

# New Construction & Major Renovations

Memorandum of Understanding for Path 1: Zero Net Energy / Deep Energy Savings

The Path 1, Zero Net Energy (ZNE)/Deep Energy Savings Program (the “Program”) is intended for customers pursuing a ZNE or zero net ready building and who also are interested in maintaining focus on the Energy Use Intensity (EUI)<sup>1</sup> reduction component of ZNE. To participate, customers must commit to a very low EUI target and must pursue that target throughout design and construction as well as through post occupancy. National Grid offers incentives to help customers offset the incremental costs associated with designing and implementing low EUI strategies. The technical assistance and incentives offered in this pathway focus customers and project teams on post occupancy outcomes. All applications for incentives under the Custom Application Process require sound documentation of the proposed cost, projected electricity savings and the related non-electric savings.

## Project Eligibility:

1. Project teams must commit to a goal of either zero net energy, zero net energy ready<sup>2</sup> or Passive House (as a path to net zero)
2. Customer must engage National Grid during the project’s feasibility or conceptual design phases, but before 50% Schematic Design
3. Projects must have a minimum of 20,000 square feet of comfort conditioned (heated and cooled) space
4. Projects must anticipate year-round occupancy. For K-12 schools, this requirement includes a minimum of 4 weeks of anticipated summer use in classroom areas.
5. Building must be separately metered (not on same utility meters as other buildings)
6. Projects must be new buildings or major renovations. A major renovation would qualify for this Program if the scope is such that occupancy is not possible during construction and where scope includes at least 3 of the following 5 systems: (1) HVAC, (2) DHW, (3) lighting, (4) envelope, and (5) process equipment
7. Core and shell and multi-family projects may not participate in Path 1 at this time
8. Projects where scope includes Combined Heat and Power (CHP) are not eligible for participation in Path 1
9. Participants must be a customer of National Grid

1. 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.
2. Zero Net Energy Building: A building that produces as much clean, renewable energy as it uses when measured over a one-year period.  
Zero Net Energy Ready Building: Projects that are not able to add renewables on site right away but achieve the EUI Target set for the project.

## Key Customer Commitments:

1. Project teams must be willing to target a 28.0 site EUI or less. An exception may be requested (or necessary) if 28.0 EUI is not reasonable due to building type, hours of operation or because some percentage of the building is semi-conditioned. In these situations, participants alternatively may pursue a site EUI target representing a minimum 25.0% EUI reduction (for electrically heated buildings) or 40.0% EUI reduction (for non-electrically heated buildings) from the National Grid baseline. National Grid must approve any exceptions, and any EUI target shall not be greater than 75 in this pathway.<sup>3</sup>
2. Include ZNE or ZNE ready goal and the EUI target in the project documents, including the Owner Project Requirements (OPR)
3. Agree to cost share the services of National Grid ZNE expert
4. Continuously monitor the predicted EUI of the project with iterative energy modeling throughout each phase of design. Design team's energy model should meet the requirements of ASHRAE 90.1 G2.2.
5. Commission the building to levels equivalent to the LEED BD&C Version 4 Fundamental Commissioning and Verification Prerequisite and the LEED BD&C Enhanced Commissioning credit (Option 1, Path 1) and Envelope Commissioning credit (Option 2)
6. Establish a plan for determining how the building's site EUI will be calculated once the building is operational, and identify the responsible parties
7. Ensure electric vehicle charging stations are separately metered
8. Ensure any on site generation is separately metered
9. Ensure any unconditioned spaces (e.g., parking garages) are separately metered
10. Meet the requirements of ASHRAE 90.1-2016, para. 8.4.3 related to metering and data storage
11. Commit to continued engagement with National Grid through a one-year post commissioning, post occupancy period

## Key National Grid Commitments:

1. Cost share the services of a ZNE expert (50% of fee up to \$10,000 cost share) with the customer to help the project team develop a roadmap to low EUI and ZNE success.
2. Offer project incentives on a dollar per square foot basis up to \$2.25/sf. See Table 1 below.
3. Offer \$3,000 toward zero net energy or Passive House certification.
4. Offer up to \$15,000 in Design Team Incentives. See Table 2 that follows.
5. Offer an optional Verification Incentive to help customers achieve their predicted EUI upon operation. See Table 1.

3. Electricity generating renewables, such as Photovoltaics (PV) or wind turbine technology, do not contribute towards the site EUI target.

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 National Grid through this Program is offered in an advisory capacity only.

National Grid understands that the following customer:	
<b>The Customer</b>	
will undertake the following (check one) <input type="checkbox"/> new construction <input type="checkbox"/> major renovation <input type="checkbox"/> addition	
<b>Premises Address</b>	
This project is being designed by the following design professionals (collectively, the "Design Team"):	
Architect	
Electrical Engineer	
Mechanical Engineer	

**IMPORTANT:**

Customers participating in this pathway may not also participate in National Grid 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 National Grid program pathway, designers must include language in project documents informing contractors that this project is participating in National Grid 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.

## Detail Process:

### Step 1 – Customer Engagement with National Grid

Customers may reach out to National Grid even before they select the Owner's Project Manager (OPM) and Designer. Very early engagement allows National Grid to provide guidance on language to include in OPM and designer services Requests for Services (RFSs) related to zero net energy and low EUI targets. Once the design team has been selected and zero net energy is a clear goal, the customer will re-engage with National Grid in conceptual/early feasibility or early schematic design. Initial conversations will focus on EUI target setting and confirmation that customer and design team goals align with the program requirements.

### Step 2 – EUI Target Setting and Developing a Roadmap to Meet the EUI Target

The target EUI for projects participating in this pathway is a site EUI of 28.0 or less or an alternative percent reduction target in accordance with key customer commitment number 1 above.

- Projects pursuing an EUI of 28 or less – National Grid will engage a ZNE specialist to provide technical assistance and ZNE planning throughout design
- Projects pursuing the 25.0% or 40.0% reduction scenarios – National Grid will engage a ZNE specialist to help determine a 25.0% or 40.0% EUI reduction target. The specialist will also help the design team with developing strategies and a pathway for getting the design to achieve the target.

Once National Grid confirms the customer is eligible for participation in this ZNE pathway, customers will be required to sign an Engineering Services Agreement (ESA) and commit to cost sharing the services of the ZNE specialist.

### Step 3 – Design

Once the EUI target is established, this EUI target should be written into the project documents, including the 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 will conduct the iterative energy modeling necessary to ensure the design remains on track to achieve the target EUI.

In addition to the feasibility and early schematic design technical support and ZNE road mapping services, the National Grid ZNE specialist will review the project documents at the end of Schematic Design and at mid design development, and then will provide reports back to the team with any further recommendations and considerations.

Customer must make final cost share payments to the ZNE specialist once the ZNE specialist's work is complete at the end of design development.

Customer must ensure a commissioning contract is in place that meets the requirements of this Program. Provide a copy of the commissioning scope of services to National Grid.

If the customer is pursuing an EUI target through the 25.0% or 40.0% reduction from National Grid baseline option, the EUI target will be estimated during the early feasibility and schematic design phases, but will not be locked in for purposes of incentives until National Grid confirms its baseline EUI based on the 100% Design Development set. Once National Grid has reviewed that set, National Grid will lock in the target EUI. The target EUI 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.

### Step 4 – Planning for EUI Data Collection and Corrective Action

Customers must consider how they will determine the post occupancy EUI of the project in coordination with National Grid and determine who will be responsible for collecting the data. Thought should be given to corrective action if at post occupancy the project is straying from the final design EUI. The project must comply with ASHRAE 90.1-2016, para. 8.4.3 related to metering and data storage, and it is recommended that the project team consider submetering 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 National Grid's scope of work for more details). National Grid 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 – National Grid Incentive Pre-Approval

At the end of design, the design team must complete a final energy model representative of the final design. If the design team’s energy model affirms the design will achieve the target EUI, National Grid will pre-approve an incentive of \$1.25/sf. If the customer has a contract in place for the Verification Incentive scope, this incentive component will be pre-approved as well.

An additional \$1.00/sf incentive will be available after the one-year post occupancy period if the project achieves the target EUI in practice (see Step 7 for details on when the post occupancy period begins). If the design team’s model does not achieve the target EUI (either a 28.0 EUI or a 25.0%/40.0% reduction in EUI from National Grid baseline), the project will shift out of the Path 1 ZNE/Deep Energy Savings participation pathway into the Path 2 Whole Buildings EUI Reduction Pathway (contact National Grid for more details).

### National Grid will require customer to sign:

1. Custom application, formally requesting National Grid incentives, and
2. National Grid Minimum Requirements Document (MRD), which lays out the energy-using equipment and system details that will lead the project to achieve the target EUI.

Customers must commit to constructing the building as it was designed and as it was documented in the MRDs. Major deviations from the design and specific equipment included in the design could jeopardize the project’s ability to achieve the target EUI and could jeopardize the customer’s opportunity to obtain full incentives.

At the end of design, National Grid will also request pdfs of the Final Design Documents. National Grid will conduct further analysis at their own expense to determine more granular information regarding National Grid program energy savings. National Grid will share the design documents with at least one additional vendor at their discretion at this time.

Table 1. Summary of Customer Incentives*	
Construction Incentive	\$1.25/sf
Post Occupancy Incentive	\$1.00/sf
ZNE or PH Certification Incentive	\$3,000
Optional Verification Incentive	50% of fee 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 National Grid’s program budget.

## Step 6 – Construction Completion and Construction Phase Incentive Payment

A few weeks before substantial completion, customers must provide a set of approved submittals, invoices and photographs corresponding with major equipment that is key in attaining the predicted EUI. National Grid may also request a copy of the project’s schedule of values.

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

Upon National Grid review of submittals, invoices and photographs, and upon completion of the post inspection, National Grid will make the \$1.25/sf construction incentive payment to the customer and will make the design team incentive payment. Where equipment and systems installed deviate substantially from equipment and systems shown in the design documents, National Grid reserves the right to adjust the customer and design team incentive amounts.

The design team is eligible for a Design Team Incentive (DTI) at construction completion if the customer’s construction payment is approved. DTI rates, offered per Table 2 below, encourage the integrated design and continuous iterative energy analysis that is necessary to achieve the EUI target.<sup>4</sup> National Grid pays the DTIs to the design team lead (an invoice is required), who may disperse them to other team members as appropriate.

Table 2. Design Team Incentives
Calculated at \$0.20/sf and capped at \$15,000, but not less than \$8,000 per project

4. Where the project has a contract that may restrict payments to the design team (as can happen with some municipal projects), it is the responsibility of the design team lead to work with the customer to ensure that the design team can obtain design team incentive payments per this program offering.

## Step 7 – Post Occupancy Incentive, Verification Incentive, and Certification Incentive

Once the building is functioning in a steady state (at anticipated occupancy and operating as intended), the customer and National Grid agree to begin National Grid Performance Period, which will last for one year. At the end of National Grid Performance Period, the customer is responsible for supplying the post occupancy energy usage (including utility bills, delivered fuel usage, and on-site generation), which is subject to National Grid review.

As described in Step 4, customers may optionally choose to pursue a Verification Incentive from National Grid. Regardless of whether the customer pursues the Verification Incentive, National Grid Performance Period as it relates to the post occupancy incentive will begin once the customer affirms:

- The metering system is set up and operating properly per ASHRAE 90.1-2016, para. 8.4.3 and as verified by the commissioning agent.
- All corrective action the customer intends to take as a result of the Verification Team’s scope of work has been completed.
- The occupancy and use of the building have reached a “steady state.”

If, at the end of National Grid Performance Period, the building achieves an operational EUI, which, when adjusted for weather by National Grid, achieves the target EUI, National Grid will pay the customer the additional \$1.00/sf incentive for this Program. The post occupancy EUI is adjusted for weather so that customers are not unfairly penalized for particularly harsh weather and are not unfairly benefitted by particularly mild weather.

If the customer opts to certify the project as net zero in accordance with LEED Zero or the International Living Future Institute’s (ILFI’s) Living Building Challenge 4.0 (including Zero Carbon, Zero Energy, CORE, Petal or Living Certification), the New Buildings Institute’s (NBI’s) zero energy standards, or if they receive Passive House certification from either PHIUS or PHI, National Grid will pay a \$3,000 certification incentive.

### Disclaimers

Except for payment of incentives as set forth hereunder, National Grid does 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”), National Grid has unilateral rights to apply for any credits or payments resulting from the Program or ECMs (the “National Grid Credits”). Such National Grid 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 National Grid Credit. National Grid is not responsible for the payment of any taxes assessed by federal, state or local governments on either benefits conferred on the customer by National Grid or design incentives paid to the design team.

**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 above.**

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

## PROCESS CHECKLIST

### Path 1: ZNE/Deep Energy Savings Program

#### Pre-Design Phase

- If possible, engage National Grid before hiring an Owner’s Project Manager (OPM) and design team. National Grid can offer request for proposal or request for services (RFP/RFS) language and questions to help customers select a designer or OPM with zero net energy (ZNE) project experience.
- Incorporate zero net energy (ZNE) goals and/or low Energy Use Intensity (EUI) goals into the RFP/RFS for OPM services and designer services

#### Feasibility and Early Schematic Design Phases

- Once design team is hired, re-engage National Grid to ensure this Program is a good fit
- Sign National Grid Memorandum of Understanding (MOU)
- Sign an Engineering Services Agreement (ESA) confirming customer is willing to cost share the services of a ZNE expert that National Grid would bring to the project
- Establish EUI target and a roadmap for achieving the target
- Add ZNE goal and EUI target to Owner Project Requirement (OPR) and provide National Grid with a copy
- Conduct iterative energy modeling throughout design to ensure the project is tracking toward the EUI target
- 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 (e.g., submetering)
- Ensure that a commissioning contract is in place that meets the program requirements and provide copy of commissioning scope to National Grid
- 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 National Grid.

#### Mid Design

- Continue to conduct iterative energy modeling throughout design to ensure the project is tracking toward the EUI target
- Provide 50% or 100% Design Development set to National Grid ZNE expert for review and team feedback/discussion
- Designers must include language in project documents informing contractors that this project is participating in a National Grid downstream program pathway, and that they may not pursue or accept any HVAC, food service, domestic hot water or lighting upstream incentives for this project.
- Finalize customer cost share payments to the ZNE specialist upon receipt of the specialists’ Design Development Review Report

#### End of Design – Upon Completion of Design Team’s Energy Modeling

- Provide the design team’s energy modeling report based on 100% Construction Documents to National Grid showing the predicted EUI of the project’s final design. If the EUI target is met, move forward in Path 1 below. If the EUI target is not met, move forward with Path 2 (consult National Grid).
- Sign the Custom Application in the pre-installation section, formally requesting National Grid incentives
- Sign the Minimum Requirements Documents (MRD) in the pre-installation section – affirming intent to build in accordance with the equipment and systems identified in the MRDs

## PROCESS CHECKLIST

### 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 major equipment and systems contributing to the predicted EUI have been installed
- Schedule a post installation walk-through with National Grid
- 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
- National Grid will pay customer's construction incentive if equipment is installed as expected
- Design Team Lead to submit an invoice for the Design Team Incentive
- National Grid will pay the Design Team Incentives if equipment is installed as expected

### National Grid Performance Period

- Once the project reaches a steady state of occupancy and operation, provide National Grid with an affidavit that confirms the metering system is set up and operating properly per ASHRAE 90.1-2016, para. 8.4.3 as verified by the commissioning agent, all corrective action customer intends to take related to energy use has been taken, and the building's occupancy and operation are in a steady state
- Customer will provide National Grid with one year of post occupancy usage (including utility bills, delivered fuel usage, and on-site generation) after the beginning of National Grid Performance Period
- National Grid will review the data and true up the EUI date to adjust for weather
- If weather adjusted EUI meets the target EUI, National Grid will make the \$1.00/sf post occupancy payment
- If customer opted for the optional Verification Incentive, provide National Grid with copies of reports from each review interval
- National Grid will make a \$3,000 certification support payment if customers certify their projects as net zero in accordance with LEED Zero or the International Living Future Institute's (ILFI's) Living Building Challenge 4.0 (including Zero Carbon, Zero Energy, CORE, Petal or Living Certification), the New Buildings Institute's (NBI's) zero energy standards, or if they receive Passive House certification from either PHIUS or PHI