

## **Extent of Underbuilding in the Single-Family Housing Market**

Special Studies, November 1, 2010

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**National Association of Home Builders**

*Report available to the public as a courtesy of HousingEconomics.com*

After 2005, the U.S. housing market experienced a downturn unlike any other seen in the post-World War II era. A common viewpoint expressed in the media and elsewhere is that this downturn was necessary to correct overbuilding that occurred, particularly in single-family housing, in the middle part of the 21st century's first decade.

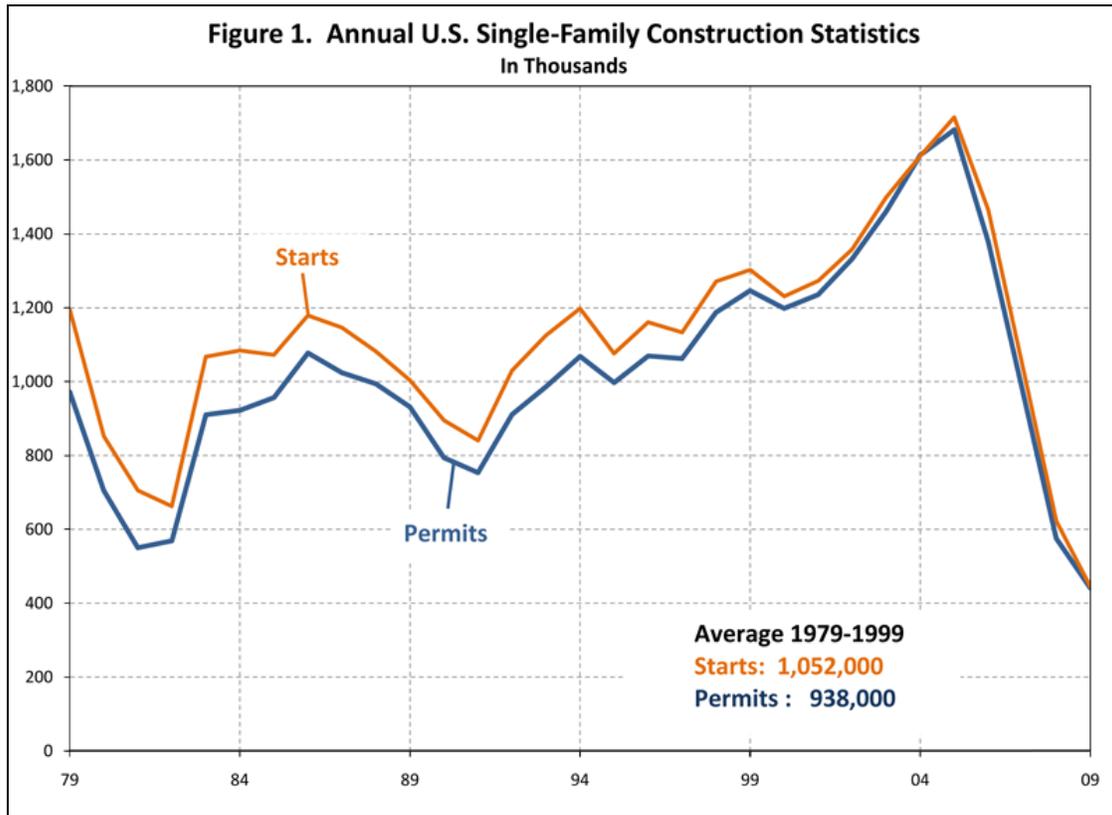
This article presents evidence that, although overbuilding in the single-family market did occur at that time, overbuilding had largely ended by 2006. Moreover, the extent of the subsequent decline in production has been severe enough to more than offset any overbuilding. As a result, the single-family housing market in the U.S. currently finds itself in a significantly **underbuilt** state—in the sense that excess or pent-up demand for new construction exists, compared to the long-run trend we would expect if housing, labor, and credit markets were functioning normally and generating a normal rate of household formations.

Such a cumulative deficit in the total number of new single-family homes can exist because there has been a corresponding deficit in new household formations. In order for the national underbuilt condition to persist, the cumulative deficit in the number of U.S. households must also persist. Below the national level, the underbuilt condition is evident in most, but not all, of the 50 states.

### **The Downturn in Historic Perspective**

There are a number of ways to measure new home construction—starts, completions, permits, dollar value, etc. Housing starts is the measure most often quoted, and as a result has become the one most familiar to the general public. As an alternative, this article will focus on single-family building permits, primarily because these data are based on a much larger sample and available in more geographic detail, which will allow an analysis of over- and under-building at the state level.

From 1979 through 1999, the U.S. averaged 938,000 new single-family building permits and 1.05 million single-family starts. A large part of the average gap between single-family permits and starts is due to the early part of this history, as the two series have tracked each other much more closely in recent years (Figure 1).



The Census Bureau currently lists the following to explain why counts of single-family permits and starts may diverge: housing starts not covered by permits, multifamily permits reclassified as single-family starts, permits abandoned before start, changes to the design of the building after authorization, non-residential permits misclassified as new residential construction by local permitting offices, revisions made to the series on permits that don't become incorporated into the series on starts, and changes in inventories of starts and permits between time periods.

Many of these factors have changed since 1979. A greater share of construction is now covered by permit, for instance. The Census Bureau has also worked with local permitting offices to classify permits more consistently, and the survey methodologies have been improved as the samples have been redesigned several times.

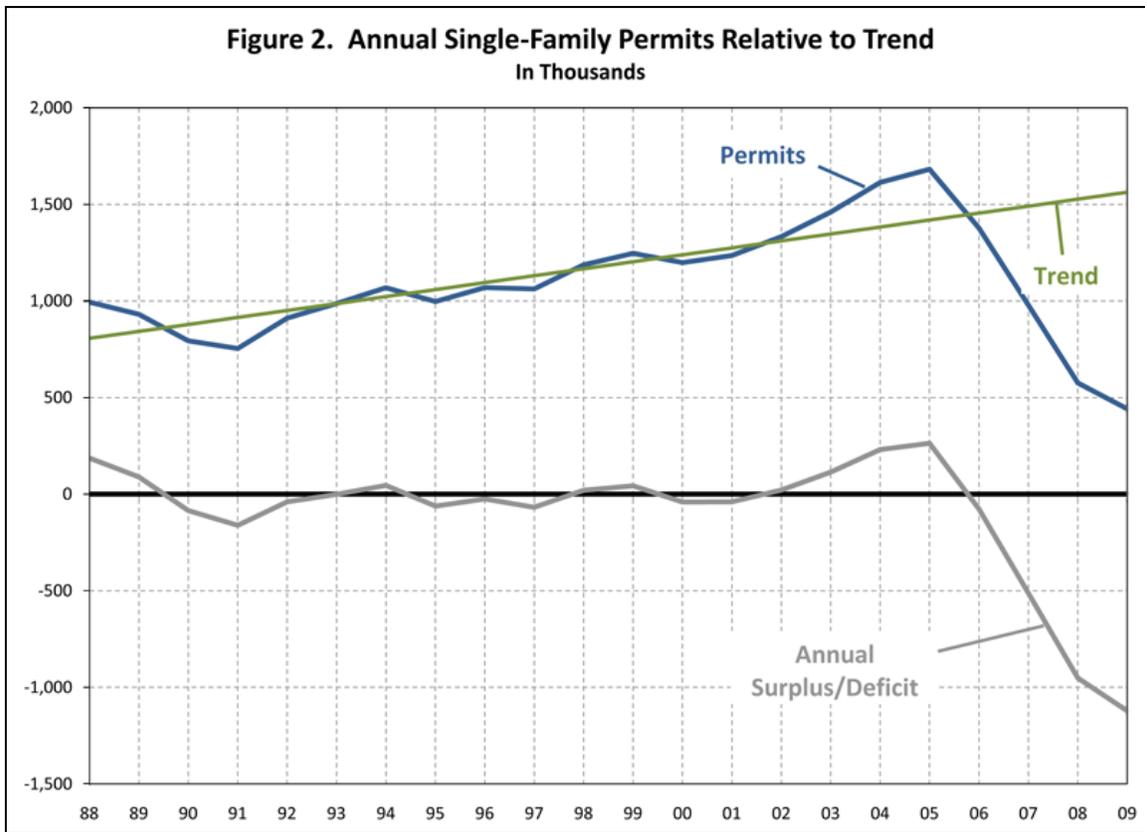
The Census Bureau's series on single-family starts and permits extends back to 1959. Since that time but prior to the recent downturn, the historic low points of these series coincided with the severe, interest-rate driven recession of the early 1980s. The respective troughs were 550,000 for single-family permits in 1981 and 663,000 for single-family starts in 1982.

In 2009, the single-family production troughs were even lower than this—441,000 permits and 445,000 starts. In short, single-family permits and starts were 20 and 33 percent lower, respectively, in 2009 than in the previously worst post-WWII recession. Even this understates the magnitude of the recent downturn in the housing industry to some extent. In the early 1980s, multifamily starts and permits were running in the neighborhood of 400,000 units a year—compared to fewer than 150,000 in 2009—so the 2009 historic low in single-family production coincided with a historic low in multifamily production as well.

Moreover, the population and stock of housing in the U.S. has continued to expand. In 1980, there were roughly 226 million people and 88 million housing units in the country. By 2009, these numbers had increased to 307 million people and 130 million housing units, so in that year the U.S. added a record low number of new housing units to a population and housing base that was larger than it had ever been before.

**Annual Production Relative to Trend**

To account for factors like population that change in a systematic fashion over time, Figure 2 plots annual single-family permits against a long-term trend. The trend is a straight line fit through the permit data, using standard techniques, from 1988 through 2003. During that time the U.S. population was growing at a fairly steady rate that averaged 1.15 percent per year and varied only between 0.90 and 1.35.



The year 1988 represents a relatively normal starting point, when single-family permits had dropped from their temporary peak in 1986 but were still far above the trough of 1991. The year 2003 is before the housing boom of 2004 and 2005. Starting the trend line in a trough or extending it through the boom would, of course, increase its slope. Instead, the trend constructed here and shown in Figure 2 slopes upward relatively gradually and indicates that, based on a growing population that needs to be housed and an expanding inventory of older homes that need to be replaced, the number of new single-family permits issued should increase by about 36 thousand per year.

This produces a trend line that climbs from 807,000 in 1988 to 1.35 million by 2003. An extension of that pre-boom trend shows that single-family permits should have hit 1.4 million by 2005, 1.5 million by 2008, and been around 1.56 million in 2009. Instead, permits were well over 1.4 million in 2003 and pushed past 1.6 million in both 2004 and 2005. This is a period of serious overbuilding that shows up as an area substantially above trend in Figure 2.

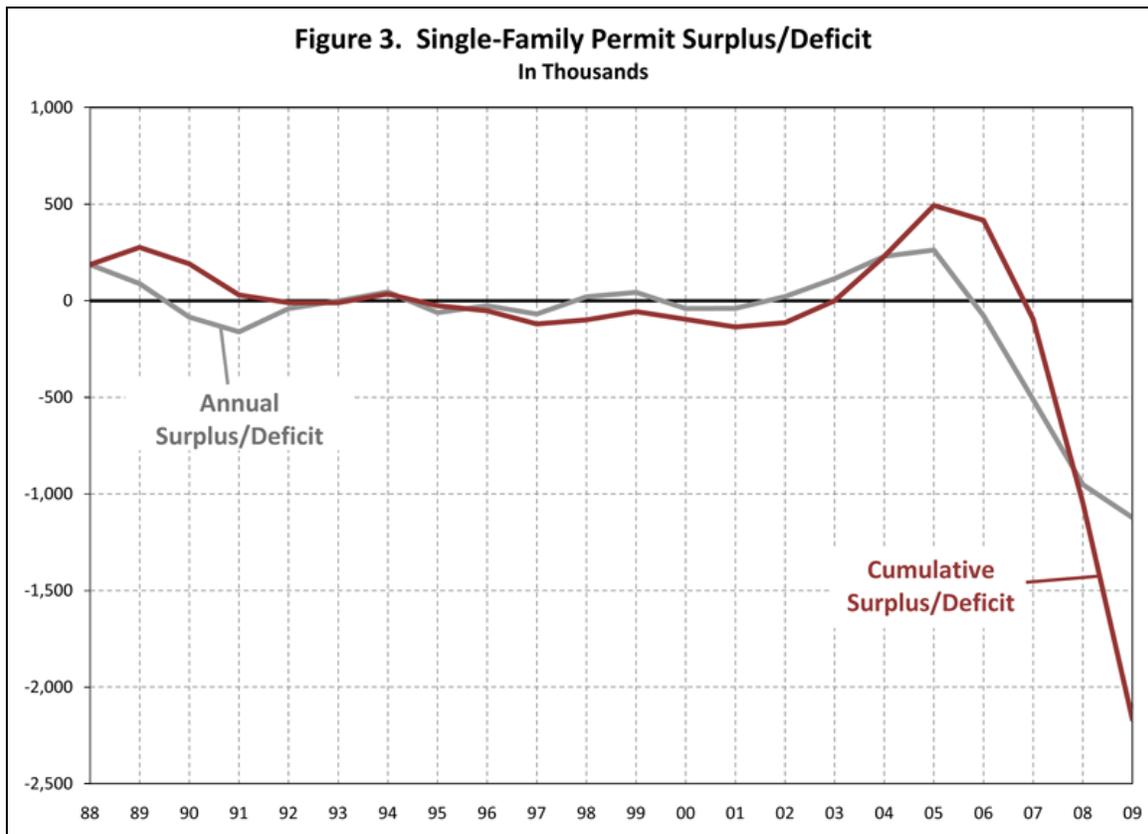
Subsequently, however, permits dropped to under 1.4 million by 2006—already slightly below trend—and continued to decline thereafter, reaching the historic low point of roughly 440,000 units in 2009.

The lower line shown in Figure 2 represents an annual permit surplus (when above zero) or deficit (below) zero obtained by subtracting the trend from the annual number of new single-family permits issued. This line illustrates the permit surpluses that were occurring in the period from 2002 until 2006. These annual surpluses were well over 200,000 units per year in the era of the most serious over building—2004 and 2005.

Immediately after 2005, however, annual permit deficits began to materialize. These deficits were about half million units in 2007, and in the neighborhood of a million units since then, as the rate of single-family permit issuance dropped to under 500,000—more than a million units per year below trend. Moreover, this low rate of new permit issuance has continued into 2010 (with the Census Bureau showing a preliminary seasonally adjusted annual rate for September of 405,000), suggesting that the permit deficit in 2010 will also be approximately 1 million single-family housing units below trend.

## Cumulative Over- and Underbuilding

Figure 3 reproduces the annual single-family surplus/deficit line and includes another line that accumulates the surpluses and deficits. At the beginning of the period shown in the figure, above trend production generated surpluses that accumulated to 276,000 units in 1989. Below trend production subsequently ran this cumulative surplus down until it became a very small deficit of 10,000 units in 1992. Production then remained relatively close to a cumulative balance until the year 2002.



After that point, overbuilding generated annual surpluses that accumulated to a peak of 493,000 single-family units in 2005. Very little of this overbuilding was worked off in 2006; but by the end of 2007, as annual production dropped below a million units, the surplus had already been worked off entirely. The continuing depressed levels of production since then resulted in cumulative underbuilding of 2.17 million units by 2009, and NAHB currently projects this cumulative deficit to grow to 3.28 million units by the end of 2010. This represents cumulative underbuilding AFTER earlier overbuilding surpluses have been entirely worked off.

## State Level Analysis

The U.S. does not, of course, consist of a single homogeneous housing market. Once built, housing units are fixed in location with minor exceptions,<sup>1</sup> and much of the population is tied to particular locations—through employment, attachments to friends and family, etc—in ways that tend to localize demand for housing.

The housing boom of 2004 and 2005 was thus not distributed perfectly across the country, but tended to be concentrated in some areas more than others. There were also geographic differences in the subsequent rates of decline. Although a large cumulative single-family production deficit exists for the U.S. as a whole, this may not be true in every local housing market.

However, Table 1 indicates that, at the state level at least, cumulative underbuilding exists in most areas. Calculations for each state in the table follow the same methodology used to produce the national analysis. A trend is constructed by fitting a line through 1988-2003 permit data (in this case, the trend is subtracted from annual permit activity, and the resulting surpluses and deficits are accumulated over time.

**Table 1. Cumulative Permit Surplus/Deficit by State**

|                      |                   |
|----------------------|-------------------|
| Alabama              | 1,300             |
| Alaska               | -7,000            |
| Arizona              | -144,500          |
| Arkansas             | -6,300            |
| California           | -49,500           |
| Colorado             | -146,200          |
| Connecticut          | -12,700           |
| Delaware             | -2,800            |
| District of Columbia | 300               |
| Florida              | -112,600          |
| Georgia              | -183,900          |
| Hawaii               | 6,200             |
| Idaho                | -16,000           |
| Illinois             | -95,700           |
| Indiana              | -98,500           |
| Iowa                 | -15,700           |
| Kansas               | -22,600           |
| Kentucky             | -42,500           |
| Louisiana            | -16,300           |
| Maine                | -5,200            |
| Maryland             | -33,700           |
| Massachusetts        | -21,900           |
| Michigan             | -163,300          |
| Minnesota            | -76,800           |
| Mississippi          | -5,500            |
| Missouri             | -39,900           |
| Montana              | 1,900             |
| Nebraska             | -11,800           |
| Nevada               | -75,600           |
| New Hampshire        | -11,500           |
| New Jersey           | -57,400           |
| New Mexico           | -16,900           |
| New York             | -11,700           |
| North Carolina       | -84,800           |
| North Dakota         | 200               |
| Ohio                 | -119,900          |
| Oklahoma             | -10,000           |
| Oregon               | -27,700           |
| Pennsylvania         | -36,800           |
| Rhode Island         | -2,800            |
| South Carolina       | -5,600            |
| South Dakota         | -4,400            |
| Tennessee            | -31,500           |
| Texas                | -171,000          |
| Utah                 | -32,800           |
| Vermont              | -700              |
| Virginia             | -56,700           |
| Washington           | -11,200           |
| West Virginia        | -6,400            |
| Wisconsin            | -73,200           |
| Wyoming              | 2,500             |
| <b>U.S. Total*</b>   | <b>-2,168,100</b> |

\*States will not add to the U.S. total precisely due to rounding

Table 1 shows that a condition of net cumulative underbuilding exists in 45 of the 51 states (including the District of Columbia). The only exceptions are Alabama, DC, Hawaii, Montana, North Dakota, and Wyoming. DC follows a very irregular pattern and is a special case of a state-equivalent that constitutes a relatively small part of a larger local housing market. Also in DC, single-family housing accounts for less than 40 percent of the total housing stock.

The common feature of the other five states still showing net cumulative overbuilding in Table 1 is that annual single-family permit surpluses were still accumulating in these states during 2007. In each of these five states, the annual permit surpluses changed to deficits beginning in 2008, and the cumulative overbuilding began to be worked off. These states vary in how close they are to totally working off previous surpluses and entering a state of net cumulative underbuilding. Graphs analogous to Figure 3, showing the annual and cumulative single-family surpluses and deficits for each state over the 1988-2009 period, are available in an Excel file that can be opened or downloaded from the “other resources” box that appears at the top of this article when viewed on NAHB’s website.

Most of the five states that still show net cumulative overbuilding are relatively small in terms of total population and housing stock, and as a group have a relatively small impact on the net level of underbuilding in the U.S. taken as a whole.

## **Summary and Conclusion**

This article has presented evidence that overbuilding relative to a 15-year trend occurred in the U.S. housing market, particularly in the years 2004 and 2005. Relative to trend, this overbuilding accumulated to a net excess of nearly 300,000 single-family homes in the market at the end of 2005. However, this net overbuilding was worked off soon afterward, by record low rates of production that dropped to a million units per year below trend and generated a net cumulative underbuilding of 2.17 single-family units—even after the earlier excesses were completely worked off. Using a similar line of reasoning, the article has also shown that the condition of net underbuilding prevails in 45 of the 51 states (including DC) in the U.S.

Housing is the largest item in the budgets of many home owners. When owners decide to sell their homes, the process usually takes an appreciable period of time and involves a number of transaction costs. When an asset with these characteristics declines substantially in value—and the S&P/Case-Shiller® U.S. National Home Price Index declined by 27 percent from 2006 to 2009—it is probably not surprising that demand collapsed and helps to explain why production for single-family housing fell off so drastically after 2006. In order for the cumulative deficit in single-family production to persist, a cumulative deficit in the number of U.S. households must also persist. Historically, the U.S. averaged 1.2 million net new households per year between 1960 and 2005. Even without adjusting for population growth, U.S. household formations have been running below this long-run average consistently since 2005 (far below, most of the time). It is also probably

not surprising that household formations have stalled and remain depressed while the national unemployment rate is above 9 percent.

But it would be difficult to explain why households would choose to remain bundled together after house prices stabilize and labor markets improve, and why the 2.17 million unit cumulative net deficit in single-family production (projected to be 3.28 million by the end of 2010) doesn't therefore represent a significant pent-up demand that will at some point need to be worked off and begin to impact single-family housing production in a positive direction.

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<sup>1</sup> The U.S. Census Bureau, in its 1-year American Community Survey estimates for 2009, counts about 107,000 non-standard and sometimes mobile entities —such as trailers, boats, and recreational vehicles—as housing units. It is also possible to argue that manufactured housing is entirely built before being transported to a location where it will be used as a residence. Under the federal code imposed by the Department of Housing and Urban Development, manufactured housing has become relatively difficult to move and now typically remains in one place after it has been transported to a site and affixed to a foundation.