

Appendix K
Comprehensive Literature Review

K-1: Staff Testimony

**Appendix K-1
Staff Testimony**

**By Lauren Scott and Anne Stephenson
8-20-2024**

Introduction

1. What is the purpose of this testimony?

This testimony describes the Efficiency Maine Trust's (the Trust's or EMT's) application of the attached research on potential measures to include in the Triennial Plan VI. That research, conducted by the Cadmus group, may be found in appendices K-2 and K-3.

2. Who is introducing this testimony?

The testimony is provided by Lauren Scott, Strategic Initiatives Manager at the Trust, and Anne Stephenson, Assistant Deputy Director for Operations at the Trust.

3. Ms. Scott, please state your name, title, and business address.

My name is Lauren Scott, and I am employed by EMT as Strategic Initiatives Manager. My business address is 168 Capitol Street, Suite 1, Augusta, ME 04330.

4. Please summarize your educational and professional experience.

I have a bachelor of science degree in environment and natural resources from The Ohio State University. I was hired by the Trust in 2020. Including my prior roles as an environmental economics research assistant and environmental science teaching assistant, I have six years of experience in benefit-cost analysis, carbon emissions tracking and environmental valuation.

5. Ms. Stephenson, please state your name, title, and business address.

My name is Anne Stephenson, and I am employed by EMT as the Assistant Deputy Director for Operations. My business address is 168 Capitol Street, Suite 1, Augusta, ME 04330.

6. Please summarize your educational and professional experience.

I have a bachelor of arts from Mount Holyoke College and master's degree and PhD from the University of Chicago in architectural history. Before working at the Trust, I worked in campus sustainability, building science education, and energy efficiency in historic buildings. I was hired by the Trust in 2013 and have worked in various communications, reporting, and project management roles since that time. I have eleven years of experience in efficiency program administration, Trust operations, and Triennial Plan development.

Background

7. Why was this study undertaken as part of the Trust's research for Triennial Plan VI (TPVI)?

Trust staff wanted a comprehensive assessment of measures that might be included in the Triennial Plan VI period. Although Trust staff regularly attend conferences and survey peer organizations for their measure lists and rebated measures, the Trust commissioned a comprehensive assessment of potential measures. The Trust hired Cadmus to conduct a literature review of the Technical Reference Manuals (TRMs) of other efficiency programs, current energy efficiency literature, and to explore new and emerging technologies of particular interest. That list of new technologies was compiled by Cadmus and Trust staff based on measures that had emerged through preliminary research; measures that might be part of the Trust's newer programs, in particular demand management; and measures suggested through workshops with stakeholders and other emerging technologies powered by electricity.

8. How was the research conducted?

The Cadmus team reviewed the incentivized measures in other programs, as well as reviewing their TRMs. The team also researched new and emerging technologies, in particular micro variable speed heat pumps. The literature and program review found that many of the efficiency measures in other jurisdictions' TRMs or program lists are already incentivized by the Trust, with the exception of those not suitable for the Maine climate.

But the research did identify a list of measures not currently offered by Efficiency Maine that might be candidates for program inclusion and merited further research. These measures were evaluated for performance in the Maine climate and screened in the Trust's benefit-cost model. This preliminary screening eliminated some potential measures and 12 were identified as promising enough for further research and screening. That research and results are outlined in appendix K-2.

Findings

9. Did the study find new cost-effective measures to be included in the Triennial Plan VI period?

After the initial research and screening, 12 measures were evaluated closely. These are listed as 14 separate measures in the Cadmus memorandum (K-2), reflecting slightly different measure configurations. After a thorough cost-effectiveness analysis, 9 measures were found to exceed a benefit to cost ratio of 1, including:

1. Timer on Existing Water Cooler
2. Advanced Rooftop Unit Controller
3. Tub Spout Thermostatic Shut-Off Valves (both 2-year and 10-year EUL)
4. Heat Pump Clothes Dryer with Electric Baseline
5. Induction Cooktop with Electric Baseline
6. Air Curtains
7. Drain Water Heat Recovery (Electric and Fuels DHW)
8. Micro VSHP (Fuels Baseline)

9. Interior Cellular Shades

Most of these measures have been incorporated into the Triennial plan and measure roll-up file (Appendix B), particularly in the C&I Custom and Prescriptive programs. The tub spout thermostatic shut-off valve is a candidate for inclusion in the direct-mail initiative for income-eligible households. A detailed description of each measure may be found in Appendix K-2.

One measure identified as cost effective, the heat pump clothes dryer, has been met with mixed performance reviews so the Trust has opted to test the measure further through the Innovation program before potential inclusion in Retail and Distributor Initiatives.

10. What is the outcome of the other measures not currently cost effective, or close to the 'breakeven' line of cost effectiveness?

At this time, the induction cooktop screened cost effective with an electric baseline, but not when it replaced a gas or propane-fueled cooktop. Because it would be impossible to restrict a rebate to only electric replacements through the retail and distributor channel, the Trust will not include induction cooktops until they become cost effective regardless of the baseline.

Some climatic differences came out in the more in-depth investigation of specific measures in Maine that led to some measures currently not screening. Trust Staff regularly researches new measures and monitors industry pricing on potential measures. Staff will continue this process but will keep a particular eye on those measures that were close to the cost-effective line because an increase in performance or a reduction in measure costs might be enough to make commercial solar water heating cost effective.

Interior cellular shades screened close to the cost-effectiveness 'breakeven' line. This emerging measure was tested in 2020 in Knoxville, TN, and modeled for other climates. A 2018 Pacific Northwest National Laboratory (PNNL) report states that the potential for heating season savings varies by the actual usage patterns of the shades. Under the 'typical use' scenario, average savings were "insignificant relative to having no shades."¹ The Trust will watch for actual performance data in cold climates as it becomes available in the future. By the customizable nature of this measure, a rebate offered at retail stores would be difficult to implement. Window shades vary greatly in both size and aesthetic, with a counterfactual scenario that is largely unknown.

11. Does this conclude your testimony?

Yes.

¹ [Testing the Performance and Dynamic Control of Energy-Efficient Cellular Shades in the PNNL Lab Homes \(wpengine.com\)](https://www.wpengine.com)