# Enhancing Custom Commercial & Industrial Programs and Customer Experience through Fuel Blind Screening

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## ABSTRACT

Fuel blind screening within the energy efficiency field is a method to test for the cost-effectiveness of a project by using all savings attributable to that project, regardless of the fuel of the distribution company that is administering or implementing it. The objective of this paper is to demonstrate how fuel blind screening is a holistic approach to screening that can help energy efficiency Program Administrators increase savings per participant in a cost-effective way while improving the customer experience by integrating the screening process and reducing the time needed to do so.

Through fuel blind screening, Program Administrators can pursue cost-effective Commercial & Industrial projects with combined gas and electric savings as well as non-gas, non-electric benefits that may have failed screening as separate projects. The benefits of fuel blind screening allow Program Administrators to realize the most savings per project possible while still delivering cost effective programs and reducing screening time.

## Introduction

### Setting the Stage

In 2008, Massachusetts Governor Deval Patrick signed into legislation the Green Communities Act. The law mandates that electric and natural gas distribution companies seek out and implement all energy efficiency measures that are cost-effective and less expensive than supply-side assets. In a combined effort between the eleven gas and electric Program Administrators ("PAs") and regulatory stakeholders, they created the state's first Three Year Energy Efficiency Plan ("Plan") for 2010 through 2012, which was then approved by the Department of Public Utilities. This plan set forth ambitious goals of reducing electric and natural gas consumption by 2.4% and 1.16% of statewide sales, respectively. In order to reach these goals, the PAs would be challenged to both deepen and broaden their approach to energy efficiency by finding innovative ways to realize more savings per customer and to educate more customers than ever about energy efficiency opportunities.

In the Plan, the Commercial & Industrial ("C&I") sector is responsible for delivering approximately 60% of the three-year statewide savings goals. Achieving this level of savings goals would be challenging due to the significant increase over previous years' goals and due to the poor economic climate that existed by the time the Plan was implemented.

One of the major improvements in the Plan was to integrate the gas and electric program design and implementation. The integration efforts called for PAs to streamline their customer-facing processes when more than one distribution company was involved. The main goals of integration were to minimize confusion for the customer and to provide the PAs an opportunity to work together to realize deeper savings in a more holistic approach. These integration efforts were seen as crucial steps to achieving the goals set forth in the Plan.

Custom projects represent the largest portion of savings for the C&I sector and the best way for PAs to achieve higher savings per customer. Custom projects present opportunities for Program Administrators to both share the costs and benefits and realize the benefits of gas and electric

integration. Custom C&I projects are the driving force behind the need for fuel-blind screening in order to ensure timely cost-effectiveness screening and accurate results.

## The Road to Fuel-Blind Screening

### A Problematic Disconnect

Prior to the Plan, a Commercial & Industrial customer would have had to contact their gas and electric distribution companies separately if they were interested in pursuing energy efficiency opportunities. The customer would have submitted duplicate information, subjected itself to multiple site visits, waited for the different companies to determine cost effectiveness and incentive levels and potentially collected multiple incentives at different time periods from the two different PAs. The process was time consuming for both the customer and the Program Administrators involved.

The implementation of the Plan addressed the customer-facing side of this issue. A customer with potential gas and electric energy efficiency projects is now contacted by a single PA who assesses all possible energy efficiency projects in one visit. In the case of a joint project opportunity, the electric PA takes the lead. Electric vendors have been trained to assess project sites for potential gas savings opportunities and work with the gas PA to make recommendations to the customer. This new way of interacting with the customer minimizes the interruption of day-to-day business and streamlines the gathering of information for the PAs. Additionally, a sole contact also allows the PA to build a relationship with the customer to construct multi-year energy efficiency plans, instead of completing discrete one-time projects.

While the Plan integrated the front end of the business, the back end systems of each individual PA were still separate. This disconnect among the PAs' processes could stall projects and negatively impact a customer's experience. Internally among the PAs, there were five main issues that prevented true statewide and consistent programs as proposed in the Plan.

**Separate Screenings.** Due to the site specific nature of custom projects, each project needs to be screened for cost-effectiveness. It is a data intensive and time consuming process, especially when more than one PA is involved. Initially, there was no process established to jointly screen projects. The gas and electric PAs would calculate their respective savings and split the costs based on the percentage of energy savings in MMBTU. Separately screening projects adds more time between initial contact with the customer and project completion and is more costly to the PAs, who are essentially screening the same project twice. The Green Communities Act states that PAs must minimize administrative costs, requiring inefficiencies such as duplicate screening to be eliminated.

**Different tools.** Each PA was using different tools to screen projects for cost effectiveness. While the basic cost effectiveness test for each PA is the same (the total resource cost test), the PAs had not reached a consensus on how to incorporate non-electric or non-gas benefits with respect to custom projects. Additionally, some PAs chose to incorporate historic realization rates from evaluation studies, while others did not, resulting in different estimates for net savings. These differences resulted in the potential for projects with identical criteria passing cost-effectiveness with one PA and failing with another.

**Cost Allocation.** When a joint project did arise, PAs would logically allocate the project costs based on their respective percentages of total annual MMBTU savings because that is what concerned them the most. However, the benefit cost ratio is dependent on total lifetime benefits. Annual energy savings are kilowatt-hours (electric) or therms (gas) that are avoided as a direct result of implementing an energy efficiency measure. Benefits, also known as avoided costs, are the net present value of all the savings that are realized over the useful life of a measure and are used to calculate the benefit cost ratio. Allocating costs based on annual MMBTU savings could potentially overburden or create non-cost

effective projects for one of the two PAs. This rudimentary way of allocating costs creates missed savings opportunities, by way of an overburdened PA declining to pursue what might have actually been a cost-effective project.

**Non-Energy Impacts.** The PAs can claim non-electric or non-gas related impacts such as oil and propane savings as well as operation and maintenance savings, and other non-resource benefits. Due to the unique and site-specific nature of custom projects, these impacts are not easily quantifiable and are therefore not included in the Plan for custom projects. Some PAs were collecting this data for custom projects but not including the data in the benefit-cost analysis, while other PAs had no data on these benefits at all. These impacts (which can also be negative) should be included in the total benefits and tend to increase cost-effectiveness. Information about these benefits can also serve as a non-monetary incentive for customers to proceed with projects, knowing that they will reap more than gas and electric savings from implementing efficiency measures.

**Combined Heat and Power Projects.** Combined Heat and Power ("CHP") measures are projects that typically have electric savings but a net increased usage of natural gas and operations and maintenance costs. These non-electric costs are known, quantifiable and should be incorporated into the benefit-cost ratio. Traditionally, CHP projects were required to be screened in a separate tool from other electric projects in order for these costs to be appropriately included.

**Proposed Solution**

The fuel-blind custom screening tool is a statewide, Excel-based tool that allows users from any Program Administrator of any fuel to test projects for cost-effectiveness. The tool addresses each of the issues discussed above. It allows for consistent screening of all types of projects, including CHP, allocation of costs based on total benefits, and includes non-energy impacts in its calculation of the benefit-cost ratio. Massachusetts PAs are able to use one statewide tool due to acting on the concerted commitment in the Plan to homogenize the energy efficiency programs. In addition to statewide, consistent program offerings, the PAs all have the same basic foundation for screening: all must use the total resource cost test per the Department of Public Utilities 08-50 Order, as well as use the same inputs to calculate benefits. Statewide use of the TRC Test and Avoided Cost Study values existed prior to the Plan, but these commonalities facilitated the adoption of a common tool.

**Consistent Statewide Offerings.** Program Administrators offer measures through three basic Commercial and Industrial programs: Large C&I New Construction, Large C&I Retrofit and a Direct Install Program. The New Construction and Retrofit programs offer both prescriptive and custom measures. The offered measures and their useful lives have been vetted by all the PAs in order to be consistent statewide.

**TRC Test.** All PAs in Massachusetts are required to test for cost-effectiveness using the total resource cost test. The benefit-cost ratio is calculated by taking the net present value of benefits over the lifetime of the measure and divide it by either the total cost (retrofit) or the incremental cost of an energy efficient measure over a standard efficiency measure (new construction).

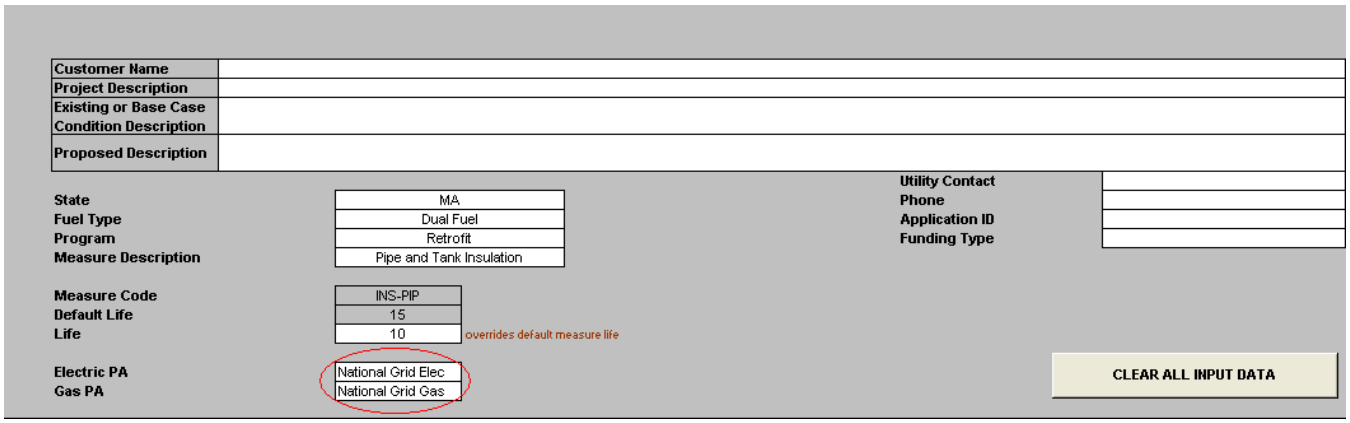
**Avoided Cost Study.** For the past 12 years, the PAs have relied on the regional AESC (Avoided Energy Supply Component) Study to calculate benefits, most recently completed by Synapse Energy Economics in 2011. The Avoided Costs Study is the basis for the benefits calculations of savings based on electric energy and capacity, natural gas, oil and propane. The study's results are the projected costs to supply these commodities. PAs can claim these avoided supply costs as benefits realized by means of implementing energy efficiency programs. The PAs all use the same, state-specific values that are produced in this study.

**Stakeholder Buy-In**

In order for the tool to be successfully utilized, members from all eleven Program Administrators would have to decide to use it. Some PAs had outsourced their custom screening, while others had their own tools. The fuel-blind screening tool would have to be accessible to all, be easy to use, and incorporate certain functions from each tool that had been in use.

**Old to New.** The fuel-blind screening tool is based on many of the tools it replaced. The inputs sheet that the user interacts with the most is left mostly unchanged from the custom electric screening tool, in order to allow users to easily transition to using the new tool. The tool is based in Microsoft Excel in order to be easily accessible to all the PAs.

**PA-specific values.** The fuel-blind screening tool has the ability to incorporate values that still remain PA-specific, such as transmission and distribution capacity values and line loss percentages. This benefit of the tool was crucial to its success, as each PA can utilize the tool without losing values that are necessary for screening projects for cost-effectiveness. The snapshot below shows the drop-down boxes for a user to select the electric and/or gas PA involved in the project. Any PA-specific values are automatically populated based on a user's PA selection.




**Constant Feedback.** The Massachusetts C&I Management Committee is a group represented by a member from the C&I implementation group from each PA, as well as consultants to the Energy Efficiency Advisory Council ("EEAC")[1]. The C&I Management Committee was the primary forum for socializing the tool and gaining approval.

Every two weeks during the tool's development, the committee viewed the latest updates, agreed on inputs and changes that needed to be made, and decided on the users and recipients of the tool.

The consultants were able to review and approve of the tool, and wrote a memorandum on two core topics that historically were never agreed upon statewide by the PAs: the application of a realization rate[2] to custom projects and the inclusion of non-energy impacts. The consultants supported using a realization rate of 100% in ex ante screening, arguing that *ex-ante* estimates of custom project savings should, by definition, represent the PA's best estimate of savings and that there should not be a planning expectation that actual savings would be different from estimated savings. In other words, from a planning perspective, realization rates should be assumed to be 1.0.

[1] The EEAC was created via the Green Communities Act. The EEAC reviews all PA filings prior to submission to the Department of Public Utilities.

[2] Realization rate refers to an adjustment factor reflecting the portion of *ex-ante* claimed/tracked savings that is ultimately estimated by an *ex-post* evaluation

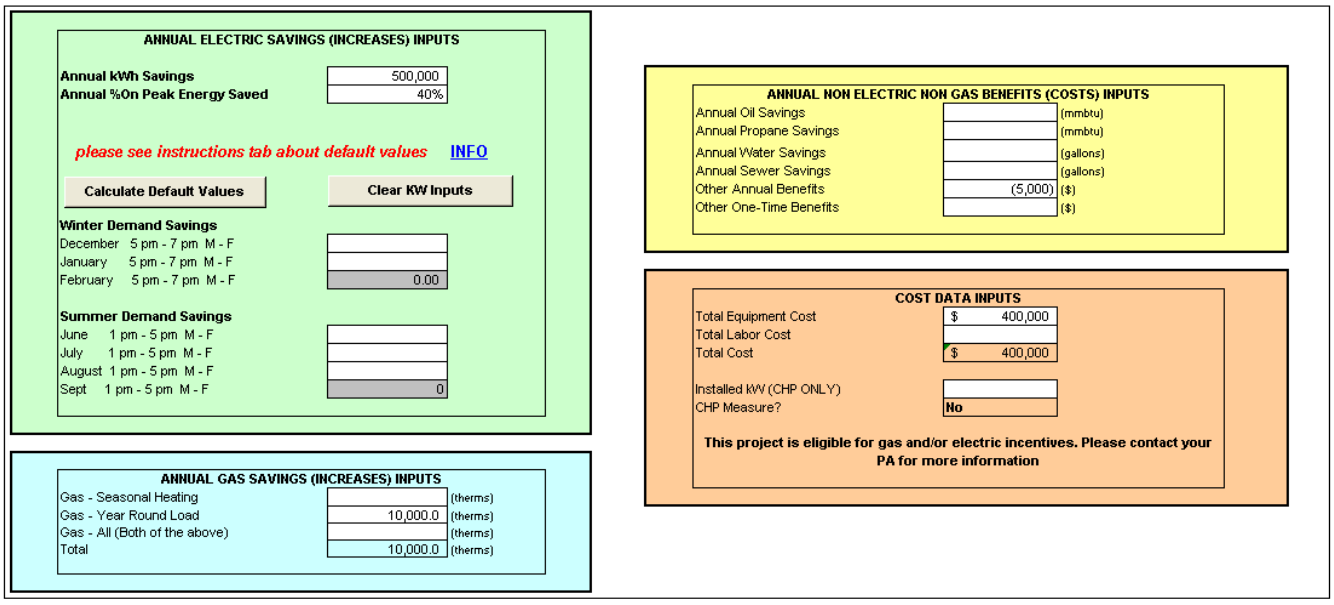
Second, the consultants encouraged the inclusion of non-electric and non-gas impacts in the calculation of custom projects' benefit-cost ratios. They agreed that the tool could be used to garner information about non-energy impacts that the PAs have not had access to in the past. This data could be useful to inform future energy efficiency planning assumptions, even though at this time, these benefits are not claimed by Program Administrators for custom projects.

**Incentive.** In addition to increasing cost effectiveness of projects, non-gas and non-electric benefits also provide a financial incentive for Program Administrators, making it a worthwhile effort for PAs to quantify these types of benefits where possible. Under the Plan, Program Administrators earn Shareholder Incentive based on the total amount of dollar benefits and the total dollar amount of net benefits (benefits less total resource costs) realized from energy efficiency. This type of incentive mechanism encourages the PAs to pursue benefits in addition to traditional energy savings such as kilowatt-hours and therms.

## Tool in Action

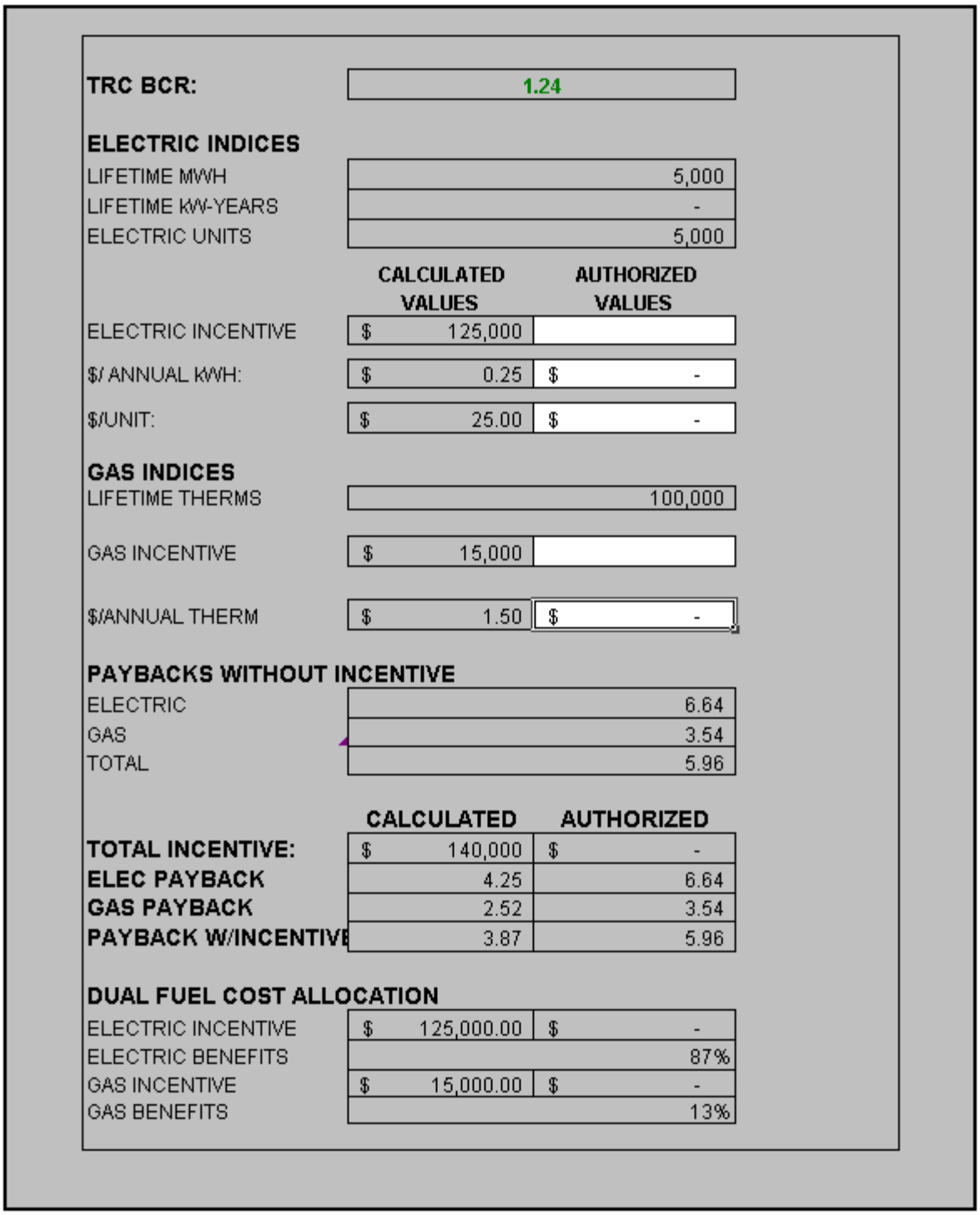
The fuel-blind screening tool is set up for users to input electric energy, demand, gas, oil, propane, water, sewer and other annual and one-time benefits. The tool will also accept negative values for any of these inputs to represent usage increases or costs. There is also a section for costs that indicates whether or not a CHP measure is being screened. Gas PAs who would be working on screening projects with electric savings with municipal electric companies[3] in their service territories requested default calculations for demand savings.

The picture below is a screen shot of the inputs for a given custom project:




The tool's output has been designed to deliver all information needed to indicate the project's cost effectiveness, eligibility for program rebates, and correct allocation of costs based on percent of total benefits. Default values for rebates based on statewide program design are populated in one column. Users have the option to override these values based on PA-specific business rules and criteria (e.g., users can set an incentive dollar amount per them saved). A sample output is shown below.

[3] Municipal electric companies are not considered Program Administers and are not required by the Green Communities Act to implement energy efficiency programs. Customers are eligible for energy efficiency programs if they are served through a gas PA.



| | | |
|---|---|---|
| **TRC BCR:** | 1.24 | |
| **ELECTRIC INDICES** | | |
| LIFETIME MWH | 5,000 | |
| LIFETIME kW-YEARS | - | |
| ELECTRIC UNITS | 5,000 | |
| | **CALCULATED VALUES** | **AUTHORIZED VALUES** |
| ELECTRIC INCENTIVE | $ 125,000 | |
| $/ ANNUAL kWH: | $ 0.25 | $ - |
| $/UNIT: | $ 25.00 | $ - |
| **GAS INDICES** | | |
| LIFETIME THERMS | 100,000 | |
| GAS INCENTIVE | $ 15,000 | |
| $/ANNUAL THERM | $ 1.50 | $ - |
| **PAYBACKS WITHOUT INCENTIVE** | | |
| ELECTRIC | 6.64 | |
| GAS | 3.54 | |
| TOTAL | 5.96 | |
| | **CALCULATED** | **AUTHORIZED** |
| **TOTAL INCENTIVE:** | $ 140,000 | $ - |
| **ELEC PAYBACK** | 4.25 | 6.64 |
| **GAS PAYBACK** | 2.52 | 3.54 |
| **PAYBACK W/INCENTIVE** | 3.87 | 5.96 |
| **DUAL FUEL COST ALLOCATION** | | |
| ELECTRIC INCENTIVE | $ 125,000.00 | $ - |
| ELECTRIC BENEFITS | 87% | |
| GAS INCENTIVE | $ 15,000.00 | $ - |
| GAS BENEFITS | 13% | |

The example shown above is a demonstration of a project that would have misallocated costs based on the older methodology. As opposed to the 87% electric, 13% gas split shown above, the old cost allocation method based on percentage of total MMBTU savings would have assigned only 63% of the cost to electric and 37% of the cost to gas. The electric PA would have a BCR higher than 1.24, while the gas PA would have failed to pass the project.

| Scenario 1 - Original allocation based on savings: | Cost Allocation | BCR |
|---|---|---|
| Annual Electric savings: 500,000 kWh = 1,706 MMBtus | 63% | 1.87 |
| Annual Gas Savings: 10,000 therms = 1,000 MMBtus | 37% | 0.49 |

| Scenario 2 - Allocation based on lifetime benefits[4]: | Cost Allocation | BCR |
|---|---|---|
| Annual Electric savings: 500,000 kWH = $472,088 | 87% | 1.24 |
| Annual Gas savings: 10,000 therms = $70,514 | 13% | 1.24 |

If the gas PA had decided not to pursue this project because it was not cost effective, the electric PA would have had the option to pick up the total cost or only offer the electric-related measures from the project (leaving gas savings on the table). In the fuel-blind screening tool, costs are allocated based on percentage of lifetime benefits, resulting in both PAs having the same benefit cost ratio and all savings realized cost-effectively.

## Conclusion

Fuel-blind screening in Massachusetts has allowed PAs to successfully integrate their internal processes and to better align with the integrated, statewide approach to implementing and delivering energy efficiency to their Commercial and Industrial customers.

The customer experience is enhanced for two main reasons. First, the time to screen custom projects has been significantly reduced. Second, customers will be able to see and understand non-electric and non-gas related benefits they are receiving from installing energy efficiency measures. This helps PAs build stronger relationships with these customers to construct multiyear energy efficiency plans to realize as much savings as possible per participant.

The PAs have improved the internal custom screening process from start to finish. They can turn projects around to their customers more quickly, even in situations where projects involve more than one PA. The tool has also allowed PAs to reduce administrative costs, by screening joint projects only once and by maintaining one tool statewide. The PAs are better managing budgets for custom projects by allocating costs based on total benefits and by having the ability to automatically calculate incentives based on key indicators.

The fuel-blind screening tool is the result of statewide PA collaboration. Faced with challenging and ambitious goals in the Plan, the PAs now have a tool to help make the best, most informed decisions about custom projects and to better inform future energy efficiency goals.

[4] Lifetime benefits were calculated using AESC's 2011 Avoided Cost study. Assumed no demand benefits for electric savings to simplify example