



ENVIRONMENTAL LAW & POLICY CENTER

Protecting the Midwest's Environment and Natural Heritage

November 6, 2019

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

RE: MPSC Case No. U-20561

Dear Ms. Kale:

The following is attached for paperless electronic filing:

**Direct Testimony of Christopher Villarreal on behalf of the
Environmental Law & Policy Center and the Natural Resources Defense
Council**

Exhibits ELP-1 – ELP-2

Proof of Service

Sincerely,

Nikhil Vijaykar
Environmental Law & Policy Center
nvijaykar@elpc.org

cc: Service List, Case No. U-20561

35 East Wacker Drive, Suite
• 1600 • Chicago, Illinois 60601
(312) 673-6500 • www.ELPC.org

Harry Drucker, Chairperson • Howard A. Learner, Executive Director
Chicago, IL • Columbus, OH • Des Moines, IA • Grand Rapids, MI • Indianapolis, IN
Minneapolis, MN • Madison, WI • North Dakota South Dakota • Washington, D.C.



**STATE OF MICHIGAN
MICHIGAN PUBLIC SERVICE COMMISSION**

In the matter of the Application of DTE)	
Electric Company for authority to)	
increase its rates, amend its rate)	Case No. U-20561
schedules and rules governing the)	
distribution and supply of electric energy,)	
and for miscellaneous accounting)	
authority.)	

DIRECT TESTIMONY

OF

CHRISTOPHER VILLARREAL

ON BEHALF OF

THE ENVIRONMENTAL LAW & POLICY CENTER AND THE
NATURAL RESOURCES DEFENSE COUNCIL

NOVEMBER 6, 2019

TABLE OF CONTENTS

I.	INTRODUCTION AND WITNESS QUALIFICATIONS	1
II.	SUMMARY AND PURPOSE OF TESTIMONY	3
III.	GRID MODERNIZATION PLANNING	5
IV.	INTEROPERABILITY TESTING	22
V.	NON-WIRES ALTERNATIVES	29
VI.	CONCLUSION	35

I. INTRODUCTION AND WITNESS QUALIFICATIONS

Q. Please state your name and qualifications.

A. My name is Christopher Villarreal. I am President of Plugged In Strategies, a consulting group that provides services and expertise on grid modernization, distribution system planning, and related programs and policies. My business address is 9492 Olympia Drive, Eden Prairie, Minnesota, 55347.

Q. Please provide your educational background.

A. I graduated from Baylor University in 1997 with a Bachelor of Arts in History.

Q. Please describe your work and professional experience.

A. I have over 20 years of experience in the electricity policy and regulatory field, with the past ten years focused on the policy and technical components of distribution system planning, grid modernization and distributed energy resources (DER) at the state level. I was staff for the California Public Utilities Commission for nine years and was Director of Policy for the Minnesota Public Utilities Commission for two years. I have participated in several training sessions in the United States and internationally on grid modernization and distribution system planning and continue to participate in several working groups and workshops at state commissions around the country. I have authored or co-authored several white papers on electricity-related issues and was the Staff Chair of the National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee on Rate Design. As Staff Chair, I oversaw the production of the NARUC Distributed Energy Resources Rate Design and Compensation Manual (DER Manual) to assist state utility commissions in becoming more educated on DER, the impacts on historic ratemaking practices, an overview of impacts from DER on rate designs and

1 compensation methodologies, and an outline for information to gather in advance of
2 action on DER.

3 **Q. Please describe your role at Plugged In Strategies.**

4 A. I started Plugged In Strategies in 2017. In my current role as President, I provide
5 consulting services related to the following topics:

- 6 • Grid Modernization;
- 7 • Distribution System Planning;
- 8 • Data Access and Data Privacy;
- 9 • Distributed Energy Resources; and,
- 10 • Rate Design.

11 In general, I educate clients, including state utility regulators, on the evolution of the
12 distribution system in response to the growing role of DER. This includes providing
13 educational seminars, participating in workshops, and assisting with planning for the
14 ratemaking, rate design, and business model changes coming to the electricity system.

15 This includes an understanding of a variety of market designs, regulatory and utility
16 models, and how these models will evolve in response to changing customer expectations
17 and availability of technology.

18 A copy of my CV is attached as Exhibit ELP-1 (CV-1).

19 **Q. Have you previously filed expert testimony in a proceeding before the Michigan
20 Public Service Commission?**

21 A. Yes. I submitted testimony in the following cases:

- 1 • Case No. U-20134, In the matter of the application of Consumers Energy
2 Company for authority to increase its rates for the generation and distribution
3 of electricity and for other relief.
- 4 • Case No. U-20162, In the matter of the application of DTE Electric Company
5 for authority to increase its rates, amend its rate schedules and rules governing
6 the distribution and supply of electric energy, and for miscellaneous
7 accounting authority.
- 8 • Case No. U-20359, In the matter of the Application of Indiana Michigan
9 Power Company for authority to increase its rates for the sale of electric
10 energy and for approval of depreciation rates and other related matters

11 **Q. Are you sponsoring any exhibits today?**

12 A. Yes, I am sponsoring the following exhibits:

13 Exhibit ELP-1 (CV-1): CV of Christopher Villarreal

14 Exhibit ELP-2 (CV-2): DTE Discovery Responses

15 **II. SUMMARY AND PURPOSE OF TESTIMONY**

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

17 A. DTE is requesting nearly \$2 billion for its distribution system for 2019 through April
18 2021.¹ My testimony responds to DTE Witness Bruzzano's testimony related to
19 distribution system planning, grid modernization, and associated investments and request
20 for cost recovery. In particular, I address DTE's distribution system planning process and

¹ DTE Exhibit A-12, Schedule B5.4, page 1.

1 conclude that it is not sufficiently integrated with the remainder of DTE’s operations to
2 be relied upon for approval of DTE’s requested costs.

3 **Q. Please summarize your reaction to Mr. Bruzzano’s testimony.**

4 A. My testimony in DTE’s previous rate case, U-20162, critiqued the Company’s
5 distribution plan and planning process for failing to adequately respond to Commission
6 expectations; failing to adequately plan for the future by relying on business as usual
7 capital solutions; lack of a robust stakeholder process; and inconsistencies and a lack of
8 clear coordination between its several witnesses.

9 DTE’s distribution plan² still has many of the same shortcomings I highlighted in U-
10 20162 because it remains too focused on short-term capital costs, does not adequately
11 plan for a future with increased DERs, and fails to adequately consider alternatives, such
12 as non-wire alternatives (NWAs), to meet reliability needs and customer demand.

13 **Q. Please summarize your recommendations to the Commission.**

14 A. I recommend that the Commission:

- 15 1) Not give weight to the Electric Power Research Institute’s (EPRI) report on
16 DTE’s distribution system planning as evidence to support DTE’s application,
17 because the report does not make any attempt to compare DTE’s plan against any
18 other utility’s distribution plan;
- 19 2) Not give weight to DTE’s investment strategy built upon its 5 Year Plan, because
20 it lacks sufficient detail to allow the Commission to rely upon it;
- 21 3) Withhold a portion of DTE’s requested tree trimming costs pending additional
22 performance-based requirements showing that DTE either actually performed the

² DTE’s 5-year distribution plan is discussed in Exhibit A-23, Schedule M9, EPRI Report on DTE’s Distribution Grid Modernization Plan.

work across a percentage of its lines or upon the realization of a certain percentage decrease in reliability indices, such as the System Average Interruption Duration Index (SAIDI);

- 4) Direct DTE to utilize third party, independent interoperability testing for its investments, to ensure that its technology, people and process effectively exchange information with one another, and direct DTE in its update to its distribution plan to describe its interoperability practices, including reliance upon open standards;
- 5) Require that DTE consider market-based solutions for NWA programs built upon a portfolio approach to NWA options; and,
- 6) Direct DTE to explicitly align its distribution planning processes with the framework and examples developed by the U.S. Department of Energy, and examples of other utility distribution system plans, to provide more transparency into its investment strategy, investment and performance tracking, and schedule.

III. GRID MODERNIZATION PLANNING

Q. Are you familiar with the Commission’s previous pronouncements regarding distribution planning and grid modernization?

A. Yes. In its prior order establishing guidance to Michigan utilities regarding the submission of five-year distribution plans, the Commission has noted the evolving nature of the electricity system into a two-way distribution grid, changing expectations and preferences from consumers, and a more complex grid that includes greater uncertainty around customer demands. Additionally, the Commission noted that in response to these changes “there is benefit to having a formal distribution planning process that evolves

1 over time and is intended to take a longer term look at changing system and customer
2 needs and innovative solutions that can be leveraged to address these needs in a safe,
3 reliable, and affordable manner.”³

4 **Q. Has the Commission identified any benefits or goals for a formal distribution**
5 **planning process?**

6 A. Yes. Specifically, the Commission has noted that a more formal and open distribution
7 planning process would yield the following benefits:

- 8 1) Better understanding of the long-term goals and objectives underlying utility
9 investment plans and how the execution of these plans can meet these goals and
10 objectives in an affordable manner;
- 11 2) Providing transparency around the need for, scope of, and expected outcomes
12 resulting from specific investment strategies which may better facilitate
13 ratemaking processes;
- 14 3) Facilitation of economic development activities by identifying suitable locations to
15 accommodate growth and areas where reinforcements are needed;
- 16 4) Enabling the Staff and stakeholders to weigh in on planning assumptions,
17 particularly those that address factors outside the utility’s control, such as rooftop
18 solar and electric vehicle adoption; and
- 19 5) Ensuring that Michigan is making “no regrets” investment decisions in the long
20 term.⁴

21 In addition, the Commission sought to have distribution plans include information that
22 could help the Commission and stakeholders have better information about the health of

³ Case Nos. U-17990, *et al.*, Order at 14 (October 11, 2017) (October 11 Order).

⁴ *Id.* at 15.

1 the distribution system with a focus on the “near-term safety and reliability of the
2 distribution grid,”⁵ and that “a focus on safety and reliability improvements in the near
3 term will also provide a foundation for a stronger electric system that can adapt to
4 changing technologies and customer patterns over time.”⁶

5 **Q. Has the Commission organized any stakeholder meetings or provided any direction**
6 **to Commission Staff regarding the distribution planning process?**

7 A. Yes. In April 2018, the Commission opened Docket U-20147 to provide further guidance
8 regarding the development and review of the utilities’ five-year distribution plans. The
9 Commission directed Commission Staff to hold several workshops to discuss the contents
10 of the utilities’ draft distribution plans and directed Commission Staff to issue an interim
11 report on the draft plans. On September 4, 2018, Commission Staff filed a report in that
12 docket to outline Staff’s recommended path forward to achieving an open, transparent,
13 and integrated electric distribution system planning process in Michigan.⁷ The Staff
14 Report outlined several concerns it had with the utilities’ filings and provided several
15 recommendations to the Commission for moving forward.
16 The Commission also recently announced MI Power Grid, which they describe as “a
17 focused, multi-year stakeholder initiative to maximize the benefits of the transition to
18 clean, distributed energy resources for Michigan residents and businesses. MI Power Grid
19 seeks to engage utility customers and other stakeholders to help integrate new clean

⁵ *Id.* at 16.

⁶ *Id.* at 17.

⁷ Case No. U-20147, *Michigan Distribution Planning Framework: MPSC Staff Report*, (September 4, 2018) (Staff Report).

1 energy technologies and optimize grid investments for reliable, affordable electricity
2 service.”⁸

3 **Q. What are the takeaways from the Staff Report in Docket U-20147?**

4 A The Staff Report describes the initial utility distribution plans and notes that, “the plans
5 that have been submitted in this first iteration advocating support for investments in
6 reliability, capacity, and grid modernization could benefit from more openness and
7 transparency for regulators and stakeholders to independently analyze the reasonableness,
8 prudence, and cost-effectiveness of the distribution plans. The initial 5-year distribution
9 plans lack proposed investments in customer-facing programs and technologies that
10 provide customers with the information to make informed energy decisions in the near
11 term. Increasing transparency in these spending categories in future planning processes
12 will help ensure an open and effective planning process as desired by the Commission.”⁹
13 Staff also recommended several additional components be included in future iterations of
14 the five-year plans “to encourage greater openness and transparency, as well as foresight
15 into the near-future distribution system.”¹⁰ Staff noted that inclusion of these components
16 “will be crucial to recognizing significant benefits associated with a comprehensive and
17 forward-looking approach.” The Staff Report specifically recommended the following:

- 18 • Dynamic System Load Forecasting for the purpose of distribution planning
19 which considers multiple scenarios and probabilistic planning to properly
20 accommodate uncertainty around DER penetrations;
- 21 • Requiring the development of a publicly available hosting capacity reports;

⁸ *In the matter, on the Commission’s own motion, to establish MI Power Grid*, Case No. U-20645, Order at 1 (October 17, 2019).

⁹ Staff Report, at 11-12.

¹⁰ *Id.* at 12.

- Utilizing the Green Button open standard to provide customers and third-party service providers access to customer usage data;
- Requiring future distribution plans to provide detailed information regarding suitable criteria for NWA projects and clear cost information for nontraditional approaches to capacity investments;
- Requiring the development of a common cost-benefit methodology that can be applied in developing future distribution plans;
- Recommending the Commission work with the companies outside of the rate case process to develop replacement/upgrade criteria for aging assets to ensure accountability during the infrastructure refresh efforts; and,
- Requiring future iterations contain a workforce adequacy and development plan to outline steps being taken to assure the proposed spending plans are feasible.¹¹

Q. Are there any other details in the Staff Report relevant to distribution system planning?

A. Yes. The Staff Report proposed a draft Framework for future distribution system plans. The Framework, as proposed by Staff, encompasses many details that I would expect to see in a more robust distribution system plan, including details on load forecasts, criteria for distribution capacity upgrades, criteria for use of non-wires alternatives, and a plan for the future costs and benefits of DER.¹²

¹¹ *Id.* at 12-18.

¹² *Id.* at 19-21.

1 **Q. Does DTE’s distribution plan or proposed investments follow the recommendations**
2 **described in the Staff Report?**

3 A. No. I find that DTE’s investment plan lacks several of the components that Staff
4 specifically requested in its reports, and that would allow the Commission to consider
5 that those investments are adequate as a foundation for the future of the electricity
6 system. While many of the discussions related to DTE’s next 5 Year Plan will be taking
7 place in a separate proceeding, the investments proposed here must reflect the discussions
8 held so far in that process, especially since the next 5 Year Plan will not be filed until
9 2021. While Mr. Bruzzano states that their investments do reflect the guidance from the
10 Commission’s November 2018 Order in Docket U-20147, I disagree, as discussed
11 below.¹³

12 For example, DTE’s plan:

- 13 • Does not include a description of how it is using dynamic system load
14 forecasting and multiple scenarios;
- 15 • Limits its discussion on hosting capacity to the development of a pilot,
16 without any discussion of timing or planning for availability of more detailed
17 hosting capacity reports;
- 18 • Does not include any discussion related to a timeline for implementation of
19 Green Button to facilitate the sharing of customer usage data;
- 20 • Does not appear to utilize a model cost-benefit analysis framework;
- 21 • Does not provide details of how it identified its replacement/upgrade criteria;
22 and,

¹³ DTE Bruzzano Direct Testimony at 30.

- Lacks details related to a workforce adequacy plan.

Furthermore, Staff recognized the need for transparency and more stakeholder outreach regarding the distribution plans and I do not believe DTE, in the context of this proceeding, has satisfied this expectation. As just one example of how DTE has not met Staff's expectations, the Staff Report identified the need for customer data access and implementation of the Green Button, yet, my review of the entirety of DTE's testimony reveals nothing about providing customers with greater access to their data or whether DTE is considering using the Green Button. Where DTE does discuss the ability of customers to access their data, the solution DTE provides requires customers to utilize technology provided by DTE, presumably utilizing proprietary communication technologies.¹⁴

Q. What is the status of U-20147?

A. On November 21, 2018, the Commission issued an Order in U-20147 that provided a review of the proceeding to date, identified next steps for the proceeding, and requirements for future 5 Year Plans to be submitted by DTE, Consumers, and Indiana Michigan Power. In this order, the Commission noted that "the next round of distribution plans is to provide focused discussion, longer-term visibility than what is available in a rate case, and better understanding, not to set prescriptive mandates on the utilities."¹⁵ The Commission also noted the importance of top down and bottom-up planning, the importance of a longer-term vision for grid architecture and system performance, and that planning cannot occur in a silo.¹⁶ This order also set the timeline for filing of DTE and

¹⁴ DTE Cejas Goyanes Direct Testimony at 28.

¹⁵ Case No. U-20147, November 21, 2018 Order at 36.

¹⁶ Case No. U-20147, November 21, 2018 Order at 36-37.

1 Consumers’ next 5 Year Plan and asked Commission Staff to initiate a new round of
2 stakeholder meetings to discuss issues related to distribution system planning.

3 Throughout 2019, Commission Staff organized and led workshops¹⁷ on topics related to
4 distribution system planning, including discussions on hosting capacity, utility pilots, and
5 the U.S. Department of Energy’s DSPx Initiative.

6 On September 11, 2019, the Commission issued additional guidance to parties. In this
7 order, the Commission identified the need for better alignment between Integrated
8 Resource Planning and Distribution System Planning, especially considering the need to
9 accommodate increasing amounts of DER.¹⁸ The Commission also identified three
10 additional components:

- 11 1) The stakeholder working groups should include a value of resilience discussion;
- 12 2) Planning horizons should be longer than five years (distribution plans should
13 “also include in the plan their vision and high-level investment strategies 10 and
14 15 years out.”); and,
- 15 3) Sets the date for filing of the next distribution plans for June 30, 2021.¹⁹

16 **Q. Why is it important to have a robust distribution plan supporting proposed**
17 **distribution investments?**

18 A. The investments the utility makes as part of this proceeding will be in place for years if
19 not decades to come. The Commission recognized this as a reason to require utilities to
20 submit 5-year investment plans- to ensure that investments being made today are there to

¹⁷ See Electric Distribution Planning, Michigan Pub. Serv. Comm’n, available at https://www.michigan.gov/mpsc/0,9535,7-395-93307_93312_93593_95590_95596_95599-508710--,00.html.

¹⁸ Case No. U-20147, September 11, 2019 Order at 3.

¹⁹ Case No. U-20147, September 11, 2019 Order at 4-5.

1 support the changes occurring across the utility industry, including flat load growth,
2 greater adoption of DER, and the need to invest in the distribution system to respond to
3 these changes. It is important that utility investments simply do not go from version 1.0
4 to 1.1, but, rather, these investments be one part of a larger, proactive and comprehensive
5 plan designed to plot out a course for the future. DTE recognizes this need in Mr.

6 Bruzzano's testimony:

7 While the Company's near-term investments are directed at preparing the
8 grid for a future with a greater level of DER and EV penetration, the
9 Company plans on building on EPRI's work presented in this case and on
10 its own modeling efforts to develop a longer-term view around potential
11 scenarios related to DERs, EVs and other factors that may impact the way
12 in which the grid should be modernized to prepare for greater levels of DER
13 penetration.²⁰

14 Unfortunately, as Mr. Bruzzano notes here, DTE is not doing this today. DTE's proposed
15 near-term investments in this docket remain unmoored to a longer-term vision. This is not
16 to say that these investments are necessarily unreasonable or unjustified. I do believe that
17 investments like an Advanced Distribution Management System (ADMS) are necessary
18 to better integrate DER and provide greater visibility into DTE's system. DTE's
19 investments, however, follow largely the same script they have been following for
20 years—focusing on immediate capital projects without a clear identification of how those
21 investments support a longer-term vision for integrating DER.

22 **Q. Do you have an example of DTE's current disconnect between proactive planning**
23 **for the future as opposed to a business as usual case?**

²⁰ DTE Bruzzano Direct Testimony at 27. See also, Exhibit ELP-2 (CV-2), DTE Response to ELPCDE-2.16a, b, and c.

1 A. Yes. Mr. Bruzzano notes the complexity of future planning through an example related to
2 the growth of rooftop solar and electric vehicles at a particular location.²¹ I believe the
3 scenario itself, to the extent it assumes EV and solar clustering on a circuit, is reasonable
4 as electric vehicle adoption and rooftop solar adoption tend to cluster. The modeled
5 scenario finds overloading during the day and under-voltage in the evening in response to
6 increasing adoption of solar and electric vehicles and concludes that DTE would need to
7 substantially invest in new technology at that location to handle these changes. In other
8 words, DTE's conclusion is to rely on new capital to solve this, but at no point does Mr.
9 Bruzzano consider utilizing the equipment installed by the customer to address the grid
10 issues, or exploring other non-wires alternatives like efficiency and demand response.
11 DTE acknowledged that the example it presents in its testimony did not consider
12 compensating customers for potential services that could be provided by on-premise DER
13 technology that could mitigate these impacts.²²

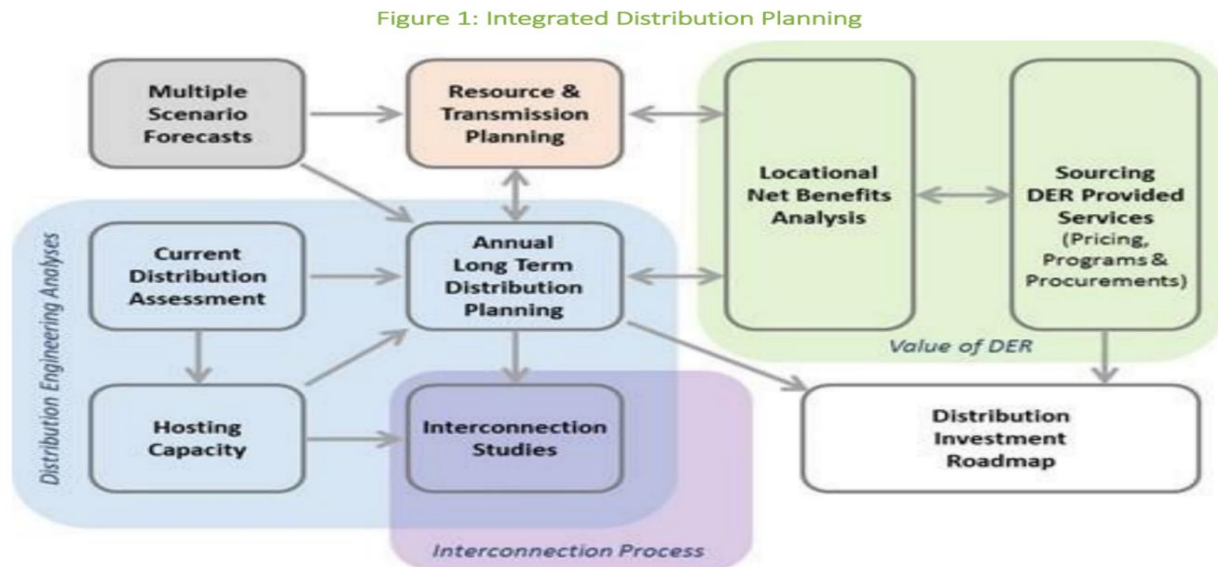
14 I agree with Mr. Bruzzano that increasing amounts of DER will increase the complexity
15 of the distribution system, including the planning, operations, and procurement of
16 services to meet and maintain service. However, as the scenario illustrates, DTE is
17 looking at only one traditional type of solution to these challenges rather than looking
18 more broadly, such as compensating for services, or providing information to customers
19 or developers to locate new services. By utilizing a tool like the DOE integrated
20 distribution planning (IDP) model developed for the Minnesota Public Utilities
21 Commission, DTE should also look at developing a locational net benefit analysis and

²¹ DTE Bruzzano Direct Testimony at 27-28.

²² Exhibit ELP-2 (CV-2), DTE Response to ELPCDE-2.48.

procurement framework to address grid needs.²³ All of this is to say that having a more complete planning framework, even if a utility does not have high DER penetration at this time, would allow the utility to start today with what is needed to accomplish that analysis.

Figure 1: DOE Integrated Distribution Planning Model developed for the Minnesota Public Utilities Commission.



Q. Can you provide any specific examples of a utility with a truly integrated distribution plan?

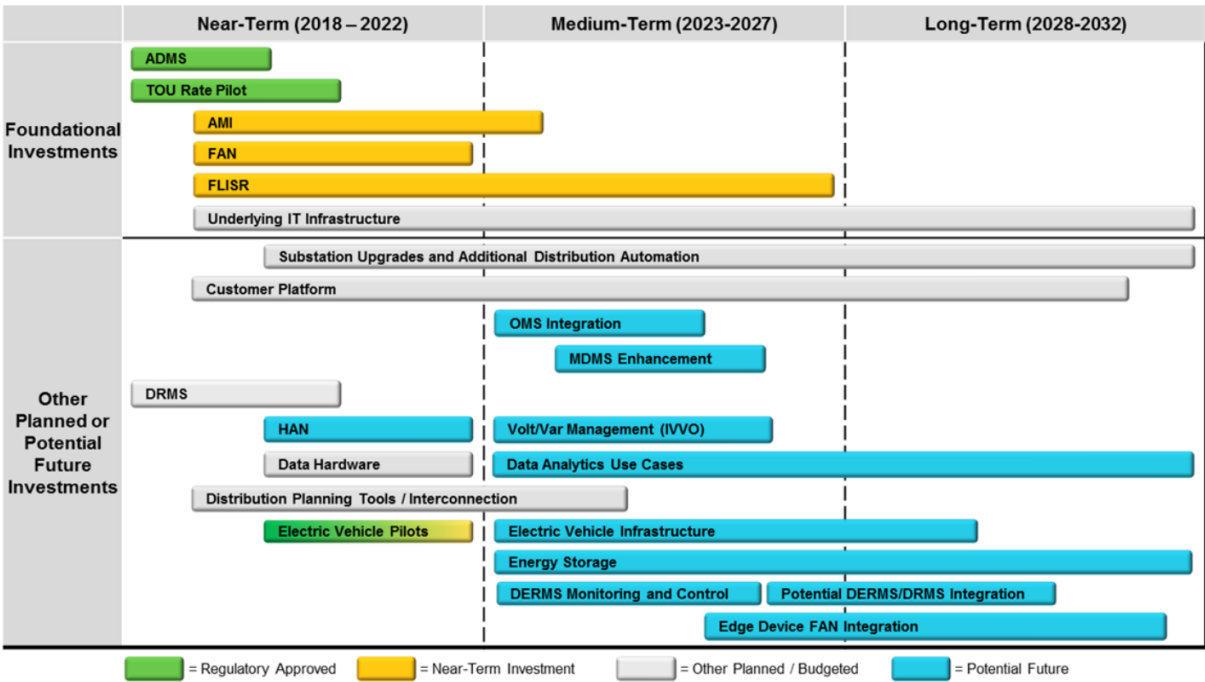
A. Yes. In November 2018, Xcel Energy in Minnesota submitted its integrated distribution plan. This filing was done at the direction of the Minnesota Public Utilities Commission, which is interested in better understanding the details of utility investment strategies for the distribution system as its utilities' distribution systems are aging and in need of replacement. As noted by the image below, Xcel's distribution plan looks out over 15 years and plots out the necessary investments over three time increments and identifies

²³ "Integrated Distribution Planning," ICF International (August 2016).

the investments that are necessary or foundational for the evolution of the distribution utility.²⁴

Figure 2: Xcel Advanced Grid Initiatives 15-Year View

Figure 7: Advanced Grid Initiatives 15-Year View



Looking at the distribution system with an eye towards the future and how to get from point A to point B is also consistent with other work done by the DOE to support grid modernization activities by state commissions. This is an example of what I would expect to see from DTE regarding the plotting out of its technology investments over the next 10-15 years. This type of picture provides a better sense of the layering I described earlier, provides greater transparency into the investment and application process, and allows stakeholders a better opportunity to consider these investments and how they can

²⁴ "Integrated Distribution Planning," Xcel Energy, Minnesota Public Utilities Commission, Docket No. E002/CI-18-251 (November 1, 2018). Available at: <https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={E098D466-0000-C319-8EF6-08D47888D999}&documentTitle=201811-147534-01>.

1 interact with each other. Additionally, in thinking about interoperability and architecture,
2 it gives a better sense of timing and organization across the utility.

3 I will also note that the Minnesota PUC asked its utilities to report on the following topics
4 in their Integrated Distribution Plans²⁵:

- 5 • Overview of investment plan: scope, timing, and cost recovery mechanism;
- 6 • Grid Architecture: Description of steps planned to modernize the utility's grid and
7 tools to help understand the complex interactions that exist in the present and
8 possible future grid scenarios and what utility and customer benefits that could or
9 will arise;
- 10 • Alternatives analysis of investment proposal: objectives intended with a project,
11 general grid modernization investments considered, alternative cost and
12 functionality analysis (both for the utility and the customer), implementation
13 order options, and considerations made in pursuit of short-term investments. The
14 analysis should be sufficient enough to justify and explain the investment;
- 15 • System interoperability and communications strategy;
- 16 • Costs and plans associated with obtaining system data (EE load shapes, PV output
17 profiles with and without battery storage, capacity impacts of DR combined with
18 EE, EV charging profiles, etc.);
- 19 • Interplay of investment with other utility programs (effects on existing utility
20 programs such as demand response, efficiency projects, etc.);
- 21 • Customer anticipated benefit and cost;

²⁵ In the Matter of Distribution System Planning for Xcel Energy, "Order Approving Integrating Distribution Planning Filing Requirements for Xcel Energy, Case No. 18-251 (August 30, 2018).

- 1 • Customer data and grid data management plan (how it is planned to be used
- 2 and/or shared with customers and/or third parties);
- 3 • Plans to manage rate or bill impacts, if any;
- 4 • Impacts to net present value of system costs (in NPV RR/MWh or MW);
- 5 • A cost-benefit analysis for each grid modernization project in its 5-year Action
- 6 Plan; and,
- 7 • Status of any existing pilots or potential for new opportunities for grid
- 8 modernization pilots.²⁶

9 **Q. Are there other elements of DTE’s proposed distribution system plan and**
10 **investments that suggest DTE may not be adequately planning for the future?**

11 A. Yes. DTE notes that even though it is requesting nearly \$2 billion for its distribution
12 system for 2019 through April 2021,²⁷ the funding requested for Strategic Capital
13 Programs (including infrastructure redesign, technology and automation, and
14 infrastructure resilience and hardening) may not ultimately be used for those programs.
15 Mr. Bruzzano notes in his testimony that DTE retains flexibility to use funding for other
16 projects, including those identified in the “Emergent Replacements.”²⁸ The Emergent
17 Replacement program covers costs related to storm and emergency events and other un-
18 planned costs. In 2018, for instance, DTE spent only 70% of its projected spending on
19 strategic capital programs, while its spending on emergent replacements was higher than
20 forecasted. DTE’s use of funds approved for strategic capital programs on Emergent

²⁶ *Id.*, “Minnesota Integrated Distribution Planning Requirements for Xcel Energy,” Attachment, E002/CI-18-251, at 6.

²⁷ DTE Exhibit A-12, Schedule B5.4, page 1.

²⁸ DTE Bruzzano Direct Testimony at 14.

1 Replacements needs shows that DTE could do a better job budgeting, but also that
2 funding can be taken away from the strategic capital spend and used on other projects.
3 Another concern relates to DTE's identification of tree trimming, yet again, as the
4 number one project to come out of DTE's Global Prioritization Model. No doubt that tree
5 trimming is important and is part and parcel of basic utility functions, but in the context
6 of a distribution system planning process, such as the one I have previously identified, I
7 believe tree trimming misses the point regarding planning for the future electricity
8 system. The Commission should be wary of continually funding this project at increasing
9 levels of funding and surges absent a showing from DTE that it is using funds allocated
10 for tree trimming on actual tree trimming. Tree trimming appears to be one of those
11 investments that, for DTE, appears easy to skip and to use that funding for other
12 purposes. I would recommend the Commission consider some means by which to ensure
13 that tree trimming funding approved in this docket is used on tree trimming for this
14 period. For example, the Commission could consider a performance-based metric tied to
15 funding tree trimming based on, for instance, a percentage of completed projects initially
16 focused on those most in need of trimming or a percentage improvement in SAIDI.

17 **Q. Please respond to Mr. Bruzzano's discussion of DTE's grid modernization strategy.**

18 A. First off, I very much appreciate DTE's use of the DSPx Framework as a starting point.
19 The DSPx is an organizing framework for distribution and grid modernization planning
20 developed by DOE in coordination with several stakeholders. Additionally, bringing in
21 EPRI as an outside consultant to review DTE's plan also appears to be proactive.
22 Unfortunately, I do not believe DTE is using either of those resources effectively, rather,
23 DTE is engaged in confirmation bias. Indeed, EPRI's analysis of DTE's plan confirms

1 that DTE’s plan is consistent with DTE’s own objectives, which itself includes a self-
2 assessment done by DTE.²⁹ Furthermore, EPRI did not compare DTE’s plan to any other
3 utilities.³⁰

4 Second, DTE (and EPRI) utilize the technology adoption curve that pictures a
5 representative “walk-jog-run” approach that focuses on foundational components of the
6 future electricity system.³¹ As EPRI notes, “The activities undertaken in the Walk phase
7 are particularly important in that they establish the plan and the foundation for grid
8 capabilities to support transition (and advanced applications) necessary for a more
9 modern grid.”³² I agree with DTE’s (and EPRI’s) assessment that DTE is currently at
10 Stage 1. What Stage 1 means, and as EPRI notes, is this is the opportunity to lay out a
11 vision and objectives for what the future electricity system should accomplish, lay out the
12 strategy for investments in the distribution system that is overlayed with an adoption
13 forecast, and to outline the timing for investments. However, DTE’s proposed
14 investments are not aligned with these expectations or the goals identified by the
15 Commission for grid modernization. I will discuss this in more detail below.

16 Third, both DTE and EPRI mis-use the DSPx framework.³³ While the DSPx framework
17 is intended to re-organize the utility into a more cohesive and integrated system, DTE
18 uses the framework simply to point to areas in which it is investing. The DSPx
19 framework’s laminar composition envisions that rather than staying in silos with
20 independent plans and strategies, the utility should be re-oriented into more coordinated

²⁹ DTE Exhibit A-23, Schedule M9, at 7 and 13.

³⁰ Exhibit ELP-2 (CV-2), ELPCDE-2.44a, b.

³¹ DTE Bruzzano Direct Testimony at 25.

³² DTE Exhibit A-23, Schedule M9 at 5.

³³ DTE Bruzzano Direct Testimony at 23.

1 components. For example, one of the foundational pieces of the DSPx framework is a
2 communications network. The use of a communications network as foundational
3 component means that instead of individual networks serving individual programs, all
4 programs (for instance, the AMI network) would have access to a common network. In
5 DTE's context, Witness Robinson describes the transition from a 3G network to 4G, and
6 includes a statement that "other grid sensing devices could take advantage of this
7 network," yet provides no examples of a plan for making that happen or whether they are
8 actively testing such capabilities.³⁴ The examples that are provided by Mr. Robinson
9 focus far more on better utilization of data rather than the broader utilization of the 4G
10 network.³⁵ Mr. Bruzzano also does not describe how DTE intends to leverage this
11 communications network.

12 In essence, DTE's grid modernization plan, while improving, still fails to reflect the need
13 to integrate its components and be clearer in outlining how its disparate pieces are
14 forming into something more cohesive to meet the needs of DTE's customers and satisfy
15 the intent of the Commission. As a general matter, now is the time for Michigan and DTE
16 to spend the time to develop the policies and identify the roles and responsibilities for the
17 evolution of the utility system coupled with the growth of distributed energy resources
18 (DER). DTE's next distribution system plan is not scheduled to be filed until 2021, but
19 the Commission should use the opportunity here to ensure that DTE's investments and
20 strategies are being well tracked and looking towards the future. Utilities will need to

³⁴ DTE Robinson Direct Testimony at 14, lines 12-13.

³⁵ DTE Robinson Direct Testimony at 5-8.

1 invest in their system in order to better integrate, utilize, and optimize DER; utility
2 investments must be done with an eye towards the future.

3 **IV. INTEROPERABILITY TESTING**

4 **Q. Mr. Bruzzano describes DTE’s proposed investments in several advanced grid**
5 **technologies, including components of an Advanced Distribution Management**
6 **System (ADMS). Do you believe that these investments are necessary?**

7 A. As I said earlier, I do believe that investments like expansion of distribution SCADA and
8 ADMS will be necessary for the future of DTE’s distribution system. However, I have
9 several concerns with DTE’s proposed ADMS implementation as described by Mr.
10 Bruzzano. Specifically, I am concerned about whether DTE has conducted sufficient
11 interoperability testing and the extent to which DTE is planning to utilize its ADMS
12 investment as a foundation for future use cases.

13 **Q. What do you mean by interoperability?**

14 A. The National Institute of Standards and Technology identifies interoperability as

15 The capability of two or more networks, systems, devices, applications, or
16 components to work together, and to exchange and readily use
17 information—securely, effectively, and with little or no inconvenience to
18 the user. The smart grid will be a system of interoperable systems; that is,
19 different systems will be able to exchange meaningful, actionable
20 information in support of the safe, secure, efficient, and reliable operations
21 of electric systems. The systems will share a common meaning of the
22 exchanged information, and this information will elicit agreed-upon types
23 of responses. The reliability, fidelity, and security of information exchanges
24 between and among smart grid systems must achieve requisite performance
25 levels.³⁶
26

³⁶ “NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 3.0,” National Institute of Standards and Technology, at pages 20-21 (September 2014). Available at: <https://www.nist.gov/sites/default/files/documents/smartgrid/NIST-SP-1108r3.pdf>.

1 Additionally, interoperability is built upon open standards. Open standards ensure that
2 vendors and utilities are not relying upon proprietary standards which may inhibit
3 interoperability. The use of open standards is vital to ensuring that the technologies
4 utilities are investing in today are scalable and upgradeable. Open standards allow for
5 competition between vendors, lowers costs to install and integrate technologies and
6 resources, and is less costly over time, especially since the utility will avoid a costly
7 integration layer to be created between the two systems.

8 **Q. Why is interoperability important?**

9 A. It is important to address interoperability before implementing a system because it will
10 then be less expensive over time to integrate various additional technologies from a
11 variety of vendors. This is particularly important in the context of an ADMS
12 implementation because it is likely that in the future, the utility will have to integrate
13 additional systems such as SCADA, FLISR, GIS, OMS, DMS, OMS, CIS, and other
14 internal technologies that will need to work with the ADMS. Without interoperability, the
15 utility may need to implement expensive integration layers between the different
16 products, which increases costs. In the alternative, the utility may need to rely on
17 proprietary solutions, which limits customer choice and customer benefits.
18 Interoperability must flow throughout the utility to ensure that it is built into the utility
19 investment strategy rather than addressed.

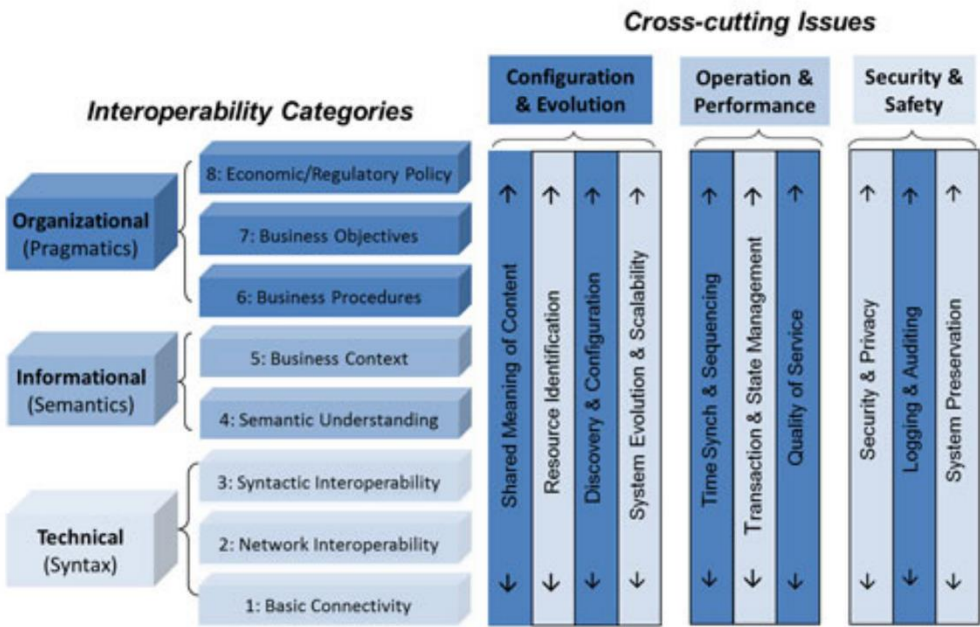
20 The GridWise Architecture Council (GWAC) developed a helpful-to-conceptualize
21 interoperability checklist. This identifies three components of interoperability:

22 Organization, Information, and Technical. As described by GWAC:

23 Technical interoperability covers the physical and communications
24 connections between and among devices or systems (e.g., power plugs and

1 USB ports). Informational interoperability covers the content, semantics and
2 format for data or instructions flows (such as the accepted meanings of
3 human or computer languages and common symbols). Organizational
4 interoperability covers the relationships between organizations and
5 individuals and their parts of the system, including business relationships
6 (such as contracts, ownership, and market structures) and legal relationships
7 (e.g., regulatory structures and requirements, and protection of physical and
8 intellectual property). All three types must be addressed to achieve effective
9 interoperability in any system.³⁷

10
11 To better represent this, GWAC also has an image that expresses this³⁸:
12



13 **Figure S.1:** GWAC Interoperability Context-Setting Framework, aka GWAC Stack
14

15 Understanding these components of interoperability is important because it helps put
16 DTE’s grid modernization investments in context. Interoperability is not just about the
17 ability of pieces to work together, but it also includes people and processes. The NIST
18 definition from above should not be read as only applying to technology. Unfortunately,

³⁷ “Introduction to Interoperability and Decision-Maker’s Interoperability Checklist, Version 1.5,” GWAC (August 2010). Available at: https://www.gridwiseac.org/pdfs/gwac_decisionmakerchecklist_v1_5.pdf.

³⁸ “Smart Grid Interoperability Maturity Model Summary,” GWAC. Available at: <https://www.gridwiseac.org/about/imm.aspx>.

1 DTE appears to have a more limited interpretation of interoperability. In response to a
2 discovery request, DTE stated that it defines interoperability as “the ability of two
3 systems to exchange data.”³⁹ This only captures part of the goal of interoperability- the
4 ability to exchange information is only a part of interoperability, the other half is to be
5 able to understand and act upon that knowledge. As evidenced by both NIST and GWAC,
6 interoperability must flow through the components of the business unit, business process,
7 and technical exchange of information. Without interoperability, the utility risks higher
8 costs via implementation of costly integration layers to allow the exchange of information
9 and ability to understand and act on that information. Those costs ultimately will be
10 borne by customers.

11 **Q. Please explain your concerns with DTE’s proposed ADMS implementation.**

12 A. I have concerns over whether the various pieces of the ADMS system— including the
13 interoperability of the pieces of the ADMS as well as the organizational and
14 informational components of installation of the various pieces of ADMS—will be able to
15 work together in the short term and be the foundational organizer and integrator of more
16 systems in the future. I have two examples that outline my concerns.

17 First, Mr. Bruzzano described several teams under his authority- one is the Operational
18 Technology team which covers AMI, data analytics, and the Network Management
19 System (NMS). A second team focuses on implementing ADMS.⁴⁰ Yet when Mr.
20 Bruzzano describes the components of an ADMS, it includes three pieces, including the
21 NMS which is not being implemented by the ADMS team.⁴¹ Considering that the NMS

³⁹ Exhibit ELP-2 (CV-2), DTE Response to ELPCDE-2.38.

⁴⁰ DTE Bruzzano Direct Testimony at 3.

⁴¹ DTE Bruzzano Direct Testimony at 70.

1 is a vital component of the ADMS as the NMS ensures the data quality that goes into the
2 Distribution Management System,⁴² Mr. Bruzzano does not explain how the various
3 teams interact or why NMS was separated from ADMS generally. As described above,
4 interoperability includes organizational- if part of the ADMS implementation is not part
5 of the ADMS implementation team, then there is an interoperability issue.

6 Second, it appears that DTE relies upon what is called first-party testing and second-party
7 testing.⁴³ DTE first relies upon the vendor's testing and certification on interoperability of
8 the systems—this is called first party certification. DTE then does its own testing of the
9 vendors' products—this is called second party certification. DTE does not, however,
10 appear to require any interoperability testing and certification of its ADMS-related
11 systems by an independent third-party entity that tests the technology's adherence to a
12 particular standard to address interoperability and conformance.

13 **Q. Why is it a problem that DTE does not require third-party interoperability testing?**

14 A. First and second party testing is insufficient because the vendor and the utility have
15 particular interests in their testing regimes, whereas an independent third party is focused
16 on interoperability and conformance without any vested interest. Third party, independent
17 testing and certification is vital to ensuring a neutral party is validating the claims of the
18 vendor and the testing of the utility for compliance and conformance to a standard.
19 Failure to do sufficient integration testing can result in increased costs as the solutions
20 may not ultimately work as expected. If that happens, then the utility (or the vendor) will

⁴² Exhibit ELP-2 (CV-2), DTE Response ELPCDE-2.36a.

⁴³ Exhibit ELP-2 (CV-2), ELPCDE-2.35 and ELPCDE-2.38.

1 need to develop an integration layer between the two components and enable their
2 communications.

3 **Q. Are there any guiding documents that establish recommended practices for third**
4 **party interoperability testing and certification?**

5 A. Yes. In 2012, the Smart Grid Interoperability Panel (SGIP), which was established by the
6 National Institute on Standards and Technology (NIST), created the Interoperability
7 Process Reference Manual (IPRM).⁴⁴ At its core, the IPRM outlines a set of practices for
8 third party testing and certification of advanced technologies being installed by utilities.
9 Furthermore, the IPRM is an integral part of NIST’s Smart Grid Interoperability
10 Framework, notably its chapter on testing and certification.⁴⁵ The IPRM “is intended to
11 enhance the validity and consistency of testing and certification programs for standards
12 based products in the market place to help assure their conformance and interoperability
13 for the end user/buyer.”⁴⁶ However, the IPRM notes that, “in the absence of a broader
14 framework, there are broad variants in the approach and depth of testing programs,
15 leading to uncertainty in whether or not the testing is achieving the needs of end users,”
16 and that vendor only testing or testing by the utility at its location “simply include[s]
17 basic testing and result reporting, and do not go so far as to certify conformance or

⁴⁴ SGIP, “Interoperability Process Reference Manual,” Smart Grid Testing and Certification Committee (2012). Available at: https://collaborate.nist.gov/twiki-sggrid/pub/SmartGrid/SmartGridTestingAndCertificationCommittee/IPRM_final_-_011612.pdf. This document was updated and adopted by ANSI/NEMA as ANSI/NEMA SG- IPRM 1-2016. Additionally, a users guide was developed in 2017, “Interoperability Process Reference Manual – User’s Guide,” SEPA (November 2017). Available at: <https://sepapower.org/resource/interoperability-process-reference-manual-%E2%8E%BC-users-guide/>.

⁴⁵ National Institute on Standards and Technology, “NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 3.0,” NIST Special Publication 1108r3 (September 2014). Available at: <https://www.nist.gov/sites/default/files/documents/smartgrid/NIST-SP-1108r3.pdf> A revision to this version is expected to be released by NIST in the upcoming weeks.

⁴⁶ IPRM at 7.

1 especially interoperability. Thus, the end buyer is not assured of conformance and
2 interoperability quality products in the market place.”⁴⁷

3 **Q. Are there any examples of where a utility’s failure to conduct sufficient**
4 **interoperability testing impacted customers?**

5 A. Yes. In September 2019, the Maine Public Advocate issued a report looking into a
6 number of billing discrepancies related to the implementation of AMI by Central Maine
7 Power.⁴⁸ The investigation revealed that Central Maine Power failed to conduct a number
8 of testing practices, including integration testing of its AMI systems with its billing
9 systems. The result of that failure to do sufficient integration testing resulted in
10 substantially higher electricity bills for many of Central Maine Power’s customers due to
11 misbilling since its billing system was not adequately interoperable with its AMI system.
12 This is an example of the need to ensure that DTE is conducting sufficient testing of its
13 ADMS system to ensure that the ADMS system is working with its many pieces, but that
14 it is also successfully integrated with non-ADMS systems, including DTE’s AMI system.

15 **Q. Have any utility commissions required interoperability testing?**

16 A. Yes. Third party testing and certification requirements have been adopted by the
17 California Public Utilities Commission for utilization of the Home Area Network⁴⁹ and
18 advanced inverters pursuant to California’s Rule 21 interconnection rule.⁵⁰

19 **Q. Are there other components of interoperability you would like to note?**

⁴⁷ *Id.* at 8.

⁴⁸ *Investigation of Central Maine Power Company’s Metering and Billing Issues*, Testimony Independent Assessment Report, Maine Public Advocate (September 6, 2019). Available at: <https://mpuc-cms.maine.gov/CQM.Public.WebUI/MatterManagement/MatterFilingItem.aspx?FilingSeq=103511&CaseNumber=2019-00015>.

⁴⁹ Resolution E-4527 (September 27, 2012). Available at: <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M029/K624/29624509.PDF>.

⁵⁰ See California Rule 21, Section L. Available at: https://www.pge.com/tariffs/tm2/pdf/ELEC_RULES_21.pdf.

1 A. Yes. Another component relates to the utilization of open standards. In this regard, DTE's
2 Insight Program description to allow customers to access their usage information appears
3 to be entirely built upon a proprietary standard and model that requires customers to use,
4 and only use, DTE's preferred method.⁵¹ This does not support interoperability and open
5 standards. The platform opportunity described in Witness Cejas Goyanes' testimony
6 should be open to all technologies, not just those provided by DTE. DTE's approach
7 impedes innovation and increases customer costs by requiring the utility provided
8 solution rather than one built upon open standards. Additionally, DTE should implement
9 the Green Button solution, which is built on an open standard- this would allow more
10 opportunities for customers to obtain their usage information and allow a market to
11 develop built upon a common data format like Green Button. By erecting barriers to
12 innovation through more expensive proprietary solutions, DTE's Insight Program is
13 keeping customers from realizing the full benefit of their investment in AML.

14 **V. NON-WIRES ALTERNATIVES**

15 **Q. What are non-wires alternatives (NWA)?**

16 A. Non-Wire Alternatives projects allow utilities to defer or avoid conventional
17 infrastructure investments by procuring distributed energy resources (DER) that lower
18 costs and emissions while maintaining or improving system reliability. In essence, when
19 the utility identifies, for example, a substation that will exceed its nameplate capacity
20 rating during peak hours, the utility can choose to upgrade the substation or it could seek

⁵¹ DTE Cejas Goyanes Direct Testimony at 27.

1 to procure resources from that location to lower peak below the capacity rating and defer
2 the investment in that substation.

3 **Q. Is DTE proposing any NWA?**

4 A. Yes. In Mr. Bruzzano's testimony, he identified four NWA projects. Two projects will
5 work with DTE's Energy Waste Reduction team to utilize DTE's energy efficiency and
6 demand response programs and energy storage.⁵² Two other pilots focus on using energy
7 storage as the NWA for a given location.⁵³ I would also include a fifth pilot project
8 included in Witness Cejas Goyanes' testimony as a potential NWA pilot but this project
9 is not being done in conjunction with Mr. Bruzzano's team.⁵⁴ The fifth project looks to
10 use battery storage with solar PV to test the ability of a solar+storage project to provide
11 demand response, which, at a certain size, could definitely be part of a NWA solution.

12 **Q. Do you have any comments on DTE's NWA proposals?**

13 A. Yes. DTE is still considering NWAs in too limited a fashion. I do think it is important to
14 develop a set of selection criteria, as DTE has done, to help identify locations that may be
15 suitable for NWA applications and use that across its whole system, not simply limited
16 pockets and pilot applications. However, based on Mr. Bruzzano's testimony, I do not see
17 DTE looking at NWA options in as broad a manner as possible.

18 **Q. Please explain.**

19 A. I do not believe DTE plans to use energy efficiency and demand response programs to
20 the greatest extent possible as NWAs. In addition, it is unclear to what extent DTE is
21 considering a portfolio approach that would utilize several types of possible resources.

⁵² DTE Bruzzano Direct Testimony at 93.

⁵³ DTE Bruzzano Direct Testimony at 93-94.

⁵⁴ DTE Cejas Goyanes Direct Testimony at 24-25.

1 Lastly, it appears that DTE is only considering DTE’s own resources rather than
2 including opportunities for customer-located and non-utility owned resources.

3 **Q. Please provide an example of how a utility might consider a broad portfolio of**
4 **resources in developing an NWA.**

5 A. For example, the Brooklyn-Queens Demand Management NWA program operated by
6 ConEd deferred a \$1.2 billion upgrade to its substation by procuring services built around
7 time and duration to meet demand. In a presentation to the Minnesota Public Utilities
8 Commission, ConEd provided the following image to describe its program⁵⁵:

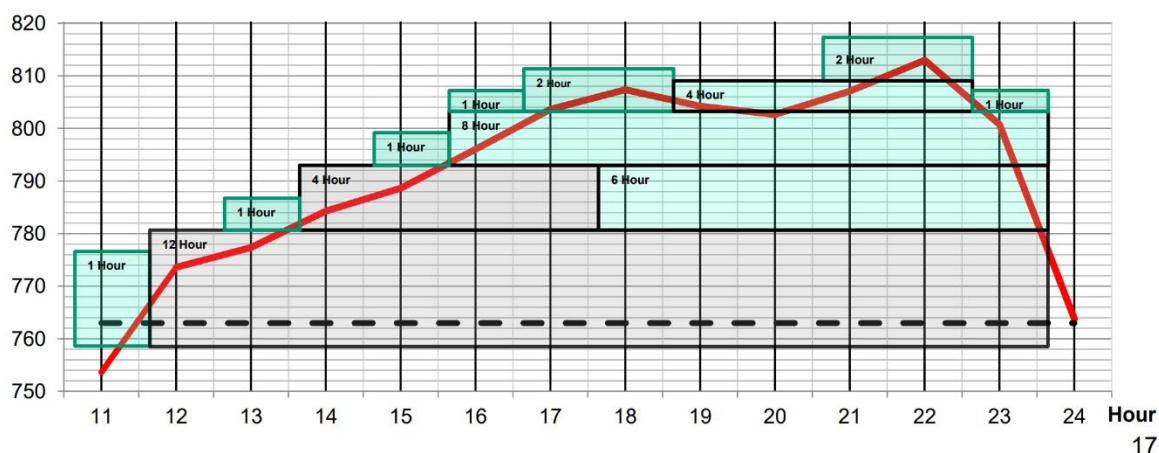
⁵⁵ Presentation of Damian Schiano, ConEd, before the Minnesota Public Utilities Commission, Docket No. 15-556 (October 30, 2015). Available at: <https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={F39616C8-E8F7-4F4C-B704-80D9C84B7101}&documentTitle=201510-115146-01.>

Brooklyn-Queens Demand Management



- \$1.2 billion substation deferral using portfolio of alternative investments in Brownsville network
- Earn rate-of-return plus incentive based on implementation

Sample Network Peak Day Load Curve



This image shows how ConEd is implementing a portfolio approach built upon services and programs that last a variety of hours. ConEd uses 12-hour programs, 6 hour programs, 4 hour programs, 2 hour programs, and 1 hour programs built around a variety of technologies that include energy efficiency, demand response, energy storage, and distributed generation, such as rooftop solar, as a means to keep the peak at this location below nameplate capacity to defer a costly upgrade to the substation at this location.

What this means is that ConEd is packaging a variety of components- ConEd starts with resources that can provide 12 hours worth of response, then, as the day continues, and consumption picks up, it will procure and dispatch shorter resources, such as a four hour and a six-hour resource. ConEd will use shorter resources for the beginning and end of

1 hours to provide some flexibility in case their forecast is off by a little bit. By mixing and
2 matching technologies and duration, they are able to enhance the flexibility of the system,
3 maintain peak below the capacity rating for that substation, maintain reliability of service,
4 and defer the investment in this substation. The other important part of this approach is
5 that it allows the utility to identify how much reduction it needs and for how long.

6 **Q. Do you have any other comments on DTE's plans with respect to NWAs?**

7 A. Yes. DTE does not appear to be considering any non-utility-owned, market-provided
8 solutions as NWAs.

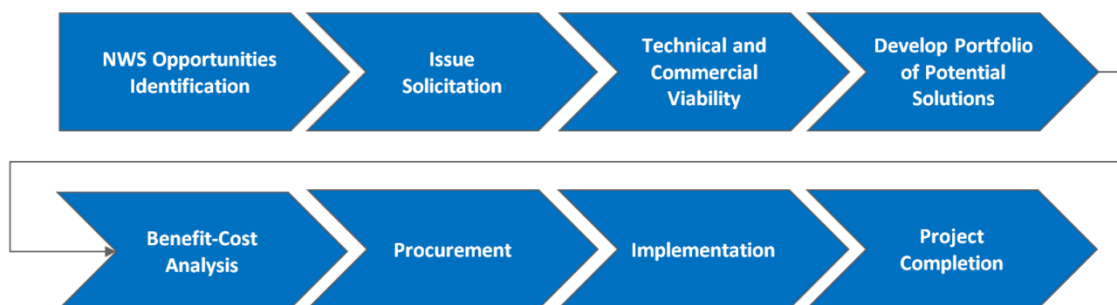
9 **Q. Why is this a problem?**

10 A. This is a problem because DTE can utilize resources that are already out in the field that
11 were paid for by customers or third parties. In order to optimize the system, DTE should
12 be looking to maximize the potential of the distribution system, including using those
13 resources that are already deployed and capable of providing a service.

14 **Q. Do you have an example of how a utility would procure resources for an NWA?**

15 A. Yes. Again, looking to New York, ConEd, as well as the other New York utilities, all
16 have a procurement process in place for NWAs. An example is from an RFP released by
17 ConEd seeking 4 MW of load relief at a substation in Queens.⁵⁶ First, ConEd provided
18 the process:

⁵⁶ "Non-Wires Solutions to Provide Demand Side Management for Subtransmission and Distribution System Load Relief: Newtown Substation Project," ConEd, at 5 (July 6, 2018). Available at: <https://www.coned.com/-/media/files/coned/documents/business-partners/business-opportunities/non-wires/newtown-project-solicitation.pdf?la=en>.



1

2 Next, it described the need⁵⁷:

NWS Project Description

Newtown Substation

Project Description

Newtown Substation serves Sunnyside and Borden networks in Queens, NY. Based on Con Edison's analysis, this area is projected to see new load growth in the next 10 years and will require additional infrastructure reinforcement at Newtown Substation to meet the expected demand. The traditional load relief solution will be the installation of a transformer in Newtown Substation to be supplied by a new 138kV sub-transmission feeder. The area will need 4MW of load relief in the year 2022, and will increase incrementally over the next 10 years.

The Company anticipates the following overload:

Total MW Need	Overload Period	Peak Hours	Need Period
24 MW	12 PM – 6 PM	5 PM – 6 PM	2022-2027

Note: All hours refer to hour ending, which denotes the preceding hourly time period. For example, hour ending 6 PM is the time period from 5:01 PM to 6:00 PM

The substation's year-over-year incremental overloads are expected to be the following:

Project	Total CSS Need (MW)	Year-Over-Year Need								
		2019	2020	2021	2022	2023	2024	2025	2026	2027
Newtown	24	-	-	-	4	3	4	5	5	3

Note: The load reduction need identified for each year will persist through the full need period so the measure implemented must also persist as well.

3

⁵⁷ *Id.*

1 In sum, this is an example looking at as many options available to the utility to evaluate
2 alternative options to cost-effectively maintain reliability while deferring increased
3 customer costs associated with distribution upgrades. Utilization of non-utility owned
4 resources, via an RFP process, can provide DTE with more options than it may otherwise
5 find available or cost-effective to DTE- if the market is willing to take that risk, then that
6 is a benefit to customers.

7 **Q. Beyond utilities in New York, are other utilities considering non-utility-owned**
8 **resources as NWAs?**

9 A. Yes – utilities in other states have looked at customer-owned DERs as NWA resources.⁵⁸

10 **Q. What do you recommend?**

11 A. As DTE continues looking into NWA, DTE should not limit its options only to DTE-
12 managed programs, but should also consider market-based and non-utility owned
13 resources for its NWA solution. DTE should include non-utility owned providers and
14 resources in their NWA pilots and explore a portfolio-based approach to its pilots and
15 future NWA needs.

16 **VI. CONCLUSION**

17 **Q. Please summarize your recommendations to the Commission.**

18 A. I recommend the following:

- 19 1) The Commission should give no weight to EPRI's report on DTE's grid
20 modernization investments and strategy;

⁵⁸ See Smart Electric Power Alliance, Peak Load Management Alliance, E4TheFuture. "Non-Wires Alternatives, Case Studies from Leading U.S. Projects" at 18. November 2018. Available at: https://e4thefuture.org/wp-content/uploads/2018/11/2018-Non-Wires-Alternatives-Report_FINAL.pdf.

- 1 2) The Commission should recognize that DTE’s investments are not in keeping with
- 2 the goals of the Commission around building a grid for the future, increased
- 3 transparency into the utility’s planning process, and are too heavily focused upon
- 4 capital projects without considering potential non-utility solutions to potential needs;
- 5 3) Hold back a percentage of DTE’s budget request for tree trimming pending either a
- 6 performance-based metric on percentage of lines cleared or a percentage
- 7 improvement in SAIDI;
- 8 4) Require that DTE implement interoperability and third-party testing and certification
- 9 programs to ensure that DTE’s testing is not limited to first or second party testing
- 10 and certification;
- 11 5) Require DTE to utilize open standards, including to enable customer data access built
- 12 upon Green Button;
- 13 6) Require that DTE consider broader forms of NWA alternatives that focus on a
- 14 portfolio approach to procuring necessary resources for an NWA project, including
- 15 customer-owned resources; and,
- 16 7) Require DTE’s next 5 Year Plan to be more aligned with work that is on-going at
- 17 DOE related to distribution system planning, and that it provide more transparency
- 18 into DTE’s planning process.

19 **Q. Does this conclude your testimony?**

20 **A. Yes.**

**STATE OF MICHIGAN
MICHIGAN PUBLIC SERVICE COMMISSION**

In the matter of the Application of DTE)	
Electric Company for authority to increase)	
its rates, amend its rate schedules and rules)	Case No. U-20561
governing the distribution and supply of)	
electric energy, and for miscellaneous)	
accounting authority.)	
)	

EXHIBITS OF

CHRISTOPHER VILLARREAL

ON BEHALF OF

THE ENVIRONMENTAL LAW & POLICY CENTER AND
THE NATURAL RESOURCES DEFENSE COUNCIL

NOVEMBER 6, 2019

CHRISTOPHER R. VILLARREAL

9492 Olympia Drive Eden Prairie, MN 55347
email: chris@pluggedinstrategies.com

(415) 680-4224

EMPLOYMENT

NON-RESIDENT (ENERGY AND ENVIRONMENTAL POLICY) ASSOCIATE FELLOW
R Street Institute

SEPTEMBER 2018-CURRENT
Washington, D.C.

- Provide regulatory and policy support on topics including performance based ratemaking, development of rules for integrated resource planning, and market-oriented solutions for customer choice and development of clean energy resources.
- Develop written materials summarizing regulatory actions on topics related to performance based ratemaking, customer choice, tracker reform, and other topics as needed.

PRESIDENT
Plugged In Strategies

APRIL 2017-CURRENT
Eden Prairie, MN

- Provide regulatory and policy analysis and consulting services related to evolution of electricity grid, distribution system planning, emerging customer and grid-connected technologies, and regulatory strategies
- Provide facilitation and moderation services for groups, workshops, and working groups
- Provide research and analysis services regarding utility and regulatory matters and structures
- Provide additional expert analysis on matters affecting electricity and regulatory structures, including topics such as data privacy, data access, rate design, interoperability, advanced technologies, and convergence of technology, industries, and markets.
- Provide expert testimony and presentations before state utility commissions.

DIRECTOR OF POLICY
Minnesota Public Utilities Commission

MAY 2015- APRIL 2017
Saint Paul, MN

- Maintained high profile inside and outside the state representing the Commission on electricity matters
- Assisted Commissioners with policy analysis to support decision-making options
- Provided policy analysis to support development of record in proceedings
- Provided subject matter expertise on specific topics, including rate design, energy storage, grid modernization, data privacy, data access, interconnection, and security
- Organized workshops, including preparing agendas, inviting speakers, and moderating public panels
- Engaged and interact with several national organizations, including National Association of Regulatory Utility Commissioners, Department of Energy, Federal Energy Regulatory Commission, National Institute of Standards and Technologies, North American Energy Standards Board, and Smart Grid Consumer Collaborative
- Regularly spoke and participated in panels, conference, webinars, and other international, national, and state conferences on behalf of the Minnesota Public Utilities Commission
- Engaged and worked with several state-level projects, including e21 Initiative and 2025 Energy Action Plan
- Participated in actions related to Midcontinent Independent System Operator product development, including demand response and energy storage
- Chaired NARUC Staff Subcommittee on Rate Design, and managed development of Distributed Energy Resources Rate Design and Compensation manual, which included meeting specific deadlines, organize and manage a group of seven staff from around the country to develop, draft, and finalize manual on time
- Maintained an awareness and understanding of electricity policy developments across the country, including at national and state level; provide an analysis of these developments for Commissioners

SENIOR REGULATORY ANALYST
California Public Utilities Commission

MARCH 2006- APRIL 2015
San Francisco, CA

Major Accomplishments:

- Staff lead on Commission Smart Grid rulemaking: responsible for coordinating Staff work on rulemaking, working with ALJ and Assigned Commissioner's Office, organizing and facilitating workshops on a number of Smart Grid-related topics, including cybersecurity, privacy, customer data access and other customer issues, and ensuring proceeding met legislatively mandated time-frame.
- Prepared initial Orders Instituting Rulemaking on energy storage, rate design reform, and Smart Grid, and assisted in completion of final Commission decisions on Smart Grid, rate design, customer access to data, and privacy.
- Named as a Top 50 Smart Grid Pioneers for 2013 by Smart Grid Today.
- Managed and facilitated Commission workshops on emerging topics, such as privacy, cybersecurity, energy storage, and customer data access.
- Provided lead and support analysis on many electricity issues affecting customers, market participants, and utilities, including dynamic pricing, demand response, energy efficiency, rate design, electric energy storage, direct access and retail/wholesale integration.
- Responsible for monitoring activities, preparing analyses of policies, and preparing and submitting comments related to specific subject areas before FERC, U.S. Congress, California State Legislature, CEC, DOE, NIST, and Office of Science and Technology Policy.
- Participated in standard making process, and prepared and submitted comments to FERC, NIST, and NAESB.
- Chair of NAESB Energy Services Provider Interface Task Force, and a member of NAESB Executive Committee.
- Lead author and contributor on White Papers related to several emerging topics, such as Pre-Pay, cybersecurity, and microgrids.
- Presented at conferences on updates and summaries of Commission position on Smart Grid issues, such as customer education, privacy, cybersecurity, customer access to usage, rate design and tariffs, and general regulatory policy.

PARALEGAL
Patton Boggs

NOVEMBER 2005-FEBRUARY 2006
Washington, D.C.

- Performed research at FERC, other Federal agencies, Congressional legislative history, and various state agencies.
- Cite-check, proofread, and shepardize pleadings filed at FERC and various U.S. Courts of Appeals.
- Organized and maintained discovery files.

PARALEGAL
McCarthy, Sweeney & Harkaway

JULY 2004- OCTOBER 2005
Washington, D.C.

- Performed research for FERC, other Federal agencies, U.S. Congress, state legislatures and state regulatory agencies.
- Obtained and summarized pleadings filed at FERC and courts for clients and attorneys.
- Performed energy-related research (*e.g.*, monitor Energy news, obtain FERC and U.S. Court cases and opinions) and maintained extensive knowledge of many energy issues (*e.g.*, RTOs, deregulation/competition, and California/Pacific Northwest refund proceedings at FERC and U.S. Courts).
- Prepared testimony and discovery-related materials for hearing before FERC Administrative Law Judge, and provided proofreading, cite-checking, and shepardizing assistance for documents filed at FERC, U.S. Supreme Court, U.S. Court of Appeals and U.S. District Courts.
- Prepared briefs and appendices, and maintained and organized case files for proceedings before FERC and U.S. Court of Appeals.
- Monitored energy-related legislation and hearings before U.S. Congress and state legislatures, as well as energy-related activities at state PUC levels (*e.g.*, electric competition/deregulation activities).

PARALEGAL

MARCH 2003- JUNE 2004

Duane Morris, LLP

Washington, D.C.

- Performed research at FERC and other Federal agencies. Monitored FERC meetings and prepared summaries of meeting for attorneys and clients.
- Obtained and summarized pleadings filed at FERC and courts for clients and attorneys.
- Performed energy-related research (*e.g.*, monitor Energy news, obtain FERC and U.S. Court cases and opinions) and maintained knowledge base on many energy issues (*e.g.*, RTOs, deregulation/competition, and California/Pacific Northwest refund proceedings at FERC and U.S. Courts).
- Prepared testimony and discovery-related materials for hearing before FERC Administrative Law Judge, and provided proofreading, cite-checking, and shepardizing assistance for documents filed at FERC, U.S. Supreme Court, U.S. Court of Appeals, and U.S. District Courts.
- Monitored energy-related legislation and hearings before U.S. Congress and state legislatures, as well as energy-related activities at state PUC levels (*e.g.*, electric competition/deregulation activities).

LEGAL ASSISTANT

APRIL 2001-MARCH 2003

McGuireWoods LLP

Washington, D.C.

- Performed research at FERC and other Federal agencies. Monitored FERC meetings and prepared summaries of meeting for attorneys and clients.
- Performed energy-related research (*e.g.*, monitor energy news, obtain FERC and U.S. Court cases and opinions) and responsible for monitoring energy issues for attorneys (*e.g.*, RTOs, deregulation/competition, generation interconnection, and California/Pacific Northwest refund proceedings at FERC and U.S. Courts).
- Prepared testimony and discovery-related materials for hearing before FERC Administrative Law Judge, and provided proofreading, cite-checking, and shepardizing assistance for documents filed at FERC, U.S. Supreme Court, U.S. Court of Appeals for D.C. Circuit and 9th Circuit, and U.S. District Court for D.C.
- Monitored energy-related legislation and hearings before U.S. Congress and state legislatures, as well as energy-related activities at state PUC levels (*e.g.*, electric competition/deregulation activities).

ENERGY SPECIALIST

MARCH 1998- APRIL 2001

Verner, Liipfert, Bernhard, McPherson, & Hand

Washington, D.C.

- Performed research at FERC, SEC, Library of Congress, U.S. Congress, NRC, Department of Interior, National Archives, EPA, U.S. Supreme Court, U.S. Court of Appeals for D.C. Circuit, U.S. District Court for D.C., and other state agencies.
- Performed and monitored energy and environmental-related research.
- Made filings at FERC, U.S. Court of Appeals for D.C. Circuit, U.S. District Court for D.C., and SEC.
- Provided proofreading assistance, including cite-checking and shepardizing of documents.
- Attended U.S. Congress hearings on Energy issues and summarized for attorneys.
- Organized and maintained Energy Group library and trade press.
- Supervised Energy Group Summer intern.

EDUCATION

BACHELOR OF ARTS IN HISTORY

Baylor University

1993-1997

Waco, Texas

ASSOCIATIONS

- Board of Directors, Minnesota Conservative Energy Forum
- Associate Member, GridWise Architecture Committee
- Planning Commission, City of Eden Prairie, MN
- Board of Directors, Emeritus, North American Energy Standard Board

- Executive Committee, Emeritus, Retail Markets Quadrant, North American Energy Standards Board
- Board of Directors, Emeritus, Smart Grid Consumer Collaborative
- Chair, Staff Subcommittee on Rate Design, National Association of Regulatory Utility Commissioners (November 2015-April 2017)
- Co-Chair, Business and Policy Domain Expert Working Group, Smart Grid Interoperability Panel (2014-2016)

PUBLICATIONS

- *Distributed Energy Resources Rate Design and Compensation Manual*, National Association of Regulatory Utility Commissioners, Staff Subcommittee on Rate Design (November 10, 2016).
<http://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0>
- *Microgrids: A Regulatory Perspective*, California Public Utilities Commission, Policy and Planning Division (April 14, 2014).
<http://www.cpuc.ca.gov/NR/rdonlyres/01ECA296-5E7F-4C23-8570-1EFF2DC0F278/0/PPDMicrogridPaper414.pdf>
- *Utility Investment Valuation Strategies: A Case for Adopting Real Options Valuation*, California Public Utilities Commission, Policy and Planning Division (October 3, 2013).
<http://www.cpuc.ca.gov/NR/rdonlyres/D5C63A2B-40F2-468D-964A-F265B90346B1/0/Final2RRM.pdf>
- *Cybersecurity and the Evolving Role of State Regulation: How it Impacts the California Public Utilities Commission*, California Public Utilities Commission, Grid Planning and Reliability/Policy and Planning Division Policy Paper (September 19, 2012).
<http://www.cpuc.ca.gov/NR/rdonlyres/D77BA276-E88A-4C82-AFD2-FC3D3C76A9FC/0/TheEvolvingRoleofStateRegulationinCybersecurity9252012FINAL.pdf>
- *A Review of Pre-Pay Programs for Electricity Service*, California Public Utilities Commission, Policy and Planning Division Policy Paper (July 26, 2012).
<http://www.cpuc.ca.gov/NR/rdonlyres/152ED1D4-DD85-4D6F-984B-B84847933A18/0/Prepaypolicypaper0712.pdf>
- *Electric Energy Storage: An Assessment of Potential Barriers and Opportunities*, California Public Utilities Commission, Policy and Planning Division (July 9, 2010).
<http://www.cpuc.ca.gov/NR/rdonlyres/71859AF5-2D26-4262-BF52-62DE85C0E942/0/CPUCStorageWhitePaper7910.pdf>

TESTIMONY

- *In the matter of the application of Consumers Energy Company for authority to increase its rates for the generation and distribution*, Direct Testimony of Christopher Villarreal on Behalf of Michigan Environmental Council, Natural Resources Defense Council, and Sierra Club, before the Michigan Public Service Commission, Case No. U-20134 (September 10, 2018)
<https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t0000002ftVkAAI>
- *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*, Direct Testimony of Christopher Villarreal on Behalf of

Michigan Environmental Council, Natural Resources Defense Council, and Sierra Club, before the Michigan Public Service Commission, Case No. U-20162 (November 7, 2018)

<https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t000000329ckAAA>

- *Application of Duke Energy Carolinas, LLC for Adjustments in Electric Rate Schedules and Tariffs and Request for an Accounting Order*, Direct Testimony of Christopher Villarreal on Behalf of South Carolina Solar Business Alliance, before the Public Service Commission of South Carolina, Docket No. 2018-319-E (February 26, 2019)
<https://dms.psc.sc.gov/Attachments/Matter/499c7e9c-65b6-4469-afbd-9d7614711b84>
- *Application of Duke Energy Progress, LLC for Adjustments in Electric Rate Schedules and Tariffs and Request for an Accounting Order*, Direct Testimony of Christopher Villarreal on Behalf of South Carolina Solar Business Alliance, before the Public Service Commission of South Carolina, Docket No. 2018-318-E (March 1, 2019)
<https://dms.psc.sc.gov/Attachments/Matter/ce0917d7-35f2-4bb0-8715-5c2345a5026c>

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.16a</u>
Respondent:	<u>M. A. Bruzzano</u>
Page:	<u>1 of 1</u>

Question: At page 27 of his direct testimony, lines 4-8, Mr. Bruzzano states that the Company plans on building on “its own modeling efforts to develop a longer-term view around potential scenarios related to DERs, EVs and other factors that may impact the way in which the grid should be modernized to prepare for greater levels of DER penetration.”

- a. Describe in detail and provide the results of the referenced “modeling efforts.”

Answer: The modeling effort referenced on Page 27, lines 4-8 has not taken place yet, but is being planned for 2020 to support the next iteration of the Distribution Plan.

Attachments: N/A

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.16b</u>
Respondent:	<u>M. A. Bruzzano</u>
Page:	<u>1 of 1</u>

Question: At page 27 of his direct testimony, lines 4-8, Mr. Bruzzano states that the Company plans on building on “its own modeling efforts to develop a longer-term view around potential scenarios related to DERs, EVs and other factors that may impact the way in which the grid should be modernized to prepare for greater levels of DER penetration.”

- b. Have the Company’s “modeling efforts” to date included any analysis of the magnitude or behavior of existing distributed energy resources located on the Company’s distribution system? If the response is anything other than an unqualified “no,” explain the response in detail and provide the results of the Company’s analysis.

Answer: No.

Attachments: N/A

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.16c</u>
Respondent:	<u>M. A. Bruzzano</u>
Page:	<u>1 of 1</u>

Question: At page 27 of his direct testimony, lines 4-8, Mr. Bruzzano states that the Company plans on building on “its own modeling efforts to develop a longer-term view around potential scenarios related to DERs, EVs and other factors that may impact the way in which the grid should be modernized to prepare for greater levels of DER penetration.”

- c. Have the Company’s “modeling efforts” to date included any analysis of the magnitude or behavior of distributed energy resources projected to be added to the Company’s distribution system in the future? If the response is anything other than an unqualified “no,” explain the response in detail and provide the results of the Company’s analysis.

Answer: No.

Attachments: N/A

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.35</u>
Respondent:	<u>M. A. Bruzzano/D. J. Griffin</u>
Page:	<u>1 of 1</u>

Question: Refer to Exhibit A-23, Schedule M6, page 21-23. Please describe the interoperability and conformance testing DTE has done on the integration of its ADMS systems with those identified on page 7.

Answer: Integration to AMI, CR&B (C360), and GIS are in development in 2019 and will be tested in 2020 during Factory Acceptance Testing (FAT) and Site Acceptance Testing (SAT). Distributed Energy Resources (DER) testing does not yet have a planned date, however this will be determined as the program evolves. Compass is the bolt-on module from OSII that will allow OMS to be used by mobile platforms. The product is due to release in January of 2020 and will be tested during FAT and SAT.

Attachments: N/A

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.36a</u>
Respondent:	<u>M. A. Bruzzano/ D. J. Griffin</u>
Page:	<u>1 of 1</u>

Question: Refer to Exhibit A-23, Schedule M6, page 9, where DTE states that it plans to “incorporate network data from GIS and harmonize the data with other system.”

a. Please describe and define the term “other system.”

Answer: In this case “other systems” include Maximo, ESRI, Clarion – NMS is a data quality and data consolidation system. NMS will cleanse asset data for the Distribution Management System (DMS).

Attachments: N/A

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.38</u>
Respondent:	<u>M. A. Bruzzano/ D. J. Griffin</u>
Page:	<u>1 of 1</u>

Question: Please provide how DTE defines interoperability, including any testing it may conduct to confirm that systems are interoperable.

Answer: Interoperability is the ability of two systems to exchange data. Testing is performed at the factory and at the Company site. Factory acceptance testing (FAT), confirms the configuration of the new system to requirements. System integrations are basic proof of plumbing tests. Site acceptance testing (SAT), tests the features, functions, integrations, of systems and confirms the interoperability with end to end test scenarios.

Attachments: N/A

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.44a</u>
Respondent:	<u>M. A. Bruzzano</u>
Page:	<u>1 of 1</u>

Question: Refer to Exhibit A-23, Schedule M9, page 13, which includes “Final Thoughts and Observations” regarding DTE’s grid modernization plan, and states that DTE’s plan “provides a good starting point for a strategic roadmap.”

- a. Did EPRI compare DTE’s grid modernization plan to any other utility’s strategic roadmap? If the response is anything other than an unqualified “no,” identify the other utility roadmaps to which EPRI compared DTE’s grid modernization plan.

Answer: EPRI’s assessment is based on EPRI SME knowledge gained through its collaborative research with industry. To the best of my knowledge and belief, and based on feedback from EPRI, no direct comparison was made with any other utility roadmap.

Attachments: N/A

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.44b</u>
Respondent:	<u>M. A. Bruzzano</u>
Page:	<u>1 of 1</u>

Question: Refer to Exhibit A-23, Schedule M9, page 13, which includes “Final Thoughts and Observations” regarding DTE’s grid modernization plan, and states that DTE’s plan “provides a good starting point for a strategic roadmap.”

- b. Please provide the basis for the statement that DTE’s grid modernization plan provides a “good starting point,” including any study, analysis, evaluation, or comparison to other utilities.

Answer: EPRI’s assessment is based on EPRI SME knowledge gained through its collaborative research with industry. To the best of my knowledge and belief, and based on feedback from EPRI, no direct comparison was made with any other utility roadmap.

Attachments: N/A

MPSC Case No.:	<u>U-20561</u>
Requestor:	<u>ELPC</u>
Question No.:	<u>ELPCDE-2.48</u>
Respondent:	<u>M. A. Bruzzano</u>
Page:	<u>1 of 1</u>

Question: Refer to the example scenario described in Mr. Bruzzano's direct testimony at pages 27-28. Did DTE compare the costs of utility investment in responding to this scenario compared to the services from technology on the customer side to minimize this scenario? For example, did DTE model compensate customers for providing local services to address over-voltage situations, and what would that compensation be compared to the costs to install new infrastructure?

Answer: No.

Attachments: N/A

**STATE OF MICHIGAN
MICHIGAN PUBLIC SERVICE COMMISSION**

In the matter of the application of DTE)	
ELECTRIC COMPANY for authority to)	
increase its rates, amend its rate schedules and)	Case No. U-20561
rules governing the distribution and supply of)	
electric energy, and for miscellaneous)	
accounting authority.)	

PROOF OF SERVICE

I hereby certify that a true copy of the foregoing *Direct Testimony and Exhibits of Christopher Villarreal on behalf of the Environmental Law & Policy Center and Natural Resources Defense Council* was served by electronic mail upon the following Parties of Record, this 6th of November, 2019.

ALJ Sharon Feldman	feldmans@michigan.gov
Counsel for DTE Electric Co. Jon P. Christinidis Lauren D. Donofrio David S. Maquera Megan E. Irving Patrick B. Carey	mpscfilings@dteenergy.com jon.christinidis@dteenergy.com lauren.donfrio@dteenergy.com maquerad@dteenergy.com megan.irving@dteenergy.com Patrick.carey@dteenergy.com
Counsel for MPSC Staff Heather M.S. Durian Michael J. Orris Monica M. Stephens Daniel Sonneveldt	Stephensm11@michigan.gov orrism@michigan.gov durianh@michigan.gov sonneveldtd@michigan.gov
Counsel for Energy Michigan, Inc. Laura A. Chappelle Timothy J. Lundgren Justin K. Ooms	lachappelle@varnumlaw.com tjlundgren@varnumlaw.com jkooms@varnumlaw.com

Counsel for Michigan Cable Telecommunications Association Michael S. Ashton Shaina R. Reed	mashton@fraserlawfirm.com sreed@fraserlawfirm.com
Attorney General Dana Nessel Joel King	Kingj38@michigan.gov AG-ENRA-Spec-Lit@michigan.gov
Counsel for Michigan Environmental Council, Natural Resources Defense Council, and Sierra Club Christopher Bzdok Michael Soules Tracy Jane Andrews	Chris@envlaw.com karla@envlaw.com kimberly@envlaw.com breanna@envlaw.com msoules@earthjustice.org tjandrews@envlaw.com
Consultant for ABATE James R. Dauphinais Brian C. Andrews Amanda M. Alderson James Leyko	jdauphinais@consultbai.com bandrews@consultbai.com aalderson@consultbai.com jkeyko@consultbai.com swilhelms@consultbai.com
Counsel for ABATE Robert A.W. Strong Michael J. Pattwell Stephen A. Campbell Bryan A. Brandenburg	rstrong@charkhil.com mpattwell@clarkhill.com scampbell@clarkhill.com bbrandenburg@clarkhill.com
Counsel for Local 223, Utility Workers Union of America, AFL-CIO John R. Canzano Ben King	jcanzano@michworkerlaw.com bking@michworkerlaw.com
Counsel for The Kroger Co. Kurt J. Boehm Jody Kyler Cohn Michael L. Kurtz	kboehm@bkllawfirm.com jkylercohn@bkllawfirm.com mkurtz@BKLLawfirm.com
Counsel for Foundry Association of Michigan Timothy J. Lundgren Laura A. Chappelle Justin K. Ooms	lachappelle@varnumlaw.com tjlundgren@varnumlaw.com jkooms@varnumlaw.com

Counsel for Residential Customer Group and Great Lakes Renewable Energy Association Don L. Keskey Brian W. Coyer	donkeyskey@publiclawresourcecenter.com bwcoyer@publiclawresourcecenter.com
Counsel for Citizens Utility Board of Michigan John R. Liskey Constance D. Groh Christopher M. Bzdok	Cub.legal@cubofmichigan.org cdgroh@liskeypllc.com chris@envlaw.com cdgroh@liskeypllc.com
Counsel for Walmart, Inc. Melissa M. Horne	Mhorne@hcc-law.com
Counsel for Soulardarity Nicholas Leonard Mark Templeton Robert Weinstock Rebecca J. Boyd	Nicholas.leonard@glecl.org templeton@uchicago.edu rweinstock@uchicago.edu Rebecca.j.boyd@gmail.com
Central Transport, LLC, Central Transport, Inc., Crown Enterprises, Inc., Detroit International Bridge Co., Universal Truckload Services, Inc. Sean P. Gallagher	sean@legalspg.com

Nikhil Vijaykar
Environmental Law & Policy Center
nvijaykar@elpc.org