



California Water and Infrastructure Report

Formerly, the “California Drought (and Flood) Update”

For November 21, 2019

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>

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“In this report, is a section on the Rural Electrification Administration (REA), which transformed the U.S. farm sector in a revolutionary manner. In 1935 only 10 percent of the farms in the nation were electrified. By 1951, as a result of the REA, 90 percent then had electricity. The leap in farm productivity completely transformed not only the farm sector of the economy, but provided the food necessary to fight World War II, while freeing up farm youth for work in the war industries and the manpower for the military.”

A Note To Readers

The quote above introduces our **Feature** this week, *“The Fight to Build the Grand Coulee Dam and the Economic Revolution that Transformed the Nation.”* I wish to focus attention on the section in that report on the creation by President Franklin Roosevelt's program in 1935 of the Rural Electrification Administration (REA).

That program exemplifies how the U.S. credit system works to build the necessary infrastructure the nation requires. For at that period of time only 10 percent of the farms in the nation were electrified. With the REA, by 1951, 90 percent had electricity.

How was that done. This was the middle of the Depression and the government was broke, as was much of the population. While other nations, especially in Europe had already electrified much of their agricultural sector, why had not the U.S?

And how, with the average farm income of less than \$1,000 per year, could the farmer afford to pay the private utilities the thousands of dollars they demanded to run electric lines to his farm?

The REA helped the farmers create coops that then received government loans to be paid back over years or decades, thus providing the ability of entire farm communities to be electrified. Was it successful? Yes! And the default rate by the coops was between 1 and 3 percent of the millions of dollars extended by the federal government.

The leap in farm productivity created by the electrification of the farm sector, completely transformed not only the farm sector of the economy, but provided the food necessary to fight World War II, while freeing up farm youth for work in the war industries and the manpower for the military.

The Rest of This Week's Report

First a weather report for California. Rain in the south, winds in the north (and more electricity shut downs) continues the pattern of a generally very dry Autumn.

The U.S. Drought Monitor for this week shows just a slight increase in drought throughout the state.

Next, while the Oroville dam and its new spillway has been out of the news for some time, we do have this report: "*Oroville Dam rebuilt recognized for international engineering award.*"

Then some further reports on PG&E, including a new cutoff of electricity to about 150,000 customers yesterday and today, which should be read in conjunction with my article, published in Executive Intelligence Review on November 15. If you have not seen or read it, here is the link:

AS HALF OF THE STATE GOES DARK: Green Insanity and Electricity Dereg Set California on Fire

https://larouchepub.com/eiw/public/2019/2019_40-49/2019-45/48-56_4645.pdf

The image of Nero fiddling while Rome burned may not be literally true, yet it is an appropriate image one should have in mind when considering the Congress's ignoring of a new, and much worse than that of 2008, breakdown of the financial system. The *LaRouche PAC Fireside Chat* last Thursday included an extensive discussion of this developing crisis. A link to the video is provided with the report.

Then what follows is a short piece, "*Putin Blasts Abandoning Hydrocarbons as Going Back to the Caves,*" showing that at least some world leaders have some sense.

Under the title, "Another Warning," is this article: "*The US needs to copy China's tech strategy to remain the top economy in the world.*" It reports on how the U.S. unlike China, is not investing in the most advanced technologies and will fall behind, permanently, if the U.S. policy does not change, and soon.

The final item this week is the "**Feature,**" introduced above.

The Weather Report

Dramatic shift to active weather in SoCal; very late season wildfire risk persists in NorCal

by [Daniel Swain](#) on November 19, 2019

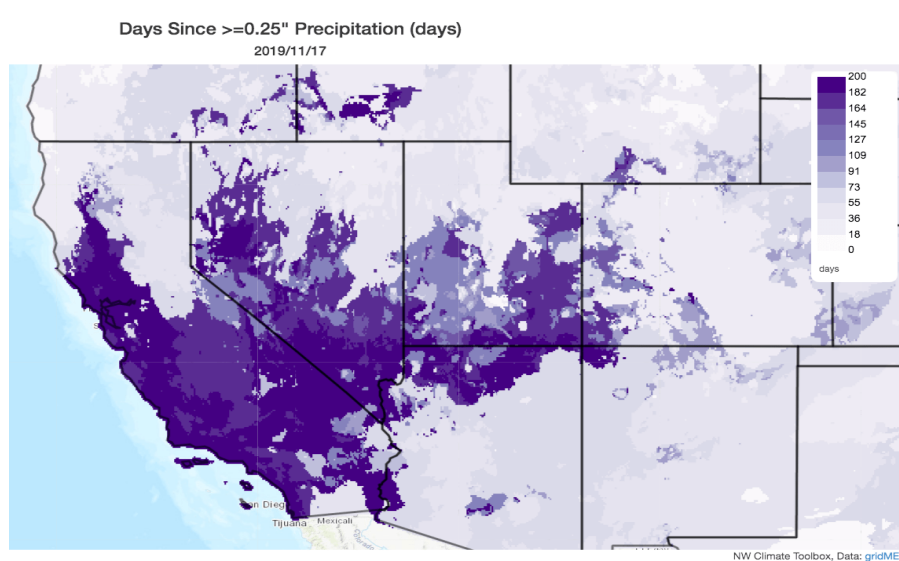
Sudden shift from record heat to localized downpours in SoCal

<https://weatherwest.com/archives/6977>

A fairly dramatic weather pattern change will take place today across Southern California. Following several days of record heat nearly statewide (including temperatures that approached all-time November records in some mountain areas), a much cooler airmass has already arrived in California today. This airmass is associated with a cold low pressure system that is currently sliding down the California coast. In addition to bringing much cooler air, this low pressure system is acting to destabilize the atmosphere—especially across southern California. In addition to this destabilization, the low is beginning to entrain some subtropical moisture which is (in turn) currently circulating around a separate, weaker low off the coast of Baja California.

Widespread heavy precipitation is also possible across much of the Desert Southwest, including the SE California deserts and Arizona, as a result of this system and its subtropical moisture tap.

NorCal stays (mostly) dry, with strong north winds leading to increased fire weather threat



It has been 180 days or more since substantial precipitation has occurred throughout most of California, including the San Francisco Bay Area. (NW Climate Toolbox)

Meanwhile, the northern 2/3 of California will likely stay dry during this event—with a couple of exceptions.

Unfortunately, this cold low pressure system will also generate relatively strong and gusty winds across NorCal later today into tomorrow. These winds will be associated with falling relative humidity, and will combine to create locally critical fire weather conditions. Neither the winds nor the humidity in this case will be particularly exceptional by themselves—but what is exceptional is the continuing summer-like dryness of vegetation in NorCal. In fact, fuels continue to be at or below record dry levels for the time of year across nearly all of Northern California. Record heat over the past couple of days has not helped the situation, but in general this autumn has actually not been an especially warm one across NorCal.

Precipitation thus far this autumn has been at or near record low levels across a large portion of the interior West, in addition to parts of California. (NW Climate Toolbox)

Due to the elevated and unseasonable fire weather concerns tomorrow, the NWS has issued Red Flag Warnings across a broad portion of NorCal. Additionally, PG&E has announced another fairly

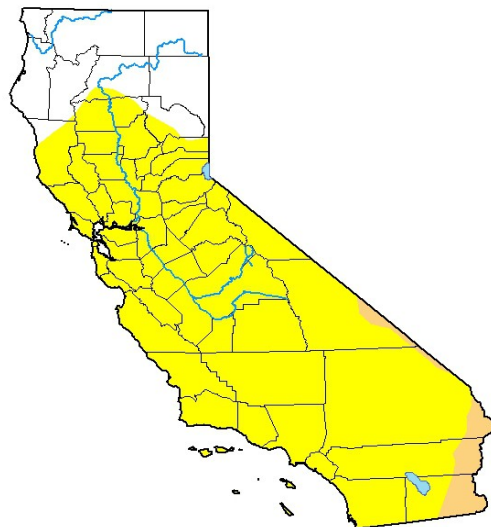
widespread Public Safety Power Shut-off, which is currently anticipated to affect around 750,000 people (while large, that's less than a third as large as earlier shut-offs this autumn, which affected around 3 million people).

Mixed signals for relief through early Dec

The bad news: there's still no clear sign that the Pacific jet will shift into a more typical configuration for late autumn/early winter—meaning that below-average precipitation is highly likely to continue through the end of November and perhaps early December. The good news: it's looking increasingly likely that at least **some** precipitation will finally fall across NorCal around Thanksgiving.

U.S. Drought Monitor

U.S. Drought Monitor California



November 19, 2019
(Released Thursday, Nov. 21, 2019)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	18.55	81.45	3.59	0.01	0.00	0.00
Last Week 11-12-2019	18.61	81.39	3.57	0.01	0.00	0.00
3 Months Ago 08-20-2019	93.27	6.73	0.00	0.00	0.00	0.00
Start of Calendar Year 01-01-2019	7.77	92.23	75.17	14.12	2.10	0.00
Start of Water Year 10-01-2019	95.29	4.71	2.06	0.00	0.00	0.00
One Year Ago 11-20-2018	0.00	100.00	77.62	18.36	3.78	0.00

Intensity:
 None (White) D2 Severe Drought (Orange)
 D0 Abnormally Dry (Yellow) D3 Extreme Drought (Red)
 D1 Moderate Drought (Light Orange) D4 Exceptional Drought (Dark Red)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
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U.S. Department of Agriculture



droughtmonitor.unl.edu

Oroville Dam Update

The dam and its new spillway has been out of the news for some time since the completion of the new spillway. But, contrary to some alarmists, not only does the spillway work well, but is now recognized as a major engineering achievement.

Oroville Dam rebuilt recognized for international engineering award

By [Chico Enterprise-Record](#) |
November 20, 2019 at 2:30 am

<https://www.chicoer.com/2019/11/20/oroville-dam-rebuild-recognized-for-international-engineering-award/>

OROVILLE — The American Society of Civil Engineers has recognized the Oroville Dam rebuild as one of 10 outstanding civil engineering projects.

Two runners-up and a winner will be chosen at the 2020 Outstanding Civil Engineering Achievement gala in Washington D.C. on March 13.

“The award recognizes exemplary civil engineering projects from around the world that contribute to the well-being of people and their communities, showcase the use of innovative materials and techniques and demonstrate resourcefulness in the face of planning or design challenges,” according to a press release from the society.



Oroville Dam and Spillway

The Oroville Dam spillway required a quick, six-month-long reconstruction following a break in the concrete of the main spillway in February 2017 that prompted the use of the emergency spillway which caused erosion that threatened the stability of the weir. When the state Department of Water Resources released more water from Lake Oroville down the main spillway, it crumbled into the Diversion Pool and needed a full rebuild.

Other projects recognized are the new Bayonne Bridge between Bayonne, New Jersey and Staten Island, New York; the Queensferry Crossing in Fife, Scotland; the Salesforce Tower in San Francisco; and the Olmstead locks and dam on the Ohio River in Olmstead, Illinois.

The award honors the overall project instead of individuals. Previous winners include the Second Avenue Subway in New York, the Emergency and Carryover Storage Project in San Diego, the Dragon Bridge in Vietnam and the Inner Harbor Navigation Canal Surge Barrier in New Orleans.

PG&E, More Blackouts, and More Fallout

While PG&E, in bankruptcy and increasingly looking at a grim future, the State Senate grandstands in hearings in Sacramento. This section begins with the blackouts and then covers the Senate hearings. It concludes with some excerpts from an article which, at least partially presents the predicament both PG&E and the State are in.

PG&E cutting power to 150,000 customers in new mass blackout

Mark Chediak, Bloomberg Nov. 20, 2019

<https://www.sfchronicle.com/business/article/PG-E-cutting-power-to-150-000-customers-in-new-14849493.php>

PG&E Corp. has started cutting power to customers in parts of Northern California in the latest in a series of blackouts designed to keep the utility's power lines from igniting further wildfires in high-wind conditions.

About 149,000 customers in parts of 18 counties throughout Northern California will eventually be affected, Katie Allen, a company spokeswoman, said by telephone Wednesday. The action comes as the National Weather Service has posted "red flag" warnings for strong gusts across the region from 4 a.m. local time Wednesday to 7 a.m. Thursday.

California Lawmakers Grill PG&E Execs Over October Power Outages

November 18, 2019 NICK CAHILL

<https://www.courthousenews.com/california-lawmakers-grill-pge-execs-over-october-power-outage/>



Pacific Gas & Electric crews work to restore power lines in Paradise, Calif., on Nov. 9, 2019. (AP Photo/Rich Pedroncelli, File)

SACRAMENTO (CN) – Fallout from a rash of recent blackouts reached the California Capitol Monday as lawmakers accused Pacific Gas and Electric executives of poor planning and oversight when it left millions of the state's residents in the dark during October's planned power outages.

“Our constituents have no more confidence in this utility, and they don't have a great deal of respect for the company,” said state Senator Nancy Skinner, a Democrat from Berkeley.

The utility has been under bombardment for weeks by customers, shareholders and regulators and the assault continued Monday during an emergency out-of-session Senate Energy, Utilities and Communications Committee hearing. More than a dozen senators gathered to pelt executives from PG&E and the state's other two privately owned utilities regarding their emerging use of so-called “public safety power shutoffs.”

State Senator Scott Wiener, a Democrat from San Francisco, accused PG&E of using a “sledgehammer” not a “scalpel” when it executed the blackouts, and said Northern California remains in a state of “emergency” due to the mega-utility's fire-prone infrastructure.

“In California, the fifth largest economy in the world, it appears that we can no longer even keep the lights on,” Wiener said. “That is beyond unacceptable.”

The hearing, which lasted over seven hours, came as PG&E issued a new warning that customers in 19 counties could potentially lose power later this week due to high winds. If forecasts hold up, an estimated 250,000 households could be without power in the days before Thanksgiving.

PG&E said this week's fire potential was "well above normal" thanks to another month without rain and an abundance of dry fuels across the state.

After an above-average winter pulled most of the state out of drought conditions, the latest [update](#) by the U.S. Drought Monitor highlighted just how dry the summer and fall seasons have been in the Golden State. The report pegged over 80% of the state as abnormally dry compared to just 5% Three months ago.

Legal 'whipsaw' threatens PG&E's future

[Peter Behr](#), E&E News reporter Energywire: Monday, November 18, 2019

<https://www.eenews.net/stories/1061578431>

As Pacific Gas and Electric Co. closes in on a year in bankruptcy court and faces a potential \$30 billion in past wildfire damage claims with more on the way, one answer to its troubled future has gained traction — a takeover that turns the state's largest utility into a government-run taxpayer-backed municipal power provider.

California Gov. Gavin Newsom (D), under sharp political pressure in the wildfire crisis, says he's considering a state takeover unless wildfire victims get a better settlement, although he has not unveiled a plan to make that immensely complicated leap. The mayor of San Francisco wants to buy PG&E's grid in the city, and leaders of 21 California cities and counties have proposed to restructure PG&E as a community-owned public utility that governments would run.

But a legal challenge that hangs over PG&E and the state's two other large investor-owned utilities also darkens the outlook for a "public" PG&E, experts say.

That barrier is the state's wildfire liability doctrine known by its obscure title "inverse condemnation," unlike any other in the nation.

As Newsom's wildfire strike force warned in June, "The current system for allocating costs associated with catastrophic wildfires — often caused by utility infrastructure, but exacerbated by drought, climate change, land-use policies and a lack of forest management — is untenable both for utility customers and for our economy."

The liability regime makes a power company responsible for losses of life and property from wildfires in its service area if a downed power line or other equipment failure is a significant cause of the blaze — whether or not utility negligence led to the failures.

Damned if it does or doesn't, a utility faces damage claims if a frayed high-voltage line breaks and ignites vegetation below, and also if 70-mph storm winds drop a snapped-off limb from a drought-stricken tree on top of a utility's lines, causing a wildfire.

The doctrine is called inverse condemnation because it reverses the familiar right of citizens whose property is taken for road construction or other public purposes, or damaged by a government agency, to receive fair compensation. California stretched the policy to cover fair compensation for fire losses caused by utilities. But that policy has divided supporters like insurance companies and fire victims against utilities and their allies who say the costs of escalating fire damage claims will break them.

For many decades, the state's wildfire policy assumed that PG&E and other utilities could recover wildfire liability costs through utility rate increases approved by the California Public Utilities

Commission (CPUC). That assumption was the other side of an acknowledged regulatory compact: Wildfire losses to residents and business owners resulting from fires linked to utility's equipment were best spread or "socialized" broadly among the public through general utility rate increases.

But two years ago, the CPUC denied a request from San Diego Gas & Electric Co. for recovery of \$379 million in damages from 2007 fires. The commission found SDG&E did not "reasonably and prudently operate its facilities" involved with the fires, an analysis by the Wharton Risk Management and Decision Processes Center at the University of Pennsylvania noted. It was the first such ruling because wildfire claims in the past did not exceed utilities' insurance coverage, Moody's Investors Service commented.

Some Sensible Words About Hydrocarbons

Putin Blasts Abandoning Hydrocarbons as Going Back to the Caves



Russian President Vladimir Putin

Nov. 20 (EIRNS)—Russian President Vladimir Putin said abandoning hydrocarbons would end civilization and send humanity back to living in the caves, reported TASS today. Putin was speaking at the "Russia Calling!" VTB Capital Investment Forum.

He stressed that Russia is a responsible country that works to make its energy balance "as green as possible," as TASS reported, using hydropower generation, nuclear generation and gas generation to a significant degree. "In this sense, discarding the purest hydrocarbon like gas seems utterly bizarre. When these types of ideas [the complete abandonment of hydrocarbons] are promoted, it seems to me that the human race may find itself again in caves, just because it won't be consuming anything," President Putin said. "Technologies are such that right now mankind cannot survive and preserve its civilization without raw hydrocarbons, without nuclear energy, and without hydropower."

Warning: The Financial System is Sitting on the Brink of Collapse, Once Again

While the Congress continues to focus on an attempted coup against the President of the United States, they do nothing else. The image of Nero fiddling while Rome burned may not be literally true, it is an appropriate image one should have in mind when considering the Congress's ignoring of a new, and much worse than that of 2008, breakdown of the financial system. That fact, while ignored by most,

puts on the table the solution, which I have presented here multiple times of implementing *Lyndon LaRouche's Four Economic Laws to Rescue the Economy*.

The *LaRouche PAC Fireside Chat* last Thursday included an extensive discussion of the this building crisis. I include just a short excerpt from that discussion immediately below. I urge you to watch the entire video, as the link is provided.

***LaRouche PAC Thursday Fireside Chat
With Paul Gallagher and Dennis Speed
November 14, 2019***

<https://larouchepac.com/20191114/what-you-are-hearing-are-real-reasons-war-mongers-want-trump-out-they-want-war-larouchepac>

PAUL GALLAGHER: Yes, thanks Dennis. Since we want to rapidly increase the intercommunicating size of our movement using the Alert system that we have, and a lot of means associated with it, we want to do that in order to achieve immediate objectives. So, let's discuss what they are.

First of all, I have to remind people, we are in a situation of financial crisis. It's a global crisis relatively speaking, but I'm discussing it now in terms of the United States. We know, more or less, that some relatively large financial institutions -- one or more -- have become illiquid this Fall; in the way that Bear Stearns and divisions of Citigroup became illiquid in early 2007. We know this from what the Federal Reserve Bank has been forced to do since the middle of September; now two months ago. It has been forced first to establish daily liquidity lending to the big banks, overnight, on a rapidly increasing scale which has gotten now up to \$120 billion per day in what they call overnight liquidity emergency loans. In addition, it has been forced to add two-week emergency liquidity loans up to \$45 billion a day. That started lower also and has gone up. In addition to that, just today it has announced an additional program of emergency liquidity loans to begin in December for 14 days or 28 days; whatever is sufficient at that time to get these obviously somewhat crippled financial institutions past December 31st -- past the end of the financial year.

So, this places us, if we were in a repeat of the 2008 crash, which we are not, and this may very well be a considerably worse one. But if we were, this would put us roughly at the point of April-May 2007 in the September 2008 global crash. It was just before that time that our magazine, {Executive Intelligence Review}, in a rather notorious headline on the front cover of a feature story said, the mortgage meltdown could case a global crash. And in ten pages, described exactly how that was likely to happen. This was perhaps 18 months away at that time, but it was visible. It was clearly visible to Lyndon LaRouche; it was clearly visible to the intelligence people in his movement. He then immediately moved to say what had to be done to protect the economy from that coming crash. Not to stop it -- he said it couldn't be stopped; but to protect the economy from it.

Now, this market in which the Federal Reserve is pumping the liquidity in, is called the repurchase market or the overnight lending market. That market is not what is driving this crisis; it is the ten years of zero and negative interest rates by the central banks; it is the now \$16 trillion debt bubble in the United States, which grows at \$1 trillion a year and has nearly tripled since 2009. That's what's actually driving this. The derivatives figures which have just been published by the Bank for International Settlements are disturbing. You can see from them that more and more trillions of actual bank assets and financial assets are at risk of suddenly being lost in the derivatives markets. Finally, the climate change green bubble which the central banks are pushing now, to force investment out of coal and oil and so forth and into solar and wind. This, which they imagined might slide them through this crisis without a complete crash, is actually making it worse. Because it is pulling down very rapidly the market values of assets associated with fossil fuels in particular, and it is bringing

forward – not pushing away, but bringing forward -- the point of this crash.

So, knowing that that's happening, right now what we must get done is to re-establish the Glass-Steagall Act in the United States. The Democratic Party has disappeared on this issue. Just one session of Congress ago, there were 90 Democrats in the House and 11 in the Senate who were sponsoring Glass-Steagall bills. Now there are virtually none, because they're all totally absorbed in trying to impeach the President. This is essential now. It would give the commercial banks time to withdraw themselves from all the speculative hedge funds, investment banks, private equity funds, derivative markets, and so forth, and let those things crash on their own. While the lending banks would still be able to lend, so the United States then issues productive credit for infrastructure, for manufacturing. To get out of the crisis, that credit will go to the banking system where we want it to go -- into productive employment and productivity -- and will not disappear into a million speculative channels.

Another Warning

The US needs to copy China's tech strategy to remain the top economy in the world

[Robert Atkinson](#),

https://www.businessinsider.com/us-copy-china-tech-strategy-remain-top-world-economy-2019-11?international=true&r=US&IR=T&fbclid=IwAR0xVxIVk_Dc6cEgAhdZXMyMiGC7U0hothyRIFBVVYVEfIGdjSZR6sL5DBw

Opinion Contributor

November 16, 2019

- *China is lapping the US when it comes to tech investment and is quickly positioning itself as the economy of the future.*
- *The US needs to seriously reconsider its investment strategy to fend off China.*
- *In order to do that, the public needs to know the value of tech investment and politicians must make investment a priority.*
- *If they don't, the US could fall way behind China.*
- *Robert D. Atkinson is president of the Information Technology and Innovation Foundation.*
- [Visit Business Insider's homepage for more stories.](#)

As the Trump administration works to wrap up the first phase of a deal to end the trade war with China, it is easy to focus on the unfair policies and practices that the United States has been pressing China to stop.

While it is critical for President Trump and US allies to eventually succeed in getting the Chinese to discontinue unfair practices like steal intellectual property it is also naïve to believe that doing so will be enough for the United States to win the [race to be the global](#) leader in the industries of the future.

The truth is China has positioned itself as a leader in many of those industries not just by flouting global trade rules, but also by smartly investing in foundational technologies like 5G, digital identities, and electronic payments .

It is time for the United States follow China's lead and develop robust national strategies to support the development of these technologies. Doing so will drive US productivity growth while helping the United States outcompete China.

Feature



The Grand Coulee Dam in Washington State

The Fight to Build the Grand Coulee Dam and the Economic Revolution that Transformed the Nation

By Patrick Ruckert
February 23, 2013

<http://amatterofmind.org/ca-drought-pdf/Grand%20Coulee%20Dam%20Report.pdf>

On YouTube:

https://www.youtube.com/watch?v=znWVTrD_FcU

Beginning on page 8 of this report, is the section on the *Rural Electrification Administration (REA)*, which transformed the U.S. farm sector in a revolutionary manner. In 1935 only 10 percent of the farms in the nation were electrified. By 1951, as a result of the REA, 90 percent then had electricity. The leap in farm productivity completely transformed not only the farm sector of the economy, but provided the food necessary to fight World War II, while freeing up farm youth for work in the war industries and the manpower for the military.

But, that development was just one element of the President Franklin Roosevelt total transformation of the U.S. economy during the 1930s.

The following is a few paragraphs from the opening section on the Rural Electrification Administration:

The New Deal: A New Platform of Development

FDR changed everything. His New Deal not merely saved the country from a catastrophe, like that which Germany slid into, also in 1933, with the establishment of the Hitler dictatorship, but moved the nation to a new platform of development. His entire policy must be seen as a conscious determination to transform the relationship of man and nature, where man is less and less a subject of nature's violence.

FDR would unleash-- using a Hamiltonian-type credit mechanism with agencies such as The Reconstruction Finance Corporation (RFC), The Works Progress Administration(WPA), and The Industrial Recovery Act(IRA)-- a massive infrastructure building program. The leading element of that

policy would be power and irrigation.

Seven Key Elements of FDR Policy

1933 Emergency Banking Act and Glass-Steagall

1933 The Tennessee Valley Authority Act

1934 The Securities and Exchange Act

1935 The Public Utility Holding Act

1935 The Federal Power Act

1936 The Rural Electrification Administration

1937 The Bonneville Project Act

But first he had to get control over the banksters of Wall Street and bust the power trusts. In a series of acts and laws from 1933-1937 he did just that. These included the following:

In these acts, FDR and Congress declared the furnishing of electric service to be a public utility, to be controlled and regulated for the general welfare of the nation.

In addition FDR and Congress saw this responsibility to include the furnishing of electricity to every home, business and farm of the nation. This was the policy until the 1990s deregulation binge, which gave us Enron and other crimes.

Rural Electrification

Let's look at the Rural Electrification Administration (REA) to see how this policy actually transformed the nation, rapidly increased its productivity and brought millions of farm families out of an essentially peasant existence. In 1936, outside of tractors and combines, life on the farm was no different than it had been 100 years before. In that year 90% of the farms in the US had no electricity. Compared to other nations that was a shocking statistic. France, then, had electrified 95% of its farms; it was 90% in Japan; 85 % in Denmark; etc. Those nations had governments that had programs to make it happen.

Why so low in the US? Because the private power companies would not run the lines to rural area unless the farmer paid the entire cost (at \$1,500 per mile) and paid a rate based on distance from the power source. That would be \$1000s per farm-- in 1936, when most farm families had an annual income of a few hundred dollars. The municipal systems could not do it by law.

In truth, the private power companies didn't give a damn, and they would not build the dams. *In July, 1935 a group of utility company executives wrote a report in which they claimed, "that there were very few farms requiring electricity for major farm operations that are not now served."*

"I want you to think about life on the farm in 1936, without electricity. Life and work for most rural Americans in the 1930s was fixed in a cycle of hardship and drudgery. They lived and worked in a dark and powerless land.

No running water in the house or barn. No flush toilet. Water was pumped by hand and hauled to where it was needed. The average farm family spent 240 hours per year pumping and hauling water.

No electrical machinery: saws, grinding wheels, pumps, milking machines, and dozens of other tools. No refrigeration for food and milk production. The typical dairy farmer would lose a portion of his milk to spoilage.

No washing machines. The farm wife would wash clothes with a scrub board.

No electrical appliances, like stoves, irons and hot water heaters. Wood stoves for cooking and heat were the norm, which meant many hours chopping wood. No lighting in the house or barn.

Please go to the link above for the full report.