



# Economic and Revenue Forecast



Third Quarter  
Fiscal Year 2015

.....  
March 2015



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



March 2015

# Economic and Revenue Forecast

*Fiscal Year 2015 – Third Quarter*

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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, Rick Roeder, Tom Heller, Duane Emmons, 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.

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 February 1<sup>st</sup>, 2015. The forecast numbers beyond that date are predicted from the most up-to-date DNR sales and revenue data available, including DNR's timber sales results through October 2014. Macroeconomic and market outlook data and trends are the most up-to-date available as the Forecast document is being written.

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

Each DNR Forecast builds on the previous one, emphasizing ongoing changes. Each re-evaluates world and national macroeconomic conditions, and the demand and supply for forest products and other commodities. Finally, each assesses the impact of these economic conditions on projected revenues from DNR-managed lands.

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

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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)
March 2015	February 1, 2015	March 18, 2015	March 31, 2015
June 2015	May 1, 2015	June 8, 2015	June 30, 2015
September 2015	August 1, 2015	September 5, 2015	September 30, 2015
November 2015	October 1, 2015	November 9, 2014	November 30, 2014





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## Forecast Summary

**Lumber and Log Prices.** Lumber and log prices increased markedly in 2013 and somewhat less so in 2014. Random Lengths' Coast Dry Random and Stud composite lumber price averaged \$370/mbf in 2013, \$373/mbf in 2014, and \$341/mbf so far in 2015. Washington log prices moved up sharply from a two-year plateau in 2013 and continued to rise in 2014. The average price for a 'typical' DNR log delivered to the mill reached \$591/mbf in 2014, and has averaged \$560/mbf so far in 2015.

**Timber Sales Volume.** DNR has sold 248 mmbf thus far this fiscal year, which is about half of the revised 491 mmbf planned for FY15. Given current timber sales plans—and absent a new sustainable harvest calculation—sales volumes are still pegged at about 500 mmbf in each future year.

**Timber Sales Prices.** The FY14 sales price averaged \$356/mbf. Weighted by volume, sales prices have averaged \$375/mbf through February. Sales prices in FY15 are predicted to average \$352/mbf, down three percent from November's \$365/mbf forecast. This reduction is primarily due to the continued slowdown in export markets, particularly China; to lower demand in end-use markets; and to an ample regional supply of logs. Stumpage sales price estimates are lowered to \$365/mbf in FY16 and to \$373/mbf in FY17, down six and one percent, respectively, from the November forecast.

**Timber Removal Volume and Prices.** Changes in the harvest plans of DNR timber purchasers have led to shifts in anticipated

timber removal volumes throughout most of the forecast period. Removal volumes for FYs 15-17 are forecast to be 487 (-40), 612 (+39), 499 (-18) mmbf. Timber removal prices are projected to be about \$339 (-\$4), \$350 (-\$23), \$358 (-\$23) per mbf for FYs 15-17. 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 all years of the forecast. The timber revenue projection for the 2013-2015 Biennium is lowered 4.6 percent to \$318 million. Revenues in the 2015-2017 Biennium are predicted to be \$393 million, down 4.4 percent from November's forecast.

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

Projected revenues from agricultural and other upland leases are revised up to \$37 million in FYs 15 and 16 (up \$1.4 million and \$1.6 million, respectively). Outlying years are also revised upward.

Revenues from aquatic lands are projected to total about \$30 million in FY15, up \$1.1 million from the November estimate. Revenue expectations for FYs 16 and 17 have been revised to \$32 and \$31 million. Aquatic revenue changes in this forecast are largely due to changes in the expected revenue from DNR's marketing of wildstock geoduck.

**Total Revenues.** Revenues for the 2013-2015 Biennium are projected to total \$459 million, down \$13 million (three percent) from the previous forecast. Revenues for the 2016-2017 Biennium are expected to total \$531 million,

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down \$13 million (two percent) from the November forecast.

**Notes to the Forecast.** Although our sales volume estimate for the current fiscal year is based on the best available internal planning data, timber sales in outlying years may be reduced due to unexpected policy, environmental, and operational issues. The assumed sustainable harvest limit of 500 mmbf could prove too high.

In the current fiscal year, the revised timber price estimate assumes an average price of \$330/mbf in each of the remaining four months of sales, which is well below recent averages. Recent timber auction prices suggest that purchasers of DNR timber are preparing for higher end-product prices in the coming year than are forecast by a number of industry analysts. Moreover, purchasers may have been paying more for timber than they ‘need’ to, given lower concurrent log prices. In short, the FY15 price forecast incorporates conservative market assumptions that may not prove out.

In outlying years, upside and downside risks to the timber price forecast—and therefore to subsequent removal prices and revenues—are more in balance.

One major downside risk for the forecast is timber and lumber demand from China. While a decrease in demand has largely been accounted for in the price forecasts and by markets, there is growing concern that the slowdown in Chinese construction, and economic growth more generally, will be much more dramatic than has been expected.

The upside potential of an unexpected strengthening of the nascent recovery in the U.S. housing market is still fairly low, but has become possible with the strong employment growth and reasonable wage growth seen in 2014. Real wage growth combined with employment growth could provide the

necessary base for household formations to increase, and therefore demand for housing—the major driver of the timber market.

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 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

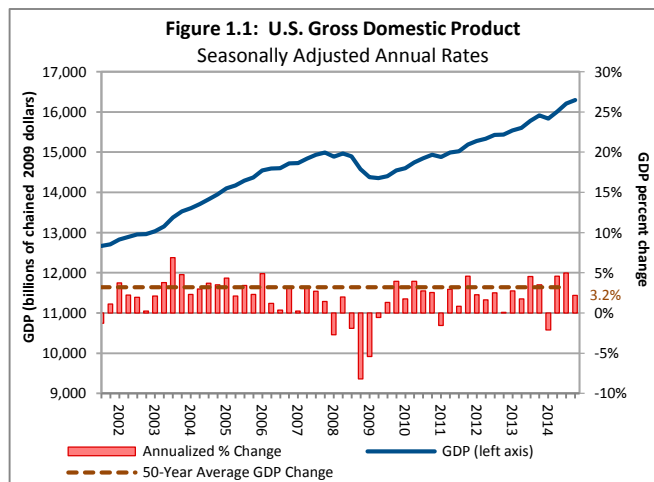
This section briefly reviews macroeconomic conditions in the United States and world economies because they influence DNR revenue—most notably through the bid prices for DNR timber sales and lease revenues from DNR-managed lands.

## U.S. Economy

### Gross Domestic Product

**Figure 1.1** shows the magnitude of the Great Recession during 2008 and the first half of 2009, when GDP actually declined in five out of six quarters. Since turning positive again in mid-2009, GDP growth has averaged a rather weak 2.3 percent on a real annualized basis, compared with an annualized average of 3.2 percent over the previous 50 years (1960-2009).

After a harsh winter and business inventory



adjustments caused the U.S. economy to shrink in the first quarter of 2014, economic growth rebounded through 2014 and, at an advanced estimate, averaged 2.4 percent. Forecasts generally predict real GDP growth to be around three percent in 2015.

### Employment and Wages

*Considerable progress has been achieved in the recovery of the labor market, though room for further improvement remains.*

Janet Yellen

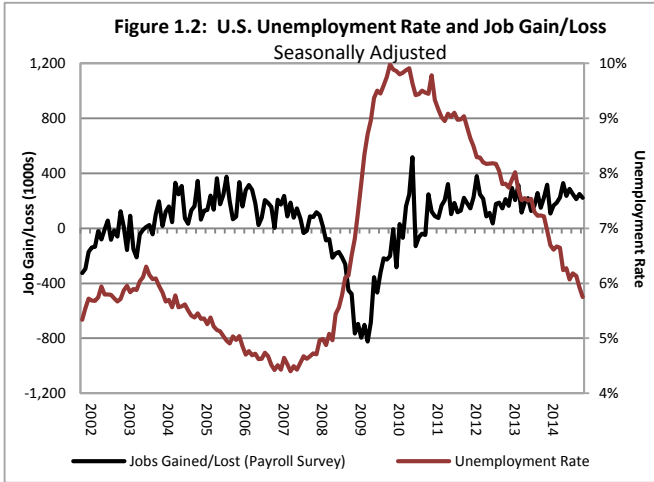
*Chair of the Board of Governors of the Federal Reserve System*

The U.S. headline unemployment rate continues to decline, with a March unemployment at 5.5 percent after unexpectedly high job growth in February (shown by the red line in **Figure 1.2**). This is down from a high of 10.0 percent in October 2009. The economy added over 3 million jobs in 2014, around 267,000 jobs per month. This is the fastest rate of job growth since 1999. Analysts are predicting over 250,000 jobs created per month in 2015 and 2016.

An alternative measure of unemployment, the U-6—which also includes involuntarily part-time employment and marginally attached workers—provides a broader picture than the headline unemployment rate<sup>1</sup>. The U-6 rate was 11 percent in February, down from 13.1 percent a year earlier and from highs of 17.1 in 2010 (**Figure 1.3**). The decline in the year-on-year U-6 is the result of a drop in all three of its components.

Positive month-over-month job gains are the main reason behind the unemployment rate's

<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.



decline, though reductions in the labor force have also contributed. 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 but over 800,000 people left the work force (**Figure 1.4**). Since the April drop, the labor force has been slowly climbing, and in October 2014 it finally exceeded March levels.

The decline in the labor force participation rate is an important confounding factor when examining the unemployment rate. If people have been leaving the labor force because they cannot find employment and are discouraged, then a decrease in the unemployment rate is not necessarily an indication of an improving labor market.

This is a key point in forecasting whether the increase in employment will trigger an increase in wages. If there are many people waiting to look for employment until it is easier to get, then as employment grows more people will enter the labor force and there will be no pressure on wages. However, if people have left the labor market for other reasons, then as the number of jobs grows there will be fewer and fewer people competing for jobs, which will push up wages as companies compete for labor.

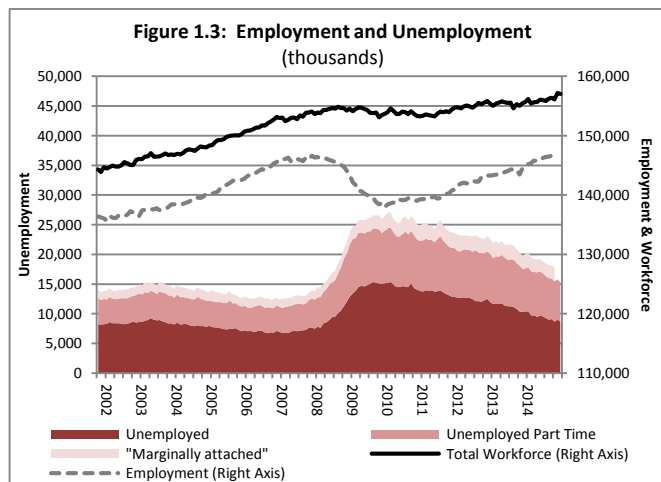
The drop in the participation rate since 2008 suggests that something about the recession itself caused people to leave the labor market, and implies that they may return when things are looking a bit better. However, some analysts have pointed out the recent decline in participation may be part of a longer-term decline starting in the late 1970s and pausing during the 1990s. If so, and there are no former workers waiting in the wings, then the recent growth in employment should put pressure on wages over the next year.

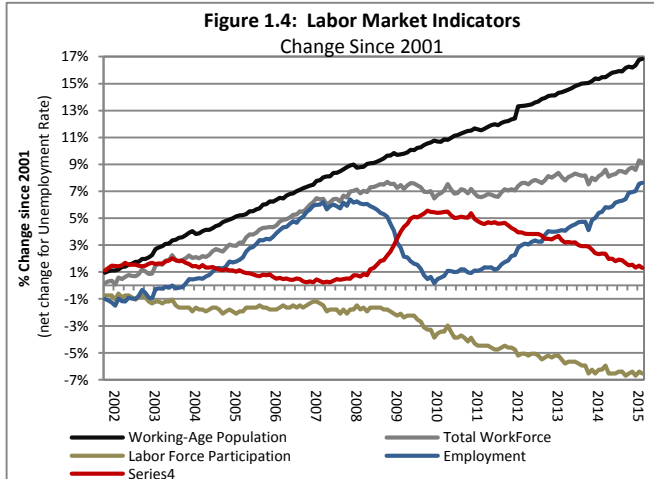
Real wage increases could support an increase in household formations, which fell dramatically during the recession and remain subdued.

### *Inflation*

The FOMC uses the core Personal Consumption Expenditures (PCE) index as the guiding measure of inflation. The PCE shows that long-term inflation has been at or below the two percent target since September 2008 (76 consecutive months, **Figure 1.5**).

While some economic forecasters see annual inflation of about two percent and above through 2019, the FOMC’s forecasts are for inflation rates of 1.0-1.6 percent, 1.7-2.0 percent and 1.8-2.0 percent for 2015, 2016 and





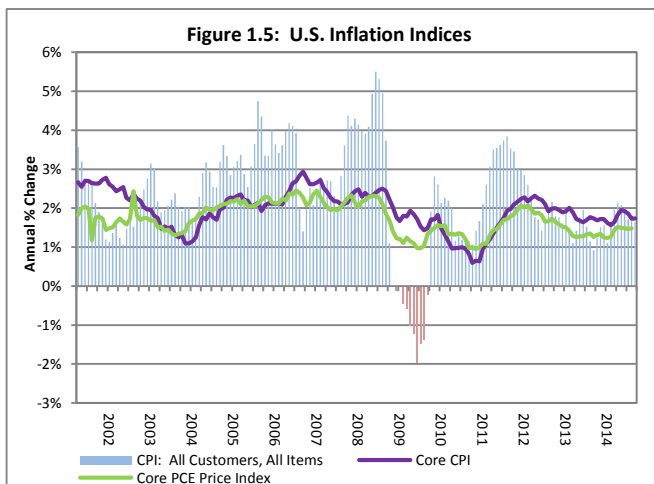
2017 respectively.

**Figure 1.5** shows several measures of the U.S. inflation rate. It is notable that the headline CPI has again turned negative. This is largely due to the sudden fall in oil prices (which are excluded from the ‘core’ measurements).

Estimates of expected long-term inflation—derived from the behavior of bond and other financial markets—appear to range between 1.4 and 1.6.

**Interest Rates**

Seldom in U.S. history has it been so inexpensive to borrow money. Interest rates have remained at record lows while the Federal Reserve has continued to hold the funds rate in



the 0.0-0.25 percent range since December 2008. The FED has pledged to keep rates near zero until it judges that there has been sufficient progress toward its dual-mandate of maximum employment and two percent inflation.

Since the unemployment rate has approached the long term average, analysts are closely examining both current and expected inflation rates in an attempt to divine when the FOMC will begin raising rates (perhaps later this year).

**The U.S. Dollar and Foreign Trade**

The trade-weighted U.S. dollar index has climbed dramatically in the past six months, increasing by almost 10 percent in real terms over the past year (**Figure 1.6**).

The climb in the dollar will likely threaten the recent improvement in the U.S. economy. This is because an increase in the dollar makes imported goods relatively cheaper than those locally produced, while making U.S. exports less competitive.

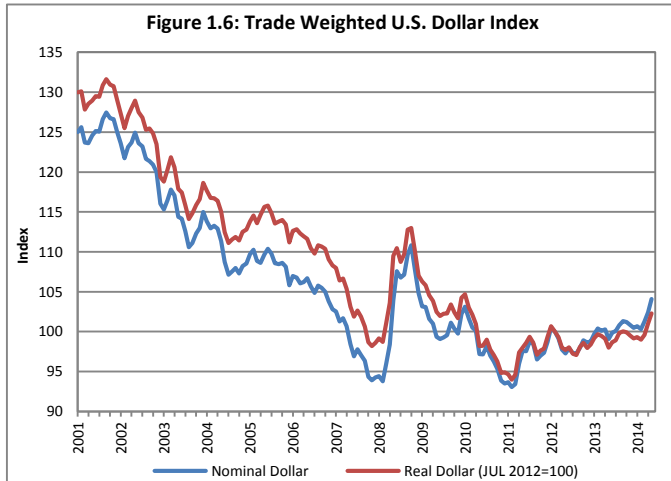
Moreover, a rising dollar means that timber and lumber from the Pacific Northwest become more expensive for international buyers and imported timber and lumber become less expensive. This will tend to suppress local prices and DNR’s timber and agricultural revenues.

The same story is true for wildstock geoducks, which are sold almost exclusively on the export market.

**World Economy**

**Europe**

Forecasts for the U.S. economy often cite Europe’s ongoing financial crisis and very weak economic performance as a significant downside risk. The EU (28 countries) is the



fourth largest trading partner of the U.S. and, as a whole, was hammered by the Great Recession, collectively suffering a 4.5 percent contraction in 2009. This was followed by two years of slow growth, and another year of contraction. After no growth in 2013, 2014 saw real EU GDP growth of 1.3 percent—finally surpassing 2007’s GDP in real terms.

The worrying risk of the EU entering a deflationary spiral—where falling prices reduce production and wages, which further reduce prices—seems to have abated. The European Central Bank recently cut interest rates and pledged to buy private sector bonds as a form of quantitative easing. The ECB’s intervention seems to be helping, since core inflation has stabilized and GDP rose by 0.3 percent in the fourth quarter of 2014. As in the U.S., fiscal remedies appear politically impossible.

Unfortunately, issues with Greek debt and bail-outs have reignited the danger of a Greek exit from the EU. Although the Greek financial system and economy are less integral to the EU than was the case several years ago, a Grexit would still cause turmoil in the fragile economy. It appears that Greek debt will never be repaid without significant restructuring because it simply cannot grow fast enough to maintain or resolve the debt, though there is no political will from its creditors to restructure.

Weakness in Eurozone economies means reduced demand for U.S. exports, but it has thus far been impossible to identify 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

*Although in my opinion the current 6-7 percent medium-term growth expectations are still far too optimistic and will almost certainly be disappointed within one or two years, the good news is that most analysts at least recognize the increasing risk of a "hard landing".*

*Michael Pettis  
Professor of Finance, Peking University*

China is a major export market for logs and lumber from the Pacific Northwest. The Seattle Customs District sent China 324 mmbf of softwood logs (out of a total regional export volume of 493 mmbf) and 109 mmbf of softwood lumber (out of a total of 474 mmbf) in 2012. Changes to the Chinese economy can have a dramatic impact on the prices for logs and lumber in the Pacific Northwest.

While China weathered the global economic and financial crisis of the past seven years better than most other economies—at least in terms of GDP growth and employment—there are a number of questions about the costs and the sustainability of that apparent economic resilience.

Already, Chinese GDP growth has slowed from 10.4 percent in 2010 to a forecast 7.5 in 2014 and it looks set to continue slowing. The IMF forecasts a decline from 7.5 percent annual growth in 2014 to 6.3 percent by 2019.

There is growing concern that these forecasts are overly optimistic and that Chinese GDP growth will fall much lower, possibly even into recession. This risk is mostly due to the

prominence of investment as a component of GDP, the huge amount of debt in the country, the way that debt is held.

Investment is almost 50 percent of the China's GDP. A debt crisis would undermine that investment, which would have an outsized effect on China's GDP.

Analysts seem to broadly agree that in order to continue growing and to stabilize its economy the country needs to move away from an investment driven economy to a consumption based economy. In order to do this it would need to encourage domestic spending and move away from saving. However, FEA notes that double digit growth in all other sectors of the economy would be needed to offset a five percent decline in investment and that would only lead to three percent GDP growth.

Debt in China has skyrocketed from 110 percent of GDP to over 190 percent in 2014; about 45 percent of that debt is exposed to inflated property markets. There is little concern of a full-blown banking crisis because the government has enough tools at its disposal to avoid it, but a property price drop that precipitates a debt crisis is not unlikely and could significantly slow growth.<sup>2</sup> Additional bad omens for the economy include a 5.1 percent year-on-year drop in house prices in China's largest cities in the last nine months and a 63 percent drop in iron ore prices (a key construction component).

## Japan

Japan is another major export market for the Pacific Northwest—importing 68 mmbf of

<sup>2</sup> A banking crisis is a type of financial crisis that threatens the existence of a banking system, while a debt crisis is a type of financial crisis where large numbers of debtors are unable to repay their debts. Debt crises can lead to banking crises unless banks have enough capital to cover the losses from bad debts.

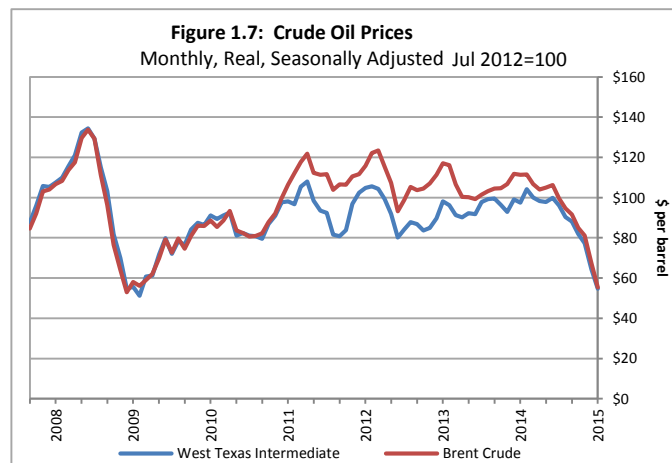
softwood logs and 153 mmbf of softwood lumber from the Seattle-Snohomish customs district in 2012. Unfortunately, Japan's growth has stagnated since the early 1990s after a stock market and property bubble bust trapped the economy into a deflationary spiral. After his election in late 2012, Japanese Prime Minister Shinzo Abe began a fairly bold combination of economic policy moves, dubbed "Abenomics", in an attempt to revitalize Japan's economy.

These policies were initially well received by the Japanese, judging by increasing consumer confidence and GDP growth. However, in 2014 they faced increasing public deficits and two quarters of falling GDP. Japan's economy grew again in the fourth quarter of 2014, but at a relatively weak annualized rate of 1.5 percent.

The Japan's outlook is uncertain. Deflation returned in January with a 0.5 percent decline in the core CPI. Though this is only one monthly estimate, it does not bode well for a major component of Abenomics—escaping the deflationary trap.

## Petroleum

Crude oil and its derivatives strongly affect production, transportation, and consumption in the world and U.S. domestic economies. Prices for Brent crude oil have plummeted from \$106/barrel in June 2014 to \$55/barrel in January 2015 (real prices, **Figure 1.7**). This





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drop in costs will make transportation-sensitive industries—such as PNW logging and agriculture—more competitive in international markets, despite the countervailing force of the rising dollar. Moreover, oil prices, especially sharp fluctuations, have the ability to influence intangible “forces” such as consumer and producer confidence.

## Part 2. Log, Lumber, and Stumpage Prices

Over the past decade, timber stumpage revenues have constituted over 75 percent of total revenue. DNR is, therefore, vitally concerned with understanding stumpage prices, log prices, lumber prices, and the related supply and demand dynamics underlying all three. This section focuses on specific market factors that affect timber stumpage prices and overall timber sales revenues generated by DNR.

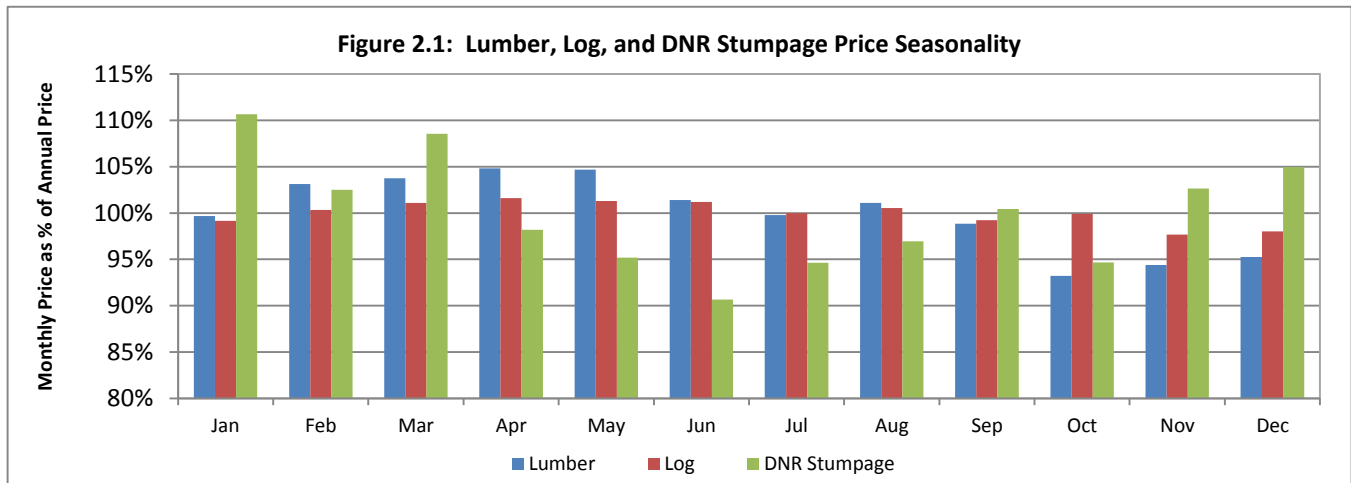
In general, timber stumpage prices reflect demand for lumber and other wood products, timber supply, and regional lumber mill capacity. There is a consistent, positive relationship between log prices and DNR's stumpage prices, despite notable volatility in DNR's stumpage prices (**Figure 2.10**). High log prices make access to logs more valuable and increase purchasers' willingness to pay for stumpage, or the right to harvest. Volatility in stumpage prices arises not only from log prices, but also from the amount of logs held in mills' inventories and from DNR-specific issues, such

as the quality and type of the stumpage mix offered at 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 price seasonality 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, stumpage prices tend to peak in spring, when housing construction picks up, and declines through 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 section continues with a discussion of the U.S. housing market because it is particularly important to overall timber demand in the U.S.



## U.S. Housing Market

Consumer spending has been lifted by the improvement in the labor market as well as by the increase in household purchasing power resulting from the sharp drop in oil prices. However, housing construction continues to lag; activity remains well below levels we judge could be supported in the longer run by population growth and the likely rate of household formation.

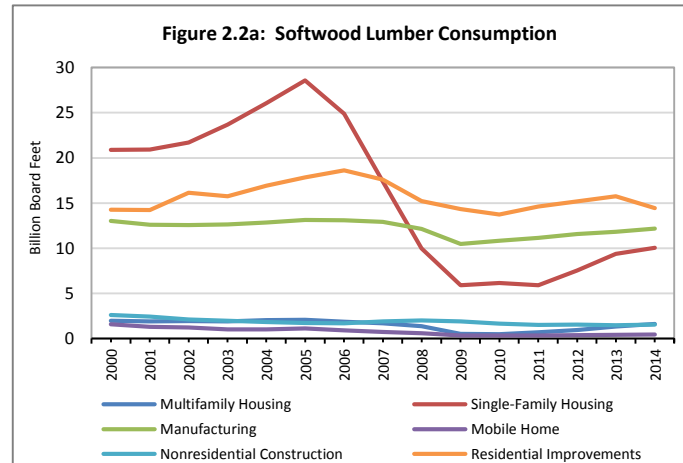
Janet Yellen

Chair of the Board of Governors of the Federal Reserve System

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.

The crash in the housing market and the following recession drastically reduced demand for new housing, which undermined the total demand for lumber (**Figure 2.2a**). Since the trough from 2009-11, the lumber demand for residential construction has increased slightly, coinciding with an increase in housing starts (**Figure 2.2b**). Prolonged growth in starts is essential for a meaningful increase in the demand for lumber, which is still 20 mmbf short of the peak domestic demand in 2005.

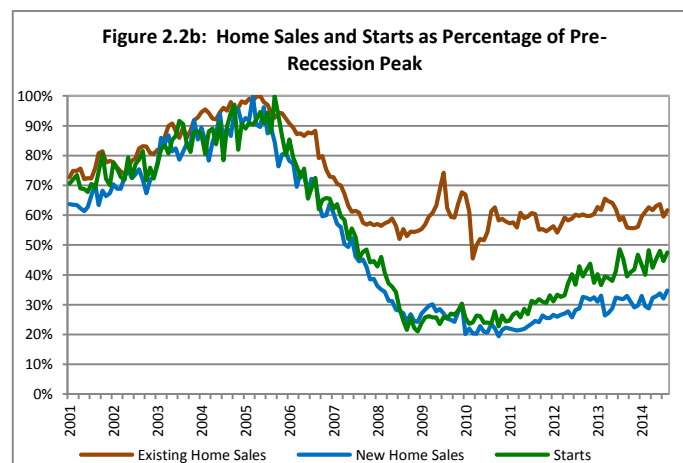
A number of measures suggest that the modest recovery of the U.S. housing market, which was driven by new home sales, has stalled. **Figure 2.2b** compares the trajectories of existing home sales, new home sales, and housing starts as percentages of their pre-recession peaks. Increases in sales have been subdued by tight lending standards, weak labor markets, and declining real wages for much of the population.

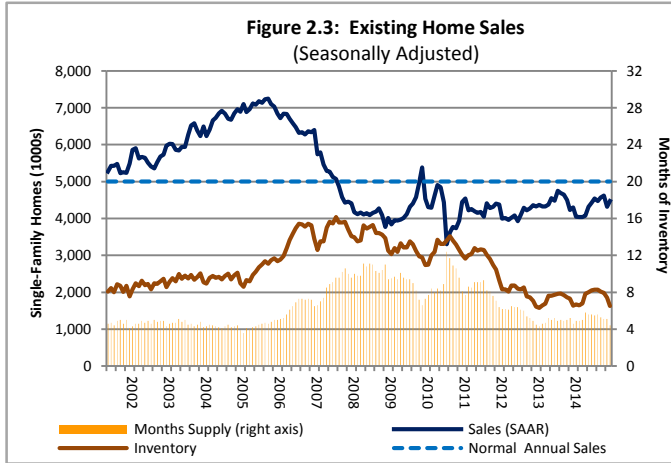


### Existing Home Sales

Existing home sales plummeted during the recession and have still not reached the historical norm, though they are currently increasing (**Figure 2.3**). In January, total sales were up 3.2 percent year-on-year and the share of distressed sales (either short-sales or foreclosures) dropped. The drop in distressed sales is notable because as fewer distressed properties are forced to market the supply of available existing housing will decline, thereby spurring new home building.

The inventory of existing homes peaked in July 2007 and generally declined until the beginning of 2013. Since then, the inventory has been vacillating around two million homes (see **brown** line in **Figure 2.3**).





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—has averaged 5.1 months since 2013, slightly above the 2001-05 average of 4.6 months.

Changes in inventory can be a useful signal about the current relationship between supply and demand. A decreasing inventory would suggest that demand is outstripping supply, which should put upward pressure on prices and encourage more homes to be listed or built. An increasing inventory would suggest the opposite. The current, reasonably stable, inventory suggests that demand for existing houses is, on average, matching well with supply.

After house prices fell in the recession, private investors moved into depressed housing markets and purchased large numbers of lower-priced foreclosed residential properties. 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.

Investor purchases appear to have fallen slightly since the beginning of 2014, when they represented more than 20 percent of home sales, to 17 percent of homes in January. This is actually up from several months ago when

the National Association of Realtors estimated that 14 percent of homes were purchased by investors in September. 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

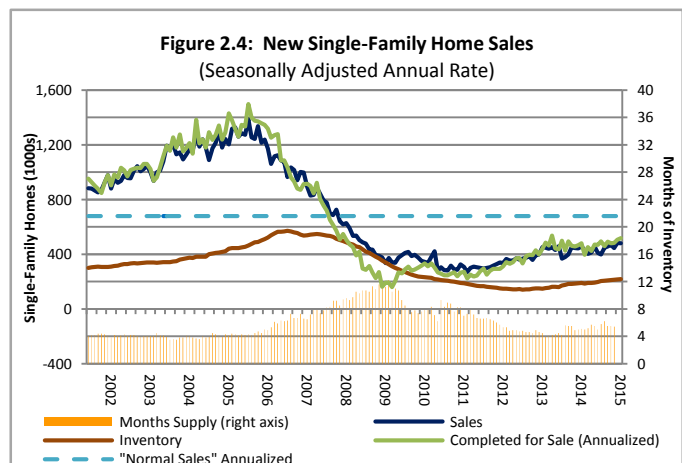
Unsurprisingly, new home sales also plummeted during the recession, reaching a record low of 306,000 in 2011 before beginning a slow rise (Figures 2.2a and 2.4). The long-term (1963-2010) “normal” rate is 678,000 sales per year.

As low as new home sales fell, new home construction fell even lower from early 2007 through mid-2011, causing the inventory of newly built homes for sale to decline over the period. After bottoming out in July 2012, the inventory of new homes has crept up as construction slightly outpaced sales.

At the current pace of sales, the current inventory would last around five 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, there is also a “shadow inventory” that has



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gained attention as an important measure of the health of the housing market. Defined as the number of homes not currently on the market, but expected to be listed in the next few years, the shadow inventory usually includes the number of properties currently in the process of foreclosure, properties with seriously delinquent mortgages, and properties owned by banks or real estate firms. A large shadow inventory can promote distressed sales (including short sales), put downward pressure on future prices, and stifle housing starts.

CoreLogic reported in September that serious delinquencies have declined from 2.04 million in October 2013 to 1.53 million in January. At the same time, the number of houses in the process of foreclosure fell from 875 thousand to 549 thousand and completed foreclosures fell from 55 thousand to 43 thousand.

### ***Household Formation***

*Our earlier hopes for a turnaround in household formations proved optimistic, in part because the employment growth has not translated in to the type of income growth we have seen historically for young adults. We remain confident however that the end of the dismal rebound is near.*

*Lynn Michaelis  
Partner, Forest Economic Advisors*

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. Due to the job and income losses and to the greater financial precarity that the recession occasioned, household formation lagged as people shared housing and many younger people, who were hit especially hard, moved back in with their parents. Net immigration from Mexico also approached zero during the Recession, contributing to slowing household formation.

The drop in household formation and the consequent reduction in demand for home

purchases contributed to the surge in the inventory of available housing units and the significant drop in housing starts. Historically U.S. household formation ranges between 1.2 and 1.3 million. Since the recession, household formations have dropped dramatically to average 0.7 million from 2009-14.

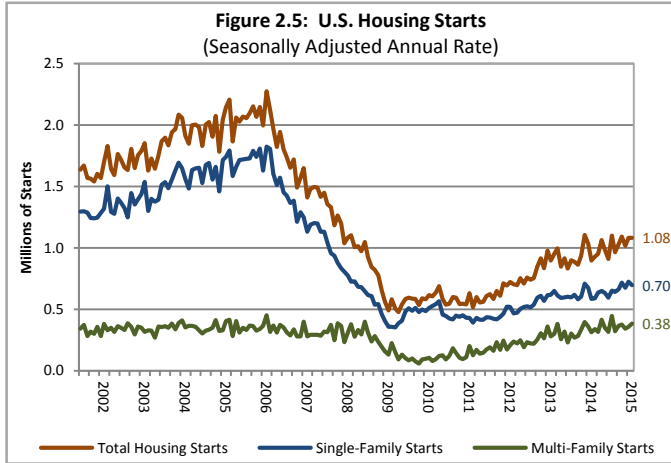
An important concept frequently discussed in relation to household formation is the ‘pent-up’ demand—the demand for housing from those who wish to form households, but are currently unable to because of employment, earnings, or credit eligibility issues. Much of the discussion from analysts in the past several years has been around how there is a large, and growing, pent-up demand as more young adults want to move out and create their own households. 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. In other words, pent-up demand has so far failed to become real demand, largely because of issues with employment, wages, credit requirements, and affordability.

Looking forward, household formation will depend on both the continued recovery in the U.S. labor market—more than just job growth, but also real wage growth—and improvements in affordability. FEA forecasts that formations will approach 1.4 million annually by 2016 given improvements in employment and wage growth. RISI predicts formations to total about 1.1 million in each of the next two years.

### ***Housing Starts***

*The fact that home prices are still trending higher, that excess for-sale and for-rent shelter is gone and that new home sales have improved all indicate that the shelter market is tightening and that demand for shelter needs to shift from existing vacant shelter to new home construction.*

*Jennifer Coskren  
Senior Economist, RISI*



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 an all-time record low since the Census Bureau began tracking housing starts in 1959.

Notably, much of the growth in housing starts since the end of the recession has come from multi-family units. This is a crucial distinction because multi-family units use much less lumber than single-family houses, so the increase in starts has had a more muted effect on timber prices than historical starts increases.

The outlook for housing starts in 2015 is fairly positive. Improvements in employment and wages are set to drive an increase in household formations, which increases demand, combined with low market and shadow inventories, which will constrain the supply of existing housing. The combination of these demand and supply conditions should start increasing prices and provide incentives to build more housing.

A possible impediment to increased housing starts is the sentiment of construction companies, who report being very wary of building more houses until demand clearly picks up. Given the lead time necessary to build houses, this could cause some volatility in both prices and supply.

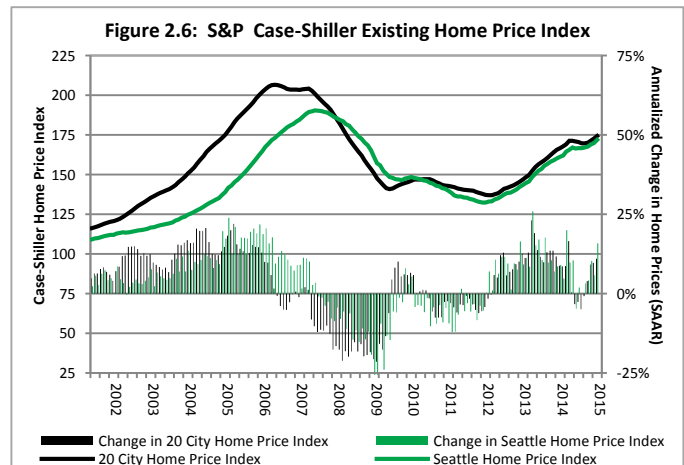
### Housing Prices

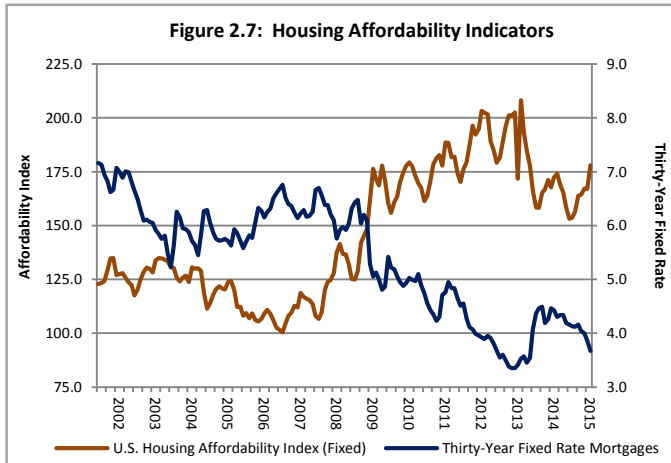
U.S. housing experienced six unprecedented years of falling or flat prices following the recession. House prices started rising again only in 2012 as economic and employment indicators continued to improve. **Figure 2.6** charts the seasonally adjusted S&P/Case-Shiller Home Price Indices for the 20-city composite, which estimates national existing home price trends. The 20-city composite index has increased most months since bottoming out in January 2012—its lowest point since October 2002, almost ten years earlier.

From April 2014 the Case-Shiller index fell slightly and price growth was essentially flat until December, when the index surpassed its April values.

Seattle house prices are following a similar trajectory, having increased 6.2 percent year-on-year as of December. 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 December, the average Seattle home was worth 90 percent of its peak price.

An increase in prices would allow the return to a more normal housing market, where home





owners are able to make rational decisions about when or whether they wish to sell—as opposed to being forced to sell or to remain ‘underwater’ to avoid taking a loss or damaging their credit.

### Housing Affordability

*This changing composition of sales away from the higher end home resulted in a lower median price. It could also represent the beginning of a shift in builder priorities away from selling less, more expensive homes to selling more, less expensive homes geared toward the kinds of younger, entry-level buyers expected to represent the biggest buying group this year.*

*Alex Hubbard  
Economic Analyst, Zillow*

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. Index values increase as affordability increases, and decline as homes become less affordable.

Affordability 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**). Following that decline the index rose and fell as housing market sentiment oscillated between bullish in the

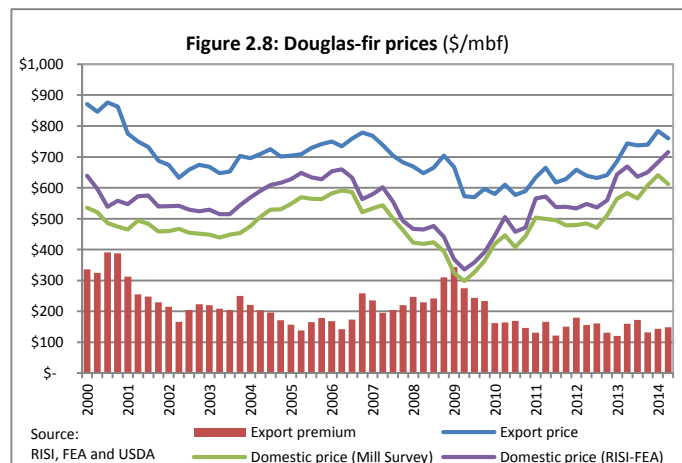
wake of price increases, and bearish as buyers withdrew and interest rates increased.

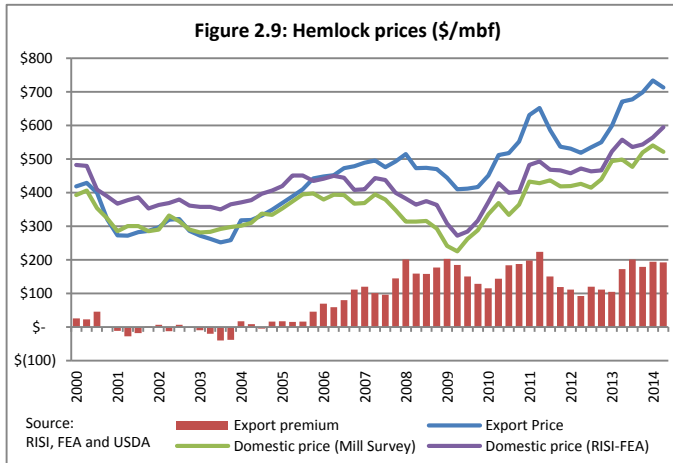
Since August 2014 the index has increased on the back of declining mortgage rates and increases in the median wage.

The annual income required to purchase a median-priced house increased from an average of \$31,824 in 2012 to \$39,744 in 2014, a 24 percent increase, and the median priced home rose from \$177,200 to \$208,900, an 18 percent increase. However, during that period median family income increased from \$62,527 to \$65,321, a four percent increase. The income needed to purchase a house is growing much faster than actual annual incomes. For now, a decrease in mortgage rates is offsetting this, but this trend cannot continue indefinitely, either price growth will need to slow or incomes will need to rise. 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>3</sup>

### Export Markets

Although Federal law forbids export of logs from public lands west of the 108<sup>th</sup> meridian, log exports still have a meaningful impact on DNR stumpage prices. Exports compete with domestic purchases for privately sourced logs;





strong export competition pulls more of the supply from the domestic market, thereby raising all domestic prices. However, changes in export prices do not influence domestic prices in a one-to-one relationship.

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

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

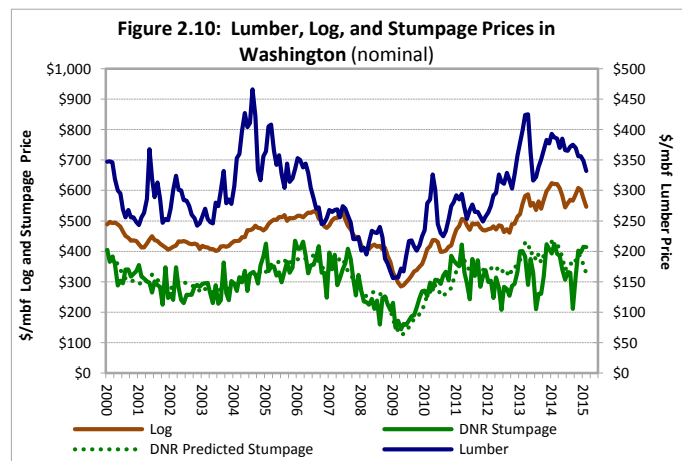
Following a surge in demand from China, export prices increased rapidly through 2011-12, with hemlock increasing 44 percent (see **Figure 2.9**) and Douglas-fir by 16 percent. The initial increase in demand was for hemlock logs, but as hemlock prices approached Douglas-fir prices the demand for Douglas-fir

logs increased. By 2012, the Douglas-fir premium was near its historic average. In 2012, export and domestic prices for both species softened and the price spread between the species returned to historical norms.

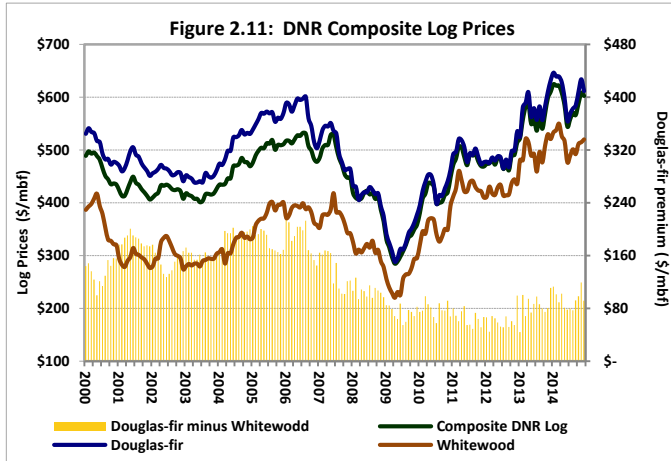
Looking forward, market analysts expect the export premium to shrink due to strong demand from recovering domestic markets and decreased demand from importing countries, China in particular. Strong domestic prices will make export logs less competitive internationally, though much will depend on supply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

## 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 stumpage inventory.

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

## 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 large price fluctuations since 2013 were generally expected by forest economists because of the jerky response of mills bringing lumber

production back on line as demand increased. Lumber prices remained generally flat over 2014 because mills and dealers were better prepared to meet increased demand.

However, analysts argue that the near future holds much greater volatility than the last year. This is largely because mills are still risk averse and unwilling to hold inventories, so any increases in demand could have dramatic impacts on price. Additionally, logging and lumber transport infrastructure has still not recovered from the downturn and is significantly constrained. Again, this will add volatility, lead times, and underlying mill costs.

While lumber prices are likely to be more volatile, prices will generally trend upward, with some analysts arguing that there will be a surge in prices in 2017. However, over the longer term, prices are expected to decline as the US economy business cycle slows.

### Log Prices

**Figure 2.11** presents prices for Douglas-fir, hemlock, and DNR’s composite log. The latter 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**.

Readily visible on the graph is the decline in the premium for Douglas fir—due in large part to the Chinese demand for whitewood pushing up its price.

### Stumpage Prices

Timber stumpage prices are the prices that successful bidders pay for the right to harvest timber from DNR-managed lands (**Figure**

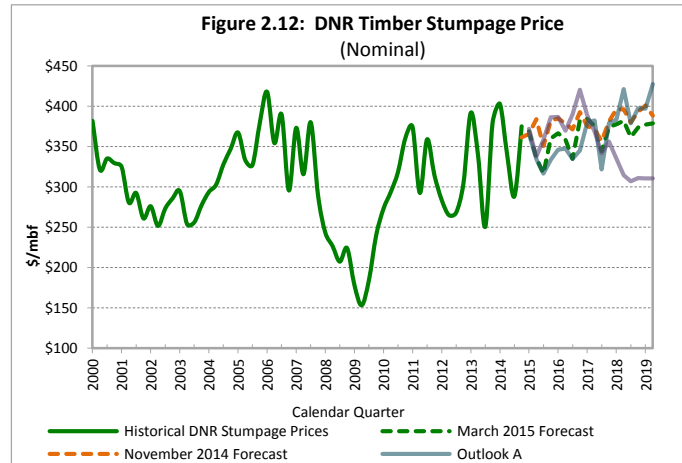
2.12). Like the log price, DNR stumpage prices bottomed out in April 2009. Currently, the average DNR stumpage price for FY 2015 weighted by volume is \$375/mbf. This is higher than the forecast annual price of \$352/mbf.

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 generally higher stumpage in 2013 and 2014.

### 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 November Forecast (orange dashed line), and the updated price outlook<sup>4</sup> (green dashed line). There are moderate downward 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 substantially lowers price estimates for 2015-2016 and for outlying years starting in mid-2017. Outlook B includes small changes in the near term and substantial drops for outlying years. Both outlooks appear to incorporate a cyclic downturn towards the end of FY 2016. The updated DNR Forecast represents a weighted middle ground between these two outlooks.

It is important to note that these price 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.

<sup>4</sup> This updated price outlook is the basis for the timber revenue changes discussed in the next section.

## Part 3. DNR Revenue Forecast

This Revenue Forecast includes revenue 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 which vary in duration. 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 harvest decisions and are likely based on their perceptions of 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

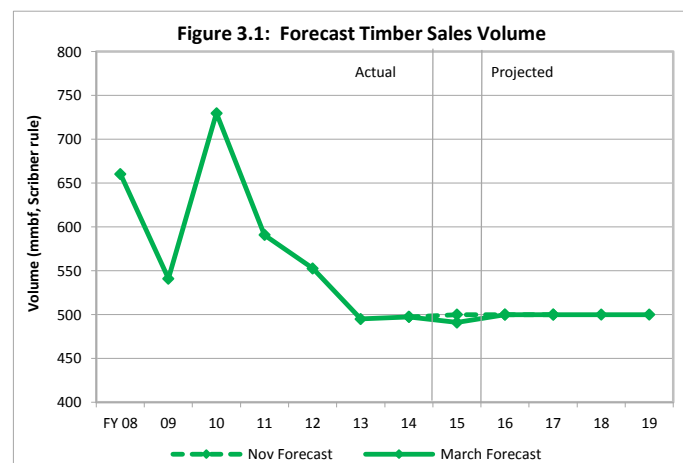
As of February, DNR had sold 249 mmbf in FY 2015. Projected timber sales volume for the current fiscal year is lowered to 491 mmbf based on an updated sales plan (see **Figure 3.1**). FY 2014 was the last year of the current FY 2005-2014 sustainable harvest decade and the new harvest limits for the next decade have not yet been determined or approved by the Board of Natural Resources.

FY 2015 is the first year of the next sustainable harvest decade (FY 2015 through FY 2024) for western Washington. Without an updated sustainable harvest limit, annual Westside sales volumes are forecast to be 450 mmbf for future years. Together with projected Eastside timber sales of 50 mmbf for each of the next several years, we arrive at a projected annual timber sales volume of about 500 mmbf for FYs 2016-2019. These projections are presented graphically in **Figure 3.1**.

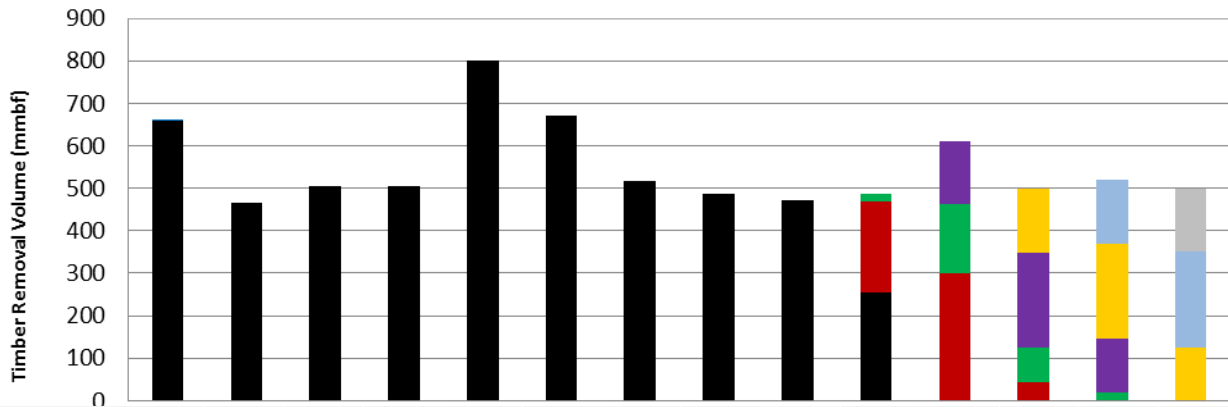
### Timber Removal Volume

At the end of January, the Department had 558 mmbf of timber under sales contract, valued at \$197 million, or \$351/mbf.

For each Forecast, we survey timber sale purchasers to determine their planned harvest timing for the timber volume they have under



**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	487	612	499	520	500
Removals to Date	658	466	504	506	801	670	517	486	471	253				
Sales Under Contract										215	299	44		
Sales in FY 15										19	163	80	20	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

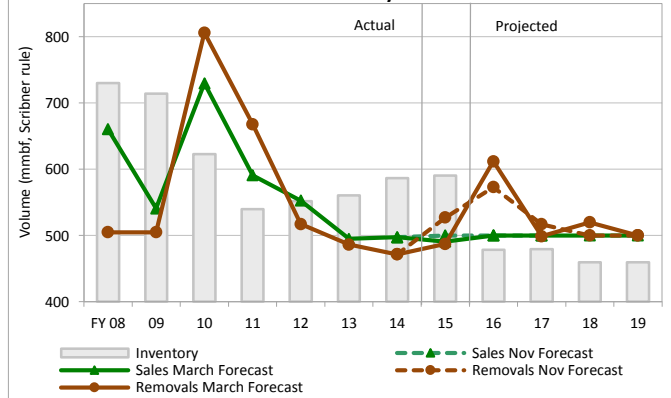
contract at the time of the survey. This Forecast’s survey, conducted in the first half of February, indicates that purchasers will likely harvest 215 mmbf, or 39 percent, of the 558 mmbf remaining under contract in the remainder of this fiscal year, 299 mmbf (54 percent) of the existing inventory in FY 2016, and the remaining 44 mmbf in FY 2017 (see **Figure 3.2** for detail).

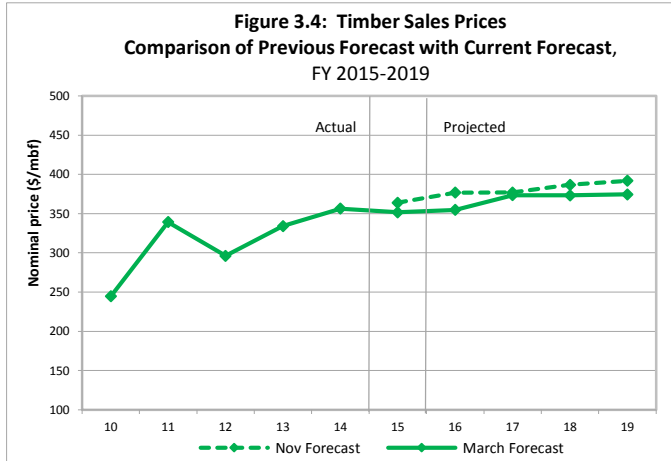
Including the survey responses, removals to date, and removals expected from future FY 2015 sales, about 487 mmbf will be removed in FY 2015, eight percent less than the November forecast of 527 (see **Figures 3.2** and **3.3**). Harvest estimates for FY 2016 have been increased to 612 mmbf (up 39 mmbf) with the increase in planned harvests from the purchaser survey offsetting the lower sales volume in FY 2015.

**Timber Sales Prices**

The price results of monthly DNR timber sales (seasonally adjusted, **Figure 2.10**) are quite volatile. As discussed in **Part 2**, the DNR sales price (stumpage) forecast uses estimates from two forest economics consulting firms. Primarily because of reductions in the consultants' forecast log and stumpage prices, the FY 2015 average DNR timber sales price

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





projection is lowered from \$364/mbf to \$352/mbf. This estimate also reflects the best information available about the planned composition of the sales.

It is notable that the new FY 2015 forecast price is lower than the average price of sales thus far in FY 2015 (\$375/mbf). This is largely due to the reduction in one consultant's forecast, but also because current stumpage prices are well above the stumpage predicted by current market log prices.

The stumpage predicted off of delivered log price is particularly relevant this forecast because current DNR stumpage prices are well above the predicted stumpage (Figure 2.10). In fact, DNR stumpage prices have increased while log and lumber prices have decreased. This implies that there is currently something of a disconnection between log prices and DNR stumpage prices: either log prices will increase in the near future or DNR stumpage prices will fall.

### Timber Removal Prices

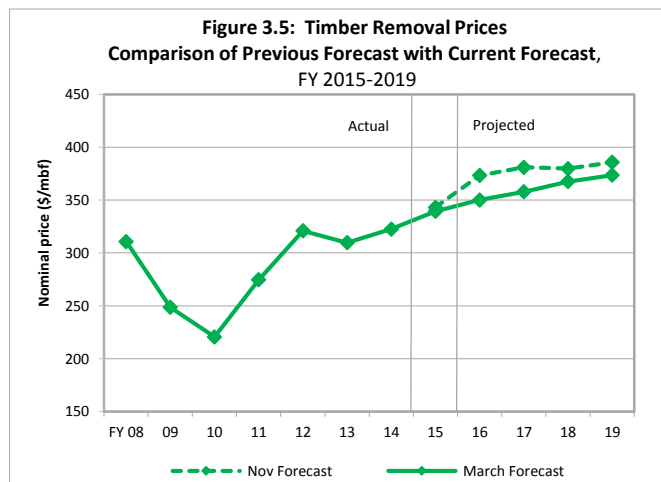
Timber removal prices are determined by sales prices, volumes, and harvest timing. They can be thought of as a moving average of previous timber sales prices, weighted by the volume of sold timber removed in each time period. The removal volumes used to calculate the weights

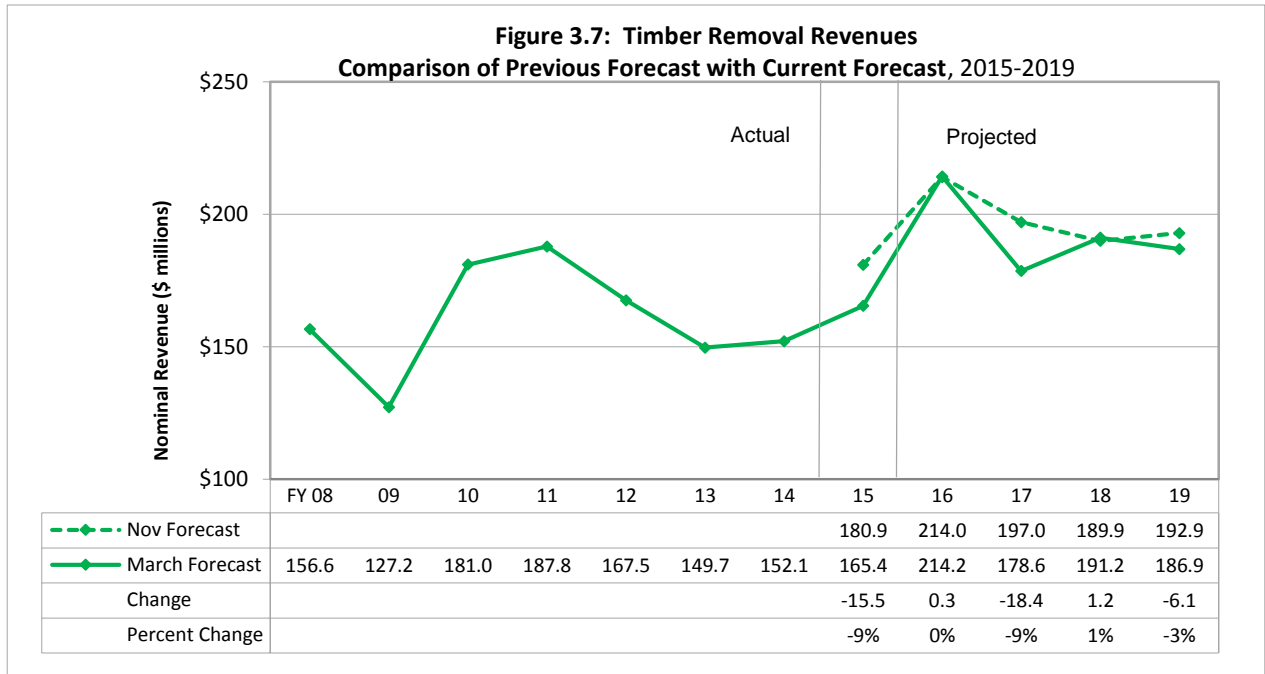
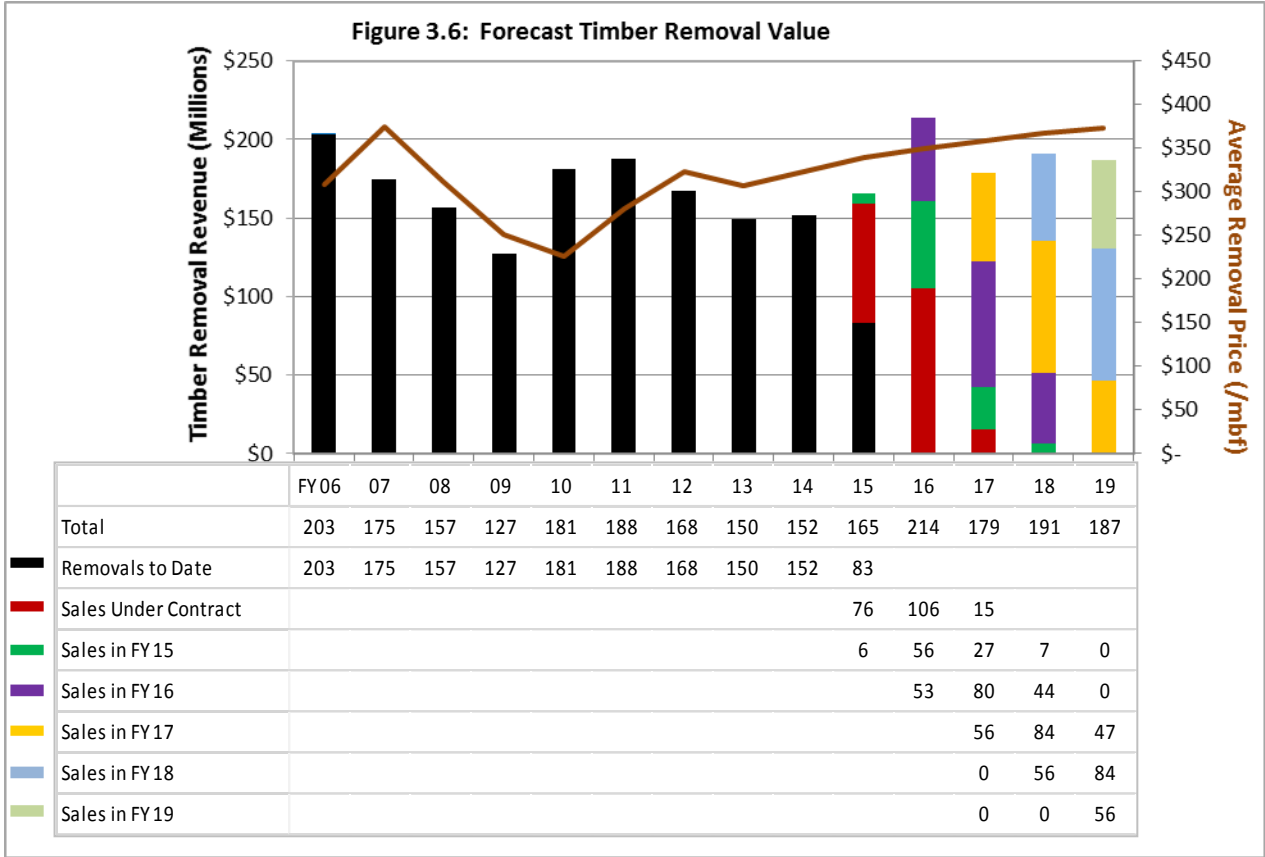
are shown in Figure 3.2. There is a smoothing out and a lag of timber removal prices compared to timber sales prices. For example, sales prices bottomed at an average annual price of \$174/mbf in FY 09 (see Figure 3.4). However, removal prices bottomed out in FY 10 at \$221/mbf on an annual basis, which was \$47/mbf higher and came a year after the bottom for annual sales prices (Figure 3.5).

### Timber Removal Revenues

Figure 3.6 shows projected annual timber removal values, broken down by the fiscal year in which the timber was sold (“sales under contract” are already sold as of February 1<sup>st</sup>, 2015). Expected removal value for FY 2015 is reduced by around \$16 million, to \$173 million, due to the decreases in both forecast removal volumes and prices. FY 2016 removal value is basically unchanged. Expected FY 2017 removal value is decreased by \$18 million to \$179 million due to both lower removal volumes and lower prices.

These changes result in the projected 2013-2015 biennium timber revenues being reduced from \$333.0 million to \$317 million—a reduction of around five percent (see Figure 3.7). In the 2015-2017 Biennium, forecast timber removal revenues are projected to fall by four percent to \$393 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.

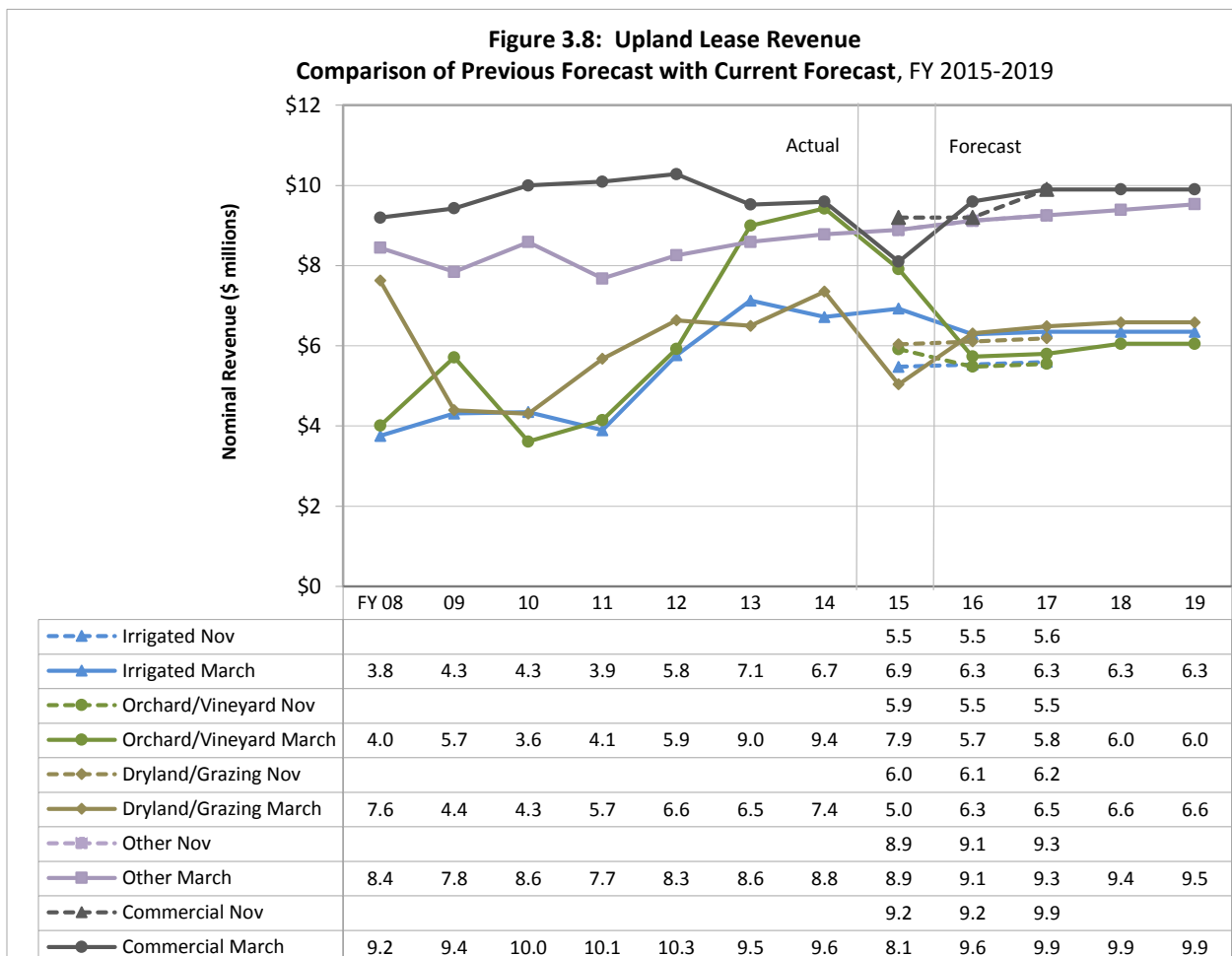
The forecast for commercial leases is reduced by \$1.1 million in the current fiscal year due to one-off maintenance costs and temporary vacancies (**Figure 3.8**). Lease revenue is up by \$400,000 in FY 2016 due to scheduled increases in leases.

The estimate for revenue from dryland agriculture in FY 2015 is reduced by \$1 million due to surprisingly low wheat prices.

Irrigated agriculture is increased by \$1.4 million in the current year due to strong

irrigated returns, and by \$750,000 in outlying years due to conversion to cash rent leasing.

Orchard and vineyard revenues are increased in FY 2015 due to strong product prices from 2013 flowing into current revenue. These sources are also increased for outlying years due to conversion of leases to cash rents.



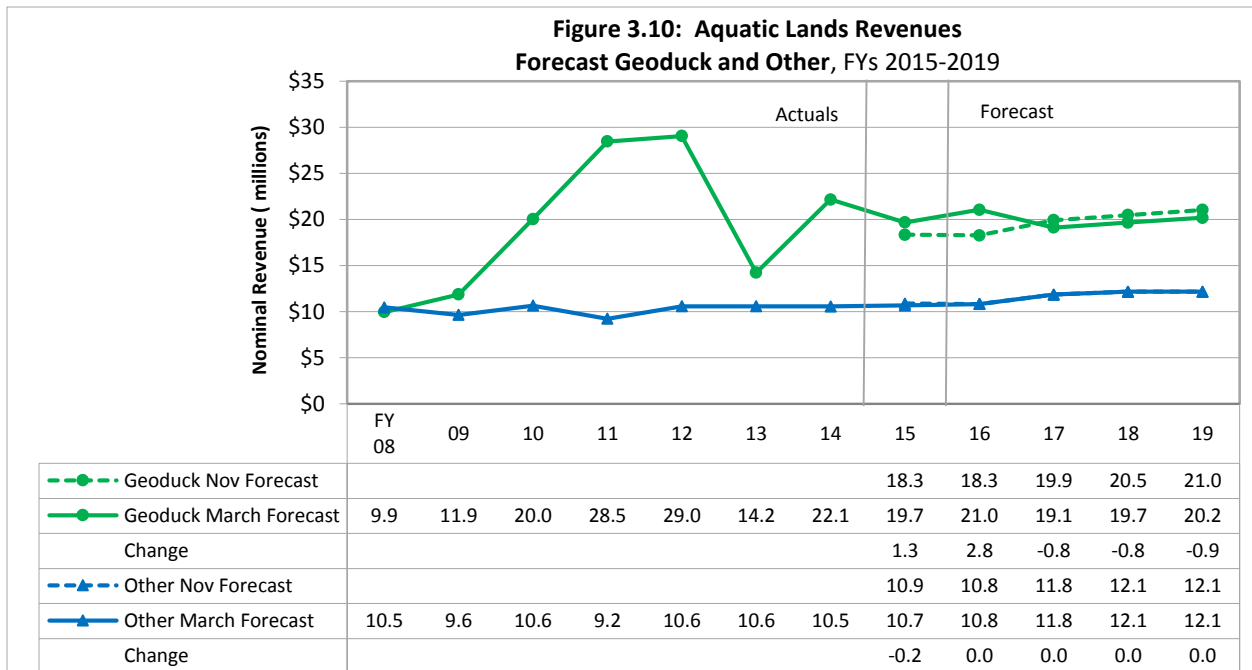
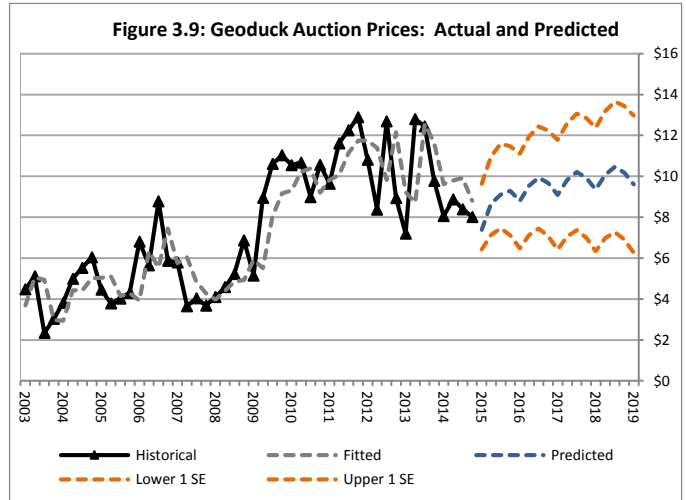
## Aquatic Lands Revenues

The expected revenue from geoduck marketing are increased by \$1.3 million in FY 2015 and \$2.8 million in FY 2016 due to a dramatic increase in the volume of geoduck planned for sale in spring auctions. These increases more than offset a sizable drop in forecast geoduck prices, due primarily to a model update with the most current auction results (**Figures 3.9 and 3.10**).

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

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

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





## Total Revenues from All Sources

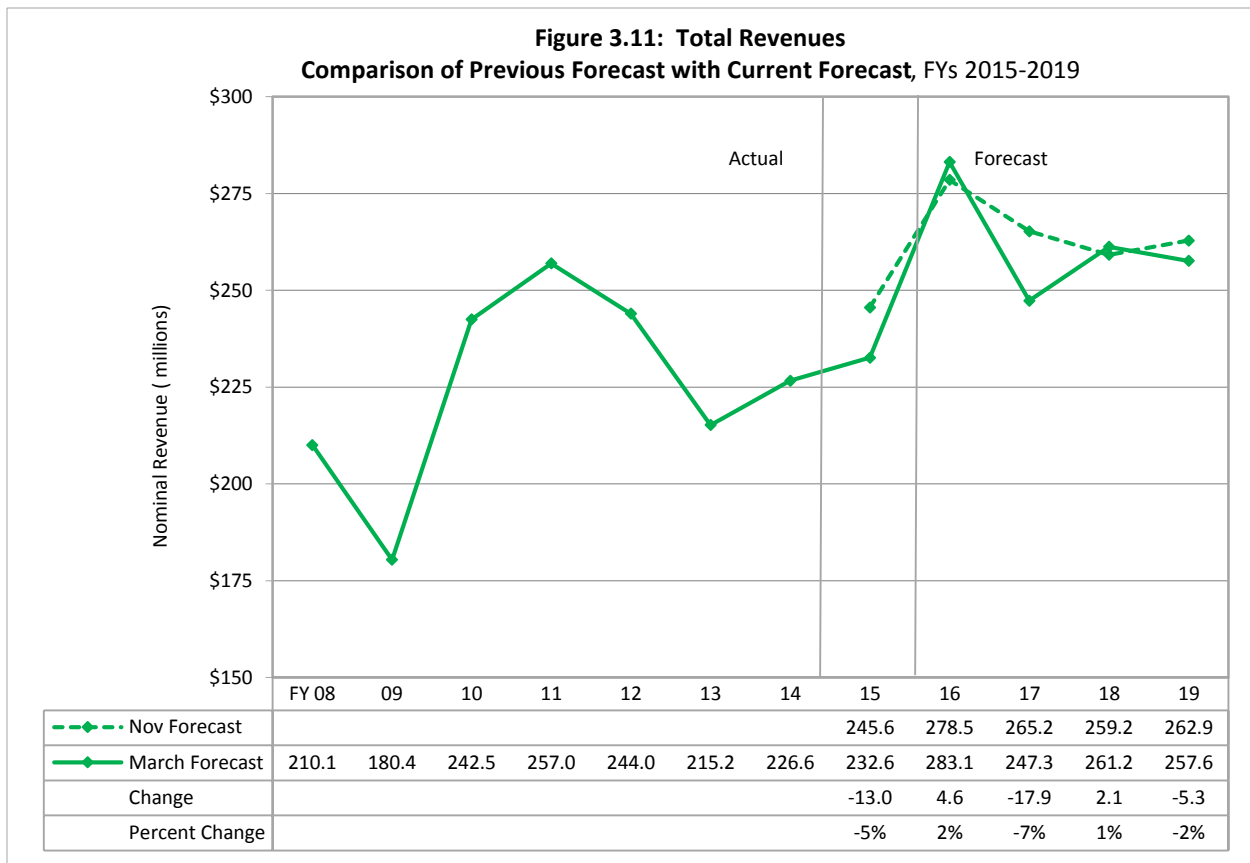
Total forecast revenues for the 2013-15 Biennium (FYs 14 and 15) are down from the previous Forecast by \$13 million (2.8 percent) to \$459 million. Revenues for the 2015-2017 Biennium (FYs 16 and 17) are projected to be down by \$13.3 million (2.4 percent) to \$531 million. The vast majority of the overall revenue changes are driven by a change in planned timber harvests and timber sales prices.

## Some Caveats

DNR strives to produce the most accurate and objective projections possible, based on the Department’s current policy directions and available information. Actual revenues will depend on future policy decisions made by the Legislature, the Board, and DNR, as well as on market and other conditions beyond DNR’s

control.

As events and market conditions develop, DNR will incorporate new information into future Forecasts. After FY 2015, we judge the downside to the overall forecast to be slightly greater than the upside because of the risks to the timber sales volume (and therefore to timber removal volume and revenues) as well as the ongoing weakness and vulnerabilities of the U.S. and world economies that affect the housing market, and therefore stumpage prices.



## Distribution of Revenues

The distribution of timber revenues by trust are based on:

- The volumes and values of timber in the inventory (sales sold but not yet harvested) by trust;
- The volumes of timber in planned sales for FY 15 by trust, and relative historical timber prices by DNR region by trust; and
- The volumes of timber by trust for FYs 15-17 based on provisional output of the sustainable harvest model<sup>5</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>6</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</u> <u>2015</u>	<u>FY</u> <u>2016</u>	<u>FY</u> <u>2017</u>	<u>FY</u> <u>2018</u>	<u>FY</u> <u>2019</u>
FDA	25	25	25	25	25
RMCA	29	29	29	29	29

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

<sup>5</sup> DNR and the Board of Natural Resources have not yet determined the sustainable harvest level for the FY 2015-2024 biennium.

<sup>6</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: March 2015 Forecast by Source (millions of dollars)**

Changes are from the November 2014 Forecast

	Actuals			Forecast				
	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
<b>Timber Sales</b>								
Volume (mmbf)	553	495	497	491	500	500	500	500
Change				(9)	-	-	-	-
% Change				-2%	0%	0%	0%	0%
Price (\$/mbf)	\$296	\$334	\$ 356	\$ 352	\$ 355	\$ 373	\$ 373	\$ 375
Change				\$ (12)	\$ (22)	\$ (3)	\$ (13)	\$ (17)
% Change				-3%	-6%	-1%	-3%	-4%
<b>Value of Timber Sales</b>	<b>\$ 163.7</b>	<b>\$ 165.4</b>	<b>\$ 177.2</b>	<b>\$ 172.6</b>	<b>\$ 177.4</b>	<b>\$ 186.7</b>	<b>\$ 186.6</b>	<b>\$ 187.3</b>
Change				\$ (9.4)	\$ (11.0)	\$ (1.7)	\$ (6.7)	\$ (8.6)
% Change				-5%	-6%	-1%	-3%	-4%

	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
<b>Timber Removals</b>								
Volume (mmbf)	517	486	471	487	612	499	520	500
Change				(40)	39	(18)	20	-
% Change				-8%	7%	-3%	4%	0%
Price (\$/mbf)	\$321	\$310	\$ 323	\$ 339	\$ 350	\$ 358	\$ 368	\$ 374
Change				\$ (4)	\$ (23)	\$ (23)	\$ (12)	\$ (12)
% Change				-1%	-6%	-6%	-3%	-3%
<b>Timber Revenue</b>	<b>\$ 167.5</b>	<b>\$ 149.7</b>	<b>\$ 152.1</b>	<b>\$ 165.4</b>	<b>\$ 214.2</b>	<b>\$ 178.6</b>	<b>\$ 191.2</b>	<b>\$ 186.9</b>
Change				\$ (15.5)	\$ 0.3	\$ (18.4)	\$ 1.2	\$ (6.1)
% Change				-9%	0%	-9%	1%	-3%

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

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

Excludes fire assessments, permits, and fees.

Totals may not add due to rounding.

**Table 3.1: March 2015 Forecast by Source (millions of dollars), cont'd**

Changes are from the November 2014 Forecast

	Actuals			Forecast				
	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
<b>Upland Leases</b>								
Irrigated Agriculture	\$ 5.8	\$ 7.1	\$ 6.7	\$ 6.9	\$ 6.3	\$ 6.3	\$ 6.3	\$ 6.3
Change				\$ 1.5	\$ 0.8	\$ 0.8	\$ 0.8	\$ 0.8
% Change				26%	14%	13%	13%	13%
Orchard/Vineyard	\$ 5.9	\$ 9.0	\$ 9.4	\$ 7.9	\$ 5.7	\$ 5.8	\$ 6.0	\$ 6.0
Change				\$ 2.0	\$ 0.3	\$ 0.3	\$ 0.5	\$ 0.5
% Change				34%	5%	5%	9%	9%
Dryland Ag/Grazing	\$ 6.6	\$ 6.5	\$ 7.4	\$ 5.0	\$ 6.3	\$ 6.5	\$ 6.6	\$ 6.6
Change				\$ (1.0)	\$ 0.2	\$ 0.3	\$ 0.4	\$ 0.4
% Change				-17%	3%	5%	6%	6%
Commercial	\$ 10.3	\$ 9.5	\$ 9.6	\$ 8.1	\$ 9.6	\$ 9.9	\$ 9.9	\$ 9.9
Change				\$ (1.1)	\$ 0.4	\$ -	\$ -	\$ -
% Change				-12%	4%	0%	0%	0%
Other Leases	\$ 8.3	\$ 8.6	\$ 8.8	\$ 8.9	\$ 9.1	\$ 9.3	\$ 9.4	\$ 9.5
Change				\$ -	\$ -	\$ -	\$ -	\$ -
% Change				0%	0%	0%	0%	0%
<b>Total Upland Leases</b>	<b>\$ 36.9</b>	<b>\$ 40.7</b>	<b>\$ 41.9</b>	<b>\$ 36.9</b>	<b>\$ 37.0</b>	<b>\$ 37.8</b>	<b>\$ 38.3</b>	<b>\$ 38.4</b>
Change				\$ 1.4	\$ 1.6	\$ 1.3	\$ 1.7	\$ 1.7
% Change				4%	5%	4%	5%	4%
<b>Aquatic Lands</b>								
Aquatic Leases	\$ 10.6	\$ 10.6	\$ 10.5	\$ 10.7	\$ 10.8	\$ 11.8	\$ 12.1	\$ 12.1
Change				\$ (0.2)	\$ -	\$ -	\$ -	\$ -
% Change				-2%	0%	0%	0%	0%
Geoduck	\$ 29.0	\$ 14.2	\$ 22.1	\$ 19.7	\$ 21.0	\$ 19.1	\$ 19.7	\$ 20.2
Change				\$ 1.3	\$ 2.8	\$ (0.8)	\$ (0.8)	\$ (0.9)
% Change				7%	15%	-4%	-4%	-4%
<b>Aquatic Lands Revenue</b>	<b>\$ 39.6</b>	<b>\$ 24.8</b>	<b>\$ 32.7</b>	<b>\$ 30.3</b>	<b>\$ 31.8</b>	<b>\$ 31.0</b>	<b>\$ 31.8</b>	<b>\$ 32.3</b>
Change				\$ 1.1	\$ 2.8	\$ (0.8)	\$ (0.8)	\$ (0.9)
% Change				4%	10%	-2%	-2%	-3%
<b>Total All Sources</b>	<b>\$ 244.0</b>	<b>\$ 215.2</b>	<b>\$ 226.6</b>	<b>\$ 232.6</b>	<b>\$ 283.1</b>	<b>\$ 247.3</b>	<b>\$ 261.2</b>	<b>\$ 257.6</b>
Change				\$ (13.0)	\$ 4.6	\$ (17.9)	\$ 2.1	\$ (5.3)
% Change				-5%	2%	-7%	1%	-2%

Note: Totals may not add due to rounding.

**Table 3.2: March 2015 Forecast by Fund (millions of dollars)**

Changes are from the November 2014 Forecast

Management Funds	Actuals			Forecast				
	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
041 RMCA - Uplands	\$ 29.7	\$ 30.3	\$ 33.2	\$ 31.9	\$ 41.0	\$ 37.1	\$ 38.5	\$ 38.3
Change				\$ (2.4)	\$ 1.0	\$ (2.1)	\$ 0.7	\$ (0.4)
% Change				-7%	2%	-5%	2%	-1%
041 RMCA - Aquatic Lands	\$ 18.4	\$ 10.7	\$ 14.8	\$ 13.7	\$ 14.3	\$ 13.7	\$ 14.1	\$ 14.3
Change				\$ 0.6	\$ 1.4	\$ (0.4)	\$ (0.4)	\$ (0.4)
% Change				5%	11%	-3%	-3%	-3%
014 FDA	\$ 20.9	\$ 16.6	\$ 19.6	\$ 22.4	\$ 26.8	\$ 22.4	\$ 24.4	\$ 24.4
Change				\$ (1.1)	\$ (0.6)	\$ (2.5)	\$ 0.2	\$ (0.8)
% Change				-5%	-2%	-10%	1%	-3%
<b>Total Management Funds</b>	<b>\$ 69.0</b>	<b>\$ 57.6</b>	<b>\$ 67.6</b>	<b>\$ 68.0</b>	<b>\$ 82.2</b>	<b>\$ 73.2</b>	<b>\$ 77.0</b>	<b>\$ 77.0</b>
Change				\$ (2.9)	\$ 1.7	\$ (5.0)	\$ 0.5	\$ (1.6)
% Change				-4%	2%	-6%	1%	-2%

Current Funds	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
113 Common School Construction	\$ 56.5	\$ 60.5	\$ 56.6	\$ 55.3	\$ 71.9	\$ 65.1	\$ 69.0	\$ 67.9
Change				\$ (3.8)	\$ 3.7	\$ (3.2)	\$ 0.9	\$ (0.4)
% Change				-6%	5%	-5%	1%	-1%
999 Forest Board Counties	\$ 64.7	\$ 55.4	\$ 52.0	\$ 61.0	\$ 72.1	\$ 58.1	\$ 61.2	\$ 59.8
Change				\$ (2.4)	\$ (1.1)	\$ (6.4)	\$ 0.6	\$ (1.9)
% Change				-4%	-1%	-10%	1%	-3%
001 General Fund	\$ 4.5	\$ 2.2	\$ 2.2	\$ 1.9	\$ 2.8	\$ 2.8	\$ 3.6	\$ 3.9
Change				\$ (0.2)	\$ (0.1)	\$ (0.3)	\$ (0.0)	\$ (0.1)
% Change				-11%	-3%	-10%	0%	-3%
348 University Bond Retirement	\$ 0.8	\$ 0.8	\$ 1.8	\$ 2.8	\$ 2.5	\$ 1.8	\$ 2.7	\$ 2.1
Change				\$ (0.1)	\$ 0.1	\$ (0.2)	\$ (0.2)	\$ (0.0)
% Change				-3%	2%	-12%	-7%	-2%
347 WSU Bond Retirement	\$ 1.8	\$ 1.6	\$ 1.7	\$ 1.7	\$ 1.6	\$ 1.7	\$ 1.7	\$ 1.7
Change				\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.1
% Change				8%	4%	4%	5%	5%
042 CEP&RI	\$ 5.0	\$ 5.1	\$ 5.5	\$ 4.2	\$ 6.2	\$ 5.0	\$ 4.8	\$ 4.5
Change				\$ 0.5	\$ 1.0	\$ 0.0	\$ 0.3	\$ (0.1)
% Change				13%	19%	1%	6%	-2%
036 Capitol Building Construction	\$ 8.8	\$ 3.7	\$ 6.7	\$ 5.9	\$ 8.1	\$ 8.1	\$ 9.0	\$ 8.8
Change				\$ (1.0)	\$ (0.9)	\$ (1.1)	\$ (0.1)	\$ (0.3)
% Change				-14%	-10%	-12%	-1%	-3%
061/3/4 Normal (CWU, EWU, WWU, TESC)	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.1
Change				\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
% Change				12%	6%	6%	8%	8%
Other Funds	\$ 0.1	\$ 0.4	\$ 1.5	\$ 0.6	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.2
Change				\$ 0.1	\$ (0.1)	\$ (0.0)	\$ (0.0)	\$ (0.0)
% Change				12%	-100%	-9%	-2%	-3%
<b>Total Current Funds</b>	<b>\$ 142.3</b>	<b>\$ 129.9</b>	<b>\$ 128.1</b>	<b>\$ 133.7</b>	<b>\$ 165.3</b>	<b>\$ 142.7</b>	<b>\$ 152.2</b>	<b>\$ 149.0</b>
Change				\$ (6.8)	\$ 2.7	\$ (11.1)	\$ 1.6	\$ (2.8)
% Change				-5%	2%	-7%	1%	-2%

(Continued)

**Table 3.2: March 2015 Forecast by Fund (millions of dollars), cont'd**

Changes are from the November 2014 Forecast

Aquatic Lands Enhancement Account	Actuals			Forecast				
	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
<b>02R</b>	<b>\$ 21.2</b>	<b>\$ 13.6</b>	<b>\$ 17.9</b>	<b>\$ 16.6</b>	<b>\$ 17.5</b>	<b>\$ 17.3</b>	<b>\$ 17.7</b>	<b>\$ 18.0</b>
Change				\$ 0.5	\$ 1.4	\$ (0.4)	\$ (0.4)	\$ (0.4)
% Change				3%	9%	-2%	-2%	-2%

Permanent Funds	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
<b>601 Agricultural College Permanent</b>	<b>\$ 3.2</b>	<b>\$ 4.1</b>	<b>\$ 3.5</b>	<b>\$ 5.7</b>	<b>\$ 7.4</b>	<b>\$ 4.3</b>	<b>\$ 4.3</b>	<b>\$ 4.2</b>
Change				\$ (2.1)	\$ 0.3	\$ (0.8)	\$ (0.2)	\$ (0.1)
% Change				-27%	5%	-15%	-4%	-3%
<b>604 Normal School Permanent</b>	<b>\$ 3.1</b>	<b>\$ 1.4</b>	<b>\$ 1.8</b>	<b>\$ 1.7</b>	<b>\$ 3.3</b>	<b>\$ 4.1</b>	<b>\$ 3.9</b>	<b>\$ 3.0</b>
Change				\$ (0.3)	\$ 0.0	\$ 0.5	\$ 0.5	\$ (0.1)
% Change				-16%	0%	15%	16%	-3%
<b>605 Common School Permanent</b>	<b>\$ 0.3</b>	<b>\$ 0.3</b>	<b>\$ 0.4</b>	<b>\$ 0.3</b>	<b>\$ 0.3</b>	<b>\$ 0.3</b>	<b>\$ 0.3</b>	<b>\$ 0.3</b>
Change				\$ -	\$ -	\$ -	\$ -	\$ -
% Change				0%	0%	0%	0%	0%
<b>606 Scientific Permanent</b>	<b>\$ 4.6</b>	<b>\$ 7.0</b>	<b>\$ 6.1</b>	<b>\$ 6.4</b>	<b>\$ 6.7</b>	<b>\$ 4.9</b>	<b>\$ 5.3</b>	<b>\$ 5.5</b>
Change				\$ (1.3)	\$ (1.5)	\$ (1.1)	\$ (0.1)	\$ (0.2)
% Change				-17%	-18%	-19%	-1%	-3%
<b>607 University Permanent</b>	<b>\$ 0.3</b>	<b>\$ 0.8</b>	<b>\$ 1.1</b>	<b>\$ 0.2</b>	<b>\$ 0.5</b>	<b>\$ 0.5</b>	<b>\$ 0.6</b>	<b>\$ 0.6</b>
Change				\$ (0.0)	\$ (0.1)	\$ (0.1)	\$ 0.0	\$ (0.0)
% Change				-18%	-15%	-16%	1%	-3%
<b>Total Permanent Funds</b>	<b>\$ 11.4</b>	<b>\$ 13.6</b>	<b>\$ 13.0</b>	<b>\$ 14.3</b>	<b>\$ 18.1</b>	<b>\$ 14.2</b>	<b>\$ 14.3</b>	<b>\$ 13.6</b>
Change				\$ (3.8)	\$ (1.2)	\$ (1.5)	\$ 0.3	\$ (0.4)
% Change				-21%	-6%	-9%	2%	-3%

Total All Funds	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 17	FY 17
<b>Total</b>	<b>\$ 244.0</b>	<b>\$ 214.8</b>	<b>\$ 226.6</b>	<b>\$ 232.6</b>	<b>\$ 283.1</b>	<b>\$ 247.3</b>	<b>\$ 261.2</b>	<b>\$ 257.6</b>
Change				\$ (13.0)	\$ 4.6	\$ (17.9)	\$ 2.1	\$ (5.3)
% Change				-5%	2%	-7%	1%	-2%

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