NATURAL RESOURCES

Economic and Revenue Forecast

First Quarter
Fiscal Year 2014

September 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 August 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 August 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)
September 2013	August 1, 2013	September 10, 2013	September 30, 2013
November 2013	October 1, 2013	November 5, 2013	November 30, 2013
February 2014	January 1, 2014	February 10, 2014	February 28, 2014
June 2014	May 1, 2014	June 9, 2014	June 30, 2014

Introduction and Forecast Highlights

U.S. Economy and Housing Market. The U.S. economy continues to improve, albeit it slowly. The unemployment rate, which peaked at 10.0 percent in October 2009, is down to 7.3 percent as of August. GDP growth remains modest at below two percent over the last four quarters ending in June. The housing market continues to show positive signs: new housing starts in the first seven months of 2013 averaged 912,000 (seasonally adjusted annual rate) and average U.S. housing prices have increased in each of the last 12 months through June. The U.S. economy still faces significant challenges. 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 recession; China's economy has slowed; and the U.S. government has still not implemented a coherent, growth-driven economic policy.

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. There will be considerable price volatility moving forward. Pacific Northwest log prices have also moved up sharply after being fairly flat for 2011 and most all 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 has fallen off a bit in August to $564/mbf, mimicking the recent drop in lumber prices.

Timber Sales Volume. Projected timber sales volumes for FYs 2014-2017 are unchanged from the June Forecast. Timber sales volumes are now 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 $340/mbf, down about nine percent from the $375/mbf predicted in June. Weighted by volume, sales prices have averaged $246/mbf in the first two months of the fiscal year. The lowered price expectations for this year are due primarily to higher proportion of thinning sales than previously anticipated. Based on continued confidence in a genuine recovery in the U.S. housing market, future timber sales prices are still estimated to be about $408/mbf in FY 2015, $412/mbf in FY 2016, and $416/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 552 (-16), 585 (+19), 513 (-12), and 499 (unchanged) mmbf respectively. Projected timber removal prices are lower

than the June Forecast at $312 (-$13.7), $347 (-$19.8), $391 (-$8.8), and $412 (unchanged) per mbf for each fiscal year in the forecast period. These removal prices follow from—and lag behind—the changes projected in timber sales prices.

Bottom Line for Timber Revenues. Accounting for the anticipated drop in FY 2014 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 $392.5 million to $375.1 million. Revenues in the 2015-2017 Biennium are predicted to be $406.5 million, down two percent from $415.7 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 unchanged from the June Forecast. Similarly, there are no changes to predicted commercial lease revenues in any year of the forecast period. Revenues from these commercial leases are forecast to total $10.1, $9.9, $9.9, and $9.9 million in FYs 2014-2017 respectively.

Due to a modest downward revision in projected geoduck harvest volumes, revenues from aquatic lands are expected to be slightly lower than previously forecast in FY 2014 and unchanged in outlying years. Revenues from aquatic lands are expected to total about $29.9 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 $508.2 million, down $18.3 million (four percent) from the previous projection. Revenues for the 2016-2017 Biennium are expected to total $542.0 million, down $9.2 million (two percent) from the June estimate.

Risks to the Forecast. Although significant curtailments in timber sales volumes have been 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.

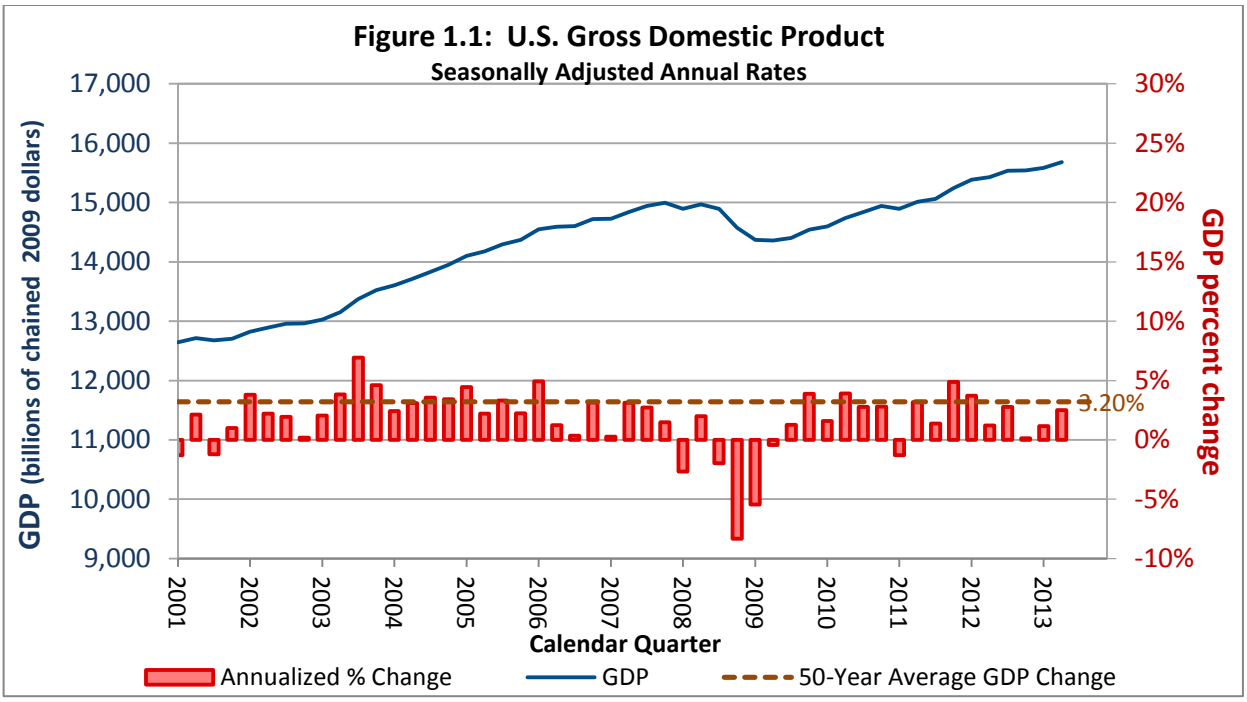
U.S. economy

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 2.2 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. The primary contributors to the nation's fourth quarter slowdown were reductions in private inventory investment, federal government spending, and state and local government spending. These downturns were somewhat offset by moderately strong upturns in commercial fixed investment and by improved consumer spending. By contrast, the economy grew by annualized rates of 1.2 percent and 2.5 percent in the first and second quarters of 2013. On a year-over-year basis, GDP grew had grown by 1.32 percent as of Q1 2013 and by 1.64 percent as of Q2 2013. The latest Blue Chip Consensus GDP projections average about 1.9% for 2013 and 2.6% for 2014.

Employment. The U.S. unemployment rate continues to fall. 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 August. The unemployment rate is near its lowest level 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

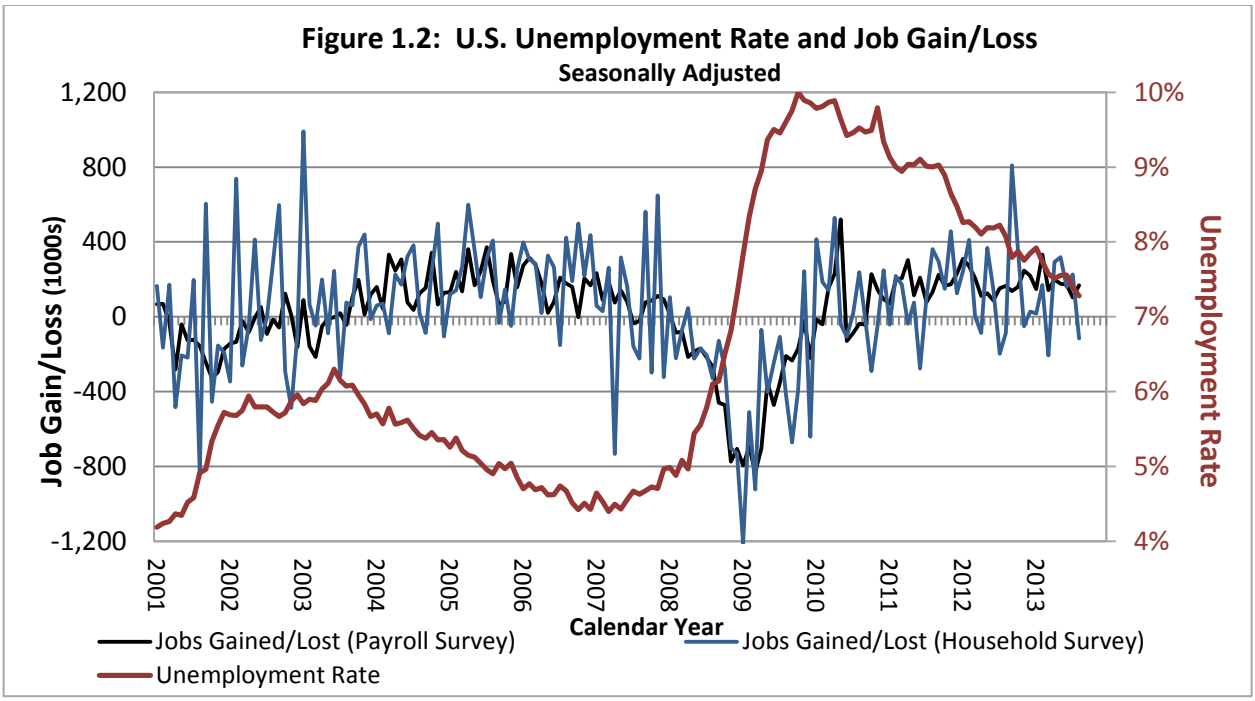


survey—both maintained by the U.S. Bureau of Labor Statistics. The household survey (or current population survey) is a sample survey of households, and it includes self-employed persons and farm workers. The unemployment, total work force, and labor force participation statistics are derived from the 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 May's payroll survey, there were 2.2 million more jobs in the United States than there were a year earlier, while there were 2.0 million more according to the household survey. Moreover, the payroll survey has shown job growth for 35 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 August's 7.3 percent headline rate. The U-6 rate was 13.7 percent in August, down from 14.7 percent a year earlier and from highs of 17.1 in 2010. **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 August, 4.3 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 August, the average duration of unemployment was 37.0 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.

Figure 1.4 compares the growth rates of the working-age population, the total workforce, labor participation[1], and employment levels. Several insights can be drawn from comparing these growth rates. 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).[2] Furthermore, 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 stabilize and the total workforce is slowly growing—though not yet at a rate to match the growth in the working-age population.

[1] The labor market participation rate is the total workforce as a percentage of the working-age population.
[2] It is important to note that some of this trend is explained by the aging of the large baby boomer segment of the population.

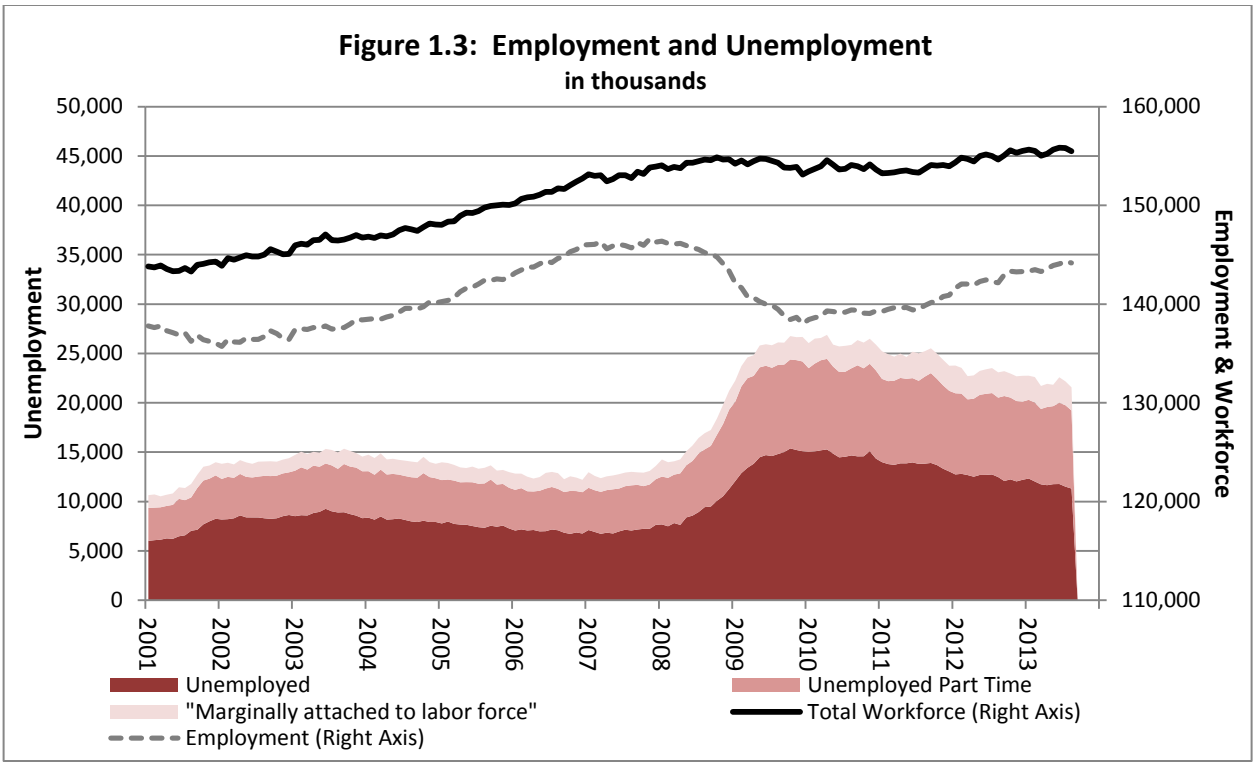


Figure 1.3: Employment and Unemployment
in thousands
Unemployment
Employment & Workforce
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
160,000
150,000
140,000
130,000
120,000
110,000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Unemployed
Unemployed Part Time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

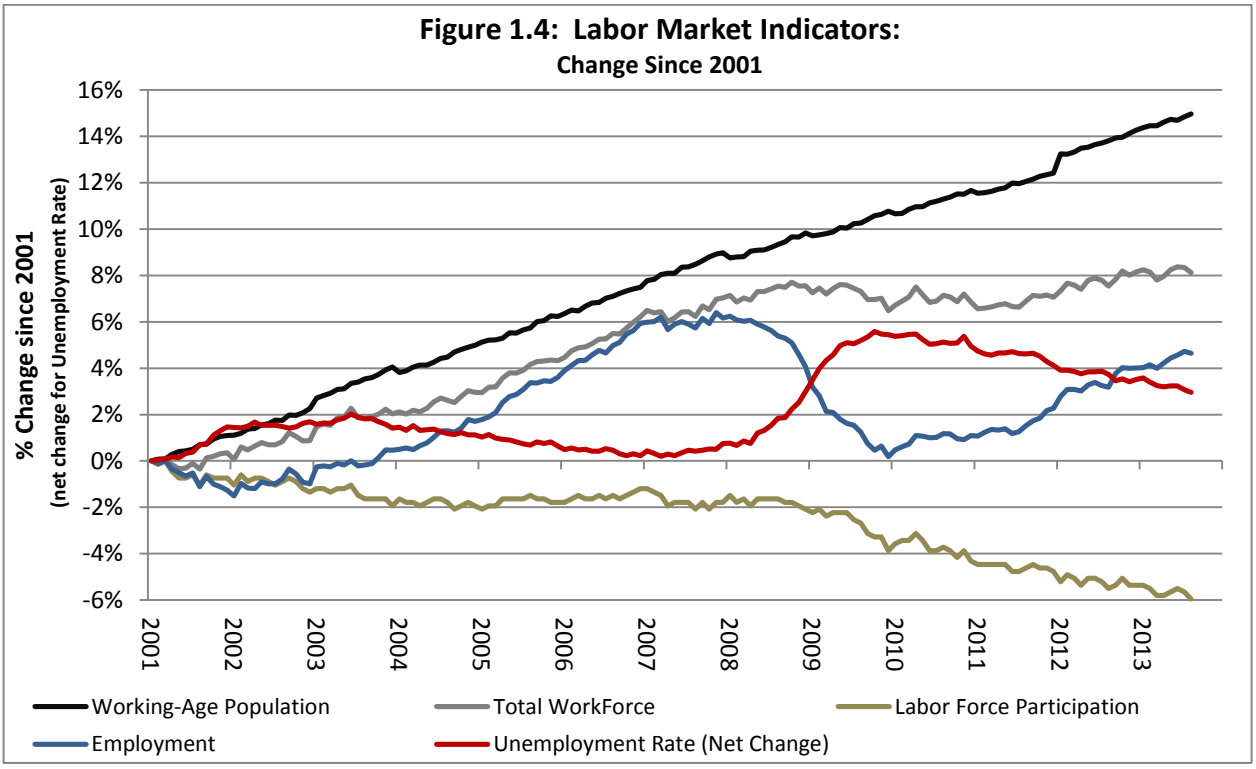


Figure 1.4: Labor Market Indicators:
Change Since 2001
% Change since 2001
(net change for Unemployment Rate)
16%
14%
12%
10%
8%
6%
4%
2%
0%
-2%
-4%
-6%
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Working-Age Population
Total WorkForce
Labor Force Participation
Employment
Unemployment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

Consumption. Real personal consumption expenditures in Q2 2013 were 1.8 percent higher than a year ago. Consumer spending on durable goods was up 7.7 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 1.7 percent and spending on services was up by 1.0 percent. On average, total real personal expenditures in July 2013 were 2.2 percent higher than a year ago.

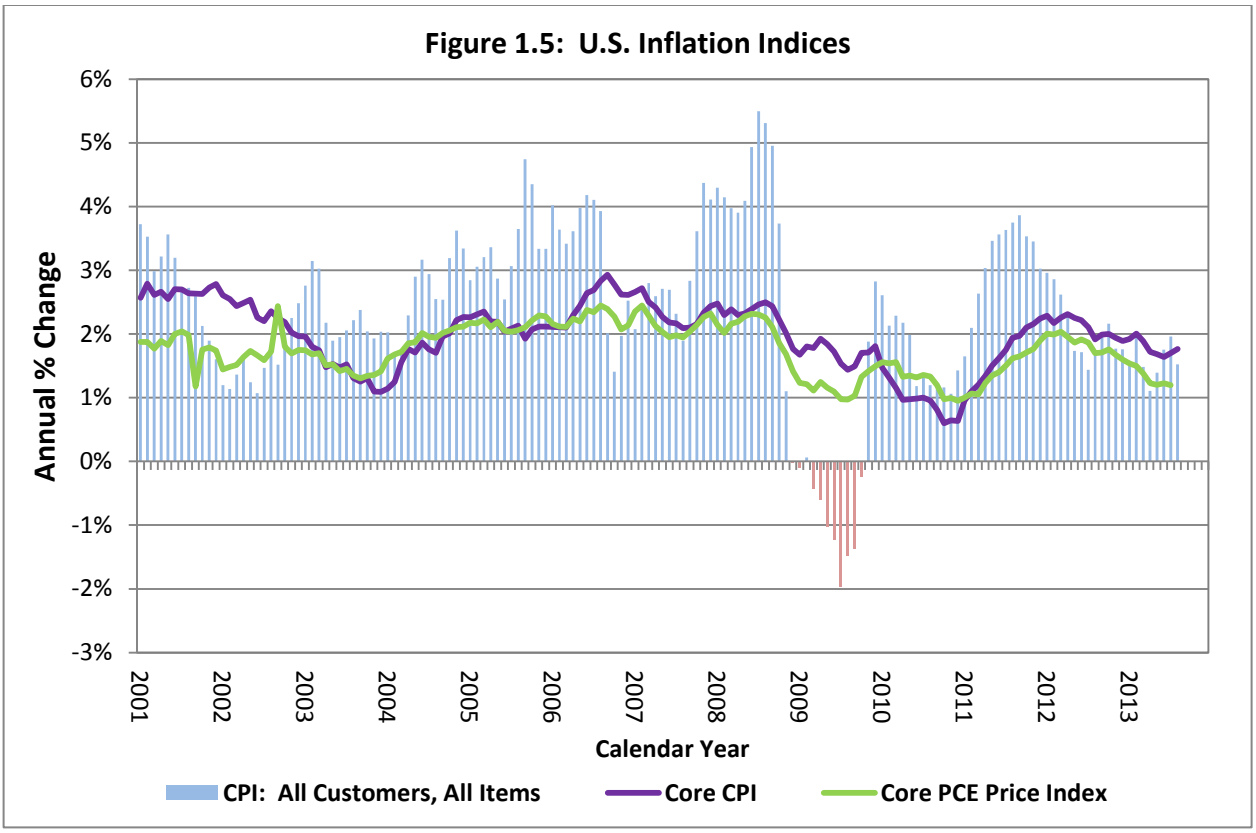
U.S. consumer confidence was deeply shaken in the recession. The final Thomson Reuters/University of Michigan Index of Consumer Sentiment for June moved up to 85.1, from 84.5 in March. August's final figure dropped slightly to 82.1. September's preliminary figure came in at 76.8. This recent weakening comes on the heels of a year of mostly improving sentiment, and is unsurprising given higher gasoline prices, policy concerns such as the threat of federal government default or shutdowns, and the expiration of the payroll tax holiday.

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 2.8 percent in 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 nine months, standing at 4.46 percent in August.

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 1.60 percent in the first eight months of 2013. Most economic forecasters see annual inflation of 2.0 percent or below through 2016.

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 below 2 percent since November 2008.



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 respectively for 2010, 2011, and 2012. It has dropped to 21.6 for the first seven months of 2013.

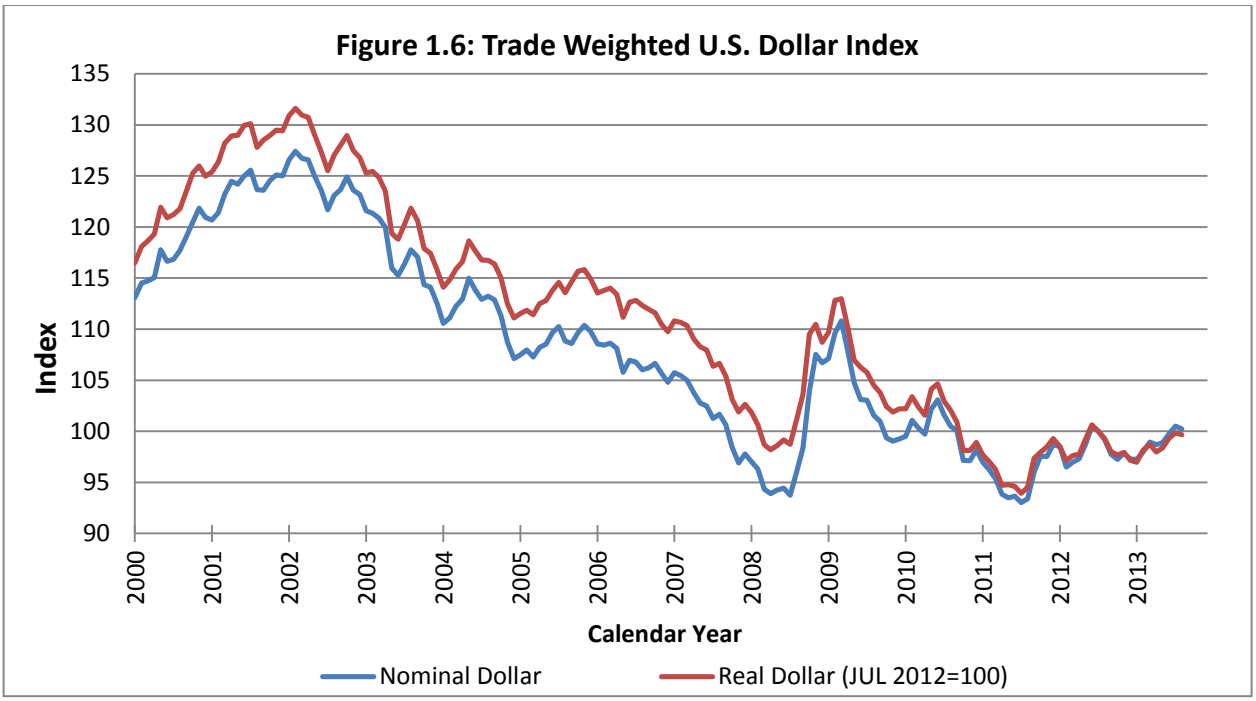


Figure 1.6: Trade Weighted U.S. Dollar Index
Index
135
130
125
120
115
110
105
100
95
90
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Calendar Year
Nominal Dollar
Real Dollar (JUL 2012=100)

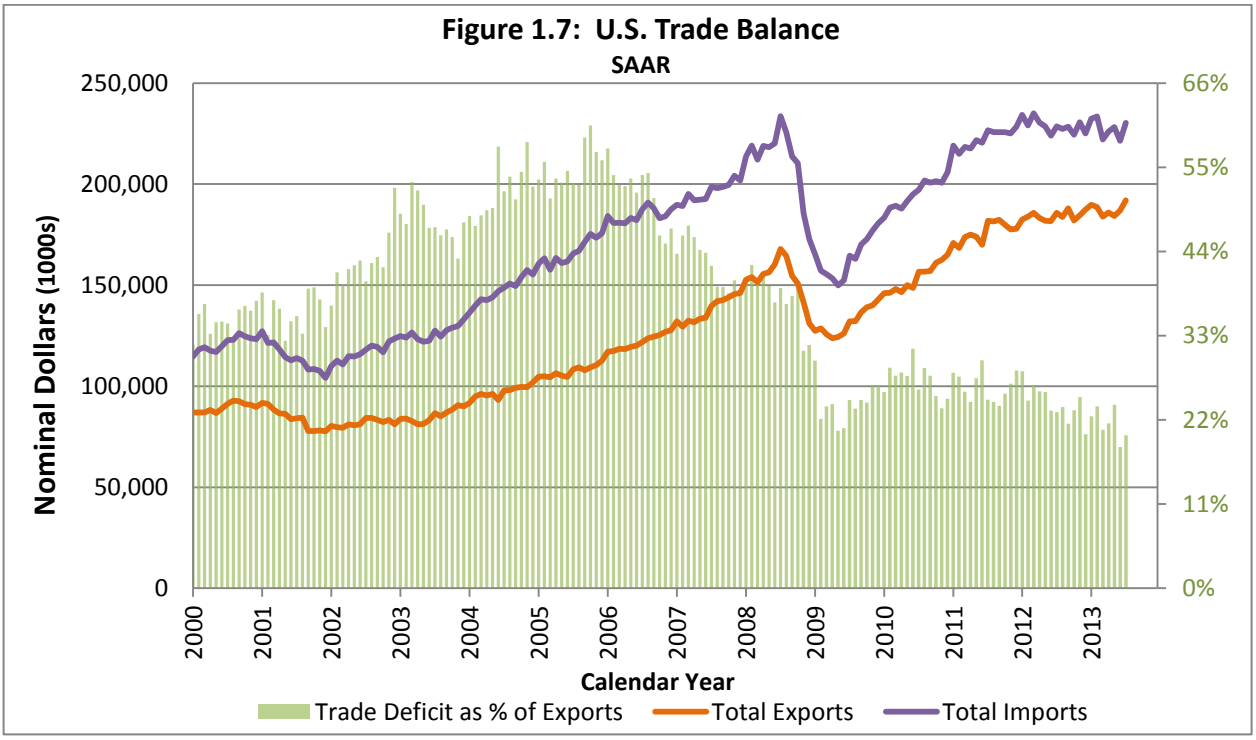


Figure 1.7: U.S. Trade Balance
SAAR
Nominal Dollars (1000s)
250,000
200,000
150,000
100,000
50,000
0
66%
55%
44%
33%
22%
11%
0%
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Calendar Year
Trade Deficit as % of Exports
Total Exports
Total Imports

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World economy

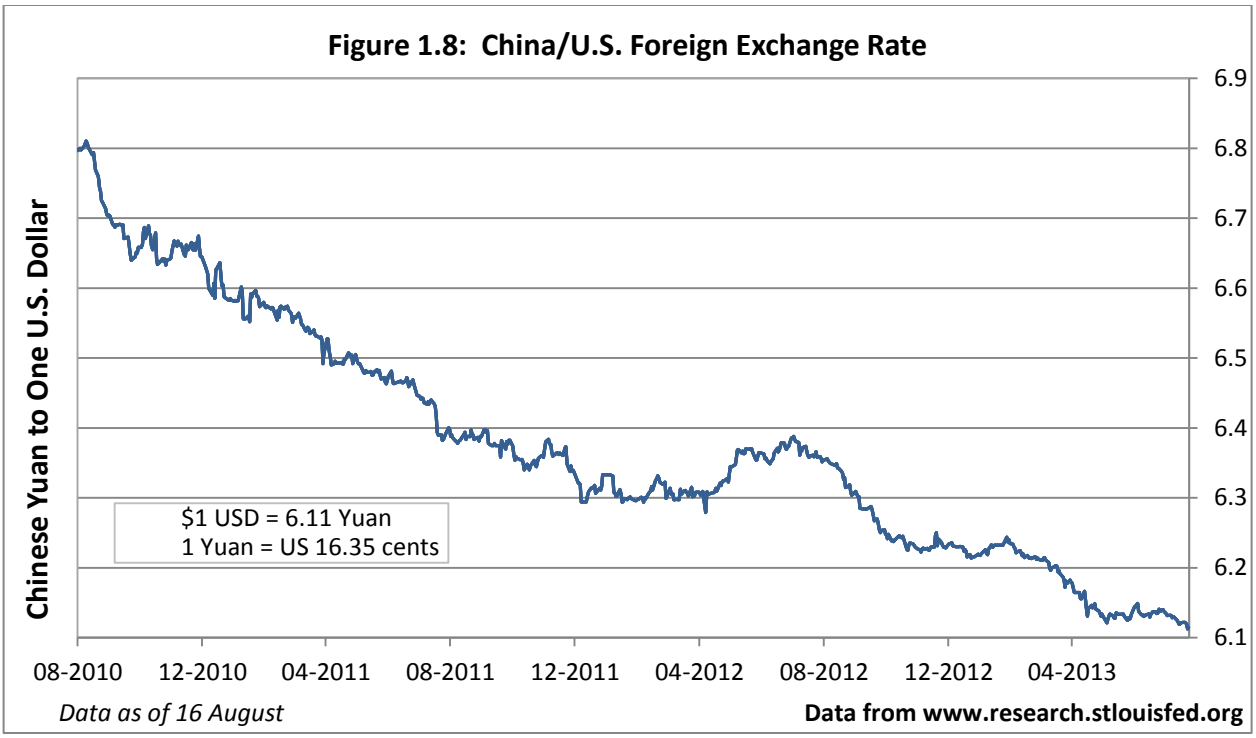
Europe. Most forecasts for the U.S. economy cite the ongoing European financial crisis as a significant downside risk. Weakness in Eurozone economies means reduced demand for U.S exports as well as continued difficulties in addressing their sovereign debt and banking crises. There are renewed questions 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 economy. 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. China is well placed to enjoy a fourth decade of rapid catch-up and improving living standards, notwithstanding various risks. In the near-term, global economic conditions might be less supportive than projected. There are also concerns about property prices, excessive off-balance sheet financing by the banking system and local governments, and alarming levels of non-performing debt. Over the longer run, inequalities and aging of the populace are sources of tension.[3]

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 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.

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



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[4], 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 $110 per barrel in the first seven 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 have not translated into cheaper prices at the pump (examine the same period from **Figure 1.10**).

[4]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.

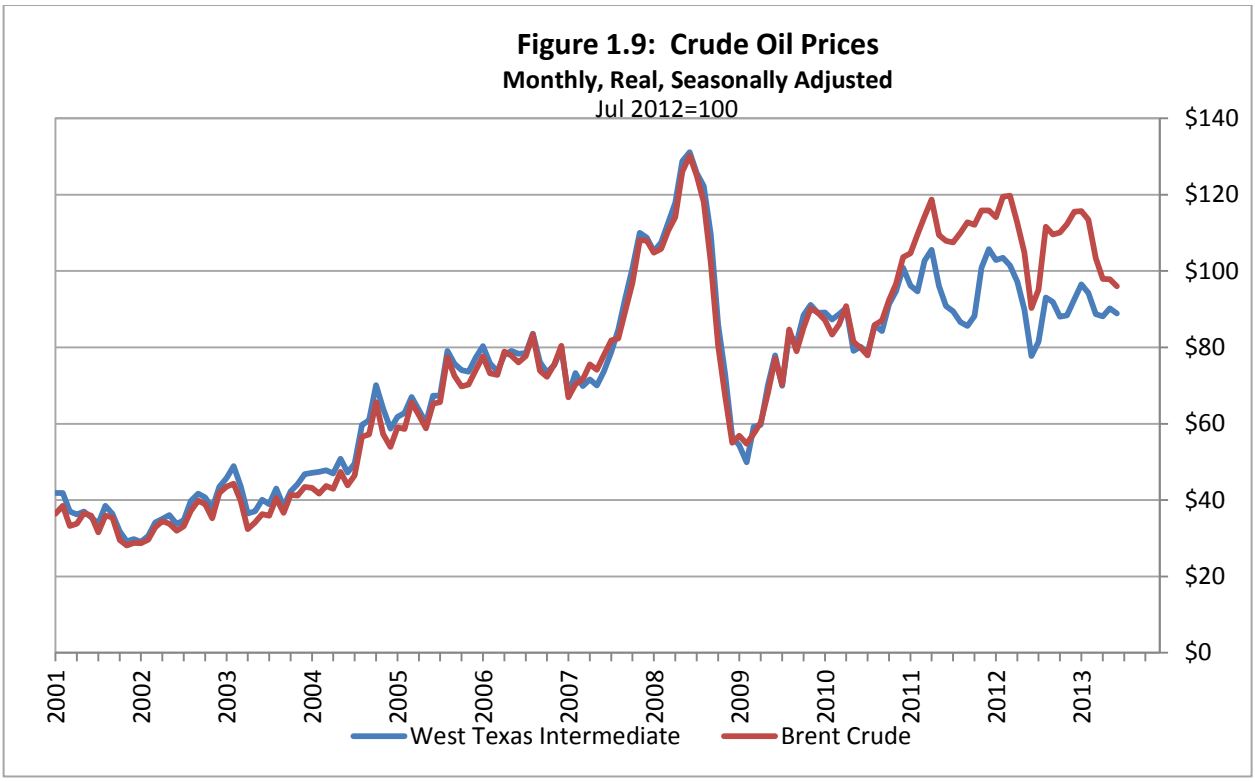
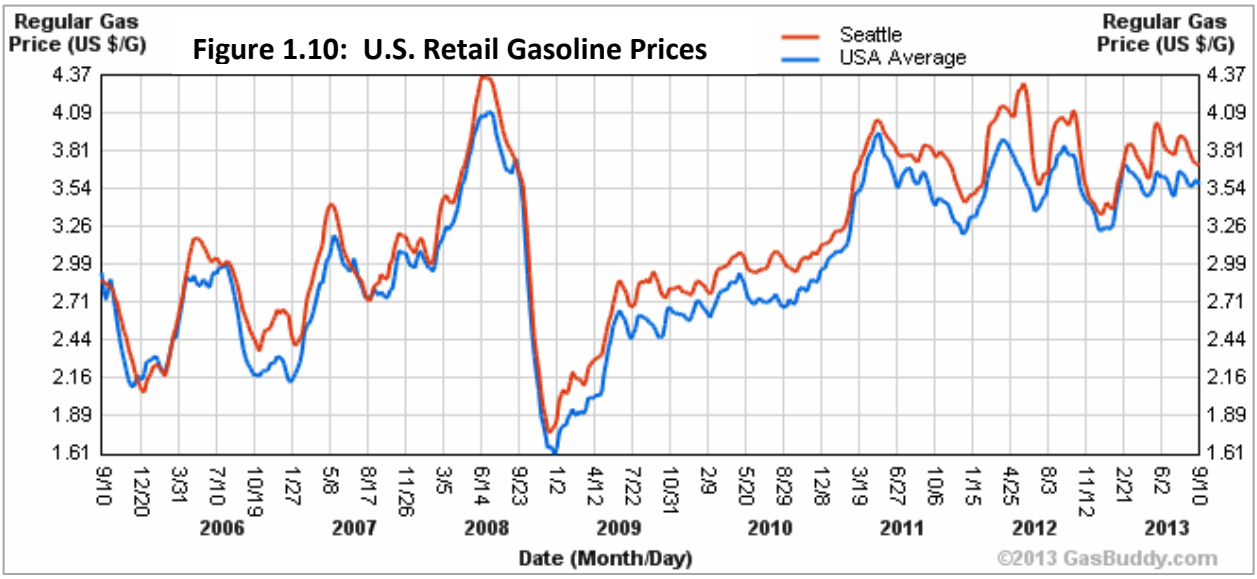


Figure 1.9: Crude Oil Prices
Monthly, Real, Seasonally Adjusted
Jul 2012=100
$140
$120
$100
$80
$60
$40
$20
$0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
West Texas Intermediate
Brent Crude


Regular Gas Price (US $/G)
Figure 1.10: U.S. Retail Gasoline Prices
Seattle
USA Average
Regular Gas Price (US $/G)
4.37
4.09
3.81
3.54
3.26
2.99
2.71
2.44
2.16
1.89
1.61
9/10
12/20
3/31
7/10
10/19
1/27
5/8
8/17
11/26
3/5
6/14
9/23
1/2
4/12
7/22
10/31
2/9
5/20
8/29
12/8
3/19
6/27
10/6
1/15
4/25
8/3
11/12
2/21
6/2
9/10
2006
2007
2008
2009
2010
2011
2012
2013
Date (Month/Day)
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Part 2. Log and Lumber Industry Factors

This chapter focuses on specific market factors that affect timber stumpage prices and overall timber sales revenues received by the Washington State Department of Natural Resources (DNR). Timber stumpage prices reflect demand for lumber and other wood products, timber supply, and regional and local lumber mill capacity. The demand for lumber and structural wood products is directly related to the demand for U.S. housing and other end-use markets.

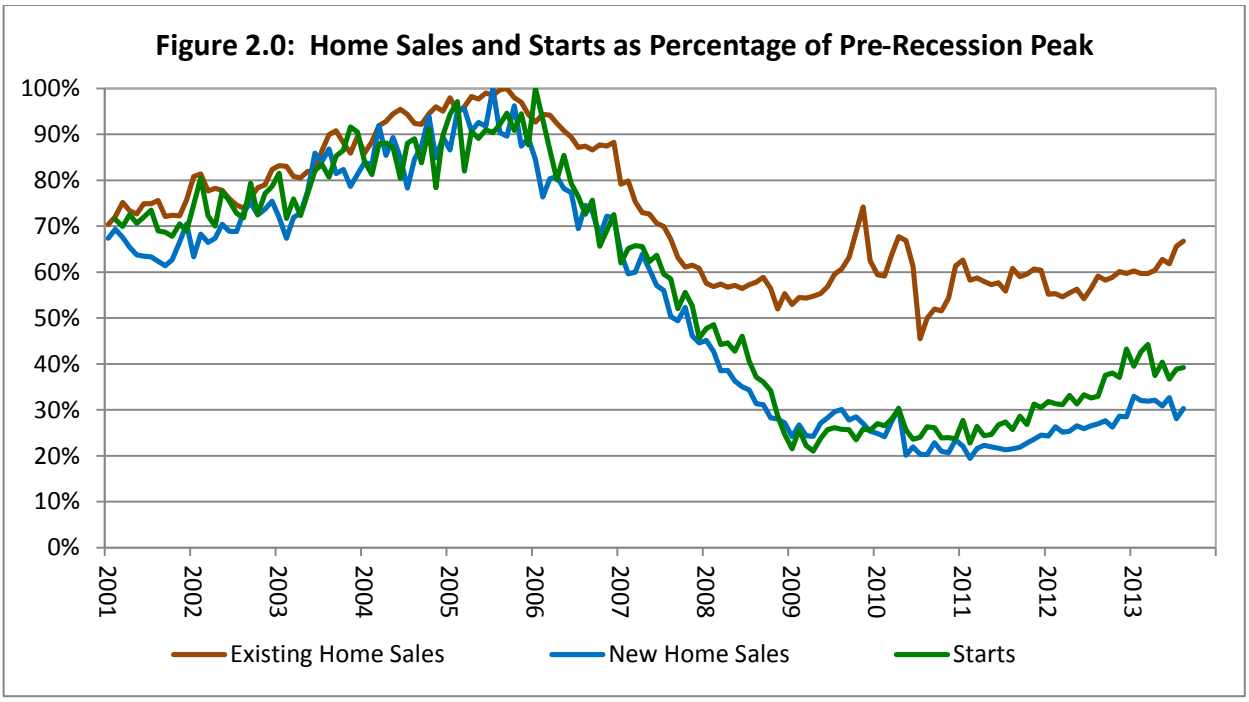
U.S. housing market

August marked the end of one of the hottest summer home shopping seasons in years, as home value appreciation rates continued their rocket ride upward – perhaps dangerously so in some metro areas. Double-digit appreciation rates do help to lift homeowners out of negative equity and to entice sellers into a low-inventory environment, but this rapid growth is not normal and cannot and should not be expected to last. We are already beginning to see moderation in the monthly pace of home value appreciation, which will be good for the market overall and in the long term.

Dr. Stan Humphries
Chief Economist, Zillow Real Estate Research
September 22, 2013

The fledgling recovery in the U.S. housing market can increasingly be seen across multiple measures. **Figure 2.0** 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 2013 to date. These individual housing market indicators are discussed in more detail below.

Existing Home Sales. Existing home sales have made a sharp turn upward (see **blue** line in **Figure 2.1**), standing at 4.76 million (seasonally adjusted annual rate) in July and 4.84 million in August. This recent higher level of sales is 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 2.1**). 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 are still occurring. However, the share of distressed sales is down year-over-year in most urban areas. Moreover, there is a decline in foreclosure sales in all of the selected cities and a shift from foreclosures to short sales. For the first time in three years, short sales in most urban areas now outnumber foreclosures.

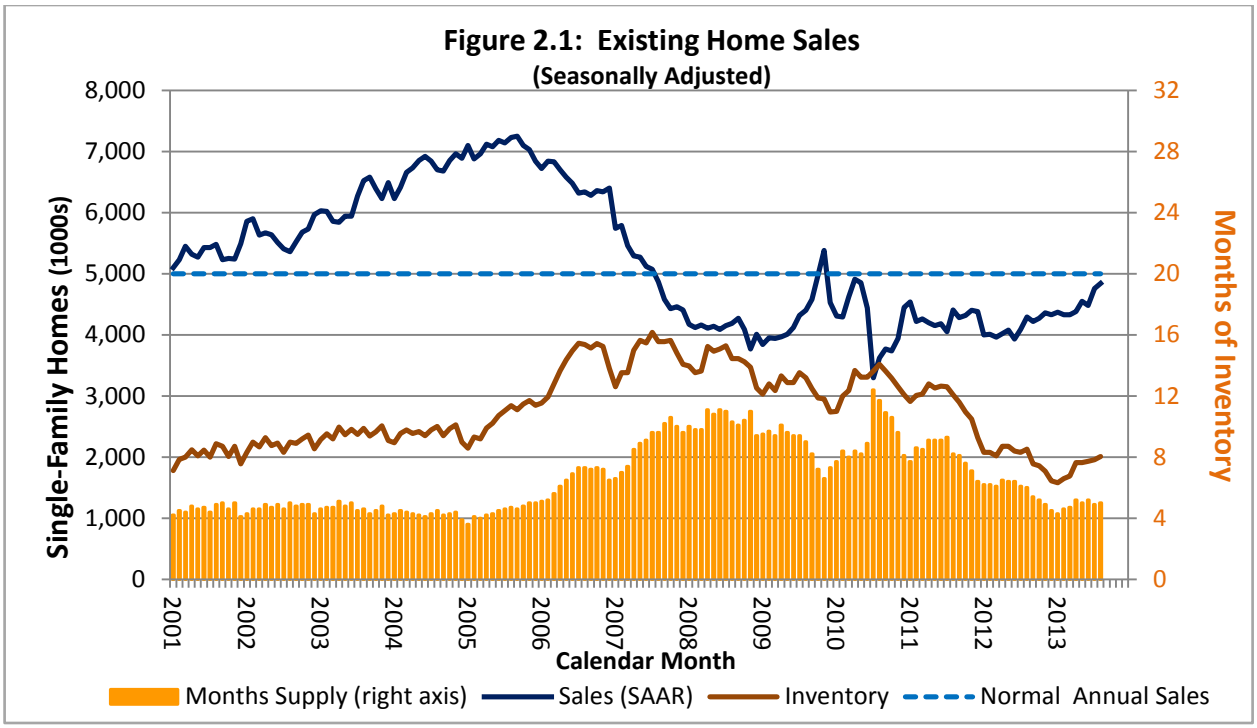


The June and July sales numbers are impressive given that as recently as February, existing home sales were at 4.33 million, within the 3.9 million to 4.5 million range where they had been fluctuating for the last two and one-third years, after moving up from the bottom of 3.3 million in July 2010 (**see Figure 2.1**).

It looks like the 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 2.1**). 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. Both the apparent recent bottom and the recent rise in inventory are encouraging signs for the housing recovery. Higher housing prices have persuaded some people, who have been holding their houses off the market waiting for higher prices, to list them for sale now. 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.

It is also encouraging that the months' worth of sales—which is 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, and had risen to 5.2 months in June before settling at 5.0 months in August (see **orange** bars in **Figure 2.1**). This measure peaked at 12.4 months less than three years ago in July 2010 but is now back down in a more normal range.

Private investors have moved into depressed housing markets and are purchasing 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. Big 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,

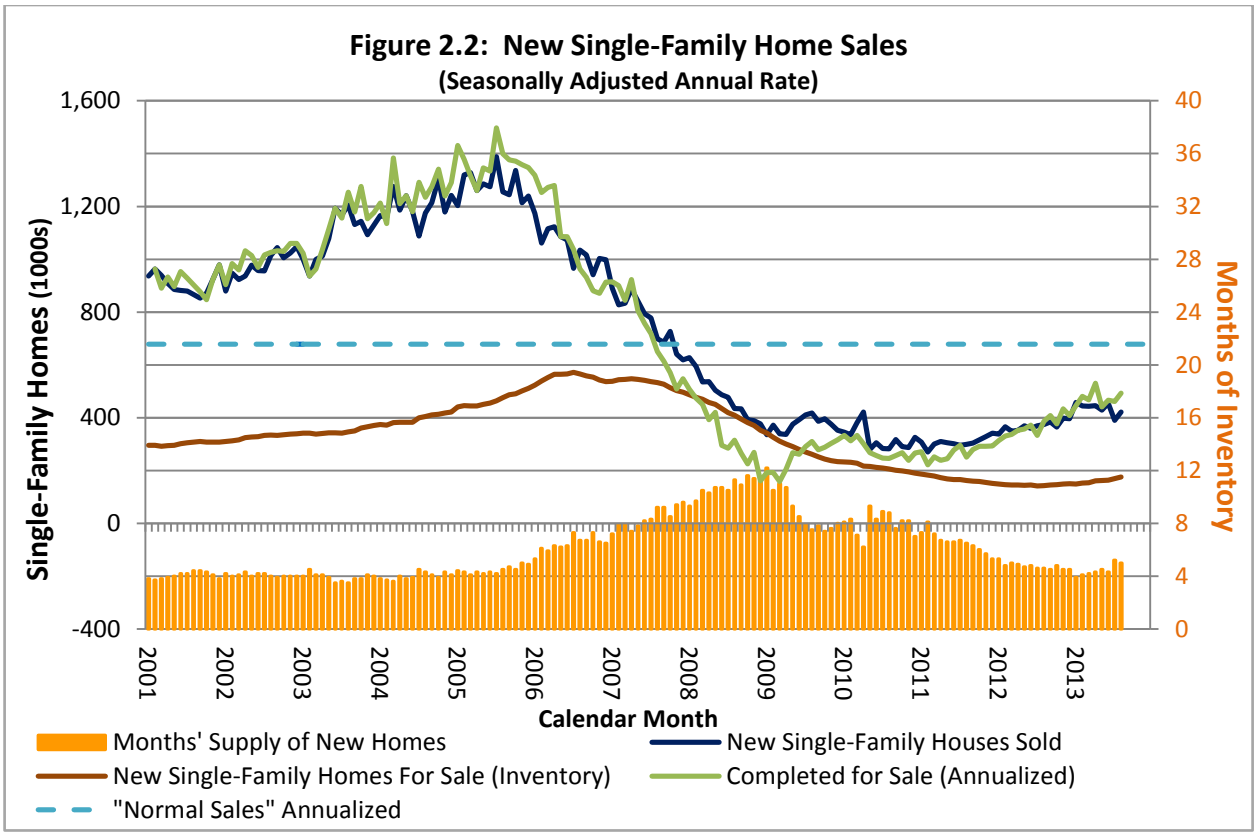


contributing to the recovery in some key markets. On the other, there is concern about the impact on the housing market when the investors begin selling, as they inevitably will.

New Home Sales. New home sales continue to climb out of their multi-year trough. The **blue** line in **Figure 2.2** 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 2.2**) 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—but 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 out of its bottom. In January, as shown in **Figure 2.2,** 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.

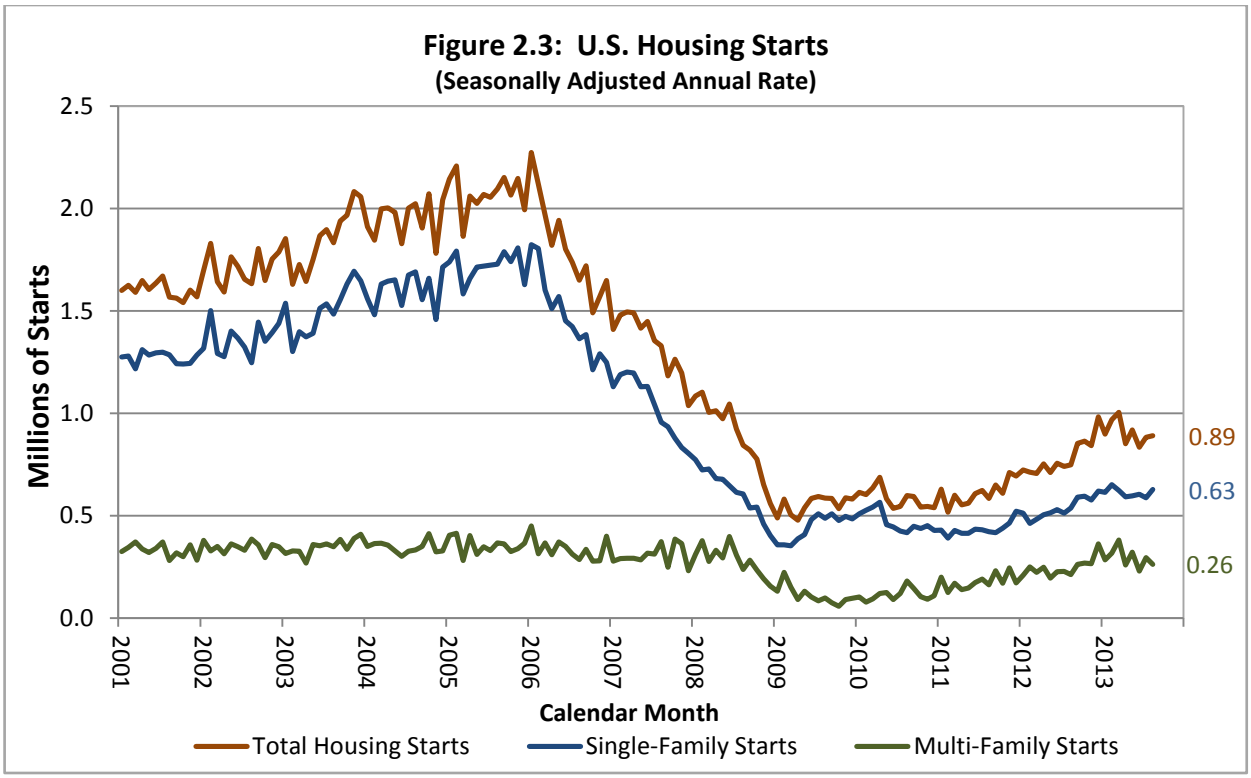


Reducing the inventory (supply) of existing and new homes for sale is essential to the U.S. housing market recovery because it increases the need for new house construction.

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[5]. 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.

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 2.3**). In April 2009, U.S. housing starts fell to 478,000 (seasonally adjusted annual rate), the all-time record

[5] 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.



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 2.3**).

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 hit a significant milestone in August, surging 12 points from January's value to a reading of 59 on the National Association of Home Builders/Wells Fargo Housing Market Index (HMI). Any reading over 50 indicates that more builders view sales conditions as good than poor. June was the first time the HMI has been 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.

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.

Under typical economic conditions, household formation (or the growth in the number of households) is the key driver of U.S. housing starts. The shockwaves of the Great Recession, however, upset all sorts of normal variables in U.S. economic equations. 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. 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 brought housing starts to startling lows. Typical annual U.S. household formation is estimated to be in the range of 1.2-1.3 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.

The outlook for housing starts is optimistic. 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. FEA's forecast is very similar, at 0.98 million and 1.26 million housing starts for 2013 and 2014 respectively.

Three straight months of national home value appreciation above 10 percent is not normal, not sustainable and, frankly, not very believable... Looking ahead, a combination of rising mortgage interest rates, flagging investor demand and more inventory entering the market will all help to moderate the pace of home value appreciation and stabilize the market.

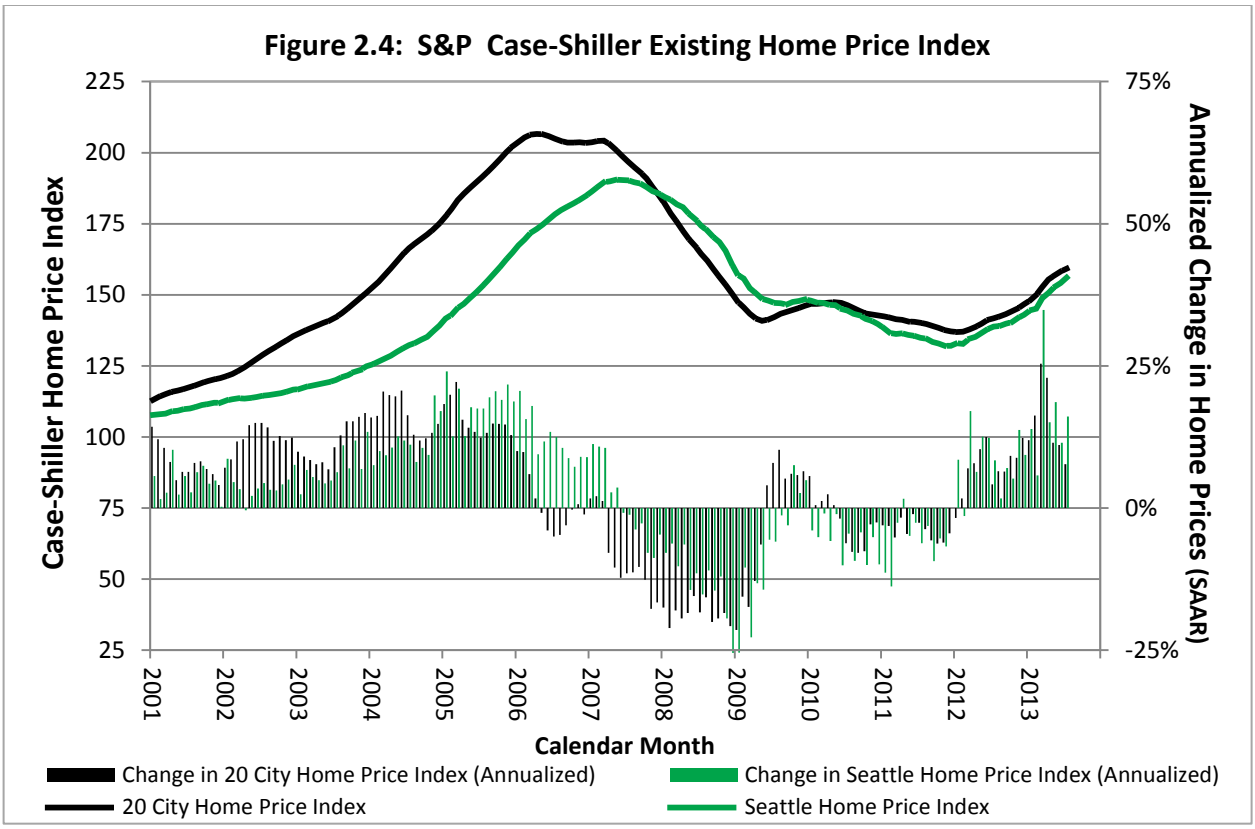
Dr. Svenja Gudell
Senior Economist, Zillow Real Estate Research
July 30, 2013

Housing Prices. U.S. housing prices have continued to climb in the last year after six unprecedented years of falling and flat prices. **Figure 2.4** 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 18 months since bottoming out in January 2012—its lowest point since October 2002, almost ten years earlier. The most recent release includes data through July 2013 and it showed that the 20-city composite index had increased by 12.3 percent over the previous year period. Even with the recent increase, the average existing house in the U.S. in July was still only worth 79 percent of its value at the peak of the real estate bubble in April 2006, up modestly from the price bottom of 66 percent in March 2012.

Seattle house prices are following a similar trajectory, having increased 12.4 percent year-over-year as of July. When Seattle prices bottomed in February 2012—at their lowest point since June 2004—the average existing house in Seattle was worth only 69 percent of the May 2007 peak (see **Figure 2.4**). As of July, the average Seattle home was worth 82 percent of its peak price.

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 don't have the income," Green said.[6]

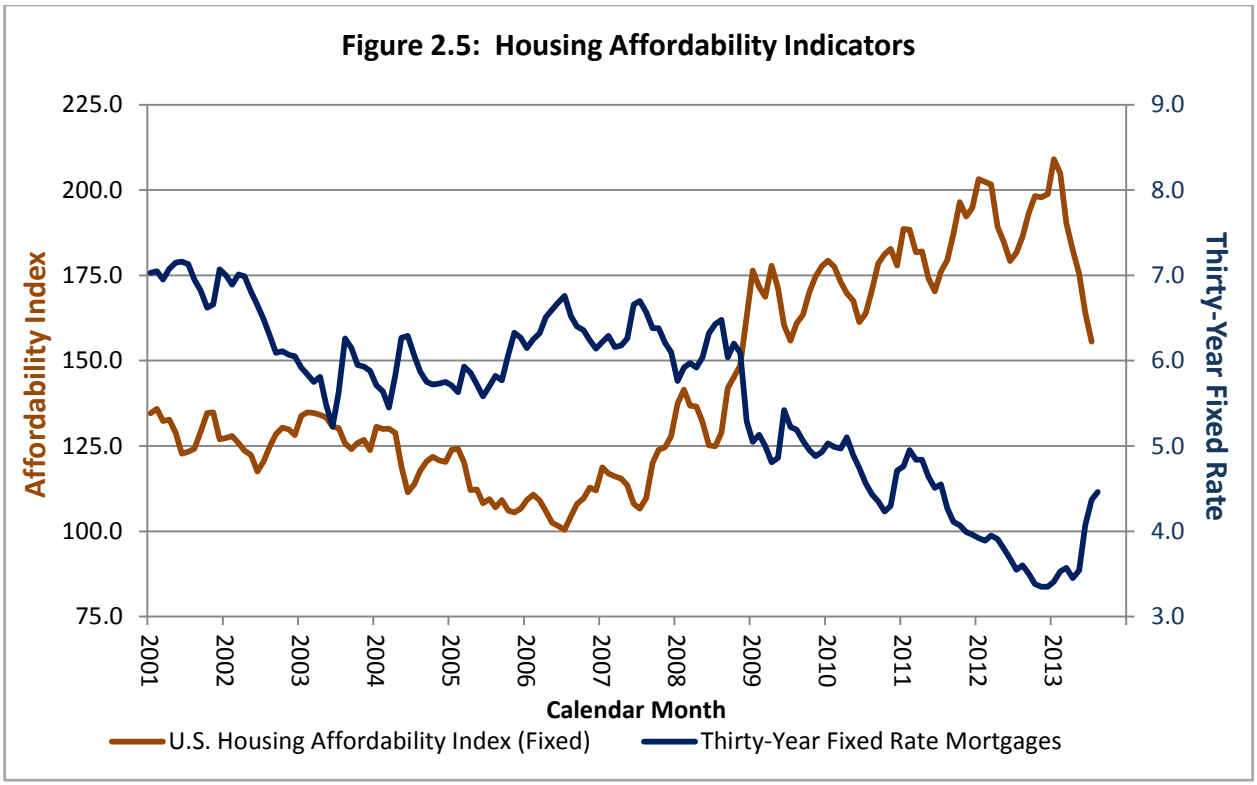
[6] "Southland home prices soar 24.7% in May from a year earlier", Los Angeles Times, June 11, 2013.



Over the past several recessionary years, excessive supply conspired with lower demand to lower housing prices. That prices are now rising suggests that the housing market is recovering, as discussed in the previous housing sections above. A beneficial result of rising housing prices is that fewer mortgages are "underwater" to the extent that those homes' values are now greater than the loan amount. However, rising prices are not unambiguously good; all else being equal, rising prices make housing less affordable.

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 an 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. However, 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 155.6 as of July (see **Figure 2.5)**. The family income required to qualify for a mortgage on the $214,000 median-priced existing single family home in the United States at the mortgage rate of 4.13 percent remained relatively low at only $39,840 per year. This compares with an average qualifying income of $45,984 in 2008 and $52,992 in 2007. While the qualifying income is now much lower, median family income



is now $62,868, very similar to the average of $63,366 in 2008 and $61,173 in 2007. In short, median wages have stagnated.

Home buying affordability may well have peaked: home prices are increasing and mortgage rates are starting to increase (see **Figure 2.5**). U.S. 30-year fixed mortgage loan rates[7] remain at historically low levels but they have now risen to 4.46 percent from their low of 3.43 percent in December 2012.[8] The 30-year fixed mortgage rate has been below 5 percent for 40 consecutive months.

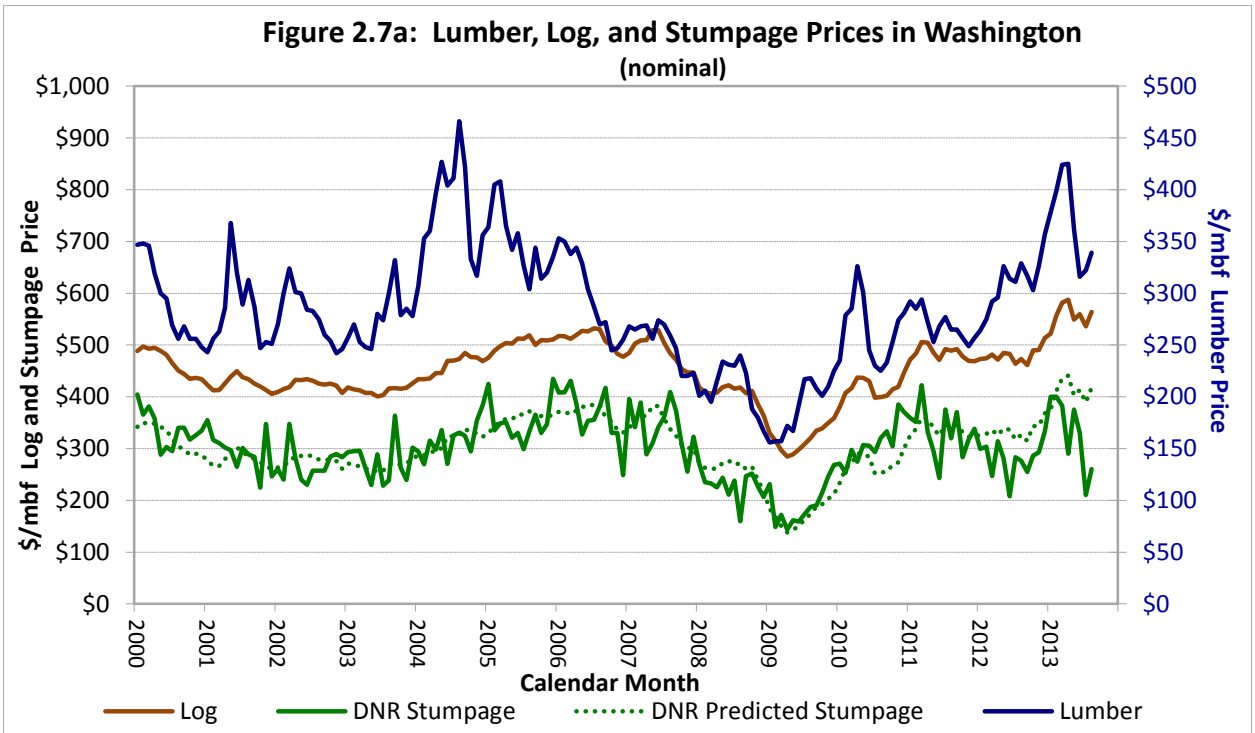
Since mortgage rates are still so low, increasing rates may not hurt the housing recovery very much. Neil Irwin, an economist at the Washington Post, argues that "rising mortgage rates, if they're rising for good reasons, could actually be net positives for the housing market if they result from more people having jobs and being confident in their prospects." He thinks 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." 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] 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.

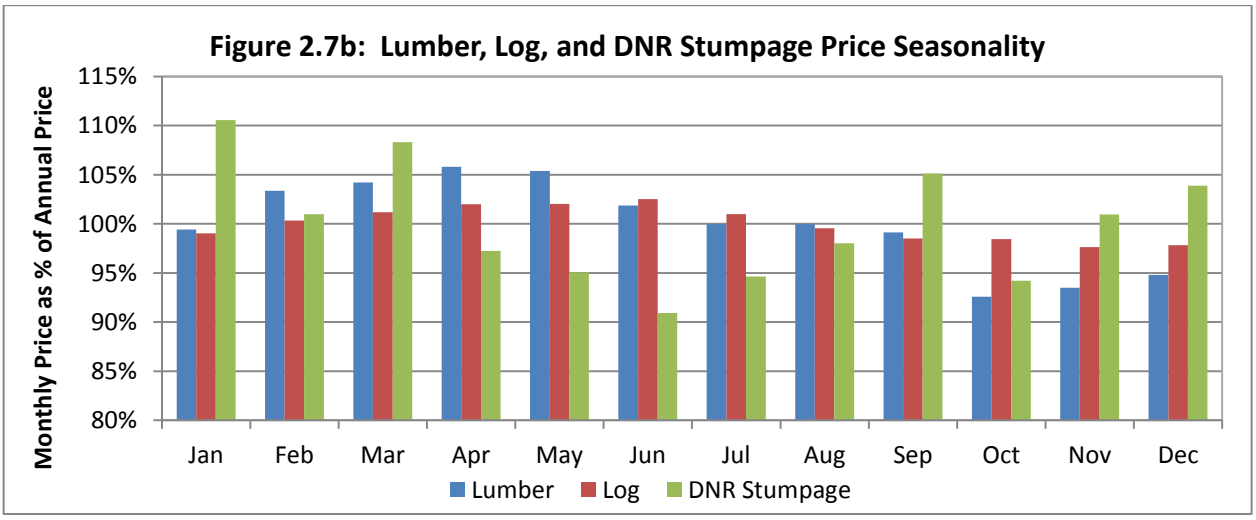
[8] It is not without interest that this change increases the 30-year debt burden on the $214,000 home by about $46,000, or that the median-priced home has increased by $34,000. Including both the rise in home prices and in mortgage rates, the debt burden has increased by about $100,000 since December.

Lumber, log, and timber stumpage prices

DNR is 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. **Figure 2.7a** shows nominal monthly lumber and log prices in Washington and DNR stumpage prices since 2000. The close relationship of log and stumpage prices is obvious and expected. Also obvious is the extreme monthly volatility in lumber and stumpage prices and dampened month-to-month price changes for logs. The differences in average annual monthly price volatility are illustrated in **Figure 2.7b.**



Note: The two scales reflect the fact that, on average, one Board foot Scribner log scale yields about two board feet lumber scale



Demand and Supply Factors. A major driver of stumpage prices is demand for lumber in new home construction, lumber's main end-use market. The favorable outlook for the recovering U.S. housing market and new housing starts supports a moderately optimistic view of lumber, log, and stumpage prices over the next several years. As discussed in the previous section, 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.

Also on the demand side, China's continued appetite for logs and lumber has served to prop up log and lumber prices, which in turn drive stumpage prices higher. This is an indirect, but real, impact on DNR stumpage prices since logs from state lands cannot be exported by Federal law. Japan also continues to be a reliable destination for U.S. log and lumber exports and Japan's economic prospects are improving, although the long-run outlook is not clear.

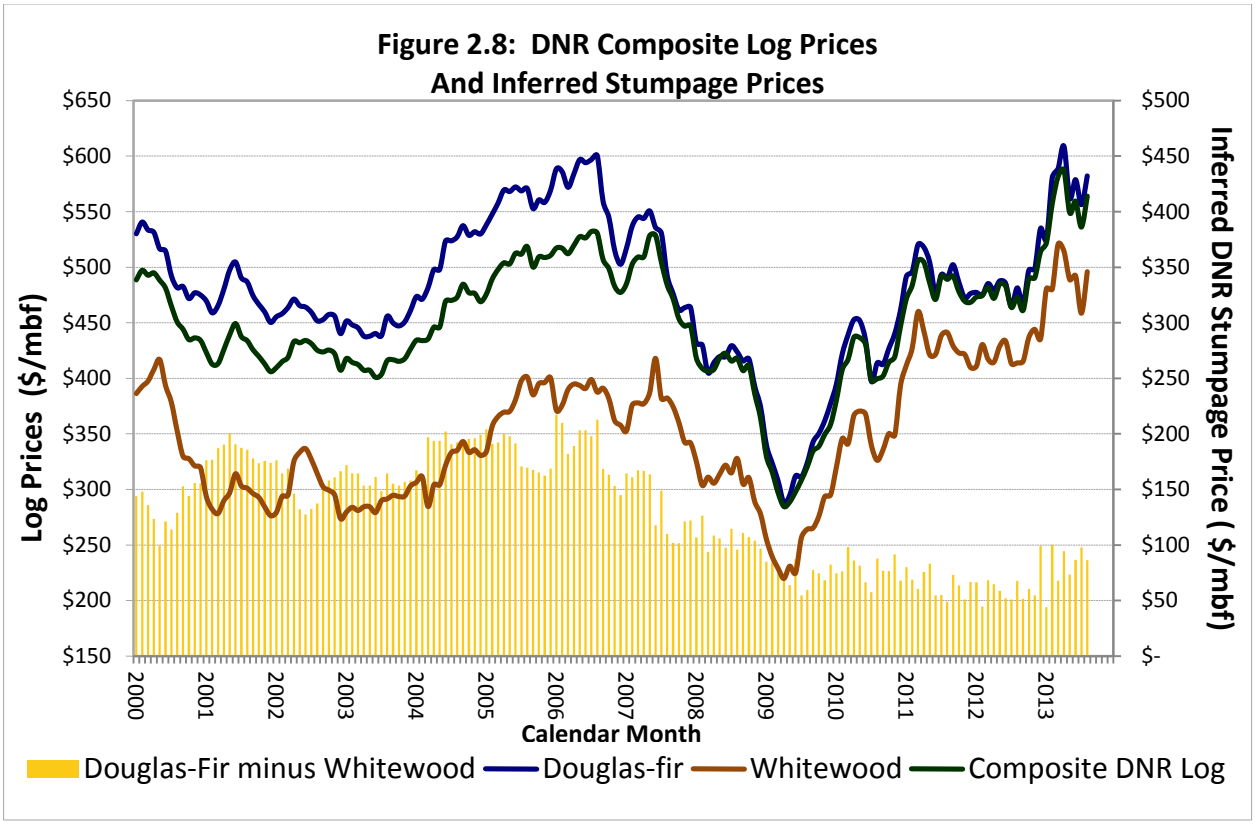
On the supply side, lumber mills have excess capacity because of layoffs and shift reductions caused by cutbacks in production during the Great Recession. Capacity utilization in the U.S. Coast region (western Washington and western Oregon) softwood lumber mills dropped to 57 percent in the bottom of 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 84 percent. Lumber prices should be driven higher as capacity utilization of Coast region lumber mills is predicted to go to 90 percent in 2014 and 91 percent in 2015. 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 moved on and may not return to the industry. 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 has exceeded timber harvest during this period 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 is not as great as in other regions and harvests are expected to exceed growth sooner.

Although the timber supply situation in the Coast Region should soon have a neutral impact on stumpage and log prices, and although increased timber inventories in the Inland and South regions will hold prices down, decreasing timber supplies in Canada will push prices up in the longer term. The mountain pine beetle kill is reducing British Columbia's potential timber harvests and Quebec's allowable annual cut is being reduced by implementation of Bill 57 in 2013 and may be additionally reduced by Plan Nord.

Lumber Prices. As shown in **Figure 2.7a**, lumber prices have had a good run up since their extreme lows in 2009, when they bottomed out at $156/mbf in January 2009 in the 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, region 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.

Lumber futures prices have shown a similar pattern in recent months, peaking at $404/mbf in mid-March and falling as low at $284/mbf in early June.

Log Prices. **Figure 2.8** 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 2.8** is the same as the brown line on **Figure 2.7a**. 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 2.8** in the period since 2000. Log prices have fallen off a bit in August to $564/mbf, mutedly mimicking the recent drop in lumber prices.

Note the diverging trend between regional lumber and log prices from late 2011 into 2013 (see **Figure 2.7a**); 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 2.7a** shows monthly nominal prices for DNR stumpage prices since 2000. Like the log price, DNR stumpage prices bottomed out in April 2009 at $145/mbf. Two months into FY 2014, the average DNR stumpage price weighted by volume is $246/mbf. The lower prices in July and August sales were due principally to a higher proportion of thinning sales than usual; prices are expected to climb throughout the year.

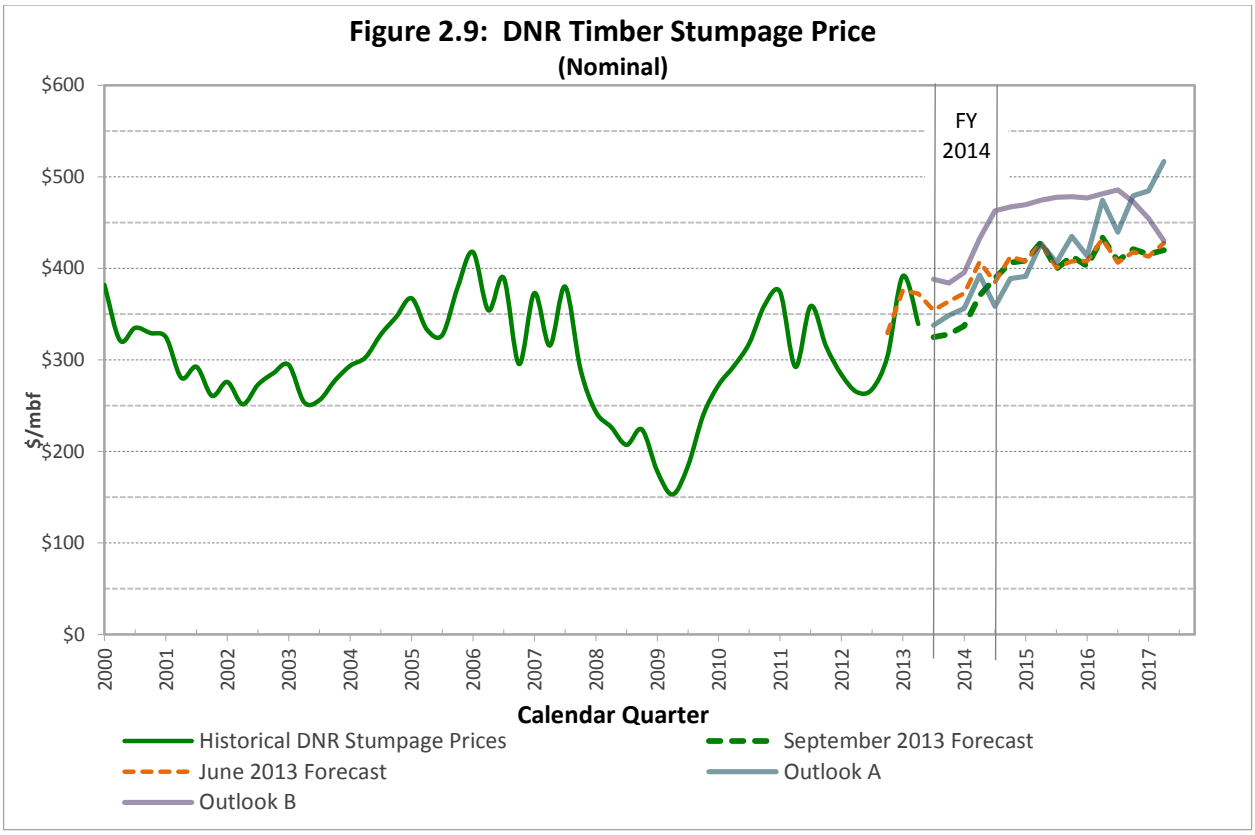
At any time, the difference between the delivered log price (in brown on **Figure 2.7a**) and DNR's stumpage price (in green), is equivalent to the sum of logging costs, hauling costs, and harvest profit. Taking the average of these costs over 12 years and subtracting it from the log price line gives 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 suggested 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 has opened in the past three months; as mentioned above, this is due to those auctions' increased thinning sales.

DNR Stumpage Price Outlook. Figure 2.9 shows DNR's historical timber stumpage prices (the solid **green** line, which is a quarterly version of the line in **Figure 2.7a**), the price outlook as of the June 2013 Forecast (**orange** dashed line), and our updated price outlook[9] (**green** dashed line). With the exception of FY 2014, these changes are very minor adjustments that are not obvious on the face of the chart. The more dramatic change in FY 2014 is 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 2.9**. Outlook A predicts steadily rising 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.

In **Figure 2.9**, the updated Forecast appears to culminate 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. Indeed, the Forecast stays at or above those high levels for several years. However, the forecast price levels are much less optimistic when viewed in real, inflation adjusted terms. Using historical BLS

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



Core CPI values to adjust the historical prices and a 2.0 percent rate[10] for future years' prices, the forecast prices are not higher than the 2006-07 peak prices in real terms.

[10] 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.

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Part 3. DNR's Revenue Forecast

This Revenue Forecast includes Department revenues from timber sales on trust uplands, leases on trust uplands, and leases on aquatic lands. It also forecasts revenues to individual funds, including DNR management funds, beneficiary current funds, and beneficiary permanent funds.
Some caveats about the uncertainty of forecasting Department revenues are summarized near the end of this section.

Timber revenues

The Washington State Department of Natural Resources (DNR) sells timber through contracts. With the approval of the Board of Natural Resources, the Department 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.

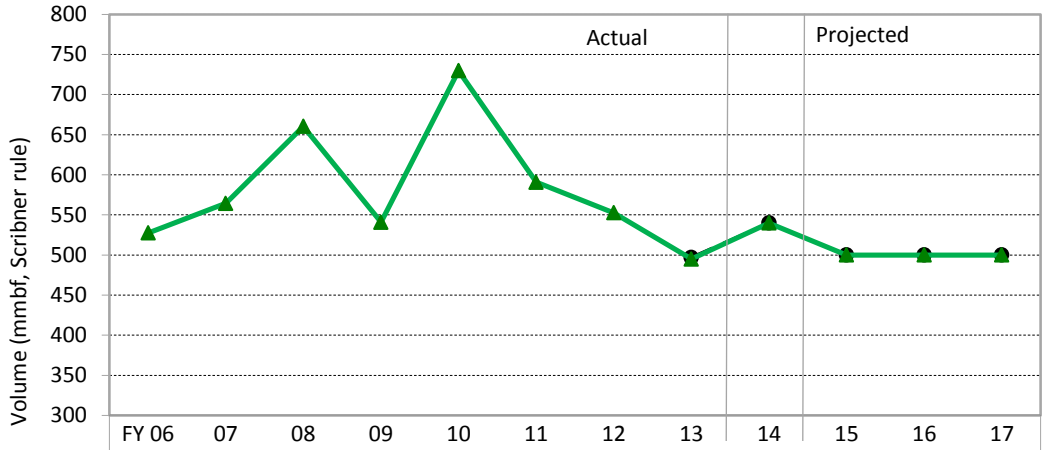
Contracts for DNR timber sales sold in FY 2012 varied in duration from three months to three years, with an average (weighted by volume) of about 21.5 months. The purchaser determines the actual timing of harvest within the terms of the contract. As a result, timber revenues to beneficiaries and DNR management funds lag current market conditions: the lag is currently about 13 months.

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 48 mmbf in FY 2013's first two 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 2005-2014 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

Figure 3.1: Forecast Timber Sales Volume



	FY 06	07	08	09	10	11	12	13	14	15	16	17
June '13 Forecast								497	540	500	500	500
Sept. '13 Forecast	528	565	660	541	730	591	553	495	540	500	500	500
Change								-2	0	0	0	0
Percent Change								0%	0%	0%	0%	0%

was unrealistically high. 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.

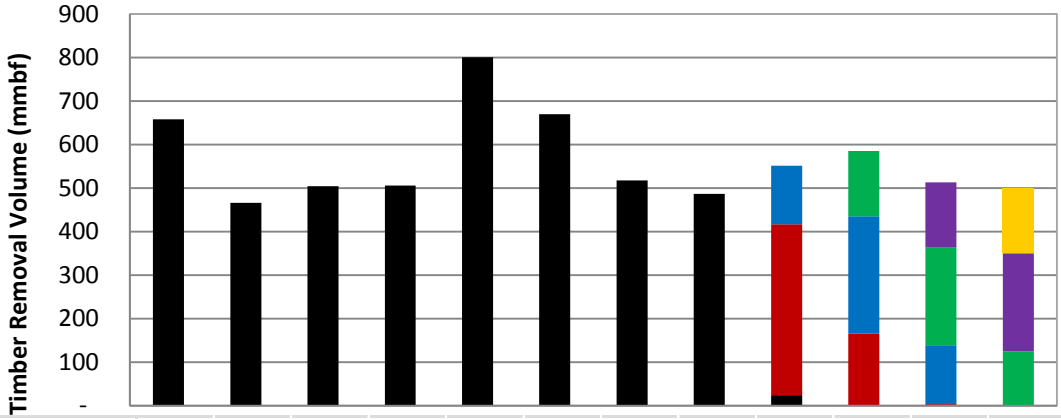
Timber Removal Volume. At the end of July, the Department had 561 mmbf of timber under sales contract, valued at $169.1 million.

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 August, indicates that purchasers plan to harvest 392 mmbf, or 70 percent, of the 561 mmbf remaining under contract this fiscal year (FY 2014) and 166 mmbf (30 percent) of the existing inventory in FY 2015 (see **Figure 3.2** for detail).

The survey indicates that a total of 552 mmbf will be removed in FY 2014: 24 mmbf that timber sale purchasers have already removed in July, anticipated removals of 392 mmbf from volume under contract as of the end of July, and 135 mmbf from sales taking place in FY 2014 (see **Figures 3.2 and 3.3**).

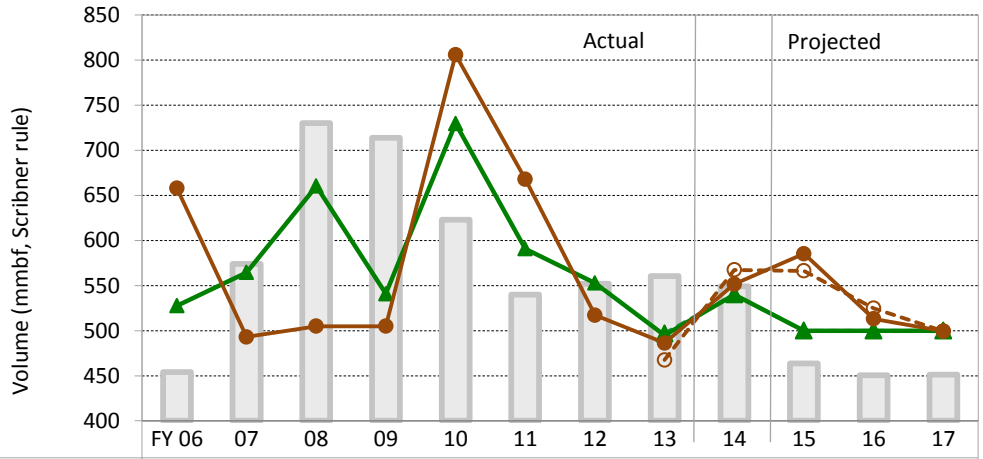
The level and timing of projected timber removal volumes have changed in this Forecast in response to purchasers' plans. As a result, projected timber removal volumes for the current biennium, 2013-2015, are increased by 3 mmbf, or one percent, from the June Forecast. Projected volumes across the 2015-2017 Biennium are reduced by 12 mmbf, or two percent (see **Figure 3.3**).

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	552	585	513	499
	Removals to Date	658	466	504	506	801	670	517	486	24			
	Sales Under Contract									392	166		
	Sales in FY 14									135	270	135	
	Sales in FY 15										150	225	125
	Sales in FY 16											150	225
	Sales in FY 17												150

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	549	464	451	451
Sales - Previous Forecast								497	540	500	500	500
Sales - Current Forecast	528	565	660	541	730	591	553	495	540	500	500	500
Change								-2	0	0	0	0
Removals Prev. Forecast								467	567	566	525	499
Removals - Current Forecast	658	493	505	505	806	668	517	486	552	585	513	499
Change								19	-16	19	-12	0
Percent Change								4%	-3%	3%	-2%	0%

Timber Sales Prices. The price results of monthly DNR timber sales (shown in **Figure 2.9** 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 2.7a** illustrates this sensitivity.

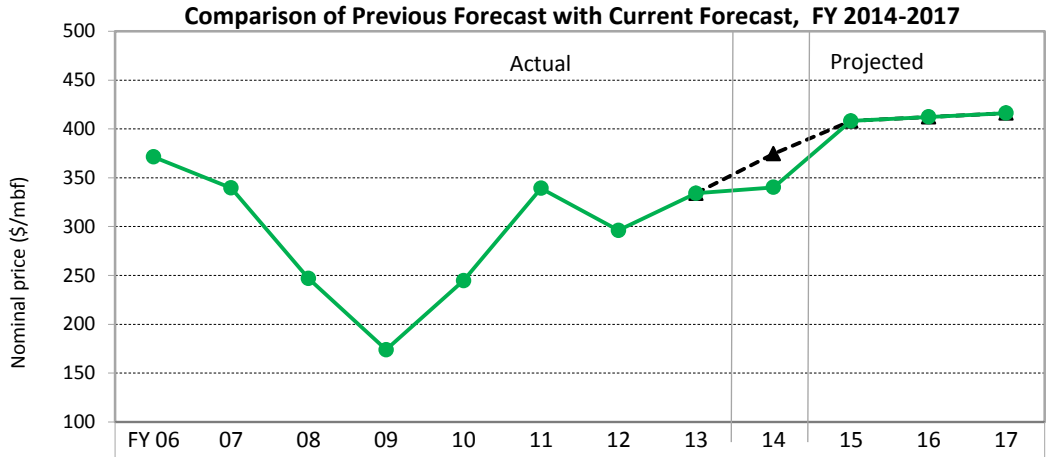
The FY 2014 average DNR timber sales price projection is lowered from $375/mbf to $340/mbf in this Forecast (see **Figure 3.4**). Timber sales in FY 2014 to date (through August) have averaged $246/mbf—so low because the sales mix was abnormally heavy to thinning, and will be for a few more months. Sale price estimates in FYs 2014-2017 are unchanged.

Timber Removal Prices. Timber removal prices are determined by sales prices 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**). As shown in **Figure 3.5**, 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. FY 2012's average removal price was $321/mbf, mostly influenced by FY 2011's average sale price of $339/mbf. **Figure 3.5** shows that future removal prices are changed only modestly from the June Forecast, despite the $35/mbf drop in FY 2014's anticipated average sales price.

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 August 1, 2013). About five percent (or $8 million) of the projected $172 million timber harvest revenue this fiscal year (FY 2014) has already been harvested, and about 69 percent ($118 million) will come from previously sold timber sales currently under contract as of the end of July.

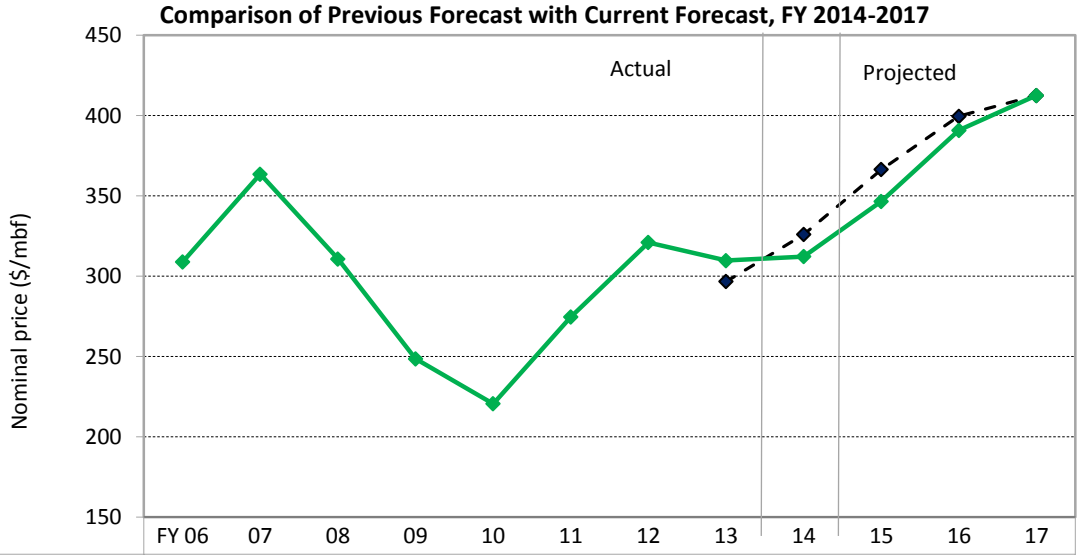
In the current 2013-2015 Biennium, projected timber revenues are revised downward from $392.5 million to $375.1, a decrease of $17.4 million, or four percent, from the June Forecast (see **Figure 3.7**). In the 2015-2017 Biennium, forecast timber removal revenues are projected to be down two percent, from $415.7 million to $406.5 million.

Figure 3.4: Timber Sales Prices
Comparison of Previous Forecast with Current Forecast, FY 2014-2017



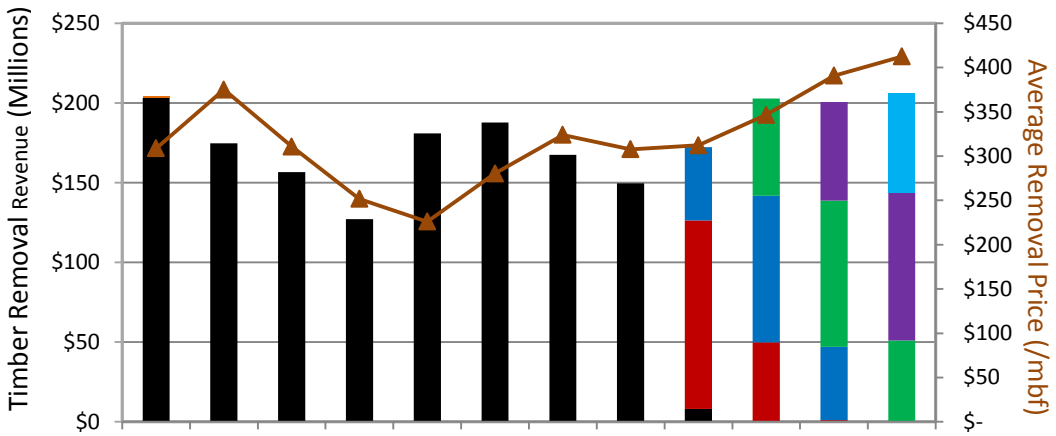
	FY 06	07	08	09	10	11	12	13	14	15	16	17
June Forecast								334	375	408	412	416
Sept. Forecast	371	340	247	174	245	339	296	334	340	408	412	416
Change								0	-34	0	0	0
Percent Change								0%	-9%	0%	0%	0%

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



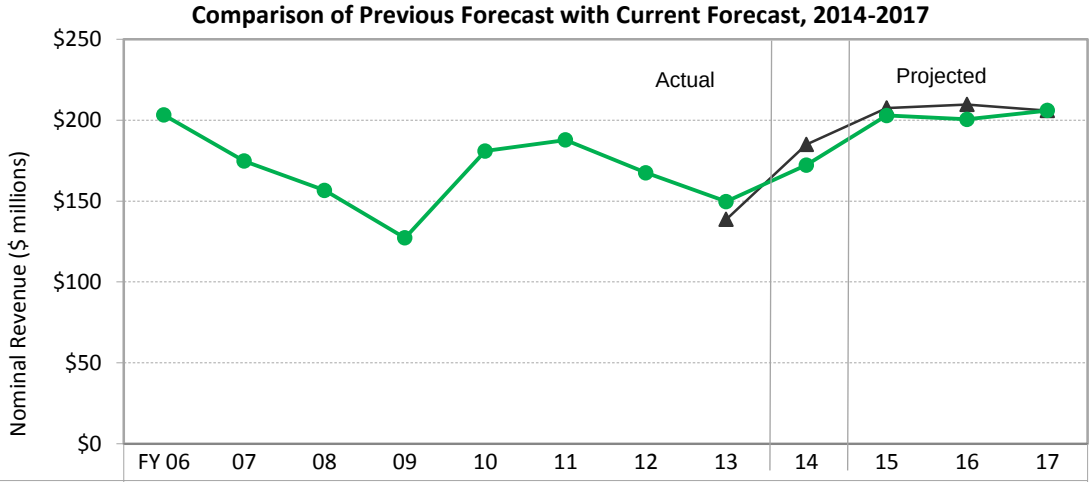
	FY 06	07	08	09	10	11	12	13	14	15	16	17
June Forecast								297	326	366	400	412
Sept. Forecast	309	363	311	249	221	275	321	310	312	347	391	412
Change								13	-14	-20	-9	0
Percent Change								4%	-4%	-5%	-2%	0%

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
June Forecast								138.7	185.0	207.5	209.7	206.0
Sept. Forecast	203.2	174.7	156.6	127.2	181.0	187.8	167.5	149.7	172.2	202.9	200.5	206.0
Change								11.0	-12.7	-4.6	-9.2	0.0
Percent Change								8%	-7%	-2%	-4%	0%

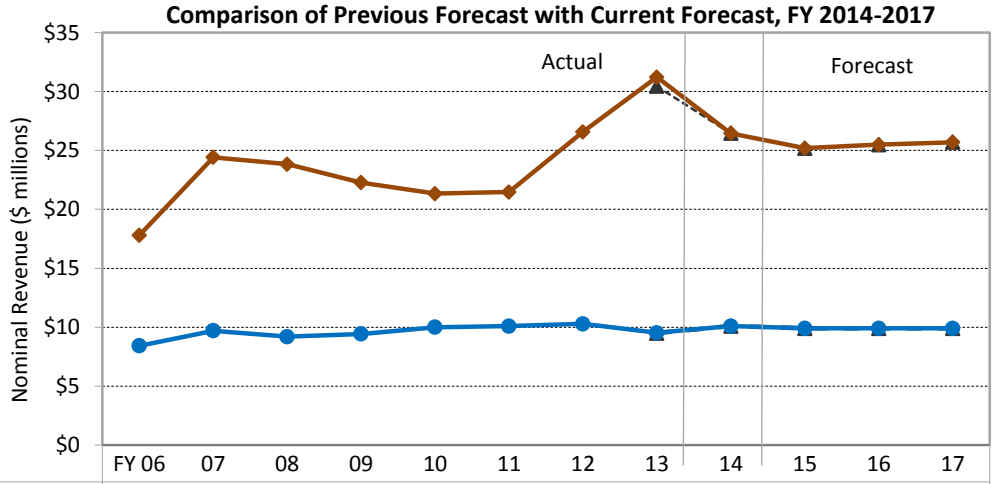
Upland lease revenues

Upland lease revenues are generated primarily from leases and the sale of valuable materials, other than timber, on state trust lands. In the Forecast, upland lease revenues are divided into two categories:

> **Commercial**—Commercial real estate leases.
> **Agricultural and Other**—Agricultural includes dryland cropland, irrigated cropland, orchard, and vineyard leases. "Other" includes grazing, special forest products, special use, communication site, and mineral and hydrocarbon leases, right-of-way easements, and sales of valuable materials other than timber (e.g., rock, sand, and gravel), as well as a few smaller miscellaneous revenue sources.

Commercial. Commercial real estate leases on state trust lands generate a steady source of revenue (see **Figure 3.8**). DNR has been fortunate to be able to maintain a $10 million level of revenue from commercial leases in the last several fiscal years, even in the face of a difficult economy that has been hard on commercial real estate.

Figure 3.8: Upland Lease Revenue
Comparison of Previous Forecast with Current Forecast, FY 2014-2017



	FY 06	07	08	09	10	11	12	13	14	15	16	17
Ag. & Other Previous								30.4	26.5	25.2	25.5	25.7
Ag & Other - Current	17.8	24.4	23.8	22.3	21.3	21.5	26.6	31.2	26.5	25.2	25.5	25.7
Change								0.8	0.0	0.0	0.0	0.0
% Change								3%	0%	0%	0%	0%
Commercial Previous								9.5	10.1	9.9	9.9	9.9
Commercial - Current	8.4	9.7	9.2	9.4	10.0	10.1	10.3	9.5	10.1	9.9	9.9	9.9
Change								0.0	0.0	0.0	0.0	0.0
% Change								0%	0%	0%	0%	0%

Projected commercial lease revenues are unchanged in all fiscal years of the forecast period (see **Figure 3.8**). The upside and downside risks to future commercial lease revenue projections are deemed to be in balance.

Agricultural and Other. Revenues from agricultural and other (non-commercial) upland leases were $21.4 million in FY 2011, $26.5 million in FY 2012, and $31.2 million in FY 2013 (see **Figure 3.8**). A more detailed breakdown of these revenues over the last three fiscal years is shown below:

	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[11]	181,000	221,000	488,000	0.6%
Total	$21,420,000	$26,541,000	$31,214,000	

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. Note in the data above that all three agricultural categories generated revenues between $5.6 million and $9 million last fiscal year. Also notable in FY 2013 was a rebound in revenues from communication sites and rock, sand, and gravel leases; the latter reflects increasing construction trends in the economic recovery.

This Forecast does not include any changes to these revenue categories. Projected revenues in the agricultural and other categories for FYs 2014-2017 are $26.5 million, $25.2 million, $25.5 million, and $ 25.7 million, respectively.

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

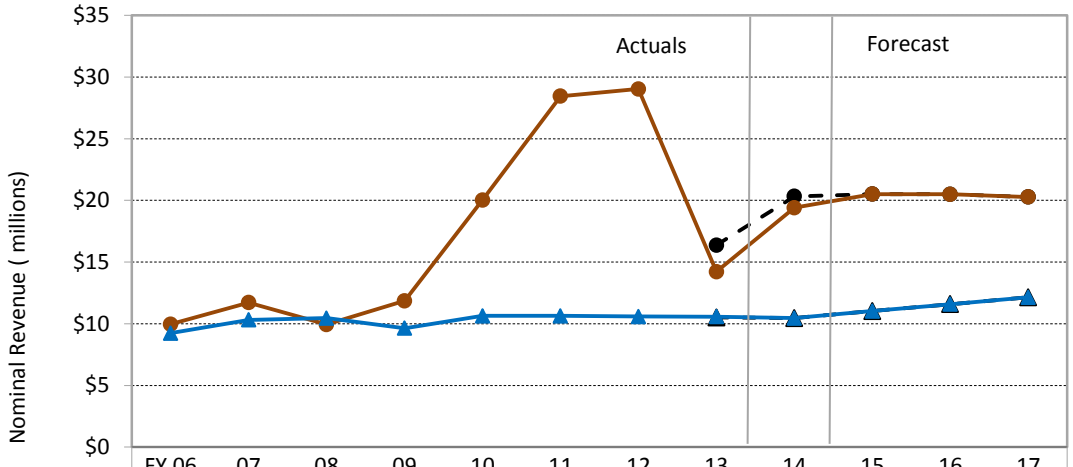
Aquatic lands revenues

Geoduck Revenues. There are currently four geoduck auctions planned for FY 2014: one held September 5th that sold 452,000 pounds at an average price of $12.84/lb; one in November for about 490,000 pounds; and one in March and May that do not yet have volume estimates. 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. The June Forecast estimated that DNR would sell about 2.2 million pounds this year. Given the revised volume estimates for the two fall sales, the two spring sales would each need to sell about 630,000 pounds to make the forecast. Since spring sales average about 550,000 pounds, this September Forecast incorporates a reduction of about 100,000 pounds to FY 2014 sales.

As a result, geoduck revenues for FYs 2014-2017 are expected to be $19.4 million, $20.5 million, $20.5 million, and $20.3 million, respectively (see **Figure 3.9**). This is a downward adjustment of $0.92 million in FY 2014; outlying years are unchanged from the June Forecast.

Figure 3.9: Aquatic Lands Revenues
Forecast Geoduck and Other, FYs 2014-2017



	FY 06	07	08	09	10	11	12	13	14	15	16	17
Geoduck Previous								16.4	20.3	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								-2.2	-0.9	0.0	0.0	0.0
Other Previous								10.5	10.5	11.0	11.6	12.1
Other Forecast	9.2	10.3	10.5	9.6	10.6	10.6	10.6	10.6	10.5	11.0	11.6	12.1
Change								0.1	0.0	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.

Lease and Other Revenues. DNR manages 2.6 million acres of state-owned aquatic lands for the benefit of the people of Washington. Where appropriate, these aquatic lands may be managed to generate revenue to the state. Besides auctions selling the rights to harvest geoducks, there are several other categories of revenues generated on the state's aquatic lands:

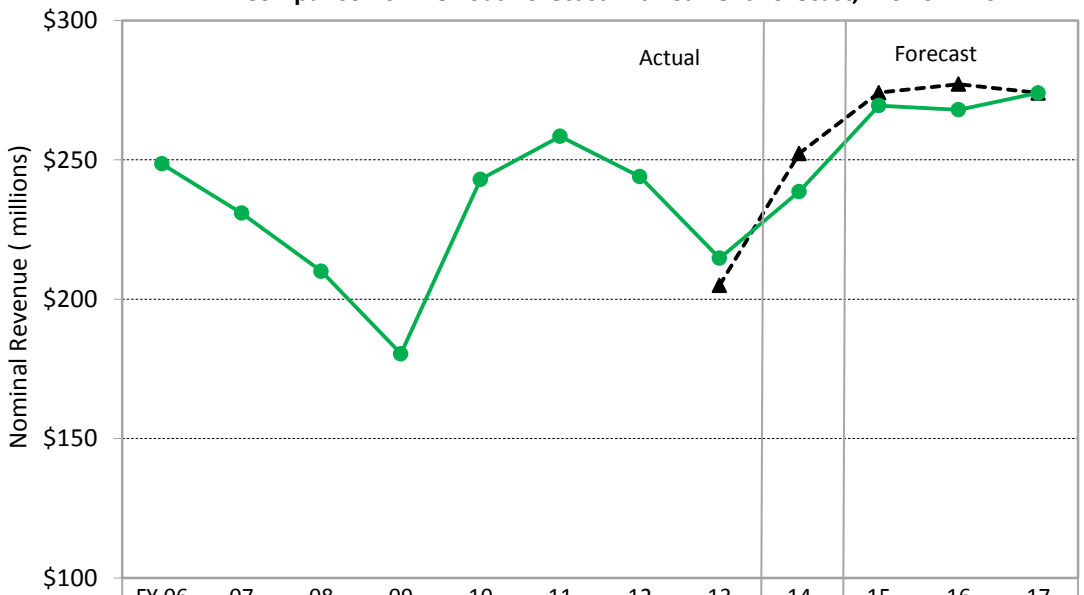
1. Water dependent leases (e.g., marinas and buoys);
2. Non-water dependent leases (e.g., structures related to upland uses);
3. Aquaculture leases (e.g., oyster and salmon 'farming');
4. Easements (e.g., powerline rights of way); and
5. Other (e.g., sand and gravel sales and trespass settlements).

In FY 2012 and FY 2014, actual revenues from these other (non-geoduck) aquatic lands categories were $10.1 million and $10.6 million. There is no change to FYs 2014-2017. Overall lease revenues are projected to total $10.5 million, $11.0 million, $11.6 million, and $12.1 million in FYs 2014-2017, respectively (see **Figure 3.9**).

Total revenues from all sources

Total forecast revenues for the 2013-15 Biennium (FYs 2014 and 2015) are down from the previous Forecast by $18.3 million (four percent) to $508.2 million. Revenues for the 2015-2017 Biennium (FYs 2016 and 2017) are down by $9.2 million (two percent) to $542.0 million. The magnitude of the overall revenue changes is driven by a reallocation of planned timber harvests and by a reduction to FY 2014's anticipated timber sales price.

Figure 3.10: Total Revenues
Comparison of Previous Forecast with Current Forecast, FYs 2014-2017



	FY 06	07	08	09	10	11	12	13	14	15	16	17
June Forecast								205.0	252.3	274.1	277.2	274.0
Sept. Forecast	248.6	230.9	210.1	180.4	243.0	258.5	244.0	214.7	238.6	269.5	268.0	274.0
Change								9.7	-13.7	-4.6	-9.2	0.0
% Change								5%	-5%	-2%	-3%	0%

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 and the Department, 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 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 been 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 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[12] 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.[13]

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:

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
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 2013-2015 and 2015-2017 Biennia in their biennial budget bills, continuing its practice which started in FY 2006.

Changes to the RMCA and FDA management fee deductions will be incorporated into future Forecasts as appropriate to reflect future actions by the Legislature and the Board.

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

[13] 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.

September 2013 Forecast by Source (millions of dollars)

Changes are from June 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				(2)	-	-	-	-
% Change				0%	0%	0%	0%	0%
Price ($/mbf)	$245	$339	$296	$334	$340	$408	$412	$416
Change				$ (0.0)	$ (34)	$ (0)	$ (0)	$ 0
% Change				0%	-9%	0%	0%	0%
Value of Timber Sales	**$ 178.5**	**$ 200.4**	**$ 163.7**	**$ 165.4**	**$ 183.7**	**$ 203.9**	**$ 205.9**	**$ 207.9**
Change				$ (0.7)	$ (18.6)	$ (0.0)	$ (0.0)	$ 0.0
% Change				0%	-9%	0%	0%	0%

Timber Removals	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Volume (mmbf)	801	670	517	486	552	585	513	499
Change				19	(16)	19	(12)	-
% Change				4%	-3%	3%	-2%	0%
Price ($/mbf)	$221	$275	$321	$310	$312	$347	$391	$412
Change				$ 13.0	$ (13.7)	$ (19.8)	$ (8.8)	$ (0.0)
% Change				4%	-4%	-5%	-2%	0%
Timber Revenue	**$ 181.0**	**$ 187.8**	**$ 167.5**	**$ 149.7**	**$ 172.2**	**$ 202.9**	**$ 200.5**	**$ 206.0**
Change				$ 11.0	$ (12.7)	$ (4.6)	$ (9.2)	$ (0.0)
% Change				8%	-7%	-2%	-4%	0%

Lease Revenue	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Agricultural/Other Upland	$ 21.3	$ 21.5	$ 26.6	$ 31.2	$ 26.5	$ 25.2	$ 25.5	$ 25.7
Change				$ 0.8	$ -	$ -	$ -	$ -
% Change				3%	0%	0%	0%	0%
Commercial	$ 10.0	$ 10.1	$ 10.3	$ 9.5	$ 10.1	$ 9.9	$ 9.9	$ 9.9
Change				$ 0.0	$ -	$ -	$ -	$ -
% Change				0%	0%	0%	0%	0%
Aquatic Lands	$ 30.8	$ 37.7	$ 39.6	$ 24.3	$ 29.9	$ 31.5	$ 32.1	$ 32.4
Change				$ (2.5)	$ (0.9)	$ -	$ -	$ -
% Change				-9%	-3%	0%	0%	0%
Total Lease Revenue	**$ 62.1**	**$ 69.2**	**$ 76.5**	**$ 65.1**	**$ 66.4**	**$ 66.6**	**$ 67.5**	**$ 68.0**
Change				$ (1.7)	$ (0.9)	$ -	$ -	$ -
% Change				-3%	-1%	0%	0%	0%

Total All Sources	**$ 243.1**	**$ 257.0**	**$ 244.0**	**$ 214.8**	**$ 238.6**	**$ 269.5**	**$ 268.0**	**$ 274.0**
Change				$ 9.3	$ (13.7)	$ (4.6)	$ (9.2)	$ (0.0)
% Change				5%	-5%	-2%	-3%	0%

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.

September 2013 Forecast by Fund (In millions of dollars)

Changes are from June 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	$ 34.7	$ 39.7	$ 40.6	$ 41.3
	Change				$ 1.9	$ 1.7	$ 4.1	$ 3.5	$ 3.5
	% Change				7%	5%	12%	9%	9%
041	RMCA - Aquatic Lands	$ 13.9	$ 17.5	$ 18.4	$ 10.7	$ 13.4	$ 14.1	$ 14.3	$ 14.4
	Change				$ (1.1)	$ (0.5)	$ -	$ -	$ -
	% Change				-10%	-3%	0%	0%	0%
014	FDA	$ 25.9	$ 25.8	$ 20.9	$ 16.6	$ 21.8	$ 25.0	$ 24.6	$ 26.1
	Change				$ 1.1	$ 1.5	$ 2.4	$ 1.3	$ 2.7
	% Change				7%	8%	11%	5%	11%
Total Management Funds		**$ 71.6**	**$ 77.1**	**$ 69.0**	**$ 57.6**	**$ 69.9**	**$ 78.8**	**$ 79.4**	**$ 81.7**
	Change				$ 1.8	$ 2.8	$ 6.5	$ 4.7	$ 6.1
	% Change				3%	4%	9%	6%	8%

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	$ 61.4	$ 70.1	$ 71.3	$ 72.1
	Change				$ 4.4	$ (3.3)	$ 0.4	$ (0.9)	$ (1.0)
	% Change				8%	-5%	1%	-1%	-1%
999	Forest Board Counties	$ 67.9	$ 70.5	$ 64.7	$ 55.4	$ 58.7	$ 65.6	$ 62.5	$ 64.9
	Change				$ 5.0	$ (7.2)	$ (6.1)	$ (8.9)	$ (4.9)
	% Change				10%	-11%	-9%	-13%	-7%
001	General Fund	$ 5.0	$ 4.2	$ 4.5	$ 2.2	$ 1.7	$ 2.7	$ 3.3	$ 3.9
	Change				$ 0.2	$ (0.4)	$ (0.2)	$ (0.2)	$ (0.1)
	% Change				10%	-20%	-7%	-7%	-2%
348	University Bond Retirement	$ 1.8	$ 1.3	$ 0.8	$ 0.8	$ 2.0	$ 2.5	$ 2.2	$ 1.8
	Change				$ (0.2)	$ 0.0	$ 0.7	$ 0.7	$ 0.3
	% Change				-24%	1%	37%	48%	24%
347	WSU Bond Retirement	$ 1.2	$ 1.4	$ 1.8	$ 1.6	$ 1.7	$ 1.6	$ 1.6	$ 1.6
	Change				$ (0.3)	$ (0.0)	$ (0.0)	$ (0.0)	$ (0.0)
	% Change				-16%	-2%	-2%	-2%	-2%
042	CEP&RI	$ 5.6	$ 4.9	$ 5.0	$ 5.1	$ 4.5	$ 4.5	$ 4.7	$ 5.3
	Change				$ 0.4	$ (0.1)	$ (0.4)	$ (0.8)	$ (0.5)
	% Change				8%	-1%	-9%	-15%	-9%
036	Capitol Building Construction	$ 8.7	$ 8.7	$ 8.8	$ 3.7	$ 6.3	$ 7.7	$ 9.0	$ 10.1
	Change				$ (0.1)	$ 0.8	$ (0.0)	$ (0.9)	$ (0.6)
	% Change				-4%	14%	0%	-9%	-5%
061/3/!	Normal (CWU, EWU, WWU, TESC)	$ 0.1	$ 0.1	$ 0.1	$ 0.2	$ 0.1	$ 0.1	$ 0.1	$ 0.1
	Change				$ 0.1	$ (0.0)	$ (0.0)	$ (0.0)	$ (0.0)
	% Change				77%	-3%	-3%	-3%	-3%
Other Funds		$ 0.1	$ 0.1	$ 0.1	$ 0.4	$ 1.5	$ 0.9	$ 0.3	$ 0.1
	Change				$ (0.4)	$ 0.1	$ 0.1	$ (0.0)	$ (0.0)
	% Change				-51%	7%	12%	-14%	-1%
Total Current Funds		**$ 138.3**	**$ 147.6**	**$ 142.3**	**$ 129.9**	**$ 138.1**	**$ 155.7**	**$ 154.9**	**$ 159.8**
	Change				$ 9.0	$ (10.2)	$ (5.6)	$ (11.1)	$ (6.7)
	% Change				7%	-7%	-3%	-7%	-4%

(Continued)

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

Changes are from June 2013 Forecast

	Actuals				Forecast			
Aquatic Lands Enhancement Account	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**	**$ 16.5**	**$ 17.4**	**$ 17.8**	**$ 18.0**
Change				$ (1.4)	$ (0.5)	$ -	$ -	$ -
% Change				-9%	-3%	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	$ 4.7	$ 6.4	$ 4.8	$ 3.6
Change				$ (0.0)	$ (4.4)	$ (6.1)	$ (3.9)	$ (0.2)
% Change				0%	-48%	-49%	-45%	-6%
604 Normal School Permanent	$ 4.0	$ 3.0	$ 3.1	$ 1.4	$ 2.0	$ 3.5	$ 4.1	$ 3.8
Change				$ (0.2)	$ (0.7)	$ 0.3	$ 0.8	$ 0.6
% Change				-11%	-24%	8%	24%	18%
605 Common School Permanent	$ 0.4	$ 0.2	$ 0.3	$ 0.3	$ 0.3	$ 0.3	$ 0.3	$ 0.3
Change				$ 0.1	$ 0.0	$ 0.0	$ 0.0	$ 0.0
% Change				25%	3%	3%	3%	3%
606 Scientific Permanent	$ 5.1	$ 5.7	$ 4.6	$ 7.0	$ 6.8	$ 7.3	$ 6.5	$ 6.2
Change				$ 0.2	$ (0.7)	$ 0.3	$ 0.3	$ 0.2
% Change				3%	-9%	5%	6%	3%
607 University Permanent	$ 0.7	$ 0.3	$ 0.3	$ 0.8	$ 0.4	$ 0.2	$ 0.3	$ 0.5
Change				$ (0.2)	$ (0.1)	$ (0.1)	$ (0.0)	$ (0.0)
% Change				-18%	-20%	-24%	-6%	-1%
Total Permanent Funds	**$ 16.3**	**$ 12.1**	**$ 11.4**	**$ 13.6**	**$ 14.2**	**$ 17.6**	**$ 15.9**	**$ 14.5**
Change				$ (0.1)	$ (5.8)	$ (5.5)	$ (2.8)	$ 0.6
% Change				-1%	-29%	-24%	-15%	4%

Total All Funds	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17
Total	**$ 243.1**	**$ 257.0**	**$ 244.0**	**$ 214.8**	**$ 238.6**	**$ 269.5**	**$ 268.0**	**$ 274.0**
Change				$ 9.3	$ (13.7)	$ (4.6)	$ (9.2)	$ (0.0)
% Change				5%	-5%	-2%	-3%	0%

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

Appendix: Comparison of previous projections and actual values

Introduction

Periodically the Office of Budget and Economics publishes comparisons of past projections with actual values to assess how well the projections predicted future revenue and to identify areas where the projection methods might be improved.

Collected here are the projected and the actual values for the 2009-2012 Biennium (fiscal years 2010 and 2011) and the 2011-2014 Biennium (fiscal years 2012 and 2013). The data are presented graphically to clearly show changes in the projected values for different Forecasts.

The charts are presented in the same order that they appear in the Forecasts' Revenue Forecast Tables – i.e. timber sales volume is first, followed by timber sales price, then value of timber sales, etc. They are also grouped by biennium, so that the charts for FY 10 and FY 11 appear, and are discussed, together.

Accompanying the charts is a short description of reasons behind any changes in the projected values. Collected together, these descriptions give a timeline of the evolution of the projections.

One difficulty in describing the changes in projections is the interconnectedness of the different values. For instance, sales volumes and sales prices combine to create the sales values, which affect removal prices and revenues in a lagged way. While there is not enough space available to identify every influence on the changes in projections, the major influences have been identified for highly interconnected values.

Notes

Some terms used in this Appendix may have several different meanings depending upon context. The following definitions may help to avoid confusion:

- **Forecast** refers to a quarterly document containing the collected price, volume and revenue projections of the Office of Budget and Economics.
- **Projection** is a prediction in a Forecast of a DNR-relevant future value.

For further discussion of the concepts and terms mentioned in this appendix, please see Part 2 and Part 3 of this Forecast document.

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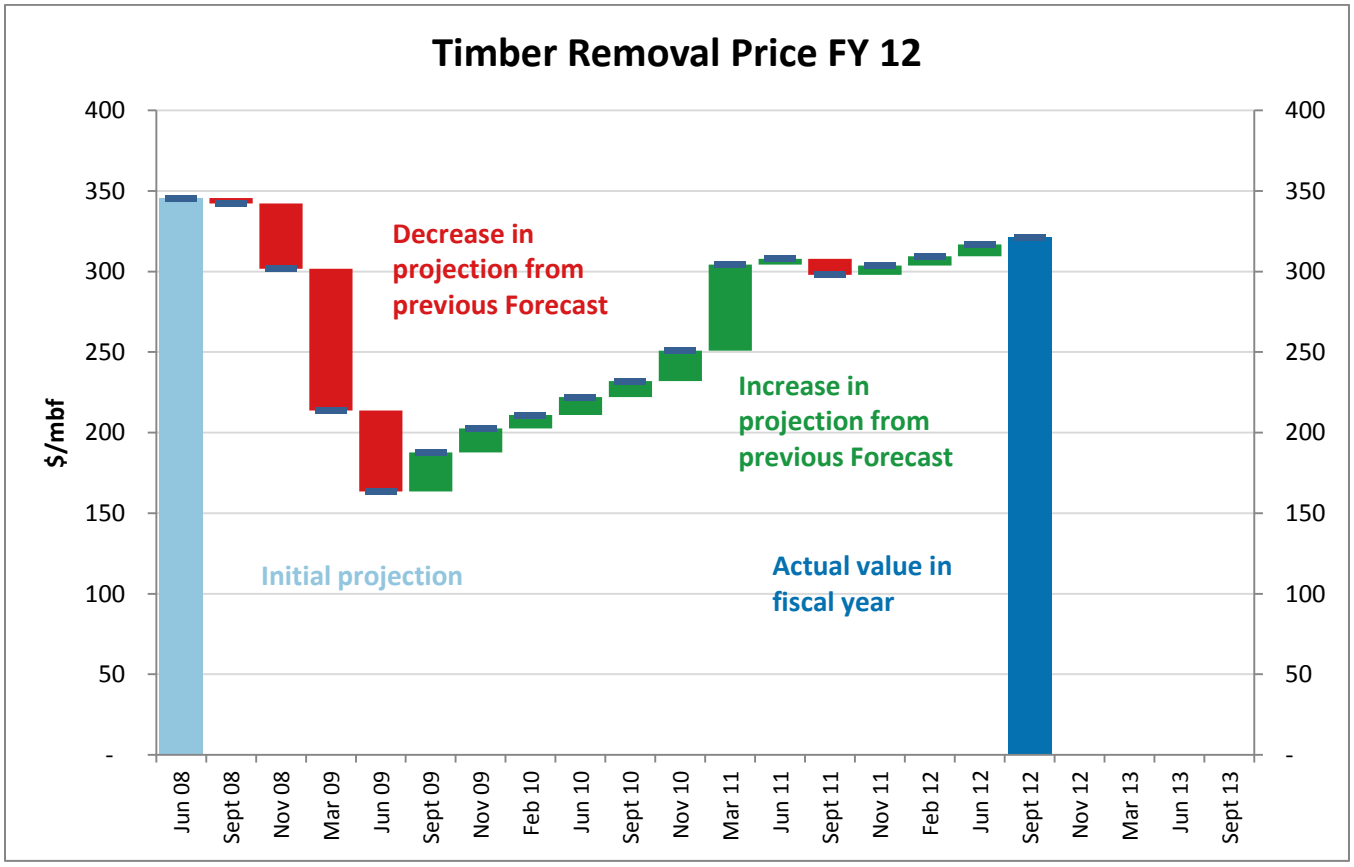
Guide to the charts

Below is an example that highlights the main features of the charts in the forecast comparison.

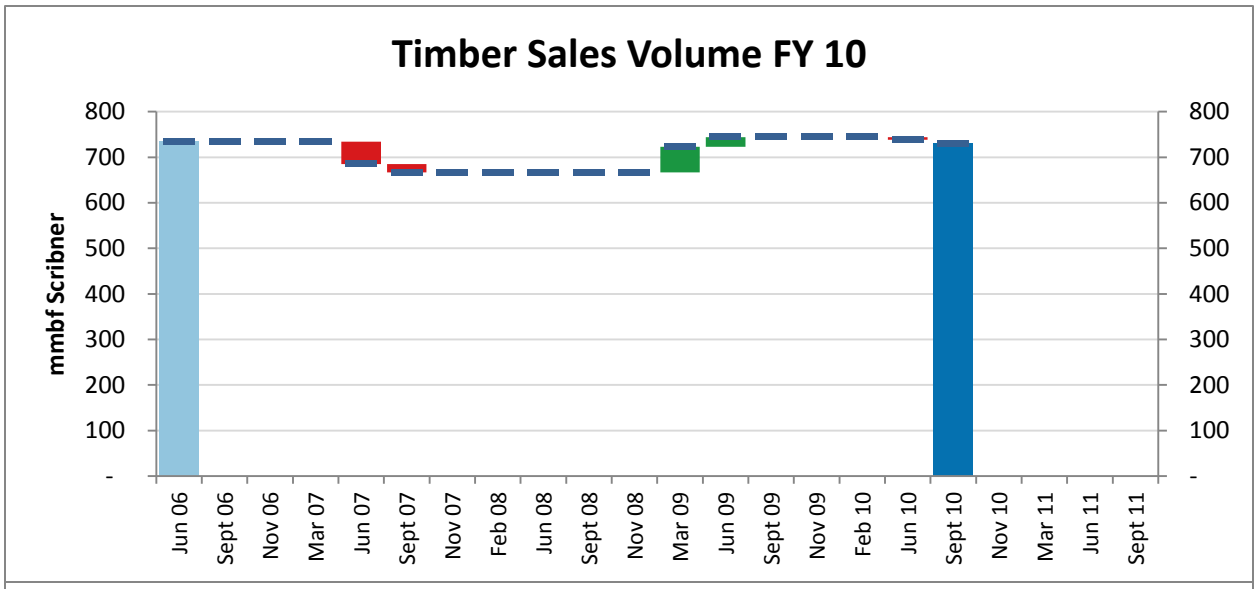
- The light blue bar on the left of the chart is the initial projection.
- Red bars indicate a decrease in the projection from the previous period and the lengths of the red bars indicate the size of the decrease. For instance, in the March 2009 Forecast the removal price projection was lowered from around $300/mbf to around $220/mbf.
- Green bars indicate an increase in the projection from the previous period and the lengths of the green bars show the size of the increase. For instance, in the March 2011 Forecast, the removal price projection was increased from around $250/mbf to over $300/mbf.
- The blue bar on the right is the final actual value for the fiscal year.
- The blue dashes at the ends of the bars indicate the projected values in that Forecast. While they are not necessarily needed in the example graph, they can be helpful for reading the graph when there are few changes between Forecasts.

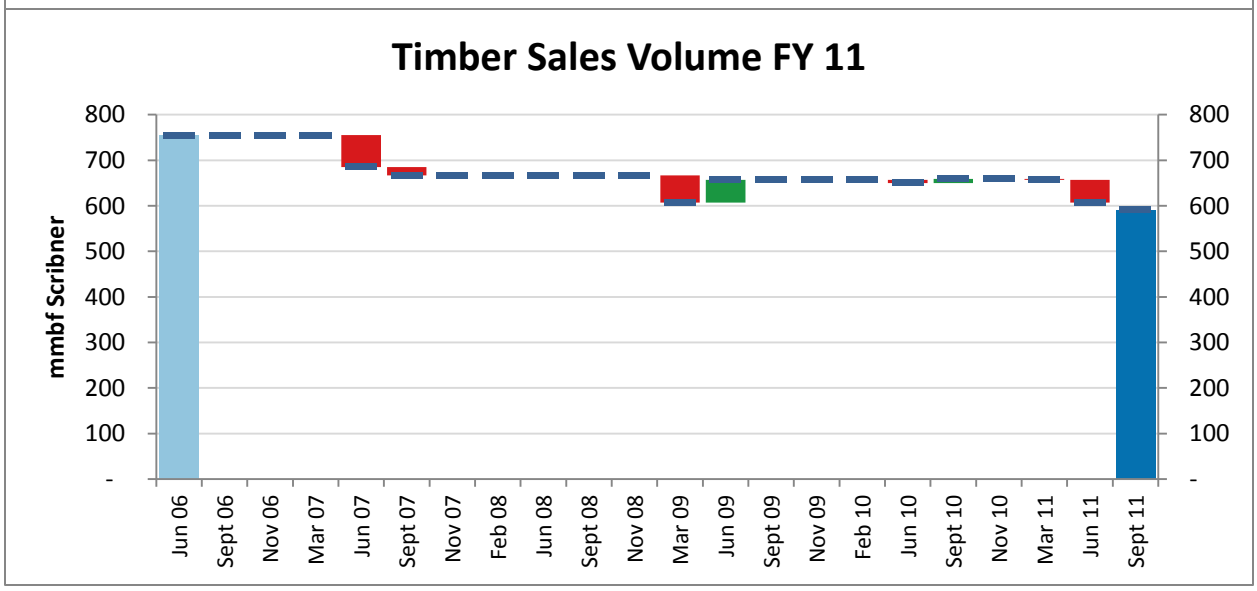


Timber Sales Volume - Fiscal Years 2010 and 2011

The timber sales projections from June 2006 to March 2007 were uncertain due to a 2005 agreement by the Department to re-evaluate sustainable harvest levels. The projections for that period were based on an understanding of the probable sustainable harvest levels that were to be decided by the end of 2007. In May 2007 the new sustainable harvest levels were solidified and were about 8 percent lower than the previous sustainable harvest levels for Western Washington. This change was accounted for in the June 2007 Forecast and affected projections for FYs 2010 and 2011.

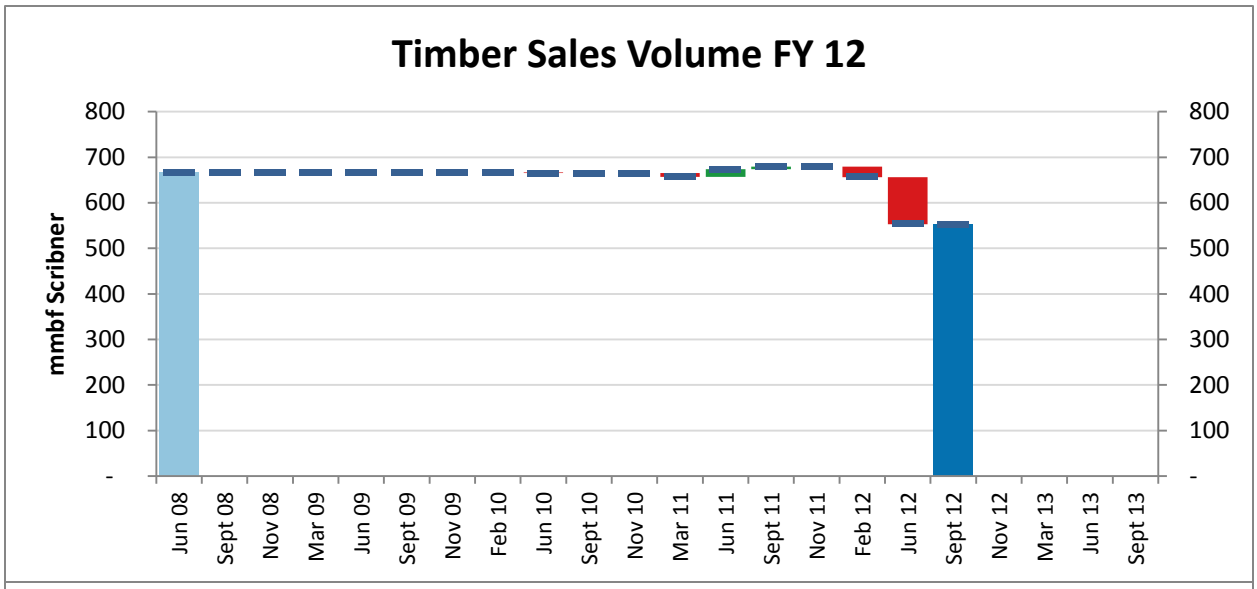
Following that adjustment, there was little change to either year's projections until the March 2009 Forecast, when the projected volumes for 2010 were increased and 2011's reduced. The 2010 projected volume was increased due to an amount of unsold volume in 2009 that was rolled over into 2010. The 2011 projection was reduced due to a withdrawal of 60 mmbf of low value sales due to low prices in 2009. The 2011 reduction was later offset by rolling some of the delayed 2009 planned sales into 2011.

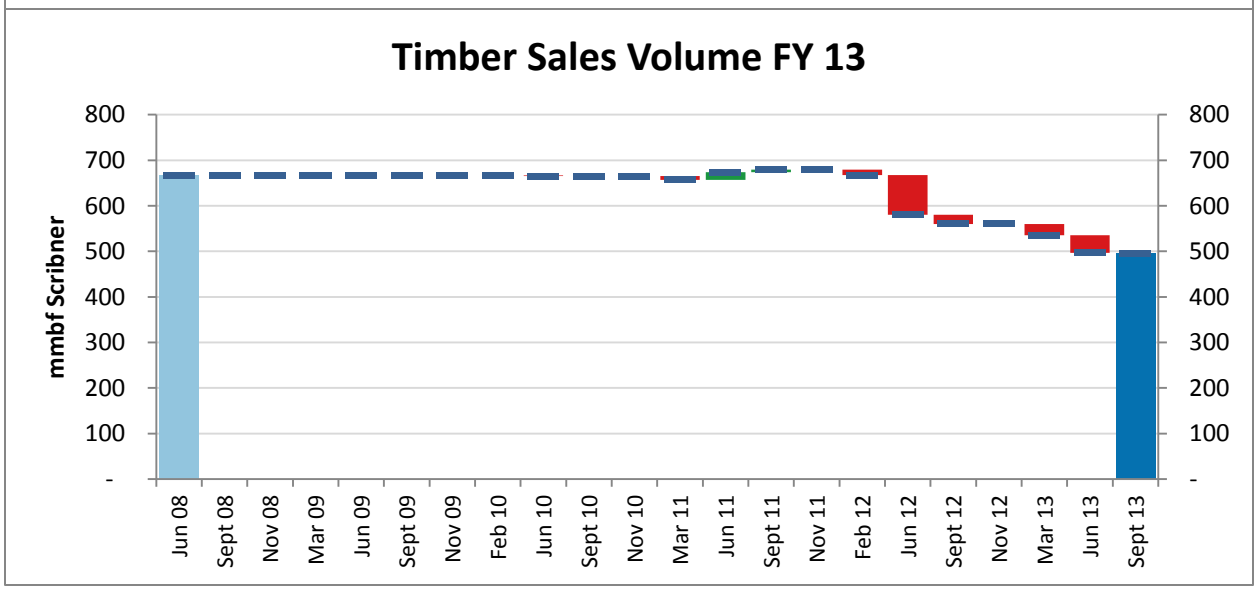




Timber Sales Volume – Fiscal Years 2012 and 2013

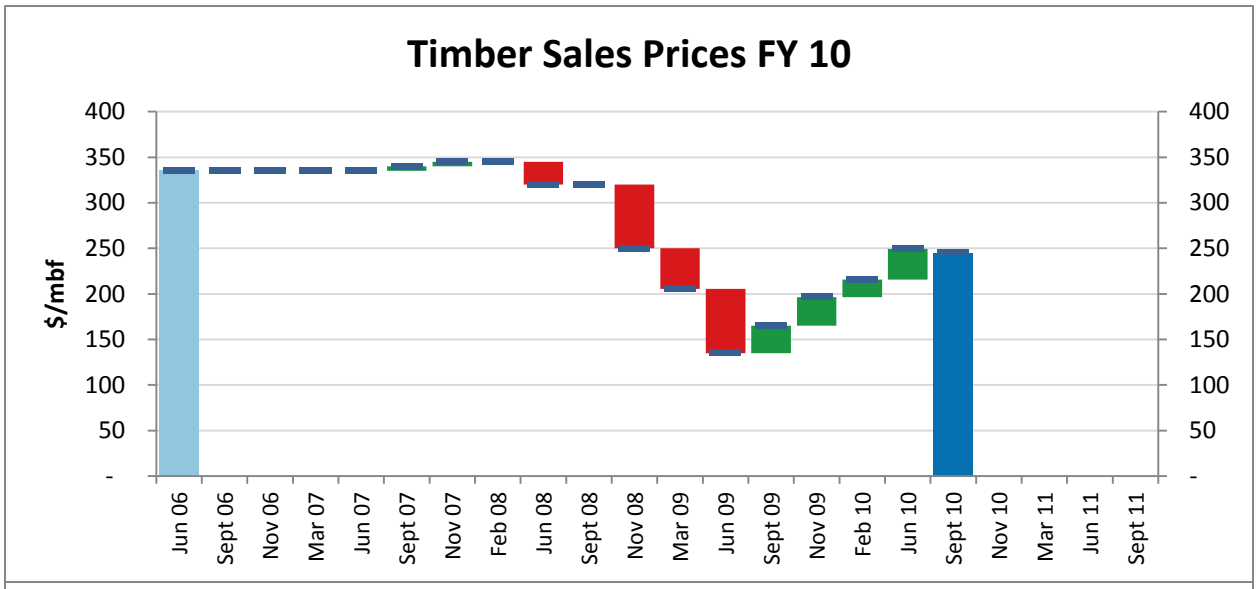
Projected sales volumes for FY 12 and FY 13 were initially based on the revised sustainable harvest plan that DNR agreed to in early 2007. The projections for both years remained fairly stable until the end of FY 12, when they were reduced in the June Forecast because it had become certain that it was too late in the decade to make up for previous shortfalls in the sustainable harvest volume. The projected sales volumes for FY 13 were further reduced near the end of the fiscal year because of weaker market conditions and increased difficulty in preparing timber volume for sale.

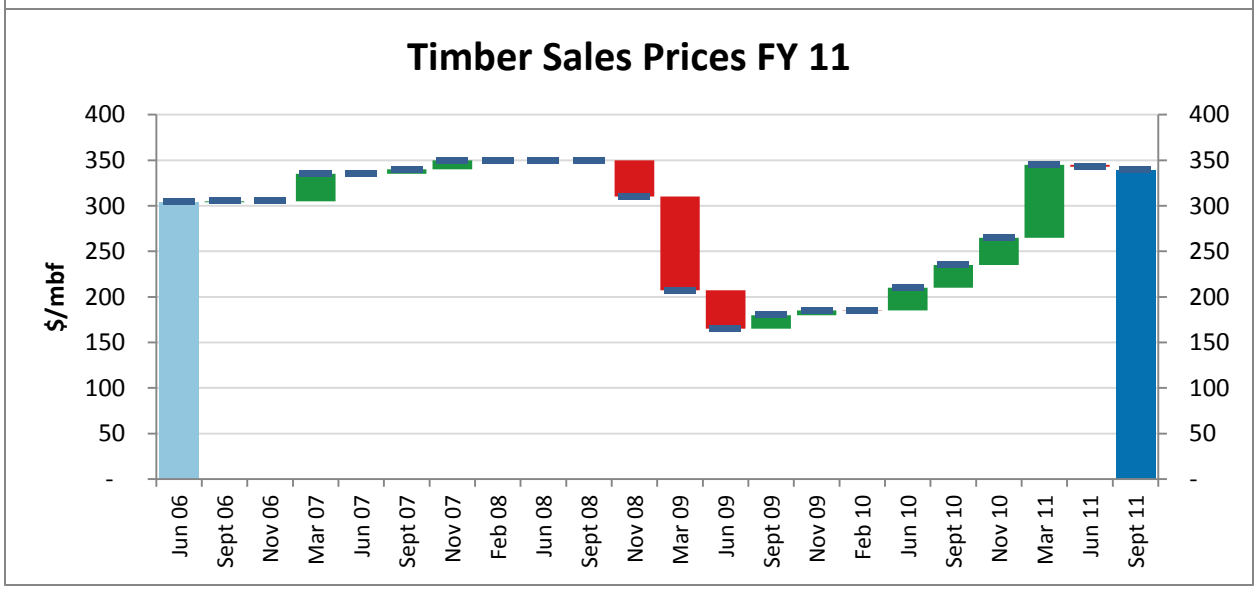




Timber Sales Prices- Fiscal Years 2010 and 2011

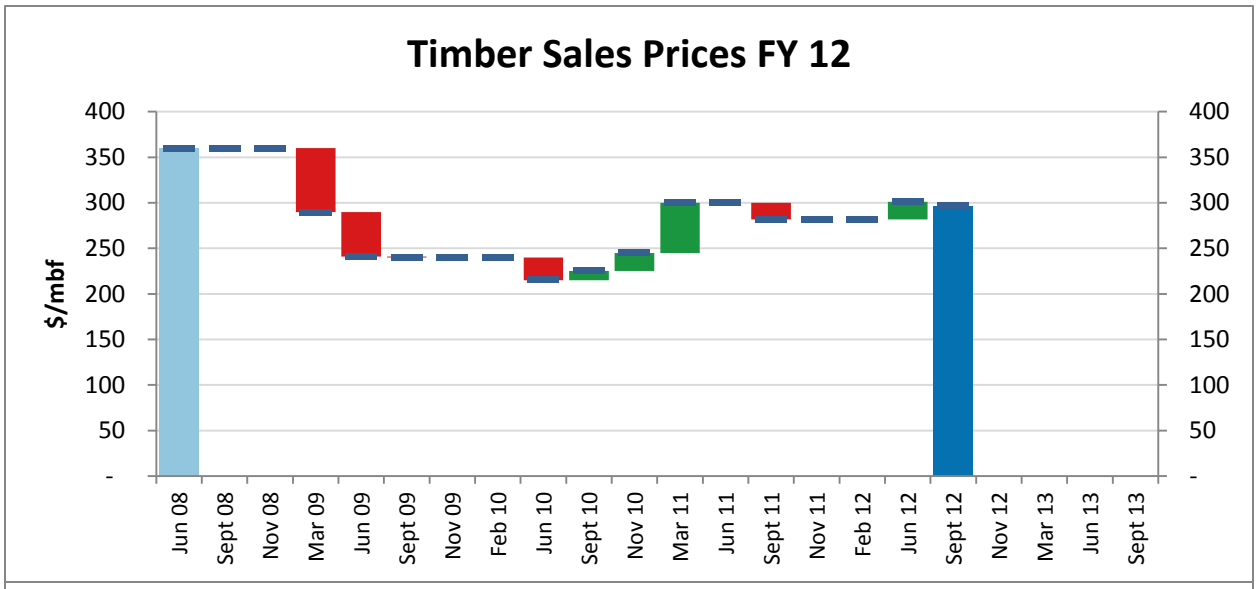
The initial projections of FY 10 and FY 11 were based largely on projections from RISI and Clear Vision that took into account trends in the housing market. In the March 2007 Forecast, the FY 11 sales price was increased to bring it into line with expected FY 10 prices based on continuing price strength and log shortages through that period. Small increases in the projected sales prices for both FY 10 and FY 11 were included in the late 2007 Forecasts based on continuing price strength and an expected housing market recovery. Projected prices in FY 10 were decreased in June 2008 because of a sharp drop in market conditions. During the period from the November 2008 Forecast to the June 2009 Forecast it became clear that the US was in a recession and the expected housing recovery was not going to materialize. After the apparent bottom of the market during the June 2009 Forecast, successive projections for FY 10 were increased based on stronger prices. FY 11 projected sales prices were treated more cautiously until the September 2010 Forecast, when it was clear that there was market support for higher prices. The FY 11 projected price was bumped up further in the March 2011 Forecast based on strong demand in the export markets, particularly from China.

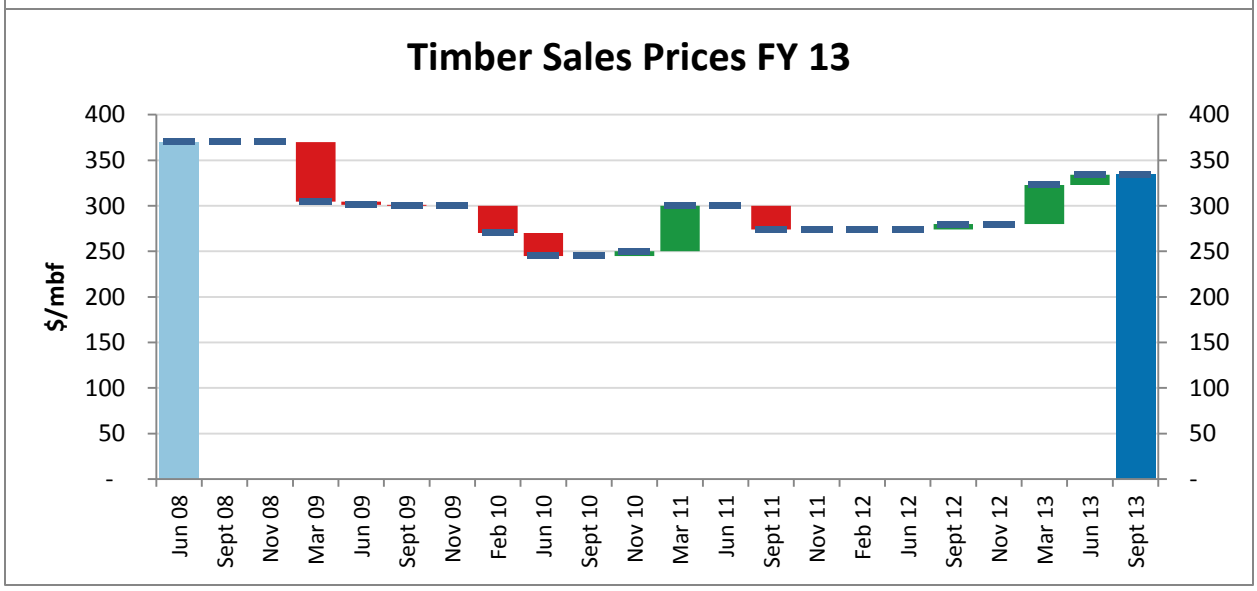




Timber Sales Prices- Fiscal Years 2012 and 2013

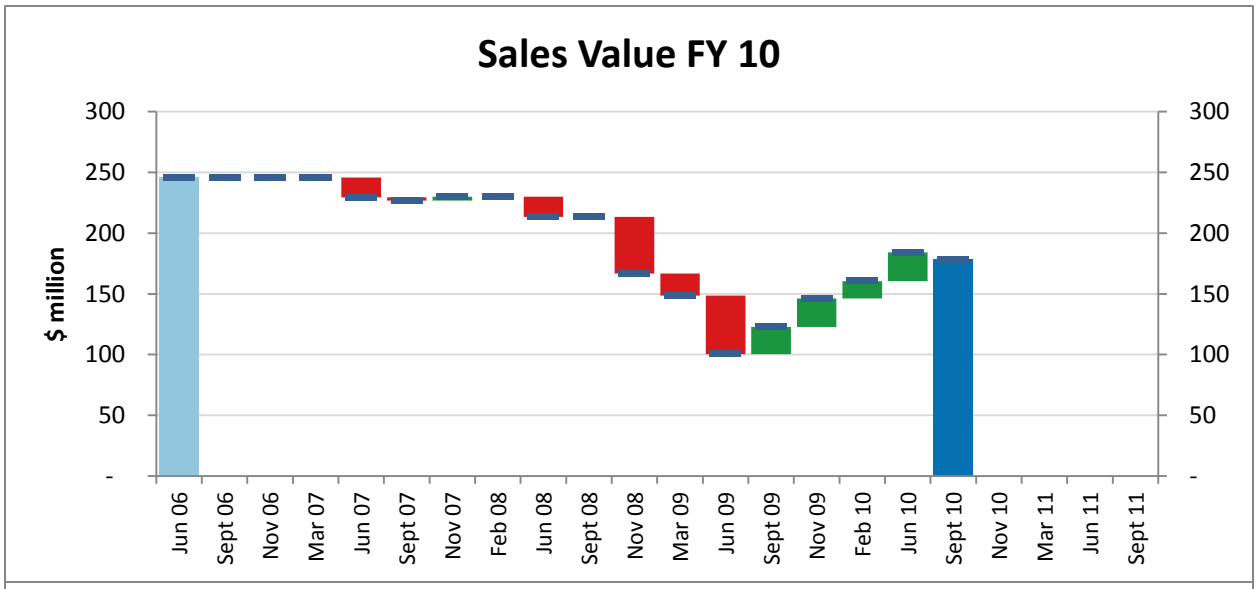
Similarly to FY 10 and FY 11, in the March 2009 and June 2009 Forecasts the projected sales prices for FY 12 and FY 13 were significantly reduced in response to the size of the recession. However, instead of the projection increasing due to market conditions and realized prices, the FY 12 and FY 13 projected sales prices were further reduced in the final Forecasts of FY 10. These changes were reversed for FY 12 in the September 2010 and November 2010 Forecasts due to export market strength. Both FY 12 and FY 13 projections were revised upward in the March 2011 Forecast, again due to significant strength in the export markets. Both projections were again reduced in the September 2011 Forecast due to continued weakness in the domestic housing market. The projected sales price for FY 12 was raised in the final quarter of that year based on higher than expected prices in auctions to that point. The projection for FY 13 prices remained stable until the March 2013 Forecast, when higher than average prices induced an increase.

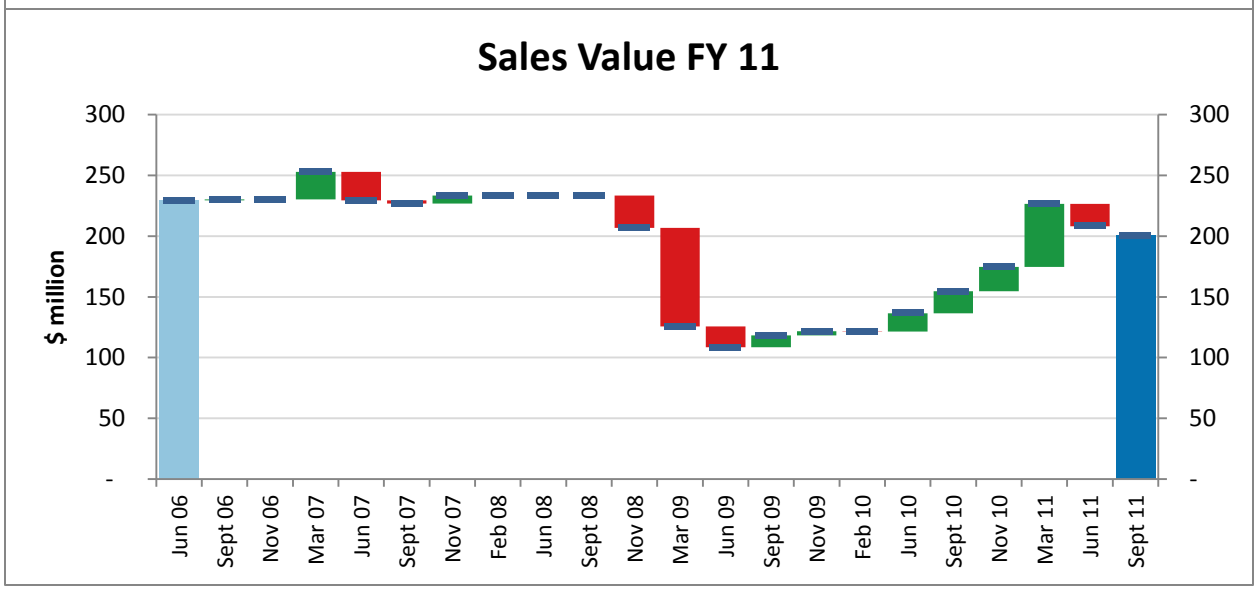




Value of Timber Sales – Fiscal Years 2010 and 2011

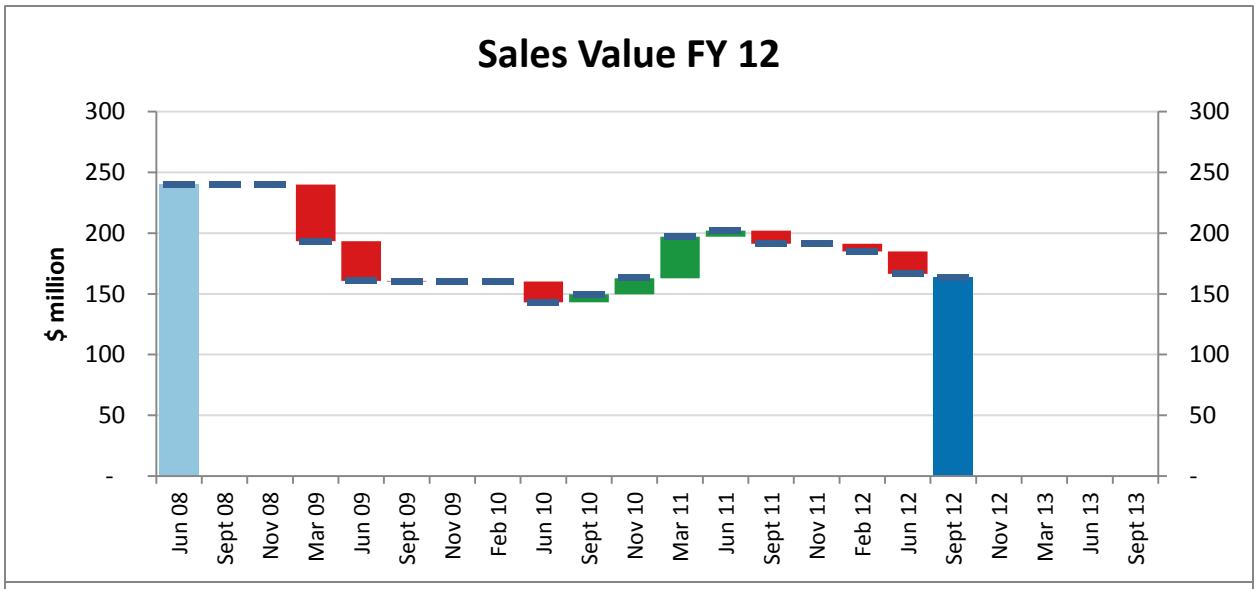
The changes in sales value projections are a result of changes to the volume or price projections. The March 2007 increase in the projected price caused an increase in the FY 11 sales value projection, which was reversed in the June 2007 Forecast by a drop in the projected volume. The large drops and then increases in projected revenue are wholely the result of large changes in the projected price that outweighed the small changes in projected volume. The only exception to this is the drop in projected revenue for FY 11 in the final Forecast of that year, in which the price projection remained stable, but the volume projection was adjusted downward.

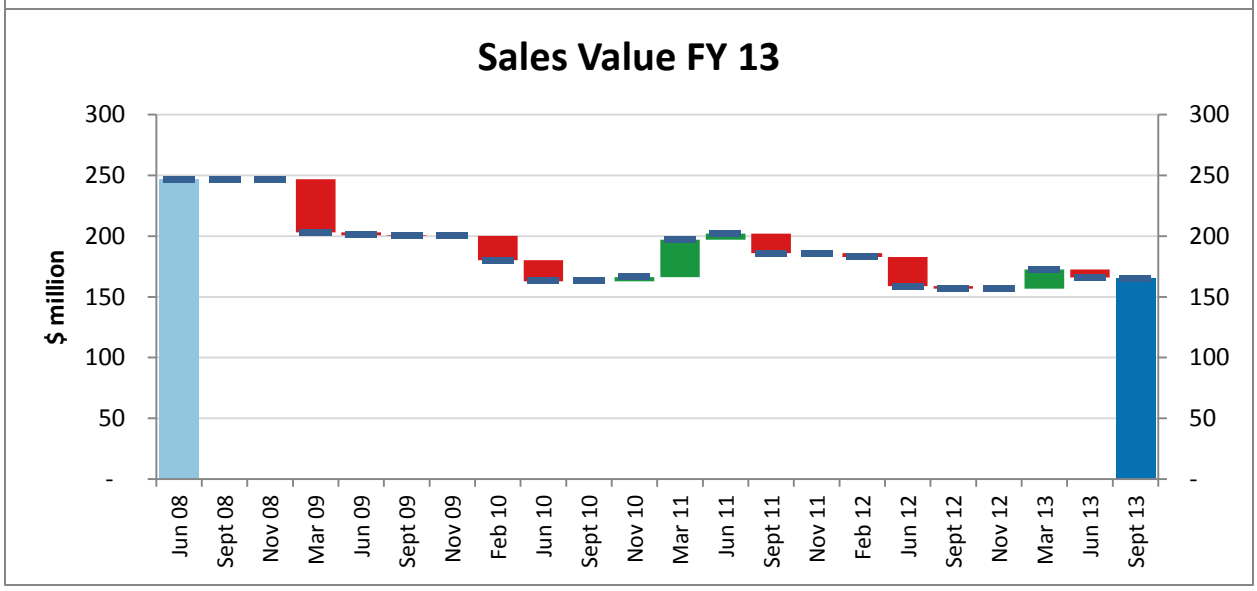




Value of Timber Sales – Fiscal Years 2012 and 2013

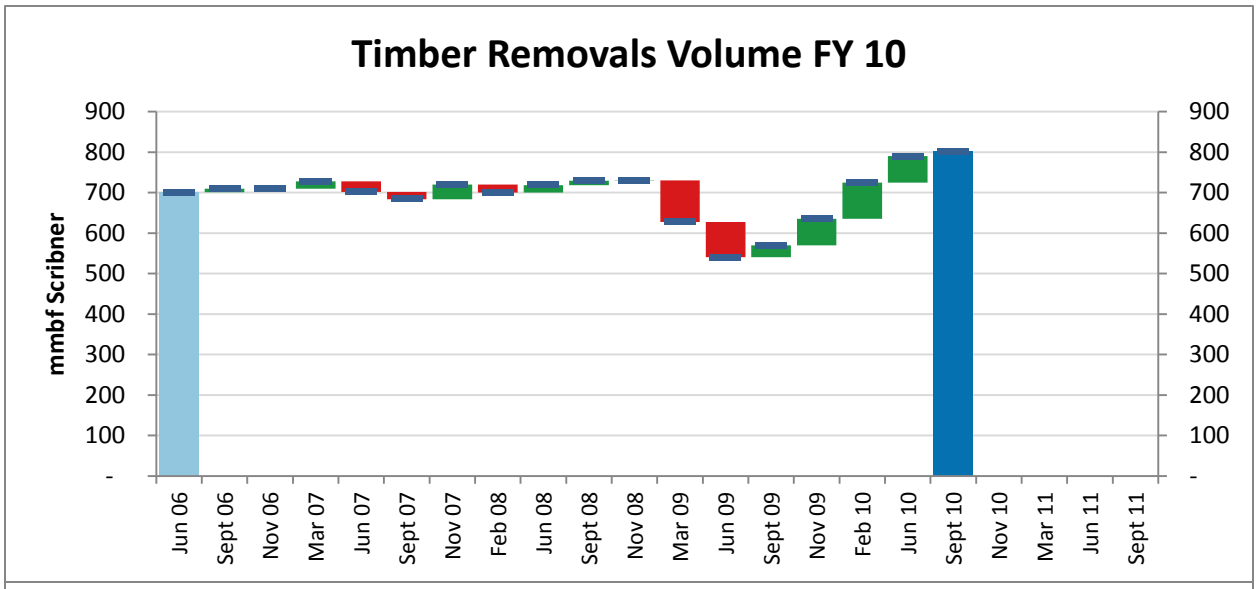
Changes to the sales value projections for FY 12 and FY 13 were the result of changes to the price projections until the February 12 Forecast, when the Forecasts began making downward adjustments to projected volume. However, the reductions in projected volume were partially offset by increases in the projected price.

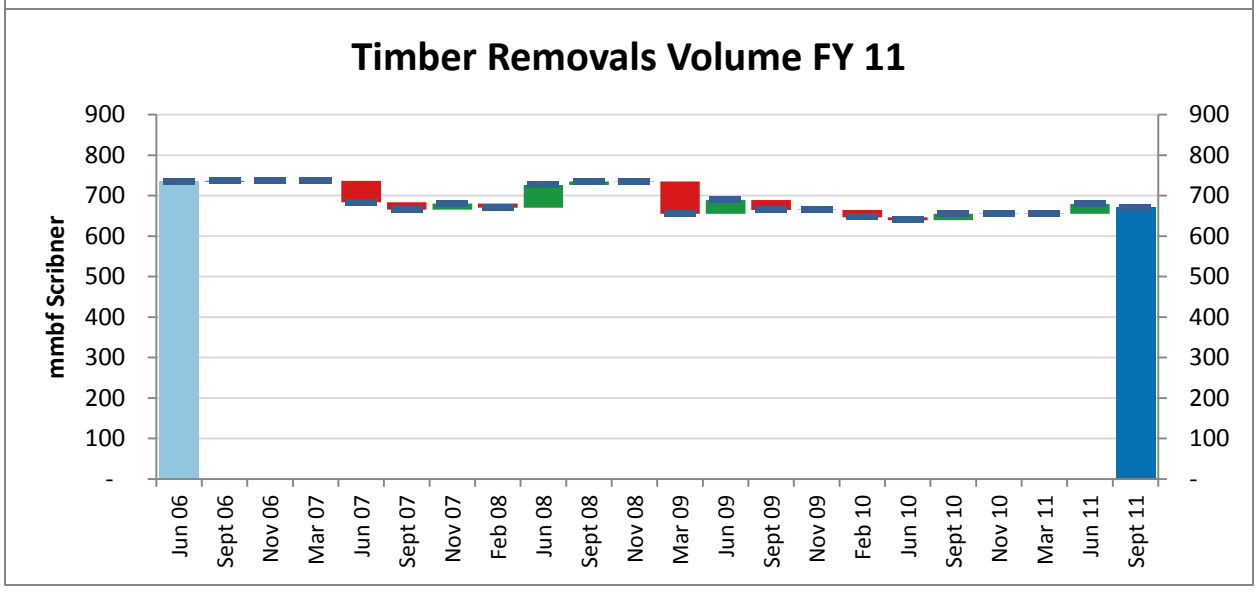




Timber Removal Volumes – Fiscal Years 2010 and 2011

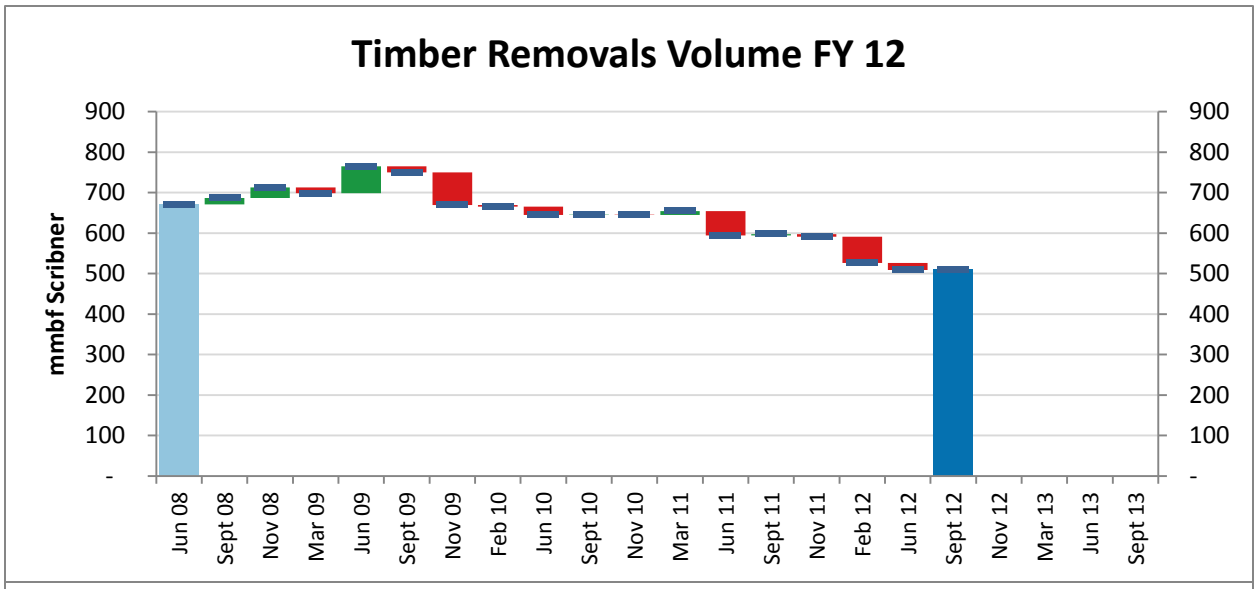
Timber removal volume projections are based on sales in prior years and the timing of harvest removal. Removal volume projections for FY 10 and FY 11 were stable until June 2007, when FY 11 projected volume was reduced due to reduced sales volumes expectations. This reduction was also applied to FY 10 to a lesser degree and offset an increase in the March 2007 Forecast. Projections up to March 2009 were adjusted marginally up or down based on changes in the sales volumes and an assumption that the housing market would fully recover by 2010. In the March 2009 Forecast, when it became apparent that the housing market would not soon recover, the projected volumes for FY 10 were significantly reduced and FY 11 projected volumes were moderately reduced. This projection was subject to significant uncertainty given that most of the volumes harvested in FY 10 and FY 11 would not have been sold at the time of the Forecast. Projected volumes for FY 10 were further reduced in the June 2009 Forecast due to reduced harvest expectations. From the September 2009 Forecast to the end of the fiscal year the FY 10 projected volumes were increased due to higher expected volumes from the purchaser survey.

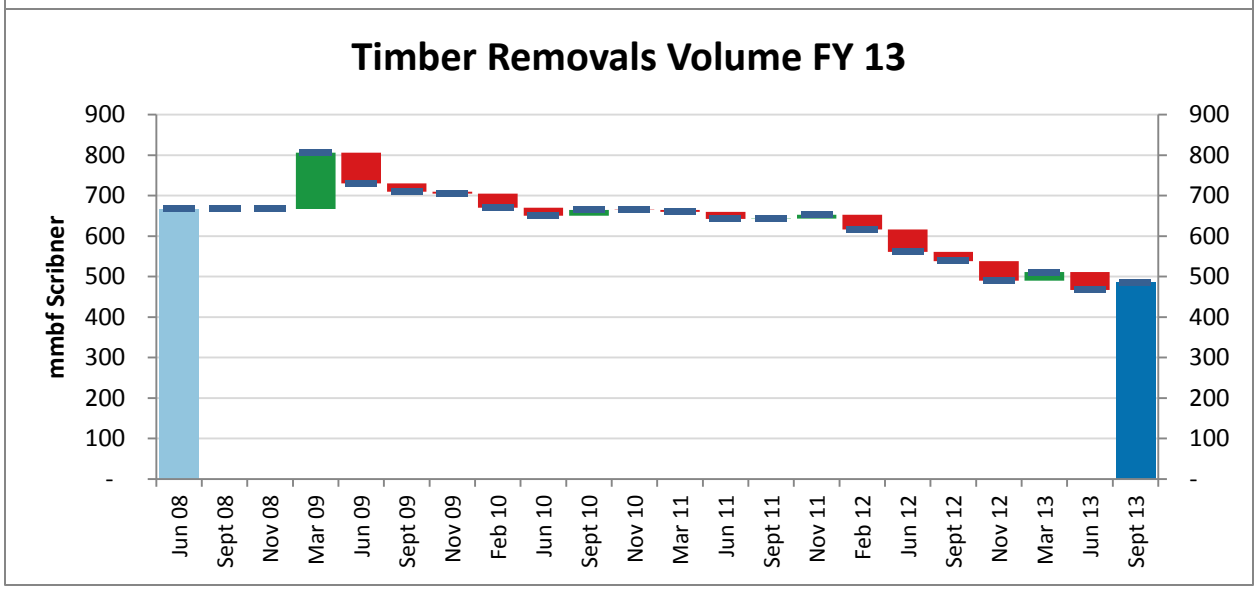




Timber Removal Volumes – Fiscal Years 2012 and 2013

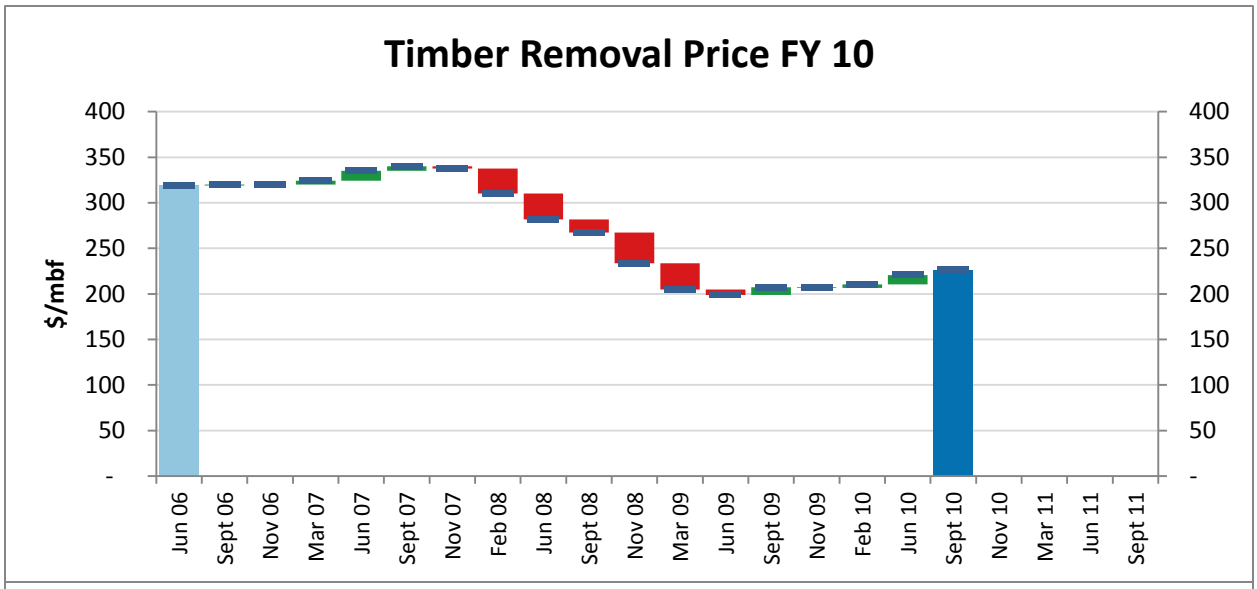
The March 2009 Forecast significantly increased the FY 13 volume projection based on lower sales volumes and modeling that suggested that months' worth of log inventory would be low by the end of FY 12. In the following June 2009 Forecast, some of this projected volume was shifted from FY 13 to FY 12. In November 2009, the FY 12 projected volume was reduced based on purchaser survey responses that suggested a shift to harvesting these volumes in FY 10. The June 2011 Forecast reduced the FY 12 and FY 13 volumes based on purchasers survey and harvest behavior that indicated they were shifting these volumes to FY 11. Further reductions were made in the February 2012 Forecast due to a reduction in projected sales volumes and purchasers' plans to delay some of their harvest – shifting volumes to the 2013-2015 Biennium. The projected removal volume were further reduced in FY 13 based on purchasers survey responses indicating more delays in harvest.

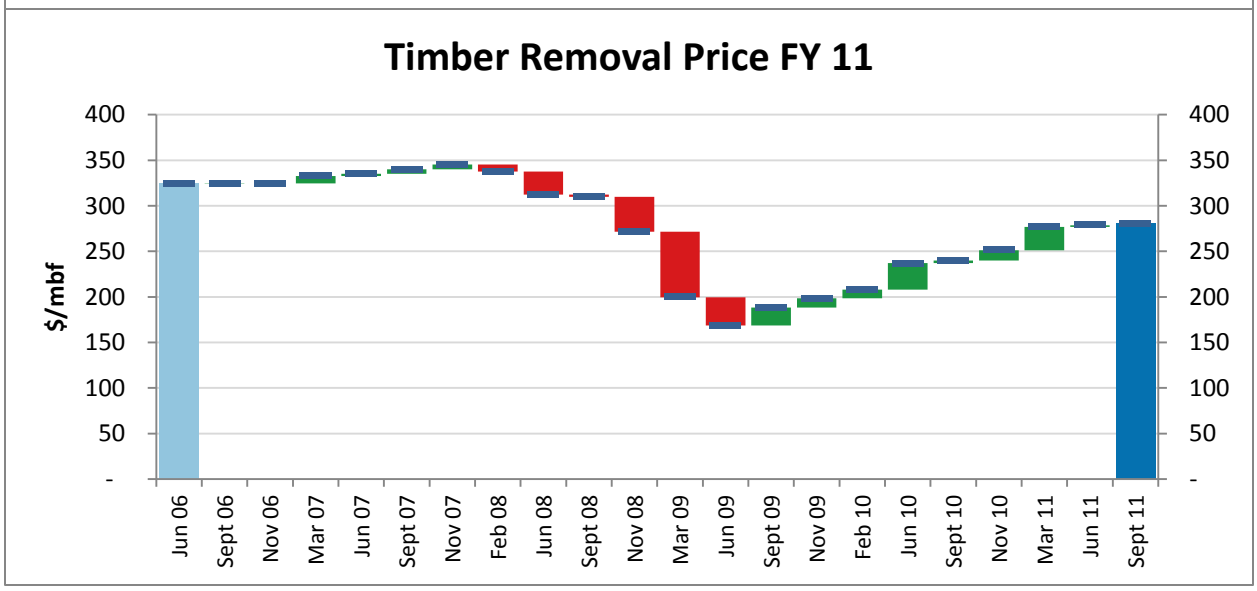




Timber Removal Prices – Fiscal Years 2010 and 2011

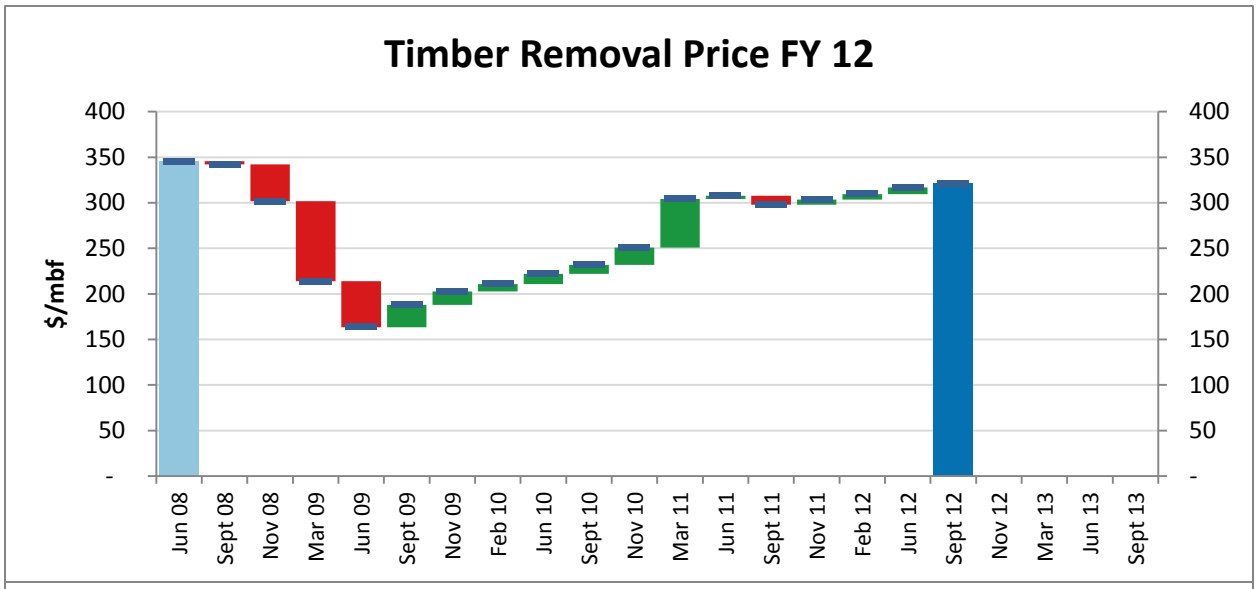
Removals prices are a function of sales prices and removal timing. Projected removals prices began to be reduced in the February 2008 Forecast due to reductions in sales price projections for the remainder of FY 08 and FY 09. This trend was continued in the subsequent Forecasts as sales prices continued to remain subdued. This trend was reversed for FY 11 with the September 2009 Forecast where increased sales prices began to flow into removal prices. Significant additional increases in FY 11 projected removal prices occurred again in the June 2010 and March 2011 Forecasts due to sales price changes.

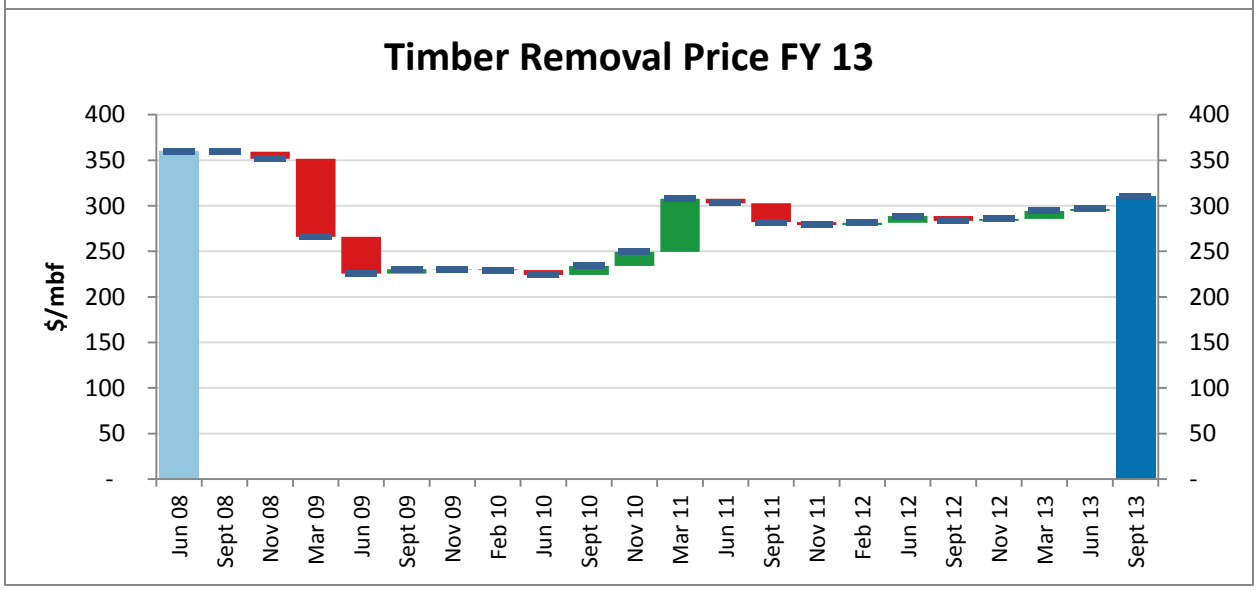




Timber Removal Prices – Fiscal Years 2012 and 2013

Projected removals prices for FY 12 and FY 13 follow similar patterns to FY 10 and FY 11, with significant reductions in projected price in the last three Forecasts of FY 09. These reductions reflect sharp decreases in projected sales prices for FY 10 and FY 11, which fed into FY 12 and FY 13 removal prices. Following the reductions, FY 12 projected removals prices were incrementally increased, reflecting an improved outlook and higher projected sales prices. From the September 10 Forecast, prices for FY 13 were also increased, with both FY 12 and FY 13 projected removals prices increased significantly in the March 2011 Forecast due to higher than expected prices received in the FY 2011.

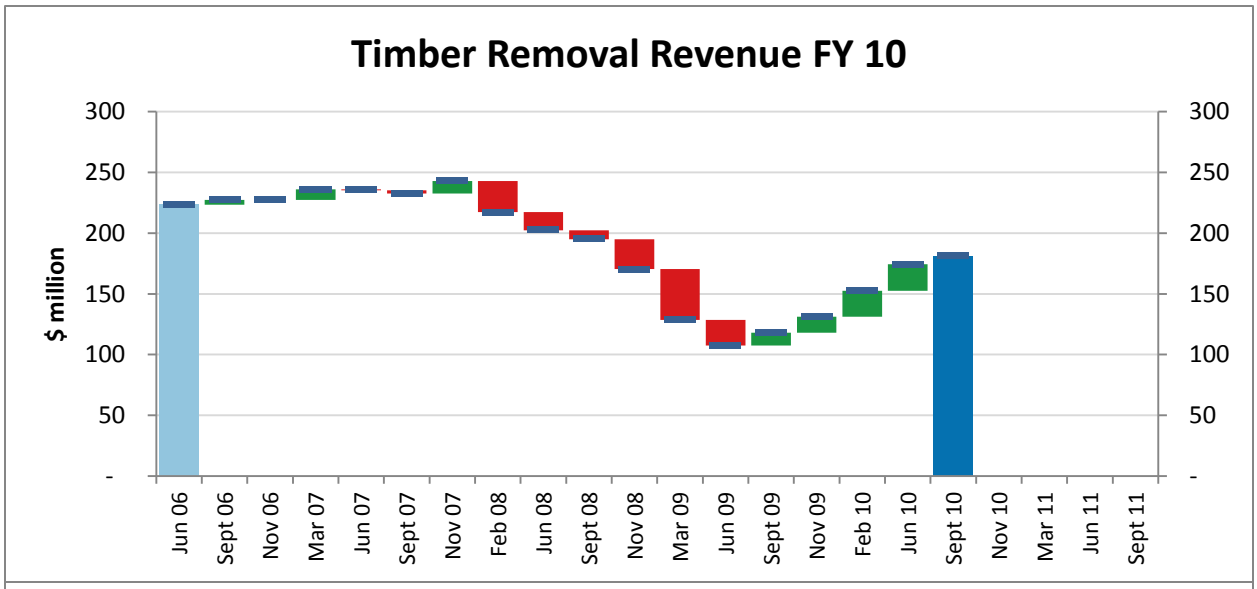


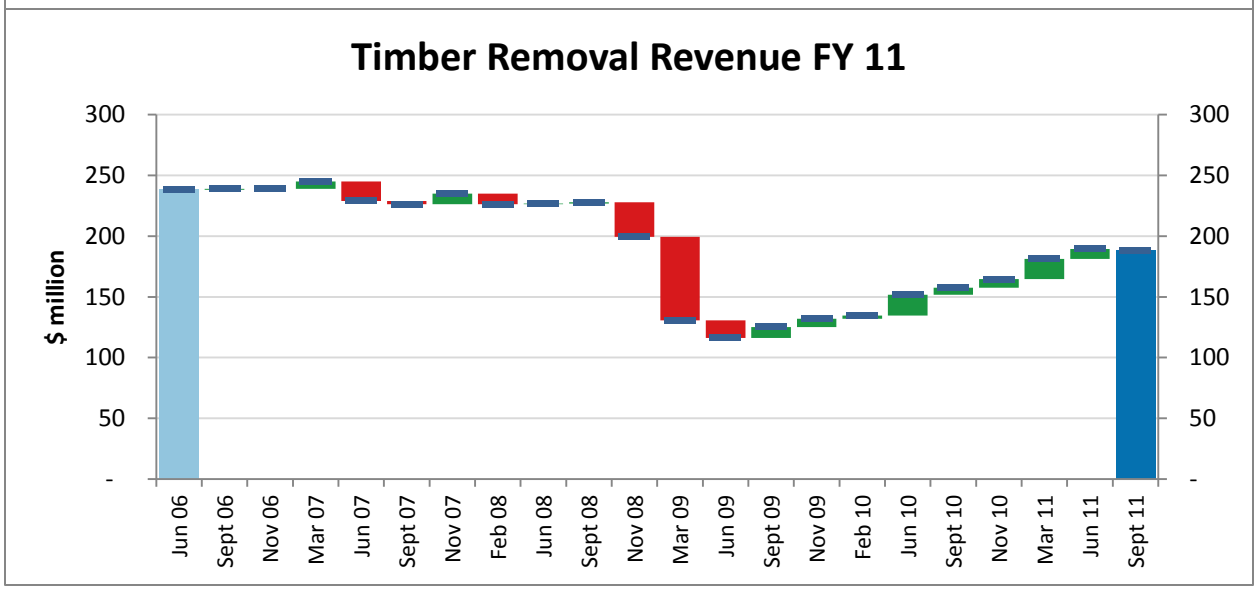


Timber Removal Revenue – Fiscal Years 2010 and 2011

The decreases in projected removal revenue for FY 10 between the February 2008 and November 2009 Forecasts were due to changes in the projected removals prices. The decrease in removal revenue for FY 10 in the March 2009 Forecast was due to drops in both the projected price and volume, and the drop in June 2009 Forecast was due only to a drop in projected volume. The increases in projected revenue for the four quarterly FY 10 Forecasts were due solely to increased projected removal volume.

The FY 11 removal revenue projections were similarly heavily influenced by changes to the removal price projections in the November 2008 and March 2009 Forecasts. The June 2009 Forecast decline in the removal price projection was partially offset by an increase in projected volumes. Following the adjustments in November 2008 through June 2009, the revenue projections followed the incremental increases of the projected removals prices.

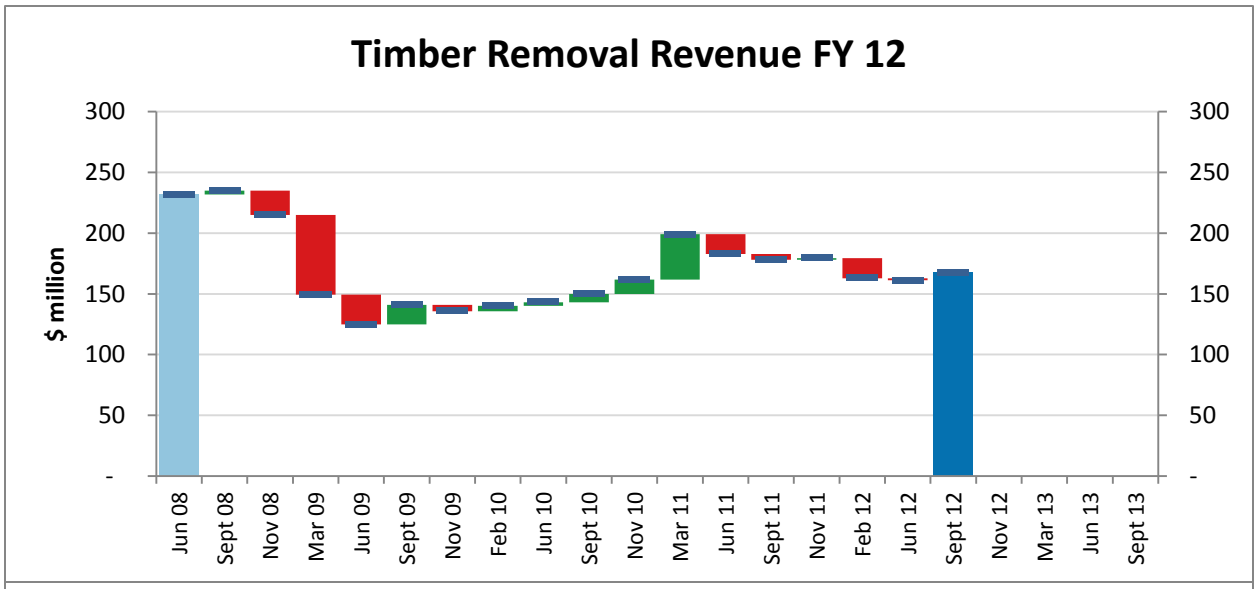


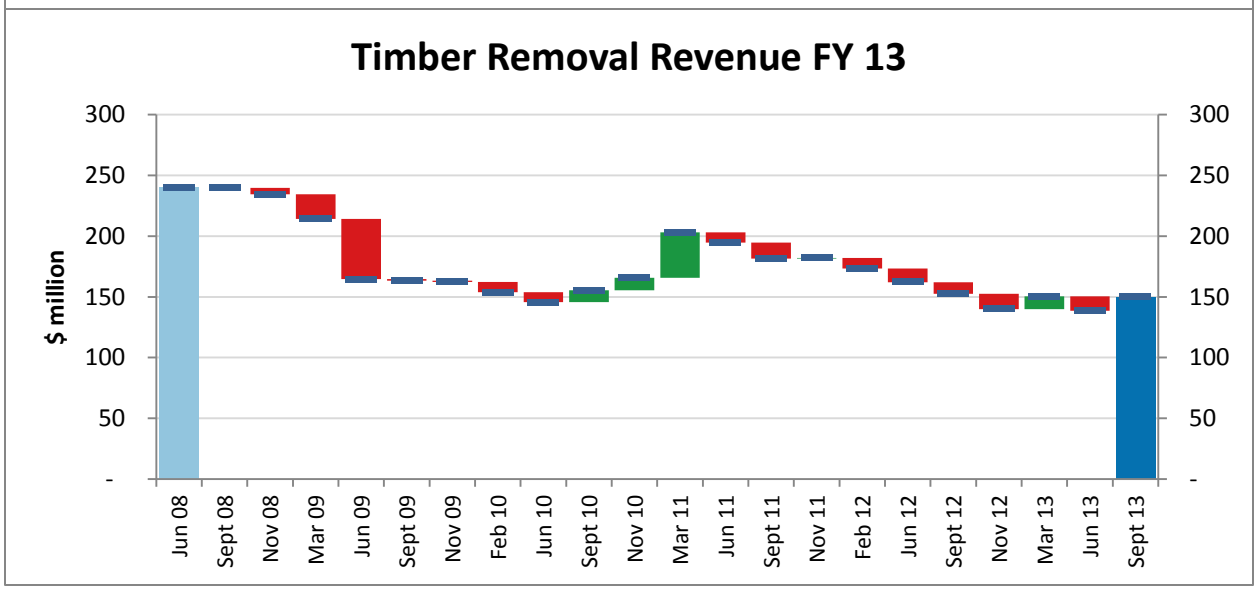


Timber Removal Revenue – Fiscal Years 2012 and 2013

The projected removal revenue for FY 12 from the November 2008 to the March 2011 Forecast closely followed increases or decreases in the projected removals price. However, the effects of the projected removal prices were occasionally offset or magnified by changes in projected removals volumes. From the June 2011 Forecast onward, the projected removal prices stabilized and the projected revenues were mostly influenced by changes in projected volumes.

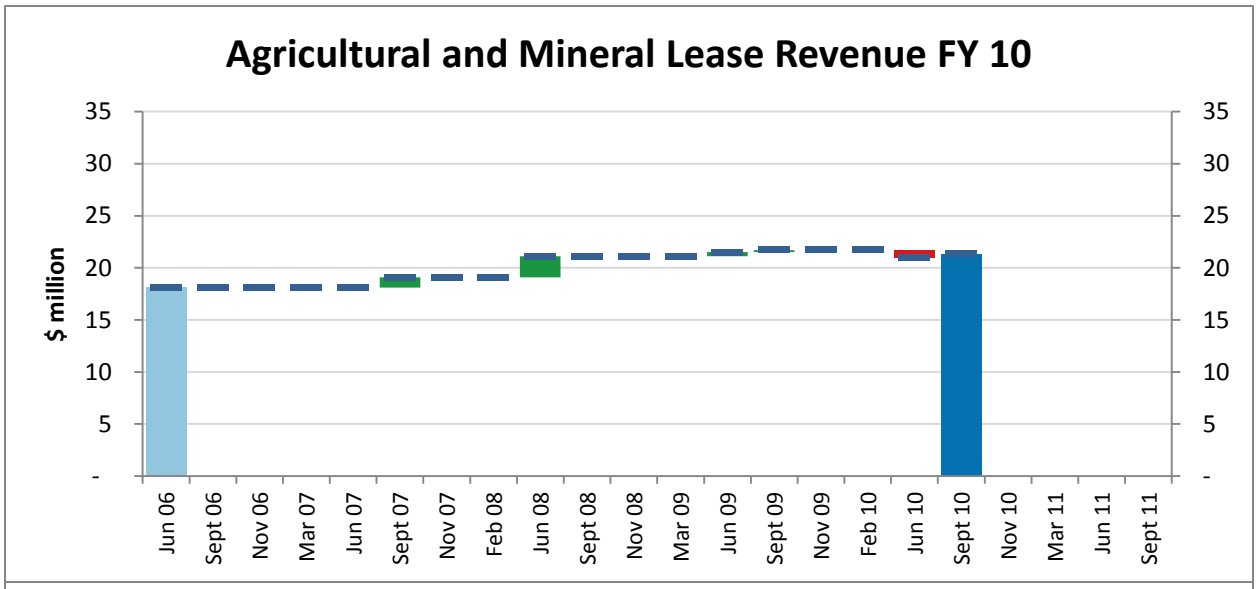
The revenue projections for FY 13 follow a similar pattern to the FY 12 Forecasts – closely following increases or decreases in projected removal price from the November 2008 to the March 2011 Forecasts. One notable exception is the March 2009 Forecast, where changes in projected removal volume offset much of the projected drop in price. However, that projection was reversed in the following quarter, with both projected price and volume dropping. Again, projected revenue adjustments closely follow changes in projected volume from the February 2012 Forecast to the end of the fiscal year.

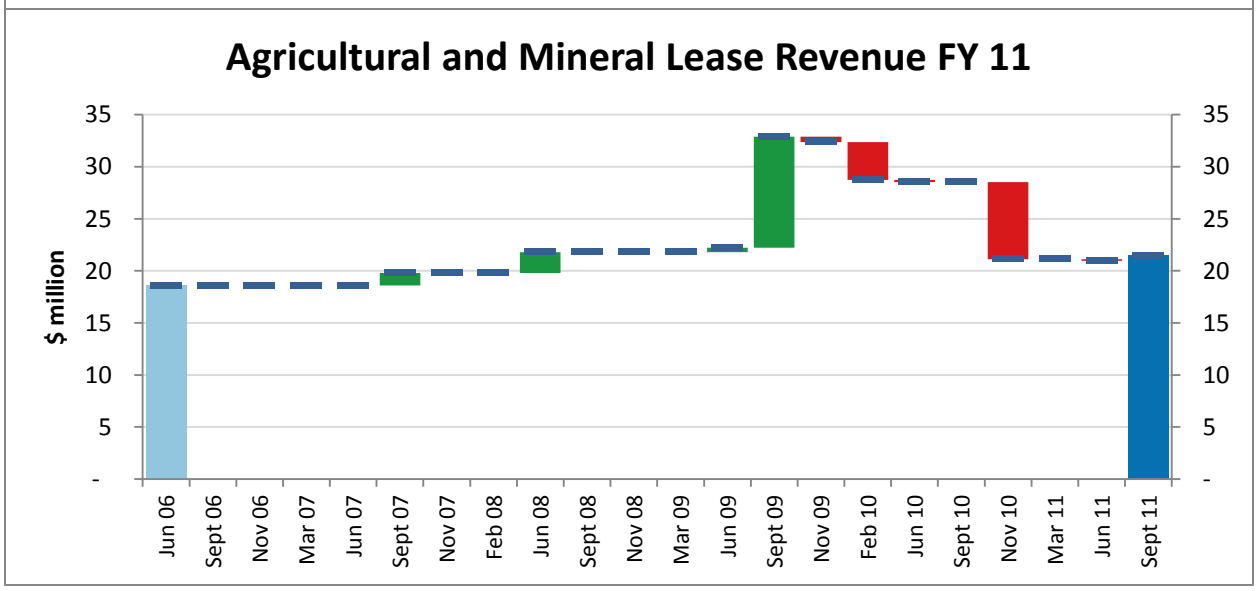




Lease Revenue – Agriculture and Mineral – Fiscal Years 2010 and 2011

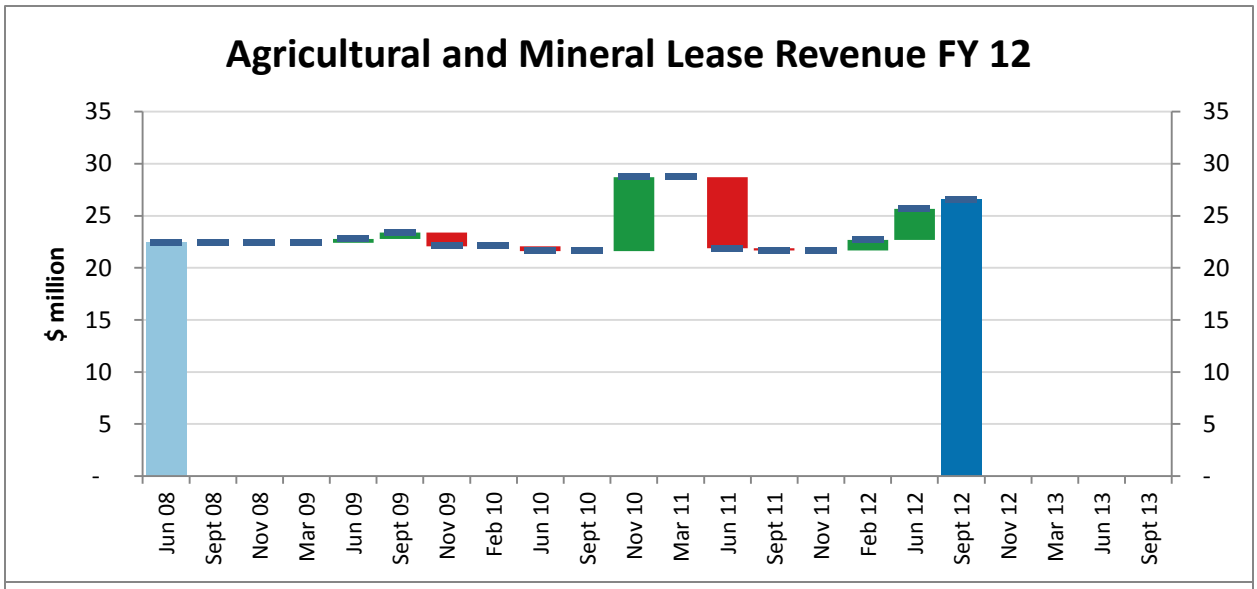
The June 2006 Forecast gave initial projections of FY 10 and FY 11 agriculture and mineral lease revenues based on an assumption of a steady upward trend from 2007 revenues. Projected revenue for both years was adjusted upward slightly in the September 2007 Forecast and again in the June 2008 Forecast due to high commodity prices. In September 2009 the revenue projection for agriculture and mineral leases was substantially increased due to an expected sale of communication site equipment. This one-time expected revenue was reduced from $10 million in the September 2009 Forecast to $7 million in the February 2010 Forecast based on better information about the sale and was subsequently eliminated in the November 2010 Forecast because the sale was pushed out to FY 12.

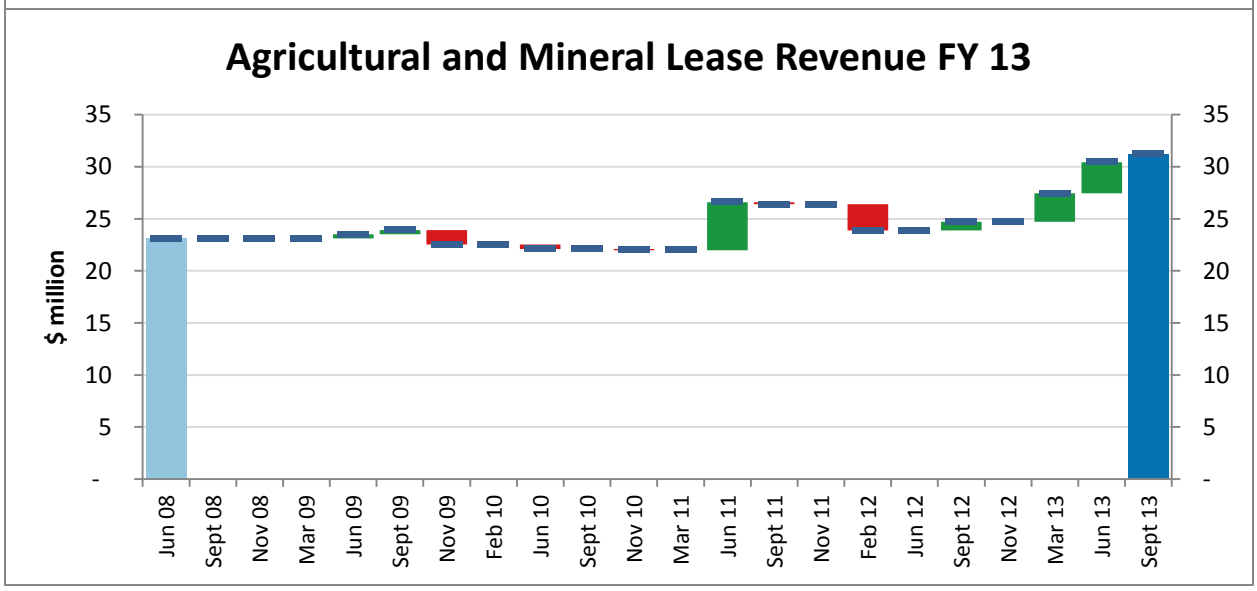




Lease Revenue – Agriculture and Mineral – Fiscal Years 2012 and 2013

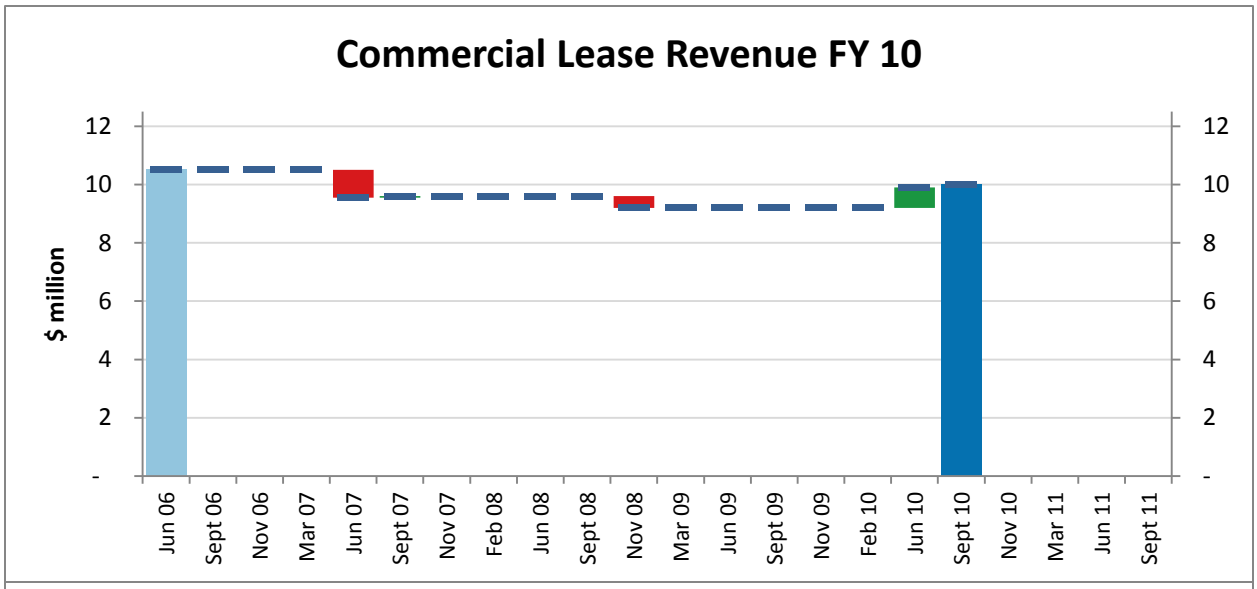
For FY 12 and FY 13 the agriculture and mineral lease revenues were initially based on an assumed growth rate in lease revenue. The revenue projections were in both years adjusted up in the June 2008 Forecast on the back of high commodity prices, but these projected increases were largely reversed in the November 2009 Forecast due to lower mineral lease revenues and reduced revenues from the sale of communication sites planned for FY 11. In the November 2010 Forecast, the FY 12 revenue projection was increased due to the communication sites sales being moved from FY 11 – which were then pushed to FY 13 in the June 2011 Forecast and reduced from $7 million to $4.5 million in the June 2012 Forecast. FY 12 lease revenue was increased in the February 2012 Forecast and again in the June 2012 Forecast based on unexpectedly high agricultural prices. Projected revenues for FY 13 were increased in the March 2013 and June 2013 Forecasts because of high commodity prices and the effect of changing some leases to a cash rent basis, which had the effect of shifting forward the timing of revenue collection.

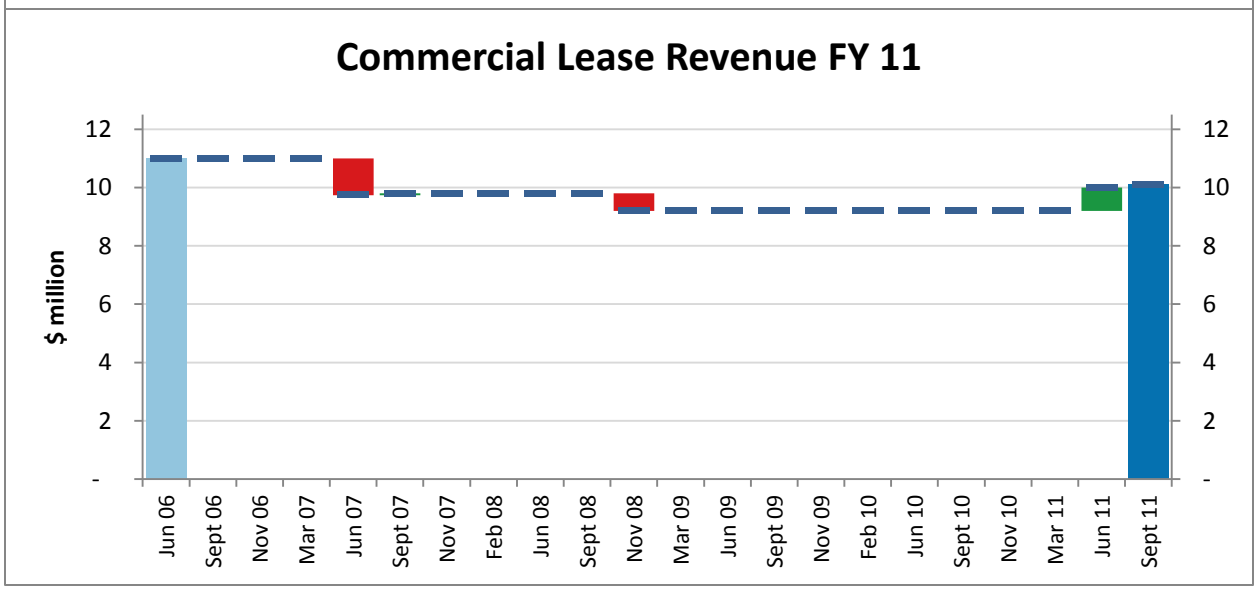




Lease Revenue – Commercial – Fiscal Years 2010 and 2011

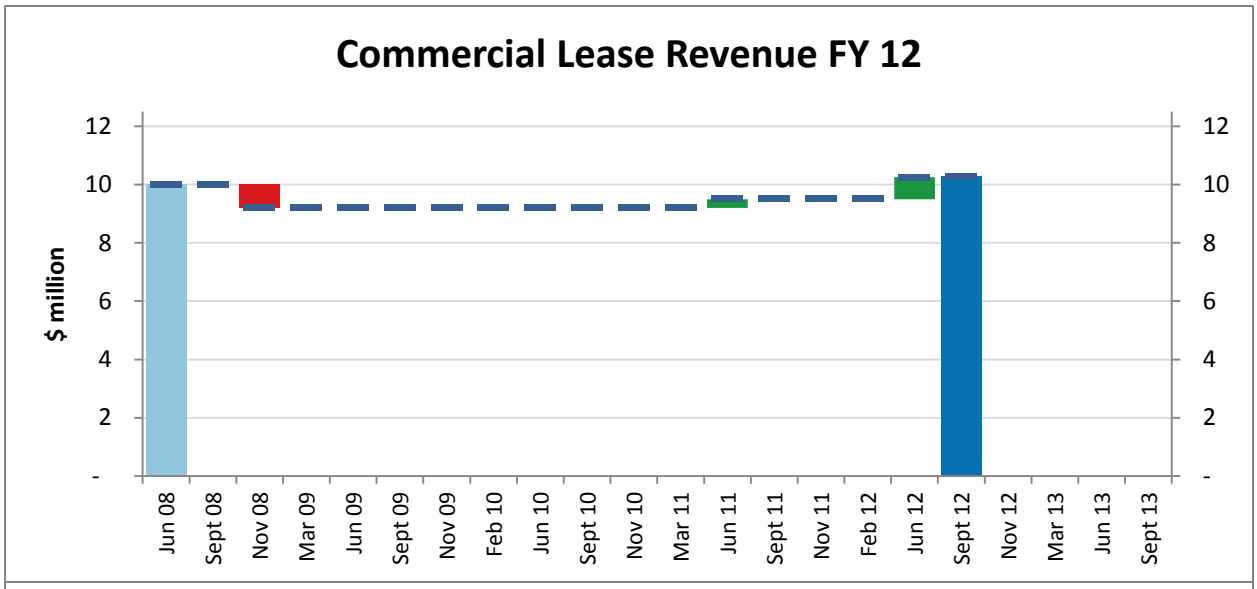
The June 2006 Forecast gave initial projections of FY 10 and FY 11 commercial leases based on an assumption of a steady upward trend from 2007 revenues and an assumption that Department would be acquiring additional commercial property through exchange and purchase of replacement trust properties for trust assets that had been transferred out of trust status. The projected revenues for these years were reduced in the June 2007 Forecast because during the 2007 legislative session, the legislature limited the Department to acquiring "commercial forestland in danger of being converted to other uses". In November 2008 the commercial revenue projections were again reduced, based on a revised assumption of no trend growth in revenue. FY 10 projected revenues were revised upward in the June 2010 Forecast due to higher actual revenue than projected for the previous fiscal year quarters. FY 11 projected commercial lease revenue was revised upward in June 2011 based on revenue actually received in that year.

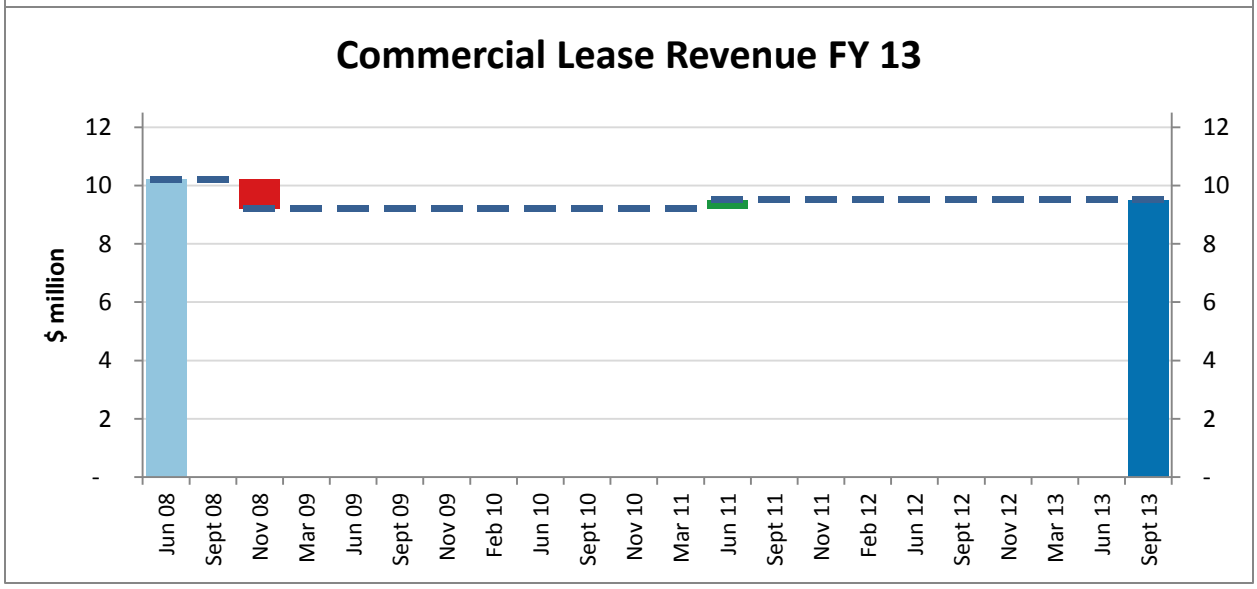




Lease Revenue – Commercial – Fiscal Years 2012 and 2013

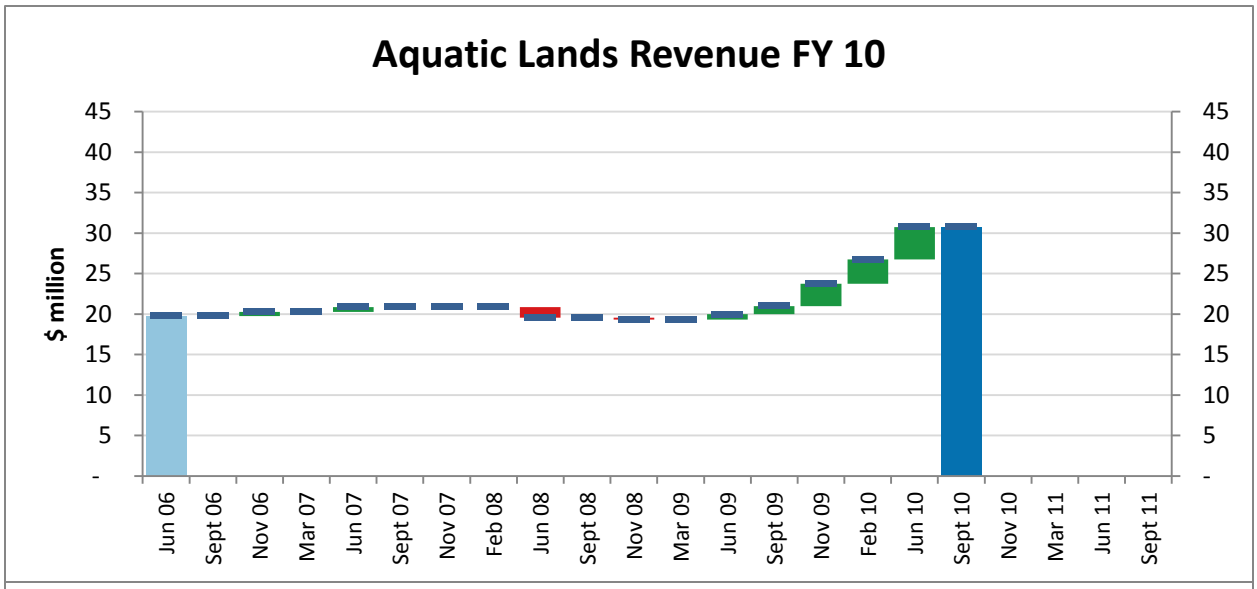
Initial projections for commercial lease revenue for FY 12 and FY 13 were based on assumed lease revenue growth from 2009's projected lease revenues. These expectations were revised downward in the November 2008 Forecast along with FY 10 and FY 11 because the projection dropped the assumption of increased lease revenue growth. The projected revenue for both years was increased in the June 2011 Forecast based on better than expected commercial revenue in the fiscal year 2011. FY 12 commercial lease revenue was increased in the June 2012 Forecast based on actual rents collected to date.

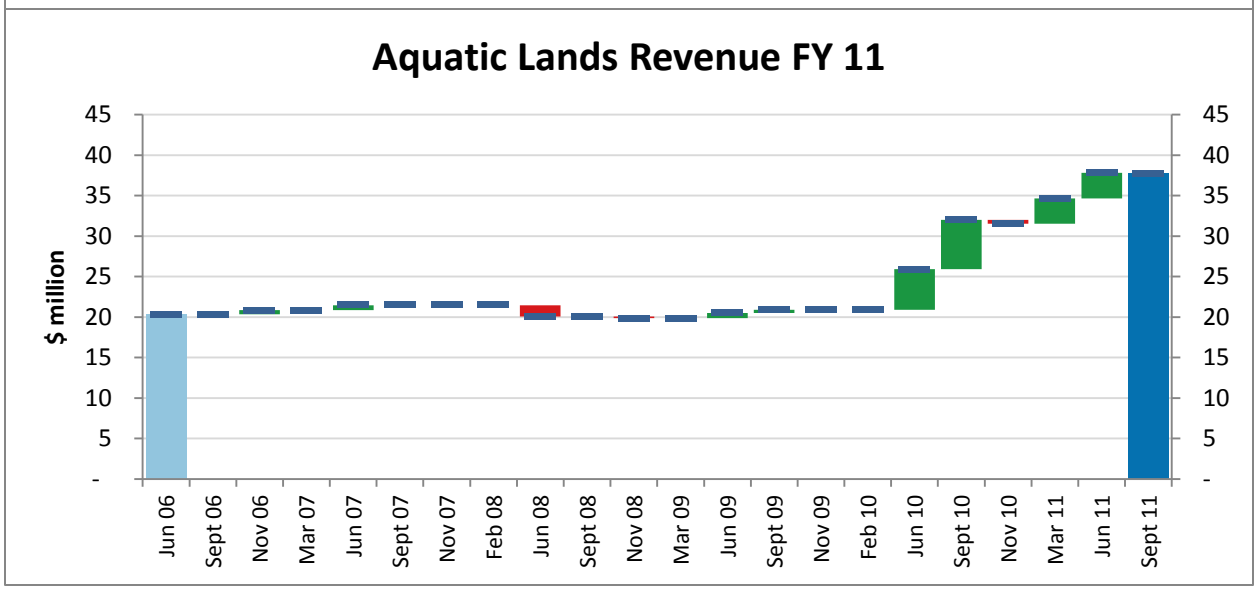




Aquatic Lands Revenue – Fiscal Years 2010 and 2011

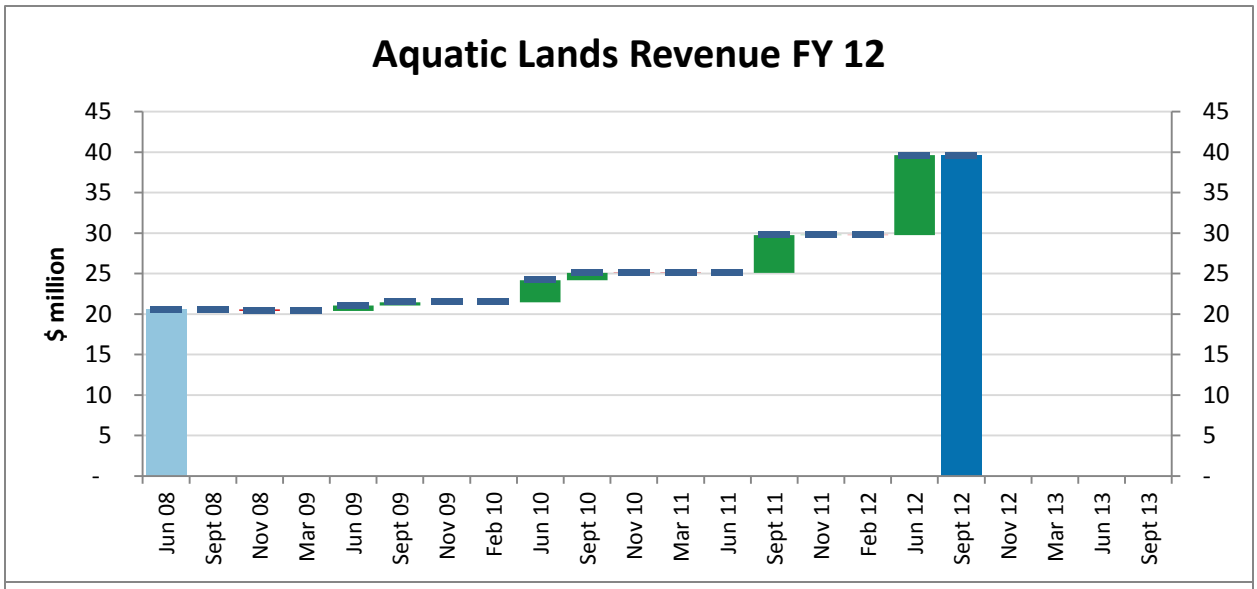
Initial projections for aquatic lease revenue were based on assumptions about the development of industry geoduck harvesting skill and lands. These assumptions were marginally increased in the June 2007 Forecast, but revised downward in the June 2008 Forecast due to a drop in geoduck revenues. From the June 2009 Forecast the aquatic revenue projection for FY 10 was increased for each quarterly Forecast based on sustained increases in geoduck prices at auction. Increases to the FY 11 projection were delayed until the June 2010 Forecast, despite the increases in prices, because geoduck prices have historically been very volatile and there was no clear indication that the prices would be sustained through FY 11. Following the June 2010 Forecast, the FY 11 projected revenue was increased several times based on sustained high geoduck prices.

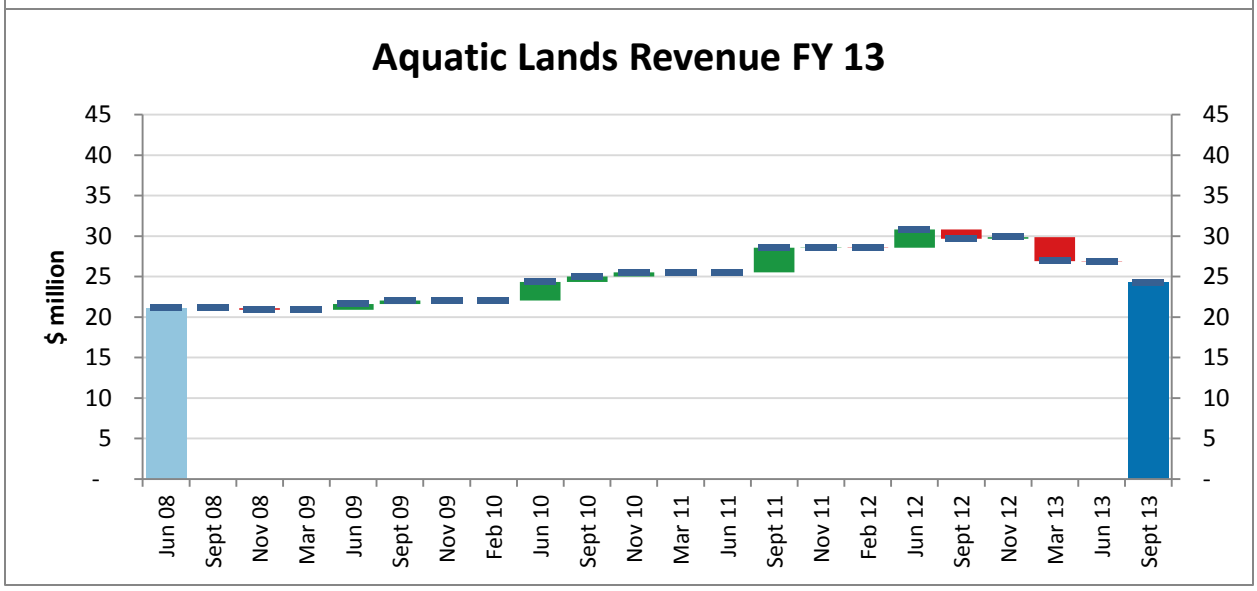




Aquatic Lands Revenue – Fiscal Years 2012 and 2013

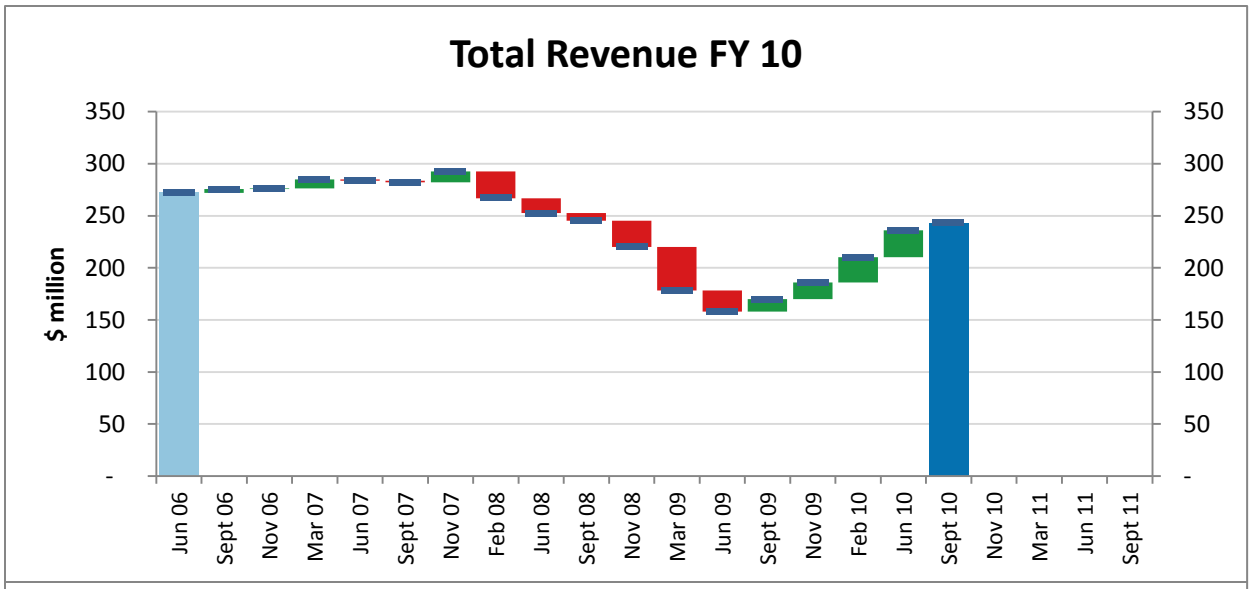
Similar to the FY 10 and FY 11 projections, the initial FY 12 and FY 13 projections for aquatic revenue was based on an expected growth rate due to increases in price and harvest volumes of geoduck. Both the FY 12 and FY 13 projections were revised downward in the June 2008 Forecast due to a drop in geoduck revenues. However, both projections were again raised in the June 2010, September 2011 and June 2012 Forecasts based on continued high prices. The FY 13 projection was decreased in the September 2012 and March 2013 Forecasts as a result of lower projected average geoduck prices.

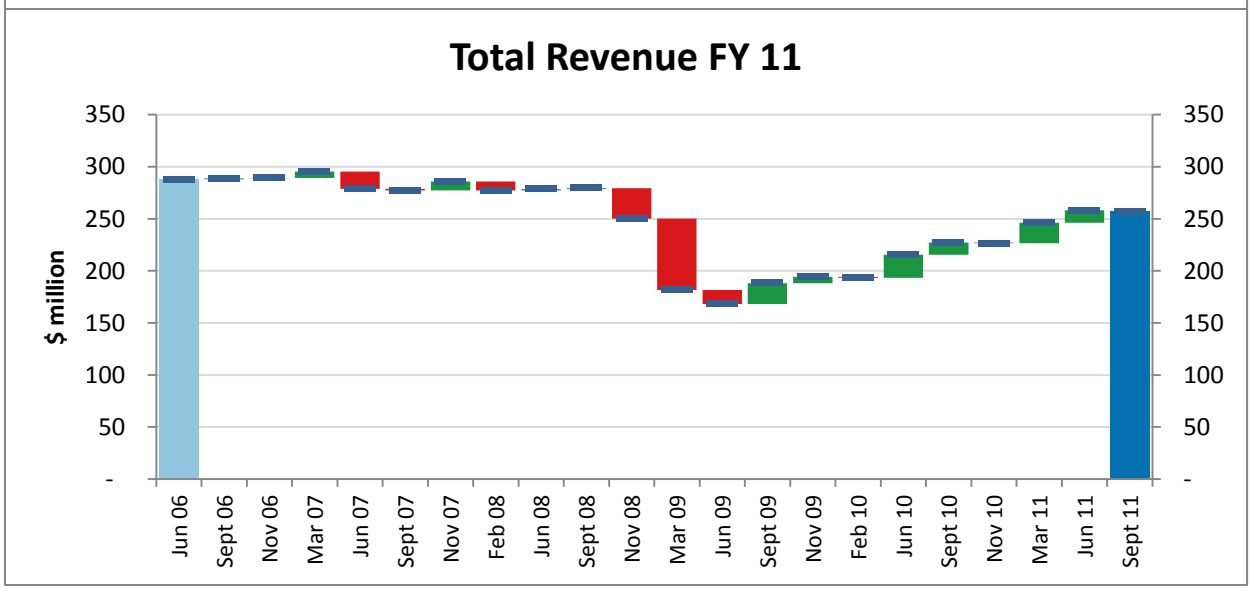




Total Revenue – Fiscal Years 2010 and 2011

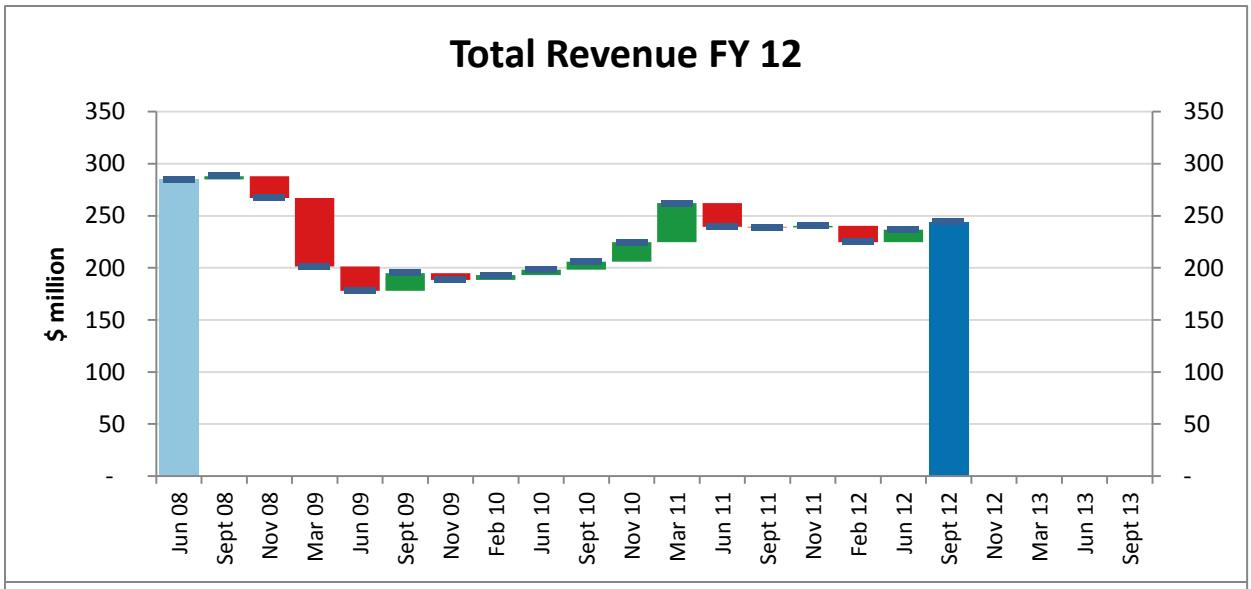
The total revenue projections for FY 10 and FY 11 closely follow the changes in the timber removal revenue projections, which are far larger than the other categories of revenue.

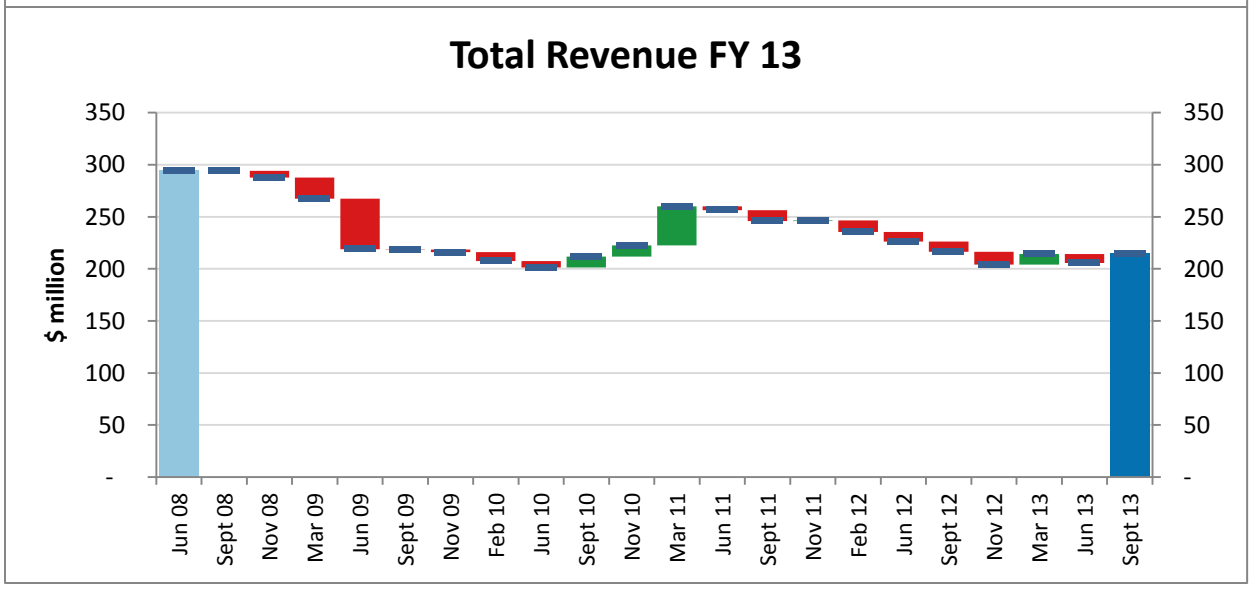




Total Revenue – Fiscal Years 2012 and 2013

Similarly to the F 10 and FY 11 projections, the total revenue projections for FY 12 and FY 13 closely follow the timber revenue projections, which are much larger than other revenue sources.





	Timber Sales Forecast - Volume mmbf Scibner				Timber Sales Forecast - Price $/mbf				Timber Sales Revenue $ million			
	FY 10	FY 11	FY 12	FY 13	FY 10	FY 11	FY 12	FY 13	FY 10	FY 11	FY 12	FY 13
Jun 06	734	755			335	304			246	230		
Sept 06	734	755			335	305			246	230		
Nov 06	734	755			335	305			246	230		
Mar 07	734	755			335	335			246	253		
Jun 07	685	685			335	335			229	229		
Sept 07	667	667	667	667	340	340	350	360	227	227	233	240
Nov 07	667	667	667	667	345	350	360	370	230	233	240	247
Feb 08	667	667	667	667	345	350	360	370	230	233	240	247
Jun 08	667	667	667	667	320	350	360	370	213	233	240	247
Sept 08	667	667	667	667	320	350	360	370	213	233	240	247
Nov 08	667	667	667	667	250	310	360	370	167	207	240	247
Mar 09	723	607	667	667	206	207	290	305	149	126	193	203
Jun 09	744	657	667	667	135	165	241	301	100	108	161	201
Sept 09	744	657	667	667	165	180	240	300	123	118	160	200
Nov 09	744	657	667	667	196	185	240	300	146	122	160	200
Feb 10	744	657	667	667	216	185	240	270	161	122	160	180
Jun 10	738	650	665	665	249	210	215	245	184	137	143	163
Sept 10	730	659	665	665	245	235	225	245	179	155	150	163
Nov 10		659	665	665		265	245	250		175	163	166
Mar 11		657	657	657		345	300	300		227	197	197
Jun 11		607	674	674		343	300	300		208	202	202
Sept 11		591	679	679		339	282	274		200	191	186
Nov 11			679	679			282	274			191	186
Feb 12			656	667			282	274			185	183
Jun 12			553	580			301	274			166	159
Sept 12			553	560			296	280			164	157
Nov 12				560				280				157
Mar 13				535				323				173
Jun 13				497				334				166
Sept 13				495				334				165

	Timber Removals Forecast - Volume mmbf Scibner				Timber Removals Forecast - Price $/mbf				Timber Removals Revenue $ million			
	FY 10	FY 11	FY 12	FY 13	FY 10	FY 11	FY 12	FY 13	FY 10	FY 11	FY 12	FY 13
Jun 06	701	734			319	324			224	238		
Sept 06	710	736			320	324			227	239		
Nov 06	710	736			320	324			227	239		
Mar 07	728	736			324	333			236	245		
Jun 07	702	684			335	335			235	229		
Sept 07	684	666	667	667	340	340	343	351	233	226	228	234
Nov 07	720	680	644	667	338	345	351	361	243	235	226	240
Feb 08	700	670	670	667	310	338	350	359	217	226	235	240
Jun 08	719	726	671	667	282	312	346	360	202	227	232	240
Sept 08	730	735	687	667	267	310	342	360	195	228	235	240
Nov 08	730	735	713	667	233	271	302	352	170	199	215	234
Mar 09	627	655	698	806	205	200	214	266	128	131	149	214
Jun 09	540	690	765	730	199	169	163	225	107	116	125	165
Sept 09	570	665	750	710	207	188	188	230	118	125	141	163
Nov 09	635	665	670	705	207	198	203	230	131	132	136	162
Feb 10	725	647	665	670	210	208	211	229	152	134	140	154
Jun 10	790	640	645	650	221	237	222	224	174	152	143	146
Sept 10	801	655	645	665	226	240	232	234	181	158	150	155
Nov 10		655	645	665		251	251	249		165	162	166
Mar 11		655	655	660		277	304	308		181	199	203
Jun 11		679	594	643		279	308	303		189	183	195
Sept 11		670	598	644		280	298	282		188	178	182
Nov 11			591	653			304	279			179	182
Feb 12			526	616			309	281			163	173
Jun 12			509	561			317	289			161	162
Sept 12			511	538			321	283			168	153
Nov 12				490				285				140
Mar 13				511				294				150
Jun 13				467				297				139
Sept 13				486				310				150

	Agriculture and Minerals $ million				Lease Revenue - Commercial $ million				Aquatic Lands $ million			
	FY 10	FY 11	FY 12	FY 13	FY 10	FY 11	FY 12	FY 13	FY 10	FY 11	FY 12	FY 13
Jun 06	18	19			11	11			20	20		
Sept 06	18	19			11	11			20	20		
Nov 06	18	19			11	11			20	21		
Mar 07	18	19			11	11			20	21		
Jun 07	18	19			10	10			21	21		
Sept 07	19	20	20	21	10	10	10	10	21	21	22	23
Nov 07	19	20	20	21	10	10	10	10	21	21	22	23
Feb 08	19	20	20	21	10	10	10	10	21	21	22	23
Jun 08	21	22	22	23	10	10	10	10	20	20	21	21
Sept 08	21	22	22	23	10	10	10	10	20	20	21	21
Nov 08	21	22	22	23	9	9	9	9	19	20	20	21
Mar 09	21	22	22	23	9	9	9	9	19	20	20	21
Jun 09	22	22	23	24	9	9	9	9	20	21	21	22
Sept 09	22	33	23	24	9	9	9	9	21	21	21	22
Nov 09	22	32	22	23	9	9	9	9	24	21	21	22
Feb 10	22	29	22	23	9	9	9	9	27	21	21	22
Jun 10	21	29	22	22	10	9	9	9	31	26	24	24
Sept 10	21	29	22	22	10	9	9	9	31	32	25	25
Nov 10		21	29	22		9	9	9		32	25	26
Mar 11		21	29	22		9	9	9		35	25	26
Jun 11		21	22	27		10	10	10		38	25	26
Sept 11		21	22	26		10	10	10		38	30	29
Nov 11			22	26			10	10			30	29
Feb 12			23	24			10	10			30	29
Jun 12			26	24			10	10			40	31
Sept 12			27	25			10	10			40	30
Nov 12				25				10				30
Mar 13				27				10				27
Jun 13				30				10				27
Sept 13				31				10				24

	Total Revenue $ million			
	FY 10	FY 11	FY 12	FY 13
Jun 06	272	288		
Sept 06	276	289		
Nov 06	276	289		
Mar 07	285	295		
Jun 07	284	279		
Sept 07	282	277	281	288
Nov 07	292	286	279	294
Feb 08	267	277	287	294
Jun 08	253	279	285	294
Sept 08	245	280	288	294
Nov 08	220	250	267	288
Mar 09	178	182	201	267
Jun 09	158	168	178	219
Sept 09	170	188	195	219
Nov 09	186	194	188	216
Feb 10	210	193	193	208
Jun 10	236	215	198	201
Sept 10	243	227	206	212
Nov 10		226	225	222
Mar 11		246	262	260
Jun 11		258	239	256
Sept 11		257	239	246
Nov 11			240	247
Feb 12			225	235
Jun 12			237	226
Sept 12			244	216
Nov 12				204
Mar 13				214
Jun 13				205
Sept 13				215