LGIP, the Newman East bus was connected to the Newman bus by four 954 ACSS\* conductors. The combined cycle units were connected to the Newman East bus. This transmission configuration will be studied later in the FERC LGIP study when the final generation site is determined.

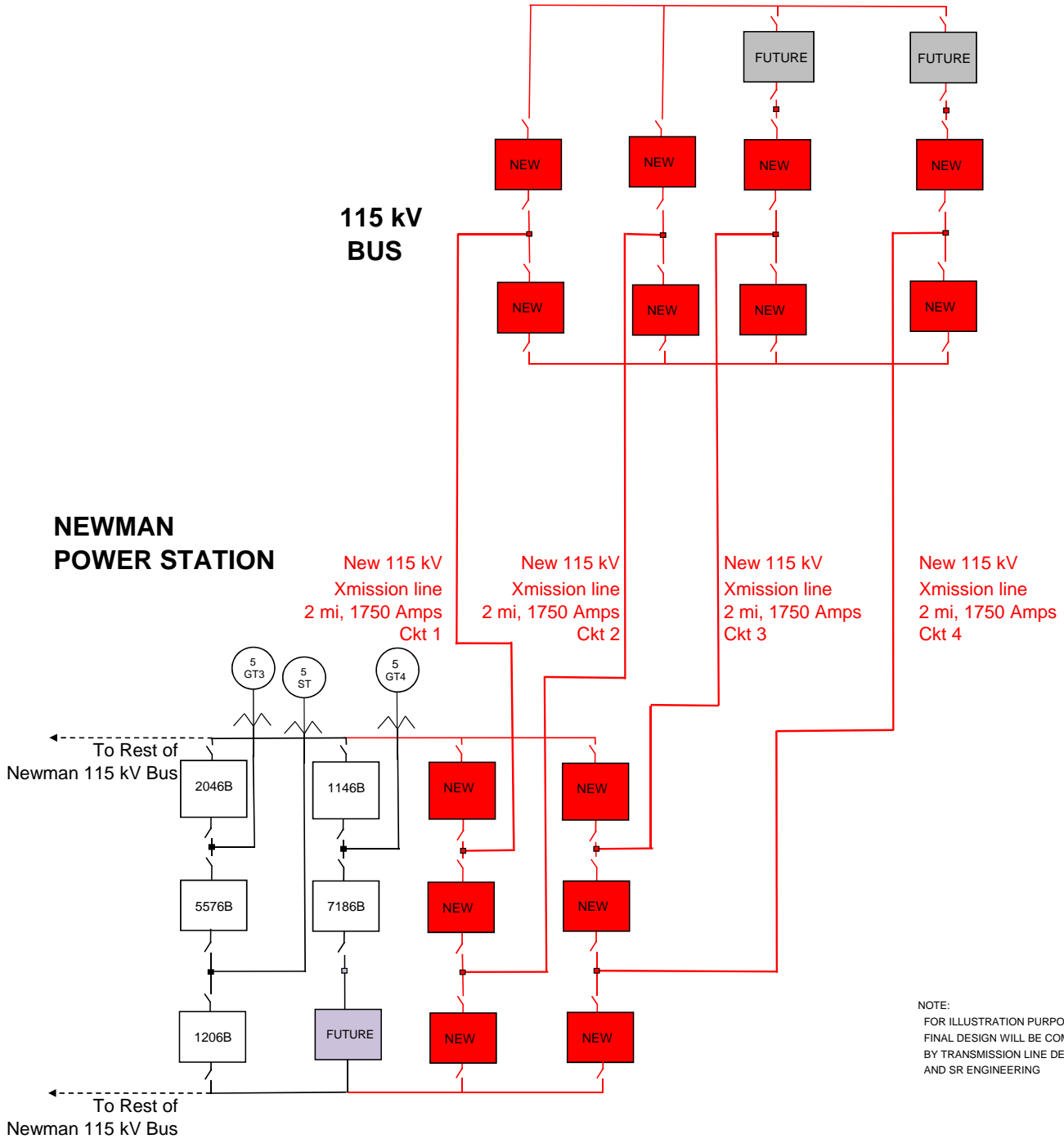
\*The use of 954 ACSS for future new line construction is used only for modeling purposes. The actual transmission line design may use a conductor with equivalent amperage rating.

# NEWMAN EAST POWER STATION

2022

\* Four New 115 kV Transmission Lines from Newman East Power Station to Newman Power Station

## NEWMAN EAST POWER STATION (EPC-1)



**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Jornada to Arroyo Line Upgrade (Re-conductor)

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** October 2022

**Project Description:** This project consists of the re-conductoring the Arroyo to Jornada 115 kV line to increase the capacity of the line to a minimum of 170 MVA under normal conditions and 230 MVA under emergency conditions.

**Project Justification:** This line experiences an increase in loading under heavy summer conditions. The increase in line capacity to a minimum of 170 MVA under normal conditions and to an emergency rating of at least 230 MVA will relieve the identified overloads.

**Year 2023**

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2023**

**Project Name:** Eastside Loop Expansion Loop: New substation E1 and a line extension to connect Coyote Substation to E1 Substation.

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

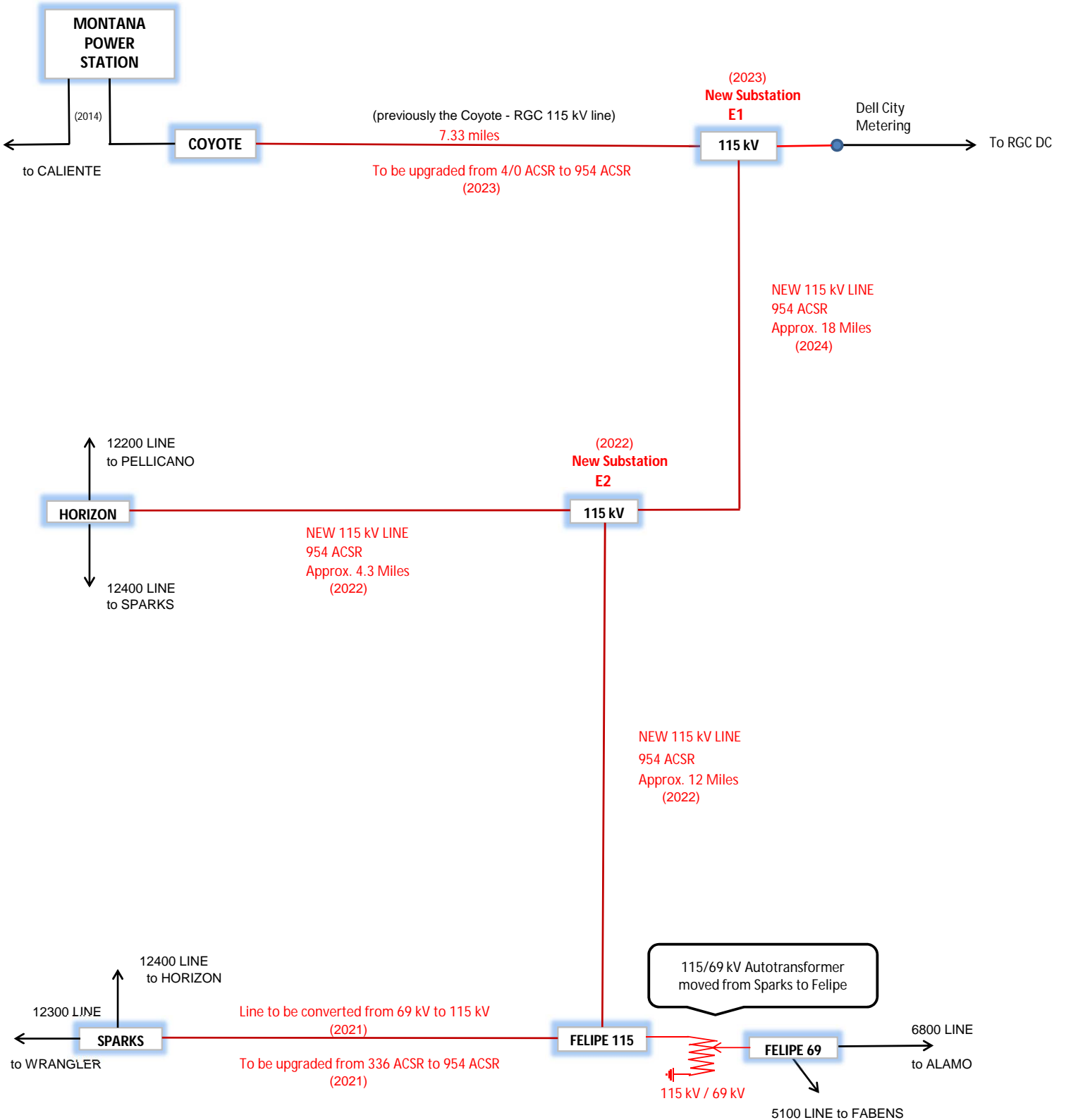
**In Service Date:** December 2023

**Project Description:** This project will add a new substation, E1, approximately 7.33 miles east of Coyote Substation. The 7.33 mile long line segment from Coyote to E1 will be re-conducted from 4/0 ACSR conductor to 954 ACSR conductor. The metering for Dell City will be moved to the east side of the E1 Substation on the line segment to Rio Grande Cooperative.

**Project Justification:** This new substation and new line addition are part of the Eastside Loop Expansion Project. Once the Eastside Loop Expansion Project is complete, the East to West generation flow will help in deferring the need to re-conductor transmission lines in the downtown area. It will lay the foundation for serving future load growth on the Eastside of El Paso. In addition, the Eastside Loop Expansion Project provides alternate flow paths from Montana Power Station making the system more reliable during the summer.

# EASTSIDE LOOP EXPANSION PROJECT

## 2021-2024



**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2023**

**Project Name:** Tap In and-Out to Picante 345 kV Substation from Caliente-Amrad 345 kV Transmission Line.

**Operating Voltage:** 345 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** May 2023

**Project Description:** EPE has a 345 kV transmission line from Amrad Substation to Caliente Substation which runs adjacent to Picante Substation. The plan is to intersect this line and connect the line in and out of the Picante Substation 345kV ring bus. This will require the addition of three 345 kV Gas Circuit Breakers, disconnect switches with motor operated devices. The 345 kV reactor will be moved from Caliente Substation to Picante Substation (or a new reactor at Picante Substation the Picante end of what will become the Amrad-Picante 345 kV line).

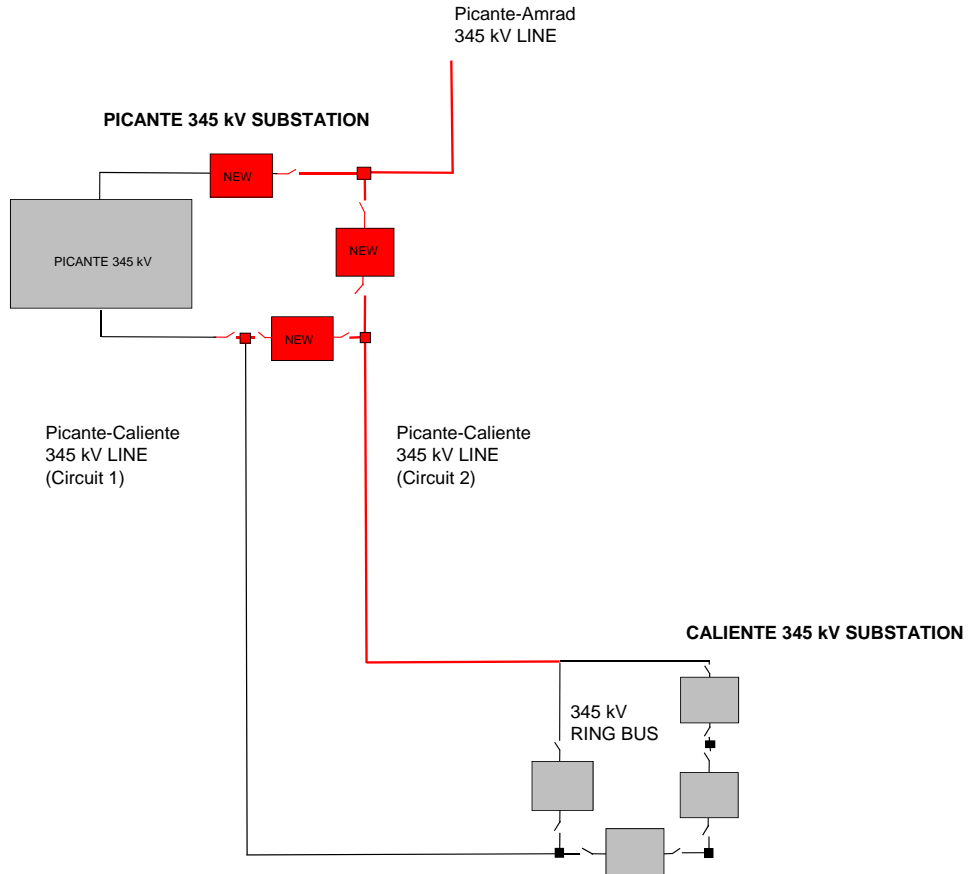
**Project Justification:** This project will result in EPE's existing Caliente-Amrad 345 kV becoming the Amrad-Picante 345 kV and the Picante-Caliente 345 kV lines. As a result, two parallel transmission lines from Picante to Caliente will exist. This project will provide increased reliability within the area. Furthermore, the new configuration will increase the flexibility to perform maintenance on the resulting transmission lines after the project is complete.



# PICANTE 345 kV SUBSTATION TAP IN-AND-OUT

2023

\* New 345 kV Transmission Line Tap In-And-Out to PICANTE 345 from AMRAD to Caliente 345 kV Line



NOTE:  
FOR ILLUSTRATION PURPOSES ONLY.  
FINAL DESIGN WILL BE COMPLETED  
BY TRANSMISSION LINE DESIGN  
AND SR ENGINEERING

**Year 2024**

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2024**

**Project Name:** Vado 115 kV Substation

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**In Service Date:** May 2024

**Project Description:** This project involves the construction of a new substation in the Vado/Anthony vicinity in order to allow for the addition of a 115 kV line that will connect to Afton North Substation. This project includes splitting EPE's existing Anthony-Salopek 115 kV Transmission Line with terminations into Vado 115 kV; the Anthony-Salopek 115 kV Line will become the Anthony-Vado 115kV and Vado-Salopek 115 kV Lines.

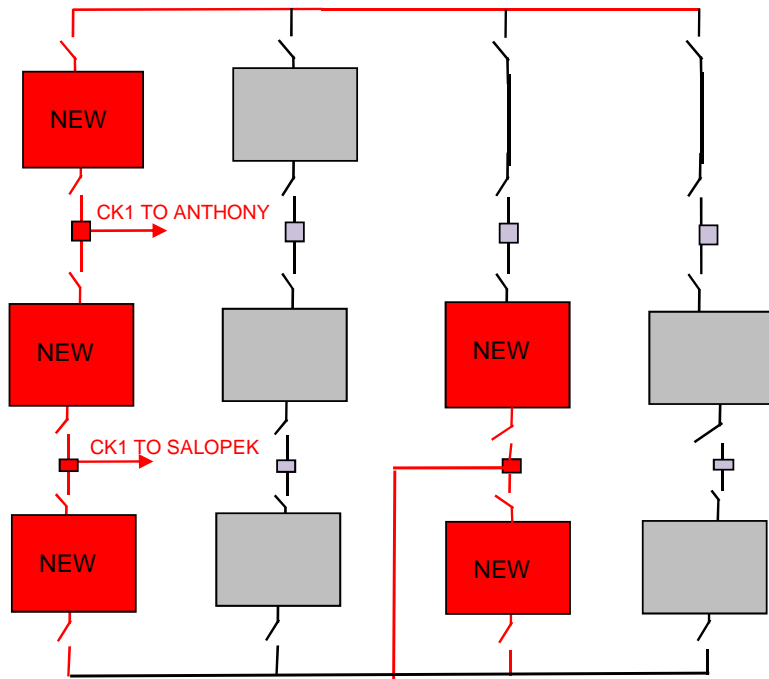
**Project Justification:** This project is part of the Afton-Afton North-Vado projects, scheduled for completion by 2026, that could collectively increase El Paso Import Capability (EPIC) by 80-120 MW. This substation will increase reliability in the Vado/Anthony area.

# NEW VADO 115 kV SUBSTATION

## NEW DOUBLE BUNDLED LINE FROM VADO 115 kV TO AFTON NORTH 115 kV

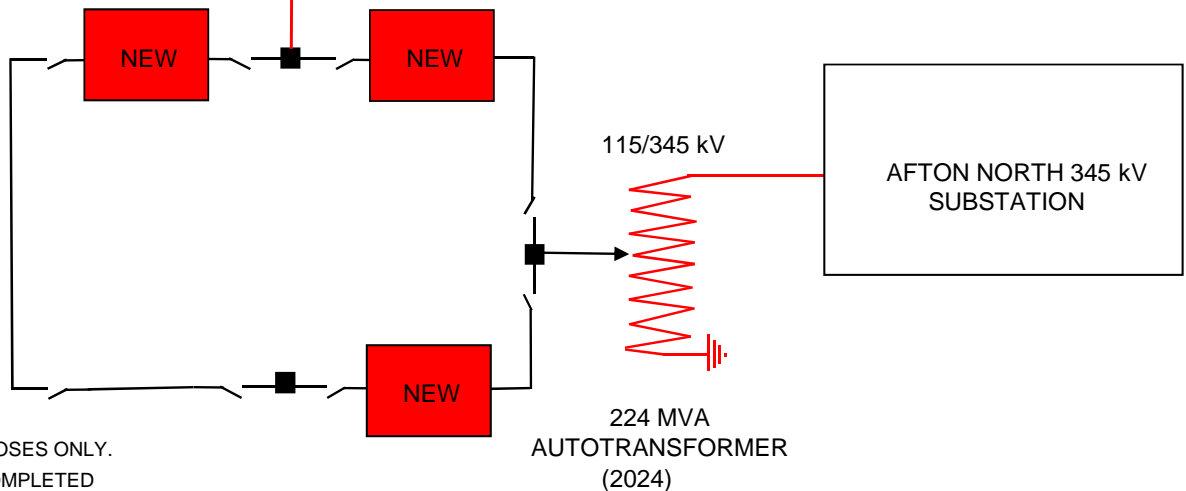
2024

NEW VADO 115 kV SUBSTATION (2024)



AFTON NORTH 115 kV  
TO VADO 115 kV  
(2024)

AFTON NORTH  
115 kV RING BUS



AFTON NORTH 345 kV  
SUBSTATION

224 MVA  
AUTOTRANSFORMER  
(2024)

NOTE:  
FOR ILLUSTRATION PURPOSES ONLY.  
FINAL DESIGN WILL BE COMPLETED  
BY TRANSMISSION LINE DESIGN  
AND SR ENGINEERING

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2024**

**Project Name:** New Afton North-Vado 115 kV Transmission Line and new 345/115 kV Auto at Afton North.

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**In Service Date:** May 2024

**Project Description:** A new 3-phase 115 kV transmission line will be built from Afton North Substation to Vado Substation. It will be approximately 12 miles long with a normal line capacity of 340 MW. This project also includes the installation of a new autotransformer 345/115 kV at Afton North Substation.

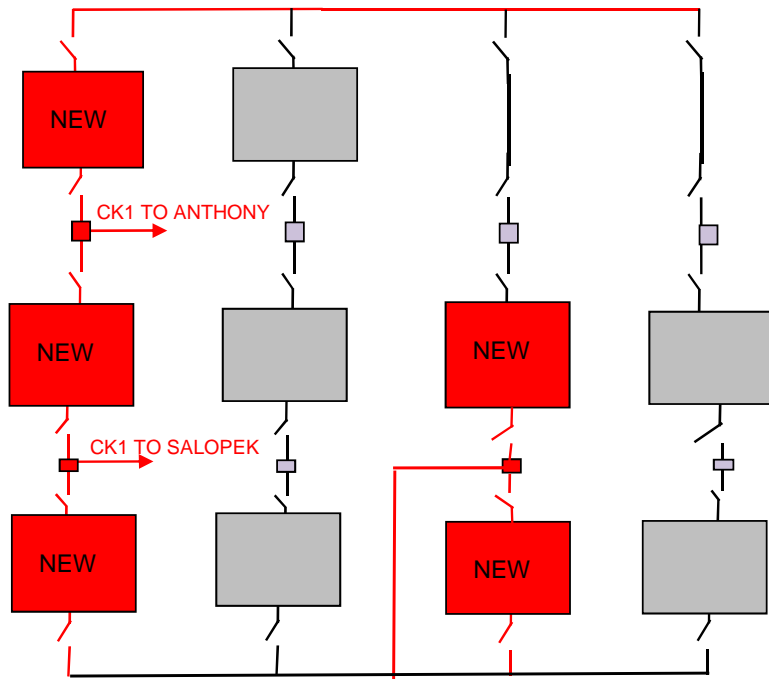
**Project Justification:** The purpose of this transmission line is to improve reliability to Las Cruces and West El Paso area by connecting Vado Substation to Afton North Substation via a 115 kV line. This connection will also reduce losses in the system as generation from the 345 kV system will have a shorter path to Las Cruces and west El Paso loads. This project as part of the Afton-Afton North-Vado projects, scheduled for completion by 2026, could collectively increase El Paso Import Capability (EPIC) by 80-120 MW.

# NEW VADO 115 kV SUBSTATION

## NEW DOUBLE BUNDLED LINE FROM VADO 115 kV TO AFTON NORTH 115 kV

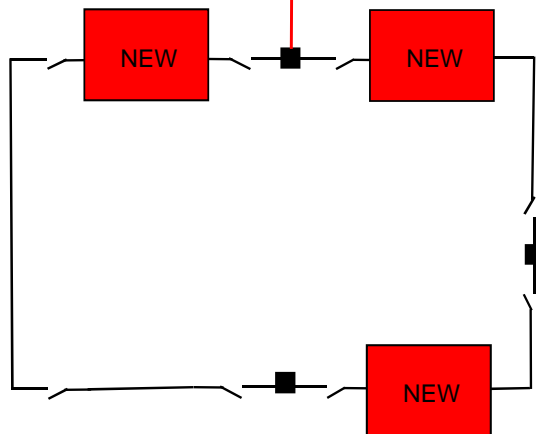
2024

NEW VADO 115 kV SUBSTATION (2024)



AFTON NORTH 115 kV  
TO VADO 115 kV  
(2024)

AFTON NORTH  
115 kV RING BUS



115/345 kV

AFTON NORTH 345 kV  
SUBSTATION

224 MVA  
AUTOTRANSFORMER  
(2024)

NOTE:  
FOR ILLUSTRATION PURPOSES ONLY.  
FINAL DESIGN WILL BE COMPLETED  
BY TRANSMISSION LINE DESIGN  
AND SR ENGINEERING

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2024**

**Project Name:** Eastside Loop Expansion Loop: 954 ACSR Transmission Line from E1 115 kV Substation to E2 115 kV Substation

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

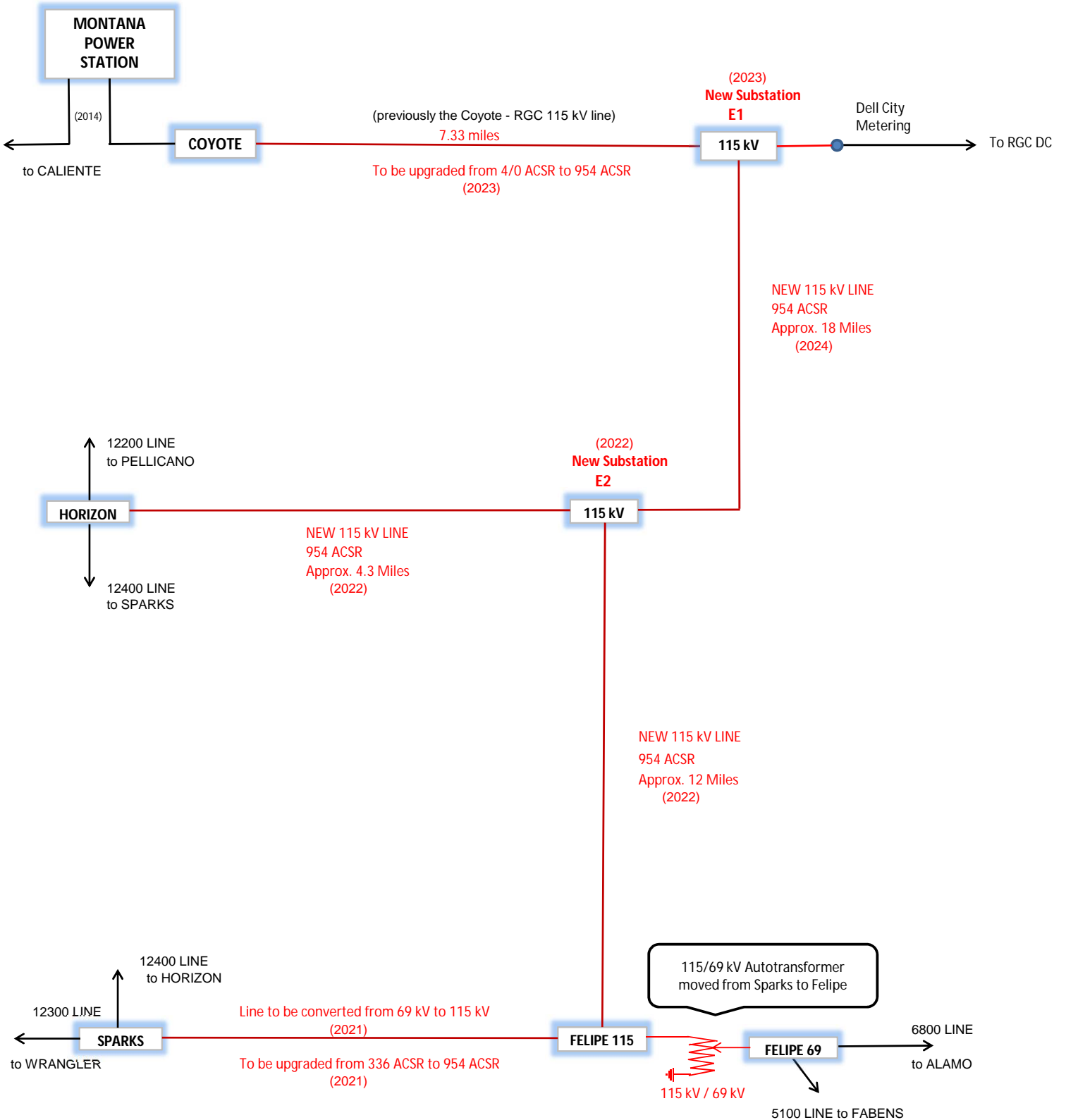
**In Service Date:** May 2024

**Project Description:** This project connects the proposed E1 115 kV Substation to the proposed E2 115 kV Substation.

**Project Justification:** The E1-E2 115 kV line is part of the East Side Loop Expansion Project. This project helps to defer the need to re-conductor transmission lines that were scheduled in earlier System Expansion Plan reports. It will help lay the foundation for serving future load growth in East El Paso. In addition, the project provides alternate flow path from Montana Power Station.

# EASTSIDE LOOP EXPANSION PROJECT

## 2021-2024





**Year 2025**

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2025**

**Project Name:** Afton North - Airport Transmission Line Addition.

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

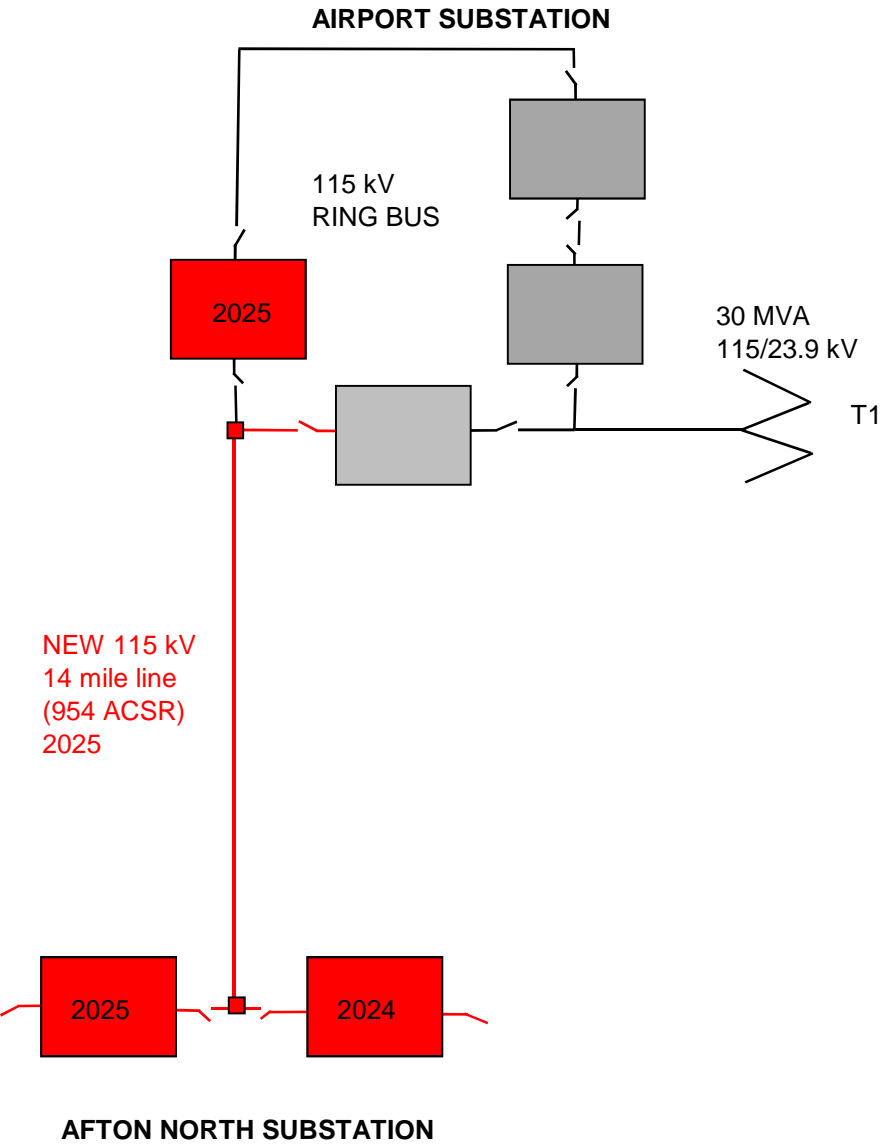
**Planned  
In Service Date:** May 2025

**Project Description:** A new 3-phase 115 kV transmission line is planned to be built from Afton North Substation to Airport Substation. It will be approximately 14 miles long and consist of 954 ACSR (Rail) conductor. This transmission line will serve Airport Substation in Las Cruces.

**Project Justification:** The purpose of this transmission line is to improve reliability with two connections to Airport Substation. The Afton North to Airport connection will be the primary source serving Airport while the Mimbres-Picacho would serve as a backup source. Presently, Airport Substation is being served via PNM's Mimbres-Picacho 115 kV transmission line (through a radial connection from Airport Tap).

# AFTON NORTH - AIRPORT 115 kV TRANSMISSION LINE

2025



**Year 2026**

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2026**

**Project Name:** New 8-mile Vado to Anthony 115 kV Line or Line Upgrade of Existing Line

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** May 2026

**Project Description:** With the addition of Vado Substation in 2024, the Anthony-Salopek 115 kV Line became the Anthony-Vado 115kV and Vado-Salopek 115 kV Lines. By 2026, additional capacity will be needed on the 115 kV lines out of Vado Substation. Capacity requirements can be achieved by either upgrading the Anthony-Vado 115kV Line or by constructing an additional Anthony-Vado 115kV circuit. The powerflow case modeling reflects construction of an additional Anthony-Vado 115kV circuit. Either option should provide a capacity of 345 MVA under normal conditions, and an emergency rating of 464 MVA for the Anthony-Vado 115kV line. It will be assumed as a placeholder assumption that the cost for the upgrade option and the line addition option are the same.

**Project Justification:** The increased capacity of this line will allow EPE to serve west El Paso load from the Afton and Vado area increasing reliability and adding system flexibility under contingency and maintenance situations.

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2026**

**Project Name:** 9-mile Vado to Salopek 115 kV Line or Line Upgrade of Existing Line

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned  
In Service Date:** May 2026

**Project Description:** With the addition of Vado Substation in 2024, the Anthony-Salopek 115 kV Line became the Anthony-Vado 115kV and Vado-Salopek 115 kV Lines. By 2026, additional capacity will be needed on the 115 kV lines out of Vado Substation. Capacity requirements can be achieved by either upgrading the Vado-Salopek 115 kV Lines or by constructing an additional Vado-Salopek 115 kV circuit. The powerflow case modeling reflects construction of an additional Vado-Salopek 115 kV circuit. Either option there has to be a minimum of 345 MVA under normal conditions and emergency rating of 464 MVA from Vado to Salopek. It will be assumed as a placeholder assumption that the cost for the upgrade option and the line addition option are the same.

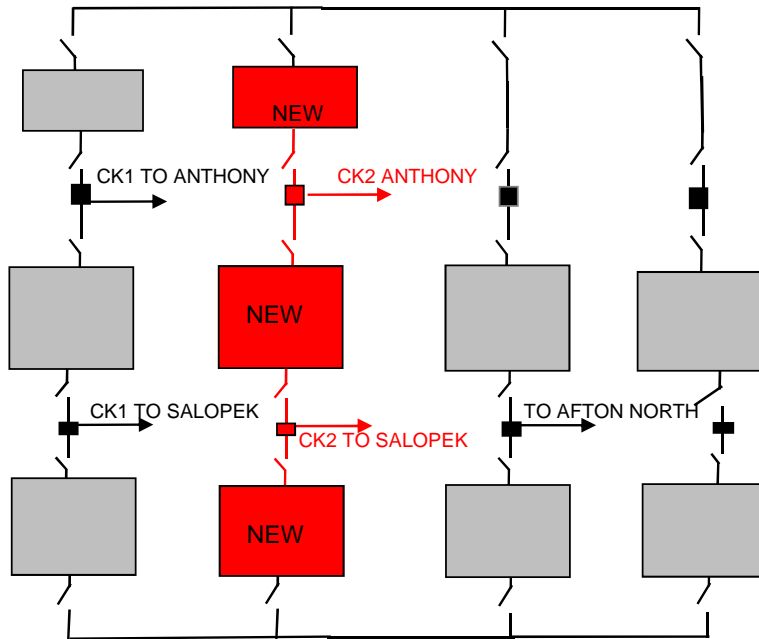
**Project Justification:** The increased capacity of this line will allow EPE to serve the Las Cruces load from the Afton and Vado area increasing reliability and system flexibility under contingency situations.

# NEW CK2 LINE FROM VADO 115 kV TO ANTHONY 115 kV

# NEW CK2 LINE FROM VADO 115 kV TO SALOPEK 115 kV

2026

## VADO 115 kV SUBSTATION



NOTE:  
FOR ILLUSTRATION PURPOSES ONLY.  
FINAL DESIGN WILL BE COMPLETED  
BY TRANSMISSION LINE DESIGN  
AND SR ENGINEERING

**Year 2027**



**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2027**

NONE

No specific new transmission facilities are called for in this Plan year.

**Year 2028**

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2028**

**Project Name:** Tap In and Out to Vado 345 kV Substation from Afton North - Newman 345 kV Transmission Line, and addition of a new 234/115 kV 224 MVA autotransformer.

**Operating Voltage:** 345 kV

**Project Number:**

**Project Cost:**

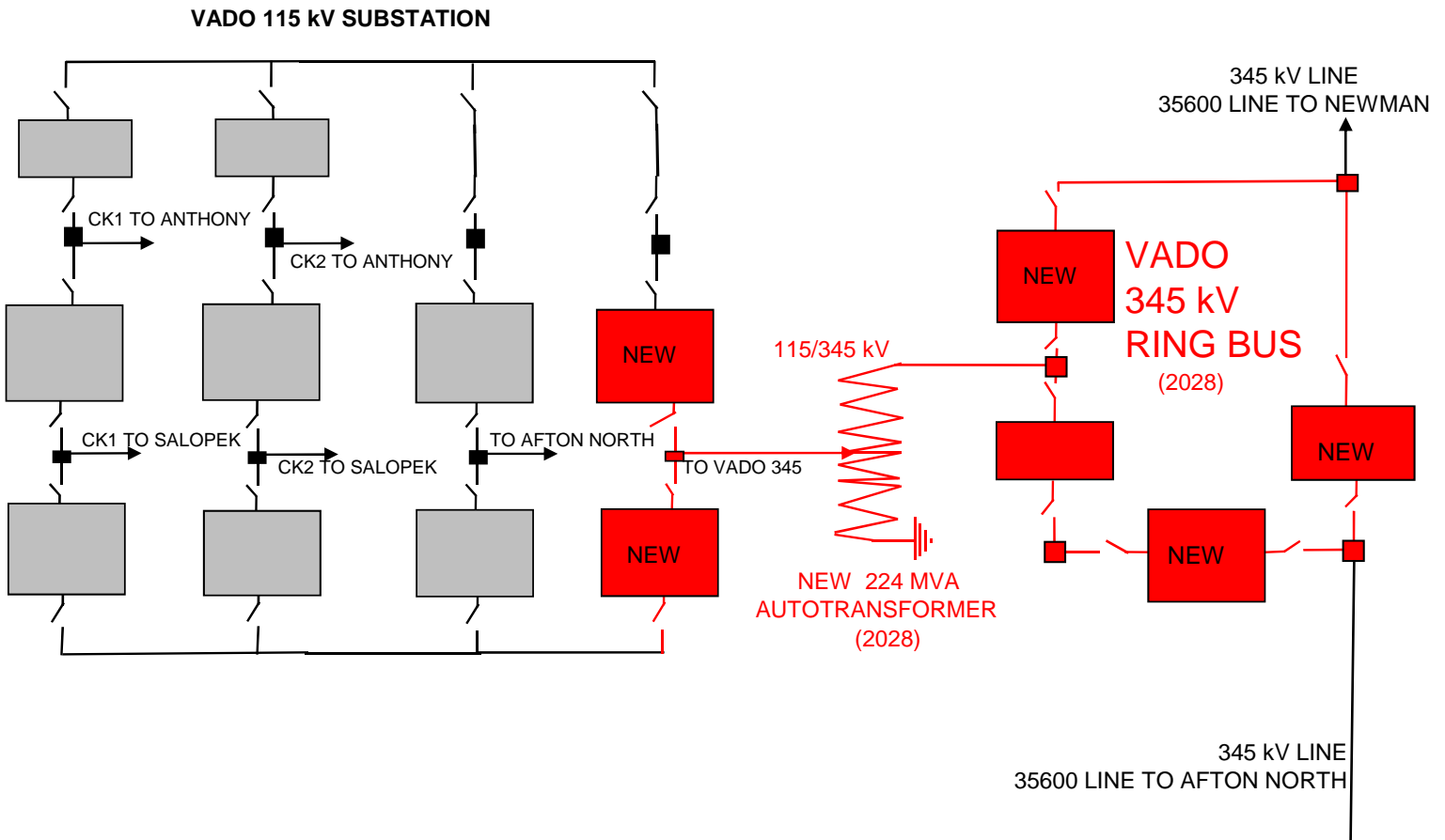
**Planned  
In Service Date:** May 2028

**Project Description:** EPE has an existing 345 kV transmission line from Afton to Newman Substation and it runs adjacent to Vado Substation; with the addition of the Afton North 345 kV Substation in 2020, this 345 kV line will become the Afton North-Newman 345 kV Line prior to this project. The plan is to cut the Afton North-Newman 345 kV Line and connect it in-and-out to the Vado Substation 345 kV ring bus. It will be necessary to add a Vado 345 kV ring bus and a new Vado 345/115 kV 224 MVA Autotransformer to connect to the Vado 115 kV system.

**Project Justification:** The purpose of this transmission line in-and-out tap is to improve reliability to Las Cruces and West El Paso area by connecting the Vado 345 kV bus to EPE's 345 kV grid at Afton North and Newman Substations. This connection will also reduce losses in the system as generation from the 345 kV system will have a shorter path to Las Cruces and west El Paso loads.

# VADO 345 kV SUBSTATION TAP IN-AND-OUT AND NEW VADO 345/115 kV AUTOTRANSFORMER

2028



**Year 2029**

**EL PASO ELECTRIC COMPANY  
2020-2029  
SYSTEM EXPANSION PLAN**

**PLANNED PROJECTS  
YEAR 2029**

NONE

No specific new transmission facilities are called for in this Plan year.