MN CIP Cost-Effectiveness Advisory Committee (CAC) Meeting 3

Applying the NSPM to Minnesota CIPs Workshop #2

May 18, 2022
10:00 a.m. – 12:30 p.m.

Type of Meeting: Microsoft Teams Meeting

Attendees: 44

Name	Organization	Name	Organization	Name	Organization
Adam Zoet	MN Dept. of Commerce	Grey Staples	The Mendota Group	Lisa Beckner	Minnesota Power
Adway De	MN Dept. of Commerce	Jamie Stallman	Great River Energy	Lloyd Kass	Franklin Energy Group
Amalia Hicks	Cadmus	Jason Grenier	Otter Tail Power	Maddie Koolbeck	Slipstream
Andy Bahn	Minnesota Public Utilities Commission	Jeremy Peterson	Jeremy Petersen	Martin X. Kapsch	CenterPoint Energy
Anna Roberts	Otter Tail Power	Joseph Dammel	Fresh Energy	Martin Kushler	American Council for an Energy-Efficient Economy
Anthony Fryer	MN Dept. of Commerce	Joseph Reilly	Minnesota Energy Resources Corp	Matt Wisnefske	Cadmus
Audrey Partridge	Center for Energy and Environment	Josh Mason	Rochester Public Utilities	Michael Hinde	Minnesota Valley Electric Cooperative
Becky Billings	Xcel Energy	Julie Michals	E4TheFuture	Natalie Fortman	E4TheFuture
Brian Edstrom	Citizens Utility Board of Minnesota	Kathy Baerlocher	Great Plains Natural Gas	Peter Scholtz	Office of Minnesota Attorney General
Chris Baker	Willdan	Katie O'Rourke	Minnesota Energy Resources Corporation	Rachel Sours-Page	The Mendota Group
Christopher Davis	MN Dept. of Commerce	Kevin Lawless	The Forward Curve	Russ Landry	Center for Energy and Environment
Cory Hetchler	Connexus Energy	Kristin Berkland	Office of Minnesota Attorney General	Tim Woolf	Synapse Energy Economics
Courtney Lane	Synapse Energy Economics	Kristine Anderson	Greater Minnesota Gas	Tom Sagstetter	Elk River Municipal Utilities
Ethan Warner	CenterPoint Energy	Kurt Hauser	Missouri River Energy Services		
Gregory Ehrendreich	Midwest Energy Efficiency Alliance	Laura Silver	MN Dept. of Commerce		

AGENDA

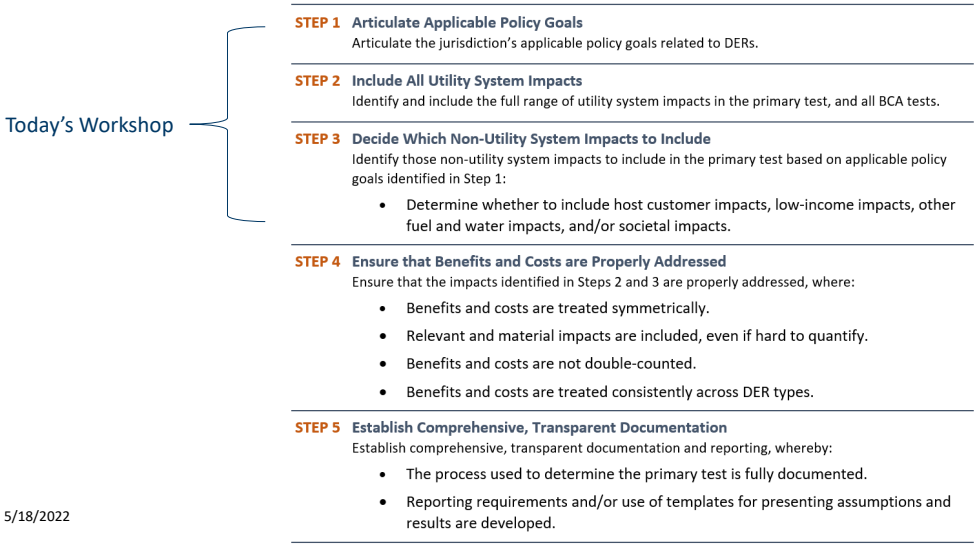
- Introduction
- Identify Utility System Impacts
    - Review current utility practice
- Non-Utility System Impacts
    - Review of Policy Goals
    - Summary of homework results
    - Discussion of which non-utility system impacts to include
- Next steps
    - Straw proposal
    - Next workshop

NOTES

Meeting Began: 10:03 a.m.

- **Grey** begins meeting, then turns it over to **Courtney**.

Slide 5



- Refresh 5-step process.

Slide 6

- Utility system impacts are foundational to cost-effectiveness
  - Indicates to what extent total utility system costs are reduced or increased by a DER
- DERs should be treated as a utility system resource and account for all relevant, material impacts
  - Important to distinguish between two questions:
    - whether an impact should be included in the test
    - the value of the impact
- In some cases, we will need to determine whether certain costs are utility system, participant, or societal impacts

- Separate whether should include the item vs. trying to do the calculations at this point.
- Whether to include as utility system impact, participants, or societal (resilience, reliability, some of the environmental impacts – what's embedded in utility system impact vs. not).

Slide 7

Current Status: Electric Utility Impacts

Type	Impact	Minnesota Power	Otter Tail	Xcel
Generation	Energy	Yes	Yes	Marginal Energy
	Capacity	Yes	Yes	Peak Load Capacity
	Environmental Compliance		Yes, through IRP approval	Embedded in Energy and Capacity
	RPS Compliance		Yes, through IRP approval	Embedded in Energy and Capacity
	Market Price Effects		Yes	No, but could be included if marginal energy cost measured @ load w/o EE
	Ancillary Services		Yes	Yes, in Capacity
Transmission	Capacity	Yes	Yes	Yes
	Losses	Yes	Yes	Yes
Distribution	Capacity	Yes	Yes	Yes
	Losses	Yes	Yes	Yes
General	Financial Incentives	Yes	If customer rebates, then yes	Yes
	Program Administration	Yes	Yes	Yes
	Utility Performance Incentives		Yes	No – can be quantified in incentive mechanism
	Credit and Collections		No	No
	Risk		No	No
	Reliability		Part of IRP/IDP	No
	Resilience		Part of IRP/IDP	No

- Highlight those that are blanks. Clarifying questions to MP.
  - **Lisa (MP)**: She'll follow up with Resource Planning folks.
  - **Lisa**: wondered what environmental compliance, RPS compliance. Adds costs that get passed on to their customers – intended to reflect?
    - **Courtney**: Yes. That's it. Already embedded in your prices.
    - **Audrey** comments at the last meeting. Regulatory cost of carbon. **Audrey** clarifies: Wouldn't be the same thing that we're talking about here.
- **Courtney**: Good time to discuss what's included in environmental compliance. Could be what's specifically included in cost. Mandate, etc.
  - **Audrey**: Don't include these … Xcel?
  - **Tim**: Some environmental compliance costs that are very straightforward. Power plants and controls that need to be included. If not, should be. Some not so obvious. GHG mandates is one. Requirement to achieving emissions reductions of x by y date.

Paid for by ratepayers. Utility system impact that should be included in compliance. Particulates. Some particulates that get produced even after requirement is met. First is utility impacts. Non-monetized become societal impacts.

- **Jeremy**: Response is in line with IRP. Gets factored into their estimates.
- **Audrey**: Include regulatory cost of carbon.
- **Jeremy**: Only use in societal.
- **Tim**: Include environmental costs in utility test. Ask about regulatory cost of carbon.
- **Audrey**: Approved by the PUC. Externality values for GHGs and criteria pollutants and regulatory cost of carbon.
- **Tim**: Should include those. If include regulatory impacts in utility cost test.
- **Adway**: PUC has two costs. Regulatory costs and externality costs. In IRP, after 2025, need to consider internal costs. Affects dispatch. Carbon tax comes in at that year and continues after that. Externality cost doesn't impact dispatch. Just to select the preferred scenario. Don't go together at the same time.
- **Tim**: Can't get caught up in how they are modeled in the IRP. Hearing that have a value for regulatory cost of carbon. Should be included in utility system impacts.
- **Jeremy**: Is it not enough to embed them within energy and capacity costs?
- **Tim**: It's fine to have them embedded within energy and capacity costs. Don't want to count twice. Reasons for separate row is to make sure doesn't fall through the cracks.
- **Marty**: Should be distinction between current enviro costs and potential future costs over life of measures. Sounds like regulatory cost of compliance might do that … getting into how you come up with the numbers. **Tim**: Wholeheartedly agrees. Regulatory cost of compliance might do that … but getting into how you come up with the numbers.
- **Audrey**: How would this work with two separate tests?
- **Tim**: Utility cost test should include regulatory cost of carbon. Societal should include both the regulatory cost of carbon plus the incremental amount above that included in social cost of carbon.
- ***Audrey in chat:*** *Currently, we already include the SCC in the SCT. For the UCT, it is my understanding we don't include the regulatory cost of GHGs, which is included in IRPs and values are approved by the MPUC.*
- ***Lisa B. in chat****: Is the regulatory cost of carbon the same as the environmental damage factor?*
- ***Audrey in chat****: Lisa, to your question, the Env Damage Factor is based on the externality values only.*
- **Tim**: Also move into discussing IRP. If utility needs to include impact in IRP. Should include the same in their BCA in CIP. To OTP – are you also including in your CIP cost-effectiveness?
  - **Jason**: Yes. They get included in energy and capacity use for CIP BCA. Similar to Xcel, whatever is approved in IRP process, are embedded in energy and capacity for BCA modeling in CIP.
  - **Courtney** to **Jason**: Do you have values for reliability and resilience, etc. that can include in CIP?
  - **Jason**: Resources approved in IRP and Integrated Distribution Plan (IDP). Those costs will get embedded in energy, capacity and T&D when do modeling for CIP BCAs.
  - **Courtney**: Any way to separate out those values or is that not possible? Or, we would say these are inherently incorporated?

- **Jason**: Yes, way he would look at it. When think about resilience or reliability – on T&D. Try to model those for avoided T&D. Thinks those get picked up, long term.
- **Grey**: Make sure they accounted for in one place. Don't want to explicitly call it out unless it's different. No double count.

- **Jeremy** points that their response to Market Effects (says "no" in table) would be same as OTP ("yes").

Slide 8

Current Status: Gas Utility Impacts

Type	Impact	CenterPoint	MERC	Xcel
ommodity / upply	Fuel	Yes	Yes	Yes
	Capacity & Storage	Unsure, probably partially captured in commodity costs	Yes, insofar as this is captured in the PGA for the demand cost (input 4)	Yes
	Environmental Compliance	Unsure, probably partially captured in commodity costs	No. Env. damage factor represents the social cost of carbon.	Yes
	Market Price Effects	Unsure of definition		Maybe
ransportation	Transportation	If this is O&M then yes	No	No
elivery	Delivery	If this is O&M then yes	No	No
eneral	Financial Incentives	Yes	No	Yes
	Program Administration	Yes	Yes	Yes
	Utility Performance Incentives	Shown in net benefits in status reports. Not used in BENCOST	Yes	No
	Credit and Collections	No	No	No
	Risk	No	No	No
	Reliability	No	No	No
	Resilience	No	No	No
ther (Specify)	Non-energy benefits adder		Yes	
	Variable O&M		Yes	
	Bill/Revenue impacts		Yes	
	Incremental measure costs		Yes	

- **Courtney**: May be some questions … about whether to include. Asks the group.
  - **Jeremy**: Dept. develops the BENCOST model. What is their feeling on each of these.
  - **Tim**: Good to see what currently doing. Move to what should be doing. As consultant to Department. All utility system impacts should be included … if relevant/material. If something here doesn't make sense, please ask and clarify.
  - **Tim**: Market price effects. It's wholesale market price suppression effects. A commodity is clipped at the peak. Reduces price at peak. Recognized in electricity … also in gas.
  - **Tim**: Is regulatory cost of carbon applied to gas utilities like electricity?
  - **Adam**: Relates to Jeremy's point. More standardized than on electricity side. After meeting, make sure Synapse has copy of BENCOST. Gas environmental and non-gas environmental factors. Mostly externality values. Applied to societal test, not utility test.
  - **Audrey**: Current inputs for environmental damage factor. Based on externality values and gets picked up in SCT.
  - **Ethan**: Largely agrees with Audrey and Adam. Unsure about environmental compliance. Relates to commodity supply. Pass through for some of those costs. Getting an input from Department based on market prices for BENCOST. How you define the system boundary – may be included or not. If are specific carbon regulatory requirements of the utility, then not in there (don't exist currently). No major concerns about theoretically including costs in utility test. Have to be careful about utility performance incentive in utility test … circular problem because calculate shareholder incentive based on utility test. Likes current way of doing

things. Do testing and see impact on portfolio. Look at effect of shareholder incentive on portfolio of EE.

- **Tim** agrees with avoiding circular problem. When screening programs, should incorporate performance incentive.
- **Audrey**: What does "regulatory cost of carbon" mean here? At some point in the future, utility will have to pay … or comply with an emissions standard. Wouldn't be embedded in commodity costs. To Chris Davis …
- **Chris**: Wasn't involved when PUC settled on what gets included in IRP. Only on electric side. Not sure are including in CIP. Comes into play in 2025. Then PUC won't be considering environmental cost of carbon. Will be other costs.
- **Audrey**: Someone who is more involved in that docket. What those figures are. What they represent. Whether embedded or not … apply to gas or not. All regulatory costs of carbon would apply to gas side …
- **Tim**: Discussion to determine whether they "should" apply.
- **Tim**: Hasn't heard anyone suggest that these items shouldn't be included in utility system impacts. Make sure all on board with that.
  - **Jason** to **Tim**: What is risk?
  - **Tim**: Notion that EE has a net reduction in risk. As you clip peaks, reduce reliance on volatile fossil fuels … lower risk on the system … To be clear, transportation and delivery… any costs that can be avoided by delivery of gas from city gate to building.
- **Marty**: What do we mean by saying "everything is included"?
- **Tim**: Say risk is included but don't have value .. not really included. If this group decides an item on this list should be included. Stick with this decision. If can't come up with value … then need to have a qualitative discussion. Wasn't included but should be … how that affects decision making. If don't have a good value, what do you do?
- ***Marty in chat****: Re: the proposal that "everything should be included"... what about the possibility of creating a false impression if the state says that X is included in their test, but due to difficulty or disagreement on measurement no actual value is assigned? For example, claiming that "risk" or "reliability" are covered, but in fact no actual value is assigned in decision-making. As a starting point, I'd agree that everything be considered, but distinguish that from what is claimed about the ultimate test designed.*
- **Ethan**: What fits into these categories. Reliability, resilience … you value based on risk. How separate?
  - **Tim**: Not easy to distinguish between three items. Reliability – how things work under normal conditions (blue sky day). Resilience – how work on black sky day. Risk relates to both. Can be narrowed down to exclude reliability, resilience … may be fuel volatility risk.
  - **Courtney**: Usually risk is a hedge value … in electricity, can be Value of lost load. Hasn't seen resilience done in EE. More in solar. More long duration events. Reliability is more short term.
  - **Tim**: Resiliency hasn't been captured reliably yet.
- **Adam**: NSPM says should be including all utility system impacts? Square that with discussion about whether should be included or not included?
  - **Courtney**: Should be including all of these. Whether you quantify/monetize for next triennial plan. She worked on National Grid in RI. Development of test from utility's perspective. Given a lot of inputs to include in evaluation. If monetized

value wasn't possible, would include commentary in filing … why hasn't been monetized. How might this have increased benefits or costs.

- **Jeremy**: Hate to go down this road. System benefits are limited to those that are passed on to customers. Symmetric in the costs and benefits. Cost to equipment being installed in EE … also embedded in energy costs to produce equipment. If start to pass along on the benefits side … also not being included in the cost side.
  - **Tim**: Whether it's a cost or a benefit. If it's an item that part of revenue requirements, then should be included.
  - **Tim**: Financial incentives …
  - **Jeremy**: Include in the cost of energy production to make the light bulb. Right now, works out well.
  - **Jeremy**: All these costs that aren't included in the costs that get passed on to consumers. If start adding them on the benefits side, no longer symmetric. Is the intent to quantify those on the cost side as well.
  - **Courtney**: Utility impacts … unless they are passed on to ratepayers somehow.
  - **Courtney**: Table until get to participant costs.
  - **Tim**: At some point, values are so low, more work than it's worth. Should be including costs and benefits – don't want asymmetry in that way.

Slide 9

- Synapse will compile information from workshops to inform straw proposal
- Workshop 3 will focus on the straw proposal
  - Stakeholders can provide feedback on proposal during workshop
- After cost-effectiveness tests are established, remaining workshops can be used to discuss methods for valuing utility system impacts
  - This process can involve determine which impacts will be monetized or addressed qualitatively
- The results of the workshops can be used to inform the next triennial plan

Slide 11

Non-Utility System Impact Descriptions

Table 3-3. Commonly Considered Non-Utility System Impacts

Non-Utility Impact	Description
Other fuel impacts	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
Host customer impacts	Host customer portion of DER costs and host customer non-energy impacts (NEI), such as impacts on productivity, comfort, health and safety, mobility, and more
Impacts on low-income customers	Impacts that are different from or incremental to non-low-income customer impacts such as energy affordability and poverty alleviation
Environmental impacts	Impacts associated with GHG emissions, criteria pollutant emissions, land use, solid waste, etc.; includes only those impacts not embedded in the utility cost of compliance with environmental regulations, which should always be treated as a utility system cost
Public health impacts	Impacts on public health; includes health impacts that are not included in host customer impacts or environmental impacts and includes benefits in terms of reduced healthcare costs
Economic development and jobs	Impacts on direct and indirect economic development and jobs
Energy security	Reduced reliance on fuel or energy imports from outside the state, region, or country

This table is presented for illustrative purposes and is not meant to be an exhaustive list or applicable in every jurisdiction.

Slide 12

Societal Impact Descriptions

Table 4-6. Potential Benefits and Costs of DERs: Societal

Type	Societal Impact	Description
Societal	Resilience	Resilience impacts beyond those experienced by utilities or host customers
	GHG Emissions	GHG emissions created by fossil-fueled energy resources
	Other Environmental	Other air emissions, solid waste, land, water, and other environmental impacts
	Economic and Jobs	Incremental economic development and job impacts
	Public Health	Health impacts, medical costs, and productivity affected by health
	Low Income: Society	Poverty alleviation, environmental justice, and reduced home foreclosures
	Energy Security	Energy imports and energy independence

Slide 13

NSPM Step 3: Non-Utility System Impacts

- Policy goals determine which non-utility system impacts to include in the primary test
- This step includes the following categories:
  - Participants
    - Costs, benefits, non-energy impacts (NEIs)
  - Other fuel and water impacts
  - Low-income
  - Societal impacts

Slide 14

Homework Summary

Which non-utility system impact should be included in the primary BCA test?

Stakeholder's initial input.

Type	Impact	Yes	No	Maybe
Participant	Participant costs	7	1	4
	Participant benefits	5	1	6
Other Fuels	Other fuels	9	0	3
Water	Water	7	3	2
Low-Income	Low-income	7	1	3
Societal	GHG emissions	12	0	0
	Criteria air emissions	6	0	5
	Solid waste	1	5	6
	Water impacts	4	3	5
	Land impacts	1	5	6
	Other environmental	1	3	8
	Public health	3	2	7
	Macroeconomic	1	3	7
	Energy security	6	3	3
	Energy equity	5	1	6
	Resilience	4	1	6

- Very clear. Other fuels and GHGs should be included. Participant costs should be included. Others that are uncertain.

Slide 15

Mapping Policies to Impacts (draft for discussion)

	Impact	Maps to Policy?	Rationale
Participant	Participant costs	x	Next Generation Energy Act (NGEA) of 2007 includes citizens, CIP IOU statute includes participants in review of cost-effectiveness
	Participant benefits	x	
Other fuels	Other fuels	x	ECO Act clearly requires consideration of other fuels for fuel switching purposes
Water	Water (participant)		
Low-income	Low-income	x	Natural Gas Innovation Act of 2021 and CIP IOU statute specifically calls out low- and moderate-income customers
Societal	GHG emissions	x	Key purpose of ECO Act is to reduce emissions that cause climate change
	Criteria air emissions	x	MN IRP statute: a range of environmental costs associated with electricity generation should be established
	Solid waste	x	NGIA of 2021 discusses waste reduction, CIP COU statute discusses waste heat, CIP IOU discuses waste heat and hazardous waste
	Water impacts		
	Land impacts		
	Other environmental	x	NGIA of 2021: consideration of general environmental benefits and environmental attributes of resources in plans
	Public health		
	Macroeconomic	x	Energy Conservation & Optimization Act of 2021 discusses need to maximize economic value
	Energy security	x	Next Generation Energy Act of 2007 states need to reduce economic burden of fuel imports
	Energy equity	x	MN Rates statute indicates rates should be equitable
	Resilience	x	NGEA of 2007 indicates importance of protecting life, safety, and security of citizens during an energy crisis

- Water, land, public health not mentioned. Others linked to key policies.
- **Audrey**: When going through HW. Water participant and water environmental. Get water savings from measure … so prorate cost of measure you get from that. Additional benefit but is not included in the BCA explicitly.
- **Courtney**: If want to include participant impacts – if is a benefit. Can quantify as a separate impact. Average water rates/gallon.
- ***Joe Dammel in chat***: *According to NSPM, how much overlap should there be between specific PUC goals/statutes and broader state goals/statutes?*
  - **Tim**: Not really distinguished in NSPM. Up to each state to decide which policy goals are most important. Up to you folks.
  - **Adam**: Things that Synapse looked at previously in its report. Included ECO Act and NGIA stuff. Where do you create the boundary.
  - Maryland. Gave weight. High, medium, low for the policy goals (which are priority)

- ***Marty in chat**: Note that the Eco Act also specifically articulates "reduce the economic burden of fuel imports" as well as "create more energy-related jobs". It seems those should be included in any assessment of MN's policy objectives.*
- ***Kevin in chat:** When CFLs were the preferred lighting source, utilities were required to help set up recycling programs for CFLs to reduce mercury. Now with LEDs we don't have the mercury issue. How would this type of cost be included - in criteria air emissions (mercury) or solid waste or both?*
- ***Marty in chat:** Kevin, maybe promoting LED's would produce a benefit in those categories, eh?*
- ***Kevin in chat:** Marty, an extra benefit over and above improved efficiency.*
- *like*

Slide 16

Homework Summary with Policies

Which non-utility system impact should be included in the primary BCA test?

Stakeholder's initial input, alongside policy mapping.

5/18/22

Type	Impact	Yes	No	Maybe	Maps to Policy
Participant	Participant costs	7	1	4	✓
	Participant benefits	5	1	6	✓
Other Fuels	Other fuels	9	0	3	✓
Water	Water	7	3	2	
Low-Income	Low-income	7	1	3	✓
Societal	GHG emissions	12	0	0	✓
	Criteria air emissions	6	0	5	✓
	Solid waste	1	5	6	✓
	Water impacts	4	3	5	
	Land impacts	1	5	6	
	Other environmental	1	3	8	✓
	Public health	3	2	7	
	Macroeconomic	1	3	7	✓
	Energy security	6	3	3	✓
	Energy equity	5	1	6	✓
	Resilience	4	1	6	✓

- Need to be sure we're focused on the energy-specific, directly related to energy policy goals. Are myriad of other goals that could be considered. Let us know if we have missed any.
- Heard a lot about the country about equity … also resiliency. Do your best at a point in time. Important to revisit the goals and the test.

Slide 17

Impacts Flagged for Discussion

Type	Impact	Include/Exclude/Discuss	Rationale
Participant	Participant costs	Discuss	Included in policies and majority of respondents said yes or indicated maybe so long as costs and benefits are included.
	Participant benefits	Discuss	
Other Fuels	Other fuels	Include	Majority of respondents said yes, and the ECO Act creates a clear policy goal.
Water	Water (participant NEI)	Include	Not linked to policy goal but stakeholders indicate may be appropriate to include for water saving measures.
Low-Income	Low-income	Include	Included in policies and majority of respondents said yes.
Societal	GHG emissions	Include	Unanimous support to include impact and mapped to several policies.
	Criteria air emissions	Include	Respondents either said yes or maybe so long as there is no double counting with other impacts. There is also a link to policy.
	Solid waste	Exclude	While waste is mentioned in several polices, the linkage to EE is limited. Little support from respondents to include.
	Water impacts	Exclude	Not linked to policy goals and majority of respondents point to measure level benefits and not societal.
	Land impacts	Exclude	Not linked to policy goals and limited support from respondents.
	Other environmental	Exclude	While several policies point to environmental attributes, the majority of respondents indicate key environmental impacts would be accounted for in other impacts.
	Public health	Discuss	Not a policy goal but there is a range of respondent opinions.
	Macroeconomic	Discuss	Linked to policy but majority of respondents said maybe.
	Energy security	Discuss	Linked to policy goals but half of respondents are no or maybe.
	Energy equity	Discuss	Linked to policy but majority of respondents said maybe.
	Resilience	Discuss	Linked to policy but majority of respondents said maybe. 17

- Consensus to include, not include.
- Based on comments, should be included. GHG emissions.
- Criteria air emissions included as well. Not double counting.
- Any issues with this?

What to exclude.

- **Joe Dammel**: Proposes moving other environmental to "discuss". Especially if the other environmental stuff isn't included. Would like to know what should be included in that.
- ***Kevin in chat***: *When CFLs were the preferred lighting source, utilities were required to help set up recycling programs for CFLs to reduce mercury. Now with LEDs we don't have the mercury issue. How would this type of cost be included - in criteria air emissions (mercury) or solid waste or both?*
- **Grey**: Mentions that Adam's document included details regarding policy impacts on BCAs. Folks may want to take a look as this could inform their views on what should be included.

Slide 18

Potential Participant Impacts

Type	Participant Impact	Description
Participant	Participant portion of DER costs	Costs incurred to install and operate DERs
	Participant transaction costs	Other costs incurred to install and operate DERs
	Risk	Uncertainty including price volatility, power quality, outages, and operational risk related to failure of installed DER equipment and user error; this type of risk may depend on the type of DER
	Reliability	The ability to prevent or reduce the duration of host customer outages
	Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions
	Tax incentives	Federal, state, and local tax incentives provided to host customers to defray the costs of some DERs
	Participant NEIs	Benefits and costs of DERs that are separate from energy-related impacts

NEIs	Description
Transaction costs	Costs incurred to adopt DERs, beyond those related to the technology or service itself (e.g., application fees, time spent researching, paperwork)
Asset value	Changes in the value of a home or business as a result of the DER (e.g., increased building value, improved equipment value, extended equipment life)
Productivity	Changes in a customer's productivity (e.g., changes in labor costs, operational flexibility, O&M costs, reduced waste streams, reduced spoilage)
Economic well-being	Economic impacts beyond bill savings (e.g., reduced complaints about bills, reduced terminations and reconnections, reduced foreclosures—especially for low-income customers)
Comfort	Changes in comfort level (e.g., thermal, noise, and lighting impacts)
Health & safety	Changes in customer health or safety (e.g., fewer sick days from work or school, reduced medical costs, improved indoor air quality, reduced deaths)
Empowerment & control	The satisfaction of being able to control one's energy consumption and energy bill
Satisfaction & pride	The satisfaction of helping to reduce environmental impacts (e.g., one of the reasons why residential customers install rooftop PV)

5/18/2022 18

- Potential participant impacts. No comments. **Courtney** mentioned Jeremy's comment about participant costs.

Slide 19

Participant Non-Energy Impacts

Points to Consider

- There are many participant non-energy impacts
- Most of them are participant benefits
- Some can be very large
- Some of them are more important to customers than energy benefits
- They vary significantly across programs
- They can be difficult to measure, quantify, and monetize
- Estimates are often approximate and uncertain

- **Courtney**: Can vary across programs.
- **Matt Wisfenske**: Benefits such as improved comfort. Complication in NTG analysis. Measures incented through a program. Not of "net" importance. Were picked because of the NEBs. Wrinkle. Already incorporating some of these things by incorporating a NTG factor.
  - **Tim**: Warned about questions related to how to quantify. In general, want to include the actual effect. If have NTG assumptions …would include cost and benefits (I would think). Defer as a quantification question.
  - **Marty**: Would save a lot of time. Leave participant costs and benefits out of the primary test. **Audrey** agrees.

- **Audrey:** Participant NEIs. Differs by customer. There are things that are big impacts and some things, like increased comfort for residential, that small but not captured.
- **Adam**: Didn't see many policies that mention participants costs and benefits. Something to consider. Audrey agrees with Adam.
- **Ethan**: Costs were added to societal test.

- ***Audrey in chat**: Participant costs are not mentioned in statutes.*
- **Grey**: Points out that statutes may not call out "participant" impacts … it is understood to be part of the tests that are described in shorthand as "impacts to the utility system, impacts to ratepayers, impacts to customers". No one responded.
- **Tim**: Talking here about the primary test.
- **Russ**: With SB 2030, very interested in participant benefits.

Slide 20

Discussion: Participant Impacts

NSPM Principles

- Symmetry Principle
  - If participant costs are included, then participant benefit should be too (including non-energy benefits)
  - If participant benefits are not included, participant costs should not be
- Hard-to-Quantify Principle
  - Relevant impacts cannot be ignored just because they are difficult to quantify

Summary of Comments

- Stakeholders are mostly supportive of including participant impacts
- Those indicating "maybe" stated need for symmetry of costs and benefits

Potential Next Steps

- Include participant costs and benefits and quantify NEIs prior to triennial plans.
- Exclude participant costs and benefits.
- Exclude participant costs and benefits unless and until NEIs have been quantified.

- If include participant costs, should include participant benefits.
- **Tim**: As one of the parties tasked with coming up with straw proposal, could use input on last three items.
  - **Jeremy**: Option of excluding participant costs and benefits is really dangerous. Are benefits that aren't included in calcs – value of house going up, etc. When have participant costs, have a bound in terms of what's allowed in there. Marginal technologies that would fail the societal test if participant costs are included. Real attribution issues there. If use utility test to determine incentives and limit incentives based on utility test, then marginal technologies that rely significantly on NEIs to pass Societal test there are big free ridership with that. Real costs that get passed on to customers. Increases NTG values. Gets into a circular situation … where high free ridership reduces benefits in utility test, which limits the rebate that can be paid … gets difficult to quantify the cost effectiveness of those, what rebates level are and the attribution. Introduces complexity to current method. Participant costs help limit to those technologies that have high attribution. Excludes some of the benefits. Policy outcome is beneficial. Suggestion to completely remove those costs get really dangerous.
  - **Audrey**: Policy outcome of not including participant benefits but include participant costs – don't do enough efficiency. Shows up in building envelope issues. Reasons we do improvements … are expensive. Difficult to quantify that for residential

customer. Not including those benefits … are not rebating those. Policy outcome is that limiting rebates on items that have high participant costs.

- **Tim**: NSPM. Can't include one and not the other. Doesn't think anyone feels differently about that. Time to chime in.
- **Tim**: Mixed positions on this. Still not resolved on this.
- **Jeremy**: Can we get case studies to illustrate? Depends on what technologies we're dealing with. Audrey example is a good one. Windows very expensive. Rebate can't move the outcome.
- **Tim**: Bad practice to look here to see what should drive decisions. More driven by what policy goals trying to achieve.
- **Brian:** Supports more examples.
- **Tim**: So many types of EE measures. Different Non-energy benefits and costs. Tough to break out. Easier to think about this as all or nothing. If question is about what the test looks like, can discuss that.
- **Adam**: State examples that might help the group. Either excluded them all or used one of next steps and applied it.
- **Tim**: NH excluded participant costs and benefits. RI. Lots of work to come up with benefits and costs – values had confidence in.
- **Lisa**: Thinking about this right. Including or not including participant costs/benefits impacts rebates. If include both participant costs and benefits, then looking at the utility cost of paying the rebate and the participant benefit of getting the rebate … they offset each other. Don't need to be as concerned about how high the rebate is. When include both, offsetting each other, so not limiting how you set the rebates that way?
- **Tim**: Rebates should be set based on practices for setting rebates. Principle, high enough to overcome market barriers but no higher. CE framework shouldn't affect that so much. Possible to separate those – what CE framework should be and what incentives should be.
- **Audrey**. Example. Utility give rebate for low-flow showerheads. Will save water as well. Will discount cost of measure before putting into analysis. Before touch BENCOST model. Should have no impact on what utility is paying customer to put in low-flow showerhead.
  - **Tim**: Can embed the benefits into the costs … yes … have heard it proposed before. May do that in California.
  - **Audrey:** Not proposing how it's done. Done that way in Minnesota. On front-end, ad hoc way. Example of thinking through it. Doesn't impact incentives are paying.
- ***Marty in Chat****: I would note that one of the main drivers for the original NSPM was the rampant existence of 'asymmetry' in common practice of including easily quantified participant costs but ignoring the many types of participant benefits.* *https://www.aceee.org/files/proceedings/2010/data/papers/2056.pdf*
- **Tim** agrees.

Slide 21

Discussion: Public Health

Description of Impact

- Includes health impacts that are not included in participant impacts or other societal impacts. These can include, for example, reduced incidents of asthma or healthcare costs such as societal investment required in medical facility infrastructure.
- Should be incremental to what is embedded in utility system costs (e.g., environmental compliance).

Summary of Comments

- Concerns related to potential double counting with low-income and criteria air emissions.
- May not be appropriate for primary test
- Concerns regarding valuing the impact

Stakeholder input?

Slide 22

Discussion: Macroeconomic

Description of Impact

- The value of any incremental economic development and jobs provided by EE
- Common practice to estimate net-job impacts in the state

Treatment of macroeconomic impacts in a BCA

- Monetary value of macroeconomic impacts should not be added to monetary values of BCA because that would result in double-counting
- Nonetheless, job impacts can be included in a quantitative way and reported separately from BCA

Summary of comments

- Recommended definitions: net jobs or reduced dollar drain from imported energy (also mentioned for macroeconomic)
- Not for primary test
- Difficult to incorporate

Stakeholder input?

- Asking whether can get consensus re: whether should include.
- **Tim:** "we'll make a call whether to include or not …based on policy mapping".
- **Lisa:** How much would be incremental to what would be included in utility system costs (from other states)?
  - **Tim**: Utility system costs. If have other air emissions, need to separate out. Isolate so not have double counting. COBRA and Avert that EPA has to come up with values.
  - **Courtney**: If don't include participant benefits. Use COBRA or Avert to include as societal benefit.

Slide 23

Discussion: Energy Security

Description of Impact

- Reductions in imports of various forms of energy help advance the goals of energy independence & security.
- Focus tends to be on costs, risks, volatility of fossil fuel imports.
- There is potential for overlap with utility system reliability and risk.

Summary of comments

- Recommend quantifying reduced economic burden of fuel imports, reduced dollar drain
- Supported by several policies
- Concerns of double counting with low-income
- Include in utility system risk and reliability instead

Stakeholder input?

- Initial thought was that would include it. Macroeconomic impacts – wouldn't want to add into BCA. Interplay between energy security and job benefits. Whether to include/exclude.
  - **Tim:** If account for inflow/outflow of $ (in macroeconomic). Most will relate to volatility of fossil fuels.
  - **Courtney**: Gas surge due to hurricane. Disruptions.
  - **Tim**: Yes, how you come up with values. Not easily valued. Mostly related to risk. Sometimes already incorporated into IRPs. Main thing here is risk. Risk talked about utility system impacts. If own fuel sources create risk … this gets at imported fuels. Not easy. Could be double counting. In concept, can be separated out.
  - **Joe D**. supports this if focus on volatility of fossil fuel imports.
  - ***Joe in chat****: I would like to include energy security to account for the items in the second bullet (cost/risk/volatility), as you just mentioned, Tim*.
  - **Audrey** and **Brian Edstrom** agree.

Slide 24

Discussion: Resilience

Description of Impact

- The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.
- EE can increase resilience by reducing the amount of load that needs to be served to recover from an outage. It is important to avoid double-counting of risk, reliability, and resilience impacts.

Summary of comments

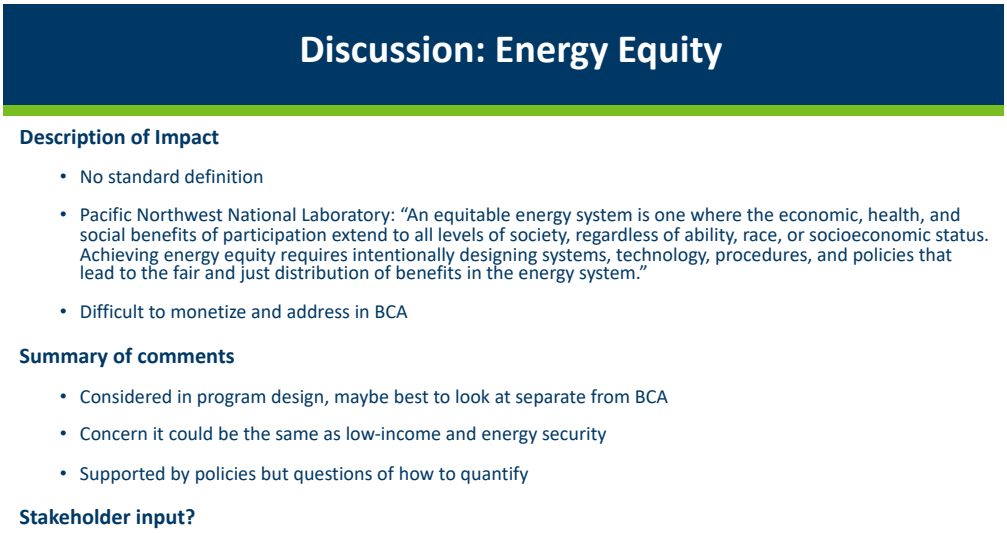
- Most comments are supportive but concerns for how to quantify
- Should this be captured in reliability

Stakeholder input?

- **Courtney**: Suggesting not including.
- **Audrey**: Can utilities remind us … how is this included currently?

- ***Kevin in chat**: Back to Resilience - Is it included in utility plans based on today's climate or the climate of the future - increased heat waves/heat durations? Since it takes substantive time to upgrade an entire system, how are we including costs/benefits of resilience?*
  - **Jeremy**: IRPs are built to make the utility resilient. Embedded in those costs. In generation, generation and capacity.
  - **Tim**: Not the ability of power plants to respond to quick changes to system. How grid responds at distribution and transmission levels. Can't account for it in IRP.
  - **Jeremy:** Do IDPs as well. In avoided T&D benefits, that resiliency is embedded.
  - **Tim**: If think it's an important policy consideration – note can be that it's included in the … avoided T&D or whatever.

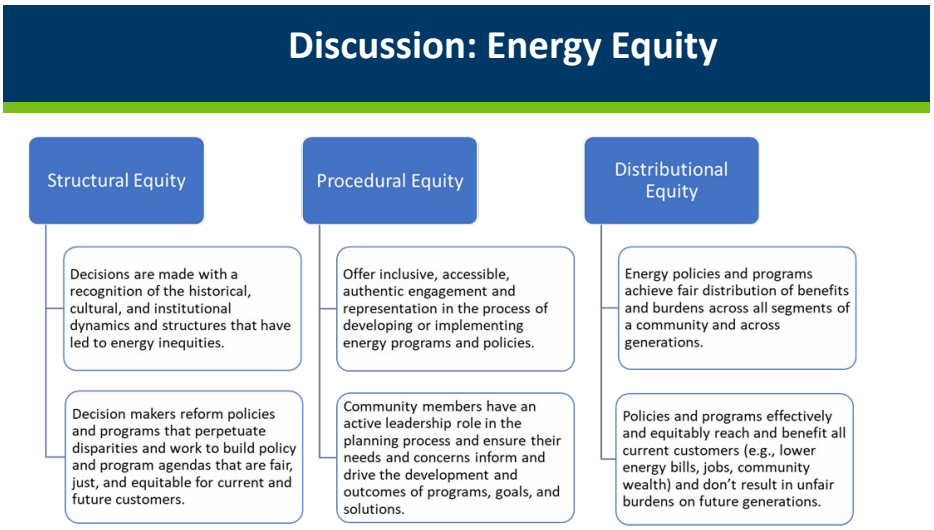
Slide 25



Tim:

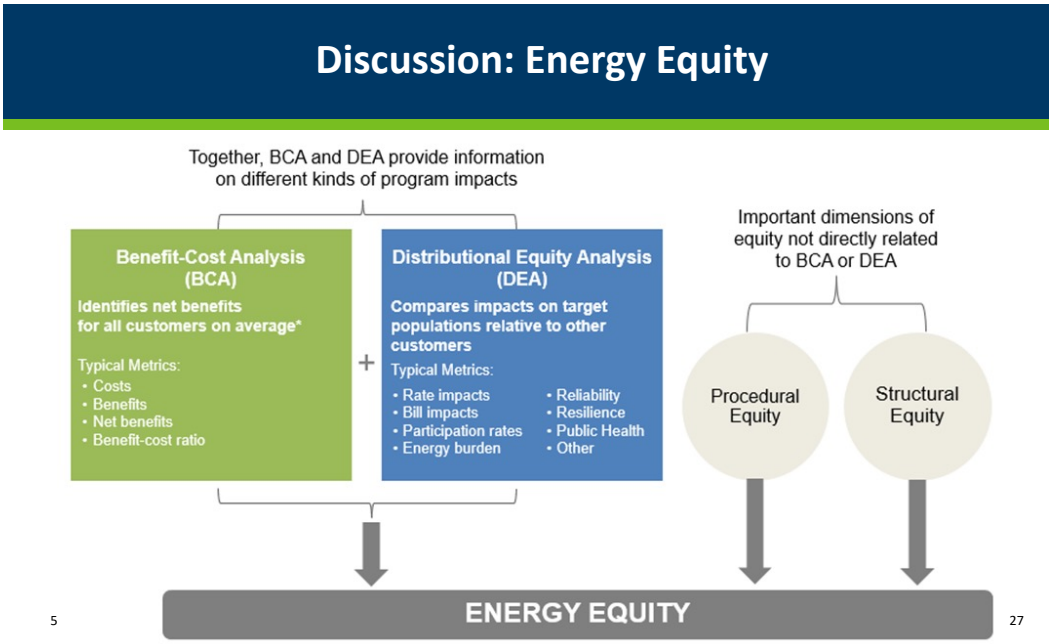
- Lots of people talk about program design. Isn't that addressing equity?
- Is important but difficult to quantify.
- In RI, if get BC>1. Haven't said anything about the customers in the category. Nothing about how other programs affect those customers. Recommend something broader. An equity distribution analysis. No fine line between …blurry line between protecting low income customers and energy equity. They have become the same thing. Whether to discuss between low income and energy equity.
- How to quantify isn't easy but doesn't mean it can't be done.

Slide 26

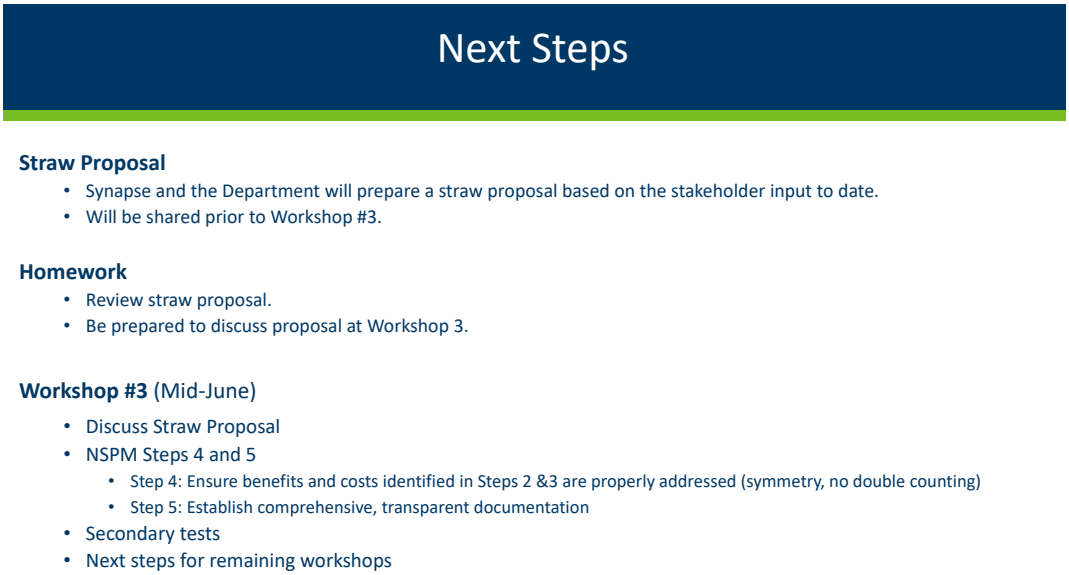


- With BCA analysis. Looking at CE of EE, is distributional equity. 2:21. Doesn't have time to go through details. Recent report from National screen project. Chapter in that on this. Distributional equity analysis. Rate and bill impacts. Should be looked at separately. If include in BCA, it's a mess. If do separately, can have more transparent understanding of all. Point of this is to isolate costs/benefits to target populations trying to protect. EJ communities, low income, at risk. Define population then can do separate analyses. Can go beyond rates, bills, etc. reliability for these customers. Public health impacts. Not easy to roll into BCA.
- Might seem new to this group. Concept that is widely used by federal government. Do BCAs on large dams. Recognize that the BCA is not about distributional effects. Do "distributional analyses". Part of their analysis. Applying to electric and gas industries.
- ***Marty in chat****: For equity, I would agree it would be best to address that through specific rules/requirements (and maybe even incentives to utilities), rather than through BCA.*
  - ***Joe D in chat:*** *Would like to discuss equity in future discussions. Would like to include in straw proposal.*
  - **Tim**: Would like to include in straw proposal. Tim. Put aside more time in next workshop to talk about. Anyone who thinks shouldn't be in there? No one.

Slide 27



Slide 29



- **Tim**: Review straw proposal and policy mapping to discuss at next workshop. Can provide written comments.
- Targeting June 15 for next meeting. Synapse will present straw proposal.
  - Quick heads-up. Straw proposal. Won't be that lengthy. 5 pages with table and checkmarks with descriptions.

Ended at: 10:18 a.m.