



Economic and Revenue Forecast



Second Quarter

Fiscal Year 2015

.....
November 2014



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

November 2014

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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.

DNR Office of Budget and Economics

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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* (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. The Forecast calendar at the end of this section shows the 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 2015 through 2019. Fiscal years for Washington State government begin July 1 and end June 30. For example, the current fiscal year, Fiscal Year 2015, runs from July 1, 2014 through June 30, 2015.

The baseline date (the point that designates the transition from "actuals" to predictions) for DNR revenues in this Forecast is October 1st, 2014. The forecast numbers beyond that date are predicted from the most up-to-date DNR sales and revenue data available, including DNR's timber sales results through October 2014. 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. Each re-evaluates world and national macroeconomic conditions, and the demand and supply for forest products and other commodities. Finally, each assesses the impact of these economic conditions on projected revenues from DNR-managed lands.

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 Forecasts*.

Economic Forecast Calendar

Forecast Title	Baseline Date	Draft Revenue Data Release Date	Final Data and Publication Date (approximate)
November 2014	October 1, 2014	November 7, 2014	November 30, 2014
March 2015	February 1, 2015	March 9, 2015	March 31, 2015
June 2015	May 1, 2015	June 8, 2015	June 30, 2015
September 2015	August 1, 2015	September 5, 2015	September 30, 2015



Introduction and Forecast Highlights

U.S. Economy and Housing Market. After a harsh winter and business inventory adjustments caused the U.S. economy to shrink by 2.1 percent (annualized) in the first quarter of 2014, economic growth rebounded with strong second quarter growth of 4.2 percent. The economy continued to grow in the third quarter with advanced estimates of 3.5 percent. Despite this recent strength, year-over-year GDP growth remains modest at about 2.4 percent. In October 2009 the unemployment rate peaked at 10.0 percent, but has slowly fallen to 5.8 percent as of October 2014. While these are positive signals, the U.S. economy still faces significant challenges. While it is dropping, unemployment remains historically high and there are significant difficulties for younger workers and the long-term unemployed. Additionally, there are serious questions about the usefulness of the unemployment rate as a measure of slack in the employment market because the labor participation rate has fallen by over three percent since the beginning of the recession. Improvements to the housing market have been disappointingly slow: new housing starts in 2013 averaged 928,000, 52 percent over 2011, but have stagnated to less than a million so far in 2014. U.S. housing prices have been trending upward since January 2012, but price growth has stalled and actually fallen back slightly in the second quarter of 2014. Finally, the U.S. government still has not implemented a coherent, growth-driven economic policy—which is unlikely to happen in the current highly politicized environment.

International Economy. Internationally, the economy of the European Union is showing significant problems, with several countries still in recession and some of the member states suffering from deflation. Additionally, the crisis in Ukraine and the uncertainty created by Russia's behavior in Eastern Europe have introduced significant political and economic uncertainty. All of the BRIC (Brazil, Russia, India and China) economies are slowing – in particular, the Russian economy is suffering from internal problems and the effects of sanctions, and the Chinese economy continues to show signs of underlying structural and demographic issues.

Lumber and Log Prices. Lumber and log prices were up in 2013 and continue to improve. While it varied widely, Random Lengths' Coast Dry Random and Stud composite lumber price averaged \$370/mbf in 2013 and has averaged \$377/mbf thus far in 2014, up over 20 percent from the 2012 average of \$309/mbf. Pacific Northwest log prices have also moved up sharply after being fairly flat for 2011 and most of 2012. The price for a 'typical' DNR log delivered to the mill continued to climb from 2013's \$564/mbf average, already up 18 percent from 2012, to a nominal high of \$624/mbf in January, the highest price since 2000. However, the average price has since pulled back to \$587/mbf as of October.

Timber Sales Volume. DNR has sold 79 mmbf thus far this year, 16 percent of the planned 500 mmbf planned sales. Given current timber sales plans—and absent a new sustainable harvest calculation—sales volumes for FY 15 and future years are still estimated to total about 500 mmbf.

Timber Sales Prices. The FY 14 average sales price came in at \$356/mbf, very close to the June forecast. Weighted by volume, sales prices have averaged \$302/mbf through October. The new predicted sales price for FY 15 is \$365/mbf, down four percent from September's \$381/mbf forecast. This is primarily due to the continued slowdown in export markets, particularly China, that affect domestic prices, and to an ample international supply of logs. Due to a broad downward forecast revision in timber prices, future stumpage price estimates are lowered to about \$379/mbf in both FYs 16 and 17, down three and four percent, respectively, from the September forecast.

Timber Removal Volume and Prices. Changes in the harvest plans of DNR timber purchasers have led to shifts in anticipated timber removal volumes throughout most of the forecast period. Removal volumes for FYs 15-17 are forecast to be 527 (-25), 573 (-27) and 517 (+49) mmbf. Timber removal prices are projected to be about \$344 (-\$8), \$375 (+\$5), \$374 (-\$9) per mbf for FYs 15-17, respectively. These removal prices reflect changes in the removal timing and follow from, and lag behind, the changes projected in timber sales prices.

Bottom Line for Timber Revenues. The above changes to timber sales prices, sales volumes, and harvest timing have reduced projected revenues in the current fiscal year. The timber revenue projection for the 2013-2015 Biennium is lowered 3.8 percent to \$333.1 million. Revenues in the 2015-2017 Biennium are predicted to be \$407.7 million, up 1.8 percent from September's forecast.

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.

Projected revenues from agricultural and other upland leases are revised down slightly in FYs 15 and 16, to \$35.5 and \$35.4 million, respectively. However, they are revised upward to over \$36 million in the outlying years.

Revenues from aquatic lands are projected to total about \$29.2 million in FY 15, down \$1.2 million from the September estimate. Revenue expectations for FYs 16 and 17 have been reduced to \$29.1 and \$31.8 million, respectively, but are unchanged for the outlying years.

Total Revenues. Total 2013-2015 Biennium revenues are projected to be \$472.4 million, down \$14.7 million (3.0 percent) from the previous forecast. Revenues for the 2016-2017 Biennium are expected to total \$540.5 million, up \$5.5 million (1.0 percent) from the September Forecast.

Risks to the Forecast. Although significant curtailments in timber sales volumes were assumed in the June 2013 Forecast, final timber sales in each year may be further reduced due to environmental, operational, and policy issues. These risks remain for the November forecast. Additionally, the assumed sustainable harvest limit of 500 mmbf could prove too high.

Upside potential and downside risks for timber prices, and therefore to subsequent removal prices, seem to be balanced. Downside risks include a further decline in the housing prices and demand, and decreased demand from China. While both of these have largely been accounted for in the price forecasts and by markets, there are indications that Chinese construction growth may slow down more quickly than previously expected. The upside potential of an unexpected strengthening of the nascent recovery in the U.S. housing market is fairly low given the rates of employment and wage growth, and

continued tight lending conditions. Supply-side influences of stumpage price—such as timber mix and quality—are poorer this year and difficult to estimate in future years, but are assumed to be about average. Mill profit margins in the Pacific Northwest appear to be much lower than the Southern U.S., suggesting that PNW prices growth will be constrained by expansion of the Southern market share at lower prices. Also on the downside are the many challenges to U.S. economic recovery cited above.

Although the end of the Chinese ban on geoduck imports from the Pacific Northwest has eased much of the uncertainty surrounding geoduck demand, geoduck prices are historically volatile and there are still questions about the testing conditions that China will accept. There is no guarantee that a blanket ban will not be reinstated. Additionally, there are indications that geoduck divers are pushing for higher wages. Taken together, this means that both the geoduck sales price and harvest volumes may become even more difficult to predict in the coming years.

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Part 1. Macroeconomic Conditions

This section briefly reviews current macroeconomic conditions of the United States and world economies, because they affect DNR revenue—most notably through the bid prices for DNR timber sales and lease revenues from DNR-managed lands.

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

U.S. economy

Gross Domestic Product

Gross Domestic Product (GDP) is the total output of goods and services produced by labor and property located in the United States, minus inflation. **Figure 1.1** 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. Since turning positive again in mid-2009, GDP growth has averaged a rather weak 2.3 percent on a real annual basis, compared with an annualized average of 3.2 percent over the previous 50 years (1960-2009).

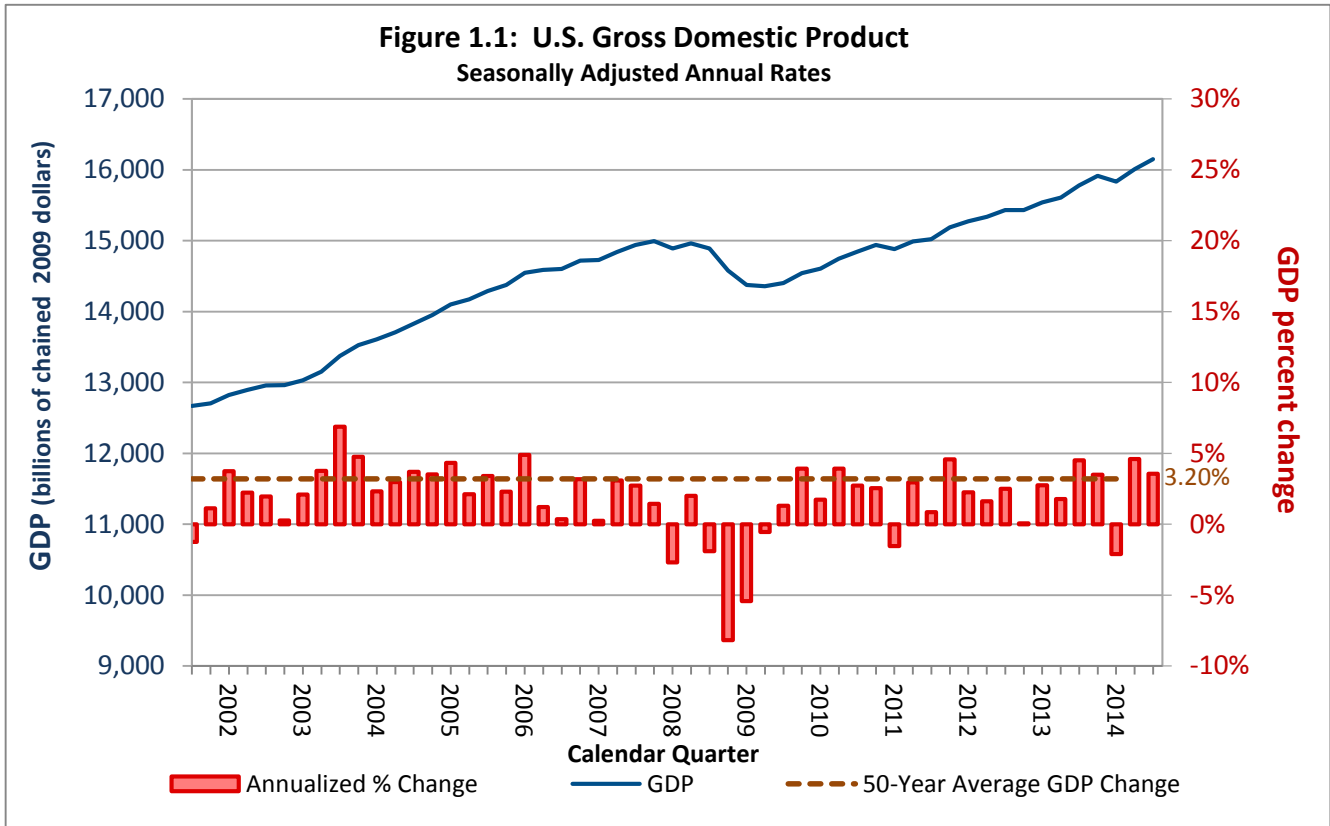
After a harsh winter and business inventory adjustments caused the U.S. economy to shrink by 2.1 percent (annualized) in the first quarter of 2014, economic growth rebounded with strong second quarter growth of 4.2 percent. The economy continued to grow in the third quarter with advanced estimates of 3.5 percent. Despite this recent strength, year-over-year GDP growth remains modest at about 2.4 percent. Most forecasters expect 2014 real GDP growth of around two percent and 2015 real GDP growth closer to three percent—for example, the Fed is expecting between 2.0 and 2.2 percent growth for 2014 and between 2.6 and 3.0 percent for 2015.

Employment

The U.S. has experienced strong employment growth in 2014. The unemployment rate is down to 5.9 percent and employment has climbed above pre-crisis levels. But the labor force participation rate remains 3 percentage points lower than before the crisis and part-time employment remains high. Despite strengthening domestic demand, labor market slack has kept wage and inflationary pressures under wraps.

*Eswar Prasad
Professor, Cornell University*

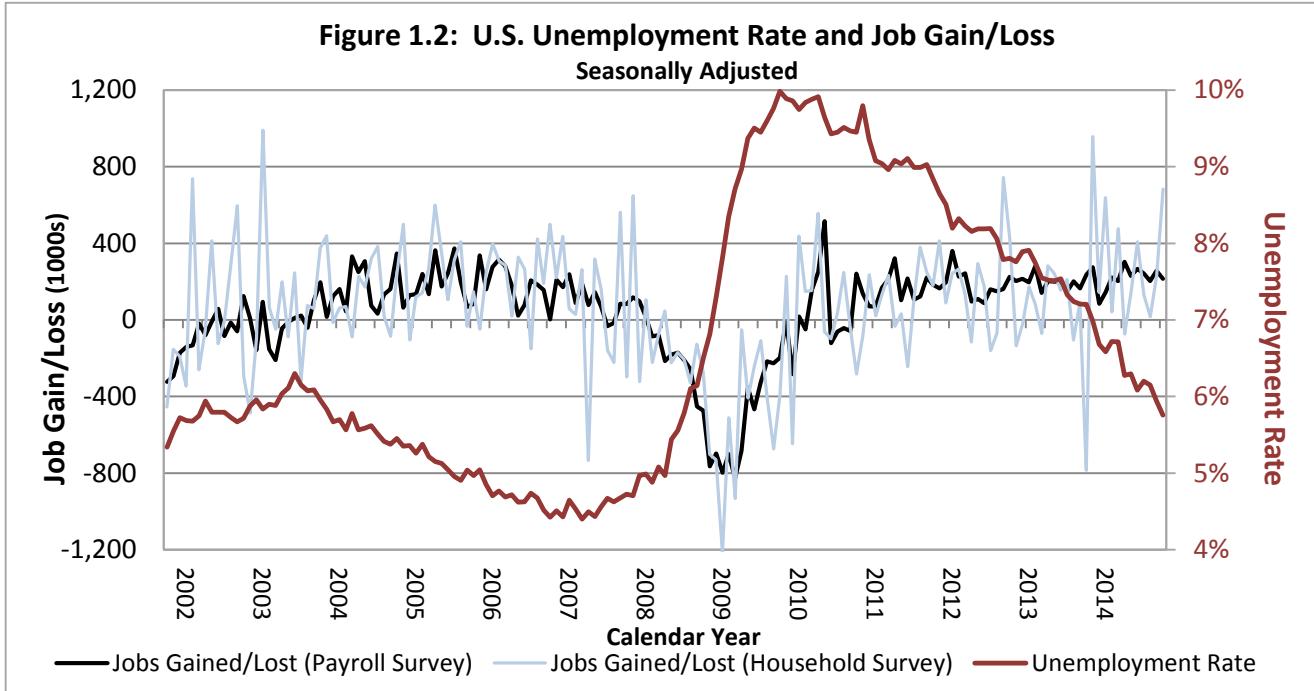
The U.S. unemployment rate continues to decline (shown by the **red** line in **Figure 1.2**). The October employment report showed an unemployment rate of 5.8 percent, down from 10.0 percent in October 2009. The economy has added almost over 2.1 million jobs thus far in 2014, around 229,000 jobs per month. This is actually above the increase in the working age population; slightly more jobs are being created than people are entering the workforce. However, ultimately, the rate of job creation has been



painfully slow, in part because that the gains in the unemployment ratio since the end of the recession are a combination of job creation and a fall in workforce participation.

Figure 1.2 shows changes in the number of employed persons, or jobs gained or lost, according to the two major employment data series: the payroll survey and the household survey. Both of the employment surveys are maintained by the U.S. Bureau of Labor Statistics. The household survey samples households, and 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 samples firms and does not include self-employed persons or farm workers. Employment statistics by industry sector come from the payroll survey. Generally, 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 than the household survey. The payroll survey has been showing job growth for over four years.

Positive month-over-month job gains are the main reason why the unemployment rate in **Figure 1.2** generally moved down from October 2010 onward. However, reductions in the labor force have made a major coincident contribution to the fall in the unemployment rate. For instance, labor force reductions were the driving force behind the reduction in unemployment from 6.7 percent to 6.3 percent in April 2014, when 282,000 jobs were added to the economy and over 800,000 people left the work force. Since the April drop, the labor force has been climbing, and in October it finally exceeded March levels.

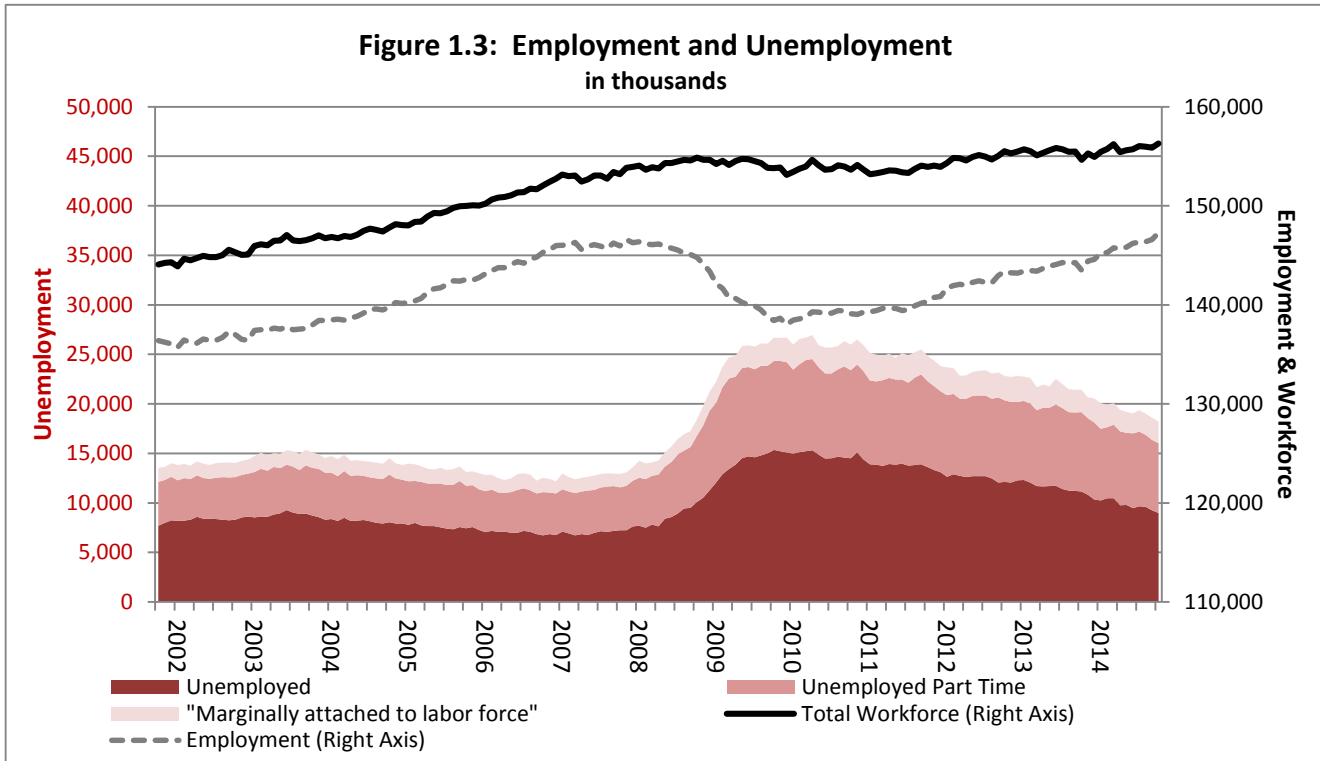


Particularly important for housing demand, youth unemployment is higher than overall unemployment. In October, 20–24 year-olds had an average quarterly unemployment rate of 11.2—up from August’s 10.6 percent, but down from 11.9 percent in January. High youth unemployment can have serious negative implications for an economy, particularly through permanently depressed wage expectations, slower household formation and reduced consumption of durable goods that can help drive business investment.

An alternative measure of unemployment, the U-6, includes unemployment, involuntarily part-time employment, and marginally attached workers, and so provides a more complete picture than the headline unemployment rate¹. The U-6 rate was 11.5 percent in October, down from 13.7 percent a year earlier and from highs of 17.1 in 2010. The year-on-year reduction is primarily due to people finding jobs or leaving the labor force; though the number of underemployed has also declined.

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) has been increasing, but at a shallower rate since mid-2008. The total workforce is the sum of working age people currently working or seeking to work, and it 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**).

¹ “Marginally attached” workers are individuals who were not in the labor force, but wanted and were available for work. However, they were not counted as unemployed because they had not searched for employment in the four weeks prior to the survey.

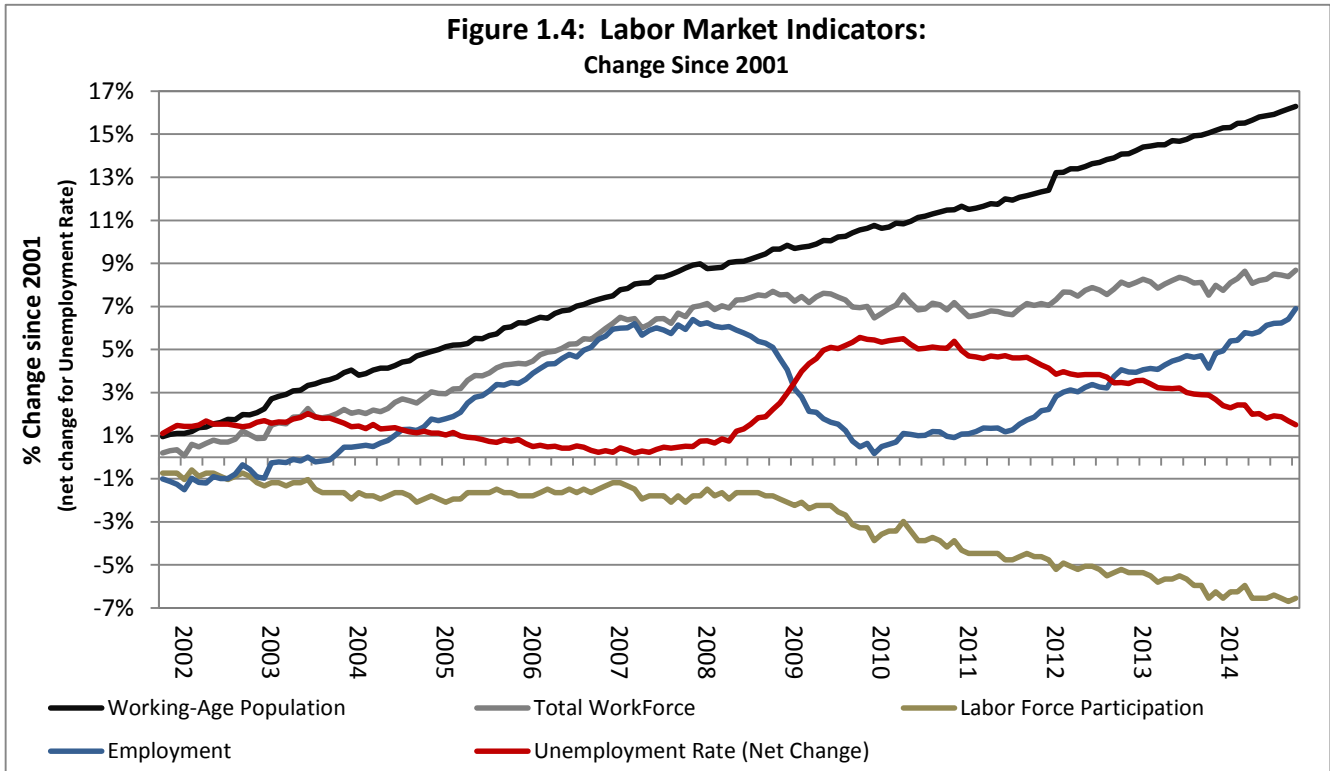


Long-term unemployment is another on-going challenge to economic recovery. The Great Recession expanded the ranks of the long-term unemployed to an extent not seen since the Great Depression. In October 2014, around 2.9 million people had been unemployed for over 27 weeks, accounting for 32 percent of the unemployed. This is a large improvement over August 2013 with 4.3 million people, or 38.0 percent of the unemployed and also down from the peak of 6.7 million in spring 2010, but it is still far above the 1.3 million average for 2005-2007. Also in October, the average duration of unemployment was 32.7 weeks (up from August's 31.7 weeks), which is off the record high of 40.9 weeks in November 2011, and is down from 35.4 at the beginning of the year. This contrasts with the 17.4-week average for 2005-2007.

Several insights can be drawn from **Figure 1.4**, which shows the percentage change in the working-age population, the total workforce, labor participation², and employment from 2001 levels.

For example, the labor force participation rate is the total workforce as a percentage of the total working age population – currently the labor force participation rate is 62.8 percent, so 37.2 percent of the working age population are not working or looking for work. Visually, the labor force participation line is horizontal when the working-age population and total workforce lines are parallel, showing that enough of the working age population is joining the workforce to keep the participation rate constant. The participation rate began declining in late in 2008 as people either left the workforce, or declined to enter it. During the past several turbulent years, more people than usual have been leaving the job market for economic reasons (i.e., not due to retirement or death). In some months the unemployment rate has gone down even though there was little net job change, simply because the

² The labor market participation rate is the total workforce as a percentage of the working-age population.



total workforce (and labor participation rate) dropped—for instance April of 2014, as noted previously. In this way, monthly variations in the participation rate and total workforce can exaggerate monthly improvements in the unemployment rate. Despite a slow upward trend in the total workforce, the participation rate has continued to decline.

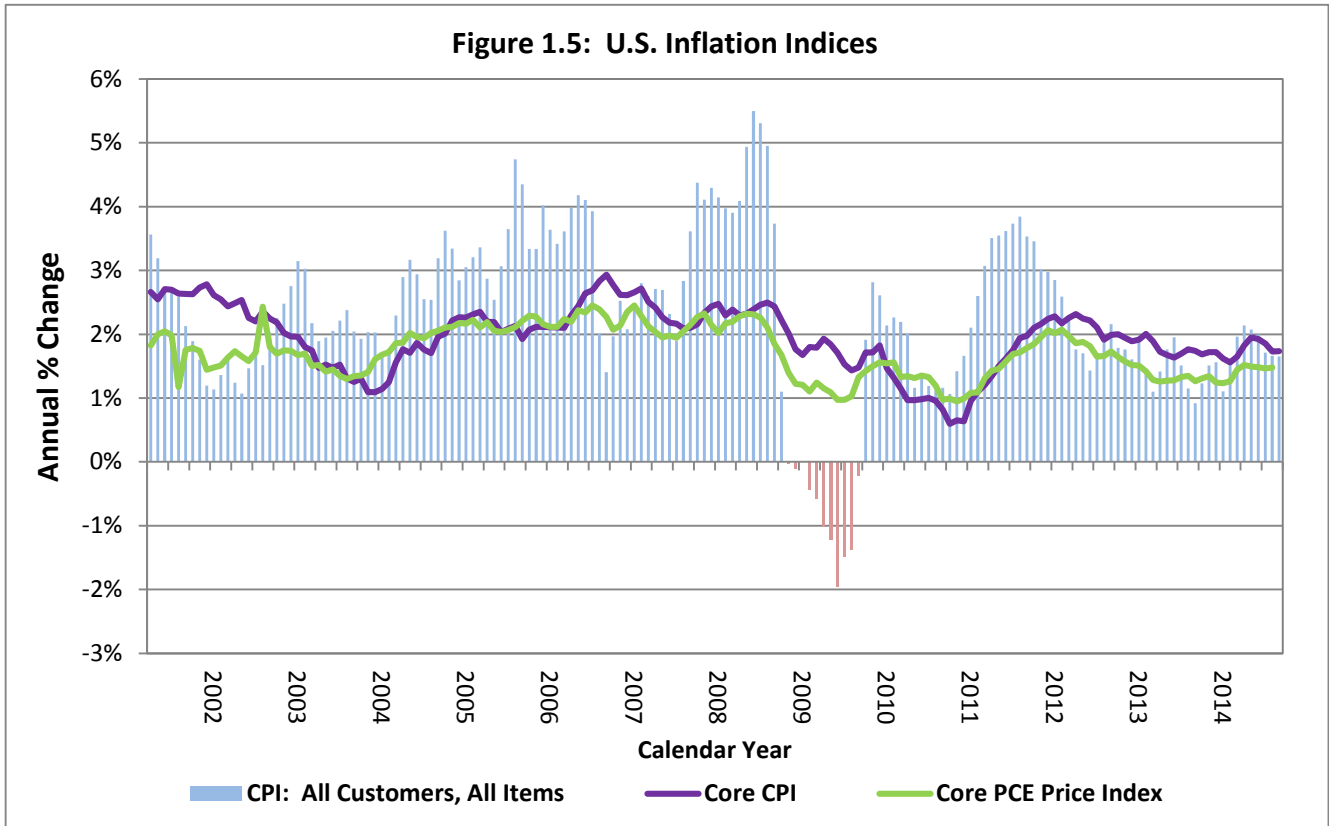
In general, analysts predict that on average over 200,000 jobs will be created per month in 2014 and 2015.

Consumption

U.S. consumer confidence was deeply shaken in the recession and people cut back on spending. Real personal consumption peaked in May 2008 at \$10.1 trillion and fell to a low of \$9.8 trillion in June of 2009³. Since October 2009, real personal consumption has been generally rising and in September was \$10.9 trillion.

The Thomson Reuters/University of Michigan Index of Consumer Sentiment can provide another insight into consumer confidence—consumer attitudes to the business climate, national economy, employment security, and so on. The consumer sentiment index reached a low of 55.3 in November 2008, after averaging 91.3 between 2000 and the end of 2007. The index reached a post-recession high of 85.1 in June 2013, then fell precipitously in October to 73.2 due to worries about dysfunctional federal governance and the government shut-down. Since then sentiment has strengthened slowly and the preliminary index for November stands at 89.4.

³ Measured in chained 2009 dollars.



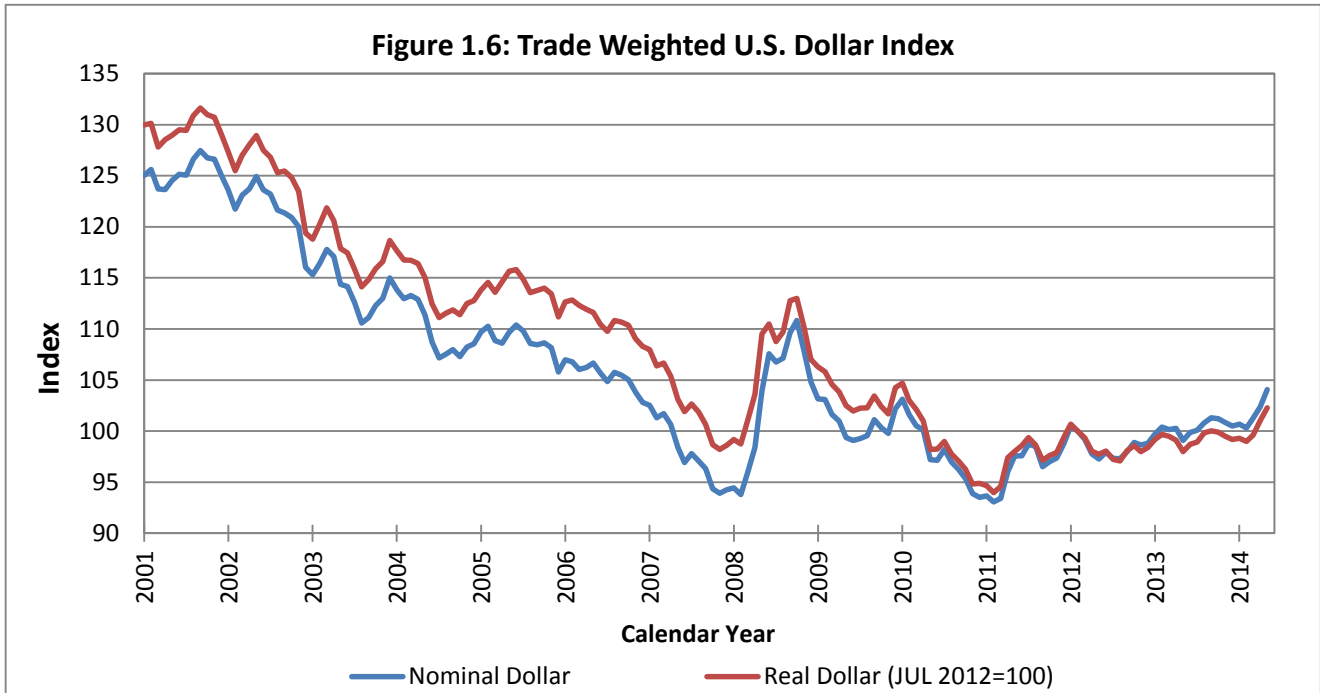
Inflation

The economy has made considerable progress in recovering from the largest and most sustained loss of employment in the United States since the Great Depression. These developments are encouraging, but it speaks to the depth of the damage that, five years after the end of the recession, the labor market has yet to fully recover.

*Janet Yellen
Chair of the Board of Governors of the Federal Reserve System
Speech at Jackson Hole, WY, August 22, 2014*

Figure 1.5 shows several measures of the U.S. inflation rate. The bars represent “headline” inflation and 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.

Generally, economists prefer to use “core” inflation measures because, in general, they give a better indication of the U.S. price level than “headline” inflation. Headline inflation includes fuel and food prices, but core inflation measures exclude these prices because they can be extremely volatile and are largely influenced by circumstances outside of the US economy. The FOMC targets the inflation rate to the core Personal Consumption Expenditures index (PCE), which shows that long-term inflation has been at or below 2 percent since September 2008 (70 months straight). Core PCE changed 1.58 percent in 2012, 1.34 percent in 2013 and 1.47 percent year-over-year in July 2014—all well below the



FOMC’s 2.0 percent target. Most economic forecasters see annual inflation of around 2.0 percent or lower through 2016 and the FOMC’s forecasts are for inflation rates of 1.4-1.6 percent, 1.6-2.0 percent and 1.7-2.0 percent for 2014, 2015 and 2016 respectively.

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’. The continued decline of the unemployment rate has prompted speculation that the FOMC will begin raising rates in late 2015.

Average rates on closed conventional 30-year fixed rate mortgages have risen from historic lows after having mostly declined since the middle of 2008 (see **Figure 2.7**). Mortgage rates bottomed out at 3.35 percent in December 2012 and rose to 4.49 percent in September of 2013. Since then mortgage rates have pulled back and averaged 4.04 percent in September 2014.

Slow employment growth and low inflation rates outlined above help explain why the FOMC has elected to keep interest rates at near zero and only recently discontinued “quantitative easing” to stimulate economic recovery.⁴

⁴ The Fed calls this program “Large-Scale Asset Purchases”. However, the term “quantitative easing” is used here because it is a more widely used and recognizable term for the program.

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 1.6**). The implications for DNR are that the lower relative value of the U.S. dollar may help spur foreign demand and push up prices for logs and geoducks.

World Economy

Europe

Most forecasts for the U.S. economy cite the ongoing Europe's financial crisis and very weak economic performance as a significant downside risk. The EU (28 countries) as a whole was hammered by the Great Recession, collectively suffering a 4.5 percent contraction in 2009, though some countries fared much worse than others. This was followed by two years of slow growth, between 1.7 and 2.0 percent, and then another contraction of 0.4 percent in 2012. In 2013, the EU economy again began to expand, but at a paltry 0.1 percent. The third quarter of 2014 saw EU GDP grow by 1.3 percent year-on-year (at current prices). EU real GDP remains below its 2007 level.

Even more worrying for the EU is the risk of entering a deflationary spiral—where falling prices reduce production and wages, which further reduce prices. In October the 12-month average inflation was 0.6 percent. The problem has become severe enough for another major intervention by the European Central Bank, with interest rate cuts and a pledge to buy private sector bonds as a form of quantitative easing. As in the U.S., fiscal remedies seem politically impossible.

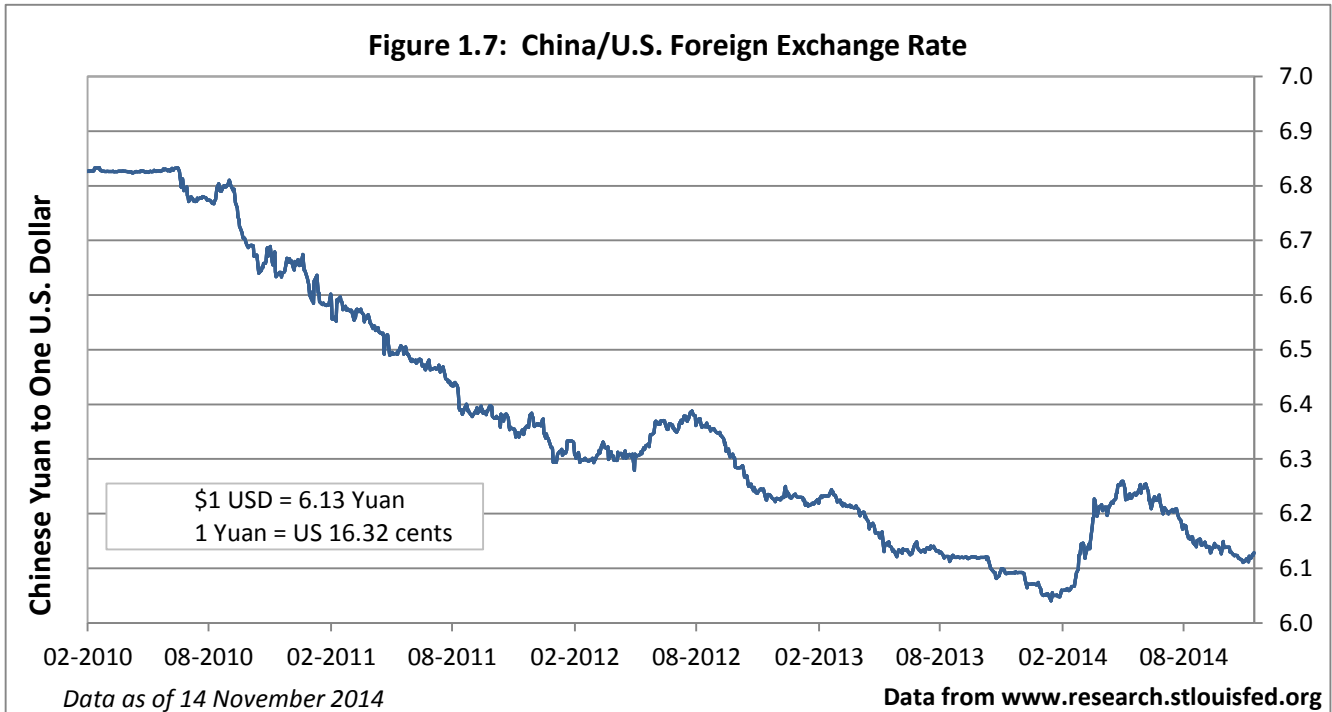
Weakness in Eurozone economies means reduced demand for U.S. exports as well as continued difficulties in addressing their sovereign debt and banking crises. There are continuing questions about whether government austerity and central bank policy are worsening or helping to repair the European economic situation, with increasing calls to change policy. Though the effects of the financial crisis are still being felt and several key European economies are contracting, it is thus far impossible to demonstrate significant tangible effects on the U.S. economy. The only good news is that the worst case European scenarios have not yet occurred, despite recurrent crises over the last several years.

China

China is a major export market for logs and lumber from the Pacific Northwest, importing 323.8 mmbf of softwood logs (out of a total export volume of 492.5 mmbf) and 108.4 mmbf of softwood lumber (out of a total of 474.3 mmbf) from the Seattle Customs District in 2012. Changes to the Chinese economy can have a dramatic impact on the prices for logs and lumber in the Pacific Northwest.

China appears to have weathered the global economic and financial crisis of the past six years better than major or emerging economies—at least in terms of GDP growth and employment. However, there are a number of questions about the costs and the sustainability of that apparent economic resilience.

The monetary and fiscal policies enacted by China to counter the financial crises have, over the past five years, alternately led to high inflation, high unemployment and unbalanced investment in infrastructure and productive capacity. In the near term, there are a number of risks to China's continued economic growth as the effects of China's aggressive investment continue to flow through its economy. For instance, the strong capital build-up has pushed down profit margins in key industries, most notably steel production. There are also concerns about property prices, excessive off-balance sheet financing by the banking system and local governments, alarming levels of non-performing debt, and systemic corruption and waste in local governments and state-owned enterprises.



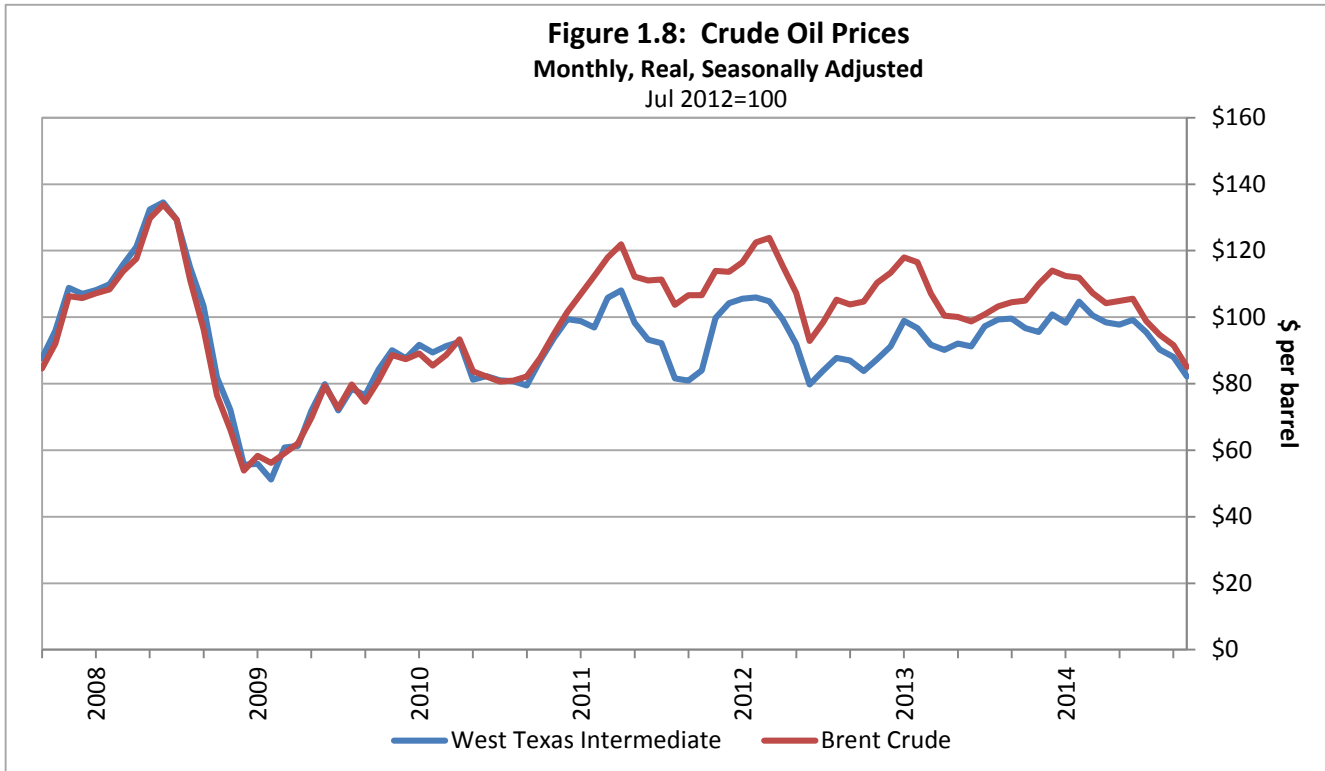
Over the longer run, inequalities, urban-rural dynamics, rural land ownership, and the aging of the populace will be significant sources of tension. In May 2013 the OECD predicted Chinese GDP to peak in 2014 at 8.2 percent and then fall to 7.5 percent in 2015, which is still a significant growth rate, despite these issues. However, in May 2014 the OECD released a revised prediction of 7.25 percent for 2014 and 2015. The IMF has also released updated GDP growth forecasts, predicting 7.5 percent growth for 2014 and 7.0 percent for 2015.

As of the February Forecast, the Chinese yuan had been strengthening against the dollar since mid-2010 when the Chinese government allowed it to begin fluctuating again (see **Figure 1.7**). At that time the yuan was worth ten percent more, relative to the dollar, than it was in July 2010. However, this caused a number of issues in China, most notably capital inflows that further inflated a credit bubble, and between February and May China pushed the value of the yuan down several percent. Since June the yuan has been appreciating again.

An appreciating yuan means that US dollar denominated logs and lumber will be cheaper than it previously was, which could help spur demand. However, new house prices in Chinese have been falling for the past six months, which will likely weaken demand. Many analysts forecast falling demand in China to undermine timber demand in the U.S., overwhelming the positive effect of the appreciating yuan.

Japan

Japan is another major export market for the Pacific Northwest—importing 68 mmbf of softwood logs and 153 mmbf of softwood lumber from the Seattle-Snohomish customs district in 2012. Unfortunately, Japan’s economic growth has been stagnant since the early 1990s after a stock market and property bubble bust. After his election in late 2012, Japanese Prime Minister Shinzo Abe began a



bold combination of economic policy moves, dubbed “Abenomics”, in an attempt to shake Japan’s economy. The “three arrows” of Abe’s economic plan are aggressive monetary easing, very large fiscal stimulus, and structural reforms to boost Japan’s competitiveness (e.g., lifting a ban on the online sale of drugs, easing industrial regulations,). The forceful monetary easing being undertaken by the Bank of Japan is intended to raise inflation in a controlled manner.

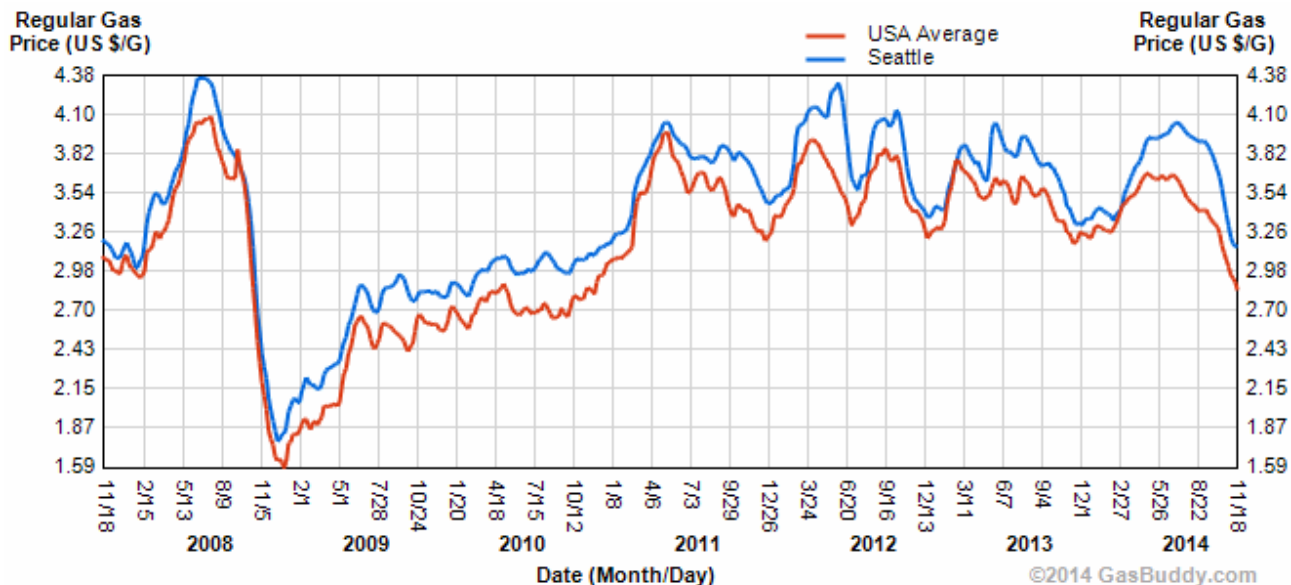
While Abenomics was initially well received by the Japanese, increasing consumer confidence and spurring GDP growth, it has recently run into problems with increasing public deficits and two quarters of falling GDP. A 6.8 percent decline in second quarter GDP was expected following a surge in first quarter GDP and the implementation of a sales tax, which came into effect in April.

The fall in GDP has prompted Prime Minister Abe to cancel a second planned increase in sales taxes—which would further contract the economy, but would help shore up public finances in the short term—and dissolve the government, calling for a new election. Delaying the new sales tax will likely help economic growth, but the new election and the continued difficulty put the future of Abenomics in question.

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. Moreover, oil prices, especially sharp fluctuations, have the ability to influence intangible “forces” such as consumer and producer confidence. **Figure 1.8**, which presents seven years of oil prices by the two most important

Figure 1.9: U.S. Retail Gasoline Prices



indicators, the Brent Crude and West Texas Intermediate⁵, shows crude oil prices vacillating widely around \$100 per barrel. These data have been adjusted for seasonality. Brent crude averaged about \$108 per barrel in 2013, compared to about \$111 per barrel in 2012. The lower petroleum prices in 2013 were one of the few points of optimism in the world economy. Gasoline price changes tend to follow from and lag crude oil prices, though the recent precipitous fall in gasoline prices is much more dramatic than the recent fall in oil prices (**Figure 1.9**).

In addition, there has also been a notable drop in diesel fuel prices on the West Coast, from over \$4 per gallon to less than \$3.8 per gallon. This may help the timber and lumber industries in the Pacific Northwest by lowering the cost of transport.

⁵As shown in **Figure 1.8**, 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.

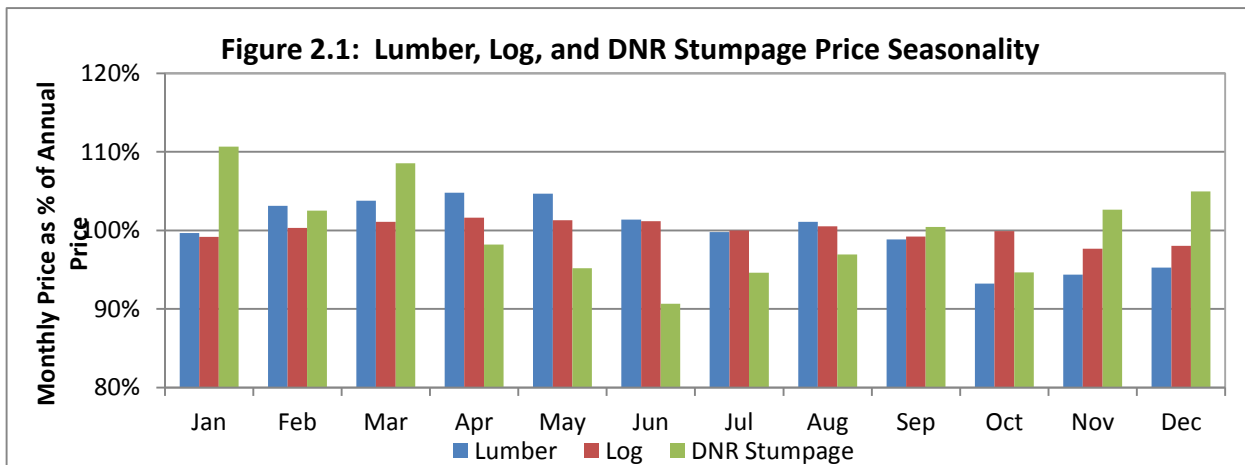
Part 2. Log, Lumber and Stumpage Prices

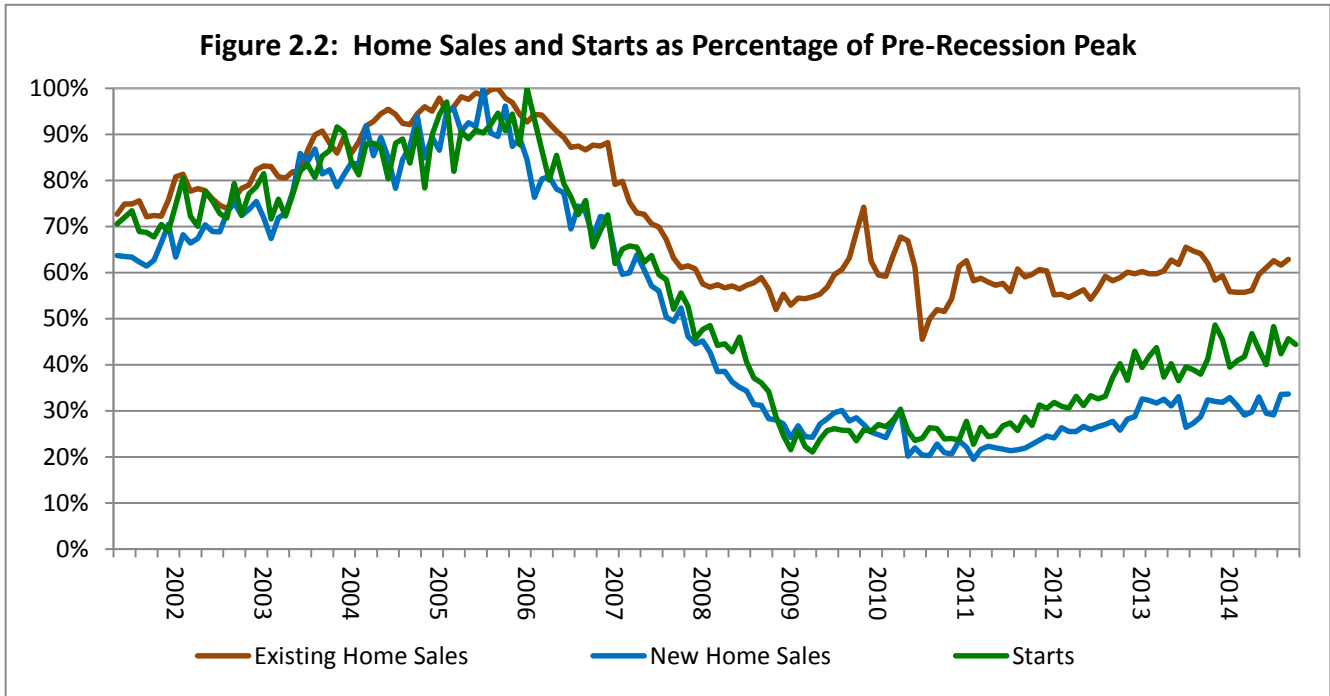
This chapter focuses on specific market factors that affect timber stumpage prices and overall timber sales revenues generated by the Washington State Department of Natural Resources (DNR). Over the past decade, timber stumpage revenues have constituted over 75 percent of total revenue. DNR is, therefore, vitally concerned with stumpage prices and understanding log prices, lumber prices, and the related supply and demand factors behind all three.

In general, timber stumpage prices reflect demand for lumber and other wood products, timber supply, and regional lumber mill capacity. Indeed, there is a consistent, positive relationship between log prices and DNR's stumpage prices, despite notable volatility in DNR's stumpage prices (evident in the forecast in **Figure 2.10**). High log prices make access to logs more valuable and increase purchasers' willingness to pay for stumpage. Volatility in stumpage prices arises not only from log prices, but also from the amount of logs held in mills' inventory and from DNR-specific issues, such as the quality of the stumpage mix offered at a given auction.

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

There are differences in average annual monthly price volatility between lumber, logs and stumpage, as illustrated in **Figure 2.1**. These prices are affected by a degree of seasonality that is largely the result of when each of these commodities will be used. For instance, lumber prices tend to peak in spring, when housing construction picks up, and declines until fall as the demand wanes. DNR stumpage price volatility is also affected by the firefighting season and the quality of the stumpage mix, which varies throughout the year but tends to be lowest from August through September.





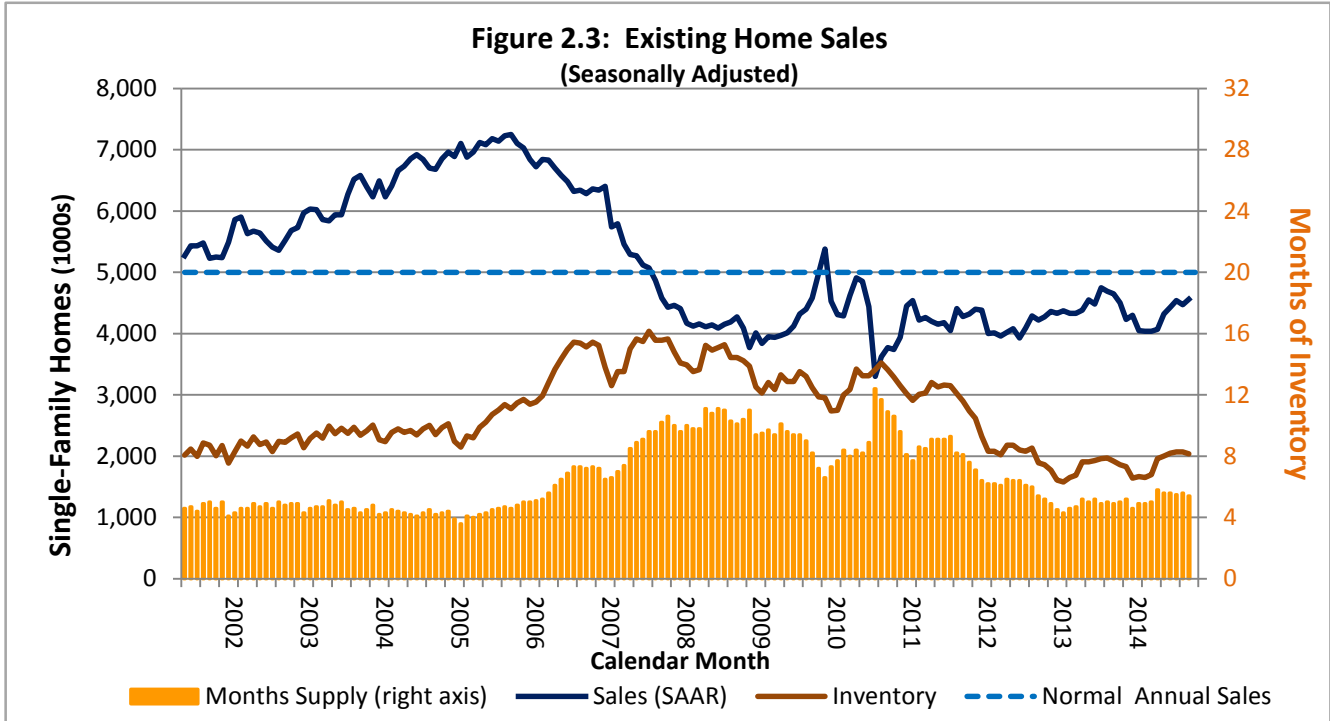
This chapter begins with a discussion of the U.S. housing market because it is particularly important to overall timber demand in the U.S. Following that are smaller sections on the export market and mill inventory and supply, all of which influence timber prices, and therefore DNR stumpage prices.

U.S. Housing Market

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

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

A number of measures suggest that the modest recovery of the U.S. housing market has stalled. **Figure 2.2** compares the trajectories of existing home sales, new home sales, and housing starts as percentages of their pre-recession peaks. The chart shows starts slowly increasing since 2011, but existing and new home sales essentially stalled since 2013. Increases in sales have been stifled by tight lending standards, increased interest rates, price rises, continued weak employment numbers, and declining real wages for much of the population.



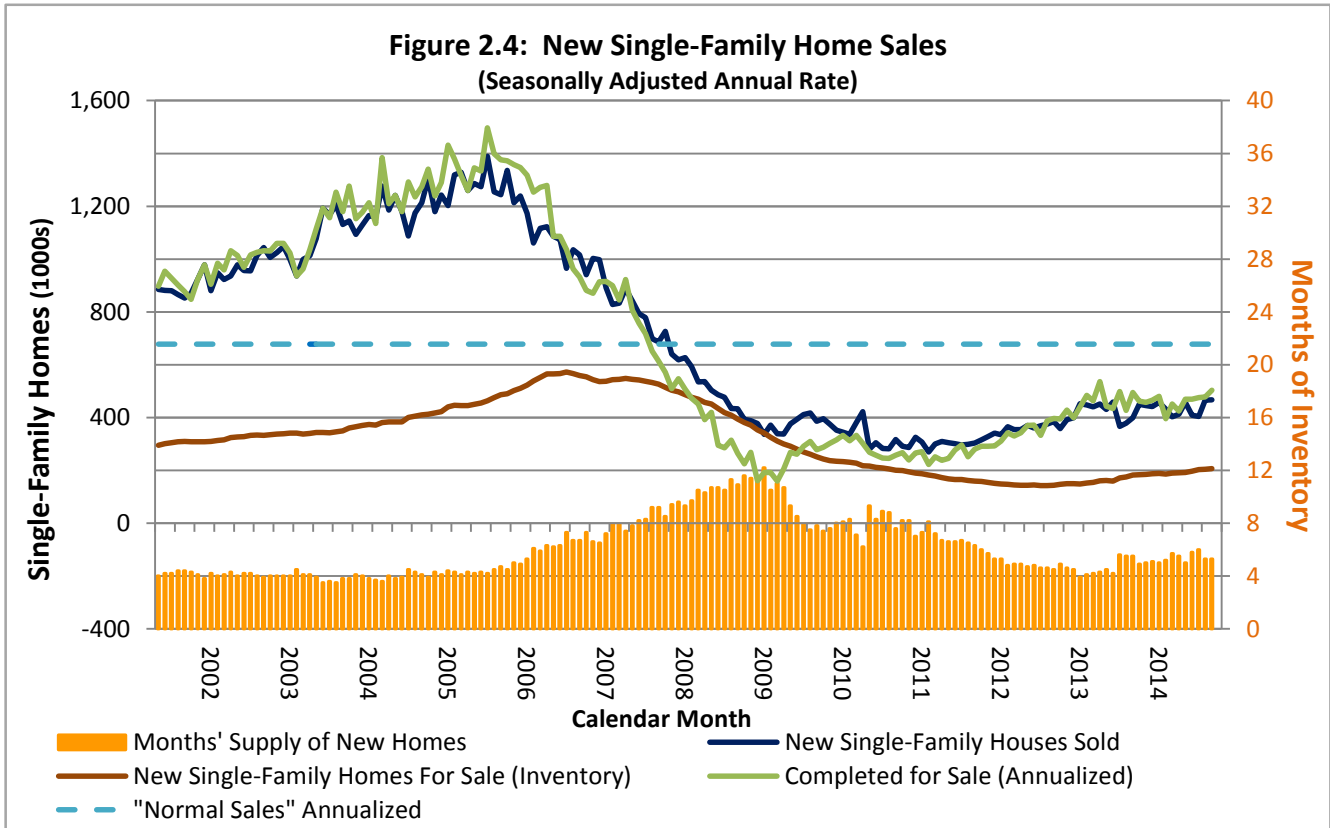
Existing Home Sales

Distressed sales are becoming less prevalent in many parts of the country and will likely be in the low single-digits percentagewise at this time next year

*Lawrence Yun
Chief Economist, National Association of Realtors*

In 2011 existing home sales fluctuated near 4 million units, but increased through late 2012 and 2013 to peak at 4.76 million in July (see **blue** line in **Figure 2.3**) before steadily falling to 4.05 million (SAAR) in January 2014. Since January existing sales have recovered somewhat and most recently were 4.56 million in Sept 2014. This is at the bottom of the range that experts expect will be the new post-recession “normal” sales rate. Notably, the share of distressed sales (either short-sales or foreclosures) continues to decline nationwide: 24 percent of sales were distressed in 2012, down to 17 percent in 2013 and most recently, 9 percent of sales for the third quarter of 2014 were distressed, the first single-digit percentage since 2008.

The inventory of existing homes peaked at 4.0 million in July 2007 and generally declined until the beginning of 2013. In 2013 inventory climbed from an apparent bottom, and 12-year low, of 1.58 million homes in January to a high of 2.0 million in August—a 27 percent increase (see **brown** line in **Figure 2.3**). Since then, inventories have oscillated around 2 million homes; most recently there were 2.04 million homes in inventory in September. The months’ supply of housing —the number of months it would take to clear the inventory of used homes on the market at current sales rates—reached a low of 4.3 months in January 2013. In September 2014 it was estimated to be 5.5 months (see **orange** bars in **Figure 2.3**). This measure peaked at 12.4 months in July 2010.



By definition, a falling inventory of existing houses means that there are more existing homes being sold than being brought to market. This can be a useful signal that demand is currently outstripping supply, which should put upward pressure on prices and encourage more homes to be listed or built. An increasing inventory generally suggests the opposite.

Investor purchases appear to have fallen slightly since the beginning of 2014, when investor purchases represented more than 20 percent of home sales. The National Association of Realtors estimated that in September 14 percent of homes were purchased by investors. Previously, private investors moved into depressed housing markets and purchased large numbers of lower-priced foreclosed residential properties, funding a bet on long term recovery in housing prices by renting in the short term to potential buyers still locked out of the housing market. These investors have been driving many housing markets and may have set a floor under the housing market, contributing to the recovery in some key markets. There is concern among analysts about the potential impact on the housing market when the investors begin selling and increase the housing supply.

New Home Sales

The blue line in Figure 2.4 shows that new home sales bottomed out in mid-2010 and that there was an upward trend from late 2011 to the beginning of 2013. Calendar year 2011 was the lowest year on record with only 306,000 new homes sold, compared with the long-term (1963-2010) “normal” rate of 678,000 per year. New home sales totaled about 368,000 in 2012 and 432,000 in 2013.

As low as new home sales have been, new house construction (**green** line in **Figure 2.4**) 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 bottomed out, reaching a low of 142,000 homes in July 2012. In September 2014, inventory had risen to 207,000 homes—still a low number historically. The inventory of new homes is still far lower than the high of 570,000 in the summer of 2006.

Total months' worth of inventory of new homes for sale has been gradually climbing from its low of 3.9 months in January 2013 (**orange** bars in **Figure 2.4**) and was 6.0 months as of July 2014. This measure is dependent not only on the current inventory but the rate of sales of new homes. Since July 2013, the months' worth of inventory has averaged around 5.4 months, varying by less than three-quarters of a month—well above the pre-2006 average of 4.0 months.

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” has gained attention as an important measure of the health of the housing market. Shadow inventory is the amount of homes not currently on the market, but expected to be listed in the next few years. It is generally estimated using the number of properties currently in the process of foreclosure, properties with seriously delinquent mortgages and properties owned by banks or real estate firms.

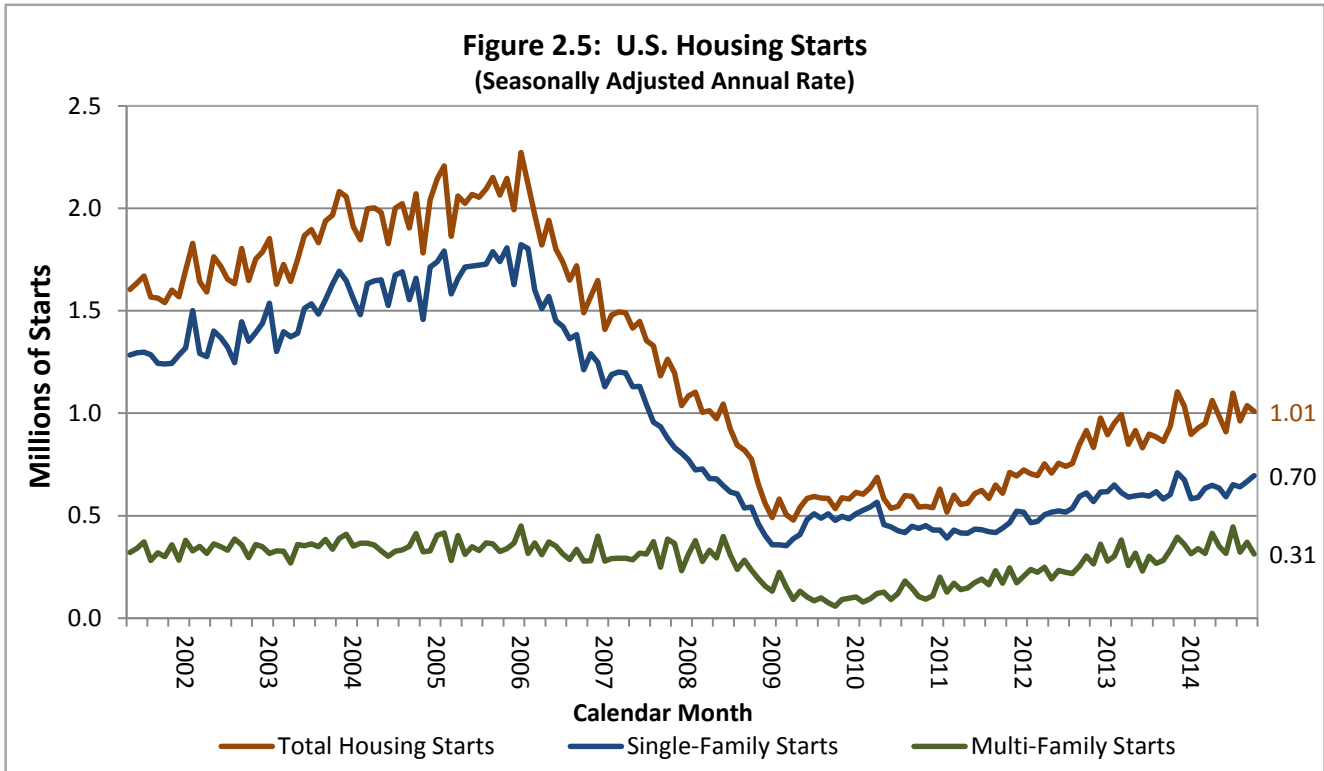
CoreLogic reported in September that serious delinquencies have declined from 2.04 million in October 2013 to 1.63 million in September of 2014. At the same time, the number of houses in the process of foreclosure fell from 875 thousand to 607 thousand and completed foreclosures fell from 55 thousand to 46 thousand.

A large shadow inventory can lead to a large number of distressed sales (including short sales) and put downward pressure on future prices, and therefore housing starts.

Household Formation

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

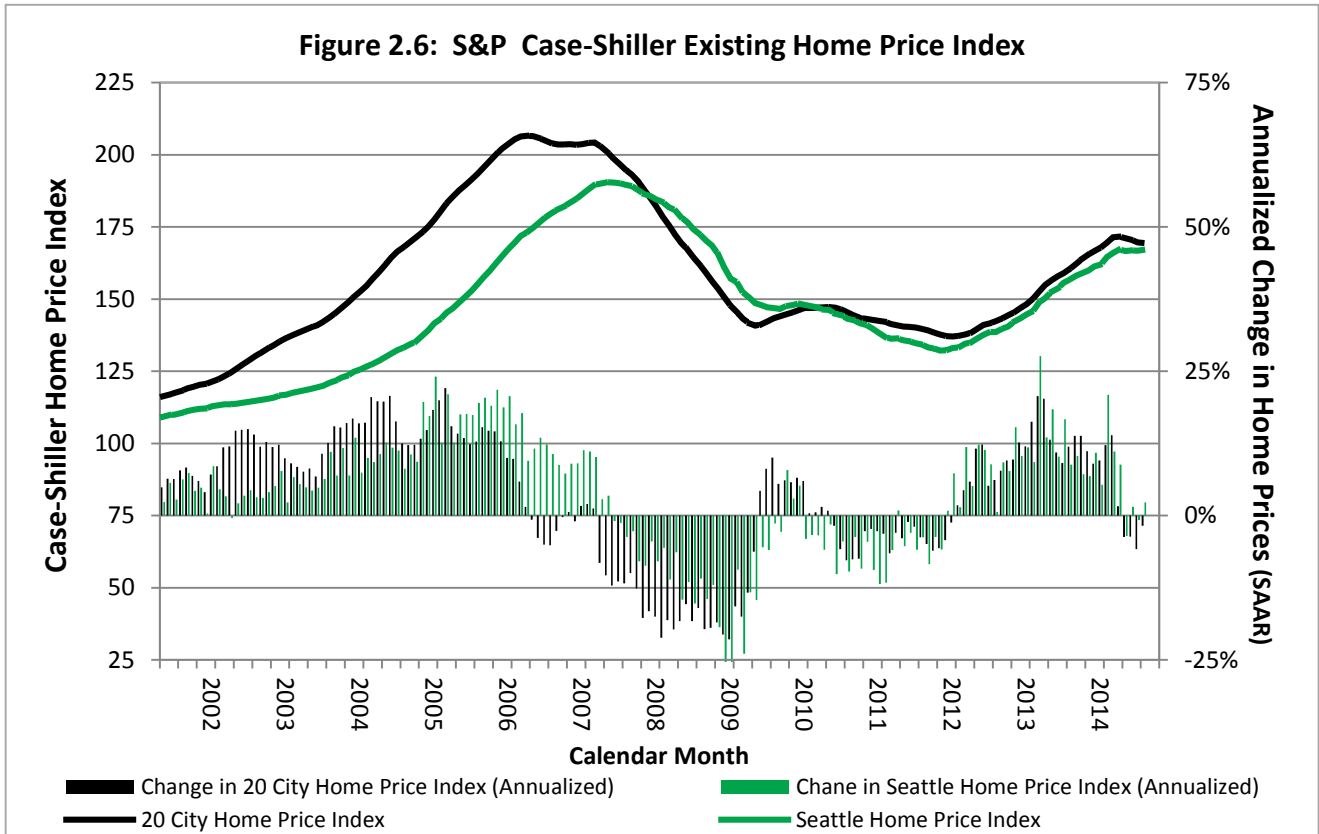
The drop in household formation and the consequent reduction in demand for home purchases contributed to the surge in the inventory of available housing units and the significant drop in housing starts. Typical annual U.S. household formation generally ranges between 1.2 and 1.3 million. In the depth of the Recession, formation dropped dramatically to 0.4 million in 2009 and to 0.5 million in 2010. Household formation returned to near the 1.2 million level in 2012, before receding below one



million in 2013. Unfortunately, household formation estimates are released annually, so there are not yet any new estimates for 2014.

An important concept frequently discussed in relation to household formation is the ‘pent-up’ demand—the demand for housing from those who wish to form households, but are currently unable to because of employment, earnings, or credit eligibility issues. Much of the discussion from analysts in the past year have been around how there is a large, and growing, amount of pent-up demand as more young adults want to move out and create their own households. The drop in household formation since the recession has created a large amount of pent-up demand for housing. Analysts have consistently overestimated its impact on the housing market, repeatedly predicting a strong rebound in household formation and housing starts that has yet to emerge. Ultimately, it seems that many analysts put too much emphasis on the pent-up demand, and not enough on what is ultimately holding the demand in check—employment, wages and affordability.

Household formation growth stalled in 2013 with the continued stagnancy of the youth labor market and increases in both prices and interest rates that had a large negative impact on affordability. Looking forward, household formation will depend on both the continued recovery in the U.S. labor market—more than just job growth, but also real wage growth—and improvements in affordability.



Housing Starts

Since early summer, builders in many markets across the nation have been reporting that buyer interest and traffic have picked up, which is a positive sign that the housing market is moving in the right direction.

Kevin Kelly

Chairman, National Association of Home Builders

17 September 2014

U.S. housing starts picked up in 2012 and continued to rise in 2013, after having moved more or less sideways at a historic low level in the three previous years (see **Figure 2.5**). In April 2009, U.S. housing starts fell to 478,000 (SAAR), the all-time record low since the Census Bureau began tracking housing starts in 1959.

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 averaged 621,000 in 2013. Multifamily starts for 2012 averaged 247,000 on an annualized basis and 309,000 for 2013, compared with the average of 148,000 in the three-year 2009-2011 trough. Through September, 2014 has averaged slightly more single-family starts at 624,000, and strong growth in the number of multi-family starts at 354,000 (SAAR).

New housing starts averaged 931,000 (SAAR) for 2013, a level not seen since mid- 2008. Housing starts have averaged 978,000 (SAAR) in 2014, though some forecasters expect starts to rebound to over one million.

However, much of the growth in housing starts since the end of the recession has come from multi-family units. This is an important distinction to make for its implication on lumber prices because multi-family units use much less lumber than single-family houses.

While the longer-term outlook for housing starts is optimistic, most analysts expect that household formation will continue to constrain sales and therefore housing starts, at least in the short term. However, some analysts expect better growth and note that when housing markets turn around, they can turn quite rapidly.

Housing Prices

U.S. housing prices have stalled out of a climb that started in 2012, after six unprecedented years of falling or flat prices. **Figure 2.6** charts the seasonally adjusted S&P/Case-Shiller Home Price Indices for the 20-city composite, which estimates national existing home price trends. Until April the 20-city composite index had increased every month since bottoming out in January 2012—its lowest point since October 2002, almost ten years earlier.

Since April the Case-Shiller index has fallen from 171.6 to 169.4 in August. The August index is still higher than it was last year, with a year-over-year increase of 4.5 percent. The average existing house in the U.S. in August was worth 82 percent of its value at the peak of the real estate bubble in April 2006, up from the price bottom of 67 percent in March 2012. Nationally, as reported by the National Association of Realtors, the preliminary estimate for the 2014 second quarter for a median-priced existing single-family home was \$217,000, up marginally from the second quarter revised price of \$212,400. This is over 20 percent higher than 2012's fourth quarter median price estimate of \$178,900.

Seattle house prices are following a similar trajectory, having increased 5.6 percent year-over-year as of August. When Seattle prices bottomed in February 2012—at their lowest point since June 2004—the average existing house in Seattle was worth only 70 percent of the May 2007 peak (see **Figure 2.6**). As of August, the average Seattle home was worth 87 percent of its peak price.

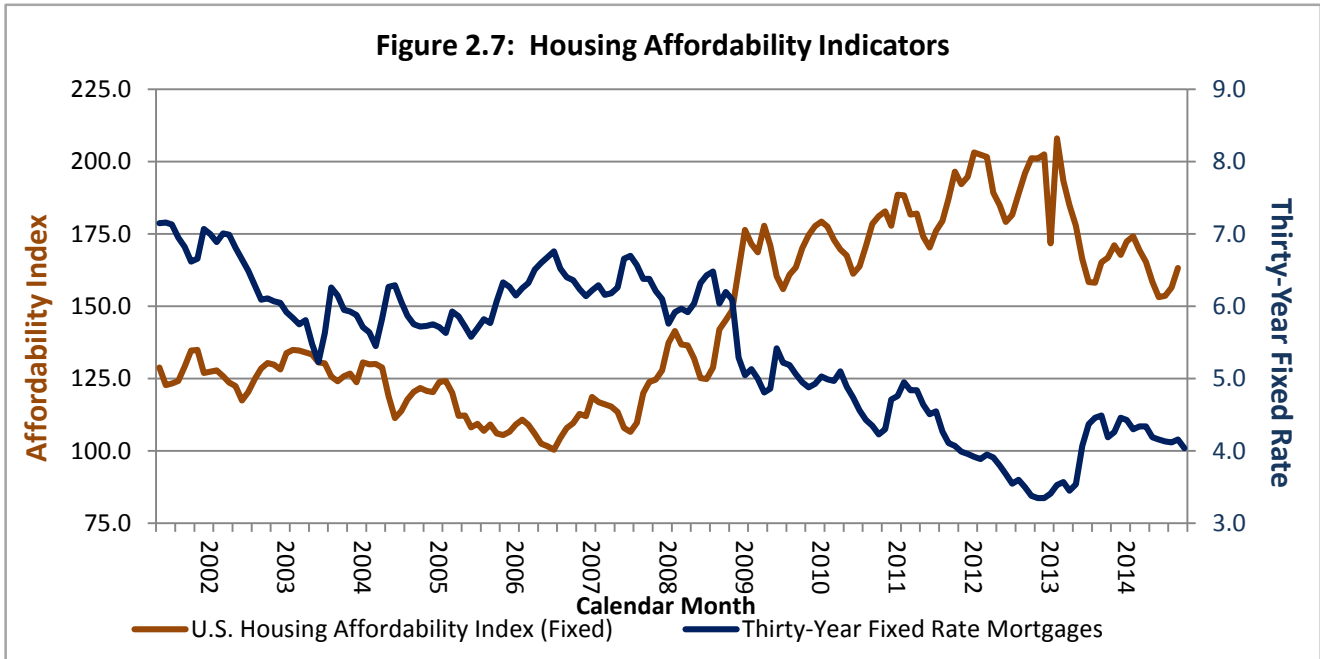
An increase in prices would allow the return to a more normal housing market, where home owners are able to make rational decisions about when or whether they wish to sell—as opposed to being forced to sell or to remain ‘underwater’ to avoid taking a loss or damaging their credit.

The Case-Shiller index is a three-month moving average that shows the changes in value of houses when they are resold in arm-length transactions. As a moving average some volatile changes get smoothed out. Additionally, the index presented in **Figure 2.6** is the *seasonally adjusted* moving average, meaning seasonal variations are removed from the index.

Housing Affordability

Less attention has been paid to the misleading nature of real GDP and income statistics. The unhappy fact is that the skewed distribution of income has severed the link between rising national income and stronger demand for housing.

*Brendan Lowney
Principal, Macroeconomics, Forest Economic Associates.*

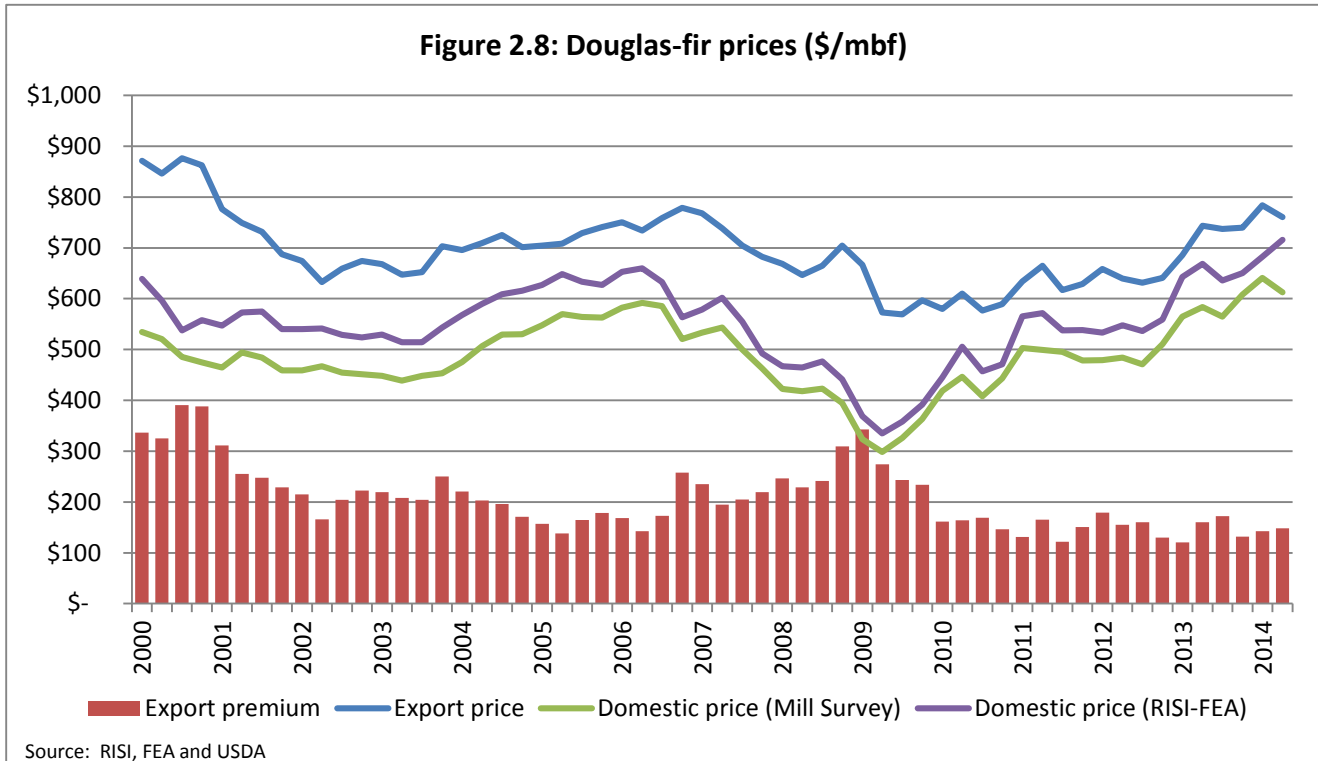


The National Association of Realtors’ (NAR) U.S. Housing Affordability Index is a useful, though imperfect, measure of how affordable or attainable houses are to the average American. The NAR is based on the relationship between the median home price, the median family income, and the average mortgage interest rate. 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 amass the 20 percent down payment that the index assumes. Examining the data series over time can reveal the overall trend of housing affordability, even though the individual values can be misleading.

The index peaked at a record high of 209.0 in January 2013 and then crashed to 156.3 in August—its steepest decline in 30 years—on the back of increased interest rates and house prices (see **Figure 2.7**). The index rose after August as prices softened and buyers withdrew, but fell again as housing demand failed to sustain price increases and prices fell back. The income required to purchase a median-priced house (\$217,000) has increased year-over-year from \$39,648 in the third quarter of 2013 to \$40,944 in the third quarter of 2014. This is still lower than the average qualifying income needed to buy the median house in 2008, \$46,000, or 2007, \$53,000. While the qualifying income is now much lower, median family income is now around \$65,562, slightly above the average of \$63,000 in 2008 and \$61,000 in 2007. In short, median income growth has been very slow, and negative in inflation-adjusted terms.

Income stagnation is becoming a more prominently discussed issue, though it has been a concern for some time. In June of 2013, Richard Green, Director of the University of Southern California’s Lusk Center for Real Estate, argued that lack of strong wage growth should put the brakes on housing price hikes.⁶

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



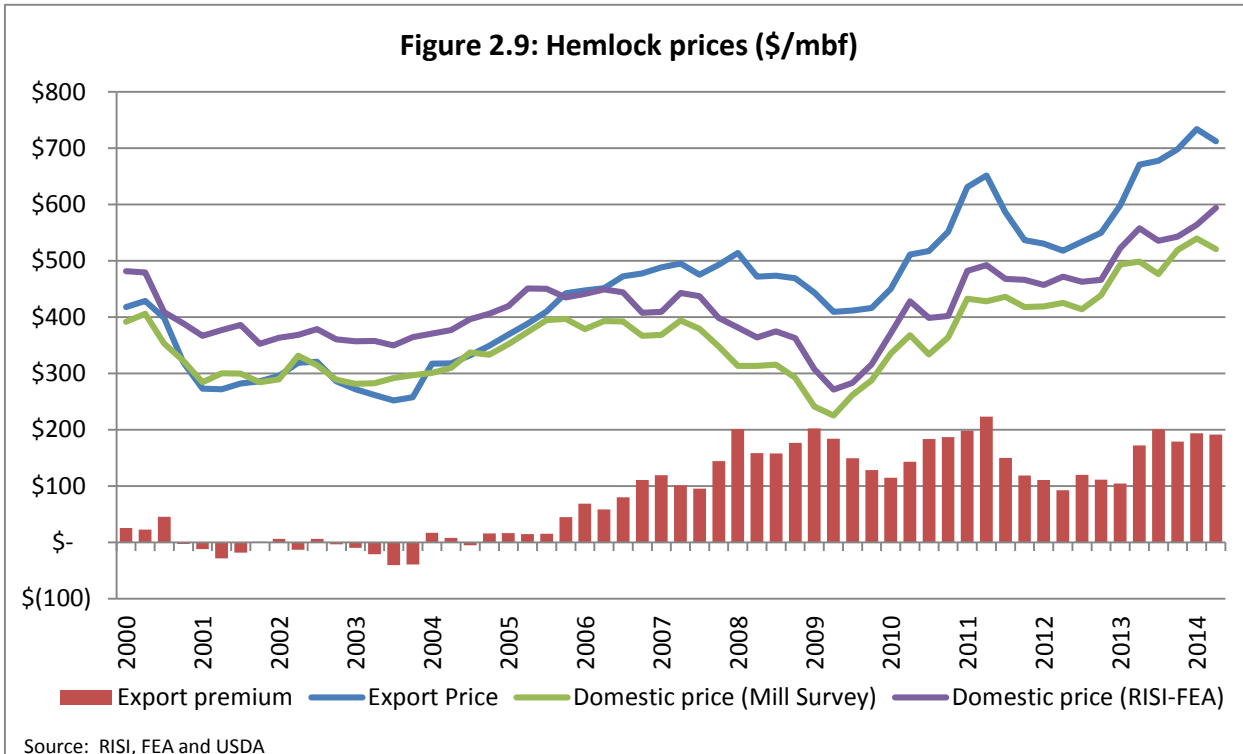
Export Markets

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

While export prices are usually higher than domestic prices, a difference which is referred to as the ‘export premium’, both prices tend to cycle together. The export premium exists primarily due to the characteristics of the export markets, which often include a demand for higher quality wood, a high value placed on long-term contracts, and high transaction costs.

Between 2002 and 2007, the export premium was between 10-20 percent for Douglas-fir while export and domestic prices for hemlock were consistently very close. Both export and domestic prices fell following the economic downturn in 2008, but the drop in export prices was more muted. For instance, the export price for Douglas-fir logs dropped 26 percent from 2007 to 2009 while the domestic price dropped 44 percent (**Figure 2.8**).

Following a surge in demand from China, export prices increased rapidly through 2011-12, with hemlock increasing 44 percent (see **Figure 2.9**) and Douglas-fir by 16 percent. The initial increase in demand was for hemlock logs, but as hemlock prices approached Douglas-fir prices the demand for Douglas-fir logs increased. By 2012, the Douglas-fir premium was near its historic average. In 2012,



export and domestic prices for both hemlock and Douglas-fir softened and the price spread between the species returned to its historical average.

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

Production Capacity

Lumber mills have developed an excess capacity because of layoffs and shift reductions caused by reduced production during the Great Recession. Capacity utilization⁷ in the U.S. West coast region softwood lumber mills dropped to 54 percent in the bottom of the U.S. wood products industry in 2009. In 2013, capacity utilization increased by two percent to 69 percent, in the west coast, as mills responded to higher prices by increasing production. While capacity utilization is this low in lumber mills, there is little impetus for investment in further capacity.

However, capacity utilization is expected to grow significantly in the coming years, with one forecast predicting 89 percent utilization by 2017. This higher utilization will drive some marginal investment

⁷ Capacity utilization is the percentage of potential capacity that is actually used by a mill, or production divided by potential capacity. Currently, most mills are operating well below their potential capacity by idling machinery and running fewer shifts than they are capable of.

and capacity growth is expected to be less than one percent per year in the west coast for the coming decade. Additionally, lumber prices are expected to be fairly volatile as mills and the supply chain adapt to increased lumber demand and bring capacity back online to increase production.

Interestingly, the US southern region does not have the same capacity underutilization, and mills there are currently operating at around 78 percent capacity and are expected to increase capacity utilization to 94 percent by 2017. Additionally, total capacity in the South is expected to increase by 3-4 percent until 2017. This will have an impact on lumber supply, and may take market share from the West coast and dampen prices.

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

Timber Supply

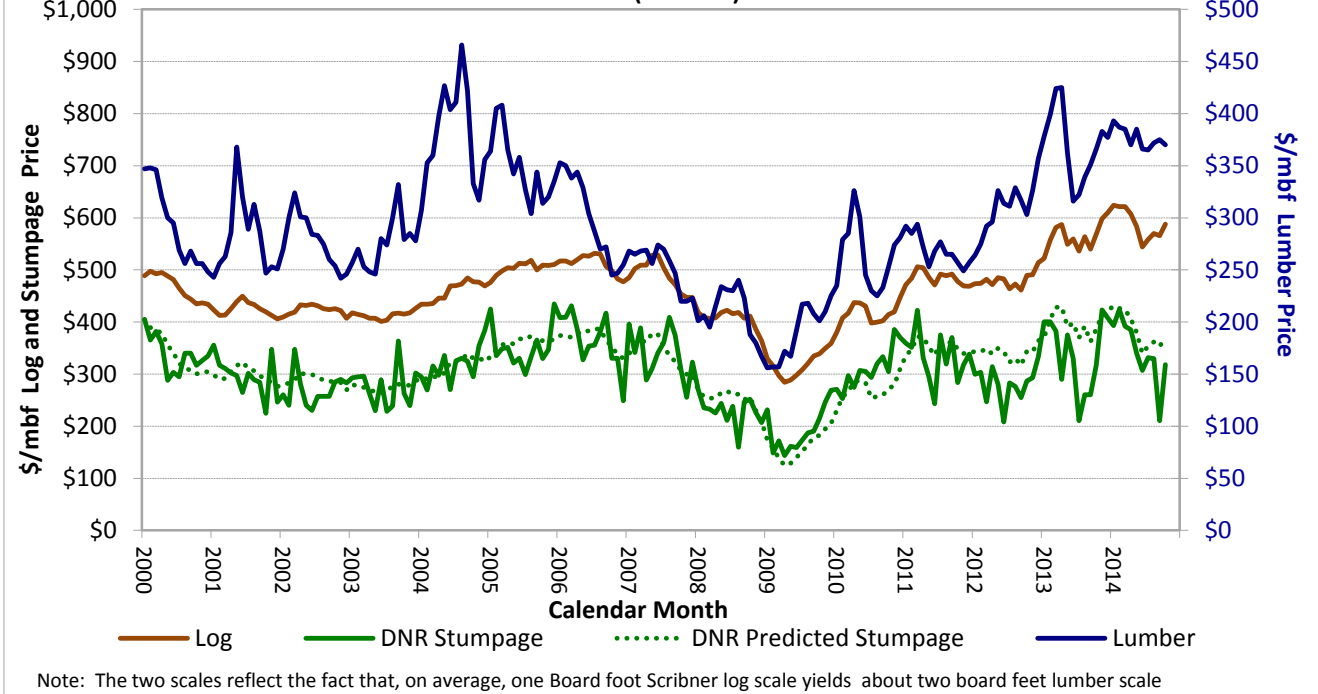
Timber supply is up in the Coast region, as well as in the competing U.S. Inland and South timber regions, because timber landowners reduced harvests during the recession in response to low prices. Although timber growth has exceeded timber harvest since the beginning of the recession, thereby increasing the potential timber inventory, strong log exports in the U.S. West Coast have constrained the growth of the timber inventory in that region. Thus the deferred volume in the Coast region is not as great as in other regions. FEA expects that harvesting on the U.S. West Coast will soon exceed growth, which will begin to deplete the inventory.

The timber resources of British Columbia have been devastated by the mountain timber beetle, which has destroyed about a third of the province's timber resources⁸. This has increased British Columbia's timber supply since 2007: timber killed by beetles must typically be harvested between 4 and 10 years after being killed, so the government increased the allowable harvest to ensure that the dead timber was not wasted. Analysts expect that British Columbia's elevated timber supplies will not fall until after 2015. The supply from Canada will be further diminished by Quebec's allowable annual cut being reduced by implementation of Bill 57 in 2013 and may be additionally reduced by the "North for All" plan (formerly Plan Nord).

Offshore lumber imports increased 30 percent in 2013 and as the domestic market strengthens, offshore imports are likely to continue to grow. FEA expects that offshore imports will double to over one billion board feet by 2016. These increases are expected from increased demand due in the U.S.

⁸ FEA Quarterly Timber Forecast Service, Q3 2013

Figure 2.10: Lumber, Log, and Stumpage Prices in Washington (nominal)



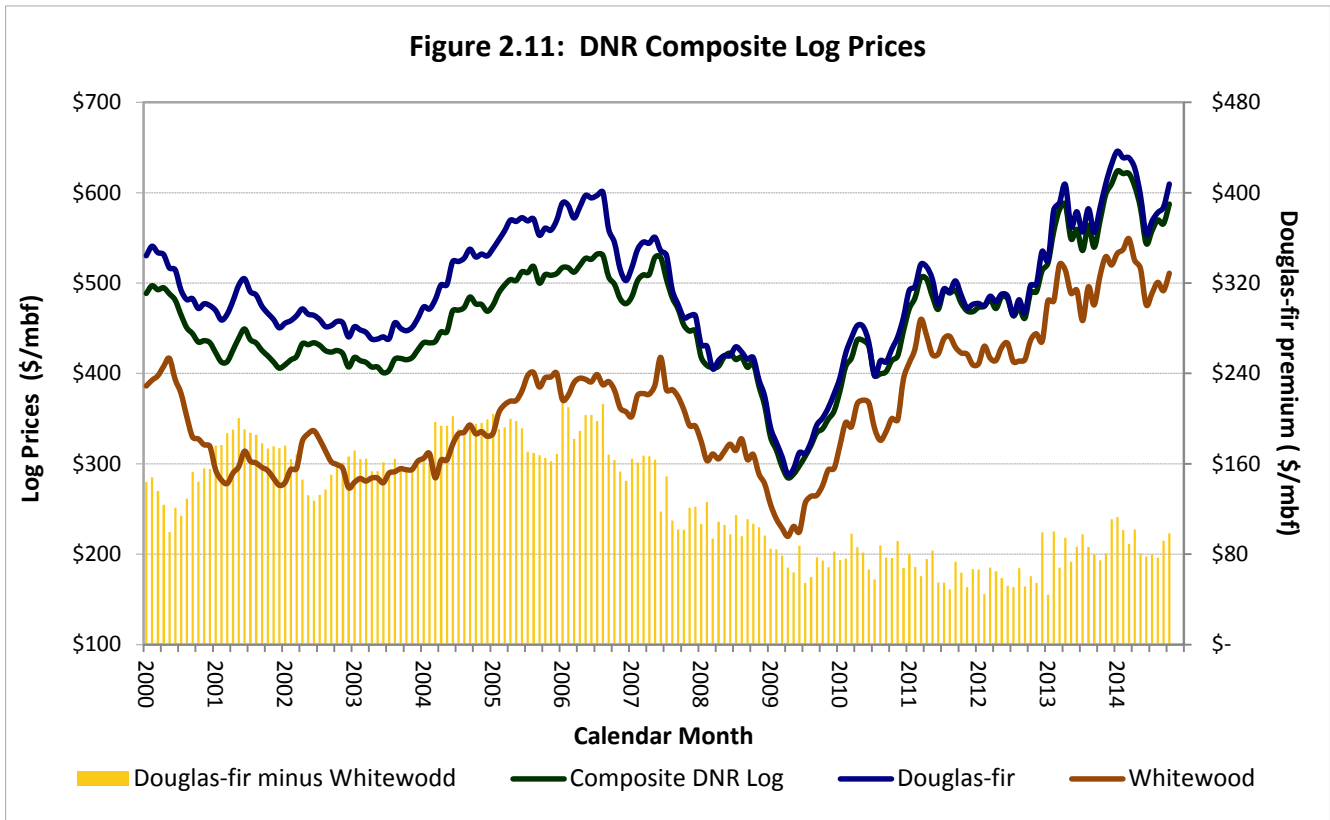
Price Outlook

Lumber Prices

As shown in **Figure 2.10**, lumber prices have increased substantially since they bottomed out at \$156/mbf in January 2009. The lumber prices shown on the chart are from Random Length’s Coast Dry Random and Stud price series.

After tremendous volatility in 2010, regional lumber prices generally rose through 2011 and 2012. Prices hit \$425/mbf in April 2013, an impressive 44 percent year-over-year increase, but quickly fell back to \$362/mbf in May 2013 and then \$322 in June. These fluctuations were generally expected by forest economists because of the jerky response of mills bringing lumber production back on line. As expected, lumber price growth is has remained generally flat over 2014 because mills and dealers are now better prepared to meet increased demand; they are unlikely to be surprised by increases in lumber demand like they were in 2013.

Generally, analysts expect that lumber prices will climb through 2015-2017. However, it is likely to be a volatile climb as analysts note that mills have been very slow to increase capacity with the slow housing recovery. Additionally, mills are avoiding holding large inventories because of the difficulties of previous years and transportation infrastructure, while more robust than they were in 2013, remain adequate for current demand.

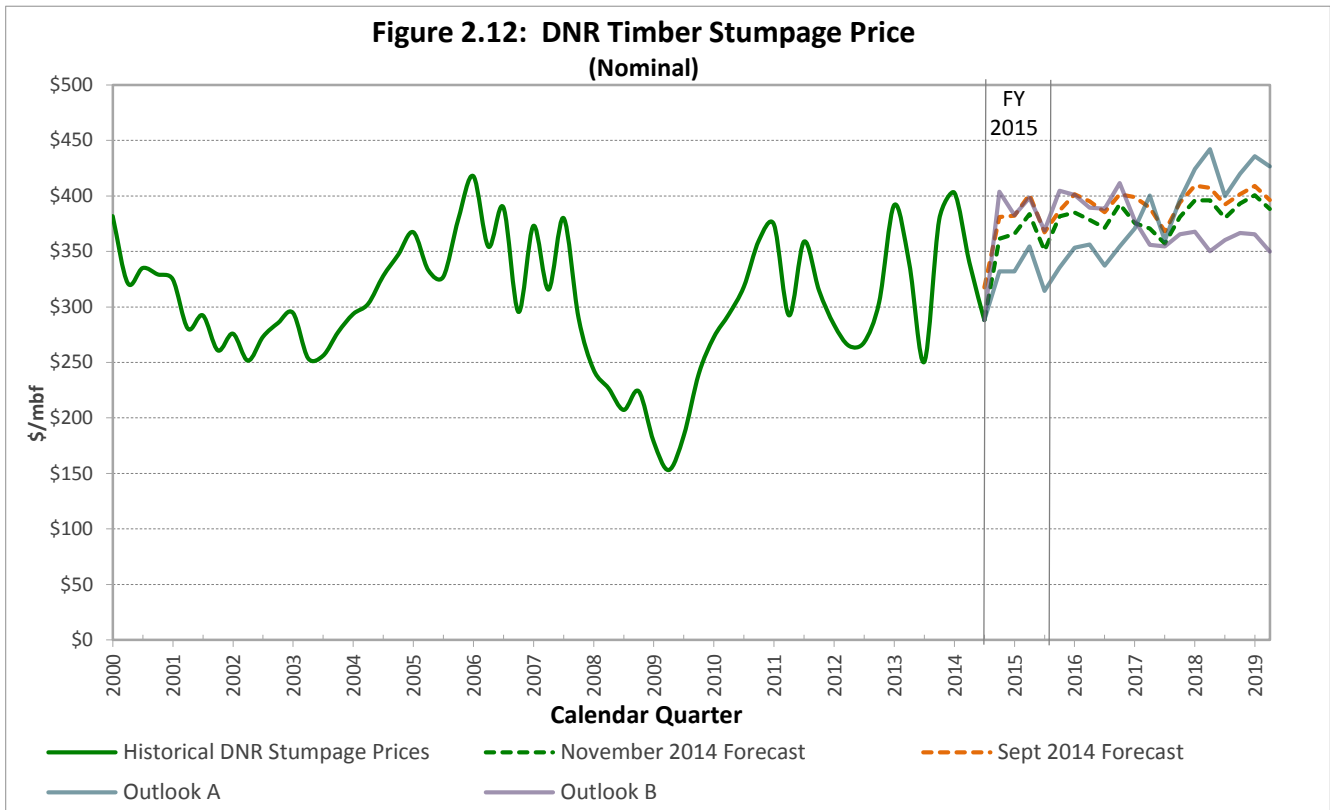


Log Prices

Figure 2.11 presents prices for Douglas-fir, hemlock, and DNR’s composite log. 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 2.11** is the same as the brown line on **Figure 2.10**. 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 autumn of 2012. From there, composite log prices climbed dramatically to a nominal high of \$587/mbf in April 2013, the highest price in the period since 2000, but fell back until the end of the 2013. At the end of 2013 the composite log prices climbed above \$600/mbf and in January reached \$624/mbf. Since January, the price of a DNR composite log fell to \$543/mbf but has since rebounded to \$587/mbf in October.

Stumpage Prices

Timber stumpage prices are the prices that successful bidders pay for the right to harvest timber from DNR-managed lands. **Figure 2.12** shows monthly nominal values for DNR stumpage prices since 2000 in green. Like the log price, DNR stumpage prices bottomed out in April 2009 at \$144/mbf. Currently, the average DNR stumpage price for FY 15 weighted by volume is \$302/mbf. This is much lower than the forecast annual price of \$364/mbf, primarily due to a high proportion of thinning sales in the first four auctions of this fiscal year.



At any time, the difference between the delivered log price (in **brown** on **Figure 2.10**) 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. This correction seems to have occurred with higher stumpage in 2013 and 2014—except for an anomalous result in the April 2013 and the low prices due to sales composition in the early months of FY14.

Note the diverging trend between lumber and log prices from late 2011 into 2013; it suggests that potential profit margins for lumber mills in the Pacific Northwest increased during those periods.

DNR Stumpage Price Outlook

Figure 2.12 shows DNR’s historical timber stumpage prices (the solid **green** line, which is a quarterly version of the line in **Figure 2.10**), the price outlook as of the February Forecast (**orange** dashed line), and our updated price outlook⁹ (**green** dashed line). There are moderate adjustments to the stumpage prices throughout the forecast years.

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.

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

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 2.12**. Outlook A has only slightly altered from the September forecast and predicts slowly increasing average prices through the forecast period, with seasonal variability and minor volatility as the market finds new equilibria in the face of a series of demand changes and supply adaptations. Outlook B has dropped significantly from the previous forecast and predicts a relatively steady stumpage price around \$400/mbg, though there is still the assumption that demand will outpace supply through late 2014 and that prices will increase from the fourth quarter 2014 through the end of 2016. Outlook B incorporates a business cycle downturn from the end of 2016 forward. The updated DNR Forecast represents a weighted middle ground between these two outlooks.

Figure 2.12 shows the outlying years of the updated Forecast culminating in DNR stumpage prices near the highest achieved in the past twelve years—including at the height of the real estate boom in 2006-07. It’s important to note that these expectations are for *nominal* prices. In real (inflation adjusted) terms, the forecast stumpage prices will be much lower than the highs achieved during the real estate boom.



Part 3. DNR's Revenue Forecast

This Revenue Forecast includes revenues generated from timber sales on trust uplands, leases on trust uplands, and leases on aquatic lands. In the final summary table, it also forecasts revenues to individual funds, including DNR management funds, beneficiary current funds, and beneficiary permanent funds. Caveats about the uncertainty of forecasting DNR-managed revenues are summarized near the end of this section.

Timber Revenues

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

Contracts for DNR timber sales sold in FY 2014 varied in duration from three months to four and a half years, with an average (weighted by volume) of about 25.4 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 sales and are subject to purchaser's perceptions of current market conditions.

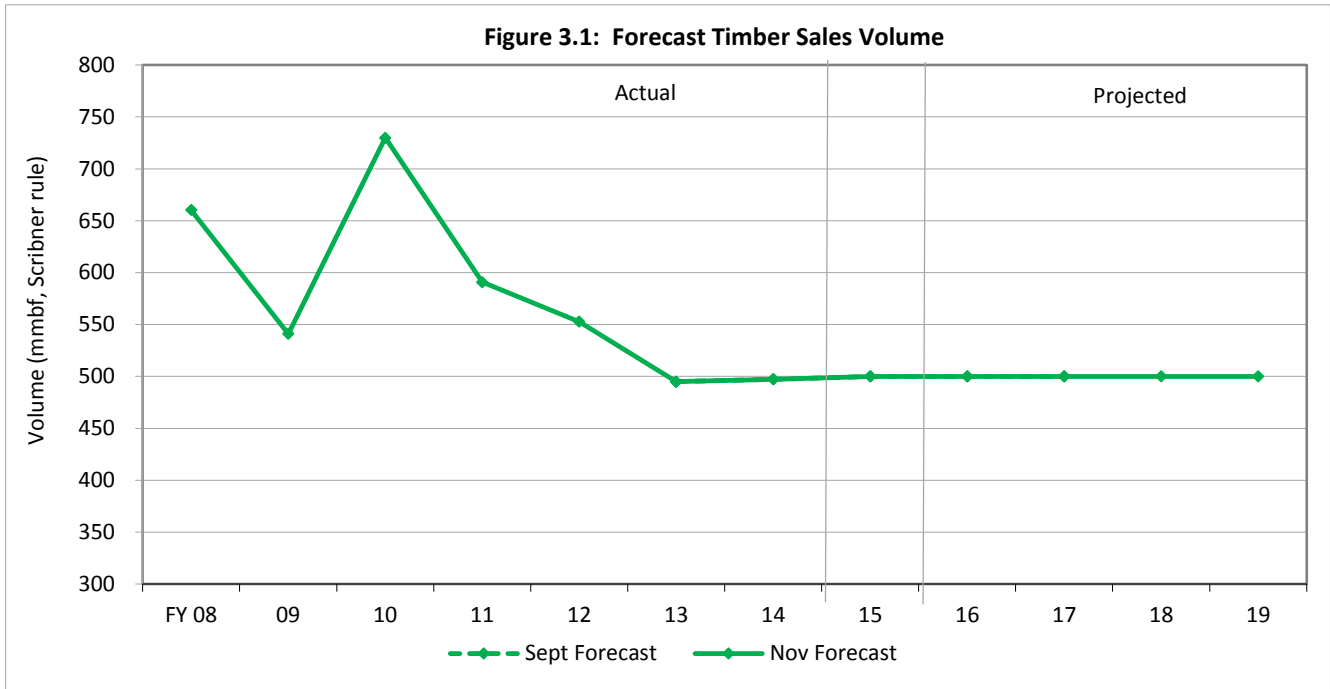
For the purposes of this chapter, timber that is sold but not yet harvested is referred to as "volume under contract" or as "inventory". Timber volume is added to the inventory when it is sold and placed under contract, and it is removed from the inventory as the timber is harvested.

Timber Sales Volume

Sales volume in FY 2014 ended 20 mmbf lower than expected in the July Forecast – this was due to a couple of sales being set aside for operational, environmental and policy reasons.

As of October, DNR had sold 78 mmbf in FY 2015. Projected timber sales volume for the current fiscal year are unchanged at 500 mmbf (see **Figure 3.1**). FY 2014 was the last year of the current FY 2005-2014 sustainable harvest decade and the new harvest limits for the next decade have not yet been set.

FY 2015 is the first year of the next sustainable harvest decade (FY 2015 through FY 2024) for western Washington. Through the March 2013 Forecast, the Department's annual Westside sustainable harvest level for FYs 2015-2019 was assumed to be 537 mmbf. In the June 2013 Forecast annual Westside sales volume estimates were reduced to 450 mmbf for FYs 2015-2019. 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 2015-2019. These projections are presented graphically in **Figure 3.1**.

Timber Removal Volume

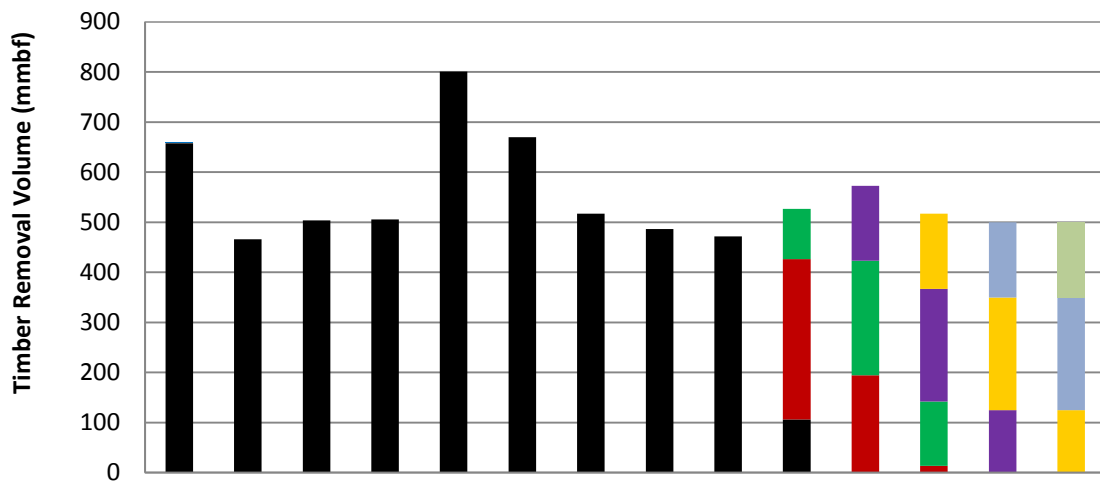
At the end of September, the Department had 528 mmbf of timber under sales contract, valued at \$197 million. This is up from the June Forecast when the Department had 527 mmbf of timber under sales contract, valued at \$180.7 million.

For each Forecast, we survey DNR timber sale purchasers to determine their planned harvest timing for the timber volume they have under contract at the time of the survey. This Forecast’s survey, conducted in the first half of October, indicates that purchasers will likely to harvest 320 mmbf, or 61 percent, of the 528 mmbf remaining under contract in the remainder of this fiscal year (FY 2015), 194 mmbf (35 percent) of the existing inventory in FY 2016 and the remaining 14 mmbf in FY 2017 (see **Figure 3.2** for detail).

Including the survey responses, removals to date, and removals expected from future FY 2015 sales, about 527 mmbf will be removed in FY 2015, five percent less than the September forecast of 55 (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’ plan. FY 2015’s expected harvest is reduced by 25 mmbf (as is the 2013-2015 biennial removals) and FY 2016’s harvest is reduced by 27 mmbf. However, FY 2017’s expected harvest has increased by 49 mmbf as producers pushed planned harvests out. Projected volumes across the 2015-2017 biennium are increased by 23 mmbf, or around two percent (see **Figure 3.3**).

Figure 3.2: Forecast Timber Removal Volume



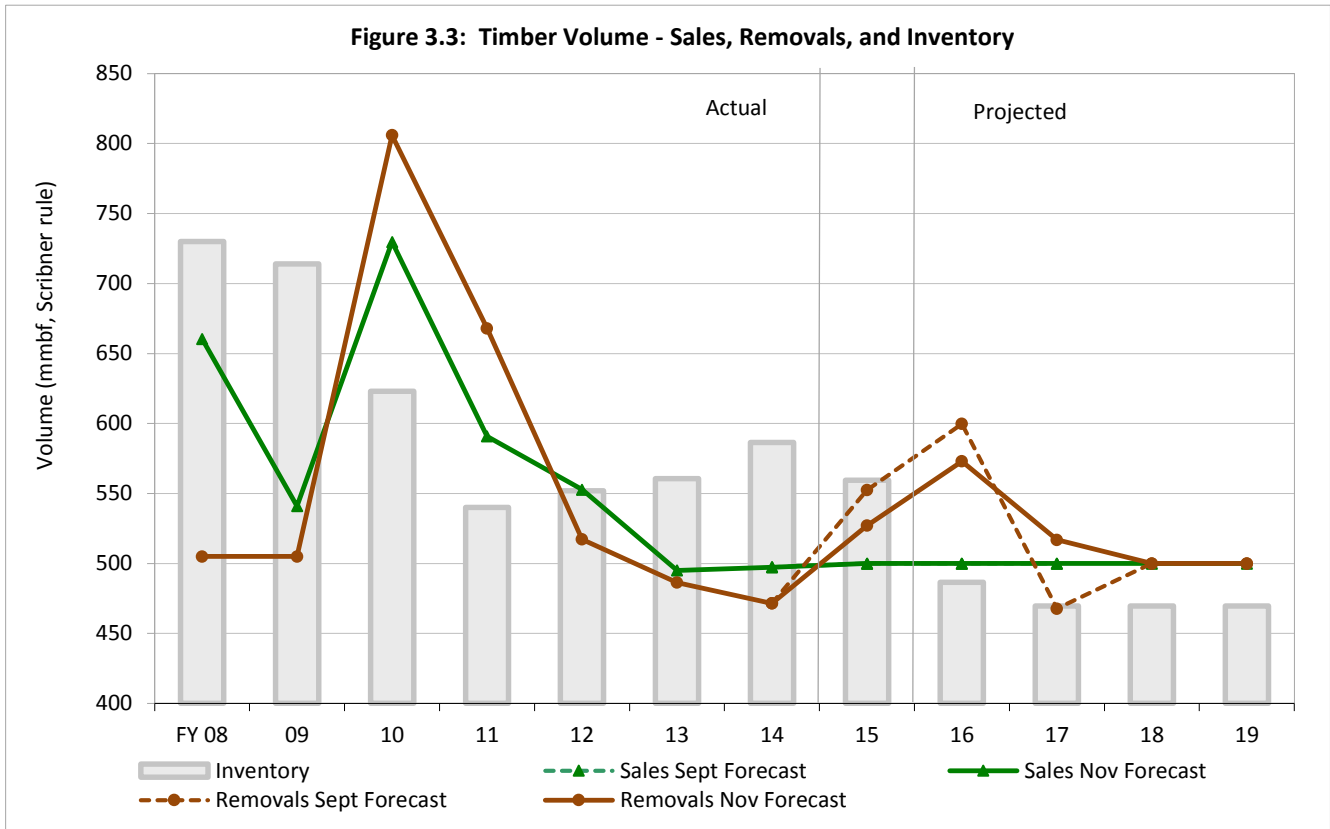
FY	FY 06	07	08	09	10	11	12	13	14	15	16	17	18	19
Total	658	466	504	506	801	670	517	486	471	527	573	517	500	500
Removals to Date	658	466	504	506	801	670	517	486	471	106				
Sales Under Contract										320	194	14		
Sales in FY 15										101	229	128	0	0
Sales in FY 16											150	225	125	0
Sales in FY 17												150	225	125
Sales in FY 18													150	225
Sales in FY 19														150

Timber Sales Prices

The price results of monthly DNR timber sales (shown in **Figure 2.10** 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 slow improvement of the U.S. housing market is likely to continue 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 2.10** illustrates this sensitivity.

The FY 2015 average DNR timber sales price projection is lowered from \$380/mbf to \$364/mbf in this Forecast, reflecting low prices in the first two months of the fiscal year and a continued weakness in the housing market (**Figure 3.4** and **2.12**). The average sales price through October 2015 was \$302/mbf. The forecast average sales price for FY 2015 is higher than the current average because auctions through the rest of the fiscal year are expected to have more valuable timber mixes.



Timber Removal Prices

Timber removal prices are determined by sales prices, volumes, and harvest timing. They can be thought of as a moving average of previous timber sales prices, weighted by the volume of sold timber removed in each time period. The removal volumes used to calculate the weights are shown in **Figure 3.2**. There is a smoothing out and a lag of timber removal prices compared to timber sales prices. For example, sales prices bottomed at an average annual price of \$174/mbf in FY 09 (see **Figure 3.4**). However, removal prices bottomed out in FY 10 at \$221/mbf on an annual basis, which was \$47/mbf higher and came a year after the bottom for annual sales prices (**Figure 3.5**).

Timber Removal Revenues

Figure 3.6 shows projected annual timber removal values, broken down by the fiscal year in which the timber was sold (“sales under contract” are already sold as of October 1, 2014). Expected removal value for FY 2015 is reduced by around \$13 million, to \$180.9 million, due to the decreases in both forecast removal volumes and prices. FY 2016 removal value is also reduced, to \$214.0 million, due entirely to changes in planned removal volume, which is somewhat offset by the increase in expected removal prices. Expected FY 2017 removal value is increased to \$197 million due to increased expected removal volumes offsetting a small decrease in expected prices. Removal revenue expectations for the outlying years, FYs 2018 and 2019 are decreased due to reduced price expectations.

These changes result in the projected 2013-2015 biennium timber revenues being reduced from \$346.3 million to \$333.0 million—a reduction of around four percent (see **Figure 3.7**). In the 2015-2017 Biennium, forecast timber removal revenues are projected to be up by 2.6 percent to 411.0 million.

Figure 3.4: Timber Sales Prices
Comparison of Previous Forecast with Current Forecast, FY 2015-2019

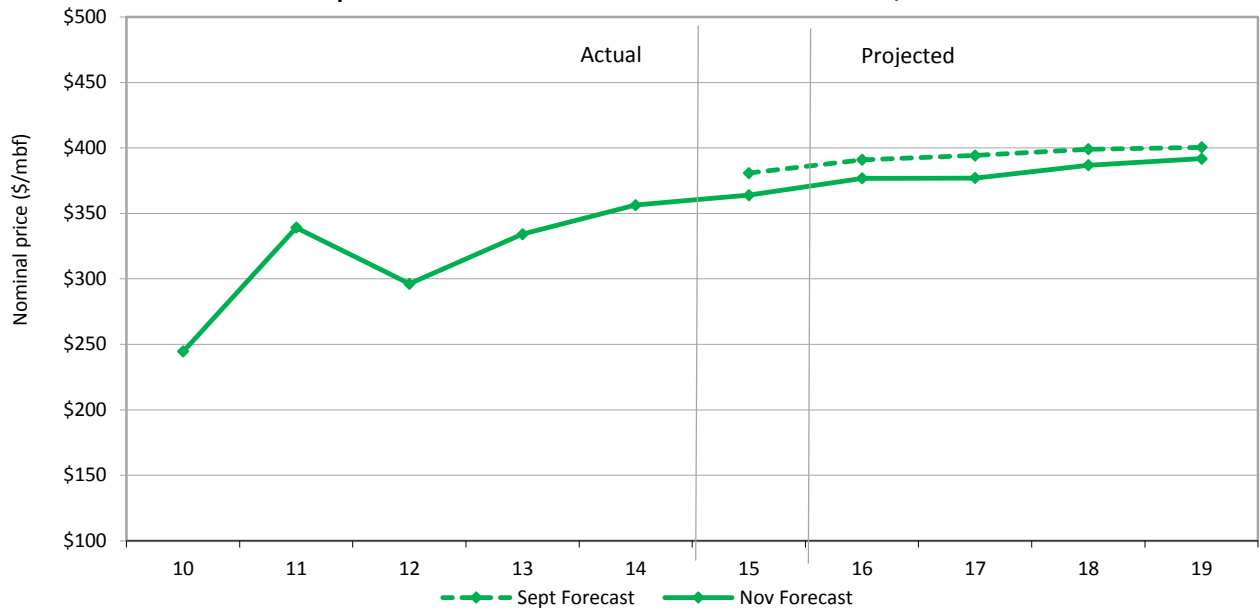


Figure 3.5: Timber Removal Prices
Comparison of Previous Forecast with Current Forecast, FY 2015-2019

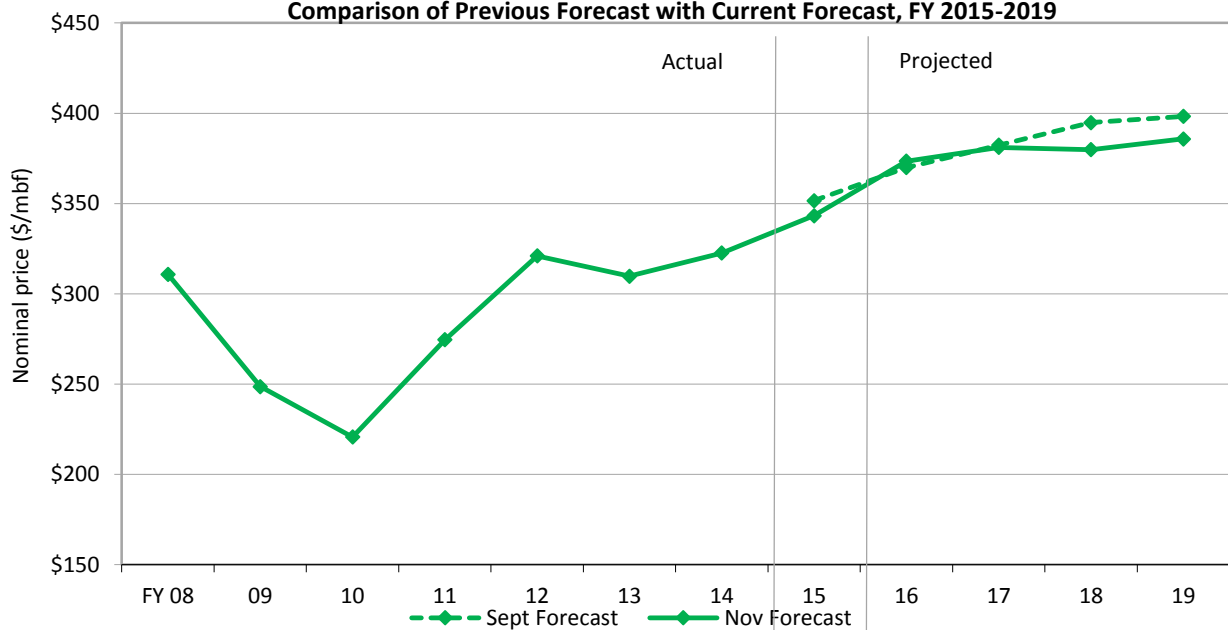
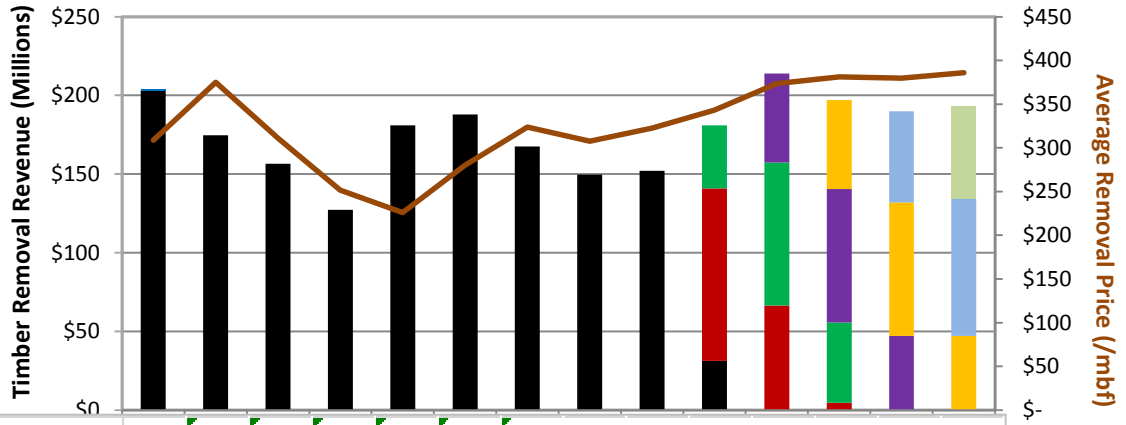


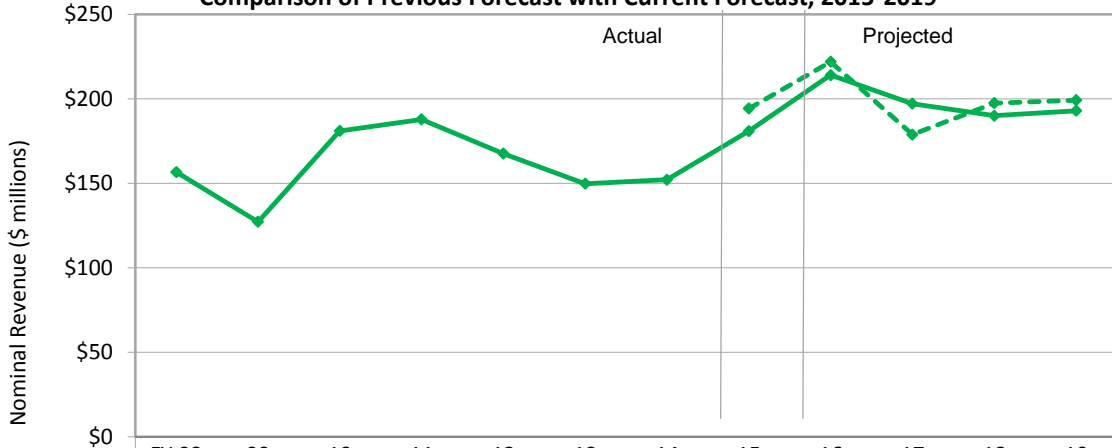
Figure 3.6: Forecast Timber Removal Value



	FY 06	07	08	09	10	11	12	13	14	15	16	17	18	19		
Total	203	175	157	127	181	188	168	150	152	181	214	197	190	193		
Removals to Date	203	175	157	127	181	188	168	150	152	31						
Sales Under Contract										109	66	5				
Sales in FY 15										40	91	51	0	0		
Sales in FY 16											57	85	47	0		
Sales in FY 17												57	85	47		
Sales in FY 18													0	58	87	
Sales in FY 19														0	0	59

Figure 3.7: Timber Removal Revenues

Comparison of Previous Forecast with Current Forecast, 2015-2019

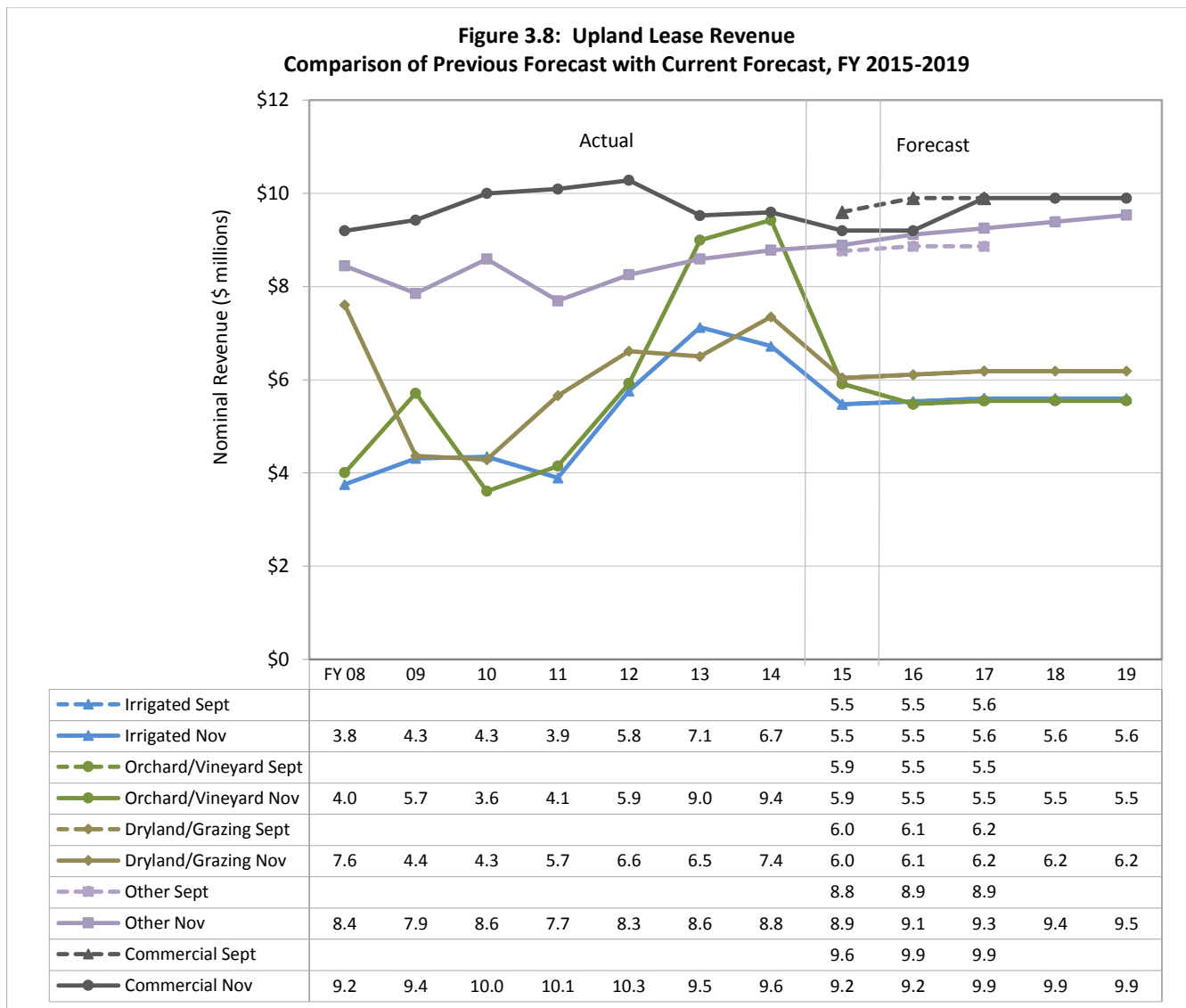


Sept Forecast										194.2	221.9	178.8	197.4	199.1
Nov Forecast	156.6	127.2	181.0	187.8	167.5	149.7	152.1	180.9	214.0	197.0	189.9	192.9		
Change								-13.3	-7.9	18.2	-7.5	-6.2		
Percent Change								-7%	-4%	10%	-4%	-3%		

Upland lease revenues

Upland lease revenues are generated primarily from leases and the sale of valuable materials, other than timber, on state trust lands. In this Forecast, upland lease revenues are divided into two overarching categories: agriculture and other. Each of these is further divided. Presenting the data this way reflects the size and constitution of the uplands revenue sources.

The forecast for commercial leases is reduced by \$400,000 in the current fiscal year and \$700,000 in FY 2016 due to the loss of a large lease. It is expected that the property will be re-let and begin providing revenue again near the beginning of FY 2017. The other change in upland lease revenue is from other revenue, which is raised due to an increase expected growth in lease revenue from communication sites. (Figure 3.8).



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Aquatic Lands Revenues

DNR manages 2.6 million acres of state-owned aquatic lands. Very broadly, aquatic lands revenues are generated in two ways: geoduck sales and harvest revenue, and lease and other revenue. The lease and other revenues are comprised of:

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

The expected revenues from these leases are reduced in the near term in this Forecast because of reduced price expectations for geoducks and reductions in water-dependent rents.

The geoduck auctions in FY 2015 have been much lower than had been predicted by our geoduck price modelling. Forecast prices are reduced as a result of the updated model and risks to geoduck demand from potentially poor demand. However, given geoducks historical price volatility, it is possible that the average price will be higher than predicted (see **Figure 3.10**).

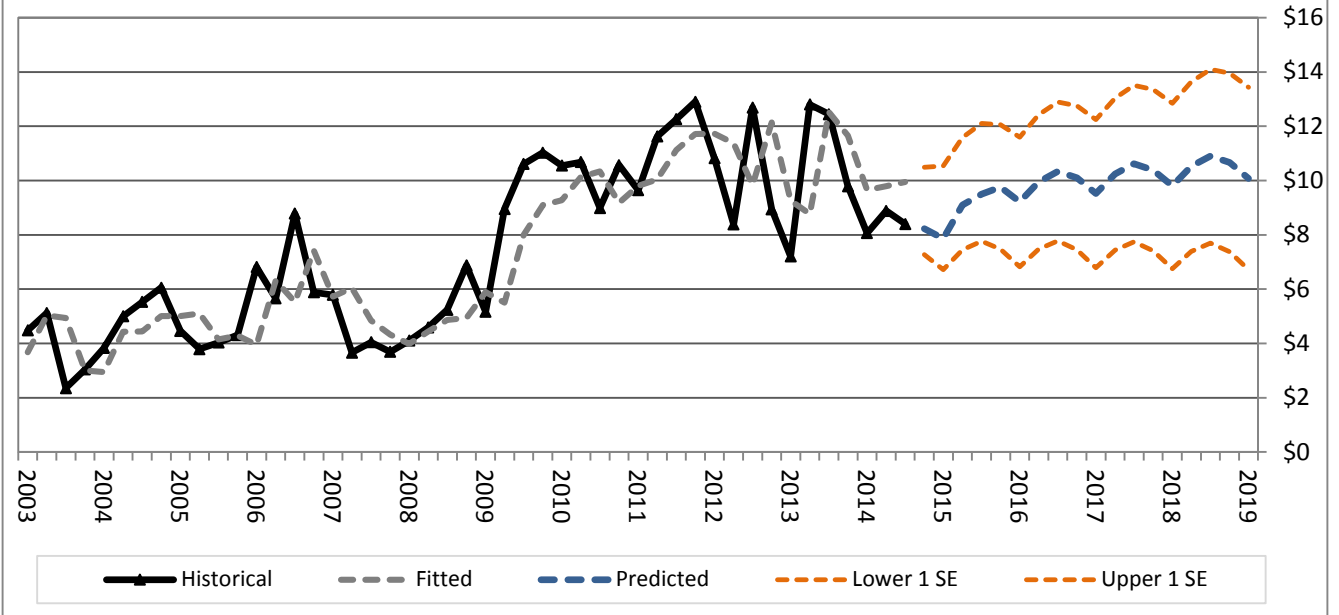
In early December 2013, the Chinese government declared import restrictions on shellfish from most of the West Coast of North America, citing health concerns from high levels of paralytic shellfish poisoning toxin (PSP) and arsenic. The ban has been lifted but it resulted in about \$1 million in refunded or foregone revenue from the last of the September 2013 auction poundage. Almost all of the poundage from the November 2013 auction was harvested in January, in time for the Chinese New Year; apparently, geoduck brokers and exporters were able to find sufficient supply routes.

There are significant downside risks to geoduck revenues, even in the near term, that are important to consider but difficult to forecast:

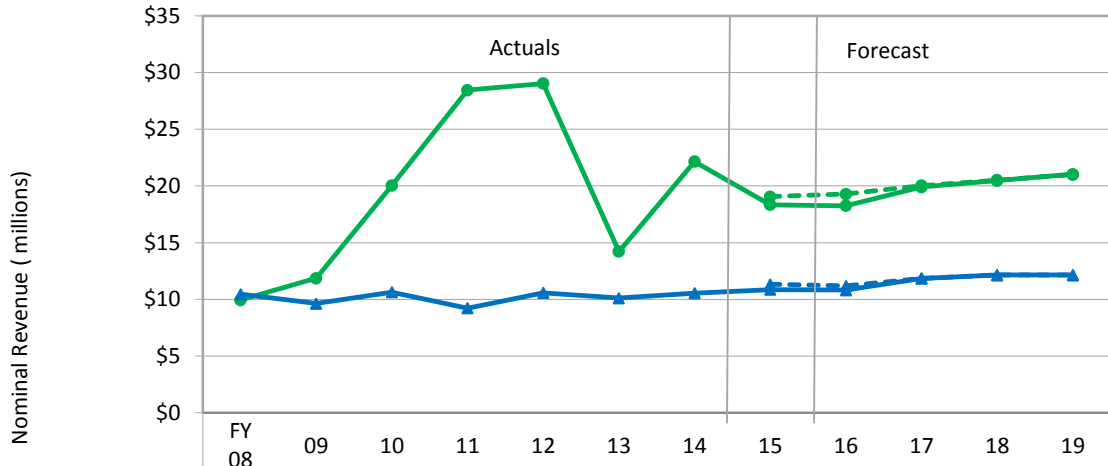
1. Harvests (and therefore revenues) could be deferred or lost if geoduck beds are closed due to occurrence PSP toxin.
2. A further slowdown in China’s economic growth could lower demand for this luxury good in its largest market.
3. In light of recent WDFW surveys of closed south Puget Sound geoduck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

Importantly, if none of the downside risks eventuate, it is quite possible for geoduck prices to be much higher than expected, given its historic volatility.

Figure 3.9: Geoduck Auction Prices: Actual and Predicted



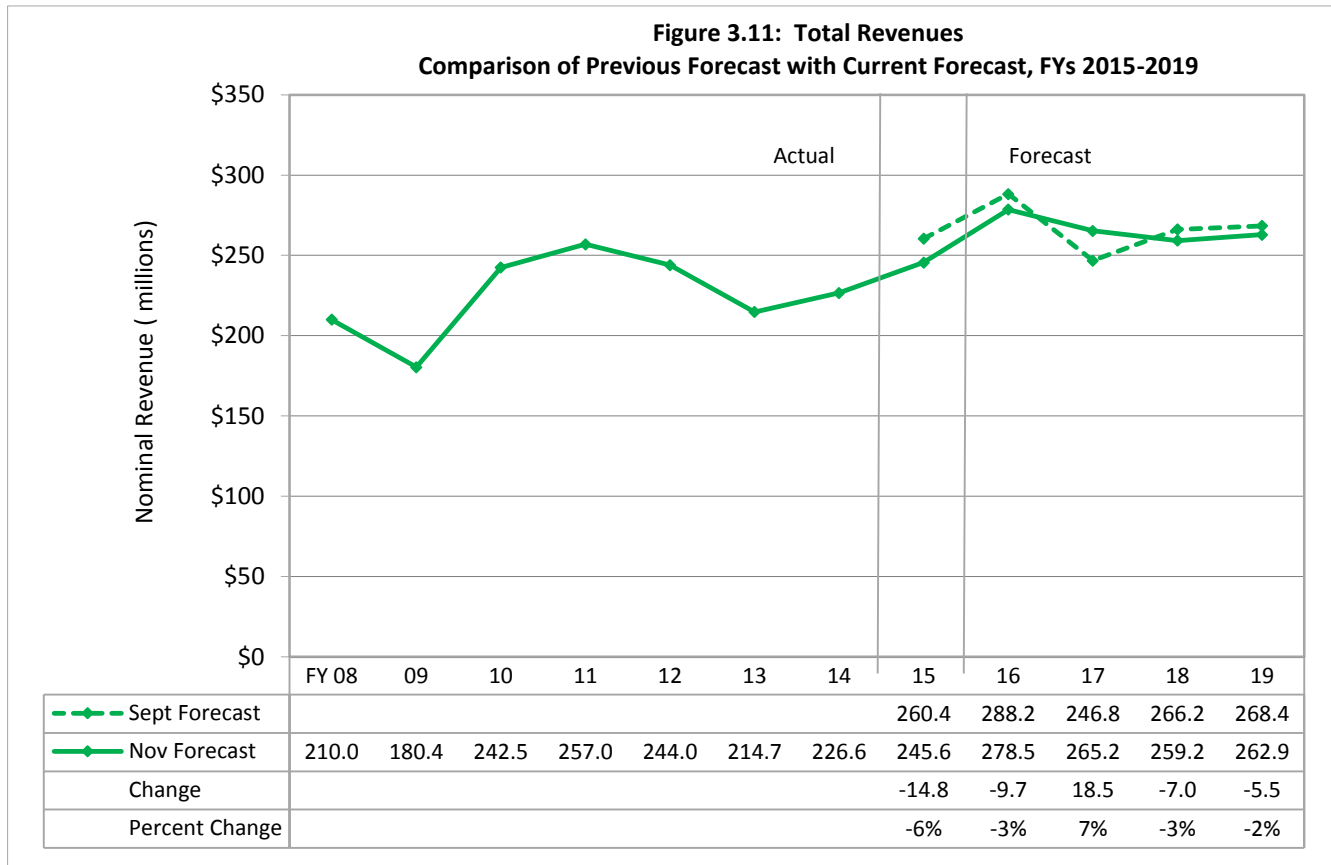
**Figure 3.10: Aquatic Lands Revenues
Forecast Geoduck and Other, FYs 2015-2019**



	FY 08	09	10	11	12	13	14	15	16	17	18	19
Geoduck Sept Forecast								19.1	19.3	20.0	20.5	21.0
Geoduck Nov Forecast	9.9	11.9	20.0	28.5	29.0	14.2	22.1	18.3	18.3	19.9	20.5	21.0
Change								-0.7	-1.0	-0.1	0.0	0.0
Other Sept Forecast								11.3	11.2	11.8	12.1	12.1
Other Nov Forecast	10.5	9.6	10.6	9.2	10.6	10.1	10.5	10.9	10.8	11.8	12.1	12.1
Change								-0.5	-0.4	0.0	0.0	0.0

Total Revenues from All Sources

Total forecast revenues for the 2013-15 Biennium (FYs 14 and 15) are down from the previous Forecast by \$14.8 million (2.9 percent) to \$472.2 million. Revenues for the 2015-2017 Biennium (FYs 16 and 17) are projected to be up by \$8.8 million (1.6 percent) to \$543.7 million. The vast majority of the overall revenue changes are driven by a change in planned timber harvests and timber sales prices.



Some Caveats

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

U.S. and Global Economic Crisis. There are still too many unemployed workers, though some have reentered the workforce after having left; the financial and economic crises in Europe are no longer improving and several European countries remain in deep recession; China's economy has slowed; and the U.S. government has still not implemented, nor is it likely to implement soon, a coherent, growth-driven economic policy.

Timber Sales Volume. Although significant curtailments in timber sales volumes were assumed in the June 2013 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, especially given the uncertainty around the sustainable harvest levels.

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

Distribution of Revenues

The distribution of timber revenues by trust are based on:

- The volumes and values of timber in the inventory (sales sold but not yet harvested) by trust;
- The volumes of timber in planned sales for FY 15 by trust, and relative historical timber prices by DNR region by trust; and
- The volumes of timber by trust for FYs 15-17 based on provisional output of the sustainable harvest model¹⁰ 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.¹¹

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:

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>
FDA	25	25	25	25	25
RMCA	29	29	29	29	29

By using 29 percent for the RMCA deduction in FYs 2015-2019, the Forecast assumes that the Legislature will approve RMCA deductions of up to 30 percent for the 2015-2017 Biennium in their biennial budget bills, continuing its practice which started in FY 2006.

¹⁰ DNR and the Board of Natural Resources have not yet determined the sustainable harvest level for the FY 2015-2024 biennium.

¹¹ 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.

Revenue Forecast Tables

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

Table 3.1: November 2014 Forecast by Source (millions of dollars)

Changes are from the September 2014 Forecast

	Actuals					Forecast				
	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Timber Sales										
Volume (mmbf)	730	591	553	495	497	500	500	500	500	500
Change						-	-	-	-	-
% Change						0%	0%	0%	0%	0%
Price (\$/mbf)	\$245	\$339	\$296	\$334	\$ 356	\$ 364	\$ 377	\$ 377	\$ 387	\$ 392
Change						\$ (17)	\$ (14)	\$ (17)	\$ (12)	\$ (9)
% Change						-4%	-4%	-4%	-3%	-2%
Value of Timber Sales	\$ 178.5	\$ 200.4	\$ 163.7	\$ 165.4	\$ 177.2	\$ 182.0	\$ 188.4	\$ 188.5	\$ 193.4	\$ 195.9
Change						\$ (8.4)	\$ (7.0)	\$ (8.6)	\$ (6.1)	\$ (4.4)
% Change						-4%	-4%	-4%	-3%	-2%
Timber Removals										
Volume (mmbf)	801	670	517	486	471	527	573	517	500	500
Change						(25)	(27)	49	-	-
% Change						-5%	-4%	11%	0%	0%
Price (\$/mbf)	\$221	\$275	\$321	\$310	\$ 323	\$ 343	\$ 373	\$ 381	\$ 380	\$ 386
Change						\$ (8.3)	\$ 3.5	\$ (1.2)	\$ (15.0)	\$ (12.4)
% Change						-2%	1%	0%	-4%	-3%
Timber Revenue	\$ 181.0	\$ 187.8	\$ 167.5	\$ 149.7	\$ 152.1	\$ 180.9	\$ 214.0	\$ 197.0	\$ 189.9	\$ 192.9
Change						\$ (13.3)	\$ (7.9)	\$ 18.2	\$ (7.5)	\$ (6.2)
% Change						-7%	-4%	10%	-4%	-3%

Note: Timber removal revenue includes FIT (forest improvement timber) sale proceeds, timber sales default settlements, and interest and extension charges (approx. \$1-4 million per year).

Excludes Trust Land Transfer, Real Property Replacement Account, and Land Bank property transactions and interest on property replacement funds.

Excludes fire assessments, permits, and fees.

Totals may not add due to rounding.

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Table 3.1: November 2014 Forecast by Source (millions of dollars), cont'd.

Changes are from the September 2014 Forecast

	Actuals					Forecast				
	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Upland Leases										
Irrigated Agriculture	\$ 4.3	\$ 3.9	\$ 5.8	\$ 7.1	\$ 6.7	\$ 5.5	\$ 5.5	\$ 5.6	\$ 5.6	\$ 5.6
Change						\$ -	\$ -	\$ -	\$ -	\$ -
% Change						0%	0%	0%	0%	0%
Orchard/Vineyard	\$ 3.6	\$ 4.1	\$ 5.9	\$ 9.0	\$ 9.4	\$ 5.9	\$ 5.5	\$ 5.5	\$ 5.5	\$ 5.5
Change						\$ -	\$ -	\$ -	\$ -	\$ -
% Change						0%	0%	0%	0%	0%
Dryland Ag/Grazing	\$ 4.3	\$ 5.7	\$ 6.6	\$ 6.5	\$ 7.4	\$ 6.0	\$ 6.1	\$ 6.2	\$ 6.2	\$ 6.2
Change						\$ -	\$ -	\$ -	\$ -	\$ -
% Change						0%	0%	0%	0%	0%
Commercial	\$ 10.0	\$ 10.1	\$ 10.3	\$ 9.5	\$ 9.6	\$ 9.2	\$ 9.2	\$ 9.9	\$ 9.9	\$ 9.9
Change						\$ (0.4)	\$ (0.7)	\$ -	\$ -	\$ -
% Change						-4%	-7%	0%	0%	0%
Other Leases	\$ 8.6	\$ 7.7	\$ 8.3	\$ 8.6	\$ 8.8	\$ 8.9	\$ 9.1	\$ 9.3	\$ 9.4	\$ 9.5
Change						\$ 0.1	\$ 0.3	\$ 0.4	\$ 0.5	\$ 0.7
% Change						1%	3%	4%	6%	8%
Total Upland Leases	\$ 30.8	\$ 31.5	\$ 36.8	\$ 40.7	\$ 41.9	\$ 35.5	\$ 35.4	\$ 36.5	\$ 36.6	\$ 36.8
Change						\$ (0.3)	\$ (0.4)	\$ 0.4	\$ 0.5	\$ 0.7
% Change						-1%	-1%	1%	1%	2%
Aquatic Lands										
Aquatic Leases	\$ 10.6	\$ 9.2	\$ 10.6	\$ 10.1	\$ 10.5	\$ 10.9	\$ 10.8	\$ 11.8	\$ 12.1	\$ 12.1
Change						\$ (0.5)	\$ (0.4)	\$ -	\$ -	\$ -
% Change						-4%	-3%	0%	0%	0%
Geoduck	\$ 20.0	\$ 28.5	\$ 29.0	\$ 14.2	\$ 22.1	\$ 18.3	\$ 18.3	\$ 19.9	\$ 20.5	\$ 21.0
Change						\$ (0.7)	\$ (1.0)	\$ (0.1)	\$ (0.0)	\$ 0.0
% Change						-4%	-5%	-1%	0%	0%
Aquatic Lands Revenue	\$ 30.7	\$ 37.7	\$ 39.6	\$ 24.3	\$ 32.7	\$ 29.2	\$ 29.1	\$ 31.8	\$ 32.6	\$ 33.2
Change						\$ (1.2)	\$ (1.4)	\$ (0.1)	\$ (0.0)	\$ 0.0
% Change						-4%	-5%	0%	0%	0%
Total All Sources	\$ 242.5	\$ 257.0	\$ 244.0	\$ 214.7	\$ 226.6	\$ 245.6	\$ 278.5	\$ 265.2	\$ 259.2	\$ 262.9
Change						\$ (14.8)	\$ (9.7)	\$ 18.5	\$ (7.0)	\$ (5.5)
% Change						-6%	-3%	7%	-3%	-2%

Note: Totals may not add due to rounding.

Table 3.2: November 2014 Forecast by Fund (In millions of dollars)

Changes are from the September 2014 Forecast

	Actuals					Forecast				
	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Management Funds										
041 RMCA - Uplands	\$ 31.8	\$ 33.9	\$ 29.7	\$ 30.3	\$ 33.2	\$ 34.3	\$ 40.1	\$ 39.2	\$ 37.8	\$ 38.7
Change						\$ (2.5)	\$ (1.9)	\$ 2.6	\$ (0.7)	\$ (0.8)
% Change						-7%	-5%	7%	-2%	-2%
041 RMCA - Aquatic Lands	\$ 13.9	\$ 17.5	\$ 18.4	\$ 10.7	\$ 14.8	\$ 13.1	\$ 12.9	\$ 14.1	\$ 14.5	\$ 14.8
Change						\$ (0.5)	\$ (0.6)	\$ (0.1)	\$ (0.0)	\$ 0.0
% Change						-4%	-5%	0%	0%	0%
014 FDA	\$ 25.9	\$ 25.8	\$ 20.9	\$ 16.6	\$ 19.6	\$ 23.5	\$ 27.5	\$ 25.0	\$ 24.2	\$ 25.2
Change						\$ (1.4)	\$ (0.8)	\$ 1.8	\$ (1.5)	\$ (0.7)
% Change						-5%	-3%	8%	-6%	-3%
Total Management Funds	\$ 71.6	\$ 77.1	\$ 69.0	\$ 57.6	\$ 67.6	\$ 70.9	\$ 80.5	\$ 78.2	\$ 76.5	\$ 78.6
Change						\$ (4.4)	\$ (3.4)	\$ 4.3	\$ (2.2)	\$ (1.5)
% Change						-6%	-4%	6%	-3%	-2%
Current Funds										
113 Common School Construction	\$ 47.9	\$ 56.5	\$ 56.5	\$ 60.5	\$ 56.6	\$ 59.1	\$ 68.2	\$ 68.2	\$ 68.0	\$ 68.3
Change						\$ (7.5)	\$ (8.9)	\$ 2.1	\$ (1.1)	\$ (1.2)
% Change						-11%	-12%	3%	-2%	-2%
999 Forest Board Counties	\$ 67.9	\$ 70.5	\$ 64.7	\$ 55.4	\$ 52.0	\$ 63.5	\$ 73.1	\$ 64.5	\$ 60.5	\$ 61.7
Change						\$ (3.3)	\$ (0.1)	\$ 7.4	\$ (2.4)	\$ (1.8)
% Change						-5%	0%	13%	-4%	-3%
001 General Fund	\$ 5.0	\$ 4.2	\$ 4.5	\$ 2.2	\$ 2.2	\$ 2.2	\$ 2.9	\$ 3.1	\$ 3.6	\$ 4.0
Change						\$ (0.2)	\$ (0.5)	\$ (0.4)	\$ (0.5)	\$ (0.1)
% Change						-8%	-14%	-11%	-12%	-3%
348 University Bond Retirement	\$ 1.8	\$ 1.3	\$ 0.8	\$ 0.8	\$ 1.8	\$ 2.9	\$ 2.5	\$ 2.0	\$ 2.9	\$ 2.1
Change						\$ (0.1)	\$ (0.2)	\$ 0.1	\$ (0.1)	\$ (0.1)
% Change						-4%	-9%	7%	-2%	-3%
347 WSU Bond Retirement	\$ 1.2	\$ 1.4	\$ 1.8	\$ 1.6	\$ 1.7	\$ 1.6	\$ 1.6	\$ 1.6	\$ 1.6	\$ 1.6
Change						\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.1
% Change						1%	1%	2%	3%	4%
042 CEP&RI	\$ 5.6	\$ 4.9	\$ 5.0	\$ 5.1	\$ 5.5	\$ 3.7	\$ 5.2	\$ 4.9	\$ 4.5	\$ 4.6
Change						\$ (0.4)	\$ (0.0)	\$ 0.5	\$ (0.1)	\$ (0.1)
% Change						-10%	0%	11%	-3%	-2%
036 Capitol Building Construction	\$ 8.7	\$ 8.7	\$ 8.8	\$ 3.7	\$ 6.7	\$ 6.9	\$ 9.0	\$ 9.2	\$ 9.1	\$ 9.1
Change						\$ (0.1)	\$ 0.4	\$ 1.1	\$ (0.1)	\$ (0.3)
% Change						-1%	4%	13%	-2%	-3%
061/3/ Normal (CWU, EWU, WWU, TESC)	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.1
Change						\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
% Change						0%	1%	1%	1%	2%
Other Funds	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.4	\$ 1.5	\$ 0.5	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.2
Change						\$ 0.0	\$ (0.4)	\$ (0.1)	\$ (0.0)	\$ (0.0)
% Change						0%	-86%	-69%	-28%	-3%
Total Current Funds	\$ 138.3	\$ 147.6	\$ 142.3	\$ 129.9	\$ 128.1	\$ 140.5	\$ 162.6	\$ 153.7	\$ 150.6	\$ 151.7
Change						\$ (11.7)	\$ (9.6)	\$ 10.6	\$ (4.4)	\$ (3.6)
% Change						-8%	-6%	7%	-3%	-2%

(Continued)

Table 3.2: November 2014 Forecast by Fund (In millions of dollars), cont'd

Changes are from the September 2014 Forecast

Aquatic Lands Enhancement Account	Actuals					Forecast				
	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
02R	\$ 16.8	\$ 20.2	\$ 21.2	\$ 13.6	\$ 17.9	\$ 16.0	\$ 16.2	\$ 17.7	\$ 18.1	\$ 18.4
Change						\$ (0.7)	\$ (0.7)	\$ (0.1)	\$ (0.0)	\$ 0.0
% Change						-4%	-4%	0%	0%	0%

Permanent Funds		FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
601	Agricultural College Permanent	\$ 6.1	\$ 2.9	\$ 3.2	\$ 4.1	\$ 3.5	\$ 7.8	\$ 7.0	\$ 5.1	\$ 4.5	\$ 4.4
	Change						\$ 0.1	\$ 0.2	\$ 1.0	\$ 0.0	\$ (0.1)
	% Change						1%	2%	25%	0%	-3%
604	Normal School Permanent	\$ 4.0	\$ 3.0	\$ 3.1	\$ 1.4	\$ 1.8	\$ 2.1	\$ 3.3	\$ 3.6	\$ 3.3	\$ 3.1
	Change						\$ (0.1)	\$ 0.3	\$ 0.8	\$ 0.1	\$ (0.1)
	% Change						-5%	10%	27%	4%	-3%
605	Common School Permanent	\$ 0.4	\$ 0.2	\$ 0.3	\$ 0.3	\$ 0.4	\$ 0.3	\$ 0.3	\$ 0.3	\$ 0.3	\$ 0.3
	Change						\$ -	\$ -	\$ -	\$ -	\$ -
	% Change						0%	0%	0%	0%	0%
606	Scientific Permanent	\$ 5.1	\$ 5.7	\$ 4.6	\$ 7.0	\$ 6.1	\$ 7.7	\$ 8.1	\$ 6.0	\$ 5.3	\$ 5.6
	Change						\$ 1.9	\$ 3.4	\$ 1.7	\$ (0.4)	\$ (0.2)
	% Change						33%	70%	38%	-8%	-3%
607	University Permanent	\$ 0.7	\$ 0.3	\$ 0.3	\$ 0.8	\$ 1.1	\$ 0.2	\$ 0.5	\$ 0.6	\$ 0.6	\$ 0.6
	Change						\$ 0.1	\$ 0.3	\$ 0.1	\$ (0.0)	\$ (0.0)
	% Change						111%	92%	24%	-8%	-3%
Total Permanent Funds		\$ 16.3	\$ 12.1	\$ 11.4	\$ 13.6	\$ 13.0	\$ 18.1	\$ 19.3	\$ 15.6	\$ 14.0	\$ 14.1
	Change						\$ 2.0	\$ 4.1	\$ 3.5	\$ (0.4)	\$ (0.4)
	% Change						12%	27%	29%	-2%	-3%

Total All Funds		FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 17	FY 17
Total		\$ 242.5	\$ 257.0	\$ 244.0	\$ 214.8	\$ 226.6	\$ 245.6	\$ 278.5	\$ 265.2	\$ 259.2	\$ 262.9
	Change						\$ (14.8)	\$ (9.7)	\$ 18.5	\$ (7.0)	\$ (5.5)
	% Change						-6%	-3%	7%	-3%	-2%

Note: 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.