GENERAL
MEMORANDUM

TO: Robert C. Doyle

FROM: David Tovar
      Manager – System Planning

SUBJECT: EPE 2018-2027 System Expansion Plan

June 26, 2017

Enclosed is the El Paso Electric Company (“EPE”) 2018-2027 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 add your signature of approval for the release of this Plan to all Plan holders.

Robert C. Doyle

Approved

Date

6/26/17
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 over a ten-year planning horizon (currently from 2018 through 2027). 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 two 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”) outage while continuing operation without impact to any EPE customers. The criteria also include maintaining voltages within defined limits.

Native load projections for this Plan were based on EPE’s Long-term and Budget Year Forecasts as detailed below. In summary, the ten-year Compounded Annual Growth Rate (CAGR) is 1.5%. 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.

Table 3 shows expansion projects that were called for and budgeted in previous plans, not completed as of this writing, but assumed to be completed before the peak of 2017. Statuses of projects called for in the previous plan but not in Table 3 are summarized in Table 4. New or modified projects called for in this Plan are summarized in Tables 5A and 5B 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 2018-2027.” This new Plan updates and replaces EPE’s previous 2017-2026 System Expansion Plan.

Load Projections

Native load and system losses modeled for future years were determined using the Expected Forecasted demand plus ¼ of the difference between the High Forecasted demand and the Expected Forecasted demand. The forecasted demand values were obtained from EPE’s 2016 Long-term and Budget Year Forecast (“Forecast”), published by the Economic Research department on April 7, 2016. This resulted in a CAGR of 1.5% for native system demand over the ten-year Plan horizon (2018-2027). 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 2016 coincidence peak loads; Distribution System’s monthly (non-coincidence) load reports; load projections in the July 2016 Distribution Expansion Plan; and input from EPE’s Load Forecasting and Commercial Services departments.

The 2016 Forecast predicts native system energy increase for 2017 of 0.7% compared to year 2016. The Forecast also predicts peak demand in 2017 will increase 0.9% compared to last year’s peak.

**Demand Side Management**

In Attachment K (posted on EPE’s website -- 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 53.7 MW in 2025.

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 2017-2026 document (“L&R”) dated May 25, 2016. 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 the Plan.

**New Generation Siting Study**

The L&R identifies two 1x1 320 MW combined cycle units to be phased in from 2023 through 2027. 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 both combined cycle
EL PASO ELECTRIC COMPANY
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SYSTEM EXPANSION PLAN

units (640 MW total) 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, 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 (maximum simultaneous demand) Heavy Summer conditions -- usually considered worst case scenarios for EPE’s system. Light Winter cases have been 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.

Latest PeakRC SOL Methodology

On February 24, 2017, revision 8.1 of the Reliability Coordinator’s System Operating Limits Methodology for the Operations Horizon went into effect. It requirements 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 2016 and the second in March 2017 -- 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. All system expansion projects identified in the Plan are therefore driven by EPE’s native load requirements.

Plan Case System Assumptions

System expansion analyses included power flow studies for each Plan year from 2018 through 2027. These analyses incorporated in-progress system expansion projects assumed to be completed before the peak of 2018. System modeling also includes the following assumptions:

- The forecasted substation load for each Plan year was adjusted to projected instantaneous peak loads using the Forecast (dated April 7, 2016) and historical load data.
- Generation, system configuration, imports, and interchange schedules -- including contractual agreements with neighboring 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 400 MVA emergency rating.
- The Luna to Diablo 345kV 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 In and Out tap to Afton 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 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 the all Plan cases.

- No 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 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.

- 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, transmission lines were modeled in 2022 and beyond to connect Newman East plant to the Newman 115 kV bus network (see Generation Resources section).

- Plan cases include lowered capacity ratings on several transmission lines based on actual field conditions.

Please note that the final generation site(s) has 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, 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.

**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 peak of 2018 are not completed and the 2018 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 (2017-2026) but are now re-scheduled to be completed before the peak of 2018. These projects have been modeled in the 2017 Plan cases and beyond to help mitigate
potential contingency overloads. Table 4 summarizes the status of projects listed in the previous plan but not assumed to be completed by the 2018 peak (i.e. not included in Table 3). New or modified Plan projects are summarized in Tables 5A & 5B and detailed in each year’s project descriptions.

**System Improvement Methodology**

After Plan cases were modified as stated 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 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, 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 internal 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 generator interconnections are not included unless an 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 5A and 5B identify each year’s system improvements. 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 2017 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. 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 2018 through 2027). 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 2018-2027. Deferred projects from prior expansion plans are listed on Table 3.

**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 Steve Eckles.
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## Individual Project Details by Year

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<th>Table</th>
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<td>2018</td>
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<td>2019</td>
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<td>2020</td>
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<td>2026</td>
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<tr>
<td>2027</td>
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### Table 1. Yearly Peak Energy Efficiency Adjustment

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<th>Calendar Year</th>
<th>Total Energy Efficiency Adjustment (MW)</th>
<th>Calendar Year</th>
<th>Total Energy Efficiency Adjustment (MW)</th>
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<td>2018</td>
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<td>2023</td>
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<td>21.5</td>
<td>2024</td>
<td>48.3</td>
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<td>2020</td>
<td>26.8</td>
<td>2025</td>
<td>53.7</td>
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<td>2021</td>
<td>32.2</td>
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<td>53.7</td>
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<td>2022</td>
<td>37.6</td>
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### Table 2. EPE Local Generation

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<th>Generator</th>
<th>Type</th>
<th>Capacity (MW) (1)</th>
<th>Planned Dates</th>
<th>Notes</th>
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<td>Photovoltaic</td>
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<td>Pre-2015</td>
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<td>Chaparral PV</td>
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<td>Copper</td>
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<td>Pre-2015</td>
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<td>MPS 4</td>
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<td>Newman 4 G1</td>
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<td>Newman 4 G2</td>
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<td>Jan. 2027</td>
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<td>Newman G1</td>
<td>Gas-fired Steam Turbine</td>
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<td>Gas-fired Steam Turbine</td>
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<td>Newman G3</td>
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<td>Santa Teresa PV</td>
<td>Photovoltaic</td>
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<td>(2)</td>
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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 “NEWMAN 6” & “NEWMAN 7” 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.
5. Pending studies to determine location of facilities. NO interconnection requests have been made.
### Table 3. System Expansion Projects Scheduled for Completion before the Peak of 2018

(All projects below are modeled in the 2017 Plan Case)

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<th>SYSTEM UPGRADE NEEDED</th>
<th>LOCATION OF UPGRADE</th>
<th>IMPROVEMENT IDENTIFICATION</th>
<th>SINGLE CONTINGENCY</th>
<th>ORIGINAL COMPLETION YEAR CALLED FOR IN PREVIOUS PLANS</th>
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<td>Relieves Line Overloading</td>
<td>RIO GRANDE - ASARCO TAP 69 KV line</td>
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<td>Reconductor from 556 ACSR to 954 ACSR</td>
<td>COPPER - PENDALE 115 KV line</td>
<td>Relieves Line Overloading</td>
<td>CALIENTE - NEWMAN(1) 345 KV line NEWMAN - AFTON 345 KV line</td>
<td>2008</td>
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<tr>
<td>Reconductor from 556 ACSR to 954 ACSR</td>
<td>PENDALE - LANE 115 KV line</td>
<td>Relieves Line Overloading</td>
<td>CALIENTE - NEWMAN(1) 345 KV line NEWMAN - AFTON 345 KV line</td>
<td>2008</td>
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<tr>
<td>Reconductor 2 spans of line upgrade</td>
<td>Trowbridge-Marlow 115kV line</td>
<td>Relieves Line Overloading</td>
<td>VARIOUS</td>
<td>2016</td>
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<td>Reconductor from 556 ACSR to to 954 ACSR</td>
<td>SOL - VISTA 115 KV line</td>
<td>Relieves Line Overloading</td>
<td>CALIENTE - DIAMOND HEAD 115 KV line</td>
<td>2015</td>
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<tr>
<td>Add 2 x 15 MVAR capacitors</td>
<td>GLOBAL REACH 115 KV bus</td>
<td>Low Voltage</td>
<td>VARIOUS</td>
<td>2015</td>
</tr>
<tr>
<td>Add 2 x 15 MVAR capacitors</td>
<td>RIO BOSQUE 69 KV bus</td>
<td>Low Voltage</td>
<td>VARIOUS</td>
<td>N/A</td>
</tr>
<tr>
<td>Add 2 x 15 MVAR capacitors</td>
<td>PICANTE 115 KV bus</td>
<td>Low Voltage</td>
<td>VARIOUS</td>
<td>2015</td>
</tr>
<tr>
<td>Add 2 x 15 MVAR capacitors</td>
<td>FORT BLISS 115 KV bus</td>
<td>Low Voltage</td>
<td>ALL LINES IN SERVICE</td>
<td>2015</td>
</tr>
<tr>
<td>Add 15 MVAR capacitor</td>
<td>FABENS 69 KV bus</td>
<td>Low Voltage</td>
<td>VARIOUS</td>
<td>N/A</td>
</tr>
<tr>
<td>Add 7.5 MVAR capacitor</td>
<td>FELIPE 69 KV bus</td>
<td>Low Voltage at Farmer</td>
<td>VARIOUS</td>
<td>2014</td>
</tr>
</tbody>
</table>

**Notes:**

(1) The Caliente-Newman Contingency initially identified is now Picante-Newman contingency.
<table>
<thead>
<tr>
<th>Notes</th>
<th>Project #</th>
<th>Project Descriptions</th>
<th>Original Recommended Completion Date</th>
<th>Revised Completion Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>New 2 x 15 MVAR Capacitors added at Global Reach 115 KV bus</td>
<td>May-15</td>
<td>Dec-17</td>
<td>Scheduled completion: 12/1/2017</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>New 2 x 15 MVAR Capacitors added at Picante 115 KV bus</td>
<td>May-15</td>
<td>Dec-17</td>
<td>Scheduled completion: 12/9/2017</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Felipe 69 KV Substation Capacitor Bank (7.5 MVAR)</td>
<td>May-14</td>
<td>May-18</td>
<td>Scheduled completion: 5/1/2018</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>New 2 x 15 MVAR Capacitors added at Fort Bliss 115 KV bus</td>
<td>May-13</td>
<td>May-18</td>
<td>Installation is driven by additional Ft. Bliss load materializing.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Afton North - Airport 115 KV Transmission Line (part of future Las Cruces 115 KV west side loop)</td>
<td>May-15</td>
<td>May-19</td>
<td>New Afton North substation project removes Airport load from Mimbres to Picacho 115 kV line and puts the load on the Afton North-Airport 115 KV line.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>SOL-Vista 115 kV Transmission Line Reconductor (556 ACSR to 954 ACSR, 2.0 miles)</td>
<td>May-15</td>
<td>Dec-18</td>
<td>Project is still required to relieve overload.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Durazno- Ascarate 115 kV re-conductor</td>
<td>May-16</td>
<td>May-19</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Sunset North- Durazno 115kV re-conductor</td>
<td>May-16</td>
<td>May-18</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>New 18.1 mile 954 ACSR Moongate - Arroyo 115 kV line</td>
<td>May-15</td>
<td>May-20</td>
<td>For new load expansion in Las Cruces</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>New 6.6 mile 954 ACSR Moongate - Jornada 115 kV line</td>
<td>May-15</td>
<td>May-21</td>
<td>For new load expansion in Las Cruces</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Upgrade of existing 4/0 wire to 115 kV from Moongate - Apollo 115 kV</td>
<td>May-15</td>
<td>May-20</td>
<td>For new load expansion in Las Cruces</td>
</tr>
</tbody>
</table>

**NOTES:**

(1) Does not include maintenance projects, except substation transformer upgrades and transmission line rebuilds where the conductor has been upgraded.

(2) Revised project is listed in this Plan's PROJECT SCHEDULE & COST SUMMARY table.
<table>
<thead>
<tr>
<th>Tab #</th>
<th>Project #</th>
<th>Project Descriptions</th>
<th>Recommended Completion Dates Month-Year (2)</th>
<th>Estimated Project Cost (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Re-conductor 4.4 miles of Copper-To Pendale 115kV line from 556 ACSR to 954 ACSR</td>
<td>May-18</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Re-conductor 0.85 miles of Pendale to Lane 115kV line from 556 ACSR to 954 ACSR</td>
<td>May-18</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sunset N.-Durazno 115kV line. Upgrade 3.3 mi of line to increase capacity to 170 MVA minimum. Tap In-And-Out to Picante 345, from Caliente - Amrad 345 KV Transmission Line</td>
<td>May-18</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transmountain 115 KV, 2-15 MVAR capacitor banks</td>
<td>May-19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New Afton North substation with 345/115 KV 224 MVA Autotransformer</td>
<td>May-19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Afton - Afton North 345 KV Transmission Line (1 mile of double-bundled 954 ACSR)</td>
<td>May-19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Afton North - Airport 115 KV Transmission Line</td>
<td>May-19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Durazno- Ascarate 115kV line. Upgrade 3.3 mi of line to increase capacity to 170 MVA minimum.</td>
<td>May-19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>East side loop expansion, Add new 115 KV substation E1, 7.33 miles east of Coyote substation</td>
<td>May-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Re-conductor 7.33 miles of Coyote to E1 115 KV from 4/0 ACSR to 954 ACSR wire</td>
<td>May-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>East side loop expansion, Add new 115 KV substation E2, 18 miles south of E1 substation</td>
<td>May-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New 954 ACSR transmission line from E1 to E2 115 KV, approximately 18 miles long</td>
<td>May-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New 954 ACSR transmission line from E2 to Horizon 115 KV, approximately 4.3 miles long</td>
<td>May-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New 954 ACSR transmission line from E2 to Felipe 115 KV, approximately 12 miles long</td>
<td>May-21</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Re-conductor Sparks to Felipe 69 KV line, 12.87 miles, to 115 KV 954 ACSR wire</td>
<td>May-21</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upgrade Felipe substation to include a 115 KV bus</td>
<td>May-21</td>
<td></td>
</tr>
</tbody>
</table>

**2018 Total**

**2019 Total**

**2020 Total**

**2021 Total**

**NOTES:**

(1) Table does not include maintenance projects, except transmission line rebuilds and/or conductor upgrades. Table does not include capital expenditures outside the native transmission network. Future Projects include rough cost estimates and may not yet be included in the EPE Capital Budget Forecast.

(2) In most cases, System Planning recommends completion date by May of the given year, in time for the summer peak period.

(3) Costs are in present-day dollars estimated by Project Management and Quality Assurance with contributions from TSR Engineering for informational purposes. See Capital Budget for latest project cost estimates.

(4) No reliability-based projects are needed in this year; however, future projects may be added driven by currently unknown load growth and load growth patterns.
<table>
<thead>
<tr>
<th>Tab #</th>
<th>Project #</th>
<th>Project Descriptions</th>
<th>Recommended Completion Dates Month-Year (2)</th>
<th>Estimated Project Cost (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>New 115 KV transmission line from Newman East to Newman, circuit 1 (2 miles of 954 ACSS)</td>
<td>Oct-22</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New 115 KV transmission line from Newman East to Newman, circuit 2 (2 miles of 954 ACSS)</td>
<td>Oct-22</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New 115 KV transmission line from Newman East to Newman, circuit 3 (2 miles of 954 ACSS)</td>
<td>Oct-22</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New 115 KV transmission line from Newman East to Newman, circuit 4 (2 miles of 954 ACSS)</td>
<td>Oct-22</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New Vado substation</td>
<td>May-22</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New double-bundle 954 ACSR transmission line from Afton North to Vado 115 KV, approx. 12 miles</td>
<td>May-22</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upgrade Vado to Salopek 115kV 795 ACSR line to 954 ACSS 200C, approximately 9 miles</td>
<td>5/1/2023</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New 954 ACSR In-and-Out Tap from Vado to Arroyo-Anthony 115kv line, approx. 3 miles</td>
<td>5/1/2023</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upgrade Vado to Anthony 115kV 795 ACSR line to 954 ACSS 200C, approximately 8 miles</td>
<td>5/1/2024</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New Vado 345/115 KV 224 MVA Autotransformer</td>
<td>5/1/2025</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>New tap in-and-out of Vado 345kV to Afton North - Newman 345 kV Line</td>
<td>5/1/2025</td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td></td>
<td>No specific new facilities or improvements were identified by System Planning in the year 2026</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td></td>
<td>No specific new facilities or improvements were identified by System Planning in the year 2027</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

(1) Table does not include maintenance projects, except transmission line rebuilds and/or conductor upgrades.

(2) Table does not include capital expenditures outside the native transmission network.

(3) Future Projects include rough cost estimates and may not yet be included in the EPE Capital Budget Forecast.

(4) In most cases, System Planning recommends completion date by May of the given year, in time for the summer peak period.

Costs are in present-day dollars estimated by Project Management and Quality Assurance with contributions from TSR Engineering for informational purposes. See Capital Budget for latest project cost estimates.

(4) No reliability-based projects are needed in this year; however, future projects may be added driven by currently unknown load growth and load growth patterns.

---

### EPE 2018-2027 TEN-YEAR SYSTEM EXPANSION PLAN PROJECT'S -----> GRAND TOTAL

---
MAPS
NOTE: All facilities with year in red are called for in the previous and current 10-year plan but are not yet in service on called for date.

NOTE: New substations are developed from distribution plan.
El Paso Electric Company
Proposed Projects For 2017 - 2026

LEGEND

- TRANSMISSION - 345KV
- TRANSMISSION - 115KV
- TRANSMISSION - 69KV
- TRANSMISSION - OTHER UTILITIES
- GENERATING STATION - STEAM
- GENERATING STATION - TURBINE
- SUBSTATION - TRANSMISSION
- SUBSTATION - DISTRIBUTION
- SUBSTATION - XFORMER ADDITION
- POINT OF WHOLESALE DELIVERY

* Noted Projects which have been included from the Distribution Expansion Plan.
  - UVAS
  - TALAVERA
  - LEASBURG
  - MOONGATE
  - FE1
  - MINER

NOTE: All facilities with year in red are called for in the previous and current 10-year plan but are not yet in service on called for date.

NOTE: New substations are developed from distribution plan.

SOURCE: SYSTEM PLANNING FEBRUARY 2017
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 in 2014 dollars 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 2018
Project Name: Sunset North to Durazno Line Upgrade (Re-conductor)

Operating Voltage: 115 kV

Project Number:

Project Cost:

Planned In Service Date: May 2018

Project Description: This project requires the re-conductoring of 3.3 miles of line to increase the capacity of the line to a minimum of 170 MVA under normal conditions and 230 MVA for its emergency rating.

Project Justification: This line is showing an increase in its emergency loading during the operational summer assessments that will be harder to mitigate in the future. 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 operations from the need to exercise operational procedures to mitigate the operational overload in the line.
**Project Name:** Copper to Pendale 115 kV Line Upgrade (Re-conductor)

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned In Service Date:** May 2018

**Project Description:** This project requires the re-conductoring of 4.4 miles of line to increase the capacity of the line to a minimum of 170 MVA under normal conditions and 230 MVA for its emergency rating.

**Project Justification:** This line is showing an increase in its emergency loading during the operational summer assessments that will be harder to mitigate in the future. 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 operations from the need to exercise operational procedures to mitigate the operational overload in the line.
EL PASO ELECTRIC COMPANY  
2018-2027  
SYSTEM EXPANSION PLAN  

PLANNED PROJECTS  
YEAR 2018

**Project Name:** Tap In and-Out to Picante 345 kV substation from Caliente-Amrad 345 kV Transmission Line, and move 345 kV reactor from Caliente to Picante sub.

**Operating Voltage:** 345 kV

**Project Number:**

**Project Cost:**

**Planned In Service Date:** May 2018

**Project Description:** EPE has a 345 kV transmission line from Amrad to Caliente substation and it runs adjacent to Picante substation. The plan is to cut this line and connected in and out to Picante substation 345kV ring bus. It will be necessary to add three additional 345 kV Gas Circuit Breakers, disconnect switches with motor operated devices, move the 345 kV reactor from Caliente substation to Picante substation and provide the TSS relay schemes for the new lines Amrad to Picante and Picante to Caliente.

**Project Justification:** This project will result in two parallel transmission lines from Picante to Caliente providing more reliability to Caliente and Picante substations as well as to the line from Picante to Amrad. Furthermore, the new configuration will increase the flexibility to do maintenance on those transmission lines.
* New 345 kV Transmission Line Tap In-And-Out to PICANTE 345 from AMRAD to Caliente 345 kV Line

NOTE: BUS FOR ILLUSTRATION PURPOSES ONLY. FINAL DESIGN WILL BE COMPLETED BY TRANSMISSION LINE DESIGN AND SR ENGINEERING
Year 2019
Project Name: Afton North Substation with a 224 MVA Autotransformer

Operating Voltage: 345/115 kV

Project Number:

Project Cost:

Planned In Service Date: May 2019

Project Description: A new 345/115 kV 224 MVA autotransformer is planned to be installed at Afton North substation in southern New Mexico that will enhance system reliability and help meet load growth objectives.

Project Justification: This project increases El Paso Import Capability (EPIC) by 80-150 MW which will potentially defer the need for an additional local generator. It will also serve Las Cruces Airport substation increasing reliability to the area. This autotransformer is part of a plan to incorporate a 115 kV feed from Afton North 115 kV to Airport substation, and to Vado substation.
**Project Name:** Afton 345 kV to Afton North 345 kV transmission line

**Operating Voltage:** 345 kV

**Project Number:**

**Project Cost:**

**Planned In Service Date:** May 2019

**Project Description:** A new, 1 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 to enhance system reliability and help meet load growth objectives.

**Project Justification:** This project increases El Paso Import Capability (EPIC) by 80-150 MW which will potentially defer the need for an additional local generator. It will also serve Las Cruces Airport substation increasing reliability to the area. This autotransformer is part of a plan to incorporate a 115 kV feed from Afton North 115 kV to Airport substation and to Vado substation.
AFTON NORTH 345/115 kV AUTOTRANSFORMER

NEW 1 mile AFTON TO AFTON NORTH 345 kV TRANSMISSION LINE

2019

NOTE:
FOR ILLUSTRATION PURPOSES ONLY.
FINAL DESIGN WILL BE COMPLETED
BY TRANSMISSION LINE DESIGN
AND SR ENGINEERING
PLANNED PROJECTS
YEAR 2019

Project Name: Afton North - Airport Transmission Line Addition

Operating Voltage: 115 kV

Project Number:

Project Cost:

Planned In Service Date: May 2019

Project Description: A new 3-phase 115 kV transmission line is planned to be built from Afton North substation to Airport Substation. The line will connect to the 115 kV side of the new 345/115 kV autotransformer at Afton North. 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**

2019

**AIRPORT SUBSTATION**

- New 115 kV 14 mile line (954 ACSR) (2019)

**NEW 115 kV RING BUS**

**NEW**

**30 MVA 115/23.9 kV**

**T1**

**AFTON NORTH SUBSTATION**

- 115 kV RING BUS

- **NEW**

- **224 MVA AUTOTRANSFORMER (2019)**

**AFTON NORTH 345 kV LINE TO LUNA**

- **2019**

**AFTON NORTH 345 kV LINE TO NEWMAN**

- **2019**

**NOTE:**

FOR ILLUSTRATION PURPOSES ONLY.
FINAL DESIGN WILL BE COMPLETED BY TRANSMISSION LINE DESIGN AND SR ENGINEERING
Project Name: Durazno to Ascarate Line Upgrade (Re-conductor)

Operating Voltage: 115 kV

Project Number:

Project Cost:

Planned In Service Date: May 2019

Project Description: This project requires the re-conductoring of 3.1 miles of line to increase the capacity of the line to a minimum of 170 MVA under normal conditions and 230 MVA for its emergency rating.

Project Justification: This line is showing an increase in its emergency loading during the operational summer assessments that will be harder to mitigate in the future. 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 operations from the need to exercise operational procedures to mitigate the operational overload in the line.
Project Name: Transmountain Substation, 2-15 MVAR Capacitor Bank

Operating Voltage: 115 kV

Project Number:

Planned In Service Date: May 2019

Project Description: A new 2-15 MVAR capacitor bank is required to be installed at Transmountain substation on the 115 kV transmission bus.

Project Justification: The addition of a 2-15 MVAR capacitor bank is necessary to raise the voltage levels at the Transmountain 115 kV bus. Voltage levels at the Transmountain 115 kV bus are below the median levels for 115 kV voltage during All Lines In Service, and at the low end of acceptable voltage levels during single system outages. System Planning recommends that this cap be installed in 2019 to maintain good service to the Transmountain area load which has been growing rapidly.
NEW 115 kV 2 x 15 MVAR CAPACITOR ADDITION

TRANSMOUNTAIN 115/13.8 kV SUBSTATION

2019

NOTE:
FOR ILLUSTRATION PURPOSES ONLY.
FINAL DESIGN WILL BE COMPLETED
BY SR ENGINEERING
Year 2020
Eastside Loop Phase I

- The following pages describe phase one of the eastside expansion loop designed to serve future growth in the El Paso area.

- A basic diagram illustrating new substations, new transmission lines, and line upgrades is included after the last description of the 2020 Eastside Loop Phase projects.
Project Name: East side loop expansion. New substation E1 and re-conductor line from Coyote to E1 substation

Operating Voltage: 115 kV

Project Number: 

Project Cost: 

In Service Date: May 2020

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 wire to 954 ACSR wire. The metering for Dell City will be moved to the east side of the E1 substation on the line segment to Rio Grande Coop.

Project Justification: The addition of this phase 1 of the east side loop helps in deferring the need to re-conductor five transmission lines that were scheduled for earlier years in the 2010 10-year plan and will lay the foundation for serving future load growth on the east side of El Paso. In addition, the east side loop expansion provides alternate flow paths from the new Montana generating station, allowing up to 400 MW of generation to be located at that substation.
Project Name: East side loop expansion. New E2 substation and new E2 to E1 115 kV line.

Operating Voltage: 115 kV

Project Description: This project will add a new substation, E2, approximately 18 miles south of the new E1 substation. A new 18 mile line will be constructed from E1 south to E2 with 954 ACSR wire.

Project Justification: This new substation and new line addition are part of phase 1 of the east side loop which helps in deferring the need to re-conductor five transmission lines that were scheduled for earlier years in the 2010 10-year plan and will lay the foundation for serving future load growth on the east side of El Paso. In addition, the east side loop expansion provides alternate flow paths from the new Montana generating station, allowing up to 400 MW of generation to be located at that substation.

Planned In Service Date: May 2020
**Project Name:** East side loop expansion. New E2 to Horizon 115 kV line.

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned In Service Date:** May 2020

**Project Description:** As part of Phase 1 of the east side loop, this project will add a new 4.3 mile, 954 ACSR transmission line west from E2 to Horizon.

**Project Justification:** This line addition is part of phase 1 of the east side loop which helps in deferring the need to re-conductor five transmission lines that were scheduled for earlier years in the 2010 10-year plan and will lay the foundation for serving future load growth on the east side of El Paso. In addition, the east side loop expansion provides alternate flow paths from the new Montana generating station, allowing up to 400 MW of generation to be located at that substation. This line and the proposed line from E2 to E1 will have to be constructed first in order to re-conductor the line segment from Coyote to E1.
EAST SIDE LOOP
2020 PHASE 1

Note: Before the COYOTE - E1 115 line segment can be reconductored to 954 ACSR, the lower portion of the loop must be constructed in order to provide a path to feed Dell City.
Year 2021
Eastside Loop Phase II

- The following pages describe phase two of the eastside expansion loop designed to serve future growth in the El Paso area.

- A basic diagram illustrating new substations, new transmission lines, and line upgrades is included after the last description of the 2021 Eastside Loop Phase projects.
<table>
<thead>
<tr>
<th><strong>Project Name:</strong></th>
<th>East side loop expansion, phase 2. New line from E2 to Felipe substation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Voltage:</strong></td>
<td>115 kV</td>
</tr>
<tr>
<td><strong>Project Number:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Project Cost:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>In Service Date:</strong></td>
<td>May 2021</td>
</tr>
<tr>
<td><strong>Project Description:</strong></td>
<td>This project will add a new 12 mile, 954 ACSR line from E2 to Felipe.</td>
</tr>
<tr>
<td><strong>Project Justification:</strong></td>
<td>The addition of this line begins phase 2 of the east side loop expansion and helps in deferring the need to re-conductor five transmission lines that were scheduled for earlier years in the 2010 10-year plan. It will help lay the foundation for serving future load growth on the east side of El Paso. In addition, the east side loop expansion provides alternate flow paths from the new Montana generating station, allowing up to 400 MW of generation to be located at that substation.</td>
</tr>
</tbody>
</table>
Project Name: East side loop expansion. Upgrade Sparks to Felipe 69 kV to 115 kV and re-conductor to 954 ACSR wire

Operating Voltage: 115 kV

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 wire.

Project Justification: The upgrade of this line begins phase 2 of the east side loop expansion and helps in deferring the need to re-conductor five transmission lines that were scheduled for earlier years in the 2010 10-year plan. It will help lay the foundation for serving future load growth on the east side of El Paso. In addition, the east side loop expansion provides alternate flow paths from the new Montana generating station, allowing up to 400 MW of generation to be located at that substation.
Project Name: East side loop expansion. Move Sparks 115/69 kV autotransformer to Felipe. Add 115 kV bus to Felipe.

Operating Voltage: 115 kV

Project Number:

Project Cost:

In Service Date: May 2021

Project Description: This project will move the Sparks autotransformer to a new Felipe 115 kV bus.

Project Justification: This will complete the phase 2 east side loop expansion which helps in deferring the need to re-conductor five transmission lines that were scheduled for earlier years in the 2010 10-year plan. It will also help lay the foundation for serving future load growth on the east side of El Paso. In addition, the east side loop expansion provides alternate flow paths from the new Montana generating station.
EAST SIDE LOOP
2021 PHASE 2

12200 LINE
(2020)
to PELLICANO

E2 Substation
(2020)
to E1 Substation (2020)

NEW 115 kV LINE
954 ACSR
Approx. 4.3 Miles
(2020)

12400 LINE
(2020)
to SPARKS

115 kV

12400 LINE
(2021)
to HORIZON

NEW 115 kV LINE
954 ACSR
Approx. 12 Miles
(2021)

115/69 kV Autotransformer moved from Sparks to Felipe

Line to be converted from 69 kV to 115 kV
(2021)

115 kV / 69 kV

To be upgraded from 336 ACSR to 954 ACSR
(2021)

12300 LINE
(2021)
to WRANGLER

12400 LINE
(2021)
to HORIZON

FELIPE 115

FELIPE 69

6800 LINE
to ALAMO

5100 LINE to FABENS

HORIZON

SPARKS

FELIPE 115

6800 LINE

5100 LINE to FABENS
Year 2022
**Project Name:** Afton North - Vado 115 kV Transmission Line Addition

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**In Service Date:** May 2022

**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.

**Project Justification:** The purpose of this transmission line is to improve reliability to Las Cruces and West El Paso area by connecting Vado to Afton North which is connected to EPE’s 345kV grid. This connection will also reduce losses in the system as generation from the 345kV system will have a shorter path to Las Cruces and west El Paso loads. In addition, this project will help increase El Paso Import Capability (EPIC) by approximately 80 to 120 MW, potentially deferring the addition of one new local generator.
Project Name: NEWMAN EAST 345 kV to NEWMAN 345 kV transmission lines

Operating Voltage: 345 kV

Project Justification: This project is part of the EPE generation expansion program which includes two new 1 x 1 combine cycle generator additions (640 MW total) 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.
Year 2023
NEWMAN EAST POWER STATION

COMBINED CYCLE UNIT (NEWMAN6)

2023

* Four New 115 kV Transmission Lines from Newman East Power Station to Newman Power Station
* Turnkey combined cycle generation unit, Newman 6

NEWMAN EAST POWER STATION (EPC-1)

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

**YEAR 2023**

<table>
<thead>
<tr>
<th><strong>Project Name:</strong></th>
<th>Vado to Salopek 115kV Line Upgrade (Re-conductor)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Voltage:</strong></td>
<td>115 kV</td>
</tr>
<tr>
<td><strong>Project Number:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Project Cost:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Planned In Service Date:</strong></td>
<td>May 2023</td>
</tr>
<tr>
<td><strong>Project Description:</strong></td>
<td>This project requires the re-conductoring of approximately 9 miles of line to increase the capacity of the line to a minimum of 345 MVA under normal conditions and 464 MVA for its emergency rating.</td>
</tr>
<tr>
<td><strong>Project Justification:</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>
**Project Name:** Tap In and-Out to Vado 115 kV substation from Arroyo- Anthony 115 kV Transmission Line.

**Operating Voltage:** 115 kV

**Project Number:**

**Project Cost:**

**Planned In Service Date:** May 2023

**Project Description:** EPE has a 115 kV transmission line from Arroyo to Anthony substation and it runs near the Vado substation. The plan is to cut this line and connected in and out to Vado substation 115kV ring bus.

**Project Justification:** This project will result in two transmission lines serving the Las Cruces area from Vado substation to enhance the reliability and flexibility of the system for operational and maintenance purposes.
CK3 LINE FROM VADO 115 TO ANTHONY 115
(Part of Tap In-and-out from Anthony to Arroyo 115)
LINE FROM VADO 115 TO ARROYO 115
(Part of Tap In-and-out from Anthony to Arroyo 115)
NEW CK2 LINE FROM VADO 115 TO SALOPEK 115

NEW 224 MVA AUTOTRANSFORMER (2019)
115/345 kV

AFTON NORTH 345 kV LINE TO LUNA
AFTON NORTH 345 kV LINE TO NEWMAN
AFTON NORTH 345 kV LINE TO AFTON

NEW 115 kV LINE TO AIRPORT (2019)

AFTON NORTH 115 kV LINE TO VADO 115 kV (2022)

VADO 115 KV SUBSTATION

NOTE: FOR ILLUSTRATION PURPOSES ONLY. FINAL DESIGN WILL BE COMPLETED BY TRANSMISSION LINE DESIGN AND SR ENGINEERING
Year 2024
Project Name: Vado to Anthony 115kV Line Upgrade (Re-conductor)

Operating Voltage: 115 kV

Project Number:

Project Cost:

Planned In Service Date: May 2024

Project Description: This project requires the re-conductoring of approximately 8 miles of line to increase the capacity of the line to a minimum of 345 MVA under normal conditions and 464 MVA for its emergency rating.

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.
Year 2025
Tap In and-Out to Picante 345 kV substation from Caliente-Amrad 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 2025

EPE has a 345 kV transmission line from Afton to Newman substation and it runs adjacent to Vado substation. The plan is to cut this line and connect it in and out to Vado substation 345kV ring bus. It will be necessary to add a 345kV ring bus and a new 345/115 kV 224 MVA autotransformer to connect to the Vado 115kV system.

The purpose of this transmission line is to improve reliability to Las Cruces and West El Paso area by connecting Vado to Afton North which is connected to EPE’s 345kV grid. This connection will also reduce losses in the system as generation from the 345kV system will have a shorter path to Las Cruces and west El Paso loads. In addition, this project will help increase El Paso Import Capability (EPIC) by approximately 80 to 120 MW, potentially deferring the addition of one new local generator.

This project will result in two parallel transmission lines from Picante to Caliente providing more reliability to Caliente and Picante substations as well as to the line from Picante to Amrad. Furthermore, the new configuration will increase the flexibility to do maintenance on those transmission lines.
Year 2026
No specific new transmission facilities are called for in this Plan year.
Year 2027
No specific new transmission facilities are called for in this Plan year.