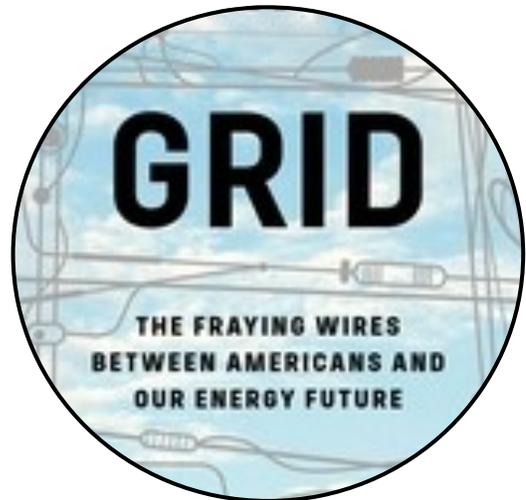


Washington State Energy Office News

Oct 2016



Monthly News
Energy Review



Aging And Unstable, The
Nation's Electrical Grid Is
'The Weakest Link'



Colorado Launches First Low-
Income Rooftop Solar Project in
its Wx Program



Energy & Climate Articles

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Energy Northwest plans Richland solar center, with storage and training



Costa Rica Has Run Solely on Renewable Energy for Two Months Straight

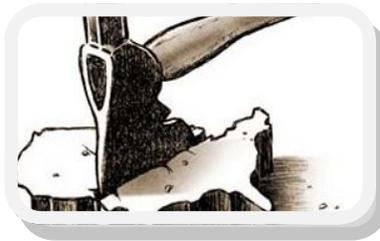


So many U.S. trees have died that some scientists want to burn them instead of coal

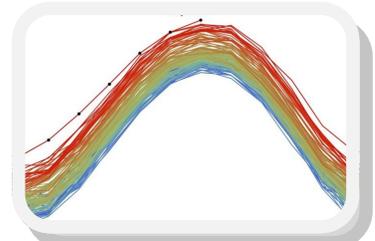
It's Getting Hotter—Climate Change Articles



Think it's hot now?
Just wait.



Divided America:
Global Warming
Polarizes More
than Abortion



July Was
'Absolutely' Earth's
Hottest Month Ever
Recorded



California Is in Flames
Right Now, With Fires
Fueled by Historic
Drought



USA Swelters Through
Hottest Summer Nights
in 121 Years



Study: Earth's
Roughly Warmest in
About 100,000 Years



Renewable Power Update



Solar Rooftop Revolution Fizzles in U-S on Utility Pushback



Dairy Digesters Fight Climate Change, Benefit Farms



Solar Tax Credits Scorch State Budgets

WA Clean Air Rule



Gas Utilities Go to Court Against State's New Clean-Air Rule



Washington State's New Cap-And-Trade Rule Tackles Global Warming



State limits carbon pollution from large sources

WA Carbon Tax Initiative – I732



Initiative 732: A 'Carbon Tax Swap' To Address Climate Change



Washington State's Carbon Tax Initiative Looks Like a Nail-Biter



Editorial: Does I-732 Go Far Enough? Progressives Can't Seem to Agree



Energy/Climate Regulatory Update



U.N. Signals That Climate Deal Has Backing Needed to Enter Into Force



White House Sets New Fuel-Efficiency Standards for Heavy-Duty Trucks



Half the Country Not Likely to Participate in EPA's Clean Energy Plan

Conventional Power Update



The Price of Cutting Carbon: More Natural Gas to Back Up Green Energy



Who is winning the battle to replace coal?



Global coal power plans shrink 14% in 2016, led by China, India

Miscellaneous



The Towns That Say "Yes in my Backyard!" to Nuclear Waste



An App to Help Reduce Emissions When Buying a Car



A New Debate Over Pricing the Risks of Climate Change



Energy & Climate Video/Graphics

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The Danger of Digging Deeper



World Energy Council Data Map

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ISTANBUL 2016
23rd WORLD ENERGY CONGRESS 



COAL OIL GAS HYDROPOWER BIOMASS SOLAR GEOTHERMAL WIND MARINE NUCLEAR PEAT

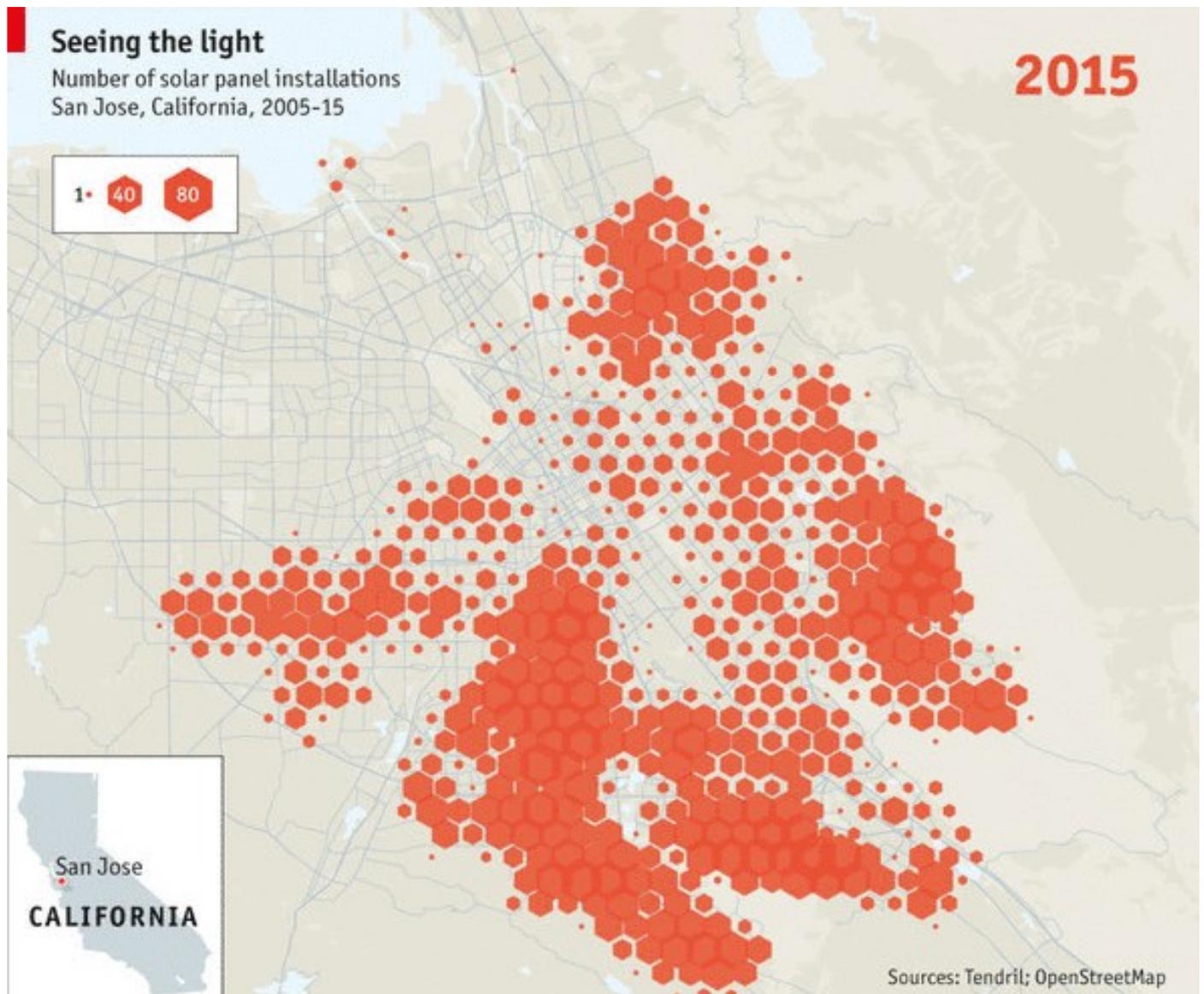


Energy & Climate Video/Graphics

[Click on graphics to access articles](#)

Covet thy neighbor's solar panel

The real reason people install solar panels





Energy & Climate Video/Graphics

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NW Power Generation Map

Power Generation Map

These are the top power producers in each category and region.

- For details, click any marker or choose from the boxes below.
- Other formats: [Google Earth](#), [Excel](#), [PDF](#)

- Select a Hydropower project -
 - only treaty dams
- Select a Natural gas project -
- Select a Coal project (see MT, WY, NV) -
- Select a Biomass project -
- Select a Wind project -
 - [wind flow map](#)
- Select a Geothermal project -
- Select a Solar project -
- Select a Nuclear project -

[More information and your comments.](#)

Last updated 4/20/2016





Energy & Climate Video/Graphics

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Understanding the Myths and Realities of the "Greener" American Home





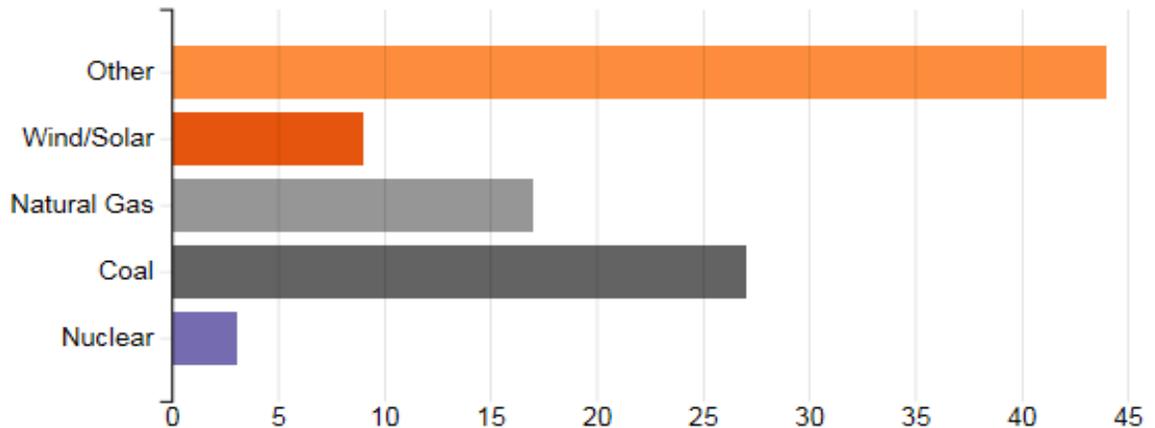
What's Your Future Electricity Mix Look Like?

NORTHWEST



2015 2030, No CPP 2030, CPP

Percent of Electricity Mix



Updated Carbon Tax Assessment Model

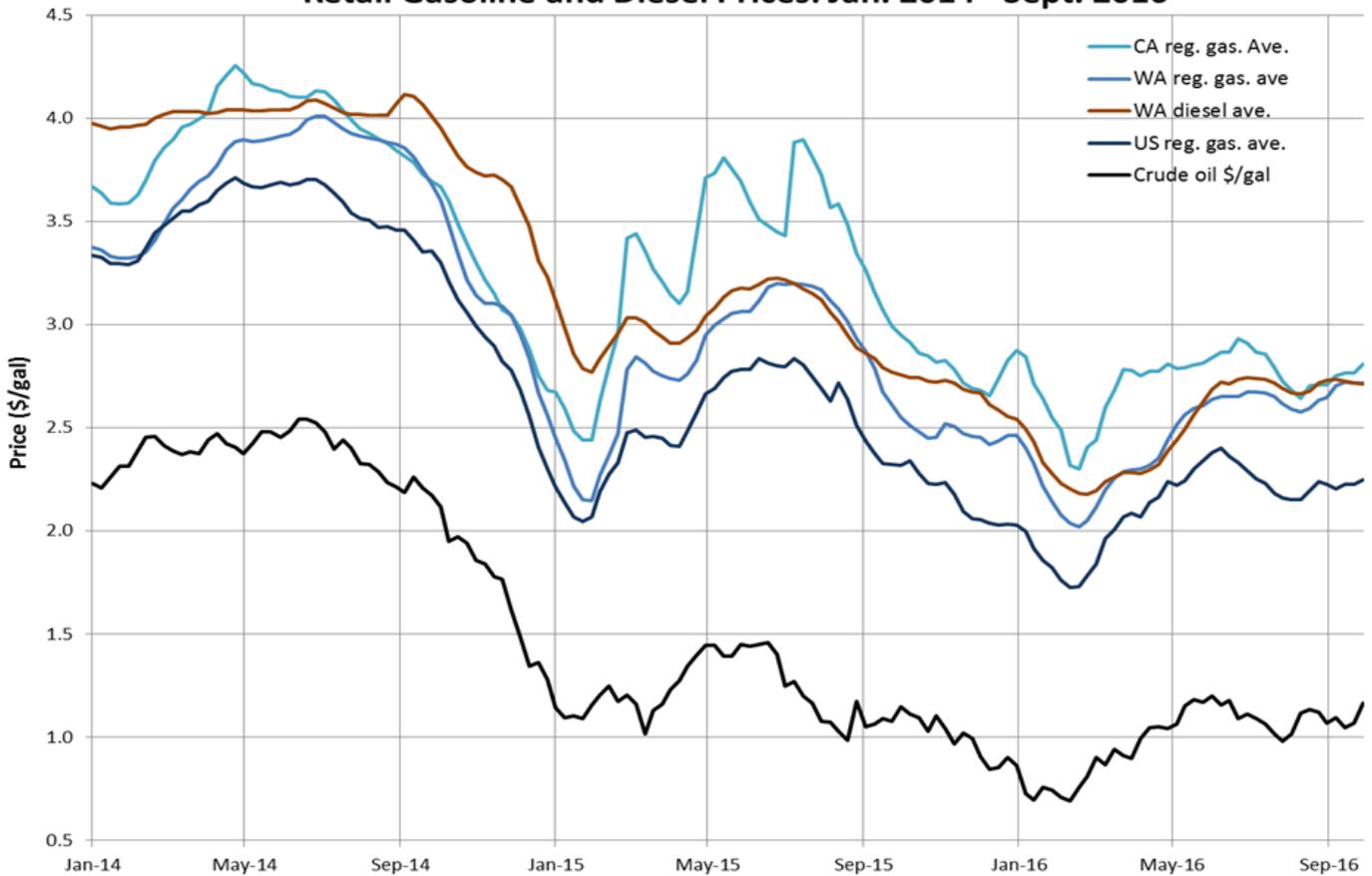
Commerce recently posted and updated version of CTAM (version 3.2c). The update version contains a number of changes and improvements, including:

- The Energy Information Administration (EIA) 2016 Annual Energy Outlook energy and price forecasts
- Update of the proration table used with the EIA forecast information
- Added a five state population forecast table which is used to adjust the prorated factors
- Northwest Power and Conservation Council 7th Power Plan electricity forecast
- Update of the Colstrip and Centralia power plant generation numbers
- Correct errors in the electric sector calculations and industrial sector natural gas calculations
- Modified calculations associated with non-energy GHG emissions
- Modified heat rate forecast for thermal electric power plants
- Added EIA derived adjustment for CA AB32 emission reduction activities
- Modified the California LCFS adjustment

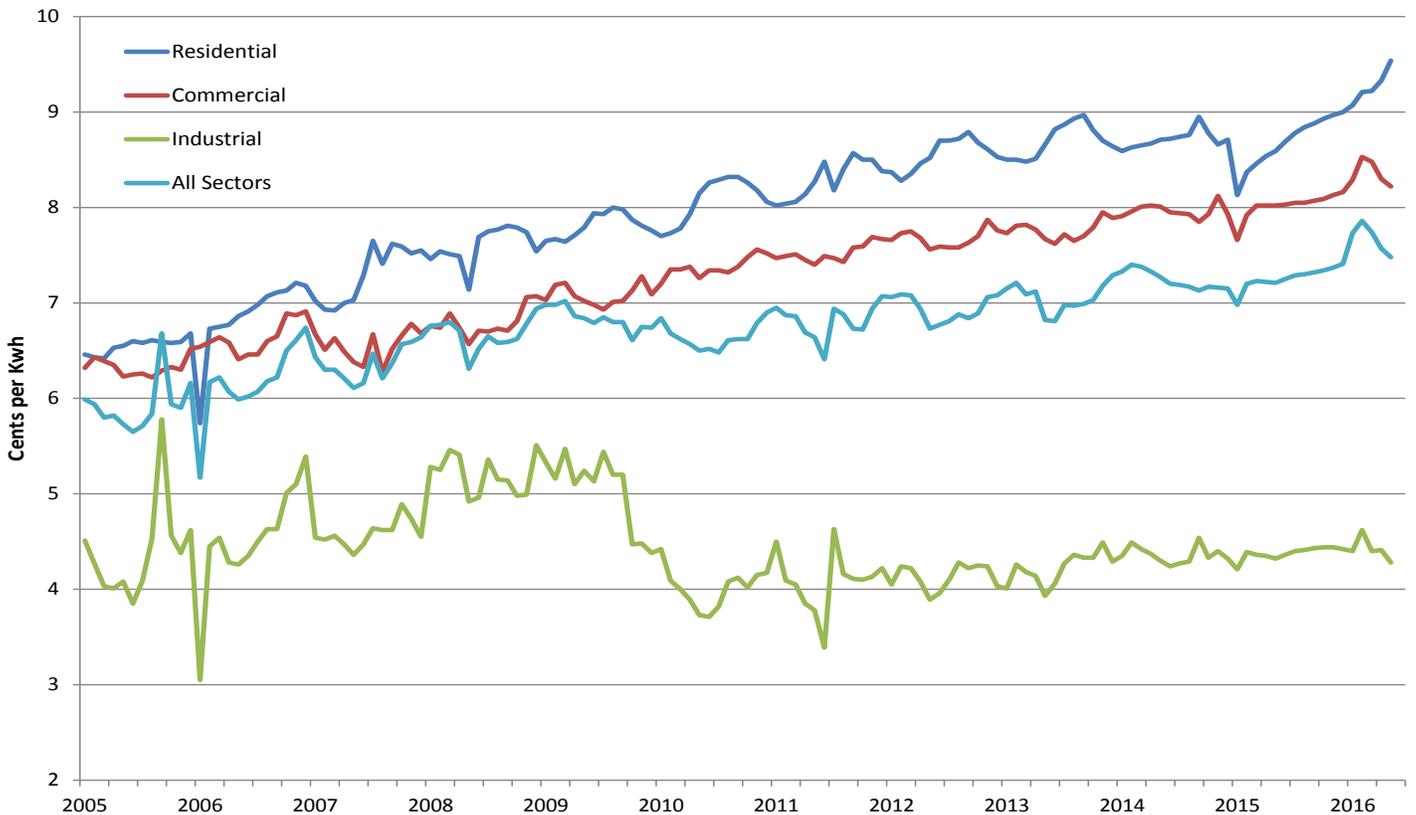
The model can be found [here](#).



Retail Gasoline and Diesel Prices: Jan. 2014 - Sept. 2016

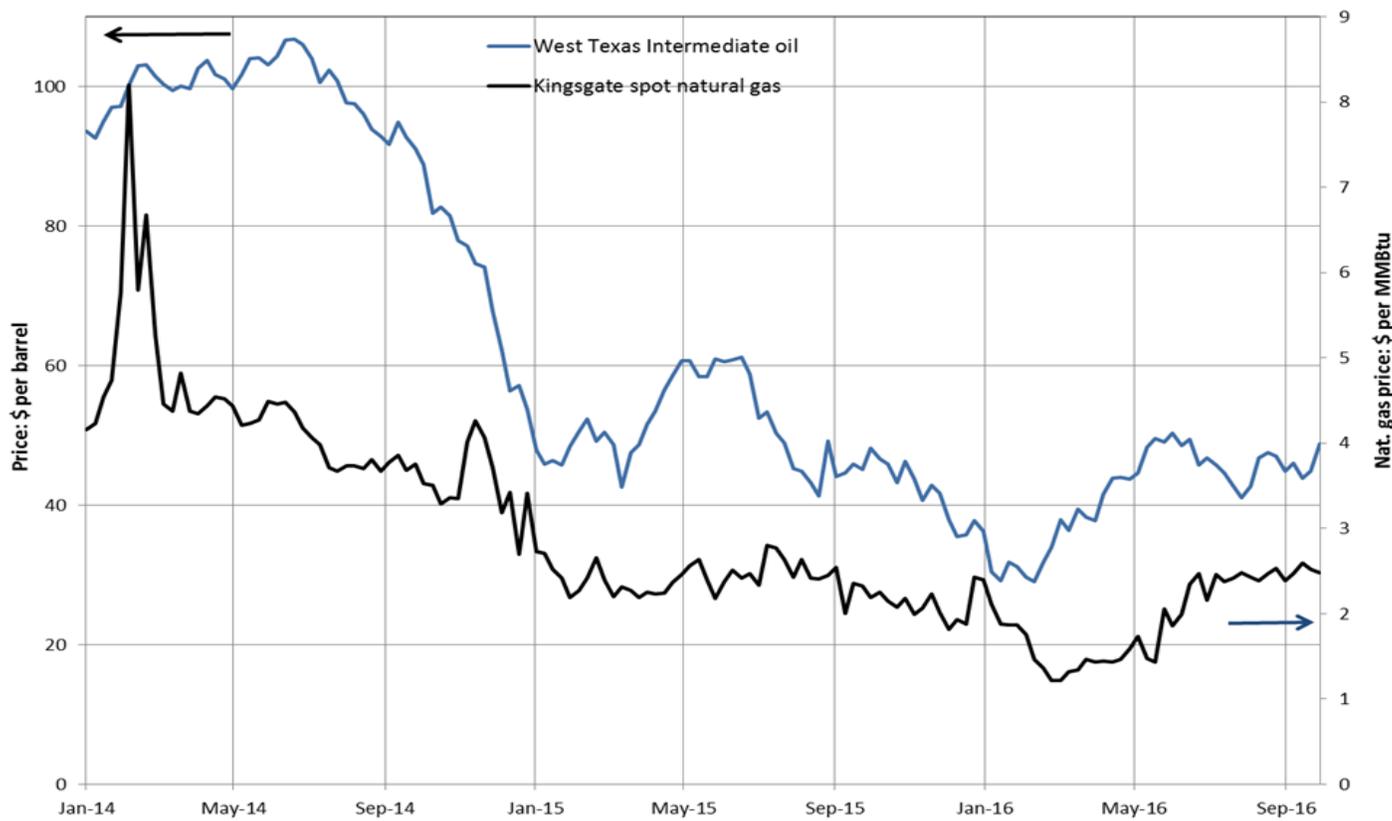


Washington State Electricity Rates by Sector: Jan. 2005 - May 2016





West Texas Intermediate Oil and Kingsgate Natural Gas: Jan. 2014 - Sept. 2016



River & Snow Pack Info

- Observed Sept stream flow at The Dalles: 86% of average.
- Observed Sept precipitation above The Dalles: 103% of average.
- Est. 2016 Final runoff at The Dalles (Jan.—July): NA
- Estimated snowpack: NA
- Federal hydropower generation in August : 5,234 aMW, 2011-2015 average: 5,699 aMW.
- Reservoir content (Libby, Hungry Horse, Grand Coulee, Dworshak): Sept. 83%, 5-year average: 83%.

River Data

| Data for May 29 | Outflow (kcfs) | Ave. outflow for last 10 years (kcfs) |
|-----------------------|----------------|---------------------------------------|
| (Snake) Lower Granite | 20.7 | 21.0 |
| (Columbia) The Dalles | 89.7 | 88.1 |

Energy Price Overview

Petroleum: Crude oil prices wandered around in the in the \$41-47 range during August and September. Global inventories of crude oil remain high and summer fuel demand started to ebb after Labor day. The Saudis and a few other OPEC members, along with Russia, have been negotiating a production cap for the cartel. They reached an agreement last week and crude oil spot prices have increased a few dollars.

Transportation Fuels: Transportation fuel prices declined during July and August, but increased during September in response to several refinery outages and the brief shutdown of the Colonial pipeline from Texas to the east coast. As of last week, national (average) gasoline prices were 6 cents higher and national diesel were 3 cents per gallon higher relative to the last week of the July: national gas and diesel were \$2.22 and \$2.38 per gallon respectively. Washington state average gasoline price for the same period was 10 cents higher relative to the end of July at \$2.72 per gallon, while diesel increased 4 cents to \$2.72per gallon.

Natural Gas: Over the past couple of months natural gas prices have increased slightly as US production has declined modestly. The price for month a head NYMEX natural gas increased to \$3.00 per MMBtu. Locally, the average July natural gas spot price at the Kingsgate hub rose to \$2.49 per MMBtu. Gas storage levels are 3,600 Bcf, about 6.5% above the 5-year storage average for this time of the year: 4 months ago storage was running 37% ahead of the 5-year average. Gas storage in the Pacific region is running 5.9 % below the 5-year average.

Electricity: September was a typical month with spot electricity prices decreasing as electricity demand for air-conditioning in the Southwest declined. The average spot price was \$27.8 per MWh, about \$7.5 less than the previous month and \$1 more than for Sept. 2015. The PNW summer of 2016 turned out to be wetter and cooler than 2015, consequently the Columbia and Snake River flows and power generation levels are about normal. See River Data table and the Power Generation below.

| Energy Price Summary | Current | Month Ago | Year Ago |
|---|-----------------------|-------------------------------|--------------------------------|
| Monthly Range at Mid-C (Peak: \$ per MWh) | 23.5-37.3 | 22.5-65 | 21-40 |
| Average Mid C price (Peak hours \$ MWh, current month) | 27.8 | 35.2 | 27.0 |
| Electricity WA Ave. Retail: July (cents/kWh) | 7.66 | 7.57 | 7.29 |
| Natural gas Kingsgate spot price (next day: \$ per million BTU) | 2.53 | 2.42 | 2.33 |
| Natural gas Sumas futures price (next month \$ per million BTU) | 2.67 | 2.47 | 2.44 |
| Natural gas Sumas monthly average: July (\$ per million BTU) | 2.31 | 1.73 | 2.25 |
| Natural gas H.H. futures (NYMEX next month: \$ per million BTU) | 3.00 | 2.72 | 2.59 |
| E85 (national average: \$ per gallon gasoline) | 2.13 | 2.13 | 2.64 |
| Ethanol (CBT next month contract: \$ per gallon) | 1.55 | 1.42 | 1.52 |
| Corn (CBT next month contract: \$ per bushel) | 3.30 | 3.33 | 3.89 |
| Petroleum, West Texas Intermediate futures (\$ per barrel) | 44.9 | 42.7 | 45.1 |
| Seattle gasoline price (\$ per gallon, last week of the month) | 2.76 | 2.65 | 2.71 |
| Gasoline futures (NYMEX next month: \$ per gallon) | 1.38 | 1.42 | 1.37 |
| State diesel price (\$ per gallon, last week of the month) | 2.72 | 2.67 | 2.77 |
| Heating oil futures (NYMEX next month: \$ per gallon) | 1.42 | 1.42 | 1.50 |
| U.S. residential propane price report (\$ per gallon) | NA | NA | NA |
| Clean Cities: Alternative Fuel Price Report, July 2016 | Current US avg | Current qtr west coast | Last qtr avg west coast |
| Ethanol E85 (\$ per gas gallon equiv.) | 2.59 | 3.12 | 2.39 |
| Biodiesel B20 (\$ per diesel gallon equiv.) | 2.59 | 2.89 | 2.27 |
| Biodiesel B99-100 (\$ per diesel gallon equiv.) | 3.33 | 3.59 | 3.09 |
| Compressed Natural Gas (\$ per gas gallon equiv.) | 2.05 | 2.36 | 2.02 |
| Propane (\$ per gas gallon equiv.) | 3.78 | 4.04 | 3.79 |