

# Hot Air Furnace Replacement Decision Tree

Step 1 Initial Home evaluation completed

Y

Step 2 Heating and Cooling system Health or Safety issues are either nonexistent or corrected

Y

Step 3 The testing will be for CET and then converted to AFUE (CET X .85)

Y

Step 4 Was AFUE less than 68% ? N Done

Y

Step 5 Was the unit operating properly ? N Calculate repair verses replacement cost

Y

Step 6 Consider Cost factors

size)  
The effect of weatherization measures on the building should be consider during sizing.  
The reason(s) why the unit is not lower input will be supplied with

2. Does the site allow for the high efficiency unit replacement?  
3. What additional work needs to be done in order to replace the unit?  
4. Are there any additonal cost to make the unit installation code complaint?  
5. any other cost?

N Calculate replacement cost with HE furnace replacement

N Calculate bringing back up to code compliance

Step 7 Get total cost (include all related cost)

Step 8 Calculate the total return on investment in years. (See calculation formula below)

Step 9 Does the replacement cost fall below 7 years N No replacement

Y

Replace unit

Assumptions

Distribution system is working properly  
If the unit is not working the contractor will need to determine how long it hasn't worked and if for any significant amount of time get past history from Utility for calculation.

If the Domestic Water heater is in the same flue and the flue needs to be addressed as part of the replacement the price needs to include the best options:

1. Replace the unit and add a directvent water heater.
2. Replace the unit and add a on - demand water heater
3. Relining the chimney

Formula for ROI

1. Determining the Customer heat factor by degree days
2. Multiply the Heat factor times the normalize degree days to get the normalized heat usage.
3. Multiply the Normalized heating usage times the full cost of gas (Commodity and delivery) to get the annual heating cost.
4. Multiply the annual heating cost times the difference in old Unit AFUE and the new unit AFUE to get the annual savings.

Annual heating cost savings divided by the total replacement cost = years until you reach ROI.

Life expectance of furnace is 20 years.	
'ROI @ 1/4 of life	<b>5</b>
'ROI @ 1/3 of life	<b>7</b>
'ROI @ 1/2 of life	<b>10</b>