

Technical Bulletin: Incentive Analysis Guide

Residential New Construction Program

The November 2019 technical bulletin focused on the HERO Compliance analysis to maximize participation in the program and guaranteeing at least \$750 for every home. To review the HERO Compliance analysis, click [here](#). The next best step is to complete an incentive analysis to estimate and optimize incentives for a builder. This consists of recording the kWh savings and incentives for various component upgrades. This technical bulletin will detail the steps to complete a Program incentive analysis and provide raters with an Excel tool to organize and display the results of the analysis for builders.

Unlike the HERO Compliance analysis, the incentive analysis should include mechanical equipment and appliance characteristics as they directly impact incentives. The items below outline some common upgrade options.

Simplest options

- Floor insulation
- Ceiling Insulation
- Attic radiant barrier
- Window U-values and SHGC
- AGW Insulation (R-13 to R-15)
- Duct leakage Results
- Increased LED lighting

More difficult options

- Increasing HVAC Efficiencies
- Switching to a heat pump DHW
- AGW Insulation (R-19)
- Advanced framing
- Slab Insulation
- Blower door results

Use the following steps to analyze incentives:

1. Download and open ICF's HERO Incentive analysis template [here](#). The template includes the following sheets.
 - a) Summary
 - b) Incentive Analysis
 - c) Options
2. Using the results from the HERO compliance analysis, open the "Options" sheet in the incentive analysis template. This sheet only includes one table labeled "Options" and is completed using the following steps.
 - a) Enter the Baseline characteristics established in the HERO compliance analysis into the Baseline column (cells B3 to B13) of the "Options" table.
 - b) With the builder's preferences in mind, determine the optional improvements to analyze.
 - c) Enter these optional improvements in columns Options 1, Options 2, and Option3 in the "Options" table or cells C3 to E13. Refer to the table below for an example.

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Characteristic	Options			
	Baseline	Option 1	Option 2	Option 3
House Leakage (Blower door)	4.00 ACH50	3.50 ACH50	3.25 ACH50	3.00 ACH50
Duct Leakage	3.00%	2.50%	2.25%	2.00%
HVAC	14 SEER/8 HSPF	15 SEER/9 HSPF	16 SEER/9 HSPF	
DHW	50 Gal 0.92 EF	50-Gal 3.0 EF Heat pump	50-Gal 3.5 EF Heat pump	
Walls	R-15 Grade I, Std framing	R-15 Grade I, Adv framing	R-19 Grade II, Std framing	R-19 Grade I, Adv framing
Floors	R-38 Grade I			
Ceilings	R-50 Blown			
Slab	100% slab insulation			
Lighting Efficiency	90% CFL Int, 75% CFL Ext, 100% CFL Gar	90% LED Int, 75% LED Ext, 100% LED Gar		100% LED Int, 100% LED Ext, 100% LED Gar
Windows	0.35/0.30	0.30/0.25	0.25/0.20	
Radiant Barrier	Yes			

3. The next step is to complete the “Incentive analysis” sheet. This sheet includes three tables. The tables and the directions for completing them are below.

a) Baseline House

i. This table displays the baseline characteristics of the house. It is automatically populated once the “Options” table in step 2 is completed.

b) Baseline Savings

i. This table includes the incentive amount for the baseline house. Enter Ekotrope’s calculated incentive in cell C8 next to “Incentive Impact”. An example of this table is located to the right.

Baseline Savings	
Incentive	
Impact	\$1,869.21

c) Incentive Analysis

i. The purpose of this table is to determine how each individual option affects the incentive of the house. Each row includes the total incentive and the change in the incentive from the baseline for each option.

ii. To complete this table, enter Ekotrope’s calculated incentive for each individual option in the “Total Incentive” column or cells E14 to E46. For example, if the duct leakage characteristic is analyzed, the rest of the characteristics must be set to the Baseline in Ekotrope. On the next characteristic, the duct leakage must revert back to the Baseline and the new characteristic is changed.

iii. The “Change in Incentives” column automatically calculates the change in incentive based off of the “Total Incentive” column and the baseline savings. An example of this table with the duct leakage and blower door options completed is below.

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Incentive Analysis				
<i>*Remember to revert back to the Baseline characteristics for each set of options*</i>				
Characteristic	Option	Option Name	Total Incentive	Change in Incentive
Duct Leakage	Option 1	2.50%	\$ 1,894.68	\$ 25.47
Duct Leakage	Option 2	2.25%	\$ 1,910.25	\$ 41.04
Duct Leakage	Option 3	2.00%	\$ 1,925.73	\$ 56.52
House Leakage (Blower door)	Option 1	3.50 ACH50	\$ 1,984.59	\$ 115.38
House Leakage (Blower door)	Option 2	3.25 ACH50	\$ 2,042.55	\$ 173.34
House Leakage (Blower door)	Option 3	3.00 ACH50	\$ 2,100.60	\$ 231.39

4. After the "Incentive Analysis" table is completed, select the summary sheet. The two tables in this sheet and their descriptions are below.
 - a) Summary
 - i. Located at the top of the tab, this table includes a summary of the following.
 1. The Baseline characteristics and the baseline incentive.
 2. The options analyzed and their respective projected impacts.
 3. A total projected impact based off the options.
 - ii. Each row in the "Options" column includes a dropdown box populated with the analyzed options. The "Projected Impact" column displays the projected impact for each option with a total impact in the last row. An image of the table is below.

Summary				
Characteristics	Baseline	Options	Projected Impact	
House Leakage (Blower door)	4.00 ACH50	3.00 ACH50	\$	231.39
Duct Leakage	3.00%	2.00%	\$	56.52
HVAC	14 SEER/8 HSPF	16 SEER/9 HSPF	\$	313.11
DHW	50 Gal 0.92 EF	50 Gal 3.5 EF Heat pump	\$	1,691.91
Walls	R-15 Grade I, Std framing	R-19 Grade I, Adv framing		379.89
Ceilings	R-50 Blown	R-15 Grade I, Std framing		
Floors	R-38 Grade I	R-15 Grade I, Adv framing		
Slab	100% slab insulation	R-19 Grade II, Std framing		
	90% CFL Int, 75% CFL Ext,	R-19 Grade I, Adv framing		
Lighting Efficiency	100% CFL Gar	100% LED Int, 100% LED Ext, 100% LED Gar	\$	380.70
Windows	0.35/0.30	0.25/0.20	\$	199.17
Radiant Barrier	Yes	Yes		
Projected Impact:	\$ 1,869.21		\$	5,121.90

An image of the Summary Table

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b) Best Projected Incentive

- i. This table displays the best projected incentive for the builder and is below the "Summary" Table.
- ii. To complete this table, select the options the builder would most likely choose in the "Summary" table. Copy and paste the selected options and the projected incentive to "Best Projected Incentives" Table in cells B17 to B28. An example of this table is below.

Best Projected Incentive	
Incentive Amount	\$ 5,121.90
House Leakage (Blower door)	3.00 ACH50
Duct Leakage	2.00%
HVAC	16 SEER/9 HSPF
DHW	50-Gal 3.5 EF Heat pump
Walls	R-19 Grade I, Adv framing
Ceilings	R-50 Blown
Floors	R-38 Grade I
Slab	100% R-10 Slab
Lighting Efficiency	100% Int, 100% Ext, 100% Gar
Windows	0.25/0.20
Radiant Barrier	Yes

5. The last step is to review and discuss the options with the builder to determine the best steps forward.