



Energy Analysis How to Guide

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SECTION 1: ABOUT

The Energy Analysis describes how a project complies with the New York City Energy Conservation Code (NYCECC). It identifies the strategy or compliance path taken by the design team and the ECC chapter or the ASHRAE standard used for design. An Energy Analysis is not required if the project is exempt.

The Energy Analysis must represent the entire project, including a building's envelope, HVAC, service water heating, lighting and electrical power systems as applicable to the scope of the project work. The Energy Analysis may be in one of the formats below. Other formats may be used if approved in advance by the Secretary of State of New York State, where required and the Buildings Commissioner.

- REScheck
- COMcheck
- DOE2-based energy modeling software, using Form EN1 for reporting to the Department
- [Energy Code Tabular Analysis](#) (pdf)

Applicants must key the identifying terms used in the energy analysis to the construction drawings, so that each wall type, window type, HVAC unit, lighting fixture, etc., can be clearly linked to their location in the drawings. Applicants must also provide sheet numbers, signaling where the supporting documentation for each line item in the energy analysis can be found. This can be done either through a column in the tabular analysis format or in notes section relating to the COMcheck, REScheck or EN1 form in the drawings.

For more information and requirements regarding REScheck, COMcheck and DOE2 software, see the [Additional Information](#) page.

SECTION 2: RESIDENTIAL BUILDINGS (ECC CHAPTER 4)

The NYCECC defines residential buildings as one-, two-, three- and multiple-family dwellings three stories or less. All residential buildings four stories and above are categorized as a commercial building.

New Residential Buildings

You may use one of the below forms when doing an energy analysis for a new residential building. See the [Additional Information](#) page for more information.

1. REScheck Software: Can be used to demonstrate compliance with the NYCECC when doing an analysis for a new residential building. When using REScheck, you must complete all the checkboxes on all the pages of the form as shown in Figure 1 in the Appendix.
2. Tabular Analysis: Can be used to demonstrate compliance with the NYCECC when doing an analysis for a new residential building, as shown in Figure 2 in the

Appendix and described in the Residential Additions and Alterations section below.

Residential Additions and Alterations

You may use one of the below forms when doing an energy analysis for an addition or alteration to a residential building. See the [Additional Information](#) page for more information.

1. REScheck Software: Can be used to demonstrate compliance with the NYCECC when doing an analysis for a residential addition or alteration when a whole building analysis is being performed. When using REScheck, you must complete all the checkboxes on all the pages of the form, as shown in Figure 1 in the Appendix.

Note: The applicant should be prepared to prove all the values used to represent the existing building.

2. Tabular Analysis: Can be used to demonstrate compliance with the NYCECC when doing an analysis for a residential addition or alteration, as shown in Figure 2 in the Appendix. You must comply entirely with the prescriptive values in the NYCECC, no performance calculations will be accepted and in the heading title you must include “Energy Analysis,” the project’s occupancy (residential or mixed), the scope of work and the climate zone. In the four columns below, you must also include each scope of work item, the proposed energy value for each item, the energy value prescribed for each item by the NYCECC with the relevant citation and the drawing number(s) where supporting documentation may be found.

For an optional method to present the tabular analysis, see the residential building sections of the [Energy Code Tabular Analysis](#) table. Complete the lines that apply to your project and delete those rows that do not apply to your project.

Note: One tabular prescriptive analysis may be used for both the residential and commercial occupancies in a mixed occupancy project.

Mixed Occupancy with a Residential Section

When a proposed project has a mixed occupancy, each occupancy must be considered separately and separate energy analyses must be performed demonstrating how the occupancies will comply with Chapters 4 and 5 of the NYCECC, respectively, Section ECC 101.4.6 of the NYCECC. For a residential building with commercial space, this can be accomplished by simply adding a tabular analysis for the commercial space to REScheck or by performing an entire analysis for both the residential and commercial spaces through a single tabular analysis.

SECTION 3: COMMERCIAL BUILDINGS (ECC CHAPTER 5 OR ASHRAE 90.1)

The NYCECC defines commercial buildings as any building that is not a residential building. This includes one-, two- or multiple-family dwellings four stories or higher, which are called Group R Buildings in ECC Chapter 5 for envelope purposes as well as all other occupancy types, regardless of number of stories.

Commercial projects must use either Chapter 5 of the NYCECC or ASHRAE 90.1 for compliance. You must decide which code all disciplines will use for their project.

New Commercial Buildings

You may use one of the below formats when doing an energy analysis for a new commercial building. See the [Additional Information](#) page for more information.

1. **COMcheck:** Can be used to demonstrate compliance with the NYCECC when doing an analysis for a new commercial building. When using COMcheck, you must complete all the checkboxes on all the pages of the form, as shown in Figure 3 in the Appendix.
2. **DOE2-Based Energy Modeling Software:** Can be used to demonstrate compliance with the NYCECC when doing an analysis for a new commercial building. The analysis must be reported on the Energy Cost Budget Worksheet (EN1 Form), as shown in Figure 7 in the Appendix. You may use either Section ECC 506 of the NYCECC or Chapter 11 in ASHRAE 90.1 and energy modeling based on the DOE2 program.
3. **Tabular Analysis:** Can be used to demonstrate compliance with the NYCECC when doing an analysis for a new commercial building, as shown in Figure 8 of the Appendix and described in the Commercial Additions and Alterations section below.

Note: The COMcheck Lighting Application Worksheet, as shown in Figure 5B in the Appendix, may be submitted at the discretion of the applicant to demonstrate how the lighting portion of the design will comply with the NYCECC.

Commercial Additions and Alterations

You may use one of the following formats when doing an energy analysis for an addition or alteration to a commercial building. See the [Additional Information](#) page for more information.

1. **COMcheck Software for the Energy Conservation Construction Code of New York State or ASHRAE 90.1:** Can be used to demonstrate compliance with the NYCECC when doing an analysis for an alteration or addition to a commercial building. You must use whichever form was used for the design and you must complete all the checkboxes on all the pages of the form, as

shown in Figures 3 through 6 in the Appendix – apply them as they seem fit to the scope of work for examples of the COMcheck report elements. The COMcheck report must state that the project type is an addition or alteration where applicable.

COMcheck may only be used when a whole building analysis is being performed, including both the existing building and addition/alteration. You should be prepared to prove the values used to represent the existing building.

2. DOE2-Based Energy Modeling Software: Can be used to demonstrate compliance with the NYCECC when doing an analysis for an alteration or addition to a commercial building. The analysis must be reported on the Energy Cost Budget Worksheet (EN1 Form). You must use energy modeling when such software is designed to model commercial additions or alterations as applicable and reports such project type. See Figure 7 in the Appendix for an example of a completed form.
3. Tabular Analysis: Can be used to demonstrate compliance with the NYCECC when doing an analysis for an alteration or addition to a commercial building, as shown in Figure 8 in the Appendix. You must comply entirely with the prescriptive values in the NYCECC, no performance calculations will be accepted unless the COMcheck Lighting Application Worksheet is submitted with trade-offs within lighting only. In the heading title you must include “Energy Analysis,” the project’s occupancy (commercial), the scope of work, the climate zone and the standard used (Chapter 5 or ASHRAE 90.1). In the four columns below, you must also include each scope of work item, the proposed energy value for each item, the energy value prescribed for each item by the NYCECC with the relevant citation and the drawing number(s) where supporting documentation may be found.

Note: The COMcheck Lighting Application Worksheet, as shown in Figure 5B in the Appendix, may be submitted at the discretion of the applicant to demonstrate how the lighting portion of the design will comply with the NYCECC.

For an optional method to present the tabular analysis, see the commercial building sections of the [Energy Code Tabular Analysis](#) table. Complete the lines that apply to your project and delete those rows that do not apply to your project.

SECTION 4: PRESENTATION OF ENERGY ANALYSIS

The energy analysis must be included on a drawing or drawings within the construction drawing set.

Projects Filed Under One Application Number with No Discipline Trade-Offs

When all disciplines are filed under one application number and there are no trade-offs among disciplines, each element of the energy analysis may be submitted with the related drawings.

For example, if you are using COMcheck, the envelope report may be included in the architectural set, the mechanical report with the mechanical set or the lighting report with the electrical or energy drawings (or architectural or mechanical drawings, as applicable); or the entire energy analysis may also be submitted with the initial filing of the project.

Projects Filed Under Separate Application Numbers

When disciplines are filed under separate application numbers, the energy analysis elements for all disciplines must be submitted together in the initial filing for the project.

Discipline Trade-Offs

When trade-offs are used among disciplines, the energy analysis must be included in the initial filing for the project and signed and sealed by the lead professional.

Foundation Permits

When a foundation permit is filed separately for a new building, the foundation drawings must include a tabular analysis and details showing foundation insulation. Additionally, the next filing for the entire project must include the entire energy analysis, including the foundation.

Signing and Sealing

When multiple applicants are permitted to sign and seal their parts of the energy analysis (as above in this section) and all parts of the energy analysis are presented on one sheet (or more as required) with each professional signing and sealing his or her respective report, there should be no seal and signature on the title block of the sheet and it must bear the EN discipline designator.

Each report may be placed on a separate sheet bearing the EN discipline designator, and each professional should then sign and seal his or her respective sheet at the title block only or the lead professionals should sign and seal at the title block.

SUBSECTION 4.1: REGISTERED DESIGN PROFESSIONAL RESPONSIBILITY

Lead Professional

When trade-offs among disciplines are used, a single professional, identified as the lead professional, must sign and seal the entire energy analysis.

For example, a building design utilizes a glass curtain wall that underperforms the prescriptive requirements in the NYCECC for the envelope, but this is mitigated with the lighting and mechanical systems that exceed NYCECC efficiency requirements. Because the envelope will not pass the compliance test, the project must undergo energy modeling using a DOE2-based program in order to demonstrate that the overall project will not use any more energy than a building of similar occupancy, mass, height, etc., and meets all the other prescriptive requirements of the NYCECC without trade-offs. Consequently, one professional must take responsibility for the entire energy analysis by signing and sealing the energy analysis drawing(s).

Respective Professional Responsibility

When trade-offs are not used among disciplines registered design professionals may sign and seal their respective parts of the energy analysis. See Section 4: Presentation of Energy Analysis” above for information on where to sign and seal the drawing(s).

Registered Design Professional, Other than the Design Applicant of Record

Registered design professionals other than the design applicant(s) of record may sign and seal the energy analysis, provided that such professional(s) file a PW1 form as a subsequent filing to the initial filing for the project. For the work type, such registered design professionals should check “OT” and indicate “EN” or “E” on the line following.

SUBSECTION 4.2: APPLICATIONS THAT ARE NOT EXEMPT BUT MAY NOT NEED TO COMPLY WITH THE NYCECC

When you must check on the PW1 form that the application complies with the NYCECC (see the [Professional Statement](#) page for more information) but the scope includes exempt items, items that may be exemptions under Section ECC 101.4.3 of the NYCECC or you deem items as not required to comply with the NYCECC, Section ECC 101.4.3 of the NYCECC, then you should list these items in the energy analysis and then address them there. We recommend listing them in the tabular analysis, as it is the best and easiest format for this situation in most cases. In such case, where appropriate and applicable, the applicant may indicate “NA” in the proposed value column and “NA” in the prescriptive value column and provide the citation where applicable as indicated above.


For example, if you are adding an unconditioned garage accessory to a one-family residence, where the roof, walls, windows and slab-on-grade of the garage are exempt

from thermal requirements of the NYCECC but the lighting must comply, you must check that the application complies in section 10 of the PW1 form. Then in the energy analysis on line 1, indicate “new roof, new walls and new floor” for the scope of work item, a proposed value of “NA” and a prescriptive value of “NA” and cite the exemption that allows no insulation (§ECC 101.5.2). On line 2, indicate “install two lighting fixtures” for the scope of work item, indicate a prescriptive value of 0.3W/SF and cite the code section prescribing the lighting requirements for this U occupancy (ECC Table 505.5.2).

Note: In cases where Section 10 of the PW1 form must be checked for compliance, but when the energy analysis shows no compliance is necessary, the TR8 will automatically be triggered as a required item. See the [Professional Statement](#) page and [Information About Forms](#) page for more information on how to address this form in such circumstances.

SECTION 5: APPENDIX

FIGURE 1: SAMPLE RESCHECK COMPLIANCE CERTIFICATE



**REScheck Software Version 4.4.1
Compliance Certificate**

Energy Code: **2010 New York Energy Conservation Construction Code**
 Location: **Kings County, New York**
 Construction Type: **Detached 1 or 2 Family**
 Glazing Area Percentage: **9%**
 Heating Degree Days: **4510**
 Climate Zone: **4**

Construction Site: _____ Owner/Agent: _____ Designer/Contractor: _____


Compliance: Passes using UA trade-off

Compliance: **12.2% Better Than Code** Maximum UA: **500** Your UA: **439**
The % Better or Worse Than Code index reflects how close to compliance the house is based on code trade-off rules.
 It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Assembly	Gross Area or Perimeter	Cavity R-Value	Cent. R-Value	Glazing or Door U-Factor	UA
Exterior Wall Type A: Steel Frame, 16" o.c.	1260	13.0	5.0		88
Window 2: Wood Frame:Double Pane with Low-E	75			0.330	25
Door B: Solid	41			0.420	17
Exterior Wall Type B: Steel Frame, 16" o.c.	2513	13.0	5.0		173
Window 1: Wood Frame:Double Pane with Low-E	210			0.330	69
Window 2: Wood Frame:Double Pane with Low-E	30			0.330	10
Window 3: Wood Frame:Double Pane with Low-E	5			0.330	2
Door A: Glass	24			0.310	7
Roof Type 1: Steel Joist/Rafter, 16" o.c.:2x10	823	0.0	35.0		21
Window 4 - Skylight: Metal Frame with Thermal Break:Triple Pane	32			0.700	22
Window 5 - Skylight: Other	9			0.540	5

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2010 New York Energy Conservation Construction Code requirements in REScheck Version 4.4.1 and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

Name - Title _____ Signature _____ Date _____



Project Title: _____ Report date: 03/10/11
 Data filename: P:\Projects\NYC DOB Energy Code Compliance Study\QC_Training Modules\RWB_VEE_Residential\Residential_rev_rck Page 1 of 1

Notes:

1. Roof, Skylight, Wall, Window, Door and Foundation Types in Energy Analysis should be carried over to construction drawings for clear identification.
2. Provide sheet numbers where each line item is supported in the construction drawings.

Supporting Documentation Reference:

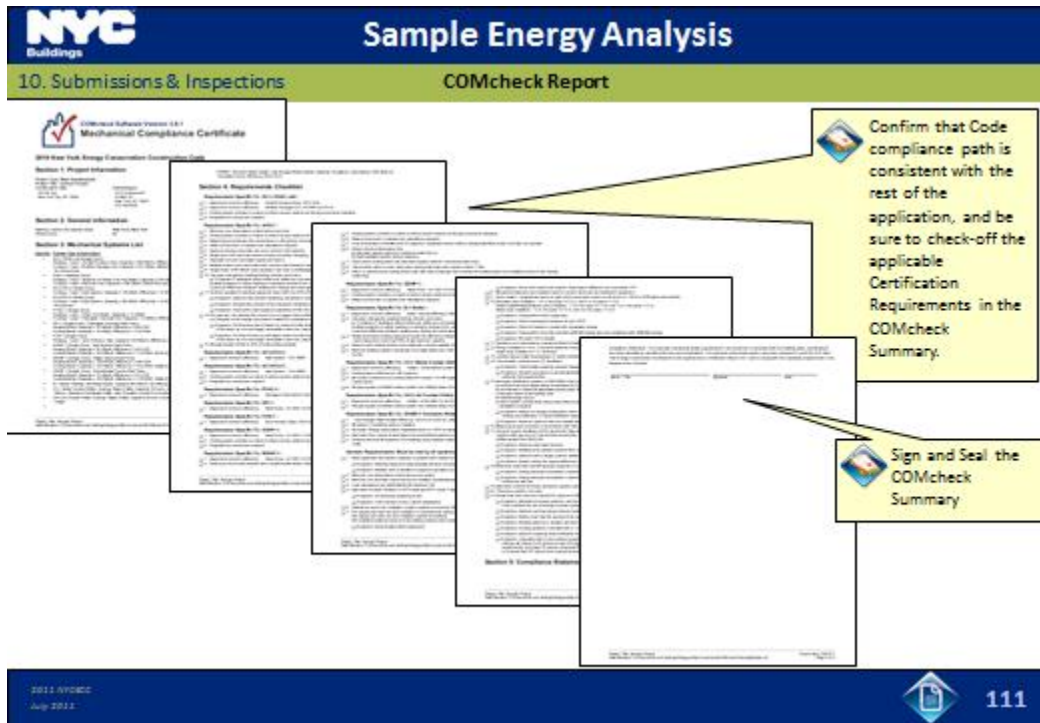
Roof Type 1: A104.01
 Exterior Wall Types A and B: A301.01
 Doors A and B: A401.01
 Windows 1-5: A401.01

FIGURE 2: TABULAR ANALYSIS

Applicants must include reference to the applicable Supporting Documentation for EACH item within the Tabular Analysis.

ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE PRESCRIPTIVE VALUE AND CITATION	SUPPORTING DOCUMENTATION
BUILDING ENVELOPE			
Replace roof shingles and sheathing, add insulation to attic	Roof Type 1: R -38 fiberglass insulation in wood ceiling joists below vented attic space	Minimum R-38 ceiling insulation NYCECC Table 402.1.1	Roof Type 1: A-100 (Roof Plan) A-402 (Wall Sections) 7/A-603 (Roof Eave Detail)
Replace existing windows w/new wood framed windows, Floors 2 - 4	Window Type 1 +2 +3: U = 0.31 Air leakage 0.30 cfm/SF	Window Types A-D: Maximum U-Factor = 0.35 NYCECC Table 402.1.1 Maximum Air Leakage = 0.3 cfm/SF NYCECC 402.4.4	Window Types A-D: A-301-302 (Elevations) A-501 (Schedules)
Renovate interior side of exterior walls around new window openings – repair/replace gwb	No change proposed to existing 3 ½” wood stud walls which are completely filled with fiberglass batts (estimated R-3.1/inch).	NYCECC 101.4.3 Exception 3 – Alterations, renovations, or repairs to roof/ceiling, wall, or floor cavities which are insulated to full depth with insulation having a minimal nominal value of R-3.0/inch.	A-102-104 (Floor Plans) 1-2/A-305 (Interior Elevations)

FIGURE 4: COMCHECK HVAC-SERVICE WATER HEATING



Supporting Documentation Reference:

AHU #1 - #5:	M701.01
Controls Narrative:	M604.01
Typical duct insulation and sealing:	M602.01
Progress Inspections for Mechanical:	M801.01

FIGURE 5A: COMCHECK INTERIOR LIGHTING CERTIFICATE

NYC Buildings ComCheck – Interior Lighting

2. Required Documentation ? What information must be completed on a COMcheck form?


- o COMcheck Analysis must reflect appropriate standard:
 - ▶ Either 2010 ECCC/NYS
 - ▶ Or 2007 ASHRAE 90.1
- o COMcheck Analysis requirements:
 - ▶ Fixture watts should be equal to system watts (lamp/ballast)
 - ▶ Fixture types and lamp description should tie back to submitted drawings
 - ▶ Quantity of fixtures should be equivalent to fixtures shown on submitted plans
 - ▶ Confirmation of compliance should be identified by a “Passes”

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Supporting Documentation Reference

- | | |
|--|-------------------|
| Interior lighting layouts, Floors B-3: | E101.01 – E104.01 |
| Exterior lighting layouts: | E106.01 |
| Lighting Fixture Legend: | E601.01 |
| Lighting Controls Narratives: | E602.01 |
| Progress Inspections: | E801.01 |

FIGURE 5B: COMCHECK INTERIOR LIGHTING APPLICATION WORKSHEET



Lighting Power Allowances (LPA)

4. Interior Lighting Requirements ? With all of this information, how do you confirm LPA?

Sample COMcheck:

Compare the
Allowed Watts
with the
Proposed Watts

Progress Inspectors:
Check areas and compare against the submitted schedule for a minimum of 15%.


Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (sq ft)	C Allowed Watts / ft ²	D Allowed Watts (B x C)
School/University	82262	1.2	98714
Click to select category.	0	0	0
			Total Allowed Watts = 98714

Section 3: Interior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
School/University (82262 sq ft.)				
Linear Fluorescent 1: Other / Electronic	2	89	68	6052
Linear Fluorescent 2: Other / Electronic	1	9	34	306
Linear Fluorescent 3: Other / Electronic	1	25	34	850
Linear Fluorescent 4: Other / Electronic	1	14	26	364
Linear Fluorescent 5: Other / Electronic	2	10	68	680
Linear Fluorescent 6: Other / Electronic	1	11	34	374
Linear Fluorescent 7: Other / Electronic	2	7	57	399
Linear Fluorescent 8: Other / Electronic	1	2	34	68
Linear Fluorescent 9: Other / Electronic	2	2	57	114
Linear Fluorescent 10: Other / Electronic	2	2	68	136
Linear Fluorescent 11: Other / Electronic	1	7	34	238
Linear Fluorescent 12: Other / Electronic	2	22	57	1254
Linear Fluorescent 13: Other / Electronic	1	17	34	578
Linear Fluorescent 14: Other / Electronic	1	4	9	36
Linear Fluorescent 15: Other / Electronic	1	9	8	72
Linear Fluorescent 16: Other / Electronic	1	31	34	1054
Linear Fluorescent 22: 4ft T5 28W / Electronic	1	29	34	986
Linear Fluorescent 23: 4ft T5 28W / Electronic	2	1	57	57
Linear Fluorescent 24: 4ft T5 28W / Electronic	1	12	34	408
Linear Fluorescent 25: Other / Electronic	1	1	26	26
Compact Fluorescent 1: Quad 2-pin 28W / Electronic	8	28	224	1792
			Total Proposed Watts = 14354	

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FIGURE 6: COMCHECK EXTERIOR LIGHTING CERTIFICATE

NYC Buildings ComCheck – Exterior Lighting

2. Required Documentation ? What information must be completed on a COMcheck form?

- COMcheck Analysis must reflect appropriate standard:
 - Either 2010 ECCCNYC
 - Or 2007 ASHRAE 90.1
- COMcheck Analysis requirements:
 - Base Site Allowance should match the appropriate NYCECC Exterior Lighting Zone based on I RONY § 5000-01
 - If applicable, tradable and non-tradable lighting should be identified
 - Checklist should be completed
 - Confirmation of compliance should be identified by a "Passes"

Section 1: Project Information

Project Title: New Construction
 Project Location: 12345 Avenue C, New York, NY 10001
 Project Type: New Construction
 Project Start Date: 12/15/2011
 Project End Date: 12/15/2011

Section 2: Exterior Lighting Area/Surface Power Calculation

Area	Area (sq ft)	Power (W)	Power (VA)
Area 1	1000	1000	1000
Area 2	2000	2000	2000
Area 3	3000	3000	3000
Area 4	4000	4000	4000
Area 5	5000	5000	5000
Area 6	6000	6000	6000
Area 7	7000	7000	7000
Area 8	8000	8000	8000
Area 9	9000	9000	9000
Area 10	10000	10000	10000
Area 11	11000	11000	11000
Area 12	12000	12000	12000
Area 13	13000	13000	13000
Area 14	14000	14000	14000
Area 15	15000	15000	15000
Area 16	16000	16000	16000
Area 17	17000	17000	17000
Area 18	18000	18000	18000
Area 19	19000	19000	19000
Area 20	20000	20000	20000
Area 21	21000	21000	21000
Area 22	22000	22000	22000
Area 23	23000	23000	23000
Area 24	24000	24000	24000
Area 25	25000	25000	25000
Area 26	26000	26000	26000
Area 27	27000	27000	27000
Area 28	28000	28000	28000
Area 29	29000	29000	29000
Area 30	30000	30000	30000
Area 31	31000	31000	31000
Area 32	32000	32000	32000
Area 33	33000	33000	33000
Area 34	34000	34000	34000
Area 35	35000	35000	35000
Area 36	36000	36000	36000
Area 37	37000	37000	37000
Area 38	38000	38000	38000
Area 39	39000	39000	39000
Area 40	40000	40000	40000
Area 41	41000	41000	41000
Area 42	42000	42000	42000
Area 43	43000	43000	43000
Area 44	44000	44000	44000
Area 45	45000	45000	45000
Area 46	46000	46000	46000
Area 47	47000	47000	47000
Area 48	48000	48000	48000
Area 49	49000	49000	49000
Area 50	50000	50000	50000

Section 3: Exterior Lighting Fixture Schedule

Fixture ID	Fixture Description	Quantity	Power (W)	Power (VA)
1	100W LED Flood Light	10	1000	1000
2	200W LED Flood Light	5	2000	2000
3	300W LED Flood Light	3	3000	3000
4	400W LED Flood Light	2	4000	4000
5	500W LED Flood Light	1	5000	5000
6	600W LED Flood Light	1	6000	6000
7	700W LED Flood Light	1	7000	7000
8	800W LED Flood Light	1	8000	8000
9	900W LED Flood Light	1	9000	9000
10	1000W LED Flood Light	1	10000	10000
11	1100W LED Flood Light	1	11000	11000
12	1200W LED Flood Light	1	12000	12000
13	1300W LED Flood Light	1	13000	13000
14	1400W LED Flood Light	1	14000	14000
15	1500W LED Flood Light	1	15000	15000
16	1600W LED Flood Light	1	16000	16000
17	1700W LED Flood Light	1	17000	17000
18	1800W LED Flood Light	1	18000	18000
19	1900W LED Flood Light	1	19000	19000
20	2000W LED Flood Light	1	20000	20000
21	2100W LED Flood Light	1	21000	21000
22	2200W LED Flood Light	1	22000	22000
23	2300W LED Flood Light	1	23000	23000
24	2400W LED Flood Light	1	24000	24000
25	2500W LED Flood Light	1	25000	25000
26	2600W LED Flood Light	1	26000	26000
27	2700W LED Flood Light	1	27000	27000
28	2800W LED Flood Light	1	28000	28000
29	2900W LED Flood Light	1	29000	29000
30	3000W LED Flood Light	1	30000	30000
31	3100W LED Flood Light	1	31000	31000
32	3200W LED Flood Light	1	32000	32000
33	3300W LED Flood Light	1	33000	33000
34	3400W LED Flood Light	1	34000	34000
35	3500W LED Flood Light	1	35000	35000
36	3600W LED Flood Light	1	36000	36000
37	3700W LED Flood Light	1	37000	37000
38	3800W LED Flood Light	1	38000	38000
39	3900W LED Flood Light	1	39000	39000
40	4000W LED Flood Light	1	40000	40000
41	4100W LED Flood Light	1	41000	41000
42	4200W LED Flood Light	1	42000	42000
43	4300W LED Flood Light	1	43000	43000
44	4400W LED Flood Light	1	44000	44000
45	4500W LED Flood Light	1	45000	45000
46	4600W LED Flood Light	1	46000	46000
47	4700W LED Flood Light	1	47000	47000
48	4800W LED Flood Light	1	48000	48000
49	4900W LED Flood Light	1	49000	49000
50	5000W LED Flood Light	1	50000	50000

Section 4: Requirements Checklist

Lighting Fixture

1. All lighting fixtures must be listed in the UL directory or approved by the ETL laboratory. All products must be listed in the UL directory or approved by the ETL laboratory.

Controls, Switching, and Wiring

2. All lighting controls must be listed in the UL directory or approved by the ETL laboratory. All products must be listed in the UL directory or approved by the ETL laboratory.

Section 5: Compliance Statement

I, the undersigned, hereby certify that the information provided in this certificate is true and correct to the best of my knowledge and belief. I understand that providing false information is a violation of the law and may result in criminal and civil penalties.

Signature: _____ Date: _____

Stamp

Supporting Documentation Reference

- Exterior lighting elevations: A601.01 – A604.01
- Exterior lighting layouts: A606.01
- Lighting Fixture Legend: A601.01
- Lighting Controls Narratives: A602.01
- Progress Inspections: EN102.01

FIGURE 7: ENERGY MODELING, EN1 FORM

NYC Buildings **Sample EN1 – Envelope Input**

4. Submissions & Inspections Examples of EN1 Form

BUILDINGS **EN1: Energy Cost Budget Worksheet** Do not make changes. Marked for approval by the building user.

Energy Model Inputs *NYS approved energy model software: DOE-2.1E*

Envelope	Proposed Design Input	Budget (Standard Design) Input
Above-grade wall U-factor	0.102 Btu/h-ft2-F	0.124 Btu/h-ft2-F
Below-grade wall U-factor	0.107 Btu/h-ft2-F	0.107 Btu/h-ft2-F
Roof construction U-factor	0.047 Btu/h-ft2-F	0.063 Btu/h-ft2-F
Exterior floor U-factor	0.88	0.88
Slab-on-grade construction (yes/no)	yes	yes
Window-to-gross wall ratio	58.8%	50%
Average fenestration assembly U-factor	0.43 Btu/h-ft2-F typical, 1.1 storefront, 0.453 ave	0.46 Btu/h-ft2-F
Average fenestration assembly SHGC	0.31 typical, 0.73 storefront, 0.325 average	0.39 north, 0.25 other orientations
Fixed shading devices (yes/no)	no	no
Automated movable shading devices (yes/no)	no	no

Information: In the case of an NYCECC-related audit, applicants may be asked to submit the calculations used to determine the averaged performance values entered in the EN1.

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NYC Buildings **Sample EN1 – Results**

4. Submissions & Inspections Examples of EN1 Form

BUILDINGS **EN1: Energy Cost Budget Worksheet** Do not make changes. Marked for approval by the building user.

Energy Cost Budget Conformance

	Proposed Design Output	Budget (Standard Design) Output
Annual Regulated Energy Cost (\$)	1,458,109	1,477,272
Annual Regulated Energy Use (BTU/GSF)	44,161	48,006
Annual Regulated Energy Cost Per Sq. Ft. (\$/GSF)	2.31	2.34

Energy Model Output Breakdown

Energy Use Breakdown	Proposed Design Output (% BTU/yr)	Budget (Standard Design) Output (% BTU/yr)
Heating	24.2%	32.9
Cooling	13.9%	7.7
Heat rejection	3.3%	2.4%
Fans	8.9%	8.6%
Pumps	1.2%	0.2%
Lighting	19.3%	19.4%
Unregulated loads (e.g. plug loads, elevators, escalators, kitchen, process equipment, exterior lighting)	28.5%	26.9%
Total	100%	100%

Information: The overall regulated annual energy use and annual energy cost of the Proposed and Budget building designs are summarized at the end of the EN1 form. As this example illustrates, if the Proposed Design cost is less than the Budget Design cost, the project passes.

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Supporting Documentation Reference

Roof Types 1-3:

A801.01


Wall Types 1-5:

A401.01, A402.01

Energy Analysis How to Guide

Doors A – G:	A501.01
Curtain wall Types #1-20:	A601.01 – A625.01
Foundation Wall Types 1-4:	A701.01, S501.01 – S504.01
Boilers 1, 2:	M501.01, M801.01
AHU #1 - #6:	M502.01 – M505.01, M801.01
Controls Narratives:	M802.01
Interior Lighting Layouts:	E101.01 – E125.01
Exterior Lighting Layouts and Elevations:	E130.01 – E136.01
Lighting Legends:	E801.01
Lighting Controls and Narratives:	E002.01

FIGURE 8: TABULAR ANALYSIS

 Sample Tabular Analysis			
4. Submissions & Inspections Examples of Tabular Analysis for Commercial Building Alterations			
ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE PRESCRIPTIVE VALUE AND CITATION	SUPPORTING DOCUMENTATION
BUILDING ENVELOPE			
Replace roof membrane and add insulation SRR = 2.2%	Roof Type 1: 4" XPS (R -20) continuous insulation above deck	<p>Applicants must include reference to the applicable Supporting Documentation for EACH item within the Tabular Analysis.</p>	Roof Type 1: A-106 (Roof Plan) A-402 (Wall Sections) E-6/A-603 (Roof Details)
Replace existing windows w/new aluminum framed windows, Floors 2 - 4 WWR = 32% PF = 0	Window Type A: U = 0.46, SHGC = 0.29, Air leakage ≤ 0.10 cfm/SF Window Types B + C: U = 0.41, SHGC = 0.31, Air leakage ≤ 0.30 cfm/SF Window Type D: U = 0.41, SHGC = 0.23, Air leakage ≤ 0.30 cfm/SF		Maximum Air Leakage = 0.3 cfm/SF NYCECC 502.4.1
Renovate interior side of exterior walls around new window openings – repair/replace gwb	N/A - No change proposed to existing 3 1/2" metal stud furring walls which are completely filled with fiberglass batts (estimated R-3.1/inch).	NYCECC 101.4.3 Exception 3 – Alterations, renovations, or repairs to roof/ceiling, wall, or floor cavities which are insulated to full depth with insulation having a minimal nominal value of R-3.0/inch.	A-102-104 (Floor Plans) 1-2/A-305 (Interior Elevations)