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**Executive Summary**

The following comments are offered after review of the DTE Energy 2019 Integrated Resource Plan (IRP) being considered by the Michigan Public Service Commission (MPSC) in docket U-20471.

These comments focus on three key issues within the company's IRP document and lead us to determine that the company's proposed course of action, or PCA, is neither reasonable nor prudent and should, therefore be rejected by the Michigan Public Service Commission.

The key issues with the document are:

1. The CO<sub>2</sub> reduction schemes outlined in the company's proposed course of action go far beyond state or federal law requirements and will cost ratepayers far more than other available methods.
2. The company's PCA will leave the customers in their operating area with more expensive and less reliable electricity service due to the loss of reliable, dispatchable generation sources.
3. The company is committing to rely heavily on more expensive and less reliable renewable sources, but has not carried out, or has not chosen to report the results of any, willingness-to-pay surveys for those renewable supplies. Numerous research studies indicate that while the public often reports a desire for increased renewable energy, when asked about their willingness to cover the additional costs of those sources, their support rapidly drops off. The company must demonstrate the support of their customer base for both the idea AND the additional costs of their plans to build billions of dollars of renewable energy before their plans are approved by the MPSC.

**Carbon dioxide reduction**

Michigan Public Act 342, Section 1(3) of December 21, 2016, requires regulated utilities to meet 15% of their customer's demand for electricity with renewable energy credits generated by sources such as wind and solar power by the year 2021. The Act further sets a goal of meeting 35% of demand by 2025 with a combination of renewable power and energy waste reduction (EWR). But the law specifically adds the caveat that the goal should only be achieved "if the investments in energy waste reduction and renewable energy are the most reasonable means of meeting an electric utility's energy and capacity needs relative to other resource options."<sup>1</sup>

DTE has, of its own accord, adopted a much more ambitious and expensive goal of meeting 50% of its customer demand with clean energy and carbon reduction goals by 2030 and a 1.75% annual energy waste reduction, or EWR, requirement.<sup>2</sup> They have added an additional goal of an

<sup>1</sup> Public Act No. 342 of 2016, Sec. 1(3) <https://www.legislature.mi.gov/documents/2015-2016/publicact/htm/2016-PA-0342.htm>.

<sup>2</sup> See DTE IRP document, Section 8.12 – *Proposed Course of Action: EWR*, pg. 77, also Qualifications and Direct Testimony of Sharon G. Pfeuffer, pg. SGP-16, Line 21.

80% reduction in carbon dioxide emissions by 2040.<sup>3</sup> This goal was established in consultation with Consumers Energy and California financier and renewable energy advocate Tom Steyer, and was widely publicized by the company prior to having submitted its IRP to the MPSC for approval.<sup>4</sup> DTE defends its clean energy goals by stating in the supporting documentation for its IRP document, on page SGP-22/A29 of the Direct Testimony of Sharon G. Pfeuffer: “The Company agrees with many of our customers and stakeholders that climate change is one of the defining public policy issues of our era.” However, no specific definition of the term “many” is given, and they offer no supporting information on how they determined how “many of [their] customers” 1) agree with this statement, or 2) would be willing to pay higher electricity rates to address this alleged concern.<sup>5</sup>

Pfeuffer further states on page SGP-13/A19 of her testimony, “This plan is consistent with the Paris Accord to address climate change.” However, apart from the legislated 15% by 2021 standard, all of the above noted clean energy goals, including the state’s 35% clean energy goal by 2025, are self-imposed by DTE. While Pfeuffer’s testimony notes the IRP document is “consistent with the Paris Accord,” there is no binding requirement for DTE to meet the demands of this agreement. President Trump announced his intent to leave the Paris Climate Accord in a June 1, 2017 speech, meaning the accord is no longer federal energy policy and can force no legislative, regulatory or treaty requirements on the utility.<sup>6</sup>

Page 85 of the DTE IRP clearly states that their CO<sub>2</sub> reduction targets “[exceed] the Michigan Renewable Portfolio Standard,” reinforcing the fact that they are completely voluntary. Furthermore, meeting those goals with EWR, wind and solar generation comes at a substantial cost premium, while also putting at risk the overall stability, reliability and resilience of Michigan’s grid.

The 2017 U.S. Department of Energy Staff Report on Electricity Markets and Reliability reinforces this fact as it notes that, “after simulating many combinations and portfolios” in the nearby PJM region, “A marked decrease in operational reliability was observed for portfolios with significantly increased amounts of wind and solar capacity.”<sup>7</sup> Earlier in the same report, Energy Information Administration, or EIA, authors reference North American Electric Reliability Corporation, or NERC, research into the capacity value of PV solar. They point out that, “The on-peak hourly capacity factor of VRE (variable renewable energy) changes as a function of VRE penetration.” Their accompanying graph demonstrates that, as PV solar penetration goes above 5% in the ERCOT region, its net on-peak capacity factor drops to near zero. The DOE report findings indicate that, as DTE and other Michigan utilities continue to

<sup>3</sup> See DTE IRP document, Section 9.2 - *IRP Starting Point: Renewable Energy*, pg. 85.

<sup>4</sup> “A California Billionaire Sets Michigan’s Policy” <https://www.wsj.com/articles/a-california-billionaire-sets-michigans-energy-policy-1529706888>

<sup>5</sup> See the “Willingness-to-pay” section below

<sup>6</sup> <https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/>

<sup>7</sup> EIA. (2017). *Staff Report on Electricity Markets and Reliability*. U.S. Department of Energy. Pg. 99. Accessed August 28, 2019 at

[https://www.energy.gov/sites/prod/files/2017/08/f36/Staff%20Report%20on%20Electricity%20Markets%20and%20Reliability\\_0.pdf](https://www.energy.gov/sites/prod/files/2017/08/f36/Staff%20Report%20on%20Electricity%20Markets%20and%20Reliability_0.pdf)

build additional wind and solar capacity, the overall stability of Michigan’s electric system will begin to degrade and utilities will begin throwing good money after bad.

Several Mackinac Center publications have covered the expected costs of DTE’s planned transition to renewable energy.<sup>8</sup> In a July article, we noted that the recently opened Pine River industrial wind facility has been billed by DTE as its “most cost-effective and cost-efficient” wind project. However, the Pine River facility produces electricity at a contract rate of \$59.67 per MWh, which is three times higher than the DOE-reported average national contract cost of \$20 per MWh for other wind facilities across the nation.<sup>9</sup>

Additionally, according to the DTE IRP, the company’s Preferred Course of Action (PCA) will have an estimated cost of “\$4.0 billion to DTE’s customers” to implement the EWR target of an equivalent 900 MW of capacity.<sup>10</sup> The DTE IRP document directly commits to spending a minimum of \$2 billion on renewable energy in the upcoming five years. They note, “Since 2009, we’ve driven investments of \$2.8 billion in renewable energy – a figure that will increase to \$4.8 billion by 2024.” They further predict that up to 1,230 MW of wind capacity and 2,535 MW of solar capacity may be added between 2019 and 2040, adding as much as \$6.5 to \$7.5 billion to the total costs.<sup>11, 12</sup>

The DTE IRP document claims the company will “reduce our carbon emissions by more than 80 percent by 2050.”<sup>13</sup> Table 18.5.1 in the DTE IRP document appears to indicate the company emitted 33 million tons of CO<sub>2</sub> in 2018.<sup>14</sup> An 80% reduction amounts to 26,400,000 tons. If all spending on EWR and renewable energy ended at the above noted \$6 billion, the company would be committing to reducing their CO<sub>2</sub> emissions at a cost of \$227/ton. If they build out at the higher levels of \$6.5 billion to \$7.5 billion, their cost per ton to meet their 80% reduction target would be \$398 to \$436/ton.

But, in various testimony the company estimates a price of carbon dioxide in their modeling scenarios of “\$5 per ton in 2025, continuing up to \$10 per ton in 2040.”<sup>15</sup> They offer further

<sup>8</sup> <https://www.mackinac.org/renewable-energy-is-not-cheaper-after-all>, <https://www.mackinac.org/michigan-is-not-a-windy-state>

<sup>9</sup> <https://www.mackinac.org/comparing-the-newest-wind-energy-facility-in-michigan-with-the-rest-of-the-us>

<sup>10</sup> DTE 2019 Integrated Resource Plan Case No: U-20471 pg. 79

<sup>11</sup> Based on DTE IRP document, Exhibit A19 “Wind and Solar Nominal Installed Cost Projections” by year, multiplied by Figures 9.4.1/9.4.2, the “Defined PCA Renewable Energy Build Plan” and “Flexible PCA Renewable Energy (2025-2040)” build plan, located on pages 87 and 88 respectively, for forecasted investments in renewable generation.

<sup>12</sup> This estimate is further supported by a similar estimate in Nasdaq 2018 reports that describe DTE’s \$6.5-billion capital spending program over the next decade and a “total investment [that] is expected to be \$18 billion over the next 10 years.” See: <https://www.nasdaq.com/article/solid-capex-plan-continues-to-aid-dte-energy-time-to-buy-cm902410>

<sup>13</sup> DTE IRP document Introduction, page 2

<sup>14</sup> This estimated value from Figure 18.5.1 on page 171 of the DTE IRP document is supported by DTE’s Total Reported Emissions by Facility of 29,802,448 Metric Tons of CO<sub>2</sub>e (32,851,576 tons CO<sub>2</sub>e) as reported September 17, 2019 in the EPA FLIGHT database <https://ghgdata.epa.gov>

<sup>15</sup> See Qualifications and Direct Testimony of Laura K. Mikulan, page LKM-34 / A52

price estimates of \$20-\$30/ton in the Environmental Policy scenario, and up to \$70/ton in a high CO<sub>2</sub> price scenario.<sup>16</sup>

Compounding the unreasonable nature of these expenses, the U.S. Environmental Protection Agency estimated the “social cost of carbon,” or SC-CO<sub>2</sub> in its Affordable Clean Energy Rule through the 2020 to 2040 IRP planning period to be \$1 to \$2 a ton at a 7% discount rate.<sup>17</sup> DTE uses a similar, 6.63%, discount rate in its IRP document.<sup>18</sup> Based on these numbers, the company’s PCA clearly does not make economic sense, as the expected cost of CO<sub>2</sub> reduction is over 200 to 400 times higher than the value of the savings.

The lack of economic argument for the PCA is compounded when one recognizes that estimated premium cost of wind and solar power is very likely underestimated. There will also be additional costs for necessary transmission line expansions and other inefficiencies associated with the frequent cycling of dispatchable power plants. A Manhattan Institute study, authored by Mark Mills a senior fellow at the Manhattan Institute, called “The New Energy Economy: An Exercise in Magical Thinking,” expands on this issue, noting that the “grand energy transition” plans being proposed by Michigan’s two big utilities suffer from “two core flaws.”<sup>19</sup>

The first flaw is based on the notion that energy generation is undergoing the same type of technological transition that computing has undergone over the past several decades. Also known as Moore’s law, this concept states that the number of transistors that can be placed on a microchip doubles every two years, while the price paid for that microchip is cut in half.<sup>20</sup> Mills points out how renewable energy advocates believe “the energy sector is undergoing the same kind of technology disruptions that Silicon Valley tech has brought to so many other markets.” Mills critiques this notion by pointing out that basic physics disallows this sort of fundamental transformation. He continues by describing the second flaw: “No fundamentally new energy technology has been discovered or invented in nearly a century—certainly, nothing analogous to the invention of the transistor or the Internet.”

Succinctly put, DTE is basing its planning for the state’s energy future in the realm of what Mills calls “magical thinking.” Hardly the basis for a sound, reliable and affordable electricity supply.

### **Concerns with lost dispatchable capacity**

DTE openly recognizes two key factors as it relates to its growing reliance on renewable generation sources. First, in supporting testimony to their IRP submission, Laura Mikulan testifies, “As renewable penetration increases in MISO Zone 7, the effects on grid reliability are expected to increase over time and will become increasingly important in portfolio selection.”<sup>21</sup>

<sup>16</sup> See Qualifications and Direct Testimony of Laura K. Mikulan, page LKM-49 / A66 and Figure 2: CO<sub>2</sub> adders used in modeling

<sup>17</sup> Proposed EPA Affordable Clean Energy Rule (40 CFR Part 51, 52, and 60), [https://www.epa.gov/sites/production/files/2018-08/documents/frn-ace-proposal\\_8.20.2018.pdf](https://www.epa.gov/sites/production/files/2018-08/documents/frn-ace-proposal_8.20.2018.pdf)

<sup>18</sup> See DTE IRP document, Figure 17.2.1 page 165

<sup>19</sup> Mills, M. (2019). The “New Energy Economy”: An Exercise In Magical Thinking. Manhattan Institute. Accessed via <https://media4.manhattan-institute.org/sites/default/files/R-0319-MM.pdf> September 18, 2019.

<sup>20</sup> <http://www.moorelaw.org>

<sup>21</sup> See DTE IRP document, supporting testimony of L.K. Mikulan pg. LKM-13, Line 23

Mikulan later continues, “While wind and solar compared favorably in terms of environmental sustainability aspects, the fact that they are not dispatchable to meet load needs means that integration with the other resources in the portfolio was required to maintain system reliability around the clock and across seasons of the year.”<sup>22</sup>

The IRP document claims the company’s PCA will ensure they have adequate capacity for the next 10 years;<sup>23</sup> there is “not a persistent capacity need until 2029-2030” due to the proposed closure of the Belle River units.<sup>24</sup> Between 2019 and 2040, the PCA eliminates 6,083 MW of dispatchable coal-fired generation,<sup>25</sup> replacing that with an addition of 1,150 MW of NGCC at the Bluewater Energy Center, 34 MW of pumped storage, 34 MW at Dearborn, 150 MW of new Demand Response, 900 MW of EWR, and possibly 412 MW of additional NGCC, for a total of 2,680 MW of new dispatchable power.

In addition, the PCA adds up to 1,160 MW of wind, 2,535 MW of solar, and perhaps another 465 MW of wind through the Voluntary Green Program (VGP).<sup>26</sup> That is 4,160 MW of intermittent and non-dispatchable power that may operate up to 30% of the time.

This plan does not add up to reliable power. It is further compromised by the fact that only 340 MW of wind or solar power are needed to meet the 2021 renewable energy requirement.

Furthermore, the IRP risk analysis shows portfolio 11 was the “overall least-cost and least-economic-risk portfolio.”<sup>27</sup> Portfolio 11 assumes a 1.5% EWR, 430 MW of new NGCC, and 1,090 MW wind from the VGP.<sup>28</sup> The Bluewater Energy Center is already under construction and the premium cost of any VGP construction is not passed onto all customers, only to those who volunteer to pay extra for renewable power.

### Coal Unit Closures

Coal unit closures also play a role in the discussion of dispatchable capacity. In the firm portion of the IRP timeline, which covers the first five years of the plan, DTE commits to replace 1,983 MW of Tier 2 coal-fired units that operate at an average net capacity factor (NCF) of 40.4% with 2,118 of dispatchable power (made up of 1,218 MW of new generation, 150 MW Demand Response, and 750 MW EWR). However, in the 15 subsequent years 4,100 MW of Tier 1 coal units that operate at an average net capacity factor of 59.9% are shuttered and replaced with only 962 MW of dispatchable power added (412 MW Natural Gas Combined Cycle and 550 MW EWR). How does the utility plan to supply sufficient dispatchable supply, given these numbers?

<sup>22</sup> See DTE IRP document, supporting testimony of L.K. Mikulan pg. LKM-15, Line 14

<sup>23</sup> See DTE IRP document, Section 4.3 Capacity Outlook, pg. 25

<sup>24</sup> See DTE IRP document, supporting testimony of L.K. Mikulan pg. LKM-142, Line 6

<sup>25</sup> See DTE IRP document, Table 7.2.1: Coal-Fired Units, pg. 53

<sup>26</sup> See DTE IRP document, Figure 9.2.1: Starting Point: Renewable Energy Building Plan, pg. 85

<sup>27</sup> See DTE IRP document pg. 148-150 & Table 15.8.2, also supporting testimony of L.K. Mikulan pg. LKM-129, Figure 7 and Line 12

<sup>28</sup> See DTE IRP document Table 15.8.1, pg. 148, also supporting testimony of L.K. Mikulan pg. LKM-128, Figure 6

## Willingness-to Pay Left Out

The IRP claims many customers and stakeholders are interested in buying renewable energy, and may offer up to 1,390 MW through the VGP. But no survey data backs up the claim.

Willingness-to-pay surveys indicate very different customer responses to VGP programs. For example, a 2017 willingness-to-pay survey conducted at the University of Michigan showed that 34% of electric customers would not be willing to pay anything — not even \$1/year — in additional costs for green energy. Fully 80% of utility customers indicated they would not be willing to pay more than \$100/year (or \$6.67 per month) for green energy.<sup>29</sup> This finding was supported by a just-published Washington Post/Kaiser Family Foundation survey, which found that although “Americans are increasingly worried about climate change, fewer than 4 in 10 say they believe that tackling the problem will require them to make ‘major sacrifices.’ And most are unwilling to pay for it out of their own pockets.”<sup>30</sup>

The Mackinac Center has demonstrated that DTE’s VGP program, titled MIGreenPower,<sup>31</sup> is both overpriced and unnecessary because customers have other, less expensive options to cut their greenhouse gas emissions or to support renewable energy technologies.<sup>32</sup> We have also pointed out how DTE’s own senior staff have publicly stated that offering carbon credits for the construction and operation of renewable energy amounts to accounting gimmicks.<sup>33</sup> Despite that reality, if DTE’s customers are still willing to pay above market rates for renewable energy options, they are free to do so. But as the utility goes about providing renewable energy at above market rates to those customers, they should be required to indemnify any other customers who do not want, or cannot afford, to pay for VGP.

Given that DTE is pursuing this PCA and their clean energy goals on a completely voluntary basis, they should, at a minimum, include a willingness-to-pay survey in the IRP to clearly demonstrate customer interest in the VGP program. That is because, even though DTE has not established a clear customer demand for the VGP program, they have already begun offering VGP to their customers. Their VGP program, MIGreenPower, adds 7.2 cents/KWh to electric bills, with a 3.9 cents/KWh credit for energy and capacity value. That leaves a net additional cost of 3.3 cents/KWh in 2019, or \$33/MWh.<sup>34</sup> Customers can select how many KWh of green energy they want to buy on a monthly basis.

<sup>29</sup> See <http://closup.umich.edu/national-surveys-on-energy-and-environment/nsee-data-tables/nsee-2017-spring/#Q31>

<sup>30</sup> [https://www.washingtonpost.com/climate-environment/americans-increasingly-see-climate-change-as-a-crisis-poll-shows/2019/09/12/74234db0-cd2a-11e9-87fa-8501a456c003\\_story.html](https://www.washingtonpost.com/climate-environment/americans-increasingly-see-climate-change-as-a-crisis-poll-shows/2019/09/12/74234db0-cd2a-11e9-87fa-8501a456c003_story.html)

<sup>31</sup> <https://newlook.dteenergy.com/wps/wcm/connect/dte-web/quicklinks/migreenpower/homepage>

<sup>32</sup> Hayes, J. (2017). *DTE green program: overpriced and unnecessary*. Huron Daily Tribune. Accessed September 18, 2019 at <https://www.michigansthumb.com/opinion/article/DTE-green-program-overpriced-and-unnecessary-11065303.php>

<sup>33</sup> Hayes, J. (2017). *False Assertions Abound about Green Energy Program: Will DTE support true consumer choice in electricity?* Mackinac Center. Accessed September 18, 2019 at <https://www.mackinac.org/false-assertions-abound-about-green-energy-program>. In this article, we note how David Harwood, director of renewable energy at DTE states that carbon credits and trading programs, “are merely financial transactions that take credit for excess renewable energy already generated, sometimes many years earlier and most often not from a Michigan- based project.”

<sup>34</sup> See <https://newlook.dteenergy.com/wps/wcm/connect/dte-web/quicklinks/migreenpower>

A hypothetical DTE customer bill, and that customer's monthly demand is depicted on the DTE website.<sup>35</sup> Had this sample customer chosen 100% renewables, their electric bill would have risen \$10.68/month, or 16%.<sup>36</sup> But, as noted above, the University of Michigan's willingness-to-pay survey indicates over 80% of utility customers would refuse to pay more than \$6.67/month for renewable energy. It is, therefore, reasonable to question what percentage of customers are actually buying in to the MIGreenPower VGP program and at what average monthly cost. This information would begin to represent the current real world demand, and act as an initial willingness-to-pay survey for the DTE MIGreenPower program.

### **Recommended PCA for lowest cost and risk to utility customers**

- 1) Conduct and report on a willingness-to-pay survey to fully determine what percentage of DTE's customer base is actually interested in taking part in the VGP program.
- 2) Build the 158 MW wind farm already under contract to make progress on meeting the 2021 15% renewable requirement.
- 3) Do not build an 11 MW solar farm with storage. As DTE states, battery storage is unlikely to be cost competitive in the foreseeable future, and experience with such systems will be acquired by others.
- 4) Build the additional 182 MW of wind energy needed to meet the 2021 RPS requirement through the VGP.
- 5) Do not close the 495 MW Trenton coal-fired generating plant until the next IRP, as MISO considers its closing a risk.
- 6) Only expand renewable energy beyond the RPS requirement with VGP programs.
- 7) Proceed with Demand Response, and Energy Waste Reduction as planned.
- 8) In the next IRP, consider the impact of building a larger NGCC power plant than 412 MW to replace the 1,034 MW Belle River coal-fired generation plant and continue the flexible approach to building any future renewable capacity while evaluating future innovation.

<sup>35</sup> <https://newlook.dteenergy.com/wps/wcm/connect/dte-web/home/billing-and-payments/common/billing/how-to-read-a-bill>

<sup>36</sup> The sample bill depicts a customer that used 371 kWh in a month. Selecting 370 kWh as the average monthly use and 100% of the bill attributed to renewable energy gives an estimated increase of \$10.68 / month, which is a 16% increase.