



## Tucson Electric Power

### Midtown Reliability Project

Stakeholder FAQs Submitted at Sept. 21, 2023 Open House

## Reliability and Energy Use

**1. You said there is heavy damage to the lines in monsoon season – will the steel poles lower the damage and length of outages?**

Yes, the steel 138-kilovolt (kV) poles proposed for use in this project will help maintain reliability. They are well equipped to withstand extreme weather and other conditions. Anecdotally speaking, no 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 this summer by storms were wooden 46 kV poles.

**2. You said demand is increasing. How much of that increased midtown demand is due to residential use verses UofA or Banner Hospital demand increasing? It's just odd that per capita water use in Tucson is not increasing but electricity is? Why?**

Tucson's peak energy needs have more than tripled since 1975, and TEP customers set new energy demand records in both 2020 and 2021. Although TEP [offers a variety of energy efficiency programs](#) for both residential and commercial customers, and despite a significant increase in the number of customers who installed their own rooftop solar systems, peak energy demand has continued to increase due to a growing population, the replacement of swamp coolers with air conditioning systems, greater use of electronics and other factors.

This mirrors national trends. For example, according to the [U.S. Energy Information Administration](#), the percentage of homes with central air conditioning in the United States more than doubled to 64 percent in 2015 from 27 percent in 1980.

Based on a review of energy usage in zip codes that encompass the project study area, the number of residential customers increased by about 7 percent from 2007 to 2020. During this time, the energy delivered by TEP to residential customers increased by more than 11 percent.

**3. Why did you let your 46kV system become so poor to very poor?**

TEP continually inspects and performs maintenance on equipment for both safety and reliability reasons. However, all systems and equipment have a finite if indefinite useful life. At least some of this 46-kV equipment would have been retired and replaced by 138-kV equipment already if our previous 138-kV upgrade project wasn't delayed. We believe upgrading to a 138-kV system, instead of like-for-like replacements of 46-kV equipment, is the best, most cost-effective solution for meeting customers' current and long-term energy needs.

**4. So the equipment was good and then it went down to poor or very poor in three years?**

TEP first proposed 138-kV upgrades for central Tucson in 2019. At that time, our 46-kV system was already in need of replacement. Please see question 3. Although TEP continually inspects and repairs systems to maintain safe operations, the delay in our previous upgrade project provided more time for our 46-kV system to degrade.

As we did then, we believe upgrading to a higher-capacity system with similar costs provides greater reliability and long-term value for our community.

**5. Why so many outages – inadequate preparation – metal poles?**

TEP has provided top-tier service to customers over the last 10 years, [ranking among the most reliable electric service providers in the country](#). Many of the outages experienced by customers this summer involved wooden 46-kV poles damaged by storms. Please see question 1.

**6. What are your plans for new energy systems – modern and environmentally friendly?**

About 27 percent of the energy serving customers in 2022 was generated by wind and solar resources, including large, efficient community-scale systems and the customer-owned systems we support every day. We're working to add more renewable systems to our energy portfolio while pursuing a goal to reduce carbon emissions 80 percent by 2035. For more information about our Integrated Resource Plan (IRP), which describes how we plan to provide service over the next 15 years, please visit [tep.com/2023-irp](http://tep.com/2023-irp).

**7. Will this reliability project assist with bringing renewable energy from the edge of town to the center of town?**

New transmission facilities will provide TEP with a more reliable system for transmission of energy from our increasingly cleaner generating resources into central Tucson. The related distribution system upgrades will also provide greater capacity, supporting customers' efforts to add more rooftop solar panels, private battery storage systems and electric vehicles.

**8. TEP/UNS's parent Fortis, Inc. is primarily a transmission corporation. TEP represents 95% of Fortis' fossil fuel generation. TEP wishes to transition to all renewables by 2030. How does TEP plan to replace generating capacity without homeowners buying solar panels and storage batteries? Is TEP not causing higher frequency of power shortages? There simply isn't enough solar or windmills commercially?**

TEP is working to add more renewable systems to our energy portfolio while pursuing a goal to reduce carbon emissions 80 percent by 2035. Please see question 6.

About 45,000 homes and businesses – approximately 10 percent of our customers – have their own rooftop systems. TEP had a record year in 2022, interconnecting with more than 7,500 customers who installed their own systems. However, fewer than 1,000 customers have installed their own battery systems. We expect customers will continue to explore the benefits of investing in their own energy systems. However, this project is designed to support safe reliable service for all customers.

Please see questions 5-7.

**9. It appears that TEP could reduce the load on the inner-city grid by working with the City and County on power agreement (i.e. the UA Power Agreement) that stress the use of green energy. This might preclude the need for the "Reliability Project". What is TEP doing to move forward on these important agreements?**

We're proud to work with the City of Tucson to help it achieve its clean energy goals while we work toward providing cleaner, less carbon-intensive energy for our entire community. TEP provides service to the city at more than 2,000 locations ranging from office buildings to water wells, adding complexity that would need to be addressed in any such agreement.

Robust transmission and distribution facilities, however, are still required to serve the 36,936 residents, 6,834 business customers and other customers within the project study area, where not all customers can afford to invest in their own energy systems. Clean energy supply agreements would not reduce our need for the Midtown Reliability Project.

**10. Why ask City for money? Regulated by State AZ PUC, get state and federal money for renewable resources.**

Proposition 412 offered an opportunity for all TEP customers in the City of Tucson to fund underground construction of a portion of this project, but voters rejected the proposal in May 2023. Since investments in our local energy grid can impact customer bills, we look for reliable, cost-effective options.

## Underground Installation

**11. Why doesn't Univ of AZ and Banner Medical cover part of the underground installation cost? They are the biggest users of power by far.**

Tucson's peak energy needs have more than tripled since 1975, and customers throughout TEP's service territory set new peak energy demand records in both 2020 and 2021. This is true for both residential and commercial customers.

Six of the eight 46-kV substations that will be replaced by the Midtown Reliability Project do not serve the University of Arizona or Banner Medical, yet they face overload conditions and reliability concerns due to higher energy demands and aging equipment in need of replacement. Please see question 2.

- 12. TEP just received an 11.5% rate increase. Undergrounding would be a minor percent of this rate increase over the life of the project: ~2/100<sup>th</sup>. Why not recover the undergrounding cost in this manner? ACC policy can be changed to allow this. If not, then Banner and University, the major increased power users, should pay for the undergrounding.**

Please see questions 2 and 11. It costs much more to build a transmission line underground, and doing so also increases maintenance costs. Because our costs are passed along to customers, TEP avoids unnecessary expenditures to help keep our rates as affordable as possible.

Additionally, 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 Commissions 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."*

- 13. Currently, 138kV poles and lines run the perimeter of the city. You are now suggesting to run them through the center of the city, ignoring undergrounding and the UofA area plan that calls for that. How do you justify that? Why not move the substation to a more industrial area, then run distribution lines, which could be undergrounded at lower cost into the neighborhoods? Although there is not yet a route, if the substation remains in the same spot, then conceivably, there will be lines right next to residences. What about the rights of those property owners?**

The location for the proposed Vine Substation was selected for several reasons. It's efficiently located in the middle of the area where it will serve customers. Although finding a suitable parcel of adequate size in the area was a challenge, this site is large enough to accommodate the substation.

Moving the substation further away from the area would require longer transmission lines, decreasing efficiency and increasing the size of the study area. Distribution lines can't provide adequate capacity to meet customers' energy needs.

Our outreach efforts are intended to find the most suitable locations for these facilities, including the lines that interconnect with the substation. We'll continue working to minimize impacts to area residents, who will be served by these new facilities.

- 14. The establishment of the "Gateway" status along Kino/Campbell was largely for the benefit of the University and its S. Kino developments. Have you asked them to subsidize undergrounding along with Banner? They appear to be the biggest beneficiaries of the project. Have you considered the value of increasing public ill-will towards TEP over this project?**

Please see questions 2, 11 and 12. The project is designed to improve transmission and distribution facilities that serve customers throughout the entire study area, including nearly 37,000 residential customers in more than 60 midtown Tucson neighborhoods. Our goal is to provide all customers within the study area with more reliable service while considering potential cost impacts and other factors.

- 15. Cost to underground is \$90M vs \$52M to overhead. TEP's 2022 profit was \$217 million, representing an 8% increase from 2021. TEP could pay for the additional \$38 million simply by not increasing profit for the next 2 years. Why is TEP not willing to do this? Seems like corporate greed.**

Underground installation would add an estimated \$80 million to the project cost.

TEP's returns are considerably lower than the level of investment needed to support safe, reliable service and our ongoing transition to cleaner, less carbon intensive resources. For example, the 250-megawatt Oso Grande Wind Farm that started producing clean energy for customers in 2021 cost approximately \$370 million.

We anticipate investments of more than \$3 billion from 2023 through 2028. The capital required for those improvements would not be available to us if we did not seek recovery of and return on those investments.

Because our costs are passed along to customers, TEP avoids unnecessary expenditures to help keep rates as affordable as possible. Underground installation would add significant and unnecessary additional cost that would be passed along to customers for aesthetics – not safety or reliability reasons.

These additional and unnecessary costs would be magnified as underground installation was considered for other transmission line projects. TEP, which anticipates the Midtown Reliability Project transmission line will stretch 7-8 miles, has about 500 miles of transmission lines in and around the metropolitan area alone.

Please see question 12.

**16. Will you consider underground only in dense areas – for example, Broadway to Vine only?**

Please see question 12. We are not considering underground installation due to significantly higher installation and maintenance costs, shorter lifespan and other factors.

**17. Why no underground? Cost is negligible 2/100<sup>th</sup> of the most current rate increase .20 per month. Does corporation commission live near the lines?**

Please see question 12.

**18. How does TEP justify above ground lines after proposing going underground along Sam Hughes? For Proposition 412, hasn't the genie already been let out of the bottle?**

Please see questions 10 and 16.

**19. How can you call undergrounding unnecessary when the city's rules call for undergrounding?**

While the City of Tucson has determined that – with some exceptions – new utilities must be installed underground in Gateway Corridors, such restrictions do not apply outside of these corridors.

These new facilities are urgently needed to maintain reliable service for customers. We continue with our efforts to find the most promising route options, which may include overhead construction outside of Gateway Corridors.

**20. Banner and the University of Arizona are major power users. Why are they not asked to pay for their fair share in undergrounding?**

Please see question 11. The rates paid by commercial and residential customers alike are based on the cost of providing service to them, which includes investment in equipment and energy systems that provide service to those customers every day.

**21. We have been hearing about the needs of TEP to move more energy through the city for three years. The undergrounding committee and our lawyer have been discussing the need to underground for all of this time. Why didn't you bring your lawyers to discuss why you think you can circumvent the rules of the City of Tucson?**

This project is designed to serve the energy needs of residents and commercial customers throughout central Tucson. This is an important discussion and we want to provide all stakeholders with opportunities to understand the need for this very important project. That's why we've invited more than 100,000 stakeholders to our open houses and invited more than 55,000 stakeholders to participate in a project survey. We also continue working closely with the city to ensure we adhere to all City of Tucson zoning requirements.

**22. Is TEP willing to negotiate with stakeholders to come up with a better proposal to pay to underground the lines?**

TEP would be willing to work with property owners to create an improvement district to fund underground installation. 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.

**23. How deep and how much per mile would it cost to put 138kV line underground?**

Cost will vary depending on the route, which has not been determined. Please see question 12 for additional cost information. The depth of the cables can vary widely. Arizona has adopted National Electric Safety Code standards that require underground facilities to be installed at a depth that ensure public safety. Designers must also consider how depth can impact operation of the line, which is susceptible to malfunction or damage due to heat buildup. Existing underground utilities, natural or cultural resources and other factors can affect the depth and configuration of underground lines.

**24. Since California and Colorado have been able to have underground transmission lines, why are these lines not going to be underground?**

Please see question 12. With rare exceptions, these underground installation initiatives involve lower-voltage distribution lines, not transmission lines. In some cases, the need for wildfire risk mitigation has been cited as justification for incurring the high cost of undergrounding transmission lines. That would not apply to lines developed in urban areas, such as the Midtown Reliability Project.

## Poles

**25. In November when you share potential routes, please include how many poles on routes will be removed and how many added. Thank you.**

In November, TEP will share preliminary segments. Preliminary segments are not routes, but simply rough alignments to consider where construction of a transmission line may be possible. Although we will strive to provide as much information as possible, it is difficult to provide a specific number of poles without a final design, which cannot be completed until a route has been determined.

**26. What will be done to prevent vandalism such as gunfire and drones? Also, the risk of helicopters falling near Banner. Will there be larger poles adjacent to the substations?**

Please see question 1. The majority of the 138-kV poles are about 75 feet tall. The exact height of each one will depend on its location and if it is required to bear heavier equipment or greater line tension. We will continue to coordinate with local officials about any safety concerns.

**27. What is the height of the poles recently erected along Grant Road between Country Club and Swan?**

Those poles stand approximately 70-80 feet tall. Although they support a 46-kV line, they are comparable to those that will be used for the 138-kV Midtown Reliability Project.

Examples of recent 138-kV installations include:

1. 22<sup>nd</sup> Street between Alvernon and Kolb
2. 36<sup>th</sup> Street between Park and Kino Parkway
3. Kolb Road between Escalante and Valencia

## Location

**28. I am concerned that this new project will run through the middle of Jefferson Park neighborhood to get to the new Vine substation. That seems inappropriate for a residential neighborhood. What will the route be and what will it look like along that route and what health impacts?**

We appreciate hearing those concerns. TEP has no routes at this point. That's why we restarted our outreach and evaluation process - to find potential routes that are most suitable for the surrounding area.

We understand that some customers have concerns about the proximity of electrical equipment to their homes and the production of electric and magnetic fields (EMFs). But research has not found reason for such concern.

For more than 30 years, scientists and researchers from universities, national laboratories, health agencies, the World Health Organization and other groups have conducted research activities into possible health effects of EMFs. According to this large body of peer-reviewed research, there are no confirmed health risks caused by exposure to low-level EMFs. The National Cancer Institute states “Extremely low-frequency EMFs include power lines, electrical wiring, and electrical appliances such as shavers, hair dryers, and electric blankets.”

More information, please visit [tep.com/electric-and-magnetic-fields](http://tep.com/electric-and-magnetic-fields).

**29. There was mention of no tall poles on scenic entryways in Tucson. Does that mean there will be no poles run down Campbell Ave to the University area?**

TEP has no routes at this time. Please see question 28.

**30. So now I am confused. If you aren't allowed to run down Campbell by city ordinance, then how are you getting lines from south to north portions? Is the ordinance for scenic corridors pushing lines into less arterial routes?**

Please see questions 19 and 28.

**31. Is TEP ready for the lawsuits which most likely will be brought by homes which will lose value if above ground are put up through historic neighborhoods?**

We do not expect that this project will negatively impact property values. TEP's lines are located above ground throughout the study area and the entire city, and that reality is already priced into local home values, which have risen significantly in recent years. We also believe this project will help preserve property values by relieving electric reliability risks and supporting additional investments in rooftop solar arrays, battery storage systems and electric vehicles.

**32. Is the line changing where it will run? It was proposed originally run north on Kino/Campbell. If so, do we get a say in the route? When you take out poles and old substations will they fully get removed? A lot of times shorter poles are left behind when new poles are installed.**

Please see questions 19 and 28. Once the project is completed, we anticipate removing 19 miles of 46-kV lines and retiring 8 46-kV substations. Some poles could remain in place if they house telecommunications equipment as required by federal law or other equipment.

**33. Can we be assured that the transmission lines will not be going down residential streets and instead using main business thoroughfares?**

When considering where to locate a new transmission line, TEP looks for siting “opportunities” – linear corridors and other land features that are suitable for such facilities. Opportunities may include major roads, railroads, and existing utility infrastructure. We also consider existing or planned land use, vacant land, open space and natural linear features.

TEP also looks for “constraints,” or areas that present natural, manufactured, regulatory or political challenges to constructing and maintaining a transmission line.

Our current outreach efforts are centered around finding such opportunities and constraints.

**34. Will lines be guaranteed to run down main arterial roads and not quiet, historic neighborhood streets (such as Linden St.)? How often do outages in midtown actually happen? Is there truly zero chance of undergrounding through historic neighborhoods?**

Please see question 33. Regarding outages, the frequency of outages will depend on individual customer location and other factors. Please see question 5. Regarding the potential for underground installation, please see question 12.

**35. Can you commit to whatever route is taken that it includes “no residential streets only major arterial roads”?**

Please see question 33.

## Health, Appearance and Property Value

- 36. Are you asking for our opinions to appease us – how open are you to really consider the people who will be impacted? Do any of you live in this area? Anyone care about health, aesthetics and health impact on us and the decrease in property values? Our TEP bill for our XXX sq. foot home was 300-400 per month this summer in Sam Hugues. Concern about money? You have 15-20 people staff, food, drinks – here to convince us of the positives? Concern for costs? Negatives of this project? We only have heard the positives.**

We very much value the input and opinions of residents and other stakeholders throughout the study area. We are working to provide the most reliable service possible to all of our customers, especially considering recent severe weather and higher temperatures.

Please see questions 28 and 31.

You can read about some of the concerns our customers have in this document. We encourage you and others to continue sharing your thoughts about the project – positive or otherwise.

- 37. Is TEP considering the costs of the loss of aesthetics and beauty in central Tucson when you when you talk about costs to you and the community? Your profit 2022: 217 million.**

Please see questions 15, 31 and 36.

- 38. How much compensation will be provided to homeowners whose home value will be negatively impacted by above ground transmission lines?**

Please see question 31.

- 39. How can I protect myself and family from the EMFs that are emitted from my new smart meter and the likes in my house?**

Please see question 28.

- 40. G<sup>3</sup> or G cube gas is hundreds of times more safe than SF6. Why not use nitrogen, carbon dioxide or G<sup>3</sup> instead of SF6?**

Sulfur hexafluoride is a heavy, inert, nontoxic and incombustible gas with excellent electric insulating and arc-quenching capacity. It has been used extensively by electric utilities in electrical transmission systems and electrical distributing devices. Although SF6 is a potent greenhouse gas, it is used in an enclosed system that prevents the gas' escape into the atmosphere.

At this time, no reliable, commercially viable alternatives are available for high-voltage operations. Oil-filled circuit breakers are no longer an option because they are no longer manufactured. Studies suggest vacuum interrupters are not well-suited to higher voltages. Alternative gases are being studied. TEP currently is participating in a technical working group evaluating alternatives to SF6.

## Substation

- 41. For a different location for the Vine substation, why not use the abandoned theater at Grant and Campbell? The theater can be torn down with no loss sense it hasn't been used for years.**

Banner University Medical Center has purchased this parcel and has plans for development on the site. Additionally, this location is further from the center of the area that will be served by the substation, decreasing efficiency while potentially increasing impacts. Please see Question 13.

- 42. Vine substation within historic neighborhood. Why was that site chosen initially within and close to homes? SF gas not safe near homes. The vine substation is to be upgraded so why not move it?**

Please see questions 13 and 40.

- 43. Have you considered moving the Vine substation to a different location?**

Please see questions 13 and 41.

## Miscellaneous

**44. What was TEP's profits for last 4 fiscal years?**

Please see question 15.

**45. We recognize the need for upgrades, we want it done in a way that enhances, not diminishes our neighborhood. We pay a lot of money for TEP services. How can you work with us for a win/win?**

We are working very hard to communicate with stakeholders and identify areas in central Tucson that are most compatible with these urgently needed facilities. Please see question 21 for details about our outreach efforts.

In addition to crucial reliability benefits, this project will result in the removal of 19 miles of 46-kV transmission lines and 8 46-kV substations. In doing so, we avoid the need to replace 46-kV poles in poor condition with larger metal poles similar in size to 138-kV poles. Fewer power poles overall will be needed throughout the area as a result of this project.

**46. Part of our bill covers maintenance, replacement and repairs. Why hasn't the older substations? Doesn't AZ Corporation Commission require maintenance?**

We continually inspect and maintain our 46-kV facilities to provide safe, reliable service. However, several systems now require replacement due to the age of the equipment and higher energy demand. Please see question 3.

**47. Do any of your administration live along the possible above ground lines?**

Approximately 1,300 full-time TEP employees live and work in this project study area and throughout the greater metropolitan area, including areas with overhead transmission and distribution lines.

**48. What is the minimum right of way to put these very tall poles for the 138kV line?**

TEP plans to use road right-of-way for placement of most poles.

**49. Exactly what is the procedure for this to move forward? In other words, what role does the City play? What about the ACC?**

Under state law, TEP must secure a Certificate of Environmental Compatibility (CEC) approved by the Arizona Corporation Commission before it can build the proposed transmission line along an approved route.

TEP must secure a Special Exception Land Use Permit from the City of Tucson before construction of the substation can begin. TEP's previous application for this permit was denied in May 2021 by the city's Zoning Examiner, who determined it could not be issued until the transmission line route is known. TEP will seek approval of this permit once a route has been approved.

Information about these required approvals is available on our project webpage.

**50. Does any other city or part of the city have this system? If so, where?**

TEP customers are served by approximately 500 miles of 138-kV transmission lines throughout the metropolitan area. Please see question 27.

**51. How much money is this going to cost? And where are you getting the money from? I think it is going to be wonderful. Thank you for your budget plan for our home. It is just right for me.**

Although the exact cost of the new transmission line and substation cannot be calculated until a final route has been determined, we estimate it will cost approximately \$52 million to build a 7-8 mile overhead line and substation.

**52. The Palo Verde Neighborhood does not benefit from this substation but we are in the study area. Why? If we don't get direct benefit, we shouldn't bear the cost.**

Thank you for your interest in the project. The Palo Verde Neighborhood is partially located within the eastern boundary of the study area. The higher capacity of new 138-kV systems and reduced strain on remaining 46-kV



systems would help improve reliability for your neighborhood and many other neighborhoods beyond the study area that are still served by the 46-kV system.

**53. What is TEP's commitment to the quality of life in Tucson? What are you actually doing and where are you investing your time and money?**

We anticipate investments of more than \$3 billion from 2023 through 2028 in our local energy grid and systems that serve our customers. Please see question 15.

TEP's dedication to service extends beyond providing safe, reliable energy service to more than 445,000 customers over a 1,155 square mile service area. TEP's financial, in-kind and volunteer contributions have significant, measurable impact in our community. TEP is among our community's leading philanthropic funders with \$1.44 million in donations and nearly 13,000 volunteer hours donated by employees in 2022.

Our contributions are funded with company resources, not with customers' rates. We focus our philanthropic investments in four specific areas: community vitality, environmental stewardship, education and racial and social equity. For more information, please visit [tep.com/investing-in-our-community](https://tep.com/investing-in-our-community).

**54. Can you provide examples from some of your and your company's other utility companies that have done this? Show us what quality finished products look like.**

Please see questions 27 and 50.

**55. What area will be next after this midtown improvement and how does that plan impact this decision?**

TEP works continually to maintain and improve our local energy grid. Please see questions 50 and 53.

**56. What options are you considering seriously? My experience is with corporations that you are thinking about options. We'd like to know what they are.**

Our evaluation of potential routes for this project has been conducted transparently and updates are shared as they occur. We believe upgrading to a higher-capacity system for the midtown area will provide greater reliability and long-term value for our community. Our current outreach efforts are focused on finding areas in central Tucson that are most compatible with these new, urgently needed transmission facilities. Please see question 33.

**57. Why are we doing this again for the same project? We went through this whole process over the last few years, including route choices. Clearly, no one cares and the idea is to start again to avoid paying any attention to previous public input. This does not suggest that the current process is honest.**

We very much value the feedback we've received over the last four years from residents and other stakeholders. We are conducting a second round of outreach to ensure we receive updated information from stakeholders, as the need for the project remains. Please see questions 4 and 10.