



Grid Modernization and Transactive Energy

Washington's Pacific Northwest National Laboratory (PNNL) was recently featured in *POWERGRID International*, for their work in transactive load management (TLM). TLM is the one of the cornerstones of grid modification. Interactive TLM techniques dictate how and when energy is delivered, and at what price.

Through Clean Energy Fund programs, Commerce has granted over \$40 million in research funds to various laboratories, including PNNL. Since 2013, Commerce-funded scientists have developed new battery technologies, created innovative methods for integrating renewables, and built real-time systems into existing buildings to test load management theories.

This research is what keeps Washington on the cutting edge of Grid modernization and transactive energy work.

Over the last two years, PNNL has run load management tests on its own buildings in Richland, WA using the *VOLTRON* software it helped develop with the U.S. Department of Energy. The data it's collecting on how efficiently campus building systems are running will help shape the direction of the state's overall grid modernization.

For more information on how Commerce is shaping Washington's energy future go to our [Clean Energy Fund page](#).

Monitoring visit to Port Townsend

Commerce staff recently visited the University of Washington Pacific Marine Energy Center (PMEC)'s research vessel in Port Townsend. This project was awarded funds under the Clean Energy Fund Federal Funds Matching Program to develop and test arrays of hydrokinetic turbines for renewable energy generation.



Congratulations to Zunum Aero

Recently [JetSuite](#), a large private jet company based in Irvine, CA, announced they plan to add 100 Zunum Aero aircraft to its fleet.

[Zunum Aero](#), based in Kirkland, WA, is one of Commerce's Clean Energy Fund RD&D grantees. The grant supports the development, build and demonstration of a full-scale prototype of a 1 MW-class hybrid-electric aircraft. The 12-passenger aircraft will be designed for flights of 700 miles.

The project includes work on a wing integrated battery prototype design and build, powertrain development and integration, development of computational fan propulsor model, wind integrated battery packs and more. Boeing and Jet-Blue are also invested in the project.

A Visit to CRTC

Commerce staff recently visited [Composite Recycling Technology Center](#) (CRTC), a Department of Commerce Clean Energy Fund Research, Development, and Demonstration grant recipient. They repurpose carbon fiber scrap from [Toray Composite Material Americas, Inc.](#) in Tacoma. They have created a variety of products made and sold right here in Washington.

Their latest product is a portable pickleball net made with aerospace grade carbon fiber. [Pickleball Central](#), a Washington based business, just placed a large order with CRTC and is bringing this product to market. On a side note, pickleball start-

ed in 1965 on Bainbridge Island, WA.



Events Coming Soon

[47th Annual National Solar Conference](#)—Boulder CO, Aug 5-8

[Electrification 2018](#)—Long Beach CA, Aug 20-23

[2018 Energy Exchange and Better Buildings Summit](#)—Cleveland OH, Aug 21-23

[The R&D 100 Conference](#)—Orlando FL, Nov 15-16

Welcome Dever Haffner-Ratliffe

The Energy Division's Energy Contracts and Programs (ECAP) Unit is excited to announce that Dever Haffner-Ratliffe is joining our unit as ECAP's Energy Efficiency & Solar Grants Manager. The energy efficiency and solar grant's goals are to increase energy efficiency, install solar, and reduce water costs at state public higher education institutions, local government facilities, state agen-

cies and kindergarten through 12th grade (K-12) public school districts.

Before joining the state in 2015, Dever worked in the renewable energy industry. As the Vice President of a local solar installer,



Dever worked closely with state and local agencies on grants, construction compliance, policy, and public works contracts. She also cofounded Solar Installers of Washington (SIW). SIW is a professional trade association which provides a unified voice for the common business interests of its members, particularly related to public policy, legislation, and governmental relations.

Dever started her state service by first working at the Department of Labor and Industries, both with in the Industrial Insurance and Prevailing Wage programs. Dever joined the Department of Commerce Housing Finance Unit in February of 2017, working as a member of the Contract and Fiscal Team. In this role, Dever helped develop and execute contracts for affordable housing loans and grants. Her time with the State has focused on building positive working relationships with businesses and stakeholders.

Utility Resource Planning

We have opened the reporting period for resource plans. They will be due back to our offices by September 1, 2018. While we have already sent instructions and forms directly to utilities, the forms are also on the [Utility Resource Plans webpage](#).

Every two years all electric utilities in the state must develop and update their resource plans or integrated resource plans. This year is a reporting year. From the plans, utilities provide Commerce with a summary of estimated resource needs ten years forward. We then report an aggregated load and resource estimates to the legislature.

Utilities with more than 25,000 customers, that are not 100% Bonneville Power Administration (BPA) customers, must produce an integrated resource plan. These plans consist of forecasts of future load, identification of probable resource options to meet loads and details of power costs and resource management.

Utilities with less than 25,000 customers and 100% BPA customers must complete resource plans, which consist of a summary of their estimated loads and resources over the ten-year planning period.

Solarize Issaquah

The Dept. of Commerce, Energy Division's Solar Plus initiative convenes solar stakeholders to create state strategies for increased solar use in Oregon and Washington. Through face-to-face meetings, utilities, state planners, industry, environmental justice and consumer advocates share their interests, concerns and technical information, building consensus on a plan of action for solar deployment. Each state has developed a working strategy to reach Solar Plus objectives. This project is funded in part by the U.S. Department of Energy.



As part of Solar Plus, Spark Northwest is leading four group purchase campaigns in Washington this year. Solarize Issaquah helps residents and businesses learn about solar and save time and money on installing a system through a community group purchase. The first step is to register to attend a free public workshop.

Free workshops:

Tuesday, July 17, 12:00pm – 1:30pm; online webinar

Tuesday, August 14, 7:00pm – 8:30pm at Pickering Barn

Register at <https://solarizenw.org/campaigns/solarize-issaquah/>

Here is the [event on Facebook](#) and a [video](#).

Notice of Funding Opportunity for Non-Profit Lenders

Commerce has published a Notice of Funding Opportunity for eligible nonprofit lenders who have experience in providing credit for energy efficiency and/or renewable power.

Proposals will need to be submitted, via email, to Commerce by 5 pm July 31, 2018. Information to include in your proposal is on pages 13-17 in the Notice, plus Exhibit A.

[Notice of Funding Opportunity for Non-Profit Lenders](#)

[Certifications and Assurances - Exhibit A](#)

[Grants to Nonprofit Lenders Prospectus](#)

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Weatherization Cuts Family's Winter Energy Bill in HALF!

By the Community Action Center
Whitman County

Karena Wilcox's fixer-upper in Maldon had a lot to recommend it. A 1912 home with gorgeous views from the front porch, it had vintage features and wood floors throughout. The \$25,000 house offered the benefit of homeownership without high mortgage payments.

However, the house had a downside. The original windows from 1912 had never been replaced. The only heat sources were two electric baseboards and a handful of Cadet wall heaters. A leaky exterior basement door continually brought massive amounts of cold air into the house.

"My pipes broke that first winter we lived there. My winter energy bill was \$350 per month," Wilcox recalls. "We would have the baseboards on all the time and we would still be freezing. We plugged in space heaters. I could just picture all that money pouring out those old windows."

Wilcox, a single mom and business owner, calls herself a "crazy renovation lady." She rolled up her sleeves, got creative, and single-handedly renovated the home on a tight budget. To weatherize, she bought 40 tubes of caulk and sealed the windows. Still, many of the home repairs that would bring down the energy bill were out of reach financially.

Since her family qualified for energy assistance through Community Action Center, she heard about

Weatherization and got on the wait list.

"I was worried, because winter was coming," Wilcox said. "Alex and his crew came out in October, just in time."

Weatherization Program Manager Alex Morris and his crew installed a ductless heat pump. They also custom-made a basement door to seal off the interior of the house, and insulated the attic and floorboards. A new water heater replaced a 1980s model. Finally, they rewrapped water pipes.



"They were amazing! They replaced a broken window pane in my son's room and made it safer for him, there is no danger now of falling out the window."

Last December, Wilcox's energy bill was half of what it had been the year before, thanks to the improvements.

"Not once have I had to use the portable heaters in the bedrooms," Wilcox said. "We just keep the bedroom doors open and the heat pump heats the whole house."

With money saved on energy bills, Wilcox is investing more in her business, the Maldon Country Market. Weatherization had the triple effect of keeping her family warm, saving energy, and boosting the vibrancy and economy of a small town on the Palouse!

Low-Income Home Rehabilitation Revolving Loan Program Rulemaking

Commerce is planning to adopt rules pursuant to RCW 43.330.482 for implementation of the Low-Income Home Rehabilitation Revolving Loan Program.

The Rural Rehabilitation Revolving Loan Program will be hosting a public hearing at Commerce on July 30 from 1-2pm to receive comments on the proposed administrative rules. The call-in number is (360) 407-3780 and PIN Code is 883401#.

Proposed rules will be posted on our [rulemaking website](#) for review. If you are unable to attend the meeting, but would like to provide written comments, please send them to Amanda Rains at Amanda.rains@commerce.wa.gov.

The public may participate by commenting after the rules are proposed by providing written comments or giving oral testimony during the public hearing process.

Energy Price Overview



River & Snow Pack Info

Observed June stream flow at The Dalles: 90% of average.

Observed June precipitation above The Dalles: 33% of average.

Est. 2018 Final runoff at The Dalles (Jan.—August):

122.3 million acre-feet

120% of normal

Estimated regional snow-pack: n/a

Federal hydropower generation in May:

12,378 aMW

5-year average: 10,586 aMW.

Reservoir content (Libby, Hungry Horse, Grand Coulee, Dworshak) May:

75.7%

5-year average: 63.9%.

Petroleum: After the price decline in late May and early June crude oil prices rose slowly through the remainder of the month. The increase was variously attributed to rising demand, declining production in a couple of OPEC nations and production problems in the oil sands region of Canada. Saudi Arabia and Russia have indicated that they will increase production to drive prices down to the low \$60 per barrel range. The average West Texas Intermediate price for June was \$66.7 per barrel, has trended above \$70 for the last two weeks.

Transportation Fuels: Transportation fuel prices at the national level declined slightly during June, in part due to slowly declining crude oil prices, but showed signs of stability at the end of the month. The national average gasoline price is about 55 cents per gallon higher than last year at this time. Part of the recent increase is because in the spring refiners' start producing summer blends of gasoline which are less volatile and more costly to produce. National gasoline and diesel at the end of June were \$2.85 and \$3.24 per gallon respectively. Washington state average gasoline price for the same period (relative to the

last week of May) decreased by 3 cents, to \$3.43 per gallon, while diesel increased 2 cents to \$3.59 per gallon.

Natural Gas: The average Henry Hub natural gas price for June increased slightly to \$2.96 per MMBtu. Locally, the average natural gas spot price at the Sumas hub, relative to the previous month, increased nearly 50 cents for June and averaged \$1.77 per MMBtu. National gas storage levels increased 78 Bcf last week and are at 2152 Bcf: about 18.6% below the 5-year natural gas storage average for this time of the year. Gas storage in the Pacific region was 14.9% below the 5-year average.

Electricity: The spring runoff faded during June and while hydropower generation remained high in the Northwest electricity prices recovered a bit from the lows of May June. The Mid-Columbia spot (peak) market price was up 50% and averaged \$1.1 per MWh during June. The current forecast 2018 runoff is at 120% of normal and reservoirs are above normal for this time of year: see River and Snowpack report.

Energy Headlines

Alternative Fuel and Electric Vehicles

[Washington state ranks third in electric vehicle sales; more to do to reach energy goals](#)—KOMO News

[Historic Pike Place Market in Seattle Installs SemaConnect Electric Vehicle Charging Stations](#)—SemaConnect

[100 Washington-based Zunum Aero to sell up to 100 hybrid planes to JetSuite](#)—Charged

Renewables

[The dawn of Japan's energy transition?](#) - CNBC

[Half of all power set to come from renewable energy by 2050, while coal recedes to just 11%](#) - Forbes

Solar

[Washington Grazing Lands Could Turn Into Fields Of Solar Panels](#)—KUOW

[“Electrogenochemistry” captures carbon, produces fuel, offsets ocean acidification](#)—ScienceDaily

[State energy council receives public input on proposed solar project](#)—Daily Record

[Major Coal-Fired Power Plant in Washington to Go Solar](#)—EcoWatch

Buildings

[Energy Benchmarking: What is it and Why Does Your Business Need It?](#) - Forbes

Other

[5 energy-saving hacks that will lower your bills this summer](#)—Fox News

[How these explorers survived 56 days in Antarctica using only clean energy](#)—CBS News

[Wash. state's only coal plant fined \\$331,000 for pollution violations](#)—KOMO News

[Washington State's Carbon Fee Initiative Has Money, Backing from Powerful Groups](#) - NW Public Broadcasting

[The Heat Wave Sent U-S Power Demand Surging to Highest in Years](#) - Bloomberg News

[Petroleum, Natural Gas, Coal Still Dominate U-S Energy Consumption](#) - U-S Energy Information Administration

[Pacific Gas & Electric to Replace Three Gas Plants with World's Biggest Battery Projects](#) - Utility Dive

[U-S House Votes to Curb Salmon Eaters: Bill Would Allow Problem Sea Lions to Be Euthanized; Senate Still Must Act](#) - Spokesman Review, Spokane, WA

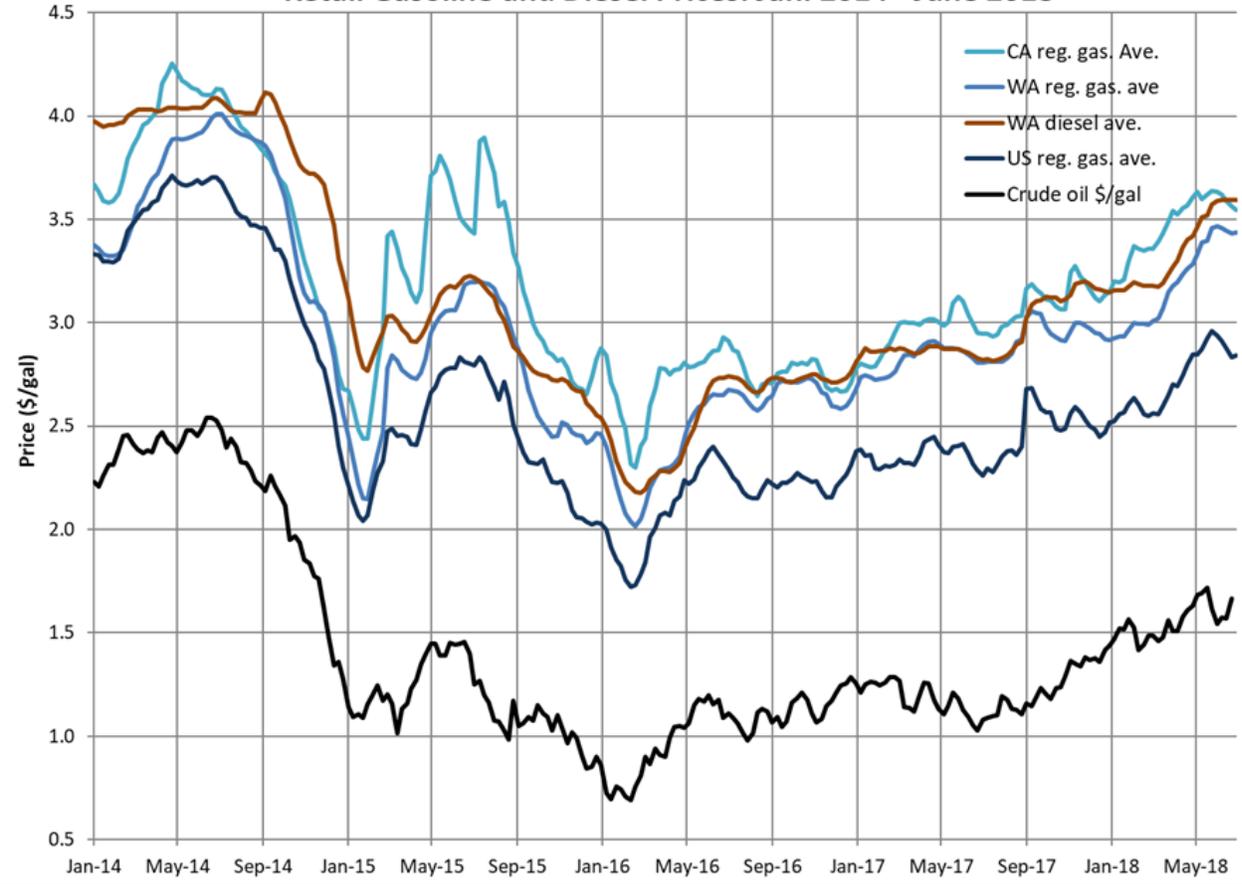
[Why Coal Is a Big Part of the Debate over California Moving Into a Regional Power Grid](#) - San Diego Union-Tribune, CA

[Study Forecasts Economic Effects of Colstrip Power Plant's Early Closure](#) - Associated Press

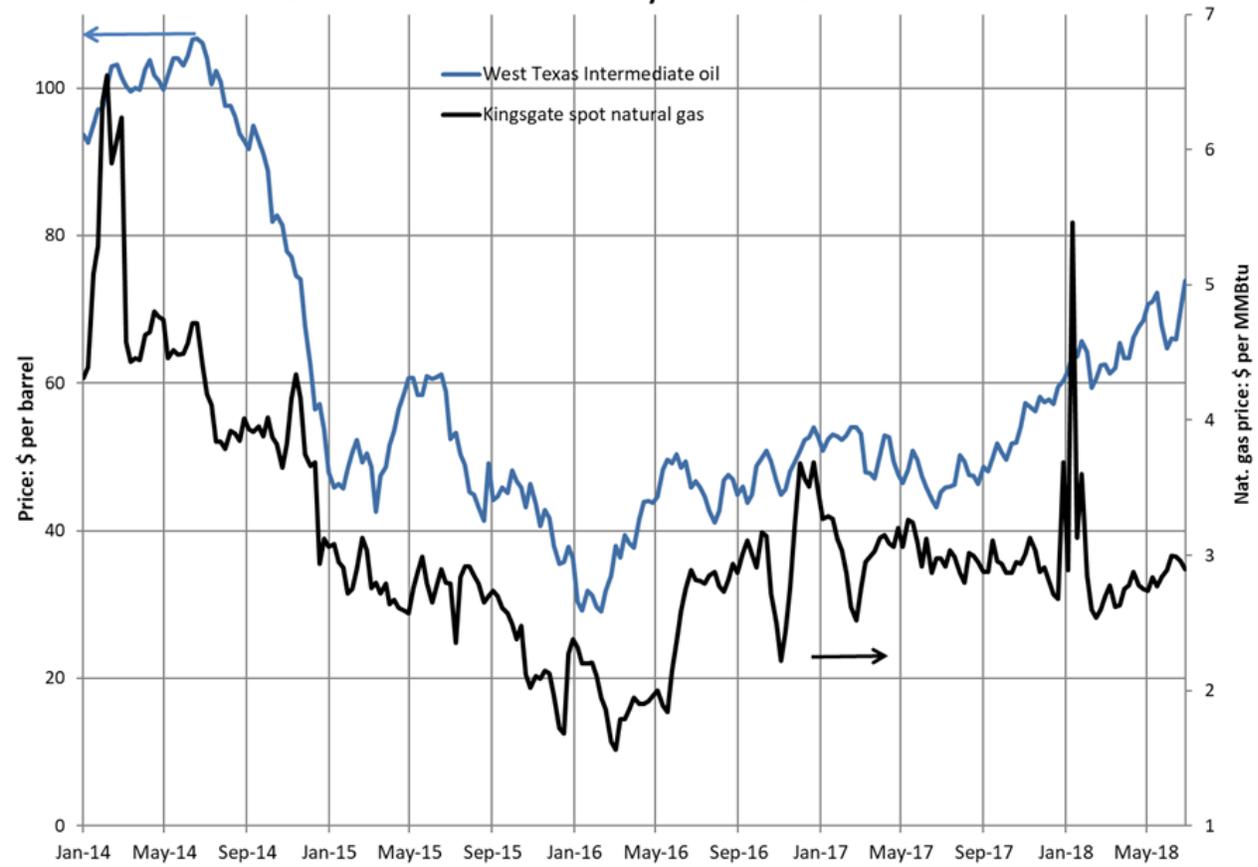
[Judge Dismisses Suit against Oil Companies over Climate Change Costs](#) - NY Times

[Rapid Snowmelt Already Evident in Dramatic Change to Area Waterways](#) - Vancouver Columbian, WA

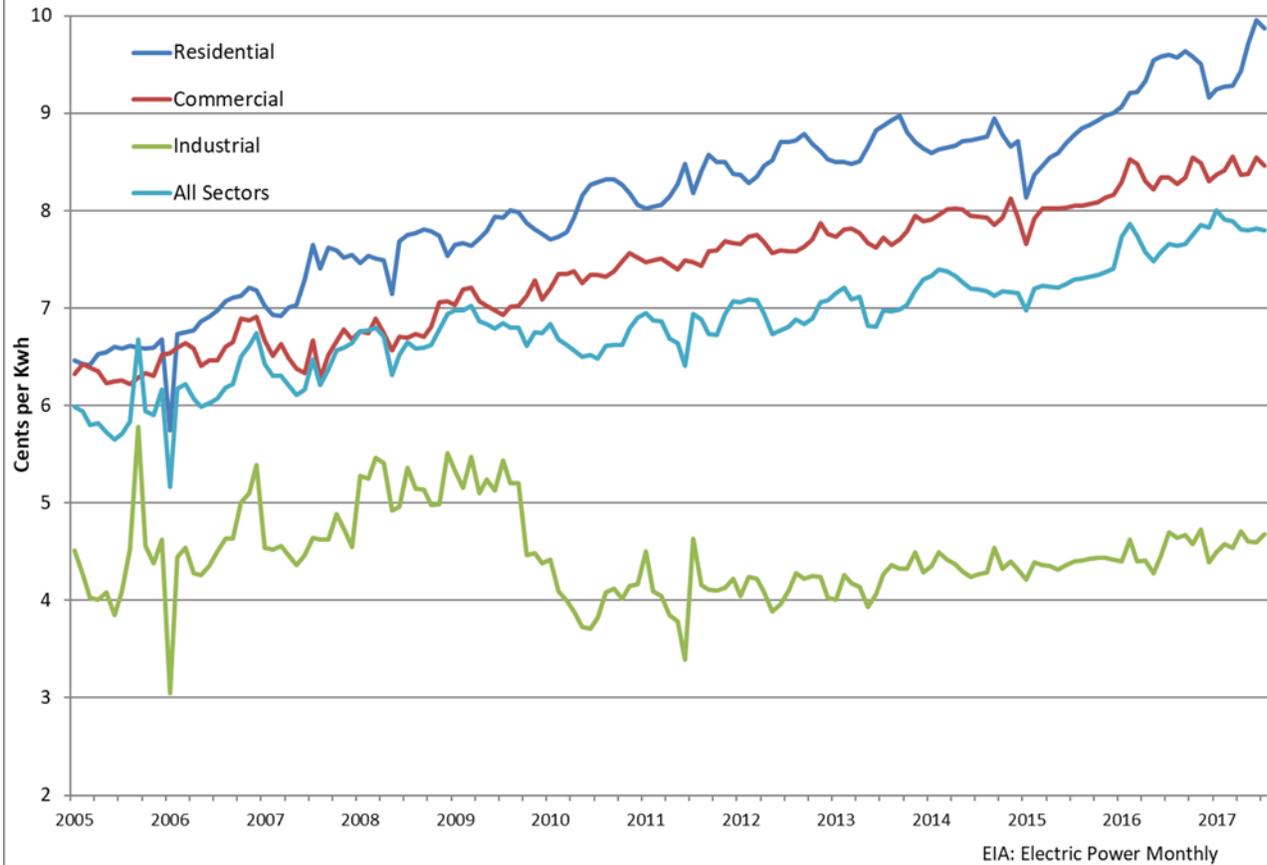
Retail Gasoline and Diesel Prices: Jan. 2014 - June 2018



West Texas Intermediate Oil and Henry Hub Natural Gas: Jan. 2014 - June 2018



Washington State Electricity Rates by Sector: Jan. 2005 - Apr. 2018



Energy Price Summary, June 2018	Current	Month Ago	Year Ago
Monthly Range at Mid-C (Peak: \$ per MWh)	8-28	-1-24.0	-2.0-24.0
Average Mid C price (Peak hours \$ MWh, current month)	18.1	12.0	15.3
Electricity WA Ave. Retail: April (cents/kWh)	8.04	8.16	7.81
Natural gas Kingsgate spot price (next day: \$ per million BTU)	2.00	1.28	2.41
Natural gas Sumas futures price (next month \$ per million BTU)	1.36	1.48	0.00
Natural gas Sumas monthly average: April (\$ per million BTU)	2.00	2.15	2.51
Natural gas H.H. futures (NYMEX next month: \$ per million BTU)	2.95	2.82	2.98
E85 (national average: \$ per gallon gasoline)	2.89	2.81	2.42
Ethanol (CBT next month contract: \$ per gallon)	1.42	1.48	1.53
Corn (CBT next month contract: \$ per bushel)	3.52	3.95	3.89
Petroleum, West Texas Intermediate futures (\$ per barrel)	66.7	70.5	45.2
Seattle gasoline price (\$ per gallon, last week of the month)	3.50	3.53	2.88
Gasoline futures (NYMEX next month: \$ per gallon)	2.10	2.18	1.50
State diesel price (\$ per gallon, last week of the month)	3.59	3.57	2.83
Heating oil futures (NYMEX next month: \$ per gallon)	2.16	2.22	1.44
U.S. residential propane price report (\$ per gallon)	2.16	2.30	1.59
Clean Cities: Alternative Fuel Price Report, April 2018	Current qtr US avg	Current qtr west coast	Last qtr avg west coast
Ethanol E85 (\$ per gas gallon equiv.)	2.87	3.52	3.29
Biodiesel B20 (\$ per diesel gallon equiv.)	2.93	3.08	3.07
Biodiesel B99-100 (\$ per diesel gallon equiv.)	3.81	3.93	3.97
Compressed Natural Gas (\$ per gas gallon equiv.)	2.18	2.48	2.45
Propane (\$ per gas gallon equiv.)	3.88	4.21	4.06

U.S. Energy Information Administration

- [Annual Energy Outlook 2018](#)
- [Electric Power Monthly](#)
- [Monthly Biodiesel Production Report](#)
- [Monthly Crude Oil and Natural Gas Production](#)
- [Monthly Energy Review](#)
- [Monthly Solar Photovoltaic Module Shipments](#)
- [Natural Gas Monthly](#)
- [Petroleum Marketing Monthly](#)
- [Petroleum Supply Monthly](#)
- [Short-term Energy Outlook](#)
- [State Carbon Dioxide Emissions](#)
- [This Week in Petroleum](#)
- [U.S. Wind Turbine Database](#)

Federal Funding Opportunities

EPA Clean Diesel Tribal Grants

[EPA-OAR-OTAQ-18-04](#) for Tribal projects that achieve significant reductions in diesel emissions and diesel emissions exposure, particularly from fleets located in areas designated as having poor air quality. Proposals are due September 6, 2018.

[DE-FOA-0001948](#) Request for Information: Identifying priorities for reducing barriers to deployment of hydrogen infrastructure. Deadline August 10, 2018.

Request for Proposal: [Hanford Site Technical Support Services](#)

[DE-FOA-0001837](#) Marine and Hydrokinetic Technology Advancement and Data Dissemination closes July 17, 2018

[DE-FOA-0001825 Buildings Energy Efficiency Frontiers & Innovation Technologies \(BENEFIT\) - 2018](#) - Applications due August 23, 2018

Regional Power Flow		
Intertie	Average power flow	Direction
California (AC+DC)	5,764 mw	export to California
Canada (BC)	237 mw	export to Canada
Total	5,437 mw	export

River Data		
Data for Nov. 7	Outflow (kcfs)	Ave. outflow for last 10 years (kcfs)
(Snake) Lower Granite	41.4	54.4
(Columbia) The Dalles	145.5	221.5

