

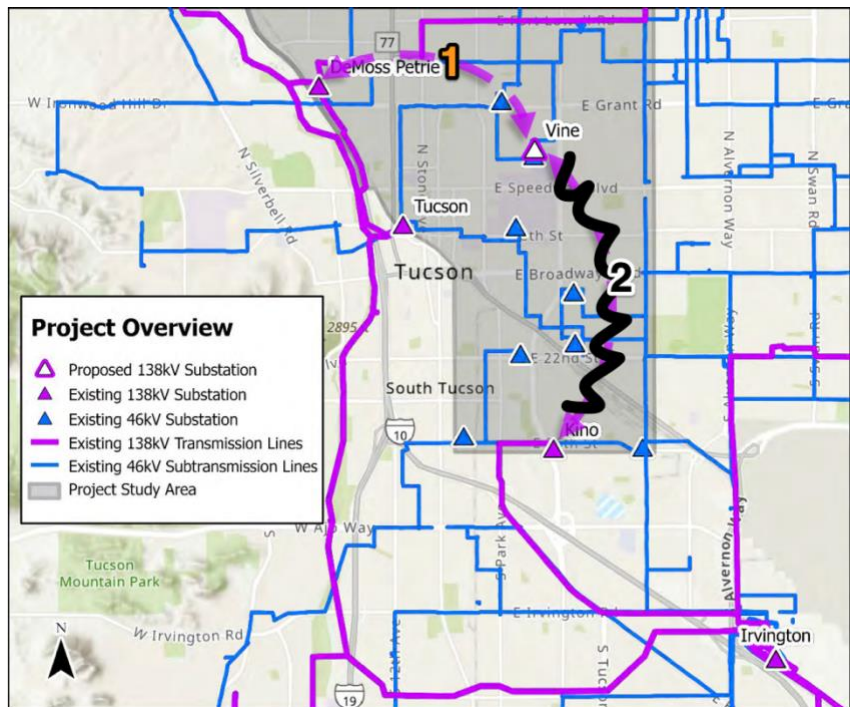
**THE HALFWAY SOLUTION:
A NEW AND BETTER PLAN ENABLING TEP TO ACHIEVE ITS
GOAL OF INCREASING CAPACITY AFFORDABLY WITH ZERO OVERHEAD
TRANSMISSION LINES IN THE MIDTOWN AREA**

By Daniel Dempsey and John E Schwarz

The Midtown Reliability Project will increase TEP’s capacity to deliver electricity to 138kV from the present 46kV. The new Kino substation at the southern end of the project is already connected to 138kV from the Irvington substation. The Demoss-Petrie substation on the northern end also is already connected to 138kV. TEP’s proposal is to link the Kino substation to Demoss-Petrie through a new Vine substation, thereby enabling TEP to increase its capacity to 138kV within the area between Kino and Demoss-Petrie.

TEP plans to construct the project overhead, which will require long strings of industrial-sized pylons approximately 100 feet high (the height of a ten-story building) carrying transmission wires for miles straight through the heart of Tucson. There are numerous reasons to avoid such an overhead project: the impact on the character and beauty of Tucson; the significant loss in property values to neighbors and businesses living along the route; the effect on historic neighborhoods; the violation of longstanding City goals and regulations; to name a few.

A very simple and affordable solution exists to avoid overhead lines in much of the midtown area, in fact the whole area from the Kino substation at 36th Street on the south all the way north to Grant Road. **We call it “the Halfway Solution.” The solution is to connect the Vine substation to Demoss-Petrie (1 in the image to the right) but to drop the connection from the Vine substation to Kino (2),** which would have cost around \$10 million to construct overhead. That \$10 million saved can be used to defray the legally-required cost to underground the remaining approximate half-mile from the Vine substation to Grant



Road (part of the University Area Plan, an adopted plan of the City)¹ and hopefully also to locate the Vine substation in a more suitable area than the middle of neighborhoods.

¹ In denying TEP’s request for rezoning the Vine substation property in May 2021, the City’s Zoning Examiner determined that TEP’s project will need to be in compliance with the University Area Plan (enacted in 1989) stipulating that new utilities within the extended area the plan covers be constructed underground wherever possible. Tucson’s Unified Development Code (UDC) specifies that the Planning and Development Services Department shall not issue permission to construct virtually anything in Tucson unless it conforms with the UDC and “all other related plans and policies adopted by the Mayor and Council.”

The obvious question is: what about the whole Kino to Vine area, how is capacity going to be increased to meet the very real demand for electricity in that area? Kino is now connected to 138kV and Vine will become connected to 138kV once connected to Demoss-Petrie, so both substations will already be connected to 138kV even were there no connection from Kino to Vine. *The line from Vine to Kino adds nothing to the capacity of either Vine or Kino.*

So why build the line? TEP's answer is that the main goal of the connection between Kino and Vine is increased resiliency. Connecting the Kino and Vine substations will create a complete link between all substations within the loop enabling electricity to flow in either direction along the lines. If any part of the 138kV were to be down and cause an outage, delivery could continue from the other direction of the loop. Improving the reliability of delivery for customers -- not the total amount of electricity that can be delivered -- is the main purpose of connecting Kino to Vine.

This answer has several problems. First, reliability for customers in the area will already improve just with the new 138kV system, without any link between Kino and Vine. TEP itself says that a 138kV system on heavy steel poles is sturdier and fails far less than does the current 46kV system on weaker wood poles, which the monsoons regularly disrupt. In fact, in defending installing the new system, *TEP claims that 138kV has not suffered a single felled pole in the past decade, which is as far back as it has researched.*

Second, according to TEP's own data, Tucson is already in the best one-quarter of the entire nation in the reliability of electricity delivery—that's so even with our current 46kV delivery system.² TEP's customers now average approximately one-hour of outage of their electricity over an entire year. Kudos to TEP! But this also means that connecting the Kino and Vine substations cannot increase reliability for customers more than very marginally over what introducing 138kV itself will produce, which requires no such link.

Thus, TEP does not need to connect the Kino and Vine substations to attain its bottom-line goal of tripling capacity for its customers from 46kV to 138kV throughout the designated area. The main purpose of the link is to increase reliability of delivery. However, only a very marginal improvement in the reliability of delivery at best, and possibly not even that, can come from linking the two substations. The possibility of that very marginal benefit is not a sufficient reason to: deface the character and beauty of Tucson, important both to its citizens and to its appeal as a place for economic development (why does the University invest so much into the beauty of its campus and buildings?); impose significant losses of property value onto many neighbors and businesses living along the route; violate historic neighborhoods; override the City's stated goals and regulations; and more.

We invite TEP and the community to unite on the Halfway Solution to avoid slow and costly conflict that will continue to delay needed capacity increases for the project area.

² <https://www.tep.com/news/teps-decade-of-reliable-service/>