THE ZERO CODE RENEWABLE ENERGY PROCUREMENT FRAMEWORK

Submittal Requirements Instructions & Template

This document contains a template form jurisdictions can adapt for use by building owners and code enforcement and verification officials for Zero Code Framework compliance, with accompanying form completion instructions.

The form is intended to be completed by building owners seeking Zero Code Framework compliance, for submittal to their jurisdiction's code enforcement and verification officials.

Template Form

Form Instructions

Submittal Requirements
Renewable Energy Procurement Policy

Project Information

Applicant Name: _____ Project Application No.: _____

Applicant Phone: _____ Project Name: _____

Applicant Email: _____ Primary Building Use: _____ No. Floors: _____

Applicant Address: _____ Project Address: _____

_____ _____

Building Energy

See *Instructions: Building Energy Calculation* to determine the Building Energy. Indicate method used and provide results here. If using the performance method, attach the energy model report with submission.

Method used:

☐ Prescriptive Method: _____ (Mbtu/yr) *(Building Energy)* or ☐ Performance Method: _____ (Mbtu/yr) *(Building Energy)*

☐ Energy Model Report Attached

On-Site Renewable Energy System Projected Production & Remaining Energy Demand

See *Instructions: On-Site Renewable Energy System Projected Production & Remaining Energy Demand* to determine the potential and projected production of an on-site RE system. Indicate methods used and provide results here. Attach report with submission.

Method used: _____ On-site PV Projected Production: _____ (Mbtu/yr) *(On-site Prod.)*

Other On-site Renewable Energy System: _____ Other On-site Projected Production: _____ (Mbtu/yr) *(On-site Prod.)*

☐ Report(s) Attached

Remaining Energy Demand: _____ (Mbtu/yr)
(Building Energy) - (Σ On-Site Prod.)

Off-Site Renewable Energy Procurement

See *Instructions: Off-site Renewable Energy Procurement* to determine procurement quantities. Provide results here and attach Renewable Energy Procurement Contracts as needed.

Procurement Method	Annual Production (RE_i)	Procurement Factor (PF_i)	Adjusted Procurement	Contract Attached
Direct Ownership				☐
Green Retail Pricing				☐
FPPA				☐
Community Renewables				☐
REIF				☐
Utility Renewable Contract				☐
RECs				☐
		TOTAL ($RE_{offsite}$):		

Procurement Contracts Requirements

By checking the boxes and signing below I, _____, verify that all off-site procurement contracts comply with the requirements.

- ☐ The building owner shall sign a legally binding contract to procure qualifying off-site renewable energy.
- ☐ The procurement contract shall have a duration of not less than 15 years and shall be structured to survive a partial or full transfer of ownership of the property
- ☐ RECs and other environmental attributes associated with the procured off-site renewable energy shall be assigned to the building project for the duration of the contract
- ☐ The reneable energy generating source shall include one or more of the following: photovoltaic systems, solar thermal power plants, geothermal power plants, and wind turbines.
- ☐ The generation source shall be located where the energy can be delivered to the building site by the same utility or distribution entity, the same independent system operator (ISO) or regional transmission organization (RTO), or within integrated ISO's (electric coordination council).
- ☐ The off site renewable energy producer shall maintain transparent accounting that clearly assigns production to the building. Records on power sent to or purchased by the building shall be retained by the building owner and made available for inspection by the code official upon request.

Prepared by: _____
print *sign* *date*

Approved by: _____
print *sign* *date*

INSTRUCTIONS:
Building Energy Calculation

There are two options for establishing total Building Energy:
PRESCRIPTIVE METHOD or **PERFORMANCE METHOD**, choose one.

Building Energy is defined as "All energy consumed at the building site as measured at the site boundary. Contributions from on-site or off-site renewable energy systems shall not be considered when determining the building energy."

I. PRESCRIPTIVE METHOD

A. When the prescriptive method[1] is used for compliance with the

_____,
(Enter policy name here.)

Building Energy shall be determined by multiplying the gross conditioned floor area plus the gross semiheated floor area of the proposed building by the prescriptive renewable energy requirement from Table 1 (below). Use a weighted average for mixed-use buildings. See the example on the next page.

B. Using the table:

1. Find your site's **Climate Zone**
2. Using Table 1 below, identify your square footage multiplier by following your Climate Zone column and Building Use row.
3. Multiply the conditioned and semi-conditioned square footage with the multiplier from Table 1.
4. Sum the products of your calculations and convert units as necessary.
5. Write the result on the Enforcement and Verification Guide

OR

II. PERFORMANCE METHOD

A. When the performance method[2] is used for compliance with the

_____,
(Enter policy name here.)

the building energy shall be determined from energy simulations.

B. Provide a report of the energy simulations. Ensure the units of building energy match the units on Enforcement and Verification Form.

C. Fill in the value in the *Building Energy* field next to "Performance Method."

1 IECC Code Section C401.2.1(1)

2 IECC Code Section C4014.2.1, Item 2 or Section C401.2.2

INSTRUCTIONS:
Building Energy Calculation

III. EXAMPLE

A new mixed-use project at 1012 Cherry St., Kansas City, MO with areas as follows:

100,000 ft² Office (B)

15,000 ft² Restaurant (A-2)

30,000 ft² Retail (M)

1. Find **Climate Zone**

a) 6a

2. Find multiplier for each use in the given climate zone (6a) via Table 1

a) Office = 33 kBtu/ft²-yr

b) Restaurant = 589 kBtu/ft²-yr

c) Retail = 60 kBtu/ft²-yr

3. Multiply each use area by the multiplier, find the sum, and convert units.

a) Office:
100,000 sq ft X 33 kBtu/ft²–yr = 3,300,000 kBtu/yr

b) Restaurant:
15,000 sq ft X 531 kBtu/ft²–yr =7,965,000 kBtu/yr

c) Retail:
30,000 sq ft X 60 kBtu/ft²–yr =1,800,000 kBtu/yr

4. Sum:

1,800,000 kBtu/yr

+7,965,000 kBtu/yr

+3,300,000 kBtu/yr

= 13,065,000 kBtu/yr

Convert kBtu/yr to mBtu/yr (1,000 : 1) = **13,065 mBtu/yr**

5. Fill in the value in the *Building Energy* field by "Prescriptive Method."

INSTRUCTIONS:
Building Energy Calculation

Table 1.
(kBtu/ft²/yr)

BUILDING AREA TYPE	CLIMATE ZONE																
	0A/1A	0B/1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
	kBtu/ft²—yr																
Healthcare/hospital (I-2)	119	120	119	113	116	109	106	116	109	106	118	110	105	126	116	131	142
Hotel/motel (R-1)	73	76	73	68	70	67	65	69	66	65	71	68	65	77	72	81	89
Multiple-family (R-2)	43	45	41	41	43	42	36	45	43	41	47	46	41	53	48	53	59
Office (B)	31	32	30	29	29	28	25	28	27	25	29	28	25	33	30	32	36
Restaurant (A-2)	389	426	411	408	444	420	395	483	437	457	531	484	484	589	538	644	750
Retail (M)	46	50	45	46	44	44	37	48	44	44	52	50	46	60	52	64	77
School (E)	42	46	42	40	40	39	36	39	40	40	39	43	37	44	40	45	54
Warehouse (S)	9	12	9	11	12	11	10	17	13	14	23	17	15	32	23	32	32
All others	55	58	54	53	53	51	48	54	52	51	57	54	50	63	57	65	73

Source: Table CC 103.1 IECC 2021

INSTRUCTIONS:

On-Site Renewable Energy System Projected Production & Remaining Energy Demand

Determine the on-site renewable energy system's projected production with software approved by the code official[3], an energy model, or other means. Attach the report and record the projected production.

If using another or additional method of on-site renewable energy system production, provide the system type and projected production.

To determine the remaining energy demand (E_{demand}), subtract the total on-site projected production (RE_{onsite}) from the building energy ($E_{building}$). Calculate remaining energy demand (E_{demand}) and write this total in the remaining energy demand box.

$$E_{demand} = RE_{min} - E_{building}$$

3 Approved software may include: PV Watts (https://pvwatts.nrel.gov/), The Zero Code 2.0 Calculator (https://zero-code.org/energy-calculator/), or...

INSTRUCTIONS:
Off-site Renewable Energy Procurement

Adjusted off-site renewable energy procurement ($RE_{offsite}$) shall be equal to or greater than the remaining energy demand (E_{demand}).

$$RE_{offsite} \geq E_{demand}$$

Use the off-site renewable energy procurement table on the submittal requirements form to calculate the total adjusted procurement ($RE_{offsite}$). Total adjusted procurement must be equal to or greater than the remaining energy demand (E_{demand}). Be sure to consult this table during contract negotiation of renewable energy procurement sources. For more detailed information on off-site procurement methods, see the **Renewable Energy Procurement Guide Document** to ensure the correct amount of renewable energy is procured.

To calculate the adjusted off-site renewable energy procurement ($RE_{offsite}$):

- List the annual production (RE_i) quantities for each type of off-site renewable energy system procurement used.
- Multiply the annual production quantities by their procurement factor (PF_i) and record the adjusted procurement.[4]
- Calculate the sum of the adjusted procurement and record the total adjusted off-site renewable energy procurement ($RE_{offsite}$) in the space provided. This number must be equal to or greater than the remaining energy demand (E_{demand}).

$$RE_{offsite} = \sum_{i-1}^{n} (RE_i \times PF_i) = RE_1 \times PF_1 + RE_2 \times PF_2 \ldots + RE_n \times PF_n$$

4 Each jurisdiction provides their own procurement factors. After doing so, remove this footnote.

EXAMPLE CONTRACTS

Here are some example contracts you can use as a guide:

- Community Renewables
  - > "**Community Solar PPA**"
  - > "**Community Solar Subscription Agreement**"
  - > **Community Solar Subscription Contract**
- **Power Purchase Agreements**
  - > **PPA Option 2**
- **Green Retail Tariffs**
- **RECs Purchase**