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Oregon and Washington High CRI Bulb and Commercial Kitchen Equipment State Standards Evaluation

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Executive Summary

The Northwest Energy Efficiency Alliance (NEEA) contracted with Michaels Energy (the evaluation team) to conduct an independent evaluation to:

1) Qualitatively assess NEEA and its partner organizations'[1] influence on the establishment of the Washington and Oregon state standards and test procedures for High Color Rendering Index (CRI) Bulbs and Commercial Kitchen Equipment (specifically Commercial Fryers and Steam Cookers) and
2) Quantitatively assess the percentage of savings from the standards influenced by the combined efforts of those same organizations.

NEEA's Codes and Standards team supported the standards development, adoption, and rulemaking processes in Washington and Oregon for High CRI Bulbs and Commercial Kitchen Equipment. The High CRI Bulbs and Commercial Kitchen Equipment standards are part of a package of energy efficiency standards for certain appliances sold in Washington and Oregon. Appliance standards are typically passed as packages due to the complexity of adopting them at the state level. In Washington and Oregon, to enact a state standard, it must first pass through the legislative process and become a law before any rulemaking or enforcement of the standard can occur. The NEEA Codes and Standards team tracks their efforts throughout the standards development process and identifies which standards have the highest potential for energy savings and warrant evaluation. Evaluations are conducted by independent contractors to assess NEEA's efforts and their overall influence on the adoption of the standards. For these standards, NEEA and its partners provided comments and Northwest-specific data analysis to the Washington Department of Commerce (WA DOC) and the Oregon Department of Energy (ODOE), ultimately leading to each state passing the standards.

To conduct its evaluation, Michaels Energy reviewed the materials provided by NEEA and conducted online research to find additional information about the standards. Documentation included letters of support and opposition, initial and final bill language, rulemaking documents, and data analysis conducted specifically for the Northwest market. The evaluation team then interviewed stakeholders active in the adoption and rulemaking process, including energy-efficiency organizations and state energy agencies.

Through a qualitative assessment, the evaluation team found that NEEA and its partner organizations engaged in some of the activities in the NEEA Standards Initiative Logic Model (Figure 1). The most significant influence that NEEA and its partners had on the standards was providing market and equipment data and potential energy and cost savings in Washington and Oregon that overcame manufacturer opposition to the standards.

[1] NEEA's partner organizations for state and federal standards work include energy-efficiency and advocacy organizations such as Appliance Standards Awareness Project (ASAP), Alliance to Save Energy (ASE), Climate Solutions, E2, Natural Resources Defense Council (NRDC), Northeast Energy Efficiency Partnerships (NEEP), Northwest Energy Coalition and the Northwest Power and Conservation Council (NWPCC).

To determine the share of savings influenced by NEEA and its partners' activities, the evaluation team conducted a quantitative assessment to assess the effectiveness and outcomes of those activities undertaken by NEEA and its partners and their ultimate influence on the standards. This analysis indicates that NEEA and its partners' activities influenced **15.8%** of the High CRI Bulbs total energy savings and **10.4%** of the Commercial Kitchen Equipment total energy savings.

1 Introduction

This report presents the evaluation results of the NEEA appliance and equipment standards advocacy work concerning High CRI Bulbs and Commercial Kitchen Equipment (specifically Fryers and Steam Cookers). This study assessed the influence of NEEA and its partner organizations on adopting these standards and estimated the share of savings influenced by their efforts in the states of Washington and Oregon.

The federal government develops energy efficiency standards for appliances and other equipment; in most cases, federal standards preempt any state standards. However, states can establish standards individually or jointly if the federal government opts not to establish or has not yet established standards for a particular appliance or product. Washington State adopted its first package of appliance efficiency standards in 2005, then again in 2009, and most recently in 2019. Oregon established its first appliance energy efficiency standards package in 2005 and updated them in 2007, 2013, and, most recently, in 2021.

Before the most recent adoption and rulemaking in Washington and Oregon, High CRI Bulbs were marketed as an alternative to the federally regulated lamps of the same type. Prior to 2012, High CRI Bulbs with a CRI of 87 or higher served a niche market. Typically used exclusively for food preparation, the bulbs were more expensive and harder to find. Due to their limited market share, Congress excluded them from federal standards. This exclusion prompted manufacturers to create cheaper, less efficient T12 and T8 fluorescent options that were exempt from the federal standards, creating a loophole in the federal regulatory framework for such products.[2] The Commercial Fryers and Steam Cookers standards needed to be updated to remain consistent with ENERGY STAR® minimums, ENERGY STAR Version 2.0 for Fryers, and ENERGY STAR Version 1.2 for Steam Cookers. The adoption and rulemaking began in Washington in 2017 (HB2327 & HB1444) and in Oregon in 2020 (HB2062).

Table 1 and Table 2 summarize the activity of each state during the adoption process for High CRI Bulbs and Commercial Kitchen Equipment.

[2] https://appliance-standards.org/blog/lighting-standards-loophole-jeopardizes-energy-and-cost-savings-fluorescent-tubes

Table 1. Timeline of Appliance Standards Adoption and Rulemaking Process – Washington

2017	• December: HB 2327 - Final rules submitted to the Secretary of State
2018	• January: The House of Representatives (House) conducted the first reading • January: The first public hearing was held in the House Committee on Technology & Economic Development • February: Bill was passed at the house level • February: Public hearing held in the Senate Committee of Environment, Energy, and Technology • March: Did not pass at the Senate level • April - November: WA DOC worked to get more bill sponsors in both the House and Senate. They met with manufacturers to work through any opposition and gained more support from non-profits, energy utilities, water and wastewater utilities, and local government • December: HB1444 - Bill was prefiled with the WA Legislature
2019	• January: The House conducted the first reading • January: First public hearing in the House Committee on Environment & Energy • March: Passed at the House level • March: Public meeting held in the Senate Committee of Environment, Energy and Technology • April: Passed at the Senate level • May: Signed into law • August: Public hearing and public comment period held by the WA DOC to establish rules
2020	• January: The department submitted the final rules to the Secretary of State
2022	• January 1st: Commercial Fryers and Steam Cookers Effective Date
2023	• January 1st: High CRI Bulbs Effective Date

Table 2. Timeline of Appliance Standards Adoption and Rulemaking Process – Oregon

2020	• April: In response to an Executive Order 20-04, the ODOE announced a plan for conducting rulemaking in the State. • May: A stakeholder advisory meeting was held to seek feedback on the proposed standards • July: Public hearing held • July: Comment period closed • August: Final rules submitted to the Secretary of State
2021	• January: The House conducted the first reading • March: The first public hearing was held in the House • April: Passed at the House level • April: Public meeting held in the Senate Committee of Environment, Energy and Technology • May: Passed at the Senate level • June: Signed into law • October: Public hearing and public comment period held by the ODOE to establish rules • November: ODOE submitted the final rules to the Secretary of State
2022	• January 1st: Commercial Fryers Effective Date
2023	• January 1st: High CRI Bulbs Effective Date • July 1st: Commercial Steam Cookers Effective Date

1.1 Purpose of the Study

NEEA's Codes and Standards team supports the development and adoption of efficiency standards and test procedures by advocating for the most stringent, technologically feasible, and economically justified standards to maximize energy savings.

This study aimed to assess, qualitatively and quantitatively, the influence of NEEA and its partners on the High CRI Bulbs and Commercial Kitchen Equipment appliance standards and test procedures adopted in Washington (2020) and Oregon (2021). The evaluation team investigated the challenges and barriers to adopting the standards and the activities conducted by NEEA and its partners to push forward the most stringent, technologically feasible, and economically viable standards. The evaluation team conducted two assessments:

1) A qualitative assessment of NEEA and its partners' influence on the standards using NEEA's Standards Logic Model (Figure 1) as a guide, and
2) A quantitative determination of the proportion of total energy savings that resulted from NEEA and its partners' influence.

1.2 Description of the Washington Standard Adoption Process

Washington State can only adopt State energy efficiency standards through a legislative process; State laws do not allow for adoption through rulemaking. However, in the most recent standards update, the following provision was added:

> *"The department [Department of Commerce] may adopt rules that incorporate by reference federal efficiency standards for federally covered products only as the standards existed on January 1, 2018. The department, in consultation with the office of the attorney general, must regularly submit a report to the appropriate committees of the legislature on federal standards that preempt the state standards set forth in RCW 30 19.260.040. Any report on federal preemption must be transmitted at least thirty days before the start of any regular legislative session."*[3]

When it comes to updating existing standards, the Washington Department of Commerce (WA DOC) WA DOC may adopt by rule a more recent version of any existing minimum efficiency standard or test method, including any product definition associated with the standard or test method, to maintain or improve consistency with other comparable standards in other states[4].

The WA DOC helps to develop and implement equipment energy-efficiency standards in the State of Washington. The Washington standards adoption and rulemaking process are featured in Table 3. Throughout the process, the State may work with other state or federal government agencies and consult with outside experts or advisory committees to help inform its decision-making.

[3] https://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/House%20Passed%20Legislature/1444-S2.PL.pdf?q=20210208131222

[4] https://app.leg.wa.gov/RCW/default.aspx?cite=19.260.040&pdf=true

Table 3. Washington Standard Adoption and Rulemaking Process

Adoption	Rulemaking
• **Needs assessment:** The WA DOC identifies a need for new or updated standards in the state. • **Bill Sponsor:** The WA DOC identifies a member(s) of the House or Senate that will sponsor the bill and help shepherd it through to becoming a law. • **Stakeholder Engagement:** The WA DOC engages with stakeholders, including manufacturers, industry groups, consumers, and other interested parties, to gather input and feedback on the proposed equipment standards. • **Drafting of Standards:** The WA DOC drafts the proposed bill for updating or adding the equipment standards based on the research and stakeholder input. • **Prefiling:** Bill sponsor pre-files the bill for introduction the month before the legislative session begins. Pre-filed bills are officially introduced on the first day of the session. • **Introduction and Committee Action:** Bill is introduced and submitted to the committee where three different types of action are taken (1) work sessions, where issues are determined and reviewed; (2) public hearings, where testimony from interested parties is taken; and (3) executive sessions, where the committee decides how it will report the bill to the whole house. • **Rules Committee:** Once a bill has been reported by the appropriate committee(s), the floor acts on the committee report and then passes the bill to the Rules Committee. Usually, the floor adopts the committee's recommendation. • **Second and Third Readings:** Bill is re-introduced, and any amendments are made and voted on. The House must pass the bill before it is submitted to the Senate for review. If the Senate passes the bill, it is considered to be enrolled. • **Signed Into Law:** Governor reviews and signs the bill into law.	• **Notice of Proposed Rulemaking (NOPR):** WA DOC publishes a Notice of Proposed Rulemaking (NOPR) in the Washington State Register. The NOPR must include the proposed text of the rule, an explanation of the reasons for the rule, and in some cases, a summary of the expected economic impact. • **Public Comment and Review:** After the NOPR is published, the WA DOC typically provides a period for public comment. Interested parties can submit written comments or testify at public hearings. • **Finalizing of Standards:** After considering public comments, the WA DOC will finalize the rule and submit it to the state's Office of the Code Reviser (OCR). The OCR reviews the rule for legality and clarity and ensures it is consistent with other state laws and regulations. • **Adoption:** After the OCR approves the final rule, the WA DOC files it with the Secretary of State, which publishes it in the Washington State Register. The rule typically becomes effective 31 days after publication. Still, the effective date may be delayed if the rule is subject to review by the Legislature or if the agency specifies a later effective date in the rule. • **Enforcement:** Once the equipment standards are adopted and become effective, manufacturers, distributors, and retailers must comply with the standards. The state may conduct inspections and take enforcement actions against non-compliant parties.

1.3 Description of the Oregon Standard Adoption Process

The Oregon Department of Energy (ODOE) is a government agency that works with state and federal partners to create standards that will reduce energy consumption, meet consumer needs, and can be implemented by manufacturers. The ODOE develops and enforces all energy-efficiency standards in the State of Oregon. Like Washington State, energy efficiency standards can only be adopted through a legislative process. The ODOE and State of Oregon standard adoption and the rulemaking process are covered in Table 4.

Table 4. Oregon Standard Adoption and Rulemaking Process

Adoption	Rulemaking
• **Needs Assessment:** The ODOE identifies a need for new or updated standards in the state or is directed by an executive order and presents it to a bill representative. The Representative decides to sponsor the bill, introduces it to the House of Representatives, and requests the bill be drafted in proper legal language. • **Presentation of Bill:** The bill is then presented to the Chief Clerk of the House, who assigns the bill a number. • **Introduction and Committee Review:** After the bill's first reading, the Speaker refers it to a committee. The committee reviews the bill and holds public hearings and work sessions. • **Second and Third Readings:** Bill is re-introduced, and any amendments are made and voted on. The House must pass the bill before it is submitted to the Senate for review. If the Senate passes the bill, it is considered to be enrolled. • **Signed Into Law:** Governor reviews and signs the bill into law. The bill becomes law on January 1 of the year after the act's passage or the prescribed effective date.	• **Stakeholder Engagement:** ODOE schedules a stakeholder advisory meeting to help inform rulemaking and gain feedback on the proposed efficiency standards, effective dates, product registration, and labeling requirements. • **Drafting of Standards:** ODOE drafts rules and test procedures. • **Public Comment and Review:** ODOE holds a public hearing and establishes a timeframe for accepting written comments. • **Finalizing of Standards:** ODOE finalizes rules and test procedures. • **Adoption:** The ODOE issues the final rule to the Secretary of the State to be voted on in Legislative Assembly. • **Enforcement:** Once the equipment standards are approved, Oregon works to implement them. This may include training programs for equipment users, inspections and enforcement by regulatory agencies, and other measures to ensure compliance with the new standards.

Overall, the process for implementing equipment standards in Oregon is designed to ensure that the standards are effective, feasible, and supported by stakeholders.

It is worth noting that the adoption of the most recent standards in 2021 was stipulated by an Executive Order signed by the Governor of Oregon that directed the ODOE to establish standards for these products.

2 Methodology

This section describes the methodology used to evaluate NEEA and its partners' influence on the Washington and Oregon state standards for High CRI Bulbs and Commercial Kitchen Equipment (Commercial Fryers and Steam Cookers). The data collection approach and its limitations are described first, followed by the methodologies for the qualitative and quantitative assessments.

2.1 Data Collection Approach

The data collection approach taken by the evaluation team was twofold. It involved a document review of pertinent information provided by NEEA and found through online research, followed by in-depth interviews with key stakeholders.

2.1.1 Document Review

The team reviewed all documentation provided by NEEA and found online. This included written letters to state legislatures, market data and analysis provided for the region, and final bill and rulemaking documents. For each document reviewed, the evaluation team aimed to answer three key research questions: 1) Who were the main players, and what were their roles? 2) What were the challenges to developing and adopting the standard? 3) What activities did the organizations undertake to overcome these challenges?

The document review helped to identify major barriers to adopting the standards and activities conducted by stakeholders to overcome these barriers. The information learned from the document review was also used as the basis for the in-depth interviews.

2.1.2 In-depth Interviews

Using the information collected during the document review, the team developed a list of potential interviewees based on stakeholders' participation in the adoption and rulemaking processes. The team created this list to gather various perspectives, including those of utilities, manufacturer associations, members of the state legislatures, and energy-efficiency organizations involved in the adoption and rulemaking of the standards. The evaluation team used a purposive sampling approach followed by a network sampling approach. The purposive sampling prioritized interviews with organizations believed to have provided input into the adoption and rulemaking processes, the issues and challenges that arose, the main stakeholders, and NEEA and its partners' influence. These interviews were conducted first, and interviewees were asked to recommend others who should be considered for interviews (network sampling).

Taking the major barriers and activities identified during the document review, the evaluation team created an interview guide to facilitate conversations with interviewees. The guide contained structured and unstructured questions to gather in-depth insight and ratings of barriers and NEEA activities to support the quantitative analysis. In-depth interviews were the preferred method over an online survey, as they allowed the evaluation team to probe the interviewee for additional information and ask clarifying questions. Interviewees were asked

about various barriers to establishing the standard that were identified during the document review and listed in the NEEA Standards Logic Model; interviewees were asked about any other barriers that existed. After adding additional barriers mentioned by the interviewee, the interviewer asked the respondent to rank each barrier on a scale of 0 – 5, with 0 meaning not applicable and 5 meaning the barrier was extremely challenging to overcome. Then, interviewees were asked to comment on each specific activity that NEEA and its partners undertook. They were also asked whether they knew of any other actions NEEA and its partners took that impacted the adoption or rulemaking. The interviewer asked interviewees to describe the role of NEEA and its partners in each identified activity, the outcomes corresponding to each activity, and the extent of NEEA's influence on the final standard.

The evaluation team completed seven interviews with eight individuals representing five organizations by January 31, 2023. Interviewees included one representative from NEEA, three energy-efficiency advocates, and four representatives from the state energy agencies (ODOE and WA DOC). The evaluation team had originally planned to conduct interviews separately by technology. However, all interviewees reported they worked with both technologies and were able to discuss both, reducing the number of interviews needed.

2.2 Limitations

Three factors limit the data collection and results of this evaluation:

1. The long duration of the adoption and rulemaking process,
2. The timing of the evaluation in relation to the completion of the final rulemaking, and
3. Non-response bias.

Most adoption and rulemaking processes occurred in 2018, 2019 (Washington), and 2020 (Oregon). The final rules were not published or approved until 2020 (Washington) and 2021 (Oregon). Several potential interviewees had either moved to a different company or retired, making it difficult to contact and recruit them for an interview. The evaluation team contacted two interviewees at their new place of employment and were able to conduct the interviews. For the others that had retired, the evaluation team interviewed their replacement instead.

Additionally, due to the extended time between the evaluation and the final rulemaking, some interviewees could not recall certain events or details concerning their involvement. The interviewer provided examples or additional context to questions when needed. Even though the interviewers avoided leading questions and prompts, there is potential that probes may have introduced some level of bias into interviewees' responses.

The evaluation team reached out to 13 organizations for interviews. A total of seven interviews were scheduled and completed; the remaining either declined or were unresponsive. The results may be biased based on who was interviewed and the lack of perspectives from some of the standard's other stakeholders. For example, the evaluation team tried to interview a manufacturer representative and a manufacturers' association that served as lobbyists on behalf of manufacturers in the High CRI Bulbs rulemaking process, neither of which had a representative willing to participate in an interview. The evaluation team also contacted a local utility with representation in the Oregon rulemaking, but they declined the interview. Lastly,

several public employees were contacted from the State of Washington who declined the interview.

2.3 Methodology to Assess NEEA and Partners' Influence

To determine NEEA and its partners' influence on the adoption and rulemaking process, the evaluation team used the NEEA Standards Initiative Logic Model, shown in Figure 1, as a framework. Each box in the logic model was numbered, starting at the Activities level and moving down to the Outcomes and Impact.

The evaluation team determined whether NEEA and its partners participated in the activities and generated the outputs and outcomes shown in the logic model resulting from the document analysis and in-depth interviews.

The evaluation team rated NEEA and its partners' participation in an activity/creation of an output or outcome as a "Yes" if they had clearly been involved, provided comments, data, or analysis, or participated; a "No" if they clearly did not undertake the activity or generate the output or outcome; and a "Some" if they undertook some of the activity, undertook a related activity, or caused some of the desired output or outcome.

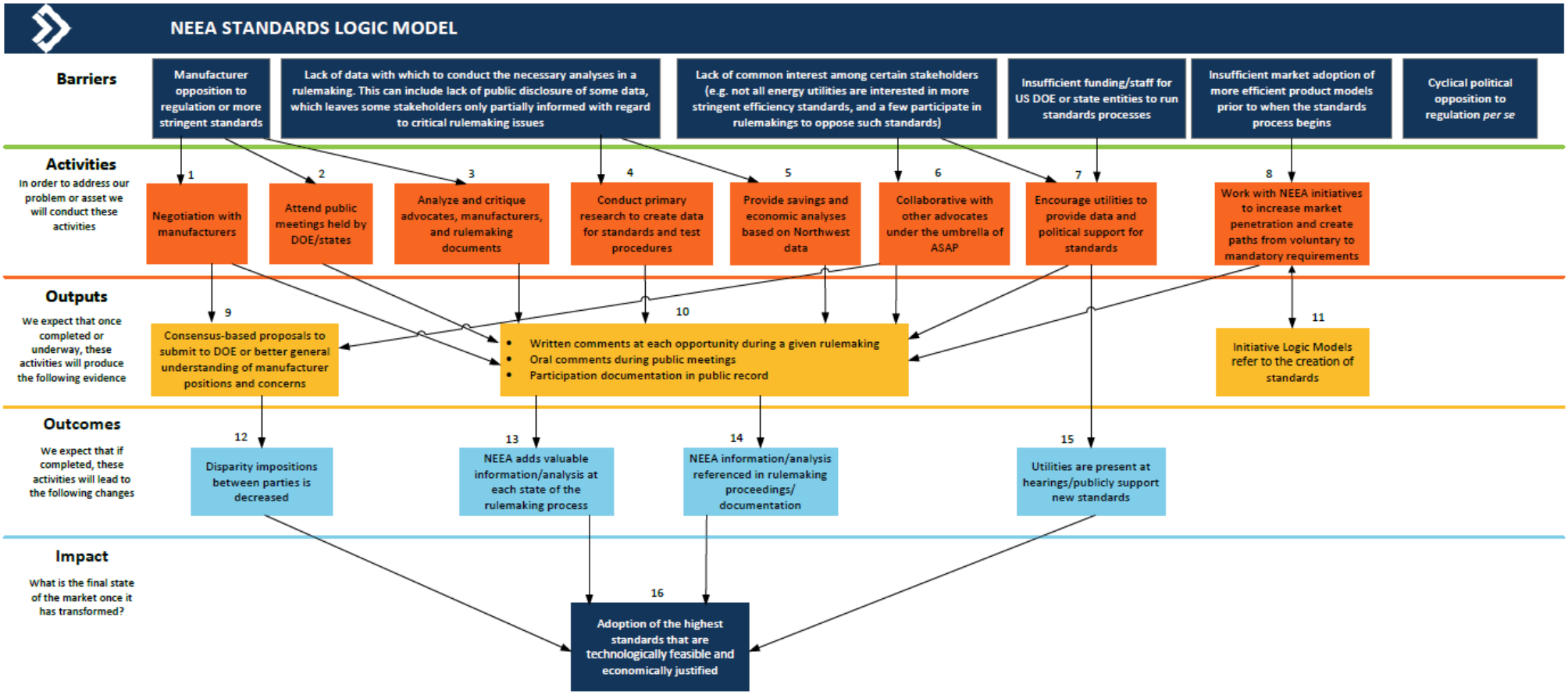

Figure 1. NEEA Standards Initiative Logic Model

2.4 Methodology to Estimate Share of Energy Savings from NEEA and Partners' Efforts

To estimate the share of savings influenced by NEEA and its partners' activities, the evaluation team followed a framework developed by NEEA and its stakeholders that was used for past standards evaluations. The key inputs created through the framework to calculate the share of savings are:

a) Significance of the Barrier
b) Effectiveness and Significance of Activity in Addressing the Barrier
c) Effectiveness of Activity Relative to All Barriers
d) NEEA and its Partners' Role in the Activity
e) Relative Savings Influenced by the Activity

Where:

a x b = c and c x d = e

The steps taken by the evaluation team to develop these inputs are summarized below. Section 2.4.1 details how to calculate the share of savings percentage, while Section 2.4.2 covers the rationale behind the ratings and percentages assigned.

2.4.1 NEEA Standards Evaluation Framework

1. **Identified all barriers** to the standard's development and adoption through a document review and stakeholder interviews. All of the barriers aligned with the NEEA Standards Initiative Logic Model.
2. **Estimated barrier significance and assigned a percent significance to each barrier**, including the barriers not addressed by energy-efficiency organizations. The sum of the percentages for all the barriers is 100%. The evaluation team used ratings from the interviews and professional judgment to determine the percentage for each barrier.
3. **Identified all activities** undertaken by the energy-efficiency organizations, their outcomes, and which barriers they addressed.
4. **Estimated each activity's effectiveness and significance** by assigning a percentage to each activity. The following assignments were used: high effectiveness = 60%, medium effectiveness = 40%, and low effectiveness = 20%. The evaluation team used their professional judgment to determine the percentages for each effectiveness level (i.e., high, medium, and low). The assigned percentages are consistently used for each rating, with exceptions made for activities that may have had a much larger or much smaller impact on overcoming the intended barrier. Rationale is provided if the percentages deviate from the standard.
5. **Estimated the effectiveness of each activity relative to all the other activities** by multiplying the significance of each barrier (2) by the significance of each associated activity (4). This calculation estimated the effectiveness of each activity relative to all efficiency organization activities to overcome all barriers.

6. **Quantified the energy-efficiency organizations' role in each activity relative to all participants by applying a specified percentage to primary, major, or minor roles**. In past evaluations, the percentages were defined as follows: primary (led effort to support the ODOE/WA DOC) = 50%, major (did not lead but contributed significantly) = 30%, and minor (did not contribute significantly) = 15%. The evaluation team used information gathered through the interviews and their professional judgment to determine the percentages for each role (i.e., primary, major, and minor). The assigned percentages are consistently used for each role, with exceptions made only if energy-efficiency organizations played a much greater or smaller role. The rationale is provided if the percentages deviate from the standard.
7. **Calculated the share of savings from efficiency organizations' activities** by multiplying the results of the effectiveness of each activity (5) by the relative role of energy-efficiency organizations (6). This calculation estimated the savings from each activity as a percentage of total savings from the standard. Summing these percentages resulted in the total savings (as a percentage) influenced by NEEA and its partners' activities.

2.4.2 Rationale for Scoring

The overall share of energy savings was determined using the methodology covered in section 2.4.1. The significance of each barrier to the standards development, adoption, and rulemaking strongly impacts the resultant percentage of energy savings. Lower-rated barriers will lead to lower activity effectiveness relative to all barriers and the relative savings influenced by the activity scores. For example, a barrier rated with a 10% significance, high-rated effectiveness (60%), and a primary role (50%) for the activity will account for less overall relative savings compared to a barrier with a 20% significance with the same effectiveness and role percentages. The barrier significance is the driving force behind the energy savings influenced by the activity.

Rationale for Rating the Significance of Barriers

Based on the information gathered in the interviews and interviewees' rankings of the importance of the barriers in the logic model, the evaluation team assigned a percentage to represent the significance of the energy savings of each barrier. Interviewees' rankings were also weighted in accordance with their direct involvement in the standards adoption and rulemaking process. For example, ratings from interviewees who were more directly involved were weighted higher than interviewees who were less directly involved in the process. The team estimated barrier significance by assigning a percent significance to each, including the barriers not addressed by NEEA and its partners. The sum of the percentages for all barriers equals 100%. The following addresses the rationale for the significance of each barrier.

Rationale for Rating the Significance of Activities Relative to Each Barrier

Before analyzing the effectiveness of each activity, the evaluation team determined its significance relative to its corresponding barrier. If there was only one barrier, the significance of the activity to address the barrier was set equal to the significance of the barrier. If there was more than one activity that addressed the same barrier, the team used information collected through the document review and interviews, along with professional judgment, to assign a

percentage to the significance of each activity relative to its barrier. The sum of the percentages of significance for each activity equals the percent significance of the barrier.

Rationale for Rating the Effectiveness of Activities and Rating the Role of NEEA and its Partners in Each Activity

Using information gathered from the interviews and the document review, the evaluation team determined what activities NEEA and its partners undertook to overcome the identified barriers. The effectiveness of each activity in overcoming the barrier was assessed by reviewing the information gathered in the interviews and re-reviewing documents to see if the action resulted in the desired outcome in the final bill or rule. Each activity was given an effectiveness rating of high, medium, low, or not effective. The percentages assigned and a description for each activity effectiveness rating are described in Table 5 below.

Table 5. Activity Effectiveness Designations

Activity Effectiveness	Percent Assigned	Description
High	60%	Achieved the desired outcome.
Medium	40%	Achieved some of the desired outcomes, but not all.
Low	20%	Achieved very little of the desired outcome or achieved outcomes with little impact on energy savings.
Not effective	0%	Did not achieve any of the desired outcomes during this rulemaking.

The evaluation team also rated the role of NEEA and its partner organizations in each activity as "primary," "major," or "minor." Information from the interviews and document reviews was used to make these assessments. A "primary" role means that NEEA and its partners either led the effort themselves or led an effort to support the state. A "major" role means that NEEA and its partners did not lead but contributed significantly to an activity. A "minor" role means that NEEA and its partners contributed, but not significantly, to an activity. Based on the precedent set in previous standards evaluations, the evaluation team assigned a percentage weight to each role rating representing NEEA and its partners' relative role in an activity compared to other stakeholders. Table 6 shows these role designations and their corresponding percentages, followed by the rationale for the ratings.

Table 6. Role of NEEA and its Partner's Designations

Role of NEEA and its Partners	Percent Assigned	Description
Primary	50%	NEEA and its partners either led the effort themselves or led an effort to support the WA DOC/ODOE.
Major	30%	NEEA and its partners did not lead but contributed significantly to an activity.
Minor	15%	NEEA and its partners contributed, but not significantly, to an activity.

3 Results

3.1 NEEA and Partners' Influence

This section presents the results of the qualitative assessment conducted by the evaluation team using the methodology described in Section 2.3. The results for the High CRI Bulbs are presented first, followed by the Commercial Kitchen Equipment (Fryers and Steam Cookers).

3.1.1 High CRI Bulbs

Table 7 presents NEEA and its partners' influence on the High CRI Bulb state standard and test procedure in Washington and Oregon using the NEEA Standards Initiative Logic Model (Figure 1) as a framework.

The most significant influence that NEEA and its partners had on the High CRI Bulbs standard was through its testimony in the Washington State Legislature. NEMA and its lobbyist were concerned that the data provided to them by the WA DOC was inaccurate. NEEA's testimony validated the legitimacy of the market and equipment data and estimates of cumulative and monetary savings specific to the Northwest market that NEEA and the Appliance Standards Awareness Project (ASAP) prepared. This testimony ultimately led to NEMA and their lobbyist rescinding their opposition and pushback to the bill and their need for further data or information. NEEA also provided written testimony to the WA DOC on multiple occasions, which was presented to NEMA and its lobbyist.

Providing written testimony that validated the data mentioned above addressed the manufacturer opposition barrier in the NEEA Standards Initiative Logic Model (Figure 1). This evaluation determined that without this data and NEEA's testimony, the likelihood that the standards would have passed is very low.

The second most significant area of influence that NEEA and its partners had on High CRI Bulbs was providing market and equipment data and estimated cumulative energy and monetary savings in Washington and Oregon for 2020-2035. Providing the information and data addressed the lack of data barrier in the NEEA logic model.

The High CRI Bulbs standard proposed and adopted requires linear fluorescent lamps with a CRI of 87 or higher to meet the same efficiency requirements as federally regulated CRI linear fluorescent lamps. These were the original requirements proposed by the WA DOC and the ODOE when the standards were first presented to the state legislatures. While NEEA and its partners did not directly influence the efficiency requirements or the level of the standard adopted, their knowledge and expertise were invaluable to both states, ultimately leading to the standard being passed.

Table 7. High CRI Bulbs - Qualitative Analysis of NEEA and its Partners' Influence

Box #	Element	Description	Did NEEA and its partners have a role in these activities?	Findings
1	Activity	Negotiation with manufacturers	Some	While NEEA and its partners did not directly negotiate with manufacturers, they did provide market and equipment data on High CRI Bulbs at the request of the state agencies to use for negotiations with manufacturers and the lobbyist hired by NEMA. The WA DOC also invited NEEA to testify in the WA Legislature to substantiate the legitimacy of the data that they and ASAP provided on their behalf.
2	Activity	Attend public meetings held by ODOE/WA DOC	Yes	A NEEA representative attended public meetings held by the state agencies (WA DOC and ODOE).
3	Activity	Analyze and critique advocates, manufacturers, and rulemaking documents	Yes	NEEA reviewed and commented on the ODOE calculations of potential energy and cost savings estimates. NEEA also provided written statements and testimony during the public comment periods in Washington and Oregon.
4	Activity	Conduct primary research to create data for standards and test procedures	No	There was no evidence in the information collected during the document review or stakeholder interviews that indicated NEEA or its partners completed any primary research for this standard.
5	Activity	Provide savings and economic analyses based on Northwest data	Yes	NEEA provided Northwest-specific market and equipment data for High CRI Bulbs. NEEA and its partner organizations summarized estimated cumulative energy and monetary savings in Washington and Oregon for 2020 – 2035 to the WA DOC and ODOE. ASAP provided annual and cumulative savings estimates to the ODOE. The Northwest Energy Coalition (NWEC) created a fact sheet containing Washington and Oregon-specific information from all advocacy groups.

6	Activity	Collaboration with other advocates under the umbrella of ASAP	Yes	NEEA, ASAP, and other partners wrote letters to the ODOE and the WA DOC and provided cost and market share data. ASAP also provided draft legislation language to the WA DOC and ODOE to use when drafting their standards. Although NEEA is required to remain bipartisan in its position on adopting the standards and can only provide facts and data in its letters and testimonies, NEEA partners offered strong support for adopting the standards in their letters and comments to the ODOE and WA DOC.
7	Activity	Encourage utilities to provide data and political support for standards	No	There was no evidence that NEEA or its partners encouraged utilities to provide data or support for this standard.
8	Activity	Work with NEEA initiatives to increase market penetration and create paths from voluntary to mandatory requirements	N/A	There was no NEEA initiative for appliance standards during the adoption or rulemaking portion of these standards.
Box #	**Element**	**Description**	**Did NEEA and its partners provide any outputs?**	**Findings**
9	Output	Consensus-based proposals to submit to ODOE/WA DOC or better general understanding of manufacturer positions and concerns	Some	Any influence on manufacturers was an indirect result of the data provided by NEEA and its partners. Manufacturers and their representatives submitted their comments, as did NEEA and its partners. There were no consensus-based proposals wherein NEEA and its partners agreed with manufacturers.
10	Output	Written comments at each opportunity during a rulemaking Oral comments during public meetings Participation documented in the public record	Yes	NEEA and its partners provided written comments throughout the Washington and Oregon adoption and rulemaking processes for High CRI Bulbs. NEEA, ASAP, Climate Solutions, NRDC, E2, and the NWEC provided multiple letters, comments, and revised comments to the state agencies, the House of Representatives, and the Senate in both states.
11	Output	Initiative logic models refer to the creation of standards	N/A	There was no NEEA initiative for High CRI Bulbs during the adoption or rulemaking processes.

Box #	Element	Description	Is there evidence that NEEA and its partners influenced these outcomes?	Findings
12	Outcome	Disparity in positions between parties is decreased	Some	NEEA was invited to testify in the WA Legislature to answer technical questions related to the cost and market share data to validate the evidence (however, they were never called to speak on the record).
13	Outcome	NEEA adds valuable information/analysis at each stage of the rulemaking process	Yes	NEEA and its partners provided cost and market share data to the WA DOC and ODOE during the entire rulemaking process.
14	Outcome	NEEA information/analysis referenced in rulemaking proceedings/documentation	No	There was no evidence that NEEA or its partners influenced the final rulemaking proceedings or documentation for the High CRI Bulbs standard.
15	Outcome	Utilities are present at hearings/publicly support new standards	No	There was no evidence that NEEA or its partners influenced utilities during the creation of the standards.
Box #	**Element**	**Description**	**Is there evidence that NEEA and its partners impacted the adoption of the standard?**	**Findings**
16	Impact	Adoption of the highest standards that are technologically feasible and economically justified	Some	The evidence and findings above indicate that NEEA and its partners impacted the adoption of the standards in both states. The standard and test procedures proposed at the beginning of the process were ultimately adopted. However, NEEA and its partners did not directly propose or suggest any specific efficiency requirement or level of standard.

3.1.2 Commercial Kitchen Equipment (Fryers and Steam Cookers)

Table 8 presents NEEA and its partners' influence on the Commercial Kitchen Equipment (Fryers and Steam Cookers) state standard and test procedure in Oregon and Washington using the NEEA Standards Initiative Logic Model as a framework.

The most significant influence that NEEA and its partners had on the Commercial Kitchen Equipment (Fryers and Steam Cookers) state standards was providing Northwest-specific data to the WA DOC and ODOE used in negotiations with manufacturers and to inform all stakeholders involved. This activity addressed the manufacturer opposition barrier.

Secondly, NEEA collaborated with other advocates under the umbrella of ASAP. NEEA and its partners provided written comments throughout the entire adoption and rulemaking process. They provided multiple letters, comments, and revised comments to the WA DOC and ODOE, the Houses of Representatives, and the Senates in Washington and Oregon. This activity addressed the lack of common interest among stakeholders barrier in the NEEA Standards Initiative Logic Model (Figure 1).

Overall, the barriers to adopting the standards for Commercial Kitchen Equipment were rated relatively low on a scale of 0 to 5. Interviewees are asked to rate each barrier on a scale of 0 to 5, with 0 meaning it was not a challenge and 5 meaning extremely challenging. These ratings were then weighted and averaged to create one rating for each barrier. The average rating of barriers for the Commercial Kitchen Equipment ranged from 0.9 to 2.1. This indicates that no barrier posed a significant challenge to adopting the standards for Commercial Kitchen Equipment[5].

The Commercial Kitchen Equipment standards proposed and adopted require fryers to meet ENERGY STAR Version 2.0 and steam cookers to meet ENERGY STAR Version 1.2. These were the original requirements the WA DOC and the ODOE first proposed to the state legislatures. While NEEA and its partners did not directly influence the efficiency requirements or the level of the standard adopted, their knowledge and expertise were invaluable to both states, ultimately leading to the standard being passed.

[5] The current analysis framework does not account for standards with low significance ratings for all barriers. Since the total percentage of barrier significance must add up to 100%, some barriers will be denoted as having a high significance for energy savings, even if all barriers were rated low by respondents.

Table 8. Commercial Kitchen Equipment - Qualitative Analysis of NEEA and its Partners' Influence

Box #	Element	Description	Did NEEA and its partners have a role in these activities?	Findings
1	Activity	Negotiation with manufacturers	Some	Based on the stakeholder interviews, there was little evidence of manufacturer opposition to adopting this standard. NEEA and its partners provided design and cost data to the WA DOC and ODOE to provide to manufacturers.
2	Activity	Attend public meetings held by ODOE/WA DOC	Some	A NEEA representative attended public meetings held by the state agencies (WA DOC and ODOE). However, Commercial Kitchen Equipment was not discussed during any of the meetings.
3	Activity	Analyze and critique advocates, manufacturers, and rulemaking documents	Some	While NEEA and its partners provided data and sent letters during the comment periods of both state standards processes, there was no evidence that NEEA or its partners analyzed or critiqued any rulemaking documents for this particular standard.
4	Activity	Conduct primary research to create data for standards and test procedures	No	There was no evidence in the information collected during the document review or stakeholder interviews that indicated NEEA or its partners completed any primary research for this standard.
5	Activity	Provide savings and economic analyses based on Northwest data	Yes	NEEA and its partner organizations summarized the estimated cumulative energy and monetary savings in Washington and Oregon for 2020 – 2035 to the WA DOC and ODOE. ASAP provided annual and cumulative savings estimates to the ODOE. NWEC created a fact sheet containing Washington and Oregon-specific information from all advocacy groups.
6	Activity	Collaboration with other advocates under the umbrella of ASAP	Yes	NEEA, ASAP, and NRDC wrote letters to the ODOE and the WA DOC, providing cost and market share data. ASAP also provided draft legislation language to the WA DOC and ODOE to use when drafting their standards. Although NEEA must remain bipartisan in its position on adopting the standard and can only provide facts and data in its letters and testimony, NEEA partners strongly supported adopting the

				standard in their letters and comments to the ODOE and WA DOC.
7	Activity	Encourage utilities to provide data and political support for standards	No	There was no evidence that NEEA or its partners encouraged utilities to provide data or political support for this standard.
8	Activity	Work with NEEA initiatives to increase market penetration and create paths from voluntary to mandatory requirements	N/A	There was no NEEA initiative for Commercial Kitchen Equipment during the adoption or rulemaking portion of these standards.
Box #	**Element**	**Description**	**Did NEEA and its partners provide any outputs?**	**Findings**
9	Output	Consensus-based proposals to submit to ODOE/WA DOC or better general understanding of manufacturer positions and concerns	Some	Any influence on manufacturers was an indirect result of the data. Manufacturers and their representatives submitted their comments, as did NEEA and its partners. There were no consensus-based proposals wherein NEEA and its partners agreed with manufacturers.
10	Output	Written comments at each opportunity during a rulemaking Oral comments during public meetings Participation documented in the public record	Yes	NEEA and its partners provided written comments throughout the Washington and Oregon adoption and rulemaking processes for Commercial Kitchen Equipment. NEEA, ASAP, Climate Solutions, NRDC, E2, and the NWEC provided multiple letters, comments, and revised comments to the state agencies, the House of Representatives, and the Senate in both states.
11	Output	Initiative logic models refer to the creation of standards	N/A	There was no NEEA initiative for appliance standards during the adoption or rulemaking processes.

Box #	Element	Description	Is there evidence that NEEA and its partners influenced these outcomes?	Findings
12	Outcome	Disparity in positions between parties is decreased	Some	NEEA was invited to testify in the Washington Legislature to answer technical questions related to the cost and market share data to validate the evidence (however, they were never called to speak on the record.)
13	Outcome	NEEA adds valuable information/analysis at each stage of the rulemaking process	Yes	NEEA and its partners provided cost and market share data to the WA DOC and ODOE during the entire rulemaking process.
14	Outcome	NEEA information/analysis referenced in rulemaking proceedings/documentation	No	There was no evidence that NEEA or its partners influenced the final rulemaking proceedings or Commercial Kitchen Equipment standards documentation.
15	Outcome	Utilities are present at hearings/publicly support new standards	No	There was no evidence that NEEA or its partners influenced utilities during the creation of the standards.
Box #	**Element**	**Description**	**Is there evidence that NEEA and its partners impacted the adoption of the standard?**	**Findings**
16	Impact	Adoption of the highest standards that are technologically feasible and economically justified	Some	The evidence and findings listed above indicate that NEEA and its partners impacted the adoption of the standards in both states. The standard and test procedures proposed at the beginning of the process were ultimately adopted. However, NEEA and its partners did not directly propose or suggest any specific efficiency requirements or level of standard.

3.2 Share of Energy Savings from NEEA and Partners' Efforts

This section presents the quantitative analysis of the significance of the barrier to passing these standards, the effectiveness of the activities NEEA and its partners participated in, and NEEA and its partners' role in each activity. Table 9 and Table 10 present the share of savings influenced by NEEA and its partners' activities during the most recent state standard rulemaking process in Washington and Oregon for High CRI Bulbs and Commercial Kitchen Equipment (Fryers and Steam Cookers). **The evaluation team estimates that the total share of savings influenced by NEEA and its partners' activities for High CRI Bulbs is 15.8%, and Commercial Kitchen Equipment is 10.4%.** More detail is provided on quantifying each barrier's significance, each activity's effectiveness, and NEEA and its partners' role in Table 9 and Table 10 below. Savings percentages were not calculated for Washington and Oregon separately. The evaluation team found that the influence and activities conducted by NEEA and its partners did not differ significantly by state.

Table 9. Estimated Share of Savings - High CRI Bulbs

	Barrier	Manufacturer Opposition		Lack of Data			Lack of common interest among stakeholders		Insufficient funding/staff for ODOE/WA DOC	Insufficient market adoption of more efficient options
a	Relative significance for energy savings	High		High			Medium		Low	Medium
	Significance of barrier (%)	30%		25%			20%		10%	15%
	Significance of activity relative to the barrier (%)	15%	15%	10%	10%	5%	10%	10%	10%	15%
b	Activity	NEEA testified in the WA legislature that the data they and ASAP provided was legitimate	ASAP provided data for High CRI Bulbs on cost data and market share	NEEA provided market and equipment data for the High CRI bulbs	NEEA and its partner organizations provided a summary of estimated cumulative energy and monetary savings in WA and OR	NWEC created a fact sheet containing WA and OR specific info from all advocate groups	NEEA collaborated with partners under ASAP to write comments	ASAP provided legislation language for the state employees to review/modify to meet the state's needs	*There was no evidence that NEEA or its partners engaged in any activities to overcome this barrier*	*There was no evidence that NEEA or its partners engaged in any activities to overcome this barrier*
	Effectiveness of activity in addressing barrier	High	High	High	High	Medium	Low	Low		
	Effectiveness of activity in addressing barrier (%)	60%	60%	60%	60%	40%	20%	20%		
c	Effectiveness of activity relative to ALL barriers: a x b (%)	9%	9%	6%	6%	2%	2%	2%		
d	NEEA and its partners' role	Major	Primary	Primary	Primary	Primary	Primary	Major		
	NEEA and its partners' relative role in activity (%)	30%	50%	50%	50%	50%	50%	30%		
e	Relative savings influenced by the activity: c x d (%)	2.7%	4.5%	3.0%	3.0%	1.0%	1.0%	0.6%		
									Total Savings %	**15.8%**

Table 10. Estimated Share of Savings – Commercial Kitchen Equipment

	Barrier	Manufacturer Opposition	Lack of Data		Lack of common interest among stakeholders		Insufficient funding/staff for ODOE/WA DOC	Insufficient market adoption of more efficient options
	Relative significance for energy savings	Medium	Low		High		Medium	High
a	Significance of barrier (%)	15%	10%		30%		20%	25%
	Significance of activity relative to the barrier (%)	15%	5%	5%	15%	15%	20%	25%
b	Activity	ASAP provided data for Commercial Kitchen Equipment on cost data and market share	NEEA and its partner organizations provided a summary of estimated cumulative energy and monetary savings in WA and OR	NWEC created a fact sheet containing WA and OR specific info from all advocate groups	NEEA collaborated with partners under ASAP to write comments	ASAP provided legislation language for the state employees to review/modify to meet the state's needs	*There was no evidence that NEEA or its partners engaged in any activities to overcome this barrier*	*There was no evidence that NEEA or its partners engaged in any activities to overcome this barrier*
	Effectiveness of activity in addressing barrier	High	High	Low	Medium	Low		
	Effectiveness of activity in addressing barrier (%)	60%	60%	20%	40%	20%		
c	Effectiveness of activity relative to ALL barriers: a x b (%)	9%	3%	1%	6%	3%		
d	NEEA and its partners' role	Primary	Primary	Primary	Primary	Major		
	NEEA and its partners' relative role in activity (%)	50%	50%	50%	50%	30%		
e	Relative savings influenced by the activity: c x d (%)	4.5%	1.5%	0.5%	3.0%	0.9%		
							Total Savings %	**10.4%**

3.2.1 High CRI Bulbs

Barrier 1: Manufacturer Opposition

Significance: High (30%)

Rationale and Findings:

- Manufacturer opposition was consistently rated as the most significant issue by energy efficiency organizations, government representatives, and industry associations interviewed by the evaluation team.
- Lighting manufacturers' opposition was a key barrier; manufacturers were represented by NEMA and the lobbyist representing their national organization.
- The Trump Administration rolled back the lighting product regulations that made purchasing High CRI Bulbs more challenging. High CRI Bulbs were historically used for specialty applications, which is why they were excluded from federal standards. Manufacturers became aware of this loophole and increased their production of these bulbs because they were a cheaper option for customers. The WA DOC found that a state can legislate these higher/more stringent requirements at the state level. This caused pushback from manufacturers and lobbyists.
- Compared to LEDs, High CRI Bulbs were less expensive for manufacturers to produce.
- The number of products in the market that did not meet the proposed state standard requirements increased.
- Manufacturers and their representatives expressed concern that the state standards would decrease customer options and increase costs for both manufacturers and customers.
- Manufacturers and their representatives expressed concern that the DOE models and the data provided by NEEA and its partners underestimated overhead costs for manufacturers and overestimated the impact of energy savings in the Northwest.

Activity 1-1: NEEA testified to verify the legitimacy of regional data

Activity: NEEA was invited to testify in the WA Legislature to verify the legitimacy of the data they and ASAP provided.

Effectiveness: **High**. During these meetings, the lobbyist for NEMA understood that the data provided was accurate for the region and ultimately concluded that the standard would not impact the lighting manufacturers significantly. Therefore, they rescinded their opposition, ultimately leading to the passing of the standard.

Role of NEEA and its Partners: **Major**. While NEEA was present to testify during the meeting, they were never actually called to the stand. The WA DOC did most of the groundwork on negotiating with NEMA and their lobbyist and presented the data to them that was provided by NEEA and ASAP.

Savings from Activity: **2.7%**

Activity 1-2: ASAP provided cost and market data

Activity: ASAP, with NEEA support, provided Northwest-specific data for High CRI Bulbs on costs and market share to the WA DOC and ODOE to use in negotiations with manufacturers.

Effectiveness: **High**. Energy efficiency organizations were advocating for more stringent standards. As stated above, this data helped sway the manufacturers to rescind their opposition to adopting the standard. One state agency representative mentioned there was a high level of products in the market that did not meet the standards. They noted that the data was integral to passing the standard, and it likely would not have passed without it.

Role of NEEA and its Partners: **Primary.** ASAP, with NEEA support, provided the data to the WA DOC and ODOE.

Savings from Activity: **4.5%**

Barrier 2: Lack of Data

Significance: High (25%)

Rationale and Findings:

- There was a lack of data about product lifetime and turnover.
- There was a lack of data about the size of the market and a deeper understanding of why there was such pushback from manufacturers.
- Manufacturers were unwilling to give their cost data to legislators.
- In general, the technologies were difficult to explain to legislators and other stakeholders.
- There was a lack of easy-to-digest information/overview of data for people to review quickly.
- There was a lack of Northwest-specific data for the technology.

Activity 2-1: NEEA provided market and equipment data

Activity: NEEA provided Northwest-specific market and equipment data on the High CRI Bulbs to the WA and OR state agencies.

Effectiveness: **High**. Local data is crucial information to have for state standards, as it dramatically increases the likelihood of adoption. One energy efficiency organization representative said there was a need for region-specific data for these standards, which NEEA provided. The data also showed an increase in these bulbs being sold in the market, which was a concern regarding efficiency because more efficient alternatives are available. Both states ultimately used this data in the legislative sessions and during the final rulemaking.

Role of NEEA and its Partners: **Primary.** NEEA provided the data and written comments during the data collection phase of the legislative process.

Savings from Activity: **3.0%**

Activity 2-2: NEEA provided a summary of estimated cumulative energy and monetary savings

Activity: NEEA and its partner organizations provided the state agencies with a summary of estimated cumulative energy and monetary savings in Washington and Oregon for 2020 – 2035.

Effectiveness: **High**. This data, along with the High CRI market and equipment data, was used during legislative and rulemaking sessions.

Role of NEEA and its Partners: **Primary.** NEEA and its partner organizations provided the data and corresponding written comments during the data collection phase of the rulemaking process.

Savings from Activity: **3.0%**

Activity 2-3: NW Energy Coalition provided a fact sheet

Activity: NWEC Fact Sheet containing WA and OR-specific information from all advocacy groups.

Effectiveness: **Medium**. This information was reviewed and given out to all stakeholders involved in the legislative and rulemaking process. However, the information provided came from the above two activities, which most stakeholders already had; therefore, the effectiveness is rated as medium.

Role of NEEA and its Partners: **Primary.** NEEA and its partner organizations provided the fact sheet to stakeholders of the legislative and rulemaking process.

Savings from Activity: **1.0%**

Barrier 3: Lack of Common Interest Among Stakeholders

Significance: Medium (20%)

Rationale and Findings:

- There was no evidence that NEEA and its partners disagreed regarding the adoption or rulemaking for this standard. ASAP wanted to ensure that the WA DOC captured the lobbyist's position so they could create a lessons-learned document to help pass standards in other states. ASAP wanted to create a coalition of states that passed these standards.
- Utilities in Washington were less involved and showed a lack of interest compared to utilities in Oregon, which generally approved of the standards.
- Joint comments were filed, demonstrating cohesion across stakeholders.
- Multi-family housing advocacy groups, other low-income advocates, the NRDC, and the National Consumer Law Center sent letters to the state commissions stating their support for the standards.
- NWEC also wanted to ensure that stakeholders were aware of the impact of the savings and could easily view this data in a one-page FAQ sheet prepared for legislators and other stakeholders.

Activity 3-1: NEEA Collaborated with other advocates under ASAP

Activity: NEEA and its partners collaborated on preparing cost and market share data, which was compiled into letters and sent to the WA DOC and ODOE.

Effectiveness: **Low**. While the collaboration between NEEA and its partners resulted in the compilation of useful cost and market share data for the states to use during the legislative and rulemaking process, the data *itself* was the most effective at achieving the desired outcome. To not double-count savings between this activity and the activities to address the lack of data barrier, the effectiveness of this activity was rated as low. In other words, the "lack of common interest among stakeholders" barrier was not as significant as the "lack of data" barrier. The data itself was the main driver behind achieving the desired outcome. Therefore, the evaluation team determined that while the activity achieved the desired outcome, it had little impact on energy savings.

Role of NEEA and its Partners: **Primary.** NEEA, along with ASAP and other partners, wrote letters to the ODOE and WA DOC that provided cost and market share data. Though NEEA is required to remain bipartisan in its position on adopting the standard and can only provide facts and data in their letters, NEEA's partners offered strong support of the standards in their letters and comments to the ODOE and WA DOC.

Savings from Activity: **1.0%**

Activity 3-2: ASAP provided legislation language to the state employees

Activity: ASAP provided legislation language for the state employees to review/modify to meet the state's needs.

Effectiveness: **Low.** Given ASAP's extensive experience with state standards adoption and rulemaking, the WA DOC and ODOE requested legislation language for them to use for drafting the updated appliance standards. One interviewee mentioned that this information was helpful, but the standards would have still likely passed without it. Therefore, the evaluation team determined that the activity did achieve the desired outcome, but it had little impact on energy savings.

Role of NEEA and its Partners: **Major.** The ODOE and WA DOC requested this information from ASAP.

Savings from Activity: **0.6%**

Barrier 4: Insufficient Funding and/or Staffing for the WA DOC/ODOE

Significance: Low (10%)

Rationale and Findings:

- Through interviews with state commission staff members, it was determined that both states had sufficient funding and staff. Still, they did have help from ASAP and NEEA because of their extensive knowledge of the technologies covered in the standards.
- One interviewee stated: "Their staff is stretched very thin and works very long hours, so dedicating time to work on these types of things is difficult. They can discuss issues with NEEA regarding technical support, but NEEA cannot provide written support (only comments)."

NEEA and its partners' activities supporting the WA DOC/ODOE are captured under the Lack of Common Interest Among Stakeholders barrier. The NEEA Standards Logic Model includes one activity that addresses the Insufficient Funding and/or Staffing for the WA DOC/ODOE Barrier: encouraging utilities to provide data and political support for the standards. The evaluation team did not find any evidence that NEEA and its partners encouraged utilities to provide data or political support. For these reasons, the evaluation team determined that NEEA and its partners did not engage in activities that overcame this barrier.

Barrier 5: Insufficient Market Adoption of More Efficient Options

Significance: Medium (15%)

Rationale and Findings:

- One interviewee mentioned some concern from consumers that the bulbs were not a 1:1 replacement for LED bulbs, and they needed to change out the entire fixture, not just the bulbs.
- Another interviewee added that the cost associated with ballast by-pass to switch to LED and the increased cost of LED were barriers to adopting more efficient options; however, the cost would likely be the only factor.

There was no evidence that NEEA or its partners engaged in any activities to overcome this barrier.

The total share of savings from NEEA and its partners' activities for High CRI Bulbs is 15.8%.

3.2.2 Commercial Kitchen Equipment (Fryers and Steam Cookers)

Barrier 1: Manufacturer Opposition

Significance: Medium (15%)

Rationale and Findings:

- Overall, interviewees did not note any significant concerns brought forth by manufacturers. Manufacturers wanted to know of any technical and cost limitations associated with the updated standards.
- Commercial kitchen equipment, such as fryers and steam cookers, can be regulated at the state level but not the federal level. Most manufacturers could already produce the equipment at the proposed efficiency levels.
- One interviewee mentioned that manufacturers wanted to ensure that the standards aligned across Washington, Oregon, and California for consistency in their production of the products.

Activity 1-1: ASAP provided cost and market share data to manufacturers

Activity: NEEA and its partner organizations provided a summary of regional information related to design and cost data to manufacturers.

Effectiveness: **High**. Most manufacturers could already produce these types of equipment at the suggested efficiency levels. However, they wanted to be aware of the technical and cost limitations. One representative of an energy efficiency organization stated that ASAP, along with the help of NEEA, provided this information to the manufacturers. The data was able to satisfy the needs of the manufacturers and eliminated any opposition that they had regarding the standards. Therefore, the desired outcome of the activity was achieved by providing the information and rating the effectiveness of the activity as high.

Role of NEEA and its Partners: **Primary.** NEEA and its partner organizations provided the data and corresponding written comments during the data collection phase of the rulemaking process.

Savings from Activity: **4.5%**

Barrier 2: Lack of Data

Significance: Low (10%)

Rationale and Findings:

- Based on the interviews, there was a lack of design and cost data for manufacturers, so NEEA provided cost analysis and efficiency requirements.
- According to interviews, there was a lack of state-specific data for the standards.
- An interview respondent noted that market share data and more technical information about the technologies are always lacking. Localized data is often missing, and NEEA and its partners provided data for both states.
- While the above findings were mentioned as concerns by several interviewees, the overall rating of the barrier was rated relatively low compared to other barriers. On a

scale of 0 to 5, with 5 being the most challenging or significant, 4 out of 6 interviewees provided a rating of 0, meaning they believed the barrier did not present any challenges, hence the low significance rating.

Activity 2-1: NEEA provided a summary of estimated cumulative energy and monetary savings

Activity: NEEA and its partner organizations provided the state agencies with a summary of estimated cumulative energy and monetary savings in Washington and Oregon for 2020 – 2035.

Effectiveness: **High**. One interviewee noted that region-specific data is often lacking during the adoption phase of standards such as this, which is why NEEA and its partners provided the data. Region-specific data is beneficial as it gives an insight into the magnitude of savings that can be realized from implementing the standards. Several interviewees noted that standards are much more difficult to adopt when there is a lack of region-specific data.

Role of NEEA and its Partners: **Primary.** NEEA and its partner organizations provided the data and corresponding written comments during the data collection phase of the rulemaking process.

Savings from Activity: **1.5%**

Activity 2-2: NW Energy Coalition provided a fact sheet

Activity: NW Energy Coalition Fact Sheet containing WA and OR-specific information from all advocacy groups.

Effectiveness: **Low**. This data was reviewed and given out to all stakeholders of the rulemaking process. It was helpful but was not a key driver in helping pass the standard. The fact sheet summarized data that had already been provided to stakeholders.

Role of NEEA and its Partners: **Primary.** NEEA and its partner organizations provided the fact sheet.

Savings from Activity: **0.5%**

Barrier 3: Lack of Common Interest Among Stakeholders

Significance: High (30%)

Rationale and Findings:

- According to interviews, most stakeholders wanted to reduce overall energy usage by installing more efficient equipment.
- Utilities supported the higher efficiency standards but wanted their state standards to be consistent with the standards in the other surrounding states, like California.
- One interviewee mentioned that some stakeholders were concerned with the payback period on the equipment.
- Another interviewee noted that restaurant and hospitality groups were concerned with potential added costs and showed some opposition.

- NWEC wanted to make sure that people were aware of the impact of the savings and could easily view this information. NWEC created a one-page FAQ document to provide to legislators and manufacturers.
- One interviewee mentioned that several multi-family housing and low-income advocacy groups sent letters to the state commissions to support the standards.
- Lastly, one interviewee noted that the industry for these types of equipment is relatively small, making it more difficult to find support for standards such as these.

Activity 3-1: NEEA Collaborated with other advocates under ASAP

Activity: NEEA collaborated with partners under ASAP to write comments.

Effectiveness: **Medium**. The collaboration between NEEA and its partners addressed the most significant barrier identified in this standard adoption process. While NEEA and its partners produced useful data at each stage of the adoption and rulemaking process, there is no evidence that the information they provided was referenced in any adoption or rulemaking proceedings for this standard. Therefore, the effectiveness of this activity is rated as medium - it achieved some of the desired outcomes but not all.

Role of NEEA and its Partners: **Primary.** NEEA, along with ASAP and other partners, wrote letters to the ODOE and WA DOC that provided cost and market share data. Though NEEA is required to remain bipartisan in its position on adopting the standard and can only provide facts and data in their letters, their partners strongly supported the standards in their letters and comments to the ODOE and WA DOC.

Savings from Activity: **3.0%**

Activity 3-2: ASAP provided legislation language.

Activity: ASAP provided legislation language for the state employees to review/modify to meet the state's needs.

Effectiveness: **Low.** Given ASAP's extensive experience with state standards adoption and rulemaking, the WA DOC and ODOE requested legislation language for them to use for drafting the updated appliance standards. One interviewee mentioned that this information was helpful, but the standards would have still likely passed without it. Therefore, the evaluation team determined that the activity did achieve the desired outcome, but it had little impact on energy savings.

Role of NEEA and its Partners: **Major.** The ODOE and WA DOC requested this information from ASAP.

Savings from Activity: **0.9%**

Barrier 4: Insufficient Funding and/or Staffing for the WA DOC/ODOE

Significance: Medium (20%)

Rationale and Findings:

- Through interviews with commission staff members, the evaluation team determined that both states had sufficient funding and staff. Still, they did receive help from ASAP and NEEA because of their extensive knowledge of both technologies.
- One interviewee stated: "Their staff is stretched very thin and works very long hours, so dedicating time to work on these types of things is difficult. They can discuss issues with NEEA regarding technical support, but NEEA cannot provide written support (as they must remain bipartisan)."

NEEA and its partners' activities supporting the WA DOC/ODOE are captured under the Lack of Common Interest Among Stakeholders barrier. The NEEA Standards Logic Model includes one activity that addresses the Insufficient Funding and/or Staffing for the WA DOC/ODOE Barrier: encouraging utilities to provide data and political support for the standards. The evaluation team did not find any evidence that NEEA and its partners encouraged utilities to provide data or political support. For these reasons, the evaluation team determined that NEEA and its partners did not engage in activities that overcame this barrier.

Barrier 5: Insufficient Market Adoption of More Efficient Options

Significance: High (25%)

Rationale and Findings:

- An interviewee noted that the equipment, specifically fryers, was more challenging to find.
- One interviewee stated that increased costs for restaurants were a factor for not wanting to adopt more efficient equipment standards. However, the reason for the standard is that the cost would weed out the "bad actors," as most manufacturers were already producing the more efficient equipment models.
- Restaurant and hospitality groups also opposed the more efficient equipment standards, as they were concerned with the added costs.

There was no evidence that NEEA or its partners engaged in any activities to overcome this barrier.

The total share of savings from NEEA and its partners' activities for Commercial Kitchen Equipment is 10.4%.

4 Savings Duration

Currently, NEEA assumes the savings attributable to its work on a standard have a duration of ten years. This duration of savings assumes that the market would have independently arrived at the same efficiency specified in the standard ten years after the standard's compliance date. In 2019 a third-party analysis was conducted for NEEA's internal use. This review did not identify any compelling evidence that supports the use of a different savings duration. Likewise, no evidence was found in the present research to suggest that a different duration of savings should be used for either the High CRI Bulbs or the Commercial Kitchen Equipment. We believe that ten years is a reasonable duration for the savings from these standards.

5 Future Energy Savings

The evaluation team found that NEEA and its partners conducted some activities that "set the stage" for increased savings in future rulemakings. They either partook in or suggested ways for the states to update existing standards or implement new ones in the future that would lead to even more energy and monetary savings. The following activities were mentioned by several interviewees and may result in future energy savings:

- NEEA and its partners wrote letters to the ODOE recommending that they (ODOE) propose legislative amendments that would authorize the ODOE to update standards without subsequent legislative approval. One comment in a letter from Climate Solutions and the Oregon Environmental Council stated that the ODOE should "ensure a clear pathway for future updates as more efficient appliances become available."
- Another letter from the ASAP provided sample language for the ODOE to use when proposing the legislative amendment to the Oregon Legislature. The letter stated, "This [legislative amendment] would allow ODOE to align with neighboring states should they amend their efficiency standards and enable ODOE to update to newer ENERGY STAR or WaterSense versions."
- Lastly, NEEA and its partners supported implementing even more appliance standards. They encouraged the ODOE to expand the scope of their rulemaking to include standards for additional appliances and equipment. Additional standards included:
    - *Air Purifiers*
    - *Commercial Ovens*
    - *Electric Vehicle Supply Equipment (EVSE)*
    - *General Service Lighting (GSL)*
    - *Hearths/Residential Vented Gas Fireplaces*
    - *Hot Food Holding Cabinets*
    - *Toilets, Urinals, and Spray Sprinkler Bodies*
    - *Water Coolers*

The Oregon Legislature has since adopted the amendment that allows the ODOE to update standards without legislative approval. If higher efficiency or ENERGY STAR-rated appliances are introduced, this could lead to future energy savings for High CRI Bulbs or Commercial Kitchen Equipment. The same can be said for Washington, as they also have the authority to update standards without legislative approval. It is recommended that NEEA monitor these standards in both states and watch for any subsequent updates.

Lastly, the evaluation team recommends that NEEA monitor any new appliance and equipment standards implemented in Oregon that align with the additional standards that NEEA and its partners recommended in letters to the ODOE.

6 Conclusion and Recommendations

6.1 Conclusion

Based on the information collected and the evaluation team's analysis, NEEA and its partner organizations moderately influenced the Washington and Oregon state standards for High CRI Bulbs and Commercial Kitchen Equipment (Steam Cookers and Fryers). The influence for High CRI Bulbs primarily came from providing cumulative energy and monetary savings for all equipment types in the standards packages, specifically for High CRI Bulbs. The market and equipment data helped sway manufacturers to allow the standard to be passed at the final rulemaking's stringency. Providing cost and market share data to manufacturers was the most influential activity undertaken by NEEA and its partners for Commercial Kitchen Equipment, followed by NEEA collaborating with partners under the umbrella of ASAP. We estimate that NEEA and its partners' activities, which included taking part in public meetings, providing data, writing comments, and collaborating with other stakeholders to influence the final standards, influenced **15.8%** of the total savings from the High CRI Bulbs standard and **10.4%** for the Commercial Kitchen Equipment standards. NEEA and its partners also conducted some activities that "set the stage" for increased savings in future rulemaking but did not lead to savings in this evaluation.

6.2 Recommendations

The evaluation team offers three recommendations for NEEA to consider including:

- Conduct the evaluation as soon as possible after the final rule is issued to increase the likelihood that participants in the adoption and rulemaking will be available and willing to participate in the evaluation research (they will be less likely to have changed jobs, retired, etc.) and the likelihood they will recall critical details about the adoption and rulemaking process.
- If it is deemed helpful to the standard, encourage utilities to engage in the standard-setting process. In addition to being another voice supporting more stringent standards, some utilities can offer valuable data from previously conducted studies in their service territories or invest in primary research to support the rulemaking process. This recommendation applies to all of NEEA's work on standards.
- The current NEEA standards framework might not be applicable for "edge case" standards adoption processes when all of the identified barriers are determined to be of low significance (as was the case for the Commercial Kitchen Equipment covered by this evaluation). While this will not likely be the case for most standards evaluations, the evaluation team recommends examining the algorithm and investigating the impact of alternative algorithms on the resultant savings percentage.