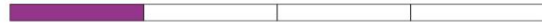




# Economic and Revenue Forecast



First Quarter  
Fiscal Year 2015

.....  
September 2014



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



September 2014

# Economic and Revenue Forecast

*Fiscal Year 2015 – First Quarter*

DNR Office of Budget and Economics  
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# Acknowledgements

The Washington Department of Natural Resources' (DNR) *Economic and Revenue Forecast* is a collaborative effort. It is the product of information provided by private individuals and organizations, as well as by DNR staff. Their contributions greatly enhance the quality of the Forecast.

Special thanks are due to those in the wood products industry who provided information for DNR's timber sale purchasers' survey. These busy individuals and companies volunteered information essential to forecasting timing of timber removal volumes, a critical component of projecting DNR's revenues.

Thanks also go to DNR staff who contributed to the Forecast. Tom Shay, Andrew Hayes, Randy Niessner, Tom Heller, Dave Gordon, Kristin Swenddal, and Blain Reeves provided data and counsel, including information on revenue flows in their areas of responsibility. Lisa Largent reviewed a draft of the Forecast. Luis Prado designed the front cover.

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](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



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## 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 August 1<sup>st</sup>, 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 August 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*.

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# Economic Forecast Calendar

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Forecast Title	Baseline Date	Draft Revenue Data Release Date	Final Data and Publication Date (approximate)
September 2014	August 1, 2014	September 5, 2014	September 30, 2014
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

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## Introduction and Forecast Highlights

**U.S. Economy and Housing Market.** While 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, preliminary estimates of second quarter growth show a strong rebound at an annualized rate of 4.2 percent. Year-over-year GDP growth remains modest at almost 2.5 percent. In October 2009 the unemployment rate peaked at 10.0 percent, but has slowly fallen to 6.2 percent as of July 2014. While these are positive signals, the U.S. economy still faces significant challenges. Improvements to the housing market have been disappointingly slow: New housing starts in 2013 averaged 928,000, 52 percent over 2011, but have stagnated near a million so far in 2014. U.S. housing prices have been trending upward since January 2012, but price growth stalled in the second quarter of 2014. While it is dropping, unemployment remains historically high and there are significant difficulties for younger graduates and workers, as well as the long-term unemployed. Internationally, the economy of the European Union is shaky, with several countries still in recession and the threat of a deflationary spiral looming. The crises in Crimea and Ukraine have introduced significant political and economic uncertainty and China's economy continues to show signs of underlying structural and demographic problems. Finally, the U.S. government still has not implemented a coherent, growth-driven economic policy—which is unlikely to happen in the highly politicized environment of an election year.

**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 averaged \$379/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, 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 \$558/mbf as of July.

**Timber Sales Volume.** FY 14 timber sales volumes totalled 497 mmbf, 20 mmbf lower than the June Forecast. 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, almost exactly as estimated in June. Weighted by volume, sales prices have averaged \$330/mbf through the first two months of FY 15. The new predicted sales price for FY 15 is \$381/mbf, down 3 percent from the June estimate. Due to a broad downward forecast revision in timber prices, future sales price estimates are lowered to about \$391/mbf in FY 16, and \$394/mbf in FY 17.

**Timber Removal Volume and Prices.** Changes in the harvest plans of DNR timber purchasers and lower year-to-date harvest volume 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 552 (-47), 600 (+68), and 468 (-47) mmbf. Timber removal prices are projected to be about \$352 (-\$2), \$370 (-\$12), and

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\$382 (-\$21) 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 4.4 percent to \$346.3 million. Revenues in the 2015-2017 Biennium are predicted to be \$400.7 million, down 2.6 percent from June'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 unchanged from the June Forecast. Revenues from all of these classes combined are predicted to total \$35.8, \$35.9, and \$36.1 million in FYs 15-17 respectively.

Revenues from aquatic lands are projected to total about \$30.4 million in FY 15, down slightly from the June estimate. Expectations for FYs 16-17 have been reduced to \$30.5 million and \$31.9 million, respectively.

**Total Revenues.** Total 2013-2015 Biennium revenues are projected to be \$487.1 million, down \$14.8 million (3.0 percent) from the previous forecast. Revenues for the 2016-2017 Biennium are expected to total \$535.0 million, down \$12.4 million (2.3 percent) from the June 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 September forecast. Additionally, the assumed sustainable harvest limit of 500 mmbf could prove too high.

Upside potential for timber prices, and therefore to subsequent removal prices, seem to slightly outweigh downside risks. Downside risks include a further decline in the housing prices and demand, and decreased demand from China. Both of these have largely been accounted for in the price forecasts. However, 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. 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 2.2 percent on a real annual basis, compared with an annualized average of 3.2 percent over the previous 50 years (1960-2009).

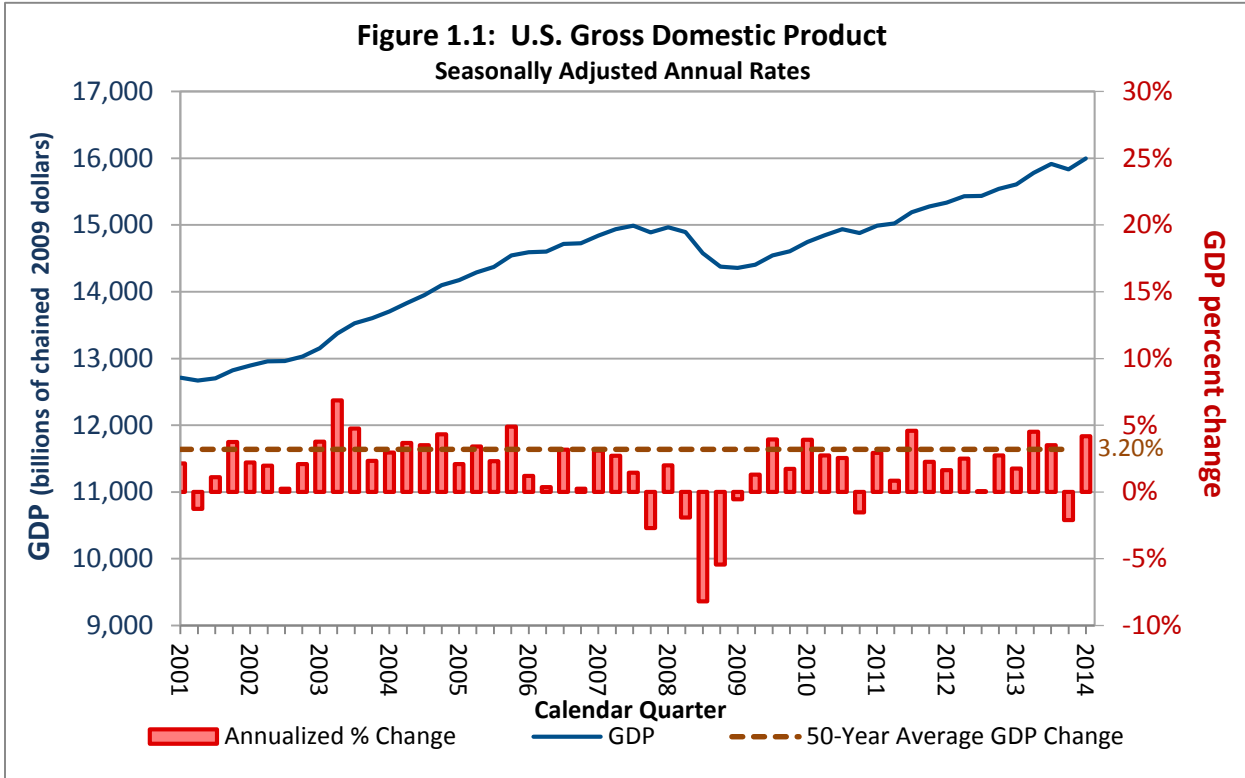
Although a fall in GDP had been expected in the first quarter of 2014, due to draw-downs in business inventories and to harsh winter weather, the drop of 2.1 percent (SAAR) was more negative than expected. However, GDP rebounded in the second quarter with advanced estimates showing 4.2 percent (SAAR) growth. Most forecasters expect 2014 GDP growth of around two percent—for example, the Fed is expecting between 2.1 and 2.3 percent GDP growth.

#### *Employment*

*Labor market conditions have improved substantially over the past several years, and the conventional measure of unemployment is now close to its longer-run normal rate...However, the participation gap and the underemployment gap remain substantial*

*Andrew Levin  
Research Fellow, I.M.F*

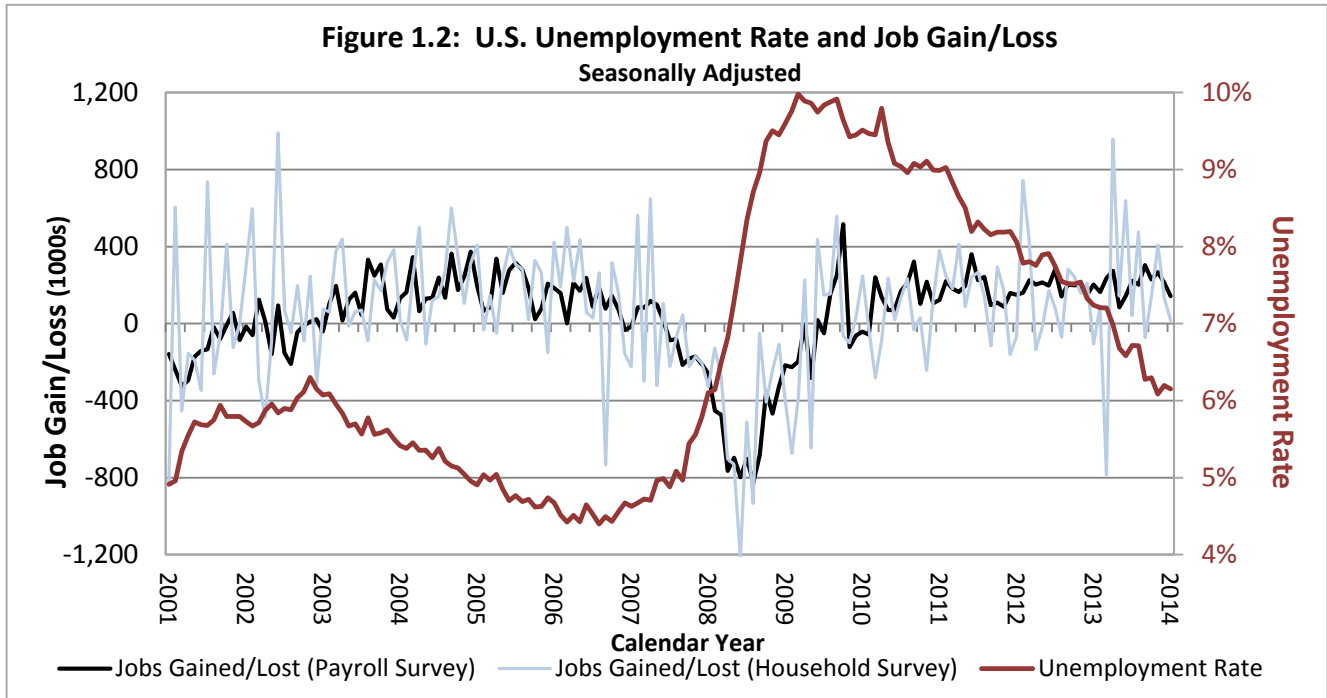
The U.S. unemployment rate continues to decline generally, though in recent months the decline has been arrested (shown by the **red** line in **Figure 1.2**). The August employment report showed an unemployment rate of 6.2 percent, down from 10.0 percent in October 2009. Thus far this year, the economy has added almost 1.6 million jobs, around 215,000 jobs per month. However, this is just shy of the growth in working-age population. Ultimately, the rate of job creation has been painfully slow, so that the gains in the unemployment ratio 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 47 consecutive months.

Positive month-over-month job gains are the main reason why the unemployment rate in **Figure 1.2** generally moves down from October 2010 onward. However, reductions in the labor force can also lower unemployment and 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, but in August there remained almost 300,000 fewer people in the labor force than in March. Additionally, while an average of over 200,000 jobs per month have been created since the beginning of the year, the working age population has been increasing by around 300,000 per month.

Particularly important for housing demand, youth unemployment is higher than overall unemployment. In August, 20–24 year olds had an unemployment rate of 10.6 percent—down from 11.9 percent in January—and 25–29 year olds had a 7.8 percent unemployment rate. High youth unemployment can



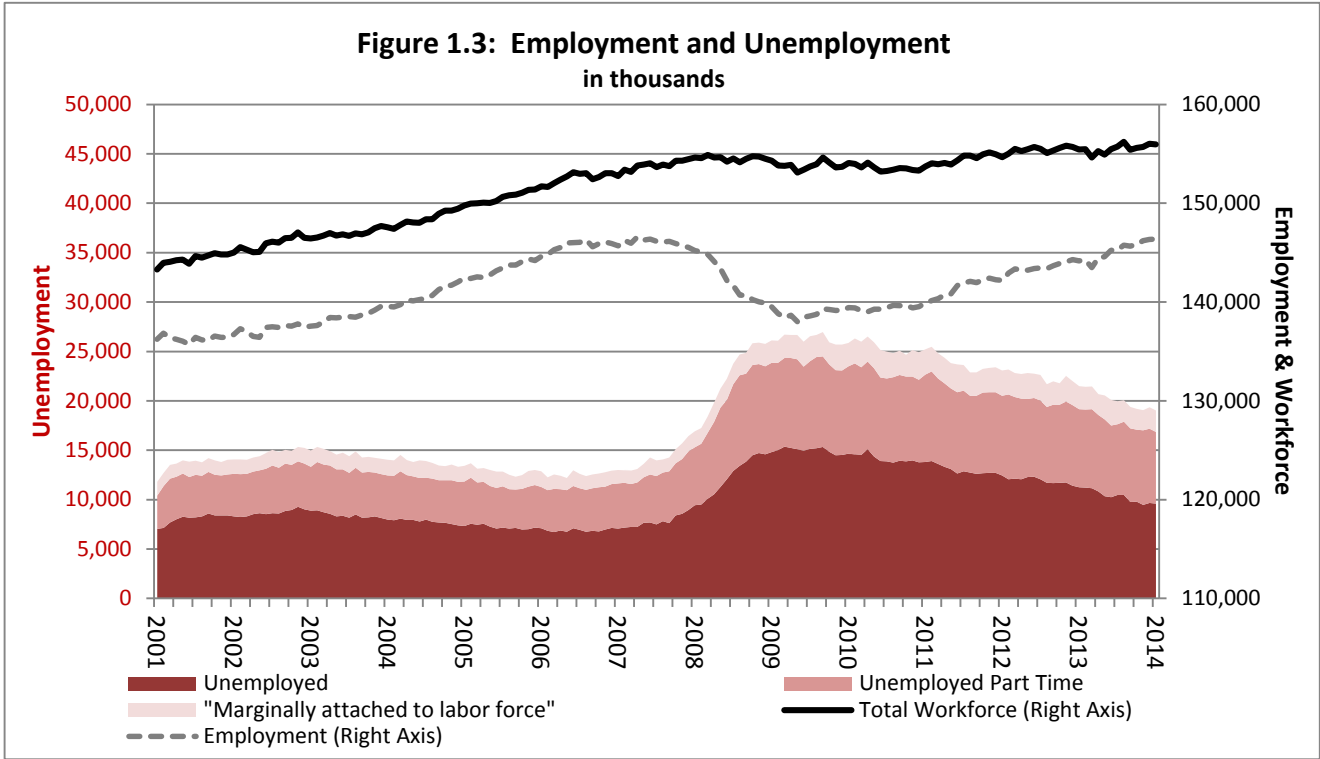
have serious negative implications for an economy, particularly regarding household formation and consumption of durable goods that can help drive business investment.

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 rate<sup>1</sup>. The U-6 rate was 12.0 percent in August, down from 13.6 percent a year earlier and from highs of 17.1 in 2010. The year-on-year reduction is due mostly to a decrease in the number of technically unemployed (either through finding work or leaving the labor force); though the number of marginally attached and involuntarily part-time workers has declined somewhat in the past year.

**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**).

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 August 2014, almost 3 million people had been unemployed for over 27 weeks, accounting for 31.2 percent of the unemployed. This is a large improvement over August 2013 with 4.3 million people, or

<sup>1</sup> “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.

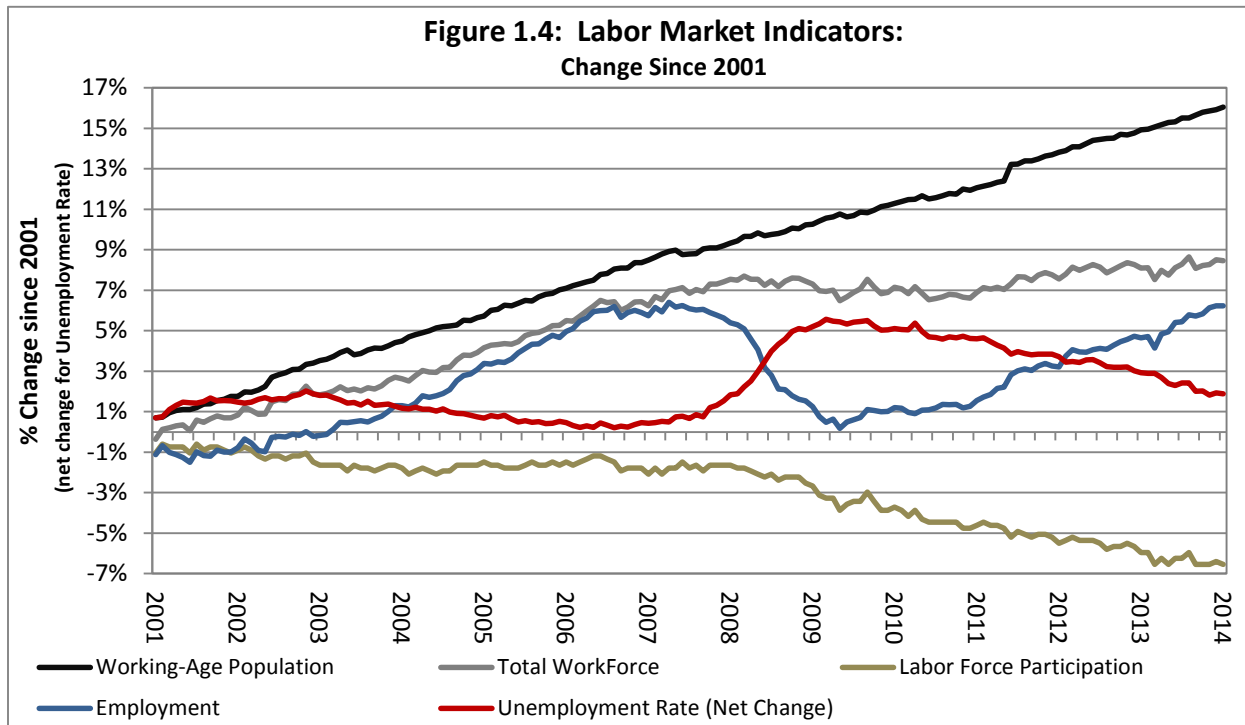


38.0 percent of the unemployed and also down from the peak of 6.7 million in spring 2010, but it is still far above the 1.3 million average for 2005-2007. Also in August, the average duration of unemployment was 31.7 weeks, which is off the record high of 40.9 weeks in November 2011, and is down from 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 participation<sup>2</sup>, 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, that is 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 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.

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



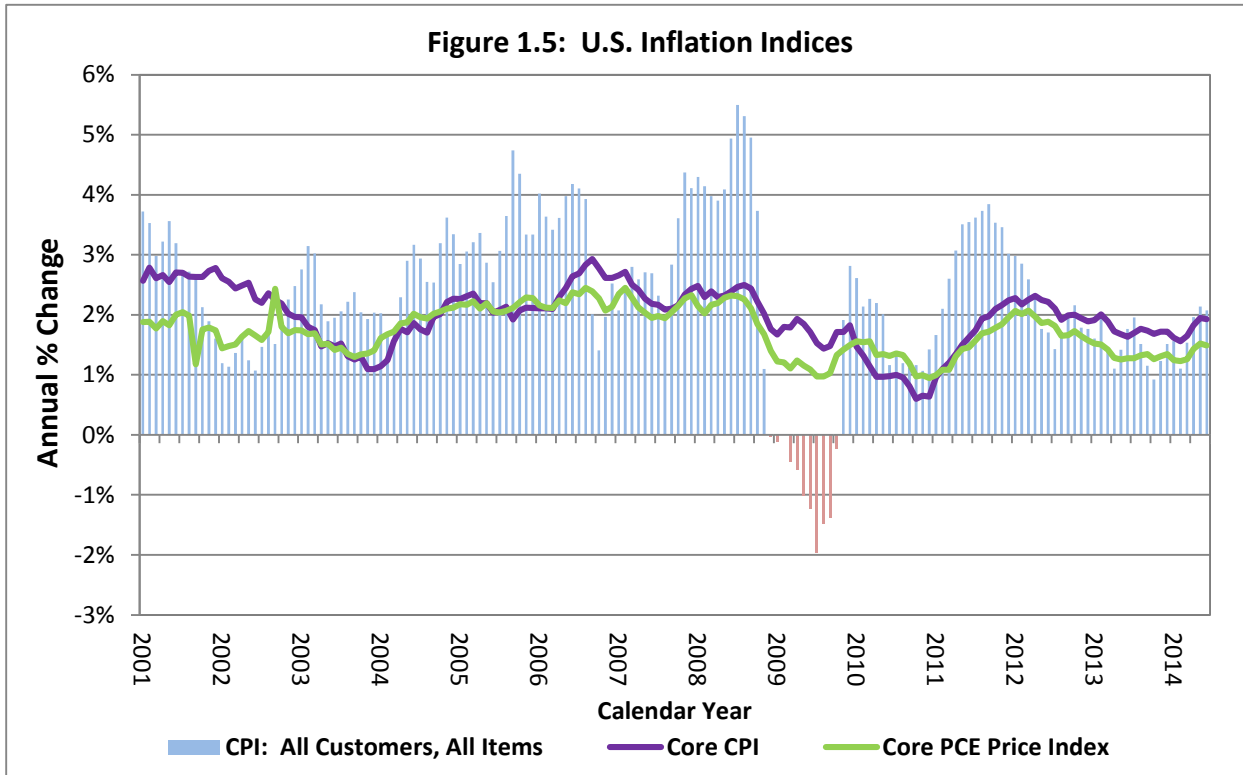
In general, analysts predict that on average over 200,000 jobs will be created per month in 2014 and 2015. Unfortunately, FEA notes that this will create around 5.2 million jobs in that time, while the U.S. population will have increased by nearly 20 million.

### **Consumption**

U.S. consumer confidence was deeply shaken in the recession and people cut back on consumption. Real personal consumption peaked in May 2008 at \$10.1 trillion and fell to a low of \$9.8 trillion in June of 2009<sup>3</sup>. Since October 2009, real personal consumption has been generally rising and in July 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, etc. The consumer sentiment index reached a low of 55.3 in November of 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 consumer sentiment has strengthened slowly and the preliminary index for September stands at 84.6.

<sup>3</sup> Measured in chained 2009 dollars.



## Inflation

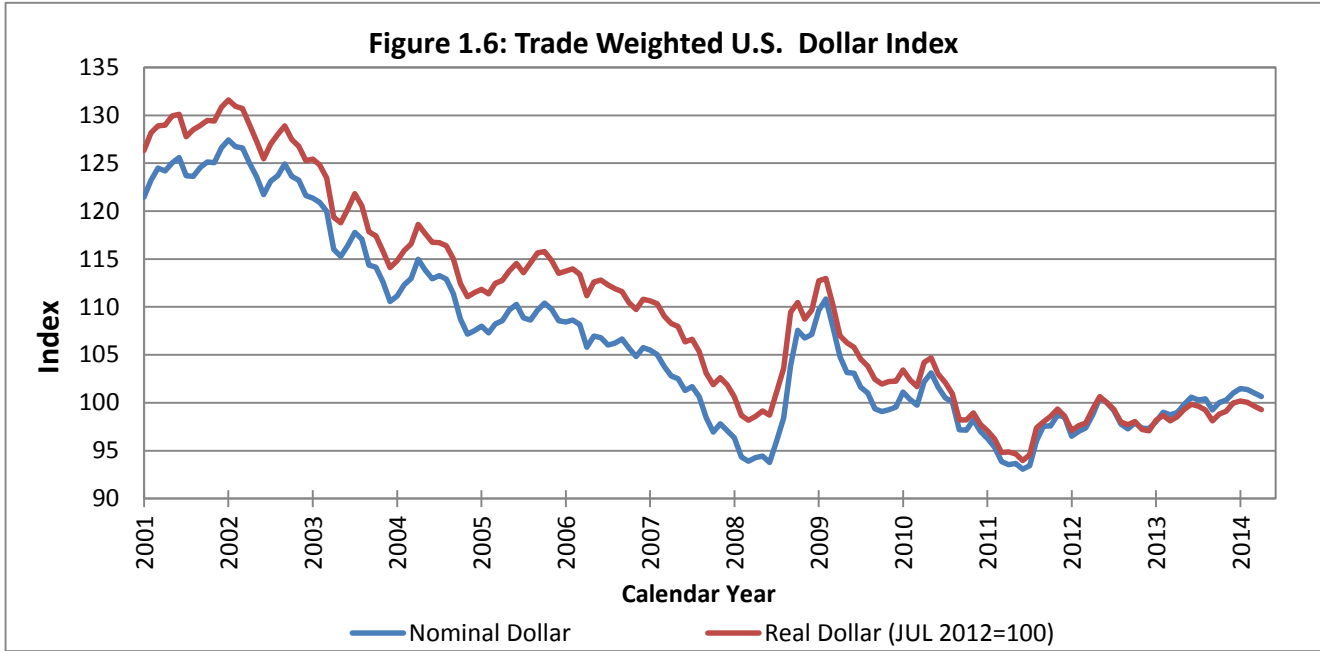
*The economy has made considerable progress in recovering from the largest and most sustained loss of employment in the United States since the Great Depression. These developments are encouraging, but it speaks to the depth of the damage that, five years after the end of the recession, the labor market 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 the “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. Ten-year U.S. Treasury bonds averaged 2.4 percent in August.

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 4.12 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 continue “quantitative easing” to stimulate economic recovery.<sup>4</sup> In its basic form, quantitative easing injects money into the economy and lowers long-term interest rates through the purchase of bonds and other investment vehicle with longer maturities.

Quantitative easing is one of the unconventional monetary policies undertaken by the FOMC in an attempt to stimulate the economy. The FOMC is the monetary policy-making body of the Federal

<sup>4</sup> 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.

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Reserve System and is tasked with, among other things, encouraging full employment while managing inflation rates. Traditionally, the FOMC pursues these goals through changes in interest rates, which affect the incentives of individuals and businesses to save or spend money. Generally, higher interest rates make it more expensive to borrow money and create an incentive to save money, which can help cool down an overheated economy and lower inflation. Alternatively, lower interest rates make it less expensive to borrow and can encourage business expansion, which generally increases inflation.

Unfortunately, given the situation the economy is in, the FOMC has reduced interest rates to nearly zero and has hit the ‘zero bound’ where further interest rate reductions are implausible. When faced with this the Fed has tried more unconventional, and generally controversial, monetary policy measures. The first policy was targeted assistance to financial institutions, through the Troubled Asset Relief Program (TARP) and other policies. This was largely successful at stabilizing the financial system, but was unable to spur economic growth, so the FOMC has been using its quantitative easing policy.

### *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 spur foreign demand and push up prices for logs and geoducks.

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## World Economy

### *Europe*

Most forecasts for the U.S. economy cite the ongoing European 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 first half of 2014 saw EU GDP grow by 1.6 percent year-on-year (at current prices). EU 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. This year inflation in the EU has been 0.3 percent, a five-year low. The problem has become severe enough for a 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.

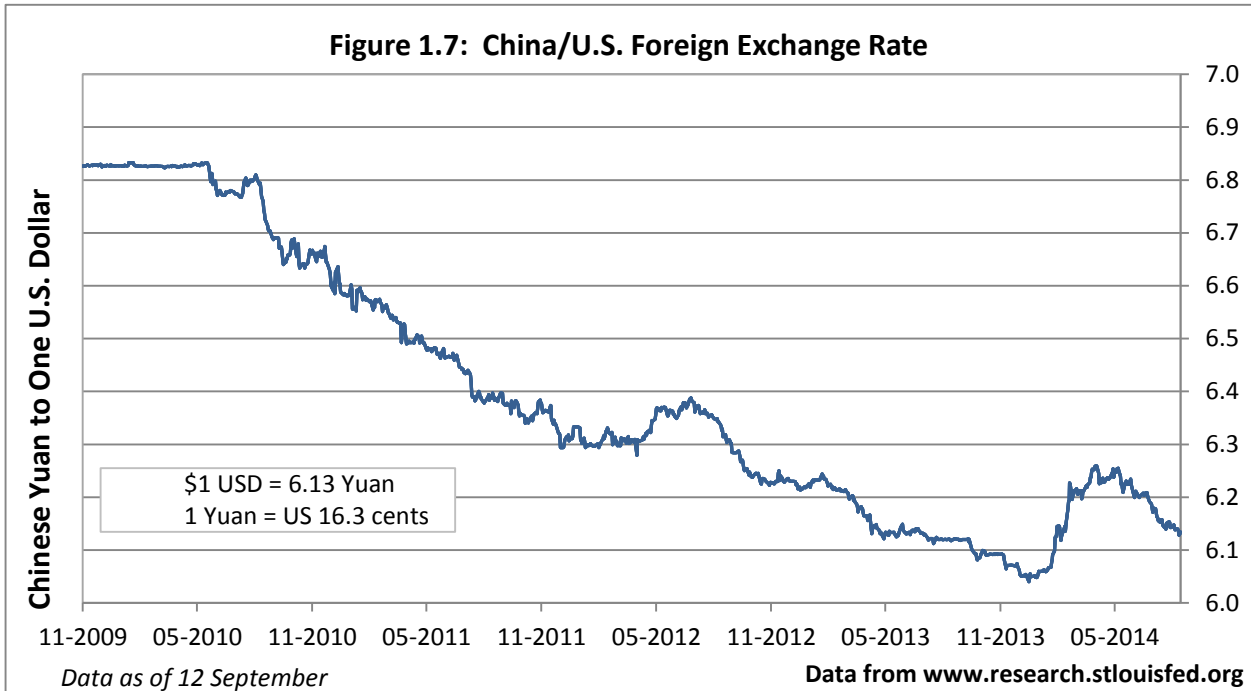
Weakness in Eurozone economies means reduced demand for U.S. exports as well as continued difficulties in addressing their sovereign debt and banking crises. There are continuing questions about whether government austerity and central bank policy are worsening or helping to repair the European economic 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 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.

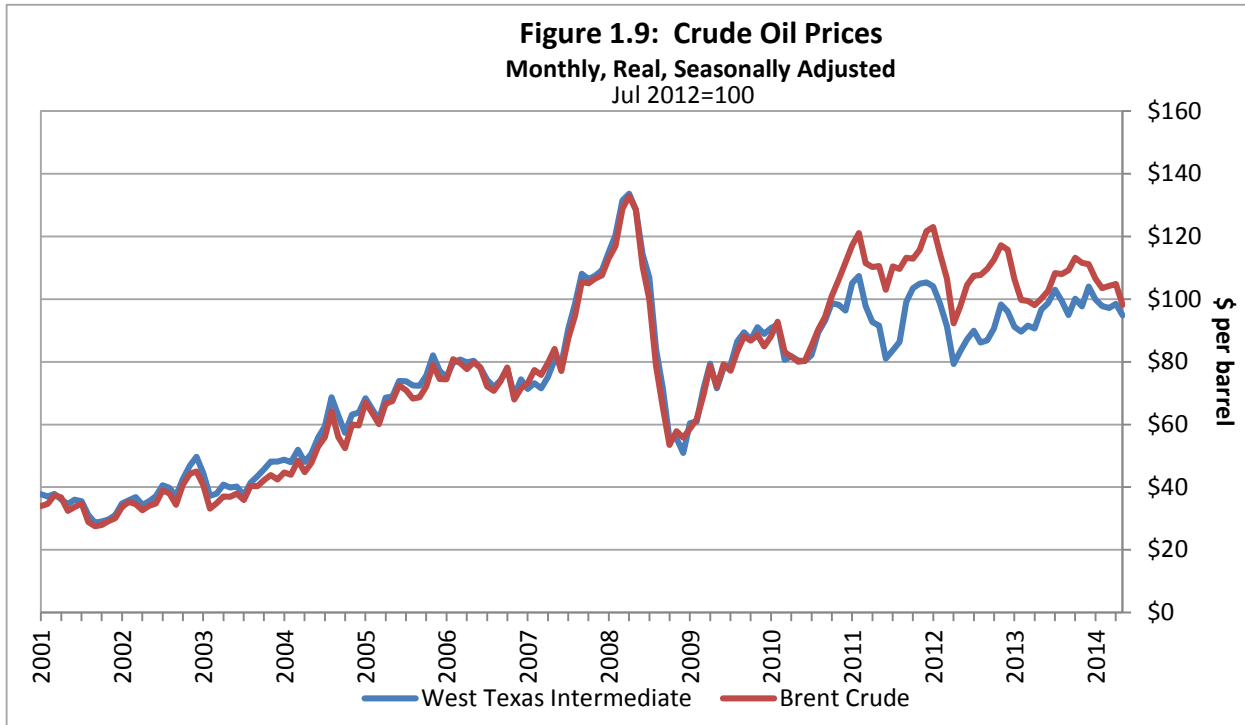
The monetary and fiscal policies enacted by China to counter the financial crises have, over the past five years, alternately led to high inflation, high unemployment and unbalanced investment in infrastructure and productive capacity. In the near term, there are a number of risks to China's continued 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 significant a 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 recently 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.

### *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.

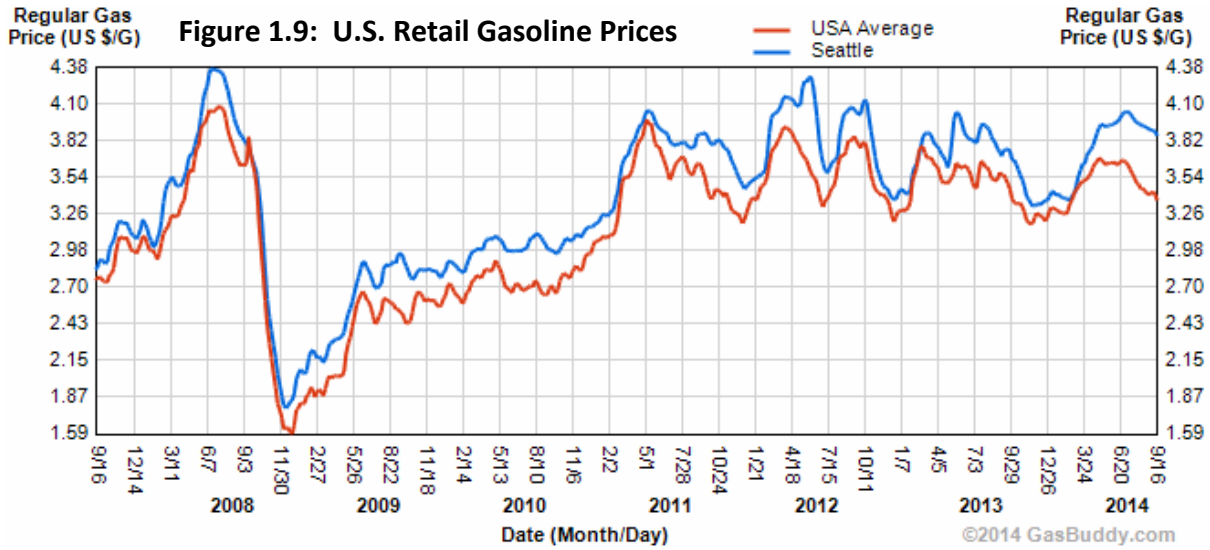


While Abenomics was initially well received by the Japanese, consumer confidence has since fallen to the lowest point since Abe took office, due to disappointing GDP growth and a number of risks to the policy. First quarter 2014 GDP surged higher than expected to an annualized 6.7 percent, but this appeared to be on the back of a surge in consumer spending to avoid a sales tax increase that came into effect in April. That sales tax, as well as a fast growing trade deficit and a drop in the exchange rate (which helps manufacturers but hurts households) are the major risks to the continued success of Abenomics. Indeed, in the second quarter annualized GDP contracted by 6.8 percent. With these two quarters, the Japanese economy is virtually the same size, in real terms, as it was in mid-2013.

### ***Petroleum***

Crude oil prices and supply play an important role in the world and U.S. domestic economies, since crude oil and its derivatives affect production, transportation, and consumption. 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 indicators, the Brent Crude and West Texas Intermediate<sup>5</sup>, shows that 2013 featured the most dramatic crude oil price drop since 2008. 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

<sup>5</sup>As 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.



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 (**Figure 1.9**).

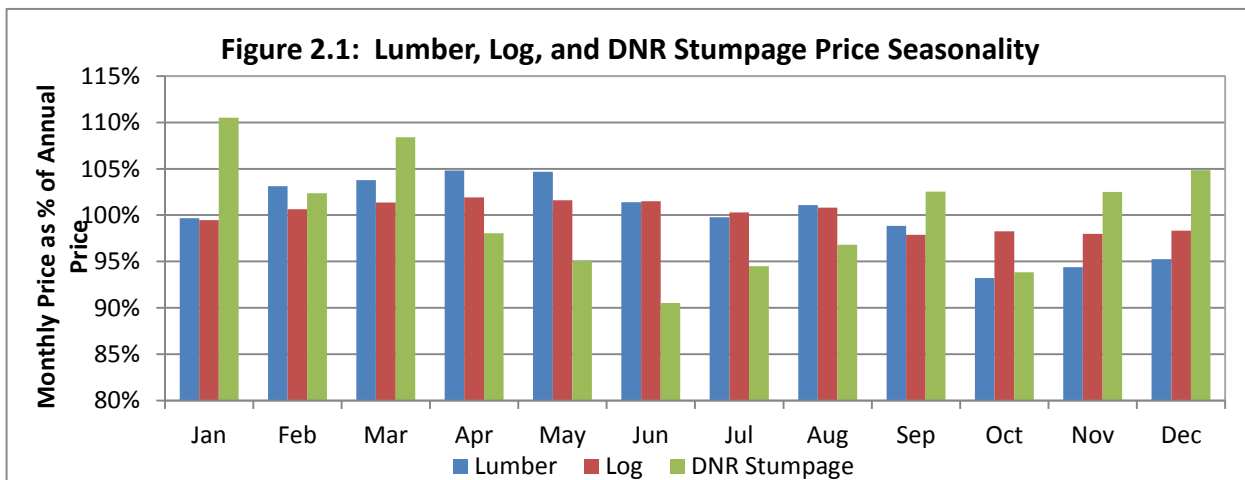
## Part 2. Log, Lumber and Stumpage Prices

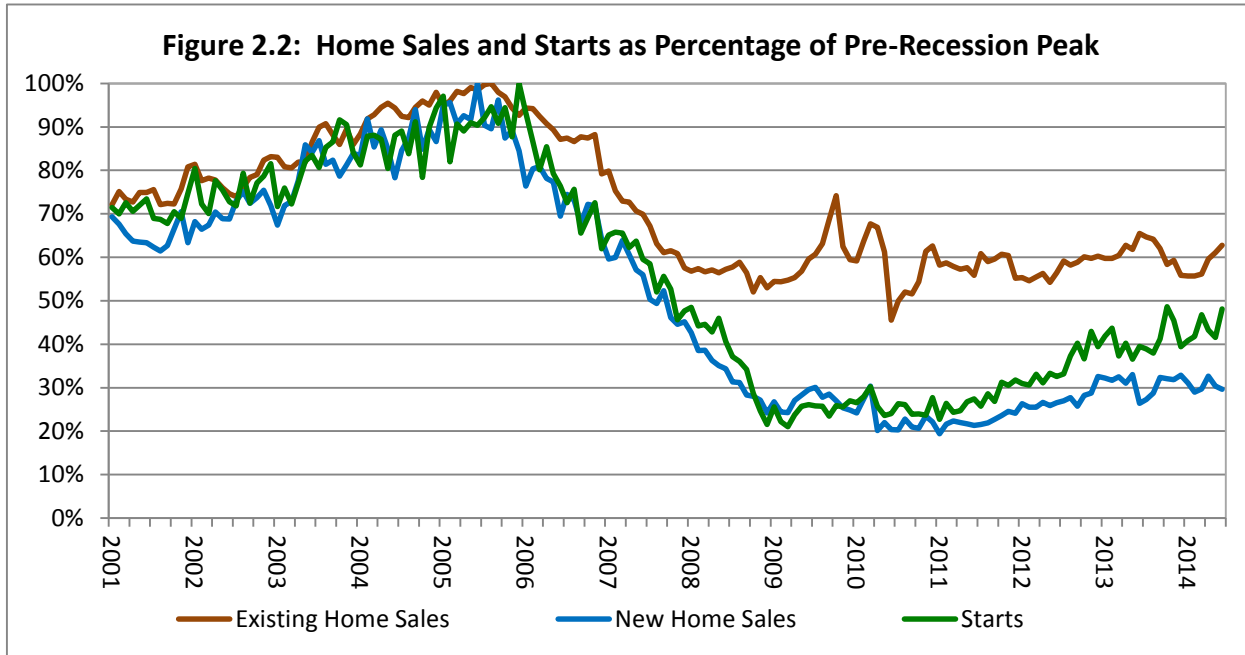
This chapter focuses on specific market factors that affect timber stumpage prices and overall timber sales revenues generated by the Washington State Department of Natural Resources (DNR). Over the past decade, timber stumpage revenues have constituted over 75 percent of DNR's total revenue. DNR is, 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 further 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 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.

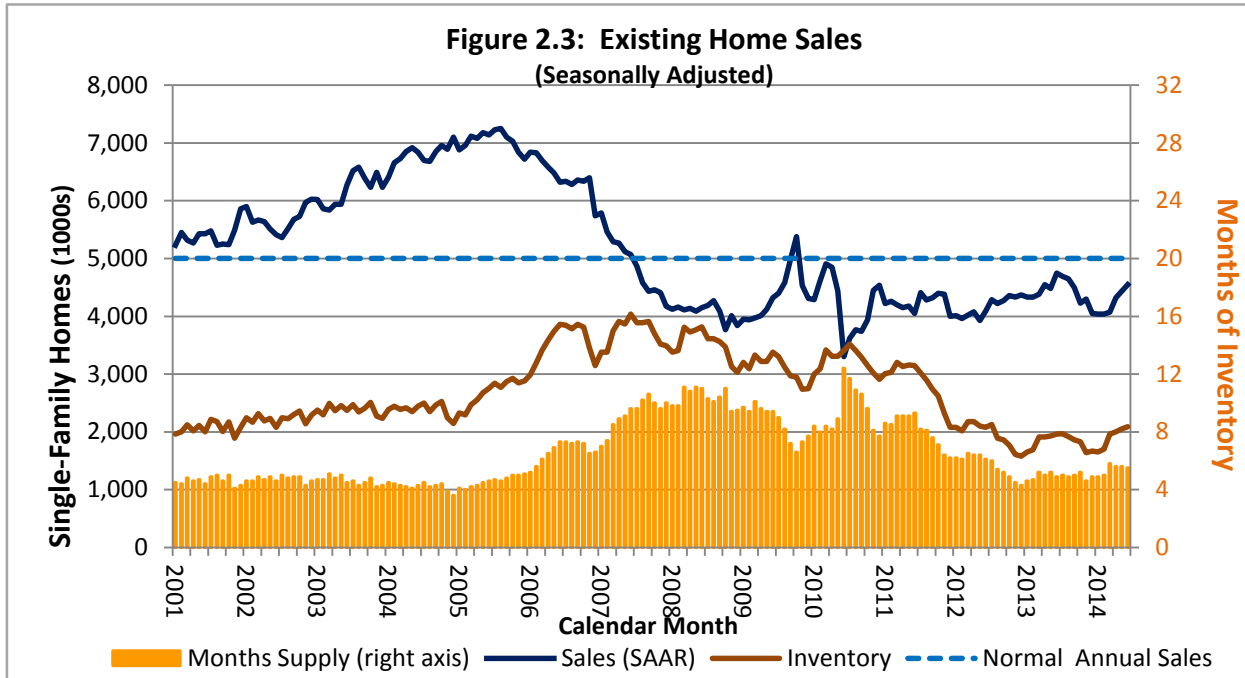
## U.S. Housing Market

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 a modest recovery in the U.S. housing market is underway. **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, and continued weak employment numbers.





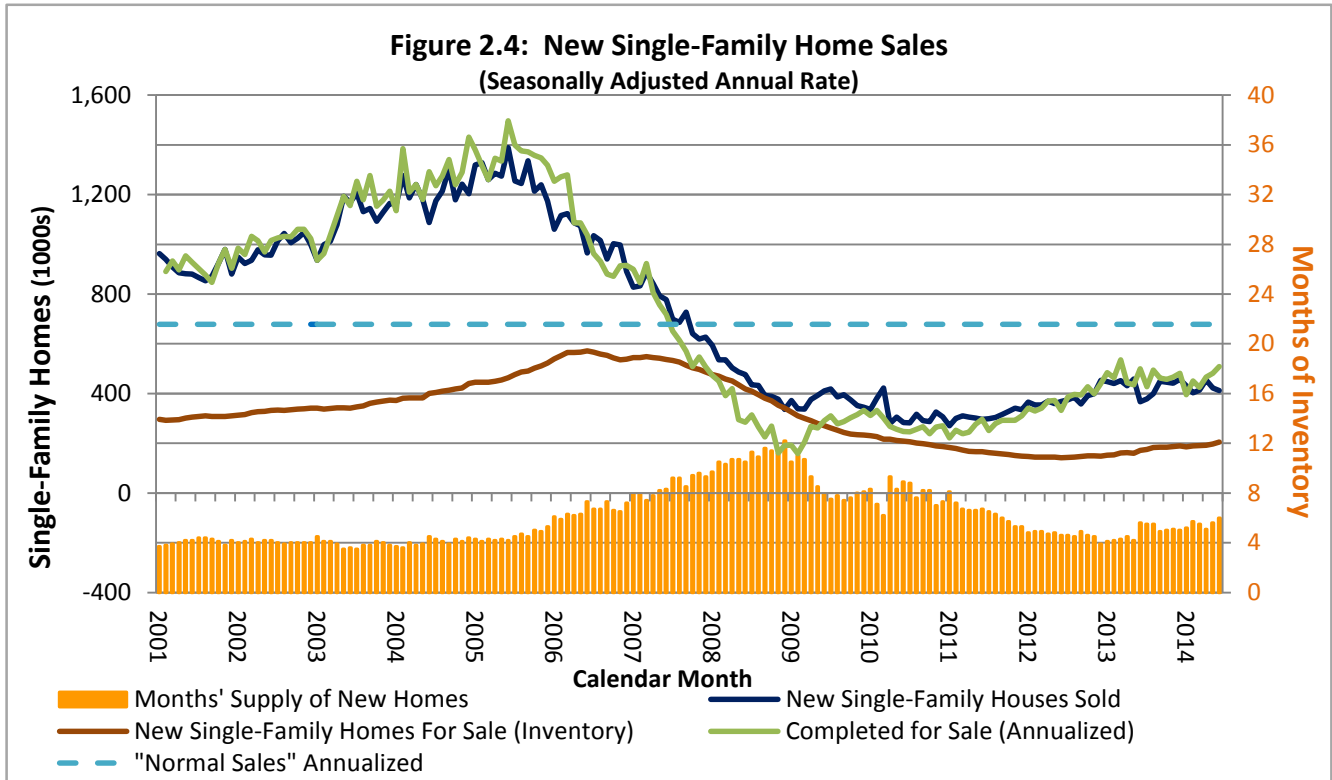
### Existing Home Sales

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 4.55 million in July 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 continues to decline nationwide, 24 percent of sales were distressed in 2012, down to 17 percent in 2013 and most recently, only 9 percent of sales for July were distressed, the first single-digit percentage since 2008.

The inventory of existing homes peaked at 4.0 million existing homes 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 2.09 million homes in inventory in July. 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 an apparent low of 4.3 months in January 2013. In July 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 to the market 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 been 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 July 16 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 now bottomed out, reaching a low of 142,000 homes in July 2012. In July 2014, inventory had risen to 205,000 homes—still a low number historically. Inventory 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 seems to be 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

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2013, the months' worth of inventory has averaged around 5.3 months, varying by less than half of a month—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. Previously, CoreLogic tracked shadow inventory, but has discontinued its reports. CoreLogic reported in April (the most recent month the data was reported) that the shadow inventory had declined to 1.7 million housing units, down 43 percent from its January 2010 peak of 3.0 million. In June 2014, there were 648,000 homes in some stage of foreclosure, compared to 1 million in June of 2013. 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.

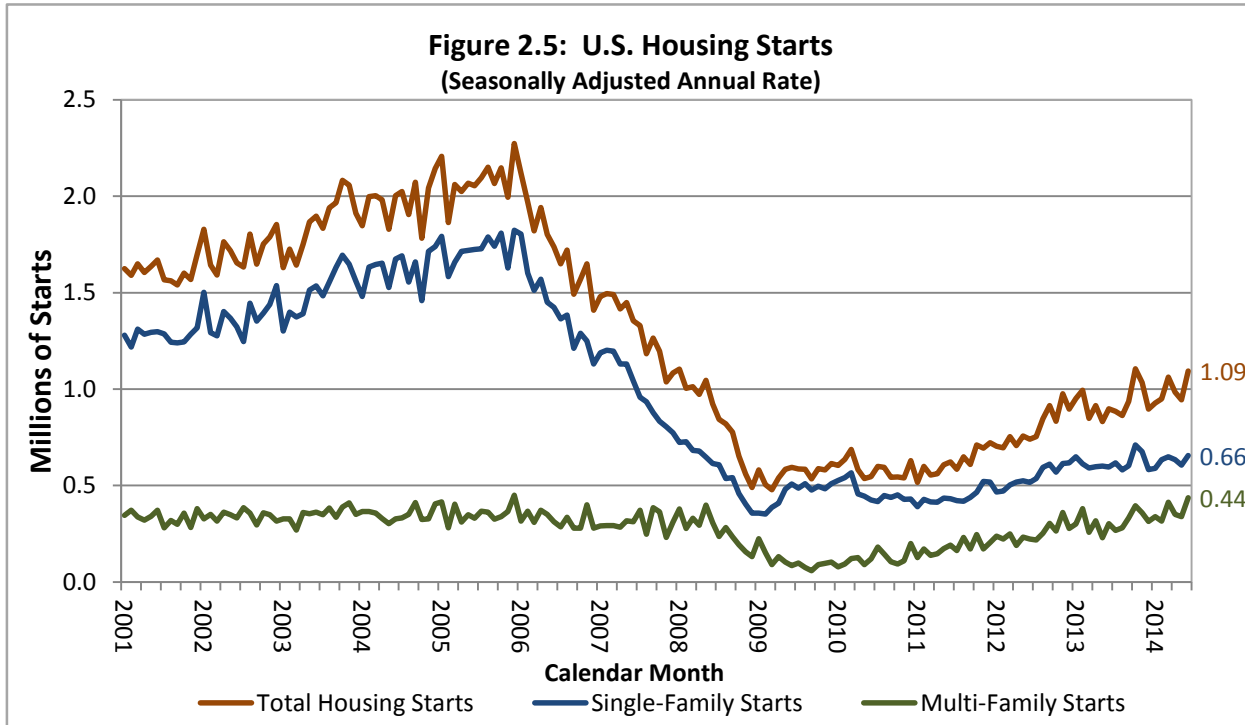
### ***Household Formation***

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 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.

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 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.*

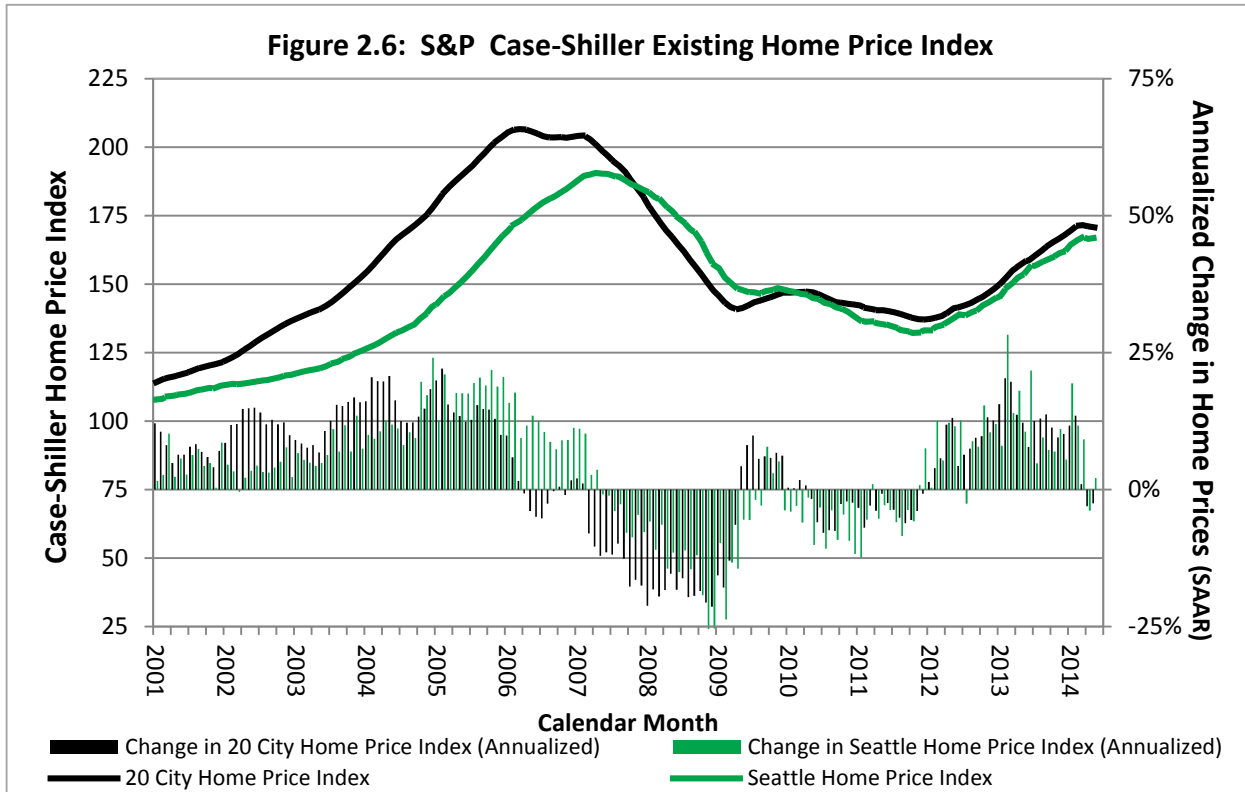
*Kevin Kelly*

*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 (seasonally adjusted annual rate), the all-time record low since the Census Bureau began tracking housing starts in 1959. New housing starts averaged 931,000 (SAAR) for 2013, a level not seen since mid- 2008. In July, housing starts again topped one million (SAAR), after pulling back from over a one million starts (SAAR) in April. However, single-family housing starts are still below their November and December numbers—all of the growth back to over a million starts 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.

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 622,000 in 2013. Multifamily starts for 2012 averaged 247,000 on an annualized basis, compared with the average of 148,000 in the three-year 2009-2011 trough. In July, there were 656,000 single family and 437,000 multi-family starts (SAAR).

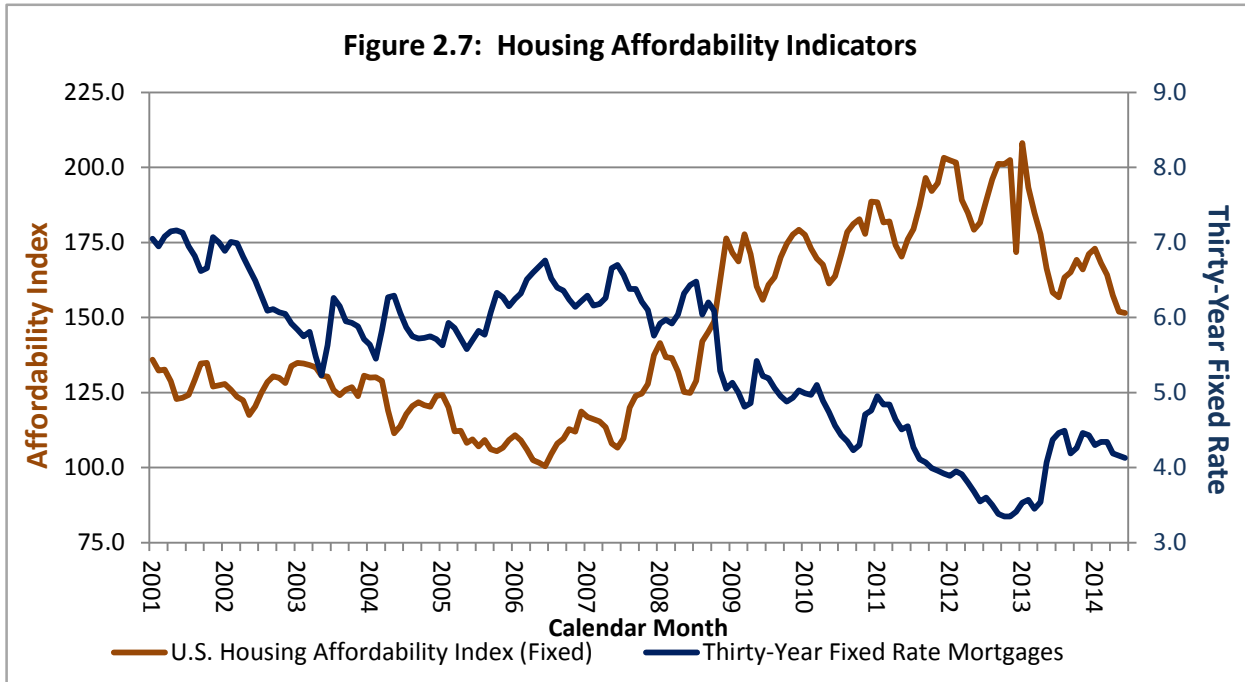


Homebuilder confidence in the market for newly-built single-family homes, as measured by the Housing Market Index (HMI), reached its highest level since November of 2005, at 59. An HMI above 50 indicates that homebuilders’ outlooks are generally optimistic. This is the fourth consecutive monthly increase in the HMI and the third month that the index has been above 50. The HMI averaged 15-16 for years 2008-2011, when the housing market was the most depressed, and remained below 50 until mid-2013.

While the longer-term outlook for housing starts is optimistic, in the short term household formation will continue to be constrained. FEA reduced their projected housing starts from 1.05 million units for 2014 in their May forecast to 0.99 million units in their July forecast— this is a further drop from their January forecast of 1.11 million units.

**Housing Prices**

U.S. housing prices have remained flat since March, stalling 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 March 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. The most recent release includes data through June 2014 and shows a year-over-year increase of 7.4 percent. With the recent increase in prices, the average existing house in the U.S. in June was worth 83 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 \$212,400, up strongly from the



revised first quarter estimate of \$191,100. This is also almost 20 percent higher than 2012’s fourth quarter median price estimate of \$178,900.

Seattle house prices are following a similar trajectory, having increased 6.8 percent year-over-year as of June. 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 June, the average Seattle home was worth 88 percent of its peak price.

The increase in prices should 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 remaining ‘underwater’ to avoid taking a loss or damaging their credit.

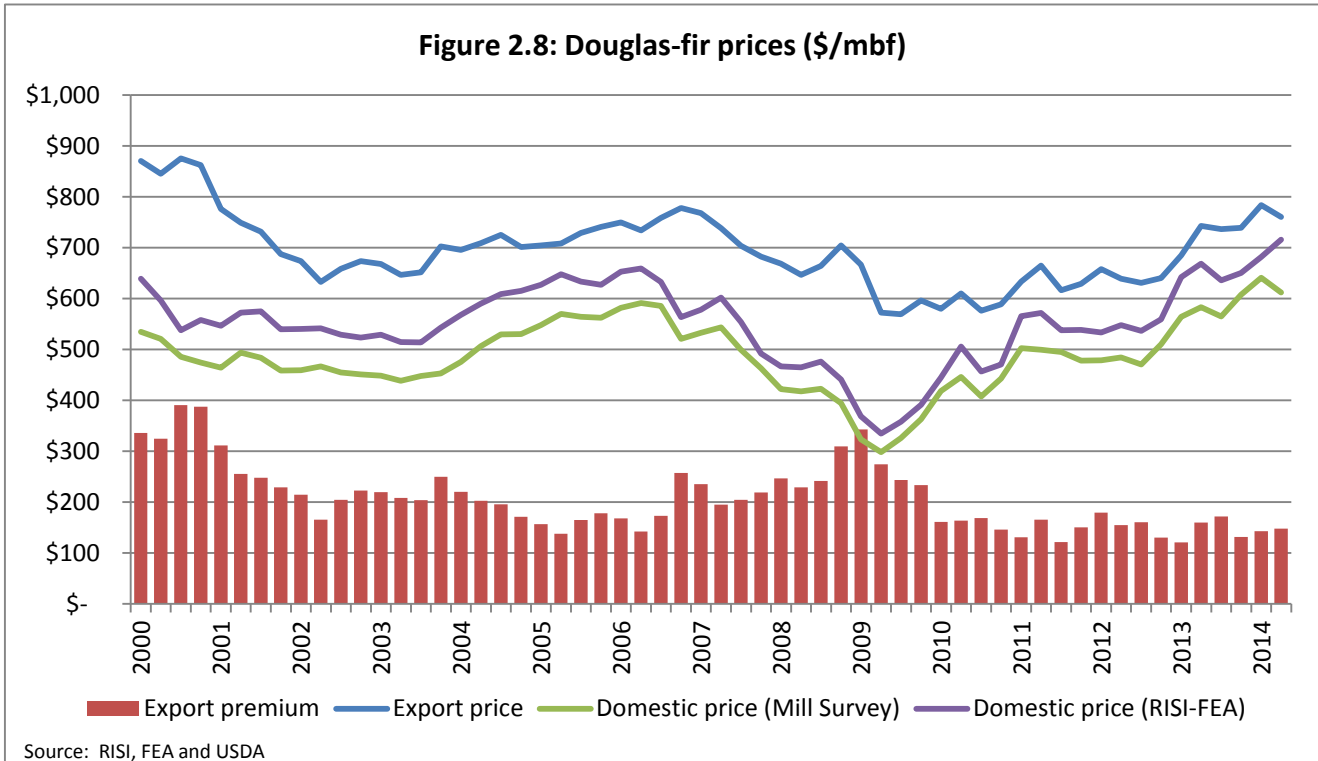
The Case-Shiller index is a three-month moving average that shows the changes in value of houses when they are resold in arm-length transactions. As a moving average some volatile changes get smoothed out. Additionally, the index presented in **Figure 2.6** is the *seasonally adjusted* moving average,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



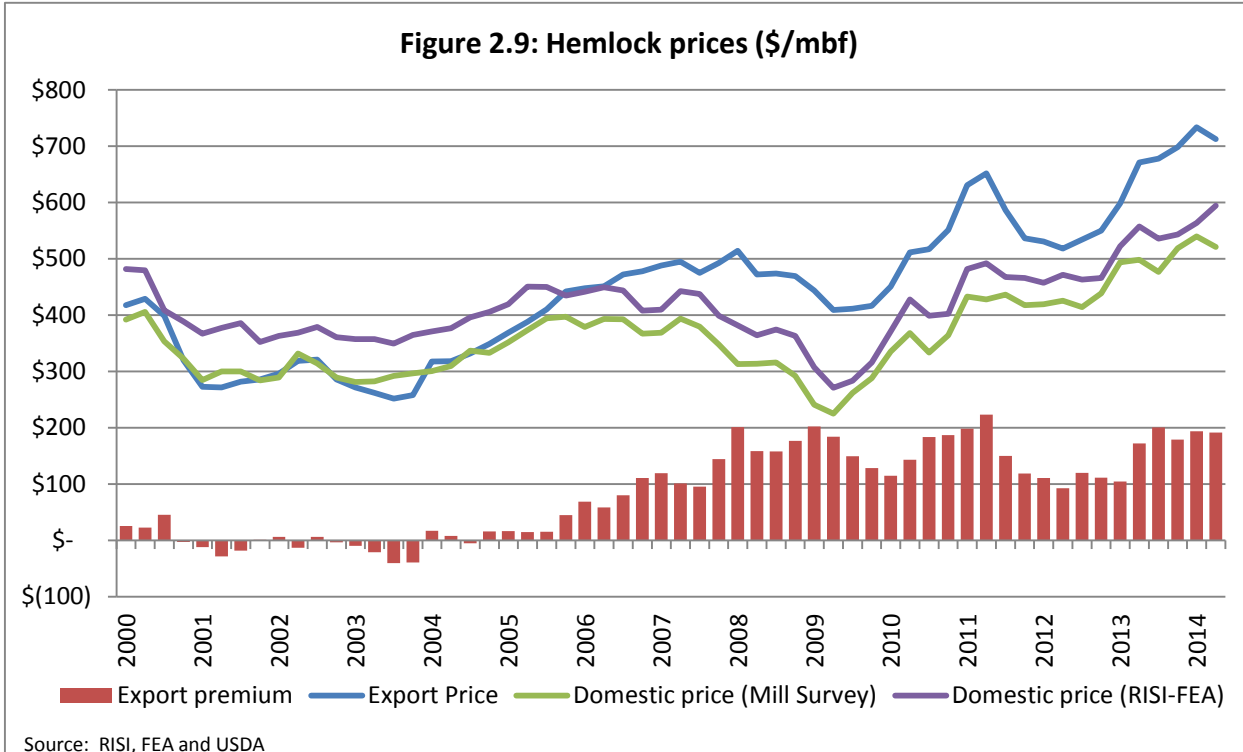
based on the relationship between the median home price, the median family income, and the average mortgage interest rate. A higher index value reflects greater household purchasing power and therefore improved affordability of the typical home, though it says nothing about whether the median income 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 has since fallen from a recent peak of 173.5 in February to 153.8 in July (the newest point available). The income required to purchase a median-priced house (\$212,400) has increased year-over-year from \$35,664 in the second quarter of 2013 to \$40,464 in the second 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 \$64,751, very similar to the average of \$63,000 in 2008 and \$61,000 in 2007. In short, median incomes have stagnated.

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.<sup>6</sup>

<sup>6</sup> “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 108<sup>th</sup> 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,



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

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

## **Production Capacity**

Lumber mills have developed an excess capacity because of layoffs and shift reductions caused by reduced production during the Great Recession. Capacity utilization<sup>7</sup> in the U.S. Coast region (western Washington and western Oregon) softwood lumber mills dropped to 57 percent in the bottom of the U.S. wood products industry in 2009. In 2013, production capacity increased by two percent in the latter half of the year as mills responded to higher prices by increasing investment. Broadly, capacity is expected to expand by three percent per year in 2014-15. In the meantime, lumber prices are expected to be especially volatile as mills and the supply chain adapt to increased lumber demand and production.

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

## **Timber Supply**

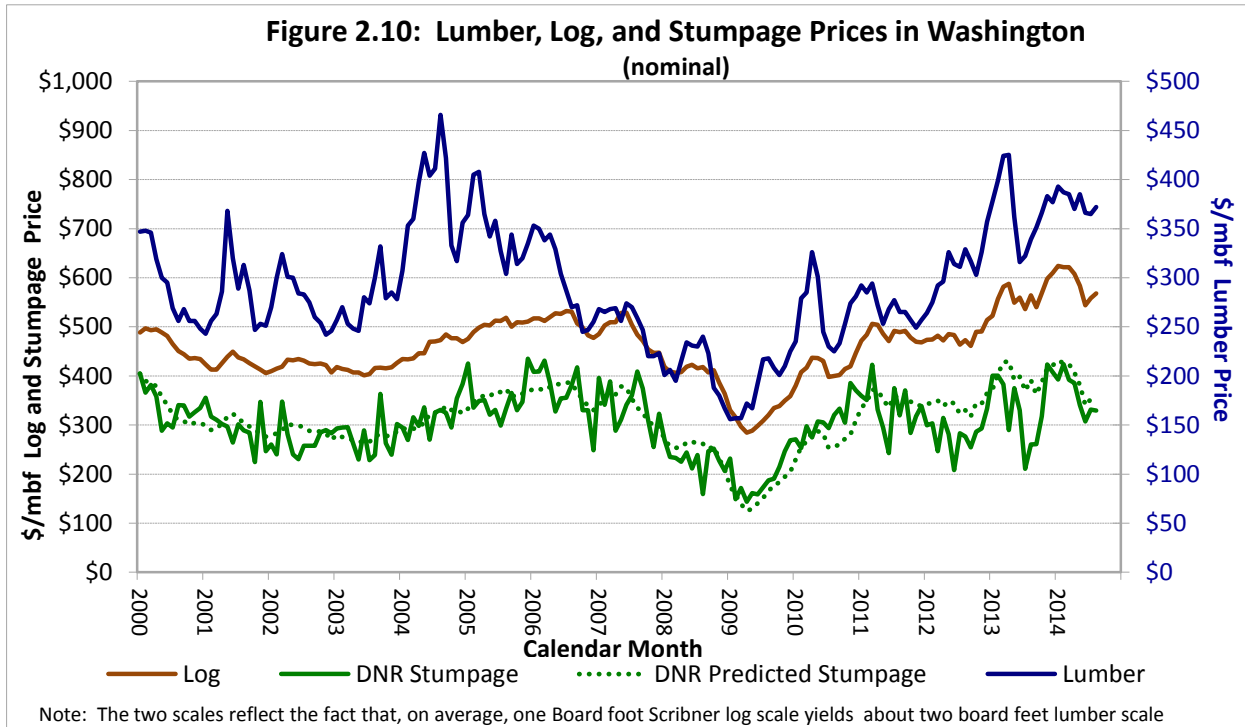
Timber supply is up in the Coast region, as well as in the competing U.S. Inland and South timber regions, because timber landowners reduced harvests during the recession in response to low prices. Although timber growth has exceeded timber harvest since the beginning of the recession, thereby increasing 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 resources<sup>8</sup>. 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. FEA forecasts that British Columbia's timber supplies will increase in 2014 before

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<sup>7</sup> Capacity utilization is the percentage of potential capacity that is actually used by a mill, or effective capacity 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.

<sup>8</sup> FEA Quarterly Timber Forecast Service, Q3 2013



declining by two percent per year thereafter. The supply from Canada will be further diminished by Quebec’s allowable annual cut being reduced by implementation of Bill 57 in 2013 and may be additionally reduced by Plan Nord.

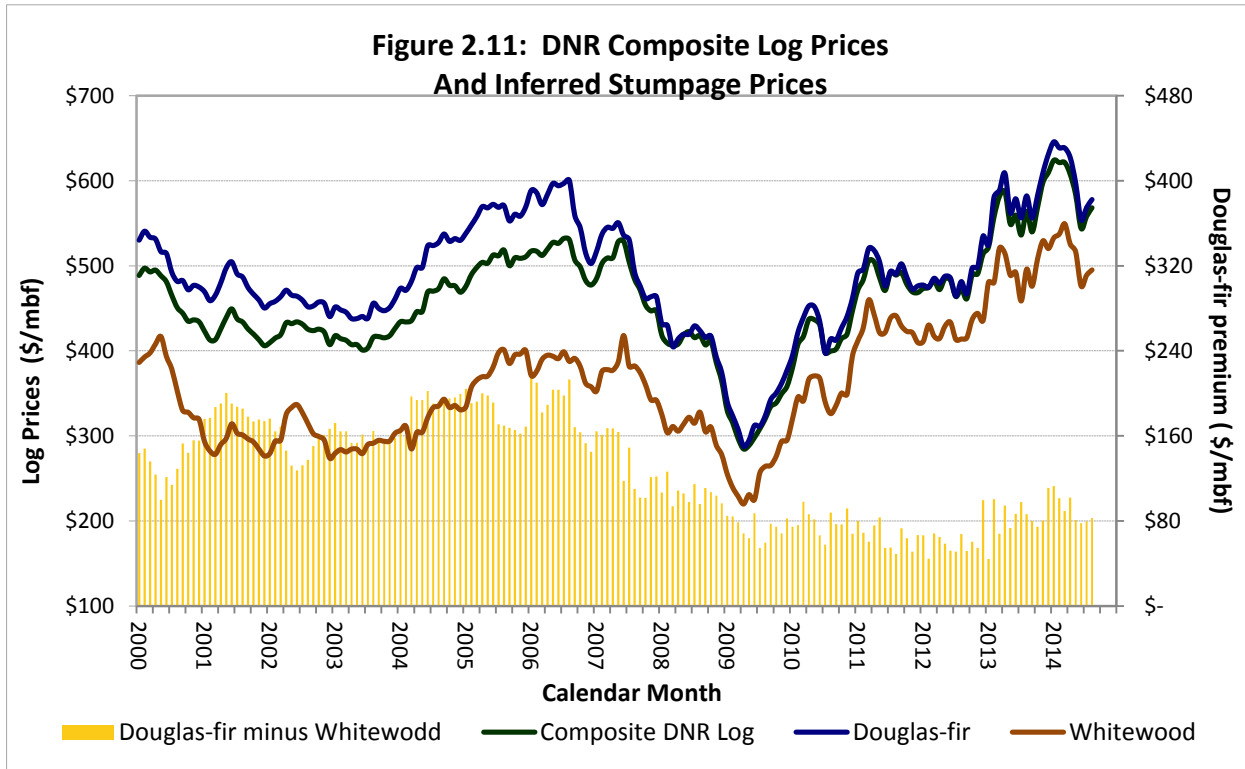
Imports increased 30 percent in 2013 and as the domestic market strengthens, offshore imports of softwood lumber are likely to continue to grow. FEA expects that imports will increase by about 50 percent per year between 2014 and 2018, totaling over three billion board feet in the latter year. Decreasing Canadian timber supplies in the long term will likely outweigh the effects of the increase in supply from the U.S. Coast region, such that overall supply will be diminished.

## 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. Lumber price growth is likely to remain flat over 2014 because mills and dealers are now better prepared to meet increased demand; they are unlikely to be surprised by increased lumber demand like they were in 2013. However, analysts note that mills have been very slow to increase capacity with the



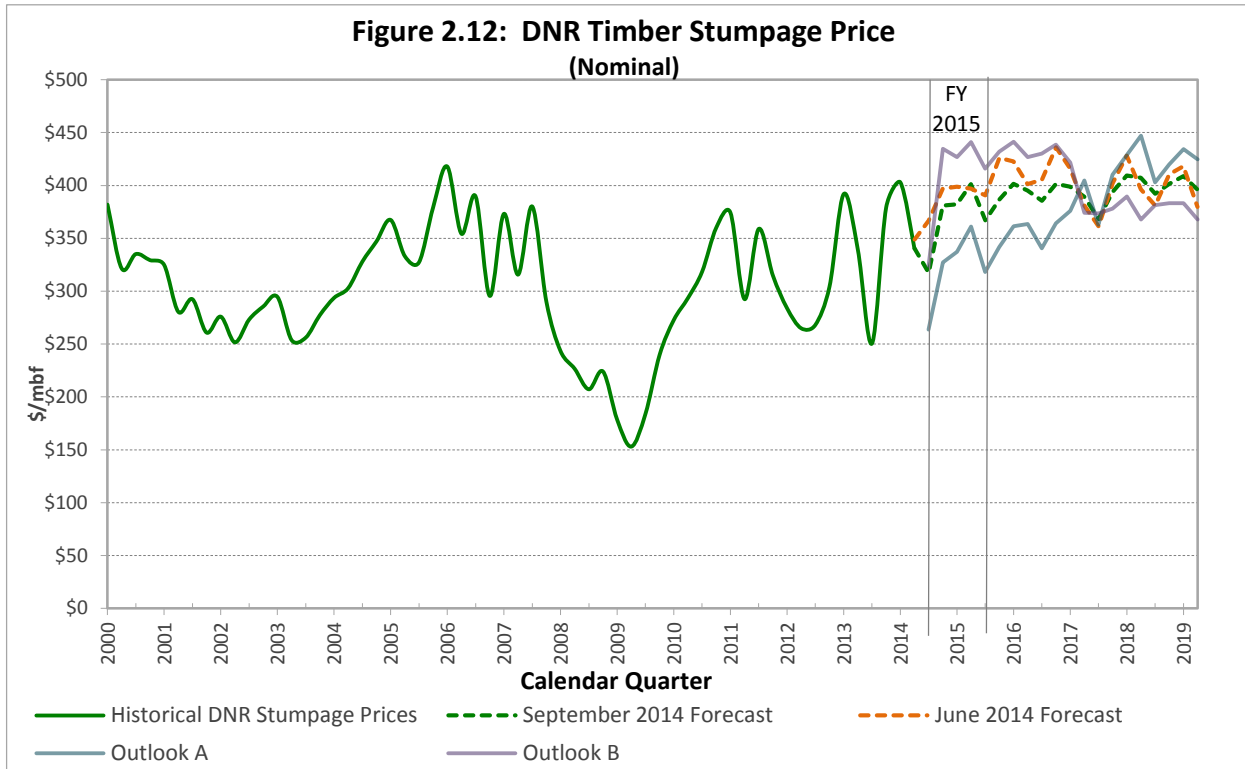
slow housing recovery. A sudden or unexpected increase in housing demand could see another period of price fluctuations as mills are again caught flat-footed. More generally, analysts expect that lumber prices will climb through 2015-2017 on the back of stronger housing markets, constraints on capacity, and more cautious inventory positions.

**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 has fallen back and was \$568/mbf in August.

**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 \$330/mbf. This is much lower than the forecast annual price of \$380/mbf, primarily due to a high proportion of thinning sales in the first two 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),

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and our updated price outlook<sup>9</sup> (green dashed line). There are modest 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. 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 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 reflects an assumption that demand will outpace supply through late 2014 and that prices will increase from the fourth quarter 2014 through the end of 2016 to a range between \$400/mbf and \$450/mbf. 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. Furthermore, the ascent of our forecast stumpage prices slows down in outlying years to account for increasing uncertainty, particularly in the quality of timber mix brought to auction.

**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 is 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.

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

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## 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 and holds it until the sale is completed. Revenues are collected at the time of harvest (removal). The initial deposit is credited as the last 10 percent of timber is harvested.

Contracts for DNR timber sales sold in FY 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.

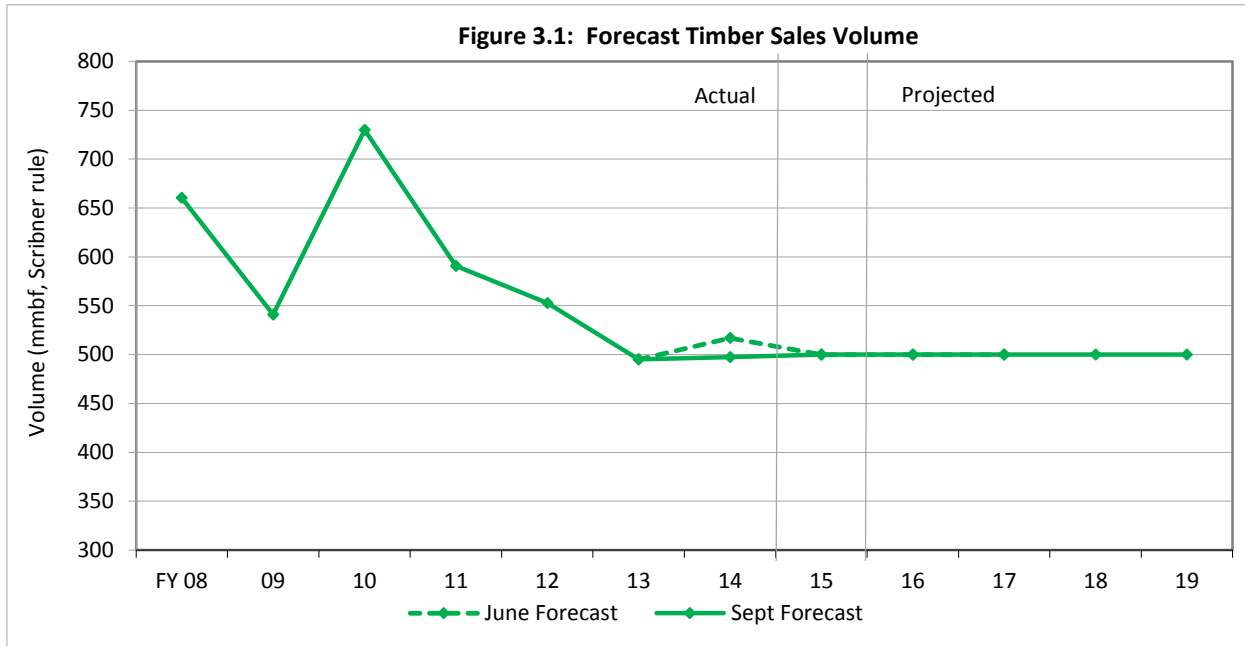
For the purposes of this chapter, timber that is sold but not yet harvested is referred to as "volume under contract" or as "inventory." Timber volume is added to the inventory when it is sold and placed under contract, and it is removed from the inventory as the timber is harvested.

#### ***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 September, DNR had sold 27 mmbf in FY 2015. Projected timber sales volume for the current fiscal year, 500 mmbf, are based on the anticipated new sustainable harvest (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 August, the Department had 578 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 \$177.5million.

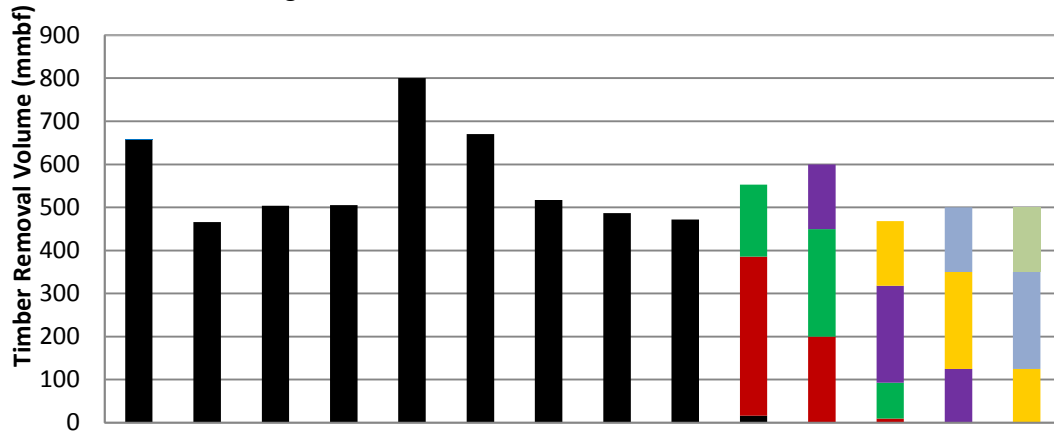
For each Forecast, we survey DNR timber sale purchasers to determine their planned harvest timing for the timber volume they have under contract at the time of the survey. This Forecast’s survey, conducted in the first half of August, indicates that purchasers plan to harvest 370 mmbf, or 64 percent, of the 578 mmbf remaining under contract in the remainder of this fiscal year (FY 2015) and 200 mmbf (35 percent) of the existing inventory in FY 2016. 365 mmbf (65 percent) of the existing inventory in FY 2015 (see **Figure 3.2** for detail).

The survey suggests that a total of about 552 mmbf will be removed in FY 2015: 370 mmbf of sales currently under contract that timber purchasers plan to remove, 16 mmbf that have already been removed and anticipated removals of 167 mmbf from sales yet to occur in the rest of the fiscal year.<sup>10</sup> (see **Figures 3.2 and 3.3**).

<sup>10</sup> The anticipated removals can differ from the purchasers planned removals because the purchaser’s survey excludes sort sales and purchasers with little volume.



**Figure 3.2: Forecast Timber Removal Volume**



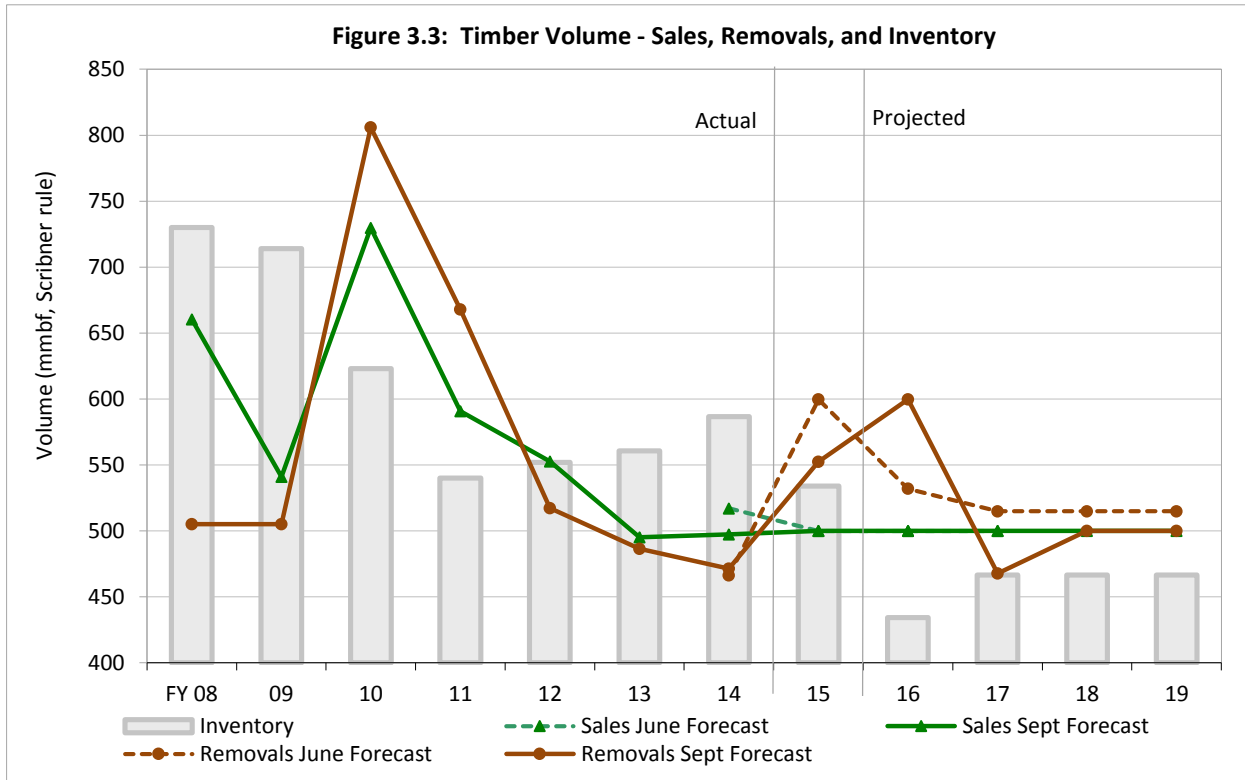
FY	FY 06	07	08	09	10	11	12	13	14	15	16	17	18	19
Total	658	466	504	506	801	670	517	486	471	552	600	468	500	500
Removals to Date	658	466	504	506	801	670	517	486	471	16				
Sales Under Contract										370	200	9		
Sales in FY 15										167	250	83	0	0
Sales in FY 16											150	225	125	0
Sales in FY 17												150	225	125
Sales in FY 18													150	225
Sales in FY 19														150

The level and timing of projected timber removal volumes have changed in this Forecast in response to purchasers’ plans and the lower than expected FY 2014 timber sales volume. FY 2015’s expected harvest is reduced by 47 mmbf. However, FY 2016’s harvest is increased by 68 mmbf, gaining from planned harvests moving from FY 2015 and FY 2017. As a result, projected timber removal volumes for the current biennium, 2013-2015, are decreased by 42 mmbf, around four percent, from the June Forecast. Projected volumes across the 2015-2017 Biennium are increased by 21 mmbf, or around two percent (see **Figure 3.3**).

**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.



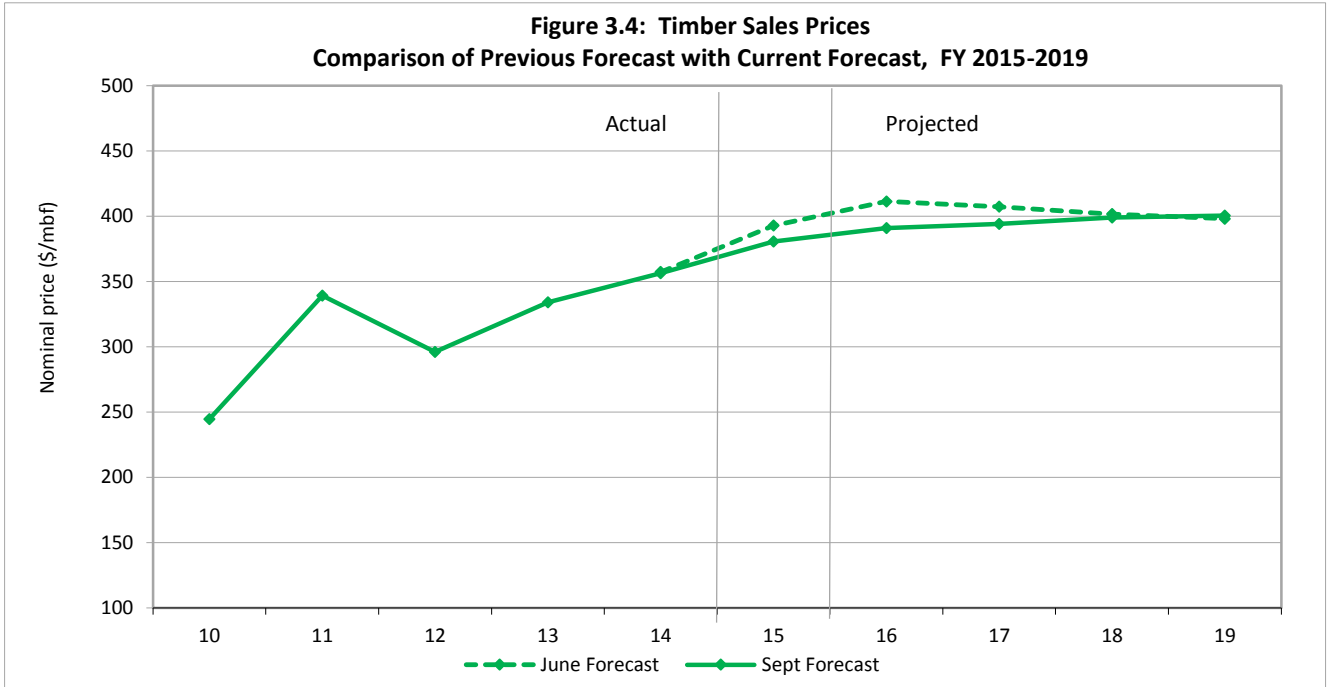
The FY 2015 average DNR timber sales price projection is lowered from \$392/mbf to \$380/mbf in this Forecast, reflecting low prices in the first two months of the fiscal year and a continued weakness in the housing market (**Figure 3.4 and 2.12**). The average sales price through August 2015 is \$330/mbf. 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**

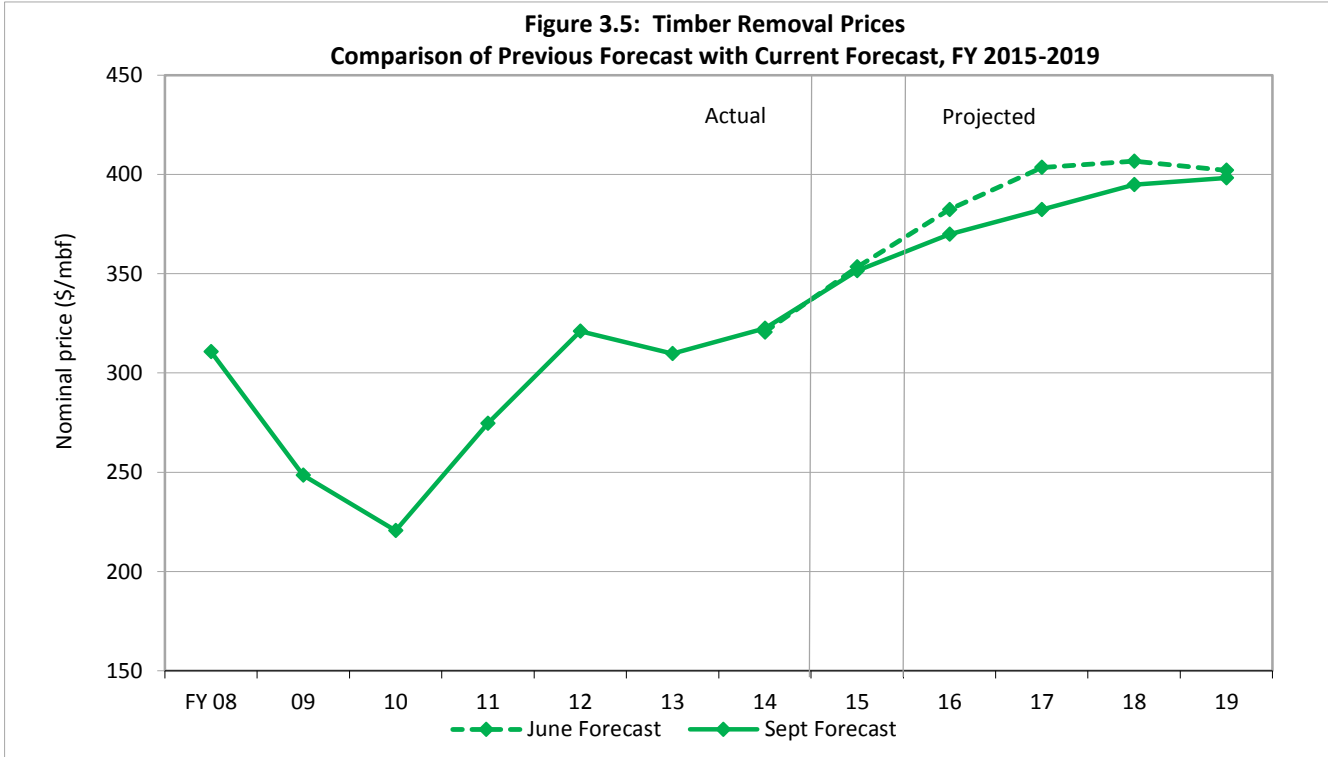
Timber removal prices are determined by sales prices, volumes, and harvest timing. They can be thought of as a moving average of previous timber sales prices, weighted by the volume of sold timber removed in each time period. The removal volumes used to calculate the weights are shown in **Figure 3.2**. 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**). **Figures 3.4 and 3.5** shows the small adjustments to the timber sales and removal prices, in FYs 14 and 15, and the larger changes to projected sales and removal prices in the FYs 16 and 17.

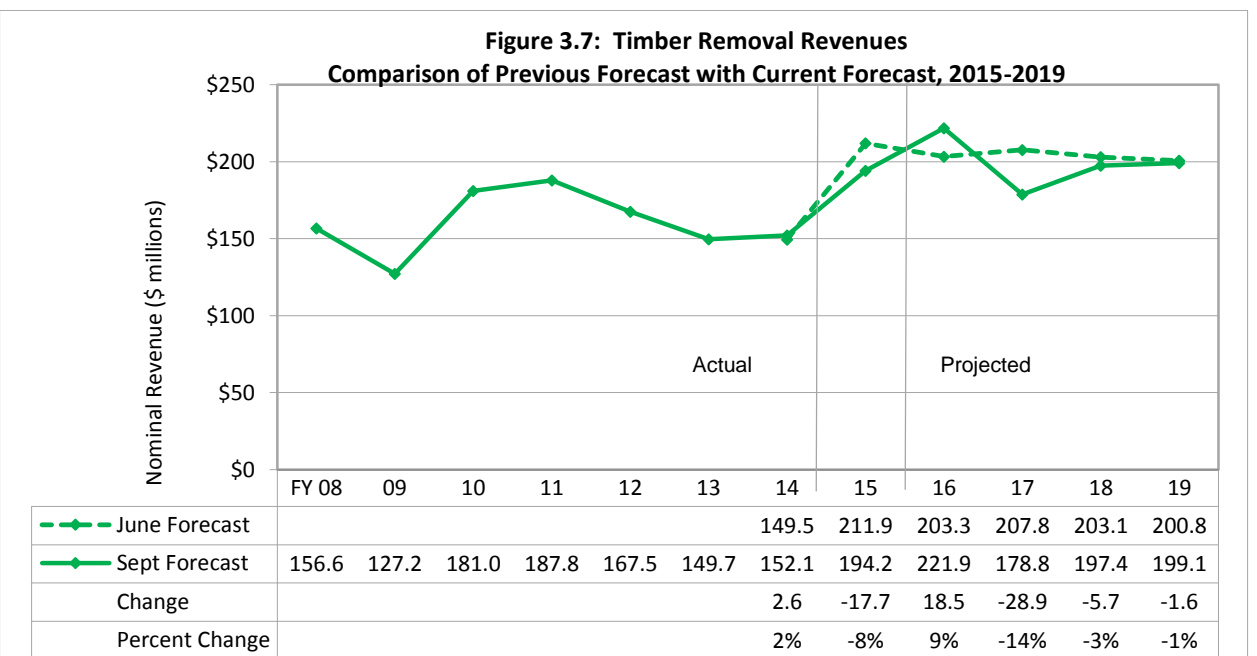
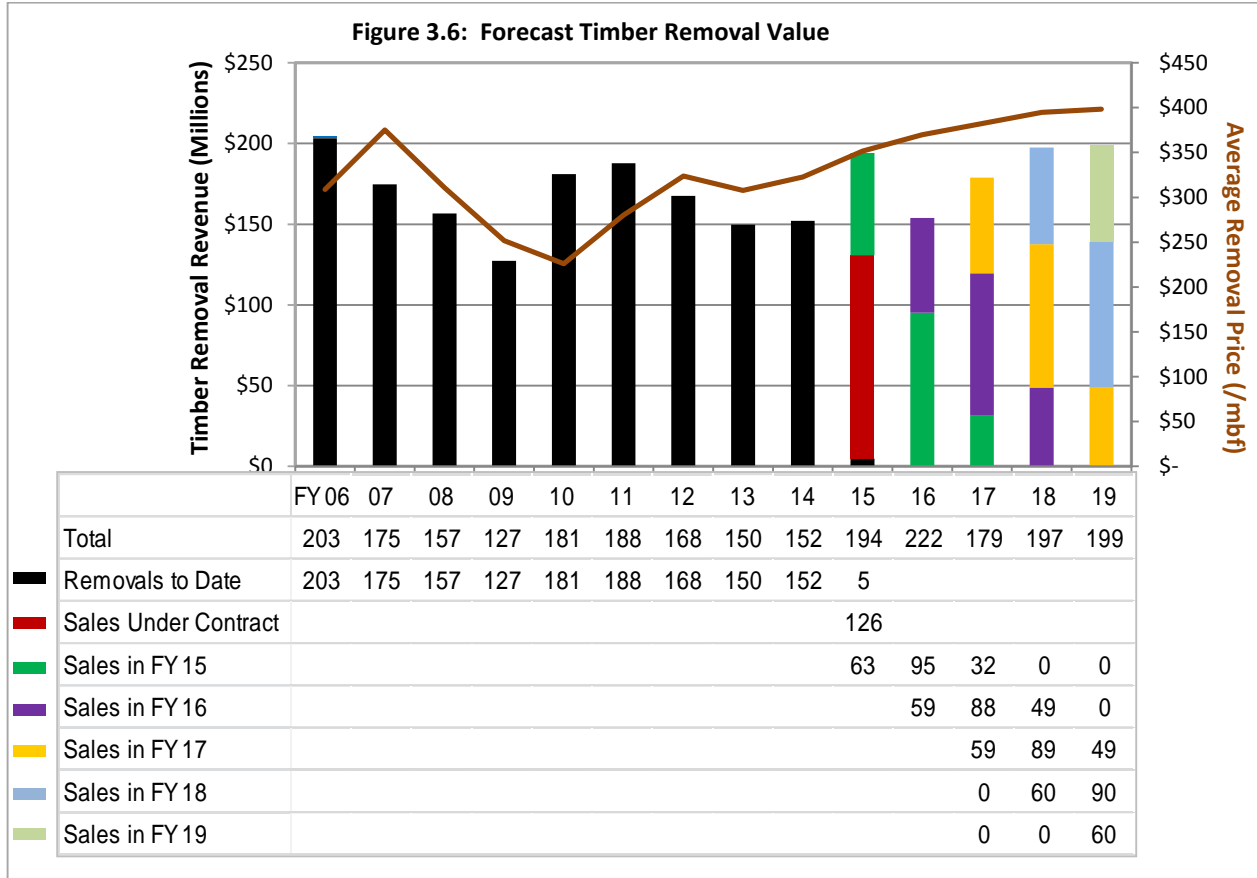
### **Timber Removal Revenues**

**Figure 3.6** shows projected annual timber removal values, broken down by the fiscal year in which the timber was sold (“sales under contract” are already sold as of August 1, 2014). About \$5 million, or around two percent, of the projected \$194 million timber harvest revenue this FY 15 has already been harvested.



The projected 2013-2015 Biennium timber revenues have been reduced from \$361.4 million to \$346.3 million—a reduction of around four percent (see **Figure 3.7**). In the 2015-2017 Biennium, forecast timber removal revenues are projected to be down 2.5 four percent or \$10.4 million, from \$411.1 million to \$400.7 million.

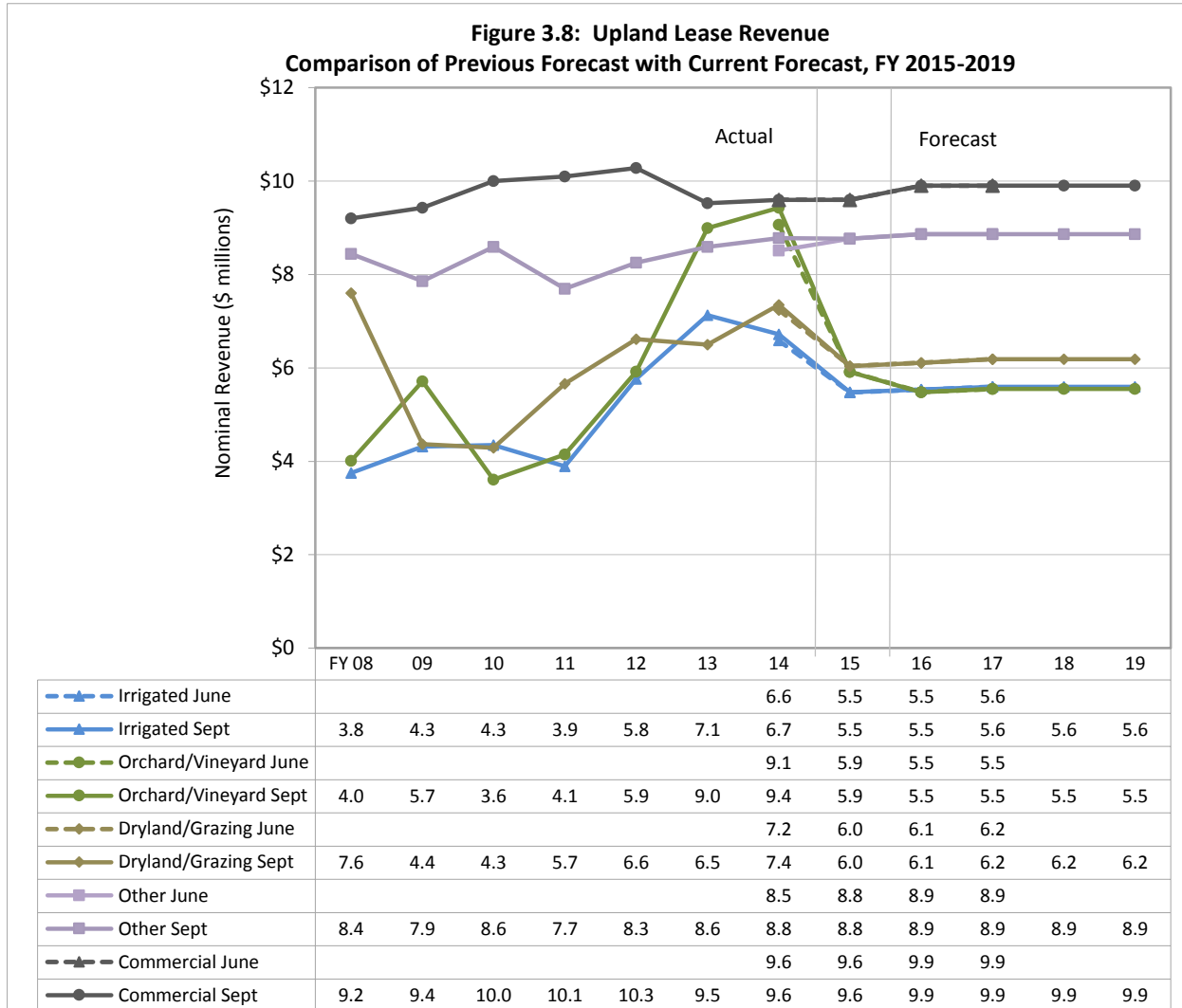




## Upland lease revenues

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.

There are no changes to the forecast for upland lease revenue in any of the forecast years (**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 for all outlying years in this Forecast because of reduced price expectations for geoducks. There has only been one auction in FY 15 and it had a lower price than that predicted by our geoduck price modelling. Accordingly, when we updated the model, it forecast lower prices.

DNR sells the rights to harvest geoducks at several auctions throughout the year. There were four geoduck auctions in FY 14. The first was held September 5<sup>th</sup> and sold 452,000 pounds at an average price of \$12.84/lb, which was on the high side of our expectations. The second auction took place November 21, selling 490,000 pounds at an average of about \$12.44/lb—also on the high side. At the time of the November Forecast only the results from the first auction were available. Given that auction’s modest volume compared to the whole year and given the significant price volatility inherent in geoduck markets (see **Figure 3.9a**), the November projection for FY 14’s average auction price of \$9.20/lb remained unchanged from September’s.

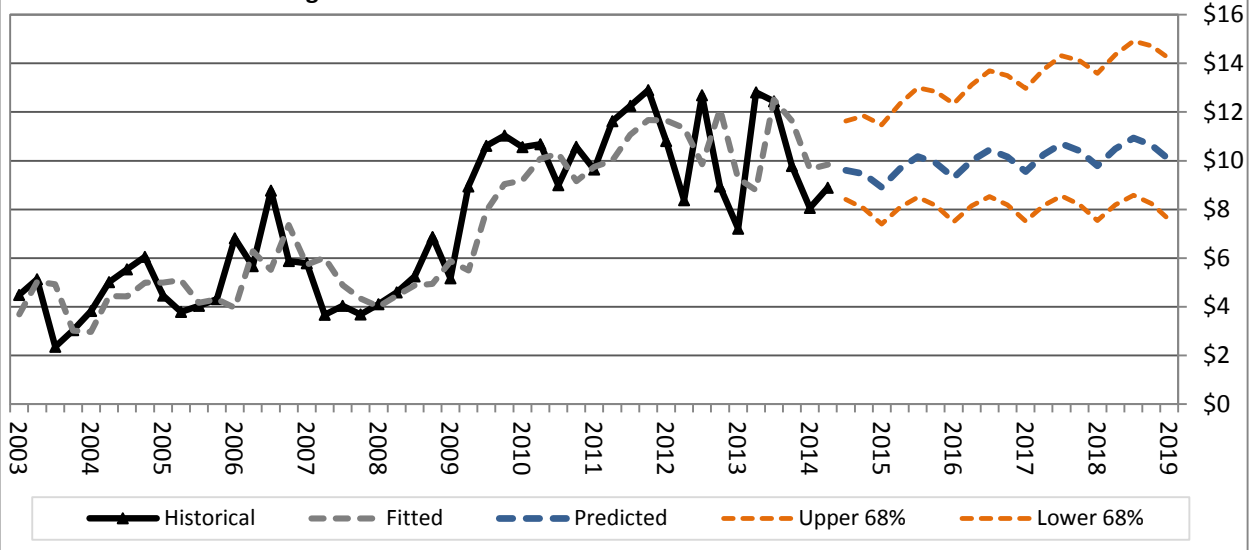
In early December 2013, the Chinese government declared import restrictions on shellfish from most of the West Coast of North America, citing health concerns from high levels of paralytic shellfish poisoning toxin (PSP) and arsenic. The ban has been lifted but it resulted in about \$1 million in refunded 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.

These downside risks to geoduck revenues in outlying years are important to consider but difficult to forecast:

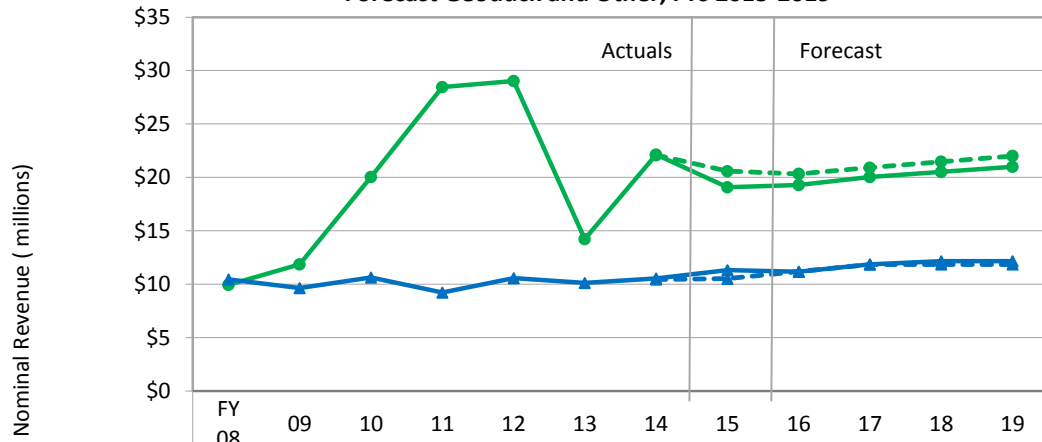
1. Harvests (and therefore revenues) could be deferred or lost if geoduck beds are closed due to occurrence PSP toxin.
2. A further slowdown in China’s economic growth could lower demand for this luxury good in its largest market.
3. In light of recent WDFW surveys of closed south Puget Sound geoduck 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 entirely possible for geoduck prices to be much higher than expected, given its historic volatility.

**Figure 3.9a: Geoduck Auction Prices: Actual and Predicted**



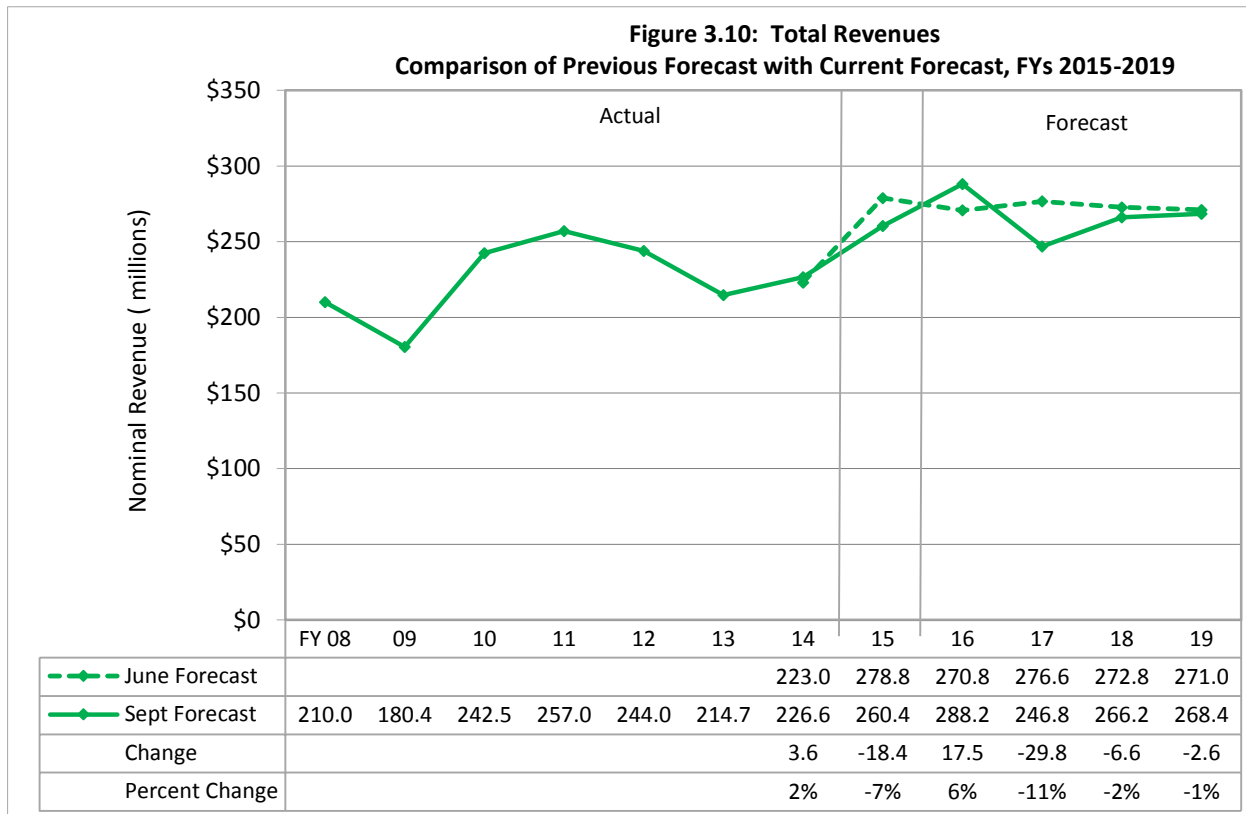
**Figure 3.9: Aquatic Lands Revenues  
Forecast Geoduck and Other, FYs 2015-2019**



	FY 08	09	10	11	12	13	14	15	16	17	18	19
Geoduck June Forecast							22.1	20.6	20.3	20.9	21.5	22.0
Geoduck Sept Forecast	9.9	11.9	20.0	28.5	29.0	14.2	22.1	19.1	19.3	20.0	20.5	21.0
Change							0.1	-1.5	-1.1	-0.9	-0.9	-1.0
Other June Forecast							10.4	10.5	11.2	11.8	11.8	11.8
Other Sept Forecast	10.5	9.6	10.6	9.2	10.6	10.1	10.5	11.3	11.2	11.8	12.1	12.1
Change							0.1	0.8	0.0	0.0	0.3	0.3

## 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 \$487.1 million. Revenues for the 2015-2017 Biennium (FYs 16 and 17) are projected to be down by \$12.4 million (2.3 percent) to \$535.0 million. The vast majority of the overall revenue changes are driven by a change in planned timber harvests and timber sales prices.





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## 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.

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## 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 model<sup>11</sup> 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.<sup>12</sup>

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 2014-2019, 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.

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<sup>11</sup> DNR and the Board of Natural Resources have not yet determined the sustainable harvest level for the FY 2015-2024 biennium.

<sup>12</sup> 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: September 2014 Forecast by Source (millions of dollars)**

Changes are from the June 2014 Forecast

	Actuals					Forecast				
<b>Timber Sales</b>	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Volume (mmbf)	730	591	553	495	497	500	500	500	500	500
Change					(20)	-	-	-	-	-
% Change					-4%	0%	0%	0%	0%	0%
Price (\$/mbf)	\$245	\$339	\$296	\$334	\$ 356.4	\$ 380.7	\$ 390.9	\$ 394.2	\$ 399.0	\$ 400.5
Change					\$ (1)	\$ (12)	\$ (20)	\$ (13)	\$ (3)	\$ 2
% Change					0%	-3%	-5%	-3%	-1%	1%
<b>Value of Timber Sales</b>	<b>\$178.5</b>	<b>\$200.4</b>	<b>\$163.7</b>	<b>\$165.4</b>	<b>\$ 177.2</b>	<b>\$ 190.4</b>	<b>\$ 195.4</b>	<b>\$ 197.1</b>	<b>\$ 199.5</b>	<b>\$ 200.3</b>
Change					\$ (7.5)	\$ (5.8)	\$ (10.0)	\$ (6.3)	\$ (1.1)	\$ 1.4
% Change					-4%	-3%	-5%	-3%	-1%	1%

<b>Timber Removals</b>	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Volume (mmbf)	801	670	517	486	471	552	600	468	500	500
Change					5	(47)	68	(47)	1	1
% Change					1%	-8%	13%	-9%	0%	0%
Price (\$/mbf)	\$221	\$275	\$321	\$310	\$ 322.6	\$ 351.5	\$ 369.9	\$ 382.3	\$ 394.8	\$ 398.3
Change					\$ 2.0	\$ (1.9)	\$ (12.4)	\$ (21.2)	\$ (11.8)	\$ (3.8)
% Change					1%	-1%	-3%	-5%	-3%	-1%
<b>Timber Revenue</b>	<b>\$181.0</b>	<b>\$187.8</b>	<b>\$167.5</b>	<b>\$149.7</b>	<b>\$ 152.1</b>	<b>\$ 194.2</b>	<b>\$ 221.9</b>	<b>\$ 178.8</b>	<b>\$ 197.4</b>	<b>\$ 199.1</b>
Change					\$ 2.6	\$ (17.7)	\$ 18.5	\$ (28.9)	\$ (5.7)	\$ (1.6)
% Change					2%	-8%	9%	-14%	-3%	-1%

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

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

Excludes fire assessments, permits, and fees.

Totals may not add due to rounding.

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

Changes are from the June 2014 Forecast

	Actuals					Forecast				
	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
<b>Upland Leases</b>										
Irrigated Agriculture	\$ 4.3	\$ 3.9	\$ 5.8	\$ 7.1	\$ 6.7	\$ 5.5	\$ 5.5	\$ 5.6	\$ 5.6	\$ 5.6
Change					\$ 0.1	\$ -	\$ -	\$ -	\$ -	\$ -
% Change					2%	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					\$ 0.4	\$ -	\$ -	\$ -	\$ -	\$ -
% Change					4%	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					\$ 0.1	\$ -	\$ -	\$ -	\$ -	\$ -
% Change					2%	0%	0%	0%	0%	0%
Commercial	\$ 10.0	\$ 10.1	\$ 10.3	\$ 9.5	\$ 9.6	\$ 9.6	\$ 9.9	\$ 9.9	\$ 9.9	\$ 9.9
Change					\$ (0.0)	\$ -	\$ -	\$ -	\$ -	\$ -
% Change					0%	0%	0%	0%	0%	0%
Other Leases	\$ 8.6	\$ 7.7	\$ 8.3	\$ 8.6	\$ 8.8	\$ 8.8	\$ 8.9	\$ 8.9	\$ 8.9	\$ 8.9
Change					\$ 0.3	\$ -	\$ -	\$ -	\$ -	\$ -
% Change					3%	0%	0%	0%	0%	0%
<b>Total Upland Leases</b>	<b>\$ 30.8</b>	<b>\$ 31.5</b>	<b>\$ 36.8</b>	<b>\$ 40.7</b>	<b>\$ 41.9</b>	<b>\$ 35.8</b>	<b>\$ 35.9</b>	<b>\$ 36.1</b>	<b>\$ 36.1</b>	<b>\$ 36.1</b>
Change					\$ 0.9	\$ -	\$ -	\$ -	\$ -	\$ -
% Change					2%	0%	0%	0%	0%	0%
<b>Aquatic Lands</b>										
Aquatic Leases	\$ 10.6	\$ 9.2	\$ 10.6	\$ 10.1	\$ 10.5	\$ 11.3	\$ 11.2	\$ 11.8	\$ 12.1	\$ 12.1
Change					\$ 0.1	\$ 0.8	\$ -	\$ -	\$ -	\$ -
% Change					1%	8%	0%	0%	0%	0%
Geoduck	\$ 20.0	\$ 28.5	\$ 29.0	\$ 14.2	\$ 22.1	\$ 19.1	\$ 19.3	\$ 20.0	\$ 20.5	\$ 21.0
Change					\$ 0.1	\$ (1.5)	\$ (1.1)	\$ (0.9)	\$ (0.9)	\$ (1.0)
% Change					0%	-7%	-5%	-4%	-4%	-5%
<b>Aquatic Lands Revenue</b>	<b>\$ 30.7</b>	<b>\$ 37.7</b>	<b>\$ 39.6</b>	<b>\$ 24.3</b>	<b>\$ 32.7</b>	<b>\$ 30.4</b>	<b>\$ 30.5</b>	<b>\$ 31.9</b>	<b>\$ 32.7</b>	<b>\$ 33.2</b>
Change					\$ 0.2	\$ (0.7)	\$ (1.1)	\$ (0.9)	\$ (0.9)	\$ (1.0)
% Change					1%	-2%	-3%	-3%	-3%	-3%
<b>Total All Sources</b>	<b>\$ 242.5</b>	<b>\$ 257.0</b>	<b>\$ 244.0</b>	<b>\$ 214.7</b>	<b>\$ 226.6</b>	<b>\$ 260.4</b>	<b>\$ 288.2</b>	<b>\$ 246.8</b>	<b>\$ 266.2</b>	<b>\$ 268.4</b>
Change					\$ 3.6	\$ (18.4)	\$ 17.5	\$ (29.8)	\$ (6.6)	\$ (2.6)
% Change					2%	-7%	6%	-11%	-2%	-1%

Note: Totals may not add due to rounding.

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

Changes are from the June 2014 Forecast

Management Funds	Actuals					Forecast				
	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
041 RMCA - Uplands	\$ 31.8	\$ 33.9	\$ 29.7	\$ 30.3	\$ 33.2	\$ 36.8	\$ 42.0	\$ 36.6	\$ 38.5	\$ 39.5
Change					\$ 0.8	\$ (2.8)	\$ 2.1	\$ (4.5)	\$ (1.2)	\$ (0.4)
% Change					2%	-7%	5%	-11%	-3%	-1%
041 RMCA - Aquatic Lands	\$ 13.9	\$ 17.5	\$ 18.4	\$ 10.7	\$ 14.8	\$ 13.7	\$ 13.6	\$ 14.2	\$ 14.5	\$ 14.8
Change					\$ 0.1	\$ (0.3)	\$ (0.5)	\$ (0.4)	\$ (0.5)	\$ (0.5)
% Change					1%	-2%	-4%	-3%	-3%	-3%
014 FDA	\$ 25.9	\$ 25.8	\$ 20.9	\$ 16.6	\$ 19.6	\$ 24.9	\$ 28.3	\$ 23.1	\$ 25.7	\$ 25.9
Change					\$ 0.5	\$ (2.1)	\$ 2.6	\$ (3.5)	\$ (0.8)	\$ (0.2)
% Change					3%	-8%	10%	-13%	-3%	-1%
<b>Total Management Funds</b>	<b>\$ 71.6</b>	<b>\$ 77.1</b>	<b>\$ 69.0</b>	<b>\$ 57.6</b>	<b>\$ 67.6</b>	<b>\$ 75.4</b>	<b>\$ 83.9</b>	<b>\$ 73.9</b>	<b>\$ 78.7</b>	<b>\$ 80.2</b>
Change					\$ 1.5	\$ (5.3)	\$ 4.1	\$ (8.5)	\$ (2.4)	\$ (1.1)
% Change					2%	-7%	5%	-10%	-3%	-1%
<b>Current Funds</b>	<b>FY 10</b>	<b>FY 11</b>	<b>FY 12</b>	<b>FY 13</b>	<b>FY 14</b>	<b>FY 15</b>	<b>FY 16</b>	<b>FY 17</b>	<b>FY 18</b>	<b>FY 19</b>
113 Common School Construction	\$ 47.9	\$ 56.5	\$ 56.5	\$ 60.5	\$ 56.6	\$ 66.6	\$ 77.0	\$ 66.2	\$ 69.2	\$ 69.6
Change					\$ 1.3	\$ (4.3)	\$ 3.2	\$ (8.3)	\$ (1.7)	\$ (0.8)
% Change					2%	-6%	4%	-11%	-2%	-1%
999 Forest Board Counties	\$ 67.9	\$ 70.5	\$ 64.7	\$ 55.4	\$ 52.0	\$ 66.8	\$ 73.2	\$ 57.1	\$ 63.0	\$ 63.5
Change					\$ 1.6	\$ (5.0)	\$ 7.2	\$ (9.3)	\$ (2.1)	\$ (0.9)
% Change					3%	-7%	11%	-14%	-3%	-1%
001 General Fund	\$ 5.0	\$ 4.2	\$ 4.5	\$ 2.2	\$ 2.2	\$ 2.4	\$ 3.3	\$ 3.5	\$ 4.1	\$ 4.1
Change					\$ 0.4	\$ (0.7)	\$ 0.1	\$ (0.4)	\$ (0.1)	\$ 0.0
% Change					23%	-22%	2%	-10%	-1%	1%
348 University Bond Retirement	\$ 1.8	\$ 1.3	\$ 0.8	\$ 0.8	\$ 1.8	\$ 3.0	\$ 2.7	\$ 1.9	\$ 2.9	\$ 2.2
Change					\$ (0.5)	\$ (0.4)	\$ 0.5	\$ 0.2	\$ 0.8	\$ 0.6
% Change					-21%	-12%	25%	11%	35%	35%
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					\$ (0.3)	\$ (0.1)	\$ (0.1)	\$ (0.1)	\$ (0.1)	\$ (0.1)
% Change					-14%	-4%	-4%	-4%	-4%	-4%
042 CEP&RI	\$ 5.6	\$ 4.9	\$ 5.0	\$ 5.1	\$ 5.5	\$ 4.2	\$ 5.2	\$ 4.4	\$ 4.7	\$ 4.7
Change					\$ 0.2	\$ 0.3	\$ 0.4	\$ (0.8)	\$ (0.4)	\$ (0.3)
% Change					3%	7%	9%	-15%	-8%	-6%
036 Capitol Building Construction	\$ 8.7	\$ 8.7	\$ 8.8	\$ 3.7	\$ 6.7	\$ 6.9	\$ 8.6	\$ 8.2	\$ 9.3	\$ 9.4
Change					\$ 0.5	\$ (0.9)	\$ 0.4	\$ (1.3)	\$ (0.5)	\$ (0.3)
% Change					8%	-12%	5%	-14%	-5%	-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					\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
% Change					42%	16%	16%	16%	16%	16%
Other Funds	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.4	\$ 1.5	\$ 0.5	\$ 0.4	\$ 0.2	\$ 0.2	\$ 0.2
Change					\$ (0.8)	\$ (0.1)	\$ 0.1	\$ (0.0)	\$ (0.0)	\$ (0.0)
% Change					-35%	-10%	53%	-2%	-5%	-3%
<b>Total Current Funds</b>	<b>\$ 138.3</b>	<b>\$ 147.6</b>	<b>\$ 142.3</b>	<b>\$ 129.9</b>	<b>\$ 128.1</b>	<b>\$ 152.2</b>	<b>\$ 172.2</b>	<b>\$ 143.1</b>	<b>\$ 155.0</b>	<b>\$ 155.3</b>
Change					\$ 2.5	\$ (11.2)	\$ 11.9	\$ (19.9)	\$ (4.1)	\$ (1.7)
% Change					2%	-7%	7%	-12%	-3%	-1%

(Continued)

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

Changes are from the June 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
<b>02R</b>	<b>\$ 16.8</b>	<b>\$ 20.2</b>	<b>\$ 21.2</b>	<b>\$ 13.6</b>	<b>\$ 17.9</b>	<b>\$ 16.7</b>	<b>\$ 16.9</b>	<b>\$ 17.7</b>	<b>\$ 18.2</b>	<b>\$ 18.4</b>
Change					\$ 0.0	\$ (0.4)	\$ (0.5)	\$ (0.4)	\$ (0.5)	\$ (0.5)
% Change					0%	-2%	-3%	-2%	-3%	-3%
<b>Permanent Funds</b>										
	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	\$ 7.7	\$ 6.9	\$ 4.1	\$ 4.5	\$ 4.5
Change					\$ (0.9)	\$ 0.1	\$ 1.2	\$ (0.3)	\$ 0.6	\$ 0.7
% Change					-21%	1%	22%	-6%	16%	19%
604 Normal School Permanent	\$ 4.0	\$ 3.0	\$ 3.1	\$ 1.4	\$ 1.8	\$ 2.2	\$ 3.0	\$ 2.8	\$ 3.2	\$ 3.2
Change					\$ 0.2	\$ (0.6)	\$ 0.2	\$ (0.3)	\$ 0.0	\$ 0.1
% Change					13%	-22%	5%	-9%	0%	2%
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					\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
% Change					49%	5%	5%	5%	5%	5%
606 Scientific Permanent	\$ 5.1	\$ 5.7	\$ 4.6	\$ 7.0	\$ 6.1	\$ 5.8	\$ 4.8	\$ 4.4	\$ 5.8	\$ 5.8
Change					\$ (0.2)	\$ (0.9)	\$ 0.5	\$ (0.5)	\$ (0.2)	\$ (0.1)
% Change					-3%	-13%	13%	-9%	-3%	-1%
607 University Permanent	\$ 0.7	\$ 0.3	\$ 0.3	\$ 0.8	\$ 1.1	\$ 0.1	\$ 0.3	\$ 0.5	\$ 0.6	\$ 0.6
Change					\$ 0.4	\$ (0.1)	\$ (0.0)	\$ (0.0)	\$ (0.0)	\$ (0.0)
% Change					64%	-54%	-13%	-8%	-3%	-1%
<b>Total Permanent Funds</b>	<b>\$ 16.3</b>	<b>\$ 12.1</b>	<b>\$ 11.4</b>	<b>\$ 13.6</b>	<b>\$ 13.0</b>	<b>\$ 16.2</b>	<b>\$ 15.2</b>	<b>\$ 12.1</b>	<b>\$ 14.4</b>	<b>\$ 14.5</b>
Change					\$ (0.3)	\$ (1.6)	\$ 1.9	\$ (1.0)	\$ 0.4	\$ 0.7
% Change					-2%	-9%	14%	-8%	3%	5%
<b>Total All Funds</b>	<b>FY 10</b>	<b>FY 11</b>	<b>FY 12</b>	<b>FY 13</b>	<b>FY 14</b>	<b>FY 15</b>	<b>FY 16</b>	<b>FY 17</b>	<b>FY 17</b>	<b>FY 17</b>
<b>Total</b>	<b>\$ 242.5</b>	<b>\$ 257.0</b>	<b>\$ 244.0</b>	<b>\$ 214.8</b>	<b>\$ 226.6</b>	<b>\$ 260.4</b>	<b>\$ 288.2</b>	<b>\$ 246.8</b>	<b>\$ 266.2</b>	<b>\$ 268.4</b>
Change					\$ 3.6	\$ (18.4)	\$ 17.5	\$ (29.8)	\$ (6.6)	\$ (2.6)
% Change					2%	-7%	6%	-11%	-2%	-1%

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.