NATURAL RESOURCES

Economic and Revenue Forecast

Second Quarter
Fiscal Year 2014

November 2013

WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

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In the final analysis, the views expressed are our own and may not necessarily represent the views of the contributors, reviewers, or DNR.

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This Forecast is also available on the DNR website:

http://www.dnr.wa.gov/BusinessPermits/Topics/EconomicReports/Pages/econ_timb_rev_forcsts.aspx

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Acronyms and abbreviations

bbf	Billion board feet
BLS	U.S. Bureau of Labor Statistics
CAD	Canadian dollar
CNY	Chinese yuan (renminbi)
CPI	Consumer Price Index
CY	Calendar Year
DNR	Washington Department of Natural Resources
ECB	European Central Bank
ERFC	Washington State Economic and Revenue Forecast Council
FDA	Forest Development Account
FEA	Forest Economic Advisors
Fed	U.S. Federal Reserve Board
FOMC	Federal Open Market Committee
FY	Fiscal Year
GDP	Gross Domestic Product
HMI	National Association of Home Builders/Wells Fargo Housing Market Index
IMF	International Monetary Fund
ISM	Institute for Supply Management
LVL	Laminated Veneer Lumber
mbf	Thousand board feet
mmbf	Million board feet
PPI	Producer Price Index
Q1	First quarter of year (similarly, Q2, Q3, and Q4)
QE	Quantitative Easing
RCW	Revised Code of Washington
RISI	Resource Information Systems, Inc.
RMCA	Resource Management Cost Account
SA	Seasonally Adjusted
SAAR	Seasonally Adjusted Annual Rate
TAC	Total Allowable Catch
USD	U.S. Dollar
WDFW	Washington Department of Fish and Wildlife
WWPA	Western Wood Products Association
WTO	World Trade Organization

Preface

This *Economic and Revenue Forecast* projects revenues from Washington state lands managed by the Washington State Department of Natural Resources (DNR). These revenues are distributed to management funds and beneficiary accounts as directed by statute. The Forecast revenues are organized by source, fund, and fiscal year.

DNR revises its Forecast quarterly to provide updated information for trust beneficiaries and state and department budgeting purposes. See the Forecast calendar at the end of this section for release dates. We strive to produce the most accurate and objective forecast possible, based on current policy direction and available information. Actual revenues depend on DNR's future policy decisions and on changes in market conditions beyond our control.

This Forecast covers fiscal years 2014 through 2017. Fiscal years for Washington State government begin July 1 and end June 30. For example, the current fiscal year, Fiscal Year 2014, runs from July 1, 2013 through June 30, 2014.

The baseline date (the point that designates the transition from "actuals" to forecast) for DNR revenues in this Forecast is October 1st, 2013. The forecast numbers beyond that date are predicted from the most up-to-date DNR sales and revenue data available, including DNR's timber sales results through October 2013. Macroeconomic and market outlook data and trends are the most up to date available as the Forecast document is being written.

Unless otherwise indicated, values are expressed in nominal terms without adjustment for inflation or seasonality. Therefore, interpreting trends in the Forecast requires attention to inflationary changes in the value of money over time separate from changes attributable to other economic influences.

Each DNR Forecast builds on the previous one, emphasizing ongoing changes. Before preparing each Forecast, world and national macroeconomic conditions and the demand and supply for forest products and other commodities are re-evaluated. The impact on projected revenues from DNR-managed lands is then assessed, given current economic conditions.

DNR Forecasts provide information used in the *Washington Economic and Revenue Forecast* issued by the Washington State Economic and Revenue Forecast Council. The release dates for DNR Forecasts are determined by the state's Forecast schedule as prescribed by RCW 82.33.020. The table below shows the anticipated schedule for future *Economic and Revenue Forecast*s.

Economic Forecast Calendar

Forecast Title	Baseline Date	Draft Revenue Data Release Date	Final Data and Publication Date (approximate)
November 2013	October 1, 2013	November 5, 2013	November 29, 2013
February 2014	January 1, 2014	February 10, 2014	February 28, 2014
June 2014	May 1, 2014	June 9, 2014	June 30, 2014
September 2014	August 1, 2014	September 5, 2014	September 30, 2014

Introduction and Forecast Highlights

U.S. Economy and Housing Market. The U.S. economy is improving in fits and starts. The unemployment rate peaked at 10.0 percent in October 2009 and has since dropped to 7.3 percent as of October, barely lower than a year ago. The unemployment rate for recent undergraduates is pushing 13 percent. Year-over-year GDP growth remains modest at below two percent over the last four quarters ending in September, and the recent government shutdown will lower GDP in this and future quarters. The housing market continues to show positive signs: new housing starts in the first eight months of 2013 averaged 907,000 (seasonally adjusted annual rate) and average U.S. housing prices have increased in each of the last 19 months through August. The U.S. economy still faces significant challenges. There are still too many unemployed workers, though some have reentered the workforce after having left; the financial and economic crises in Europe are improving, but several European countries remain in recession; China's economy has slowed; and instead of implementing a coherent, growth-driven economic policy, the U.S. government is engaging in perilous brinkmanship.

Lumber and Log Prices. Lumber and log prices are up in 2013. The Random Lengths' Coast Dry Random and Stud composite lumber price hit $414/mbf in April 2013, an impressive 44 percent year-over-year increase, before falling off steeply to $322/mbf in June. Predicted by forest economists, this drop was due to the uneven response of bringing lumber production back online and is interpreted as a temporary setback and not the beginning of a long-term downward price trend. October prices averaged $366/mbf, and there will be considerable price volatility moving forward. The average price in 2013 is 20 percent higher than the same period in 2012. Pacific Northwest log prices have also moved up sharply after being fairly flat for 2011 and most of 2012. The price for a 'typical' DNR log delivered to the mill climbed dramatically to a nominal high of $587/mbf in April, the highest price since 2000. The log price then fell a bit before climbing back to $568/mbf in October.

Timber Sales Volume. Projected timber sales volumes for FYs 2014-2017 are unchanged from the September Forecast. Timber sales volumes are still predicted to be 540 mmbf in FY 2014 and about 500 mmbf in each of the outlying years.

Timber Sales Prices. The FY 2014 average sales price is now predicted to be about $337/mbf, down one percent from the $340/mbf predicted in September. Weighted by volume, sales prices have averaged $309/mbf in the first five months of the fiscal year. The lowered price expectations for this year are the effect of low value thinning sales. The predicted sales price for FY 2015 is lowered by $27 to $381/mbf. Based on continued confidence in a genuine recovery in the U.S., housing market, future sales prices estimates are lowered only slightly to about $405/mbf in FY 2016 and $412/mbf in FY 2017.

Timber Removal Volume and Prices. Moderate changes in DNR timber purchasers' harvest plans for volume currently under contract have led to shifts in anticipated timber removal volumes in most years of the forecast period. Removal volumes for FYs 2014-2017 are forecast to be 538 (-14), 572 (-

14), 526 (+13), and 501 (+2) mmbf respectively. Projected timber removal prices are lower than the September Forecast at $308 (-$4.0), $340 (-$6.8), $377 (-$13.7), and $401 (-$11.7) per mbf for each fiscal year in the forecast period. These removal prices reflect changes in the removal timing and follow from—and lag behind—the changes projected in timber sales prices.

Bottom Line for Timber Revenues. Accounting for the drop in timber sales prices and moderate changes to the timing of removals, anticipated timber revenues have decreased throughout the forecast period. The timber revenue projection for the 2013-2015 Biennium is revised downward four percent from $375.1 million to $359.9 million. Revenues in the 2015-2017 Biennium are predicted to be $399.3 million, down two percent from $406.5 million.

Uplands and Aquatic Lands Lease (Non-Timber) Revenues. In addition to revenue from timber removals on state-managed lands, DNR also generates sizable revenues from managing leases on uplands and aquatic lands.

Revenues from agricultural and other upland leases are very similar to the September Forecast; orchard leases are projected to generate an additional $0.5 million in FY 2014. With the exception of a $0.5 million drop in FY 2014, there are no changes to predicted commercial lease revenues over the forecast period. Revenues from these commercial leases are predicted to total $9.6, $9.9, $9.9, and $9.9 million in FYs 2014-2017 respectively.

Due to a minor revision in projected aquaculture revenues, revenues from aquatic lands are expected to be slightly higher than previously predicted in FY 2014, and unchanged in outlying years. Revenues from aquatic lands are expected to total about $30.2 million in FY 2014, $31.5 million in FY 2015, $32.1 million in FY 2016, and $32.4 million in FY 2017.

Total Revenues. Total 2013-2015 Biennium revenues are projected to be $493.1 million, down $14.9 million (three percent) from the previous projection. Revenues for the 2016-2017 Biennium are expected to total $534.8 million, down $7.2 million (one percent) from the September estimate.

Risks to the Forecast. Although significant curtailments in timber sales volumes were assumed in the June Forecast, further reductions due to potential environmental, operational, and policy issues (e.g., riparian management areas and continued timber harvest deferrals pending implementation of a long-term marbled murrelet conservation strategy) remain a real risk. This risk is particularly heavy for FYs 2015-2017.

While there are downside risks to the demand-side influences of timber sales prices—and therefore to subsequent removal prices—there is also upside potential if the nascent recovery in the U.S. housing market strengthens sooner than anticipated. Supply-side influences of stumpage price—such as timber mix and quality—are difficult to estimate in future years, but are assumed to be about average. Also on the downside are the many challenges to U.S. economic recovery cited in the opening paragraph above.

Part 1. Macroeconomic Conditions

This section briefly reviews current conditions of the United States and world economies, because they affect the bid prices for DNR timber sales as well as lease revenues from DNR-managed uplands and aquatic lands.

International supply and demand also affect domestic timber stumpage and lumber prices. On the supply side, for example, Canada has a strong influence on the U.S. wood products sectors because it is a major source of lumber entering U.S. markets. On the demand side, China is an important market for commodities including logs and geoducks.

Unless otherwise noted, all years in this section are calendar years.

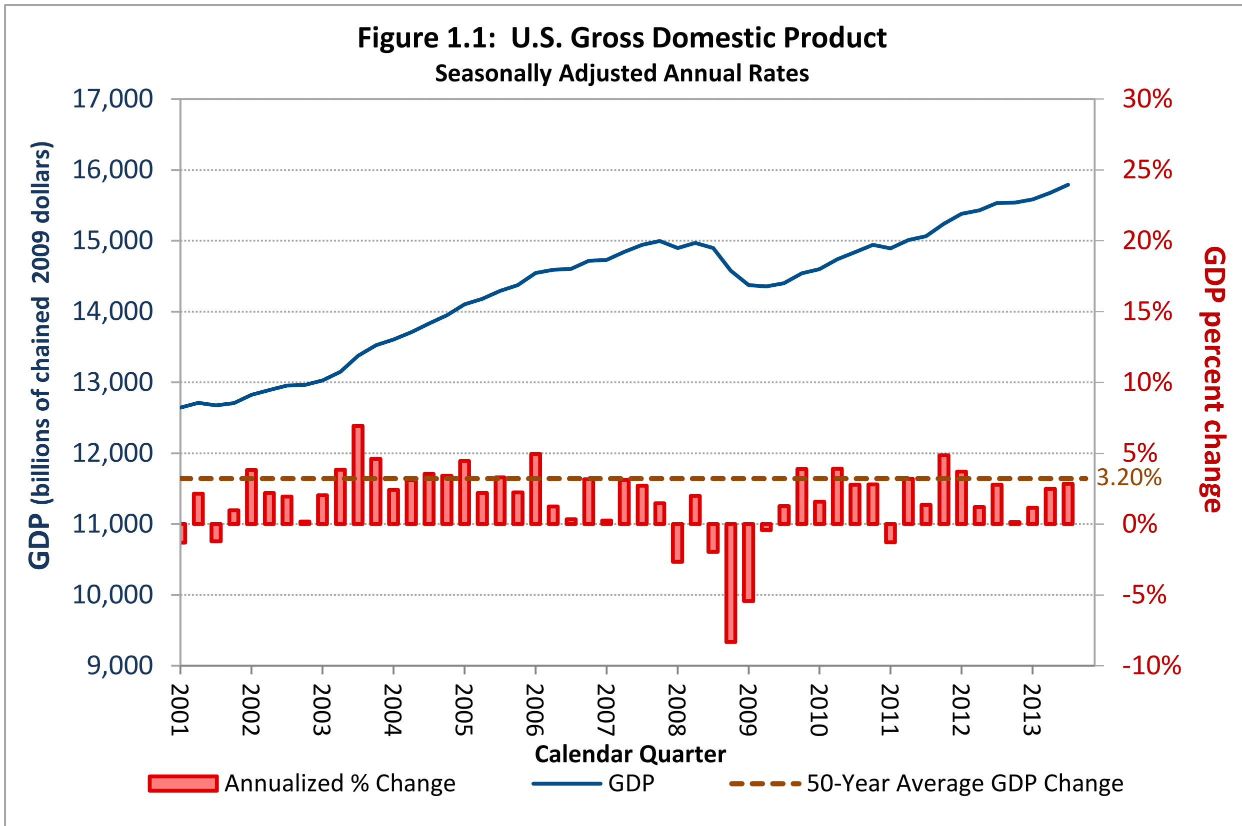
U.S. economy

Gross Domestic Product (GDP). GDP is the total output of goods and services produced by labor and property located in the United States, minus inflation. **Figure 1.1** clearly shows the magnitude of the Great Recession during 2008 and the first half of 2009, when GDP actually declined in five out of six quarters. It took almost four years—until Q4 2011—for real GDP to return to its pre-recession peak (Q4 2007). Since turning positive again in mid-2009, GDP growth has averaged a rather weak 2.3 percent on a real annual basis, compared with an annualized average of 3.2 percent over the last 50 years.

Subdued by the fourth quarter's low annualized growth rate of 0.14 percent, GDP growth in 2012 averaged 1.95 percent. By contrast, the economy grew by annualized rates of 1.2 percent, 2.5 percent, and 2.8 percent in the first three quarters of 2013. On a year-over-year basis, GDP grew by 1.32 percent, 1.63 percent, and 1.65 percent as of each of those quarters. It is unclear how severely the Federal shutdown will affect GDP in the fourth quarter, but October Blue Chip Consensus GDP projections averaged about 1.6% for 2013 and 2.6% for 2014.

Employment. The U.S. unemployment rate continues to lower. As shown by the **red** line in **Figure 1.2**, the national unemployment rate, which rose as high as 10.0 percent in October 2009, has fallen to 7.3 percent as of October. The unemployment rate hasn't been this low since December 2008, but for many its descent is painfully slow.

There are two major official U.S. employment data series—the household survey and the payroll survey—both maintained by the U.S. Bureau of Labor Statistics. The household survey (or current population survey) is a sample survey of households, and it includes self-employed persons and farm workers. The unemployment, total work force, and labor force participation statistics are derived from the household survey. The payroll survey (or establishment survey) samples firms and does not include self-employed persons or farm workers. Employment statistics by industry sector are derived



from the payroll survey. **Figure 1.2** shows changes in the number of employed persons, or jobs gained or lost, according to each. Many economists favor the payroll survey data as a measure of job growth or to measure monthly changes in employment levels, mostly because its month to month changes are much less volatile.

According to October's payroll survey, there were 204 thousand more jobs in the United States than there were in September and 2.3 million more than a year earlier. According to the household survey, however, there were 735 thousand fewer employed people in October than in September (mostly due to temporary federal layoffs), and only 240 thousand more than the previous year. Moreover, the payroll survey has shown job growth for 36 consecutive months.

Normally, monthly job growth will increase the employment level and decrease the unemployment rate, which is the ratio of unemployed persons (the unemployment level) to the total work force. The positive month-over-month job gains are the main reason why the unemployment rate in **Figure 1.2** generally moves down from October 2010 onward. As described below, the last three years have often been abnormal.

The alternative unemployment rate, U-6, includes unemployment, involuntarily part-time employment, and marginally attached workers, and so provides a more complete picture than October's 7.3 percent headline rate. The U-6 rate was 13.8 percent in October, down from 14.7 percent a year earlier and from highs of 17.1 in 2010, but up from recent months.

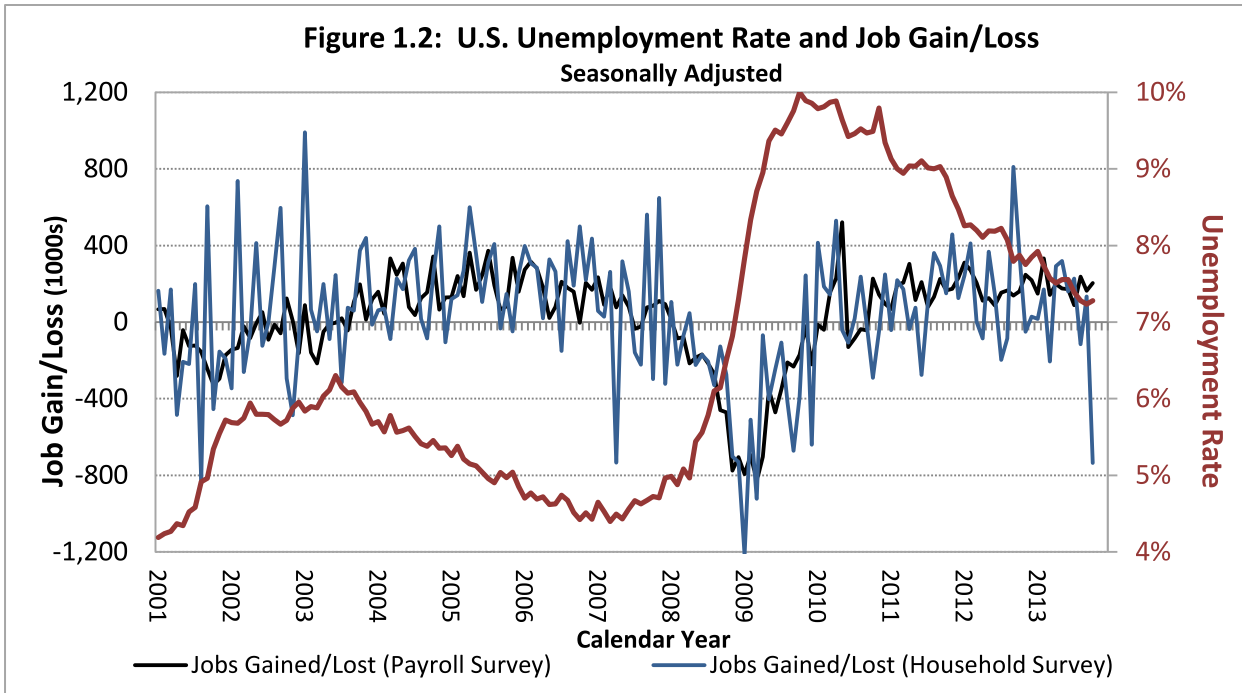


Figure 1.3 depicts the composition of the U-6 unemployment level (measured on the left-hand axis) and how persistently high it has been in comparison to the first half of the decade. It also shows how the total workforce (right axis)—the sum of working age people currently working or seeking to work—has been increasing, but at a shallower rate since mid-2008. The total workforce usually moves upward over time since entrants (from population growth, immigration, and returning workers) tend to outnumber those leaving the labor market (see **Figures 1.3** and **1.4**).

The Great Recession expanded the ranks of the long-term unemployed to an extent not seen since the Great Depression. In October, 4.1 million people had been unemployed for over six months. This is an improvement over the peak of 6.7 million in Spring 2010 but it is still far above the 1.3 million average for 2005-2007. Also in October, the average duration of unemployment was 36.1 weeks, which is still near the record high of 40.9 weeks in November 2011. This contrasts with the 17.4-week average for 2005-2007.

Several insights can be drawn from **Figure 1.4**, which compares the growth rates of the working-age population, the total workforce, labor participation[1], and employment levels. For example, the labor force participation rate line is horizontal when the working-age population and total workforce lines are parallel. The decline in the participation rate that started late in 2008 reflects the drop in the total workforce with respect to the working-age population: during the past several turbulent years, more people than usual have been leaving the job market for economic reasons (i.e., not due to retirement or death). In some months the unemployment rate has gone down even though there was little net job change, simply because the total workforce (and labor participation rate) dropped. In this way, monthly variations in the participation rate and total workforce have sometimes exaggerated monthly improvements in the unemployment rate. However, in the past year the participation rate has begun to

[1] The labor market participation rate is the total workforce as a percentage of the working-age population.

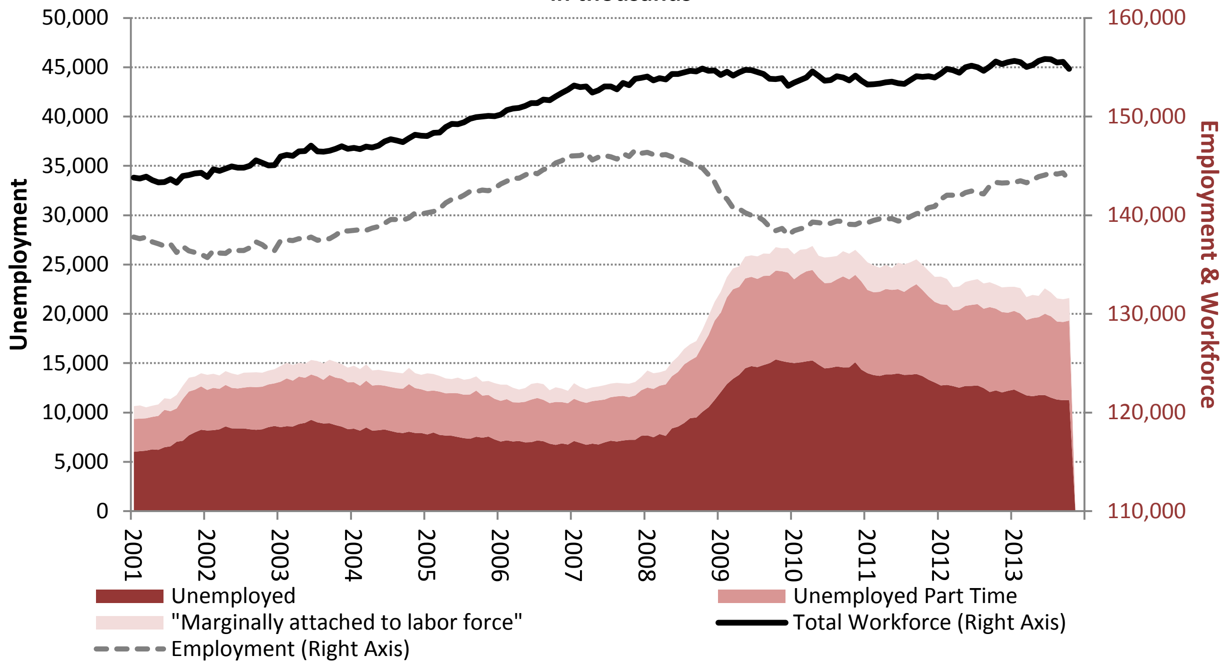


Figure 1.3: Employment and Unemployment
in thousands
Unemployment
Employment & Workforce
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
160,000
150,000
140,000
130,000
120,000
110,000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Unemployed
Unemployed Part Time
"Marginally attached to labor force"
Total Workforce (Right Axis)
Employment (Right Axis)

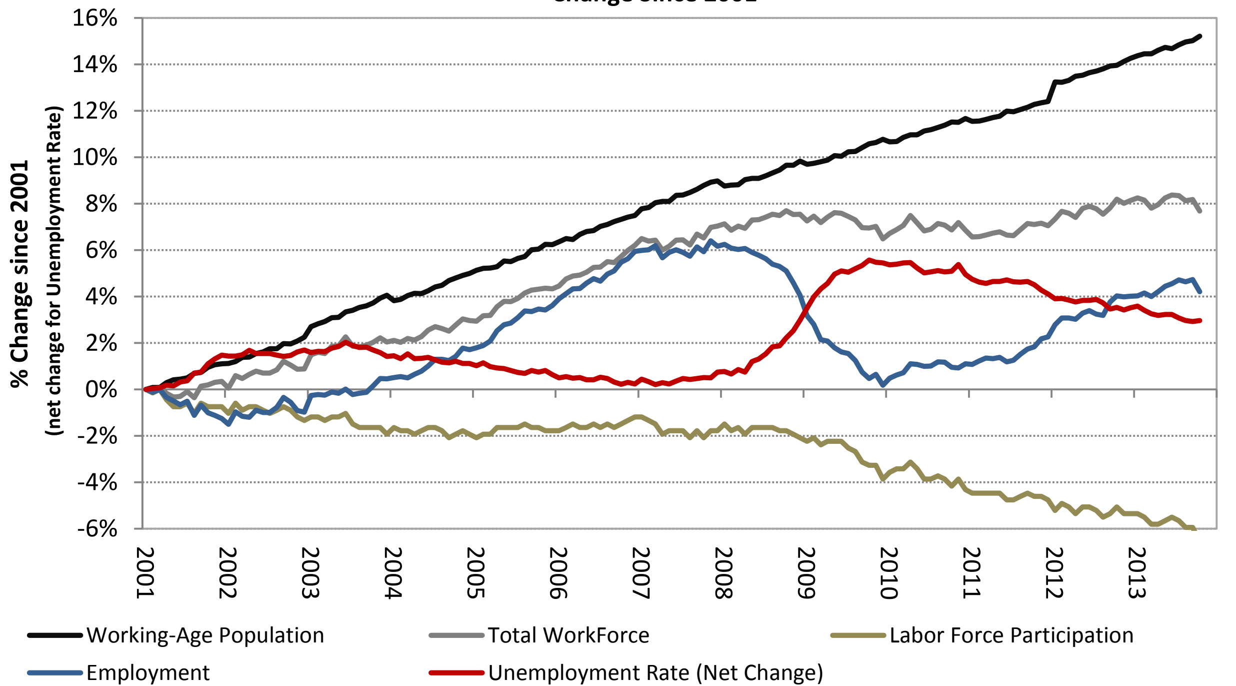


Figure 1.4: Labor Market Indicators:
Change Since 2001
% Change since 2001
(net change for Unemployment Rate)
16%
14%
12%
10%
8%
6%
4%
2%
0%
-2%
-4%
-6%
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Working-Age Population
Total WorkForce
Labor Force Participation
Employment
Unemployment Rate (Net Change)

stabilize and the total workforce is slowly growing—though not yet at a rate to match the growth in the working-age population.

Consumption. Real personal consumption expenditures in Q2 2013 were 1.8 percent higher than a year ago. Consumer spending on durable goods was up 7.6 percent year-over-year, likely reflecting purchases of automobiles and major appliances that were deferred during the depth of the recession. Over the year period, spending on nondurable goods increased by 1.9 percent and spending on services was up by 0.9 percent. On average, total real personal expenditures in July 2013 were 2.2 percent higher than a year ago.

U.S. consumer confidence was deeply shaken in the recession. The final Thomson Reuters/University of Michigan Index of Consumer Sentiment for June moved up to 85.1, from 84.5 in March. August's final figure dropped slightly to 82.1 before sliding further to 77.5 in September. Due to further worries about dysfunctional federal governance, October's index dropped yet lower to 73.2—its lowest value since the end of last year.

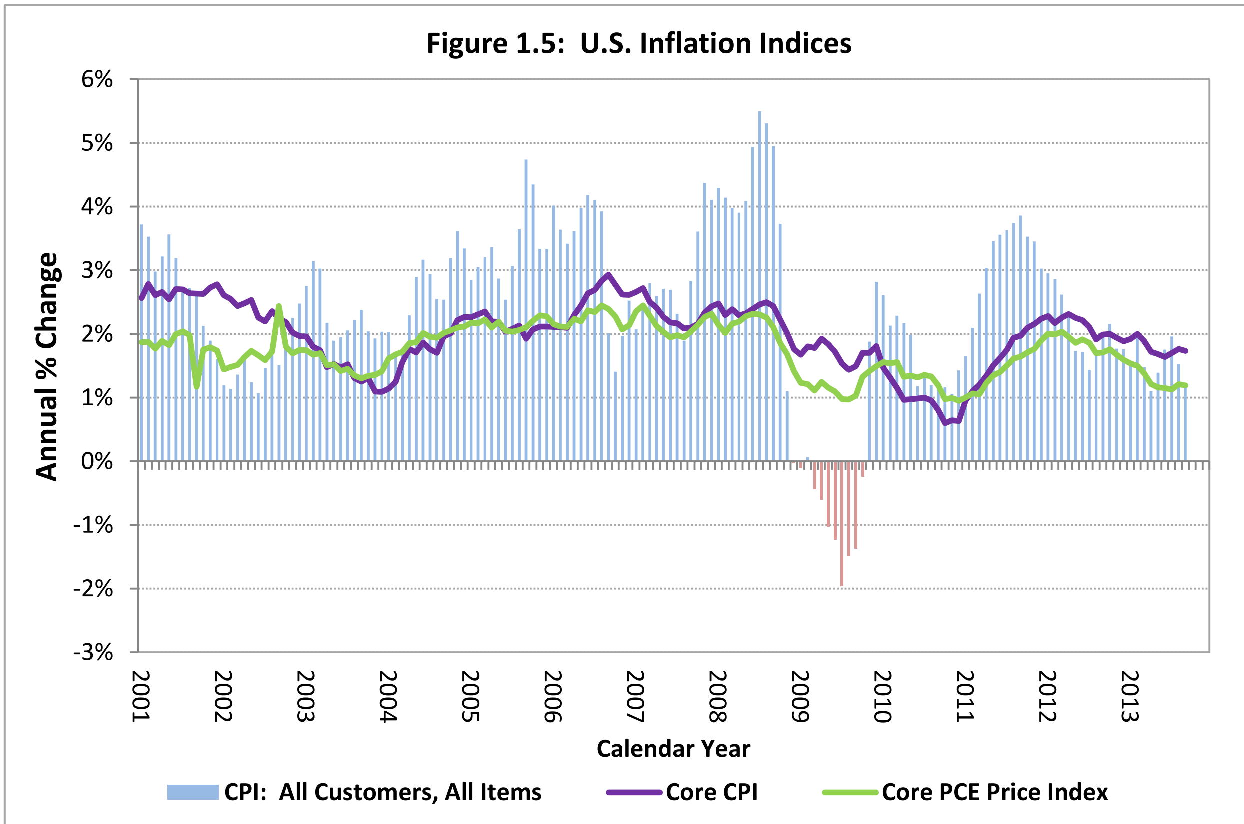
Interest Rates. Seldom in U.S. history has it been so inexpensive to borrow money. U.S. interest rates remain at or near record lows. The Federal Reserve funds rate has remained in the 0.0-0.25 percent range since December 2008 and the FOMC has pledged to keep rates near zero until the employment situation has improved 'sufficiently'. Ten-year U.S. Treasury bonds have averaged 2.6 percent over the last month.

Average rates on closed conventional 30-year fixed rate mortgages have recently risen from historic lows after having mostly declined since the middle of 2008 (see **Figure 2.5**). However, mortgage rates appear to have bottomed out at 3.35 percent in December 2012 and have now risen in most of the last ten months, standing at 4.19 percent in October.

Inflation. **Figure 1.5** shows several measures of the U.S. inflation rate. The bars—representing "headline" inflation, measured by year-over-year changes in the Consumer Price Index (CPI)—show that consumer prices in the United States fell precipitously beginning in August 2008. The CPI did not recover to its July 2008 level until December 2010. In effect, inflation was zero over that two and one-half year period. The rate of inflation was 1.6 percent for all of 2010, 3.2 percent for 2011, and 2.07 percent for 2012. More recently, the year-over-year change in CPI averaged 1.55 percent in the first nine months of 2013—well below the FOMC's target. Most economic forecasters see annual inflation of 2.0 percent or below through 2016. In addition to the disappointing employment growth outlined above, these low inflation rates help explain why the FOMC has elected to continue its large-scale asset purchases to stimulate economic recovery.

Figure 1.5 also shows two alternative measures of inflation—core CPI and the core personal consumption expenditures (PCE) price index—that exclude purchases of historically volatile goods such as energy and food and provide a more realistic measure of underlying long-term inflation. The PCE price index is preferred by the Federal Reserve; it shows that long-term inflation has been at or below 2 percent since September 2008 (60 months straight).

The U.S. Dollar and Foreign Trade. **Figure 1.6** shows the broad trade-weighted U.S. dollar index for the last 12 years. The broad index is a weighted average of the foreign exchange values of the U.S. dollar against the currencies of a large group of major U.S. trading partners. In July 2011, the index in



nominal and real terms fell to its lowest point in the history of the data series, which began in January 1973. At its low, the (real) U.S. dollar index was 29 percent below its early 2002 highpoint. Since July 2011, the dollar has generally strengthened off the bottom.

Declines in the dollar's trade value make American goods cheaper and more competitive relative to foreign goods. This supports U.S. exports and boosts economic growth. However, it also leads to higher prices for imports which partly explains why oil and gasoline prices increased in dollar terms from 2009 through much of 2011, while the dollar was weakening (see **Figure 1.9**).

In 2012, the total U.S. trade deficit was $540 billion—the difference between $2.20 trillion in exports and $2.73 trillion in imports. The United States actually had a $213 billion surplus on trade in services for 2012, but this was outweighed by the much larger $797 billion deficit on trade in goods. As shown in **Figure 1.7**, the U.S. trade deficit as a percent of exports dropped to a cyclical low of 20 percent in May and June of 2009 (compared with a high of 60 percent in September and October of 2005) because imports fell off much more steeply than exports. More recently, this percentage has remained flat, at 27.1, 26.4, and 24.2 percent for 2010, 2011, and 2012 respectively. It has dropped to 21.4 for the first nine months of 2013.

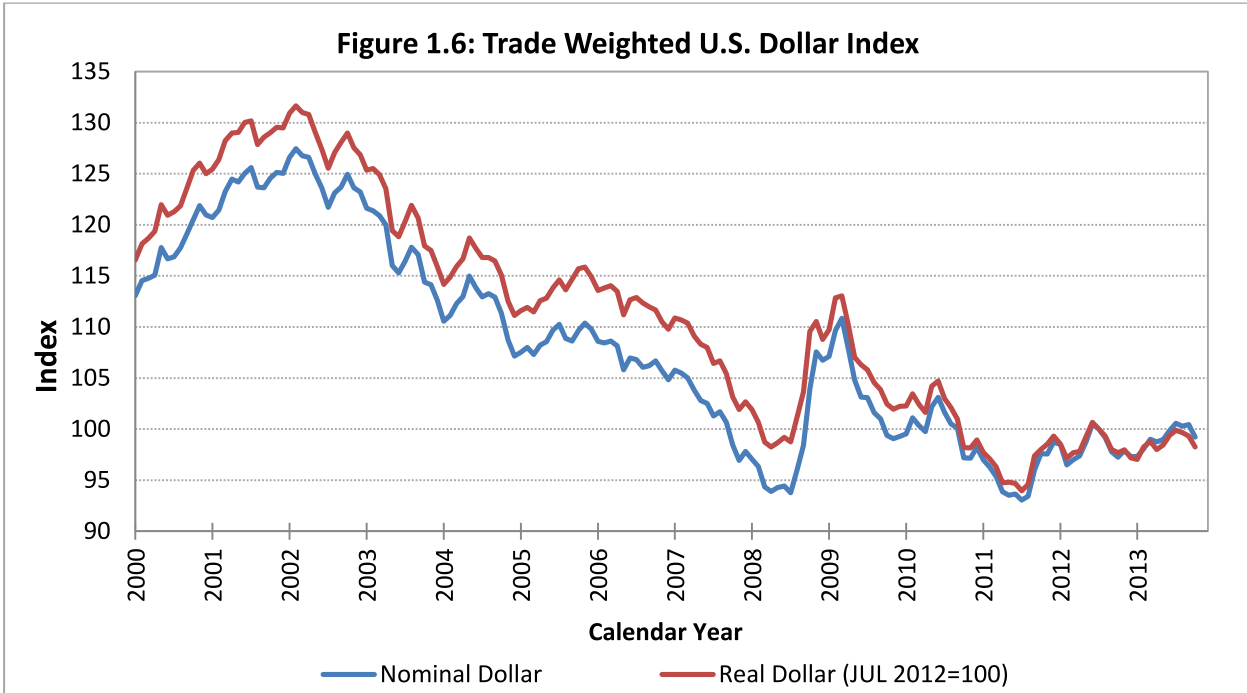


Figure 1.6: Trade Weighted U.S. Dollar Index
135
130
125
120
115
110
105
100
95
90
Index
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Calendar Year
Nominal Dollar
Real Dollar (JUL 2012=100)

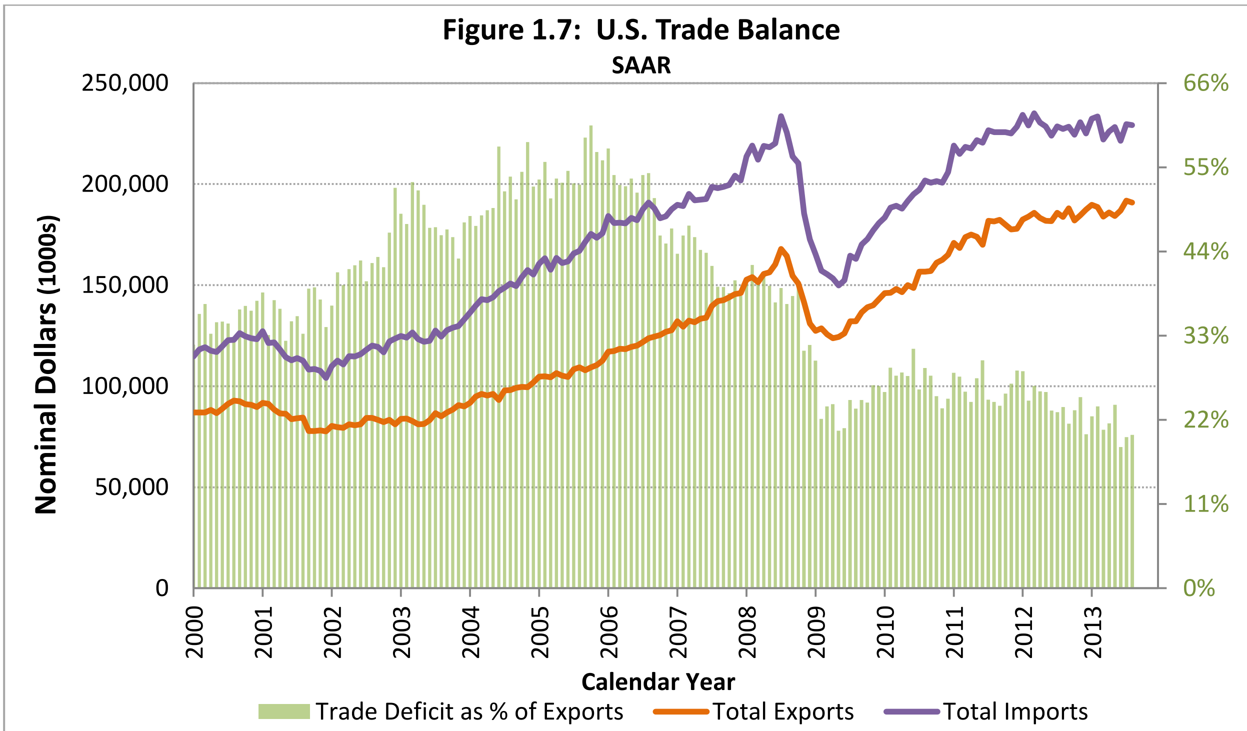


Figure 1.7: U.S. Trade Balance
SAAR
250,000
200,000
150,000
100,000
50,000
0
Nominal Dollars (1000s)
66%
55%
44%
33%
22%
11%
0%
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Calendar Year
Trade Deficit as % of Exports
Total Exports
Total Imports

World economy

There have been few significant new developments in the world economy that are likely to affect DNR interests. Therefore the following section is little changed from the previous forecast.

Europe. Most forecasts for the U.S. economy cite the ongoing European financial crisis as a significant downside risk. Weakness in Eurozone economies means reduced demand for U.S exports as well as continued difficulties in addressing their sovereign debt and banking crises. There are renewed questions about whether government austerity is worsening or helping to repair the European economic situation. Though the effects of the financial crisis are still being felt and several key European economies are contracting, the tangible effects on the U.S. economy have not been significant. The good news is that the worst case European scenarios have not yet occurred, despite recurrent crises over the last several years, and there are weak signs that a recovery might be beginning – with one quarter of tepid growth.

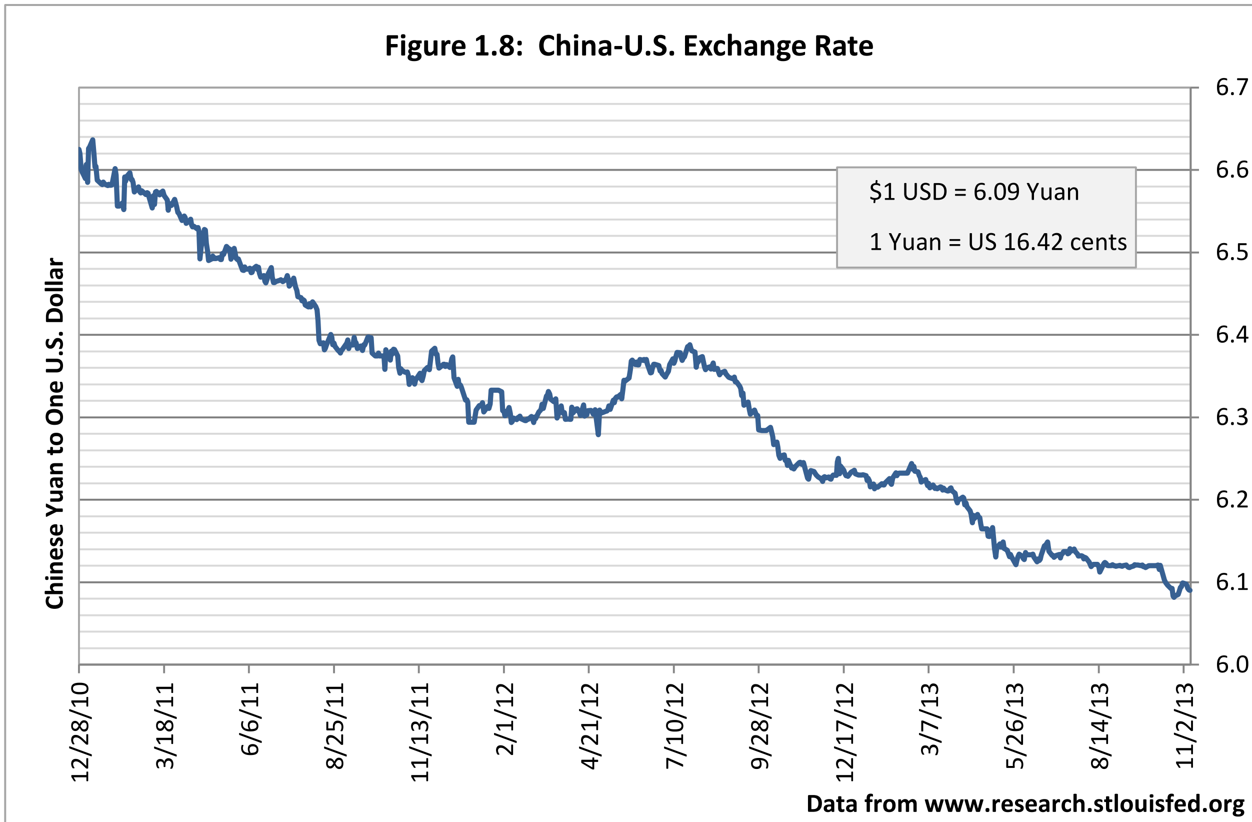
China. China has weathered the global economic and financial crisis of the past five years better than virtually any more developed country and better than most other emerging economies. The global economic and financial crisis that erupted in 2007 weakened Chinese exports but swift policy action, including massive fiscal stimulus in the form of public infrastructure investment, mitigated the impact on the employment and GDP. As a result, year-average GDP growth remained above 9% in 2008 through 2010, only fractionally below the performance of the previous high-growth decade. However, in the face of overheating symptoms and sectoral imbalances, corrective action was undertaken in 2011, contributing to a slowdown that was amplified by a weakening and uncertain international environment. Following the slowdown, the policy was reversed mid-2012 and growth troughed at 7.8% that year. More recently toward the end of July, China faced two straight quarters of slowing growth and enacted a "mini stimulus" which appears to be paying off in higher growth metrics.

In the near-term, global economic conditions might be less supportive than previously projected, as the effects of China's zealous investment flow through its economy. For instance, the strong capital build-up has pushed down profit margins in key industries, most notably steel production. There are also concerns about property prices, excessive off-balance sheet financing by the banking system and local governments, alarming levels of non-performing debt and systemic corruption and waste in local governments and state-owned-enterprises. Over the longer run, inequalities, urban-rural dynamics, rural land ownership, and the aging of the populace will be significant sources of tension.[2]

The Chinese Yuan has been strengthening against the dollar since mid-2010 when the Chinese government allowed it to begin fluctuating again (see **Figure 1.8**). The Yuan is currently worth ten percent more relative to the dollar than it was in July 2010. Critics contend that the Yuan is still artificially weak and that the Chinese authorities need to allow it to strengthen more quickly.

Japan. Japanese Prime Minister Shinzo Abe has begun a bold combination of economic policy moves, dubbed "Abenomics", in an attempt to shake Japan's economy out of two decades in the doldrums. The "three arrows" of Abe's economic plan are aggressive monetary easing, very large fiscal stimulus, and structural reforms to boost Japan's competiveness (e.g., lifting a ban on the online

[2] Adapted from OECD Economic Surveys: China, March 2013.



sale of drugs, easing industrial regulations, etc.). The forceful monetary easing being undertaken by the Bank of Japan is intended to raise inflation in a controlled manner and it is much larger than the U.S. Fed's attempt at quantitative easing (in percentage terms). Abenomics has led to a surge in Japanese consumer confidence although economists remain divided on its probability of long-term success.

Petroleum. Crude oil prices and supply play an important role in the world and U.S. domestic economies, since crude oil and its derivatives affect production, transportation, and consumption. In addition, oil prices—especially sharp fluctuations—have the ability to influence intangible "forces" such as consumer and producer confidence. **Figure 1.9**, which presents seven years of oil prices by the two most important indicators, the Brent Crude and West Texas Intermediate[3], shows that this year featured the most dramatic crude oil price drop since 2008. These data have been adjusted for seasonality. Brent crude has averaged about $108 per barrel in the first nine months of 2013, compared to about $112 per barrel over the same period of 2012. The lower petroleum prices this year have been one of the few points of optimism in the world economy. It is interesting to note that 2013's cheaper crude prices had not translated into cheaper prices at the pump until the last two months (examine the same period from **Figure 1.10**).

[3]As shown in **Figure 1.9**, the Brent Crude and West Texas Intermediate prices were essentially the same until late 2010 when the WTI price started tracking below Brent Crude. The difference in price has developed because unusually large stockpiles of crude oil have built up in the middle of the North American oil supply system and there is a higher price to move this landlocked surplus to market. The Brent Crude price remains more important to the overall U.S. economy as it is the predominant crude oil price benchmark in the world economy.

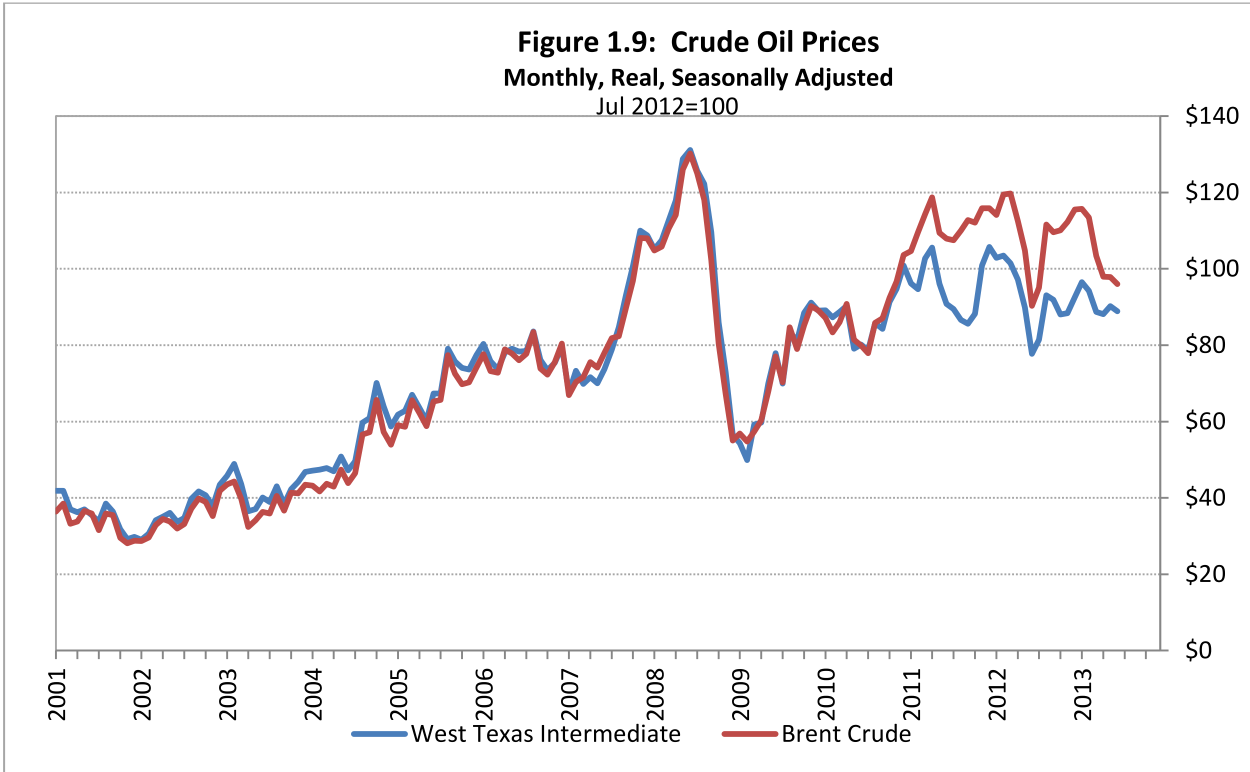


Figure 1.9: Crude Oil Prices
Monthly, Real, Seasonally Adjusted
Jul 2012=100
$140
$120
$100
$80
$60
$40
$20
$0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
West Texas Intermediate
Brent Crude

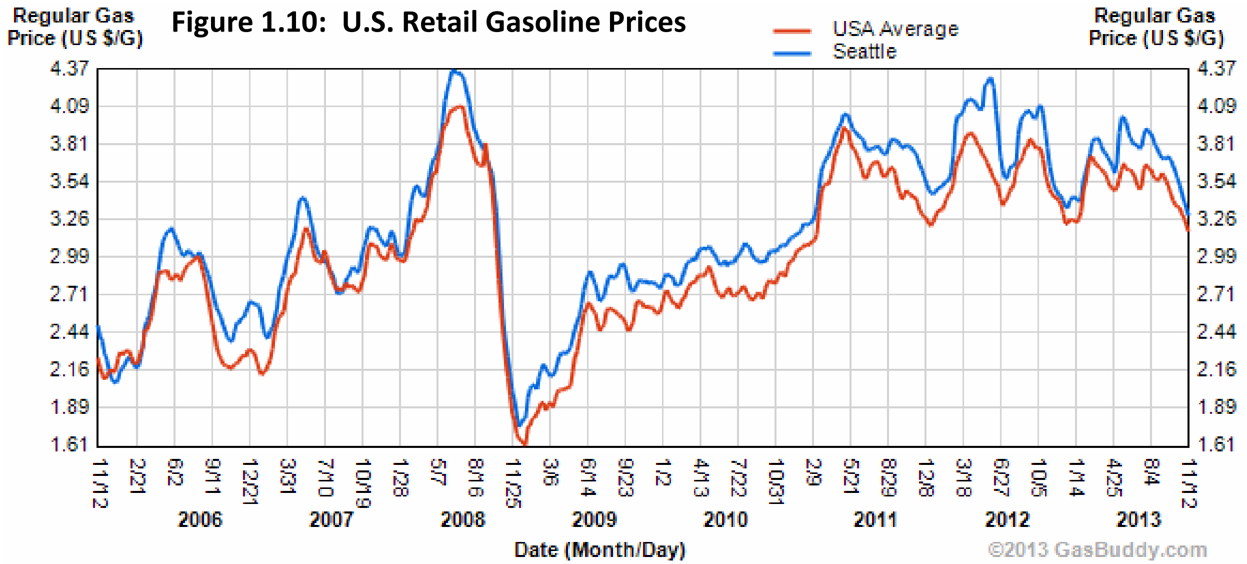


Figure 1.10: U.S. Retail Gasoline Prices
Regular Gas Price (US $/G)
USA Average
Seattle
4.37
4.09
3.81
3.54
3.26
2.99
2.71
2.44
2.16
1.89
1.61
11/12
2/21
6/2
9/11
12/21
3/31
7/10
10/19
1/28
5/7
8/16
11/25
3/6
6/14
9/23
1/2
4/13
7/22
10/31
2/9
5/21
8/29
12/8
3/18
6/27
10/5
1/14
4/25
8/4
11/12
2006
2007
2008
2009
2010
2011
2012
2013
Date (Month/Day)
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Part 2. Log, Lumber and Stumpage Prices

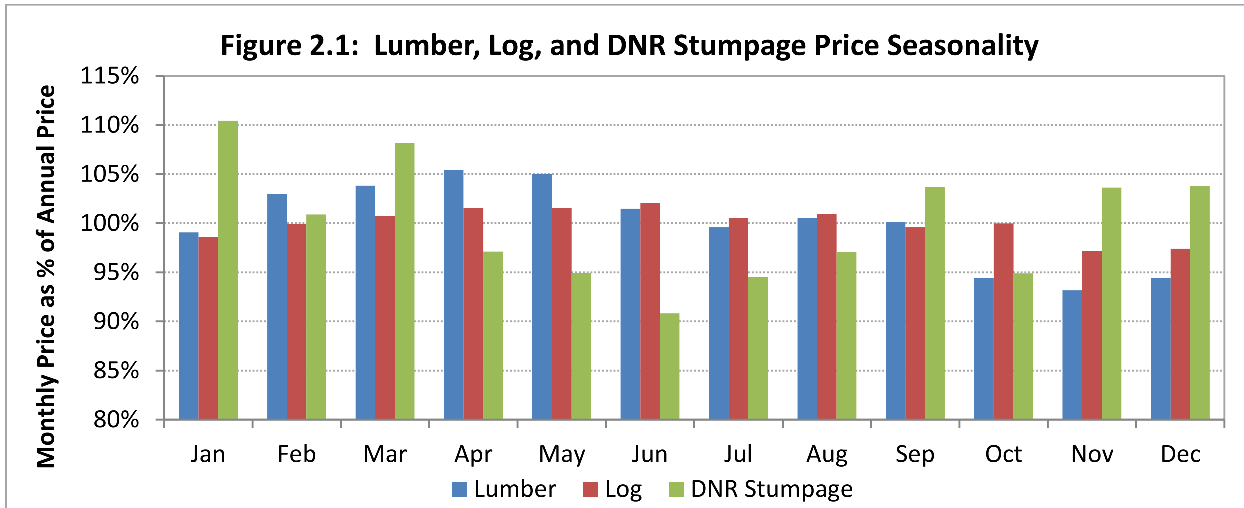
This chapter focuses on specific market factors that affect timber stumpage prices and overall timber sales revenues generated by the Washington State Department of Natural Resources (DNR). Over the past decade, timber stumpage revenues have comprised over 75 percent of DNR's total revenue. DNR is, therefore, vitally concerned with timber stumpage prices and this requires an understanding of log prices, lumber prices, and the related supply and demand factors behind all three. Timber stumpage prices reflect demand for lumber and other wood products, timber supply, and regional and local lumber mill capacity. The US housing market is particularly important to overall timber demand and is discussed separately from other demand factors.

Lumber, log, and stumpage relationship

There is a consistent, positive relationship between log prices and stumpage prices, despite notable volatility in DNR's stumpage prices (see **Figure 2.7a**). This should be expected—high log prices make access to logs more valuable and increase purchasers' willingness to pay for stumpage. Volatility in stumpage prices also arises from market conditions, such as the amount of logs held in mills' inventory, and DNR-specific issues, such as the quality of the stumpage mix at a given auction.

The relationship between lumber prices and log prices is less consistent. Lumber prices are significantly more volatile and both the direction and size of price movements can differ from log prices. Lumber prices tend to lead log prices because it takes time for mills to process the logs into lumber and mills will often have an inventory of logs, so they do not always need to bid up log prices to take advantage of high lumber prices.

There are differences in average annual monthly price volatility between lumber, logs and stumpage, as illustrated in **Figure 2.0.** These prices are affected by a degree of seasonality that is largely the result of when each of these commodities will be used. For instance, lumber prices tend to peak in spring, when housing construction picks up, and declines until fall as the demand wanes. DNR stumpage price volatility is also affected by the firefighting season and the quality of the stumpage mix, which varies throughout the year but tends to be lowest from August through September.



U.S. housing market

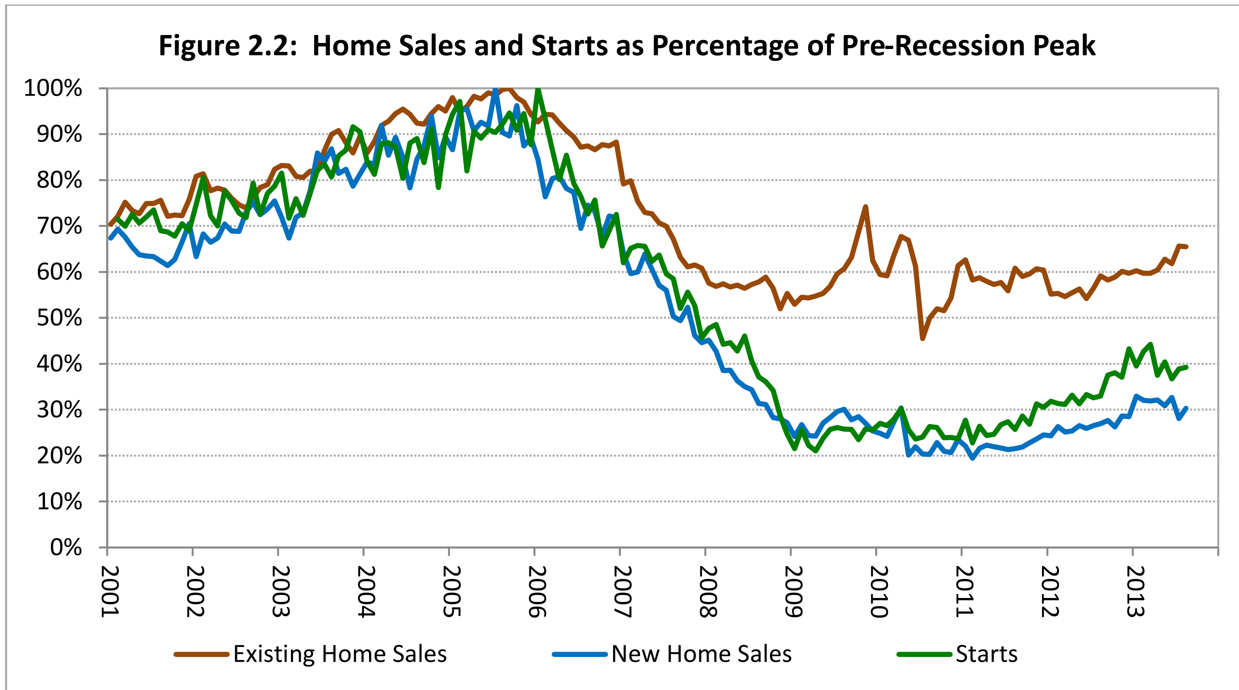
The road to a robust housing market leads through the employment market. An improving employment market will support household formation, bolster homebuyer confidence and trigger a return to a more "normal" monetary policy...The preponderance of indicators shows that the labor market is improving, albeit at a halting and uneven pace. As a result, housing demand will improve only modestly in 2014

Brendan K Lowney
Principal, Macroeconomics, Forest Economic Advisors
November 1, 2013

New residential construction (housing starts) and residential improvements are major components of the total demand for timber in the US. Historically, these sectors have comprised over 70 percent of softwood consumption—45 percent going to housing starts and 25 percent to improvements—with the remainder going to industrial production and other applications.

However, the crash in the housing market and following recession drastically reduced timber demand for new residential construction—from over 30 billion board feet per year in 2005 to less than 10 billion board feet per year in 2009. This undermined the total demand for lumber which fell from over 60 billion board feet per year in 2005 to less than 35 billion board feet per year in 2009. Since the trough in 2009, the lumber demand by residential construction has increased slightly, but it was still less than 10 billion board feet at the end of 2012. An increase in housing starts is essential for a meaningful increase in the demand for lumber.

A number of measures suggest the beginning of a modest recovery in the U.S. housing market. **Figure 2.1** compares the trajectories of existing home sales, new home sales, and housing starts as percentages of their pre-recession peaks. The chart shows the increases in all three in since 2011, though starts and new home sales appear to have flattened off recently.



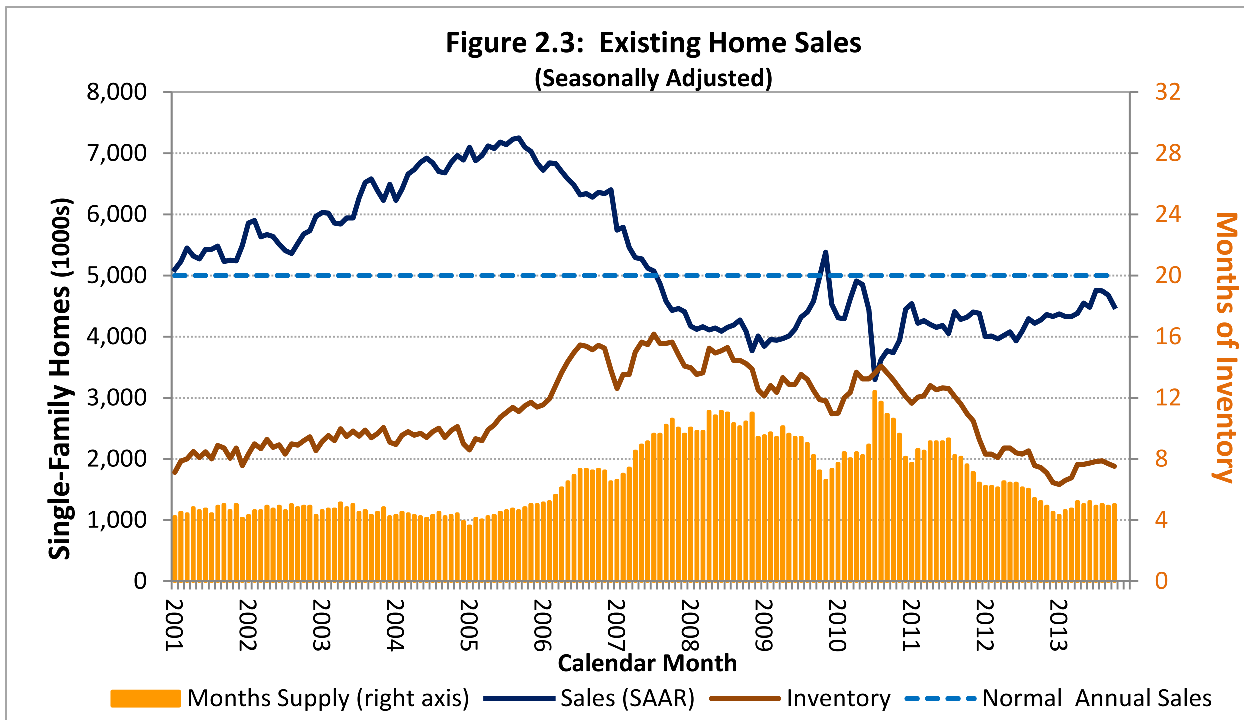
Existing Home Sales

Existing home sales have moderated after a sharp upward turn in July (see **red** line in Figure 2.0) and stand at 4.49 million (seasonally adjusted annual rate) in October, down from 4.65 million in September. However, there is an upward trend in existing home sales approaching 5.0 million, the midpoint of the 4.5 million to 5.5 million range that housing experts think will be the new post-recession "normal" sales rate for existing homes (see **Figure 2.2**). Although the level of existing home sales is now in this range, truly normal conditions would not have the unusually large number of distressed sales that currently undermine the market's strength. While there are still a number of distressed sales, the share of distressed sales is down year-over-year in most urban areas and there is a decline in foreclosure sales in all of the surveyed cities and a shift from foreclosures to short sales. For the first time in three years, short sales in most urban areas outnumber foreclosures.

It appears that inventory of existing homes for sale may have bottomed out in January at 1.58 million homes, a low level not seen in the last twelve years (see **brown** line in **Figure 2.2**). This compares with the peak of 4.0 million existing homes in the inventory in July 2007. The inventory rose sharply to 2.0 million through August, a 27 percent increase since the January bottom, and dropped to 1.9 million in October. Inventory values are not seasonally adjusted.

The months' supply of housing—the number of months it would take to clear the inventory of used homes on the market at current sales rates—apparently bottomed out in January, at 4.3 months. It rose to 5.2 months in June before settling at 5.0 months in August, where it has stayed (see **orange** bars in **Figure 2.2**). This measure peaked at 12.4 months less than three years ago in July 2010.

The apparent recent bottom and rise in inventory and the apparent stabilization of months' supply are encouraging signs for the housing recovery. Higher housing prices may have persuaded people to list their houses for sale now, some of whom may have been holding their houses off the market waiting



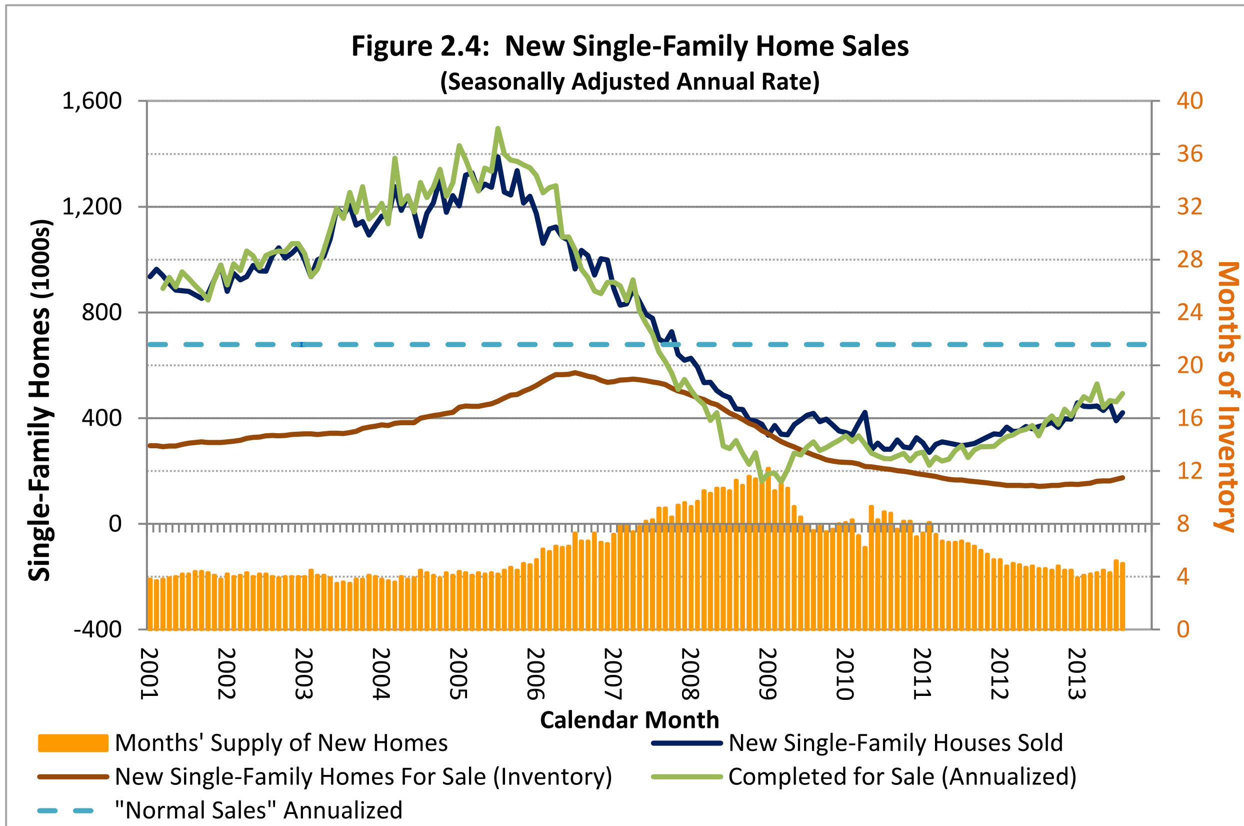
for higher prices. Higher prices have also helped millions who were "underwater" in their mortgages move to a position where the house is now worth more relative to the amount owned, enabling some to list their house for sale now. This suggests a potential return to a more normal housing market, where home owners are able to make rational decisions about when or whether they wish to sell—as opposed to being forced to sell or remaining 'underwater' to avoid taking a loss or damaging their credit.

Purchases by private investors have slowed in recent months. Previously, private investors moved into depressed housing markets and purchased large numbers of lower-priced foreclosed residential properties, funding a bet on long term recovery in housing prices by renting in the short term to buyers still locked out of the housing market. Large investors have been driving many housing markets: in 2012, they accounted for 30 percent of home purchases in Miami and 23 percent in Phoenix. On one hand, the investors may have set a floor under the housing market, contributing to the recovery in some key markets. On the other, there is concern about the impact on the housing market when the investors begin selling, as they likely will.

New Home Sales

Due to the government shutdown in October, there are no new Census data available new home sales.

Through the September Forecast new home sales continue to climb out of their multi-year trough. The **blue** line in **Figure 2.3** shows that new home sales bottomed out in mid-2010 and that they have been moving up since late 2011. Calendar year 2011 was the lowest year on record with only 306,000 new homes sold, compared with the long-term (1963-2010) "normal" annual rate of 678,000 per year. New home sales were about 368,000 in 2012 and they are averaging 436,000 (annualized) over the first eight months of 2013.



As low as new home sales have been, new house construction (**green** line in **Figure 2.3**) was even lower from early 2007 through mid-2011. Since the number of new homes sold exceeded the number of new homes built for the five year period, the inventory of newly built homes for sale (brown line) declined over the period. It appears the inventory of new homes has now bottomed out, reaching a low of 142,000 homes in July 2012. In August 2013, the inventory was up to 175,000 homes—still a low number by historical standards, especially when compared to the high of 570,000 in the summer of 2006. The inventory is starting to increase again because the number of new home completions has caught up to and exceeded the number of new home sales.

An additional sign of a strengthening housing market is that the total months' worth of inventory of new homes for sale may be climbing from its lows. Total months' worth of inventory is dependent not only on the current inventory but the rate of sales of new homes. In January, as shown in **orange** bars in **Figure 2.3,** the months' worth of inventory of new homes for sale (at current sales rates) decreased to 3.9 months from a high of 12.2 months in January 2009. After increasing in almost every month this year, it is now in the range of the pre-2006 average of about five months' worth of inventory of new homes. New home completions and sales have begun to increase because the excess supply of existing homes is being absorbed. Reducing the inventory (supply) of existing and new homes for sale is essential to the U.S. housing market recovery because it increases the need for new house construction.

Shadow Inventory

The inventories of existing and new homes discussed above are made up of those housing units that are currently listed for sale ("on the market"). While it exists even in normal times, the "shadow inventory"—housing units not currently on the market, but expected to be listed in the next few years—has gained attention as an important measure of the health of the housing market. CoreLogic tracks the shadow inventory, which it defines as being composed of bank-owned properties (REO, or "real estate owned"), properties in the process of foreclosure, and properties with seriously delinquent mortgages of over 90 days[4]. As of January 2013, the shadow inventory as defined by CoreLogic had declined to 2.2 million housing units, down 27 percent from its January 2010 peak of 3.0 million. A large shadow inventory leads to a large number of distressed sales (including short sales) and therefore pushes home prices down. The decline in the excess shadow inventory is relieving some of the downward pressure on house prices.

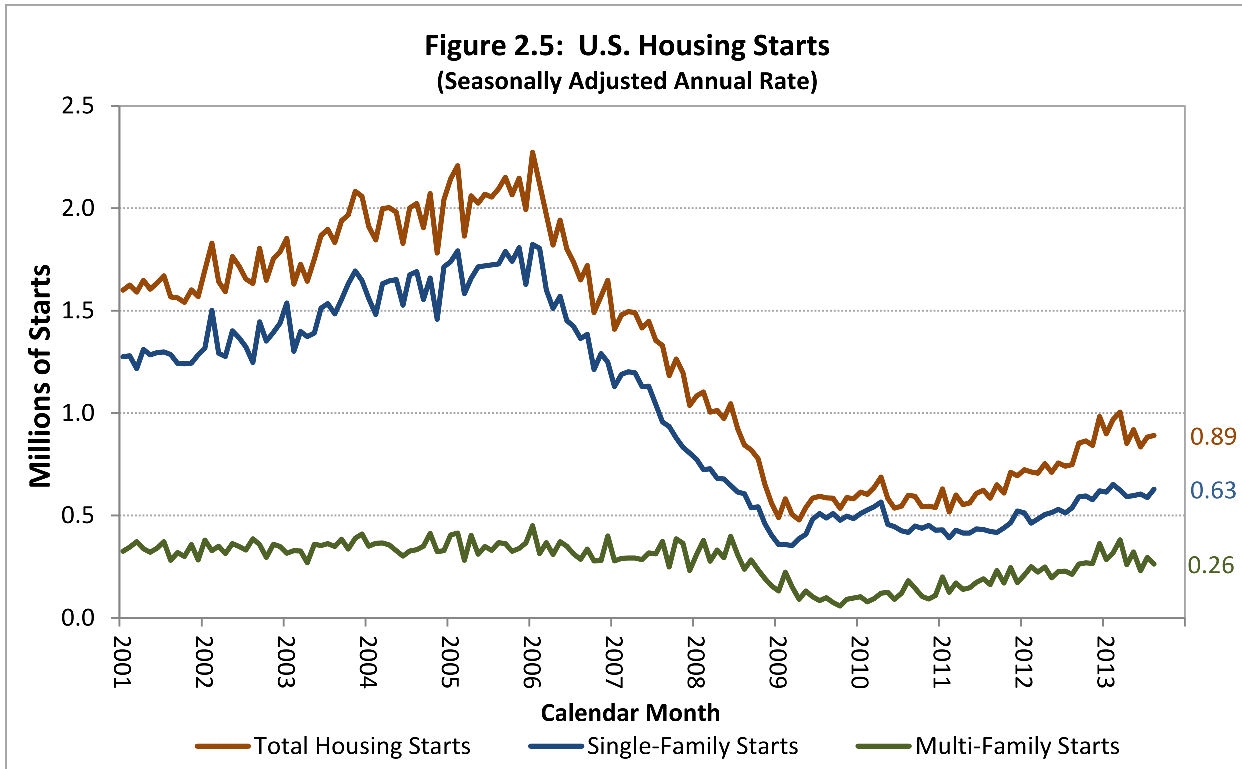
Household formation

Under typical economic conditions, household formation (or the growth in the number of households) is the key driver of U.S. housing starts. However, the Great Recession caused atypical conditions that have continued for several years. Due to job and income losses and an uncertain future, household formation lagged as people doubled up and younger people, who were hit especially hard, moved back in with their parents or lived in shared housing. Net immigration from Mexico also approached zero during the Recession, slowing household formation.

The reduction in demand for home purchases caused a surge in the inventory of excess housing units and caused a significant drop in housing starts. Typical annual U.S. household formation generally ranges between 1.2 and 1.3 million. In the depth of the Recession, household formation dropped dramatically to 0.4 million in 2009 and to 0.5 million in 2010. With 'pent-up' demand, household formation returned to the 1.2 million level in 2012.

Looking forward, increased rates of household formation, while dependent on continued recovery in the U.S. labor market, will help to remove the extra housing stock and to drive construction of new houses. Unfortunately, household formation growth has apparently stalled in 2013. FEA forecasts that household formations for the 2010s will average about 1.15 million per year. The next effect of household formation and other demand factors is an FEA estimate of demand of about 1.5 million conventional housing units per year from 2010-2020.

[4] Other definitions of "shadow inventory" include other residential properties such as those with less seriously delinquent mortgages that will become seriously delinquent, condos that were converted to apartments and that are expected to be converted back in the next few years, investor-owned rental properties, and homes that owners want to sell but that are not yet on the market.



Housing Starts

Due to the government shutdown in October, there are no new Census data available on housing starts.

U.S. housing starts picked up in 2012 and continue to rise in 2013, after having moved more or less sideways at a historic low level in the three previous years (see **Figure 2.4**). In April 2009, U.S. housing starts fell to 478,000 (seasonally adjusted annual rate), the all-time record low since the Census Bureau began tracking housing starts in 1959. In the first eight months of 2013, new housing starts have averaged 907,000 (SAAR), a level not seen since mid- 2008 (see **Figure 2.4**).

In the 2009-2011 housing market trough, single family starts (blue line) averaged 440,000 per year (SAAR). The annualized rate of single family starts was up to 537,000 in 2012 and has averaged 612,000 in the first eight months of 2013. Multifamily starts for 2012 averaged 247,000 on an annualized basis, compared with the average of 148,000 in the three-year 2009-2011 trough. Multifamily starts were up to an annual average of 294,000 in the first eight months of 2013.

Homebuilder confidence in the market for newly-built single-family homes, as measured by the Housing Market Index (HMI), has pulled back from its August high of 62 to a preliminary value of 58 in October[5]. June was the first time the HMI rose above 50 since April 2006, reflecting the fact that builders are seeing better market conditions as demand for new homes increases. The HMI averaged 15-16 for years 2008-2011, when the housing market was the most depressed.

[5] The Housing Market Index is produced monthly by the National Association of Home Builders and Wells Fargo. An index of above 50 indicates that more builders view sales conditions as good than poor. http://www.nahb.org

In many areas, home builders are scrambling to ramp up production but face delays because of the difficulty of finding construction workers and in obtaining permits from suddenly overwhelmed local authorities. After six years of low levels of new home building, skilled labor is scarce. Many workers have returned to Mexico and others have pursued work in Texas and North Dakota's oil and gas fields, where jobs have become more plentiful. Others are hesitant to return to construction work after experiencing the employment upsets of the recession and are content to stick with lower paying but more secure jobs.

In sum, household formation, pent-up home ownership demand, and a slowly recovering U.S. labor market support projections of increased housing starts, with a consensus of near 1.0 million in 2014. Tempering the housing starts forecast are the sluggishness and shakiness of the macroeconomic recovery; the stressed financial situation of young adults caused by unemployment, lower quality jobs, and student loan debt; and generally poor wage and income growth.

While the longer term outlook for housing starts is optimistic, in the short term household formation will be constrained by the labor market. According to Blue Chip Economic Indicators March 2013 edition, the average forecast of U.S. housing starts by top U.S. business economists was revised upwards to 1.00 million units for 2013 and 1.28 for 2014. However, continued weakness in the labor market induced FEA to trim their 2013 Q3 forecast to 0.95 million and 1.26 million housing starts for 2013 and 2014 respectively.

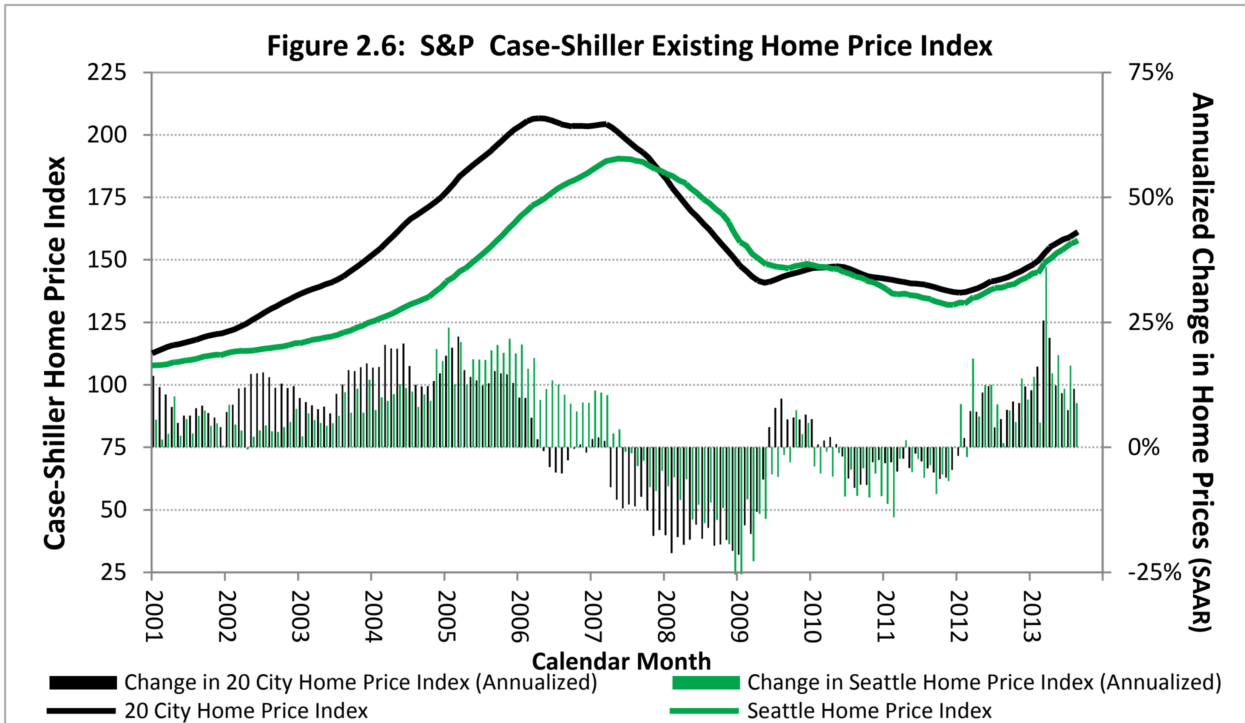
Housing Prices

Overall, we are seeing a widening slowdown in home value appreciation. In fact, of the top 30 metros, half showed home value depreciation from August to September (note, the Zillow Home Value Index is seasonally adjusted). This slowdown was expected, and shouldn't come as a surprise, as home values have been growing at an unsustainable pace and affordability had been decreasing in light of higher home values and rising mortgage rates. Absent more substantial growth in incomes, some metros where affordability is already back in line with historical levels may see below-normal home value appreciation rates (or even modest declines) as mortgage rates return to normal.

Zillow Real Estate Market Report
September, 2013

U.S. housing prices have continued to climb in the last year after six unprecedented years of falling and flat prices. **Figure 2.5** charts the seasonally adjusted S&P/Case-Shiller Home Price Indices for the 20-city composite, which represents national existing home price trends, as well as the Seattle index. The 20-city composite index has increased in each of the last 19 months since bottoming out in January 2012—its lowest point since October 2002, almost ten years earlier. The most recent release includes data through August 2013 and it showed that the 20-city composite index had increased by 12.8 percent over the previous year period. Even with the recent increase, the average existing house in the U.S. in August was still only worth 77 percent of its value at the peak of the real estate bubble in April 2006, up modestly from the price bottom of 67 percent in March 2012.

Seattle house prices are following a similar trajectory, having increased 13.2 percent year-over-year as of August. When Seattle prices bottomed in February 2012—at their lowest point since June 2004—the average existing house in Seattle was worth only 70 percent of the May 2007 peak (see **Figure 2.5**). As of August, the average Seattle home was worth 83 percent of its peak price.



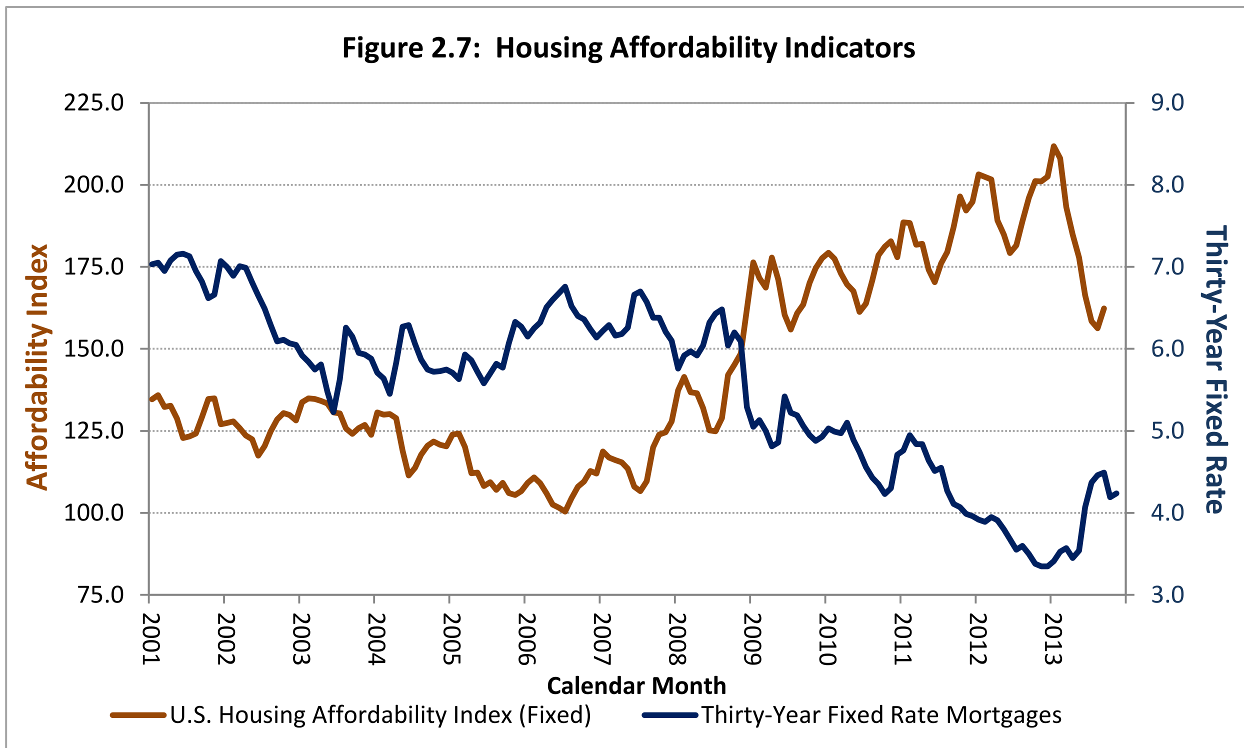
Housing Affordability

The National Association of Realtors' (NAR) U.S. Housing Affordability Index composite—which is based on the relationship between the median home price, the median family income, and the average mortgage interest rate—is a useful, though imperfect, measure of how affordable or attainable houses are to the average American. A higher index value reflects greater household purchasing power and therefore improved affordability of the typical home, though it says nothing about whether the median income family can actually conjure up the 20 percent down payment that the index assumes. Examining the data series over time can reveal the overall trend of housing affordability, even though the individual values can be misleading.

The index rose to a record high of 209.0 in January 2013 and it has now fallen off to 154.5 as of July (see **Figure 2.6**). The income required to purchase the median priced house—$199,000—has decreased slightly from around $40,000 in August to about $39,000 in September. This is still around %15 lower than the average qualifying income of $46,000 in 2008 and $53,000 in 2007. While the qualifying income is now much lower, median family income is now $64,000, very similar to the average of $63,000 in 2008 and $61,000 in 2007. In short, median wages have stagnated.

Home buying affordability looks to have peaked in late 2012 as both home prices and mortgage rates are trending upward (see **Figure 2.6**). Although U.S. 30-year fixed mortgage loan rates[6] remain at historically low levels, they have been rising recently, hitting 4.46 percent in August before pulling back to 4.19 in October. These are up from a low of 3.43 percent in December 2012. The 30-year fixed mortgage rate has been below 5 percent for 42 consecutive months. Including both the rise in

[6] The data series cited here is the national average effective rate on closed fixed-rate 30-year conventional home mortgage loans by all major lenders as reported by the Federal Housing Finance Agency.



home prices and mortgage rates, the debt burden of a mortgaged median priced house in October is around $60,000 more than it was in December 2012.

While most analysts expect the housing recovery to continue over the long term, there are remaining concerns over recent increases in interest rates and the continued poor employment situation. This is reflected in the median housing price, with has pulled back from its recent high of $214,000 in June to $199,000 in September. Richard Green, Director of the University of Southern California's Lusk Center for Real Estate, argues that lack of strong wage growth should put the brakes on housing price hikes. "Ultimately, people do not have the income," Green said.[7]

Increasing interest rates may not hurt the housing recovery very much for two reasons. First, as Neil Irwin, an economist at the Washington Post, argues that "as long as home prices remain below the level where affordability is out of reach, and so long as mortgage rates are rising because the economy is on the mend, the housing market should be able to withstand the blow." Second, as Andrea Heuson, Finance Professor with the University of Miami, notes "Interest rates have been so low for so long that anyone who qualifies for a mortgage already has one."[8]

That affordability is still favorable suggests that Americans are holding back from buying houses because of other factors such as tight credit standards, difficulty building up a down payment, and lack of confidence in future job prospects.

[7] "Southland home prices soar 24.7% in May from a year earlier", Los Angeles Times, June 11, 2013.

[8] http://www.interest.com/mortgage/advice/affordable-housing-pipedream/

Other supply and demand factors

Aside from the demand due to the housing market, there are other factors that influence log, lumber and stumpage prices. These include export demand and international and local supply considerations.

Export markets

While logs from state lands west of the 108th meridian cannot be exported by Federal law, log exports have an indirect, but real, impact on DNR stumpage prices. Foreign purchasers compete with domestic purchasers for privately sourced logs. Strong export competition for private logs will pull more of the supply from the domestic market—reducing the overall number of logs available to the domestic market and raising all domestic prices. However, changes in domestic prices do not arise from changes in export prices in a one-to-one relationship.

While export prices are usually higher than domestic prices, a difference which is referred to as the 'export premium', both prices tend to cycle together. The export premium exists primarily due to the characteristics of the export markets, which often include a demand for higher quality wood, a high value on long-term contracts, and high transaction costs. A 2009 internal DNR briefing note estimates that the export ban on state logs costs DNR and trust beneficiaries around $37 million per year.

Between 2002 and 2007, the export premium was between 10-20 percent for Douglas-fir while export and domestic prices for hemlock were consistently very close. Both export and domestic prices fell following the economic downturn in 2008, but the drop in export prices was more muted. For instance, the export price for Douglas-fir logs dropped 26 percent from 2007 to 2009 while the domestic price dropped 44 percent.

Following a surge in demand from China, export prices increased rapidly through 2011-12, with hemlock increasing 44 percent and Douglas-fir by 16 percent. The initial increase in demand was for hemlock logs, but as hemlock prices approached Douglas-fir prices the demand for Douglas-fir logs increased; by 2012, the Douglas-fir premium was near its historic average. In 2012, export and domestic prices for both hemlock and Douglas-fir softened and the price spread between the species returned to its historical average.

Looking forward, the export premium will likely shrink due to strong domestic demand from recovering markets. Strong domestic prices will make export logs less competitive internationally, but much will depend on supply constraints from key international suppliers. In the long run, the export premium will likely shrink yet more as West Coast log exports face stronger international competition.

Supply

On the supply side, lumber mills have excess capacity because of layoffs and shift reductions caused by cutbacks in production during the Great Recession. Capacity utilization in the U.S. Coast region (western Washington and western Oregon) softwood lumber mills dropped to 57 percent in the bottom of the U.S. wood products industry in 2009. In 2013, with some mills closed permanently and remaining mills adding shifts and workers, RISI expects capacity utilization to approach 79 percent. Lumber prices should be driven higher as capacity utilization of Coast region lumber mills is predicted

to rise to 93 percent in 2014 and 97 percent in 2015[9]. In the meantime, lumber prices are expected to be especially volatile as mills and the supply chain adapt to increased lumber demand and production.

The recession in the forestry and wood products sector affected not only the mills but also the logging workforce and infrastructure. Many loggers and log truckers have left the industry and may not return. Logging firms and lumber mills have delayed investments in facilities, roads, and equipment in order to eke through the tough times. This will limit the mills' ability to produce lumber quickly and will add to the price volatility expected over the next couple of years.

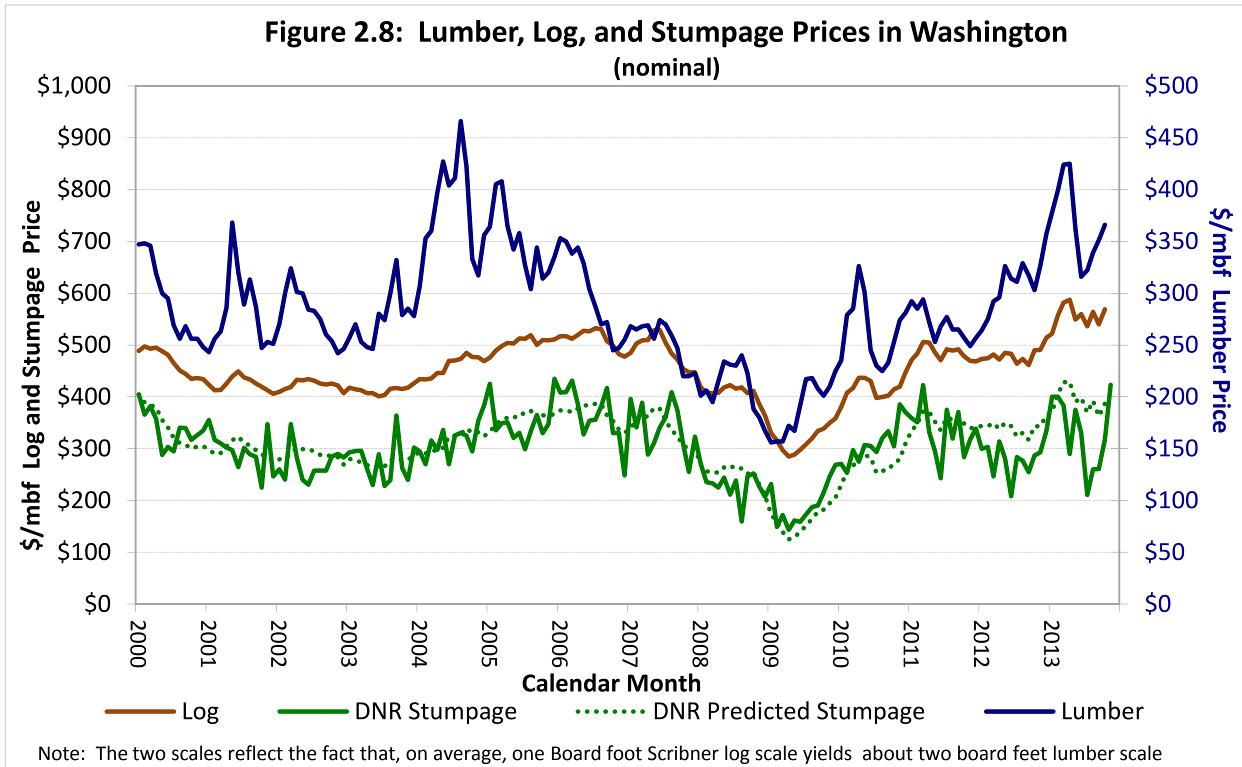
Timber supply is up in the Coast region, as well as in the competing U.S. Inland and South timber regions, because timber landowners reduced harvests during the recession in response to low prices. Timber growth continues to exceed timber harvest and the potential sawtimber inventory has grown. Because of the strong log exports in the U.S. Coast region during 2010 and 2011, the deferred volume in the Coast region is not as great as in other regions.

The timber resources of British Columbia have been devastated by the mountain timber beetle, which has destroyed about a third of province's timber resources[10]. This has increased British Columbia's timber supply since 2007. Timber killed by beetles can typically be harvested between 4 and 10 years after being killed, so the government increased the allowable harvest to ensure that the dead timber was not wasted. FEA forecasts that British Columbia's timber supplies will start declining as early as 2015. The supply from Canada will be further diminished by Quebec's allowable annual cut being reduced by implementation of Bill 57 in 2013 and may be additionally reduced by Plan Nord.

Decreasing Canadian timber supplies in the long term will likely outweigh the effects of the increase in supply from the U.S. Coast region, such that overall supply will be diminished.

[9] RISI Quarterly North American Timber Forecast, November 2013

[10] FEA Quarterly Timber Forecast Service, Q3 2013



Price outlook

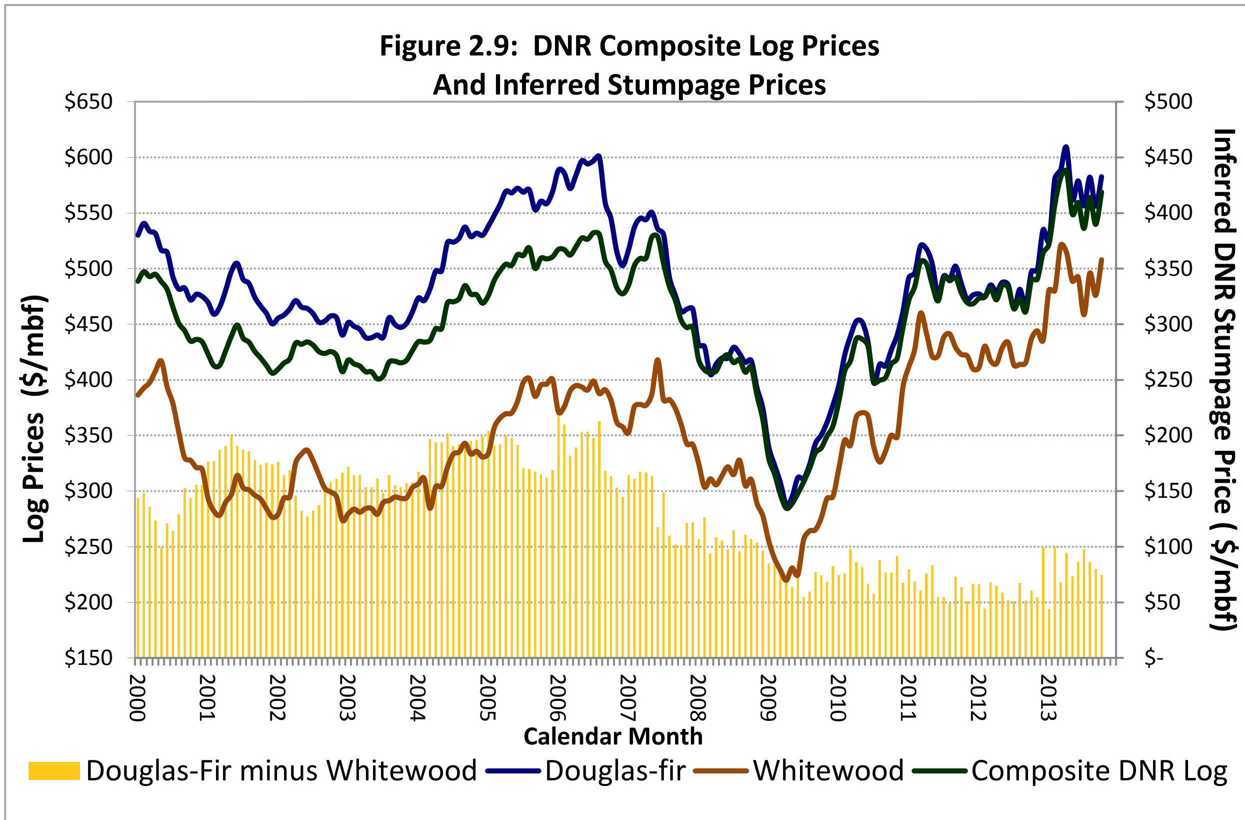
Lumber Prices

As shown in **Figure 2.6**, lumber prices have had a good run up since their extreme lows in 2009, when they bottomed out at $156/mbf in January 2009 – depth of the Great Recession. The lumber prices shown on the chart are from Random Length's Coast Dry Random and Stud price series.

After some extreme volatility in 2010, regional lumber prices generally rose through 2011 and 2012. More recently, they hit $425/mbf in April 2013, an impressive 44 percent year-over-year increase. The lumber price fell off steeply to $362/mbf in May but a drop in this time period was predicted by forest economists because of the jerky response of bringing lumber production back on line. The drop is seen as a temporary setback or blip and not the beginning of a longer-term downward price trend. Lumber prices are not expected to return to the April high during the rest of this year, and there will likely be considerable volatility moving forward.

Log Prices

Figure 2.7 presents prices for Douglas-fir, hemlock, and DNR's composite logs. DNR's "composite log price" is calculated from prices for logs delivered to regional mills, weighted by the average geographic location, species, and grade composition of timber typically sold by DNR. In other words, it is the price a mill would pay for delivery of the typical log harvested from DNR-managed lands. The dark **green** line for the DNR composite log price on **Figure 2.7** is the same as the **brown** line on **Figure 2.6**. All three log prices hit their post-2000 lows in April 2009, with the composite log falling



to $284/mbf. After rising through the rest of 2009, 2010, and into 2011, log prices generally moved sideways until the fall of 2012. From there, composite log prices climbed dramatically to a nominal high of $587/mbf in April, the highest price on **Figure 2.7** in the period since 2000. Log prices have fallen since then, but are rising again and were $568/mbf in October – mutedly mimicking the recent lumber prices.

Note the diverging trend between lumber and log prices from late 2011 into 2013 (see **Figure 2.6**); it suggests that profit margins for lumber mills in the Pacific Northwest have increased throughout this recent period.

Stumpage Prices

Timber **s**tumpage prices are the prices that successful bidders pay for the right to harvest timber from DNR-managed lands. **Figure 2.6** shows monthly nominal prices for DNR stumpage prices since 2000 in **green**. Like the log price, DNR stumpage prices bottomed out in April 2009 at $145/mbf. Five months into FY 2014, the average DNR stumpage price weighted by volume is $308/mbf, up from $246/mbf in the previous Forecast. The lower prices in July and August sales were due principally to a higher proportion of thinning sales than usual; prices are expected to continue climbing throughout the year.

At any time, the difference between the delivered log price (in **brown** on **Figure 2.6**) and DNR's stumpage price (in **green**), is equivalent to the sum of logging costs, hauling costs, and harvest profit. Taking the average of these costs over 12 years and subtracting it from the log price line gives us an inferred or estimated DNR stumpage price, as shown by the green dotted line. Stumpage prices from

actual DNR timber sales in 2012 were generally lower than stumpage prices inferred from log prices, which suggests that an upward market "correction" would be forthcoming. Indeed, auction results in 2013 would appear to have done just that except for the April anomaly. Another divergence opened in the beginning of FY14 due to the larger than average number of thinning sales (see above).

DNR Stumpage Price Outlook

Figure 2.8 shows DNR's historical timber stumpage prices (the solid **green** line, which is a quarterly version of the line in **Figure 2.6**), the price outlook as of the September 2013 Forecast (**orange** dashed line), and our updated price outlook[11] (**green** dashed line). There are moderate adjustments to both the FY 2014 and FY 2015 stumpage prices that are obvious on the chart. These changes will be explained in Part 3.

DNR currently contracts with two forest economics consulting firms that provide log and timber stumpage price forecasts, as well as valuable insights into the housing, lumber, and timber markets. By modeling DNR's historical data on their price forecasts, we arrive at two alternative stumpage price outlooks—named Outlook A and Outlook B in **Figure 2.8**. Outlook A predicts steadily upward-trending prices throught the forecast period, with considerable volatility that represents the market finding new equilibria in the face of a series of demand changes and supply adaptations. Outlook B assumes that demand will outpace supply more dramatically through late 2014, and it incorporates a business cycle downturn from 2015 forward. The updated DNR Forecast represents a middle ground between these two outlooks. Furthermore, the ascent of our forecast stumpage prices slows down in outlying years to account for increasing uncertainty, particularly in timber mix brought to auction.

Figure 2.8 shows the updated Forecast culminating in DNR stumpage prices at or above the highest achieved in the past twelve years – including at the height of the real estate boom in 2006-07 – despite the reduced expectations for FYs 2012 and 2015. However, the forecast price levels are much less optimistic when viewed in real, inflation adjusted terms. Using historical BLS Core CPI values to adjust the historical prices and a 2.0 percent rate for future years' prices, the forecast prices are not higher than the 2006-07 peak prices in real terms[12].

[11] This updated price outlook is the basis for the timber revenue changes discussed in the next section.

[12] Two percent is the average annual inflation rate from 2001 through 2012. The consensus of economic forecasters also has the future inflation rate at about 2.0 percent per year.

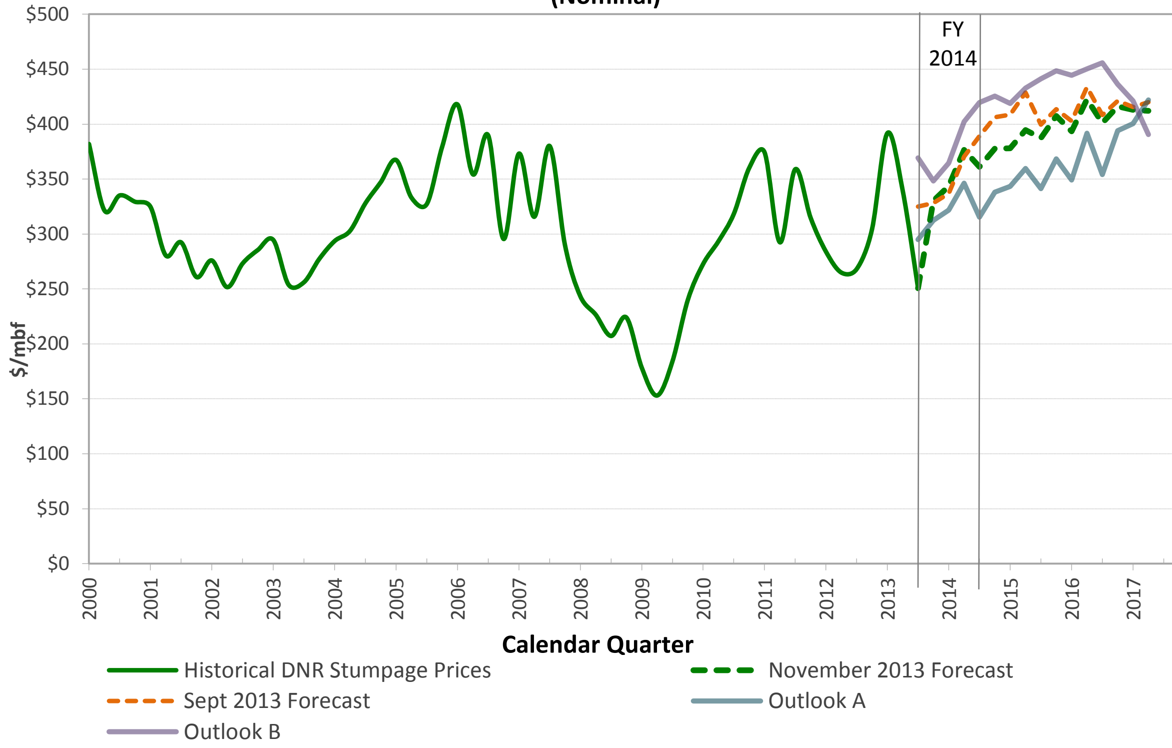


Figure 2.10: DNR Timber Stumpage Price
(Nominal)
$500
$450
$400
$350
$300
$250
$200
$150
$100
$50
$0
$/mbf
FY
2014
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Calendar Quarter
Historical DNR Stumpage Prices
November 2013 Forecast
Sept 2013 Forecast
Outlook A
Outlook B

Part 3. DNR's Revenue Forecast

This Revenue Forecast includes revenues generated from timber sales on trust uplands, leases on trust uplands, and leases on aquatic lands. In the final summary table, it also forecasts revenues to individual funds, including DNR management funds, beneficiary current funds, and beneficiary permanent funds.

Of special note is that in this Forecast previously aggregated uplands and aquatics revenue sources have are separated to give a more detailed forecast. Irrigated Agriculture, Orchard/Vineyard, Dryland Agriculture/Grazing, and Other Leases have been treated separately. Additionally, aquatic lands revenues have been divided into Geoduck and Aquatic Leases revenues.

Some caveats about the uncertainty of forecasting DNR-managed revenues are summarized near the end of this section.

Timber revenues

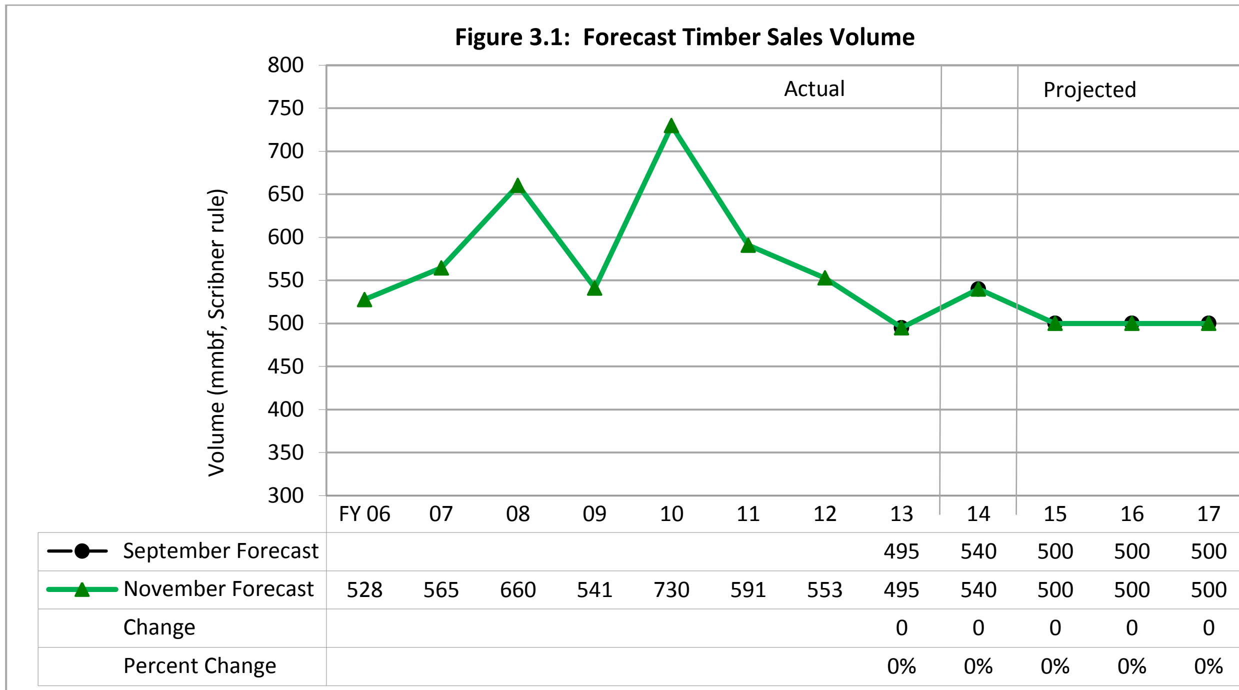
DNR sells timber through auctioned contracts. With the approval of the Board of Natural Resources, DNR determines the total volume to be offered for sale each month and the minimum bid for each timber sale. The sale is awarded to the highest bidder and the average sales price ($/mbf), or stumpage price, is set by the result of the auction. DNR collects a 10 percent initial deposit at the time of sale and holds it until the sale is completed. Revenues are collected at the time of harvest (removal). The initial deposit is credited as the last 10 percent of timber is harvested.

Contracts for DNR timber sales sold in FY 2013 varied in duration from three months to three and a half years, with an average (weighted by volume) of about 21.5 months. The purchaser determines the actual timing of harvest within the terms of the contract. As a result, timber revenues to beneficiaries and DNR management funds lag current market conditions.

For the purposes of this chapter, timber that is sold but not yet harvested is referred to as "volume under contract" or as "inventory." Timber volume is added to the inventory when it is sold and placed under contract, and it is removed from the inventory as the timber is harvested.

Timber Sales Volume

DNR sold 135 mmbf in FY 2013's first five months of timber sales. Projected timber sales volume for the current fiscal year is 540 mmbf (see **Figure 3.1**). FY 2014 is the last year of the current FY 2005-



	FY 06	07	08	09	10	11	12	13	14	15	16	17
September Forecast								495	540	500	500	500
November Forecast	528	565	660	541	730	591	553	495	540	500	500	500
Change								0	0	0	0	0
Percent Change								0%	0%	0%	0%	0%

2014 sustainable harvest decade. If actual timber sales results follow the projections in this Forecast, the shortfall on this decade's 5,500 mmbf target for western Washington will be about 380 mmbf (60 mmbf higher than the March Forecast).

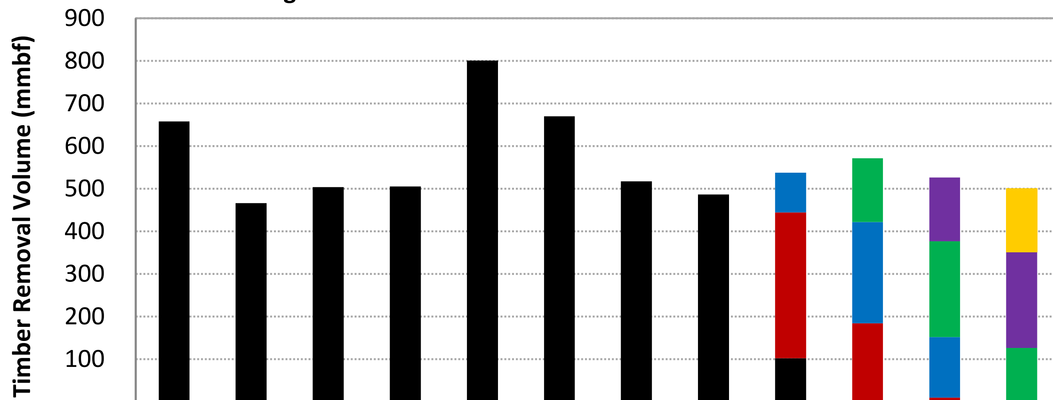
FY 2015 is the first year of the next sustainable harvest decade (FY 2015 through FY 2024) for western Washington. Through the March Forecast, the Department's annual Westside sustainable harvest level for FYs 2015-2017 was assumed to be 537 mmbf. This placeholder target was estimated at the beginning of the current FY 2005-2014 from the sustainable harvest model. More recent policy constraints, scenario modeling, and observations from the field suggest that the 537 mmbf assumption was no longer likely. In response to this evidence, in the June Forecast annual Westside sales volume estimates were reduced to 450 mmbf for FYs 2015-2017. This Forecast assumption will be periodically revisited throughout the official process of determining the next decade's sustainable harvest levels. Combined with projected eastern Washington timber sales of 50 mmbf for the next several years, we arrive at a projected annual timber sales volume of about 500 mmbf for FYs 2015-2017.

Timber Removal Volume

At the end of September, the Department had 536 mmbf of timber under sales contract, valued at $159.3 million. This is down from 561 mmbf in July, at a value of $169.1 million.

For each Forecast, we survey DNR timber sale purchasers to determine their planned harvest timing for the timber volume they have under contract at the time of the survey. This Forecast's survey, conducted in the first half of October, indicates that purchasers plan to harvest 333 mmbf, or 62 percent, of the 536 mmbf remaining under contract this fiscal year (FY 2014) and 190 mmbf (30 percent) of the existing inventory in FY 2015 (see **Figure 3.2** for detail).

Figure 3.2: Forecast Timber Removal Volume



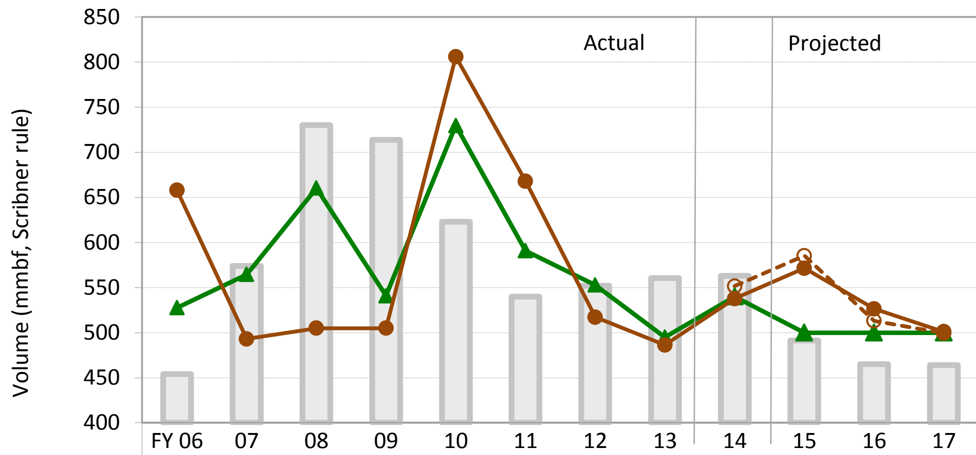
FY	FY 06	07	08	09	10	11	12	13	14	15	16	17
Total	658	466	504	506	801	670	517	486	538	572	526	501
Removals to Date	658	466	504	506	801	670	517	486	102			
Sales Under Contract									342	185	10	
Sales in FY 14									93	237	142	2
Sales in FY 15										150	225	125
Sales in FY 16											150	225
Sales in FY 17												150

The survey indicates that a total of 538 mmbf will be removed in FY 2014: 102 mmbf that timber purchasers have already removed since July, anticipated removals of 342 mmbf from volume under contract as of the end of September[13], and 93 mmbf from further sales taking place in FY 2014 (see **Figures 3.2 and 3.3**).

The level and timing of projected timber removal volumes have changed in this Forecast in response to purchasers' plans. As a result, projected timber removal volumes for the current biennium, 2013-2015, are decreased by 28 mmbf, around two percent, from the September Forecast. Projected volumes across the 2015-2017 Biennium are increased by 15 mmbf, or around one percent (see **Figure 3.3**).

[13] The anticipated removals differ from the purchasers planned removals because the purchasers survey excludes sort sales and purchasers with little volume.

Figure 3.3: Timber Volume - Sales, Removals, and Inventory



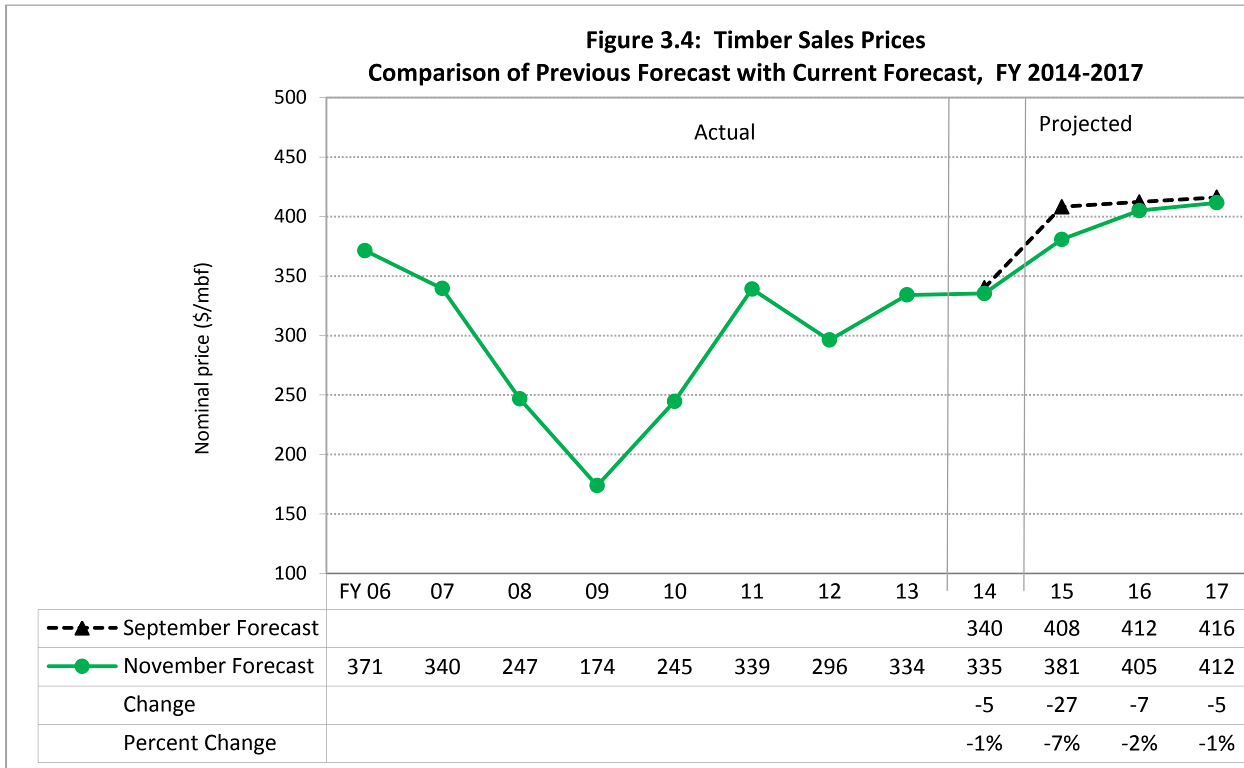
	FY 06	07	08	09	10	11	12	13	14	15	16	17
Inventory	454	574	730	714	623	540	552	561	563	491	465	464
Sales - Previous Forecast									540	500	500	500
Sales - Current Forecast	528	565	660	541	730	591	553	495	540	500	500	500
Change									0	0	0	0
Removals Prev. Forecast									552	585	513	499
Removals - Current Forecast	658	493	505	505	806	668	517	486	538	572	526	501
Change									-14	-14	13	2
Percent Change									-3%	-2%	3%	0%

Timber Sales Prices

The price results of monthly DNR timber sales (shown in **Figure 2.8** in seasonally adjusted, nominal terms) are quite volatile. In FY 2011, monthly timber sale prices were mostly above $300/mbf and averaged $339/mbf weighted by volume, whereas they averaged $296/mbf in FY 2012 and $334/mbf in FY 2013 (see **Figure 3.4**).

As discussed in **Part 2**, the U.S. housing market is showing signs of improvement and is likely to continue to strengthen over the forecast period. The timing and magnitude of the recovery in housing construction remain uncertain, but when domestic demand for lumber strengthens, it exerts upward pressure on stumpage prices via higher log prices. This effect on stumpage prices is lagged, but the length of the lag is shorter when mills have less log inventory, as they have now: among other things, **Figure 2.6** illustrates this sensitivity.

The FY 2014 average DNR timber sales price projection is lowered from $340/mbf to $337/mbf in this Forecast, reflecting reductions in the predicted market prices in calendar year 2015 (see **Figure 3.4**). Timber sales in FY 2014 through October averaged $274/mbf—so low because there was an unusually large percentage of forest improvement thinnings. The average jumped to $308/mbf through November due to the November auctions high average price of $423/mbf. Sales price estimates for FY 2015 were also reduced because of predicted weakness in log prices through 2017.



	FY 06	07	08	09	10	11	12	13	14	15	16	17
September Forecast									340	408	412	416
November Forecast	371	340	247	174	245	339	296	334	335	381	405	412
Change									-5	-27	-7	-5
Percent Change									-1%	-7%	-2%	-1%

Timber Removal Prices

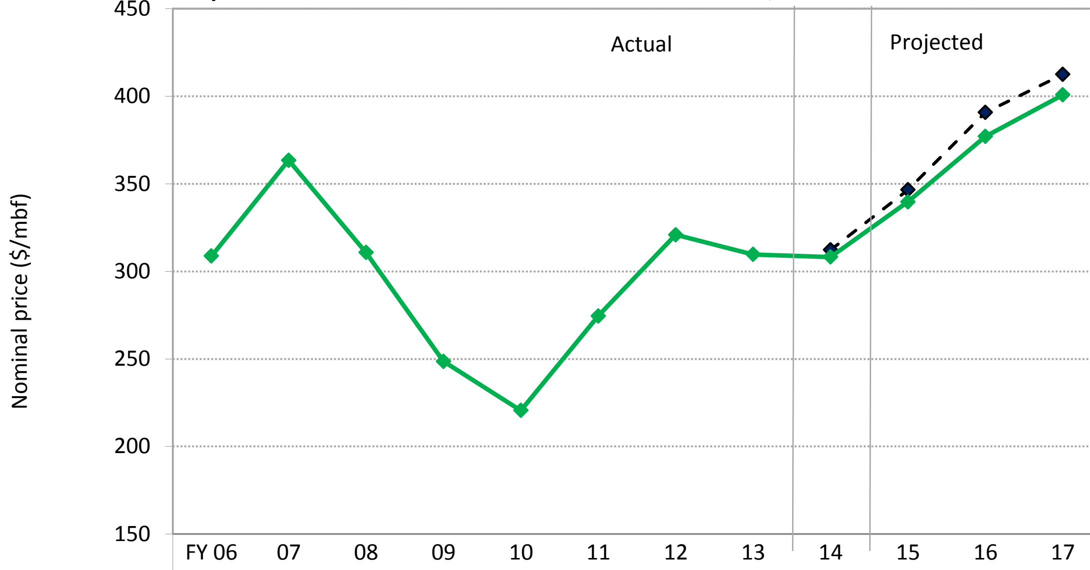
Timber removal prices are determined by sales prices, volumes, and harvest timing. They can be thought of as a moving average of previous timber sales prices, weighted by the volume of sold timber removed in each time period. The removal volumes used to calculate the weights are shown in **Figure 3.2**. There is a smoothing out and a lag of timber removal prices compared to timber sales prices. For example, sales prices bottomed at an average annual price of $174/mbf in FY 2009 (see **Figure 3.4**). However, removal prices bottomed out in FY 2010 at $221/mbf on an annual basis, which was $47/mbf higher and came a year after the bottom for annual sales prices (**Figure 3.5**). **Figure 3.5** shows that future removal prices are changed only modestly from the September Forecast, despite the reductions in the expected sales prices.

Timber Removal Revenues

Figure 3.6 shows projected annual timber removal values, broken down by the fiscal year in which the timber was sold ("sales under contract" are already sold as of October 1, 2013). About $32 million, or around 19 percent, of the projected $166 million timber harvest revenue this fiscal year (FY 2014) has already been harvested, and about 61 percent ($102 million) will come from previously sold timber sales currently under contract as of the end of September.

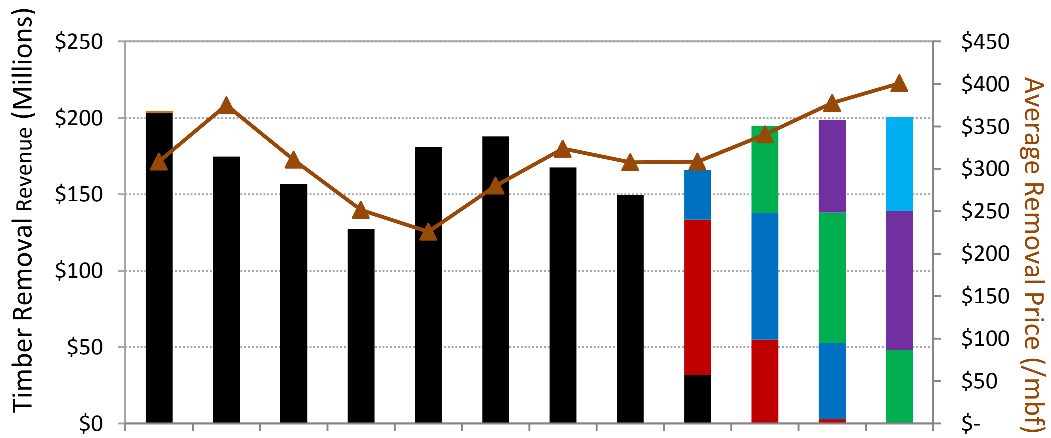
The projected 2013-2015 Biennium timber revenues have been reduced from $375.1 million to $360.6 million – a decrease of $14.5 million or four percent (see **Figure 3.7**). In the 2015-2017 Biennium, forecast timber removal revenues are projected to be down two percent, from $406.5 million to $399.6 million.

Figure 3.5: Timber Removal Prices
Comparison of Previous Forecast with Current Forecast, FY 2014-2017



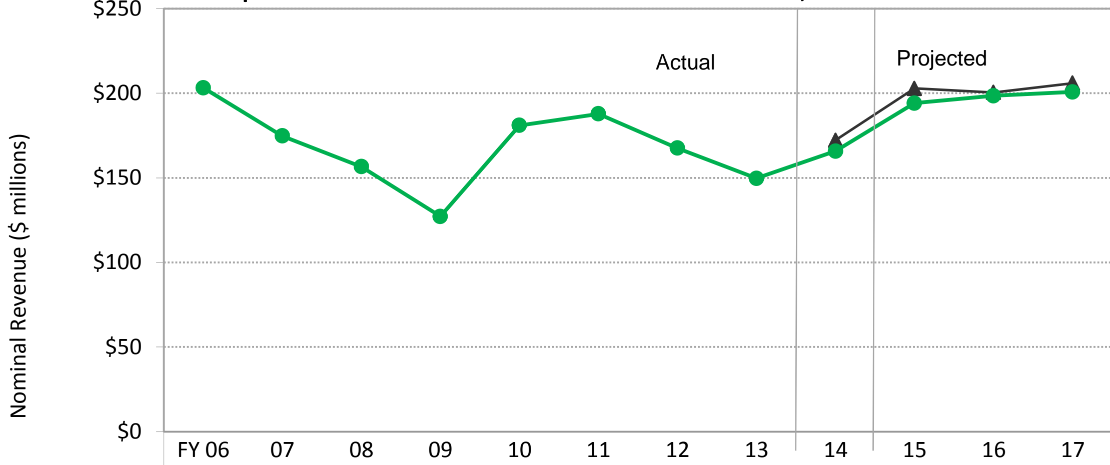
	FY 06	07	08	09	10	11	12	13	14	15	16	17
September Forecast									312	347	391	412
November Forecast	309	363	311	249	221	275	321	310	308	340	377	401
Change									-4	-7	-14	-12
Percent Change									-1%	-2%	-4%	-3%

Figure 3.6: Forecast Timber Removal Value



FY	FY 06	07	08	09	10	11	12	13	14	15	16	17
Total	203	175	157	127	181	188	168	150	172	203	201	206
Removals to Date	203	175	157	127	181	188	168	150	8			
Sales Under Contract									118	50		
Sales in FY 14									46	92	46	
Sales in FY 15										61	92	51
Sales in FY 16											62	93
Sales in FY 17												62

Figure 3.7: Timber Removal Revenues
Comparison of Previous Forecast with Current Forecast, 2014-2017



	FY 06	07	08	09	10	11	12	13	14	15	16	17
September Forecast									172.2	202.9	200.5	206.0
November Forecast	203.2	174.7	156.6	127.2	181.0	187.8	167.5	149.7	165.7	194.2	198.5	200.8
Change									-6.5	-8.7	-2.0	-5.2
Percent Change									-4%	-4%	-1%	-3%

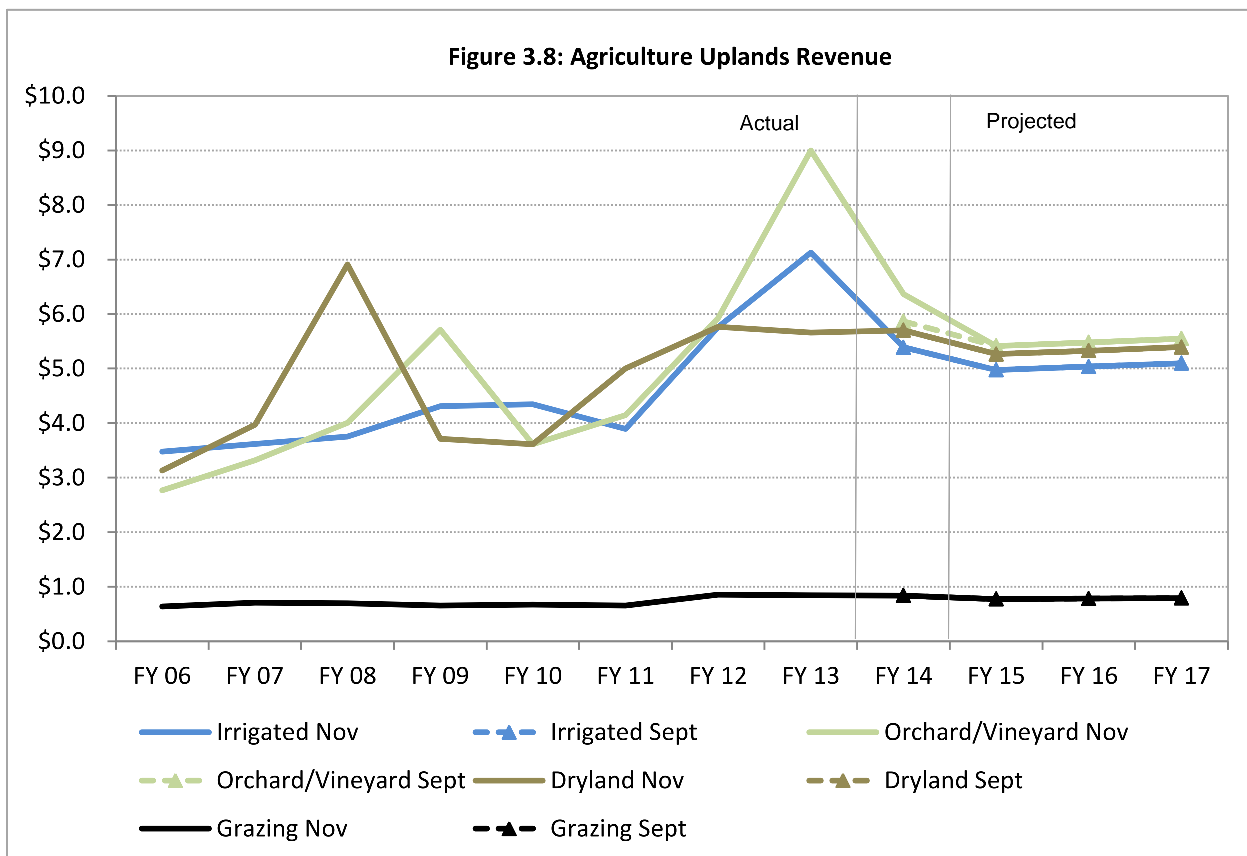
Upland lease revenues

Upland lease revenues are generated primarily from leases and the sale of valuable materials, other than timber, on state trust lands. In this Forecast, upland lease revenues are divided into two overarching categories: agriculture and other. Each of these is further divided. This is a change from previous forecasts that only presented aggregated information for agriculture and other, and commercial. Presenting the data this way better reflects the size of the uplands revenue sources.

FY 2013 was a record year for revenues from agricultural leases—due to a combination of a record year for irrigated crop lease revenues, an excellent year for orchard and vineyard lease revenues, and the second highest year from dryland crop lease revenue.

The only change in the agricultural upland leases from the previous Forecast is a $0.5 million increase in orchard/vineyard revenue for FY 2014 (**Figure 3.8**). Orchard/vineyard leases are dependent upon product prices in the previous year and the increase in revenue is due to higher than expected prices for orchard products, particularly apples, in 2013.

The predicted revenue from other uplands has been reduced by $0.7 million for FY 2014. The majority of this is reduction is due to a $0.5 million decrease in expected commercial lease revenue—some commercial real estate has remained vacant longer than anticipated. The vacant real estate will likely be leased and will generate revenue in FY 2015. Expected mineral and hydrocarbon revenue was dropped by $0.2 million due to continued slow-down in those industries in Washington. The upside and downside risks to future commercial lease revenue projections are deemed to be in balance.



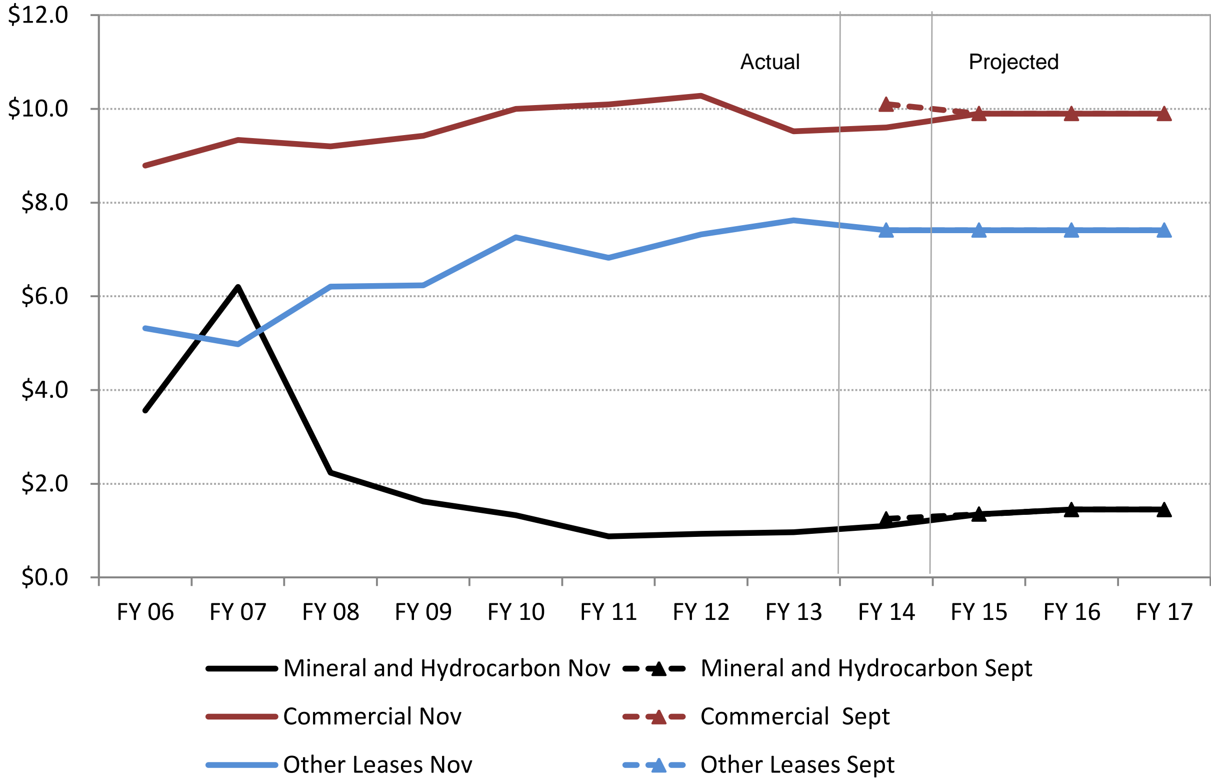


Figure 3.9: Other Uplands Revenue
$12.0
$10.0
$8.0
$6.0
$4.0
$2.0
$0.0
Actual
Projected
FY 06
FY 07
FY 08
FY 09
FY 10
FY 11
FY 12
FY 13
FY 14
FY 15
FY 16
FY 17
Mineral and Hydrocarbon Nov
Mineral and Hydrocarbon Sept
Commercial Nov
Commercial Sept
Other Leases Nov
Other Leases Sept

	FY 2011	FY 2012	FY 2013	Percent of FY 2011-13 Total
Agricultural	$13,058,000	$17,471,000	$21,623,000	67.1%
Irrigated	3,895,000	5,762,000	7,127,000	21.2%
Orchard/Vineyard	4,148,000	5,922,000	8,996,000	24.1%
Dryland	5,015,000	5,788,000	5,658,000	20.8%
Grazing	663,000	850,000	843,000	3.0%
Special forest products	424,000	567,000	576,000	2.0%
Special use	1,818,000	2,132,000	1,779,000	7.2%
Communication site	3,958,000	3,814,000	4,190,000	15.1%
Right-of-way	433,000	634,000	588,000	2.1%
Mineral, oil, and gas	282,000	147,000	61,000	0.6%
Rock, sand, and gravel	595,000	877,000	908,000	3.0%
Other[14]	181,000	221,000	488,000	0.6%
Total	$21,420,000	$26,541,000	$31,214,000	

[14] "Other" is composed of smaller miscellaneous revenue sources including habitat and conservation leases, trespasses, assessment payments, pass-through power charges, biomass, and others.

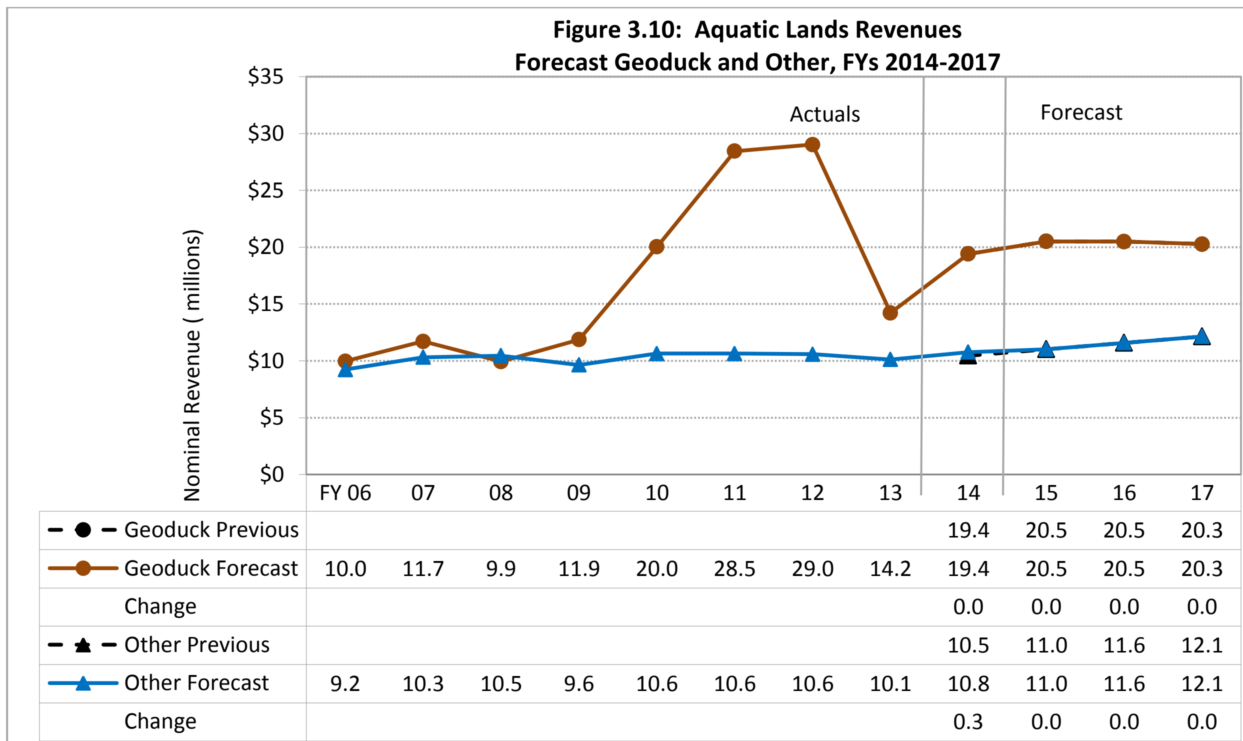
Aquatic lands revenues

DNR manages 2.6 million acres of state-owned aquatic lands and generally aquatic lands revenues are generated in two ways: geoduck sales revenue, and lease and other revenue. The rights to harvest geoducks are sold at several auctions throughout the year and lease and other revenues are comprised of:

1. Water dependent leases (e.g., marinas and buoys);
2. Non-water dependent leases (e.g., structures related to upland uses);
3. Aquaculture leases (e.g., oyster and salmon 'farming');
4. Easements (e.g., powerline rights of way); and
5. Other (e.g., sand and gravel sales and trespass settlements).

There are currently four geoduck auctions planned for FY 2014. One was held September 5th that sold 452,000 pounds at an average price of $12.84/lb. There will be another in November for about 490,000 pounds; one in the end of February for around 600,000 pounds and a final one in May that does not yet have a volume estimate. The September auction prices were stronger than expected, the forecasting model would have therefore predicted a higher yearly price of about $9.50/lb. However, given recent price and volume volatility, the forecast average auction price for FY 2014 is unchanged at $9.20/lb.

The total allowable catch for the next fishing year—in which fishing from the two spring auctions will take place—has not yet been determined. However, there are no changes to the expected volume estimates in this Forecast. Overall, expected geoduck revenues remain unchanged for FYs 2014-2017 (see **Figure 3.9**).



	FY 06	07	08	09	10	11	12	13	14	15	16	17
Geoduck Previous									19.4	20.5	20.5	20.3
Geoduck Forecast	10.0	11.7	9.9	11.9	20.0	28.5	29.0	14.2	19.4	20.5	20.5	20.3
Change									0.0	0.0	0.0	0.0
Other Previous									10.5	11.0	11.6	12.1
Other Forecast	9.2	10.3	10.5	9.6	10.6	10.6	10.6	10.1	10.8	11.0	11.6	12.1
Change									0.3	0.0	0.0	0.0

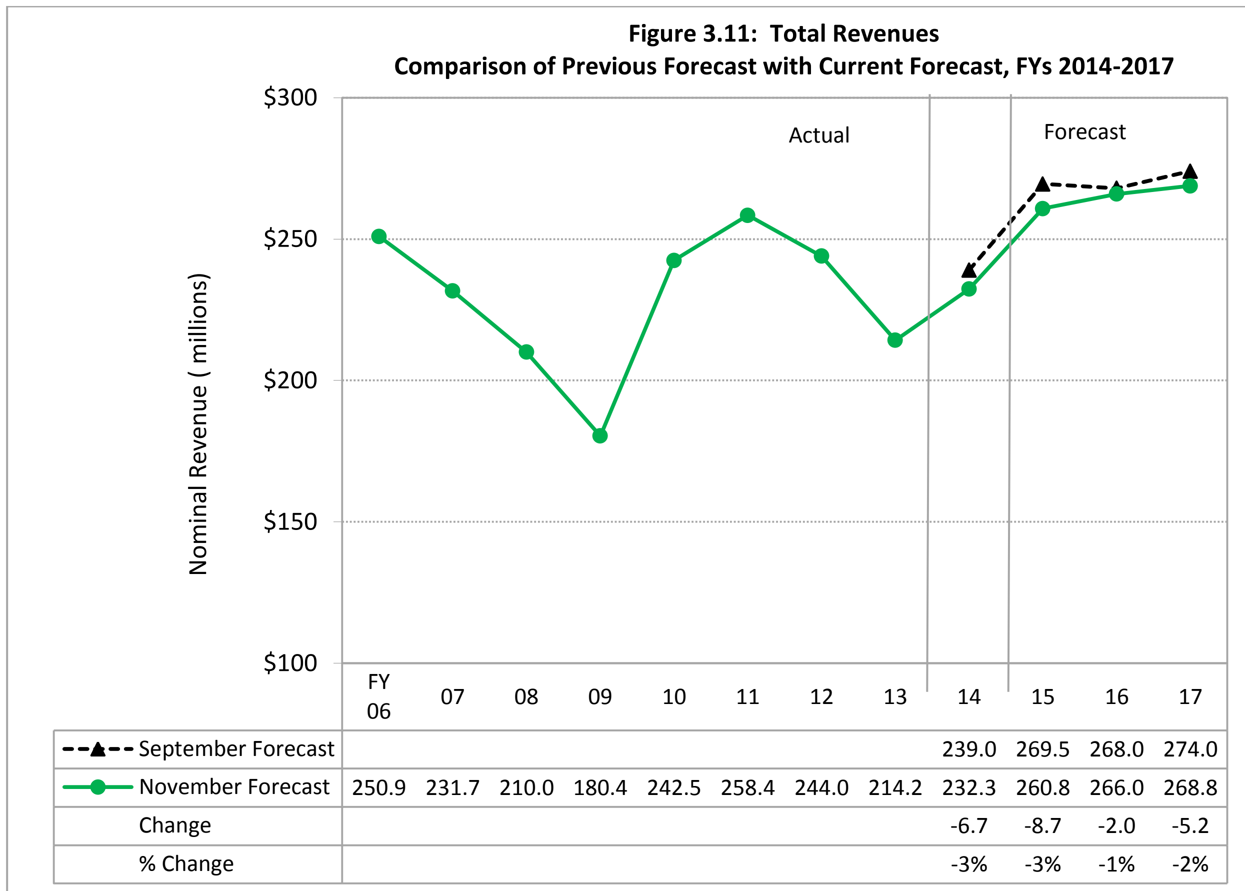
However, there are several downside risks to geoduck revenues that are difficult to forecast:

1. Harvests (and therefore revenues) could be deferred or lost if geoduck beds are closed due to occurrence of the paralytic shellfish poisoning (PSP) toxin.
2. A further slowdown in China's economic growth could lower demand for this luxury good in its largest market.
3. In light of WDFW surveys of closed south Puget Sound geoduck tracts showing slowed or declining recovery rates in recent years, and of evidence of active poaching, future commercial harvest levels may be further reduced.

The expected revenue for lease and other revenue has been increased in this Forecast due to an unexpected settlement payment, which arrived in August 2013. There are no other changes to FYs 2014-2017.

Total revenues from all sources

Total forecast revenues for the 2013-15 Biennium (FYs 2014 and 2015) are down from the previous Forecast by $14.2 million (three percent) to $493.8 million. Revenues for the 2015-2017 Biennium (FYs 2016 and 2017) are down by $6.9 million (around one percent) to $535.1 million. The vast majority of the overall revenue changes is driven by a reallocation of planned timber harvests and by a reduction to FY 2014 and FY 2015's anticipated timber sales price.



	FY 06	07	08	09	10	11	12	13	14	15	16	17
September Forecast									239.0	269.5	268.0	274.0
November Forecast	250.9	231.7	210.0	180.4	242.5	258.4	244.0	214.2	232.3	260.8	266.0	268.8
Change									-6.7	-8.7	-2.0	-5.2
% Change									-3%	-3%	-1%	-2%

Some caveats

DNR strives to produce the most accurate and objective projections possible, based on the Department's current policy directions and available information. Actual revenues will depend on future policy decisions made by the Legislature, the Board, and DNR, as well as on market and other conditions beyond DNR's control. Listed below are issues that could potentially impact future revenues from DNR-managed lands:

U.S. and Global Economic Crisis. There are still too many unemployed workers, though some of reentered the workforce after having left; the financial and economic crises in Europe are improving, but several European countries remain in deep recession; China's economy has slowed; and the U.S. government has still not implemented a coherent, growth-driven economic policy.

Timber Sales Volume. Although significant curtailments in timber sales volumes were assumed in the June Forecast, further reductions are possible. These reductions would be due to potential environmental, operational, and policy issues (e.g., riparian management areas, and continued timber harvest deferrals pending implementation of a long-term marbled murrelet conservation strategy). This risk is particularly heavy for FYs 2015-2017.

As events and market conditions develop, DNR will incorporate new information into future Forecasts. At this point, we judge the downside to the overall forecast to be slightly greater than the upside because of the risks to the timber sales volume (and therefore to timber removal volume and revenues) as well as the ongoing weakness and vulnerabilities of the U.S. and world economies that affect the housing market, and therefore stumpage prices.

Distribution of revenues

The distribution of timber revenues by trust are based on:

- The volumes and values of timber in the inventory (sales sold but not yet harvested) by trust;
- The volumes of timber in planned sales for FYs 2014 and 2015 by trust, and relative historical timber prices by DNR region by trust; and
- The volumes of timber by trust for FYs 2015-2017 based on provisional output of the sustainable harvest model[15] and relative historical timber prices by DNR region by trust.

Since a single timber sale can be worth over $3 million, dropping, adding, or delaying even one sale can represent a significant shift in revenues to a specific trust fund. Distributions of upland and aquatic lease revenues by trust are assumed to be proportional to historic distributions unless otherwise specified.

Management Fee Deduction. The underlying statutory management fee deductions to DNR as authorized by the legislature are 25 percent or less, as determined by the Board of Natural Resources (Board), for both the Resources Management Cost Account (RMCA) and the Forest Development Account (FDA). In budget bills, the Legislature has authorized a deduction of up to 30 percent to RMCA since July 1, 2005, now in effect through the 2013-2015 Biennium.[16]

At its April 2011 meeting, the Board adopted a resolution to reduce the RMCA deduction from 30 to 27 percent and the FDA deduction from 25 to 23 percent. At its July 2011 meeting, the Board decided to continue the deductions at 27 percent for RMCA (so long as this rate is authorized by the legislature) and at 23 percent for FDA. At its October 2011 meeting, the Board approved a resolution to reduce the FDA deduction from 23 to 21 percent. The Board decided in July 2013 to raise the FDA deduction to 25 percent and the RMCA deduction to 29 percent.

Given this background of official actions by the legislature and the Board, the management fee deductions assumed in this Forecast are:

	FY2013	FY2014	FY2015	FY2016	FY2017
FDA	21	25	25	25	25
RMCA	27	29	29	29	29

By using 29 percent for the RMCA deduction in FYs 2014-2017, the Forecast assumes that the Legislature will approve RMCA deductions of up to 30 percent for the 2015-2017 Biennium in their biennial budget bills, continuing its practice which started in FY 2006.

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[15] DNR and the Board of Natural Resources have not yet determined the sustainable harvest level for the FY 2015-2024 biennium.

[16] The Legislature most recently authorized the RMCA deduction of up to 30 percent, making it effective through the entire 2013-2015 Biennium, in the FY13-15 operating budget, Sec. 1001, 2ESSB 5034.

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Revenue forecast tables

Tables 3.1 and 3.2 on the following pages provide Forecast details. **Table 3.1** focuses on the source of revenues—timber sales and removals, uplands leases, and aquatic lands leases. **Table 3.2** focuses on the distribution of revenues to various state accounts—DNR management funds, beneficiary current and permanent funds, and the Aquatic Lands Enhancement Account. Both tables include historical and projected figures.

Table 3.1: November 2013 Forecast by Source (millions of dollars)

Changes are from the September 2013 Forecast

	Actuals				Forecast			
Timber Sales	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Volume (mmbf)	730	591	553	495	540	500	500	500
Change					-	-	-	-
% Change					0%	0%	0%	0%
Price ($/mbf)	$245	$339	$296	$334	$337	$381	$405	$412
Change					$ (3)	$ (27)	$ (7)	$ (5)
% Change					-1%	-7%	-2%	-1%
Value of Timber Sales	**$178.5**	**$200.4**	**$163.7**	**$165.4**	**$ 182.1**	**$ 190.2**	**$ 202.3**	**$ 205.5**
Change					$ (1.6)	$ (13.7)	$ (3.6)	$ (2.3)
% Change					-1%	-7%	-2%	-1%

Timber Removals	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Volume (mmbf)	801	670	517	486	538	572	526	501
Change					(14)	(14)	13	2
% Change					-3%	-2%	3%	0%
Price ($/mbf)	$221	$275	$321	$310	$309	$341	$378	$401
Change					$ (3.7)	$ (5.9)	$ (13.1)	$ (11.7)
% Change					-1%	-2%	-3%	-3%
Timber Revenue	**$181.0**	**$187.8**	**$167.5**	**$149.7**	**$ 165.9**	**$ 194.7**	**$ 198.8**	**$ 200.8**
Change					$ (6.3)	$ (8.2)	$ (1.7)	$ (5.2)
% Change					-4%	-4%	-1%	-3%

Note: Timber removal revenue includes FIT (forest improvement timber) sale proceeds, timber sales default settlements, and interest and extension charges (approx. $1-4 million per year).
Excludes Trust Land Transfer, Real Property Replacement Account, and Land Bank property transactions and interest on property replacement funds.
Excludes fire assessments, permits, and fees.
Totals may not add due to rounding.

Table 3.1 November 2013 Forecast by Source (millions of dollars), cont'd.

Changes are from the September 2013 Forecast

	Actuals				Forecast			
Upland Leases	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Irrigated Agriculture	$ 4.3	$ 3.9	$ 5.8	$ 7.1	$ 5.4	$ 5.0	$ 5.0	$ 5.1
Change					$ -	$ -	$ -	$ -
% Change					0%	0%	0%	0%
Orchard/Vineyard	$ 3.6	$ 4.1	$ 5.9	$ 9.0	$ 6.4	$ 5.4	$ 5.5	$ 5.5
Change					$ 0.5	$ -	$ -	$ -
% Change					9%	0%	0%	0%
Dryland Ag/Grazing	$ 4.3	$ 5.7	$ 6.6	$ 6.5	$ 6.5	$ 6.0	$ 6.1	$ 6.2
Change					$ -	$ -	$ -	$ -
% Change					0%	0%	0%	0%
Commercial	$ 10.0	$ 10.1	$ 10.3	$ 9.5	$ 9.6	$ 9.9	$ 9.9	$ 9.9
Change					$ (0.5)	$ -	$ -	$ -
% Change					-5%	0%	0%	0%
Other Leases	$ 8.6	$ 7.7	$ 8.3	$ 8.6	$ 8.5	$ 8.8	$ 8.9	$ 8.9
Change					$ (0.1)	$ -	$ -	$ -
% Change					-2%	0%	0%	0%
Total Upland Leases	**$ 30.8**	**$ 31.5**	**$ 36.8**	**$ 40.7**	**$ 36.4**	**$ 35.1**	**$ 35.4**	**$ 35.6**
Change					$ (0.1)	$ -	$ -	$ -
% Change					0%	0%	0%	0%

Aquatic Lands	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Aquatic Leases	$ 10.6	$ 9.2	$ 10.6	$ 10.1	$ 10.8	$ 11.0	$ 11.6	$ 12.1
Change					$ 0.3	$ -	$ -	$ -
% Change					3%	0%	0%	0%
Geoduck	$ 20.0	$ 28.5	$ 29.0	$ 14.2	$ 19.4	$ 20.5	$ 20.5	$ 20.3
Change					$ -	$ -	$ -	$ -
% Change					0%	0%	0%	0%
Aquatic Lands Revenue	**$ 30.7**	**$ 37.7**	**$ 39.6**	**$ 24.3**	**$ 30.2**	**$ 31.5**	**$ 32.1**	**$ 32.4**
Change					$ 0.3	$ -	$ -	$ -
% Change					1%	0%	0%	0%

Total All Sources	**$ 242.5**	**$ 257.0**	**$ 244.0**	**$ 214.7**	**$ 232.5**	**$ 261.3**	**$ 266.3**	**$ 268.8**
Change					$ (6.0)	$ (8.2)	$ (1.7)	$ (5.2)
% Change					-3%	-3%	-1%	-2%

Note: Totals may not add due to rounding.

Table 3.2: November 2013 Forecast by Fund (In millions of dollars)

Changes are from the September 2013 Forecast

		Actuals				Forecast			
Management Funds		FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
041	RMCA - Uplands	$ 31.8	$ 33.9	$ 29.7	$ 30.3	$ 33.6	$ 37.7	$ 39.7	$ 40.2
	Change					$ (1.1)	$ (2.0)	$ (0.9)	$ (1.1)
	% Change					-3%	-5%	-2%	-3%
041	RMCA - Aquatic Lands	$ 13.9	$ 17.5	$ 18.4	$ 10.7	$ 13.5	$ 14.1	$ 14.3	$ 14.4
	Change					$ 0.1	$ -	$ -	$ -
	% Change					1%	0%	0%	0%
014	FDA	$ 25.9	$ 25.8	$ 20.9	$ 16.6	$ 20.8	$ 24.6	$ 24.9	$ 25.8
	Change					$ (1.0)	$ (0.5)	$ 0.4	$ (0.3)
	% Change					-5%	-2%	2%	-1%
Total Management Funds		**$ 71.6**	**$ 77.1**	**$ 69.0**	**$ 57.6**	**$ 67.9**	**$ 76.3**	**$ 78.9**	**$ 80.3**
	Change					$ (2.0)	$ (2.4)	$ (0.5)	$ (1.4)
	% Change					-3%	-3%	-1%	-2%
Current Funds		FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
113	Common School Construction	$ 47.9	$ 56.5	$ 56.5	$ 60.5	$ 58.8	$ 66.8	$ 70.6	$ 71.0
	Change					$ (2.6)	$ (3.3)	$ (0.7)	$ (1.1)
	% Change					-4%	-5%	-1%	-2%
999	Forest Board Counties	$ 67.9	$ 70.5	$ 64.7	$ 55.4	$ 56.0	$ 64.6	$ 63.4	$ 63.9
	Change					$ (2.8)	$ (1.0)	$ 0.9	$ (1.0)
	% Change					-5%	-2%	1%	-2%
001	General Fund	$ 5.0	$ 4.2	$ 4.5	$ 2.2	$ 1.5	$ 2.4	$ 3.3	$ 3.9
	Change					$ (0.2)	$ (0.3)	$ 0.0	$ (0.0)
	% Change					-12%	-10%	1%	-1%
348	University Bond Retirement	$ 1.8	$ 1.3	$ 0.8	$ 0.8	$ 1.9	$ 2.5	$ 2.1	$ 1.6
	Change					$ (0.1)	$ 0.1	$ (0.0)	$ (0.2)
	% Change					-6%	3%	-2%	-8%
347	WSU Bond Retirement	$ 1.2	$ 1.4	$ 1.8	$ 1.6	$ 1.7	$ 1.6	$ 1.6	$ 1.6
	Change					$ 0.0	$ -	$ -	$ -
	% Change					1%	0%	0%	0%
042	CEP&RI	$ 5.6	$ 4.9	$ 5.0	$ 5.1	$ 4.4	$ 3.8	$ 4.2	$ 4.9
	Change					$ (0.1)	$ (0.7)	$ (0.5)	$ (0.4)
	% Change					-2%	-16%	-11%	-7%
036	Capitol Building Construction	$ 8.7	$ 8.7	$ 8.8	$ 3.7	$ 6.2	$ 7.3	$ 8.4	$ 9.5
	Change					$ (0.1)	$ (0.5)	$ (0.6)	$ (0.6)
	% Change					-2%	-6%	-6%	-5%
061/3/5	Normal (CWU, EWU, WWU, TESC)	$ 0.1	$ 0.1	$ 0.1	$ 0.2	$ 0.1	$ 0.1	$ 0.1	$ 0.1
	Change					$ 0.0	$ -	$ -	$ -
	% Change					2%	0%	0%	0%
Other Funds		$ 0.1	$ 0.1	$ 0.1	$ 0.4	$ 1.9	$ 1.2	$ 0.2	$ 0.2
	Change					$ 0.4	$ 0.3	$ (0.0)	$ 0.1
	% Change					25%	29%	-10%	73%
Total Current Funds		**$ 138.3**	**$ 147.6**	**$ 142.3**	**$ 129.9**	**$ 132.6**	**$ 150.3**	**$ 154.0**	**$ 156.7**
	Change					$ (5.5)	$ (5.4)	$ (0.9)	$ (3.1)
	% Change					-4%	-3%	-1%	-2%

(Continued)

Table 3.2: November 2013 Forecast by Fund (In millions of dollars), cont'd

Changes are from the September 2013 Forecast

Aquatic Lands Enhancement Account	Actuals				Forecast			
	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
02R	**$ 16.8**	**$ 20.2**	**$ 21.2**	**$ 13.6**	**$ 16.7**	**$ 17.4**	**$ 17.8**	**$ 18.0**
Change					$ 0.2	$ -	$ -	$ -
% Change					1%	0%	0%	0%

Permanent Funds	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
601 Agricultural College Permanent	$ 6.1	$ 2.9	$ 3.2	$ 4.1	$ 5.5	$ 6.5	$ 4.7	$ 3.5
Change					$ 0.8	$ 0.1	$ (0.1)	$ (0.2)
% Change					18%	2%	-1%	-5%
604 Normal School Permanent	$ 4.0	$ 3.0	$ 3.1	$ 1.4	$ 2.0	$ 2.7	$ 3.0	$ 3.2
Change					$ (0.1)	$ (0.8)	$ (1.0)	$ (0.6)
% Change					-3%	-23%	-26%	-16%
605 Common School Permanent	$ 0.4	$ 0.2	$ 0.3	$ 0.3	$ 0.3	$ 0.3	$ 0.3	$ 0.3
Change					$ -	$ -	$ -	$ -
% Change					0%	0%	0%	0%
606 Scientific Permanent	$ 5.1	$ 5.7	$ 4.6	$ 7.0	$ 7.2	$ 7.4	$ 7.0	$ 6.2
Change					$ 0.4	$ 0.2	$ 0.6	$ 0.1
% Change					6%	2%	9%	1%
607 University Permanent	$ 0.7	$ 0.3	$ 0.3	$ 0.8	$ 0.4	$ 0.4	$ 0.5	$ 0.6
Change					$ (0.0)	$ 0.1	$ 0.2	$ 0.1
% Change					-3%	50%	68%	19%
Total Permanent Funds	**$ 16.3**	**$ 12.1**	**$ 11.4**	**$ 13.6**	**$ 15.4**	**$ 17.3**	**$ 15.5**	**$ 13.8**
Change					$ 1.2	$ (0.4)	$ (0.3)	$ (0.6)
% Change					8%	-2%	-2%	-4%

Total All Funds	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Total	**$ 242.5**	**$ 257.0**	**$ 244.0**	**$ 214.8**	**$ 232.5**	**$ 261.3**	**$ 266.3**	**$ 268.8**
Change					$ (6.1)	$ (8.2)	$ (1.7)	$ (5.2)
% Change					-3%	-3%	-1%	-2%

Note: Excludes Trust Land Transfer, Real Property Replacement Account, and Land Bank property transactions and interest on property replac
Excludes fire assessments, permits, and fees.
Totals may not add due to rounding.