



NEW CONSTRUCTION & MAJOR RENOVATIONS

Memorandum of Understanding for Path 2: Whole Building Energy Use Intensity (EUI) Reduction

The Whole Building Energy Use Intensity (EUI) Reduction Program (“Program”) is intended for customers with larger and/or fairly complex projects,¹ who are interested in setting an EUI² reduction target that represents at least 10% improvement over a baseline building EUI. The intent of the incentives and technical assistance offered in this pathway is to provide a holistic energy reduction approach that shifts customer and design team focus to expected performance outcomes as they work through the project design.

Project Eligibility:

1. Projects must have a minimum of 50,000 square feet (sf) of comfort conditioned (heated and cooled) space.³
2. Customer should engage their Mass Save Sponsor(s) during the project’s conceptual or schematic design phases, but before 100% Design Development
3. Projects must be new buildings, building additions or complete renovations of existing buildings.⁴ Qualifying major renovations are such that occupancy is not possible during construction and where the project scope includes at least 3 of the following systems: (1) HVAC, (2) domestic hot water (DHW), (3) lighting, (4) envelope, and (5) process equipment.
4. Buildings should be comfort-conditioned (heated and cooled), but partially conditioned buildings such as warehouses and industrial facilities, may be eligible on a case by case basis
5. Core and shell and high-rise multi-family projects may participate, provided they meet the requirements above
6. Participants must be a customer of one of the Mass Save Sponsors

Key Customer Commitments:

1. Participating project teams commit to setting an EUI target⁵ in early design (at least a 10% EUI reduction from the Mass Save baseline) and working toward it throughout the remainder of design
2. Customers agree to including the EUI target in project documents such as Owner Project Requirements (OPR)
3. Customers agree to establishing a plan for determining the building’s post occupancy EUI and identifying a responsible party.
4. Customers must commit to a 25% cost share of the services of a third-party technical assistance vendor (services include energy charrette facilitation, EUI target setting, energy modeling, and mid-design review/feedback).

1. Examples of complex projects might be labs, health science centers, grocery stores, data centers, etc.
2. Energy Use Intensity (EUI): A measure of a building’s gross annual energy consumption (excluding parking garages) relative to its gross square footage (excluding parking garages; penthouse square footage should also not be included, as it is not conditioned space). EUI is calculated as KBtu per square foot per year.
3. Mass Save Sponsors may allow participation in this pathway for energy intensive projects even if they are less than 50,000 sf in size.
4. Tenant fit outs are not eligible to participate in this pathway.
5. Neither combined heat and power (CHP) nor electricity generating renewables, such as photovoltaic (PV) or wind turbine technology, contribute towards the site EUI target. The EUI target may evolve throughout the design process.

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Key Mass Save Sponsor Commitments:

1. Cost share services of a Technical Assistance (TA) vendor (up to 75% of fee)
2. Assist customer and design team in identifying and evaluating EUI reduction strategies
3. Offer construction and post occupancy incentives on a dollar-per-square-foot basis, supporting projects with deeper EUI reductions with higher incentive rates (see Table 1 below)
4. Offer Design Team Incentives to qualifying projects (see Table 2 below)
5. Offer an optional Verification Incentive to help customers and their teams achieve the predicted EUI once the building is operating (see Table 1 below)

This document outlines the roles and responsibilities of each party to set transparent expectations for all parties participating in the Program. Under no circumstances does this Memorandum require customers or design teams to incorporate any particular EUI reduction strategy, nor does this document bind the customer or design team to a particular EUI target. All assistance offered by the Sponsors of Mass Save through this Program is offered in an advisory capacity only.

The Sponsors of Mass Save understand that the following customer:			
The Customer			
will undertake the following (check one)			
<input type="checkbox"/>	new construction	<input type="checkbox"/>	major renovation
<input type="checkbox"/>		<input type="checkbox"/>	addition
Premises Address			
This project is being designed by the following design professionals (collectively, the "Design Team"):			
Architect			
Electrical Engineer			
Mechanical Engineer			
Participating Mass Save Sponsors			
Electric Sponsor			
Gas Sponsor			

IMPORTANT:

Customers participating in this pathway may not also participate in the Mass Save upstream programs where incentives for HVAC, domestic hot water, food service and lighting equipment are offered directly to distributors. To ensure participation in only one Mass Save program pathway, designers must include language in project documents informing contractors that this project is participating in a Mass Save downstream program pathway, and that they may not pursue or accept any HVAC, domestic hot water, food service or lighting upstream incentives for this project.



Detailed Process:

Step 1 – Coordination with Mass Save Sponsors

During schematic design or in pre schematic design, inform your Mass Save Sponsor(s) of your new construction/major renovation project. The Path 2 Whole Building EUI Reduction Program is only available when the Mass Save Sponsors are engaged and an energy charrette is scheduled before the end of Design Development. The earlier you contact your Mass Save Sponsors, the better the opportunity for energy savings and incentives.

All customers and architects must sign this Memorandum of Understanding (MOU) and agree to the following steps.

Step 2 – Energy Charrette, EUI Target Setting and Developing a Roadmap to Meeting the EUI Target

Customer and design team participate in an energy charrette with their Mass Save Sponsor(s) and their TA vendor.

- All projects participating in this Program must establish an EUI target that represents at least a 10% EUI reduction from the Mass Save baseline at or shortly after the energy charrette, with the understanding the EUI target may evolve over the course of design.
- Mass Save Sponsors will bring on a TA vendor who will:
 - » Assist the project team in establishing a preliminary EUI target for the project, if one has not already been determined by the project team
 - » Help the design team develop a set of strategies that will lead to a reduction in site EUI for the project relative to the Mass Save baseline EUI
 - » Prepare a proposal to develop a baseline energy model (per Mass Save baseline requirements) and two phases of as-designed models:
 - TA vendors will produce the first as designed model and iteration of the baseline model based on either the 50% or 100% Design Development (DD) set. TA vendors will provide a report with feedback and further EUI reduction recommendations for the customer and design team at this time.
 - TA vendors will produce a final baseline and as-designed model based on the 90% Construction Documents (CD) set.

Step 3 – Customer Agrees to Cost Share TA Services

- Mass Save Sponsors will cover the fees for TA services in this Program at up to 75% cost share (each Mass Save Sponsor is capped at \$20,000).
- Customer must commit to 25% of the fee for TA services and must sign an Engineering Services Application (ESA) committing to this cost share.

Step 4 – Customer Must Develop a Plan for Measurement and Verification of the Project's Operational EUI

Setting an EUI target and working toward it during design is an important step toward reducing operational energy use, however customers must establish a plan to evaluate energy use post occupancy to be successful in truly achieving a low site EUI. Customers must determine how EUI data will be collected and evaluated post occupancy and assign a responsible party.

Thought should be given to corrective action if at post occupancy the project is straying from the final design EUI. Mass Save Sponsors strongly recommend that the project team consider submetering at minimum in accordance with the LEED BD&C v4 Energy and Atmosphere Advanced Energy Metering credit, which requires submetering of any individual energy end uses that represent 10% or more of the total annual consumption of the building.

An optional Verification Incentive is available to help customers identify issues that may arise related to energy savings post construction (please request the Mass Save scope of work for more details). The Sponsors of Mass Save will reimburse 50% or up to \$10,000 of the fee associated with this work. Customers must decide during design if they wish to pursue this incentive so that a contract can be put in place.

Step 5 – Design

Once the EUI target established the EUI target, it should be written into the project documents, including the Owner Project Requirements (OPR) where it will serve as a touchstone throughout the rest of design and construction. The project team will pursue the EUI target throughout design and should conduct the iterative energy modeling necessary to ensure that the design remains on track to achieve the target EUI.



Step 6 - Interim Report and Consultation

The TA vendor will produce a model and report based on the 50% or 100% Design Development set, showing measures that are producing site energy savings relative to the Mass Save baseline as well as the predicted EUI of the project. The customer, design team and the Mass Save Sponsors will meet at this time with the TA vendor to review results and recommendations for further reducing the project EUI.

The Mass Save Sponsors will lock in the target EUIs at each incentive tier at this time, based on the interim report. The target EUIs will remain locked for purposes of incentives unless there are major design changes between 100% Design Development and 100% Construction Documents, including, but not limited to HVAC system type changes and space type changes. Customers are not required to hit any particular target, however at this time, they will know for certain the EUI targets they must hit to achieve each tier of incentive rates.

Step 7 - Mass Save Incentive Pre-Approval

At 90% Construction Documents (CDs), the TA vendor will prepare the final Mass Save energy model and report documenting the final predicted EUI and the percent EUI reduction from the Mass Save baseline. The Mass Save Sponsors will issue customer offer letters in accordance with the incentive rates shown in Table 1 below.

Table 1. Summary of Customer Incentives*

% EUI Reduction	Rate
10.0% - 14.9%	\$0.35/sf
15.0% - 19.9%	\$0.50/sf
20.0% - 24.9%	\$0.75/sf
25.0% and above	\$1.25/sf
Optional Verification Incentive	50% up to \$10,000

*Customer incentives are capped at 100% of the combined incremental cost of the EUI reduction strategies included in the project. Projects must be cost-effective to receive the full customer incentive and are subject to each Mass Save Sponsor's program budget.

The Mass Save Sponsors will require customers to sign a Custom Application, formally requesting Mass Save incentives, and customers must also sign the Mass Save Minimum Requirements Document (MRD) that lays out the energy-saving equipment and system details, based on 90% Construction Documents, that will lead the project to achieve the final design's predicted EUI. Customers must commit to building the building as it was designed and as it was documented in the MRDs. Major deviations from the design and changes in energy system components, equipment efficiencies and control strategies as documented in the MRDs could jeopardize the project's ability to achieve the target EUI and could jeopardize the customer's opportunity to obtain full incentives.

At this time, the Sponsors of Mass Save and the customer need to finalize all payments to the TA vendor since the modeling and EUI reduction consultation phase of the project is complete.

Step 8 - Construction Completion, Construction Phase Incentive Payment, Design Team Incentive Payment

A few weeks before substantial completion, customers must provide a set of approved submittals, invoices and photographs corresponding with energy reducing equipment and systems per the MRDs. The Sponsors may also request a copy of the project's schedule of values.

All projects participating in the Program are subject to inspection by each participating Mass Save Sponsor. Customers may be asked to arrange for these post inspections to take place once the building is ready for occupancy.

Upon Mass Save Sponsor review of submittals, photographs, and invoices, and upon completion of the post inspection, Mass Save Sponsor(s) will make the construction incentive payment to the customer. Where equipment and systems installed deviate substantially from equipment and systems shown in the design documents and MRDs, the Sponsors of Mass Save reserve the right to adjust the customer and design team incentive amounts.

Select projects are subject to 20% incentive hold-back pending receipt of trend data or other information stipulated in the Minimum Requirements Documents (MRDs).



The design team is eligible for a Design Team Incentive if the modeled EUI reduction is at least 10%. It is payable at the end of construction in accordance with the rates in Table 2 below, to encourage the integrated design and continuous iterative energy analysis that is necessary to achieve the EUI target.⁶ The Mass Save Sponsor(s) will pay the Design Team Incentives to the design team lead (an invoice is required), who may disperse them to other team members as appropriate.

Table 2. Design Team Incentives

10.0% to 14.9% EUI Reduction	\$0.02/sf, capped at \$7,500
15.0% to 19.9% EUI Reduction	\$0.05/sf, capped at \$10,000
20.0% and 24.9% EUI reduction	\$0.10/sf, capped at \$12,500
≥ 25.0% EUI reduction	\$0.20/sf capped at \$15,000

Step 9 – Verification Incentive (optional)

Customers that have chosen to pursue a separate Verification Incentive from the Mass Save Sponsors must ensure that their selected consultant completes the scope of work during the post occupancy period. This incentive is offered to help customers achieve their EUI targets not only in the design, but upon occupancy as well. Provide copies of consultant reports generated at each review interview to Mass Save Sponsors. See your Mass Save Sponsors for details on requirements for this optional incentive.

Engagement with Mass Save Sponsors after Design Development

Project teams and customers who engage with Mass Save Sponsors on qualifying projects after the end of design development, may participate in the following manner:

- Engagement with Mass Save Sponsors after the end of Design Development and before the end of Construction Documents:
 - » Project teams may still participate in the modeling-only portion of the Path 2 Whole Building EUI Reduction Program at up to 50% Mass Save Sponsor and 50% customer model cost share.
 - » The early EUI benchmarking support, the additional modeling cost share and the design team incentives will not be available for project teams that engage Mass Save Sponsors after 100% Design Development.
 - » Customer incentive rates will vary from those published in this document.
- Engagement after 100% Construction Documents:
 - » The Path 2 Whole Building EUI Reduction Program as described above is not available, but teams may participate with Mass Save Sponsors by completing appropriate prescriptive and custom applications via the New Construction Systems Path.

Disclaimers:

Except for payment of incentives as set forth hereunder, the Mass Save Sponsors do not make any representations, warranties, promises or guarantees in connection with the Program, energy conservation measures (ECMs), EUI reduction strategies, energy savings, benefits, adequacy or safety of ECMs or other items, or any work, services or other item performed in connection with the Program including, without limitation, the warranty of merchantability or fitness for a particular purpose. Also, other than the (i) energy cost savings realized by Customer, (ii) energy or ancillary service market revenue achieved through market sensitive dispatch, (iii) alternative energy credits, and (iv) renewable energy credits (altogether, the "Customer Credits"), the Mass Save Sponsors have unilateral rights to apply for any credits or payments resulting from the Program or ECMs (the "Sponsor Credits"). Such Sponsor Credits include but are not limited to credits and payments for: (a) ISO-NE capacity, (b) forward capacity credits, (c) other electric or natural gas capacity and avoided cost payments or credits, and (d) demand response program payments. Customer waives, and agrees not to seek, any right to any Sponsor Credit. The Mass Save Sponsors are not responsible for the payment of any taxes assessed by federal, state or local governments on either benefits conferred on the owner by the Sponsor(s) or design incentives paid to the design team.



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By signing below, the customer represents that he/she (1) shall be the sole and lawful customer of the Premises and (2) has read, understands, accepts and agrees to the terms and conditions for participation in the Program outlined previously

Owner Signature:		Owner Printed Name:
Date:	Phone:	Email:
Architect Signature:		Architect Printed Name and Company Affiliation:
Date:	Phone:	Email:



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PROCESS CHECKLIST	
Whole Building EUI Reduction Program	
Early Design	
	During concept design or early schematic (but before the end of Design Development), engage Mass Save Sponsor(s) and schedule an energy charrette
	Sign Mass Save Memorandum of Understanding (MOU)
	Sign an Engineering Services Agreement (ESA) confirming customer is willing to cost-share the services of a Technical Assistance (TA) vendor
	Establish EUI target. Insert site EUI target here if known:
	Include EUI target in the Owner Project Requirement (OPR) and provide Mass Save Sponsor(s) with a copy
	Establish a plan for calculating site EUI once the building is operational; identify responsible parties and consider tools that will flag unexpectedly high energy use at post occupancy (e.g., submetering)
	If pursuing the Verification Incentive, establish a contract with the Verification Team to complete this work and provide a copy of the contract that includes the scope of work necessary to obtain the incentive to Mass Save Sponsors
Mid Design	
	Provide 50% or 100% Design Development set to TA vendor for review and team feedback/discussion
	Designers must include language in project documents informing contractors that this project is participating in a Mass Save downstream program pathway, and that they may not pursue or accept any HVAC, domestic hot water or lighting upstream incentives for this project. Upstream incentives for food service equipment are allowed and encouraged.
End of Design – Upon Completion of Energy Modeling	
	Provide 90% Construction Documents to the TA vendor to provide a final report showing the predicted EUI of the project's final design. The EUI results will determine the level of incentives to be paid.
	Sign the Custom Application in the pre-installation section formally requesting Mass Save incentives
	Sign the Minimum Requirements Documents (MRD) in the pre installation section, affirming intent to build in accordance with the equipment and system specifications stated in the MRDs
	Finalize payment to Mass Save TA Vendor once energy model and report are complete
Construction/End of Construction Phase	
	Maintain focus on the project components such that the predicted EUI is maintained as a target throughout construction
	Provide submittals, invoices, photographs and possibly a contractor schedule of values at the end of construction to affirm that equipment and systems were installed as stated in the MRDs
	Schedule a post installation walk-through with Mass Save Sponsors
	Sign the Custom Application in the post-installation section to confirm project is complete and ready for occupancy
	Sign the Minimum Requirements Document (MRD) in the post-installation section to confirm that equipment and systems have been installed as expected to contribute to the predicted EUI. Note any changes.
	Mass Save Sponsors will pay customer's construction incentive if equipment is installed as expected
	Design Team Lead to submit an invoice for the design team incentive
	Mass Save Sponsors will pay the Design Team Incentives if equipment is installed as expected
Post Construction	
	If pursuing the Verification Incentive, provide copies of the Verification Team's reports at each reporting interval indicated in the scope of work provided to Mass Save Sponsors