The Virginia Tech – U.S. Forest Service November 2015 Housing Commentary: Part A







Urs Buehlmann

Department of Sustainable Biomaterials College of Natural Resources & Environment

Virginia Tech Blacksburg, VA 540.231.9759

buehlmann@gmail.com

Delton Alderman

Forest Products Marketing Unit

Forest Products Laboratory



U.S. Forest Service Madison, WI 304.431.2734

dalderman@fs.fed.us

2016

Virginia Polytechnic Institute and State University

VCE-701NP

Virginia Cooperative Extension programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Ed win J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; M. Ray McKinnie, Interim Administrator, 1890 Extension Program, Virginia State University, Petersburg.

Table of Contents

Slide 3: Executive Summary

Slide 4: <u>Housing Scorecard</u>

Slide 5: Wood Use in Construction

Slide 7: <u>U.S. Home Ownership</u>

Slide 9: 2016 Housing Forecasts

Slide 12: New Housing Starts

Slide 15: Regional Housing Starts

Slide 21: New Housing Permits

Slide 23: Regional New Housing Permits

Slide 30: <u>Housing Under Construction</u>

Slide 32: Regional Under Construction

Slide 36: <u>Housing Completions</u>

Slide 38: <u>Regional Housing Completions</u>

Slide 42: Multifamily Insights

Slide 43: New Single Family House Sales

Slide 46: Regional SF House Sales & Price

Slide 47: SF Sales, Price, & Median Income

Slide 50: Construction Spending

Slide 52: Construction Spending 2015

Slide 53: Existing House Sales

Slide 54: Existing Sales by Price & Region

Slide 55: <u>First-Time Purchasers</u>

Slide 58: Existing Sales Insights

Slide 61: Summary

Slide 62: <u>Virginia Tech Disclaimer</u>

Slide 63: <u>USDA Disclaimer</u>

This report is a free monthly service of Virginia Tech. Past issues can be found at:

http://woodproducts.sbio.vt.edu/housing-report. To request the report, please email: buehlmann@gmail.com

Executive Summary

November's housing data was predominately positive on a monthly and year-over-year basis. Most sectors improved with the exceptions of existing house sales and new housing completions. From a regional perspective, all data were mixed across sectors.

Housing has improved incrementally since January 2010. As written then, the housing market remains far from normal and the housing market still faces several obstacles. New sales are appear to be bifurcated, as the aggregate share of lower-valued price category homes is declining while the higher-valued group share is increasing. This is evidenced by viewing new sales plotted against real median income. Further, viewing home ownership rates provides some evidence of income decline and lower-end new house construction. Multifamily construction is solid; yet the number of multifamily units remains less than permitted and constructed in the early 1970s.

This month we have a slide that is dedicated to housing forecasts, from 1,154,000 to 1,435,000. For the most part, predictions are bound in a fairly tight range. The key take away, housing market remains less than historical averages. We also introduce railroad lumber and wood products shipments plotted against new housing permits, starts, and new house sales. The aim is to see if shipments yield some type of insight into the three sectors mentioned. Please note, we realize that not all wood products are shipped via rail and that all wood products are not utilized in new housing.

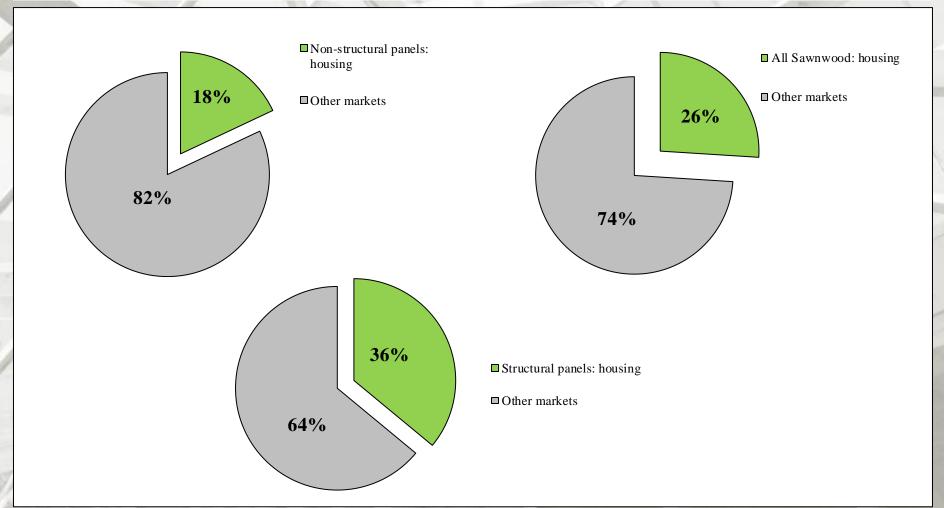
This report provides information on housing, economics, private and government indicators, and forecasts for the global and United States economy. Segment A of the commentary is data based and Segment B contains current housing market information and economic material. We hope you find this commentary beneficial.

November 2015 Housing Scorecard

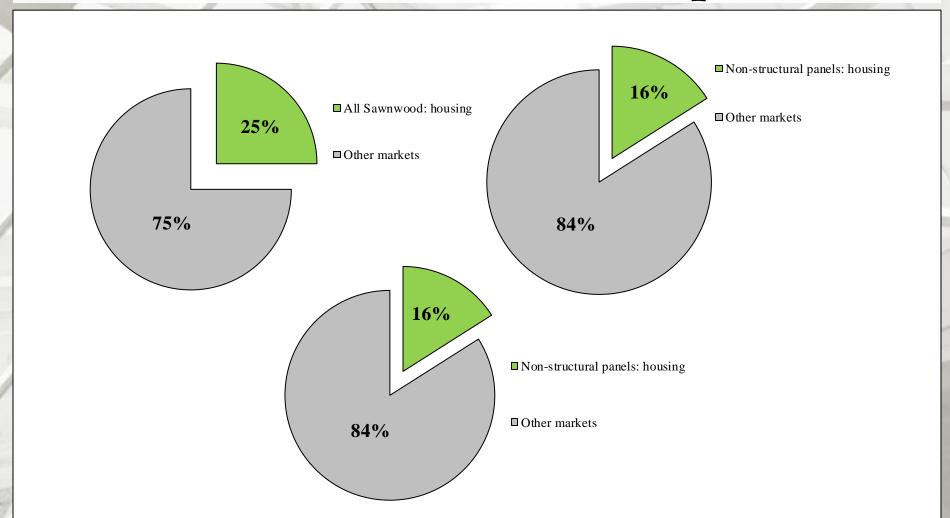
	M/M	Y/Y
Housing Starts	Δ 10.5%	Δ 16.5%
Single Family Starts	△ 7.6%	Δ 14.6%
Housing Permits	Δ 11.0%	Δ 19.5%
Housing Completions	∇ 3.2%	△ 9.2%
New Single-Family House Sales	△ 5.7%	Δ 21.6%
Existing House Sales ¹	▽ 4.8%	△ 6.2%
Private Residential Construction Spending	Δ 0.3%	Δ 10.8%
Single Family Construction Spending	△ 0.6%	Δ 9.3%

M/M = month-over-month; Y/Y = year-over-year

New Construction's Percentage of Wood Products Consumption

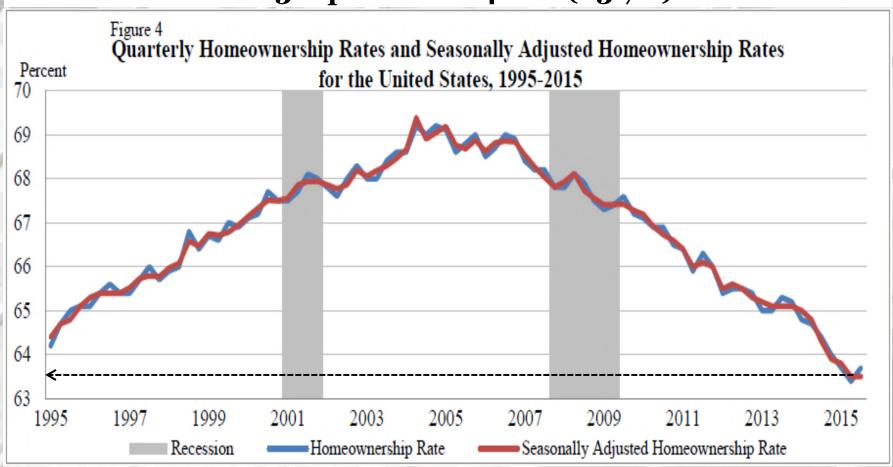


Repair and Remodeling's Percentage of Wood Products Consumption



U.S. Home Ownership

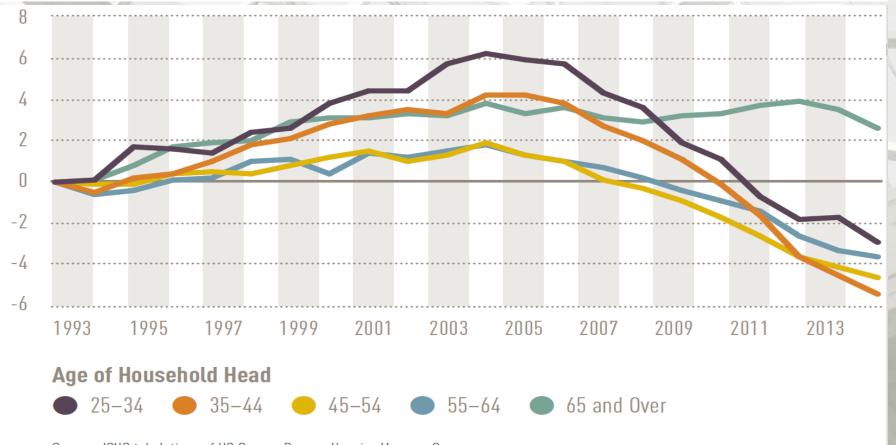
Home ownership rate: $64.4\% \rightarrow 0.7\%$ more than the 3^{rd} quarter 2014 rate (63.7%)



U.S. Home Ownership

"... BUT Rates for Most Age Groups Are Well Below That Point.

Change in Homeownership Rate (percentage points)"



Source: JCHS tabulations of US Census Bureau, Housing Vacancy Surveys.

2016 Housing Forecasts

Organization	Total Starts	Single Family Starts	New House Sales
APA - The Engineered Wood Association ^a	1,257.0	840.0	
Fannie Mae ^b	1,224.0	826.7	562.0
Freddie Mac ^c	1,330.0		
National Association of Homebuilders ^d	1,292.0	914.0	
Export Development Canadae	1,435.0		
Forest Economic Advisors ^f	1,265.0	833.0	
Metrostudy ^g	1,235.0	750.0 - 770.0	625.0
Mortgage Bankers Associationh	1,233.0	823.0	593.0
The Conference Boardi	1,320.0		
UCLA Ziman Center for Real Estate ^j	1,420.0		
Urban Land Institute ^k		842.0	
BMO Capital Markets ¹	1,130.0		
Dodge Data & Analytics ^m	1,154.0	609.0	
Goldman Sachs ⁿ	1,300.0		
Royal Bank of Canada ^o	1,356.5		
Scotiabank ^p	1,300.0		
TD Economics ^q	1,340.0		
Wells Fargo LLC ^r	1,265.0	820.0	620.0

 $Return\,TOC$

in thousands

2016 Housing Forecasts

References

a-http://www.apawood.org/

b-http://www.fanniemae.com/resources/file/research/emma/pdf/Housing_Forecast_111915.pdf

c-http://www.freddiemac.com/finance/ehforecast.html

d-http://www.nahb.org/en/news-and-publications/Press-Releases/2015/october/housing-recovery-to-pick-up-steam-in-2016-but-challenges-remain.aspx

e-https://www.edc.ca/EN/Knowledge-Centre/Economic-Analysis-and-Research/Documents/gef-fall-2015-summary.pdf

f-https://www.getfea.com/

g-http://blog.buildingsolutions.com/blog/beware-the-wildly-optimistic-construction-forecast

h-https://www.mba.org/Documents/Research/Mtg%20Finance%20Forecast%20Nov%202015.pdf

i-https://www.conference-board.org/data/usforecast.cfm

j-http://www.anderson.ucla.edu/centers/ucla-ziman-center-for-real-estate

k-http://uli.org/press-release/consensus-forecast-september-2015/

1-http://www.bmonesbittburns.com/economics/outlook/20160106/nao.pdf

m-http://www.constructiondive.com/news/inside-the-dodge-2016-construction-outlook-commercial-residential-predic/408351/

n-http://www.housingwire.com/articles/35648-goldman-sachs-residential-investment-on-pace-for-solid-growth-

chart?eid=311702681&bid=1239337

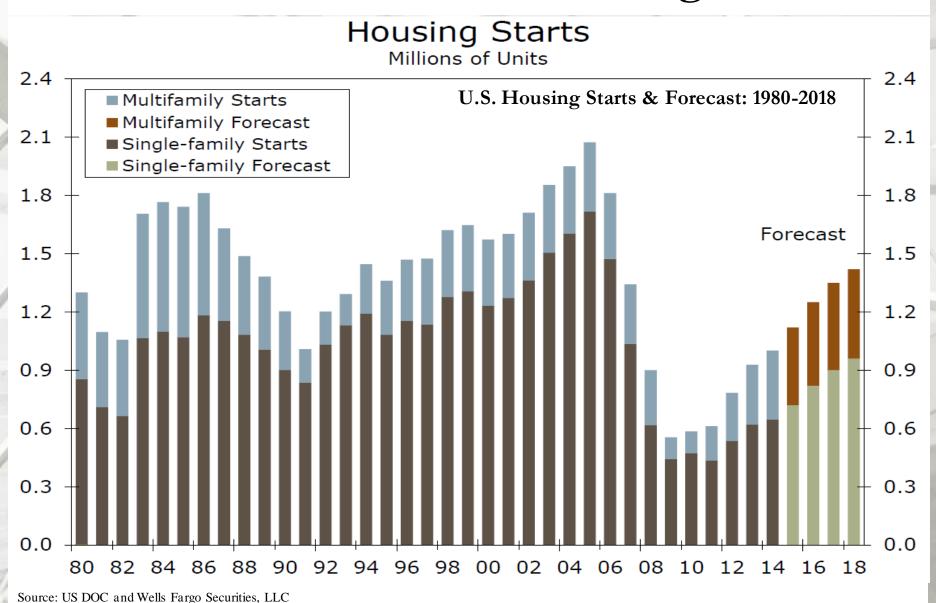
o-http://www.rbc.com/economics/economic-data/pdf/economy_us.pdf

p-http://www.gbm.scotiabank.com/English/bns_econ/forecast.pdf

q-https://www.td.com/document/PDF/economics/qef/long_term_sep2015.pdf

r-https://www08.wellsfargomedia.com/assets/pdf/commercial/insights/economics/real-estate-and-housing/housing-wrapup-20151030.pdf

Private Indicators: Wells Fargo LLC



New Housing Starts

	Total Starts*	Single Family Starts	Multifamily 2-4 unit Starts**	Multifamily ≥ 5 unit Starts
November	1,173,000	768,000	7,000	398,000
October	1,062,000	714,000	11,000	337,000
2014	1,007,000	706,000	9,000	328,000
M/M change	10.5%	7.6%	-36.4%	18.1%
Y/Y change	16.5%	14.6%	-22.2%	21.3%

^{*} All start data are presented at a seasonally adjusted annual rate (SAAR).

^{**} US DOC does not report 2 to 4 multifamily starts directly, this is an estimation.

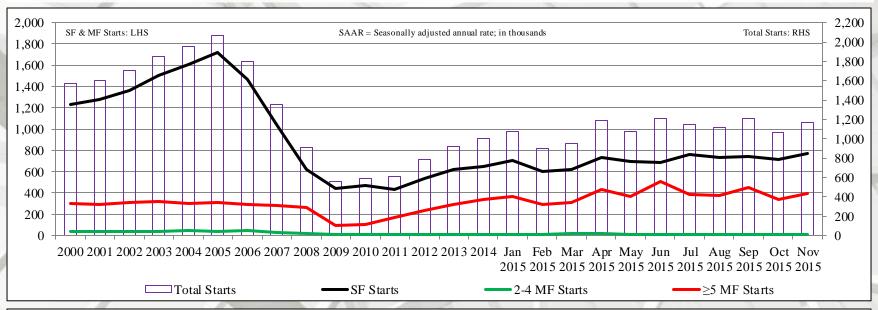
New Housing Starts^

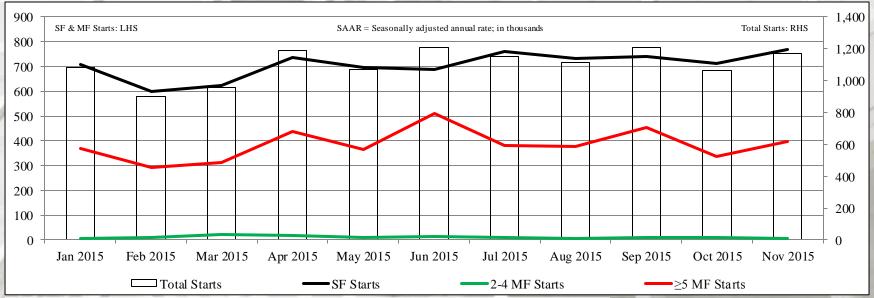
		ALC: NO		
	Total Starts	Single Family Starts	Multifamily 2-4 unit Starts**	Multifamily ≥ 5 unit Starts
November	89.8	55.5	0.6	33.8
October	89.9	58.5	1.0	30.1
2014	75.8	47.3	0.4	27.8
M/M change	-0.1%	-5.1%	-40.0%	12.3%
Y/Y change	18.5%	17.3%	150.0%	21.6%

[^] Not seasonally adjusted; in thousands of units.

^{**} US DOC does not report 2 to 4 multifamily starts directly, this is an estimation.

Total SF Housing Starts





New Housing Starts by Region

	Northeast (NE) Total Starts	NE SF Starts	NE MF Starts**
November	130	60	70
October	142	59	83
2014	107	55	52
M/M change	-8.5%	1.7%	-15.6%
Y/Y change	21.5%	9.1%	34.6%

	Midwest (MW) Total Starts	MW SF Starts	MW MF Starts
November	174	108	66
October	174	113	61
2014	172	109	63
M/M change	0.0	-4.4%	8.2%
Y/Y change	1.2%	-0.9%	4.7%

^{*} All data are SAAR; NE = Northeast and MW = Midwest; in thousands. ** US DOC does not report multifamily starts directly, this is an estimation

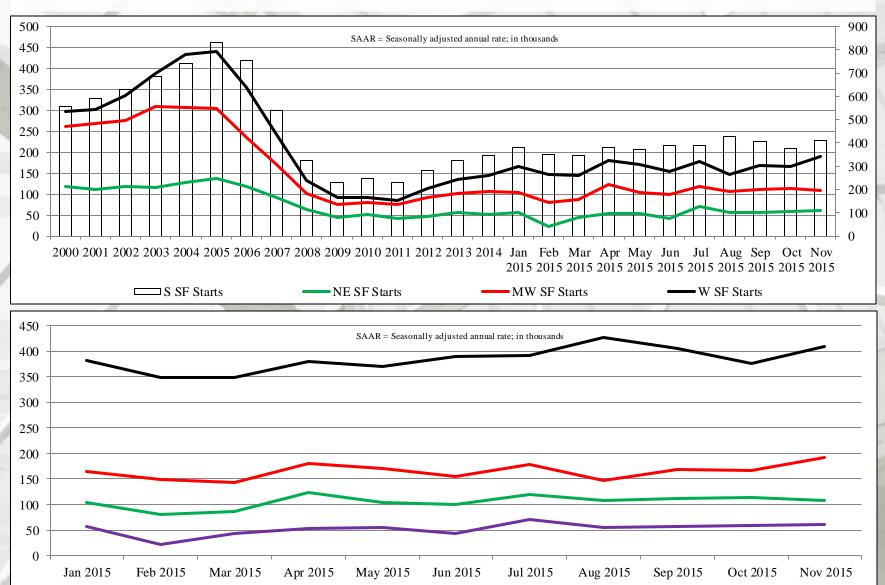
New Housing Starts by Region

	South (S) Total Starts	S SF Starts	S MF Starts**
November	615	409	206
October	507	376	131
2014	454	361	93
M/M change	21.3%	8.8%	57.3%
Y/Y change	35.5%	13.3%	121.5%

	West (W) Total Starts	W SF Starts	W MF Starts
November	254	191	63
October	239	166	73
2014	274	145	129
M/M change	6.3%	15.1%	-13.7%
Y/Y change	-7.3%	31.7%	-58.9%

^{*} All data are SAAR; S = South and W = West; in thousands. ** US DOC does not report multifamily starts directly, this is an estimation.

SF Housing Starts by Region



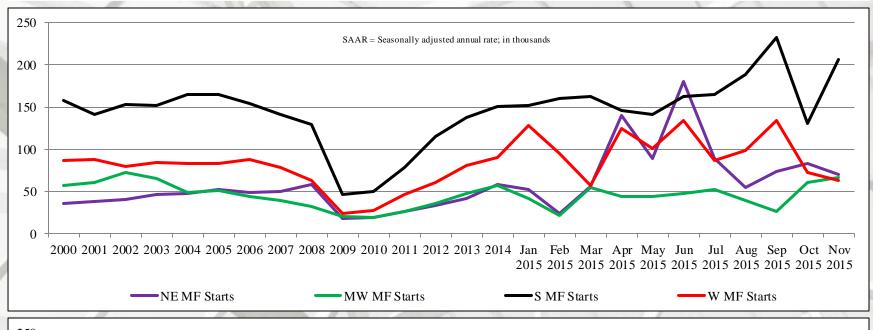
MW SF Starts

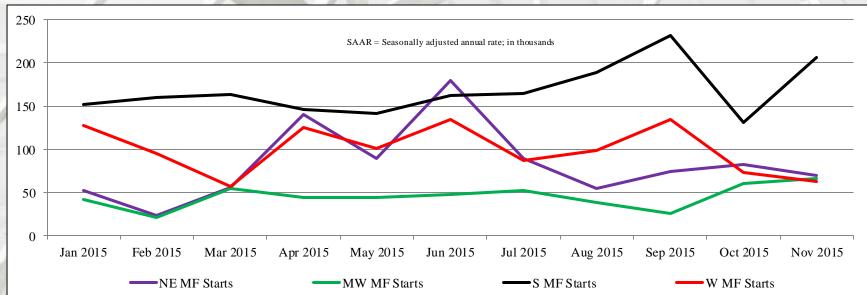
NE SF Starts

W SF Starts

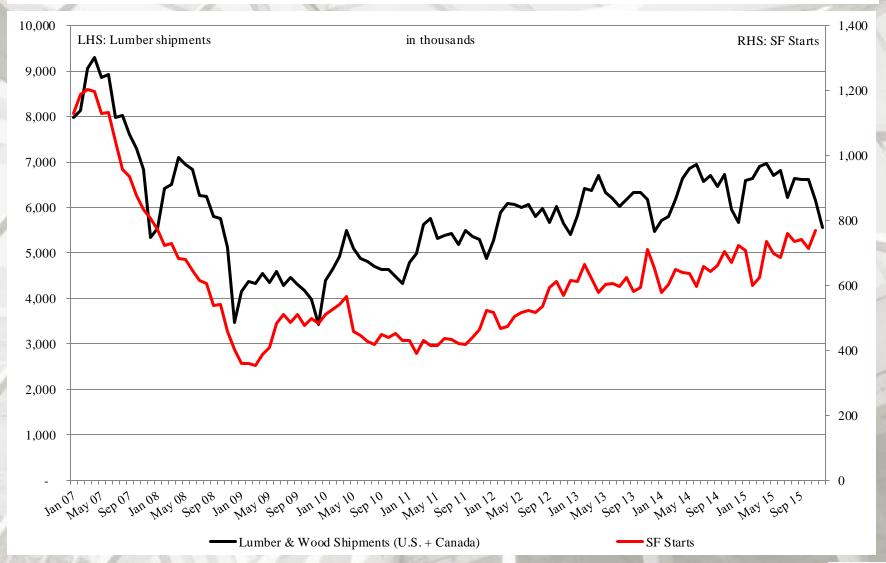
S SF Starts

MF Housing Starts by Region

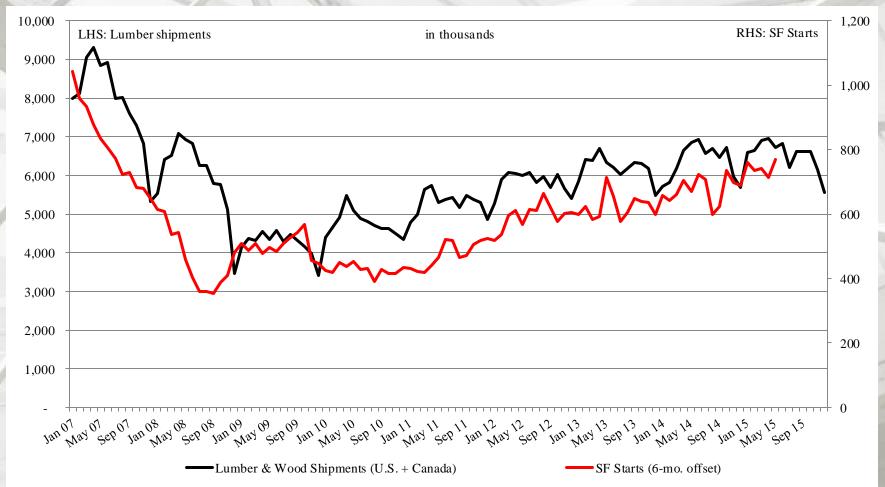




Railroad Lumber & Wood Shipments vs. U.S. SF Housing Starts



Railroad Lumber & Wood Shipments vs. U.S. SF Housing Starts: 6-month Offset



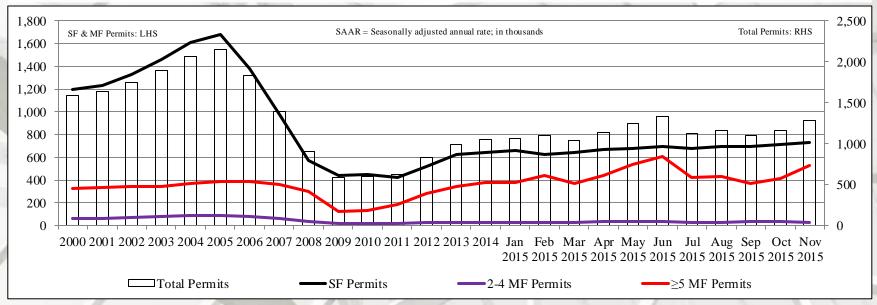
In this graph, January 2007 lumber shipments are contrasted with July 2007 starts. The purpose is to discover if lumber shipments relate to future single-family starts. Also, it is realized that trucking hauls lumber; however, to our knowledge comprehensive trucking data is not available.

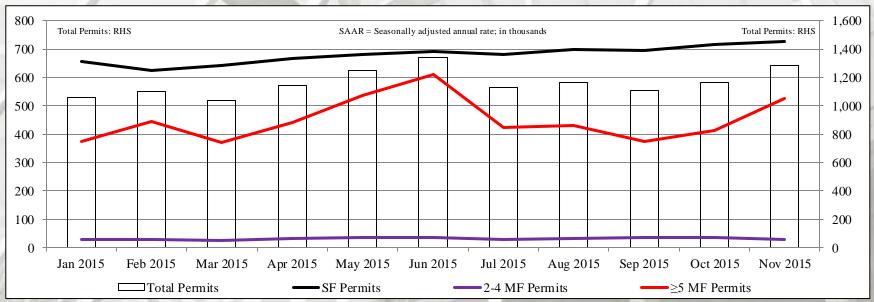
New Housing Permits

	Total Permits*	Single Family Permits	Multifamily 2-4 unit Permits	Multifamily ≥ 5 unit Permits
November	1,289,000	723,000	27,000	539,000
October	1,161,000	715,000	34,000	412,000
2014	1,079,000	663,000	28,000	388,000
M/M change	11.0%	1.1%	-20.6%	30.8%
Y/Y change	19.5%	9.0%	-3.6%	38.9%

^{*} All data are SAAR

Total New Housing Permits





New Housing Permits by Region

	NE Total Permits	NE SF Permits	NE MF Permits
November	131	54	77
October	131	51	80
2014	135	61	74
M/M change	0.0	5.9%	-3.7%
Y/Y change	-3.0%	-11.5%	-4.1%

	MW Total Permits	MW SF Permits	MW MF Permits
November	211	106	105
October	173	104	69
2014	143	97	46
M/M change	22.0%	1.9%	52.0%
Y/Y change	47.6%	9.3%	128.3%

^{*} All data are SAAR; in thousands

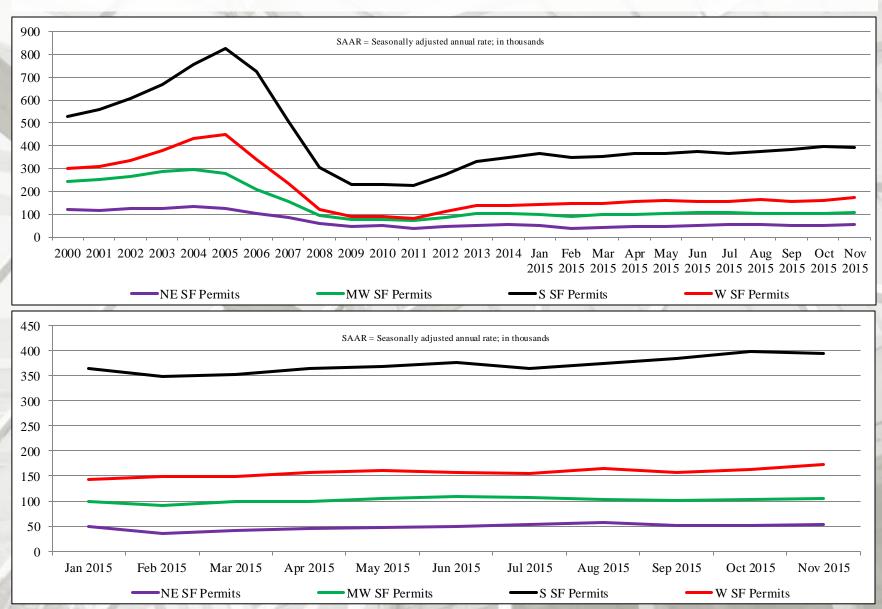
New Housing Permits by Region

	S Total Permits	S SF Permits	S MF Permits
November	627	391	236
October	594	398	196
2014	518	359	159
M/M change	5.6%	-1.8%	20.4%
Y/Y change	21.0%	8.9%	48.4%

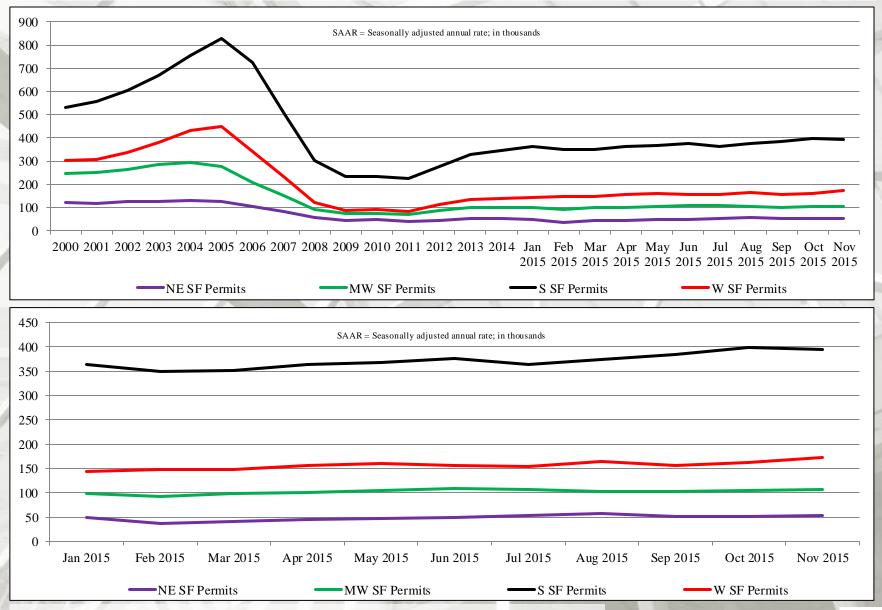
	W Total Permits	W SF Permits	W MF Permits
November	320	172	148
October	263	162	101
2014	283	146	137
M/M change	21.7%	6.2%	46.5%
Y/Y change	13.1%	17.8%	8.0%

^{*} All data are SAAR

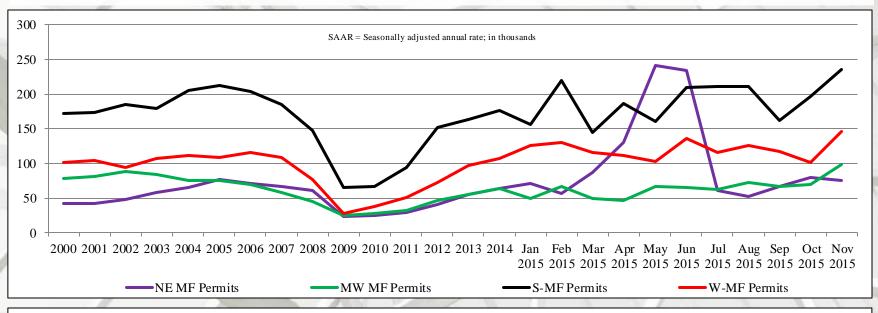
Housing Permits by Region

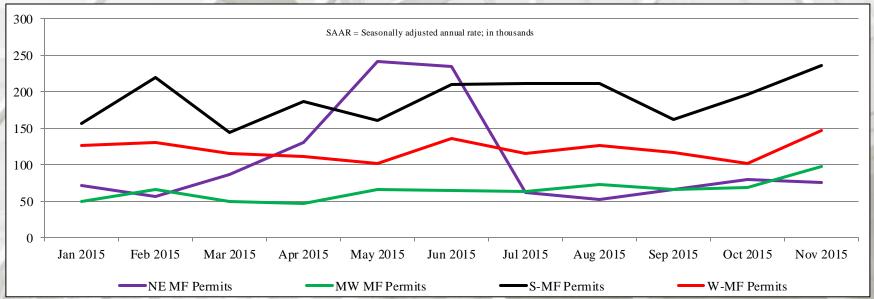


SF Housing Permits by Region

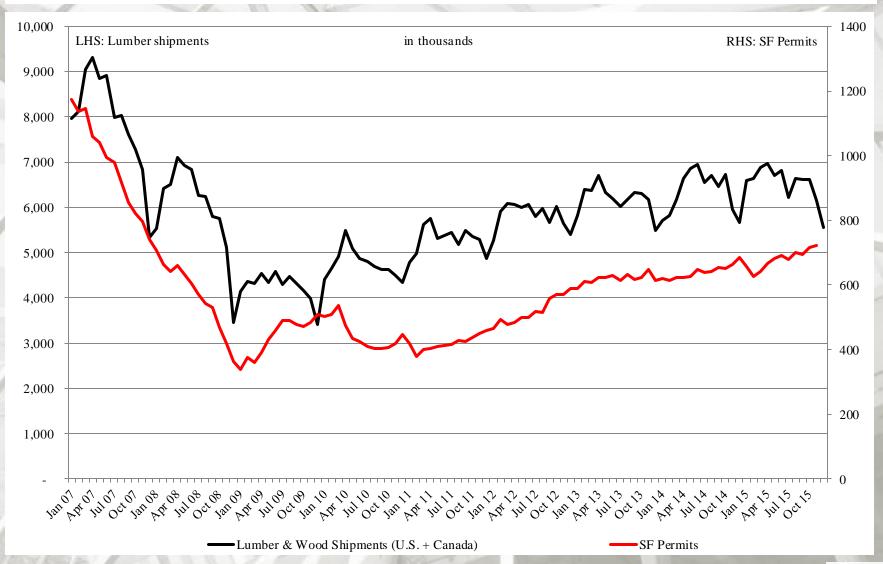


MF Housing Permits by Region

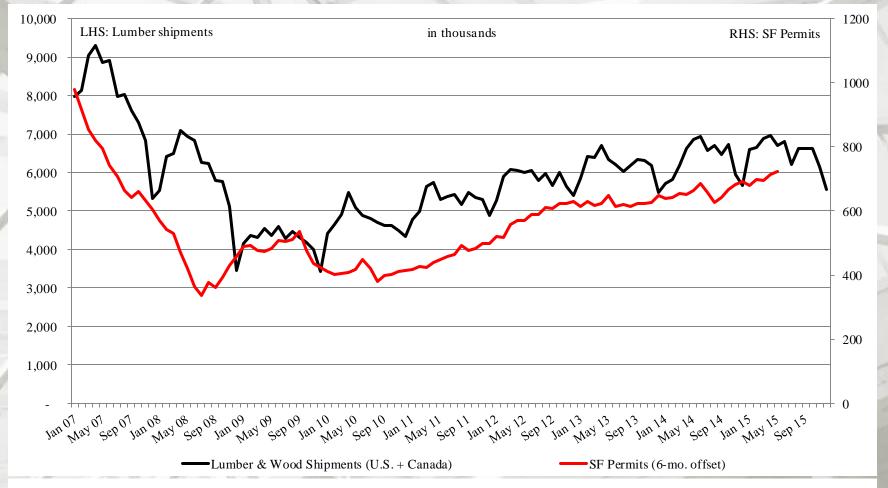




Railroad Lumber & Wood Shipments vs. U.S. SF Housing Permits



Railroad Lumber & Wood Shipments vs. U.S. SF Housing Permits: 6-month Offset



In this graph, January 2007 lumber shipments are contrasted with July 2007 permits. The purpose is to discover if lumber shipments relate to future single-family building permits. Also, it is realized that trucking hauls lumber; however, to our knowledge comprehensive trucking data is not available.

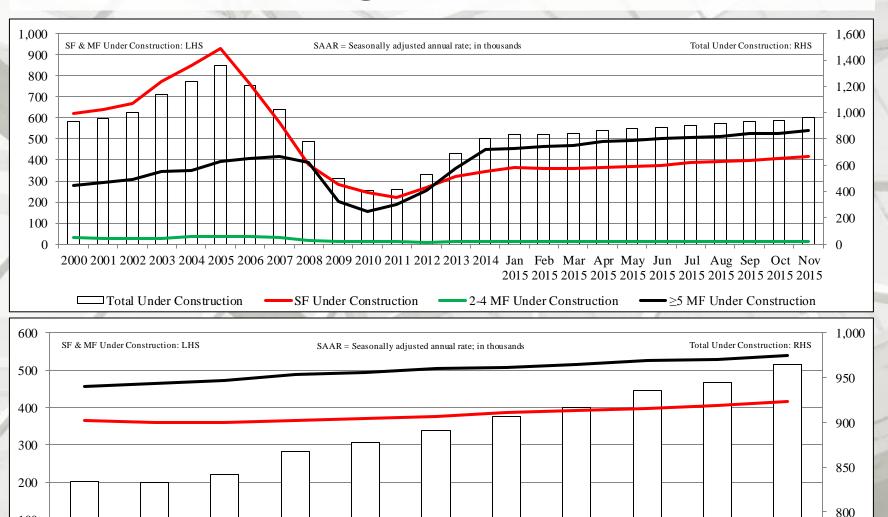
New Housing Under Construction

	Total Under Construction*	Single Family Under Constructions	Multifamily 2-4 unit** Under Constructions	Multifamily ≥ 5 unit Under Construction
November	965,000	416,000	11,000	538,000
October	944,000	406,000	11,000	527,000
2014	816,000	360,000	12,000	445,000
M/M change	2.2%	2.5%	0.0	2.1%
Y/Y change	18.3%	15.6%	-8.3%	20.9%

^{**} US DOC does not report 2-4 multifamily units under construction directly, this is an estimation.

^{*} All data are SAAR

Total Housing Under Construction



Jul 2015

SF Under Construction 2-4 MF Under Construction

Aug 2015

Sep 2015 Oct 2015

—≥5 MF Under Construction

Mar 2015 Apr 2015 May 2015 Jun 2015

100

Jan 2015

Feb 2015

Total Under Construction

New Housing Under Construction by Region

	NE Total	NE SF	NE MF**
November	175	48	127
October	174	47	127
2014	121	40	81
M/M change	0.6%	2.1%	0.0
Y/Y change	37.8%	17.1%	53.0%

	MW Total	MW SF	MW MF
November	127	69	58
October	122	67	55
2014	128	63	65
M/M change	4.1%	3.0%	5.5%
Y/Y change	-0.8%	9.5%	-6.5%

All data are SAAR; NE = Northeast and MW = Midwest; in thousands.

^{**} US DOC does not report multifamily units under construction directly, this is an estimation.

New Housing Under Construction by Region

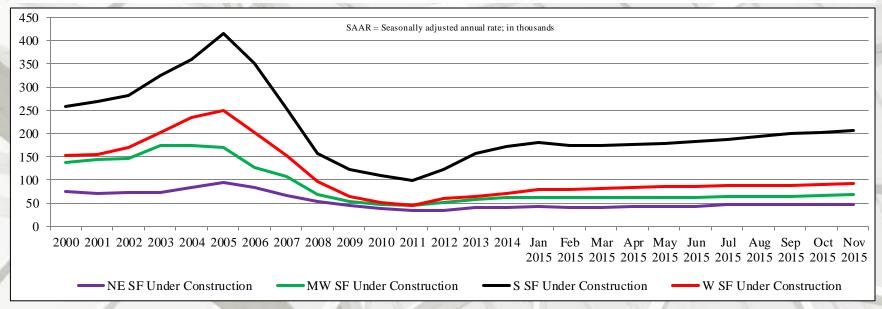
	S Total	S SF	S MF**
November	424	206	218
October	412	203	209
2014	365	180	185
M/M change	2.9%	1.5%	4.3%
Y/Y change	16.2%	14.4%	21.1%

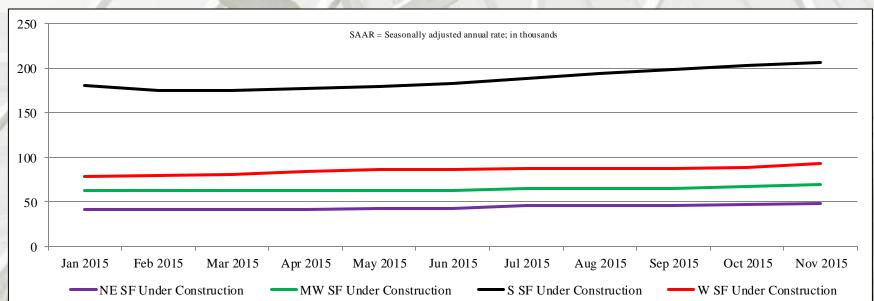
	W Total	W SF	W MF
November	239	93	146
October	236	89	147
2014	196	76	120
M/M change	1.3%	4.5%	-0.7%
Y/Y change	21.9%	22.4%	22.7%

All data are SAAR; S = South and W = West; in thousands.

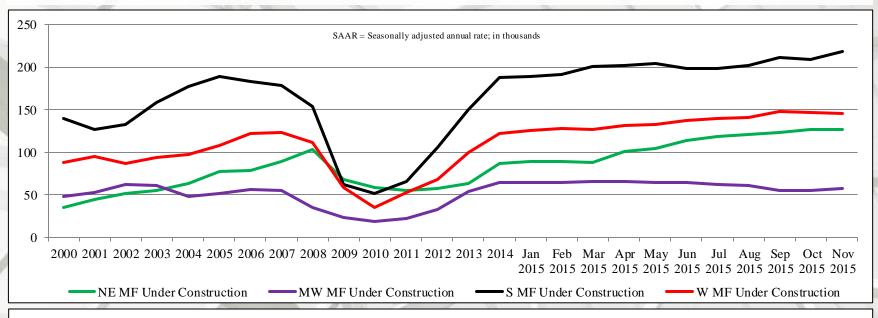
^{**} US DOC does not report multi-family units under construction directly, this is an estimation.

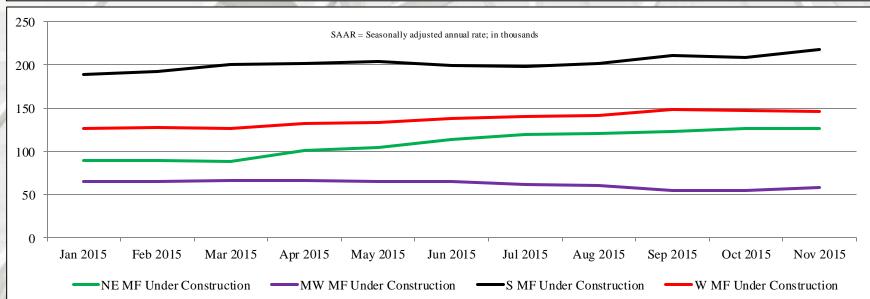
SF Housing Under Construction by Region





MF Housing Under Construction by Region





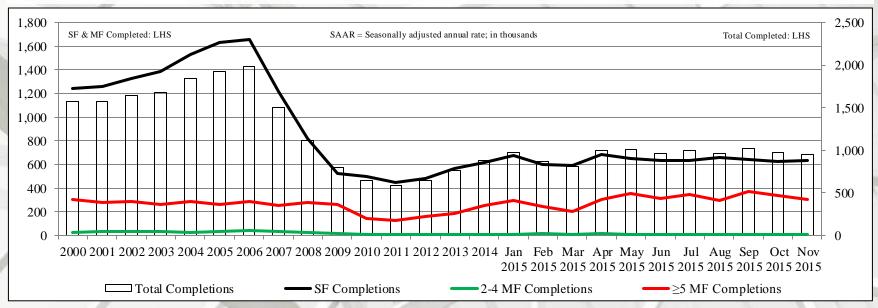
New Housing Completions

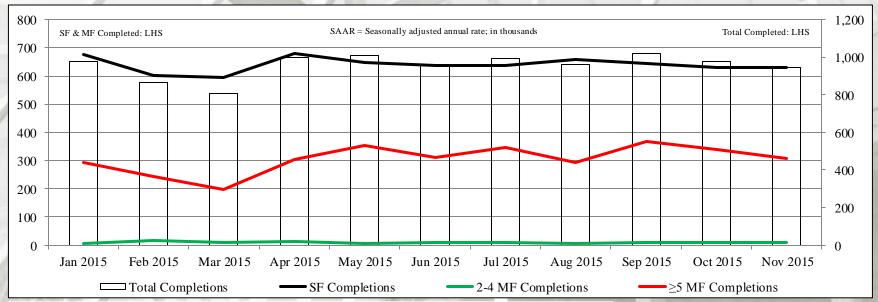
	Total Completions*	Single-Family Completions	Multi-Family 2-4 unit** Completions	Multi-Family ≥ 5 unit Permits
November	947,000	632,000	9,000	306,000
October	978,000	630,000	8,000	340,000
2014	867,000	609,000	14,000	244,000
M/M change	-3.2%	0.3%	12.5%	-10.0%
Y/Y change	9.2%	3.8%	-35.7%	25.4%

All data are SAAR

^{**} US DOC does not report multifamily completions directly, this is an estimation.

Total Housing Completions





New Housing Completions by Region

	NE Total	NE SF	NE MF**
November	107	52	55
October	120	47	73
2014	54	42	12
M/M change	-10.8%	10.6%	-24.7%
Y/Y change	98.1%	23.8%	-25.0%

_				
		MW Total	MW SF	MW MF
	November	94	80	14
	October	155	101	54
	2014	132	99	33
	M/M change	-39.4%	-20.8%	-74.1%
	Y/Y change	-28.8%	-19.2%	-72.7%

All data are SAAR; NE = Northeast and MW = Midwest; in thousands.

^{**} US DOC does not report multifamily completions directly, this is an estimation.

New Housing Completions by Region

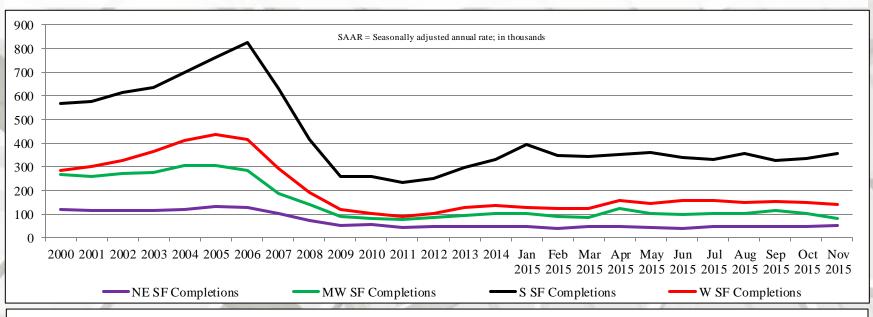
	S Total	S SF	S MF**
November	500	358	142
October	477	335	142
2014	458	329	129
M/M change	4.8%	6.9%	0.0
Y/Y change	9.2%	8.8%	10.0%

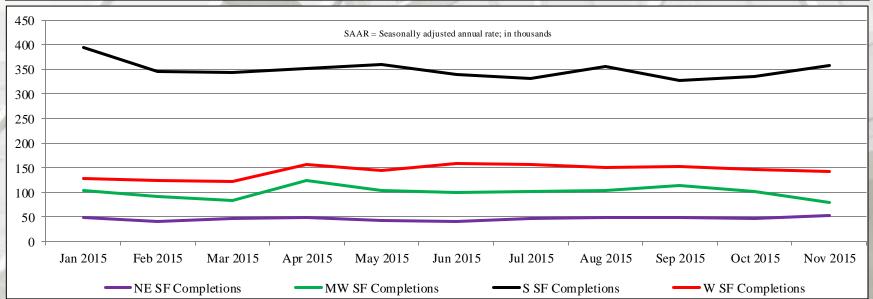
	W Total	W SF	W MF
November	246	142	104
October	226	147	79
2014	223	139	84
M/M change	8.8%	-3.4%	23.8%
Y/Y change	10.3%	2.2%	31.6%

All data are SAAR; S = South and W = West; in thousands.

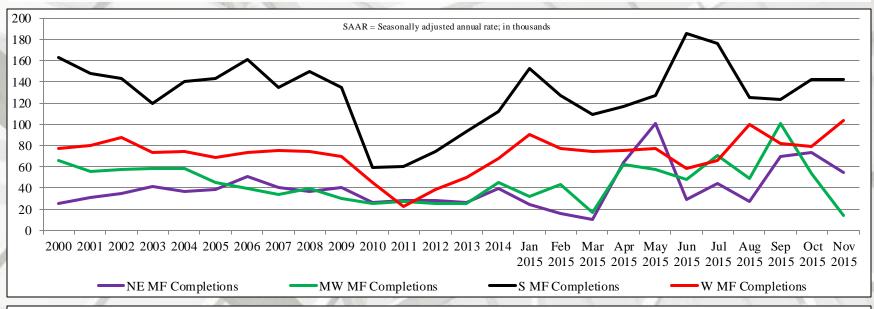
^{**} US DOC does not report multi-family completions directly, this is an estimation.

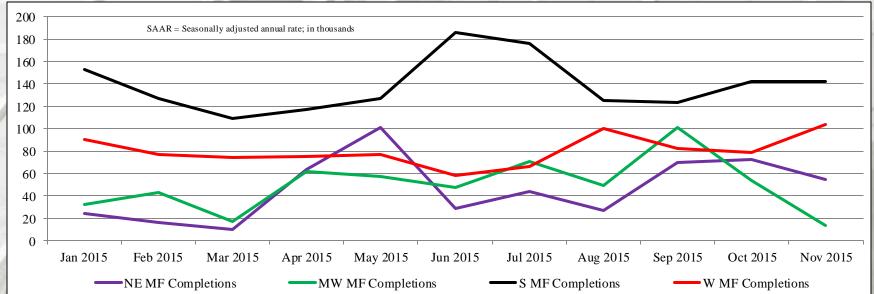
SF Housing Completions by Region



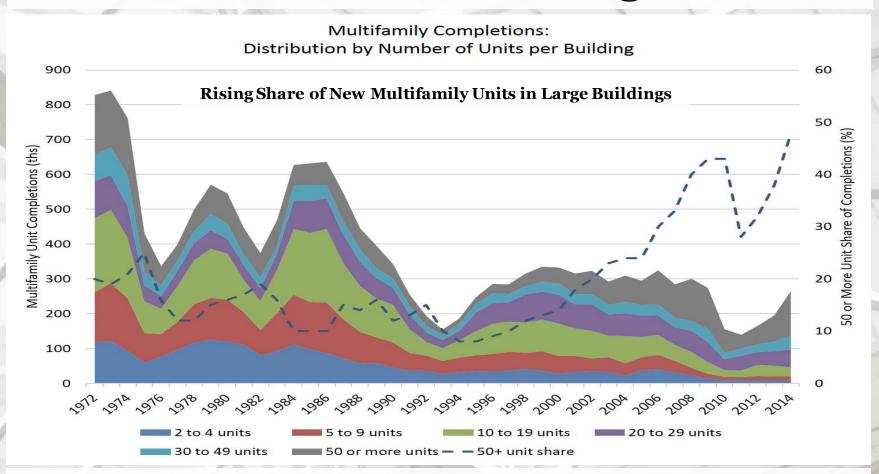


MF Housing Completions by Region





MF Construction Insights



"An increasing number of newly-built multifamily units are found in larger buildings, as measured by the number of apartments per building. According to Census Bureau data of multifamily completions, the share of new multifamily units in buildings with 50 or more units reached a data series high of 48% during 2014.

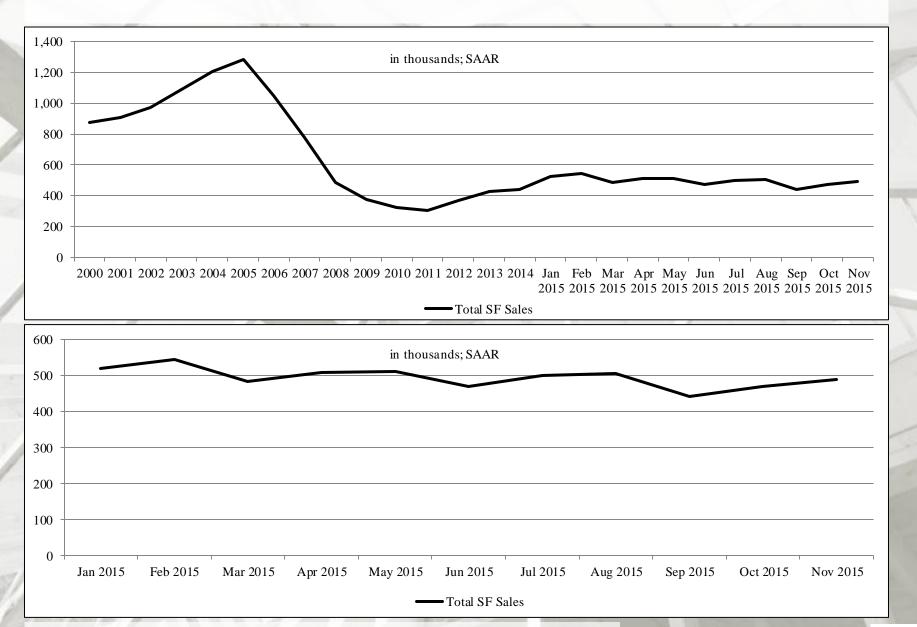
The share of new units in large buildings (50+ units or more) has been rising steadily since 1996, after reaching a data series low of 8% during 1994 and 1995, albeit with one exception. The share declined to 28% in 2011 after recording a 43% mark for 2010." -- Robert Dietz, Ph.D., Vice-President, Tax and Market Analysis, NAHB

New Single Family House Sales

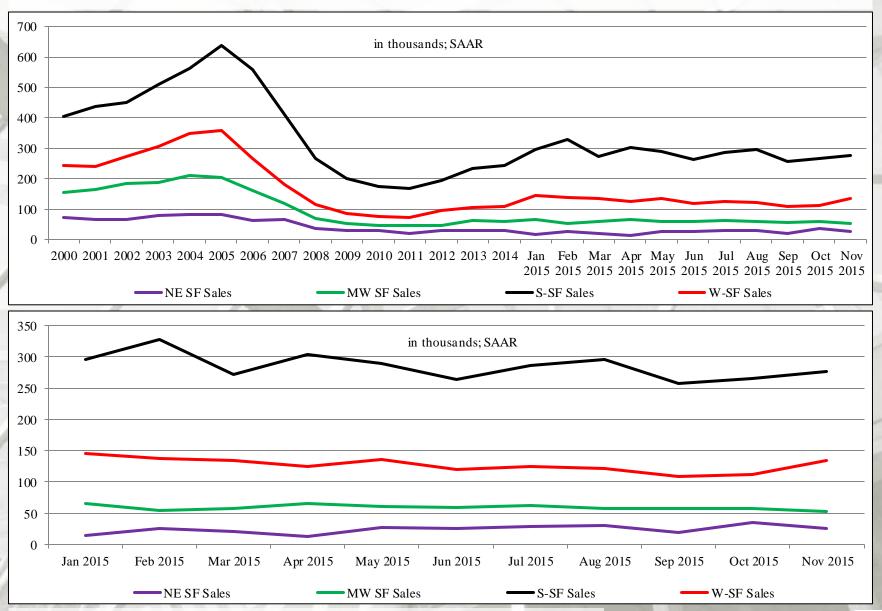
	New SF Sales*	Median Price	Mean Price	Month's Supply
November	490,000	\$305,000	\$374,900	5.8
October	470,000	\$286,900	\$358,100	5.7
2014	449,000	\$302,700	\$358,800	5.6
M/M change	4.3%	6.3%	4.7%	1.7%
Y/Y change	9.1%	0.7%	4.5%	1.8%

^{*} All sales data are SAAR

New SF House Sales



New SF House Sales by Region



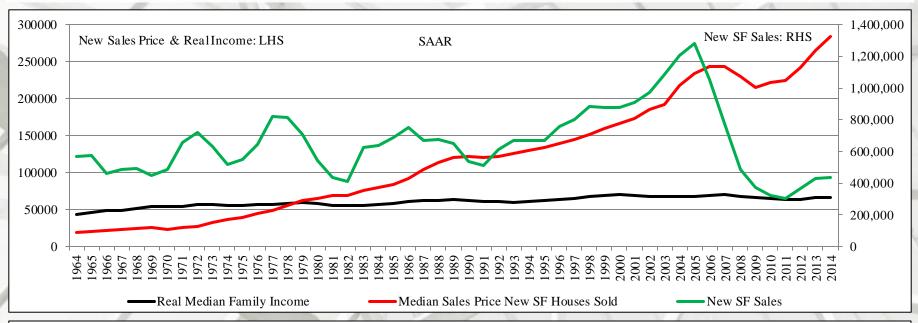
New SF House Sales by Region and Price Category

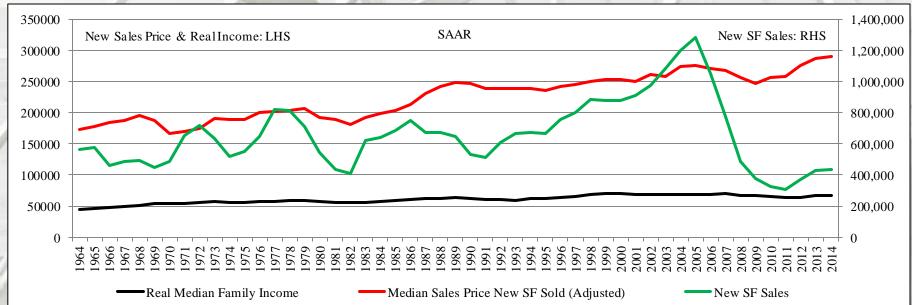
	NE SF Sales	MW SF Sales	S SF Sales	W SF Sales	Total SF Sales
November	25,000	53,000	277,000	135,000	490,000
October	35,000	58,000	265,000	112,000	470,000
2014	29,000	59,000	232,000	129,000	449,000
M/M change	-28.6%	-8.6%	4.5%	20.5%	4.3%
Y/Y change	-13.8%	-10.2%	19.4%	4.7%	9.1%

			1000					
	< \$150m	\$150- \$199.9m	\$200- 299.9m	\$300- \$399.9m	\$400- \$499.9m	\$500- \$749.9m	> \$750m	Total ^{1,2,3}
November	1,000	3,000	13,000	7,000	5,000	3,000	2,000	34,000
October	2,000	5,000	14,000	8,000	4,000	3,000	2,000	38,000
2014	2,000	4,000	9,000	6,000	4,000	4,000	1,000	31,000
M/M change	-50.0%	-40.0%	-7.1%	-12.5%	25.0%	0.0	0.0	-16.3%
Y/Y change	-50.0%	-20.5%	44.4%	16.7%	25.0%	-25.0%	100.0%	-2.7%

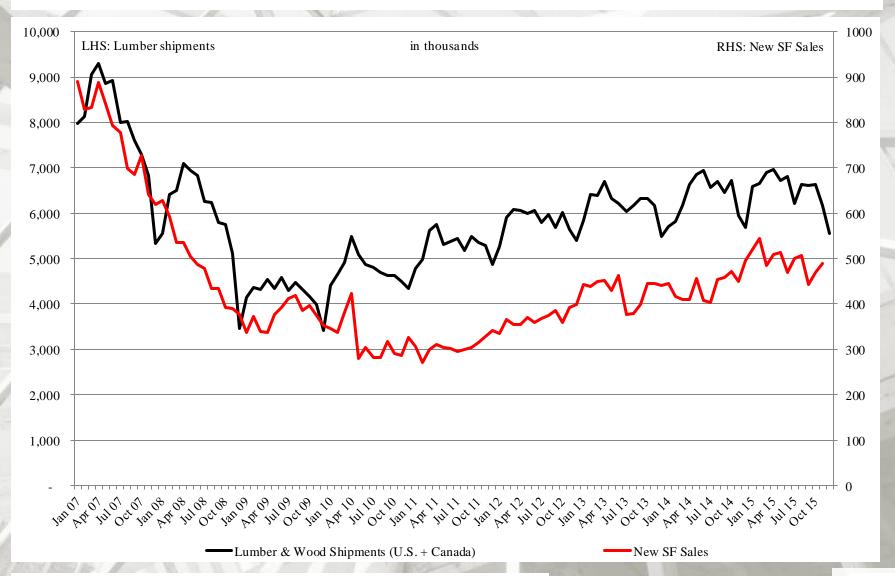
^{*} All data are SAAR; ¹-Houses for which sales price were not reported have been distributed proportionally to those for which sales price was reported; ²-Detail may not add to total because of rounding.

New SF House Sales Price and Real Median Income

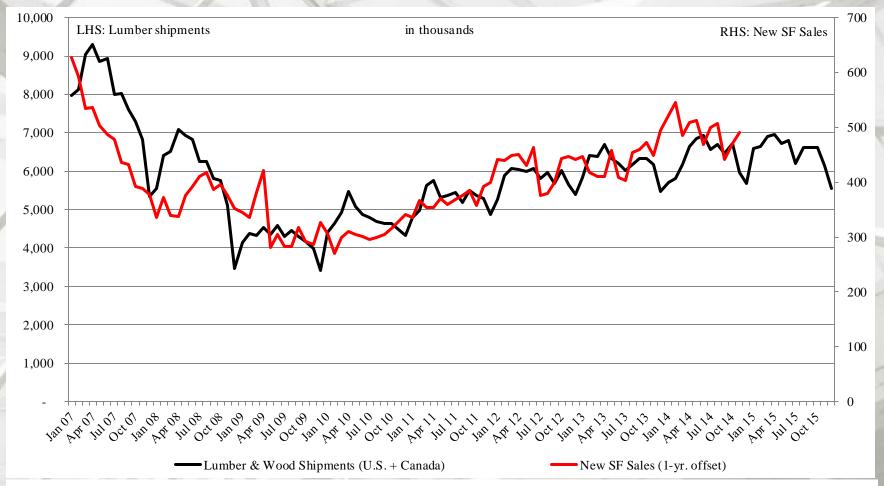




Railroad Lumber & Wood Shipments vs. U.S. New SF House Sales



Railroad Lumber & Wood Shipments vs. U.S. New SF House Sales: 1-year offset



In this graph, January 2007 lumber shipments are contrasted with January 2007 new SF house sales. The purpose is to discover if lumber shipments relate to future new SF house sales. Also, it is realized that trucking hauls lumber; however, to our knowledge comprehensive trucking data is not available.

November 2015 Construction Spending

November 2015 Private Construction: \$427.9 billion (SAAR)

0.3% more than the revised October estimate of \$426.8 billion (SAAR) 10.8% greater than the November 2014 estimate of \$386.3 billion (SAAR)

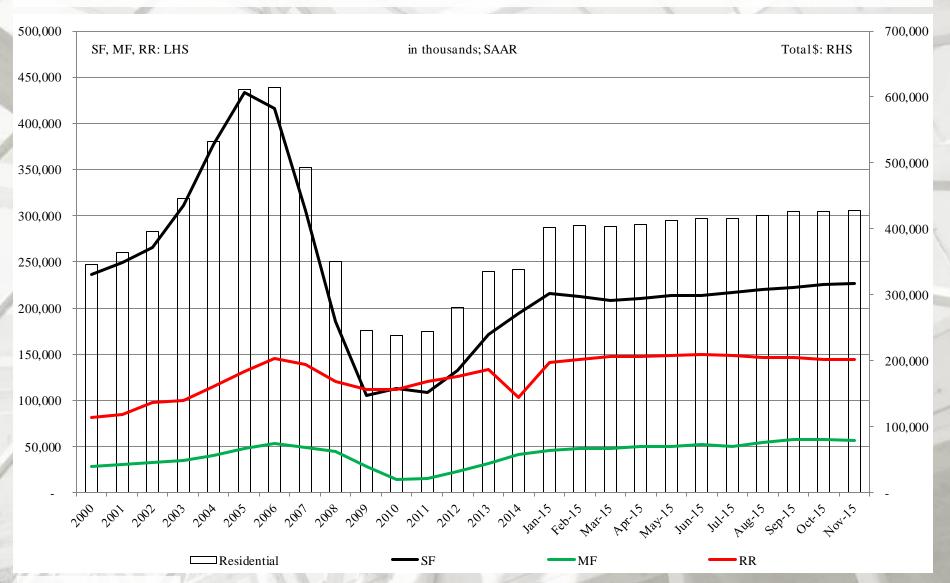
November SF construction: \$226.7 billion (SAAR)
0.6% more than October: \$225.3 billion (SAAR)
9.3% greater than November 2014: \$207.4 billion (SAAR)

November MF construction: \$56.9 billion (SAAR)
-0.7% less than October: \$57.4 billion (SAAR)
24.5% greater than November 2014: \$45.7 billion (SAAR)

November Improvement^C construction: \$144.3 billion (SAAR) 0.1% more than October: \$144.1 billion (SAAR) 8.3% greater than November 2014: \$133.2 billion (SAAR)

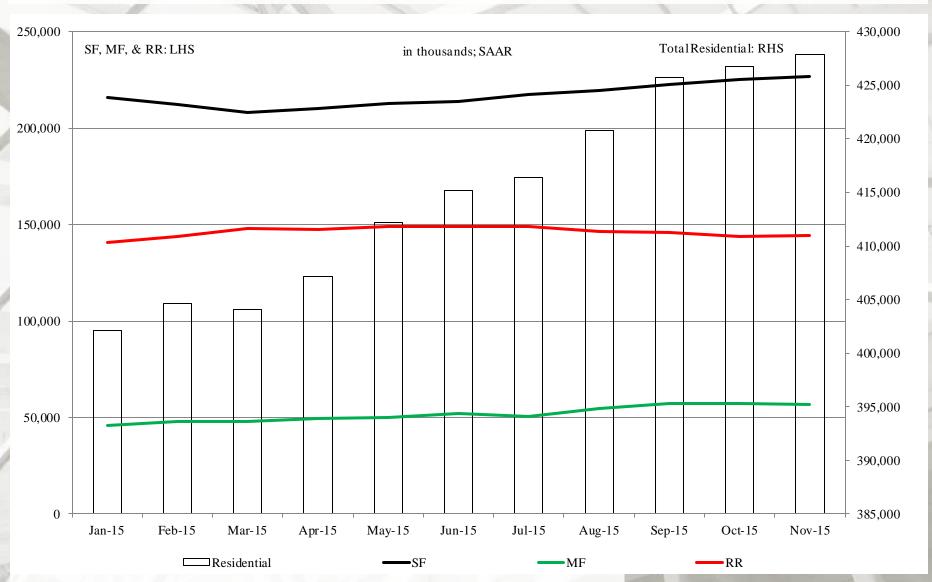
^C The US DOC does not report improvement spending directly, this is an estimation. All data are SAARs and reported in nominal US\$.

Construction Spending: 2000-November 2015



Reported in nominal US\$.

2015 Construction Spending



The US DOC does not report improvement spending directly, this is an estimation. Reported in nominal US\$.

Existing House Sales

National Association of Realtors (NAR®)

November 2015 sales: 4.7 million houses sold (SAAR)

Distressed house sales: 9% of sales –

(7% foreclosures and 2% short-sales);

6% in October and 9% in November 2014.

All-cash sales: increased to 27%; 24% in October, and 25% (November 2014).

Individual investors still purchase a considerable portion of "all cash" sale houses – 16% in November, 13% in October and 15% in November 2014.

64% of investors paid cash in November.

Existing House Sales

		Existing Sales	Median Price	Month's Supply
ľ	November	4,760,000	\$220,300	5.1
9	October	5,320,000	\$219,100	4.8
	2014	4,950,000	\$207,200	5.0
	M/M change	-10.5%	0.5%	6.3%
	Y/Y change	-3.8%	6.3%	2.0%

	NE Sales	MW Sales	S Sales	W Sales
November	690,000	1,100,000	1,980,000	990,000
October	760,000	1,300,000	2,110,000	1,150,000
2014	680,000	1,130,000	2,100,000	1,040,000
M/M change	-9.2%	-15.4%	-6.2%	-13.9%
Y/Y change	1.5%	-2.7%	-5.7%	-4.8%

^{*} All sales data: SAAR

First-Time Purchasers

National Association of Realtors (NAR®)

First-Time Purchases

30% of sales in November –

31% in October and 31% in November 2014.

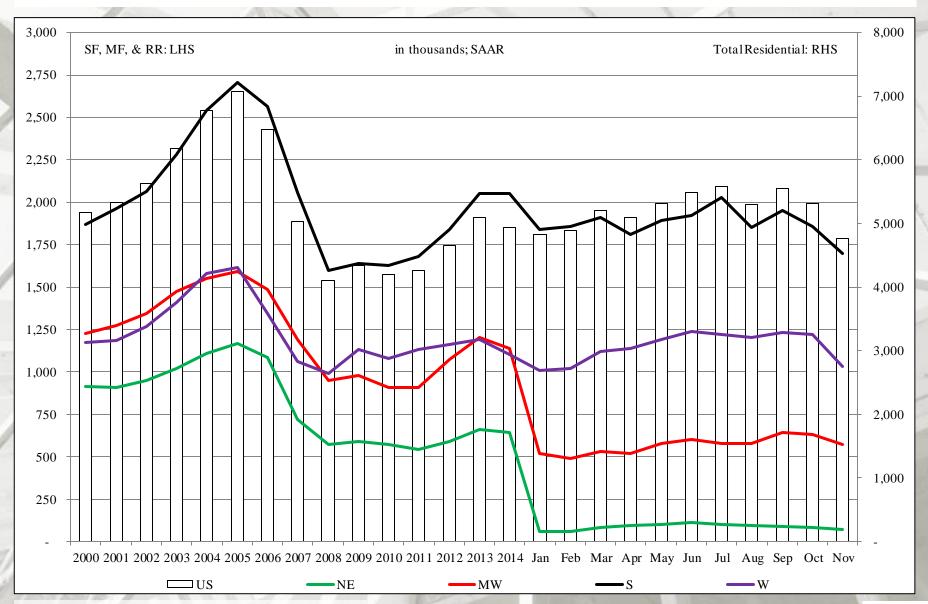
American Enterprise Institute Center on Housing Risk

First-Time Purchases

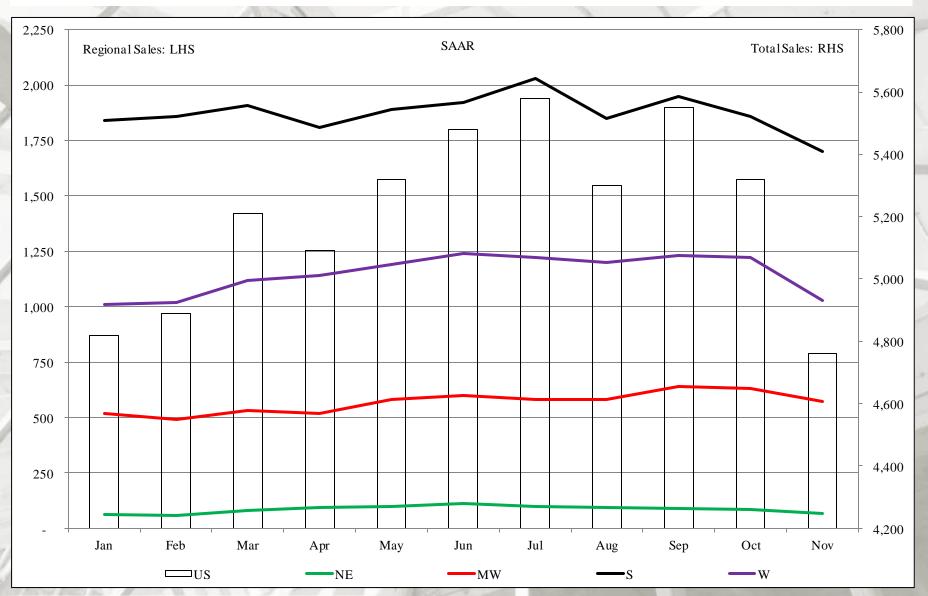
"56.7 percent of primary owner-occupied home purchase mortgages with a government guarantee..."

and 49.8% in November 2014.

Total Existing House Sales

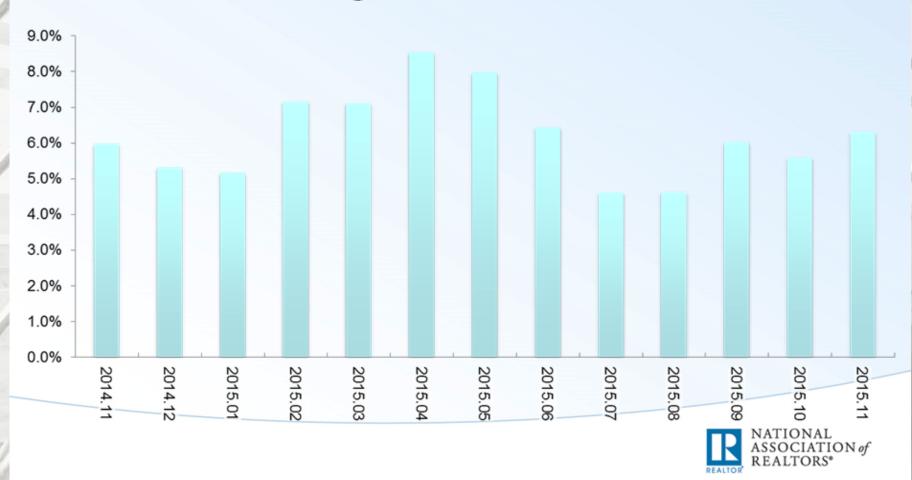


Total Existing House Sales: 2015



Existing House Sales

Existing Home Sales Median Price, Percent Change Year-Over-Year

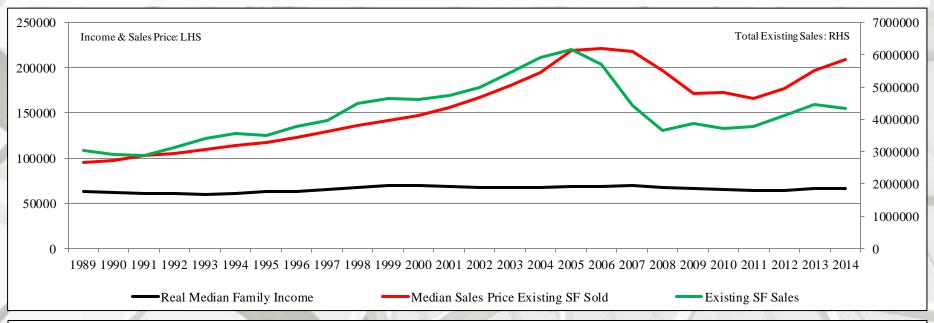


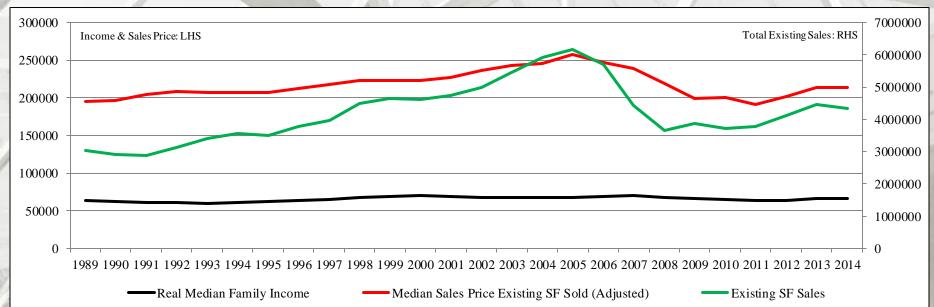
Total Existing House Sales: 2015

Percent Change in Sales From a Year Ago by Price Range



Existing SF House Sales Price & Real Median Income





Summary

In summary:

The housing market continues to move forward – albeit incrementally. Multifamily remains steady; construction and sales of new single family houses in the upper price echelons are solid; and improvement or remodeling expenditures appear to be steady.

The fact remains that in most housing data categories, construction and sales remain far less than historical averages. Existing house sales are strong—this is good. Yet, from a wood products utilization perspective, the new housing sector is where the bulk of forest products are used and this is the housing sector that still has room for improvement.

Pros:

- 1) Historically low interest rates are still in effect;
- 2) As a result, housing affordability is good for most of the country;
- 3) Household formations increased in Q4 2014 (using occupied housing data from the October 2015 Current Population/Housing Vacancy surveys);
- 4) Some builders are beginning to focus on entry-level houses; and
- 5) Consumer attitudes towards housing are improving.

Cons:

- 1) Job creation is consistent but some economists question the quantity and types of jobs being created;
- 2) Declining real median annual household incomes though increasing the past few months;
- 3) Strict home loan lending standards plus CFPB's new TILA-RESPA Integrated Disclosure rules; and
- 4) Global uncertainty???

Virginia Tech Disclaimer

Disclaimer of Non-endorsement

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement, recommendation, or favoring by Virginia Tech. The views and opinions of authors expressed herein do not necessarily state or reflect those of Virginia Tech, and shall not be used for advertising or product endorsement purposes.

Disclaimer of Liability

With respect to documents sent out or made available from this server, neither Virginia Tech nor any of its employees, makes any warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

Disclaimer for External Links

The appearance of external hyperlinks does not constitute endorsement by Virginia Tech of the linked web sites, or the information, products or services contained therein. Unless otherwise specified, Virginia Tech does not exercise any editorial control over the information you may find at these locations. All links are provided with the intent of meeting the mission of Virginia Tech's web site. Please let us know about existing external links you believe are inappropriate and about specific additional external links you believe ought to be included.

Nondiscrimination Notice

Virginia Tech prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the author. Virginia Tech is an equal opportunity provider and employer.

U.S. Department of Agriculture Disclaimer

Disclaimer of Non-endorsement

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government, and shall not be used for advertising or product endorsement purposes.

Disclaimer of Liability

With respect to documents available from this server, neither the United States Government nor any of its employees, makes any warranty, express or implied, including the warranties of merchantability and fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

Disclaimer for External Links

The appearance of external hyperlinks does not constitute endorsement by the U.S. Department of Agriculture of the linked web sites, or the information, products or services contained therein. Unless otherwise specified, the Department does not exercise any editorial control over the information you may find at these locations. All links are provided with the intent of meeting the mission of the Department and the Forest Service web site. Please let us know about existing external links you believe are inappropriate and about specific additional external links you believe ought to be included.

Nondiscrimination Notice

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202.720.2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call 800.795.3272 (voice) or 202.720.6382 (TDD). The USDA is an equal opportunity provider and employer.