

## Cost Approach to Value for Single-family Property

HCAD uses a computerized valuation program to develop estimates of value using the cost approach. Using cost data from a national supplier of construction cost information, the system calculates a replacement cost for each residential structure based on the property's characteristics, such as size, type of construction, quality, and age. A land value for each property is also developed using generally accepted appraisal techniques.

The valuation program emulates the steps that an appraiser would go through in manually appraising a property using the cost approach to value. In general, the formula for the cost approach is:

$(\text{Replacement Cost New} - \text{Depreciation}) + \text{Land Value}$ .

The system starts with a base price per square foot for a one story, 1000 square foot, C grade, slab foundation home and makes adjustments up or down based on the characteristics of the property. For example, a lesser grade home would be adjusted down and a higher grade home would be adjusted up. The general formula below is then used to obtain the market value:

$\text{Total Cost Factor} \times \text{Cost \& Design Index} \times \text{Grade Index} \times \text{Story Height Index} \times \text{Size Index} \times \text{Neighborhood Factor} \times \text{Base Rate} = \text{Adjusted Base Rate}$

Then

$((\text{Adjusted Base Rate} \times \text{Effective Area}) + \text{Lump Sum Adjustment}) \times \text{Percent Good} = \text{Market Value of Improvements}$

Then

$(\text{Market value of Improvements} + \text{Extra Features}) + \text{Market Land Value} = \text{Market Value of Property}$

In calculating each of these items, the valuation program considers a number of data items. Some data items are generated by other programs, some are provided to us under copyright from third party vendors, and others (such as the dimensions of a building or a code designating condition) are manually entered by an appraiser. Examples of the above factors are listed below, but are not limited to these items:

**Total Cost Factor:** An indication of construction cost, which considers the foundation type, HVAC, exterior wall type.

**Cost & Design Index:** A modifying factor that reflects differences from what is typical, such as level of remodel, New home in old neighborhood, Economic mis-improvement. Examples of the codes include: partial (91), extensive (92), and total remodels (93).

**Grade Index:** Reflects overall quality of construction at the time the home was built. Grades range from E- at the low end to X+ at the high end.

**Story Height Index:** Indicates story height from 1 to 4 stories.

**Size Index:** Addresses economies of scale in construction. Assuming all other factors equal, larger homes with a lower price per square foot rate than smaller homes. However, the overall market value of the larger home will still be higher than the smaller home.

**Neighborhood Factor:** The neighborhood economic factor, sometimes referred to as market adjustment factor, is often required to adjust values obtained from the cost approach to the market. These adjustments are applied by type of property and neighborhood based on sales ratio studies and other market analyses. These adjustment factors represent the demand side of the cost-derived estimates of value.

**Base Rate:** Base construction cost per square foot of one story, 1000 square foot, C grade, slab foundation home in the schedule.

**Lump sum adjustments:** Bathrooms, fireplaces, elevators.

**Percent Good:** This measures depreciation – the difference in value between the house as is and the house as if it were new. It is remaining useful life expressed as a percentage.

**Extra features:** These are additional or auxiliary structures, such as detached garages, pools, decks, carports.