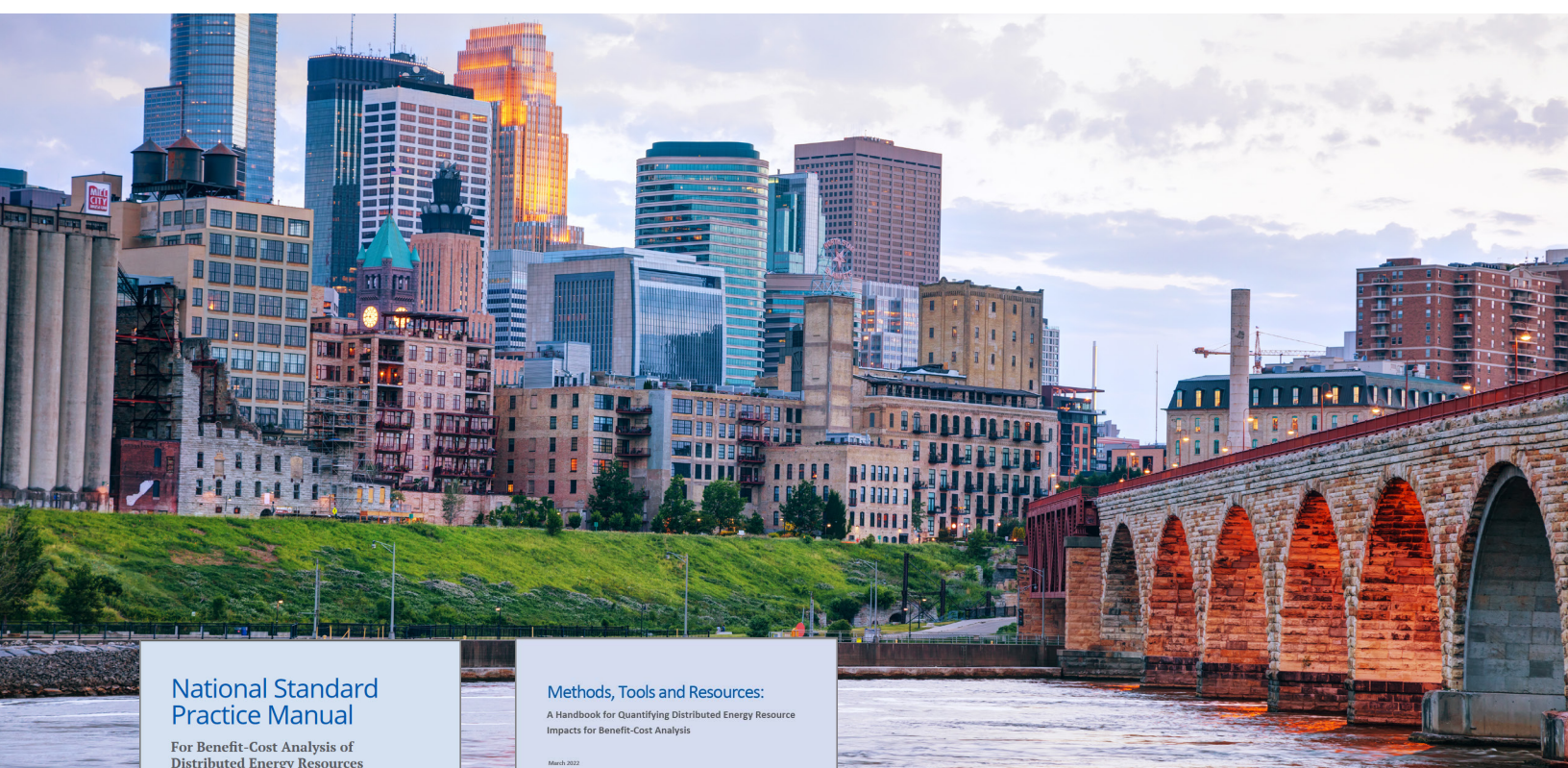


National Standard Practice Manual

CASE STUDY:

Minnesota



National Standard Practice Manual

For Benefit-Cost Analysis of Distributed Energy Resources

AUGUST 2020



Methods, Tools and Resources:

A Handbook for Quantifying Distributed Energy Resource Impacts for Benefit-Cost Analysis

March 2022

Companion Guide to the National Standard Practice Manual



NATIONAL ENERGY SCREENING PROJECT

Minnesota Case Study on Application of the NPSM

June 2023

A. Introduction

The purpose of this case study is to show how Minnesota has undergone a formal process to review its cost-effectiveness practices using the [National Standard Practice Manual](#) (NSPM). Minnesota used the NSPM benefit-cost analysis (BCA) framework to develop a Minnesota Jurisdiction Specific Test (JST), which regulators will use to decide whether to approve Conservation Improvement Program (CIP) plans put forth by electric and gas investor-owned utilities (IOUs) during the 2024-2026 Triennial. Led by the Minnesota Department of Commerce ('DOC' or 'the Department'), and with extensive input from a Cost-effectiveness Advisory Committee (CAC) made up of affected stakeholders, the DOC Commission adopted the DOC staff recommended [Minnesota Cost Test](#), and a set of secondary tests, in April 2023.

The NSPM, a project of the National Energy Screening Project (NESP), uses a 5-step process to develop a (or modify an existing) cost-effectiveness test for distributed energy resources (DERs). This process produces a primary benefit-cost analysis (BCA) test, which regulators use to help answer the question: ***Which resources have benefits that exceed costs and, therefore, merit utility acquisition or support on behalf of their customers?*** Secondary tests can be used to answer other questions such as: How much will utility bills on average be reduced? How much will cost-effectiveness change if an additional policy goal is added or removed from the primary test?

The NSPM is applicable to all types of electric and gas utilities and all jurisdictions where DERs are funded by and implemented on behalf of electric or gas utility customers. The NSPM offers a set of guiding principles for DER BCAs, as provided in Table 1 below. These principles present a foundation for jurisdictions to develop a BCA framework.

Table 1. NSPM BCA Principles

Principle 1	Treat DERs as a Utility System Resource. Recognize that DERs can provide energy/power system needs and should be compared with other energy resources and treated consistently for BCA.
Principle 2	Align with Policy Goals. A jurisdiction's primary cost-effectiveness test should align with applicable policies and goals that serve as basis for investing in or supporting energy resources.
Principle 3	Ensure Symmetry. Benefits and costs should be treated symmetrically for any given type of impact of a resource to avoid bias in investment decisions.
Principle 4	Account for Relevant, Material Impacts. Cost-effectiveness tests should include all relevant (per applicable policy goals), material impacts including those that are difficult to quantify or monetize.
Principle 5	Conduct Forward-Looking, Long-term, Incremental Analyses. BCAs should be forward-looking, long-term, and incremental to scenario without the DER to allow for comparison with alternatives.
Principle 6	Avoid Double-Counting Impacts. BCAs can present a risk of double-counting benefits and/or costs. All impacts should therefore be clearly defined and valued to avoid double-counting.
Principle 7	Ensure Transparency. Transparency helps to ensure engagement and trust in the BCA process and decisions, and thus practices should ensure documentation of assumptions, methods and results.
Principle 8	Conduct BCAs Separately from Rate Impact Analyses. BCA answer fundamentally different questions than rate impact analyses, and therefore these should be conducted separately.

Background and Summary

Historically, Minnesota has used four cost-effectiveness tests:

1. the Societal Cost Test (SCT), as their primary test
2. the Utility Cost Test (UCT), as a secondary test to determine Utility performance incentives
3. the Participant Cost Test (PCT) as a secondary test
4. the Ratepayer Impact Measure Test (RIM) as a secondary test

Minnesota requires IOUs to submit their plans for the next triennial every 3 years to the MN DOC for approval. In preparation for this, in April 2022, the DOC launched a process to develop energy efficiency cost-effectiveness testing practices that utilities must use for their 2024-2026 CIP Triennial Plans. The DOC convened a CAC and established a technical workshop series to apply the NSPM BCA framework, as set forth in a [Department 2/11/2020 Cost-Effectiveness Decision](#).

The CAC included the following stakeholders:

- Minnesota government agencies
- Electric and natural gas utilities
- Consulting groups and non-governmental organizations (NGOs) whose missions involve advocating for the environment, transitioning to a clean energy system, and representing Minnesota ratepayers.

The stakeholder process built on earlier work which Synapse Energy Economics conducted for the DOC in 2018 on [Updating the EE Cost-Effectiveness Framework in Minnesota](#). While a stakeholder process began in 2020, it was paused with the passage of the [Eco Act](#) in 2021, and restarted in spring of 2022.

Table 2 below summarizes the [MN workshop series](#) in which the CAC used the NSPM process to guide the development of a new primary cost-effectiveness test. The DOC staff facilitated the meetings with support from their lead consultant, Mendota Group, and technical assistance from Synapse Energy Economics (Synapse) on the NSPM application. The technical assistance was funded by US DOE via Lawrence Berkeley National Laboratory).

The workshop series began with an [April kick-off meeting](#), where DOC staff reviewed the roles of the DOC and CAC in updating the state's cost-effectiveness test for its efficiency programs, and reviewed historical testing practices. The DOC addressed key provisions of the Eco Act pertaining to efficient fuel-switching and load management and the need for BCA guidance. Technical advisors from Synapse explained the NSPM 5-step process and outlined subsequent meeting topics, broken into two phases, where Phase I informed the development of the proposed primary BCA test for Minnesota, followed by a Phase II series that addressed methodologies for quantifying impacts and other key issues.

Additional details are provided further below on key topics addressed at each meeting, DOC staff's recommendations, and the final commission order.

Table 2. Summary of NSPM Process and Meetings/Workshop Topics

Phase I - NSPM 5-STEP PROCESS	MINNESOTA CAC MEETING TOPICS
<p>STEP 1</p> <p>Articulate Applicable Policy Goals. Articulate the jurisdiction’s applicable policy goals related to DERs.</p>	<p>Meeting #1¹ (4/22/22) – Introduction to process</p> <p>Meeting #2 (5/4/22)</p> <ul style="list-style-type: none"> • Reviewed NSPM principles and steps • Inventory of MN applicable policies and relevant impacts • Homework (HW): what utility system impacts are currently in BCA test? What non-utility impacts align with policies?
<p>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.</p>	<p>Meeting #3 (5/18/22)</p> <ul style="list-style-type: none"> • Review of HW results from utilities on current practice - utility system impacts • Review of working group feedback on non-utility system impacts to include (or not) in a primary Minnesota Jurisdiction Specific Test (MN JST) • Discussion on where feedback varied across stakeholders
<p>STEP 3 Decide Which Non-Utility System Impacts to Include. Determine whether to include host customer, low-income, other fuel, and water, and/or any societal impacts based on alignment with policy goals.</p>	
<p>Straw Proposal developed by Synapse Energy Economics based on Steps 1-3 (circulated to CAC on 6/8)</p>	
<p>STEP 4 Ensure that Impacts are Properly Addressed. Ensure that the impacts identified in Steps 2 and 3 are properly addressed e.g., ensure symmetrical treatment of costs and benefits, relevant impacts are accounted for (even if hard to quantify); and avoid any double counting of impacts.</p>	<p>Meeting #4 (6/15/22)</p> <ul style="list-style-type: none"> • Straw proposal overview and review of CAC member comments • Key issues: whether to include participant impacts (to ensure symmetry) and magnitude of these impacts; confirm inclusion of certain societal impacts (consistent with policy) but not others
<p>Draft Working Group Report developed by Mendota Group (Document Steps 1-4 plus staff recommendations on MCT)</p>	
<p>STEP 5 Establish Comprehensive, Transparent Documentation. Ensure clear and understandable documentation and reporting of test development, input assumptions and BCA results.</p> <p><i>This step is applied throughout NSPM process.</i></p>	<p>Meeting #5 (8/12/22)</p> <ul style="list-style-type: none"> • Review of Draft Working Group Report developed by Mendota, incorporating Synapse straw CE test proposal, stakeholder comments and DOC staff recommendations • Discussion of treatment of certain impacts (utility incentives, low-income programs) • Scope of primary MCT (EE, DR, fuel switching), does not include other DERs (no statute) • Use of primary and secondary tests

¹ Meeting #1 was not a workshop per se but served as an administrative and background meeting. Meeting #2 was also referred to as Workshop #1, Meeting #3 was also referred to as Workshop #2, etc.

Phase II – Determine Methods/Approaches for Quantifying Impacts

Identified priority impacts to quantify, focusing on new utility system impacts (USIs) not previously accounted for but now in proposed primary test. Identified and discussed specific methods to use to quantify the impacts, and ultimately presented DOC recommendations that will be proposed to Commissioners.

Meeting #6 (9/7/22)

- Identify methods to account for environmental compliance, RPS, market price effects (using Methods, Tools & Resources (MTR) Handbook)
- Discuss use of discount rate and discount rate value

Meeting #7 (10/14/22)

- Methodology descriptions for key utility system impacts
- Presented guidelines for efficient fuel switching and load management
- Non-utility system impacts – focused on use of proxies and transferability of values from other jurisdictions

Meeting #8 (11/18/22)

- Utility System Impact Methodologies: reviewed areas of agreement, disagreement, and DOC recommendations
 - Reviewed content and process for developing Efficient Fuel-Switching and Load Management guidance
 - Charted next steps on Avoided Electric Energy/Capacity Costs and Updates to BENCOST values
-

Phase I Meeting Topics – Developing a Primary Cost-Effectiveness Test

The Phase I meetings (#2-#5) focused on applying the NSPM process to develop a primary cost test, the development and review of a [straw proposal](#) by Synapse with a proposed “Minnesota Test (MN Test)”, and the preparation of a [Draft Working Group Report](#) by Mendota Group incorporating the Synapse straw BCA proposal, stakeholder comments, and the DOC staff’s recommendation for a new Minnesota Cost Test (MCT)² and use of secondary tests. The CAC reviewed this report in Meeting #5. The specific topics covered in the meetings are summarized below.

[Meeting #2 \(Workshop #1\) \(May 4\)](#) presented the NSPM core principles, reviewed examples of applicable policy goals, and presented an assignment for stakeholders, where utilities were asked to identify and document what Utility System Impacts (USIs) were currently accounted for in the BCA test were already using, and for stakeholders to indicate which non-utility systems should be included in a MN specific cost-effectiveness test.

[Meeting #3 \(Workshop #2\) \(May 18\)](#) reviewed responses from the utilities and stakeholders from the previous meeting on utility and non-utility system impacts (Non USIs), and reviewed a [Draft Policy Inventory](#) prepared by DOC, which compiled all the relevant policies which could be used to inform the development of a MN specific test. The CAC discussed the mapping of the DER impacts to policies.

² The Minnesota Cost Test (MCT) is used to refer to the final version of Minnesota’s primary test adopted by the DOC. In the straw proposal prepared by Synapse, Synapse proposed a “MN Test”, which was not the version that was approved as it evolved after further CAC input.

Utility System Impacts: Synapse provided a list of Electric Utility System Impact Categories to be included in the Primary Cost Test, consistent with the NSPM, as shown in Table 3 below.

Table 3. Electric Utility System Impact Categories

Category	Impact	Description
Generation	Energy Generation	The production or procurement of energy (kWh) from generation resources on behalf of customers
	Capacity	The generation capacity (kW) required to meet forecasted system peak load.
	Environmental Compliance	Actions to comply with environmental regulations. This can include compliance with federal regulations like the Clean Air Act or state or local greenhouse gas emissions mandates.
	Renewable Portfolio Standard Compliance	Actions to comply with renewable portfolio standards or clean energy standards.
	Market Price Effects	The decrease (or increase) in wholesale market prices as a result of reduced (or increased) customer consumption.
	Ancillary Services	Services required to maintain electric grid stability and power quality (i.e., frequency regulation, voltage regulation, spinning reserves, and operating reserves).
Transmission	Transmission Capacity	Maintaining the availability of the transmission system to transport electricity safely and reliably.
	Transmission System Losses	Electricity lost through the transmission system.
Distribution	Distribution Costs	Maintaining the availability of the distribution system to transport electricity safely and reliably; includes capacity, O&M, voltage.
	Distribution System Losses	Electricity lost through the distribution system.
General	Program Incentives	Utility financial support to participants or other market actors; typically includes rebates, upstream payments, interest rate buy-down.
	Program Administration Costs	Utility outreach to trade allies, technical training, marketing, payments to third-party consultants, and administration and management of energy efficiency programs.
	Utility Performance Incentives	Incentives offered to utilities to encourage successful, effective implementation of energy efficiency programs.
	Credit and Collection Costs	Utility costs associated with arrearages, disconnections, and reconnections.
	Risk	Uncertainty including operational, technology, cybersecurity, financial, legal, reputational, and regulatory risks.
	Reliability	Maintaining generation, transmission, and distribution system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components.
	Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

Synapse also provided a similar list of Gas USIs.

Homework: Meeting #3 also reviewed Meeting #2’s homework assignment, which was for CAC members to fill out a table indicating which non-utility system and societal impacts should be included in the MN JST. The results are shown below. However, as the CAC members were just beginning to learn about the NSPM process, these results were considered preliminary.

Table 4. Synapse Straw Proposal

	Category	Impact	Straw Proposal	Map to Policy	Homework Assignment			
					Yes	Maybe	No	
Utility System	Electric Utility System	All	✓	N/A				
	Gas Utility System	All	✓	N/A				
Non-Utility System	Other Fuels	Other Fuels	✓	✓	9	3	0	
	Water	Water	-		7	2	3	
	Participant	Participant Costs	✓	✓	7	4	1	
		Participant Benefits	✓	✓	5	6	1	
	Low-Income	Low-Income	✓	✓	7	3	1	
Societal	Societal Impacts	GHG Emissions	✓	✓	12	0	0	
		Criteria Air Emissions	✓	✓	6	5	0	
		Solid Waste	Include in Other Environmental		✓	1	6	5
		Water Impacts	Include in Other Environmental			4	5	3
		Land Impacts	Include in Other Environmental			1	6	5
		Other Environmental	✓	✓	1	8	3	
		Public Health	-			3	7	2
		Economic and Jobs	✓	✓	1	7	3	
		Energy Security	✓	✓	6	3	3	
		Energy Equity	✓	✓	5	6	1	
		Resilience	-	✓	4	6	1	

Other feedback provided by stakeholders in this meeting included:

- Which environmental impacts would be included in a MN JST, including Solid Waste, Water Impacts and Land Impacts under this category.
- Whether to include Participant Impacts (also referred to as ‘host’ customer impacts) in the test.

- Recommendation to include energy security as its own category to account for volatility from the prices of oil changing.
- Clarification on how resilience is accounted for (where utilities indicated the resilience is embedded in other avoided costs).
- A recommendation that energy equity be addressed in the straw proposal.

The discussions and materials from this meeting were used by Synapse to develop an initial straw proposal, as described below.

Meeting #4 (Workshop #3) (June 15) focused on the [Straw Proposal](#), which proposed a MN Test. The meeting discussed general feedback on the proposed USIs, the implications of including participant impacts (or not) in a primary test and order of magnitude of different non-energy impacts, and various societal impacts.

Utility System Impacts (USIs): There was a general consensus in support of some items in the Synapse Straw Proposal, mainly related to USIs. There was some concern that energy security would be double counted with risk and reliability, but no disagreement on whether it should be included. Most participants supported the Straw Proposal approach to including all USIs. The utilities initially raised concerns with including utility performance incentives in the category of USIs due to the creation of a circular reference error when calculating cost-effectiveness. This was due to the incentive amount being depending on the result of the cost-effectiveness analysis. Additionally, some of the utilities contended that impacts such as Risk, Reliability, and Resilience are already embedded within other avoided costs. It was also questioned whether Credit and Risk should be included because it was not clear that energy efficiency has a large impact on credit and collections.

Participant Impacts: Much of the discussion during Meeting #4 centered around whether to include Participant Impacts. The Straw Proposal suggested including both Participation Costs and Participation Benefits in the MN Test, as only including Participation Costs would violate the third BCA NSPM principle of ensuring symmetry, and Synapse suggested a set of Participant Non-Energy Impacts (NEIs) Minnesota could include in its test. Synapse observed that NEIs typically have the largest impact on residential and low-income programs due to the types of measures commonly included such as weatherization and heating systems that have relatively large NEI values related to health, comfort, and safety compared to measures found in commercial programs, as demonstrated in Table 6.

Table 6 – Example Magnitude of Non-Energy Impacts on Sectoral Programs

Sector	Program	NEIs as % of Total Benefits
Residential	New Construction	2%
	HVAC	3%
	Single-Family Retrofit	8%
	Multi-Family Retrofit	31%
	Behavioral	0%
	Products	0%
Low-Income	Single-Family Retrofit	44%
	Multi-Family Retrofit	47%
Commercial & Industrial	New Construction	5%
	Retrofit	14%
	Small Business	15%

Participant Impacts continued to be a cause of debate. Some CAC members argued that because of the complexities of quantifying NEIs the MN Test should exclude both Participants Costs and Participant Benefits. One major utility, however, argued that both participant costs and benefits should be included so that the company can demonstrate that they are providing substantial benefits to their customers. The utility explained that excluding participant costs would be problematic as it would lead to large amounts of free riders which can lead to high costs being passed on to customers.

Synapse pointed out that, even if Participant Costs and Benefits are removed from the Primary Test, Participant Impacts can be incorporated by using the PCT as a Secondary Test. While under current Minnesota CIP BCA practice, secondary tests have no practical role, the DOC would need to clarify how the PCT would be incorporated.

Other Non-USIs: The CAC also discussed the Non-USIs of Water and Other Fuels. The CAC members agreed that there is a clear policy mandate for the inclusion of Other Fuels within the MN Test. Water was ultimately excluded as it was more appropriate as a participant benefit from the installation of energy efficiency measures that also produce water savings.

Societal Impacts: The CAC also discussed whether the list of Societal Impacts was sufficiently complete, with some arguing that Public Health should also be included. Some also questioned whether other impacts Synapse excluded from the Straw Proposal, namely Water (Non-Utility System Impact) and Resilience (Societal Impact), should be included. Participants provided written feedback specifically regarding areas of agreement and disagreement. See Appendix H of the [MN DOC Proposed Decision](#).

Overall, CAC members supported the Straw Proposal's approach, with the largest areas of disagreement around treatment of Participant Impacts, whether Low-Income-specific elements should be included, and whether to include utility performance incentives and Risk, Reliability, and Resilience in USIs.

The Mendota Group used the CAC comments on the Straw Proposal to develop their Draft Working Group Report. Note that the Synapse proposed MN Test discussed above, along with the CAC input, was used to inform the final proposed MN JST, as described below.

[Meeting #5 \(Workshop #4\) \(August 12\)](#) reviewed the [Draft Working Group Report](#). The report summarized the work the CAC had done up to this point, recommended changes to the Straw Proposal, and proposed a revised Minnesota Cost Test (MCT)³. The key modifications to the Synapse straw proposal were as follows:

1. The report recommended that, to preserve symmetry, neither Participant Benefits nor Participant Costs should be included in the primary MCT. Instead, there would be a secondary test used to account for Participant Impacts (the Participant Cost Test or PCT).
2. The report also recommended that the MCT not include impacts on low-income customers, public health impacts, water impacts, or resilience impacts. Historically, the DOC has not measured low-income impacts as part of the Societal Cost Test (SCT), but instead does not require low-income programs to be cost-effective. The Mendota Group Staff recommended Minnesota keep that approach, which is why low-income impacts were not included.
3. The Mendota report also recommended excluding Public Health Impacts and Water impacts because Minnesota's policy goals do not address them.

³ The MN Test refers to the test that Synapse developed in the straw proposal. The Draft Working Group Report started referring to the primary test as the Minnesota Cost Test, or MCT, which is the final version/name of the test.

4. With regard to resilience, the report indicated that these impacts are embedded in other impacts measured by the utilities. The utilities indicated that risk, reliability, and resilience were inherently part of utility planning. For example, integrated resource plans (IRP) are built to make the utility resilient and there was an indication that resilience may be included in avoided T&D values. It was therefore recommended that utilities should document in which system impacts resilience impacts are included. Further, if risk, reliability, and resilience are not adequately covered in existing USIs, a separate impact category should be created.
5. The report included energy equity as a societal impact and recommended that the DOC establish a definition of Energy Equity.
6. In addition to using PCT, the secondary tests should be a Utility Cost Test (UCT), Societal Cost Test (SCT), and Ratepayer Impact Measure (RIM) Test.

Tables 7, 8, 9 and 10 show the impacts that were ultimately included in the MCT.

Table 7 - Electric USIs included in the MCT

Category	Impact	Description
Generation	Energy Generation	The production or procurement of energy (kWh) from generation resources on behalf of customers
	Capacity	The generation capacity (kW) required to meet forecasted system peak load.
	Environmental Compliance	Actions to comply with environmental regulations. This can include compliance with federal regulations like the Clean Air Act or state or local greenhouse gas emissions mandates.
	Renewable Portfolio Standard Compliance	Actions to comply with renewable portfolio standards or clean energy standards.
	Market Price Effects	The decrease (or increase) in wholesale market prices as a result of reduced (or increased) customer consumption.
	Ancillary Services	Services required to maintain electric grid stability and power quality (i.e., frequency regulation, voltage regulation, spinning reserves, and operating reserves).
Transmission	Transmission Capacity	Maintaining the availability of the transmission system to transport electricity safely and reliably.
	Transmission System Losses	Electricity lost through the transmission system.
Distribution	Distribution Costs	Maintaining the availability of the distribution system to transport electricity safely and reliably; includes capacity, O&M, voltage.
	Distribution System Losses	Electricity lost through the distribution system.
General	Program Incentives	Utility financial support to participants or other market actors; typically includes rebates, upstream payments, interest rate buy-down.
	Program Administration Costs	Utility outreach to trade allies, technical training, marketing, payments to third-party consultants, and administration and management of energy efficiency programs.
	Utility Performance Incentives	Incentives offered to utilities to encourage successful, effective implementation of energy efficiency programs.
	Credit and Collection Costs	Utility costs associated with arrearages, disconnections, and reconnections.
	Risk	Uncertainty including operational, technology, cybersecurity, financial, legal, reputational, and regulatory risks.

	Reliability	Maintaining generation, transmission, and distribution system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components.
	Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

Table 8 - Gas USIs included in the MCT

Category	Impact	Description
Commodity/ Supply	Fuel	Purchasing gas at specific locations on the gas system and the variable cost of getting the gas where, and when, it will be used.
	Capacity & Storage	The gas and storage capacity required to meet forecasted peak load.
	Environmental Compliance	Actions to comply with environmental regulations.
	Market Price Effects	The decrease (or increase) in wholesale prices as a result of reduced (or increased) customer consumption.
Transportation	Transportation	The transport of gas from delivery points located on interstate and intrastate pipelines to distribution utility city gate.
Delivery	Delivery	Delivery of gas from the city gate to retail customers.
General	General	Same as Electric Utility System Impacts

Table 9 – Non USIs included in the MCT

Type	Impact	Description
Other Fuels	Other Fuels	The impact of other fuels captures the impacts on fuels that are not provided by the relevant utility, for example, electricity (for a gas utility), gas (for an electric utility), oil, propane, gasoline, and wood.

Table 10 - Societal Impacts included in the MCT

Category	Impact	Description
Societal Impacts	GHG Emissions	Non-embedded GHG emissions. Should be incremental to values included in Utility System impacts.
	Criteria Air Emissions	Emissions of criteria pollutants such as carbon monoxide, lead, nitrogen oxides, ground-level ozone, particulate matter, and sulfur oxides.
	Other Environmental	Catch-all for all other environmental impacts to include other air emissions, solid waste, land, water, and other environmental impacts.
	Economic and Jobs (Macroeconomic)	Incremental economic development and job impacts.
	Energy Security	Reduction in imports of various forms of energy to help inform the goals of energy independence and security.
	Energy Equity	Energy equity requires intentionally designing systems, technology, procedures, and policies that lead to the fair and just distribution of benefits in the energy system.

After the Working Group Report was finalized, the next steps were to prepare for Phase II by assigning homework to the CAC. Stakeholders were asked to look over the MTR handbook and give feedback on what USIs and Non USIs they might have problems quantifying and what discount rate they should use, among other things. The CAC discussed these issues further in the Phase II meetings.

Phase II Meeting Topics – Determining Methods for Developing Tests

With the draft MCT proposed and reviewed by stakeholders, the CAC moved to the next phase of the NSPM process, to **identify methodologies to quantify impacts** for use in cost effectiveness, as well as to determine **an appropriate discount rate** to use for the primary MCT.

As presented by Synapse in Meeting #6, this effort referred to using NESP's [MTR Handbook](#) (a companion resource to the NSPM) to guide selection of appropriate methodologies for quantifying various impacts. Identifying methods to account for relevant impacts in this phase were informed by utility practices and stakeholder input. Phase II focused on accomplishing the following 5 tasks:

- Task 1: Develop Utility System Impacts
 - Develop documentation on how these factors are calculated and guidance regarding sources that utilities can use to develop estimates and incorporate into their cost-effectiveness modeling.
 - Review utility-proposed 2024-2026 electric avoided costs.
 - Review and update 2024-2026 gas BENCOST inputs.
- Task 2: Develop Non-Utility System Impacts
 - Similar to USIs, this task involved developing documentation regarding how the Non-Utility System impacts are calculated and guidance regarding the sources that utilities use to develop estimates and incorporate into their cost-effectiveness modeling.
- Task 3: Develop Efficient Fuel-Switching and Load Management Cost-Effectiveness Guidance
 - This applies the approach adopted for the Primary Test to evaluation of Efficient Fuel-Switching and Load Management CIP programs. The Guidance also sought to address EFS/LM-related questions raised by CAC members.
- Task 4: Determining Discount Rates to Use in Cost-Effectiveness Analyses
 - Document and estimate the discount rates utilities will use in their cost-effectiveness analyses.
- Task 5: Secondary Cost-Effectiveness Tests and Program Design
 - How the secondary tests apply to cost-effectiveness screening and to inform program design decisions.

A summary of the Phase II meetings, and key issues raised in addressing the tasks above, is provided below. Details on the topics, including stakeholder comments and feedback on DOC inquiries, and the specific methods prescribed by the Commission, are documented in the [MN DOC Proposed Decision](#) (Appendices G and K).

[Meeting #6 \(Workshop #5\)](#) (September 7) reviewed the homework that the CAC had been assigned by the DOC requesting feedback on USIs, and whether CAC members anticipated areas of concern around quantifying them. CAC members also provided feedback on methods for quantifying non-USIs, especially impacts that Minnesota had not quantified in their previous tests. The discussion focused on which MTR methods would be best for quantifying the impacts, which ones would be problematic, and which

impacts should be prioritized. The meeting also addressed the topic of discount rates, and appropriate discount rates for use in the primary and secondary tests.

Prioritized USI Inputs. Table 11 gives a list of the new USIs in the MCT (underlined), with the priority USIs to be quantified discussed below.

Table 11. List of Utility System Impacts (USIs)

Electric Utility System Impact	Gas Utility System Impact
Energy*	Fuel*
Capacity*	Capacity & Storage*
<u>Environmental Compliance</u>	<u>Environmental Compliance</u>
<u>Renewable Portfolio Standard Compliance</u>	<u>Market Price Effects</u>
<u>Market Price Effects</u>	Transportation*
<u>Ancillary Services</u>	Delivery*
<u>Utility Performance Incentives</u>	Program Incentives *
Transmission Capacity*	Program Administration Costs*
Transmission System Losses*	<u>Utility Performance Incentives</u>
Distribution Costs*	<u>Credit and Collection Costs</u>
Distribution System Losses*	<u>Risk</u>
Program Incentives*	<u>Reliability</u>
Program Administration Costs*	<u>Resilience</u>
<u>Credit and Collection Costs</u>	
<u>Risk</u>	
<u>Reliability</u>	
<u>Resilience</u>	

* Are part of current CIP cost effectiveness analyses. Underlined are new impacts to include in the MCT.

Synapse gave a presentation based on the [MTR Handbook](#), a companion to the NSPM which is a technical document with guidance on how to quantify the full range of utility and non-utility system impacts. Synapse discussed how to measure environmental impacts, market price effects, utility services, and ancillary services.

There was general CAC support for quantifying the priority USI inputs—given the allotted time available to develop estimates—using reasonable proxy values. Although the CAC recognized that this more simplified method can be less accurate, the approach was generally agreed upon given this would be the first time the Minnesota utilities would include these values in their CIP cost-effectiveness analyses. There was general consensus that such proxies serve as starting point values, with an understanding that future triennials can incorporate different methods for developing criteria estimates. The specific proxies for the priority USIs were proposed by the Mendota Group during Meeting #7 (see below).

Avoided Electric Marginal Energy and Capacity Costs. With regard to USIs, the DOC collected feedback from the CAC on issues related to utilities’ avoided cost methodologies. There were differing views on standardizing electric avoided cost methodologies and proprietary data issues regarding marginal energy and capacity costs. The DOC inquired whether, in order to improve the transparency of the utility avoided

electric marginal energy and capacity costs, these values could be based on those found in the IOUs' integrated resource plans (IRPs), and what level of detail (hourly, daily, monthly, annually) would be acceptable to not treat the data as confidential? They further inquired whether, if a stakeholder requested more detailed avoided marginal or capacity costs that the utility considers confidential, would the electric IOUs be willing to sign an NDA with that stakeholder and then share the data with the requesting stakeholder. The Utilities suggested alternative ways to estimate the numbers, and considered allowing the information to be shared with those stakeholders who signed an NDA.

Benefit Cost Inputs: A review of the BENCOST model indicated certain inputs should be updated to current values. Some NGOs were interested in revising the input values to reflect price volatility and higher commodity price forecasts. For more information on the BENCOST model, see

Discount rates: The group agreed the MCT should use the societal discount rate but disagreed on the specific number. Historically, it has been based on the United States Department of the Treasury's (Treasury) 20-year Constant Maturity (CMT) Rate, which was 3.30% in 2022. However, two of the NGOs and one of the clean energy consulting groups proposed a discount rate of 2.5%. Those same groups also wanted to use the societal discount rate in the secondary tests, however, some of the utilities argued that the UCT, PCT for non-residential customers, and/or RIM should use the Weighted Average Cost of Capital (WACC), which is generally higher than the societal discount rate.

Meeting #7 (Workshop #6) (October 14) focused on methodologies for quantifying utility system impacts. The Mendota Group presented estimates for potential proxy values to measure each of the USIs, and explained the background and underlying methodology for each proposed proxy value or proposed approach:

- **Utility Performance Incentives** should be treated as a utility systems cost
- **Market effects (electric)** should use a proxy method, using 10% adder
- **Market effects (gas)** should also use a proxy method and 10% adder
- **Environmental compliance** should not include utility system costs associated with GHGs, but should include costs for equipment, fees, permits and future requirements
- **Ancillary services (electric)** should use the historic primary data method with a 1% adder
- **Renewable portfolio standards (electric)** should have a value of zero during the 2022-2024 Triennial, as all 3 electric utilities already exceed renewable portfolio standards. The MN DOC should revisit this as electric use increases.
- **Marginal energy (electric)** impacts should be based on publicly available information. Mendota reviewed several types of approaches, including Proxy Unit method, Power System modeling, Market Data method, and use of Public Forecast data.
- **Generating capacity (electric)** impacts should be based on publicly available information. Mendota reviewed several types of methods, including the Proxy Unit method, the Peaker Unit Method, the Market Data Method, Power Sector Modeling and Public Forecast Data.

For both marginal energy and generating capacity impact methods, Mendota recommended that the utilities propose a methodology that is transparent using publicly available data, and to indicate any downsides to the method vis a vis the utilities' current non-transparent/confidential method.

Meeting #8 (Workshop #7) (November 18) began with a review of the CAC comments on the proposed proxy values for each category of USIs. One area of disagreement was around market price effects: 10% was suggested, but some thought it should be 5%, 1%, or 0%. If the adder was 0%, the understanding would be that the positive and negative market forces balanced each other out, not that they had no impact at all. The circularity of utility incentives was also raised, where the utility incentives

need to be part of a different test so that regulators aren't using utility incentives to determine the utility incentives.

The CAC was also asked questions and concerns around Efficient Fuel Switching (EFS) and Load Management (LM). Under the ECO act, utilities must qualify the changes they make to EFS on a more granular level. One issue that was discussed was that only gas utilities are eligible for incentives for EFS, because only gas utilities can claim incentives for it. Synapse recommended that fuel switching be treated consistently across sectors, for example, heat pumps and EVs that use fuel switching should be treated the same way. There was less discussion around LM, however the Mendota Group also gave guidance around this topic.

Societal Impacts. Priority impacts to quantify values for included GHG emissions and Criteria Air Pollutant impacts.

- **GHG Emissions:** The value for GHG emissions is derived from the MN PUC's January 3, 2018 Order in docket number CI-14-643. In this order, environmental externalities are calculated using the "*damage-cost* method, which attempts to place an economic value on the net damage to the environment caused by power-plant emissions."⁴ Specifically, the MN Test will use the "high" externality values from this order, which range from \$55.07 per net short ton in 2017 to \$69.48 per net short ton in 2033.⁵
- **Criteria Air Pollutants:** Similar to GHG emissions, the value for criteria air emissions comes from the MN PUC's January 3, 2018 Order in docket number CI-14-643. The utilities are directed to use the high-end values from this order, which includes environmental cost associated with NO_x, SO₂, and PM_{2.5}.⁶

MCT Impacts – Quantification Deferred

As part of the CAC update process, there was insufficient time to quantify all of the impacts that were identified for inclusion in the MCT. The DOC Staff recommended that these impacts be assigned a value equal to zero (\$0) for the IOUs' 2024-2026 CIP cost-effectiveness analyses using the MCT, and be deferred for future consideration. Importantly, the DOC Staff noted that the MCT will be refined and built upon going forward.

The impacts that are deferred (either not currently quantified as part of the MCT and/or do not have an approved estimation methodology) are as follows:

Electric Utility System Impacts: Credit & Collection Costs; Risk; Reliability; and Resilience.

Gas Utility System Impacts: Market Price Effects (there was considerable uncertainty about whether Gas Market Price Effects exist in Minnesota that led to the recommendation to include a zero value for the variable for the upcoming Triennial); Risk; Reliability; and Resilience.

Societal Impacts: Other Environmental; Economic & Jobs; Energy Security; and Energy Equity.

A note on Accounting for Energy Equity in BCA: While addressing energy equity is a clear policy goal for Minnesota, and is included as a line item in the MCT, there was some discussion and recognition that

⁴ Order Updating Environmental Cost Values, "In the Matter of the Further Investigation into Environmental and Socioeconomic Costs Under Minnesota Statutes Section 216B.2422, Subdivision 3", Docket No. E-999/CI-14-643, January 3, 2018, p. 6.

⁵ Proposed Decision of the Staff of the Minnesota Department of Commerce, Division of Energy Resources (Staff) in the 2024-2026 CIP Cost-Effectiveness Methodologies for Electric and Gas Investor-Owned Utilities. Pg. 52.

⁶ *Id.*, pg. 53.

addressing distributional equity involves *a separate* analysis from BCA. Consistent with the [NESP's Methods, Tools & Resources Handbook for Quantifying DER Impacts](#) (MTR Handbook, Chapter 9), BCAs do not address distributional equity, rather, they answer questions regarding *What are the costs and benefits of a DER program across all customers on average?* A separate distributional equity analysis (DEA) is needed to answer questions related to *How will DER impacts accrue to priority populations compared to other customers?* These two analyses – BCA and DEA – are complementary and ideally can be used in parallel to provide a broader decision-making framework for regulators to understand the net benefits (or costs) of a DER pilot/program, alongside the distributional equity implications of the investments on priority populations.

The National Energy Screening Project and Lawrence Berkeley National Laboratory are working to develop guidance on conducting DEA, with publication forthcoming in Fall 2023. For more information see [LBNL DEA Guide project website](#).

Conclusion

The Minnesota CAC process and NSPM workshop series concluded in January 2023. With the information and extensive discussion with CAC provided in the eight meetings, the Department staff then developed a [Proposed Decision](#) on February 16, 2023 recommending to the Commission specific cost-effectiveness methodology updates for the 2024-26 CIP Triennial Plan period. The Staff's proposed decision included documentation of the CAC's extensive input and comments.

The issuance of Staff's Proposed Decision—which included adopting a **Minnesota Cost Test (MCT)**—marked the beginning of a formal regulatory process (Docket 23-46), with a public comment period to March 6, 2023. CAC members submitted comments on the proposed decision largely supporting the Staff's proposal, and the DOC Deputy Commissioner ultimately [issued a decision](#) on March 31, 2023, adopting the staff's proposal.

To learn more about Minnesota's experience applying the NSPM BCA framework, see [MN NSPM workshop materials](#).