Questions and Answers from March 22, 2023 Technical Conference:

Question 1: Would the circuit voltage be a more accurate measure of a customer's service?

Answer 1: Circuit voltage by itself is not an accurate measure of a customer's service. The Company uses "power quality" as an indicator of the customer's experience. There are several factors that typically affect power quality including power interruptions, over/under voltages, and to a lesser extent, flicker and transients. Both voltages (4.8kV or 13.2kV) can provide good power quality.

Question 2: What percentage of the 4.8 system has some form of banked transformer system?

Answer 2: DTEE does not have transformers categorized by banked and non-banked. A high-level estimate based on field knowledge is approximately 50% of the 4.8kV system transformers are banked but the actual number may vary.

Question 3: If the ungrounded Delta is not grounded where does the current flow that causes injury come from?

Answer 3: There is a capacitive connection to ground that creates a path for low levels of dangerous current to flow when a wire comes in contact with the ground.

Question 4: Does the equipment that operates above the day-to-day level (the level at which you are degrading asset life of the equipment) (20% for 4.8kV and 30% of 13.2kV) have any common geographic or equipment characteristics?

Answer 4: The reference in the question (20% for 4.8kV and 30% for 13.2kV) relates to circuits operating above the DTE Design Standard, not the day-to-day rating. Operating above the DTE Design Standard has no impact on the life of the equipment. The design standard limitation allows the Company to maintain capacity on the system so the Company is able to jumper load to/from adjacent circuits during an outage event.

In 2022, there were (91) circuits from (74) substations, which peaked at 100% or greater of their day-to-day ratings. This represents 4% of 4.8kV circuits and 2% of 13.2kV circuits. There are no common geographic characteristics.

Question 5: Many of the devices in the subs have exceeded their design life. When do you replace the equipment? Do you increase your inspection frequency? What criteria do you use to replace the devices?

Answer 5: DTEE has an asset health process. Age is one factor, but age in and of itself would not necessarily trigger increased inspection frequency. Factors that would trigger more frequent inspections are typically condition based inputs, examples include a negative trending dissolved gas analysis (DGA) on a power transformer or a breaker counter

exceeding an established threshold. An additional inspection would also be required, if there is a substation alarm warranting a troubleshooting type inspection.

For a more complete description of the asset health process see section 8 of DTEE's 2021 Distribution Grid Plan (DGP). The capital replacement programs, developed as a result of the asset health assessments, are described in Section 9 of the DGP.

Question 6: You said that 4.8 kV system has fewer outages but longer outage times. What is the difference in the number of outages and restoration time?

Answer 6: 2017-2021 five year-average reliability for both voltages (per slide 6 of Technical Conference presentation):

- 4.8kV All Weather SAIFI: 1.20
- 13.2kV All Weather SAIFI: 1.53
- 4.8kV All Weather SAIDI: 783
- 13.2kV All Weather SAIDI: 569

Question 7: Is there any opportunity to provide protective devices to "see" low fault currents (downed wires) closer to loads?

Answer 7: As part of the 4.8kV automation program, DTEE is installing a new device/automation that will be used to identify and isolate energized down wire using voltage instead of current. The Company's existing installed protection devices (fuses, recloser, sectionalizes, breakers) are designed to read current (load current or fault current). These installed protection devices can't differentiate between normal load and low fault current. This is because low fault current can be in the range of normal load current values (regular day to day electric use).

Question 8: Just flagging that I would be very interested to see a SAIDI/SAIDI comparison bucketing customers by circuit voltage and see how the outcome looks compared to the substation bus presented. It would also be helpful to see CAIDI for comparisons next to SAIDI/SAIFI. It's easy to calculate from them, but it helps to see it visualized when we're talking about restoration time.

Answer 8: Unfortunately, DTEE does not have this information because it does not analyze reliability data in this format as part of the Company's typical processes. This view of the data would require detailed data analysis of approximately 3,300 circuits to identify ISO transformers and determine the service voltage to customers.

Question 9: Are there any current examples of the small solar/EV already overwhelming 4.8kV circuits already (e.g. in Ann Arbor?).

Answer 9: The Company doesn't understand the intent of the word "overwhelmed". Assuming the question is looking for circuit impacts that require some type of remediation, there are not currently instances where circuits require remediation due to solar or EV adoption.

The Company has an annual planning process that evaluates total circuit loading, identifies circuits that are approaching or at capacity, and creates projects to add capacity where needed.

Several individual new developments have requested large amounts of DER or EV installations, and these are being handled on a case-by-case basis through the Method of Service and interconnection processes to design circuit upgrades.

Question 10: Is DTE projecting the impact of HVAC electrification in addition to EVs and solar on 4.8kV circuits?

Answer 10: DTEE is currently working on a forecasting tool that will allow the Company to incorporate building electrification, EV, and solar impacts at a circuit level.

Question 11: How do you plan to address the challenges in Detroit with access to wires? Working with city or the state to use imminent domain procedures?

Answer 11: Where alleys were vacated, the City of Detroit provided DTEE with a utility easement to maintain and upgrade our existing equipment. DTEE utilizes those easement rights to gain access to these locations. In addition, as the work requires, DTEE will work with individual customers to gain access to their property. Eminent domain procedures should not be required to perform the work to modernize the grid.

Further, DTEE establishes communication plans with customers, block associations and Government officials to provide clear expectations on what will occur as the grid modernization work is completed. Specific communications are sent to individual customers throughout the lifecycle of the project.

Question 12: Probably a question for another day but I am interested in O&M costs related to hardened vs non-hardened 4.8 and/or conversion.

Answer 12: The company does not conduct analysis on O&M costs of specific circuits, however data from the 4.8kV Hardening program does show a reduction in trouble event volume after work is completed, which results in a reduced O&M expense vs the non-hardened circuits.

Question 13: Looks like you are using reliability metrics to identify locations to remediate problematic plant. Are there any other criteria that you are using (e.g. disadvantaged communities)?

Answer 13: Yes, the Company does consider other criteria when identifying locations to remediate. For example, prioritization of 4.8kV Hardening circuits is based on recorded wiredowns per mile, foot traffic, SAIDI, and total outage and non-outage events. Conversion projects are prioritized based on substation and circuit loading, wiredowns per mile, and substation risk.

DTEE plans to continue to analyze reliability and investment data using the draft MiEJScreen tool, including the consideration of any updates based on the state's forthcoming release of the tool's final version. In the next Distribution Grid Plan, the company intends to update our Global Prioritization Model (used to rank potential distribution investments) in support of EJ considerations in investment decisions.

Question 14: I am surprised that one year after you have hardened the system you only have a decrease of 26% in wire down with trees trimmed and cross arms replaced. I would expect more than a 50% drop.

Answer 14: The percent reduction may vary based on factors, which is why we use a control group to calculate the comparison. Analysis has shown a 26% absolute reduction in wiredowns on circuits in the year after 4.8kV Hardening is performed. However, it shows a net 46% reduction in wiredowns when compared to circuits in the control group which degraded by 20% from their starting point. The Company considers preventing further degradation as a benefit of the 4.8kV Hardening program.

Wire down events are created from customer reports. Customers often see telecommunication or other lines down and believe them to be electric wires. Each of these customer wire down reports generate wire down events in the Company's systems and crews must go to each report to ensure public safety. Unfortunately, none of the Company's capital programs can directly reduce the amount of mistakenly called in wire downs. As such, we believe that the actual reduction in DTEE wire downs is considerably higher than the 26% shown.

Question 15: Is the list of primary and secondary factors for prioritizing hardening/conversion available?

Answer 15: Conversion projects are prioritized based on substation firm rating, circuit overloads, wire downs per overhead mile, and substation risk rating. While these criteria initially prioritize substations for conversion, many additional criteria are considered when developing and proposing a project including: adjacent substations are evaluated for inclusion, the feed for the new substation is considered, property for expanding a substation or building a new substation must be available and acquired. Prioritization and sequencing of a long-term conversion plan is an iterative process. The pace at which electrification develops is likely to impact prioritization because it will drive potential circuit and substation overloads in the future.

Prioritization of 4.8kV Hardening circuits is based on recorded wiredowns per mile, foot traffic, SAIDI, and total outage and non-outage events.

Question 16: Did the Company consider non-utility scale or owned DERs and storage as alternatives, such as customer owned DERs and storage, in the analysis of possible alternatives?

Answer 16: The Company continues to evaluate various aspects of DERs and storage as alternatives in the context of the planning and operations of the distribution grid. There are many complex issues that would need to be resolved to make non-utility DERs and storage a practical solution for distribution grid needs. The impact of DERs on the electric distribution system are unlikely to be uniform, will be location and situation specific, and would need to be evaluated on a case-by-case basis. In addition, distribution upgrades may be needed for the full benefit of DERs to be realized.

Question 17: As you harden the 4.8 kV system could you replace the wires to 13.2kV wires and connect them to the remaining 4.8kV wires so that when you do the full conversion to a 13.2kV system you don't need to go back and replace the 4.8kV sections you previously hardened?

Answer 17: Reconductoring provides benefits, smaller older wire being replaced with newer larger stronger wire, however, performing additional work would add time, complexity and costs to the 4.8kV Hardening program. The other assets (i.e., cross arms, insulators) installed in the 4.8kV Hardening program are rated for use with 13.2kV.

Question 18: The conversion plan outlined in the map here doesn't quite match what has been put forward in rate case testimony (I think, please correct me if I'm wrong). Can someone explain that discrepancy or correct me?

Answer 18: In the Technical Conference, the Company presented the complete conversion portfolio in a map including 4.8kV, 8.3kV, and CODI. The conversion map provided in the 2021 DGP (included as an exhibit in U-21297) contained only 4.8kV conversion projects. Additionally, the map shared in the Technical Conference was also updated to reflect changes in the 4.8kV conversion project list; most notably project 19 from the DGP map (Snover conversion and consolidation) was cancelled because the Company was able to transfer some load to an adjacent substation.

Question 19: Would Conversion include proactive infrastructure improvements to increase DER usage, for example 3V0 (i.e., negative-sequence voltage) protection?

Answer 19: This type of protection would be installed at a DER site to prevent an adverse condition or misoperation in specific configurations of interconnection equipment and transformers and would be considered for installation at the DER point of common coupling during the interconnection process. The reconductoring work included in a conversion project would increase DER capability by increasing the available capacity.

Question 20: Since the City of Detroit has returned the alley ownership to the homeowner how does your easement work? I assume the original easement was granted by the City.

Answer 20: DTEE was originally granted access to alleys by Detroit city permits. When alleys were vacated by the City of Detroit, they were split in half lengthwise and became property of homeowners on either side. A Public Utility easement was reserved for utilities, but City permitting oversight was lost, which led to encroachments into the utility easement from new adjoining landowners**.**

Question 21: I would love to see a cost analysis of what we are paying long-term for conversion of 13.2 kV if we choose the various options for arc-wire (AND non-arc wire 4.8kV) options (hardening, pre-conversion, etc.). This goes to the question of if I choose hardening (as we do today) am I signing up for higher long-term costs on that circuit generally?

Answer 21: There are several factors that need to be considered when determining the long-term cost benefit of conversion vs hardening vs other options. Factors include the timing of reduced event volume (aka emergent costs), reliability improvements and the value of outage reductions, and safety benefits that are not necessarily quantifiable.

In MPSC Case No. U-20162, the Company looked at several options for addressing the concerns with the arc wire connected to the 4.8kV system in the city of Detroit. The Company still believes that the immediate benefits achieved, for less tangible metrics like safety and reliability improvements, from the 4.8kV Hardening program was the most cost-effective solution.

At this time the Company is prioritizing conversion to higher voltage because of similarly less tangible benefits such as capacity. Other programs such as arc-wire only removal and 4.8kV Hardening do not address the future needs of the grid as it relates DER and EV adoption.

Question 22: Some communities have worse reliability than others. Interventions are long term and until then there is a continued impact to these customers. Is there some approach for unequal service for ratepayers paying the same rate?

Answer 22: The Company has not proposed any such approach.