

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of)
DTE ELECTRIC COMPANY)
for authority to increase 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
AND EXHIBIT
OF
JOHN RICHTER**

On Behalf of

Great Lakes Renewable Energy Association

July 26, 2024

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1 **II. QUALIFICATIONS**

2 **Q. Please state your name and business address.**

3 A. My name is John Richter, and I have no business address, because I am retired.

4 **Q. Who are you representing, and what is your title and role there?**

5 A. I'm representing The Great Lakes Renewable Energy Association (GLREA). I am on the
6 Board of Directors. I am also the Chairman of the Policy Committee.

7 **Q. Who is the GLREA?**

8 A. The GLREA is a 501(c)(3) (non-profit) corporation based in Michigan. Our Mission
9 Statement is to "Promote the Use of Renewable Energy in Michigan and in the Great
10 Lakes Region, By Empowering Our Members and the Public Through Advocacy,
11 Education and Strategic Collaboration." And our Vision Statement is: "We believe that
12 current and emerging clean, renewable energy solutions can provide 100% of the electrical
13 energy demand in the Great Lakes Region. Furthermore, we believe that increasing
14 development and access to clean, renewable energy that is locally produced, operated and
15 utilized supports economic development, creates new good paying jobs and is essential to
16 supporting healthier, more resilient communities that advance climate justice."

17 **Q. Please describe your educational background.**

18 A. I received a Bachelor of Science degree in Computer Engineering, with a minor in
19 Economics, from Oakland University in 1982. I did some graduate work in software
20 engineering at both Oakland University, and University of Detroit, Mercy. I did some
21 alternative energy coursework at Oakland Community College. I received a Master of
22 Science in Renewable Energy from Murdoch University in Perth, Australia in 2009. I've

1 been through training at Michigan State University’s Institute for Public Utilities
2 Regulatory Research and Education’s courses on rate making, and “grid school.”

3 **Q. Please describe your relevant business experience.**

4 A. At Frontier Communications, I was the Senior Manager of Hardware Integration. In this
5 role, I performed request for proposals (RFPs) and request for quotes, set up the criteria for
6 evaluating the responses, engaged in purchase negotiations, and performed project
7 management for equipment installation, testing, and turn-up. I had a \$25M capital budget
8 for equipment purchases. I also created the Company’s capacity forecasting model, and did
9 net present value (NPV) analysis to determine which equipment sites should be closed and
10 consolidated. I was promoted to Director, Product Platform Development, where I again
11 did RFPs and equipment selection. As a Sr. Product Development Manager at Global
12 Crossing, I created new business processes in support of new product launches.

13 During 2002, I consulted on renewable energy policy for the GLREA. In that role, I did a
14 presentation to Michigan legislators and staff on policies to incentivize renewable energy
15 deployments. I was one of three invited presenters to the Northeast and Midwest Caucus
16 meeting on a national RPS at the U.S. Capitol Building. And I was a member of the MPSC
17 Collaborative on Renewable Energy. Under contract with American Council for an Energy
18 Efficient Economy, I wrote a white paper on energy efficiency policy, which was
19 presented to the Governor of Michigan. I was also featured in the PBS documentary film,
20 *Michigan’s Green Energy Economy*.

21 In 2010 and 2011, I was an adjunct instructor at Macomb Community College, teaching a
22 course on solar energy. My resume is provided as **GLREA Exhibit-1 (JR-1)**.

1 **Q. Have you previously presented testimony before the Michigan Public Service**
2 **Commission (“MPSC” or the “Commission”)?**

3 A. Yes, in the following cases:

- 4 ○ U-18091, DTE Energy PURPA case (remand)
- 5 ○ U-18232, DTE REP (reopened)
- 6 ○ U-20165, Consumers Energy IRP case
- 7 ○ U-20359, Indiana Michigan Power rate case
- 8 ○ U-20471, DTE Energy IRP
- 9 ○ U-20561, DTE Energy Rate case
- 10 ○ U-20713, DTE Energy Renewable Energy Plan
- 11 ○ U-21090, Consumers Energy IRP case
- 12 ○ U-21386, DTE Energy Rate case
- 13 ○ U-21193, DTE Energy IRP
- 14 ○ U-21224, Consumers Energy Rate case
- 15 ○ U-21172, DTE Energy Voluntary Green Power case

16 **Q. What is the purpose of your direct testimony?**

17 A. The purpose of my direct testimony is to provide useful input on:

- 18 • How to improve DTEE’s proposed commercial time-of-use (TOU) rate schedules
- 19 • How to expand and improve DTEE’s demand response (DR) program

- 1 • Why the Commission should reject DTEE’s proposal to recover certain outage
2 credit costs
- 3 • How to improve DTEE’s future battery deployments.
- 4 • How the Commission should respond to DTEE’s proposal on the recovery of
5 outage credits.

6 **Q. Are you sponsoring any exhibits?**

7 A. Yes:

8 Exhibit GLREA-1 (JR-1) Resume of John Richter

9 **Q. Were these exhibits prepared by you or under your supervision?**

10 A. Yes.

11 **III. PROFITS, CAPITAL INVESTMENT, AND PEAK LOAD**

12 **Q. What is the purpose of a for-profit corporation?**

13 A. According to the Corporate Finance Institute, “For-profit entities form the majority of
14 corporations, and they are formed to generate revenues and provide a return to their
15 shareholders, according to their percentage of ownership in the corporation.”¹

16 **Q. Is DTE Electric Company (DTEE) a for-profit Corporation?**

17 A. Yes. DTEE is a wholly owned subsidiary of the non-regulated corporation DTE Energy
18 Company, which is the parent holding Company and lists its shares on public stock

¹ Corporate Finance Institute, “Corporation,” accessed at:
<https://corporatefinanceinstitute.com/resources/knowledge/finance/what-is-corporation-overview/> on 4/22/2022

1 markets.

2 **Q. What determines the profit of a regulated, State-chartered utility corporation?**

3 A. Regulated utilities earn a profit which is the product of their rate base multiplied by their
4 regulated rate of return.² To increase their profit, they must generally either expand their
5 rate base through capital investment, or convince their regulators to increase their rate of
6 return, or both. More recently (in Michigan), electric utilities have the opportunity to get
7 profit incentives for actions such as energy waste reduction (EWR), demand response
8 (DR), and signing Power Purchase Agreements (PPAs).

9 **Q. How do regulated utilities justify expanding their rate base?**

10 A. There are numerous avenues, including asserting that investment will improve reliability,
11 that pilot programs are needed to learn about new technologies, that new investment will
12 reduce environmental impacts, or that increased demand (across the system or in certain
13 geographic areas) requires additional capacity. Additional regulator-approved capital
14 investment increases utility profits, regardless of the cause of the investment or the
15 justification(s) used. One industry veteran summarized this as: “Utilities usually respond to
16 load growth, clean energy mandates, or calls to increase resilience by building more
17 infrastructure, adding to their rate bases, and then recovering those costs through higher
18 customer rates.”³

² Jim Clarkson, “Public Utility Ratemaking 101 (the problems of rate base, cost passthrough),” *Master Resource*, March 24, 2016, available at: <https://www.masterresource.org/public-utility-regulation/public-utility-ratemaking-101/> accessed on 4/22/2022

³ William Driscoll, “Sunrun says better policy is needed to add “vast” amounts of distributed solar and storage,” *PV Magazine*, April 20, 2022, available at: <https://pv-magazine->

1 **Q. How does peak demand drive electric utility capital investment?**

2 A. Utility generation is sized to meet peak system-wide demand, with a reserve margin.
3 Increased system-wide peak demand increases the utility's opportunity to expand the rate
4 base by increasing generating capacity. Decreasing system-wide demand may not reduce
5 the Company's generating capacity or generation-related capital expenses for some time,
6 because generating facilities have long design lives and long capital depreciation
7 schedules. But decreasing system-wide demand removes the need to add new generation
8 to meet demand beyond facility retirements.

9 Shared distribution assets (such as substations) are sized to meet the aggregate peak
10 demand of the customers using each asset. Anything that reduces the local peak demand
11 on distribution asset reduces the utility's opportunity to expand the rate base by
12 increasing the capacity of that distribution asset.

13 In the words of esteemed utility regulation expert and author Professor Bonbright:

14 "While significant peaking problems exist in all public utilities, the most
15 important peaking problem for most electric companies is the recurring
16 cycle of summer peak demand. *The generation, transmission, and*
17 *distribution systems have been built to serve peak demand.*"⁴ (emphasis
18 added)

19 Given the above, it is very much in the interest of regulated electric utilities to drive up
20 peak demand, and against their interest to reduce it.

<https://www.ica.com/2022/04/20/sunrun-says-better-policy-is-needed-to-add-vast-amounts-of-distributed-solar-and-storage/> accessed on 4/22/2022

⁴ James C. Bonbright, Albert L. Danielsen, David R. Kamerschen, "Principles of Public Utility Rates," 2nd edition, (Arlington Virginia): *Public Utility Reports Inc*, 1988, p 475

1 **Q. Why is the demand response program benefit of reducing peak load on the**
2 **distribution system important?**

3 A. Because peak load is driving DTEE to make major investments in the distribution system.
4 In the instant case, “The Company is requesting recovery of \$521.4M of 2024 capital
5 investment and \$711.6M of 2025 capital investment related to Distribution Operations
6 strategic investment that the Company plans to put into service during those years.” [2024-
7 2028].⁵ Not all of that is related to providing capacity, but a large part of it is, “The
8 capacity driven requested recovery is approximately 18% for 2024 and 30% for 2025.”⁶
9 Those two facts suggest that $(18\% \times \$521.4M + 30\% \times \$711.6M = \mathbf{\$307M})$ of the capital
10 requested for the distribution system in the case is driven by peak demand. This amount,
11 with similar sums to be repeated in annual rate cases, add up to the potential value of a
12 larger, more effective demand response program, especially if geo-targeted.

13 **Q. How does peak demand affect customer interests?**

14 A. Customers want low rates. The recovery of capital investment to meet peak demand plus
15 the profit on that capital investment, increases rates. Whether they’re aware of it or not,
16 customers should desire low peak demand, both system-wide and locally in the
17 distribution system. The customer’s interests and the Company’s incentives are at odds
18 with one another.

⁵ GLREADE-3.36a

⁶ GLREADE-3.36b

1 **Q. What does this mismatch of customer and utility interests mean for the MPSC?**

2 A. The Commission should not expect any regulated electric utility to voluntarily initiate
3 actions that will have the effect of reducing their peak demand. Therefore, in the interest
4 of affordability, the Commission should push and even force regulated electric utilities to
5 reduce peak demand.

6 **Q. How has the Commission pushed DTE to reduce peak demand and hence capital**
7 **costs?**

8 A. The Commission's directive in its order of August 20, 2020 stated that "the Commission
9 expects to be presented with "a robust suite of NWAs that may be evaluated for prudence
10 as possible programs."⁷ It appears that the collection of NWA pilots DTEE proposes in
11 the instant case, and the details provided on the pilots proposed implementation in
12 Exhibit A-12, schedule B-5, are a direct result of that order.⁸ Implementation of those and
13 similar programs will be critical.

⁷ U-20147, Commission order dated August 20, 2020, page 44, citing its order of May 8, 2020, in the same case.

⁸ Direct testimony of S. M. Hartwick, SHH-51

1 **Q. What else has the Commission done to reduce DTEE’s peak load, and hence capital**
2 **costs?**

3 A. While Time-of-Use (TOU) rates may or may not be *intended* to reduce peak usage, and
4 hence capital costs, they have that affect, as I will describe later in my testimony. The
5 Commission directed DTEE to file a commercial TOU rate in its December, 2023 order
6 stating: “For its next general rate case, DTE Electric Company shall develop and present
7 optional time-of-use rates for its commercial secondary and primary customers.”⁹

8 DTEE responded to that directive in the instant case, proposing the D3.11 rate for
9 commercial customers taking service at secondary voltage, and the D14 rate for
10 commercial customers taking service at primary voltage.¹⁰

11 **Q. What has the Commission do tone reduce DTEE’s peak load, and hence capital costs**
12 **in earlier cases?**

13 A. In April of 2018, the Commission ordered DTEE to propose a residential rate that
14 eliminated the inverted block design and include on-peak summer rates in its next case.¹¹

15 In May of 2019, the Commission approved DTEE’s proposal to conduct multiple
16 residential TOU pilots, stating “In DTE Electric’s next case filing, the Commission expects
17 a comprehensive plan that offers a sound method for piloting the rate structure discussed
18 herein...”¹² In November, 2022, the Commission directed DTE to implement a TOU rate,

⁹ U-21297, Order dated December 1, 2023, page 372

¹⁰ Direct testimony of A. Willis, pg. AW-4.

¹¹ U-18255, Commission order of April 18, 2018, page 82

¹² U-20162, Order dated May 2, 2019, page 165

1 and that it “shall use the mandatory enrollment strategy”, establishing a TOU rate as the
2 standard residential rate.¹³

3 It took a long process of repeated Commission prodding to get DTEE to adopt a standard
4 residential TOU rate.

5 In the words of the Collaborative Utility Solutions:

6 “Heavily regulated industries rely on policy direction/innovation, not
7 industry innovation. Nothing is going to change without regulatory vision
8 to require the change.”¹⁴

9 There is still a long way to go in implementing policies that will reduce peak electric utility
10 load.

11 **IV. TOU RATES AND PEAK LOAD REDUCTION**

12 **Q. Why should TOU rates be broadly implemented?**

13 **A.** There are several reasons:

14 1. To comply with Federal law. PURPA, as amended by EPACT 2005 states:

15 “(a) IN GENERAL.—Section 111(d) of the Public Utility Regulatory
16 Policies Act of 1978 (16 U.S.C. 2621(d)) is amended by adding at the end
17 the following: “(14) TIME-BASED METERING AND
18 COMMUNICATIONS.—(A) Not later than 18 months after the date of
19 enactment of this paragraph, each electric utility shall offer each of its
20 customer classes, and provide individual customers upon customer
21 request, a time-based rate schedule under which the rate charged by the

¹³ U-20386, Commission order dated November 18, 2022, page 401

¹⁴ Chris Hickman, “Empowering Energy Transition,” February 22, 2024, slide 6, MPSC: Demand Response Aggregation. Accessed on 07/15/2024 at: <https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/workgroups/DR-DER-Aggregation/DR-DER-Aggregation-CUS-Presentation-2-22-24.pdf?rev=e5e9dd35cf99499896021c10b1b5e293&hash=E7F43CFA1D29132C622BC5397FB2C720>

1 electric utility varies during different time periods...”¹⁵

2 TOU rates are not just a good idea, they are the law.

3 2. To accurately reflect the cost-of-service. Generation, transmission and distribution

4 must all be sized for their maximum load, either system-wide (generation) or locally.

5 Meeting load during peak periods is much more expensive than meeting load at other

6 times. The rate schedule should send accurate price-signals to customers.

7 3. For affordability. When rates accurately charge customers for the costs that they cause,

8 customers have an incentive to reduce their use during high-cost periods. The highly

9 desirable side effect of accurate cost-of-service is affordability.

10 4. For fairness. Without TOU rates, customers that use more energy during non-peak

11 periods (as an illustration - nightclubs) end up subsidizing customers that use more

12 energy during the peak periods (as an illustration - restaurants).

13

¹⁵ U.S. Department of Energy, “Public Law 109-85 – Energy Policy Act of 2005,” section 1252(a)(14) “Smart Metering” accessed on 7/12/2024 at: https://www1.eere.energy.gov/femp/pdfs/epact_2005.pdf

1 **Q. Did the implementation of the TOU rate D1.11 as the standard residential rate**
2 **provide accurate price signals about the cost of electricity service in different seasons**
3 **and hours of the day?**

4 A. D1.11 certainly reflects the cost-of-service *more* accurately than the non-time-varying D1
5 rate it replaced. But as I testified at length in U-20386, it fails to recover all capacity costs
6 from usage during the peak rate period.¹⁶

7 **Q. Why should capacity costs be recovered entirely from peak usage periods, when some**
8 **capacity is necessary at all times of day?**

9 A. While some capacity is necessary during other periods of time, this is already reflected
10 with the 4CP 75-0-25 method of cost allocation for production plant-related costs. This
11 allocates 25% of the cost of generation plants on the basis of energy consumption. The
12 other 75% of the cost of generation plants is, properly, allocated to capacity. This
13 computed capacity cost should be recovered from capacity charges imposed during peak
14 time periods.

¹⁶ U-20386 8 V 3233 - 3240

1 **Q. But why should the 75% of plant costs allocated on the basis of 4CP contribution as a**
2 **capacity be recovered only during peak usage periods?**

3 A. To accurately reflect the cost-causation of peak usage. The charge for capacity reflects the
4 cost of ensuring there is sufficient generation and transmission available to meet that peak
5 load. Therefore, it would be accurate to assign the entire cost of capacity to the peak
6 demand time period. Professor Bonbright discussed capacity costs and their recovery his
7 seminal book on utility regulation:

8 “The last margin of capacity is used only at peak, and so the total costs of
9 installing, depreciating, and maintain it year-round are focused on just a
10 few units of use. This cost properly falls on peak-load use, which is
11 responsible for requiring the capacity... *At off-peak times, fixed (capacity)*
12 *costs are zero.*”¹⁷ (emphasis added)

13 And Professor Bonbright recommends a recovery method:

14 “Time of use tariffs are efficient because they are put on cost causers.
15 While it is true that large power users can and will alter their loads in
16 response to time of use tariffs, this is irrelevant to the cost-tracking
17 purpose of the tariffs. Economic efficiency simply dictates that consumers
18 should be faced with prices reflecting the true costs they impose on society
19 regardless of how they choose to react to these tariffs.”¹⁸

20 For avoidance of doubt, Professor Bonbright states that non-peak rates should be based
21 solely on operating costs:

22 “The generation, transmission, and distribution systems have been built to
23 serve peak demand. During off-peak periods much of this capacity is
24 idle... Off-peak demand usage usually does not press against the system
25 capacity, *so only the operating costs need be considered.*”¹⁹ (emphasis
26 added)

¹⁷ James C. Bonbright, Albert L. Danielsen, David R. Kamerschen, “Principles of Public Utility Rates,” 2nd edition, (Arlington Virginia): *Public Utility Reports Inc*, 1988, p 459

¹⁸ Ibid, p 475-6

¹⁹ Ibid, p 475

1 **Q. Did you make similar arguments when the D1.11 residential TOU rate was proposed?**

2 A. Yes, I did. But the Commission approved a rate structure with capacity charges during
3 both peak and off-peak periods.

4 **Q. Do the proposed commercial TOU rates (C3.11 and D14) implement a cost recovery**
5 **approach that is similar to the structure approved for the residential D1.11 rate?**

6 A. Yes, DTEE reports that “Thus, the rate utilizes the same overall billing determinants, cost
7 allocations, and underlying revenue requirements as D3 in this case, similar to the initial
8 D1.11 proposal in Case No. U-20836.”²⁰

9 **Q. Why should the proposed commercial TOU rates (C3.11 and D14) implement a cost**
10 **recovery approach that was not approved for the residential D1.11 rate?**

11 A. Because D1.11 featured mandatory enrollment, while the proposed C3.11 and D14
12 commercial TOU rates are purely optional, at the discretion of the customer. In an earlier
13 case, DTEE argued that Staff’s proposal for a D1 rate redesign was “too radical, and the
14 Commission should address this issue more incrementally.”²¹

15 The Commission suggested interest in a different TOU structure in the future:

16 “While the Commission appreciates the Staff’s rate design proposal to
17 better align rates to reflect how capacity costs are incurred (primarily to
18 cover the summer peak), this is not the proceeding to modify rate design
19 given the complexity of other issues. This issue could be revisited, as
20 appropriate, in a future rate case.”²²

²⁰ Direct testimony of A. Willis, pg. AW-31

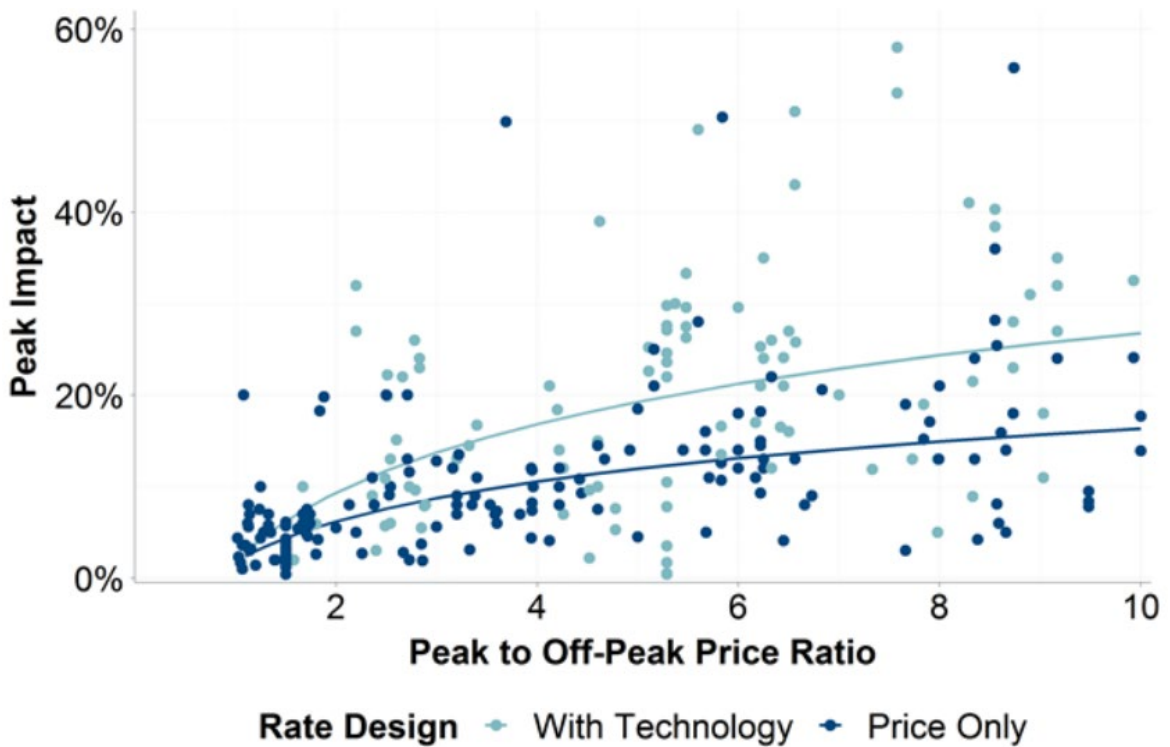
²¹ U-18255, Order dated April 18, 2018, page 81

²² U-18248, Order dated November 21, 2017, page 70

1 *This is* the “appropriate future rate case.” Incremental changes are not necessary in an
2 optional, pilot rate schedule. To the contrary, an optional, pilot rate is exactly the right
3 place to try a bold test of a rate design that recovers capacity costs accurately.

4 **Q. Is there any reason to believe that such a rate design, if widely adopted, would reduce**
5 **peak load?**

6 A. Absolutely. A study by the Brattle Group based on nearly 400 TOU pilots around the globe
7 found a clear relationship between the peak to off-peak price ratio, and the percentage
8 decline in peak load, illustrated by this graph:²³



9

²³ Ahmad Faruqui, “Electricity Ratemaking and Equitable Rate Design, A Survey of Best Practices,” June 2, 2021, slide 9. Accessed on 5/11/2021 at: <https://www.brattle.com/wp-content/uploads/2021/08/Electricity-Ratemaking-and-Equitable-Rate-Design-A-Survey-of-Best-Practices.pdf>

1 The lower, darker line on the graph represents TOU pricing pilots that changed only
2 pricing. It is clear that in other places, TOU rates with higher peak to off-peak price ratios
3 reduce peak load more than TOU rates with lower peak to off-peak price ratios.

4 **Q. What should the Commission order regarding the proposed C3.11 and D14**
5 **commercial TOU rates?**

6 A. The Commission should direct the Company to redesign both commercial pilot rates to
7 recover the same amount of funds from energy-capacity rates, but recover all of it during
8 the peak rate time periods. The Commission should direct the Company to file the adjusted
9 rate schedules, within 60 days of the order in the instant case, for ex parte approval. The
10 Commission should also direct the Company to include in its next rate case, a discussion of
11 the pros and cons of making a TOU rate structure the default, standard rate structure for all
12 secondary voltage commercial customers, and to collect metrics of success on the pilots to
13 prepare for making them the default standard rate.

14 **Q. Other than well-designed TOU rates, what other programs can reduce peak load, and**
15 **hence capital costs?**

16 A. Demand response (DR) programs are designed to do exactly that.

1 **V. DEMAND RESPONSE FOR PEAK LOAD REDUCTION**

2 **A. CAPACITY ADEQUACY**

3 **Q. Why would you discuss capacity adequacy in a rate case? Isn't capacity adequacy**
4 **what Integrated Resource Plan (IRP) cases are for?**

5 A. Yes, capacity adequacy is central to IRP cases. But I will discuss the deficiencies of
6 DTEE's Demand Response (DR) programs later in my testimony, and it is important to
7 understand why DR is so critically important at this time.

8 **Q. Has the North American Electric Reliability Council (NERC) expressed concerns**
9 **recently about the reliability of generation facilities?**

10 A. Yes. In their 2024 "State of Reliability" report released in June of this year, NERC
11 reported concern about the high "weighted equivalent forced-outage rates" (WEFOR) for
12 both coal and cycled natural gas units. The overall WEFOR for 2023 was 7.8%, vs. the 5-
13 year average of 7.4%.²⁴ It expressed concerns that coal units are becoming less reliable due
14 to reduced maintenance and abnormal cycling.²⁵

15 **Q. Has MISO recently expressed concerns resource adequacy?**

16 A. Yes, In February of this year, MISO released its Reliability Imperative report. The report
17 warned that "there are immediate and serious challenges to the reliability of our region's
18 electric grid..." It cited the transition to non-dispatchable wind and solar sources,
19 increasing extreme weather events, supply chain and permitting issues, large sign-site load

²⁴ NERC, "2024 State of Reliability," June 2024, page 58, Accessed on 7/8/2024 at:
https://www.nerc.com/pa/RAPA/PA/Performance%20Analysis%20DL/NERC_SOR_2024_Technical_Assessment.pdf

²⁵ *ibid*, page 59

1 additions, and electrification as key risks.²⁶

2 Also, the annual OMS-MISO survey (released in June of this year) expressed concerns
3 about near-term resource adequacy. The survey considered a variety of variables and
4 scenarios and projected anything from a “potential surplus of 1.1 GW to a deficit of 2.7
5 GW for the summer of PY2025/26, depending on critical, yet uncertain, drivers...” and
6 stated that “Resource Adequacy risks could grow over time across all seasons, absent
7 increased new capacity additions and actions to delay capacity retirements.”²⁷

8 **Q. Has MISO expressed concerns that their capacity accreditation methods may**
9 **understate load shedding risk?**

10 A. Yes. In its most recent OMS-MISO Survey Results presentation, MISO reported:

11 “MISO’s existing accreditation methods can overstate a resource’s
12 capacity value during the highest risk periods, especially as the region’s
13 risk profile changes, leading to understated risk.”²⁸

14 **Q. Have you recently provided testimony to the MPSC that MISO’s capacity adequacy**
15 **methods overstated capacity during critical times?**

16 A. Yes. In DTE Energy’s last IRP,²⁹ I provided the following testimony:

17 “Q. Energy production from wind and solar is variable, depending on
18 the weather. Do dispatchable thermal plants provide assured supply when

²⁶ MISO, “MISO’s Response to the Reliability Imperative,” November 2024, Executive Summary, page 1. Accessed on 7/8/2024 at:
<https://cdn.misoenergy.org/Executive%20Summary%202024%20Reliability%20Imperative%20Report%20Feb.%202021%20Final631825.pdf?v=20240221114214>

²⁷ MISO, “2024 OMS-MISO Survey Results,” June 20, 2024, slide 2. Accessed on 7/8/2024 at:
<https://cdn.misoenergy.org/20240620%20OMS%20MISO%20Survey%20Results%20Workshop%20Presentation635585.pdf>

²⁸ *ibid*, slide 15

²⁹ U-21193, 7V 2298 - 2300

1 needed?

2 A. Often, but not always. The rules of MISO capacity accreditation
3 assume that outages of thermal plants are rare, and completely
4 independent of one another. In practice, this has not proven to be an
5 accurate assumption; several major outages have been caused by
6 numerous thermal plants failing simultaneously for related reasons. For
7 example:

8 1. This past Christmas Eve, ISO-NE declared a “capacity deficiency.”
9 Certain, undisclosed power plants were fined \$39M for their failure to
10 perform.³⁰

11 2. During that same storm, the PJM region also suffered capacity-
12 related outages. PJM believed they had almost 29 GW of reserve
13 capacity, but more than 23% of generating capacity in PJM was
14 unavailable, and 92% of outages were reported on less than an hour’s
15 notice, or with no notice at all.³¹ An astonishing 46 GW of power
16 plants were out of service. All were powered by fossil fuels, mostly
17 natural gas. PJM announced penalties that may reach \$2B.³²

18 3. Also, last December, coal and natural gas power plant outages
19 caused blackouts in North Carolina and Tennessee.³³

20 4. In 2021 in Texas, unusually cold weather resulted in a massive
21 power outage. It should be noted that “the 2021 storm did not set
22 records for the lowest recorded temperatures in many parts of the
23 state...”³⁴ Significantly, “all types of generation technologies failed”,
24 including gas-fired, coal-fired, nuclear reactors and solar facilities that
25 failed to operate at expected output levels.³⁵ Power cut-offs to natural
26 gas facilities resulted in less gas available for power generation – a

³⁰ David Sharp, “New England ISO levies \$39M in fines to power plants for coming up short in December,” *Power Grid International*, January 10, 2023. Accessed at: <https://www.power-grid.com/policy-regulation/new-england-iso-levies-39m-in-fines-to-power-plants-for-coming-up-short-in-december/> on 3/4/2023.

³¹ Clarion Energy Content Directors, “PJM describes widespread generation failures during December cold wave,” *Power Engineering*, January 12, 2023. Accessed at <https://www.power-eng.com/nuclear/pjm-describes-widespread-generation-failures-during-december-cold-wave/> on 3/5/2023.

³² Utility Dive, “Winter storm Elliott proved fossil fuel plants are an infirm resource,” January 30, 2023. Accessed at: <https://www.utilitydive.com/spons/winter-storm-elliott-proved-fossil-fuel-plants-are-an-infirm-resource/641320/> on 3/4/2023.

³³ Ibid.

³⁴ University of Texas, at Austin Energy Institute, “The Timeline and Events of the February 2021 Texas Electric Grid Blackouts,” July 2021, p 7. Accessed at: <https://energy.utexas.edu/research/ercot-blackout-2021> on 3/5/2023.

³⁵ Ibid, p 8.

1 domino effect.³⁶ This co-dependence of gas on electricity and
2 electricity on gas was highly problematic, and it wasn't the first time
3 this happened in Texas.

4 5. In 2011 in Texas, unusually cold weather resulted in 3.2M ERCOT
5 customers losing power. Prior to the event, ERCOT had "3100 MW of
6 responsive reserves available on the first day of the event, compared to
7 a minimum requirement of 2300 MW." But over two days, 193
8 ERCOT generating units failed or were derated, for a total loss of
9 29,720 MW.³⁷ In addition to freezing generating equipment and water
10 lines, natural gas production also fell off due to frozen equipment.³⁸
11 Rolling blackouts also caused a quarter of the decline in natural gas
12 production.³⁹ So again, there was a domino effect. Failures of various
13 systems were not independent, they were all related to the same
14 weather, or to other weather-related failures.

15 My point is that "dispatchable" is not synonymous with "reliable." Current
16 methods of accrediting capacity to thermal power plants fails to reflect
17 very real cases in which a single stress causes *simultaneous* failures in
18 multiple plants. The current capacity accreditation process for thermal
19 plants is somewhat flawed, and cannot be rectified with a marginally
20 larger amount of reserve capacity."
21

22 **Q. Have storms caused thermal plant outages in Michigan recently?**

23 A. Yes, in December of 2022, as a result of winter storm Elliot. NERC's final report
24 summarized it this way:

25 During the Event, 1,702 individual BES [Bulk Electric System] generating
26 units in the Eastern Interconnection experienced 3,565 unplanned outages,
27 derates, or failures to start. Each individual unit could, and often did, have
28 multiple outages from the same or different causes. At the worst point of
29 the Event, there were 90,500 MW of coincident unplanned generating unit

³⁶ Mani Cai, Erin Douglas, and Mitchell Ferman, "How Texas' power grid failed in 2021 — and who's responsible for preventing a repeat," *The Texas Tribune*, February 15, 2022. Accessed at: <https://www.texastribune.org/2022/02/15/texas-power-grid-winter-storm-2021/> on 3/5/2023.

³⁷ FERC, "Report on Outages and Curtailments During the Southwest Cold Weather Event of February 1-5, 2011, Causes and Recommendations," August 2011, p7. Accessed at: <https://www.ferc.gov/sites/default/files/2020-04/08-16-11-report.pdf> on 3/4/2023.

³⁸ *Ibid*, p 9.

³⁹ *Ibid*, p 11.

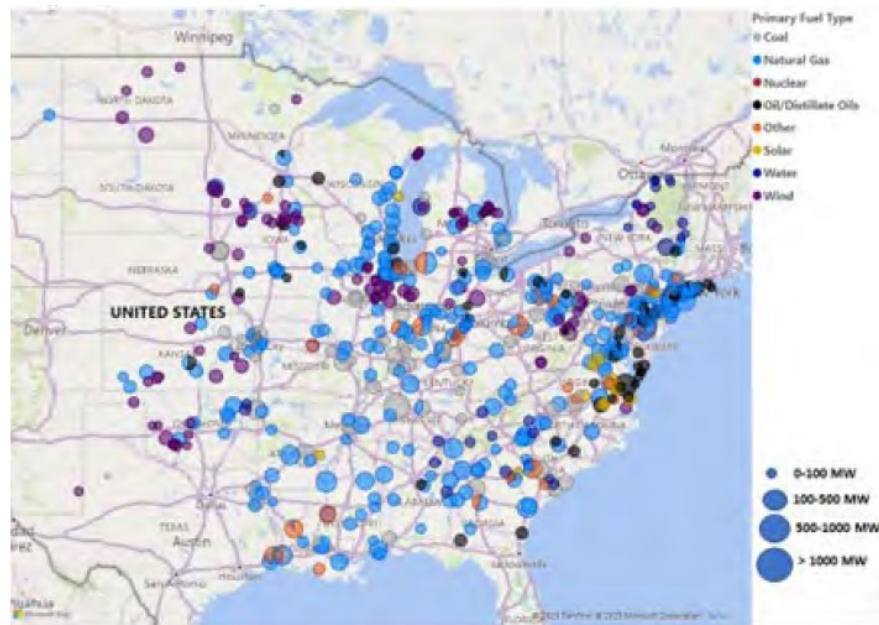
1 outages, derates and failures to start (meaning they all occurred at the
2 same time). Including generation that was already out of service, a total of
3 over 127,000 MW of generation was unavailable, representing 18 percent
4 of the U.S. portion of the anticipated resources in the Eastern
5 Interconnection.

6 The Event was the fifth in the past 11 years in which unplanned cold
7 weather-related generation outages jeopardized grid reliability. Several
8 Balancing Authorities (BAs) (grid operators that balance demand and
9 electric energy) in the southeast U.S. needed to shed firm load during the
10 Event to maintain system reliability...”⁴⁰

⁴⁰ FERC / NERC, “Inquiry into Bulk-Power System Operations During December 2022 Winter Storm Elliott,” October 2023, pg. 5-6. Accessed on 7/21/2024 at: <https://www.ferc.gov/news-events/news/ferc-nerc-release-final-report-lessons-winter-storm-elliott>

1 The NERC report included a map showing generator outages, and it is plain to see that
2 Michigan electric generation including wind, coal, and gas-fired plants, all had problems
3 during the storm:⁴¹

Figure 2: Location and Fuel Type of Unplanned Generation Outages and Derates During the Event (Bubble Size by MW for each Outage), as of December 24, 2022



4

5 **Q. Has any DTEE witness suggested that the realistic capacity of DTEE generation may**
6 **be less than the MISO capacity adequacy methods assign?**

7 A. Yes, DTEE hired a consulting company named Astrapé to perform capacity
8 determinations. The consultant’s report contained a footnote which stated:

9 “The UCAP accreditation of the retired resources (Monroe) overestimates
10 its reliability contribution relative to its ELCC value due to the large size
11 of the individual units (approximately 750MW each). Large resources
12 have disproportionate impacts on LOLE.”⁴²

⁴¹ Ibid, pg. 8

⁴² U-21193, 7 V 2302, citing a DTEE exhibit

1 **Q. Has DTE Energy suggested that load reduction through Demand Response (DR) may**
2 **become necessary more often in the future?**

3 A. Yes, in the instant case, Company witness Sharma testified:

4 “Under circumstances where available generation is unable to meet load
5 demand, the Company will communicate the need to customers under
6 Interruptible Agreements that their load must be reduced.... Due to lower
7 energy reserves in the market, *the potential for the frequency of these*
8 *event has increased.*”⁴³ (emphasis added)

9 **Q. Can’t DTEE just build more generation capacity to address any capacity adequacy**
10 **issues?**

11 A. Yes, to a degree. But there are at least two limitations to that approach:

12 1. DTEE and other utilities across the country are experiencing difficulties trying to bring
13 new wind and solar generation facilities online on schedule (see below).

14 2. Due to the drive to decarbonize, new generation facilities are mostly wind and solar.

15 These facilities are weather-dependent and, within each technology, highly correlated
16 in their output. A low-wind weather pattern may cover much of the State at one time,
17 reducing the output of wind turbines across a broad area. A cloudy weather pattern may
18 cover much of the State at one time, reducing the output of solar farms across a broad
19 area.

20 **Q. Has DTE Energy expressed concerns about their ability to bring new generation**
21 **facilities online on schedule?**

22 A. Yes. In August of 2022, DTE Energy’s Director of Renewable Energy testified:

⁴³ Direct testimony of P. Sharma, PS-74 & PS-75, lines 18-20 and 2-3, respectively

1 “The Company is currently experiencing delays with both the White Tail
2 Solar Project (120 MW) and the Freshwater Solar Project (200 MW), and is
3 undergoing confidential discussions with the developer, so an expected
4 Commercial Operation Date (COD) is not known at this time.”⁴⁴

5 In November of 2022, A member of DTEE’s Renewable Energy Strategy Team testified
6 on multiple issues with bringing planned generation facilities online on-time:

7 “The MISO generation interconnection (GI) process was targeted to take around 500
8 days under the tariff but has experienced delays, with recent projects taking over
9 900 days to complete from start to finish. The extended process with the additional
10 risk of delays limits the ability of projects to become commercially operational by
11 the date they are needed.”⁴⁵
12

13 and also,

14 “As Witness Leslie discusses in her testimony, the solar photovoltaic industry has
15 recently faced disruptions on a global scale with supply chain constraints and
16 international trade actions affecting the availability of solar panel modules being
17 imported into the US. These developments have delayed some solar projects as
18 reported by the US Energy Information Administration and other sources and
19 created uncertainty for utilities and developers related to the pricing and availability
20 of solar panels.”⁴⁶
21

22 Growing interconnect queues are a national problem; a Berkeley Lab study shows 2,600

23 GW of capacity in the transmission interconnect queues, up 30% during 2023.⁴⁷

⁴⁴ U-21172, Direct Testimony of K. W. Cameron, 2 V 36, lines 6-10

⁴⁵ U-21193, Direct Testimony of V. M. Hernandez, 5 V 1050, lines 12-16

⁴⁶ *ibid*, 5V 1054, lines 4 - 10

⁴⁷ Sean Wolfe, “U.S. interconnection queues, already jammed, grew 30% in 2023,” *Power Grid International*, April 10, 2024. Accessed on 7/9/2024 at: <https://www.power-grid.com/renewable-energy/u-s-interconnection-queues-already-jammed-grew-30-in-2023/>

1 **Q. Couldn't DTEE build a new nuclear plant to fill the gap?**

2 A. Building a new nuclear power plant would certainly take many years, failing to fill the
3 immediate potential capacity gap. The most recently built nuclear power plant in the U.S.,
4 Georgia's Vogtle, started construction in 2009, and finished this year.⁴⁸

5 Additionally, while nuclear power is "firm power,"⁴⁹ it is not, in a practical sense,
6 dispatchable. While it is technically possible to vary the output of a nuclear power plant,
7 for economic reasons and the challenges of the refueling cycle, nuclear power plants are
8 nearly always operated at full capacity. This functionally fixed-output generation source
9 does not effectively fill the gaps in load/supply balance as demand varies and the output of
10 solar and wind facilities varies over time.

11 **Q. What zero-carbon alternatives could be implemented quickly?**

12 A. There are two that come to mind: Demand Response (DR), and energy storage. Both are
13 zero emission, and both can be ramped up rapidly to bring supply and demand in balance. I
14 will discuss each in turn.

⁴⁸ Gautama Mehta, "Georgia's Vogtle plant could herald the beginning — or end — of a new nuclear era," *GPB news*, April 9, 2024. Accessed on 7/9/2024 at: <https://www.gpb.org/news/2024/04/09/georgias-vogtle-plant-could-herald-the-beginning-or-end-of-new-nuclear-era>

⁴⁹ Defined by the U.S. EIA as "Power or power-producing capacity, intended to be available at all times during the period covered by a guaranteed commitment to deliver, even under adverse conditions." *US. EIA*, "Glossary". Accessed on 7/10/2024 at: <https://www.eia.gov/tools/glossary/?id=electricity>

1 **B. DEMAND RESPONSE BENEFITS**

2 **Q. What is Demand Response (DR)?**

3 A. Demand Response is a very old idea. Any program which incents customers to reduce
4 their energy usage during periods of peak demand, including pricing programs (e.g.,
5 time-of-use, critical peak pricing, or critical peak rebates) may be considered demand
6 response.⁵⁰ A DR program may reduce the customer’s total energy consumption, but
7 more often it shifts their energy consumption from a high demand time period to another
8 time period.

9 **Q. What is the relationship between DR and “non-wires alternatives” (NWA)?**

10 A. The MPSC has defined non-wires alternatives as:

11 “An electricity grid investment or project that uses distribution solutions
12 such as distributed energy resources (DER), energy waste reduction
13 (EWR), demand response (DR), and grid software and controls, to defer or
14 replace the need for distribution system upgrades.”⁵¹

15 NWA is a broader concept, that includes DR, but also other kinds of grid
16 investment. Note that the MPSC definition specifically states that NWA defers or
17 replaces the need for *distribution system* upgrades.

18 **Q. What is a Virtual Power Plant (VPP), and how is that related to demand response?**

19 A. According to the U.S. DOE, VPPs are:

20 “...generally considered a connected aggregation of distributed energy
21 resource (DER) technologies, offer deeper integration of renewables and
22 demand flexibility, which in turn offers more Americans cleaner and more

⁵⁰ U.S. DOE Office of Electricity, “Demand Response.” Accessed on 7/9/2024 at:
<https://www.energy.gov/oe/demand-response>

⁵¹ U-20147, Order dated August 20, 2020, page 11

1 affordable power.”⁵²

2 VPPs extend the traditional concept of demand response in two ways:

- 3 1. The aggregation of DER is often done by a third party, though it may be
4 done by the electric utility.
- 5 2. The DERs being aggregated may include generation and/or batteries,
6 which can inject energy into the grid, rather than just reduce the load on
7 the grid.

8 **Q. What kind of DER technologies can participate in a VPP?**

9 **A.**According to Jigar Shaw, of the DOE,

10 “A VPP is generally considered a connected aggregation of DER
11 technologies – not only solar and battery storage, but increasingly grid-
12 interactive efficient appliances and buildings, electric vehicle charging,
13 and thermal energy storage. Aggregators, utilities, or grid operators, under
14 terms agreed upon with participants, can remotely and automatically
15 adjust DERs in this aggregation to provide clean energy, reliability, and
16 grid services while maintaining customer comfort and productivity.
17 Through a combination of software and hardware, VPPs not only open the
18 grid to a whole new utility-scale, behind-the-meter supply, but also
19 coordinate disparate DERs into holistic, demand-flexible resources.
20 Operators gain the flexibility to better reduce peak demand and, as a
21 result, defer investment in additional capacity and infrastructure to serve a
22 peak load that is expected to increase as we electrify the nation’s
23 economy.”⁵³

24

25 **Q. What advantages do VPPs offer?**

26 **A.**According to Jigar Shaw, of the DOE,

⁵² U.S. DOE Loan Programs Office, “Virtual Power Plants.” Accessed on 7/9/2024 at:
<https://www.energy.gov/lpo/virtual-power-plants>

⁵³ Jigar Shaw, “Introducing VPPieces: bite-sized blogs about Virtual Power Plants”, *U.S. DOE*,

1 “DERs can provide energy at a lower price than what the grid typically
2 offers. They do so more cleanly while offering consumers greater
3 resilience during adverse grid events. And despite commercial lenders’
4 unwillingness to adequately recognize it, DERs are also more widely
5 available and cost-effective than ever. As researchers at Lawrence
6 Berkeley National Laboratory have shown, solar adopters can come from
7 a range of incomes, and financing options are gradually expanding to
8 lower income groups, as well as to those with below-median home values
9 and credit scores.”⁵⁴

10 and also:

11 “Energy end-use is at least somewhat predictable because most people
12 follow daily patterns: washers, dryers, ovens, HVAC, and other usual
13 suspects come to life around the same times each day, often in the
14 evening. These daily peaks, as well as seasonal peaks, are when electricity
15 is most expensive, hence when demand flexibility can save consumers the
16 most money... Additionally, *the costs of building new transmission and*
17 *distribution infrastructure* are borne by ratepayers. This spend is
18 increasing as a portion of the average U.S. electricity bill as utilities
19 overbuild this infrastructure to handle peak loads – meaning that the
20 average utilization of the grid is going down every year. Utility spending
21 for electricity delivery increased 65% over the past decade and now
22 represents nearly half of the all-in costs of electricity supply. VPPs, and
23 DERs in general, can further drive savings by deferring further investment
24 in system infrastructure by spreading out electricity demand that will only
25 increase as we electrify the nation’s economy.”⁵⁵ (emphasis added)

26 Reducing peak demand not only reduces or defers the need for new generation, but also
27 for distribution grid capacity upgrades. As I discussed earlier in this testimony, DTEE is
28 proposing to spend ~\$307M of capital on capacity related distribution upgrades, in the
29 instant case alone.

Loan Programs Office, May 12, 2022. Accessed on 7/9/2024 at:
<https://www.energy.gov/lpo/articles/introducing-vppieces-bite-sized-blogs-about-virtual-power-plants/>

⁵⁴ Ibid

⁵⁵ Jigar Shaw, “VPPiece #2: Benefits to Affordability,” *DOE Loan Programs Office*, June 9, 2022. Accessed on 7/9/2024 at: <https://www.energy.gov/lpo/articles/vppiece-2-benefits-affordability>

1 **Q. Can VPPs provide peak capacity quickly?**

2 A. Yes! Here are two examples:⁵⁶

3 1. The Ontario Independent Electricity System Operator’s Save on Energy Peak Perks
4 program enrolled 100,000 homes within six months in 2023, reducing peak summer
5 demand by up to 90 MW.

6 2. The California Public Utility Commission’s Demand Side Grid Support VPP launched
7 in 2022, and achieved 142 MW of committed capacity within a year.

8 **Q. Does DTEE recognize that DR supports its transition to clean energy?**

9 A. Yes. DTEE states, “DR programs allow electric customers to play a role in the operation of
10 the electric grid and support the clean energy transition.”⁵⁷

11 **Q. Does DTEE recognize that DR reduces both generation and distribution costs for
12 ratepayers?**

13 A. No such recognition is apparent in the Company’s testimony in the instant case. DTEE
14 recognizes the generation / energy-cost benefit (extending even to wholesale prices), but
15 makes *no mention* of savings in the distribution system:

16 “Q15. What are the benefits of DR to the utility?

17 A15. The reduction or shift in customer usage from DR programs can
18 provide value to the utility by reducing the need for additional *generation*,
19 resulting in lower energy costs and supporting the Company’s generation

⁵⁶ Brian Martucci, “US VPPs can meet summer demand peaks faster, cheaper than new generation and transmission: RMI,” *Utility Dive*, July 10, 2024. Accessed on 7/20/2024 at: <https://www.utilitydive.com/news/us-vpps-can-meet-summer-demand-peaks-faster-cheaper-than-new-generation-an/721024/>

⁵⁷ Direct testimony of K. O. Farrell, pg. KOF-5, lines 15-16

1 transformation. If DR programs are less costly than other capacity
2 resources, the utility and all customers can benefit from displacing or
3 deferring the need for new *generation resources*. In addition, reducing
4 electricity usage when demand is the highest can result in lower wholesale
5 energy prices.”⁵⁸ (emphasis added)

6 However, in discovery, DTEE seems to acknowledge that demand response is beneficial to
7 the distribution system by reducing peak load:

8 “Question: 19. Regarding DTE Energy’s Demand Response (DR)
9 program, as described on pages KOF-5 & 6:

10 b. Testimony discusses the benefit of DR by reducing the need for
11 additional generation. Does the Company’s DR program provide
12 any benefit to the Company by reducing load on the distribution
13 system, during peak periods?

14 Answer: Yes, the Company’s DR programs are designed to be used as a
15 capacity resource during peak periods.”⁵⁹

16 **C. DTEE’S DR PROGRAM**

17 **Q. What kinds of offers make up DTEE’s DR program?**

18 A. DTEE currently offers eleven DR tariffs and programs.⁶⁰ Ten of these involve directly
19 reducing customers’ specific load during peak periods, such as air conditioners or water
20 heaters, in return for a lower rate during other times, or some other financial reward. The
21 eleventh, Dynamic Peak Pricing (DPP, AA D1.8), charges customers a much higher rate
22 during declared DR “events” - critical peak periods (CPPs) when the utility is struggling to
23 meet demand.

⁵⁸ Ibid, pages KOF-5 and KOF-6, lines 23-25 and 1-4, respectively

⁵⁹ GLREADE-2.19b

⁶⁰ Direct testimony of K. O. Farrell, pg. KOF-8

1 **Q. Given the resource adequacy challenges you've mentioned above, is DTEE planning a**
2 **major expansion of these programs?**

3 A. DTEE's words and projections seem to be at odds with each other. DTEE asserts that:

4 "The Company is committed to continued growth of the portfolio and
5 prudent spending to assure the Company and its customers are receiving
6 the maximum benefits of demand response."⁶¹

7 However, they forecast that the portfolio will shrink from 786 MW in 2022 to 712 MW in
8 2025/2026PY,⁶² a reduction of 9.4% ($786 \text{ MW} - 712 \text{ MW} / 786 \text{ MW} = .094$).

9 **Q. Why would DTEE cutback their DR programs now?**

10 A. They aren't exactly cutting them back. They're recognizing that they are not as large as
11 they had computed in the past and are adjusting their capacity claim to more closely align
12 with reality.⁶³ Additionally, as part of the 2022 IRP settlement, DTEE is issuing two 25
13 MW DR-related competitive solicitations.⁶⁴ Given their asserted commitment, it's unclear
14 to me why they would not have initiated such programs on their own.

15 **Q. Has DTEE had problems with the execution of load curtailment in their DR**
16 **programs?**

17 A. Yes. DTEE has issues with Radio Control Units (RCUs) and Load Control Devices
18 (LCDs) used to interrupt customer equipment in their CoolCurrents program.

⁶¹ *ibid*, pg. KOF-44, lines 4-7

⁶² *ibid*, pg. KOF-43

⁶³ *ibid*, pg. KOF-43

⁶⁴ *ibid*, pg. KOF-42

1 **Q. What kind of problems?**

2 A. CoolCurrents interrupts air conditioning. It is dependent on either an old RCU (Radio
3 Control Unit) or newer LCD (Load Control Device) to interrupt the air conditioner. But for
4 a variety of reasons, many LCDs are not able to interrupt service when called to do so. The
5 Company also reports that RCUs are “prone to malfunctioning and difficult to service”⁶⁵,
6 and about 170,000 RCUs have been replaced with newer LCDs. But of the 170,000
7 replacement LCDs installed, “nearly 25,000” are “not available for interruption”.⁶⁶

8 **Q. What does DTEE propose to do about LCDs that aren’t available for interruption?**

9 A. DTEE proposes to replace the 24-volt LCDs, which are apparently often disconnected
10 from the transformer that supplies them with power, with 240-volt LCDs, which will tie
11 directly into the power of the air conditioner.⁶⁷ In short, DTEE’s replacement device (the
12 24-volt LCD) hasn’t work well, so they’re replacing the replacements.

13 **Q. Have the customers with the failed RCUs and LCDs remained in the CoolCurrents**
14 **program and continued to benefit from lower rates?**

15 A. Yes, they have. A DR program is supposed to justify the cost of the incentive to the
16 customer by saving money, by reducing load. But providing the customer with the
17 incentive when the equipment is unable to reduce peak load causes a reduction in
18 Company revenue unmatched by any reduction in its costs. In fact, the failed units impose
19 an additional cost to replace the RCUs and LCDs. Worse yet, this policy creates a perverse

⁶⁵ *ibid*, KOF-16, lines 23 & 24

⁶⁶ *ibid*, KOF-16, lines 7 & 9

⁶⁷ *ibid*, KOF-27

1 incentive for customers to sabotage their LCDs, so that they can continue gain the benefits
2 of being in the CoolCurrents program, without the discomfort of having their air
3 conditioner turned off for hours at a time.

4 **Q. How widespread is this problem of CoolCurrents LCDs failing?**

5 A. The Company stated “nearly 25,000” replacements failed.⁶⁸ It’s unclear if there were non-
6 replacement LCDs installed that also failed. But the Company provided one worrying
7 anecdotal figure: on the Fisher sub-station there are 298 CoolCurrents customers whose
8 LCDs are “online”, and an additional 201 CoolCurrents customers whose LCDs “are
9 currently offline because they do not have the proper 24-volt power source connection.”⁶⁹.

10 That’s a total of 499 CoolCurrents customers on the Fisher substation with LCDs, of which
11 201 of them are without power, for a failure rate of 40% (201/499=.40)!

12 In discovery regarding the above calculation, the Company acknowledged that this failure
13 rate is not unique to the Fisher substation:

14 “Question... For this sample, 40% (201 offline of 201+299=500 total
15 CoolCurrent customers) are offline. Does the Company believe that the
16 offline rate for CoolCurrents customers in other parts of the Company’s
17 network is roughly 40%?
18

19 Answer: Yes.”⁷⁰
20

21 A 40% failure rate in a large program like CoolCurrents represents a serious failure.

⁶⁸ *ibid*, KOF-16, line 7

⁶⁹ Direct testimony of S. M. Hartwick, pg SMH-60 & 61, lines 24-25 and line 1, respectively.

⁷⁰ GLREADE-3.43g

1 **Q. What is the DTEE Insight program?**

2 A. DTEE customers can download an app, which allows them to view their hourly usage from
3 the day before. Customers with the insight app can also get an Energy Bridge (EB), which
4 provides real-time data on the energy consumption of smart devices, and to turn them on
5 and off.

6 **Q. What is the purpose of the DTEE Insight program?**

7 A. The program “aims at driving customer behavior with the goals of reducing both overall
8 energy (gas and electricity) consumption and electricity demand at peak hours. If it
9 succeeded at that, it would be a DR program.

10 **Q. How much has the Insight program reduced, or changed the pattern of, customer**
11 **energy consumption?**

12 A. We don’t know, and neither does the Company. The Company’s filing in the instant case
13 offered no figures whatsoever. In discovery, the Company admitted that they have no data
14 to suggest that customers with the Insight program, with or without the bridge, have
15 “altered their energy consumption patterns in any beneficial way.”⁷¹

⁷¹ GLREADE-2.32f and GLREADE-2.32g

1 **Q. How does the Company justify asking for recovery of the program costs?**

2 A. The Company describes how participation in the program is growing, with a rapid increase
3 in the number of copies of the app downloaded, and 56,000 households with energy
4 bridges.⁷² The Company also declares their intent to make the program “an educational
5 tool”.⁷³

6 **D. CRITICAL PEAK REBATE PROGRAMS**

7 **Q. What other kinds of DR programs are being offered by electric utilities in other**
8 **jurisdictions?**

9 A. One common approach is a critical peak (CP) rebate program. The core idea is this: when
10 the Company declares a CP-event and notifies participating customers, those customers
11 that reduce their usage during the CP-event period get an on-bill credit. The credit provides
12 the incentive for customers to reduce their usage during declared CP-events. Participation
13 is voluntary.

14 **Q. How is that any better than DTEE’s current Dynamic Peak Price (DPP) rate?**

15 A. DTEE’s DPP rate schedule (D1.8) is a time-of-use schedule, with a very high (\$0.95/kWh)
16 rate during declared CP-events.

17 The CP-rebate programs have several advantages over the DPP rate schedule:

⁷² Direct testimony of K. O. Farrell, pg. KOF-49 & KOF-50

⁷³ Ibid, KOF-51

- 1 1. A CP-rebate program offers a reward (a bill credit) vs. a punishment (a very high rate
2 for the duration of the event). Customers may be reluctant to sign up for a program that
3 will charge them a high rate, fearing that either they will miss a notification or that they
4 will be out-of-town, and unable to adjust their air conditioner. With a rewards-based
5 program, the worst thing that happens is that the customer misses the opportunity to get
6 the reward.

- 7 2. It isn't a rate schedule. The number of rate schedules available to customers is already
8 overwhelming and confusing. Other electric suppliers offer a CP-rebate program that
9 can be added by any residential or commercial customer on any (or nearly any) rate
10 schedule.

- 11 3. With D1.8's punishingly high rate during CP events, the utility is obliged to limit the
12 number of CP-events that can be declared. Few customers would dare to sign up for the
13 DPP rate if the Company could declare a CP-event every day. Some of the CP-rebate
14 programs I'll describe below have a limit on the number and/or duration of declared
15 CP-events, but others do not. Given DTEE witness Sharma's declaration that DR
16 events may become more frequent in the future, this could be a major advantage to the
17 Company and its customers.

1 **Q. What are the advantages of a CP-rebate program vs. service interruption programs**
2 **like CoolCurrents, SmartSavers, and interruptible water heating?**

3 A. For one, it doesn't require DTEE installed equipment at the customer site. Equipment
4 installed at customer sites must be maintained and periodically replaced. Given the
5 difficulties DTEE has reported with CoolCurrents RCUs and LCDs, this is a major
6 advantage.

7 Secondly, a CP-rebated program is not technology specific. The customer can reduce their
8 usage in any manner or manners they choose. They may simply turn up their thermostat to
9 reduce their air conditioning load (without the need for a smart thermostat, or an LCD).
10 They may turn down the setpoint on their water heater (without the need for an LCD).
11 They may reschedule activities like washing clothes or dishes. Or they may take more
12 dramatic actions. A customer with a solar + battery system may choose to isolate from the
13 grid and run on their own solar generation and battery. A customer with a generator may
14 choose to isolate from the grid and power their facility with their generator (there are
15 numerous commercial customers with sizable loads and generators); and the generator
16 doesn't need remote start-up capability. A customer with an EV and vehicle-to-load (V2L)
17 capability (such as the Ford F-150 Lightning) may isolate from the grid and power their
18 home with their EV. These are just a few ideas that come easily to mind. By creating an
19 easy-to-understand reward program, we could unleash the full creativity and innovation of
20 customers throughout the service territory! The possibilities for peak load reduction are
21 limited only by the imaginations of the customers, and the size of the incentive given.

1 **Q. Who would administer this program?**

2 A. In other jurisdictions, CP-rebate programs are sometimes run by the utility, and other times
3 by a third-party aggregator. In its order of December 21, 2022, in case U-21099, the
4 MPSC lifted the prohibition on demand response aggregation resources participating in
5 wholesale power markets for commercial and industrial customers with a minimum
6 enrollment size of 1 MW, but not for residential customers or smaller C & I customers.⁷⁴
7 So for now, a program that would allow participation by residential and small commercial
8 customers would need to administered by DTEE, unless and until the Commission expands
9 the opportunity for DR aggregation to smaller customers.

10 **Q. How could DTEE determine how much the CP-rebate customer reduced their usage**
11 **as a result of the CPP-event vs. how much they would have used otherwise?**

12 A. The programs I've seen compare the customer's actual usage during the event to that same
13 customer's usage during the same hours in recent days.

14 **Q. Is determining how much energy was saved by comparing it to the usage of the**
15 **customer over a prior time period a new concept to DTEE?**

16 A. No, DTEE is already doing this to estimate the capacity value of DR programs⁷⁵, though it
17 may be new functionality for the Company's billing system.

18 **Q. What electric utilities offer a CP-rebate program like the one you describe?**

19 A. In searching the web, GLREA's research staff found several:

⁷⁴ U-21099, Order dated December 21, 2022, page 49

⁷⁵ GLREADE-2.21a & 2.21d

- 1 1. Southern California Edison (SCE) runs a program called Power Saver Rewards. SCE may
2 declare up to 12 events, for 5 hours each. Customers earn \$1.00/kWh reduced during the
3 event, paid as an annual bill credit. There is no penalty for not responding. Each
4 customer's consumption is compared to the same time period during the prior 10 business
5 days, and the savings calculated against the 5 highest energy consumption days of those 10
6 business days. The program includes a smartphone app called ClimateResponseapp from
7 Olvine which allows enrollment and provides the notifications. Power Savers specifically
8 includes customers with their own solar energy system.⁷⁶

- 9 2. In Delaware, Delmarva Power offers a Peak Energy Savings Credit when the utility
10 announces a Peak Savings Day. Customers automatically get a call the night before an
11 event, or can choose to be notified of an event via text or email. Customers earn a credit of
12 \$1.25/kWh saved "below your average energy use."⁷⁷ An apparently identical program is
13 offered in Maryland by Pepco (also an Exelon company).⁷⁸

- 14 3. In Colorado, the Holy Cross Energy co-op offers a similar program called Peak Time
15 Payback. The Company declares "high alerts," during which customers earn a credit of
16 \$.75/kWh, and "critical alerts," during which customers earn a credit of \$1.50/hour. The
17 amount of energy saved is computed by "an algorithm that determines your expected

⁷⁶ Southern California Edison, "Power Saver Rewards FAQ." Accessed on 7/9/2024 at:
<https://powersaver.sce.com/faq/>

⁷⁷ Delmarva Power, an Exelon Company, "About Peak Energy Savings Credit." Accessed on
7/9/2024 at: <https://www.delmarva.com/ways-to-save/for-your-home/delaware/peak-energy-savings-credit/about-peak-energy-savings-credit>

⁷⁸ Pepco, an Exelon Company, "About Peak Energy Savings Credit." Accessed at 7/9/2024 at:
<https://www.pepco.com/ways-to-save/for-your-home/maryland/peak-energy-savings-credit/about-peak-energy-savings-credit>

1 electricity usage at the time of predicted high demand (based on your historical usage
2 patterns).” Program is limited to no more than *96 Peak Time Payback hours* per calendar
3 year.⁷⁹ This program illustrates the flexibility a voluntary rebate program offers. There is
4 no mention of a maximum event duration, and it can support a very high number of CP-
5 events – if each event were 4 hours, Holy Cross Energy could declare 24 events during the
6 year! At the end of 2023, Holy Cross reported that they have 3,022 residential and
7 commercial customers enrolled (6.6% of their eligible customers).⁸⁰

- 8 4. In Virginia, Dominion Energy offers a similar program called Peak Time Rebates. Event
9 notification is via text or email. The utility expects about 10 events per year, each for no
10 more than four hours. Usage during the event is compared to the customer’s average usage
11 during those same hours during the 10 prior weekdays. Customers receive a credit of
12 \$1.25/kWh. Dominion recommends that customers *prepare* for an event by pre-cooling
13 their home and planning a dinner that doesn’t need the oven.⁸¹

⁷⁹ Holy Cross Energy, “Peak Time Payback.” Accessed on 7/9/2024 at:
<https://www.holycross.com/member-programs/peak-time-payback>

⁸⁰ Holy Cross, “2023 Annual Report,” slide 6. Accessed at: https://holycross.com/wp-content/uploads/2024/06/HCE_AnnualReport2023_Email.pdf

⁸¹ Dominion Energy, “Peak Time Rebates Program.” Accessed on 7/9/2024 at:
<https://www.dominionenergypr.com/#toggle-id-11>

- 1 5. In Oregon, PGE also offers a program called Peak Time Rebates. Notifications are sent via
2 email or text. Usage during the event is compared to the prior 10 days during the same
3 hours, but adjusted for temperature. Customers earn a credit of \$1.00/kWh. PGE reports
4 that “22% of PGE customers are participating in energy shifting programs like Peak Time
5 Rebates.”⁸²
- 6 6. In Maryland, BGE offers a very similar program called Smart Energy Rewards. BGE
7 “plans to call up to 3” Energy Savings Days per summer, during the period of 2pm to 6pm.
8 Notifications may be provided via phone, email, text and mobile app alert, or combinations
9 of those. Customers receive a credit of \$1.25/kWh for reduction beyond the cycling of their
10 air conditioner (BGE has another DR program with air conditioning interruption that runs
11 in parallel with this). Energy consumption is compared to the prior 14 days with similar
12 weather. In an interesting variation, there is no enrollment required.⁸³

⁸² PGE, “Peak Time Rebates.” Accessed on 7/9/2024 at: <https://portlandgeneral.com/save-money/save-money-home/peak-time-rebates>

⁸³ BGE, an Exelon Company, “Frequently Asked Questions.” Accessed on 7/9/2024, at: <https://www.bge.com/ways-to-save/for-your-home/energy-savings-days/ser-faqs>

1 7. In Illinois, Ameren has a “Peak Time Rewards” program. Events are declared with alerts
2 sent to customers via email or text. The amount of reduction is computed based on the
3 customer’s prior usage.⁸⁴ Customers earn between \$0.50 and \$2.00/kWh (it varies by
4 year).⁸⁵ The program started in 2015, and had more than 130,000 participants in 2021.⁸⁶

5 8. Right here in Michigan, Consumers Energy offers “Peak Time Rewards.” Customers enroll
6 and provide an email address. The utility can declare up to 14 events, between 2pm and
7 6pm. The amount of reduction is computed based on the customer’s “typical energy use on
8 similar weather days when there is no event.” Customers earn \$1/kWh of reduced use.

9 All of the above programs have common elements. Customers usually must enroll. There
10 is a notification of an event given via text and/or email and/or an automated phone call.
11 Customers may optionally choose to reduce their energy consumption in any manner of
12 their choosing. There is no penalty for ignoring an alert. The utility’s billing system
13 compares their usage during the event to their usage during “similar” recent times and
14 computes the kWh load reduction. The customer gets a bill credit of a specific amount per
15 kWh saved, varying from a low of \$0.75/kWh to a high of \$1.50/kWh, depending on the
16 program and the type of event.

⁸⁴ Ameren, “Peak Time Rewards.” Accessed on 7/17/2024 at:
<https://www.ameren.com/illinois/account/customer-service/bill/peak-time-rewards/details#a0364d9a-5104-49a9-8f0f-ea1e20ac5aaa-971f87fd-59aa-4d3e-a1c3-ad77472a1962>

⁸⁵ “Ameren Illinois’ Peak Time Rewards,” *Citizens Utility Board*, May 2021. Accessed on 7/17/2024 at: <https://www.citizensutilityboard.org/wp-content/uploads/2017/02/AmerenPTR.pdf>

⁸⁶ “Smart Energy Options,” *Elevate*. Accessed on 7/17/2024 at:
<https://www.elevatenp.org/smart-electricity-options/>

1 The critical feature is that the CP-rebated program does not proscribe *how* the customer
2 will save energy during the event. This is left up to the ingenuity of the customer. This
3 could be particularly important for commercial customers, who use energy in so many
4 different ways, providing a wide variety of options for reducing their consumption.

5 **Q. Can peak rebate programs shift significant amounts of load during events?**

6 A. Yes. On July 8, 2024, PGE (Portland) instituted voluntary energy shifting. They report that
7 21% of the customer base responded, causing a very rapid decrease in load of 109 MW.
8 Load immediately prior to the event was approximately (reading the graph) 4300 MW, so
9 this was a reduction of (109 MW / 4300 MW = .025) 2.5% of peak load of the entire
10 system:⁸⁷



⁸⁷ John Engle, "How an Oregon utility achieved the largest customer demand shift in history,"

1 **Q. Does DTEE have any pilot programs that are similar to the CP-rebate programs you**
2 **describe?**

3 A. Not that I'm aware of. The only one that appears related is the DR Residential Generator
4 Pilot, described in KOF-39 through KOF-42 and exhibit A-12, schedule B5.6.2. The DR
5 residential battery pilot suffers several disadvantages when compared to a CP-rebated
6 program:

7 1. It's limited to one technology – customer owned generators. Anyone with a generator
8 could participate in a CP-rewards program, but so could lots of customers without a
9 generator.

10 2. It requires that the customer have a subscription to “Mobil Link”. Compared to current
11 DTEE DR programs, this has the significant advantage of avoiding an LCD, but the
12 Company provides no data on how prevalent Mobile Link subscriptions are amongst
13 residential customers with generators. The Company has found only 6,200 residential
14 customers with generators and mobile-link in DTEE's service territory.⁸⁸ This small set
15 of eligible customers severely limits the potential peak demand reduction this program
16 could theoretically achieve.

Power Grid International, July 15, 2024. Accessed on 7/16/2024 at: <https://www.power-grid.com/der-grid-edge/how-an-oregon-utility-achieved-the-largest-customer-demand-shift-in-its-history/>

⁸⁸ GLRADE-2.12bi

1 3. Once enrolled, the customer's generator will be automatically started during an event.
2 While enrollment is voluntary, customers may not like their generator starting and
3 stopping outside of their control. In a CP-rebate program, starting and stopping the
4 generator would be under the control of the customer, and would occur at the discretion
5 of the customer.

6 4. It appears that the incentive to the customer is in no way proportional to their load
7 shed, at least during the pilot program. A customer gets a gift card upfront, and another
8 for remaining enrolled for the duration of the pilot term. In a CP-rebate program, the
9 credit the customer receives is based on the kWh they reduced usage during the event.

10 **Q. Are you saying that the proposed DR residential generator pilot should be denied**
11 **recovery of costs?**

12 A. No, I support the DR residential generator pilot. Unlike most of DTEE's existing DR
13 programs, the customer will not lose some valuable service during the event; that's a big
14 advantage in gaining enrollees. I think a similar customer generator program for
15 *commercial* customers would have a much greater DR value, because so many commercial
16 buildings have large loads and large backup generators.

17 But a CP-rebate program could be far better than the generator pilot, because it would be
18 available to a vastly greater number of customers than any program limited to customers
19 with backup generators with the mobile link option.

1 **Q. What should the Commission do regarding critical-peak rebate programs?**

2 A. The Commission should direct the Company, in its next rate or demand response case, to
3 propose a robust pilot of CP-rebate program, structured like those I have described in this
4 testimony. If the Company resists, the Commission should create the opportunity for a
5 third-party aggregator to do so.

6 **E. GRID INTERACTIVE WATER HEATER PROGRAMS**

7 **Q. What other kind of DR program has been shown to be successful in other**
8 **jurisdictions?**

9 A. Grid interactive water heater DR programs.

10 **Q. What is a grid interactive water heater (GIWH) DR program?**

11 A. Grid interactive (electric) water heaters allow the utility to turn the water heater's set-point
12 both up and down, or to reduce the heating *rate*. Unlike simpler interruption devices, like
13 the LCDs that DTEE is using in its interruptible water heating service, GIWHs can pre-
14 heat the water to a higher-than-normal temperature in advance of a critical peak period.
15 This allows for allows interruption of service for a period of time with no customer impact.

1 **Q. What are the advantages of grid interactive water heaters for the utility?**

2 A. In addition to the usual benefits of any DR program, grid interactive water heaters can
3 store energy from peak solar output in the afternoon and turn the load off during peak load
4 during the evening. Unlike service interruption-based services, it can absorb energy at
5 times of excess production, reducing the “duck curve”. Here’s a description from
6 Guidehouse Insights:

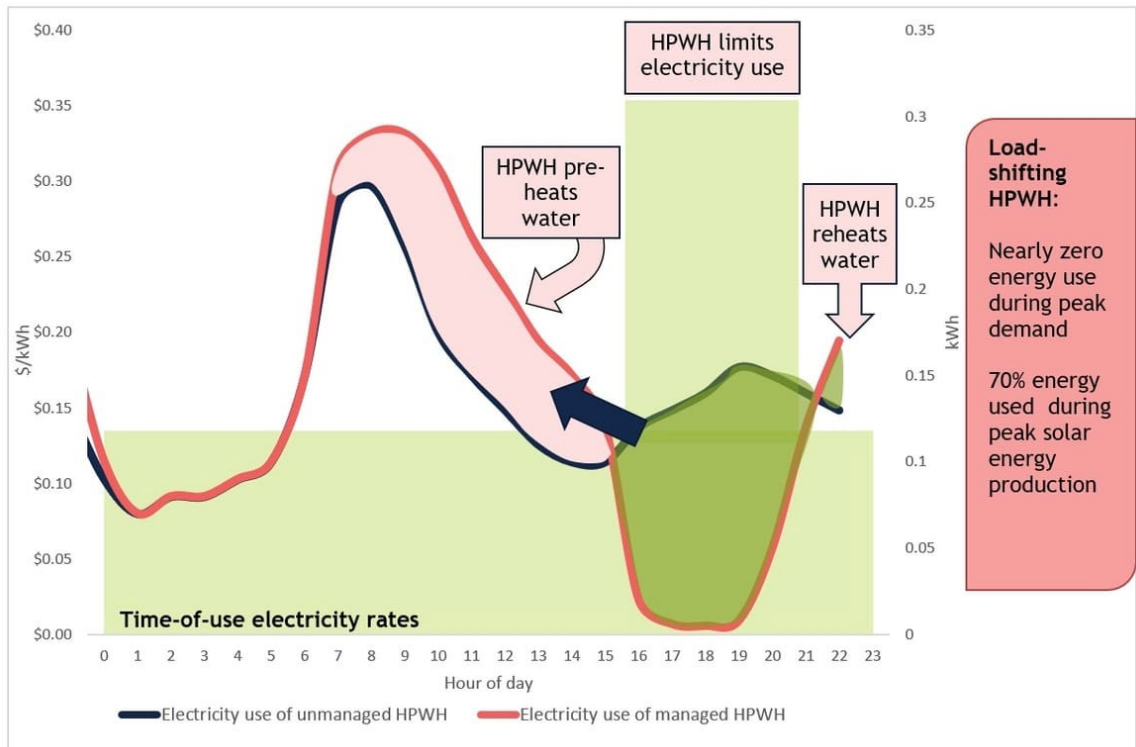
7 “Water heaters are one of the most ubiquitous pieces of equipment in the
8 building sector. In addition to being essential for everyday life, water
9 heaters offer enormous thermal storage and load flexibility potential. In
10 the US, water heating is the [second-largest single end use energy user](#) after
11 space heating, accounting for roughly 19% of overall energy use in
12 homes.

13 When made electric and equipped with two-way grid communication
14 abilities, storage water heaters become known as grid-interactive water
15 heaters (GIWHs). Two-way grid communication allows grid operators to
16 heat water in customers’ homes at any point throughout the day. Water
17 heating is a [flexible end use](#), and if hot water is available when the
18 consumer needs it, it can be heated at another point during the day. The
19 thermal mass of the water in the tank acts as a virtual storage device for
20 the energy used to heat it, ensuring that zero-carbon electricity isn’t
21 wasted.

22 In a grid increasingly powered by renewable sources that are often at high
23 output levels when demand is low, GIWHs enable load shifting to make
24 demand for hot water follow supply. Excess solar energy in the early
25 afternoon that would have otherwise been curtailed could be used to heat
26 water in anticipation of the evening demand ramp when people return
27 home from work and school.”⁸⁹

⁸⁹ Grid-Interactive Water Heaters Are Important VPP Resources,” *Guidehouse Insights*,
November 12, 2021. Accessed on 7/15/2021 at: <https://guidehouseinsights.com/news-and-views/grid-interactive-water-heaters-are-important-vpp-resources>

- 1 This illustration from Canary Media shows how grid-interactive water heaters can
2 store peak mid-day solar energy to meet demand in the evening:⁹⁰



3

⁹⁰ Jeff St. John, “Home water heaters: A new ally in making grids cleaner,” *Canary Media*, April 11, 2022. Accessed on 7/15/2024 at: <https://www.canarymedia.com/articles/grid-edge/home-water-heaters-a-new-ally-in-making-grids-cleaner>

1 **Q. Is the GIWH a new idea?**

2 A. No. Demonstrations were being done back in 2013.⁹¹ ACEEE published a paper
3 on it in 2016, reporting on two pilots completed in 2015.⁹² An article from Utility
4 Dive in 2017 listed pilots at Portland General Electric (PGE), Arizona Public
5 Service (APS), and Green Mountain Power (GMP).⁹³

6 **Q. Have utilities in other jurisdictions implemented GIWH DR programs?**

7 A. Yes, the GLREA’s research team found several:

8 1. Hawaiian Electric started a GIWH program called “Energy Scout” in 2005. By 2012,
9 they had 34,000 residential customers totaling 15 MW of DR curtailment capacity;
10 participants receive a \$3/month bill credit. By 2024 the program had 161 commercial
11 customers totaling 1 MW, who receive a \$5/month bill credit.⁹⁴

⁹¹ Jeff St. John, “The Water Heater as a Grid Battery, Version 2.0,” *Green Tech Media*, November 8, 2013. Accessed on 7/15/2023 at:
<https://www.greentechmedia.com/articles/read/the-water-heater-as-grid-battery-version-2-0>

⁹² David Podorson, E Source, “Grid Interactive Water Heaters – How Water Heaters Have Evolved Into a Grid Scale Storage Medium,” (c) 2016 ACEEE. Accessed on 7/15/2024 at:
https://www.aceee.org/files/proceedings/2016/data/papers/6_336.pdf

⁹³ Herman K. Trabish, “Utilities in hot water: Realizing the benefits of grid-integrated water heaters,” *Utility Dive*, June 20, 2017. Accessed on 7/15/2024 at:
<https://www.utilitydive.com/news/utilities-in-hot-water-realizing-the-benefits-of-grid-integrated-water-hea/445241/>

⁹⁴ Hawaii Electric, “Customer Incentive Programs.” Accessed on 7/20/2024 at:
<https://www.hawaiianelectric.com/products-and-services/customer-incentive-programs/energy-scout>. Also: “Our History and Timeline”, at: <https://www.hawaiianelectric.com/about-us/our-history>

- 1 2. Portland General Electric started the “Connected Water Heaters” program for property
2 managers of residential buildings in 2018. Property managers earn \$20 per water heater
3 per year.⁹⁵
- 4 3. Southern California Edison has a program called “SmartShift Rewards.” Customers
5 must have an electric water heater that uses the CTA-2045 protocol, and has a mixing
6 valve (to avoid scalding). Participants earn an enrollment bonus of \$50 and \$5/month
7 they participate.⁹⁶
- 8 4. Xcel Energy in Colorado has a program called “Smart Water Heater Program.” It
9 requires a heat pump water heater and a mixing valve. Enrollees earn a \$75 enrollment
10 credit and a \$25 per year bill credit.⁹⁷
- 11 5. Fort Collins Utilities operates a program provided by a Company named Itron, which
12 provides full turnkey support, including a cloud-based Distributed Energy Resource
13 Management (DERM) solution. The program also uses the CTA-2045 protocol.⁹⁸

⁹⁵ Portland Electric, “Connected Water Heaters,” accessed on 7/20/2024 at: <https://portlandgeneral.com/property-managers/connected-water-heaters> and also: “Water Heaters Get Smart” at: <https://www.multifamilynw.org/news/water-heaters-get-smart--and-give-you-a-cash-bonus>

⁹⁶ Southern California Edison, “Save Money with Smart Water Heater Rewards,” June 3, 2024. Accessed at 7/20/2024 at: <https://energized.edison.com/stories/save-money-with-smart-water-heater-rewards> Also: “About SmartShift Rewards at: <https://smartshiftrewards.com/faqs/>

⁹⁷ Xcel Energy, “Smart Water Heater Program.” Accessed on 7/20/2024 at: <https://co.my.xcelenergy.com/s/residential/home-rebates/smart-water-heaters> Also:

⁹⁸ Power Grid International, “Fort Collins Utilities adds grid-interactive water heater program to its DERMS solution,” June 23, 2021. Accessed on 7/20/2024 at: <https://www.power-grid.com/der-grid-edge/fort-collins-utilities-adds-grid-interactive-water-heater-program-to-its-derms-solution/>

1 **Q. Are there any non-utility aggregators that run programs with GIWHs?**

2 A. Yes, we found two examples:

3 1. An aggregator called Shifted Energy has been working with Hawaiian Electric for
4 years, and learned from that experience. Shifted Energy provides a cellular Internet of
5 Things chip in an off-tank controller installed in the electric line that powers the water
6 heater. This allows control and data collection independent of the customer's internet
7 network, and includes cybersecurity. It also provides high-quality, high-frequency
8 data.⁹⁹

9 2. An aggregator called Mosaic Power runs a network of 20,000 GIWHs spread from
10 Maryland to Ohio in the PJM region. Mosaic uses the water heater network to
11 participate in the PJM frequency regulation market.¹⁰⁰

12 **Q. Has DTEE considered a GIWH program?**

13 A. No, in discovery, they admit that: "The Company has not explored such a program."¹⁰¹

I. ⁹⁹ Randall Fish and Trevor Gibson, "Two Birds, One Water Heater: How Shifted Energy and Hawaiian Electric are Helping Hawaii Meet its Clean Energy Goals," *Smart Power Alliance*, October 10, 2019. Accessed on 7/20/2024 at: <https://sepapower.org/knowledge/two-birds-one-water-heater-how-shifted-energy-and-hawaiian-electric-are-helping-hawaii-meet-its-clean-energy-goals/>

¹⁰⁰ Mosaic Power, "Yes, Water Heaters Can Do That." Accessed on: 7/20/2024 at: <https://mosaicpower.com/yes-water-heaters-can> and also: "Our Story" at: <https://mosaicpower.com/our-story>

¹⁰¹ GLREADE-3.38

1 **Q. What should the Commission do regarding grid-interactive water heaters?**

2 A. The Commission should direct the Company, in its next rate or demand response case, to
3 propose a robust grid-interactive water heater pilot program. If the Company resists, the
4 Commission should create the opportunity for a third-party aggregator to do so.

5 **VI. DTEE NWA PILOTS**

6 **Q. Did the Company propose pilot programs of non-wires alternatives (NWA)?**

7 A. Yes, responding to the Commission's dated August 20, 2020 in U-20147 explicitly
8 directing DTEE to do so, DTEE presented nine NWA pilots, including six that had been
9 approved in U-21297, order dated December 1, 2023. DTEE believes they "have the
10 potential to become economic alternatives to infrastructure upgrades."¹⁰²

11 **Q. What is your general reaction to the Company's proposed NWA pilots?**

12 A. They're very promising. The Company's pilots include: trying mobile batteries for event
13 restoration (Mobile Trailer), batteries to address sub-station overloading (Omega),
14 batteries plus solar to address sub-station overloading (Port Austin). I'm especially
15 excited that they're trying geo-targeted EWR and DR to relieve a substation (Fisher).

16 **Q. What do you find exciting about the Fisher pilot, which uses geo-targeted EWR and**
17 **DR?**

18 A. It demonstrates that the value of energy and capacity are *location specific*, something I
19 discussed in testimony in U-20359, in the context of customer owned, behind the meter
20 solar:

¹⁰² Direct testimony of S. M. Hartwick, pg. SMH-52 and SMH-53, lines 5-6

1 “DG outflow enters the I&M grid on the distribution network, at the point
2 of use. This has a greater *locational value* than energy that enters the I&M
3 network at the PJM hub interconnect. The DG outflow energy does not have
4 to pass through miles of transmission and distribution system wires and
5 transformers, and does not incur their line losses. If energy at the point of
6 use was not more valuable than energy at central hubs, customers would not
7 pay distribution charges.”¹⁰³

8 DTEE’s pilot design apparently recognizes that energy and capacity in a geographic
9 region served by a stressed sub-station is worth more than energy and capacity in other
10 geographic regions. The Lawrence Berkely National Laboratory published a study on
11 how DERs can provide value to the distribution system, stating:

12 “This report focuses on the locational value of DERs for distribution systems...
13 Locational value of DERs is important in large part because utility investments in
14 electricity distribution systems account for the largest portion of capital
15 expenditures for U.S. investor-owned utilities—29% in 2019 (\$39 billion),
16 according to Edison Electric Institute. Further, that share is increasing, up from
17 22% in 2013.”¹⁰⁴

18 This is a principle that can be effectively expanded.

19 **Q. How should the principle that energy and capacity have locational value be**
20 **expanded?**

21 A. In addition to geo-targeted EWR and DR, the Company should pilot geo-targeted
22 incentives for customer-owned distributed generation. As I’ve testified in the past, “From
23 the viewpoint of the Company’s grid (on the Company’s side of the meter), this [DG
24 customer self-consumption] is *indistinguishable* from a reduction in their load achieved

¹⁰³ U-20359, 7 V 2713, lines 11-16

¹⁰⁴ Frick, Price, Schwartz, Hanus, and Shapiro, “Locational Value of Distributed Energy Resources,” *Lawrence Berkely National Laboratory*, February, 2021, page 1. Accessed on 7/16/2024 at: https://eta-publications.lbl.gov/sites/default/files/lbnl_locational_value_der_2021_02_08.pdf

1 by other means.”¹⁰⁵ Additionally, the outflow from the DG systems will provide
2 additional load relief to the local grid.

3 **Q. Could customer-owned DG provide meaningful amounts of capacity to a geo-targeted**
4 **area?**

5 A. Yes. A recent study showed that, on a national basis, rooftop solar could meet 45% of U.S.
6 electricity demand in 2022.¹⁰⁶ In November of 2022, Texas regulators approved an
7 aggregated customer-DER (Telsa Powerwalls) pilot targeting 80 MW of capacity. It was so
8 successful that the Texas PUC wants to expand it.¹⁰⁷

9 **Q. What should the Commission do regarding geo-targeted incentives for customer-**
10 **owned DG systems?**

11 A. The Commission should direct the Company, in its next rate case or demand response case,
12 to propose a pilot of geo-targeted incentives for customer-owned distributed energy
13 systems (including batteries).

¹⁰⁵ U-20836, 8 V 3188-3189, lines 20 and 1-2, respectively

¹⁰⁶ Ryan Kennedy, “Rooftop solar has the technical potential to meet 45% of U.S. electricity demand,” *PV Magazine*, February 20, 2024. Accessed on 7/16/2024 at: <https://pv-magazine-usa.com/2024/02/20/rooftop-solar-has-technical-potential-to-meet-45-of-u-s-electricity-demand/>

¹⁰⁷ Robert Walton, “Texas regulators look to expand successful 80 MW virtual power plant pilot,” *Utility Dive*, December 15, 2023. Accessed on 7/16/2024 at: <https://www.utilitydive.com/news/Texas-to-expand-ADER-80-mw-distributed-energy-resources/702641/>

1 **VII. DTEE’S BATTERY PROGRAM**

2 **Q. Has DTEE embarked on any battery programs, larger than NWA pilots discussed**
3 **above?**

4 A. Yes, in U-21566, DTEE received Commission approval to install a 220-MW / 880 MWh
5 battery energy storage system (BESS) at the site of the retired Trenton Channel coal
6 power plant at a cost between \$423 and \$460 million.¹⁰⁸

7 **Q. Why did the Company decide to install a 220-MW BESS system at this time?**

8 A. It specified in the settlement agreement in U-21193:

9 “DTE Electric will accelerate the storage build timeline in its PCA as
10 follows and as shown in Table 3 below: 160 MW of storage will be
11 accelerated from 2026 and 2027 to facilitate the Company’s Trenton
12 Channel storage project (totaling 220 MW), with a target COD in
13 2025...”¹⁰⁹

14 **Q. What reasons did the Company give for installing the BESS at Trenton Channel?**

15 A. The Company named three:¹¹⁰

- 16 1. Repurpose existing MISO transmission interconnect rights
- 17 2. Redevelop an existing brownfield and maintain presence in the Community
- 18 3. Because the Trenton Channel site is in an “energy community,” the installation gets an
19 additional 10% of the cost in an investment tax credit.

¹⁰⁸ U-21566, Commission order dated March 15, 2024, pages 2 and 4

¹⁰⁹ U-21193, Commission order dated July 26, 2023, page 10

¹¹⁰ U-21566, Affidavit of Terri L. Schroeder, pg. 4-5

1 **Q. Did the Company explain why repurposing MISO transmission interconnect rights**
2 **was important?**

3 A. Yes. The Company estimated that getting transmission interconnect approval in another
4 site would take between 330 and 473 days.¹¹¹

5 **Q. What benefits does the Company expect from the BESS being installed at Trenton**
6 **Channel?**

7 A. The Company's application names three:¹¹²

- 8 1. Price arbitrage, charging during off-peak and discharging during peak demand
- 9 2. Providing capacity to the MISO Planning Resource Auction (PRA)
- 10 3. Selling ancillary services into the MISO market

11 **Q. Has the Company forecasted any new, large BESS systems in the instant case?**

12 A. Yes. The Company is forecasting the operation "of *a* 275 MW BESS" in 2028.¹¹³
13 (emphasis added). I note the use of the singular indefinite article "a" to describe the new
14 BESS capacity addition as a single system.

¹¹¹ Ibid, pg. 5

¹¹² U-21566, Company application, pg 4

¹¹³ Direct testimony of M. E. Guillaumin, pg MEG-9, rows 24-5

1 **Q. Did the settlement agreement in the Company’s last IRP require this new BESS?**

2 A. The settlement agreement in U-21193 targets the addition of 275 of Company owned
3 BESS capacity in 2028; it did not specify that it should be installed as a single system or at
4 a single location:

5 “The Company will target the following capacity allocation for storage
6 projects:”

Table 3 Target Storage Timeline and Capacity Allocation								
Storage	2024	2025	2026	2027	2028	2029	2030	Total
PCA Build	0	230	0	120	430	0	0	780
Company Owned	0	230	0	0	275	0	0	505
Third Party Owned	0	0	0	120	155	0	0	275

7
8 If the winning bids in any annual solicitation *do not amount to* the desired
9 RFP capacity in any annual solicitation, the unfulfilled capacity in each
10 allocation category (company owned and third party owned) will be
11 carried forward...”¹¹⁴ (emphasis added)

12 The term “do not amount to” implies multiple bids adding up to the desired capacity. There
13 is no requirement to locate the entire 275 MW of BESS capacity in one location, or that the
14 BESS(s) connect to the transmission system.

15 **Q. Is there any reason to think that the Company will install the entire 275MW of BESS
16 capacity at a specific location?**

17 A. Yes, there are two things that make me *think* that the Company is inclined to install the
18 entire 275 MW of company-owned BESS at one location:

¹¹⁴ U-21193, Order dated July 26, 2023, page 10

- 1 1. The Company mentions both the retirement of Monroe units 3 and 4 and commencing
2 operations of the 275 MW BESS in the same sentence, occurring in the same year.¹¹⁵
- 3 2. Precedent. Having connected the prior large BESS system to the transmission grid at
4 the site of a retired coal plant (Trenton Channel), the Company may be inclined to do
5 so again, citing the same benefits.

6 **Q. How did the Company respond to discovery about their plans to install 275MW of**
7 **BESS capacity?**

8 A. The Company stated that no decision has been made:

9 “The Company is exploring potential locations for the 275 MW of BESS
10 capacity being added in 2028 but has not narrowed down any sites
11 specifically. No determination has been made as to whether the storage
12 will be installed at one location or multiple locations.”¹¹⁶

13 **Q. Could deploying the 275 MW of BESS by 2028 in smaller units at multiple**
14 **substations, connected to the distribution system, avoid the schedule delays caused by**
15 **the MISO interconnect process, and provide additional benefits as well?**

16 A. Yes. Deploying smaller BESSs, co-located with DTEE substations and connected to the
17 distribution grid would avoid the MISO interconnect process entirely, and would provide
18 additional, local benefits. The Lawrence Berkely National Laboratory issued a report in
19 2021 on the “Locational Value of Distributed Energy Resources. The report states:

20 “Distributed energy resources (DERs) offer several potential sources of
21 utility system value. Primary electricity system benefits include deferred
22 or avoided costs for distribution and transmission capacity, avoided
23 distribution and transmission energy losses, deferred or avoided costs of
24 power plant capacity, and avoided hourly and subhourly costs of

¹¹⁵ Direct testimony of M. E. Guillaumin, pg. MEG-9, rows 21-25

¹¹⁶ GLREADE-2.33a-b

1 electricity generation or wholesale electricity purchases. Examples of
2 secondary benefits include avoided ancillary services costs, reduced
3 wholesale market clearing prices, increased reliability and power quality,
4 avoided risks associated with long lead-time investments, reduced
5 environmental cost risk, and improved fuel diversity and energy security
6 (SEE Action 2020a). Several of these benefits require the value of DERs
7 to be assessed at a specific point on the grid—the locational value”¹¹⁷

8 and

9 “Accurately valuing all potential distribution system solutions, including
10 consideration of the locational value of DERs, is increasingly important
11 for reliable, least cost electricity systems”¹¹⁸

12 and

13 “Yet few utilities and states consider their value at specific points on the
14 electric system in planning, procurement, and design of DER programs
15 and rates.”¹¹⁹

16 and

17 “DERs that reduce demand during distribution system peak produce the
18 most value”¹²⁰

19 **Q. What additional benefits could be provided by smaller BESS systems located at**
20 **DTEE substations, compared to the Trenton Channel BESS installation?**

21 A. Several. First, as DTEE is demonstrating in some of their NWA pilots, co-locating
22 batteries at substations with either stressed substation capacity, or a stressed sub-
23 transmission line can delay or avoid costly equipment upgrades.

24 Secondly, rather than sell the capacity on the MISO market like the Trenton Channel

¹¹⁷ Frick, Schwartz, Price, “Locational Value of Distributed Energy Resources,” (the report), *Lawrence Berkely National Laboratory*, February 2021. Accessed on 7/17/2024 at: https://eta-publications.lbl.gov/sites/default/files/lbnl_locational_value_der_2021_02_08.pdf

¹¹⁸ Frick, Schwartz, Price, “Locational Value of Distributed Energy Resources” (a PowerPoint), March 9, 2021, slide 6. Accessed on 7/16/2024 at: https://eta-publications.lbl.gov/sites/default/files/lbnl_locational_value_20210309_final.pdf

¹¹⁹ Ibid, slide 4

¹²⁰ Ibid, slide 10

1 system, the BESS would provide the capacity to the local grid. As I discussed above,
2 capacity and energy have locational value; they're more valuable in a stressed substation
3 than the price they are likely to fetch on the wholesale market, as the Company is
4 demonstrating in the Omega, Fisher, and Veridian NWA pilots.

5 **Q. What other benefits could be achieved with BESSs located at DTEE substations?**

6 A. Rather than selling the ancillary services on the MISO wholesale market, the BESS
7 would provide ancillary services, including voltage and frequency regulation to the local
8 grid, as is being demonstrated in the O'Shea NWA battery pilot.

9 **Q. Are there other benefits to co-locating BESS at DTEE substations?**

10 A. Yes, several:^{121,122}

11 1. Zero transmission cost and zero transmission loss, because the transmission system
12 is bypassed.

13 2. Reduced line losses, by reducing load during peak periods, when line losses are the
14 highest.

15 3. Increased grid hosting capacity.

16 4. Reduced curtailment of renewable energy facilities in the area (if there is, or would
17 soon be any such curtailment).

18 5. A small solar system could be added at the site (space permitting), which would use

¹²¹ Ibid, slide 7.

¹²² Illinois Commerce Commission, "Energy Storage Program." Accessed on 7/16/2024 at:
<https://www.icc.illinois.gov/informal-processes/energy-storage-program>

1 the BESS to shift its output to the peak period. Such a system would form the
2 foundation of a micro-grid.

3 6. The provision of emergency power to the region, if cut off from the distribution
4 system.

5 **Q. Don't we need some storage tied to the transmission network?**

6 A. I don't know if transmission connected storage is critical or not; but we already have a
7 huge energy storage system connected to the transmission system in Michigan – the
8 Ludington Pumped Storage Facility (LPSF). DTEE owns 49% of the LPSF, giving DTEE
9 7,699 MWh of energy storage already connected to the transmission system, and
10 operating (for decades).¹²³

11 If additional transmission connected storage were needed, there is a non-utility model to
12 add it. A Company named Intersect Power is installing massive storage in Texas and
13 California to do price arbitrage between peak pricing and off-peak pricing. According to
14 the Wall Street Journal:

15 “The company has agreed to buy billions of dollars worth of Tesla
16 Megapack batteries to accelerate installations in California and Texas.
17 Investors are betting the surge in solar and falling costs for storage will
18 make their bets pay off...

19 ‘It has been the hot topic over the last 24 months,’ said Michael Bonafide,
20 director on the infrastructure and energy financing team at Deutsche Bank,
21 which has invested in six storage deals over the last two years.’¹²⁴

22 Other corporations can install, own, and operate transmission-tied storage; utility

¹²³ U-21193, 7 V 2335

¹²⁴ Amrith Ramkumar, “Wall Street Wants In on America’s Battery Storage Boom”, *The Wall Street Journal*, July 17, 2024. Accessed on 7/17/2024 at: <https://www.wsj.com/business/energy-oil/wall-street-wants-in-on-americas-battery-storage-boom-861f5f1f?page=1> (there is a paywall).

1 ownership is not the only business model available. But the utility is in a unique position
2 of knowing where the distribution system is stressed, which can be relieved by
3 distribution connected storage.

4 **Q. How could a shift of some capital investment (such as transmission-connected battery**
5 **storage) from DTEE to a non-utility company be beneficial?**

6 A. As explained by Company witness Villadsen,

7 “DTE Electric’s capital expenditures are higher than of the average company in the
8 Electric Sample... A higher capital expenditure introduces relatively higher fixed
9 costs, which cannot readily be eliminated should circumstances change. Thus, all
10 else equal, higher capital expenditures increases business risk?”¹²⁵

11 Witness Villadsen also explained how more risk requires a higher cost of capital:

12 “The cost of capital is defined as the expected rate of return in capital
13 markets on investments of equivalent risk. Cost of capital theory illustrates
14 the direct relationship between risk and the expected rate of return – the
15 higher the risk, the higher the cost of capital required.”¹²⁶

16 This cost of capital is then passed on to ratepayers.

17 **Q. What should the Commission do regarding DTEE’s plans for the deployment of 275**
18 **MW of BESS capacity?**

19 A. The Company has not yet made a specific proposal on the next 275 MW of BESS to be
20 operational by 2028. By the time they make a specific proposal in an official filing, it
21 may be too late to direct the Company to make a different plan. Therefore, the
22 Commission should direct the Company to carefully consider the benefits of installing
23 future BESS capacity in smaller, distribution-connected units, and that any future BESS

¹²⁵ Direct testimony of Bente Villadsen, pg. 44, lines 17 - 22

¹²⁶ Ibid, pg. 7, lines 19 - 22

1 proposal should include an analysis of opportunities for distribution-connected BESS,
2 and why that option was, or was not, selected by the Company.

3
4 **VIII. DTEE’S PROPOSAL ON OUTAGE CREDITS RECOVERY**

5 **Q. What did the Company propose regarding the recovery of credits for service**
6 **outages?**

7 A. The Company’s proposal had four parts:¹²⁷

8 1. That outage credits paid for exceeding the duration limit would be recoverable if the
9 outage was caused by an error of the transmission operator or other utility, public
10 interference, or animal interference.

11 2. That outage credits paid to customers for exceeding the frequency limits would be
12 recoverable if the outage was caused by weather.

13 3. That recovery would be deferred.

14 4. That a percentage of the outage credits due to outage frequency would be recoverable,
15 based on the percentage of outages that were due to recoverable causes.

16 **Q. How did the Company justify recovering the credits paid due to excessively frequent**
17 **outages blamed on weather?**

18 A. With the statement:

19 “The rationale is that the Company controls the restoration time when
20 there is a weather event but not the frequency with which weather events
21 occur.”¹²⁸

¹²⁷ Direct testimony of A. F. Crozier, pg. AFC-32 through AFC-34

¹²⁸ Direct testimony of A. F. Crozier, p AFC-33, lines 12-13

1 **Q. Do you see any issues with the logic expressed in DTEE’s statement on why weather-**
2 **related outage credits should be recoverable?**

3 A. Yes, two.

4 1. The statement presumes that every outage with a weather-related cause-code is
5 unavoidable, which is not true.

6 2. A weather cause-code is overly vague. Weather is omnipresent. If DTEE equipment
7 overheats, that *could* be blamed on hot weather. If DTEE equipment cracks due to
8 freezes, that *could* be blamed on cold weather. If poles rot or fall over, that *could* be
9 blamed on wet weather. If a tree falls on the lines, that *could* be blamed on wind; even
10 if it results from poor tree trimming practices.

11 **Q. How are outages caused by weather avoidable?**

12 A. Through effective tree trimming programs and through grid hardening.

13 **Q. Can the Company reduce the frequency of weather-related outages through tree**
14 **trimming?**

15 A. Yes, Company witness Steudle has testified that this is true:

16 “Historically, tree-caused outages accounted for two-thirds of the time that
17 customers spent without power. The Company’s Tree Trimming Program
18 *reduces the frequency* of tree contact with the distribution system,
19 mitigating impact. The ongoing, successful execution of this program
20 allows DTEE to continuously improve the overall reliability of electric...
21 A robust Tree Trimming Program improves system reliability, including a
22 *reduction of the volume and duration of outages*, wire-downs, and other
23 non-outage trouble events.”¹²⁹ (emphasis added)

¹²⁹ Direct testimony of R. C. Steudle, page RCS-5, lines 2-5 and 10-12

1 The Company says that tree-trimming reduces the frequency of tree contact, and the
2 volume of outages. The Company provides statistics showing that tree trimming reduces
3 “outage events” (that’s frequency) by 54% in the first post-trim year.¹³⁰

4 **Q. Can the Company reduce the frequency of weather-related outages through grid**
5 **hardening?**

6 A. Yes, Company witness Crozier testified that:

7 “...the Company’s 4.8 kV Hardening program has led to a *61% reduction*
8 *in frequency of outages* (SAIFI) on hardened circuits compared to non-
9 hardened circuits.”¹³¹ (emphasis added)

10 Company witness Andahazy testified that:

11 “... the customers on hardened circuits experienced a 38% improvement
12 in All-Weather SAIFI, while the control group circuits degraded by 23%,
13 resulting in a net improvement of 61% for hardened circuits.”¹³²

14

15 **Q. Can the Company reduce the frequency of weather-related outages through pole-top**
16 **maintenance and modernization (PTMM)?**

17 A. Yes, Company witness Andahazy testified that:

18 “Overhead equipment failures cause approximately 25% of all outages
19 customers experience during all weather conditions... Poles and pole-top
20 equipment are some of the most critical and visible parts of the
21 distribution and subtransmission grid, and are continually exposed to harsh
22 conditions (e.g., tree strikes, ice, heat, rain, lightning, sunlight, and wind),
23 causing them to degrade, weaken, and fail over time.”¹³³

¹³⁰ Ibid, p RCS-9

¹³¹ Direct testimony of A. F. Crozier, pg. AFC-12, lines 6-8

¹³² Direct testimony of M. Elliott Andahazy, pg. MEA-25, lines 2-4

¹³³ Ibid, pg. MEA-29, lines 11 - 17

1 Note that “weather” degrades equipment. Using the Company’s logic that they can’t
2 control the weather, one *could* argue that equipment failures of old, outdoor equipment
3 that cause outages are really the result of weather, which should be recoverable.

4 **Q. Can the Company reduce the frequency of weather-related outages through**
5 **operational redundancy?**

6 A. Yes, Company witness Anadahazy testified that service lost due to substation failures can
7 be restored by “switching load to adjacent substations with available jumpering
8 capacity.”¹³⁴

9 **Q. Can the Company reduce the frequency of weather-related outages by improving**
10 **circuits with frequent outages (CEMI)?**

11 A. Yes, Company witness Anadahazy testified:

12 “Although weather is variable year to year and can impact comparisons of
13 circuit performance, Figure 20 shows that customers on circuits where
14 Frequent Outage (CEMI) work was performed experienced a 35.2%
15 improvement in All Weather SAIFI and a 14.0% improvement in All
16 Weather SAIDI when comparing 2023 to 2022.”¹³⁵

¹³⁴ Ibid, pg. MEA-56, line 2

¹³⁵ Ibid, pg. MEA-81, lines 1 - 4

1 **Q. Are there other ways that the Company can reduce the frequency of weather-related**
2 **outages?**

3 A. Yes, the Company's filing also talks about cable replacement,¹³⁶ Undergrounding cable,¹³⁷
4 replacing breakers with modern reclosers,¹³⁸ replacement of some wood poles with steel
5 poles,¹³⁹ using SCADA pole-top devices,¹⁴⁰ etc. There are numerous ways that the
6 Company can reduce the frequency with which weather causes customer outages. The
7 Company's claim that the frequency of such outages is outside the Company's control is
8 contradicted by broad swaths of the Company's own filing in the instant case.

9 **Q. How should the Commission react to the Company's proposal to recover the cost of**
10 **customer outage credits resulting from weather-related outage frequency?**

11 A. The Commission should soundly reject it, sticking to the very limited list of outage causes
12 that warrant recovery, enumerated in its order in U-20386:

13 "However, it is reasonable that the company have the ability to recover
14 outage credits when the outage was caused by customer negligence or the
15 transmission system operator..."¹⁴¹

16 The Commission should not allow the Company to expand this well-reasoned list of causes
17 into the proposed vaguely defined exception for outages caused by "weather."
18

¹³⁶ Ibid, pg. MEA-83 through MEA-92

¹³⁷ Ibid, pg. MEA-92 through MEA-100

¹³⁸ Ibid, pg. MEA-100 through MEA-105

¹³⁹ Ibid, pg. MEA-111 through MEA-112

¹⁴⁰ Ibid, MEA-113 through MEA-114

¹⁴¹ U-20836, Commission order dated November 11, 2022, page 366

1 **IX. RECOMMENDATIONS**

2 **Q. What actions should the Commission take in this case?**

3 A. I offer the following recommendations:

4 The Commission should direct the Company to redesign both commercial pilot rates (C1.11 and
5 D14) to recover the same amount of revenue from energy-capacity rates, but recover all of
6 it during the peak rate time periods. The Commission should direct the Company to file the
7 adjusted rate schedules, within 60 days of the order in the instant case, for ex parte
8 approval. The Commission should also direct the Company to include in its next rate case,
9 a discussion of the pros and cons of making a TOU rate structure the default, standard rate
10 structure for all secondary voltage commercial customers, and to collect metrics of success
11 of the pilots to prepare for making them the default standard rate.

12 • .

13 • The Commission should direct the Company, in its next rate or demand response case, to
14 propose a robust pilot of a critical-peak-rebate program, structured like those I have
15 described in this testimony. If the Company resists, the Commission should create the
16 opportunity for a third-party aggregator to do so.

17 • The Commission should direct the Company, in its next rate or demand response case, to
18 propose a robust grid-interactive water heater pilot program. If the Company resists, the
19 Commission should create the opportunity for a third-party aggregator to do so.

20 • The Commission should direct the Company, in its next rate case or demand response case,
21 to propose a pilot of geo-targeted incentives for customer-owned distributed energy
22 systems (including batteries).

1 • The Commission should direct the Company to carefully consider the benefits of installing
2 future BESS capacity in smaller, distribution-connected units, and that any future BESS
3 proposal should include an analysis of opportunities for distribution-connected BESS, and
4 why that option was, or was not, selected by the Company.

5 • The Commission should soundly reject DTEE’s proposal to recover outage credits
6 resulting from outages caused by weather. Instead, the Commission should approve the
7 recovery of outage credits only from the very limited list of outage causes enumerated in
8 its order in U-20386, that warrant recovery.

9 **Q. Does that conclude your testimony?**

10 **A. Yes.**

John Richter

EDUCATION	<p>Murdoch University, Perth, Australia – January 2009 M.S. in Renewable Energy</p> <p>Oakland Community College, Rochester Hills, Michigan – 1991 Alternative Energy Technologies (Solar, Wind, Biomass)</p> <p>Oakland University, Rochester, Michigan B.S. Engineering, minor in Economics - 1982</p>
RENEWABLE ENERGY EXPERIENCE	<p>Adjunct Instructor, Macomb Community College (2009 – 2010) Online / classroom hybrid course including labs. Grant-funded curriculum development and classroom instruction in solar energy.</p> <p>President, Great Lakes Renewable Energy Association (2002 – 2003) Non-profit administration focused on financial planning, fundraising & recruitment. Staffing, budget, and strategic planning.</p> <p>Policy Analyst, Great Lakes Renewable Energy Association Developed position papers on policy initiatives. One of three invited presenters to the Northeast and Midwest Caucus meeting on a national RPS. Presented: <i>Wind Power and Distributed Generation</i> to U.S. Congressional Staffers at the U.S. Capitol Building. Member of the MPSC collaborative on renewable energy and the Michigan Wind Working Group of the DOE’s <i>Wind Powering America</i> program.</p> <p>Renewable Energy Consultant American Green Careers Project management and meeting facilitation for a team of independent contractors for the start-up of a proprietary school green jobs training program.</p> <p>Great Lakes Renewable Energy Association Researched, developed, and presented policy recommendations: <i>Opportunities for Renewable Energy Deployment</i> to Michigan legislators and staff.</p> <p>Midwest Education Connection Network (MECNet) / Urban Options Developed K-12 educational materials: <i>Michigan’s Renewable Energy and Efficiency Success Stories</i>. This complemented materials from NEED.</p> <p>American Council for an Energy Efficient Economy (ACEEE) Researched and authored <i>Michigan’s Current Energy Situation</i> section of an energy efficiency white paper for the State Governor.</p> <p>Speaker Scores of speaking engagements at conferences, community colleges, and community groups for two decades, including:</p> <ul style="list-style-type: none">▪ American Solar Energy Society; <i>Making the Benefits of RE Real</i>, and <i>World Oil Depletion and Its Implications for U.S. Energy Policy</i>▪ Pierce Cedar Creek RE Conference - Keynote speaker: <i>RE Cornucopia</i>▪ PBS Documentary: <i>Michigan’s Green Energy Economy</i> <p>Contributing Writer Home Power Magazine, The Rock River Times, ReNews, Energy Paths, Energy Times</p>

TELECOM
EXPERIENCE

Century Link Communications (formerly *Level-3, Global Crossing, Frontier, and Allnet*), Southeastern Michigan – September 1987
to March 2002, December 2002 – May 2018

Sr. Software Architect

Design and specify software changes to meet program objectives.

- Define project scope, deliverables, schedule and budget.
- Develop software specifications.

Sr. Product Development Manager

Plan, direct, and coordinate all work activities to build new services on-time and within budget.

- Create cross-functional project teams with members from various departments; build team commitment to project objectives.
- Define project scope, deliverables, schedule and budget.
- Create or update business processes to support new products.
- Develop software specifications.

Director, Product Platform Development

Responsible for the selection, purchase, project management, installation, integration, and operation of multi-million dollar real-time call processing systems.

- Performed vendor/product evaluation, purchase negotiations and installation project management.
- Managed staff of 23 Software Engineers developing real-time call processing software and integrating purchased systems.

Senior Manager of Hardware Integration

Responsible for evaluation, selection, engineering, purchase, and installation of all switching equipment and Digital Cross-connect Systems (DCS).

- Planned and managed annual capital budget in excess of \$25M.
- Negotiated pricing and payment terms, installation schedules, and acceptance testing procedures.
- Created network traffic forecasting model for budgetary and capacity planning. Selected sites to close for economic efficiency.
- Provided Project Management of equipment purchases, moves, and installs to facilitate consolidation of four acquired carrier switching networks into one fully integrated network.

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**

ELECTRONIC SERVICE LIST

On **July 26, 2024** an electronic copy of the **Direct Testimony and Exhibit of John Richter on behalf of the Great Lakes Renewable Energy Association** was served on the following:

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The statements above are true to the best of my knowledge, information and belief.

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Dated: July 26, 2024