



Tucson Electric Power

Midtown Reliability Project

Responses to Stakeholder Questions Submitted at November 2023 Open House

Underground Costs

- 1. You refer to “aging assets” – some infrastructure less than 60 years old. You also refer to a 200% increase in demand over 40 years. Why has TEP not addressed this 10 or 20 years ago when costs were much lower? Do you think that the lack of innovation with regard to putting transmission lines underground is in large part due to corporate resistance to moving to completely underground electric infrastructure?**

TEP has upgraded many elements of our local energy grid over the past 10 to 20 years at a pace designed to maintain reliability and control costs while preparing for future needs. The success of these efforts is reflected in our ranking in the top quartile of all electric utilities across the country for service reliability, with metrics that reflect 99.99 percent reliability. The transmission line upgrade included in this project would have been completed in 2023 but was delayed in an attempt to addressing stakeholder concerns. That delay has exacerbated the need for the upgrade to maintain system reliability in central Tucson.

Installing transmission lines underground is much more expensive than building them above ground. The cost difference varies significantly by project but increases dramatically with higher voltages, which explains why many lower voltage lines are installed underground while higher-voltage transmission lines are not.

The higher construction cost typically reflects civil engineering expenses, right-of-way acquisition, additional labor, and materials such as conduit, insulated wire and pull-boxes that are not required for overhead projects. Transmission lines conduct energy flows at higher amperages than distribution cables, generating far more excess heat that must be managed to avoid overloads. This requires the use of higher-cost conductors and other insulating infrastructure.

Underground lines also have higher maintenance costs and require more time for repairs. Underground transmission lines typically have comparable performance and shorter lifespans when compared with overhead systems.

- 2. Why not go underground and pass the costs to the consumer? You can surcharge to residents in the areas that are affected.**

TEP cannot charge different rates in different parts of town unless this were to be approved by the Arizona Corporation Commission (ACC), which we consider to be unlikely. In October 2023, the Arizona Corporation Commission approved a policy statement instructing regulated utilities like TEP to avoid underground installation. A portion of the statement says: *"As a general matter, utilities under the Commission's jurisdiction should avoid incurring these higher costs unless underground installation of a transmission line is necessary for reliability or safety purposes or to satisfy other prudent operational needs."*

TEP can work with property owners who wish to create an improvement district to fund underground installation of facilities in their area. Arizona state law (ARS 48-620) provides for the creation of an underground utility improvement district that can allow nearby property owners to pay the additional cost of installing facilities below ground. While such districts have been used to fund the underground installation of distribution lines, the extremely high cost of installing higher-voltage lines below ground makes this option less realistic for transmission line projects.

- 3. Your marketing materials state that this project will lower costs and improve efficiency. Why can't these savings be used to offset the cost of undergrounding in sensitive areas? It seems TEP wants it both ways – build lines the cheapest way possible now then benefit from efficiency savings later.**

The savings realized through cost-effective development of utility infrastructure benefit customers, not TEP, as they result in lower rates. This project will provide greater capacity and reliability at a cost comparable to simply maintaining the aging, capacity-constrained system in place now. The project will also allow us to remove eight 46-kV substations and up to 19 miles of 46-kV overhead lines.

As described on our [project webpage](#) and in other project communications, overhead installation and maintenance cost significantly less than undergrounding. Please see questions 1 and 2. Building the line underground between our Kino Substation and the proposed Vine substation would add about \$80 million to the cost of the project, currently estimated at about \$52 million for overhead installation of the entire transmission line and construction of Vine Substation.

4. If U of A and Banner were not here, we would not be here tonight. Again, why don't they shoulder cost?

The Midtown Reliability Project will support electric reliability throughout a study area that includes 36,936 residential customers and 6,834 business customers in 62 neighborhoods – all served by eight aging 46-kilovolt (kV) substations. Six of these eight 46-kV substations do not provide service to the University of Arizona or Banner. Another only provides partial service. They *all* face overload conditions and reliability concerns due to higher energy demands and aging equipment in need of replacement.

Ultimately, higher energy users will end up paying a larger share of project costs than other customers in the study area through higher electric bills. All customers pay rates that reflect a cost allocation approved by the Arizona Corporation Commission.

5. U of A and Banner are the major users. Why don't they (or in case of U of A) go to state legislators for funding? There was a \$250 million surplus in state coffers.

Please see the response to question 4.

Substation

6. Can we have a map of the capacity of each substation in use now that serve this area with U of A?

Please visit our project webpage to view an interactive map, which includes a layer representing capacity constraints on our existing 46-kV system.

7. Can we see a map that also shows the 10-year plan buildout which includes future substations and lines and loops?

TEP's [Ten Year Plan Transmission Projects for years 2023-2032](#) includes maps that describe existing and planned transmission infrastructure.

8. Could TEP use ~95k existing substations and upgrade existing lines to ~95k instead of jumping from 46k to 138k?

No. Our local energy grid is designed to accommodate sub-transmission facilities at 46 kilovolts (kV) and transmission facilities at 138, 230, 345 and 500 kV. The project would replace 46-kV facilities.

A sub-transmission line and other equipment operating at 95 kV would be incompatible with our local energy grid. Any attempt to install such a system would include higher costs, lower energy capacity and significant technical challenges.

Poles

9. How many poles per mile? Can they be painted like the ones on Sabino Canyon Road near Udall Park?

The number of poles required will vary depending on the final route. In an urban environment, one mile of a 138-kV overhead line might require 6 to 10 poles.

TEP no longer uses painted poles. Although poles can be painted, the paint tends to fade and crack over time, losing its aesthetic appeal. Maintaining the paint requires additional cost and effort that could otherwise be allocated to system reliability or safety concerns.

In late August, TEP invited more than 55,000 stakeholders to participate in a project survey. Based on responses from nearly 2,800 participants, most respondents prefer poles with a 'rusted' weathering steel finish, which TEP typically uses throughout its service territory, rather than poles with a galvanized metallic finish.

- 10. Was it always an option to have more small poles vs fewer larger poles? Does Banner Hospital have concerns regarding the placement of poles along the ring road and if so, is this why an additional option to run poles in the alleyway between Lester and Linden?**

TEP typically installs taller poles because they're sturdier and fewer are required, resulting in lower cost, less required maintenance, and a smaller disturbance footprint. Taller poles also lift lines above the line of sight for viewers focused on buildings, roads, natural features and other ground level sights.

The alleyway between Lester and Linden is under consideration as a preliminary segment because a 46-kV line is installed there. Segments with 46-kV lines and other major linear infrastructure are considered to be siting opportunities.

- 11. Have you looked into other ways to make the infrastructure less notable, such as using specific paint like go away green?**

Please see question 9.

Segments

- 12. Can you show the preliminary segment and segment points on the screen? Aren't the segments the more likely route?**

During the entire planning and line siting process, TEP will evaluate hundreds of segments that could be combined in various ways to form potential routes. At this time, TEP continues to evaluate these segments, and has not identified a preferred route.

- 13. Preliminary segment – please define – as opposed to green highlighted segment without preliminary segment.**

Preliminary segments represent specific sections between points on a map that – from an engineering perspective - could support installation of a transmission line. These preliminary segments, which are identified early in the process, do not consider stakeholder preferences, local ordinances or other considerations which may result in their elimination.

The areas highlighted in green in our earlier maps were less specific, representing areas of opportunity that required further study.

Constraints

- 14. I fully understand the U of A and Banner need for increased capacity – Kino/Campbell is a constraint route so what is the planned route? And how do you link with Vine substation?**

Please see question 4. TEP has no proposed routes at this time.

15. When a constraint is not marked, this means, in part, the neighborhood representative and analysis by TEP. Is this correct? Are there any other factors?

Our maps of opportunities and constraints represent areas that required further analysis. Please see question 12. TEP will consider multiple factors as it evaluates potential route segments.

16. Does “constraints” mean off-limits?

Not necessarily. Constraints are factors in areas or specific locations that present challenges to installation of an overhead transmission line.

17. Is there a way to get rid of route constraints? Those constraints seem to benefit only a small percentage of people. The U of A seems to benefit the most.

Please see question 16. TEP will review hundreds of segments throughout the process, and each could present opportunities, constraints or both at the same time.

Areas with higher building density like the University of Arizona main campus or downtown Tucson present technical challenges to building a transmission line.

Miscellaneous

18. What is your position on microgrids and municipal microgrids?

The term “microgrid” is often used to describe systems that do not qualify as such. Generally speaking, microgrids replicate components of the larger electric grid at a smaller scale, making them capable of operating in isolation from the local grid. This can provide greater resiliency but at a higher cost, as the utility grid leverages economies of scale to provide service at lower rates. TEP stands ready to work with customers who wish to invest in systems that support their resiliency needs in ways that are compatible with grid reliability standards and regulatory constraints.

19. How will the public input that is received be used? Will it really enter into the decision-making process? Will the data gathered be made public?

Yes, public input has already expanded the criteria TEP will use to evaluate segments and potential route options. State law requires consideration of cost, impact on sensitive plant and wildlife species, existing development plans and several other factors. Additionally, TEP will consider residential properties adjacent to potential routes, health and safety, alignment with existing utility corridors and other factors as a result of input provided by residents and other stakeholders.

TEP will share all public comments received during the planning and siting process with the Arizona Power Plant and Transmission Line Siting Committee and the Arizona Corporation Commission, the regulatory entities that must review and approve a route for TEP’s transmissions before construction can begin.

20. Has TEP looked at all flight patterns for snowbird operation at DM?

TEP has notified Davis-Monthan officials about this project and the Irvington to East Loop Transmission Project, a 138-kV transmission line under construction and nearing completion adjacent to the base.

21. Considering the old infrastructure will be torn down, what is the plan to ensure the communities will not be exposed to harmful/toxic chemicals during the demolition process?

Public safety is a crucial consideration for all TEP operations. All demolition will closely adhere to all applicable laws, environmental requirements and safety procedures designed to protect the public while minimizing any inconvenience to nearby residents.

22. How often does the 138kV system go down?

The steel 138-kilovolt (kV) poles proposed for use in this project are strong, reliable, and capable of withstanding extreme weather and other conditions. None of TEP's steel 138-kV poles have been felled by storms, traffic collisions or other emergencies in the last 10 years. Many of the more than 200 poles damaged in summer 2023 by storms were wooden 46-kV poles.

23. What is RFI? How are you presenting this information to the public that can be understood at any level of knowledge and language barriers? Will the public get a vote on how much they are willing to agree on price rises?

"RFI" is an acronym for radio frequency interference, or unwanted interruption of television, radio or other telecommunication signals. TEP must consider and mitigate potential RFI conditions when evaluating potential transmission line routes. We strive to provide complete and transparent project communications. Throughout the process and as you have in this case, customers and other stakeholders should always feel free to reach out to us with their questions.

TEP does not set the rates paid by its customers. Our rates and pricing plans are based on the cost of service provided to customers. They must be reviewed and approved by the Arizona Corporation Commission in a public process that provides opportunities for public input before incorporation into customer bills.

24. Can the neighborhood reps meeting be recorded and posted online?

Although all neighborhoods within the study area are invited to participate in the advisory group, meetings are designed to be small in order to encourage discussion among neighborhood representatives. Some seating is available for residents to attend and observe the meeting.