



# EL PASO ELECTRIC COMPANY SYSTEM EXPANSION PLAN 2022-2031

2021



PREPARED BY  
TRANSMISSION  
SYSTEM PLANNING

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## **1.0 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 2022 through 2031). 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 these conditions:

- Equipment will not be loaded more than its normal facility limits for All Facilities in Service ("AFIS").
- Equipment will not be loaded more than its emergency facility limits for any single-element ("N-1") contingency.
- Real-time violations that have been identified because of actual system conditions or real-time contingency analysis will be addressed.
- Conformance with NERC Standard TPL-001-4 criteria will be applied to certain planning events.
- Equipment voltage limits (high or low) will not be exceeded.
- System Expansion Projects Scheduled for Completion before Peak of 2022, and Project Schedule for 2022-2031 System Expansion Plan Projects.
- Future local generation resources serving native load have been identified in the 2020 L&R as detailed in the Generation Resources are summarized in Table 2.

This Plan's content has been organized as follows:

- An Introduction Section briefly summarizes requirements and scope of the EPE System Expansion Plan
- A Planning Organizations Section list and summarizes all regional and subregional planning groups that EPE participates in.
- A General Assumptions Section addresses Load Projections, Demand Side Management, Generation Resources, Reliability Criteria, System Operating Limit ("SOL") Methodology for the Operating Horizon, Open Planning Meetings, and Base Case System Assumptions.
- The Tables Section consists of:
  - Table 1 which identifies Peak Energy Efficiency Adjustment assumed for the current System Expansion Plan.
  - Table 2 which identifies Projected EPE Local Generation assumed for the current System Expansion Plan.
  - Table 3A identifies projects scheduled for completion before the peak of 2022.
  - Table 3B lists a comparison between recommended completion dates for planned projects in the 2020 System Expansion Plan and the 2021 System Expansion Plan.
  - New or modified projects for the current System Expansion Plan are summarized

in Tables 4A and 4B.

- Table 5 identifies reactive support projects identified in the current System Expansion Plan.
- A description of major EPE planned projects for each year is provided under the Transmission Project Summary. Information includes the Project Name, Operating Voltage, Project Number, Planned in Service Date, Project Description, and Project Justification.

The basis for Native system peak demand projections has historically been set by EPE's annual Long-Term Forecast Report. Incorporated within the 2021 Load Forecast and the 2020 Loads and Resources ("L&R") are EPE Public Policy requirements. It is in this manner that Public Policy requirements are considered in the Plan.

The system performance analyses presented in this Plan include an assessment of outage impacts, generator interconnection impacts, and economic planning evaluations. The major projects identified within this report are summarized below by geographical area and estimated in-service year:

#### WEST SERVICE TERRITORY

- Afton North Substation and Afton-Newman 345 kV line reconfiguration (2023)
- Afton-Afton North 345 kV Double Bundled Line New (2023)
- Two New 224 MVA 345/115 kV Autotransformers at Afton North (2024)
- Vado Substation 115 kV New (2024)
- Afton North-Vado 115 kV Double Bundled Line New (2024)
- CE-2 Substation (New) and Related 115 kV West Loop Line Reconfiguration (2025)
- Vado-Salopek 115 kV Double Bundled Line Reconductor (2026)
- CE-3 Substation (New) and Related 115 kV West Loop Line Reconfiguration (2026)
- Vado to Anthony 115 kV Double Bundled Line Reconductor (2027)
- Afton North - Airport 115 kV Line New (2028)
- CE-4 Substation (New) and Related 115 kV West Loop Line Reconfiguration (2029)
- In-and-Out into Vado 345 kV Substation from Afton North-Newman 345 kV Line (2030)
- New 224 MVA 345/115 kV Autotransformer at Vado (2030)

## DOWNTOWN SERVICE TERRITORY

- Marlow-Trowbridge 115 kV Line Reconductor (2021)
- Rio Grande-Sunset 69 kV (5500/5600) & Rio Grande-Sunset North 115 kV Line Rebuild/Reconductor

## NORTHEAST SERVICE TERRITORY

- North Bliss Substation New (2021)
- Newman-Chaparral 115 kV Line Reconductor (2022)
- McCombs Substation (New) and Related 115 kV Transmission Line Reconfiguration (2022)
- Roberts Substation (New) and Related 115 kV Transmission Line Reconfiguration (2023)

## EAST SERVICE TERRITORY

- In-and-Out into Picante 345 kV Substation from Caliente-Amrad 345 kV Line (2022)
- Caliente-MPS (16700) 115 kV Line Reconductor
- Seabeck Switching Station 115 kV New (2024)
- Seabeck-Horizon 115 kV Line New (2024)
- Seabeck-San Felipe 115 kV Line New (2024)
- San Felipe Substation 115/69 kV New (2024)
- Sparks-San Felipe Line Conversion 69 kV to 115 kV (2024)
- Pine Switching Station 115 kV New (2024)
- Pine-Seabeck 115 kV Line New (2024)
- Coyote-Pine 115 kV Line Reconductor (2025)

## LAS CRUCES SERVICE TERRITORY

- Moongate Substation New (2021)
- Moongate-Jornada 115 kV Line New (2021)
- Apollo-Cox Line Conversion/Reconductor 69 kV to 115 kV (2022)
- Jornada-Arroyo 115 kV Line Reconductor/Rebuild (2022)
- Moongate-Apollo 115 kV Line New (2022)
- Remove any series element bottlenecks so that the full conductor-based normal and emergency ratings are achieved on the Jornada-Hatch 115 kV line (2025)

## AMRAD SERVICE TERRITORY

- New Amrad SVC/S device connecting on high-voltage side to Amrad 345 kV using its own dedicated step-up transformer to a dedicated bay, size assumed +/- 100 MVAR (symmetrical range) (2026)

## **2.0 INTRODUCTION**

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 2022 through 2031). 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 these conditions:

- Equipment will not be loaded more than its normal facility limits for All Facilities in Service ("AFIS").
- Equipment will not be loaded more than its emergency facility limits for any single-element ("N-1") contingency.
- Real-time violations that have been identified because of actual system conditions or real-time contingency analysis will be addressed.
- Conformance with EPE's Planning Criteria for NERC Standard TPL-001-4 will be applied to certain planning events.
- Equipment voltage limits (high or low) will not be exceeded.

The projects presented within El Paso Electric Company System Expansion Plan 2022-2031 are a result of technical analyses performed by System Planning with contributions from the Interconnections & Transmission Plan Department. This new Plan updates and replaces EPE's previous 2021-2030 System Expansion Plan.



### **3.0 PLANNING ORGANIZATIONS**

EPE is involved in regional and subregional planning organizations. EPE's participation in these planning organizations facilitates EPE's coordination of its transmission plans with the plans of the other transmission providers/entities. See EPE's OATT, Attachment K for more details on how these activities relate to EPE's planning process.

#### **3.1 Regional Planning Organizations**

##### **3.1.1 Western Electricity Coordinating Council (WECC)**

EPE actively participates in WECC committees.

WECC is a non-profit corporation approved by the Federal Energy Regulatory Commission (FERC) to serve as the Regional Entity tasked with assuring a reliable Bulk Electric System in the Western Interconnection geographical area of the United States of America.

##### **3.1.2 WestConnect**

EPE actively participates in the WestConnect regional transmission planning process.

WestConnect members collaboratively assess stakeholder needs and may develop cost-effective transmission projects. EPE is an active member participant in the WestConnect regional transmission planning process established by FERC Order No. 1000.

#### **3.2 Subregional Planning Group**

##### **3.2.1 Southwest Area Transmission (SWAT) Subregional Planning Group**

EPE actively participates in the activities of the Southwest Area Transmission (SWAT) Subregional Planning Group that is comprised of transmission regulators/governmental entities, transmission users, transmission owners, transmission operators and environmental entities.

The SWAT addresses future transmission needs on a subregional (desert southwest) basis.

## **4.0 GENERAL ASSUMPTIONS**

### **4.1 Load Projections**

EPE's 2021 native system peak demand exceeded the forecasted Expected native system peak demand from EPE's 2021 Long-Term Forecast report ("Forecast"), published by Economic Research department on April 11, 2021. The increase in load was largely due to people remaining indoors and consuming larger than normal loads.

The 2021 Forecast predicts 10-year CAGR of 0.9% for native system peak demand. The Forecast includes demand side management and energy efficiency programs as detailed in the next section. Native load, system losses and station service modeled for future years were determined using the forecasted Expected Native System Demand value plus station service plus  $\frac{1}{4}$  of the difference between the Upper Bound Native System Demand value and the Expected Native System Demand value from the Forecast. Note that station service is modeled explicitly as load.

Each substation load was projected for the planning years based on available historical 2020 coincident peak loads; Distribution System's monthly (non-coincident) load reports; load projections in the June 2020 Distribution Expansion Plan; and input from EPE's Load Forecasting and Commercial Services departments.

The 2021 Forecast predicts a Native System Energy increase for 2021 of 1.12% compared to year 2020. The 2021 Forecast also predicts Native System Peak Demand in 2021 will decrease 2.41% compared to last year's peak.

### **4.2 Demand Side Management**

In Attachment K within EPE's OATT (posted on EPE's website at [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 2020 Forecast shows a continuous increase in the energy efficiency demand adjustment with a projected peak of 57.5 MW in 2029.

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

### **4.3 Generation Resources**

EPE's Resource Planning Department ("RP") identified future generation resources and purchased power to serve native load in its Loads & Resources 2021-2030 document ("L&R") dated July 2, 2020. It compares owned resources and power purchases against forecasted load to determine new resources that may be needed.

Generation was modeled based on this L&R and other documents/press releases while developing the Plan. Table 2 shows EPE's local generation resources (including additions and retirements) used in the Plan.

The following new generation was assumed in the System Expansion Plan modeling and is reflected on Table 2.

As shown on Table 2, the 2020 L&R portfolio identifies the following:

- 100 MW solar facility in 2022
- Solar/battery combination storage facility of 100/50 MW in 2022
- 70 MW solar facility in 2022
- 228 MW (summer rating)/255 MW (winter rating) Newman 6 GT5 resource/unit is planned to be energized in 2023
- 48 MW geothermal facility in 2025
- Solar/battery combination storage facility of 100/100 MW in 2025
- 130 MW solar facility in 2027
- 100 MW combustion turbine (CT) in 2027
- 228 MW combustion turbine (CT) in 2027
- 48 MW geothermal facility in 2030

### **4.4 Reliability Criteria**

The Plan follows Good Utility Practice and planning as described in EPE's OATT 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's Planning Criteria for NERC Standard TPL-001-4 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 to 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 heavy summer coincidental peak demand conditions which is typically considered worst case scenarios for EPE's system since EPE is a summer peaking utility. 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.

#### **4.5 Southwest Power Pool Reliability Coordinator Area System Operating Limit Methodology Western Interconnection Revision 1.1**

On August 30, 2019, Revision 1.1 of the Southwest Power Pool Reliability Coordinator Area System Operating Limit Methodology Western Interconnection went into effect. It requires that EPE operate its system in the pre-contingency state (All-Facilities-in-Service, AFIS) so that all facilities shall be within their normal (continuous) facility (thermal) ratings and that for the post-contingency state for single (element) contingencies, all facilities shall be within their emergency facility (thermal) ratings.

#### **4.6 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 2020 and the second in February 2021 -- 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 has been 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.

#### **4.7 Plan Case System Assumptions**

System expansion analyses utilize powerflow studies and stability studies for each Plan year from 2022 through 2031. These analyses incorporated in-progress system expansion projects assumed to be completed before the peak of 2022. System modeling also includes the following assumptions:

- The forecasted substation load for each Plan year was adjusted to the modified projected coincidental peak loads using the Forecast (dated April 11, 2021) 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.
- El Paso Electric load power factor was set to 0.98 per unit (lagging) in each Plan case.
- Plan cases were modeled with the Arroyo Phase Shifting Transformer (“PST”) in service with a 400 MVA normal and a 500 MVA emergency rating.
- Plan cases modeled PNM’s 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 the PST power flow schedule 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 94 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) 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 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 130 MW solar photovoltaic facility was modeled beginning in 2027 and onwards.
- Newman 6 GT5 is a gas combustion turbine generating unit addition capable of 228 MW in the summer and 255 MW in the winter, and it is modeled at the planned Roberts substation located approximately 1 mile east of the existing Newman power plant in El Paso, Texas (2023 onwards).
- Newman 7 is a 100 MW combustion turbine (CT) and is modeled at the Newman power plant in El Paso, Texas (2027 onwards).
- Newman 8 is a 228 MW combustion turbine (CT) and is modeled at the Newman power plant in El Paso, Texas (2030 onwards). This model represents a geothermal plant for the time being until more details are known.
- 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.

Note that the final generation sites have not yet been determined for the resource additions called for in the L&R to be phased in from 2022 to 2030. 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”).

## **4.8 Case Development**

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

Plan cases were developed with the General Electric Positive Sequence Load Flow (“GE- PSLF”) program which was used for the numerous powerflow and contingency studies performed for the Plan. 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.

#### **4.8.2 Topology Changes**

In addition to the most current load and generation updates, System Planning 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/or 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. Factors affecting completion dates include, for example, those identified above. Where completion targets are not achieved, or in instances in which EPE experiences more rapid load growth than forecasted, EPE evaluates and identifies short-term corrective measures to mitigate impacts, as necessary.

Table 3A shows expansion projects that were called for and budgeted in the last Plan (2021-2030) but are now re-scheduled to be completed before the peak of 2022. These projects have been modeled in the 2022 Plan cases and beyond to help mitigate potential contingency overloads.

Table 3B shows a comparison between project schedule recommended completion dates for planned projects in the 2020 Plan and the 2021 Plan.

New or modified Plan projects are summarized in Tables 4A & 4B and detailed in each year's project descriptions.

#### **4.9 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 (e.g., Plan projects) were added to EPE's transmission system. Each year's Plan cases carried over the previous year's system improvements. These upgrades will be reflected in the following year's assessment.

Some Plan projects are a result of studies performed outside of System Planning, such as those from the LGIP, third-party generators or Transmission Service Requests 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.

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-element 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.

#### **4.10 Project’s Summary Explained**

Tables 4A and 4B identify each year’s system improvements. It also includes generic projects as “Additional Future Capital Improvements” added in each year to serve as placeholders in areas of the system where it is difficult, at present, to identify whether and how much specific transmission infrastructure may be necessary. 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 2022 through 2031). 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 2022-2031. Deferred projects from prior expansion plans are listed on Table 3B.

#### **4.11 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, Economic Research, Interconnections Department, Resource Planning, and other EPE departments or personnel. Supporting documentation for the numerous studies is not included in this document due to space constraints.



## **5.0 TABLES**

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

<b>Calendar Year</b>	<b>Total Energy Efficiency Demand Adjustment (MW)</b>	<b>Calendar Year</b>	<b>Total Energy Efficiency Demand Adjustment (MW)</b>
2022	15	2027	54
2023	23	2028	62
2024	31	2029	69
2025	38	2030	77
2026	46	2031	85

**Table 2. Projected EPE Local Generation**

Generator	Type	Capacity (MW) (1)	Planned In Service	Planned Retirement (4)	Notes
Airport PV	Photovoltaic	12	Pre-2015		2
Chaparral PV	Photovoltaic	10	Pre-2015		2
Copper	Gas Combustion Turbine	63	Pre-2015	Dec. 2030	
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 GT1	Gas Combustion Turbine	70	Pre-2015	Dec. 2026	
Newman 4 GT2	Gas Combustion Turbine	70	Pre-2015	Dec. 2026	
Newman 4 ST1	Combined Cycle HRSG	80	Pre-2015	Dec. 2026	
Newman 5 GT3	Gas Combustion Turbine	70	Pre-2015		
Newman 5 GT4	Gas Combustion Turbine	70	Pre-2015		
Newman 5 ST2	Combined Cycle HRSG	148	Pre-2015		
Newman 6 GT5	Gas Combustion Turbine	228	Jan. 2023		3
Newman 7	Gas Combustion Turbine	100	May. 2027		5
Newman 8	Gas Combustion Turbine	228	May. 2027		5
Newman G1	Gas-fired Steam Turbine	74	Pre-2015	Dec. 2022	
Newman G2	Gas-fired Steam Turbine	74	Pre-2015	Dec. 2022	
Newman G3	Gas-fired Steam Turbine	93	Pre-2015	Dec. 2026	
Patriot PV	Photovoltaic	10	Jan. 2015		2
Rio Grande G7	Gas-fired Steam Turbine	44	Pre-2015	Dec. 2022	
Rio Grande G8	Gas-fired Steam Turbine	144	Pre-2015	Dec. 2033	
Rio Grande G9	Gas Combustion Turbine	88	Pre-2015		
Hecate	Photovoltaic	150 (100, 50)	May. 2022		
Buena Vista	Photovoltaic/Battery Storage	120 (100 + 20 Solar/50 Battery)	May. 2022		
Rio_Geo	Geothermal	48	May. 2025		5
Solar_W	Photovoltaic	100 (100 Solar/100 Battery)	May. 2025		5
Newman_Renew	Photovoltaic	130	May. 2027		5
Newmn_Geo	Geothermal	48	May. 2030		5

Notes:

1. Available Capacity used in Plan cases may differ from those published in other documents.
2. This photovoltaic generation connects into EPE's distribution system.
3. Plan identifies Newman 6GT5 approximately 1 mile east of existing Newman Generation Station.
4. No listing if planned retirement date is after 2033. Retirements taken from EPE 2020 L&R (July 2, 2020)
5. Planned facilities pending studies to determine location.

## 5.1 Project Changes from 2020 EPE Plan:

EPE Bulk Electric System project completed projects or planned project changes are noted between EPE's 2020 Plan and this EPE 2021 Plan. See Tables 3A and 3B for the details of these project completions and changes, respectively.

### 5.1.1 Completed Projects:

EPE System Expansion Projects scheduled for completion before Peak of Year 2022 (in-service date expected prior to or on June 1, 2022) are summarized in Table 3A below.

**Table 3A. System Expansion Projects Scheduled for Completion Before Peak of 2022**  
(All projects below are modeled in the 2022 Plan Case)

SYSTEM UPGRADE NEEDED	LOCATION OF UPGRADE	IMPROVEMENT IDENTIFICATION
In-and-Out of Caliente-Amrad 345 kV Line	Picante Substation	Improves Reliability under N-1
Reconductor Line to 954 ACSR	Marlow-Trowbridge 115 kV Line	Improves Reliability under N-1
New Line 954 ACSR	Moongate-Jornada 115 kV Line	Assist with Load Growth
Reconductor Line to 954 ACSR	Newman-Chaparral 115 kV Line	Improves Reliability under N-1
New Substation	Moongate Substation	New substation to serve load growth of East Las Cruces
New Substation	North Bliss Substation	New substation to serve load growth of Fort Bliss
New 115 kV Capacitors (2 x 15.6 MVAR)	North Bliss Substation	Improve reactive capability and voltage profile in Northeast El Paso area under N-1
New 115 kV Capacitors (2 x 15.6 MVAR)	Diamond Head Substation	Improve reactive capability and voltage profile in East El Paso area under N-1
New 115 kV Capacitors (2 x 15.6 MVAR)	Moongate Substation	Improve reactive capability and voltage profile in Las Cruces area under N-1
New 115 kV Capacitors (2 x 15.6 MVAR)	Talavera Substation	Improve reactive capability and voltage profile in Las Cruces area under N-1
New 115 kV Capacitors (2 x 15.6 MVAR)	Triumph Substation	Improve reactive capability and voltage profile in East El Paso area under N-1
New Line Shunt Reactor on Otero-Picante 345 kV Line (50 MVAR)	Picante Substation	Facilitates line switching options and voltage control options at Picante Substation

### 5.1.2 Revised Projects:

EPE System Expansion Projects that were revised are summarized in Table 3B that follows.

**Table 3B. Summary of Previous Plan's Project Schedule  
EPE 2022-2031 System Expansion Plan**

Project Description	Recommended Completion Date 2020 Plan (Month- Year)	Recommended Completion Date 2021 Plan (Month- Year)
Newman-Chaparral 115 kV Line (Reconductor)		Mar-22
In-and-Out into Picante 345 kV Substation from Caliente-Amrad 345 kV Line and Associated Line Reactor at Picante	Oct-21	Apr-22
Caliente-MPS (16700) 115 kV Line (Reconductor)		May-22
Apollo-Cox Line (Conversion/Reconductor) 69 kV to 115 kV	Mar-23	Jul-22
McCombs Substation (New) and Related 115 kV Line Reconfiguration		Sep-22
Jomada-Arroyo 115 kV (Reconductor/Rebuild)	Dec-23	Oct-22
Moongate-Apollo 115 kV Line (New)	Apr-22	Dec-22
Afton North Substation 345 kV (New) and Afton-Newman 345 kV Line Reconfiguration	May-23	May-23
Afton-Afton North 345 kV Double Bundled Line (New)	May-23	May-23
Roberts Substation (New) and Related 115 kV Line Reconfiguration	Dec-22	May-23
Afton North (Two) 224 MVA 345/115 kV Autotransformers (New)	Mar-24	May-24
Vado Substation 115 kV (New)	Mar-24	May-24
Afton North-Vado 115 kV Double Bundled Line (New)	Mar-24	May-24
Seabeck Switching Station 115 kV (New)	May-24	Oct-24
Seabeck-Horizon 115 kV Line (New)	Mar-25	Oct-24
Seabeck-San Felipe 115 kV Line New	May-24	Oct-24
San Felipe Substation 115/69 kV New	May-23	Oct-24
Sparks-San Felipe Line (Conversion/Reconductor) 69 kV to 115 kV	May-23	Oct-24
Pine Switching Station 115 kV (New)	Mar-24	Dec-24
Pine-Seabeck 115 kV Line (New)	Mar-25	Dec-24
Coyote-Pine 115 kV Line Reconductor	Mar-25	May-25
Rio Grande-Sunset 69 kV Lines (5500/5600) and Rio Grande-Sunset North 115 kV Line (Rebuild/Reconductor)	Mar-25	May-25
CE-2 Substation (New) and Related 115 kV West Loop Line Reconfiguration		May-25
Vado-Salopek 115 kV Double Bundled Line (Reconductor)	May-26	May-26
New Amrad SVC/Statcom device connecting on high-voltage side to Amrad 345 kV using its own dedicated step-up transformer to a dedicated bay, size assumed +/- 100 MVAR (symmetrical range)		May-26
CE-3 Substation (New) and Related 115 kV West Loop Line Reconfiguration		May-26
Vado-Anthony 115 kV Double Bundled Line (Reconductor)	May-27	May-27
Afton North-Airport 115 kV Line (New)	May-28	May-28
CE-4 Substation (New) and Related 115 kV West Loop Line Reconfiguration		May-29
In-and-Out into Vado 345 kV Substation from Afton North-Newman 345 kV Line	May-30	May-30
Vado 224 MVA 345/115 kV Autotransformer (New)	May-30	May-30

## 5.2 Planned EPE Bulk Electric System Transmission Projects:

Planned EPE Bulk Electric System Projects with projected in-service dates between 2022-2031 as needed to support the local EPE Bulk Electric System transmission system are summarized in Tables 4A & 4B that follow.

**Table 4A. Project Schedule (2022-2024)  
EPE 2022-2031 System Expansion Plan**

Year	Project No.	Project Description	Recommended Completion Date Month- Year (2)
2022		Newman-Chaparral 115 kV Line (Reconductor)	Mar-22
		In-and-Out into Picante 345 kV Substation from Caliente-Amrad 345 kV Line and Associated Line Reactor at Picante	Apr-22
		Caliente-MPS (16700) 115 kV Line (Reconductor)	May-22
		Apollo-Cox Line (Conversion/Reconductor) 69 kV to 115 kV	Jul-22
		McCombs Substation (New) and Related 115 kV Line Reconfiguration	Sep-22
		Jomada-Arroyo 115 kV (Reconductor/Rebuild)	Oct-22
		Moongate-Apollo 115 kV Line (New)	Dec-22
2023		Afton North Substation 345 kV (New) and Afton-Newman 345 kV Line Reconfiguration	May-23
		Afton-Afton North 345 kV Double Bundled Line (New)	May-23
		Roberts Substation (New) and Related 115 kV Line Reconfiguration	May-23
2024		Afton North (Two) 224 MVA 345/115 kV Autotransformers (New)	May-24
		Vado Substation 115 kV (New)	May-24
		Afton North-Vado 115 kV Double Bundled Line (New)	May-24
		Seabeck Switching Station 115 kV (New)	Oct-24
		Seabeck-Horizon 115 kV Line (New)	Oct-24
		Seabeck-San Felipe 115 kV Line (New)	Oct-24
		San Felipe Substation 115/69 kV (New)	Oct-24
		Sparks-San Felipe Line (Conversion/Reconductor) 69 kV to 115 kV	Oct-24
		Pine Switching Station 115 kV (New)	Dec-24
		Pine-Seabeck 115 kV Line (New)	Dec-24

Notes:

1. Table does not include maintenance projects except for transmission line rebuilds and or conductor upgrades.
2. System Planning recommends completion prior to May for the given to aid with the summer peak period.

**Table 4B. Project Schedule (2025-2031)  
EPE 2022-2031 System Expansion**

Year	Project No.	Project Description	Recommended Completion Date Month- Year (2)
2025		Coyote-Pine 115 kV Line (Reconductor)	May-25
		Rio Grande-Sunset 69 kV Lines (5500/5600) and Rio Grande-Sunset North 115 kV Line (Rebuild/Reconductor)	May-25
		CE-2 Substation (New) and Related 115 kV West Loop Line Reconfiguration	May-25
2026		Vado-Salopek 115 kV Double Bundled Line (Reconductor)	May-26
		New Amrad SVC/Statcom device connecting on high-voltage side to Amrad 345 kV using its own dedicated step-up transformer to a dedicated bay, size assumed +/- 100 MVAR (symmetrical range)	May-26
		CE-3 Substation (New) and Related 115 kV West Loop Line Reconfiguration	May-26
2027		Vado-Anthony 115 kV Double Bundled Line (Reconductor)	May-27
2028		Afton North-Airport 115 kV Line (New)	May-28
2029		CE-4 Substation (New) and Related 115 kV West Loop Line Reconfiguration	May-29
2030		In-and-Out into Vado 345 kV Substation from Afton North-Newman 345 kV Line	May-30
		Vado 224 MVA 345/115 kV Autotransformer (New)	May-30
2031		No specific facilities or improvements were identified by System Planning in year 2031	

Notes:

1. Table does not include maintenance projects except for transmission line rebuilds and or conductor upgrades.
2. System Planning recommends completion prior to May for the given to aid with the summer peak period.

### 5.3 Planned EPE 69 kV and 115 kV Reactive Device Projects:

Planned EPE 69 kV and 115 kV Reactive Device Projects with projected in-service dates between 2022-2031 as needed to support the local EPE 69 kV and 115 kV transmission system are summarized in Table 5 below.

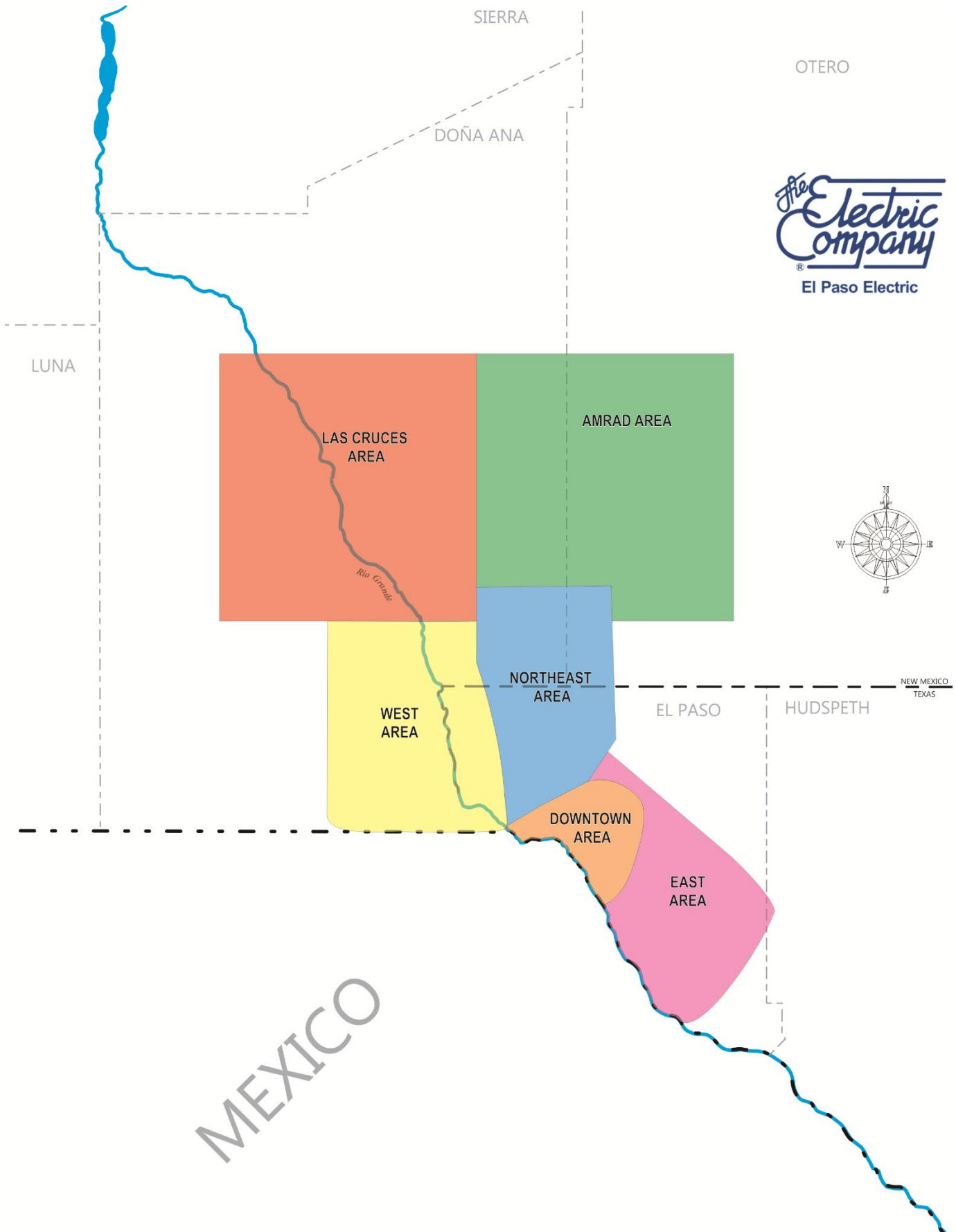
**Table 5. 69 kV and 115 kV Bus Shunt Capacitor Additions**

SYSTEM UPGRADE NEEDED	LOCATION OF UPGRADE	IMPROVEMENT IDENTIFICATION	RECOMMENDED COMPLETION DATE
New 115 kV Capacitors (2 x 15 MVAR)	San Felipe	Improve reactive capability and voltage profile in the Far East El Paso area under N-1	Oct-24
New 115 kV Capacitors (2 x 15 MVAR)	CE-2	Improve reactive capability and voltage profile in the Las Cruces area under N-1	May-25
New 115 kV Capacitors (2 x 15 MVAR)	Leasburg	Improve reactive capability and voltage profile in the Las Cruces area under N-1	May-26
New 115 kV Capacitors (2 x 15 MVAR)	CE-4	Improve reactive capability and voltage profile in the West El Paso area under N-1	May-29
New 115 kV Capacitors (2 x 15.6 MVAR)	North Bliss Substation	Improve reactive capability and voltage profile in Northeast El Paso area under N-1	With completion of Substation
New 115 kV Capacitors (2 x 15.6 MVAR)	Talavera Substation	Improve reactive capability and voltage profile in Las Cruces area under N-1	With completion of Substation
New 115 kV Capacitors (2 x 15.6 MVAR)	Moongate Substation	Improve reactive capability and voltage profile in Las Cruces area under N-1	With completion of Substation
New 115 kV Capacitors (2 x 15.6 MVAR)	Diamond Head Substation	Improve reactive capability and voltage profile in East El Paso area under N-1	May-22
New 115 kV Capacitors (2 x 15.6 MVAR)	Triumph Substation	Improve reactive capability and voltage profile in East El Paso area under N-1	May-22



## **6.0 EPE BES PLANNED PROJECTS MAP**

## EPE Proposed Projects Map for 2022-2031



## **7.0 TRANSMISSION PROJECT SUMMARY**

Transmission Projects will be identified with the following format.

### **PLANNED PROJECTS** **YEAR XXXX**

**Project Name:** Commonly used name by El Paso Electric Company for a transmission or substation system expansion capital project. Projects of a normal maintenance nature and those located external to the EPE's 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.

**In Service Date:** This is recommended project completion date. In general, it is recommended that projects be completed by May of the installation year, so that anticipated system peak load demand is met.

**Peak Modeling Year:** The year modeled in heavy summer PSLF cases.

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

**Project Justification:** Project need is identified.

## **Transmission Projects in 2022**

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Newman-Chaparral 115 kV Line (Reconductor)

**Operating Voltage:** 115 kV

**Project Number:** TL294

**In Service Date:** March 2022

**Peak Modeling Year:** 2022

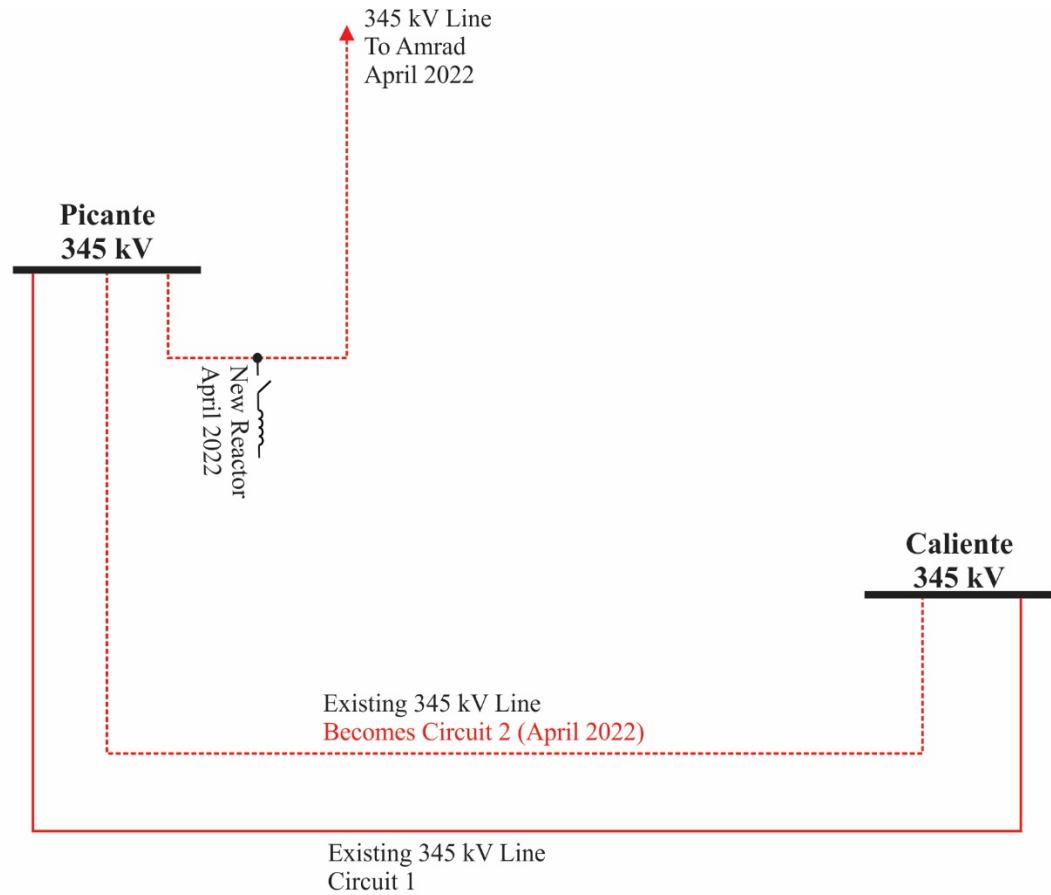
**Project Description:** The project consists of reconductoring the Newman to Chaparral 115 kV transmission line with conductor that provides a normal capacity rating of 185 MVA and an emergency capacity rating of 246 MVA.

**Project Justification:** This project has been identified as part of a facilities upgrade required to relieve conditional limitations identified as part of a third-party request. The reconductoring of the line is needed to address overloads on this line during certain N-1 contingencies.

**PLANNED PROJECTS  
YEAR 2022**

<b><u>Project Name:</u></b>	In-and-Out into Picante 345 kV Substation from Caliente-Amrad 345 kV Line and Associated Line Reactor at Picante
<b><u>Operating Voltage:</u></b>	345 kV
<b><u>Project Number:</u></b>	TS125
<b><u>In Service Date:</u></b>	April 2022
<b><u>Peak Modeling Year:</u></b>	2022
<b><u>Project Description:</u></b>	EPE's Caliente to Amrad 345 kV transmission line runs adjacent to Picante Substation and will be reconfigured to connect to this substation's ring bus. This requires the addition of three 345 kV Gas Circuit Breakers as well as disconnect switches with motor operated devices. A new in-line 345 kV reactor will be installed at Picante Substation of what will become the Amrad-Picante 345 kV line.
<b><u>Project Justification:</u></b>	EPE's existing Caliente-Amrad 345 kV will be reconfigured to be the Amrad-Picante 345 kV and the Picante-Caliente 345 kV lines. As a result of this re-configuration, two parallel transmission lines from Picante Substation to Caliente Substation will now exist. The project will provide increased reliability within the area.

**IN-AND-OUT INTO PICANTE 345 kV SUBSTATION  
FROM CALIENTE-AMRAD 345 kV LINE  
AND ASSOCIATED LINE REACTOR AT PICANTE  
YEAR 2022**



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

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Caliente-MPS 16700 115 kV Line (Reconductor)

**Operating Voltage:** 115 kV

**Project Number:** TBD

**In Service Date:** May 2022

**Peak Modeling Year:** 2022

**Project Description:** The project consists of reconductoring the Caliente-MPS 16700 115 kV line transmission line with conductor that provides a normal capacity rating of 185 MVA and an emergency capacity rating of 246 MVA.

**Project Justification:** System Planning studies have indicated that this line has the potential to load above its emergency rating under certain planning event contingencies.



**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Diamond Head Capacitor Banks

**Operating Voltage:** 115 kV

**Project Number:** TBD

**In Service Date:** May 2022

**Peak Modeling Year:** 2022

**Project Description:** The project consists of two 15.6 MVAR bus shunt capacitor banks connected to the 115 kV bus.

**Project Justification:** This project has been identified to provide reactive and voltage support in the eastern El Paso area.

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Talavera Capacitor Banks

**Operating Voltage:** 115 kV

**Project Number:** TBD

**In Service Date:** May 2022

**Peak Modeling Year:** 2022

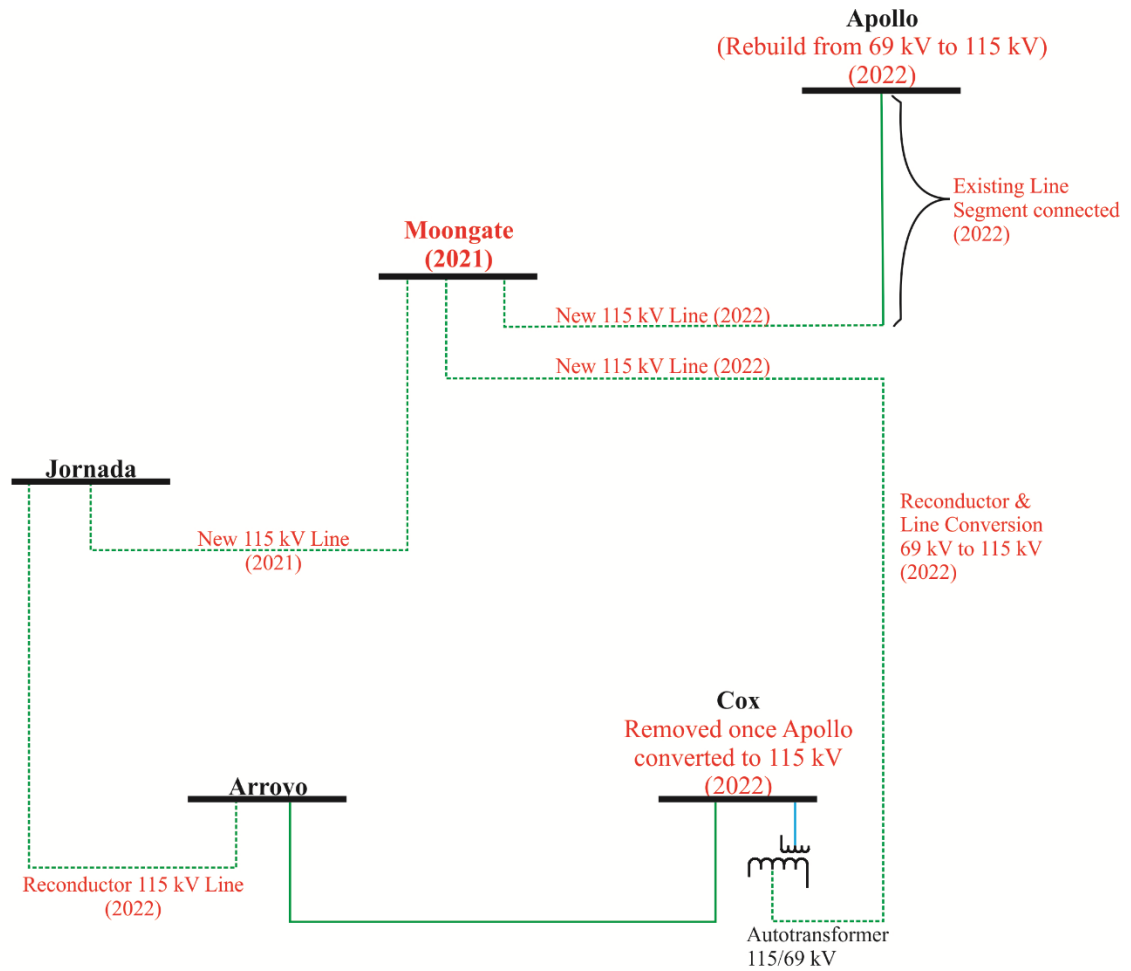
**Project Description:** The project consists of two 15.6 MVAR bus shunt capacitor banks connected to the 115 kV bus.

**Project Justification:** This project has been identified to provide reactive and voltage support in the Las Cruces area.

**PLANNED PROJECTS  
YEAR 2022**

<b><u>Project Name:</u></b>	Apollo-Cox Line (Conversion/Reconductor) 69 kV to 115 kV
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TL194
<b><u>In Service Date:</u></b>	July 2022
<b><u>Peak Modeling Year:</u></b>	2023
<b><u>Project Description:</u></b>	This project consists of converting from a nominal operating voltage of 69 kV to a nominal operating voltage of 115 kV. It also calls for the reconductor of the Apollo-Cox transmission line with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA.
<b><u>Project Justification:</u></b>	The existing Apollo to Cox 69 kV line will be converted to 115 kV and upgraded to mitigate N-1 contingency conditions. As part of this conversion, the removal of the Cox 69 kV substation is planned, and the portion of the line that formerly terminated at the Cox 69 kV bus will now be terminated at the Arroyo 115 kV bus.

## LAS CRUCES LOOP YEAR (2021-2022)



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

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** McCombs Substation (New) and Related 115 kV Line Reconfiguration

**Operating Voltage:** 115 kV

**Project Number:** DT420

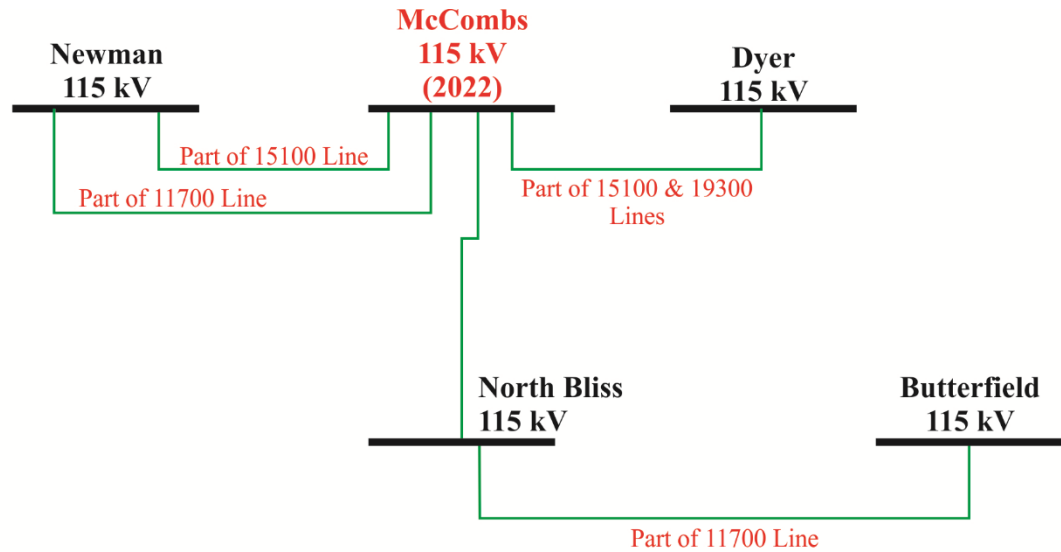
**In Service Date:** September 2022

**Peak Modeling Year:** 2023

**Project Description:** The new McCombs will be built to serve the load from Shearman and Shearman Temporary substations that will be removed after McCombs Substation is in-service. In addition, there are several existing lines and line segments that will connect to McCombs Substation resulting in an EPE transmission system reconfiguration.

**Project Justification:** Distribution planning project that results in an EPE transmission system reconfiguration. Shearman Substation is being replaced to improve capacity, address legacy equipment, and location issues impacting access and operation.

**MCCOMBS SUBSTATION (NEW)  
AND RELATED 115 kV LINE RECONFIGURATION  
YEAR 2022**



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

**PLANNED PROJECTS  
YEAR 2022**

<b><u>Project Name:</u></b>	Jornada-Arroyo 115 kV Line (Reconductor/Rebuild)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TL186
<b><u>In Service Date:</u></b>	October 2022
<b><u>Peak Modeling Year:</u></b>	2023
<b><u>Project Description:</u></b>	This project consists of reconductoring the Arroyo to Jornada 115 kV line to increase the capacity of the line with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA.
<b><u>Project Justification:</u></b>	The line experiences an increase in loading under heavy summer conditions. The increase in line rating with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA will relieve identified overloads.

**PLANNED PROJECTS  
YEAR 2022**

**Project Name:** Moongate-Apollo 115 kV Line (New)

**Operating Voltage:** 115 kV

**Project Number:** TL241

**In Service Date:** December 2022

**Peak Modeling Year:** 2023

**Project Description:** This project consists of constructing a new Moongate 115 kV Substation in the Las Cruces New Mexico area, with two transmission lines connecting the Moongate Substation to the Jornada and Apollo (rebuilt from a 69 kV substation) 115 kV substations. The Jornada-Moongate 115 kV line will use a conductor that provides at least a normal capacity rating of 185 MVA and an emergency capacity rating of 246 MVA.

**Project Justification:** Moongate Substation will be constructed to meet load growth and will be part of the planned Las Cruces Loop Project.

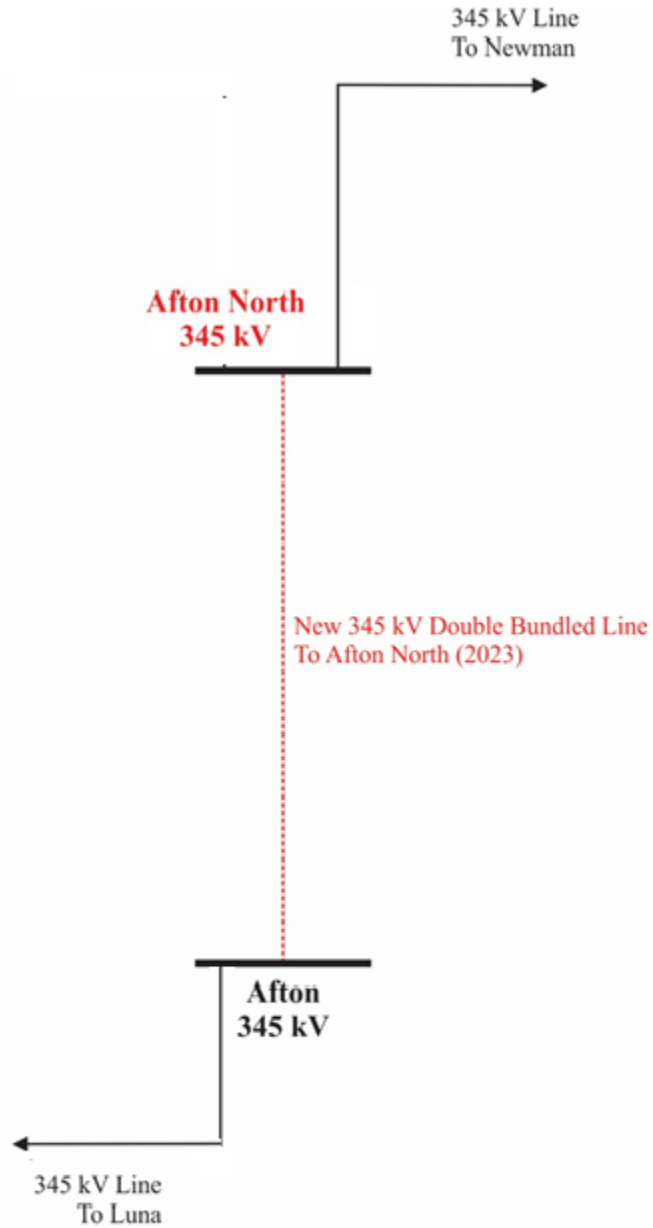


## **Transmission Projects in 2023**

**PLANNED PROJECTS  
YEAR 2023**

<b><u>Project Name:</u></b>	Afton North Substation 345 KV (New) and Afton-Newman 345kV Line Reconfiguration
<b><u>Operating Voltage:</u></b>	345/115 kV
<b><u>Project Number:</u></b>	TH171
<b><u>In Service Date:</u></b>	May 2023
<b><u>Peak Modeling Year:</u></b>	2023
<b><u>Project Description:</u></b>	A planned 345/115 kV substation in southern New Mexico will enhance system reliability. The new substation will have two new future (2024) 345/115 kV autotransformers (part of TH171). The Afton North 115 kV bus will be used to connect a 115 kV line from Afton North Substation to the proposed Vado Substation in 2024 as well as a 115 kV radial line from Afton North Substation to Airport Substation in 2028.
<b><u>Project Justification:</u></b>	This project is part of the Afton-Afton North-Vado project that will increase El Paso Import Capability (EPIC). The two future 345/115 kV 224 MVA autotransformers, planned for 2024, are part of a plan to bring a 115-kV feed from the Afton North 115 kV bus to the Airport Substation (2028), and to a new Vado Substation (2024).

**AFTON NORTH 345 kV SUBSTATION (NEW)  
AND AFTON-NEWMAN 345 kV LINE RECONFIGURATION  
YEAR 2023**



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

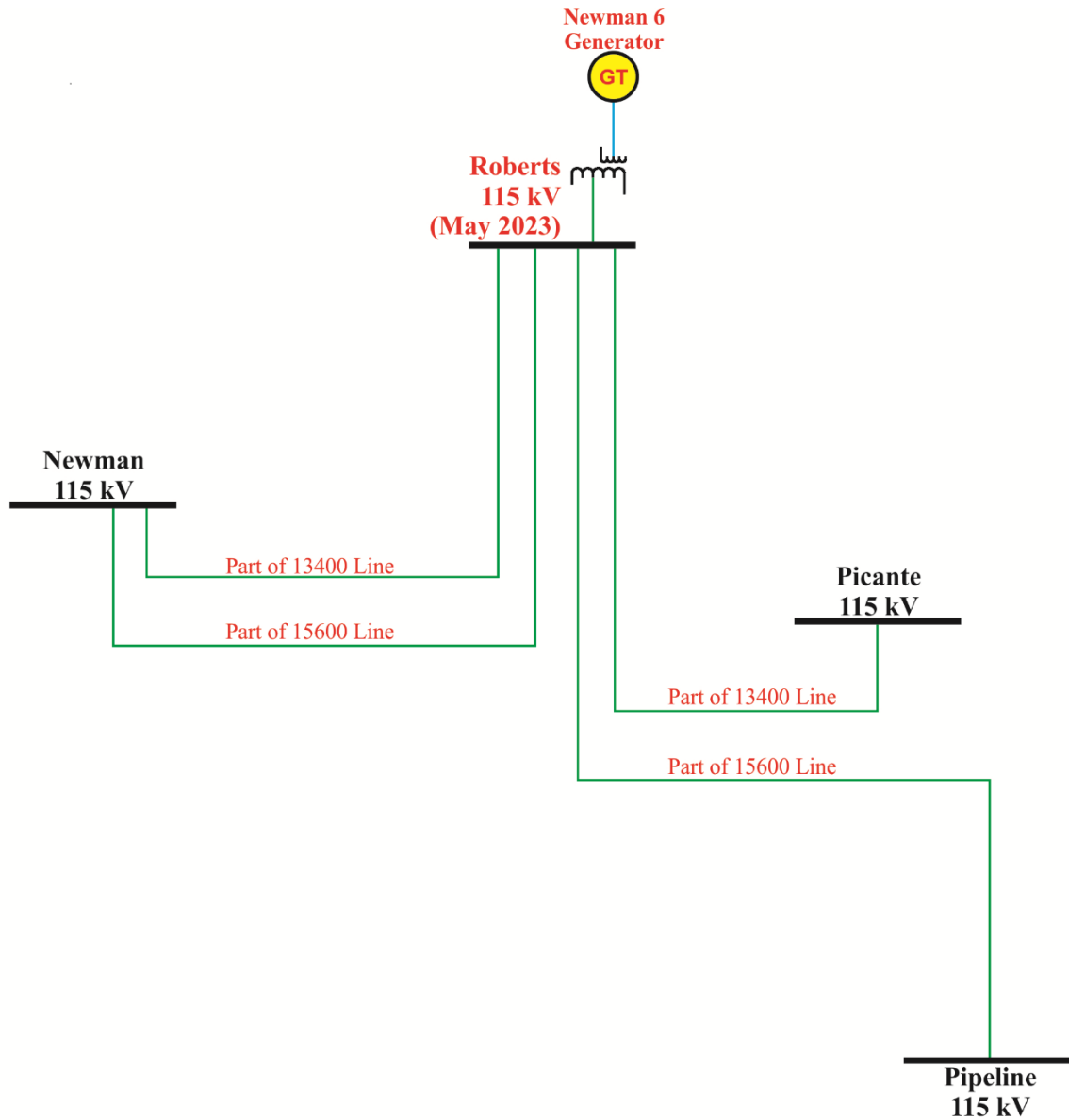
**PLANNED PROJECTS  
YEAR 2023**

<b><u>Project Name:</u></b>	Afton-Afton North 345 kV Double Bundled Line (New)
<b><u>Operating Voltage:</u></b>	345 kV
<b><u>Project Number:</u></b>	TH173
<b><u>In Service Date:</u></b>	May 2023
<b><u>Peak Modeling Year:</u></b>	2023
<b><u>Project Description:</u></b>	A new one mile, 345 kV double bundled transmission line with at least a normal capacity rating of 1109 MVA and emergency capacity rating of 1479.6 MVA 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.
<b><u>Project Justification:</u></b>	This project is part of the Afton-Afton North-Vado projects, scheduled for completion by 2030, that will increase El Paso Import Capability (EPIC) and improve reliability within the area.

**PLANNED PROJECTS  
YEAR 2023**

<b><u>Project Name:</u></b>	Roberts Substation (New) and Related 115 kV Line Reconfiguration
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TS148/TL274
<b><u>In Service Date:</u></b>	May 2023
<b><u>Project Description:</u></b>	This project involves connecting the Newman-Picante and the Newman-Pipeline 115 kV transmission lines as well as the future Newman 6 generator into the Roberts Substation.
<b><u>Project Justification:</u></b>	This Substation is needed for the interconnection of the Newman 6 Generator to EPE's 115 kV system.

## ROBERTS SUBSTATION YEAR 2023



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

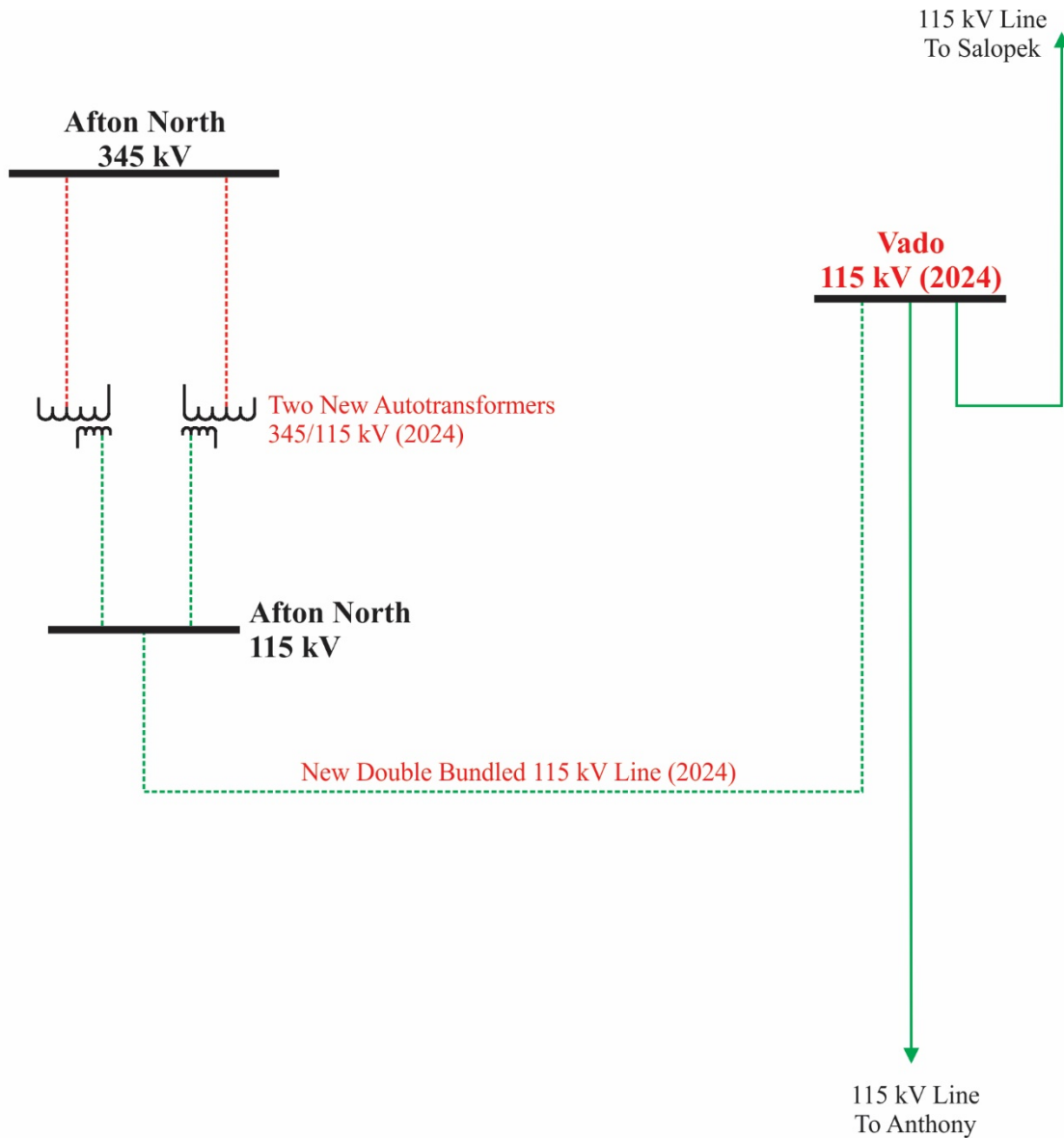
## **Transmission Projects in 2024**

**PLANNED PROJECTS  
YEAR 2024**

<b><u>Project Name:</u></b>	Afton North-Vado 115 kV Double Bundled Line (New)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TL255
<b><u>In Service Date:</u></b>	May 2024
<b><u>Peak Modeling Year:</u></b>	2024
<b><u>Project Description:</u></b>	A new 115 kV transmission line will be built from Afton North Substation to Vado Substation. It will have a normal capacity rating of at least 369 MVA and emergency capacity rating of 493 MVA.
<b><u>Project Justification:</u></b>	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 is part of the Afton-Afton North-Vado projects, scheduled for completion by 2028, which will increase El Paso Import Capability (EPIC).



**NEW VADO 115 kV SUBSTATION  
NEW DOUBLE BUNDLED 115 KV LINE:  
VADO 115 kV TO AFTON NORTH 115 kV  
TWO AFTON NORTH 345/115 kV AUTOTRANSFORMERS  
YEAR 2024**



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

**PLANNED PROJECTS  
YEAR 2024**

**Project Name:** Afton North (Two) 224 MVA 345/115 kV Autotransformers (New)

**Operating Voltage:** 345/115 kV

**Project Number:** PT358/TH171

**In Service Date:** May 2024

**Peak Modeling Year:** 2024

**Project Description:** Two new 224 MVA 345/115 kV autotransformers will be installed at Afton North Substation.

**Project Justification:** The two new autotransformers will connect the 115 kV bus at Afton North Substation in preparation for 115 kV transmission line additions i.e., Vado Substation to Afton North Substation via a 115 kV line in 2024. This will improve reliability in the Las Cruces and West El Paso areas. This project is part of the Afton-Afton North-Vado projects, scheduled for completion by 2028, that will increase El Paso Import Capability (EPIC).

**PLANNED PROJECTS  
YEAR 2024**

**Project Name:** Vado Substation 115 kV (New)

**Operating Voltage:** 115 kV

**Project Number:** TS139

**In Service Date:** May 2024

**Peak Modeling Year:** 2024

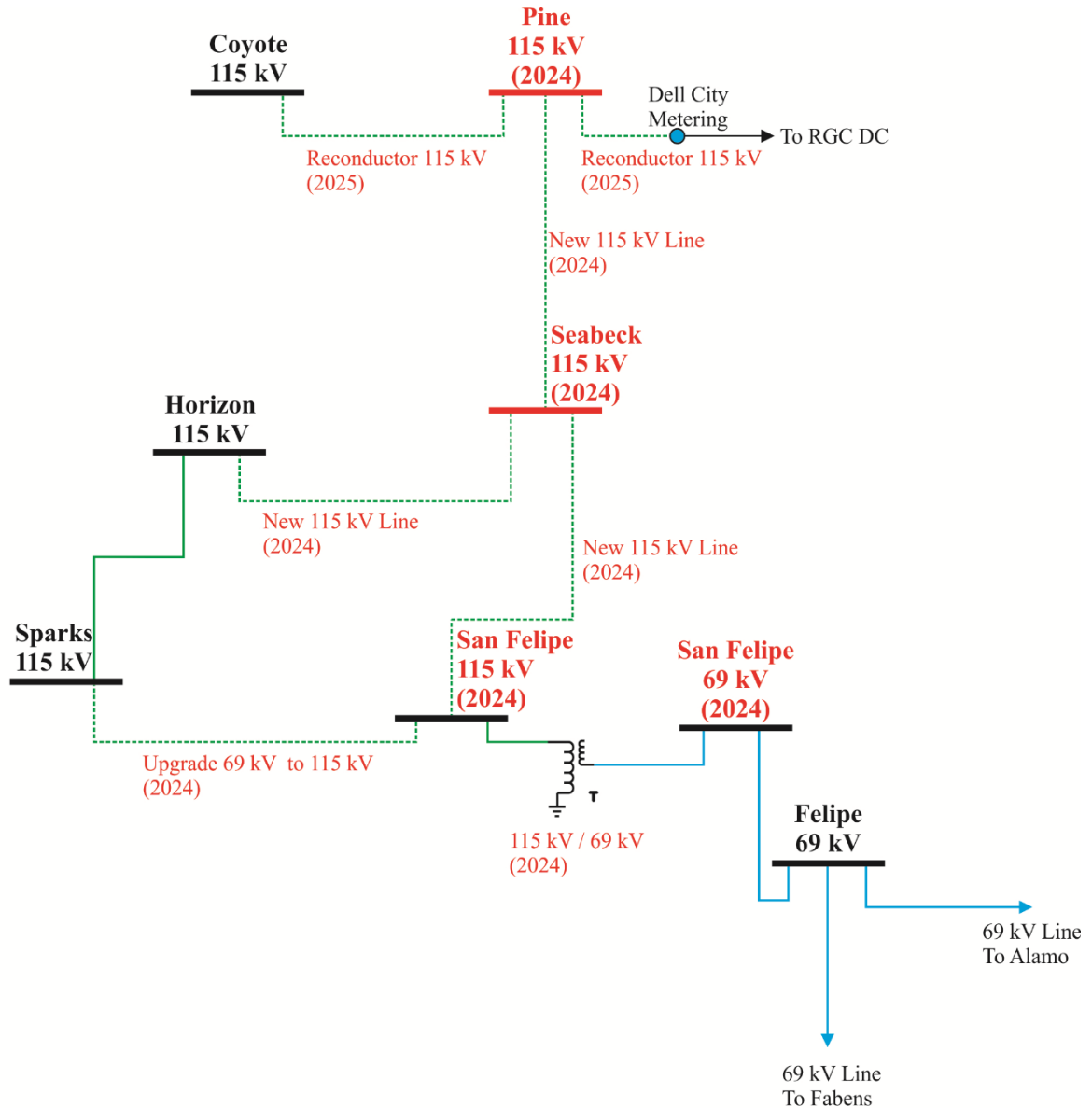
**Project Description:** This project involves the construction of a new substation in the Vado/Anthony area to allow for the addition of a new 115 kV line that will connect to Afton North Substation. The project includes splitting EPE's existing Anthony-Salopek 115 kV transmission line with terminations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

**Project Justification:** This project is part of the Afton-Afton North-Vado projects scheduled for completion by 2028, that will increase El Paso Import Capability (EPIC). The substation will also increase reliability in the Vado/Anthony area.

**PLANNED PROJECTS  
YEAR 2024**

<b><u>Project Name:</u></b>	Seabeck Switching Station 115 kV (New)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TS120
<b><u>In Service Date:</u></b>	October 2024
<b><u>Peak Modeling Year:</u></b>	2025
<b><u>Project Description:</u></b>	This project involves the construction of a new Seabeck 115 kV Switching Station that will be part of the East Side Loop Expansion Project
<b><u>Project Justification:</u></b>	This project is part of the East Side Loop Expansion Project and is needed to address and mitigate potential overload conditions under certain N-1, N-2, and N-1-1 contingencies. Additionally, the project will allow EPE to address expected development and load growth in east El Paso County.

## EASTSIDE LOOP YEAR (2024-2025)



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

**PLANNED PROJECTS  
YEAR 2024**

**Project Name:** Seabeck-Horizon 115 kV Line (New)

**Operating Voltage:** 115 kV

**Project Number:** TL243

**In Service Date:** October 2024

**Peak Modeling Year:** 2025

**Project Description:** This project will involve the construction of a new 115 kV transmission line from Seabeck to Horizon with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA.

**Project Justification:** This project is part of the East Side Loop Expansion Project and is needed to address potential overload conditions under certain N-1, N-2, and N-1-1 contingencies. Additionally, the project will enable EPE to address expected development and load growth in east El Paso County

**PLANNED PROJECTS  
YEAR 2024**

<b><u>Project Name:</u></b>	Seabeck-San Felipe 115 kV Line (New)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TL245
<b><u>In Service Date:</u></b>	October 2024
<b><u>Peak Modeling Year:</u></b>	2025
<b><u>Project Description:</u></b>	This project consists of constructing a new 115 kV transmission line from Seabeck Substation to San Felipe 115 kV Substation. The conductor will have at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA.
<b><u>Project Justification:</u></b>	This project is part of the East Side Loop Expansion Project and will address projected overload conditions on the EPE system under certain N-1, N-2, and N-1-1 contingencies. This project will also enable EPE to address anticipated development and load growth in east El Paso County.

**PLANNED PROJECTS  
YEAR 2024**

<b><u>Project Name:</u></b>	San Felipe Substation 115/69 kV (New)
<b><u>Operating Voltage:</u></b>	115/69 kV
<b><u>Project Number:</u></b>	DT395
<b><u>In Service Date:</u></b>	October 2024
<b><u>Peak Modeling Year:</u></b>	2025
<b><u>Project Description:</u></b>	The project consists of constructing a new San Felipe Substation 115/69 kV that will be part of the East Side Loop Expansion Project.
<b><u>Project Justification:</u></b>	This project is part of the East Side Loop Expansion Project and is needed to address projected overload conditions on the EPE system under certain N-1, N-2, and N-1-1 contingencies. Additionally, the project will enable EPE to address expected development and load growth in eastern El Paso County.



**PLANNED PROJECTS  
YEAR 2024**

**Project Name:** Sparks-San Felipe Line (Conversion/Reconductor) 69 kV to 115 kV

**Operating Voltage:** 115 kV

**Project Number:** TL116

**In Service Date:** October 2024

**Peak Modeling Year:** 2025

**Project Description:** This project will involve the conversion and reconductoring the Sparks-San Felipe transmission line from 69 kV to 115 kV with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA. Note that a 115/69 kV autotransformer will be assumed for San Felipe substation. Also, 2021 Plan modeling assumed that the Felipe 69 kV Substation, at the point that a 115/69 kV autotransformer exists at San Felipe and assuming that the Sparks-Felipe 115 kV line is in service, is fed at 69 kV from San Felipe Substation. Also, the 2021 Plan assumed that Felipe 69 kV Substation remains in service until at least peak (June 1 for modeling purposes) 2025.

**Project Justification:** This project is part of the East Side Loop Expansion Project and is needed to address potential overload conditions on the EPE system under certain N-1, N-2, and N-1-1 contingencies. Additionally, the project will enable EPE to address expected development and load growth in east El Paso County.

**PLANNED PROJECTS  
YEAR 2024**

**Project Name:** San Felipe Capacitor Banks

**Operating Voltage:** 115 kV

**Project Number:** TBD

**In Service Date:** October 2024

**Peak Modeling Year:** 2025

**Project Description:** The project consists of two 15.6 MVAR bus shunt capacitor banks connected to the 115 kV bus.

**Project Justification:** This project has been identified to provide reactive and voltage support in the far east El Paso area.

**PLANNED PROJECTS  
YEAR 2024**

<b><u>Project Name:</u></b>	Pine Switching Station 115 kV (New)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TS119
<b><u>In Service Date:</u></b>	December 2024
<b><u>Peak Modeling Year:</u></b>	2025
<b><u>Project Description:</u></b>	This project involves the construction of a new Pine 115 kV Switching Station that will be part of the East Side Loop Expansion Project
<b><u>Project Justification:</u></b>	This project is a part of the East Side Loop Expansion Project and is needed to address and mitigate potential overload conditions under certain N-1, N-2, and N-1-1 contingencies. Additionally, the project will enable EPE to address expected development and load growth in east El Paso County.

**PLANNED PROJECTS  
YEAR 2024**

<b><u>Project Name:</u></b>	Pine-Seabeck 115 kV Line (New)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TL244
<b><u>In Service Date:</u></b>	December 2024
<b><u>Peak Modeling Year:</u></b>	2025
<b><u>Project Description:</u></b>	This project consists of constructing a new 115 kV transmission line from Pine to Seabeck with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA.
<b><u>Project Justification:</u></b>	This project is part of the East Side Loop Expansion Project and is needed to address potential overload conditions under certain N-1, N-2 and N-1-1 contingencies. Additionally, the project will enable EPE to address expected development and load growth in east El Paso County.

## **Transmission Projects in 2025**

**PLANNED PROJECTS  
YEAR 2025**

<b><u>Project Name:</u></b>	Coyote-Pine 115 kV Line (Reconductor)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TL242
<b><u>In Service Date:</u></b>	May 2025
<b><u>Peak Modeling Year:</u></b>	2025
<b><u>Project Description:</u></b>	This project consists of reconductoring the Coyote to Pine 115 kV transmission line with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA.
<b><u>Project Justification:</u></b>	This project is part of the East Side Loop Expansion Project and is needed to address potential overload conditions under certain N-1, N-2, and N-1-1 contingencies. Additionally, the project will enable EPE to address expected development and load growth in east El Paso County.

**PLANNED PROJECTS  
YEAR 2025**

**Project Name:** Rio Grande-Sunset 69 kV Lines (5500/5600) and Rio Grande-Sunset North 115 kV Line (Rebuild/Reconductor)

**Operating Voltage:** 69 kV and 115 kV

**Project Number:** TL101

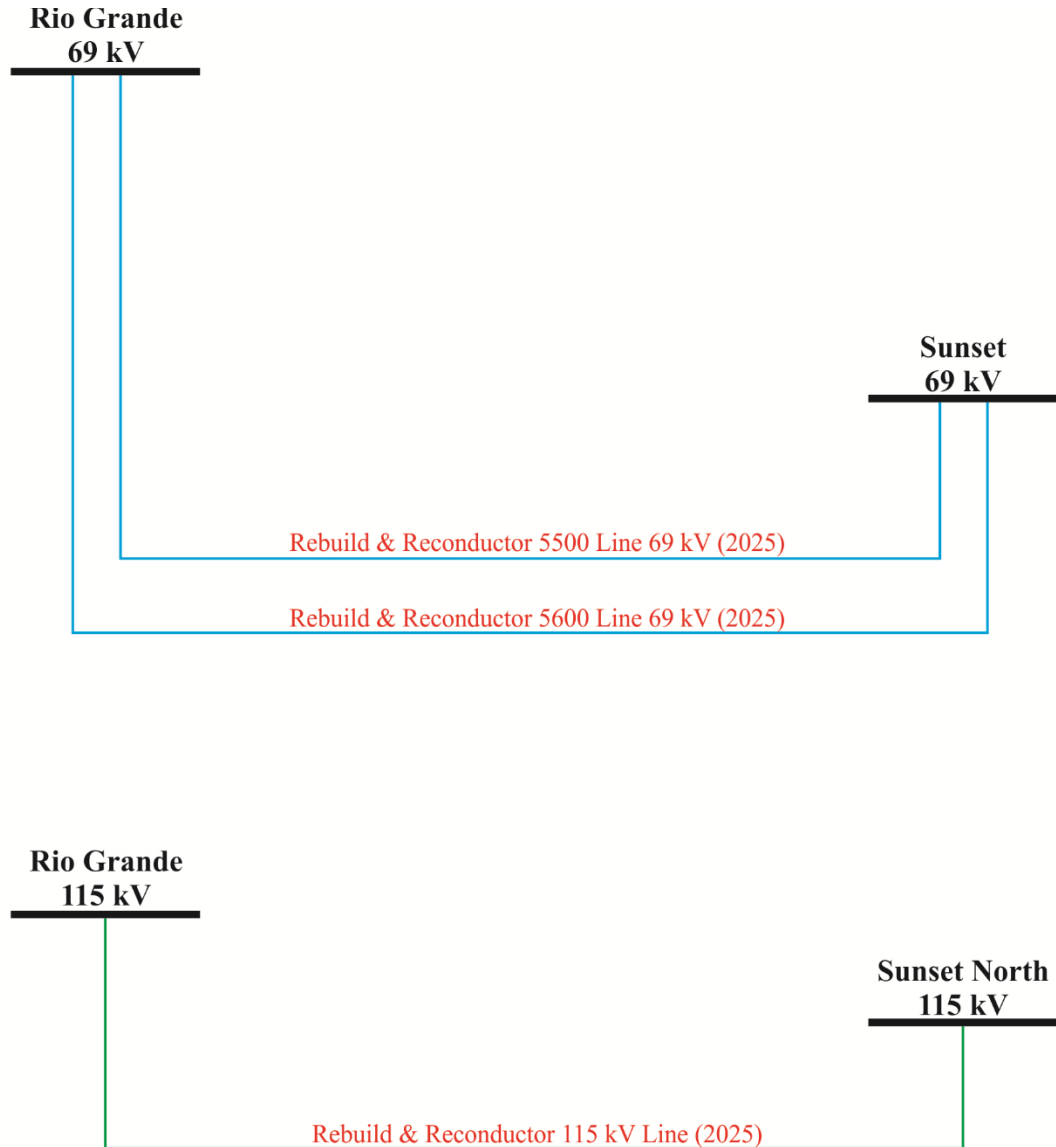
**In Service Date:** May 2025

**Peak Modeling Year:** 2025

**Project Description:** This project involves the reconductoring of two 69 kV lines that for a portion of each of these lines, traverse mountainous terrain and extend through the UTEP campus area. The 69 kV lines (5500/5600) connect Rio Grande Substation and Sunset Substation. The 69 kV lines (5500/5600) connect Rio Grande Substation and Sunset Substation. The reconductoring capacity of the 69 kV (5500/5600) lines require an upgrade with at least a normal capacity rating of 111 MVA and emergency capacity rating of 148 MVA each. The reconductoring capacity of the 115 kV Rio Grande-Sunset North line requires an upgrade with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA.

**Project Justification:** These lines experience increased loading during the summer peak months, a condition that is difficult to mitigate. The increase in line capacity will relieve operational mitigation measures.

**RIO GRANDE-SUNSET 69 kV LINES (5500/5600)  
AND RIO GRANDE-SUNSTE NORTH 115 kV LINE  
(REBUILD/RECONDUCTOR)  
YEAR 2025**



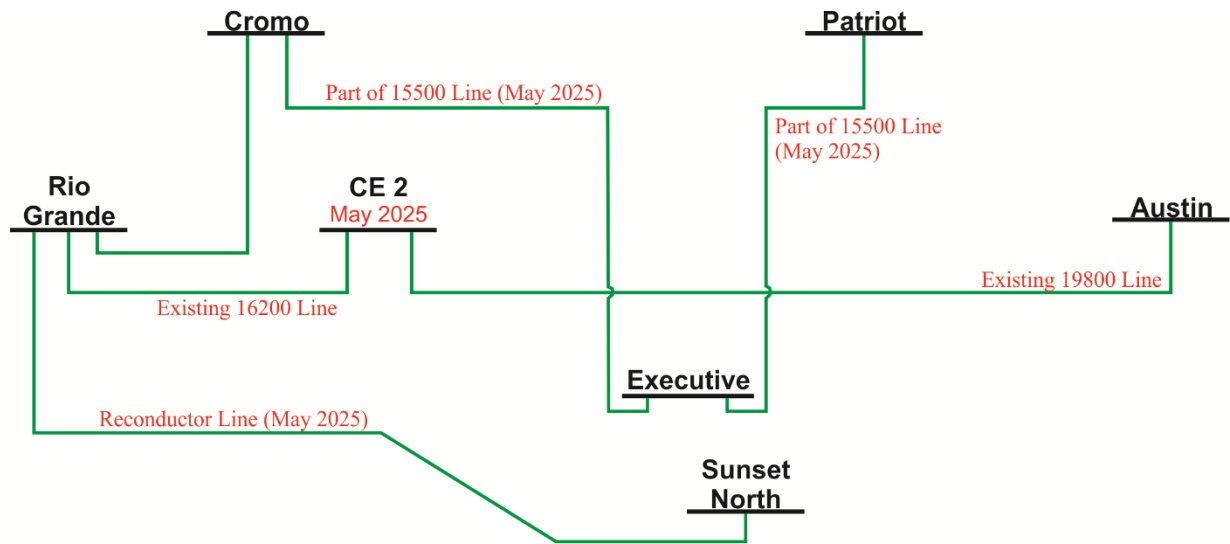
**NOTE:** FOR ILLUSTRATION PURPOSES ONLY.  
FINAL DESIGN WILL BE COMPLETED  
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AND SR ENGINEERING



**PLANNED PROJECTS  
YEAR 2025**

<b><u>Project Name:</u></b>	CE-2 Substation (New) and Related 115 kV West Loop Line Reconfiguration
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TBD
<b><u>In Service Date:</u></b>	May 2025
<b><u>Peak Modeling Year:</u></b>	2025
<b><u>Project Description:</u></b>	This project involves the addition of a CE-2 Substation to the Rio Grande-Austin 115 kV line. With this CE-2 Substation addition, Mesa and CET Substations will be retired. Also, with the rebuilt/reconfigured Rio Grande-Sunset North 115 kV line in service, Executive Substation will be served from the Cromo-Patriot 115 kV line.
<b><u>Project Justification:</u></b>	By peak 2025, CE-2 will replace CET and Mesa Substations. Also, the rebuilt/reconfigured Rio Grande-Sunset North 115 kV line will be placed in service. These projects will result in the need to reconfigure 115 kV transmission lines to accommodate these changes. The series of 115 kV transmission line reconfiguration projects that involve the CE-2 and other new and existing substations in this part of the west service territory will be referred to as the “West Loop”.

**CE2 SUBSTATION (NEW)  
AND RELATED 115 kV WEST LOOP LINE RECONFIGURATION  
YEAR 2025**



**NOTE:** FOR ILLUSTRATION PURPOSES ONLY.  
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AND SR ENGINEERING

**PLANNED PROJECTS  
YEAR 2025**

**Project Name:** CE2 Capacitor Banks

**Operating Voltage:** 115 kV

**Project Number:** TBD

**In Service Date:** May 2025

**Peak Modeling Year:** 2025

**Project Description:** The project consists of two 15.6 MVAR bus shunt capacitor banks connected to the 115 kV bus.

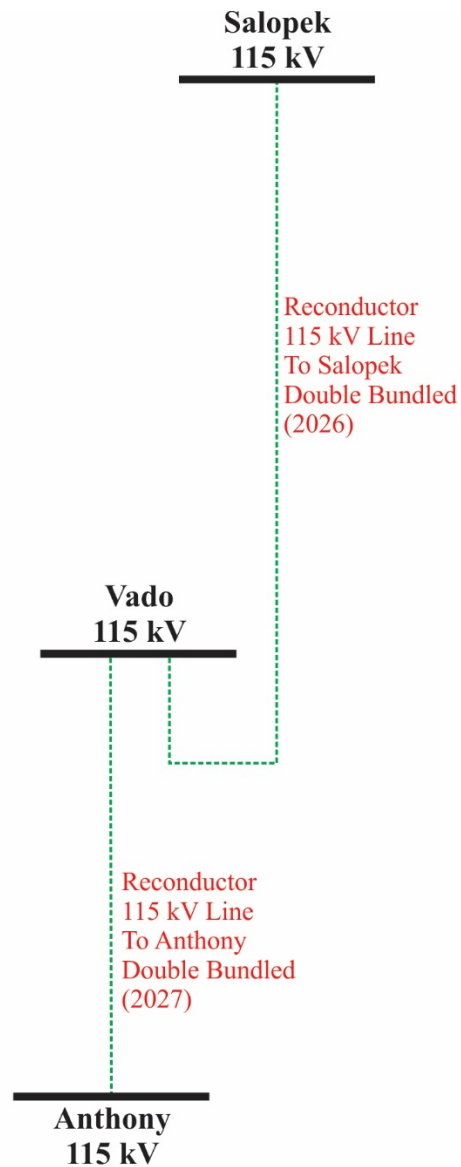
**Project Justification:** This project has been identified to provide reactive and voltage support in the West Loop area.

## **Transmission Projects in 2026**

**PLANNED PROJECTS  
YEAR 2026**

<b><u>Project Name:</u></b>	Vado-Salopek 115 kV Double Bundled Line (Reconductor)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TL256
<b><u>In Service Date:</u></b>	May 2026
<b><u>Peak Modeling Year:</u></b>	2026
<b><u>Project Description:</u></b>	The addition of the Vado Substation in 2024 resulted in the reconfiguration of the Anthony-Salopek 115 kV transmission line into the Anthony-Vado 115kV and Vado-Salopek 115 kV transmission lines. By 2026, additional capacity will be needed on the 115 kV lines out of Vado Substation. The new capacity of the line must have a minimum of 369 MVA under normal conditions and emergency rating of 492 MVA from Anthony to Vado (2027 project) and, separately, from Vado to Salopek (2026 project).
<b><u>Project Justification:</u></b>	The increased capacity of this line will allow EPE to serve the Las Cruces load from the Afton and Vado area which will increase reliability and system flexibility under contingency situations.

**LINE FROM VADO 115 KV TO SALOPEK 115 kV (YEAR 2026)**  
**LINE FROM VADO 115 TO ANTHONY 115 kV (YEAR 2027)**



**NOTE:** FOR ILLUSTRATION PURPOSES ONLY.  
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AND SR ENGINEERING

## PLANNED PROJECTS YEAR 2026

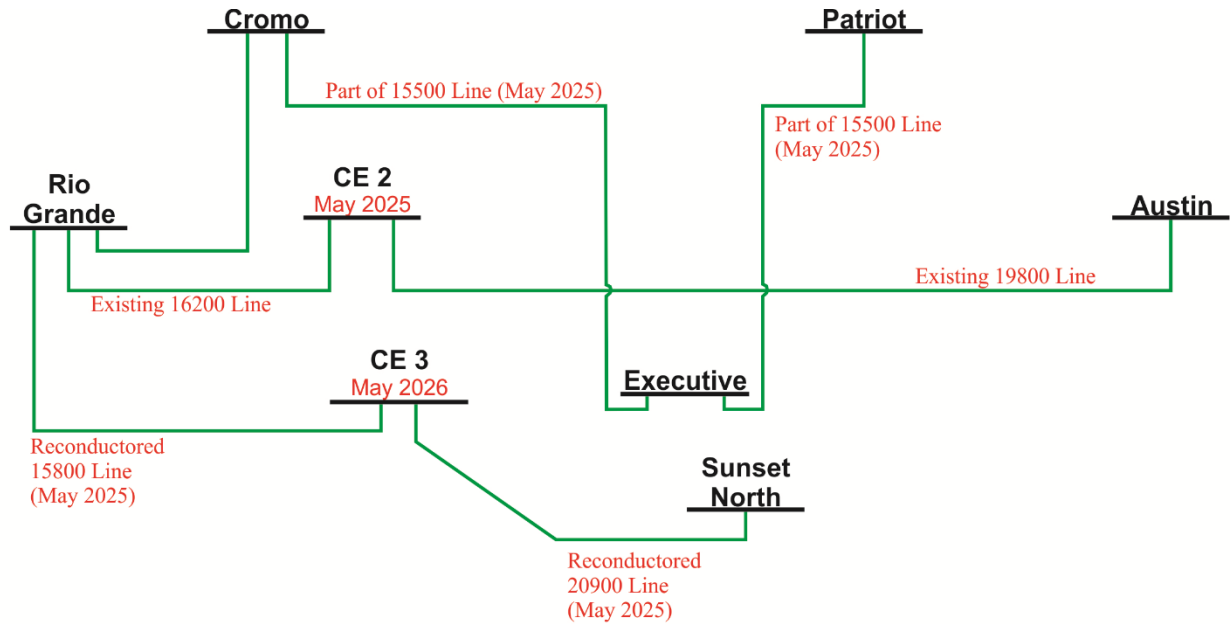
<b><u>Project Name:</u></b>	New Amrad SVC/S device connecting on high-voltage side to Amrad 345 kV side using its own dedicated step-up step up transformer to a dedicated bay, size assumed +/- 100 MVAR (symmetrical range)
<b><u>Operating Voltage:</u></b>	345 kV
<b><u>Project Number:</u></b>	TBD
<b><u>In Service Date:</u></b>	May 2026
<b><u>Peak Modeling Year:</u></b>	2026
<b><u>Project Description:</u></b>	The existing Static Var Compensator (SVC) is reaching the end of its expected service life. This device provides dynamic MVAR reactive support throughout the Amrad area and supports stabilization of voltage fluctuations in the area. Traditionally, this device has helped with changes in system voltage in the area as the Artesia HVDC terminal operates with a MW schedule on it. However, this device also supports voltage fluctuations under reactive and voltage varying operating conditions such as under contingencies of transmission elements in the general area.
<b><u>Project Justification:</u></b>	Studies have indicated that the type of dynamic reactive and voltage support will continue to be needed at or near the Amrad area. Engineering studies through 2021 have indicated that a replacement SVC or STATCOM type of device sized +/- 100 MVAR suffices to stabilize the anticipated operating changes in the system in the Amrad area and provide the reliability needs for the area based on study criteria.

**PLANNED PROJECTS  
YEAR 2026**

<b><u>Project Name:</u></b>	CE-3 Substation (New) and Related 115 kV West Loop Line Reconfiguration
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TBD
<b><u>In Service Date:</u></b>	May 2026
<b><u>Peak Modeling Year:</u></b>	2026
<b><u>Project Description:</u></b>	This project involves the construction of the CE-3 Substation onto the rebuilt Rio Grande-Sunset North 115 kV line.
<b><u>Project Justification:</u></b>	CE-3 Substation is needed in the West Loop area for load serving purposes and for purposes of connecting a 115 kV transmission line to a future CE-4 substation.



**CE3 SUBSTATION (NEW)  
AND RELATED 115 kV WEST LOOP LINE RECONFIGURATION  
YEAR 2026**



**NOTE:** FOR ILLUSTRATION PURPOSES ONLY.  
FINAL DESIGN WILL BE COMPLETED  
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AND SR ENGINEERING

**PLANNED PROJECTS  
YEAR 2026**

**Project Name:** Leasburg Capacitor Banks

**Operating Voltage:** 115 kV

**Project Number:** TBD

**In Service Date:** May 2026

**Peak Modeling Year:** 2026

**Project Description:** The project consists of two 15.6 MVAR bus shunt capacitor banks connected to the 115 kV bus.

**Project Justification:** This project has been identified to provide reactive and voltage support in the Las Cruces area.

## **Transmission Projects in 2027**

**PLANNED PROJECTS  
YEAR 2027**

<b><u>Project Name:</u></b>	Vado-Anthony 115 kV Line Double Bundled (Reconductor)
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TL258
<b><u>In Service Date:</u></b>	May 2027
<b><u>Peak Modeling Year:</u></b>	2027
<b><u>Project Description:</u></b>	With the addition of Vado Substation in 2024, the Anthony-Salopek 115 kV Line became the Anthony-Vado 115 kV and Vado-Salopek 115 kV Lines. By 2026, additional capacity will be needed on the 115 kV lines out of Vado Substation. The new capacity of the line must have a minimum of 369 MVA under normal conditions and emergency rating of 492 MVA from Anthony to Vado (2027 project) and, separately, from Vado to Salopek (2026 project).
<b><u>Project Justification:</u></b>	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.

## **Transmission Projects in 2028**

**PLANNED PROJECTS  
YEAR 2028**

**Project Name:** Afton North-Airport 115 kV Line (New)

**Operating Voltage:** 115 kV

**Project Number:** TL178

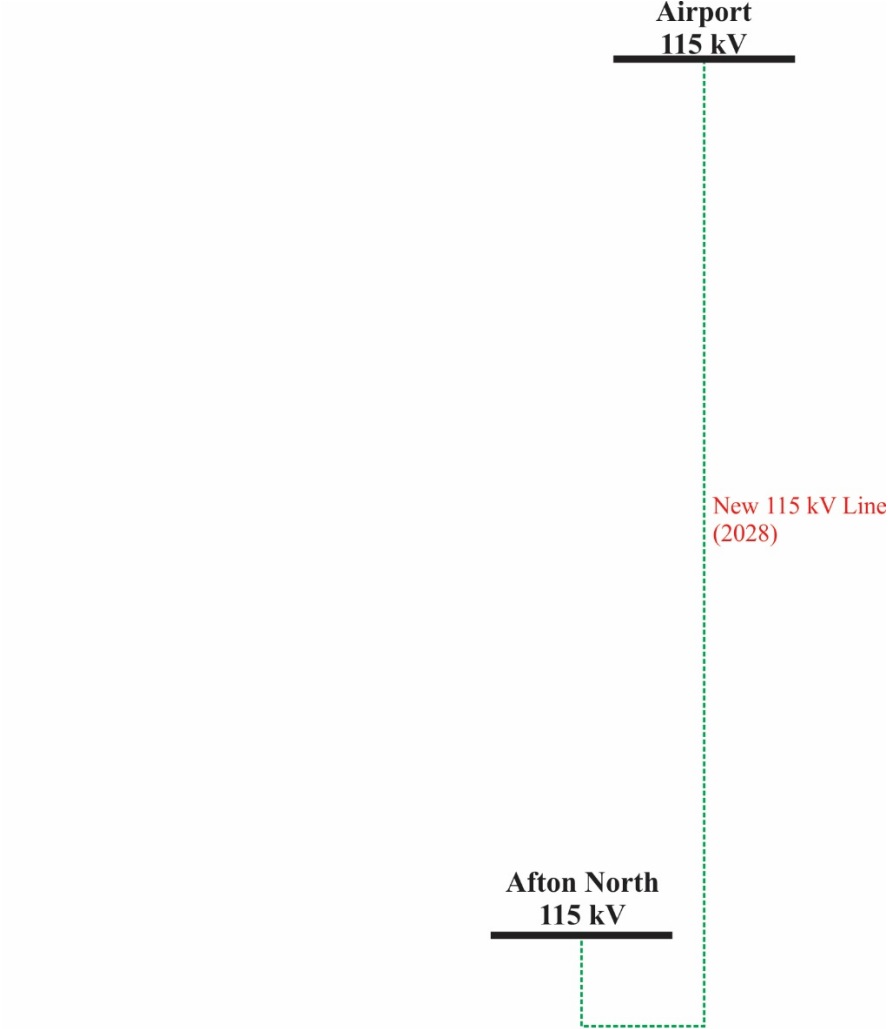
**In Service Date:** May 2028

**Peak Modeling Year:** 2028

**Project Description:** A new 115 kV transmission line is planned to be built from Afton North Substation to Airport Substation with at least a normal capacity rating of 185 MVA and emergency capacity rating of 246 MVA. This transmission line will serve Airport Substation in Las Cruces, New Mexico.

**Project Justification:** The purpose of this transmission line is to improve reliability to Airport Substation. The Afton North to Airport connection will become the source serving Airport. Presently, Airport Substation is being served via PNM's Mimbres-Picacho 115 kV transmission line through a radial connection from Airport Tap. This new line into the Airport Substation will serve to improve reliability in the area.

**AFTON NORTH-AIRPORT 115 kV TRANSMISSION LINE ADDITION  
YEAR 2028**



**NOTE:** FOR ILLUSTRATION PURPOSES ONLY.  
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AND SR ENGINEERING

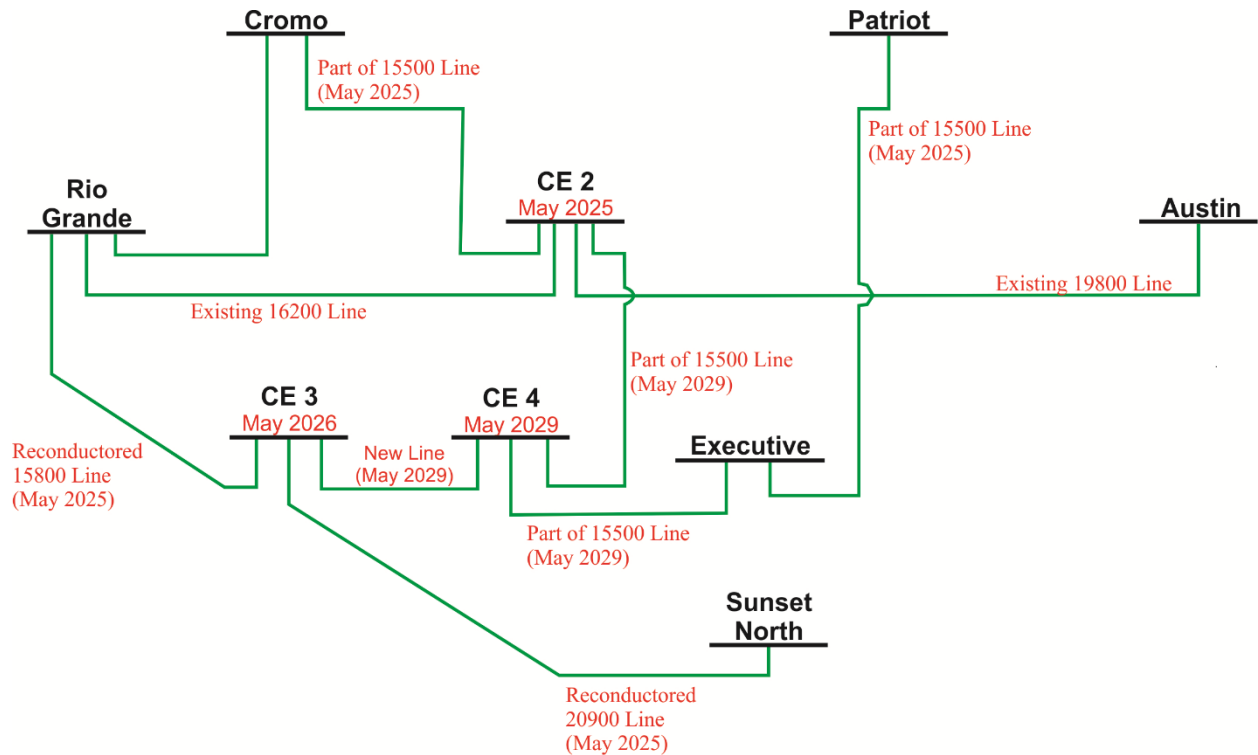
## **Transmission Projects in 2029**



**PLANNED PROJECTS  
YEAR 2029**

<b><u>Project Name:</u></b>	CE-4 Substation (New) and Related 115 kV West Loop Line Reconfiguration
<b><u>Operating Voltage:</u></b>	115 kV
<b><u>Project Number:</u></b>	TBD
<b><u>In Service Date:</u></b>	May 2029
<b><u>Peak Modeling Year:</u></b>	2029
<b><u>Project Description:</u></b>	This project involves the addition of a CE-4 Substation connected to a total of three 115 kV transmission lines.
<b><u>Project Justification:</u></b>	CE-4 Substation is needed in the West Loop area for load serving purposes and for purposes of connecting four 115 kV transmission lines which will add reliability and scheduled transmission line maintenance flexibility to the area due to the resultant 115 kV transmission line “looped” system and the completion of the West Loop project concept.

# **CE4 SUBSTATION (NEW) AND RELATED 115 kV WEST LOOP LINE RECONFIGURATION YEAR 2029**



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

**PLANNED PROJECTS  
YEAR 2029**

**Project Name:** CE4 Capacitor Banks

**Operating Voltage:** 115 kV

**Project Number:** TBD

**In Service Date:** May 2029

**Peak Modeling Year:** 2029

**Project Description:** The project consists of two 15.6 MVAR bus shunt capacitor banks connected to the 115 kV bus.

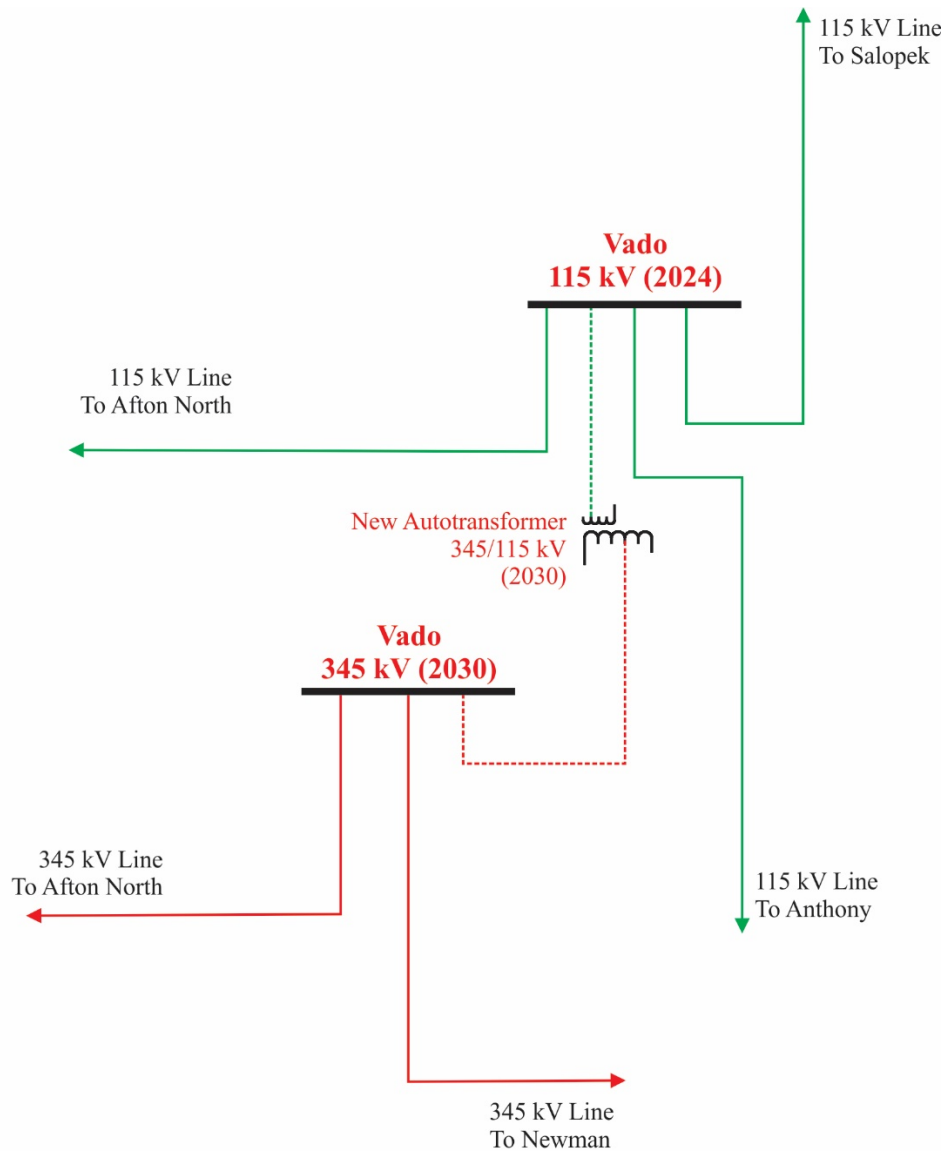
**Project Justification:** This project has been identified to provide reactive and voltage support in the West Loop area.

## **Transmission Projects in 2030**

**PLANNED PROJECTS  
YEAR 2030**

<b><u>Project Name:</u></b>	In-and-Out into Vado 345 kV Substation from Afton North-Newman 345 kV Line
<b><u>Operating Voltage:</u></b>	345 kV
<b><u>Project Number:</u></b>	TL257
<b><u>In Service Date:</u></b>	May 2030
<b><u>Peak Modeling Year:</u></b>	2030
<b><u>Project Description:</u></b>	EPE has an existing 345 kV transmission line between Afton and Newman Substations which runs adjacent to the proposed Vado Substation. With the addition of the Afton North 345 kV Substation in 2023, the Afton-Newman 345 kV Line will become the Afton North-Newman 345 kV transmission line.
<b><u>Project Justification:</u></b>	The purpose of this transmission line in-and-out 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 reduce losses in the system as power flows from the 345 kV system will have a shorter path to Las Cruces and west El Paso loads.

**VADO 345 kV SUBSTATION IN-AND-OUT  
NEW VADO 345/115 kV AUTOTRANSFORMER  
YEAR 2030**



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

**PLANNED PROJECTS  
YEAR 2030**

**Project Name:** Vado 224 MVA Vado 345/115 kV Autotransformer (New)

**Operating Voltage:** 345 kV and 115 kV

**Project Number:** TS140

**In Service Date:** May 2030

**Peak Modeling Year:** 2030

**Project Description:** EPE has an existing 345 kV transmission line between Afton and Newman Substations and this line runs adjacent to the proposed Vado Substation; with the addition of the Afton North 345 kV Substation in 2023, the Afton-Newman 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 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. The Afton North-Newman 345 kV Line will become the Afton North-Vado and Afton North-Newman 345 kV Lines after the completion to this project.

**Project Justification:** The purpose of this transmission line in-and-out 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 power flows from the 345 kV system will have a shorter path to Las Cruces and west El Paso loads.