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Date:	March 31, 2023

New Jersey X2218 Incremental Measure Cost Study Phase 1 –Memo Accompanying IMC Spreadsheet

1   INTRODUCTION

The purpose of the X2218 New Jersey Energy-Efficiency Incremental Measure Cost (IMC) Study was to refine incremental measure costs to be used by the NJ Program Administrators (PAs) in cost-effectiveness analysis throughout the Second Triennium of energy efficiency programs. DNV was contracted by Rutgers to complete Phase 1 of the study, which involved secondary research to determine the best available IMC estimates for all measures in the NJ Technical Reference Manual (TRM) by the Second Triennium filing deadline of April 2023.

The attached spreadsheet summarizes the recommended IMCs most applicable to NJ's coordinated measure list as determined through secondary research. This memo summarizes the methodology used to gather publicly available data and refine IMC estimates to obtain the most appropriate values. Additionally, the memo includes a data dictionary defining the various fields in the accompanying spreadsheet. To conclude this study's Phase 1, DNV will deliver a more comprehensive report, including prioritization of measures for future primary research, in April 2023.

2   SPREADSHEET AND DATA DICTIONARY

DNV conducted a literature review of currently available IMC studies and data to establish a library of secondary sources for cost data review. Measure costs are embedded in a variety of publicly available EE resources. DNV focused the literature review on the following types of sources to identify IMC data applicable to New Jersey:

- **Potential studies:** Potential studies are typically conducted as part of a regulatory goal-setting process for energy efficiency portfolios. To estimate the potentially achievable savings from energy efficiency programs, the studies incorporate incremental measure costs of various measures along with other market forecasts. This often necessitates the creation of an incremental measure cost database (see next bullet). An example of a relevant potential study is the 2019 New Jersey Energy Efficiency Potential Report.[1]

- **Incremental measure cost databases:** IMC databases compare costs of energy-efficient technologies to costs of baseline alternatives, which vary depending on measure implementation type (e.g., early replacement or replace-

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[1] https://s3.amazonaws.com/CandI/NJ+EE+Potential+Report+-+FINAL+with+App+A-H+-+5.24.19.pdf

on-burnout). IMC databases broadly assign measure costs for entire portfolios of measures; in some cases, they also provide the sources used to estimate IMC for each measure. Occasionally the sources used in the secondary research may be outdated, unavailable, or not transferrable across jurisdictions. An example of a relevant IMC database is the 2020 Pennsylvania Incremental Cost Database.[2]

- **Technical reference manuals:** TRMs dictate how program implementors should estimate savings for various energy efficiency measures. Occasionally, TRMs include deemed incremental measure cost values for use in cost-benefit calculations. Like IMC databases, TRMs are very comprehensive and can provide IMCs for an entire portfolio of measures based on the best available information at the time of publishing. However, as with IMC databases, IMC values in TRMs often rely on secondary sources of varying vintage and availability. This can lead to a circle of citations in which different documents cite the same sources year after year, resulting in values that appear recent but are actually based on old or unavailable primary data. An example of a relevant TRM is the Mid-Atlantic Technical Reference Manual.[3]

- **Evaluation reports and IMC studies:** Evaluation reports and IMC studies leverage primary research to estimate incremental measure costs for specific measures. There reports are often published as directed by utility program evaluation plans and tend to focus on a narrow set of measures. Common methodologies for these studies are discussed in Section. A recent example of a relevant IMC study is a Mini-Split Heat Pump study from Massachusetts.[4]

- **Benefit-cost ratio models:** Publicly available benefit-cost ratio (BCR) models, often in the form of Excel workbooks, show the results of benefit-costs tests used in energy efficiency program and portfolio planning. These models often include measure-level costs but do not necessarily cite sources for cost information very clearly. Examples of BCR models include the Eversource BCR models for the Massachusetts 2022-2024 Three-Year Plan.[5]

- **Papers:** Academic/conference papers or whitepapers that review IMC methodologies. These typically do not have useful cost information but can offer lessons for future primary research.

Additionally, DNV requested data from both the NJ utilities and Rutgers to obtain current and previous IMCs used in filings.

DNV assessed over 38 secondary sources for data recency and applicability to NJ. When multiple sources provided reliable and relevant cost data points, DNV often averaged comparable IMCs to obtain the proposed IMC. Oftentimes sources with IMC data referenced older sources where costs originated. The study team traced IMC values to the most original source to determine the vintage of the primary cost research. When data points varied in reliability, age, relevancy, or other factors, DNV selected the most applicable or reliable cost estimate. Additionally, the team applied a Consumer Price Index inflation rate to adjust for 2023 US dollars. Where little to no data was found, or where data was deemed insufficient related to the measure in question, DNV did not provide an IMC. In these cases, measures are highlighted in green and will be given higher priority consideration for primary research recommendation.

The spreadsheet is organized by measure to reflect NJ's coordinated measure list and in accordance with the TRM Comprehensive Update. The spreadsheet also distinguishes measures by sector, end-use category, measure section,

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[2] https://www.puc.pa.gov/media/1316/act129_incremental_cost_database_v4-0.xlsx
[3] https://neep.org/mid-atlantic-technical-reference-manual-trm-v10
[4] https://ma-eeac.org/wp-content/uploads/RLPNC_17-14_MiniSplitCost_27NOV2018_Final.pdf
[5] https://ma-eeac.org/wp-content/uploads/Exhibit-5-2022-2024-Plan-BC-Model-Eversource-Electric-1.xlsb

measure name, and fuel type. The study team's decision-making is summarized in the IMC spreadsheet for each measure. The following table defines additional fields included in the IMC spreadsheet:

Column Header	Description
Determination Notes	DNV methodology and decision making associated with proposed IMC
Proposed Total IMC	Recommended incremental measure cost value. When costs are split out into capital and labor, the proposed total IMC equates to the sum.
Proposed Capital IMC	Where applicable, the material or equipment cost associated with the IMC
Proposed Labor IMC	Where applicable, the labor cost associated with the IMC
Incremental or Full Cost	Indicates whether the proposed cost is associated with an incremental or full cost
IMC UOM	Unit of Measurement
Cost Year	The year associated with the IMC value's original research
Inflation Adjusted (2023)	Recommended total IMC value inflated to 2023 US dollars
Proposed IMC Source	Original source associated with IMC value
Stakeholder Feedback Response	DNV response to stakeholder feedback received in March 2023