



# Integrated Modeling Incentive

## Program Guidelines

These guidelines govern the procedures and qualifications for incentives under Austin Energy's Integrated Modeling Incentive (the "Program").

### I. Eligible Customers

- A. Program applicant ("Customer") must have an Austin Energy ("AE") electric utility account at the service address where the project will be built or own the property within Austin Energy's service territory where the project will be built.
- B. Property must be new construction or major renovation and must be 10,000 square feet or greater for commercial, multifamily, or governmental use.
- C. Energy models must be created with OpenStudio<sup>®</sup> by an Energy Consultant qualified by Austin Energy through a third-party administered exam.
- D. Projects must comply with all stage requirements, Application through Post Occupancy Measurement & Verification.
- E. Energy Consultant must house all project communications, resources, and required documentation related to Program participation in the Energy Design Assistance Program Tracker.

### II. Definitions

"**Alternative EEM Model**" is a Baseline Model with a single Energy Efficiency Measure applied.

"**Baseline Model**" is an energy model simulated in OpenStudio<sup>®</sup> according to the criteria of the current Austin Energy Code.

"**Building Systems**" include building envelope (roof, wall, floor, door, fenestration, infiltration rate); HVAC systems; lighting and daylighting systems and control strategies; domestic hot water systems; and process systems.

"**Commercial Building**" is a building or space subject to the Commercial Provision of the current Austin Energy Code. This includes multifamily high-rise buildings (5 stories or more above grade).

"**Design Alternative**" is one of a collection of building designs having a specified set of EEMs.

"**Economic Analysis**" is a simple payback requiring inputs of capital costs (material and labor) for the EEM proposed and the baseline equipment or system.

"**Energy Design Assistance Program Tracker ("EDAPT")**" is a web service developed by the National Renewable Energy Laboratory that manages Program applications, project status, data, communication, and reports.

"**EDAPT Roles**" – see Table I.

Table I. EDAPT Roles & Definitions		
Project Team Roles		
Role	Name	Definition
EC	Energy Consultant	Access: Read/Write while in 'EC' State Responsible for coordinating the delivery of all stage requirements <b>Created by site administrator</b>
Customer	Customer	Access: Read Only Owner or designated representative <b>Assigned in EDAPT 'Customer Information'</b>
Design Team	Design Team	Access: Read Only Cross functional design professionals <b>Assigned in EDAPT 'Additional Contacts'</b>
Austin Energy Roles		
Role	Name	Definition
PM	Program Manager	Access: Read/Write at all stages Responsible for stage approval <b>Created by site administrator</b>
EEE	Energy Efficiency Engineer	Access: Read/Write at all stages Pre-approves modeling stages prior to PM <b>Created by site administrator</b>
MVC	M&V Consultant	Access: Read/Write while project is in 'MVC' Verifies occupied building attributes <b>Created by site administrator</b>
AM	Account Manager	Access: Read Only AE representatives assigned to project <b>Created by site administrator</b>
MA	Marketing Assistant	Access: Read/Write during 'Application' Responsible for pre-approval of application <b>Created by site administrator</b>

**“Energy Efficiency Measure (“EEM”)** is any type of project, product(s), or controls approved by Energy Efficiency Engineer implemented to reduce the consumption of energy in the building.

**“Energy Model”** is a virtual representation of a building used to analyze the energy use, demand, and energy cost.

**“Measurement and Verification (“M&V”)** is the act of verifying installation and measuring or collecting data of EEMs to verify effectiveness.

**“Multifamily Building”** is a building less than or equal to four (4) stories above grade subject to the Residential Provision of the current Austin Energy Code.

**“National Renewable Energy Laboratory (“NREL”)** is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

**“OpenStudio<sup>®</sup>”** is a collection of software tools to support whole building energy modeling and parametric analysis using EnergyPlus, advanced daylight analysis using Radiance, and graphical interface through the OpenStudio SketchUp plug-in. OpenStudio<sup>®</sup> is an open source (LGPL) project.

“Operational Measures” are EEMs dependent on variables such as occupancy, schedules, or controls.

“Parametric Analysis Tool (“PAT”)” is a feature of OpenStudio® that allows the user to apply scripts to a baseline model to quickly compare many Design Alternatives.

“Peak Demand Savings” is defined as the greatest difference in total electric demand between the Proposed and Baseline Models occurring on the same weekday and time during the period from June 1st through September 30th during the on-peak period (between 2 pm and 8 pm).

“Project Team Member”– see Table II.

Table II. Project Team Definitions	
Project Team Member	Definition
<b>Design Team</b>	
<b>Energy Consultant</b>	Qualified OpenStudio energy modeler responsible for providing energy models of Design Alternatives.
<b>Design Professional</b>	Individuals involved in identifying acceptable Design Alternatives to be modeled, at minimum architect and MEP engineer.
<b>Developer</b>	Individual or organization responsible for building execution and implementing selected Design Alternative.
<b>Property Representative</b>	Individual or organization in possession of title for land or building in the Austin Energy service territory.
<b>Review Team</b>	
<b>Measure and Verification Professional</b>	Individual or organization responsible for verifying the efficacy of EEM savings.
<b>Austin Energy Representative</b>	Austin Energy employees responsible for verifying project meets all Program requirements.

“Proposed Model” is an energy model simulated in OpenStudio to the modeling requirements set in the current Austin Energy Code.

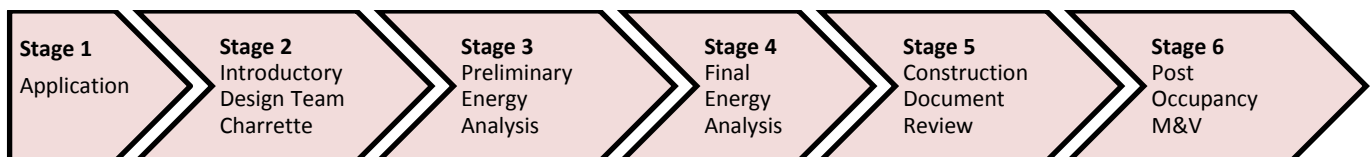
“Simple Box Model” is an energy model used to evaluate high level options for energy use characteristics that affect conceptual design. Any simulation program capable of meeting this definition is acceptable.

“Speculative Space Model” is a model simulated with portions of the building that may not be finished out with all systems, such as, lighting, heating, cooling or ventilation.

“Static Measures” are EEMs independent of variables such as scheduling, occupancy, or controls.

### III. Incentive Process

- A. The Program consists of six stages: Application, Introductory Design Team Charrette, Preliminary Energy Analysis, Final Energy Analysis, Construction Document Review, and Post Occupancy M&V.



- B. Incentive payment is made to the Customer and is calculated by multiplying the Stage 6 verified Peak Demand (kW) Savings accomplished beyond the baseline demand, multiplied by the incentive level in place at the time a Letter of Intent is issued by Austin Energy [(baseline kW demand – proposed kW demand) x incentive level]. Current incentive levels are found at [savings.austinenergy.com](http://savings.austinenergy.com).
- C. The Customer incentive will be paid after completion of Stage 6 and upon Austin Energy's verification of Peak Demand Savings achieved. Any incentive payment above the City Manager's spending authority is subject to approval by the Austin City Council.
- D. **Letter of Intent (LOI):** Austin Energy makes no financial commitment to the Customer until a signed LOI is issued. Simply submitting an application does not entitle Customer to the incentive rate or amount requested.
  - 1. A LOI will be issued at AE's discretion, pending submission of the complete application package and Stage 5 analysis reports, and budget approval.
  - 2. If an LOI expires, the applicant may reapply for the Program at the prevailing incentive level.
- E. Payments made under the Program are special limited obligations of the City of Austin, payable solely from the revenues of Austin Energy, and not from any tax revenues of the City. The incentive is subject to annual budget appropriations and does not constitute indebtedness or a loan of credit. Neither the faith and credit nor the taxing power of the City is pledged to any potential incentive payment obligations.

#### IV. Integrated Modeling Stages and Requirements

- A. **Application** – The purpose of this stage is for the Customer (or a representative) to complete the online application with the details of the project and agree to the Program terms & conditions.
  - 1. The Customer must complete all required fields of the online application on [eda-pt.org](http://eda-pt.org).
  - 2. The Customer must sign the Terms & Conditions and upload them to the application prior to submitting to Austin Energy for review.
    - a. Incomplete applications will not be reviewed.
- B. **Introductory Design Team Charrette** – The purpose of this stage is to have a meeting where the Energy Consultant introduces the Project Team to the Program. The Project Team must discuss Program requirements, identify opportunities, set goals for project design, and gather project information needed to begin the energy analysis process.
  - 1. The Energy Consultant will facilitate a charrette to discuss project goals with the Project Team. A Simple Box Model may be utilized at this stage.
  - 2. The Project Team must review the *Integrated Modeling Incentive Guidelines*, identify a minimum of six EEMs within a minimum of two Building Systems to be simulated during 'Stage 3 – Preliminary Energy Analysis', and set a kW & kWh savings goal.
  - 3. The Project Team must provide a proposed project schedule and Project Team communication plan.
  - 4. The Energy Consultant must complete the following: establish a rate class and baseline(s) used for comparison, and submit a completed *Introductory Meeting Report*.
- C. **Preliminary Energy Analysis ("PEA")** – The purpose of this stage is to analyze the energy and economic impacts of individual EEMs by applying them to the baseline simulation in the OpenStudio Parametric Analysis Tool (PAT). This exercise will allow the project team to choose specific EEMs to carry forth in the process.
  - 1. The Energy Consultant must create a baseline model using OpenStudio and six or more Alternative EEM models.
  - 2. The Project Team must provide associated drawings and specifications.
  - 3. The Energy Consultant must submit the PEA model results (zip or .xml), PEA energy model (.osm), and the completed *Preliminary Energy Analysis Report*.
- D. **Final Energy Analysis ("FEA")** – The purpose of this stage is to analyze the energy and economic impacts of a combination of EEMs in three (3) Design Alternatives.
  - 1. The Energy Consultant must create three proposed Design Alternative FEA models.
  - 2. The Energy Consultant must submit the FEA models results (zip or .xml), FEA energy models (.osm), and Enduse Timeseries Exports (.csv).
  - 3. The Project Team must review the costs attributed to both the EEM and the associated baseline model components for the Economic Analysis.
  - 4. The Customer must select one of the approved Design Alternatives.

5. The Project Team must provide associated drawings and specifications of the selected Design Alternative.
  6. The Energy Consultant must submit the selected Design Alternative FEA energy model (.osm), the Enduse Timeseries Export (.csv), and the completed *Final Energy Analysis Report*.
- E. Construction Document (“CD”) Review** – The purpose of this stage is to identify any design changes that may impact the building energy use, adjust the FEA model to reflect these changes, determine the estimated kW savings, and approve the estimated incentive payment through issuance of the LOI.
1. The Project Team must provide the latest associated construction documents with a narrative detailing the changes to all Building Systems that may affect the results of the selected Design Alternative model.
  2. The Energy Consultant must revise and submit the *CD Review Results Report* to reflect changes from FEA to latest construction documents set.
  3. The Measurement & Verification Consultant (“MVC”) must review the construction documents and submit the completed *CD Review Results Report* to identify any EEMs that need to be re-simulated.
  4. The Energy Consultant must update the FEA model with the changes identified in the *CD Review Results Report* then submit the CD Model results (zip or .xml), CD energy model (.osm), Enduse Timeseries Export (.csv), and the completed final *CD Report* within 60 days of issuance of building permit.
  5. The Customer must notify the Program Manager when the City of Austin building permit is approved.
- F. Post Occupancy M&V** – The purpose of this stage is to ensure EEM’s are installed, determine final energy savings, and approve the incentive payment for the completed project.
1. The Project Team must provide approved construction submittals for associated EEMs and identify changes made to the project during construction.
  2. The MVC will review EEMs and submit the completed *M&V Review*.
    - a. Static Measures will be reviewed by visual inspection and by the approved construction submittals for rated performance characteristics.
    - b. Operational Measures will be reviewed by system, occupant, and schedule monitoring.
  3. The Energy Consultant must use the *M&V Review* to update the energy model to ‘as built’ conditions then submit the M&V Model results (zip or .xml), M&V energy model (.osm), the Enduse Timeseries Export (.csv), and the completed *M&V Report* within one-year post-occupancy.
  4. The Customer must notify the Program Manager when the City of Austin final Certificate of Occupancy is approved.

## V. Modeling Methodologies to be utilized by Energy Consultants

- A. Baseline Modeling Methodology** will be selected according to building use.
1. Multifamily Buildings that are less than or equal to four stories above grade must be modeled according to the current Austin Energy Code referencing Residential Provision of IECC Section R405 “Simulated Performance Alternative”. The current “Austin Energy - Low-Rise Energy Analysis Summary Form” may be used as a resource tool for determining Baseline and Proposed Model inputs.
  2. Commercial buildings (includes multifamily high-rise buildings five stories or more above grade) and commercial spaces in Multifamily Buildings must be modeled according to the current Austin Energy Code referencing ASHRAE Standard 90.1, Appendix G (with errata). The current “Austin Energy - Commercial Energy Analysis Summary Form” may be used as a resource tool for determining Baseline and Proposed Model inputs.
- B. OpenStudio Measures**
1. OpenStudio Measures may be used to create Design Alternative and Alternative EEM Models using the PAT.
  2. OpenStudio Measures specific to Austin Energy must be used for Design Alternative and EEM models using the PAT.
- C. Speculative Space Modeling Methodology** is allowed. The Energy Consultant must choose one of the following compliance options.
1. If savings from speculative spaces are not included in model, then the speculative space must be modeled identically in the Baseline and Proposed Models.

2. If savings from speculative spaces are included in model, then the performance values of the EEMs must be included in a legally binding tenant sales and/or lease agreement (TSLA). The speculative space will be modeled identically in the Baseline and Proposed Models, except for the EEM's listed in the TSLA.
- D. Exceptional Calculation Methodology is allowed per ASHRAE 90.1 Appendix G
1. Where no simulation program is available that adequately models a design, material, or device, the rating authority may approve an exceptional calculation method to demonstrate above-standard performance using this method. Applications for approval of an exceptional method shall include documentation of the calculations performed and theoretical and/or empirical information supporting the accuracy of the method.
  2. Energy Consultants submitting EEMs for projects must provide the following supporting documentation:
    - a. A narrative describing the Baseline Case determination and verification that the Baseline Case reflects standard practice.
    - b. A narrative describing the Proposed EEM and verification that the measure exceeds standard practice.
      - i. Acceptable verification includes: a utility program incentive from the past 5 years, a case study, or industry white paper.
      - ii. Sales brochures are not acceptable.
    - c. Systems must have identical capacity in the Baseline and Proposed Models. Exceptions may be approved at Austin Energy's sole discretion on a case-by-case basis with the submittal of supporting documentation.
- E. A building receiving energy from a district energy services system (such as district cooling, heating) is allowed.
1. An energy model for a building on Austin Energy District Cooling must measure chilled water use in the Baseline and Proposed Cases applying the chilled water tariff provided by the Program Manager.
  2. An energy model for a building served by an on-site or on-campus customer-owned district energy system must measure chilled water, hot water, and steam use in the Baseline and Proposed Cases applying the applicable energy rates.

## VI. Post-Occupancy Measurement & Verification Methodologies

- A. The MVC will verify EEM equipment type, efficiency, and functionality.
- B. The MVC will spot check and monitor designated EEM energy usage by utilizing short-term data loggers, building automation system trend data, sub-metering data, or combination of these data sources.

## VII. Relationship to other AE Programs

- A. Customer participation in the Program is voluntary and independent of Customer participation in other Austin Energy programs. More information about the following programs can be found at [savings.austinenergy.com](http://savings.austinenergy.com).
  1. Austin Energy Green Building (AEGB)  
The Program energy model documentation and review will be synergistic per each associated requirement in the AEGB Commercial and Multifamily ratings.
  2. Austin Energy Rebates and Incentives  
The Program EEMs implemented may qualify for additional Austin Energy Rebates and Incentives.
  3. Austin Energy Solar Photovoltaics (PV) Incentive  
Solar PV generation may not be added to the energy model peak demand savings.
  4. Austin Energy District Cooling  
Peak demand shifting calculated from Austin Energy District Energy Thermal Storage may not be added to the energy model Peak Demand Savings.

## VIII. Policies

- A. Incentive payments are subject to budget allocation by the Austin City Council.
- B. No commitment to payment of incentive funds is made by Austin Energy prior to issuance of the LOI.
- C. Funding for any Program incentive above the City Manager's discretionary spending authority is subject to City Council approval.

- D. Projects will be disqualified from the Program incentive if any required documentation is not submitted timely and in accordance with these guidelines.

## IX. Required Documentation

- A. Application prior to or during early design analysis
  - 1. The Customer must submit:
    - a. An application on EDAPT
    - b. A signed Terms & Conditions
- B. Introductory Design Team Charrette during early design analysis
  - 1. The Energy Consultant must submit:
    - a. The *Introductory Meeting Report*
  - 2. Project Team must submit:
    - a. A team communication plan
- C. Preliminary Energy Analysis during early design analysis
  - 1. The Energy Consultant must submit:
    - a. The PEA model results
    - b. The PEA model
    - c. The *Preliminary Energy Analysis Report*
  - 2. The Project Team must submit:
    - a. Associated Drawings and Specifications
- D. Final Energy Analysis during design development
  - 1. The Energy Consultant must submit:
    - a. The three Design Alternative FEA models results
    - b. The three Design Alternative FEA models
    - c. The three Design Alternative FEA models Enduse Timeseries Exports
    - d. The selected Design Alternative
    - e. The *Final Energy Analysis Report*
  - 2. The Project Team must submit:
    - a. Associated drawings and specifications
- E. Construction Document Review during construction documentation
  - 1. The Energy Consultant must submit:
    - a. A change narrative
    - b. Revisions to the *CD Review Results Report*
    - c. The CD Model results
    - d. The CD Model
    - e. The Enduse Timeseries Export
    - f. The *CD Report*
  - 2. The Project Team must submit:
    - a. Associated drawings and specifications
  - 3. The MVC must submit:
    - a. The *CD Review Results Report*
  - 4. The Customer must provide notification of approved:
    - a. City of Austin building permit
- F. Post Occupancy Measurement & Verification within one-year post-occupancy
  - 1. The Project Team must provide:
    - a. Approved associated construction submittals, revised final drawings and specifications
  - 2. The MVC must submit:
    - a. The *M&V Review*
  - 3. The Energy Consultant must submit:
    - a. The M&V OpenStudio model results
    - b. The M&V OpenStudio model
    - c. The Enduse Timeseries Export
    - d. The *M&V Report*
  - 4. The Customer must provide notification of approved:
    - a. City of Austin final Certificate of Occupancy



## X. Resources

- A. EDAPT application and resources – [eda-pt.org](http://eda-pt.org)
- B. OpenStudio® documentation and resources – [openstudio.net](http://openstudio.net)
- C. OpenStudio® user support forum, Unmet Hours – [unmethours.com](http://unmethours.com)
- D. EnergyPlus Web-based documentation Input Output Reference – [bigladdersoftware.com](http://bigladdersoftware.com)
- E. Building Component Library - [bcl.nrel.gov](http://bcl.nrel.gov)
- F. City of Austin Energy Code - [austintexas.gov/department/building-technical-codes](http://austintexas.gov/department/building-technical-codes)

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