ENVIRONMENTAL LAW & POLICY CENTER

July 26, 2024

Ms. Lisa Felice
Michigan Public Service Commission
7109 W. Saginaw Hwy.
P. O. Box 30221
Lansing, MI 48909

RE: MPSC Case No. U-21534

In the matter of the Application of DTE ELECTRIC COMPANY for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority

Dear Ms. Felice:

The following is attached for paperless electronic filing:

- **Direct Testimony and Exhibits of Curt Volkmann**
- **Proof of Service**

Sincerely,

Daniel Abrams
Environmental Law & Policy Center
dabrams@elpc.org
csb

c: Service List, Case No. U-21534

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of **DTE ELECTRIC COMPANY** for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority.	))))))	Case No. U-21534

DIRECT TESTIMONY OF

CURT VOLKMANN

ON BEHALF OF

THE ECOLOGY CENTER, THE ENVIRONMENTAL LAW & POLICY CENTER, UNION OF CONCERNED SCIENTISTS, AND VOTE SOLAR

July 26, 2024

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I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q: PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND CURRENT POSITION.

A: My name is Curt Volkmann. My business address is 1400 Waterview Way, Lake Geneva, Wisconsin, 53147. I am President and founder of New Energy Advisors, LLC.

Q: PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A: I have a BS in Electrical Engineering from the University of Illinois with a concentration in Electrical Power Systems. I also have an MBA from the University of California at Berkeley with a concentration in Finance. I have 40 years of experience in the utilities industry, primarily in electric transmission and distribution. My work experience includes nine years at Pacific Gas & Electric in various transmission and distribution engineering roles, and eighteen years at Accenture with several positions including Executive Director in the North American Utilities practice. Since 2015, I have worked independently and supported clients in various distribution planning and grid modernization regulatory proceedings across the United States. Ex. CEO-4 provides a statement of my qualifications and experience.

Q: HAVE YOU PREVIOUSLY TESTIFIED OR COMMENTED BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION ("COMMISSION" OR "MPSC")?

A: Yes. I have testified before the MPSC in Case No. U-17752 and contributed to comments in Case No. U-20147. I have also testified and commented before regulatory commissions in fourteen other states. Ex. CEO-5 provides a summary of my prior testimony and contributions to comments.

Q: ON WHOSE BEHALF ARE YOU SUBMITTING TESTIMONY?

A: I am submitting testimony on behalf of the Ecology Center, Environmental Law & Policy Center, Union of Concerned Scientists, and Vote Solar (collectively, the Clean Energy Organizations ("CEO")).

Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A: I provide an assessment of this rate case application of the DTE Electric Company ("DTEE" or "the Company") as it relates to distribution planning and the transformation of DTEE's distribution system.

Q: PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A: I recommend that the Commission require DTEE to:

1) Provide enhanced reporting of circuit-level reliability program results (for Tree Trimming, 4.8kV Hardening, Pole Top Maintenance and Modernization, 4.8kV Conversions, and Distribution Automation) compared to the Company's reliability improvement projections.
2) Work with Staff and interested stakeholders to design a Virtual Power Plant pilot/demonstration project for resilience and peak load reduction use-cases using a third-party aggregator, and to include the pilot/demonstration in its 2025 Distribution Grid Plan ("DGP").
3) Work with Staff and interested stakeholders to define its approach for scaling up piloted technologies and incorporating Non-wires Alternative ("NWA") solutions into its distribution planning process. DTEE should explain the approach in its next DGP.

I also request that DTEE, in rebuttal testimony, confirm that it will:

1) Provide additional information about Environmental Justice ("EJ") Community impacts in its next DGP, including how customers are benefitting from investments and confirming that these benefits are the ones the communities prioritize.

2) Conduct one or more Technical Conferences to further explain its Global Prioritization Model to Staff and stakeholders and explain how it differs from a benefit-cost analysis ("BCA").
3) Conduct one or more Technical Conferences to help Staff and stakeholders understand the Distribution Automation Prioritization Model's assumptions and calculations.
4) Expand its Reliability Model to include the impacts from Underground Residential Distribution ("URD") Replacement, Cable Replacement, Breaker Replacement, and Substation Risk projects and include the enhanced model in its next DGP.
5) Collect and incorporate actual outage data to refine the assumptions in its Reliability Model.
6) Refresh its assumptions in the Distribution Automation Prioritization Model with the actual customer interruption and outage duration impacts from automation as the data become available.
7) Expand the Company's application of its BCA methodology to its 4.8kV Conversion, Distribution Automation, Frequent Outage, Subtransmission Redesign & Rebuild, Breaker Replacement, URD Replacement, Cable Replacement, and Tree Trimming Surge programs.
8) Make necessary modifications to its outage management systems to begin incorporating actual DTEE failure data in its BCA methodology.
9) Consider partnering with Lawrence Berkeley National Lab to quantify the resilience impacts of DTEE's planned investments using the Power Outage Economics Tool, for inclusion in future BCAs.
10) Modify the BCA methodology to reflect the full revenue requirements of investments.

II. OVERVIEW

Q: PLEASE PROVIDE A BRIEF ASSESSMENT OF DTEE'S SITUATION.

A: DTEE faces a monumental task to transform its aging distribution system and to cost-effectively improve reliability. In the annual Institute of Electrical and Electronics Engineers ("IEEE") reliability benchmarking report, the Company has performed in the fourth quartile (worst) in all-weather SAIDI for six of the last seven years.[1] DTEE plans to spend $9 billion from 2024-2028[2] to rebuild, modernize, and automate 46,000 miles of electric circuits to achieve reliability that is better than industry average by 2029.[3] DTEE is projecting that its planned 2024-2028 investments will:

- Improve all-weather SAIDI from a baseline of 563 to 173 minutes per customer in 2029 (a 69% improvement).
- Improve all-weather SAIFI from a baseline of 1.37 to 0.91 interruptions per customer in 2029 (a 34% improvement).[4]

The Company estimates that this reliability improvement by 2029 will provide $15 billion of economic benefits for its customers.[5] However, investments of this magnitude will have major impacts on customer bills and affordability.

As the CEO recommended in prior proceedings, transparent grid planning to identify innovative solutions, including non-conventional but cost-effective customer-owned and third-party solutions, is critically important. As DTEE faces the daunting challenge of transforming its distribution system, transparent planning with a robust cost-

[1] Kryscynski Direct at AJK-19, Figure 2.
[2] Crozier Direct at AFC6:1–2.
[3] Crozier Direct at AFC5:7–9.
[4] WP AJK U-21534 Reliability Model, tab 'Reliability Projections', rows 12 and 17.
[5] Crozier Direct at AFC-8:14.

effectiveness framework gives the Commission, Staff and stakeholders confidence that the Company is considering and deploying the most cost-effective solutions (i.e., solutions with customer benefits exceeding customer costs).

III. DTEE's RESPONSE TO PRIOR CEO RECOMMENDATIONS

Q: HAVE THE CEO PREVIOUSLY MADE RECOMMENDATIONS ON DTEE'S DISTRIBUTION GRID PLAN?

A: Yes. In Case No. U-20147, the CEO provided comments on DTEE's 2023 Electric Distribution Grid Plan ("DGP").[6] Among other topics, we requested that DTEE:

- Provide more transparency into DTEE's planning and investment prioritization processes, including its Global Prioritization Model ("GPM").
- Develop a BCA methodology for demonstrating that the customer benefits of DTEE's planned investments exceed the customer costs.
- Provide a more robust evaluation of Conservation Voltage Reduction and Volt Var Optimization ("CVR/VVO") and consider a more aggressive deployment plan.
- Explain its NWA evaluation framework, including the cost thresholds and evaluation criteria the Company intends to employ to determine whether an NWA may be an appropriate solution for a projected grid need, as well as the solution-sourcing process DTEE will use to solicit NWA proposals from the market.
- Consider non-conventional solutions for transforming its distribution system that balance important factors such as reliability, affordability, equity, and energy justice. These may include more energy waste reduction including CVR/VVO,

[6] MPSC Case No. U-20147, Comments on DTE Electric's 2023 Electric Distribution Grid Plan Submitted by the Ecology Center, the Environmental Law & Policy Center, Union of Concerned Scientists, & Vote Solar, March 15, 2024.

utility-scale solar plus storage, microgrids, virtual power plants, and geo-targeted energy waste reduction and demand response.

Q: IN DTEE'S PREVIOUS RATE CASE, DID THE COMMISSION ADDRESS THE NEED FOR INCREASED TRANSPARENCY IN DISTRIBUTION PLANNING?

A: Yes. Its U-21297 order states:

> The Commission notes that DTE Electric presented the GPM and the DGP as the sole sources of support offered by the company for many capital expenditure programs in the distribution category. The Commission requires greater transparency into the basis for the GPM and the internal review process, as well as some explanation for the instances where the company deviated from the GPM's conclusions and sought funding for projects that were assigned a low priority. Without this additional information on how the rankings were arrived at, assessments of reasonableness and prudence are hampered and at times impossible. The Commission also expects DTE Electric to provide adequate supporting information, either in its initial rate case filing or in response to discovery, when intervenors seek basic information on the company's assertions about priority and need.[7]

Q: HOW HAS DTEE RESPONDED?

A: As I describe in my testimony, DTEE has responded well to the Commission's Order and the CEO's prior recommendations by providing increased transparency, developing a BCA methodology, increasing CVR/VVO deployment, and piloting non-conventional solutions. These are all good first steps towards meeting the Commission's expectations for greater transparency in distribution planning to support the Company's proposed investments in rate cases.

IV. DTEE HAS INCREASED TRANSPARENCY INTO ITS PLANNING PROCESS

Q: HOW HAS DTEE RESPONDED TO THE COMMISSION'S AND CEO'S REQUEST FOR INCREASED TRANSPARENCY INTO ITS PLANNING PROCESSES?

[7] MPSC Case No. U-21297 December 1, 2023 Order, p. 71.

A: In this proceeding, DTEE has fully disclosed to Staff and CEO its Global Prioritization Model, Reliability Model, and Distribution Automation ("DA") Prioritization Model. In addition to providing the models, DTEE hosted calls with the CEO to explain the models and answer our questions.[8]

A. DTEE's Global Prioritization Model (GPM)

Q: WHAT IS THE GPM?

A: The GPM is a tool DTEE uses to prioritize investments by ranking projects and programs based on the benefits the project or program delivers for a given level of investment. The Company evaluates projects across ten impact dimensions,[9] which represent project benefits, and develops a total project score based on the weighting of each impact dimension and the project cost. The GPM results serve as the initial basis for the Company's investment prioritization and highlight those projects that have the highest relative benefit and/or are most urgent.[10]

Q: HAS DTEE MODIFIED THE GPM IN RESPONSE TO THE COMMISSION'S DIRECTIVES REGARDING EQUITY?

A: Yes. The Commission ordered the Company to "fully incorporate equity considerations into its decision-making processes."[11] In response, DTEE added an "Investment in EJ Communities" impact dimension to the GPM, which reflects the percentage of customers benefiting from a project who are from EJ communities.[12]

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[8] DTEE and the CEO met virtually on April 5, April 16, May 14, May 15, June 28, July 8, and July 23, 2024.
[9] The impact dimensions are Reduce Electrical Hazards, Overload Relief, SAIDI, SAIFI, Regulatory Compliance, Major Event Risk, Capacity Relief, Investment in EJ Communities, O&M Avoidance, and Capital Avoidance.
[10] Kryscynski Direct at AJK-54:17-24.
[11] MPSC Case No. U-20836, November 18, 2022 Order, p. 459.
[12] Kryscynski Direct at AJK-60:15–16.

Q: DO YOU AGREE WITH THIS APPROACH?

A: Yes, however I encourage DTEE to provide additional information about EJ Community impacts in its next DGP, including how customers are benefitting from investments and confirming that these benefits are the ones the communities prioritize.

Q: HOW DOES DTEE USE THE GPM RESULTS?

A: The GPM helps the Company compare hundreds of vastly different types of projects and programs of different sizes. DTEE uses the GPM to identify the highest relative benefit projects that will have the greatest impact improving the grid and the overall customer experience. Investments that score highest in the GPM rankings are generally selected for the Company's distribution infrastructure strategic investment plan.[13]

Q: DOES THE GPM INCLUDE A BENEFIT-COST ANALYSIS?

A: No. The GPM compares a project's unitless benefit score to a project's cost but does not compare benefits (in dollars) to a project's cost.

Q: HOW IS THE GPM DIFFERENT FROM A BENEFIT-COST ANALYSIS?

A: The GPM helps DTEE prioritize different types of projects, while a BCA determines if customer benefits exceed customer costs for a specific project or program. A BCA will identify where (which circuits and substations) and how much of each program's spending is cost-effective (i.e., customer benefits exceed customer costs). The GPM does not identify this.

Q: WHAT IS YOUR ASSESSMENT OF THE COMPANY'S GPM?

A: First, the CEO genuinely appreciate DTEE's increased transparency and willingness to fully share the model. The GPM is complex, and I had many questions after my initial

[13] Kryscynski Direct at AJK-63:6–25.

review. DTEE hosted calls to answer questions and to help the CEO understand the methodology. I believe that the Company's application of the GPM is a reasonable approach for prioritizing DTEE's planned investments. However, as I explain later in my testimony, DTEE should expand the application of its BCA methodology to more programs to demonstrate that its planned investments are cost-effective.

Q: WHAT DO YOU RECOMMEND?

A: Because of its complexity, I recommend that DTEE conduct one or more Technical Conferences to further explain the GPM to Staff and stakeholders and how it differs from a BCA.

B. DTEE's Reliability Model

Q: WHAT IS DTEE'S RELIABILITY MODEL?

A: The Company's Reliability Model provides details of each DTEE circuit including the number of customers, overhead and underground miles, and 2017-2022 outage history. The model also calculates expected reliability improvement at a circuit level based on historical performance and the impact of planned investments on those circuits, then sums the projected performance of all circuits to provide a system level projection. The Reliability Model projects DTEE's 69% improvement in all-weather SAIDI and 34% improvement all-weather in SAIFI in 2029 that I described earlier.

Q: FROM WHICH PLANNED INVESTMENTS DOES THE COMPANY PROJECT RELIABILITY IMPROVEMENT?

A: The DTEE Reliability Model projects reliability improvements from Tree Trimming, 4.8kV Hardening, Pole Top Maintenance and Modernization ("PTMM"), 4.8kV Conversions, and Distribution Automation. The Company acknowledges that it has not

modeled other programs (URD Replacement, Cable Replacement, Breaker Replacement, Substation Risk projects) that will also reduce outage events and impact reliability.[14]

Q: HOW DOES THE MODEL CALCULATE THE RELIABILITY IMPROVEMENT PROJECTIONS FROM THESE INVESTMENTS?

A: DTEE explains that the model projects reliability performance through the following steps:

- Baseline: Calculate circuit-level baseline reliability performance.
- Program impact: Estimate impact of reliability programs.
- Degradation impact: Estimate impact of system degradation.
- Investment plan: Enter planned or expected in-service schedule for reliability programs into model.
- Calculate Ex-MED performance: Combine baseline performance with investment plan on a circuit level to project future performance.
- Calculate All-weather performance: Scale Ex-MED output to all weather output and expected ranges.[15]

Q: HOW DOES THE MODEL ESTIMATE THE IMPACT OF DTEE'S INDIVIDUAL RELIABILITY PROGRAMS?

A: DTEE's Reliability Model assumes:

- An initial 40% improvement in outage events from Tree Trimming.
- An initial 80% reduction in outage events from 4.8kV Hardening.
- An initial 90% reduction in outage events from 4.8kV Conversions.
- An initial 30% reduction in outage events from PTMM.

[14] Kryscynski Direct at AJK-73:14-16.
[15] Kryscynski Direct at AJK-70:6–17.

- Circuit-specific reductions in outage events from Distribution Automation.[16]

The model also assumes an 8% degradation in performance each year following a capital investment.[17]

Q: ARE THESE ASSUMPTIONS BASED ON ACTUAL DTEE RESULTS?

A: I understand that many of these assumptions are estimates and not based on actual DTEE results. I recommend that the Company continue to collect actual outage data to refine these assumptions.

Q: WHAT IS YOUR ASSESSMENT OF THE COMPANY'S RELIABILITY MODEL?

A: I commend the Company for disclosing this detailed circuit information and providing its projected reliability analysis. This model is the foundation of the Company's justification for its planned $9 billion of 2023-2028 capital investments, and therefore requires close scrutiny and monitoring. I understand that DTEE currently reports system-level reliability results in Case No. U-16065, but I believe the Company must report more detailed results from its individual reliability investment programs. This will allow the Commission to adjust DTEE's authorized expenditures in future proceedings if the Company is not achieving or is exceeding expected outcomes.

Q: WHAT DO YOU RECOMMEND?

A: I recommend that the Commission require DTEE to:

[16] WP AJK U-21534 Reliability Model, tab 'Benefits Walkdown & Degradation'.
[17] U-21534 MNSCDE-12.9-01 Degradation Analysis.

- Provide enhanced reporting of circuit-level reliability program results (for Tree Trimming, 4.8kV Hardening, PTMM, 4.8kV Conversions, and Distribution Automation) compared to the Company's reliability improvement projections.

I recommend that DTEE, in rebuttal testimony, confirm that it will:

- Expand the Reliability Model to include the impacts from URD Replacement, Cable Replacement, Breaker Replacement, and Substation Risk projects and include the enhanced model in its next DGP.
- Collect and incorporate actual outage data to refine the assumptions in its Reliability Model.

C. DTEE's Distribution Automation (DA) Prioritization Model

Q: WHAT IS DISTRIBUTION AUTOMATION?

A: The Company explains, "The Distribution Automation Program is primarily composed of pole top recloser deployments. Pole top reclosers . . . offer a variety of capabilities needed for distribution automation such as the ability to isolate outages into smaller sections and the ability to reroute power around damage. Reclosers installed at midpoints on a circuit will operate when a fault is detected and isolate the outage to (a) smaller area, impacting less customers. Reclosers installed at a tie point on the end of a circuit provide the ability to reconfigure circuits and reroute power around damaged sections by connecting to adjacent circuits. This device is also used to provide advanced protection capabilities, such as ground detection and isolation. . . . The pole top devices also provide circuit level SCADA monitoring and control to the System Operations Center."[18]

[18] Hartwick Direct at SMH-12:20–SMH-13:7.

Q: IS DISTRIBUTION AUTOMATION IMPORTANT FOR DTEE?

A: Yes. DA will improve ground detection and isolation, thus reducing the risk of energized downed wire on DTEE's unique ungrounded 4.8 kV delta system. DA also has the potential to be a cost-effective approach for significantly improving DTEE's reliability. As I will explain later, I recommend that DTEE apply its BCA methodology to the DA program to demonstrate cost-effectiveness.

Q: WHAT IS DTEE'S DA PRIORITIZATION MODEL?

A: The Company's DA Prioritization Model projects the circuit-level impact of DA to assist DTEE in prioritizing locations for automation investment.

Q: IS THE DA PRIORITIZATION MODEL THE SAME AS A BCA?

A; No. The model calculates benefit "points" based on reduced customer-interruptions, reduced customer-minutes interrupted, and live wire downs prevented from automation on each circuit, as well as if the circuit serves EJ or critical customers. Similar to the GPM, the model divides the benefit "points" for each circuit by the capital cost for automation to calculate a "prioritization factor." The model does not calculate the benefits (in dollars) and compare them to the costs, nor does it determine where and how much DA investment is cost-effective (i.e., customer benefits exceed customer costs).

Q: ARE THE ASSUMPTIONS FOR THE RELIABILITY IMPROVEMENT IMPACT FROM AUTOMATION BASED ON ACTUAL DTEE DATA?

A: I don't believe the assumptions are based on actual DTEE data, but rather DTEE expert opinions. In the model's tab labeled 'Assumption Sources', the source for the customer interruption impact and outage duration impact assumptions is "Confirmed in workshop with DTE Team May 18, 2023". I understand that DTEE's DA program, as currently

designed, did not begin until 2023.[19] I recommend that DTEE refresh its assumptions in the DA Prioritization Model with the actual customer interruption and outage duration impacts from automation as the actual data become available.

Q: WHAT IS YOUR ASSESSMENT OF THE DA PRIORITIZATION MODEL?

A: DTEE shared a read-only version of the model on July 9, 2024, in response to an MNSC data request.[20] I reviewed the read-only version but none of the formulas are intact, so I was unable to fully understand the model's logic and calculations.

Q: WHAT DO YOU RECOMMEND?

A: As with the GPM, DTEE's DA Prioritization Model is complex. I recommend that the Company host one or more Technical Conferences to help Staff and stakeholders understand the DA Prioritization Model's assumptions and calculations.

I also recommend that DTEE refresh its assumptions in the DA Prioritization Model with the actual customer interruption and outage duration impacts from automation as the data become available.

Finally, as I explain below, I recommend that DTEE apply its BCA methodology to its DA program to identify the circuits for which DA is cost-effective (i.e., customer benefits exceed customer costs).

[19] DTEE response to DR MNSCDE 12.8cvi.
[20] NDA CEII U-21534 MNSCDE-12.13.01 Automation Prioritization Analysis.

V. DTEE HAS DEVELOPED A BENEFIT-COST ANALYSIS METHODOLOGY

Q: HOW HAS DTEE RESPONDED TO CEO AND OTHER INTERVENOR'S REQUEST FOR A BCA METHODOLOGY?

A: DTEE engaged an external consultant to develop a BCA methodology for PTMM and Strategic Undergrounding. To calculate the benefits of an investment option, the methodology compares a "Baseline Scenario" (representing a no investment, run-to-failure scenario) with the 40-year life-cycle outcomes if the investment option is placed in service. The benefits are the avoided reactive costs,[21] avoided customer outage costs, and avoided vegetation management costs if DTEE makes the investment. The outputs of the model are the life-cycle risk-weighted present value of each investment option and the benefit-to-cost ratio ("BCR") as shown in Figure 1 below.[22]

	Baseline Scenario	Example Investment Option
Initial Investment Option Investment	**$0**	**$520,000**
Equipment Failure Reactive Cost	$325,000	$30,000
Non-Equipment Outage Reactive Cost	$125,000	$20,000
Non-Outage Trouble Reactive Cost	$25,000	$15,000
Emergent Reactive Cost Total	**$475,000**	**$65,000**
Customer Outage Cost (ICE)	**$195,000**	**$20,000**
Vegetation Management Cost	**$50,000**	**$50,000**
Total Life-Cycle Cost Excluding Initial Investment	**$720,000**	**$135,000**
Benefit (Avoided Cost)	$720,000 - $135,000 = **$585,000**	
Benefit-to-Cost Ratio for Example Investment Option	$585,000 / $520,000 = **1.125**	

Figure 1 – Example BCA Calculations[23]

[21] Reactive costs are those incurred by DTEE when responding to outages, equipment failures, or other emergencies.
[22] Exhibit A-23, Schedule M13, p. 5.
[23] *Id.*, Table 1-1.

Q: ARE THE PROJECTED EQUIPMENT FAILURE RATES IN THE PTMM BCA BASED ON ACTUAL DTEE DATA?

A: No. DTEE relied on its consultant's Weibull survivor curves[24] due to a lack of data. DTEE states, "Due to lack of historical failure data, segmented by various equipment failures as the root causes, DTEE cannot confirm whether the survivor curves assumed show higher or lower failure rates than what actually exist on the DTEE system."[25] I recommend that DTEE make the necessary modifications to its outage management system to begin collecting actual failure rate data to incorporate into its PTMM BCA.

Q: HOW DOES THE BCA QUANTIFY CUSTOMER OUTAGE COSTS?

A: The BCA uses customer outage costs calculated by the Department of Energy's Interruption Cost Estimate ("ICE") Calculator, a tool commonly used in the industry for quantifying the economic impacts of reliability improvement.

Q: ARE THERE BENEFIT TYPES NOT INCLUDED IN THE BCA?

A: The BCA model excludes benefits from improved safety and resilience.[26]

Q: COULD DTEE INCLUDE QUANTIFIABLE RESILIENCE IMPACTS?

A: Yes. Lawrence Berkeley National Laboratory ("LBNL") recently partnered with Commonwealth Edison ("ComEd") to apply its Power Outage Economics Tool ("POET") for ComEd's service territory in northern Illinois. The tool evaluates the impacts of hypothetical widespread, long-duration ("WLD") power interruption scenarios on all customer classes and evaluates the impacts of potential resilience investments. According to LBNL, "POET could be replicated in other parts of the country to estimate the costs of

[24] Weibull survivor curves project the probability of an asset surviving over time.
[25] DTEE response to DR MNSCDE 3.21.
[26] Exhibit A-23, Schedule M13, p. 5.

WLD power interruptions and the economic value of investments in power system resilience."[27] I recommend that the Company consider partnering with LBNL to apply POET to DTEE's service territory and include the benefits of improved resilience in future BCAs.

Q: WHAT COSTS ARE INCLUDED IN THE BCA METHODOLOGY?

A: The BCA methodology only includes the capital costs of the planned investments.

Q: DO YOU AGREE?

A: No. I believe the BCA should reflect the revenue requirements (including capital, lifetime O&M, financing costs, and taxes) of DTEE's planned investments. Revenue requirements reflect the full costs that customers pay for these investments, and I recommend that DTEE reflect the full revenue requirements in future BCAs.

Q: WHAT ARE THE RESULTS OF THE BCA FOR PTMM?

A: DTEE modeled the impact of PTMM on 2,242 circuits and determined that benefits exceed costs for 95% of the analyzed circuits. The circuits that have BCRs less than 1 have fewer customers and/or newer poles than the cost-effective circuits.[28]

Q: HOW DOES DTEE INTEND TO USE THESE RESULTS?

A: DTEE states, "Starting in 2025 and beyond, the (BCA) BCRs will be used during the process of selecting circuits for the PTMM program."[29]

Q: DO YOU AGREE WITH THE BCA METHODOLOGY?

A: I believe the BCA methodology is a good first step and applicable to many more of DTEE's programs (e.g., 4.8 kV Conversions, Distribution Automation, etc.). The Company can

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[27] https://eta-publications.lbl.gov/sites/default/files/puct_ice-poet_larsen_28jul2023.pdf
[28] Exhibit A-23, Schedule M13, p. 22.
[29] DTEE response to DR MNSCDE 3.8(a).

further refine the BCA methodology by incorporating actual DTEE failure data (when available), potentially incorporating resilience benefits, and including full revenue requirements.

Q: WHAT DO YOU RECOMMEND?

A: I recommend DTEE confirm, in rebuttal testimony, it will:

- Expand its application of the BCA methodology to its 4.8kV Conversion, Distribution Automation, Frequent Outage, Subtransmission Redesign & Rebuild, Breaker Replacement, URD Replacement, Cable Replacement, and Tree Trimming Surge programs.
- Make necessary modifications to its outage management systems to begin incorporating actual DTEE failure data in the BCA methodology.
- Consider partnering with LBNL to quantify the resilience impacts of DTEE's planned investments using POET, for inclusion in future BCAs.
- Modify the BCA methodology to reflect the full revenue requirements of investments.

VI. ALTERNATIVES FOR TRANSFORMING DTEE's DISTRIBUTION SYSTEM

Q: WHY ARE NON-CONVENTIONAL SOLUTIONS IMPORTANT FOR DTEE?

A: DTEE's customers are facing a $9 billion price tag between now and 2029 to transform the distribution grid using conventional grid solutions. Non-conventional solutions can potentially be more cost-effective for addressing grid needs, since many of these alternatives use customer-owned and customer-financed resources, lowering the overall cost. They can be quickly deployed and flexibly scaled to meet grid needs that may vary

over time. These non-conventional solutions can potentially offset some of DTEE's planned Reliability and System Loading capital expenditures.

Q: WHAT IS SYSTEM LOADING?

A: System loading refers to the peak amount of delivered energy relative to the rated capacity of the distribution equipment used to deliver the energy. If peak demand exceeds a component's rating, the component is overloaded.

Q: WHAT ARE DTEE'S SYSTEM LOADING EXPENDITURES?

A: DTEE explains, "In areas that have seen and continue to see steady load growth, capital investments are required to prevent (equipment) overloads. These projects are categorized as System Loading projects."[30] DTEE projects its System Loading capital expenditures to grow from $33 million in 2024 to $79 million in 2025.[31]

Q: WHAT ARE EXAMPLES OF NON-CONVENTIONAL SOLUTIONS?

A: Non-conventional solutions can include:

- **Conservation Voltage Reduction ("CVR")/Volt-Var Optimization ("VVO")** - CVR maintains customer voltage at the circuit level in the lower portion of the allowable voltage ranges, thus reducing system losses, peak demand and energy consumption. VVO manages system-wide reactive power flow to reduce losses, manage circuit level voltage, and/or optimize power factors.[32] One main advantage of CVR/VVO is that it requires no customer behavioral change to achieve significant energy and peak demand reductions.

[30] Deol Direct at SSD-81:19–21.
[31] U-21534 Capital Exhibits A-12 B5.4 DO, tab 'A-12 B5.4 Redesign', cells G149 and H149.
[32] Hartwick Direct at SMH-48:15–23.

- **Geo-targeted Energy Waste Reduction ("EWR") and Demand Response ("DR")** - Unlike conventional EWR and DR programs which provide system-wide energy reductions or load relief at the time of system peaks, geo-targeted EWR/DR programs provide energy and peak demand reductions to address local circuit or substation overloads.
- **Utility-scale Solar + Storage, and Stand-Alone Storage** - The addition or inclusion of large-scale storage alone or in a portfolio with utility-scale solar facilities (>1 MW) to address capacity, reliability, and power quality issues. New technologies such as Long Duration Energy Storage can discharge or charge for days at a time, providing new ways to support distribution system resilience.
- **Microgrids** - A group of interconnected loads and DER that acts as a single controllable entity with respect to the grid. Microgrids can connect and disconnect from the grid to operate in grid-connected or island mode. Microgrids can improve customer reliability and resilience to grid disturbances.[33] DTEE is also testing the concept of Adaptive Networked Microgrids ("ANM"), which are two or more neighboring microgrids with controls and protection that enable them to merge based on several considerations including but not limited to the locations of faults, load forecasts, weather forecasts, and DER status. These microgrids can dynamically change their boundaries through switching operations to isolate faults and improve customer reliability.[34]

[33] https://www.nrel.gov/grid/microgrids.html
[34] Hartwick Direct at SMH-75:7–12.

- **Virtual Power Plants ("VPPs")** - According to the DOE, VPPs are aggregations of customer-owned DER such as rooftop solar with behind-the meter ("BTM") batteries, electric vehicles and chargers, electric water heaters, smart buildings and their controls, and flexible commercial and industrial loads that can balance electricity demand and supply and provide utility-scale and localized grid services. VPPs enroll DER owners—including residential, commercial, and industrial electricity consumers—in a variety of participation models that offer rewards for contributing to efficient grid operations.[35]

Q: DOES DTEE HAVE EXPERIENCE WITH THESE NON-CONVENTIONAL SOLUTIONS?

A: Yes. The Company is scaling up its deployment of CVR/VVO. As shown in Figure 2 below, DTEE also has a suite of NWA pilots which are testing combinations of these technologies for various use cases. However, I believe the Company's NWA pilots primarily rely on DTEE-owned assets. The Company will gain experience with non-conventional solutions utilizing customer-owned DER with its Veridian NWA pilot.

Location	Technology	Pilot Scope and Objectives	'23-'25 Cost (M)[36]
Hancock Substation	Geo-targeted EWR	Test the effectiveness of targeted EWR programs to address substation loading; the pilot, completed in 2020, achieved 57kW of peak reduction or approximately 141% of the goal.[37]	N/A
Fisher Substation	Geo-targeted EWR/DR	Targeted deployment of DR and EWR to relieve a portion of circuit/substation overloads.	$4.7

[35] US Department of Energy, *Pathways to Commercial Liftoff: Virtual Power Plants*, September 2023, p. 2. https://liftoff.energy.gov/wp-content/uploads/2023/10/LIFTOFF_DOE_VVP_10062023_v4.pdf
[36] U-21534 Capital Exhibits A-12 B5.4 DO, tab 'A-12 B5.4 Tech'.
[37] MPSC Case No. U-20836, Pfeuffer Direct at SGP-143:4–SGP-144:5.

		Expecting an estimated 300 peak-kW reduction over the span of three years, to be completed in 2025."38	
Port Austin Substation	Utility-scale Solar + Storage	Solar + storage to address substation and circuit overloads, low voltage during periods of peak demand, and backup power during severe weather.39 Site construction and equipment installation to be completed by early 2025.	$5.1
O'Shea Solar Park	Utility-scale Solar + Storage	1 MW by 1 MWh Battery Energy Storage System ("BESS") at the O'Shea Solar Park, a DTEE owned 2 MW solar array. DTEE expects the BESS to address power quality concerns related to the intermittent nature of the installed solar generation.[40] BESS installation to be completed in late 2024.	$0.9
Port Austin Substation O'Shea Solar Park	Microgrids	DTE Electric will use DOE funding to incorporate Adaptive Networked Microgrids (ANMs) to further increase the customer benefits from the deployed assets. Between these two locations, DTEE will fully develop and test the ANM concept to identify customer benefits.[41] DTEE expects ANM pilot results in 2028.	$14.4 (net of project contributions)
Veridian	VPP	DTEE control of residential BTM customer-owned solar and storage to prevent overloads.[42]	$8.8

Figure 2 – Select DTEE NWA Pilots

[38] Hartwick Direct at SMH-59:3–SMH-60:8.
[39] Hartwick Direct at SMH-61:19–SMH-62:5.
[40] Hartwick Direct at SMH-55:7–12.
[41] Hartwick Direct at SMH-73:17–SMH-74:5.
[42] Hartwick Direct at SMH-62:24–SMH-63:20.

Q: PLEASE DESCRIBE DTEE'S EXPERIENCE WITH CVR/VVO.

A: DTEE piloted CVR/VVO on six circuits in 2020 through 2022 and achieved peak reductions of 0.9% to 1.4% and energy savings of 0.7% to 1.0%. The Company now plans to upgrade a total of 44 circuits in 2024-2025 to enable CVR/VVO. The program ($12.3 million from 2023-2025) is targeting a total peak demand reduction of up to 38 MW by 2030.[43]

Q: WHY IS DTEE FOCUSED ON MICROGRIDS?

A: The Company states, "The DOE's vision includes microgrids as a building block for the future electrical system. Microgrids provide a mechanism to bring local DER together to provide solutions for resilience and reliability by becoming their natural aggregation point. Microgrids form a unit that hosts loads and generation that can be connected or disconnected from the rest of the grid. Additionally, multiple neighboring microgrids with dynamic boundaries can form larger multi-customer dynamic microgrids."[44]

Q: WHAT DOES DTEE CONSIDER TO BE THE CUSTOMER BENEFITS OF MICROGRIDS?

A: DTEE states, "Benefits to the Company's customers include (a) greater resilience to extreme weather conditions, (b) improved reliability for everyday operations, (c) enhanced security from an evolving number of cyber-physical threats, (d) superior flexibility to respond to the variability and uncertainty of conditions, and (e) increased sustainability through energy efficient and renewable resources."[45]

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[43] Hartwick Direct at SMH-49:10–SMH-50:24.
[44] Hartwick Direct at SMH-74:13–19.
[45] Hartwick Direct at SMH-76:1–5.

Q: HOW ARE UTILITIES DEPLOYING VPPS?

A: Utilities use VPPs (managed either in-house or by a third party) for a broad range of use-cases, including as an alternative to procuring energy or capacity from wholesale markets, to alleviate overloaded distribution systems, to build resilience for their customers, and to avoid renewables curtailment.[46]

Q: PLEASE PROVIDE AN EXAMPLE OF A SUCCESSFUL VPP.

A: ConnectedSolutions is a New England VPP operated by multiple utilities with support from VPP platform company EnergyHub,[47] in which residential and non-residential customers can enroll a variety of DERs. In Massachusetts, Connecticut, and Rhode Island, utilities offer customers a bring-your-own-battery demand response program. In addition to the customer-owned battery providing power backup services, the program links the batteries to create a VPP that the utilities use to curb peak demand and provide additional grid services. Battery owners who participate in the ConnectedSolutions program earn a one-time incentive for enrolling (up to $3,000 in some states)[48] and additional income for every kilowatt of benefit they provide to the grid—up to $1,500 per year depending on the size of the battery and the state where they live.[49]

Q: WHO TYPICALLY ENROLLS PARTICIPANTS AND AGGREGATES THE DER IN A VPP?

A: According to the DOE, three primary models have emerged.

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[46] US Department of Energy, *Pathways to Commercial Liftoff: Virtual Power Plants*, September 2023, p. 20. https://liftoff.energy.gov/wp-content/uploads/2023/10/LIFTOFF_DOE_VVP_10062023_v4.pdf.
[47] https://www.energyhub.com/
[48] https://www.eversource.com/content/residential/save-money-energy/energy-efficiency-programs/demand-response/battery-storage-demand-response/home-battery-storage-faqs/nh
[49] https://www.energyhub.com/blog/energyhub-and-tesla-to-support-the-northeasts-largest-battery-virtual-power-plant/

1) The entity responsible for enrolling DER-owning customers is a utility that serves their electrical load. In this scenario, the utility will reach out to customers and offer to enroll their existing DER and/or offer DER purchase subsidies as enrollment incentives. Utilities who aggregate DER of their own customers may operate the VPP in-house or partner with a third-party service provider to operate the VPP. ConnectedSolutions described above is an example of the third-party service provider operating the VPP.

2) The manufacturer or retailer of the DER who sold it to the customer takes responsibility for enrollment and management of customers. DER companies that have launched VPP platforms include EV makers Tesla, Ford, and GM, and distributed solar and storage companies Sunrun and Sunnova.

3) A VPP platform company enrolls and manages DER, which may include multiple different types and brands aggregated into a single portfolio. EnergyHub, Voltus, AutoGrid, and Leap, for example, recruit participants, directly or via partnerships, with a variety of DER in residential and non-residential settings.[50]

Q: WHAT DO YOU RECOMMEND?

A: I recommend that the Commission require DTEE work with Staff and stakeholders to design a VPP pilot/demonstration[51] for resilience and peak load reduction use-cases using a third-party aggregator, and to include the pilot/demonstration in its 2025 DGP.

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[50] US Department of Energy, *Pathways to Commercial Liftoff: Virtual Power Plants*, September 2023, p. 16. https://liftoff.energy.gov/wp-content/uploads/2023/10/LIFTOFF_DOE_VVP_10062023_v4.pdf.

[51] Pilots are typically focused on answering technical questions, while demonstrations validate the business case for scaling up to full system deployment and can test business models, rates/incentives, customer interest, and cost-effectiveness.

VII. DTEE MUST MOVE MORE QUICKLY FROM PILOTS TO FULL DEPLOYMENT

Q: WHAT IS DTEE'S VISION FOR NWA OR NON-CONVENTIONAL SOLUTIONS?

A: DTEE explains, "The Company's objective is to incorporate NWA solutions into the distribution planning process to be considered along with traditional options to best meet the customer needs. . . . The pilots currently being pursued are building blocks that will form a foundation for future NWA projects. As capabilities are confirmed, multiple NWA technologies can be combined to further advance the Company's utilization of NWA."[52]

The Company further explains, "NWA projects have the potential to become economic alternatives compared to traditional infrastructure upgrades. The pilots are expected to validate customer and economic benefits to help further refine the analysis of NWAs as an alternative to traditional solutions. While individual participating customers benefit from investment in some of the technologies used in targeted NWA solutions, such as lower energy bills due to EWR, customers overall may benefit from the deferred or displaced investment in infrastructure."[53]

Q: DO YOU SUPPORT THIS APPROACH?

A: Yes. I agree that these are important building blocks for future DTEE planning and operating capabilities, and I recommend that the Commission approve these pilots.

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[52] Hartwick Direct at SMH-52:21–SMH-53:2.
[53] Hartwick Direct at SMH-53:5–11.

Q: HAS DTEE EXPLAINED HOW IT WILL SCALE UP THESE PILOTED TECHNOLOGIES AND INCORPORATE NWA SOLUTIONS INTO ITS DISTRIBUTION PLANNING PROCESS?

A: No. DTEE did not explain it in its most recent DGP[54] and has not addressed it in this proceeding. Non-conventional solutions are an important component of the future grid and DTEE, while off to a good start with the pilots, should do more to define actionable next steps to move from pilots to demonstrations to full deployment.

As the Smart Electric Power Alliance explains, "Replicability and scalability are not just a matter of taking a small project and expanding it. (Utilities) should have a clear plan for how to fully deploy their solution that leverages the work completed during the pilot process. The risk to the pilot program if replicability and scalability are not addressed is failure to act on the results of the pilot creating frustration for all stakeholders involved."[55]

Q: WHAT SHOULD DTEE DEFINE?

A: With full deployment in mind, DTEE should identify and plan for the strategic, technical, and economic barriers to scaling from the outset of each pilot project.[56] DTEE should define how it will incorporate lessons-learned from the pilots, the cost/timing thresholds and evaluation criteria the Company intends to employ to determine whether an NWA may

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[54] MPSC Case No. U-20147, Comments on DTE Electric's 2023 Electric Distribution Grid Plan Submitted by the Ecology Center, the Environmental Law & Policy Center, Union of Concerned Scientists, & Vote Solar, March 15, 2024, pp. 23–26.

[55] Smart Electric Power Alliance, *Guidelines for a Successful Grid Modernization Pilot Project Program*, 2019, p. 13. https://sepapower.org/resource/pilot-projects-guidelines-for-a-successful-grid-modernization-pilot-project-program/

[56] Rocky Mountain Institute, *Pathways for Innovation - The Role of Pilots and Demonstrations in Reinventing the Utility Business Model*, 2017, p. 21. https://rmi.org/insight/pathways-for-innovation/

be an appropriate solution for a projected grid need, as well as the solution-sourcing process DTEE will use to solicit NWA proposals from the market.

Q: WHAT DO YOU RECOMMEND?

A: I recommend that the Commission require DTEE to work with Staff and interested stakeholders to define its approach for scaling up piloted technologies and incorporating NWA solutions into its distribution planning process. DTEE should explain the approach in its next DGP.

VIII. SUMMARY OF RECOMMENDATIONS

Q: PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A: I recommend that the Commission require DTEE to:

1) Provide enhanced reporting of circuit-level reliability program results (for Tree Trimming, 4.8kV Hardening, PTMM, 4.8kV Conversions, and DA) compared to the Company's reliability improvement projections.

2) Work with Staff and interested stakeholders to design a VPP pilot/demonstration project for resilience and peak load reduction use-cases using a third-party aggregator, and to include the pilot/demonstration in its 2025 DGP.

3) Work with Staff and interested stakeholders to define its approach for scaling up piloted technologies and incorporating NWA solutions into its distribution planning process. DTEE should explain the approach in its next DGP.

I also request that DTEE, in rebuttal testimony, confirm that it will:

1) Provide additional information about EJ Community impacts in its next DGP, including how customers are benefitting from investments and confirming that these benefits are the ones the communities prioritize.

2) Conduct one or more Technical Conferences to further explain its GPM to Staff and stakeholders and explain how it differs from a BCA.

3) Conduct one or more Technical Conferences to help Staff and stakeholders understand the DA Prioritization Model's assumptions and calculations.

4) Expand its Reliability Model to include the impacts from URD Replacement, Cable Replacement, Breaker Replacement, and Substation Risk projects and include the enhanced model in its next DGP.

5) Collect and incorporate actual outage data to refine the assumptions in its Reliability Model.

6) Refresh its assumptions in the DA Prioritization Model with the actual customer interruption and outage duration impacts from automation as the data become available.

7) Expand the Company's application of its BCA methodology to its 4.8kV Conversion, Distribution Automation, Frequent Outage, Subtransmission Redesign & Rebuild, Breaker Replacement, URD Replacement, Cable Replacement, and Tree Trimming Surge programs.

8) Make necessary modifications to its outage management systems to begin incorporating actual DTEE failure data in its BCA methodology.

9) Consider partnering with LBNL to quantify the resilience impacts of DTEE's planned investments using POET, for inclusion in future BCAs.

10) Modify its BCA methodology to reflect the full revenue requirements of investments.

Q: DOES THIS CONCLUDE YOUR TESTIMONY?

A: Yes.

Statement of Qualifications for Curt Volkmann

Professional Experience

I am President and founder of New Energy Advisors, LLC (http://www.newenergy-advisors.com/), an independent consulting firm. With 40 years of experience in the utilities industry, I work with environmental and consumer advocates across the US in a variety of regulatory proceedings related to distribution system planning, distributed energy resources, and grid modernization. I have testified or commented before regulatory commissions in 15 states.

Prior to founding New Energy Advisors, I worked for the Environmental Law & Policy Center (ELPC) as a Senior Clean Energy Specialist. My work at ELPC focused on providing technical advice and expert witness testimony in several renewable energy and energy efficiency regulatory proceedings.

Prior to ELPC, I was employed for eighteen years by Accenture, a global management consulting and technology firm. I held several positions at Accenture, including Executive Director in Accenture's North America Utilities practice, with client leadership responsibilities for several gas, electric, and water utilities. In this role, I oversaw utility cost reduction and operational improvement programs.

Prior to Accenture, I worked for the consulting firm UMS Group, where I led multi-utility benchmarking studies examining global best practices in electric transmission and distribution. Participating utilities in the studies were from North America, Europe, Australia, New Zealand, and Africa.

I began my professional career working for nine years at Pacific Gas and Electric in various transmission and distribution roles. This included a role as a Distribution Planning Engineer, where I evaluated the impacts of cogeneration on distribution system protection and the impacts of demand-side management programs on the deferral of distribution substation upgrades.

Education

I have a BS in Electrical Engineering from the University of Illinois at Urbana-Champaign with a concentration in Electrical Power Systems. I also received an MBA from the University of California at Berkeley with a concentration in Finance.

I held a Registered Professional Electrical Engineer license in California from 1987 to 1995.

Recent Publications

Curt Volkmann. "*Integrated Distribution Planning - A Path Forward.*" GridLab. June 2018. https://gridlab.org/wp-content/uploads/2019/04/IDPWhitepaper_GridLab-1.pdf

Ric O'Connell, Curt Volkmann, Paul Brucke. "*Regulating Voltage: Recommendations for Smart Inverters.*" GridLab. September 2019. https://gridlab.org/wp-content/uploads/2019/09/GridLab_Regulating-Voltage-report.pdf

Sara Baldwin, Ric O'Connell, Curt Volkmann. "*A Playbook for Modernizing the Distribution Grid; Volume I: Grid Modernization Goals, Principles and Plan Evaluation Checklist.*" IREC and GridLab. May 2020. https://gridlab.org/wp-content/uploads/2020/05/Grid-Modernization-Playbook-report-1.pdf

Prior Testimony & Comments by Curt Volkmann

Prior Testimony Filed by Curt Volkmann

(as of July 2024)

State	Date	Proceeding	Case/Docket #
AR	8/19/16 and 9/9/16	AR PSC in the matter of net metering and the implementation of Act 827 of 2015	16-027-R
	8/26/16 and 9/23/16	AR PSC investigation of policies related to distributed energy resources	16-028-U
AZ	2/25/16 and 4/7/16	Arizona Corporation Commission investigation into the value and cost of distributed generation	E-00000J-14-0023
	5/19/17 and 9/29/17	The Application of Tucson Electric Power Company for approval of its 2016 renewable energy standard implementation plan	E-01933A-15-0239
	5/19/17 and 9/29/17	The Application of UNS Electric, Inc. for the establishment of just and reasonable rates and charges	E-04204A-15-0142
CA	5/2/17	CA Public Utilities Commission (CPUC) review of Southern California Edison's application for authority to increase its authorized revenues in 2018	A.16-09-001
	7/26/19	CPUC review of the application of Pacific Gas and Electric Company for authority to increase rates and charges for electric and gas service in 2020	A.18-12-009
	5/5/20	CPUC review of Southern California Edison's application for authority to increase its authorized revenues in 2021	A.19-08-013
CO	9/28/22, 11/2/22	PUC of CO's review of Public Service Company of Colorado's first Distribution System Plan	22A-0189E
FL	6/21/21	Florida PSC's review of a petition for rate increase by Florida Power and Light	20210015-EI

Prior Testimony Filed by Curt Volkmann (continued)
(as of July 2024)

State	Date	Proceeding	Case/Docket #
IA	10/2/18	IA Utility Board's approval of Interstate Power & Light's energy efficiency 5-year plan	EEP-2018-0003
	8/1/19	Interstate Power & Light's GRC application and grid modernization plan	RPU-2019-0001
IL	10/18/13	Illinois Commerce Commission (ICC) approval of Ameren IL's Energy Efficiency and Demand Response Plan	13-0498
	11/14/13	ICC approval of ComEd's Energy Efficiency and Demand Response Plan	13-0495
	12/4/14	ICC investigation of ComEd's cost of service for low-use residential customers	14-0384
	6/20/18 and 8/10/18	Ameren IL proceeding for approval of its customer generation rebate and customer generation charge.	18-0537
	7/17/18 and 8/28/18	ComEd proceeding for approval of its customer generation rebate and customer generation charge.	18-0753
	2/5/21	Investigation into an annual process and formula for the calculation of Ameren IL's distributed generation rebates	20-0389
	5/11/23 and 7/13/23, 5/13/24, 7/3/24	Ameren IL's Initial and Refiled Multi-Year Integrated Grid Plan	22-0487
	5/22/23, 7/26/23, 5/23/24, 7/17/24	ComEd's Initial and Refiled Multi-Year Integrated Grid Plan	22-0486
MI	2/24/15	MI PSC in its investigation into the application of Consumers Energy to amend its renewable energy plan	U-17752

Prior Testimony Filed by Curt Volkmann (continued)
(as of July 2024)

MN	10/3/22	MN PUC's review of Northern States Power Company's application for authority to increase rates for electric service in Minnesota	E002/GR-21-63
OH	1/17/19	PUC of OH in the matter of the filings by FirstEnergy of a Grid Modernization Business Plan and Distribution Platform Modernization Plan	16-481-EL-UNC and 17-2436-EL-UNC
UT	3/3/20, 7/15/20, 9/15/20	Rocky Mountain Power's application to establish export credits for customer generated electricity	17-035-61 Phase 2
VA	12/20/19	Review by the VA State Corporation Commission (SCC) of Dominion's second petition for approval of a Grid Transformation Plan	PUR-2019-00154
	9/24/21	SCC's review of Dominion's third petition for approval of a Grid Transformation Plan	PUR-2021-00127
WI	9/5/23	Application of Wisconsin Power and Light Company for authority to adjust electric and natural gas rates	6680-UR-124

Prior Comments Filed by or with Contributions from Curt Volkmann
(as of July 2024)

State	Date	Proceeding/Topic	Case/Docket #
CA	8/31/15, 1/26/16, 3/3/16	CPUC's proceeding regarding policies, procedures, and rules for development of Distribution Resources Plans (DRP)	R.14-08-013
MA	5/28/21	MA Department of Public Utilities' investigation into DER planning and costs	20-75
MI	5/14/18, 2/16/24, 3/15/24	MPSC's investigation into DTE's and Consumers Energy's five-year distribution investment and maintenance plans	U-20147
	10/5/18	MPSC's Staff Report on a Michigan distribution planning framework	U-20147
MN	9/15/15, 11/18/15, 8/21/17, 9/21/17	MN PUC investigation into grid modernization and distribution planning	E002/M-15-962 E999/CI-15-556
	2/2/18 and 2/28/18	Xcel Energy's 2017 distribution system hosting capacity report	E002/M-17-777
	7/6/18 and 2/22/19	Distribution system planning for Xcel Energy	E002/CI-18-251
	3/17/20 and 4/22/20	Xcel Energy's Integrated Distribution Plan (IDP) and Advanced Grid Intelligence and Security certification request	E002/M-19-666
	9/25/20	Stakeholder process informing the metrics, performance evaluation methods, and consumer protection conditions for Xcel Energy's AMI and FAN projects	E999/CI-20-627
	2/25/22 and 4/11/22	Xcel Energy's 2021 IDP and Request for Certification of Distributed Intelligence and the Resilient Minneapolis Project	E002/M-21-694
	3/1/24 and 4/12/24	Xcel Energy's 2023 IDP	E002/M-23-452

Prior Comments Filed by or with Contributions from Curt Volkmann (continued)
(as of July 2024)

NY	4/13/18, 5/7/18, 8/27/18	New York PSC's investigation into the matter of the Value of DER working group regarding value stack	17-01276

STATE OF MICHIGAN
MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of **DTE ELECTRIC COMPANY** for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority	))))))	Docket No. U-21534

PROOF OF SERVICE

I hereby certify that a true copy of the foregoing *Direct Testimony and Exhibits of Curt Volkmann* was served by electronic mail upon the following Parties of Record, this Friday, July 26, 2024.

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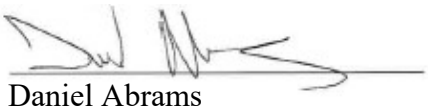

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