



A modern steam turbine (see this week's Feature on page 7)

California Water and Infrastructure Report

For August 22, 2024

(With expanded coverage of all the Western States)
by Patrick Ruckert

Published weekly since July, 2014

An archive of all these weekly reports can be found at both links below:

<http://www.californiadroughtupdate.org>

<https://www.facebook.com/CaliforniaDroughtUpdate>

A Note to Readers

The **Feature** this week is a report by my associate Brian Lantz, “*Why Baseload Electrical Power? A Necessity Not An Option.*”

Nothing is more important in revitalizing the U.S. as an industrial super-power than that the current collapsing energy grid be doubled, then tripled, over the next two decades.

Brian writes in the first two paragraphs of the report:

“To power-up the U.S. economy we must leap-frog to technologies utilizing ever higher energy flux densities, as both applied to the cross-section of work area, as in the factory and elsewhere, and as utilized across the area of the entire nation — our farms, mines, waterworks, factories, cities and towns — as a whole.”

*“Here, the topic is one which has otherwise been virtually canceled; the necessity of **baseload** electrical power. The capital-intensive sources of energy to power our industries and advanced manufacturing, and power Americans to the Moon, Mars and beyond. The electric power industry is arguably the most capital-intensive industry in the United States. At the same time the availability of reasonably priced and reliable energy drives our industrial and manufacturing production. Today, our nation must both drive down the cost of energy and power-up, as Donald J. Trump has singularly committed to do.”*

The **U.S. Drought Monitor** and map this week show that California has begun to enter an acceleration of the the deepening drought. While not yet technically in a drought, the state is drying out.

“Persistent drought in the West over the last two decades has limited the amount of electricity that hydropower dams can generate, costing the industry and the region billions of dollars in revenue.”

In this week's coverage of the U.S. Presidential campaign I highlight the real issue that shall most likely determine who will be the next President-- the economy. Three articles highlight that: One on the exposure of the lies of the Biden administration on real job creation over the past year being almost one million fewer than the administration had reported. The second headline is the report on the continued collapse of U.S. birth rates. The third is a J.D. Vance column, *“Harris Wages War on U.S. Energy.”*

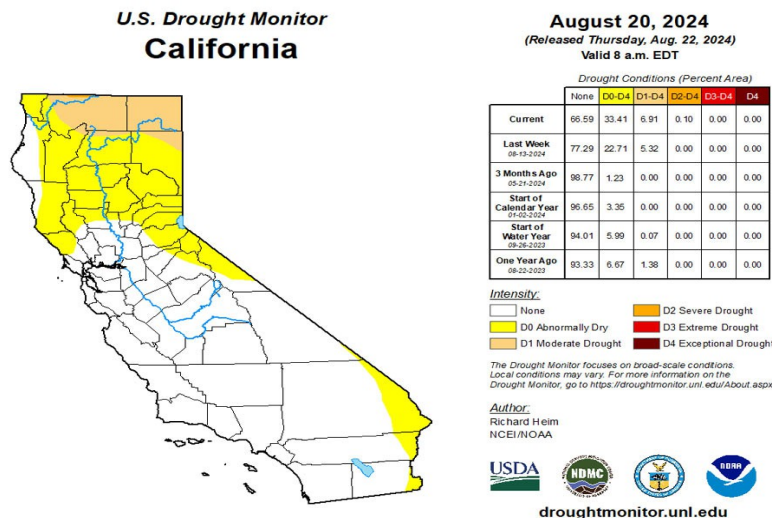
Kamala Harris has proposed to fight inflation by outlawing “price gouging,” by grocery stores, and the reactions from grocery store associations has been, as should be expected, extremely negative. Yet the real issue is discussed in a later article in this report, *“Food Inflation? Farm American and Bust Up the Ag Cartels!”*

The Colorado River, because of a decent snow pack the last two winters is, for now, out of serious danger of the nation's two largest reservoirs-- Lake Mead and Lake Powell-- falling to levels potentially reaching “dead pool.” All the states receiving water from the river will remain in “Tier One” restrictions, limiting allocations to Nevada, Arizona and Mexico.

The last item this week is the **Feature**, as discussed above.

The U.S. Drought Monitor

California



California and the West Drought Summary for August 20, 2024

Half an inch of rain or more fell this week along the Washington and Oregon coast, in the Rockies, and parts of the Southwest (Four Corners States), with little to no rain falling across most of California, Nevada, and interior portions of the Pacific Northwest.

Temperatures were cooler than normal in the Far West to Great Basin, averaging as low as 4 to 6 degrees below normal, but warmer than normal in southern and eastern areas, averaging 2 to locally 8 degrees above normal in Arizona, New Mexico, and Montana.

Contraction of abnormal dryness or drought occurred in a few parts of New Mexico, Utah, and Montana, but drought or abnormal dryness expanded in the Pacific Northwest, California, and Nevada.

The most notable changes occurred in Washington and Oregon, where moderate to severe drought expanded. More than 60% of the topsoil/subsoil moisture was rated short or very short in Oregon (81%/75%), Washington (69%/65%), Idaho (65%/62%), Montana (78%/79%), and New Mexico (70%/70%). Almost two-thirds of the pasture and rangeland was rated in poor to very poor condition in Oregon (62%) and Washington (63%).

Drought in US West Has Cost Hydropower Industry Billions in Losses

August 17, 2024

[Guest Contributor 11 Comments](#)

<https://cleantechnica.com/2024/08/17/drought-in-us-west-has-cost-hydropower-industry-billions-in-losses/>

Persistent drought in the West over the last two decades has limited the amount of electricity that hydropower dams can generate, costing the industry and the region billions of dollars in revenue.

The sector lost about 300 million megawatt hours of power generation between 2003 and 2020 due to drought and low water compared with the long-term average, researchers from the University of Alabama found. That equals about \$28 billion in lost revenue. Half of the drop in power generation was due to drought in Oregon, Washington and California, which produce half the hydropower generated in the U.S.

The researchers [published their findings](#) July 23 in the journal *Environmental Research Letters*.

The three states have been the most affected financially and environmentally by the decline in power production. Economic losses in California were estimated to be more than \$8.7 billion, and in Washington more than \$4 billion. In Oregon, the hydroelectricity sector is estimated to have lost more than \$1.5 billion in revenue over those 18 years.

When there isn't enough hydropower available, utilities are forced to purchase energy from fossil fuel producers, mostly from natural gas companies, that drive up emissions. The purchase of gas-powered electricity to supplement a lack of hydropower drove carbon dioxide emissions up 10% over the 18 years, the study found.

Hydropower electricity from Oregon and Washington dams [fell](#) to historically low levels last year. Both Oregon and Washington generated 20% less hydropower in 2023 than in 2021. The U.S. Energy Information Administration attributed this to low precipitation in the fall and winter, and the May 2023 "heat dome" that drove regional temperatures up 30 degrees above average and rapidly melted snowpack in the region, which traditionally feeds rivers and streams steadily throughout the summer.

Experts at the federal agency predict that hydropower generation across the West for 2024 will decrease 12% from 2023, leading to more historic lows.

The Presidential Campaign

With just two months before the presidential election, the real issue that will most likely determine whether our next President is Donald Trump or Kamala Harris, is found in three articles that highlight the economy. They are:

US birthrate hits new low, CDC data shows

by [Alejandra O'Connell-Domenech](#) - 08/20/24 1:57 PM ET

<https://thehill.com/policy/healthcare/4837169-us-birth-rate-drop-2022-2023/>

US economy created 818,000 fewer jobs than previously reported-- Labor Department releases key payroll data

<https://www.foxbusiness.com/economy/us-economy-created-818000-fewer-jobs-than-previously-reported>

As Bill Clinton said in his 1992 campaign, "It's the economy stupid."

JD Vance: Harris Wages War on U.S. Energy--In the name of fighting climate change, she pushes net-zero policies that would enervate America.

By JD Vance

Aug. 19, 2024 1:38 pm ET

<https://www.wsj.com/opinion/jd-vance-harris-wages-war-on-us-energy-inflation-net-zero-2024-presidential-election-aaf19e44>

Growing up in Ohio, I learned the hard way that poverty breaks families. To break the cycle of dependency, families need to be able to rely on a growing and dynamic economy that generates wealth and opportunity. But an economy that works for working Americans is possible only when we have reliable, abundant, low-cost energy.

Tragically, under the "net zero" energy policies advanced by [Kamala Harris](#), the Biden administration and the entire Democratic Party, families are being denied the hopeful and abundant future that comes with low-cost energy. Electricity already costs 30% more than it did when Ms. Harris took office, with projections of another 30% increase in many parts of the country next year. Gasoline prices are up 42%. The net-zero project is already stifling investment in the coal, natural gas, and nuclear plants that Americans rely on for reliable, affordable "base load" electricity.

The Colorado River

Projected Lake Mead level means no change to water shortage for 2025

by: [Greg Haas](#)

Posted: Aug 15, 2024 / 02:51 PM PDT

Updated: Aug 15, 2024 / 05:17 PM PDT

<https://www.8newsnow.com/news/local-news/projected-lake-mead-level-means-no-change-to-water-shortage-for-2025/>

LAS VEGAS ([KLAS](#)) — A Tier 1 water shortage will remain in effect for 2025, the U.S. Bureau of Reclamation announced on Thursday.

Based on projections in a two-year forecast looking at lake levels for both Lake Powell and Lake Mead — the nation's two largest reservoirs — officials determined that more severe restrictions on water use are not needed next year. Tier 1 is the least severe shortage condition.

Record snowpack in 2023 helped refill Lake Powell and Lake Mead, which had dipped to about 25% capacity as the drought that started in 2000 took its toll.

The two-year projections for Lake Mead and Lake Powell appear below.

LAKE MEAD: The lake is currently at 1,062.11 feet (the elevation of the lake's surface), about 33% full. Projections show the lake at 1,062.32 feet on Jan. 1, almost 13 feet below the threshold required to avoid Tier 1 restrictions.

LAKE POWELL: The lake is currently at 3,582.42 feet (the elevation of the lake's surface), about 41% full. Projections show the lake at 3,574.08 feet on Jan. 1, about 84 feet above minimum power pool but 126 feet below full pool.

Colorado River water cuts to continue for Arizona, Nevada, and Mexico

Updated: 6:22 PM PDT Aug 16, 2024

SUMAN NAISHADHAM

<https://www.ksbw.com/article/colorado-river-water-cuts-2024/61892313>

WASHINGTON —

Arizona, Nevada and Mexico will continue to live with less water next year from the Colorado River after the U.S. government on Thursday announced water cuts that preserve the status quo. Long-term challenges remain for the 40 million people reliant on the imperiled river.

The 1,450-mile river is a lifeline for the U.S. West and supplies water to cities and farms in northern Mexico, too. It supports seven Western states, more than two dozen Native American tribes and irrigates millions of acres of farmland in the American West. It also produces hydropower used across the region.

Years of overuse combined with rising temperatures and drought have meant less water flows in the Colorado today than in decades past.

The Interior Department announces water availability for the coming year months in advance so that cities, farmers and others can plan. Officials do so based on water levels at Lake Mead, one of the river's two main reservoirs that act as barometers of its health.

Based on those levels, Arizona will again lose 18% of its total Colorado River allocation, while Mexico's goes down 5%. The reduction for Nevada — which receives far less water than Arizona, California or Mexico — will stay at 7%.

The cuts announced Thursday are in the same "Tier 1" category that were in effect this year and in

2022, when the first federal cutbacks on the Colorado River took effect and magnified the crisis on the river. Even deeper cuts followed in 2023. Farmers in Arizona were hit hardest by those cuts.

Officials on Thursday said the two reservoirs were at 37% capacity.

Food Inflation? Farm American and Bust Up the Ag Cartels!

Grocery price sticker-shock has become the norm for most Americans.

[Kathy Magraw](#)

August 22 2024 2:00 PM 4 min read

https://www.prometheanaction.com/food-inflation-farm-american-and-bust-up-the-ag-cartels/?fbclid=IwY2xjawE0cy1leHRuA2FlbQIxMQABHW9U2BYCBOPn4CxgsA0eSkcHcMtak5rmAw5e1Sv3jHDbd2mv4n936404bg_aem_i2VU3Dzc8qaUtwNIOejqQ

Food is central to a nation's security. In a nation committed to promoting the general welfare of its people, its government, legislators, and administrators would promote policies that enable the farmer to farm and agricultural producers to produce the required agricultural commodities, and to market those products at prices that not only sustain the farmer, but allow investment to upgrade the inputs into their farm or agricultural concern. This is an American System policy of price supports—parity pricing—that protects manufacturing and agriculture from predatory free trade, monopolization and outsourcing. The last time the United States enacted agricultural price supports and commerce regulations was in 1938; it was repealed in full by 1996, after decades of chiseling away at the protectionist framework. Unleashed was an orgy of consolidation by multinational corporations, bankrupting smaller U.S. agricultural concerns.

The cost of food has not been stable for decades, and the recent spike in costs has gotten people's attention. But Kamala Harris is wrong to declare that she will fix it by banning food price-gouging by the grocers. It's scapegoating. The National Grocers Association, which has called out large food retailers and suppliers for "unfair and discriminatory tactics," called Harris's proposal "a solution in search of a problem," reports *Grocery Dive*. They point to already existing legislation—the Robinson-Patman Act of 1938 that prohibits price discrimination favoring preferred retailers, and prevents large retailers from coercing preferential treatment from suppliers. The Department of Justice ceased enforcing that act in 1977. The NGA also suggests reining "in excessive and burdensome regulation" that places costly constraints on agriculture and manufacturing.

Harris's proposal "a solution in search of a problem."

The source of food price inflation can be found in the unbridled consolidation of the agricultural sector. Take beef: four companies slaughter 85 percent of U.S. grain-fattened cattle and they determine the price at which this cattle is purchased. This includes the Minnesota based global commodity trader, Cargill, and the Brazilian multinational JBS SA. **On top of this monopolization, these companies can raise their livestock outside the U.S., but as long as they finish and butcher that livestock in the U.S. it can be marketed as "Made in America," undercutting the American farmer.** Similar consolidation exists in the pork and poultry sectors, with Smithfield Foods, a subsidiary of the Chinese firm WH Group, Tyson Foods and JBS leading pork producers, and Cargill, Tyson Foods, and Sysco leading poultry producers. Each one of these companies is vertically integrated into everything from grain for feed to transport and slaughterhouses. And each one buys and sells subsidiary companies with each other. **In this process, high paying union jobs, in slaughterhouses for example, have been eliminated, with the often dangerous work now accomplished by low wage and unprotected**

Food industry fires back at Kamala Harris' price control plans to combat soaring grocery prices

By [Ariel Zilber](#)

Published Aug. 20, 2024, 10:43 a.m. ET

<https://nypost.com/2024/08/20/business/food-industry-hits-back-at-kamala-harris-over-grocery-price-gouging-plan/>

Food industry executives pushed back on [Vice President Kamala Harris' claim](#) that they were “price gouging” by raising the cost of groceries and making it more expensive for Americans to eat.

Harris, the Democratic Party nominee for president, blamed corporate greed for soaring prices at supermarkets and [said there was a need to institute price controls](#) in order to [bring down the cost of food nationwide](#), which has [soared since President Biden took office](#).

Food companies responded that the costs of labor and raw materials have soared due to high inflation — necessitating price hikes. They also said they need to maintain healthy profit margins to keep developing new products.

Feature:

Why Baseload Electrical Power? A Necessity Not An Option

[Brian Lantz](#)

Aug 22, 2024

<https://brianlantz.substack.com/p/why-baseload-electrical-power>

To power-up the U.S. economy we must leap-frog to technologies utilizing ever higher energy flux densities, as both applied to the cross-section of work area, as in the factory and elsewhere, and as utilized across the area of the entire nation — our farms, mines, waterworks, factories, cities and towns — as a whole.



A modern steam turbine

Here, the topic is one which has otherwise been virtually canceled; the necessity of **baseload** electrical power. The capital-intensive sources of energy to power our industries and advanced manufacturing,

and power Americans to the Moon, Mars and beyond. The electric power industry is arguably the most capital-intensive industry in the United States. At the same time the availability of *reasonably priced* and *reliable* energy drives our industrial and manufacturing production. Today, our nation must both drive down the cost of energy and power-up, as Donald J. Trump has singularly committed to do.

Major Capital Investments Required: Return to “the American System”!

President Trump's renewed call to build back the U.S. as a manufacturing superpower cannot be brushed aside as hyperbole.

The disastrous "financialization" of the U.S. economy, combined with "outsourcing," meant someone else, somewhere else, made the *hard, long-term capital investments* required to physically produce, including in energy. Financialization and outsourcing crippled our industrial and manufacturing sectors and shrank the size and skill levels of our national workforce.

It allowed our corporations to become de facto financially profitable “asset-light businesses,” as they outsourced actual manufacturing to China and other lower-cost locales. U.S. capital intensity and the size of the productively employed U.S. workforce steadily declined.

Measures of formal capital intensity — a measure of the amount of fixed or real capital present in relation to other factors of production, especially labor — do not fully encompass, statistically, the results. The qualitative effects of the dramatic shrinkage of our nation's productively employed industrial and manufacturing workforce must also be recognized; the cultural and essential educational & skill levels of our entire citizenry suffered.

What Grid?

It is now widely acknowledged that the shutdown of coal powered electricity, and threatened shut down of nuclear power plants, are destabilizing the entire national grid.¹ It is not hard to understand why; total electricity production in the U.S. flatlined for 20 years, while the U.S. population grew by 50 million souls!

For example in Texas, where this writer resides, there has been no net new **baseload electricity capacity** built in roughly 20 years, yet the population of the state has grown by millions. During that time Texas was promoted as a model of business-friendly policies! Looking closer at the actual circumstances on the ground, one will see that Houston, the fifth largest metro area in the country, literally shut down for more than a week due to Hurricane Beryl. There is a stream of warnings of potential brownouts throughout the state. The collapse of the entire ERCOT electrical grid with Winter Storm Uri, and the impact of Hurricane Harvey, are hardly in the rear-view mirror.

Baseload?

So what is baseload power? Here we use the definition from the Energy Information Agency's own glossary [2](#)

Base load capacity: The generating equipment normally operated to serve loads on an around-the-clock basis.

Base load plant: A plant, usually housing high-efficiency steam-electric units, which is

normally operated to take all or part of the minimum load of a system, and which consequently produces electricity at an essentially constant rate and runs continuously. These units are operated to maximize system mechanical and thermal efficiency and minimize system operating costs.

"Baseload" power plants, such as large nuclear & big fossil fuel power plants, operate without much interruption throughout the year.

Then there is a 'gray area' of intermediate, or "load-following" power plants, which "dispatch" their electricity output as demand for electricity fluctuates throughout the day. Further down the food chain there are "peaker plants" (power plants that only operate during peak demand) which game "the market," designed solely to quickly provide power when there is some unfilled demand and wholesale power prices go through the roof. Likewise with the new battery storage businesses, with both peaker plant and battery storage projects being now a bi-product of unreliable wind and solar.

There are smaller, "dispatchable," natural gas-powered providers in the same game. (Warren Buffett's Berkshire Hathaway lobbied Texas lawmakers for a deal to build **\$8 billion** worth of power plants just for emergency use.³) Likewise, the Biden/Harris promotion of "dispatchable" small modular nuclear reactors. As more renewable energy power plants have connected to the electric power grid, the grid has become more unstable, with the grid becoming a Rube Goldberg contraption. That is, performing what should be a straight-forward task in a ridiculously complicated manner.

Texas: Poster Boy for What-Not-To-Do

Recall the days when public and private utilities built power plants and delivered it to homes and businesses, and the rest of us just "forgot about it"? It was so reliable one never had to give it a thought. Now, every other day, Texans are beaten over the head with warnings of the next looming rolling blackout — and "nudged" to turn up their thermometers (during the summer), and turn them down in the winter. Oh, and consider buying a home generator costing a family thousands of dollars!

Today unreliable (renewable) sources provide almost three-tenths of total state electricity net generation in Texas. That fueled the energy crisis, and Texas alone now actually accounts for about 16% of the nation's total unreliable (renewable) electricity generation. ⁴

Unlike wind and solar, **coal, hydro and nuclear plants** operate almost 24/7, 365 days a year. Likewise with efficient big, **combined-cycle natural gas plants**. That's why they're spoken of as base-load power sources.

Coal plant systems include super critical pulverized coal fired power units that combust coal to create steam which turns turbines to generate electricity. Coal today produces 16% of our electrical power nationally. Large scale **hydroelectricity plants** provide about 6% of U.S. power, utilizing large dams to generate the volumes of water that turn turbines. **Combined cycle natural gas plants** have both combustion turbines and steam turbines fueled by waste heat from the combustion process, and natural gas produced 43% of our power. Here in the U.S., 94 operating commercial nuclear reactors utilize nuclear reactions, rather than fuel combustion, to create steam and turn turbines. In 2023, Nuclear power produced about 19% of the U.S. total annual electricity generation. ⁵

Such Baseload power is absolutely critical for ensuring grid resiliency and reliability going forward. If one wants to "harden the grid," — a popular idea these days — baseload power is a must.

Energy Secretary Rick Perry Warned

Then Energy Secretary Rick Perry and the Trump's Department of Energy warned that the growing lack of baseload power provided by coal and nuclear power threatened the national grid. The Secretary urged the Federal Energy Regulatory Commission (FERC) to issue a final rule that Commission-approved organized markets also, "ensure that all suppliers have an opportunity to recover their costs," and "have a 90-day fuel supply on site" to provide essential energy in the event of disruptions, extreme weather or disasters. "All suppliers" meant baseload power plants in particular, the backbone of reliability and resiliency. From page 11:

Over the past few years, the Commission has been considering various aspects of accurate price formation within Commission-approved organized markets in its ongoing price formation docket. Throughout these proceedings the Commission has declared that a key goal of price formation is to "ensure that all suppliers have an opportunity to recover their costs."⁴⁰ The Commission has conducted technical conferences, sought and received significant stakeholder and public input, and issued and approved several market rule changes to accomplish these goals.

Today, pursuant to the Secretary's authority under Section 403 of the Department of Energy Organization Act (42 USC 7173), the Secretary is directing the Commission to issue a final rule requiring its organized markets to develop and implement market rules that accurately price generation resources necessary to maintain the reliability and resiliency of our Nation's bulk power system.

The proposed rule allows for the recovery of costs of fuel-secure generation units frequently relied upon to make our grid reliable and resilient. Such resources provide reliable capacity, resilient generation, frequency and voltage support, on-site fuel inventory—in addition to providing power for our basic needs, quality of life, and robust economy. The rule allows the full recovery of costs of certain eligible units physically located within the Commission-approved organized markets. Eligible units must also be able to provide essential energy and ancillary reliability services and have a 90-day fuel supply on site in the event of supply disruptions caused by emergencies, extreme weather, or natural or man-made disasters. These resources must be compliant with all applicable environmental regulations and are not subject to

Perry was opposed by both the Environmental Defense Fund on the "left" and the Koch Brothers interests on the "right." Secretary of Energy Rick Perry provocatively called the notion that there's a free market in electrical generation a "fallacy." [7](#)

Perry, the former governor of Texas, clearly stated his thinking in February, 2021, in the aftermath of Winter Storm Uri. "We need to have a baseload. And the only way you can get a baseload in this country is natural gas, coal, and nuclear." [8](#)

The rebuilding now of the U.S. economy as a industrial and manufacturing superpower means that the **enormous energy deficit**, the consequence of "green," flea-market policies, must not only be made up, but must now be superseded. Not to meet green/brown EV dictates, but to power new forms of American industrial production and advanced manufacturing.

Nationally, to power into the second half of the 21st Century, thinking must be in terms of doubling of U.S. electrical energy capacity to two terrawatts - 2,000 gigawatts — or more — for the nation. We can accomplish this **while dramatically reducing costs per kilowatt**, just as presidential candidate Donald J. Trump promises.

The United States therefore requires a program of advanced power plant construction, prioritizing baseload capacity. We can build **natural gas and coal-fired baseload plants** — and simultaneously initiate construction of hundreds of generation III+ nuclear reactors, starting with locations where planned expansion of nuclear power plants had already been cleared by the NRC. This will be a collaborative effort, between state government, private and public sector energy providers, and federal government, led by an energetic President.

Due to the modular construction methods built into Generation III+ nuclear reactors, such as the Westinghouse AP1000, we can now advantageously build-out factory construction capacities that will construct generation III+ and then generation IV nuclear power plants in 5-6 years, with rapidly falling costs. South Korea and China are already fine-tuning such baseload nuclear power plant construction. We can do it better, here.

Notes

1 <https://www.nerc.com/news/Headlines%20DL/2023%20LTRA%20Media%20Release.pdf>

2 <https://www.eia.gov/tools/glossary/?id=B>:

3 <https://www.texastribune.org/2021/03/25/warren-buffett-texas-power-plants/>

4 <https://www.eia.gov/state/analysis.php?sid=TX>

5 <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>

6 <https://www.energy.gov/articles/notice-proposed-rulemaking-grid-resiliency-pricing-rule>

7 <https://www.texastribune.org/2017/10/20/perrys-plan-boost-coal-and-nuclear-power-confounds-those-who-knew-him-/>

8 <https://www.newsweek.com/texas-power-cuts-rick-perry-federal-government-renewables-1570117>