

Technical Bulletin: HERO Compliance Guide

Residential New Construction Program



BUILDING A SMARTER ENERGY FUTURE™

Guarantee your builders at least \$750 for every home.

To maximize participation and incentives in the program, raters should provide their builders with the bare-minimum specifications that house plans need to comply with the HERO code. A summary of the two whole-home incentives is below.

1. **HERO-only:** The home complies with HERO code performance standards but does not meet the 4 ACH50 code requirement.
2. **HERO+HERS:** The home meets all HERO code requirements. Incentives are based on the actual home's modeled energy use compared to the NCECC code baseline.

Whole House Incentive		
Type	HERO-only	HERO+HERS
2019 Requirements	<ul style="list-style-type: none">- Annual energy usage is less than HERO reference home with blower door set to 4.00 ACH50- 90% or greater efficient lighting	<ul style="list-style-type: none">- Annual energy usage is less than HERO reference home- Blower door \leq 4.00 ACH50 or 0.24 CFM50/SFSA- 90% or greater efficient lighting
Incentive	\$750/home	\$0.90 / kWh savings

Homes that meet HERO code requirements when modeled with the maximum allowable ACH50 are eligible to receive the \$750 HERO-only incentive *even if the ACH50 is over 4.0*. If that same home needed a sub-4.0 ACH50 to meet HERO, it would not qualify for any whole-home incentive without achieving that sub-4.0 ACH50.

For Example:

Assume that your builder's home only shows HERO compliance in Ekotrope with a 3.4 ACH50 (or better). If the final testing shows any ACH50 that is greater than 3.4, the home will not receive any whole-house incentive.

If Ekotrope shows that the home meets HERO compliance with a 4.0 ACH50, the home will receive \$750 regardless of the blower door result.

It is always advisable that home specifications be set to achieve HERO compliance with a 4.0 ACH50. This guarantees at least a \$750 incentive for each home. Characteristics that most effectively improve HERO performance are listed below.

Simplest options

- Floor insulation
- Ceiling insulation
- Attic radiant barrier
- Window U-values and SHGC
- Above Grade Wall Insulation (R-13 to R-15)

More challenging options

- Above Grade Wall Insulation (R-19)
- Advanced framing
- Slab Insulation
- Duct Leakage Results

Technical Bulletin: HERO Compliance Guide

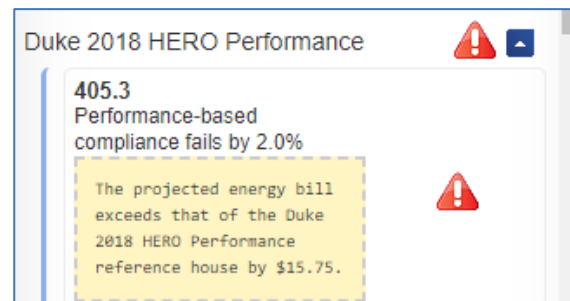
Residential New Construction Program

BUILDING A SMARTER ENERGY FUTURE™

Note that mechanical equipment does not affect HERO compliance and should not be considered in HERO compliance analysis. Mechanical equipment only affects the amount of kWh savings over the NCECC baseline that informs incentives in the HERO+HERS pathway.

Use the following steps to establish the characteristics needed to meet HERO compliance.








1. Create a model using the homebuilder plans and building characteristics (standard takeoff process). Set the blower door and duct leakage values to a worst-case scenario, such as 4.1 ACH50 and 4.00% LTO. This adds a performance buffer for safety.
2. Check that the home meets HERO requirements by looking at the “Duke 2018 HERO Performance” outputs in the Quick Results section of Ekotrope’s interface (see image at right).



Example of Ekotrope results in the Quick Results panel.

3. If the house fails HERO Performance, Ekotrope displays the percent difference in savings compared to the Duke HERO Performance reference home (use this metric to guide your analysis, not the energy bill \$ comparison).
4. Ekotrope also provides a more detailed “Duke NC 2018 HERO Performance Compliance” report that breaks out performance by usage category. An example of this report is below.

Annual Energy Cost		
Design	Duke 2018 HERO Performance	As Designed
Heating	\$404	\$404
Cooling	\$110	\$126
Water Heating	\$267	\$267
Mechanical Ventilation	\$0	\$0
SubTotal - Used to determine compliance	\$781	\$797
Lights & Appliances w/out Ventilation	\$539	\$539
Onsite generation	\$0	\$0
Total	\$1,320	\$1,335

Requirements		
	405.3	Performance-based compliance fails by 2.0%. The projected energy bill exceeds that of the Duke 2018 HERO Performance reference house by \$15.75.
	R402.4.2.2	Air Leakage Testing. Air leakage is not below the HERO code maximum. This means the home must pass a visual inspection according to HERO code and the reference home value is assumed for the performance model.
	R402.5	Area-weighted average fenestration SHGC
	R402.5	Area-weighted average fenestration U-Factor
	R404.1	Lighting Equipment Efficiency
	Mandatory Checklist	Mandatory code requirements that are not checked by Ekotrope must be met.
	R403.3	Duct Insulation

Design fails to meet the performance requirement for Duke 2018 HERO Performance compliance by 2%.

Example of the Duke NC 2018 HERO Performance Compliance report

Technical Bulletin: HERO Compliance Guide

Residential New Construction Program



BUILDING A SMARTER ENERGY FUTURESM

5. Update failing plans by addressing the building characteristics listed on page 1.
6. If these steps do not bring a home into HERO compliance raters are encouraged to make use of Ekotrope's Component Load Report tool. This tool allows raters to pinpoint the largest sources of energy loss as compared to the HERO reference home. View the Program's earlier Technical Bulletin for this tool [here](#).
7. ***Adjusting a home's projected blower door and duct blaster results should be a last resort, as they are the most variable input in a home's energy model. ***
8. After completing the analysis, discuss the options with the homebuilder and determine the most cost-effective options for implementation.