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February 1, 2023

Lisa Felice
Executive Secretary
Michigan Public Service Commission
7109 West Saginaw Highway
Lansing, MI 48917

RE: In the matter, on the Commission's own motion, to commence a collaborative to consider issues related to new technologies and business models.
MPSC Case No: U-20898

Dear Ms. Felice:

The Commission, in its August 23, 2022, Order in Case No. U-20898 (the "August 2022 Order") laid out its expectations for pilot benefit-cost analysis and ordered the following:

> "A. [Michigan utilities] shall file proposed Michigan-specific uniform benefit cost analysis requirements (including a proposed societal cost test) that could be used in evaluating pilot proposals no later than February 1, 2023.
>
> B. The proposed benefit cost analysis should be informed by the provisions of the National Standard Practice Manual, tailored to Michigan's regulatory structure and requirements." (Page 3)

DTE Electric Company and Consumers Energy Company ("the Companies") submit the attached "Proposed Requirements and Further Guidance on Benefit-Cost Analyses for Pilot Initiatives" in response to the August 2022 Order. Also attached is the Proof of Service.

In developing this filing, the Companies engaged WestMonroe Partners to assist in undertaking a rigorous examination of recent utility pilot proposals, previous Commission guidance, and the National Standard Practice Manual for BCA of Distributed Energy Resources. This examination and the collaboration between WestMonroe and the two companies has culminated in the attached guidance.

The Companies have also conducted outreach to other stakeholders in the state, including the Michigan Electric and Gas Association and the Association of Businesses Advocating Tariff

Equity, to share the parameters of the enclosed proposal and exchange perspectives in advance of this filing.

Very truly yours,

Jon Christinidis
Digitally signed by Jon Christinidis
Date: 2023.02.01 12:05:56 -05'00'

Jon P. Christinidis
DTE Electric Company

Bret Totoraitis
Digitally signed by Bret Totoraitis
Date: 2023.02.01 12:08:41 -05'00'

Bret Totoraitis
Consumers Energy

Proposed Requirements and Further Guidance on Benefit-Cost Analyses for Pilot Initiatives

Prepared by DTE Electric Company and Consumers Energy Company

February 1, 2023

Table of Contents

1. EXECUTIVE SUMMARY

DTE Electric Company (DTE) and Consumers Energy ("the Companies") are proposing a set of Michigan-specific benefit-cost analysis (BCA) requirements for evaluating utility pilot proposals. These requirements establish practical guidance that the Companies recommend applying when proposing utility pilots to the Michigan Public Service Commission for purposes of cost recovery review.

The Commission, in its August 23, 2022, Order in Case No. U-20898 (the "August 2022 Order") laid out its expectations for pilot benefit-cost analysis and ordered the following:

> "A. [Michigan utilities] shall file proposed Michigan-specific uniform benefit cost analysis requirements (including a proposed societal cost test) that could be used in evaluating pilot proposals no later than February 1, 2023.
>
> B. The proposed benefit cost analysis should be informed by the provisions of the National Standard Practice Manual, tailored to Michigan's regulatory structure and requirements." (Page 3)

In response to the Commission's order, the Companies propose the following benefit-cost analysis requirements for pilots:

1. The Companies will use a primary cost-effectiveness test, referred to as the Jurisdiction-Specific Test (JST), when performing a BCA for pilots as defined in Section 7 of this document. The JST takes a societal viewpoint of pilot costs and benefits by incorporating the relevant utility system, host customer, and societal impacts.
2. Where possible and appropriate, the Companies will use a standardized set of treatment norms (i.e., monetized, quantitative, or qualitative) and estimation methods, defined in Section 8 of this document, for the impacts captured in the JST.
3. For any pilot under consideration, the Companies will perform cost effectiveness testing based on a pilot project description "at scale" in recognition of the Commission's interest in "whether the pilot program will grow into a cost-effective program when deployed at full scale."[1]

The Companies' proposed BCA framework will equip the Commission with the insights it needs to assess promising new technologies and business models and the pilot learnings needed to unlock their potential. To facilitate the implementation of these requirements, the Companies have also laid out a seven-step BCA methodology, outlined in Section 6

[1] February 4, 2021, Order in Case No. U-20645, page 10.

of this document, for supporting a pilot proposal. The Companies recognize that other cost tests (herein referred to as "secondary cost tests") may provide additional perspectives on pilot cost-effectiveness, as described in Section 7 of this document. As such, pilot proposals may also include other cost tests at the discretion of the pilot sponsor to supplement the JST.

A prominent feature of the Companies' proposal is the requirement to describe the "pilot at scale" (in its physical, cost, geographic, and/or customer participation features) and to use this for purposes of performing the JST. This approach will permit a reasonable description of how the piloted system, technology, and/or approach could influence the energy system in the long term, were the pilot to be more widely deployed. While the "pilot at scale" method cannot be overly precise[2] because the future-state of the piloted system is uncertain by its nature, evaluating pilot BCA based on today's costs and benefits fails to demonstrate the potential pilot initiatives are seeking to uncover. Pilots aimed at fulfilling learning objectives will not necessarily drive monetized benefits greater than costs during the pilot period. Focusing the BCA on "pilot at scale" helps to identify the most promising pilots for Michigan's energy future.

The Companies' JST provides a broad view of the benefits that a piloted measure could provide, enhancing the information available to the Commission in making its determination on a pilot proposal. The Companies have applied the NSPM guidance to construct the JST, leveraging the NSPM's impacts inventory and guided by Michigan's policy goals and objectives.[3] Because it is comprehensive in the scope of impacts included, the JST satisfies the Commission's Order to consider the role of a societal cost test. While no single cost-effectiveness test should be the sole measure of the pilot's merits, the JST establishes a useful, uniform, and wide "aperture" for inspecting the costs and beneficial aspects of utility pilots, particularly since the JST is performed based on the "pilot at scale".[4]

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[2] The Companies' recommendations also include guidance on how to describe the pilot at scale, and how to consider costs and benefits for a system, technology or approach that is at a pre-commercial stage in its development, and whose future costs and performance will change, potentially drastically, in future years.

[3] The impacts comprising the impacts inventory are organized and defined in the NSPM. The Companies have inspected each impact in relation to its relevancy to utility pilots. This "impacts inventory" and its application are essential features of the NSPM's structured method, and its incorporation in the Companies' recommendations is a necessary, enabling element in conformance to the Commission's Order.

[4] Consistent with the NSPM, the JST is based on *relevant* impacts, in relation to Michigan Policy Goals and Objectives. The *relevant* impacts define the possible universe of impacts for pilot proposals. Individual pilot proposals are further screened for *material* impacts. This is a down selection activity in applying the impacts inventory to a specific pilot proposal. Not all *relevant* impacts are *material* for an individual pilot.

As part of the JST, the Companies recommend that a specific treatment norm and method of estimation are applied to each impact. These will standardize the handling of the project's costs and benefits and allow for a more consistent assessment of proposed pilots. The treatment norms include recommendations (also aligned with NSPM guidance) on how to treat qualitatively considered impacts within the BCA.[5]

The Commission has placed emphasis within its August 2022 Order on the role of the NSPM to inform these recommendations. The Companies emphasize that flexibility is required in applying the NSPM's guidance to the requirements of utility pilots. The NPSM, for example, does not provide much guidance about the unique aspects of pilot proposals, which are heavily influenced by the Companies' learning objectives in service of Michigan's goals for clean, affordable, safely delivered, and reliable energy (hence the Companies propose the innovative step of performing the pilot BCA based on the "pilot at scale"). Also, the NSPM is focused on Distributed Energy Resources (DERs), whereas the Companies' pilots have a wider range of focus. The Companies propose ways to address these inconsistencies in ways that remain well-aligned to the NPSM's guiding principles and other core guidance.

The Companies' proposed pilot BCA requirements are responsive to the guidance offered in the August 2022 Order. The requirements are tailored to Michigan's regulatory structure and requirements throughout; the proposed JST fulfills the Commission's requirement to include a proposed societal cost test; and the Companies' proposed requirements are based on guidance taken from the provisions of the National Standard Practice Manual[6] in ways that reflect Michigan-specific conditions. Moreover, by working jointly in the creation of these recommendations, the Companies have aspired to contribute towards the Commission's direction to establish *uniform* requirements. The Companies' proposed BCA framework will position the Commission and the utilities it regulates to more effectively test and deploy innovative new ideas, improving the state's energy system for the benefit of customers and society.

[5] As further explained, the Companies recommend identifying whether the impact is monetized, quantitative (but not monetized), or treated qualitatively.

[6] The full title of the Manual is: The National Standard Practice Manual for Benefit Cost Analysis of Distributed Energy Resources.

2. KEY TERMS [7]

Benefit-cost analysis (BCA): an approach to methodically compare the benefits and costs of pilots to determine whether the benefits exceed the costs of the pilot or program "at scale" (Section 6) over its lifetime.

Distributed Energy Resource (DER): electricity and gas resources sited close to customers that can provide all of some of their immediate power needs and/or can be used by the utility system to either reduce demand or provide supply to satisfy the energy, capacity, or ancillary service needs of the grid (DOE 2019). These include demand response, distributed generation, storage, plug-in electric vehicles (EVs), strategic electrification technologies, and more.[8]

Impacts: both the benefits and costs of a supply-side or demand-side resource.

Jurisdiction-specific test (JST): the primary cost-effectiveness test created by a jurisdiction utilizing the NSPM BCA Framework, including cost-analysis principles, relevant impacts, and applicable policy goals and objectives identified by the jurisdiction.

National Standard Practice Manual (NSPM): manual published by the National Energy Screening Project to guide the development of jurisdictions' cost-effectiveness test(s) for conducting benefit-cost analyses (BCAs) of distributed energy resources (DERs).

Policy goals and objectives: delineation and incorporation of jurisdictional objectives and goals, based on regulatory statutes, orders, and other requirements, to weight and prioritize impacts included in the pilot BCA requirements.

Secondary tests: cost-effectiveness tests that may be leveraged alongside the primary test to inform stakeholders of additional impacts, considerations, gaps, and analysis to inform and prioritize effective investment decisions that may lack cost-effectiveness based on the primary test or may maintain other applicable implications to customers or society.

3. LIST OF TABLES AND FIGURES

[7] Definitions for "DER", "Impacts", and "JST" as cited in the NSPM p. xviii-xxiii

[8] Energy Waste Reduction has its own statutory requirements related to benefit-cost analysis and is out of scope for this effort

4. PILOT BCA REQUIREMENTS, COMMISSION DIRECTION AND REGULATORY CONTEXT

The purpose of this document is to propose Michigan-specific uniform benefit cost analysis (BCA) requirements for use in evaluating utility pilot proposals. It includes practical guidance for the Companies, the Commission, and the Companies' stakeholders to apply when assessing and reviewing the merits of utility company pilot proposals.

The MSPC has established guidance on utility pilot proposals in at least three instances specifically relevant to these requirements. First, in its February 4, 2021 Order in Case No. U-20645 (February 2021 Order) the Commission defines pilots: "A pilot is a limited duration experiment or program to determine the impact of a measure, integrated solution, or new business relationship on one or more outcomes of interest."[9] Second, in its July 27, 2022 Order, the Commission ordered:

> Therefore, it is ordered that: A. [The utilities] shall file proposed Michigan-specific uniform benefit cost analysis requirements, including a proposed societal cost test, that could be used in multiple types of dockets, including pilot proposals, distribution planning, and rate cases, no later than September 1, 2022, in Case No. U-20898. The proposed benefit cost analysis should be informed by the provisions of the National Standard Practice Manual, tailored to Michigan's regulatory structure and requirements.[10]

In response to the July 2022 Order, in an August 2022 petition, the Companies requested that the timeline to propose uniform requirement be extended, and that the focus be narrowed to utility pilots. In consideration of these requests, the Commission, in a follow-on August 23, 2022 Order in Case No. U-20898, split the July 27, 2022 Order requirements, narrowing them to an initial focus on utility pilot proposals (and providing a time extension):

> Therefore, it is ordered that: A. [The utilities] shall file proposed Michigan-specific uniform benefit cost analysis requirements (including a proposed societal cost test)

[9] February 2021 Order, page 7.

[10] MSPC Order in Case No. U-20898, July 27, 2022. P. 20.

that could be used in evaluating pilot proposals no later than February 1, 2023. B. The proposed benefit cost analysis should be informed by the provisions of the National Standard Practice Manual, tailored to Michigan's regulatory structure and requirements.[11]

In providing the proposed guidance in this document, the Companies aim to comply with the MSPC's August 23, 2022 Order, with the specific focus on the BCA requirements for pilot proposals.

For completeness, the Companies note that the National Standard Practice Manual's full title is the National Standard Practice Manual for Benefit Cost Analysis of Distributed Energy Resources. The Companies refer to the manual as the *NSPM* throughout this document.

To provide additional regulatory context for the pilot BCA requirements, the Companies also make reference to the information requirements identified by the Commission in its February 4, 2021 Order on Pilots, as part of Case No. U-20645.[12] The Commission stated that these information items are "[to] be used by the [MPSC] staff when evaluating future pilot proposals coming before the Commission for funding approval."[13] The Companies include this reference to these information requirements in the February 2021 Order because they help explain how the specific pilot BCA requirements proposed here fit into the larger set of information requirements that the Commission has established for pilot project review purposes.

5. APPLICATION OF THE NATIONAL STANDARD PRACTICE MANUAL & KEY CONSIDERATIONS

About the NSPM

Consistent with the August 2022 Order, the Companies' proposed pilot BCA requirements are informed by the provisions of the NSPM. The focus of the NSPM is on the development of a BCA for Distributed Energy Resources (DER). According to the NSPM, this requires (a) identifying all *relevant* and *material*[14] cost and benefit impacts, and (b) performing an evaluation and analysis of those costs and benefits based on various perspectives involving the utility, participants, DER hosts, and society at large.

[11] MSPC Order in Case No. U-20898, August 23, 2022. p. 3-4.

[12] See Exhibit A, including item 3(c), and item 6 (a-f).

[13] See Exhibit A, including item 3(c), and item 6 (a-f).

[14] These adjectives are italicized because of their importance within the NSPM as part of its stepwise process of identify the appropriate range of project impacts.

Furthermore, the NSPM enumerates DERs as including energy efficiency, demand response, distributed generation, distributed storage, electrification, gas DER, and non-wire solutions.

The NSPM-guided BCA evaluation's principal outputs are cost-effectiveness tests. The present value of benefits and costs are compared as a numeric ratio. A cost-effectiveness result of greater than one (1.0) means that the present value of benefits exceeds the present value of costs. Additional interpretative accommodations are also included in the NSPM for factoring in the weights of qualitatively stated benefits.

The NSPM recommends developing a primary cost-effectiveness test, which it refers to as the jurisdiction-specific test ("JST"). The JST is determined based on the mapping of the utility's policy goals and objectives to the relevant cost and benefit impacts of DER projects. The NSPM assumes by design that these policy goals and objectives relate to DER as a potential utility-recognized resource that can lower energy system costs. The NSPM also supports the role of secondary tests to address various related questions about the DER project that are not adequately revealed by the JST. The JST and secondary tests work together to provide a well-rounded view of the project's merits from a cost-effectiveness perspective.

Companies' General Observations on NSPM Alignment

The Companies find that the NSPM provides useful and reasonable guidance that can and should be applied to Company pilot proposals, albeit with certain exceptions. A key pilot BCA requirement, in fact, is the Companies' recommendation for a JST to be used in the evaluation of utility pilots. The Companies have developed their proposed JST and recommendation, -- as well as their guidance on the potential role for secondary cost-effectiveness tests, -- based on applying the NSPM's stepwise evaluation steps in conformance to the NSPM's eight (8) guiding principles. The JST and the role of secondary tests are described in Section 7, which includes a description of how the Companies derived the JST in conformance to the NSPM's principles and recommendations.

However, the Companies note several limitations and areas of exceptions in applying the NPSM to Company pilot cost-benefit evaluations. These include:

- The NSPM is intended to apply to DER as defined and described in the NSPM. The Companies caution that not all Michigan utility pilots will include DER attributes. For example, pilots to test certain utility-scale resources (e.g., batteries), different approaches to system safety and reliability (e.g., undergrounding), and alternative fuel sources (e.g., hydrogen) all fall outside of the resources defined as in-scope of

the NSPM.[15] Nevertheless, the Commission has directed the state's utilities to leverage the NSPM for applications beyond solely DERs.

- The NSPM does not provide much guidance on pilots but does provide several points of emphasis on the importance of utilities innovating and learning to meet the challenges of "fully integrated planning"[16] and "[an expanding] set of planning objectives – such as clean energy, resilience, flexibility, equity and affordability, and more."[17] In the Companies' case, the fulfillment of learning objectives is the major objective in pursuing pilots.[18]

- The NSPM describes important exceptions (NSPM, page 14-2, 14-3) pertinent to grid modernization (and by extension grid modernization pilots):

  > "Grid modernization planning includes BCA as one component of the decision-making process, but it also includes a least-cost, best-fit component to address some decisions where BCAs are not feasible or warranted. More detailed discussion of grid modernization planning is beyond the scope of this manual."

  The Companies note that the requirements included within this proposal are limited to pilots. Application of these requirements to larger utility investment planning is out of scope of the August 2022 Order.

- The NSPM does not provide extensive guidance on how to address the fact that many project impacts may be qualitative in nature. The JST is formed by a strict comparison of the monetary benefits versus the identified costs. Additional consideration is then given to the contribution and potential weight (or influence) to assign to qualitative benefits. The Companies' pilot BCA requirements, therefore, elaborate on how to address qualitative benefits, as part of determining

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[15] The NSPM defines DER as "resources located on the distribution system that are generally sited close to or at a customers' facilities. DERs include EE, DR, DG, DS, EVs, and increased electrification of buildings. … [DERs] can provide all or some of host customers' immediate power needs and/or support the utility system by reducing demand and/or providing supply to meet energy, capacity, or ancillary services (time and locational) needs of the electric grid." NSPM, page i.

[16] NSPM, page 14-5.

[17] Ibid.

[18] The NSPM uses the word "pilot" or "pilots" 17 times in the body of the report. Seven (7) and eight (8) instances appear within two separate one-page case studies found on pages 11-13 and 12-13 respectively. The other two references appear on page H-3 and 14-6.

a conclusion on cost-effectiveness, one that takes into account both the numeric JST result and the additional contribution of qualitative benefits.

- The NSPM recognizes certain unresolved issues involving utility BCA, including the role of discount rates for the estimation of present value impacts. The Companies provide commentary and their recommendations for identifying the appropriate discount rate to be applied for utility pilots in Section 6.

As implied by these observations, the Companies emphasize that flexibility is required in applying the NSPM guidance to Company pilot proposals. This includes the general need for flexibility in applying the NSPM guidance to account for unique conditions arising from the MSPC Order, such as the Order's focus on pilots and its broader view than that of the NSPM. This need for both flexibility and uniformity informs the Companies' application of the NSPM and the resulting JST recommendation, which is further described in Section 7.

6. PERFORMING A BCA FOR A SINGLE PILOT PROPOSAL

This section describes the general steps the Companies propose for performing a BCA for a pilot project. [19] These steps help form a process to standardize the identification of BCA project impacts and calculation methodologies. The primary steps in conducting a utility pilot BCA evaluation are:

1. **Assemble BCA Input Information:** The Companies note the planning context and information requirements that are described as part of the Commission's February 2021 Order on pilot proposals. To conduct the BCA, the Companies must assemble information that contributes to the identification of costs and benefits. These information requirements are enumerated in the February 2021 Order. They include pilot goals, pilot design and evaluation information, pilot project costs and timeline, and public interest-related information.

2. **Describe the "Pilot at Scale"**: An essential attribute of the Companies' pilot BCA requirements is to create a distinction between the definition of the pilot project itself, and the potential need for the pilot sponsor to describe the "pilot at scale". The Companies recommend that the JST and any supporting secondary tests should be performed for the "pilot at scale". The reason is that a pilot may be small or modest in scale (whether measured in terms of costs, geographic extent, or

[19] The proposed pilot BCA requirements focus is on single pilot projects. The assessment of pilots as a portfolio, and dynamic market planning assessments, are out of scope of the proposed pilot BCA requirements.

number of customer participants) and therefore may not be able to demonstrate and realize the full set of benefits, or may not enjoy the cost economies of scale, that a full-scale deployment or a mature technology or system could offer.

Said differently, performing the JST (and any supporting secondary tests) only narrowly considering the costs and benefits of the pilot itself could result in skewed results that are not reflective of a future full-scale deployment. This would potentially result in the rejection of otherwise valid and useful pilots and, in the most extreme case, preclude the Companies from ultimately testing and deploying otherwise valuable solutions.

The Companies also emphasize the possibility that the pilot-as-designed is at a sufficient scale (and reflects technology of sufficient maturity and commercial viability) that permits an evaluation of the potential costs and benefits of the system, technology, or approach. Nothing precludes basing the BCA on the pilot-as-designed under such circumstances. Rather, the "pilot-at-scale" step provides the needed flexibility for the BCA to reflect sizable effects of the piloted approach, as based on the judgement of the utility analyst.

The Companies also note that the "pilot at scale" feature is consistent with the July 27, 2022 Order in Case U-20898, page 9: "The Commission is interested in the cost and benefits associated with full-scale implementation of the proposed program and an understanding of the cost difference between the implementation of the pilot and full-scale implementation".

Therefore, to perform the BCA, and carry out the cost-effectiveness testing, the "pilot at scale" description should be based on scaling up the piloted solution as if the underlying solution and/or technology meets a threshold of maturity and commercial viability that is acceptable from a deployment risk perspective. Also, the size of this "pilot at scale" should be adequate to describe the potential impacts that such a technology, approach or system may have to the energy system. At the same time, the purpose of this "scaling" is not to engage in market planning activities. Rather, the "scaling" is to lend support to describing the potential impacts of the pilot in relation to the NSPM-guided impacts inventory.

3. **Perform Cost Estimation for the "Pilot at Scale":** The goal of the cost estimation process is to create a cost estimate of reasonable precision over a project time forecast in nominal dollar terms, and to convert these values to their present value

sum. [20] Therefore, the "pilot at scale" description – and its use within the BCA – compels the Companies to construct reasonable cost estimates for the capital and operating costs associated with supporting the utility pilot at scale. Estimates should also be assembled for other relevant costs, such as those incurred by host / participating customer and non-utility participants, if applicable. Costs should be provided in nominal dollar terms based on the year of estimated occurrence, adjusted as needed with relevant inflationary cost adjustments.

An important caveat in the cost (and benefit) estimation of the pilot at scale is the uncertainty inherent in projecting the future, full-scale performance of what may be a pre-commercial technology. The future-state of the piloted system is uncertain by its nature, and difficult to estimate for its potential costs and benefits for many reasons. Therefore, the "pilot at scale" cannot be expected to be overly precise. Instead, it should be used to give an indication that full-scale deployment of the piloted system could be valuable to the energy system under various assumptions, thus underlining the importance of the learning objectives articulated for the pilot. [21]

It is preferrable if the cost forecast is converted into revenue requirements for utility incurred costs. This involves determining the useful life period assumptions for the utility assets and recovering the asset costs over the useful life (along with other components of the revenue requirement).

After the nominal dollar 'flow' of costs are determined, it should be converted to a present value sum. Accordingly, a present value discount factor should be applied to the resulting forecasted values. The Companies note that the NSPM provides

[20] Appendix C of the NSPM provides a description of the estimate of monetary utility cost impacts, other than fuel. See Appendix C, section C.2, Monetary Values. Page C-2. The Companies do not propose modifications to this statement describing cost estimation for utility costs. However, the Companies do propose that the cost-effectiveness testing for "pilots at scale" should be subject to range estimation to account for a reasonable measurement error range and uncertainty around the estimate of costs and offsetting benefits.

[21] As DTE explained in its December 10, 2020 comments to the Commission (in relation to the Commission's October 29, 2020 Order on pilot recommendations): "If the underlying motivation for the pilot is to learn about the characteristics of the outcomes generated by the intervention, it is not possible to prospectively know if the intervention is or is not cost-effective at scale". Consistent with this earlier statement, the Companies place strong emphasis as part of its "pilot at scale" BCA feature on the role of uncertainty in estimating costs and benefits when performing cost-effectiveness testing. The Companies maintain that while the use of the "pilot at scale" scenario will be helpful in the cause of reviewing single pilot proposals, it must not be conflated with knowledge certainty about the future role of the piloted system, technology, or approach.

a discussion on the importance and role of selecting the discount rate. The Companies recommend the continued use of a post-tax weighted average cost of capital factor (post tax WACC) for the discounting of costs and monetary benefits. This is consistent with BCA performed by the Companies for other areas of utility investments and programs.

Throughout the process, the analyst should document cost assumptions and sources.

4. **Identify and Classify the Nature of the "Pilot at Scale" Impacts:** The primary cost-effectiveness test -- the Jurisdiction Specific Test, or JST -- is based (and defined) on those impacts that the Company deems most relevant to include in a cost-effectiveness test for any single pilot project. (See Section 7 for a discussion on how the JST is determined). This is the starting point for the analyst in inspecting the potentially relevant and material impacts for a given single pilot project.

   Leveraging the impacts inventory -- and the "starting list" of impacts that form the Companies' JST, -- impacts for the pilot at scale are determined. If the impacts are material, then they are classified and further estimated using the treatment norms and estimation methods (described in Section 8). [22] Specifically, impacts will be identified in terms of their type: qualitatively considered, quantified but not monetized, or monetized. Regardless of treatment, the impacts should be described. If quantified and/or monetized, the basis of this estimation should be provided.[23]

   Exceptions to the classification process established as part of the JST definition should be explained, including departures from the proposed calculation or estimation norm. The NSPM-provided template should be used as a basis of documentation. A separate spreadsheet should also be prepared that is used to convert the estimate of impacts as an annual or other relevant factor to their yearly occurrence over the useful life of the assets. The useful life of the assets (used for costs) and the benefit occurrence forecast time period should be consistent.

[22] An NSPM guiding principle is to account for relevant, material impacts; the NSPM also includes guidance that immaterial impacts should be documented, but not necessarily included within the BCA.

[23] An example of a quantified but not monetized impact may be Greenhouse Gas (GHG) Emissions. A pilot may not need or want to monetize such emission decreases, and so it may be quantified but not monetized. However, a pilot may choose to monetize such emissions at its option.

Care is also needed to determine if any of the beneficial impacts influence the revenue requirements (in a manner similar to how costs are treated). For those beneficial impacts that influence (lower) revenue requirements, these should also be expressed in terms of their revenue requirements. The yearly forecast of benefit impacts should be expressed in present value terms, using the same discount factor used for costs.

After the nominal dollar 'flow' of benefit value streams have been determined, they should be converted into a present value sum. Accordingly, a present value discount factor[24] should be applied to the resulting forecasted values. This discount factor should be the same one applied to the costs.

Throughout the process, the analyst should document benefit assumptions and sources.

5. **Combine the present value of "pilot at scale" costs and benefits and perform the JST:** The present value sums of utility and other costs (step 3) and various monetary benefits (step 4) should be compared to form a ratio, which is the JST (prior to consideration of benefits that could not be monetized, but which are relevant and material for the pilot in question). During this step it is also reasonable to consider the range of uncertainty associated with the monetized and other benefits, and, if appropriate, to express the numeric JST result using high/low range values.

   The potential relevance of the quantified but not monetized benefits, and the purely qualitatively defined benefits, cannot be overlooked. It is necessary to inspect the additional non-monetary benefits and determine the cumulative impact of these additional benefits to render a conclusion for the JST in relation to the "pilot at scale". This step requires analyst judgement and expertise to determine the extent to which these non-monetary benefits influence the pilot sponsor's recommendation on whether to move forward with the pilot. The Companies note that the NSPM provides useful guidance about a set of techniques that may be deployed to aid in this analysis step.[25]

[24] The Companies note that the NSPM provides a discussion on the importance and role of selecting the discount rate. The Companies do not have exceptions to note about this guidance. The Companies also recommend the continued use of a post-tax weighted average cost of capital factor (post tax WACC) for the discounting of costs and monetary benefits. This is consistent with BCA performed by the Companies for other areas of utility investments and programs.

[25] NSPM Appendix C. Approaches to Accounting for Relevant Impacts.

6. **Inspect other secondary cost-effectiveness tests:** Secondary tests may also be performed for the pilot at scale if these are determined by the analyst to add insight and additional perspective to the pilot at scale BCA. As described in the NSPM: "Different tests provide different information, and there may be situations where that additional information is helpful in analyzing and deciding among DER options."[26] (Section 7 describes the role of other, secondary tests). Other tests may require the inclusion of additional cost impacts (i.e., participant costs, and/or host costs). They may also focus on a subset of benefit impacts that otherwise form the JST. These secondary tests are performed in a manner consistent with how the JST is performed, as described above. As with the JST, additional weight can be assigned to the contribution of non-monetary benefits to the resulting numeric cost-effectiveness test result.

   While secondary tests may be useful under some pilot circumstances, the Companies emphasize that these are ultimately single pilot projects that are under scrutiny, and as such the decision to present "at-scale" evaluations for these other cost-effectiveness tests should rest with the discretion of the pilot sponsor. Additional secondary cost-effectiveness testing may require further speculation on the part of the pilot analyst, and it may also increase the burden associated with justifying a pilot. Accordingly, the pilot analyst should have the discretion to present additional analysis if it would be beneficial in further justifying a pilot, but there should be no requirement to do so.

7. **Describe the results of the BCA, including the results based on cost-effectiveness tests, and make recommendations**. This final step involves bringing perspective and analysis conclusions forward, and ensuring documentation is created for assumptions influencing the BCA. In developing and supporting pilot recommendations:

   - The analyst should discuss the JST, its range of uncertainty, and the role of non-monetary benefits that may influence perspective on the numeric JST results. [27]

[26] NSPM Appendix D, Section D.7. Page D-10.

[27] In Appendix D, sections D1 – D4, of the NPSM presents several options for presenting BCA results. The Companies find these approaches relevant and useful, depending on the specific single pilot project needs and attributes. The utility analysis should exercise discretion on elaborating on the JST result accordingly, and in accordance with the guidance presented in Appendix D.

- The analyst should discuss the contribution, if any, of any secondary tests performed.

- As appropriate, the analyst should fine tune or stress test key assumptions to determine how they influence the BCA. For example, it is possible that the pilot at scale is influenced by assumptions concerning rate programs, government incentives (that may defray or offset costs), or levels of customer participation. This suggests the possibility of iteration of the BCA to better understand the impact of these assumptions.

- The analysis should provide documentation of assumptions informing the inputs and other factors influencing the cost and benefit impacts.

It must be emphasized that the JST (and other tests, if applied) is useful for illustrating the potential of the piloted system, but the pilot as designed is significantly justified by the learning objectives of the utility in relation to the piloted system. The JST and other cost-effectiveness tests may provide relevant, additional perspectives that help explain the intended purpose of the pilot. They may also help inform pilot evaluation plans and plan metrics. However, they represent one of several information items and they should not be considered dispositive for the purposes of gauging a pilot's merits. In fact, gauging the pilot success or failure outcome -- which will be determined in the future -- relates most importantly to the degree of success of the pilot in achieving learning objectives. It should not be based retrospectively on whether the pilot achieved the estimated costs and benefits of the pilot-at-scale scenario that informed the BCA.

In closing, the Companies' step-by-step process for conducting pilot BCA (along with the pilot objectives previously articulated by the Commission) provides a robust and transparent framework to aid the evaluation of utility pilots. While pilots are ultimately designed to achieve specific learning objectives, the BCA evaluation proposed by the Companies incorporates the future-state potential of the piloted measure, which is a key consideration in assessing the merits of those learning objectives. A measure's ability to provide benefits in the long-term will inform whether it is worthwhile to learn more about the measure's characteristics in the short-term, and the Companies' BCA process is constructed to provide the Commission with the information and insights necessary to make this determination.

7. THE PROPOSED JST & ROLE OF SECONDARY COST TESTS

The previous section describes the steps for performing a BCA for a single utility pilot proposal. This section focuses on the Companies' recommendations for a primary test to be used in the evaluation of pilot proposals (applied within BCA Step 5). Within the NSPM this is referred to as the Jurisdiction Specific Test, or JST. Additionally, the Companies

provide recommendations around the role of secondary cost tests (applied within BCA Step 6). The NPSM recommends the development of a primary test for conducting BCAs. The JST aims to properly account for a jurisdiction's policy goals and objectives relative to specific impacts within the cost and benefit impacts inventory. Furthermore, development of a JST fulfills multiple aspects of the Commission's order:

- The JST provides a uniform cost test for evaluating pilot proposals
- The Companies' proposed JST resembles a Societal Cost Test
- The Companies developed the JST following the NSPM's guiding principles and process
- The JST is Michigan-specific, tailored to Michigan's regulatory structure and requirements

A 5-step Process for JST determination

The NSPM provides a 5-step process that can be used to develop the JST. The Companies followed these steps to derive its conclusion about the set of impacts to include in its JST:

1. Articulate Applicable Policy Goals
2. Include All Utility System Impacts
3. Decide Which Non-Utility System Impacts to Include
4. Ensure that Benefits and Costs are Properly Addressed
5. Establish Comprehensive, Transparent Documentation

The development of the JST begins with the identification of relevant policies and their related goals and objectives. The Companies have a very broad set of policy goals and objectives covering a wide spectrum of energy programs and initiatives. In recognition of the potential wide scope of utility pilots, however, the Companies propose that the Michigan policy goals and objectives of most relevance for purposes of its JST for pilots are high level and overarching.

The policy goals and objectives therefore relevant to Michigan utility pilots (recognizing their diversity) are:

- Safety
- Reliability
- Affordability
- Resiliency
- Environmental Justice and Equity

- Decarbonization

Establishing these overarching policy goals ensures inclusion of a wide set of cost and benefit impacts as part of the JST for pilots. For NSPM Steps 2 and 3, the Companies began defining the specific impacts within the JST leveraging the NSPM's impacts inventory. Per the Step 2 guidance, the Companies initially included all utility impacts, which would be later refined as part of Step 4. In Step 3, the Companies expand the JST to include host/participating customer impacts and societal impacts to reflect the diverse span of potential pilot-related impact areas. Including such a wide set of impacts within the JST benefits Michigan customers because it ensures that all relevant impacts fitting the overarching policy goals and objectives are considered for inclusion within a utility pilot BCA.[28]

By defining the JST broadly, the Companies also aim to fulfill the Commission's direction within its August 2022 Order to include a role for a "societal cost test". Directionally, the Companies interpret the Commission's request for a "societal cost test" as indicating a need for a broad test. The Companies' proposed JST reflects the scope of a Societal Cost Test that is structured to consider impacts across utility, host customers / participants (if applicable), and society.

In NSPM Step 4, the Companies continued to refine the JST based on whether the impact is relevant in the Michigan context, whether the impact would be material for a pilot at-scale, and whether there would be "double counting" of impacts. Explanations of why each impact was included or excluded from the JST through these steps is provided in Appendix i. The documentation provided within this section, as well as Appendix i, serves as the Companies' comprehensive, transparent documentation (NSPM Step 5).

The resulting JST proposed by the Companies is provided in Table 1. The rows of this table reflect the full impact inventory provided in the NSPM. These are organized by electric and gas utility system impacts, societal impacts, and host customer / participant impacts. The Companies amended the NSPM's original title for host customer impacts to also include participant impacts for clarity, as these impacts are intended to reflect benefits and costs of a participating customer (regardless of whether the pilot involves hosting a technology on-site, such as rooftop solar). For each impact, the Companies propose whether it should be included in the JST as a result of NSPM's Steps 1 through 4.

The Companies note that when applying the JST to a pilot, not all impacts included in the JST will be relevant and material to the project. For example, a distribution system pilot

[28] A few NSPM-identified impacts are not included in the Companies proposed JST for narrow technical and definitional areas.

may not result in any material greenhouse gas emissions impacts. Conversely, a community solar pilot may not result in distribution system impacts (depending on location and other variables). Regardless, the JST provides a uniform and common lens to assess cost-effectiveness where all impacts that are *relevant* to policy goals are included for screening purposes.

Table 1: The Companies' Proposed Jurisdiction-Specific Test (JST)

Impact Category	Impact	Include impact in JST?
Electric Utility System Impacts	Generation: Energy Generation	Yes
	Generation: Capacity	Yes
	Generation: Environmental Compliance	No
	Generation: RPS/CES Compliance	No
	Generation: Market Price Effects	No
	Generation: Ancillary Services	Yes
	Transmission: Capacity	Yes
	Transmission: System Losses	Yes
	Distribution: Capacity	Yes
	Distribution: System Losses	Yes
	Distribution: O&M	Yes
	Distribution: Voltage	Yes
	General: Financial Incentives	Yes
	General: Program Administration Costs	Yes
	General: Utility Performance Incentives	Yes
	General: Credit and Collection Costs	Yes
	General: Risk	Yes
	General: Reliability	Yes
	General: Resilience	Yes
Gas Utility System Impacts	Energy: Fuel & Variable O&M	Yes
	Energy: Capacity	Yes
	Energy: Environmental Compliance	No
	Energy: Market Price Effects	No
	General: Financial Incentives	Yes
	General: Program Administration Costs	Yes
	General: Utility Performance Incentives	Yes
	General: Credit and Collection Costs	Yes
	General: Risk	Yes
	General: Reliability	Yes
	General: Resilience	Yes
Societal Impacts	Resilience	No
	Greenhouse Gas Emissions	Yes
	Other Environmental Impacts	No
	Public Health	Yes

	Economic Development and Jobs	Yes
	Energy Security	No
Host Customer / Participant Impacts	Measure Costs (Host)	Yes
	Transaction costs (Host)	No
	Interconnection Fees	Yes
	Risk	Yes
	Reliability	Yes
	Resilience	Yes
	Tax incentives and donations	Yes
	Non-Energy Impacts (Low Income)	Yes
	Non-Energy Impacts (non-LI)	Yes
	Other Fuel	Yes

Role of Secondary Cost Tests

The NSPM provides guidance on the role of secondary cost tests, which together provide different perspectives, and therefore answer different cost-effectiveness questions. This section describes the role of secondary tests, which are all formed using the same impacts inventory as a starting point. The difference between the various tests is the selection of impacts to be included in the cost-effectiveness test.

The NSPM also recognizes that "depending on a jurisdiction's applicable policy goals, the primary test [JST in this instance] may or may not align with traditional BCA tests"[29]. However, traditional BCA tests are usually equivalent with one of the secondary tests.

The Companies' recommended JST is broad and encompasses most of the impacts identified as part of the NSPM's impact inventory. As such, it provides a wide 'aperture' through which to view a utility pilot proposal. When considering all stakeholders – the utility, host customers, customer participants, and society at large – it provides one perspective on the value prospects for the pilot (when considered at scale). However, by its nature it does not single out the unique relationships and features of costs and benefits that are contained within it. These additional relationships and features are the role of secondary cost effectiveness tests, and they can address specific questions about the BCA results.

Of significant importance is the fact that whether and how to use secondary cost tests is a unique circumstance for each pilot BCA. The secondary tests illuminate additional features of the cost and benefit relationships. As a general proposition, once the impacts inventory is well identified for the pilot in question and the JST is developed, performing additional tests can round out the perspectives concerning costs and benefits for the pilot. In fact, the other tests – the secondary tests – can be considered as a cascade, moving

[29] NSPM, page vii

from the narrowest test – that involving solely utility costs and benefits – to more expansive tests, such as the JST.

In considering the role of secondary tests for pilots, it is important to recognize the exploratory nature of pilots, the level of uncertainty inherent in the "pilot-at-scale" evaluation, and the need for flexibility in testing different pilot projects. Thus, the Companies recommend that the use of secondary cost tests be considered by the BCA analyst on a pilot-by-pilot basis as they may not always be needed and may be overly burdensome for a pilot proposal. This approach is supported by the NSPM, which provides guidance on when and how to use secondary tests. The NSPM asserts that "in some instances, secondary tests can help enhance regulators' and stakeholders' overall understanding" of the impacts, but states that "secondary tests should be used cautiously to ensure that they do not make the BCA decision-making process burdensome or undermine the purpose of the primary test"[30]. The Companies provide information on each of the traditional cost tests that can be used as a secondary cost test within Appendix ii.

8. IMPACT TREATMENT & UNIFORM METHODS

A key part of the Companies' recommendation is an interpretation and customization of the impacts inventory to meet Michigan-specific regulatory circumstances and support uniform BCA methodologies where possible. This section proposes for each impact inventory element (a) a working definition, (b) a recommended treatment as to whether and how it should be captured, and (c) guidance on standard values or methods.

The Companies present these recommendations in Table 2. To establish a common understanding of each impact, the Companies leveraged NSPM definitions as the basis for proposed definitions. However, in some instances, the Companies provided revisions to improve clarity and distinguish amongst impacts.

All benefit and cost impacts are designated as "Monetized" (Mon), "Quantitative" (Quant), "Qualitative" (Qual), or "Not Included" (N/I). The Companies believe that some of NSPM impacts are not relevant in the Michigan context based on current regulatory requirements and markets. These are indicated as not included ("N/I") and reasoning provided in Appendix i.

The Companies note that each individual impact may not be material or apply to all Pilots. As described in Section 6, the Companies recommend assessing whether impacts are material for a pilot at scale. In addition, there may be instances when there are potential overlaps between impacts. For example, resilience is listed within the utility system

[30] Ibid.

impacts, societal impacts, and host customer / participant impacts. One of the NSPM's guiding principles is to avoid double-counting. Thus, if the impacts are redundant, the pilot sponsor should only count the impact once and can make note of it in explanations for excluding redundant impacts.

Material impacts should be monetized when the utility, its customers, and/or other participants utilize a transparent and uniform methodology to capture the monetary value. Impacts that are difficult to monetize should be reported through other quantitative metrics based on uniform methodologies to ensure consistent comparison across Pilot proposals. For impacts that are difficult to quantify or monetize, or for which no appropriate uniform methodology exists, qualitative information should be provided to describe the materiality of the impact. The inclusion of comprehensive qualitative information and a discussion of relevance is imperative for symmetrical consideration of impacts across pilots.

Table 2: Pilot Impacts, Definition, and Treatment

Impact Category	Specific Impact	Impact Definition	Treatment (Mon, Quant, Qual, N/I)
Electric Utility System Impacts	Generation: Energy Generation	The production or procurement of energy (kWh) from generation resources on behalf of customers	Mon
	Generation: Capacity	The generation capacity (kW) required to meet the forecasted system peak load	Mon
	Generation: Environmental Compliance	Actions to comply with environmental regulations	N/I
	Generation: RPS/CES Compliance	Actions to comply with renewable portfolio standards or clean energy standards	N/I
	Generation: Market Price Effects	The decrease (or increase) in wholesale market due to reduced (or increased) customer consumption	N/I
	Generation: Ancillary Services	Services required to maintain electric grid reliability and power quality	Mon
	Transmission: Capacity	Maintaining the availability of the transmission system to transport electricity safely and reliably	Mon
	Transmission: System Losses	Electricity lost through the transmission system	Mon
	Distribution: Capacity	Maintaining the availability of the distribution system to transport electricity safely and reliably	Mon
	Distribution: System Losses	Electricity lost through the distribution system	Mon
	Distribution: O&M	Operating and maintaining the distribution system	Mon
	Distribution: Voltage	Maintaining voltage levels within an acceptable range to ensure that both real and reactive power production are matched with demand	Qual
	General: Financial Incentives	Utility financial support provided to host customers, participants, or other market actors to encourage implementation	Mon
	General: Program Administration Costs	Utility outreach to trade allies, technical training, marketing, and administration and management	Mon
	General: Utility Performance Incentives	Incentives offered to utilities to encourage successful, effective implementation of DER programs	Mon
	General: Credit and Collection Costs	Bad debt, disconnections, reconnections	Qual
	General: Risk	Uncertainty including operational, technology, financial, cybersecurity, legal, reputational, and regulatory risks	Qual

	General: Reliability	Maintaining generation, transmission, and distribution system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components	Mon
	General: Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions	Qual
Gas Utility System Impacts	Energy: Fuel & Variable O&M	The fuel and O&M impacts associated with gas or other fuels	Mon
	Energy: Capacity	The gas capacity required to meet forecasted peak load	Mon
	Energy: Environmental Compliance	Actions required to comply with environmental regulations	N/I
	Energy: Market Price Effects	The decrease (or increase) in wholesale prices due to reduced (or increased) customer consumption	N/I
	General: Financial Incentives	Utility financial support provided to host customers, participants, or other market actors to encourage implementation	Mon
	General: Program Administration Costs	Utility outreach to trade allies, technical training, marketing, and administration and management	Mon
	General: Utility Performance Incentives	Incentives offered to utilities to encourage successful, effective implementation of DER programs	Mon
	General: Credit and Collection Costs	Bad debt, disconnections, reconnections	Qual
	General: Risk	Uncertainty including operational, technology, financial, cybersecurity, legal, reputational, and regulatory risks	Qual
	General: Reliability	Maintaining generation, transmission, and distribution system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components	Mon
	General: Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions	Qual
Societal Impacts	Resilience	Resilience impacts beyond those experienced by utilities or host customers (e.g., allowing critical facilities to continue providing services during an outage)	N/I
	Greenhouse Gas Emissions	GHG emissions created by fossil-fueled energy resources	Quant
	Other Environmental Impacts	Other air emissions, solid waste, land, water, and other environmental impacts	N/I
	Public Health	Health impacts, medical costs, and productivity affected by health	Qual
	Economic Development / Jobs	Increased economic development and job impacts	Qual
	Energy Security	Energy imports and energy independence	N/I
Host Customer / Participant Impacts	Measure Costs (Host)	Costs incurred to install and operate DERs	Mon
	Transaction costs (Host)	Other costs incurred to install and operate DERs (e.g., time spent collecting information, obtaining quotes, filing paperwork)	N/I

	Interconnection Fees	Costs paid by host customer to interconnect DERs to the electricity grid	Mon
	Risk	Uncertainty including price volatility, power quality, outage, and operational risk related to failure of installed technology and use error; this type of risk may depend on the type of technology	Qual
	Reliability	The ability to prevent or reduce the duration of host customer outages	Qual
	Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions	Qual
	Tax incentives and donations	Federal, state, and local tax incentives provided to host customers to defray cost of technology (e.g., DERs). Also includes any donations that may be used to reduce costs for customer or enable participation at no-cost.	Mon
	Non-Energy Impacts (Low Income)	Non-energy benefits and costs that affect low-income host customers or participants	Qual
	Non-Energy Impacts (non-LI)	Benefits and costs that are separate from energy-related impacts	Qual
	Other Fuel	The displacement of other fuel costs due to new technologies (e.g., electric heat pumps displacing costs of oil or propane, EVs displacing costs of gasoline)	Mon

i. Electric Utility System Impacts Methods

a. Generation: Energy Generation – *Monetize*. Use the relevant utility's avoided cost (as set in an IRP or PURPA avoided cost proceeding for energy generation).

b. Generation: Capacity – *Monetize*. Use PURPA avoided cost of capacity.

c. Generation: Ancillary Services – *Monetize*. Leverage MISO ancillary services clearing price.

d. Transmission: Capacity – *Monetize*. Will be limited to circumstances where a specific transmission project is avoided or deferred. The Companies examined other opportunities for a pilot at scale to impact transmission costs, however, these were less certain and unlikely to result in changes to overall transmission costs.

e. Transmission: System Losses – *Monetize*. Calculate using loss factors from relevant utility's most recent transmission and distribution loss study.

f. Distribution: Capacity – *Monetize*. Use the avoided distribution capacity value provided in the utility's Electric Distribution Investment and Maintenance Plan or Integrated Resource Plan (IRP), from the filing with the most recent publication date.

g. Distribution: System Losses – *Monetize*. Calculate using loss factors from relevant utility's most recent transmission and distribution loss study.

h. Distribution: O&M – *Monetize*. Will vary by pilot.

i. Distribution: Voltage – *Qualitative*. Describe potential impacts if applicable.

j. General: Financial Incentives – *Monetize*. Will vary by pilot.

k. General: Program Administration Costs – *Monetize*. Will vary by pilot.

l. General: Utility Performance Incentives – *Monetize*. Will vary by pilot.

m. General: Credit and Collection Costs – *Qualitative*. Describe potential impacts if applicable.

n. General: Risk – *Qualitative*. Describe potential impacts.

o. General: Reliability – *Monetize*. Use Lawrence Berkeley National Laboratory's Interruption Cost Estimate (ICE) Calculator. DTE is actively engaged in refining the ICE calculator to more accurately reflect interruption costs for Michigan customers.

p. General: Resilience – *Qualitative*. Describe potential impacts.

ii. Gas Utility System Impacts Methods

q. Energy: Fuel & Variable O&M – *Monetize*. Average avoided cost of gas plus variable O&M.

r. Energy: Capacity – *Monetize*. Will vary by pilot. Includes incremental infrastructure (i.e., pipeline).

s. General: Financial Incentives – *Monetize*. Will vary by pilot.

t. General: Program Administration Costs – *Monetize*. Will vary by pilot.

u. General: Utility Performance Incentives – *Monetiz*e. If available, will vary by pilot.

v. General: Credit and Collection Costs – *Qualitative*. Describe potential impacts if applicable.

w. General: Risk – *Qualitative*. Describe potential impacts.

x. General: Reliability – *Qualitative*. Describe potential impacts.

y. General: Resilience – *Qualitative*. Describe potential impacts.

iii. Societal Impacts Methods

z. Greenhouse Gas Emissions – *Quantitative*. Will vary by pilot.

aa. Public Health – *Qualitative*. Describe potential impacts.

bb. Economic Development / Jobs – *Qualitative*. Describe potential impacts.

iv. Host Customer / Participant Impacts Methods

cc. Measure Costs (Host) – *Monetize*. Will vary by pilot. Note: bill savings should not be included for JST to avoid double counting with utility generation, transmission, and distribution impacts.

dd. Interconnection Fees – *Monetize*. See state interconnection rules for fees.

ee. Risk – *Qualitative*. Describe potential impacts.

ff. Reliability – *Qualitative*. Describe potential impacts. Note: This impact may overlap with reliability within utility system impacts and caution should be taken to avoid double counting.

gg. Resilience – *Qualitative*. Describe potential impacts. Note: This impact may overlap with resilience within utility system impacts and caution should be taken to avoid double counting.

hh. Tax incentives and donations – *Monetize*. Will vary by pilot. It is recommended that only federal incentives are included within JST, as local incentives would be offset as a societal cost.

ii. Non-Energy Impacts (Low Income) – *Qualitative*. Will vary by pilot. The MiEJScreen, when available, is an example of a tool that may be used to guide location focus for pilots.

jj. Non-Energy Impacts (non-LI) – *Qualitative*. Describe potential impacts.

kk. Other Fuel – *Monetize*. Will vary by pilot.

9. SUMMARY OF THE COMPANIES' PILOT BCA REQUIREMENTS

DTE and Consumers Energy have worked collaboratively to develop their joint Company recommendations for how to perform utility pilot BCA. The Companies' proposed requirements fulfill the Commission's requirement to propose Michigan-specific uniform BCA requirements for evaluating pilot proposals. The requirements also meet the Commission's requirement to include a societal cost test element, follow the provisions of the NSPM, and tailor the requirements to meet Michigan regulatory needs (in relation to pilot proposals).

As described in its proposal document, the Companies have grounded their set of recommendations on three core requirements:

1. The Companies will use a primary cost-effectiveness test, referred to as the Jurisdiction-Specific Test (JST), when performing a BCA for pilots. The JST takes a societal viewpoint of pilot costs and benefits in that it incorporates the relevant utility system, host customer, and societal impacts.

2. Where possible and appropriate, the Companies will use a standardized set of treatment norms (i.e., monetize, quantitative, or qualitative) and estimation methods for the impacts captured in the JST.
3. For any pilot under consideration, the Companies will perform cost effectiveness testing based on a pilot project description "at scale" in recognition of the Commission's interest in "whether the pilot program will grow into a cost-effective program when deployed at full scale."[31]

As described throughout its proposal, there are supporting features that operationalize and contextualize these three core proposal elements. To make its guidance practical, the Companies provide a detailed seven-step BCA methodology that analysts can apply to single pilot proposals. This seven-step process applies the primary cost-effectiveness test, or JST, to the pilot under review based on the description of the "pilot at scale".

The "pilot at scale" technique aids in revealing the potential impacts of the piloted technology, system, or approach on the Michigan energy system (whereas the pilot itself, given its smaller scale, may not reveal system impacts). The Companies' proposal, however, also emphasizes the discretion of the analyst to use judgement in describing the pilot at scale. The goal is to describe a system, approach, or technology at a scale that is sufficient and adequate to demonstrate potential energy system effects, while also describing what commercial viability and market maturity might entail.

The pilot at scale's relevant and material impacts are evaluated as part of the BCA steps based on the treatment norms and estimation methods defined as part of the JST definition process, which is aligned with the NSPM-provided impacts inventory and associated guidance. The Companies' proposed JST is comprehensive in the number and types of impacts that are included within it. In creating its JST, the Companies have been guided by Michigan's policy goals and objectives. Within the JST, impacts are classified according to their nature: monetary impacts, quantified but not monetized impacts, and strictly qualitative impacts. While only the monetary impacts formally influence the JST's numeric results, (comparing costs to monetary benefits), the other benefit impacts are considered by the analyst in interpreting the JST results in support of the overall BCA conclusions.

Because it is comprehensive in the scope of impacts included, the JST satisfies the Commission's Order to consider the role of a societal cost test. While no single cost-effectiveness test should be the sole measure of the pilot's merits, the JST establishes a useful, uniform, and wide "aperture" for inspecting the costs and beneficial aspects of utility pilots, particularly since the JST is performed based on the "pilot at scale".

[31] February 4, 2021, Order in Case No. U-20645, page 10.

Importantly, while the "pilot at scale" basis is useful for describing potential, future costs and benefits, this technique should not cloud perspective on the importance of the pilot's learning objectives. Additionally, the future-state of the piloted system is uncertain by its nature, and difficult to estimate for its potential costs and benefits for many reasons. Therefore, the "pilot at scale" cannot be expected to be overly precise. Instead, it should be used to give an indication that full-scale deployment of the piloted system could be valuable to the energy system under various assumptions.

The Commission has placed emphasis within its August 2022 Order on the role of the NSPM to inform these recommendations. The Companies emphasize that flexibility is required in applying the NSPM's guidance to the requirements of utility pilots. The NPSM, for example, does not provide much guidance about the unique aspects of pilot proposals, which are heavily influenced by the Companies' learning objectives in service of Michigan's goals for clean, affordable, safely delivered, and reliable energy (hence the Companies propose the innovative step of performing the pilot BCA based on the "pilot at scale"). Also, the NSPM is focused on Distributed Energy Resources (DERs), whereas the Companies' pilots have a wider range of focus. The Companies propose ways to address these inconsistencies in ways that remain well-aligned to the NPSM's guiding principles and other core guidance.

In closing, the Companies' proposed BCA framework will equip the Commission with the insights it needs to assess promising new technologies and business models and the pilot learnings needed to unlock their potential. The Companies' step-by-step process for the pilot at scale BCA evaluation will help characterize that potential, which is a key consideration in assessing the merits of those learnings. The Companies' JST also provides a broad view of the benefits that a piloted measure could provide, enhancing the information available to the Commission in making its determination. Finally, the Companies have considered practical and uniform methods throughout their proposal to streamline the development of pilot BCA. These elements of the Companies' proposed BCA framework will position the Commission and the utilities it regulates to more effectively test and deploy innovative new ideas, improving the state's energy system for the benefit of customers and society.

10. APPENDICES

i. Application of NSPM's 5-Step Process for Developing a JST

In accordance with the NSPM, the Companies recommend and have applied the 5-step process outlined in Figure 1 to develop a Jurisdiction's Primary Test.[32]

Develop Primary Cost Test: Steps for Developing a Jurisdiction-Specific Test

STEP 1	**Articulate Applicable Policy Goals** Articulate the jurisdiction's applicable policy goals related to DERs.
STEP 2	**Include All Utility System Impacts** Identify and include the full range of utility system impacts in the primary test, and all BCA tests.
STEP 3	**Decide Which Non-Utility System Impacts to Include** Identify those non-utility system impacts to include in the primary test based on applicable policy goals identified in Step 1: • Determine whether to include host customer impacts, low-income impacts, other fuel and water impacts, and/or societal impacts
STEP 4	**Ensure that Benefits and Costs are Properly Addressed** Ensure that the impacts identified in Steps 2 and 3 are properly addressed, where: • Benefits and costs are treated symmetrically. • Relevant and material impacts are included, even if hard to quantify. • Benefits and costs are not double-counted. • Benefits and costs are treated consistently across DER types.
STEP 5	**Establish Comprehensive, Transparent Documentation** Establish comprehensive, transparent documentation and reporting, whereby: • The process used to determine the primary test is fully documented. • Reporting requirements and/or use of templates for presenting assumptions are developed.

Figure 1: NSPM's 5-step process for developing a Jurisdiction-Specific Test

In Step 1, the Companies examined and documented overarching policy goals and accompanying discussion that are presented within Section 7. For Steps 2-5, the

[32] The Companies removed specific references to DERs as these steps were applied for developing the JST for all utility pilots, inclusive but not limited to DER pilots.

Companies examined the full impacts inventory provided in the NSPM to identify which impacts to include in the JST. Per NSPM guidance in Step 2, the Companies included all utility impacts. In Step 3, the Companies followed MPSC guidance to employ a societal test, which informs the scope of non-utility impacts for inclusion in its proposed JST. This means that in addition to utility impacts, the Companies explored the applicability of host customer and societal impacts to the policy goals. While the whole NSPM impacts inventory has merits for qualitative and quantitative consideration, these were refined based on the applicable policy goals.

In Step 4, to address the topic of relevant and material impacts, the Companies have proposed examining impacts at "pilot at scale" (see Section 6 for further details), as pilots will inherently be challenged to have material impacts. Additionally, the Companies carefully examined each impact to identify potential instances where double counting could occur and made note to guide a practitioner.

The Companies recognize the value for both the Commission and future application of the pilot BCA requirements to include recommended guidance on the how to interpret, evaluate and communicate applicable impacts (e.g., qualitative, quantitative, or monetized) provided in Section 8. This guidance is shown in Table 4. This table also serves to support the comprehensive, transparent documentation advised in Step 5 of the NSPM, which requires a comprehensive discussion of relevance, assumptions, and methodologies which have informed the pilot BCA requirements. This transparency enables stakeholders to trust the processes and decisions outlined and to provide input and review of the proposed requirements.

The resulting JST is a broad test that closely resembles a societal cost test. This is aligned with the direction from the Commission to propose a societal cost test. The JST will serve to provide a uniform, Michigan-specific cost test and can be complemented by secondary cost tests as appropriate (see Appendix ii).

Table 3: Reasoning for Impacts Included or Not Included in JST

Impact Category	Specific Impact	Include Impact	Reasoning and Documentation
Electric Utility System Impacts	Generation: Energy Generation	Included	Included per NSPM's Step 2 for developing a JST.
	Generation: Capacity	Included	Included per NSPM's Step 2 for developing a JST.
	Generation: Environmental Compliance	Not Included	Impact not material across examples of pilot at-scale.
	Generation: RPS/CES Compliance	Not Included	Utilities are fully compliant with state RPS.

	Generation: Market Price Effects	Not Included	Impact not material across examples of pilot at-scale.
	Generation: Ancillary Services	Included	Included per NSPM's Step 2 for developing a JST.
	Transmission: Capacity	Included	Included per NSPM's Step 2 for developing a JST
	Transmission: System Losses	Included	Included per NSPM's Step 2 for developing a JST.
	Distribution: Capacity	Included	Included per NSPM's Step 2 for developing a JST.
	Distribution: System Losses	Included	Included per NSPM's Step 2 for developing a JST.
	Distribution: O&M	Included	Included per NSPM's Step 2 for developing a JST.
	Distribution: Voltage	Included	Included per NSPM's Step 2 for developing a JST.
	General: Financial Incentives	Included	Included per NSPM's Step 2 for developing a JST.
	General: Program Administration Costs	Included	Included per NSPM's Step 2 for developing a JST.
	General: Utility Performance Incentives	Included	Included per NSPM's Step 2 for developing a JST.
	General: Credit and Collection Costs	Included	Included per NSPM's Step 2 for developing a JST.
	General: Risk	Included	Included per NSPM's Step 2 for developing a JST.
	General: Reliability	Included	Included per NSPM's Step 2 for developing a JST.
	General: Resilience	Included	Included per NSPM's Step 2 for developing a JST.
Gas Utility System Impacts	Energy: Fuel & Variable O&M	Included	Included per NSPM's Step 2 for developing a JST.
	Energy: Capacity	Included	Included per NSPM's Step 2 for developing a JST.
	Energy: Environmental Compliance	Not Included	Impact not material across examples of pilot at-scale.
	Energy: Market Price Effects	Not Included	Impact not material across examples of pilot at-scale.
	General: Credit and Collection Costs	Included	Included per NSPM's Step 2 for developing a JST.
	General: Financial Incentives	Included	Included per NSPM's Step 2 for developing a JST.
	General: Program Administration Costs	Included	Included per NSPM's Step 2 for developing a JST.
	General: Reliability	Included	Included per NSPM's Step 2 for developing a JST.
	General: Resilience	Included	Included per NSPM's Step 2 for developing a JST.
	General: Risk	Included	Included per NSPM's Step 2 for developing a JST.
	General: Utility Performance Incentives	Included	Included per NSPM's Step 2 for developing a JST.
Societal Impacts	Resilience	Not Included	Excluded per NSPM's Step 4 for developing a JST to avoid double counting. Recommended to capture impact in Utility sections for Reliability or Resilience.
	Greenhouse Gas Emissions	Included	Included per NSPM's Step 3 for developing a JST.
	Other Environmental Impacts	Not Included	Impact not material across examples of pilot at-scale.
	Public Health	Included	Included per NSPM's Step 3 for developing a JST.
	Economic Development and Jobs	Included	Included per NSPM's Step 3 for developing a JST.

	Energy Security	Not Included	Impact not material across examples of pilot at-scale and can be complicated with tradeoffs at various parts of the energy supply chain.
Host Customer / Participant Impacts	Measure Costs (Host)	Included	Included in NSPM's Step 3 for developing a JST, per Commission guidance of Societal Cost Test.
	Transaction costs (Host)	Not Included	Excluded in NSPM's Step 3 for developing a JST (not material impact).
	Interconnection Fees	Included	Included in NSPM's Step 3 for developing a JST, per Commission guidance of Societal Cost Test.
	Risk	Included	Included in NSPM's Step 3 for developing a JST, per Commission guidance of Societal Cost Test
	Reliability	Included	Included in NSPM's Step 4 for developing a JST to ensure that cost-effectiveness practices are symmetrical.
	Resilience	Included	Included in NSPM's Step 4 for developing a JST to ensure that cost-effectiveness practices are symmetrical.
	Tax incentives and donations	Included	NSPM recommends to only include federal incentives as local incentives are technically a societal cost.
	Non-Energy Impacts (Low Income)	Included	Included in NSPM's Step 3 for developing a JST, per Commission guidance of Societal Cost Test.
	Non-Energy Impacts (non-LI)	Included	Included in NSPM's Step 3 for developing a JST, per Commission guidance of Societal Cost Test.
	Other Fuel	Included	Included in NSPM's Step 4 for developing a JST to ensure that cost-effectiveness practices are symmetrical.

ii. Additional Information on Secondary Cost Tests

In this section, the Companies provide additional information on traditional cost-effectiveness tests that can be used as a secondary cost test. The Companies also detail the different perspectives that these tests can provide to support the BCA analyst in determining whether to apply and examine any of these alternative perspectives (in addition to the JST). A summary view to illustrate the differences in these tests is shown in Table 4.

Table 4: Illustration of different perspectives that traditional cost tests can provide as a secondary cost test

	Proposed JST	UCT	TRC Test	SCT	PCT	RIM Test
Electric System Utility Impacts	✓	✓	✓	✓	-	✓
Gas System Utility Impacts	✓	✓	✓	✓	-	✓
Other Fuel Impacts	✓	-	✓	✓	✓	-
Host Customer Impacts	✓	-	✓	✓	✓	-
Societal Impacts	✓	-	-	✓	-	-
Host Customer Bill Savings	-	-	-	-	✓	✓

Role of the Utility Cost Test (UCT)

The Utility Cost Test is highly relevant to any inspection of pilot costs and benefits, as it isolates the costs and benefits for the utility system. Per the NSPM: The UCT answers "Will utility system costs be reduced?" The impacts inventory breaks out the utility-centric impacts as a separate category of impacts. The UCT excludes the potential customer and/or host unique costs, and societal benefits, like greenhouse gas emissions, environmental impacts, job potential, or broad equity considerations. [33]

By focusing on utility impacts, the UCT provides a good measure of how the proposed pilot at scale impacts utility system costs (across all levels – generation, transmission, and distribution). These cost changes are ultimately resolved through the rates process over time as costs are incurred and recovered. Additionally, the UCT can be useful when considering the comparative merits of different projects strictly from a utility system perspective, before consideration of a wider set of merits beyond utility system costs.

[33] NSPM Appendix E.2, page E-3, provides a description of the UCT.

Gross changes to utility system costs estimated as part of the BCA should not be assumed to equal customer bill savings without further detailed inspection. For example, a marginal reduction in energy system costs estimated using the BCA treatment norms for the impacts inventory may not equal the actual, long term and/or average costs that form the basis of various utility charges.

As a general matter, since the Companies are vertically integrated utilities, the customer revenue requirements should reflect all utility system costs on a long-term basis. A material change revealed through the UCT result could suggest the need for a separate rates analysis to learn more about how the project might impact rates, and therefore affect the recovery of costs through revenue requirements. An estimated significant reduction in utility costs could alter the fair allocation of costs across customer classes. The Companies note, however, that as part of pilot proposals it is highly unlikely (due to their size and nature) that there will be rate concerns due to changes in utility system costs.

Finally, the comparison of the JST and the UCT will reveal the incremental value added by expanding the set of impacts beyond utility costs: the greater value of the JST versus the UCT points to the value contribution of non-utility system cost impacts.

As with the performance of the JST, the UCT should include accommodation for qualitative impacts. The numeric test result should be inspected, and the additional value of the qualitative impacts imputed on a case-by-case basis.

Role of the Total Resource Cost Test (TRC)

The TRC expands the set of impacts within the cost-effectiveness test beyond those included in the UCT by including host customer and customer participant impacts. An example of a customer / participant impact is the separate costs these participants incur to interconnect or administer the resource. A particular advantage of the TRC is the inclusion of other, non-utility fuel costs.

This is particularly relevant when the resource in question uses gases or other fuels to generate electricity – this increases fuel use and related impacts. Combined Heat Power (CHP) is an example of a distributed resource that increases the use of other fuels in this manner. In the case of CHP, the total system efficiency may improve, but there are exchanges of fuel from the central system to the distributed system.

The TRC picks up the non-electric energy system impacts, which can include the capital costs of customer or 3rd-party owned resources, fuel, and other O&M (for the host resource). The TRC will also include potential host tax or other incentives related to the deployment of the resource.

As with the performance of the JST, the TRC should include accommodation for qualitative impacts. The numeric test result should be inspected, and the additional value of the qualitative impacts imputed on a case-by-case basis.

The TRC reflects the principle that the piloted resource is recognized as a system resource, regardless of whether it is owned and operated by the utility or others. As such, the comparison of costs and benefits using the TRC provides perspective on the value as a resource independent of this consideration (but prior to inclusion of societal benefits).

An important nuance of the TRC is how energy savings are recognized, as it involves customer and participant costs and benefits along with utility costs and benefits. There is a risk of double counting in this instance. For example, if the distributed resource generates energy for use by the host customer, this reduction in energy costs is identified as a lowering of energy costs at the utility system level. It is not separately captured again as a customer savings.

Role of the Participant Cost Test (PCT)

The PCT provides a narrower focus than the TRC – it excludes utility system costs altogether, but it adds in potential customer bill savings. The rationale is that the PCT is focused on just the view of the participant, without consideration of the wider effects to the utility or the societal effects (as defined by the impacts inventory).

The PCT has a more focused application than the other tests. It does not address the "big picture" and excludes many of the savings related to the project. Therefore, it should not be used for making conclusive judgments about the piloted project's ultimate merits. Rather, it provides insights about the participant's viewpoint in isolation from other impacts. As such, it can be helpful in designing programs and considering the best way to attract customer participants. A large PCT result might imply the need for fewer incentives to attract participants and small PCT result might imply the opposite. The PCT can also help reveal the extent of non-energy benefits, around which customers may have unique perspectives as they consider program participation.

The 'add-in' of bill savings within the PCT accounts for the real savings that participating customers could enjoy through their participation. However, a big factor when considering the PCT result is that the bill savings are usually estimated based on avoided

customer costs based on electricity and gas *rates*. These may differ than the estimate of the avoided utility system costs.[34]

As with the performance of the JST, the PCT should include accommodation for qualitative impacts. The numeric test result should be inspected, and the additional value of the qualitative impacts imputed on a case-by-case basis.

Role of the Rate Impact Measure Test (RIM Test)

The RIM Test is focused on utility system costs along with customer bill savings. As such, it is a focused test to determine how the project or measure could increase or decrease electricity and gas rates over the long term. The RIM Test is based on the UCT elements of the impact inventory, along with the customer bill savings which are an estimate of lost utility revenues.

Consider a measure that both reduces utility costs while providing bill savings to participating customers (based on estimates using customer rates). The bill savings represent lost revenues that otherwise support the utility's revenue requirements. As a result, there will be long term upward pressure to increase revenue requirements to all rate payers, to make up for these lost revenues.

The NSPM cautions on applying the RIM Test for DER, because it tests for potential long term rate impacts. It does not approve of the RIM Test being used as a basis of selecting projects.

[34] NSPM, Appendix E.5, page E04. The difference arises from the choices made in the treatment norm for energy system cost impacts. The BCA is predicated on marginal and short term avoided costs due to the measure, whereas customer rates reflect long term historical average costs inclusive of variable and fixed cost components.

iii. Companies' Guidance on Describing the Pilot at Scale

- To perform the BCA (and JST) for the "pilot at scale" the analyst must create a description of the "pilot at scale".

- The purpose of creating the "pilot at scale" description is to provide a means by which the potential impacts to the energy system can be identified and estimated.

- The pilot project description is leveraged and used to create the "pilot at scale" project description.

- There should be a high degree of conformance between the nature of the pilot and the "pilot at scale" in essential features.

- The "pilot at scale", like the pilot itself, is for a single project or program.

- The purpose of the "pilot at scale" description is not to study views about large scale adoption levels of the technology, system, or approach within the market. Rather, the scale of the pilot subject to the BCA should be sufficient to describe and estimate the various key impacts that are possible by the piloted system, technology, or approach, should it achieve a greater degree of maturity and commercial viability.

- Determining the degree of maturity and commercial viability necessary, sufficient, or adequate in order to estimate energy system effects will require judgement of the utility analyst and pilot sponsor.

- The cost of the "pilot at scale" should reflect reasonable estimates for the technology, system, or approach at the level of maturity and commercial viability that underpins the "pilot at scale" description. However, there are many factors why costs may rise or decline (in comparison to today's cost levels), and these trends and directions are due to many underlying factors: collective industry experience and learning effects, adoption levels in the market, the nature and availability of vendor support including warranty, skilled installers and operators, perceived riskiness of involved parties, and the passage of time. It is incumbent on the analyst to describe the "pilot at scale" costs and provide explanations for the assumptions used to determine the relevant costs and create the cost estimate. Major assumptions should be identified and described and where possible assessed for how such costs might be expected to change at scale.

- The "pilot at scale" benefit impacts should be based on known or reasonably foreseeable conditions of the energy system, and on the deployment and

operation of the pilot at scale system in meeting these needs. The analyst should avoid undue speculation about future state conditions that are largely speculative.

- For purposes of present value cost and benefit estimation, the time periods utilized for the BCA and performance of the JST should be clearly stated. It is possible that the analyst may select future dates for the incurrence of costs and benefits. The analyst should explore the impact of the choice for the start year for the present value computations on the JST result.

iv. NSPM Template for Reporting BCA Results

Summary - JST BCA Results

Project Name:			**Date:**		
A. Monetized Utility System Impacts	**Benefits**	**Costs**	**(A. cont.)**	**Benefits**	**Costs**
			NPV of Costs (see Step 3 for details)		
			A. Sub-Total Utility System Impacts		
B. Monetized Host/Participant Impacts	**Benefits**	**Costs**	**C. Monetized Societal Impacts**	**Benefits**	**Costs**
B. Sub-Total Host Customer Impacts			***C. Sub-Total Societal Impacts***		
D. Total Monetized Benefits and Costs	**Total Present Value ($)**		**Benefit-Cost Ratio**		
Total Benefits					
Total Costs					
Net Benefits or Costs					
E. Non-Monetized and Qualitative Assessments					
COST-EFFECTIVENESS DETERMINATION:			**Do Benefits Exceed Costs? [Yes/No]**		

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion, to commence a collaborative to consider issues related to new technologies and business models.	))))	Case No. U-20898

PROOF OF SERVICE

CAITLIN D. MYERS states that on February 1, 2023, she served a copy of DTE Electric Company's and Consumers Energy Company's Proposed Requirements and Further Guidance on Benefit-Cost Analyses for Pilot Initiatives in the above referenced matter, via electronic mail, upon the persons listed on the attached service list.

Caitlin D. Myers

Digitally signed by Caitlin D. Myers
Date: 2023.02.01 12:09:31 -05'00'

CAITLIN D. MYERS

MPSC Case No. U-20898
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