The EPA announced rules for natural gas and oil produced using hydraulic fracturing (Fracking). The rules apply only to new wells drilled on federal land, but states may adopt these or similar rules for hydraulic fracturing on state or private land. See article on page 4.

From mid February to early March, cars in three oil trains derailed and burned. The derailments occurred in Illinois, West Virginia, and Ontario. Two of the incidents involved the newer oil tanker cars, which are supposed to be less prone to rupture following derailment. An oil train traversing Washington was reported to be leaking from several cars. A federal Dept. of Transportation report predicts that trains hauling crude oil or ethanol will derail an average of 10 times a year over the next two decades, causing more than $4 billion in damage and possibly killing hundreds of people if an accident happens in a densely populated part of the U.S. More robust tanker cars, better track maintenance and additional safety measures could reduce the occurrence of derailments. See articles on page 4 and 5 and EIA link showing oil by rail 2010-14.

Crude oil price has remained around $50 per barrel (US WTI below and international Brent just above $50). Several articles on page 7 note that US production continues to increase, but at a slower rate. The CEO of Exxon predicts oil prices will remain low for the next 2 years. See link with animated presentation of the rise and fall of US drilling activity on page 2.

Global solar installations reached a record 177 gigawatts during 2014. This is up from 140 gigawatts in 2013 and more than ten times the installation amount in 2008. Solar panel prices have fallen significantly over the last several years and when incentives are included solar power is competitive with conventional electric power. The rapid increase in solar installations has raised concerns about integrating variable electricity sources such as wind and solar. See articles on page 7.

Washington state Governor Inslee declared a drought in three regions of the state: Yakima, Wenatchee and Walla Walla drainage basins. The declaration allows the state to provide money and other relief to those impacted by the drought. The Snotel map on page 9 illustrates the current snowpack for Columbia and Snake river drainage regions in Oregon, Washington, Idaho and Montana as a percent of normal. Low snow pack is primarily limited to the Cascades and eastern Oregon. The Canadian snowpack that feed the headwaters of the Columbia is close to normal as is the case for much of the Snake river. The better snowpack conditions to the north and east of Washington has allowed the BPA to forecast, that while lower than average, hydropower generation in the Northwest will be sufficient during the summer and fall of 2015. See articles on page 4 and 5. See also the articles on page 9 describing the multi-year western US drought with focus on California and Arizona.

Regionally, Grant County PUD announced that repairs to Wanapum dam are nearly complete. BPA has proposed a 6.7% wholesale power rate increase as well as a 5.6% transmission rate increase for fiscal 2016-17. Puget Sound Energy, Avista, Cascade Natural Gas and NW Natural Gas have announced rate increases for natural gas customers. Avista has requested UTC approval of a 7.9% increase for electricity customers. Seattle City Light received City Council approval for an increase of 4.2%, while Tacoma Power is requesting a 3% increase from the Tacoma City Council.
Interactive Energy & Climate Graphics

2014 Hottest Year on Record: Global mean temperature 1880—2014.

http://www.bloomberg.com/graphics/2015-oil-rigs/

Pain at the Pump: Gasoline Prices by Country

EIA Oil by Rail 2010-14: EIA Energy Today (interactive graph at bottom of page)
http://www.eia.gov/todayinenergy/detail.cfm?id=20592
Electricity, Petroleum & Natural Gas Prices

Energy Price Overview

This month, West Texas Intermediate (WTI) crude oil price bounced around in the $45-50 range: higher when fighting escalated in Yemen, lower when the U.S. inventory reports came in. The EIA reported that the 2014 U.S. oil production growth was the largest in more than 100 years: http://www.eia.gov/todayinenergy/detail.cfm?id=20572. However, the EIA has also projected that, because of persistent low oil prices and declining drilling activity, U.S. oil production in the very productive oil shale regions will start to decline this spring. U.S. demand for oil has crept up slightly over the last 2 years as the economy has grown and fuel prices have declined. Supply and demand are slowly converging.

During the last two days of March, national gasoline and diesel prices averaged $2.42 and $2.84 per gallon respectively. During the last two weeks of February through the first two weeks of March, west coast gasoline and diesel prices rose rapidly due to refinery maintenance, a refinery explosion, and fire, and strikes by refinery workers. During the second week of March, Washington state gasoline and diesel prices averaged $2.84 and $3.03 per gallon respectively, but during the last two days of March the two fuels averaged $2.75 and $2.95.

The price for month ahead NYMEX natural gas declined in March to $2.79 per MMBtu: the same as last month at this time. Locally, natural gas spot price at Kingsgate was $2.29 per MMBtu, down 9¢ from the price reported last month. Nationally, there was a small natural gas storage injection of 12 Bcf last week, a bit unusual for this time of year. The big chill that has afflicted the eastern US this winter has largely abated, and as a result, gas consumption has sharply declined. Gas storage levels are 1,479 Bcf, about 12% below the 5-year storage average at this time. Because of our exceptionally warm winter, gas storage in the West is running 23% ahead of the 5-year average.

Regional electricity prices are also down because of our warm winter weather: Feb. monthly average spot price of $19.2 per MWh is about the same as the previous month. River flow and rainfall have generally been above normal this year. This is because much of the precipitation in the mountains has been rain instead of snow. Mountain snowpack, which is critical for summer and fall power generation, as well as irrigation, is well below normal, as shown in the illustration on page 9. This will likely mean higher spot market electricity prices during the late summer and fall.

<table>
<thead>
<tr>
<th>Energy Price Summary</th>
<th>Current</th>
<th>Month Ago</th>
<th>Year Ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Range at Mid-C (Peak: $ per MWh)</td>
<td>7.0-28</td>
<td>7-28</td>
<td>NA</td>
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<tr>
<td>Average Mid C price (Peak hours $ MWh)</td>
<td>19.3</td>
<td>19.5</td>
<td>NA</td>
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<tr>
<td>Electricity WA Retail: Jan. (cents/kWh)</td>
<td>6.98</td>
<td>7.15</td>
<td>7.33</td>
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<tr>
<td>Natural gas Kingsgate spot price (next day: $ per million BTU)</td>
<td>2.17</td>
<td>2.65</td>
<td>4.82</td>
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<td>Natural gas Sumas futures price (next month $ per million BTU)</td>
<td>2.16</td>
<td>2.65</td>
<td>5.39</td>
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<tr>
<td>Natural gas Sumas monthly average: Jan. ($ per million BTU)</td>
<td>3.50</td>
<td>3.88</td>
<td>4.57</td>
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<tr>
<td>Natural gas H.H. futures (NYMEX next month: $ per million BTU)</td>
<td>2.78</td>
<td>2.87</td>
<td>4.49</td>
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<tr>
<td>E85 (national average: $ per gallon gasoline)</td>
<td>2.51</td>
<td>2.52</td>
<td>4.25</td>
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<tr>
<td>Ethanol (CBT next month contract: $ per gallon)</td>
<td>1.53</td>
<td>1.35</td>
<td>3.50</td>
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<tr>
<td>Corn (CBT next month contract: $ per bushel)</td>
<td>3.94</td>
<td>3.73</td>
<td>5.02</td>
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<tr>
<td>Petroleum, West Texas Intermediate futures ($ per barrel)</td>
<td>48.7</td>
<td>49.2</td>
<td>100.1</td>
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<tr>
<td>Seattle gasoline price ($ per gallon)</td>
<td>2.88</td>
<td>2.95</td>
<td>3.76</td>
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<tr>
<td>Gasoline futures (NYMEX next month: $ per gallon)</td>
<td>1.84</td>
<td>1.63</td>
<td>2.87</td>
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<tr>
<td>State diesel price ($ per gallon)</td>
<td>2.95</td>
<td>3.03</td>
<td>4.03</td>
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<tr>
<td>Heating oil futures (NYMEX next month: $ per gallon)</td>
<td>1.80</td>
<td>2.12</td>
<td>2.86</td>
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<tr>
<td>U.S. residential propane price report (reported Oct.–Mar.)</td>
<td>2.35</td>
<td>2.36</td>
<td>3.15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Clean Cities: Alternative Fuel Price Report, Jan. 2015</th>
<th>US avg current</th>
<th>West coast current qtr</th>
<th>West Coast last qtr avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol E85 ($ per gas gallon equiv.)</td>
<td>3.12</td>
<td>3.58</td>
<td>4.53</td>
</tr>
<tr>
<td>Biodiesel B20 ($ per diesel gallon equiv.)</td>
<td>3.24</td>
<td>3.29</td>
<td>4.06</td>
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<tr>
<td>Biodiesel B99-100 ($ per diesel gallon equiv.)</td>
<td>4.42</td>
<td>4.50</td>
<td>4.79</td>
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<tr>
<td>Compressed Natural Gas ($ per gas gallon equiv.)</td>
<td>2.11</td>
<td>2.28</td>
<td>2.41</td>
</tr>
<tr>
<td>Propane ($ per gas gallon equiv.)</td>
<td>4.03</td>
<td>4.22</td>
<td>4.43</td>
</tr>
</tbody>
</table>
Energy Headlines - If you only have time to read a few articles—read these.


Fuel trains could derail up to 10 times a year over the two decades, Feds predict. Huffington Post, Feb. 22.


The melting of Antarctica was already really bad. It just got worse. Washington Post, Mar. 16.
http://www.washingtonpost.com/news/energy-environment/wp/2015/03/16/the-melting-of-antarctica-was-already-really-bad-it-just-got-worse/


Climate change: UN backs fossil fuel divestment campaign. The Guardian, Mar. 15.
**Oil on the tracks**

Derailed Canadian crude oil train still burning. Scientific American, Mar. 8.  

Derailed Illinois oil train that burst into flames had safer cars, NBC News, Mar. 5.  

W. Virginia oil train derailment sends crude tankers into river. Huffington Post, Feb. 19.  
http://www.huffingtonpost.com/2015/02/16/west-virginia-oil-train-derailment_n_6693634.html

14 leaking oil cars removed from BNSF train. Spokesman Review, Feb. 11.  

**Drought**

As California drought enters 4th year, conservation efforts and worries increase. New York Times, Mar. 17.  

California could face droughts nearly every year. Washington Post, Mar. 2.  

Pacific Northwest Braces for Drought Because of Record-Low Snowpack. E&E Publishing.  
http://www.eenews.net/stories/1060014995

Record-Low Snowfall in Parts of West Contributes to Waning Hydro Power. Associated Press.  
http://www.startribune.com/business/297129021.html

**Regional news**

Grant PUD Nearly Finished with Repairs at Wanapum Dam. iFiber One News.  

Bonneville Power Administration Pushes for Pacific Northwest Imbalance Market. Argus Media  
http://www.argusmedia.com/News/Article?id=1008946

Avista Explains Need for another Rate Increase. Spokesman Review, Mar. 22.  

Truckers, Fuel Manufacturers Sue to Stop Oregon’s Clean Fuels Law. Portland Business Journal  

http://www.cbbulletin.com/432726.aspx

http://crosscut.com/2015/03/environmentalists-utilities-at-odds-over-green-power/
Renewables and Efficiency


Oregon Biomass Electricity Plant Effort Seeks Energy Buyer. Columbian, Mar. 18.  


http://www.thenewstribune.com/2015/03/19/3697920_sea-power-could-eclipse-sun-in.html?rh=1

http://www.motherjones.com/environment/2015/03/solar-power-net-metering-pge


California’s Shift toward Renewables Makes Energy Harder to Manage, Sacramento Bee, Mar 30.  

http://www.bizjournals.com/portland/blog/sbo/2015/03/column-a-transition-from-coal-to-clean-energy.html

Oil, natural gas and coal


Exxon chief expects oil prices to stay low for 2 years. New York Times, Mar. 5.  
http://www.nytimes.com/2015/03/05/business/exxon-chief-expects-oil-prices-to-stay-low-for-2-years.html


New EIA monthly data track crude oil movements by rail. EIA Today in Energy, Mar. 31.  
http://www.eia.gov/todayinenergy/detail.cfm?id=20592

Recent Reports on Energy and Climate Change

http://www.iea.org/publications/freepublications/publication/name,43771,en.html

Fifth Assessment Report. Intergovernmental Panel on Climate Change (IPCC) 2013. 
http://www.ipcc.ch/

http://www.edf.org/media/first-academic-study-released-edf%E2%80%99s-groundbreaking-methane-emissions-series

http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/06/14/000445729_20130614145941/Rendered/PDF/784240WP0Full00D0CONF0to0June19090L.pdf

Long-term outlook for nuclear power depends on lifetime of plant, EIA, Apr. 2013 
http://www.eia.gov/todayinenergy/detail.cfm?id=10991

Environmental Protection Agency 2012 Climate Change Indicators Report. 
http://www.epa.gov/climatechange/science/indicators/


http://www.iea.org/media/freepublications/executivesummary/WEO2013_Climate_Excerpt_ES_WEB.pdf


Short-term Energy Outlook, EIA : http://www.eia.gov/forecasts/steo/

This Week in Petroleum. EIA,: http://www.eia.gov/oog/info/twip/twip.asp


River & Snow Pack Info

- Observed Feb. stream flow at The Dalles: 225% of average.
- Observed Feb. precipitation above The Dalles: 92% of average.
- Forecast runoff at The Dalles (Jan.—July): 91.7 million acre-feet, 90% of 30-year average
- Federal hydropower generation in Feb. : 11,968 aMW, 2010-2014 average: 8,633 aMW.
- Reservoir content (Libby, Hungry Horse, Grand Coulee, Dworshak): Feb. 67%, 5-year average: 65%.

River Data

<table>
<thead>
<tr>
<th></th>
<th>Daily Outflow (kfcfs)</th>
<th>Avg Jan 26 Outflow for last 10 years (kfcfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data for Mar. 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Granite</td>
<td>56.2</td>
<td>48.2</td>
</tr>
<tr>
<td>The Dalles</td>
<td>204.9</td>
<td>165.1</td>
</tr>
</tbody>
</table>
Western Drought


Winter Sets Global Heat Record Despite US East’s Big Chill. KEPR-TV.

Researcher’s link Syrian conflict to a drought made worse by climate change. New York Times, Mar. 2.

Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Mar 26, 2015

The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov