



# Residential Trade-Off Worksheet Envelope

2002 New York State Energy Conservation Construction Code

Builder Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Builder Address: \_\_\_\_\_  
 Building Address: \_\_\_\_\_  
 Project Description: \_\_\_\_\_ Zone #: \_\_\_\_\_  
 Submitted By: \_\_\_\_\_ Phone #: \_\_\_\_\_

<b>PROPOSED</b>	<b>REQUIRED</b>
-----------------	-----------------

U-factors and F-factors can be found in Tables 1-10  
**Ceilings, Skylights, and Floors Over Outside Air**

Description	Insulation R-value	U-factor	x Area	= UA
Ceiling			ft <sup>2</sup>	
Floor Over Outside Air			ft <sup>2</sup>	
Skylight			ft <sup>2</sup>	
			ft <sup>2</sup>	
			ft <sup>2</sup>	
Ceilings: Total Area			ft <sup>2</sup>	

Required U-factor	x Area	= UA
	ft <sup>2</sup>	

↑

**Walls, Windows, and Doors**

Description	Insulation R-value	U-factor	x Area	= UA
Wall			ft <sup>2</sup>	
Window			ft <sup>2</sup>	
Door			ft <sup>2</sup>	
Sliding Glass Door			ft <sup>2</sup>	
			ft <sup>2</sup>	
			ft <sup>2</sup>	
			ft <sup>2</sup>	
Walls: Total Area			ft <sup>2</sup>	

Required U-factor	x Area	= UA
	ft <sup>2</sup>	

↑

**Floors and Foundations**

Description	Insul - Depth	Insulation R-value	U-factor	x Area	= UA
Floor Over Unconditioned				ft <sup>2</sup>	
Basement Wall				ft <sup>2</sup>	
Unheated Slab	in			ft <sup>2</sup>	
Heated Slab	in			ft <sup>2</sup>	
Crawl Wall	in			ft <sup>2</sup>	

Required U-factor	x Area	= UA
	ft <sup>2</sup>	

Total Proposed UA

Total Required UA

**Total Proposed UA must be less than or equal to the Total Required UA**

**Statement of Compliance:** The proposed building design represented in these documents is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the requirements of the 2002 New York State Energy Conservation Construction Code.

Builder/Designer \_\_\_\_\_ Company Name \_\_\_\_\_ Date \_\_\_\_\_



# Residential Trade-Off Worksheet

## Equipment (Optional To Envelope)

2002 New York State Energy Conservation Construction Code

Builder Name: \_\_\_\_\_ Date: \_\_\_\_\_

Builder Address: \_\_\_\_\_

Building Address: \_\_\_\_\_

Project Description \_\_\_\_\_ County: \_\_\_\_\_

Submitted By: \_\_\_\_\_ Phone #: \_\_\_\_\_

**Step 1** Calculate Equipment Efficiency Increase (in Percent)  
(EFF<sub>minimum</sub> From Table 2)

$$\frac{EFF_{\text{installed}} - EFF_{\text{minimum}}}{EFF_{\text{minimum}}} = \% \text{ INCREASE}$$

Equip. Type: \_\_\_\_\_  
Make & Model: \_\_\_\_\_

$$\frac{\quad - \quad}{\quad} = \quad \%$$

**Step 2** Adjust the % Increase  
(Trade-off Ratio From TABLE 1)

$$(\% \text{ increase} \times \text{Trade-off Ratio}) + 1 = \text{Adjusted Ratio}$$

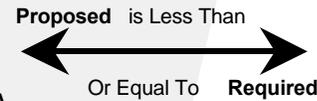
$$(\quad) \times (\quad) + 1 =$$

**Step 3** Adjust Total Required UA  
(Total Required UA From Manual Trade-Off Worksheet):

$$\text{Total Required UA} \times \text{Adjusted Ratio} = \text{Adjusted Required UA}$$

$$(\quad) \times (\quad) =$$

**Step 4** Use the **Adjusted Required UA** as new Total Required UA.  
Check if Total Proposed UA is now less than or equal to Total Required UA.



**Total Proposed UA**  
(From Manual Trade-off Worksheet)

**Total Required UA**

**TABLE 1 – Trade-Off Ratios**

COUNTY	Ratio	COUNTY	Ratio	COUNTY	Ratio	COUNTY	Ratio
Albany	1.16	Franklin	1.21	Oneida	1.18	Schuyler	1.16
Allegany	1.19	Fulton	1.16	Onondaga	1.16	Seneca	1.16
Bronx	1.08	Genessee	1.16	Ontario	1.16	Steuben	1.16
Broome	1.18	Greene	1.16	Orange	1.12	Suffolk	1.12
Cattaraugus	1.16	Hamilton	1.19	Orleans	1.16	Sullivan	1.16
Cayuga	1.16	Herkimer	1.18	Oswego	1.16	Tioga	1.16
Chautauqua	1.16	Jefferson	1.19	Otsego	1.18	Tompkins	1.18
Chemung	1.16	Kings	1.08	Putnam	1.12	Ulster	1.16
Chenango	1.18	Lewis	1.19	Queens	1.08	Warren	1.19
Clinton	1.20	Livingston	1.16	Rensselaer	1.16	Washington	1.19
Columbia	1.16	Madison	1.18	Richmond	1.08	Wayne	1.16
Cortland	1.18	Monroe	1.16	Rockland	1.08	Westchester	1.12
Delaware	1.18	Montgomery	1.16	St Lawrence	1.21	Wyoming	1.16
Dutchess	1.14	Nassau	1.08	Saratoga	1.18	Yates	1.16
Erie	1.16	New York	1.08	Schenectady	1.16		
Essex	1.21	Niagara	1.16	Schoharie	1.16		

**TABLE 2 – Minimum Equipment Efficiencies<sup>1</sup>**

Equipment Type	Minimum Standard
Furnace	78 AFUE
Boiler: Except Gas Steam	80 AFUE
Boiler: Gas Steam	75 AFUE
Heat Pump: Heating Mode	6.8 HSPF
Heat Pump: Cooling Mode	10 SEER
Air Conditioner	10 SEER

1. No Trade-off available for Electric Resistance Heating