Washington Cost-Effectiveness Test for Distributed Energy Resources

Straw Proposal for the Primary Test

Prepared for the Washington Utilities and Transportation Commission

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I. EXECUTIVE SUMMARY

The 2019 Clean Energy Transformation Act (CETA) requires changes to electric utility planning in Washington state. Among other provisions, CETA requires utilities to transition to clean energy by 2045 and amends Title 19 RCW governing utilities' 20-year integrated resource plans (IRPs), creating a new planning requirement known as the clean energy implementation plan (CEIP).

This legislation also changes the standard practice of using the modified total resource cost test (TRC) and utility cost test (UCT) and the primary and secondary screening tests by requiring the use of the social cost of carbon.[1] By newly defining the public interest, additional non-energy impacts such as the social cost of carbon, equity, public health, energy security, and resiliency are implicated.

In response to CETA, the Washington Utilities and Transportation Commission (Commission) opened Docket UE-210804 on November 4, 2021, to determine whether additional guidance related to cost-effectiveness of distributed energy resources (DERs) is necessary and develop a jurisdictional specific cost-effectiveness test for DERs. Within its initial Notice of Opportunity to File Written Comment in this docket, the Commission indicated it will follow *the National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources*[2] (NSPM for DERs) process to develop a primary cost effectiveness test for Washington state through a series of workshops and public comment opportunities.

The NSPM for DERs provides objective, policy-and technology-neutral guidance for the development of a primary DER cost-effectiveness test (or modifying an existing primary test) and has been vetted by a cross-cutting advisory group consisting of regulators, state agencies, utilities, expert consultants, and representatives from the DER industry.

Synapse Energy Economics, Inc. (Synapse) is assisting Commission Staff by providing guidance on the development of a jurisdictional cost-effectiveness test through a series of workshops following the NSPM for DERs five-step process:

Step 1. Articulate Applicable Policy Goals.
Step 2. Include All Utility System Impacts.
Step 3. Decide Which Non-Utility System Impacts to Include.
Step 4. Ensure that Benefits and Costs are Properly Addressed.

[1] RCW 80.28.380 and RCW 80.28.405

[2] National Energy Screening Project ("NESP"), *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources* (NSPM for DERs), Aug. 2020. Available at: https://www.nationalenergyscreeningproject.org/wp-content/uploads/2020/08/NSPM-DERs_08-04-2020_Final.pdf.

Step 5. Establish Comprehensive, Transparent Documentation.

Each step in the process is guided by the eight principles of the NSPM for DERs:

Principle 1: Treat DERs as a Utility System Resource. DERs are one of many energy resources that can be deployed to meet utility/power system needs. DERs should therefore be compared with other energy resources, including other DERs, using consistent methods and assumptions to avoid bias across resource investment decisions.

Principle 2: Align with Policy Goals. Utilities invest in or support energy resources to meet a variety of goals and objectives. The primary cost-effectiveness test should therefore reflect this intent by accounting for the state's applicable policy goals and objectives.

Principle 3: Ensure Symmetry. Asymmetrical treatment of benefits and costs associated with a resource can lead to a biased assessment of the resource. To avoid such bias, benefits and costs should be treated symmetrically for any given type of impact.

Principle 4: Account for Relevant, Material Impacts. Cost-effectiveness tests should include all relevant (according to applicable policy goals) material impacts including those that are difficult to quantify or monetize.

Principle 5: Conduct Forward-Looking, Long-term, Incremental Analyses. Cost-effectiveness analyses should be forward-looking, long-term, and incremental to what would have occurred absent the DER. This helps ensure that the resource in question is properly compared with alternatives.

Principle 6: Avoid Double-Counting Impacts. Cost-effectiveness analyses 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. BCA practices should therefore be transparent, where all relevant assumptions, methodologies, and results are clearly documented and available for review and input.

Principle 8: Conduct BCAs Separately from Rate Impact Analyses. Cost-effectiveness analyses answer fundamentally different questions than rate impact analyses, and therefore should be conducted separately from rate impact analyses.[3]

This straw proposal covers the first three-steps in the NSPM process which were addressed over the course of three workshops convened by Staff as part of the Docket UE-210804 workshop series. Based on verbal input from interested persons, written comments, and a draft list of applicable policy goals

[3] NSPM for DERs, pg. iv.

developed by Staff, Synapse has prepared this WA Test straw proposal for consideration that ensures alignment with the state's policy goals and objectives.

This WA Test straw proposal contains a comprehensive list of distributed energy resource costs and benefits ("impacts") that are intended to capture Washington state's policy goals. While each impact should be included in the WA Test, some may not be applicable to each type of DER or DER use case. When applying the WA Test to future benefit-cost assessments (BCAs), utilities should consider DER program design and the use case to determine which of the WA Test impacts should be included and whether the impact is a cost or a benefit. Additional guidance and examples of this point are included later in this document and in Appendix 3.

The proposed WA Test is intended to be the primary test for assessing the cost effectiveness of all DERs. The purpose of a primary test is to inform whether a utility's proposed investments in DERs create more benefits than costs and therefore merit approval. Secondary tests can be developed to help enhance the overall understanding of DER impacts, including prioritizing energy efficiency programs and informing decisions regarding marginally cost-effective programs and allocation of resources. Secondary tests are not intended to undermine the purpose of the primary test and may include a subset of the impacts included in the primary test or additional impacts. This straw proposal does not address secondary tests as the topic has not been covered in the workshops but may be addressed in the future and reflected in Staff's final recommendations to the Commission.

Table 1 shows an overview of the impacts that we recommend be included the WA Test, based on Washington state policy goals and the input to date. A detailed breakout of the impacts contained in each category and their definitions is contained within the remainder of this report.

Table 1. WA Test Straw Proposal

Impact Type	Impact Category	Impact
Utility System	Electric Utility System	All – if an electric utility investment/strategy
	Gas Utility System	All -if a gas utility investment/strategy
Non-Utility System	Other Fuels (Oil, Propane, Wood, Gasoline)	Commodity
		Environmental Compliance
		Market Price Effects
	Host Customer	Energy Impacts
		Non-Energy Impacts
		Low-Income Non-Energy Impacts
	Societal Impacts	Greenhouse Gas Emissions
		Other Environmental
		Public Health
		Economic and Jobs
		Energy Security
		Energy Equity
		Resilience

We propose that the WA Test be applied at the program and portfolio level, depending on the specific question to be answered, to determine general cost-effectiveness. For example, the WA test should be used to evaluate the cost-effectiveness of an energy efficiency portfolio. It may also be used to prioritize programs and pilots in an energy efficiency portfolio but should not be the sole reason to exclude programs if the portfolio remains cost-effective.[4]

It is important to note there are two 'phases' in the development and application of a jurisdiction-specific test. The first phase is to identify what impacts should be included in the test, while the second is to develop methods to quantify and monetize those impacts (or determine whether to account for any impacts qualitatively). The workshops to-date have primarily focused on the first step of this process. While this process did not focus on specific methods, interested persons provided initial feedback regarding potential methods for accounting for impacts that are summarized in Section IV of this report. This initial feedback will help to guide and provide prioritization for developing specific methods as part of the second phase of the Commission's initiative.

II. WA TEST STRAW PROPOSAL

Identification of State Policy Goals

The first step in the NSPM process is to articulate applicable policy goals to ensure that the jurisdiction-specific cost test aligns with Washington state's DER policy goals. The identification of applicable policy goals informs several aspects of the cost-effectiveness test including which impacts should be included in the test, treatment of host customer impacts, and choice of discount rate.

Participants identified two umbrella policies that guide the development of the WA Test. The policies goals within CETA and the Climate Commitment Act (CCA) contain a comprehensive set of policy direction to the state.

Commission Staff originally identified the following new applicable policy goals based on the content of the CETA and its legislation intent.[5]

- Provide safe, adequate, and efficient services.
- Support fair, just, reasonable, and sufficient rates.
- Reduce energy burden of low-income households.
- Avoiding increased burdens to highly impacted communities.

[4] WAC 480-109-100

[5] Docket UE-210804. Notice of Opportunity to File Written Comments, November 4, 2021, pg. 4.

- Ensure all customers benefit from the transition to clean energy through the equitable distribution of energy and nonenergy benefits and reduction of burdens to vulnerable populations and highly impacted communities.
- Ensure all customers benefit from the transition to clean energy through long-term and short-term public health and environmental benefits and reductions of costs and risks.
- Ensure all customers benefit from the transition to clean energy through energy security and resiliency.
- Maintain system reliability.
- Develop lowest reasonable cost resources.
- Enable significant and swift reductions in greenhouse gas emissions.

In addition to the above list, Public Counsel provided additional policy goals related to CETA for consideration in the development of the test.[6]

- Promoting energy independence.
- Creating high quality jobs in the clean energy sector.
- Maximizing the value of hydropower.
- Continuing to encourage and provide incentives for clean alternative energy sources.
- Including providing electricity for the transportation sector.
- Protecting clean air and water in the Pacific Northwest.

Commission Staff mapped CETA and CCA to impact categories and impacts shown in Table 2 below.

[6] Docket UE-210804. Initial Comments of Public Counsel, December 13, 2021, pgs. 3-4.

Table 2. Mapping of Umbrella Policies to Impacts

Impact Type	Impact Category	Impact	Electric Policy, Statute, or Decision	Gas Policy, Statute, or Decision
Utility System	Electric Utility System	All	CETA, CCA – all DERs	N/A
	Gas Utility System	All	N/A	CCA – all DERs
Non-Utility System	Other Fuels (Oil, Propane, Wood, Gasoline)	Commodity	CETA, CCA – all DERs	CCA – all DERs
		Environmental Compliance	CETA, CCA – all DERs	CCA – all DERs
		Market Price Effects	CETA, CCA – all DERs	CCA – all DERs
	Host Customer	Host Customer Energy Impacts	CETA, CCA – all DERs	CCA – all DERs
		Host Customer Non-Energy Impacts	CETA, CCA – all DERs	CCA – all DERs
	Low-Income Host Customer	Low-Income Host Customer Non-Energy Impacts	CETA, CCA – all DERs	CCA – all DERs
	Societal Impacts	Greenhouse Gas Emissions	CETA, CCA – all DERs	CCA – all DERs
		Other Environmental	CETA, CCA – all DERs	CCA – all DERs
		Public Health	CETA, CCA – all DERs	CCA – all DERs
		Economic and Jobs	CETA, CCA – all DERs	CCA – all DERs
		Energy Security	CETA, CCA – all DERs	CCA – all DERs
		Energy Equity	CETA, CCA – all DERs	CCA – all DERs
		Resilience	CETA, CCA – all DERs	CCA – all DERs

As shown in Table 2, the CETA and CCA pertain to each impact, indicating they should be included in the WA Test. It is important to note that While CETA and CCA cover all impacts, interested persons identified additional policies mapping to these impacts in response to the Commission's July 5, 2022, opportunity to comment.[7]

Utility System Impacts

Step 2 of the NSPM for DERs indicates that all utility system impacts should be included in cost-effectiveness tests.[8] Utility system impacts are defined as the elements of the electricity or gas system required to deliver service to utility customers. For electric utilities, this includes generation, transmission, distribution, and utility operations. For gas utilities, this includes transportation, delivery, fuel, and utility operations.

It is important to include all elements of utility system impacts in a cost-effectiveness test for several reasons. It allows for DERs like energy efficiency to be treated consistently with other utility resources – consistent with NSPM Principle #1 – and ensures that at a minimum the cost-effectiveness test will show whether total utility system costs are reduced or increased by the investment in energy efficiency.

[7] See public comments filed on 7/25/22 available at: https://www.utc.wa.gov/casedocket/2021/210804/docsets.
[8] NSPM for DERs, pg. 3-6.

Table 2 and Table 3 provide a list of the electric and gas utility system impacts for inclusion in the WA Test and their definitions. The full range of impacts include those that may be specific to some but not all DERs, or to some but not all use cases.

Based on feedback from the utilities, some of the impacts in these tables are not currently included in cost-effectiveness analyses for a variety of reasons. While it may not be feasible to address these data gaps in the initial use of the WA test absent new research to quantify/monetize the impacts, this does not mean that the impacts should not be included in the WA Test (i.e., identified as an impact). Interim approaches to quantifying impacts can be used by using proxies or can be addressed qualitatively. We provide guidance on how to include such impacts in the initial use of the WA Test in Section IV below.

Table 3. Proposed Electric Utility System Impacts

Category	Impact	Definition
Generation	Energy Generation	Fuel and variable operations and maintenance costs from the production or procurement of energy (i.e., kWh) from generation resources
	Capacity	The generation capacity (kW) required to meet the forecasted system peak load
	Environmental Compliance	Compliance costs associated with environmental regulations; net of those already embedded in Energy Generation.
	Renewable Portfolio or Clean Energy Compliance	Compliance costs associated with meeting Washington state's 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, operation and maintenance
	Distribution Voltage	Voltage regulation to ensure reliable and continuous electricity flow across the power grid
	Distribution System Losses	Electricity lost through the distribution system
General	Financial 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 DER programs
	Utility Performance Incentives	Incentives offered to utilities to encourage successful, effective implementation of DER programs

Category	Impact	Definition
	Distributed Generation Compensation Mechanisms	Utility system costs associated with compensating host customers or developers for installation and operation of distributed generation resources
	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 4. Proposed Gas Utility System Impacts

Category	Impact	Definition
Commodity/ Supply	Gas Commodity	The gas capacity required to meet forecasted peak load as well as the fuel and O&M impacts related to purchasing gas at specific locations on the gas system and the variable cost of getting the gas where, and when, it will be used
	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	Pipeline Capacity	The fixed charges for pipeline transportation services that deliver natural gas to the local distribution company city gate
Distribution	Gas Distribution	Local distribution company costs to deliver gas from the city gate to retail customers
	Pipeline Losses	The volumetric difference between the gas entering the local distribution company city gate and the gas measured at customers' meters
General	Same as Electric Utility System Impacts	

Additional Guidance

Environmental Compliance

This impact includes compliance with federal and state environmental regulations such as those limiting criteria pollutants or greenhouse gas emissions. Based on feedback it was not clear whether these impacts are already embedded in the value of energy generation.

It is important that the utilities provide documentation to demonstrate that these impact are accounted for within benefit-cost analysis and in which impact category they are included to avoid the potential for double counting or exclusion.

Renewable Portfolio Standard/Clean Energy Standard Compliance

Interested persons indicated that CETA's zero-carbon electricity goals should be included in this impact. This aligns with the NSPM, which states that clean energy standards (CES) that more generally focus on zero-emissions resources (e.g., nuclear, hydro) are included within this impact.[9] DERs can reduce CES compliance costs by lowering overall electricity demand or increasing the level of qualified renewable generation. Alternatively, if a DER increases electricity demand (e.g., electrification), it will require additional renewable purchases and therefore increase CES compliance costs.

Distribution Costs

This impact includes several aspects of distribution system costs including capacity and operation and maintenance (O&M). If O&M costs are not included within the estimates of distribution capacity costs, then they should be accounted for separately within the WA Test.

Risk, Reliability, and Resilience

Interested persons indicated the need to develop clear definitions for Risk, Reliability, and Resilience through a workshop process. Table 3 includes the NSPM for DERs definitions for these three impacts as a placeholder. We discuss each impact in more detail in a separate subsection below.

Non-Utility System Impacts

Consistent with NSPM Principle #2, the inclusion of any non-utility system impacts should align with Washington state's applicable policy goals.[10] The umbrella policies of CETA and CCA indicate that other fuels, host-customer, low-income host customer, and societal impacts should be included in the WA Test as summarized in Table 2 earlier in this report. The subsections below provide the impacts included in each category as well as their definitions. Similar to the utility system impacts, it may not be feasible for all non-utility system impacts to be quantified and monetized for inclusion in the initial use of the WA Test. However, that does not mean that these impacts should be excluded from the test. We provide guidance for how to address such impacts in Section IV.

Other Fuel Impacts

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.

Examples of DERs that would impact other fuels include energy efficiency weatherization programs where a customer heats with oil, propane, or wood; electric transportation sector programs that results

[9] NSPM for DERs, pg. 4-4.

[10] NSPM for DERs, pages 3-7.

in a customer switching from an internal combustion engine (ICE) vehicle to an electric vehicle; or a building electrification program that results in a customer switching from another fuel to electricity.

Table 5. Other Fuel Impacts

Category	Impact	Definition
Other Fuels	Commodity	The fuel and O&M impacts associated with other fuels
	Environmental Compliance	Actions to comply with environmental regulations
	Market Price Effects	The change in wholesale prices as a result of changes in customer consumption

Host Customer Impacts

Host customer impacts are those impacts pertaining to a utility customer that participates in a program. The decision to include participant impacts is a policy decision and should be based on the applicable policy goals of Washington state. Interested persons concluded that CETA and CCA map to host customer impacts and therefore these should be included in the WA Test.

It is important that if the WA Test includes host customer impacts, it should ensure there is symmetry between host customer costs and host customer benefits. This pertains to Principle 3 of the NSPM for DERs, which states that symmetrical treatment of benefits and costs is necessary to avoid bias toward any one resource.[11] It is often easier to develop costs associated with host customer impacts than it is to quantify benefits, especially those related to non-energy impacts (NEIs). However, in accordance with Principle 4 of the NSPM for DERs, the WA Test should account for all relevant, material impacts, even those that are difficult quantify or monetize. In the case of host customer NEIs, the use of proxies may be appropriate to ensure symmetry, which is a common practice around the country. Proxies can be used in lieu of or as an interim methodology until primary research is conducted to monetize NEIs. We provide more guidance on this issue in Section IV.

Table 6 below provides a proposed initial list of host customer impacts for inclusion in the WA Test.

[11] NSPM for DERs, pg. 2-5.

Table 6. Host Customer Impacts

Type	Impact	Definition
Host Customer Energy Impacts	Measure Costs	Host customer share of costs incurred to install and operate DERs
	Transaction Costs	Other costs incurred to install and operate DERs
	Interconnection Fees	Cost paid by host customer to interconnect DERs to the electricity grid
	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
	Other Fuels	Change in the Host Customer's consumption of oil, gasoline, propane, natural gas, and water due to the installation of a DER
	Tax incentives	Federal, state, and local tax incentives provided to host customers to defray the costs of some DERs
Host Customer NEIs	Water	Changes in water consumption resulting from a DER (e.g., reductions from low-flow showerheads, spray valves, clothes washers)
	Asset value	Changes in the value of a home or business resulting from a 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)
	Low-Income NEIs	Impacts that are different from non-low-income host customer impacts, such as reduced home foreclosures.

Additional Guidance

Low-Income Host Customer NEIs

Low-income host customers experience the same categories of impact as non-low-income host customers; however, the magnitude of the impacts can differ. This is attributable to the often poor condition of low-income housing stock, the baseline of the customers health, safety, and comfort can vary greatly from that of a non-low income customer. This results in low-income host customers realizing greater benefits than non-low-income host customers after the installation of a DER. There are also several NEIs that may be more applicable to low-income host customers such as reduction in home foreclosures.

While the utilities indicate that they apply NEIs to low-income participants in their programs, we recommend low-income NEIs be included as a separate category to ensure transparency. This allows for additional NEIs specific to low-income customers to be included and provides for documentation in cases where a low-income NEI is developed through a different method or has a higher value than for non-low income host customers.

Societal Impacts

This category captures the impacts of energy efficiency to society, incremental to what may already be embedded in utility system impacts (e.g., GHG emissions and air pollutants). These impacts are often referred to as externalities. The decision of whether to include societal impacts should be based on Washington state's policy goals. The umbrella policies of CETA and CCA map to each of these impacts and therefore should be included in the WA Test.

Table 7. Societal Impacts

Category	Impact	Description
Societal Impacts	GHG Emissions	Non-embedded GHG emissions. Should be incremental to values included in utility system impacts
	Other Environmental	Other air emissions, solid waste, land, water, and other environmental impacts
	Public Health	Health impacts, medical costs, and productivity affected by health
	Economic and Jobs	Incremental economic development and job impacts represented in job-years. Job-years should be quantified but should not be directly included as a monetary value in cost-effectiveness
	Resilience	Definition to be determined through working group process
	Energy Security	Reduction in imports of various forms of energy to help inform the goals of energy independence and security

Additional Guidance

GHG Emissions

Societal GHG emissions are considered externalities because, in the case of Washington state, they are not included in the cost of electricity and gas. This impact is meant to capture the additional cost of GHG emissions after environmental compliance regulations have been met.

It is important that any environmental compliance costs associated with the reduction of GHG emissions that are already included in Utility System Impacts be subtracted from this impact to avoid double counting.

Other Environmental

This impact is intended to be a catch-all for all other environmental impacts. This could include air emissions, solid waste, land, water, and other environmental impacts that are not already embedded in environmental compliance costs that are included in the utility system impacts.

Care should be taken to further define this category as there is the potential for overlap with public health impacts. In the context of Washington state policy, it may be reasonable for the impact of other environmental to only include solid waste, land, and water, given that other air emissions would be captured within public health and utility system impacts.

Public Health

Energy production and consumption can negatively impact public health, most commonly through air emissions. DERs that either increase or decrease energy consumption will create a public health impact. Under the federal Clean Air Act, the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six common air pollutants, commonly referred to as "criteria air pollutants", that contribute to environmental and health problems. These include carbon monoxide, lead, nitrogen oxides, ground-level ozone, particle matter, and sulfur oxides.[12] To the extent the impacts from these emissions are not included in the cost of electricity and gas, it would be accounted for here as a societal impact. This impact is meant to capture the additional costs associated with criteria air emissions after environmental compliance regulations have been met.

There is potential for this impact to overlap with the environmental compliance impacts within the utility system impacts and health and safety within host customer impacts, thus care should be taken to avoid double-counting.

Economic and Jobs

Investment in energy efficiency resources will result in additional jobs and economic development in several ways. There are jobs associated with managing and delivering the efficiency programs and jobs associated with the companies that implement the programs (such as contractors, vendors, product manufacturers, etc.). Further, efficiency savings provide consumers with more disposable income, which helps creates jobs and spurs economic development.

The NSPM for DERs states that economic development can be shown as changes to employment (in job-years), gross domestic product (in $), personal income (in $), or state tax revenues (in $).[13] The economic indicators are interrelated and cannot be added together. Further, the monetary values of economic development cannot be added to the monetary cost-effectiveness analysis results because that would result in double-counting. Therefore, the estimates of economic development impacts should be presented alongside the rest of the results of the BCA. Synapse recommends that the number

[12] https://www.epa.gov/criteria-air-pollutants/naaqs-table

[13] NSPM for DERs, pg.4-22.

of job-years be used to represent economic development, because job growth is easily understood and relatively easy to isolate from the other indicators.

Energy Security

Energy efficiency can sometimes reduce imports of fossil fuels that are used to generate electricity, heat buildings, or power industries in Washington state. Reducing imports of fossil fuels can help advance the goals of energy independence and security. This may need further discussion by interested persons to inform how Washington defines 'security'.

There is potential for this impact to overlap with the utility system impacts of reliability and risk, thus care should be taken to avoid double-counting.

Energy Equity

CETA includes clear direction that energy equity is an important policy outcome of the state's energy policy. While there are multiple definitions of energy equity, Pacific Northwest National Laboratory defines it as:

> "An equitable energy system is one where the economic, health, and social benefits of participation extend to all levels of society, regardless of ability, race, or socioeconomic status. Achieving energy equity requires intentionally designing systems, technology, procedures, and policies that lead to the fair and just distribution of benefits in the energy system."[14]

There are several dimensions to energy equity – structural, procedural, and distributional.[15] BCAs are not able to address procedural or structural equity and cannot fully address distributional equity. Distributional equity requires assessing which customers experience the costs and benefits of utility programs and investments; however, BCAs are designed to measure costs and benefits on average across utility system, broad customer categories, host customers, or society.

The Commission will be examining how to consider the impacts of energy equity within BCAs as part of a process separate from the development of a primary test and activities in this docket. More specific connections about how to incorporate equity analysis to supplement BCA will be discussed in the second phase of this process.

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[14] Pacific Northwest. n.d. (PNNL Energy Equity). Pnnl.com website. https://www.pnnl.gov/projects/energyequity#:~:text=What%20is%20energy%20equity%3F,energy%2Defficient%20housing%20and%20transportation

[15] Integral to energy equity, the Commission identifies four dimensions of energy justice – distributional justice, procedural justice, recognition justice, and restorative justice. WA UTC Docket UG-210795 Order 09, pages 16-20.

Risk, Resilience, and Reliability

Several interested persons indicated the need for additional workshops to discuss the definitions of risk, resilience, and reliability to determine how best to define them in terms of Washington state and whether they are applicable to the utility system, host customers, society or all three.

To provide guidance on future workshops, the definitions for each impact category are provided below.

Risk

There are several types of risk to the utility system and to host customers. These include resource risk, operational risk, and planning risk among others. DERs can reduce risk through diversifying the energy portfolio, providing a hedge against more volatile fuels, and reducing loads. However, DERs can also increase risk in situations where utility outcomes are dependent on customer response (i.e., demand response events), potential cybersecurity threats, and increased load.

The NSPM for DERs indicates that risk can fall under utility system and host customer impacts.

- Utility System Definition: Uncertainty including operational, technology, cybersecurity, financial, legal, reputational, and regulatory risks. Some jurisdictions include this as a resource risk related to fossil fuel volatility whereby DERs provide a price hedge.[16]
- Host Customer Definition: 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 U.S. Department of Energy defines reliability as the ability of the system or its components to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components.[17]

The NSPM for DERs indicates that reliability can fall under utility system and host customer impacts.

- Utility System Definition: Maintaining generation, transmission, and distribution system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components

[16] NESP. 2022. *Methods, Tools and Resources: A Handbook for Quantifying Distributed Energy Resource Impacts for Benefit-Cost Analysis.* (NSPM MTR) Available at: www.nationalenergyscreeningproject.org/resources/quantifying-impacts/. Pg. 201.

[17] U.S. Department of Energy. 2017. *Transforming the Nation's Electricity System: The Second Installment of the Quadrennial Energy Review*. "Chapter IV: Ensuring Electricity System Reliability, Security, and Resilience." Available at: www.energy.gov/sites/prod/files/2017/02/f34/Quadrennial%20Energy%20Review--Second%20Installment%20%28Full%20Report%29.pdf. Pg. 4-1.

- Host Customer Definition: The ability to prevent or reduce the duration of host customer outages.

While reliability is often tracked by utilities using metrics related to the frequency, duration, and extent of power outages experienced by customers (e.g., system average interruption duration index – SAIDI), it has not yet been widely incorporated within cost-effectiveness. The NSPM companion handbook on Method, Tools, and Resources provides potential methods for monetizing a value for reliability including using the Value of Lost Load, Customer Interruption Costs, and Service Restoration Costs.[18]

Resilience

Resilience is distinct from reliability in that it pertains to extraordinary events, whereas reliability pertains to routine events.

NARUC defines resilience as "Robustness and recovery characteristics of utility infrastructure and operations, which avoid or minimize interruptions of service during an extraordinary and hazardous event."[19]

The NSPM for DERs indicates that resilience can fall under utility system and host customer impacts.

- Utility System Definition: The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions
- Host Customer Definition: The ability of host customers to avoid, mitigate, or quickly respond to power outages.
- Societal Definition: resilience impacts are incremental to those experienced by utilities or host customers.

To-date we are not aware of jurisdictions that monetize the impact of resilience within cost-effectiveness and therefore a proxy or qualitative discussion may be most appropriate in the near-term.

III. APPLICATION OF THE WA TEST

The proposed WA Test provides for a consistent approach to assessing the cost-effectiveness of DERs. While the list of impacts covered in Section II should always be included in any application of the WA Test, there may be cases where a certain impact factor is not applicable. In addition, depending on the DER and its use case, the impact may either be a cost or a benefit.

[18] NSPM MTR. Chapter 8.1 – Reliability.

[19] National Association of Regulatory Commissioners (NARUC). 2019. "The Value of Resilience for Distributed Energy Resources: An Overview of Current Analytical Practices." Prepared by Converge Strategies. https://pubs.naruc.org/pub/531AD059-9CC0-BAF6-127B-99BCB5F02198.

Whether or not an impact in the WA Test should be included in the BCA of a DER program will depend on the following:

- Applicability of impact: If the impact is relevant to a DER, it should be included. For example, host customer interconnection fees are relevant to distributed solar and therefore should be included in the BCA for a utility distributed solar program. Conversely, these fees are not relevant to energy efficiency programs and should not be applied.

- Magnitude of impact: If the impact is expected to be of sufficient magnitude to affect the result of a BCA it is material and should be included. For example, energy generation will have a large impact on the cost-effectiveness of energy efficiency and should be included, whereas ancillary services, while applicable to energy efficiency, may not be material and therefore is not included.

Taking into account utility responses to the Commission's September 23, 2022, Notice of Opportunity to Comment and feedback at workshops, Synapse prepared the below set of tables to highlight how the WA Test can be applied to different DERs. Within these tables an "x" indicates the impact is applicable and should be applied; "N/A" means an impact is not applicable to a particular DER and can be excluded; and "N/M" means the impact is not material.

Each table shows how the WA Test may be applied to the following DER types: energy efficiency (EE), demand response (DR), distributed generation (DG), distributed storage (DS), and electric vehicles (EVs). Actual utility program offerings may not fully align with these categories or may fall into more than one category. The below tables are not intended to be prescriptive; they are included in this straw proposal to demonstrate how a jurisdiction-specific cost test can be applied to different DERs. When applying the WA Test to a DER program or portfolio, utilities should consider the type of DER and specific use case when determining which impacts are applicable and material. Appendix 3 of the straw proposal provides examples of this process.

During this process, commenters have requested additional discussion concerning electrification and how to appropriately value programs that increase load. Staff intends to include opportunity to comment and focused workshop time to address electrification during the second phase of this process.

Table 8. Electric Utility System Impacts by DER Type

Category	Impact	EE	DR	DG	DS	EVs
Generation	Energy Generation	X	X	X	X	X
	Capacity	X	X	X	X	X
	Environmental Compliance	X	X	X	N/A	X
	Renewable Portfolio or Clean Energy Compliance	X	N/A	X	N/A	X
	Market Price Effects	X	X	N/M	N/M	X
	Ancillary Services	N/M	X	X	X	X
Transmission	Transmission Capacity	X	X	X	X	X
	Transmission System Losses	X	X	X	X	X
Distribution	Distribution Costs	X	X	X	X	X
	Distribution Voltage	N/M	N/A	X	N/A	X
	Distribution System Losses	X	X	X	X	X
General	Financial Incentives	X	X	X	X	X
	Program Administration Costs	X	X	X	X	X
	Utility Performance Incentives	X	N/A	N/A	N/A	N/A
	Distributed Generation Compensation Mechanisms	N/A	N/A	X	N/A	N/A
	Credit and Collection Costs	X	N/A	X	X	X
	Risk	X	X	X	X	X
	Reliability	X	X	X	X	X
	Resilience	X	X	X	X	N/A

Table 9. Gas Utility System Impacts by DER Type

Category	Impact	EE	DR	DG	DS	EVs
Commodity/ Supply	Gas Commodity	X	X	N/A	N/A	N/A
	Environmental Compliance	X	X	N/A	N/A	N/A
	Market Price Effects	X	X	N/A	N/A	N/A
Transportation	Pipeline Capacity	X	X	N/A	N/A	N/A
Distribution	Gas Distribution	X	X	N/A	N/A	N/A
	Pipeline Losses	X	X	N/A	N/A	N/A
General	Financial Incentives	X	X	N/A	N/A	N/A
	Program Administration Costs	X	X	N/A	N/A	N/A
	Utility Performance Incentives	X	X	N/A	N/A	N/A
	Credit and Collection Costs	X	X	N/A	N/A	N/A
	Risk	X	X	N/A	N/A	N/A
	Reliability	X	X	N/A	N/A	N/A
	Resilience	X	X	N/A	N/A	N/A

Table 10. Other Fuel Impacts by DER Type

Category	Impact	EE	DR	DG	DS	EVs
Other Fuel	Commodity	X	X	N/A	N/A	X
	Environmental Compliance	X	X	N/A	N/A	X
	Market Price Effects	X	X	N/A	N/A	X

Table 11. Host Customer Impacts by DER Type

Type	Impact	EE	DR	DG	DS	EVs
Host Customer Energy Impacts	Measure Costs	X	X	X	X	X
	Transaction Costs	X	X	X	X	X
	Interconnection Fees	N/A	N/A	X	X	N/A
	Risk	X	N/A	X	X	X
	Reliability	X	X	X	X	X
	Resilience	X	N/A	X	X	X
	Other Fuels	X	X	N/A	N/A	X
	Tax incentives	X	N/A	X	X	X

Host Customer NEIs	Water	X	N/A	N/A	N/A	N/A
	Asset value	X	N/A	X	X	N/A
	Productivity	X	X	X	X	N/A
	Economic well-being	X	X	X	X	X
	Comfort	X	X	X	X	N/A
	Health & safety	X	X	X	X	N/A
	Empowerment & control	X	X	X	X	X
	Satisfaction & pride	X	X	X	X	X
	Low-Income NEIs	X	X	X	X	X

Table 12. Societal Impacts by DER Type

Category	Impact	EE	DR	DG	DS	EVs
Societal Impacts	GHG Emissions	X	X	X	X	X
	Other Environmental	X	X	X	X	X
	Public Health	X	X	X	X	X
	Economic and Jobs	X	X	X	X	X
	Resilience	X	N/A	X	X	X
	Energy Security	X	N/A	X	X	X

IV. DEVELOPING METHODS FOR WA TEST IMPACTS

Approaches to Account for All Relevant Impacts

Once the WA Test is established, the next phase of the NSPM process is to identify the method or approach to account for impacts, where there are data gaps. There are three main pathways to including an impact within the WA Test, which can be to use:

1. Monetized values: impacts are quantified, and a dollar value is determined to represent the impact of a DER. These impacts can be derived from modeling, a jurisdiction-specific study, directly from the utility (e.g., financial incentives), or studies from another jurisdiction.

2. Proxies: proxy values are typically represented as a percentage adder that estimates the value of impacts that cannot be monetized. Percent adders are typically applied to scale-up monetized impacts to approximate additional value, for example 5 percent of total resource benefits. These are most used for non-energy impacts.

3. Qualitative assessments: a qualitative impact is one that is described in writing but is not included as a dollar value within the cost-effectiveness test.

As indicated by Principle 4 of the NSPM for DERs, the WA Test should account for all relevant, material impacts, including those that are difficult to quantify or monetize. Therefore, impacts that cannot be quantified and monetized in the near term should be addressed through use a proxy or described qualitatively.

Recommendations for Prioritization

In response to the Commission's September 23, 2022 Notice of Opportunity to Comment, the utilities identified which of the proposed WA Test impacts are already accounted for within their BCAs (i.e., monetized). These responses are compiled in Appendix 1. For impacts that are not currently included within BCAs, the utilities were asked to indicate whether it was due to lack of data, the impact being not material, or not applicable to a given DER. These responses are compiled in Appendix 2.

As detailed in these appendices there are substantial differences between utilities in their responses. While it is not possible to develop a consensus recommendation from these responses, Synapse proposes the following next steps to help guide Phase 2 of the Commission's investigation.

1. Impacts currently included:

   There is a lack of consistency across utilities regarding which impacts are currently included. It is possible this is related to a lack of clarity around the impact. As part of Phase 2, we recommend that current practice be confirmed and where discrepancy between utilities remains, there should be consideration as to whether the same impact value or method can be shared across all utilities.

2. Currently excluded impacts:

   For impacts that are relevant, material, but not currently included by the utilities, we recommend that stakeholders go through a further process of prioritization, where stakeholders rank these impacts based on their potential impact on cost-effectiveness results and the difficulty in monetizing. These two metrics will help to prioritize which impacts require studies be completed in the near-term to develop jurisdiction-specific values versus those that can be addressed through proxies or qualitatively.

Staff will conduct Phase 2 of this process during the next year. During the second phase, participants will develop methods to quantify and monetize impacts identified, as well as discuss specific areas of interest brought up by commenters during this process to date.