California Water and Infrastructure Report

For January 16, 2020

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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"Over the span of eight years, the TVA transformed the Tennessee Valley region, consisting of all or parts of Tennessee, Kentucky, Virginia, North Carolina, Georgia, Alabama,and Mississippi. It brought the people living in the TVA region into the modern industrial and agricultural era, from a standard of living and culture that was little different than that in the Third World. Between 1933 and the end of World War II, the TVA directors managed the biggest construction project on Earth."

*From this week's **Feature**: The Tennessee Valley Authority*

A Note To Readers

The **Feature** this week highlights one of the greatest infrastructure projects in U.S. history-- The Tennessee Valley Authority. Three months into the presidency of Franklin D. Roosevelt, he signed the legislation that created the TVA.

But first:

Also in this week's report:

While California is wet, there is a drought in Oregon.

Then an item on the anger of California farmers, especially when they see articles that portray them as vampires because, "they suck water out of the ground like vampires suck blood out of their victims.

We know that 2019 was the not the fire season of 2017 and 2018. The number of acres burned was the lowest since 2011, and the wildfire-related death toll dropped to three, down from the dozens of fatalities in both 2017 and 2018. We have a report on why that was the case.

Then, “Environmentalism, Not ‘Climate Change,’ Caused Explosion of Australia’s Bushfires.”

Under the title, **“Infrastructure and the Space Program,”** we have, first, this report, “Infrastructure Fails Locally, But Solution Takes Major Powers.” That sets the stage for the second item, “LaRouche's Four Laws of Economic Recovery.” Then the fourth law provides an introduction of an update on one policy of the Trump administration that has received virtually no media coverage: “The Artemis Project,” well underway now, that will land the first woman and a man on the Moon in 2024.

This week's report ends with the **Feature** on the Tennessee Valley Authority.

The Weather and the Drought

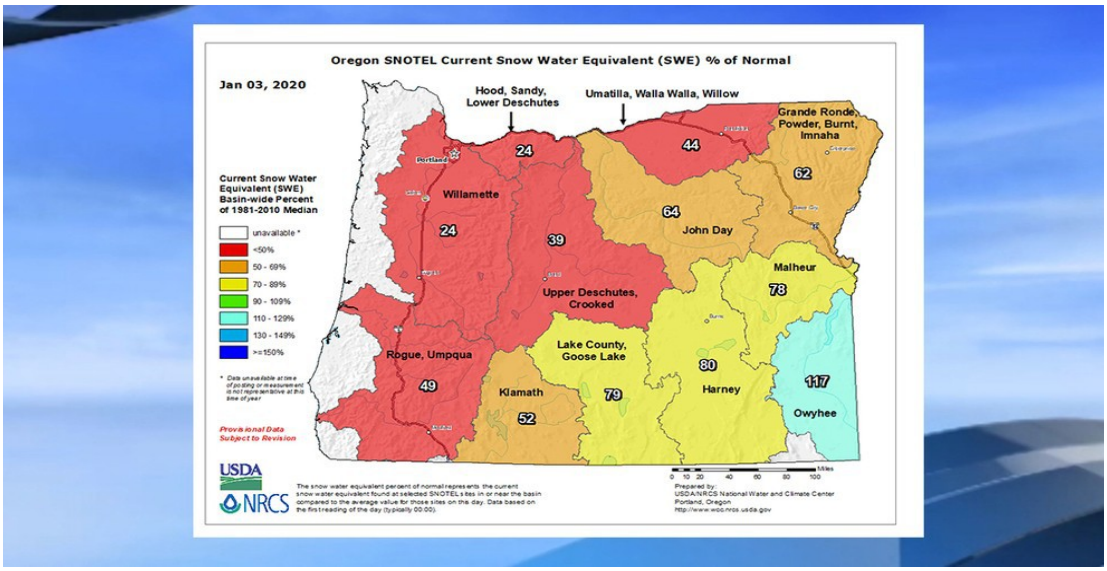
Well, in California it is wet and we are experiencing one storm after another. The snowpack in the Sierras is above average for this time of the year.

But, north of us in Oregon and to a lesser extent in Washington State, there is drought. Here is the report from Oregon:

Meager winter snowfall could spell tough summer for Oregon agriculture

by The Associated Press

January 3rd 2020
https://kpic.com/news/local/meager-winter-snowfall-could-spell-tough-summer-for-oregon-agriculture



The latest snow survey results published January 3, 2020, show the Willamette basin is at 24% of normal. (NRCS)

SALEM, Ore. (AP) — Lagging snowfall early in the season in Oregon could mean a tough, dry summer for farmers and ranchers around the state.

The U.S. Department of Agriculture Resources Conservation Service says the amount of water from snow that's fallen in Oregon right now is just 45% of normal statewide, the Capitol Press reported.

Water from melting snow is crucial for replenishing streams and reservoirs for farms and fish, particularly in eastern Oregon where the climate is drier.

Every water basin is measuring below average for snow except for the Owyhee Basin in southeastern

Oregon, which stands at 117% of normal. The lowest totals are in the Hood, Sandy and Lower Deschutes basins at 25% of normal, and the Willamette Basin at 26%.

Scott Oviatt, the agency's snow survey supervisor for Oregon, said the first water supply outlook for agricultural and fish interests will be released Jan. 10.

"We're not in panic mode yet," Oviatt said. "It is early in the (water) year. ... We can see some improvement, depending on conditions."

The water year, as defined by hydrologists, begins on Oct. 1 and runs through Sept. 30 of the following calendar year.

November and December are typically much cooler and wetter months, but most of the state's 90 snow-monitoring sites are measuring less than 8 inches of snow-water equivalent, Oviatt said, and overall precipitation — including rain — is on average half of normal.

The Oregon Water Resources Department reports that November in particular was one of the top five driest months on record for Northwest Oregon.

Racquel Rancier, spokeswoman for that department, said that average stream flows were just 40% of normal statewide as of Dec. 30.

The U.S. Drought Monitor shows nearly 98% of Oregon listed in some stage of drought, ranging from "abnormally dry" to "moderate."

The Angry Voice of California Agriculture

The California water wars is generally seen as a war between farmers and their need for water to grow the food you eat and environmentalists who are attempting to save a fish or a pristine stream, or some such other nice thing. That the farmer's voice is seldom heard by the non-farm community is a reality. So here, below, we have the voice of "Families Protecting the Valley." The post includes a link to the article their statement refers to.

Vampire Almonds!

http://familiesprotectingthevalley.com/news.php?ax=v&n=5&id=10&nid=805

...because they suck water out of the ground like vampires suck blood out of their victims.

Jan 14, 2020

The article below explains how almond growers are 'struggling' to overcome their 'vampire' image problem. We get it. Almond farmers are likened to vampires because they suck water out of the ground like vampires suck blood out of their victims. Remember when people liked farmers? So do we, but there has been a concentrated effort by environmentalists to demonize farmers because of their water use. And they've done a pretty good job of it. Farmers haven't been used to defending themselves. Who would have thought they'd have to?

We suppose that those environmentalists involved in the water wars thought it was better to demonize a crop than it was to demonize farmers. They choose their words carefully, using 'big corporate agribusiness' instead of 'farmers', and going after the evil water sucking almond rather than the more generic 'food'.

The almond was a natural target for them as more and more farmers added more and more acres.

Many of the almonds were exported to China and other countries making it easier to demonize them as not even a necessary food for Americans.

But, if anyone cares to think about it, they should ask themselves why so many farmers decided to plant almond trees. When government bureaucratic policy takes more and more water from our Central Valley, and then farmers have lower and lower allocations of that water, they have to make the best economic decision they can about what it is they'll grow on the land they can farm with limited water. If you can only farm half the land you have because of less available water, you have to grow the most economically viable crop. That crop has been almonds. They can't afford to grow crops that don't pay on limited land. Why are almond prices high? Because people want them. If you're a farmer, you grow the food people want. If there are too many almond acres out there, the market will adjust.

So, the policies of the water bureaucrats have forced farmers into the decisions they've had to make to survive. Then they blame those farmers for making those decisions.

How US almond growers are struggling to overcome 'vampire' image problem

By Harry Holmes

10 January 2020

https://www.thegrocer.co.uk/plant-based/how-us-almond-growers-are-struggling-to-overcome-vampire-image-problem/600799.article

Why 2019 Was Not Another Devastating Year of Wildfires

Dramatic Steps, Better Weather, Luck Made 2019 a Much Less Devastating Fire Year

Kevin Stark
Jon Brooks
Jan 14, 2020

https://www.kqed.org/science/1954768/dramatic-steps-better-weather-and-luck-made-2019-a-much-less-devastating-fire-year

Embers fly as high winds blow hot spots from the Kincade Fire on October 29, 2019 in Calistoga, California. *(Justin Sullivan/Getty Images)*

It's impossible to divorce the 2019 fire season in Northern California from the two that came immediately before. Those were nothing short of disastrous, so much so that many Californians entered last summer filled with dread of a third consecutive year of incinerated homes, mass evacuations and tragic loss of life.

So, with those recent calamities haunting the state, officials took some unprecedented steps to avert a devastating repeat.

Did they work? Well, judging by the results tallied at the end of the year, something went right. The number of acres burned was the lowest since 2011, and the wildfire-related death toll dropped to three, down from the dozens of fatalities in both 2017 and 2018.

The most extreme preventive measure came from PG&E, the state's largest utility, whose transmission line had sparked the 2018 Camp Fire that killed 85 people and destroyed nearly 14,000 homes. Last fall the company implemented several large-scale power shutoffs affecting up to 2 million people during periods of high-risk for wildfire, and the outages deprived some residents of electricity for as long as a week.

Emergency procedures evolved as well. During the Kincade Fire, the state's largest of the year, officials forced about 200,000 residents out of their homes in reportedly the biggest evacuation in Sonoma County history. The magnitude of the response was prompted by major problems concerning emergency procedures during the devastating North Bay Fires of 2017.

PG&E's Planned Outages: Did They Help?

The utility executed a series power outages when high winds coincided with other dangerous conditions. After PG&E carried out its first shutoff, from Oct. 9 to Oct. 12, the company said it found dozens of locations where downed trees or other equipment failures would have created conditions ripe for a wildfire. "It is possible that any one of these instances could have been a potential source of ignition had a PSPS (public safety power shutoff) not been initiated," PG&E said in a press release.

Susan Gorin, the Sonoma County supervisor, said the power shutoffs at the very least helped in an indirect way. When the Kincade Fire broke out, the county already had its emergency operations center up and running in response to the outage, "because we needed to work with the community," she said.

It's also worth noting that PG&E has acknowledged the malfunctioning of one of its transmission lines near the origin of the Kincade Fire just seven minutes before the blaze ignited. Ironically, the line was located in an area subject to one of the company's planned outages, but only on lower-voltage lines.

(The official cause of the Kincade Fire is still under investigation.)

Fortuitous Weather

Other factors most certainly contributed to a relatively subdued fire year.

From year to year, there are dramatic differences in weather and forest conditions. Last year, the wet winter helped to dampen potential fuel, as did a late-May rain that left vegetation with high levels of moisture throughout the summer.

"The moderate weather pattern this year was very conducive to the [low] totals that we have as far as acres burned," said Scott McLean, a Cal Fire spokesman. "In 2017 and 2018 you saw hundred-degree weather that was consistent for weeks at a time with winds. This year ... started out with a good weather pattern. We stayed in that moderate weather pattern, but really no wind. Until you hit the fall, and then you started seeing fires because the wind picked up."

California was also lucky, given the risk caused by wind storms repeatedly sweeping across Northern California's parched chaparral in October and early November, before the region received any rain.

And Now, the Fires in Australia

Environmentalism, Not 'Climate Change,' Caused Explosion of Australia's Bushfires

Jan. 13 (EIRNS)—The Australian Citizens Movement released two analyses of the current bushfire crisis in Australia's southeast, which will be published in EIR. They show, as in America's West, that massive "fuel loads" on brushland, the result of environmental bans on use and controlled burns, multiply fire danger over years leading to disaster. The analysis says in part:

Saeed Khan/AFP via Getty Images

The Volunteer Fire Fighters Association (VFFA) of New South Wales prominently displays on its website an article, "Green Ideology, Not Climate Change, Makes Bushfires Worse," by Miranda Devine. Numerous articles on the VFFA website point to fire experts warning that fuel loads pose the real danger and that "it's ridiculous to blame climate change." Devine's article reported a federal parliamentary inquiry into bushfires in 2003 which showed that a four-fold increase in ground fuel leads to a thirteen-fold increase in the heat generated by a fire.

The mainstream media mostly ignore these firefighters and has instead focused on the Emergency Leaders for Climate Action, which is a front for the Anglo-American financial oligarchy's World

Wildlife Fund and its secretive 1001 Club of extremely rich donors.

Chairman Roger Underwood of Bushfire Front Inc. of Western Australia, on March 10, 2019, wrote to then-Environment Minister Melissa Price following her comments that the recent Victoria bushfires were "the result of climate change." Such misinformed comments from the minister could not go unchallenged. Underwood has 40 years' experience in bushfire management in Australia and overseas. He was General Manager of the Department of Conservation and Land Management (CALM) in Western Australia. He wrote: "I implore you to withdraw your comments blaming the recent bushfires on climate change. They are unhelpful to Australian firefighters and disrespectful to Australian bushfire scientists and managers ... the very people who are putting their lives on the line to protect the Australian environment and communities."

Raging bushfires sweeping through Australia were entirely predictable and the experts who forecast the crisis are in utter dismay that their warnings were ignored. Fuel loads are now about 10 times greater than existed under Aboriginal management at the time of British colonization. In April 1770, Captain James Cook described Australia as a "continent of smoke," because Aboriginal tribes performed regular controlled burns, but now environmental laws prevent necessary controlled burns and land clearing, setting the stage for mega-infernos on hot windy days. In recent decades green ideology has seen forests locked up, fire trails grown over, and fuel loads explode as controlled burns are prevented under spurious green rationales.

Fire expert David Packham has explained that a 10-fold increase in fuel load means the fire will be 100 times more intense. It's just basic physics and has nothing to do with whatever climate change may be occurring.

"It's all preventable, this is the tragedy of it all," VFFA Vice President Brian Williams told Jane Marwick on 2GB radio last week. "This fire has been building for the last 20 years. We've been burning, in N.S.W., less than 1% of our bushfire-prone land for the last 20 years. So that means every year, the fuel loads just continue to build. And they continue to build until we get a disaster like this."

Infrastructure and the Space Program

Infrastructure is a platform of the economy. What the economy is able to be and to do depends upon the technological level and the abundance of the means of transportation, electrical power, water availability. A culture or a nation that drives that forward with greater productivity provided by advancing technology is one that is creating a future for its citizens.

That used to be understood in the U.S., but in this age of dominance by financial speculation as the defining criteria of "wealth," that has been significantly lost. As we have reported often, the reports of the National Association of Civil Engineers make clear that the deficit of funding for just repairing and maintaining the existing infrastructure is in the trillions of dollars.

The first item below sets the stage for the second item, LaRouche's Four Laws of Economic Recovery. Then the fourth law provides an introduction of an update on one policy of the Trump administration that has received virtually no media coverage: The Artemis Project, well underway now, that will land the first woman and a man on the Moon in 2024.

Infrastructure Fails Locally, But Solution Takes Major Powers

Jan. 13, 2020 (EIRNS) — Despite announcements throughout American media lately that "experts" no

longer expect a U.S. recession, the reality of 2020 looks different — for industry and manufacturing; for economic infrastructure; and for the Federal Reserve, which is still pumping $60-70 billion in liquidity loans to the big banks every day to keep the financial system from crashing.

President Donald Trump travels — fortunately not by road — to a rally in Milwaukee Tuesday; there the state roads are underfunded by a billion a year for the next 20 years, according to the Society of Civil Engineers. UPS considers the condition of Wisconsin roads a significant problem for its delivery service.

In fact the American infrastructure annual deferred maintenance deficit (depreciation losses) has reached a level greater than total Federal and municipal infrastructure investment combined. The repairs required are more than $1 trillion/year, according to a November 2019 report of the Volcker Alliance, a think-tank founded by the late former Federal Reserve chair Paul Volcker. This has nothing to do with building infrastructure, only repairing and replacing deteriorated infrastructure — but it exceeds the total being invested.

That report's summary says, "We estimate that the cost of making deferred repairs at the state level may be as large as $873 billion,… or almost three times the value of all investment by states and localities in nonresidential fixed assets. Combined with a reported federal backlog of $170 billion, the national total deferred maintenance cost may be at least $1 trillion." It discusses reasons the deficit may be even higher.

Dealing with this accelerating rate of deterioration requires modular construction methods, and engineering cooperation with nations which are using them most aggressively. But more important, the missions to drive infrastructure creation now are among the major powers: Moon-Mars colonization, great projects in third countries (developing countries) as in China's Belt and Road Initiative, as in the joint U.S.-China credits and capital exports for Mexico's proposed development corridors for it and Central America. These missions require starting with joint development on the world scale, in order to rebuild here.

LAROUCHE'S FOUR LAWS FOR ECONOMIC RECOVERY-- With a foucus on the Fourth Law

http://media.larouchepac.com/larouche/documents/20180503-LPAC-2018-Campaign-web.pdf

(1) The immediate re-enactment of the Glass-Steagall law instituted by U.S. President Franklin D. Roosevelt, without modification, as to principle of action.

(2) Return to a system of top-down, and thoroughly defined, National Banking.

(3) The purpose of the use of a Federal Credit-system, is to generate high-productivity trends in improvements of employment, with the accompanying intention, to increase the physical-economic productivity and the standard of living of the persons and households of the United States.

(4) A Crash Program for Fusion and an expanded Space program.

Fusion is a Space Platform
Applying the immense power of controlled fusion on Earth will transform our species' relationship to nature in an almost unimaginable way, but its full potential is extraterrestrial. Fission and fusion power will allow us to live and work in other places in the Solar System, and to transform them, in a way that is impossible with chemical power alone.

The process will begin on the Moon, our nearest planetary neighbor—and a rich depot for fusion fuel!

For billions of years, the Sun has been depositing heium-3, an isotope of helium, via the solar wind onto the surface of the Moon, where it is held within the upper layers of the lunar soil. Helium-3 is very rare on Earth, but estimates are that there are 1 million tons of helium-3 on the Moon, which would be enough to power civilization on Earth at current levels of consumption for millions of years.

Helium-3 is an ideal fusion fuel. Fusion of deuterium and helium-3 releases more energy than any other fusion fuel regime (see diagram), and unlike other fuel combinations, the products of the reaction are almost entirely charged particles—which can be controlled with a magnetic field. This means that they can be used to produce electricity directly and efficiently, and also as thrust in fusion rockets. With nuclear power we can maintain our work and industries through the two-week-long lunar nights. Nuclear rockets can power flight to distant bodies like Mars in weeks, as opposed to months.

With fusion power, we will upshift our species to one which can extend and maintain its existence throughout the inner solar system, and perhaps beyond, and begin to fulfill our role as a creature from Earth with an extraterrestrial imperative.

NASA's newly minted astronauts

Miriam Kramer

January 14, 2020

https://www.axios.com/nasa-astronauts-graduation-artemis-92fa2ead-c1ff-44a5-bc45-451af6c412f6.html?fbclid=IwAR3ZpvN45UJOGo-vMj1HPZrYX_ZNYkYqRyXMkiGbCeCm0olq1_12Y0mjrCM

The new class of 11 NASA astronauts and two Canadian astronauts. Photo: NASA

Newly graduated NASA astronauts are looking to the Moon, the International Space Station and even Mars as possible destinations.

Why it matters: *Astronauts are NASA's charismatic public face, and the new class of 11 — known as the Turtles — will be at the forefront of the space agency's plans to return to the Moon as part of its Artemis program.*

- *But perhaps more than that, this diverse class of astronauts represents the space agency's hunger for human spaceflight in a post-space-shuttle, post-Apollo world.*
- *"If you look back at the Apollo missions, it was this incredible unifying thing," new astronaut Zena Cardman told Axios of her view on Artemis. "And now [there is] the chance to do that — something of that magnitude again — but to do it differently and sustainably; to go and to stay."*

What's next: *The new astronauts now await flight assignments as they rotate through various jobs supporting their colleagues on the space station and on the ground.*

- *NASA also has plenty of kinks to work out with Artemis as the agency aims to send people to the Moon by 2024. Congress doesn't appear to be supportive of the timeline laid out by the Trump administration.*

NASA racing to get astronauts to the moon in four years

Miriam Kramer

Jan 7, 2020

https://www.axios.com/nasa-astronauts-moon-four-years-e6be2efc-c154-43d7-a732-b354812414b6.html

Earth rising above the Moon. Photo: NASA

NASA is racing against the clock to get its astronauts' boots back on the Moon within four years.

Why it matters: *The Artemis program to the Moon is the Trump administration's flagship space mission, designed to show off U.S. capabilities in space and eventually prove out the technology needed to send humans to Mars.*

Feature: The Tennessee Valley Authority (TVA)

The **Feature** this week highlights one of the greatest infrastructure projects in U.S. history-- The Tennessee Valley Authority. Three months into the presidency of Franklin D. Roosevelt, he signed the legislation that created the TVA.

”Over the span of eight years, the TVA transformed the Tennessee Valley region, consisting of all or parts of Tennessee, Kentucky, Virginia, North Carolina, Georgia, Alabama,and Mississippi. It brought the people living in the TVA region into the modern industrial and agricultural era, from a standard of living and culture that was little different than that in the Third World. Between 1933 and the end of World War II, the TVA directors managed the biggest construction project on Earth.

Our story is told by Marsha Freeman in the following article from *Executive Intelligence Review.* I include here just a few pages of the entire article. The link to the full article is provided.

The world needs the TVA model, not the IMF

by Marsha Freeman
Executive Intelligence Review
June 12, 1998
https://larouchepub.com/eiw/public/1998/eirv25n24-19980612/eirv25n24-19980612_026-the_world_needs_the_tva_model_no.pdf

On May 18, 1933, when President Franklin Delano Roosevelt signed the legislation that created the Tennessee Valley Authority (TVA), the economy of the United States lay prostrate. Official unemployment stood at 25%. Steel production had fallen from 44.6 million tons in 1930 to little more than 15 million tons two years later, as construction ground to a standstill. Electric power production had collapsed by 10% in the space of one year.

Various proposals had been put forward to deal with the economic contraction that had taken hold of the United States, and much of the world, during the Depression. As one writer of a TVA history described it: "The Authority was established in the U.S. of A. at a time of economic distress, in the gravest worldwide economic depression ever recorded. It came into being when governments were taking the desperate course of restricting production and destroying produce in the hope of restoring economic welfare.

"The TVA represented an altogether different conception of the management of a modern nation's economic resources: that of enterprise on a large scale, deliberately undertaken by the public authorities, with certain social and economic purposes clearly in mind from the beginning. It represented an economic policy of hope and expansion in which the government would play a dynamic part.

Less than three months after the TVA was signed, construction began on the agency's first multi-purpose hydroelectric dam, on the Clinch River. It was named for Sen. George Norris of Nebraska, who led a decades-long fight for the establishment of the TVA. Norris Dam: "No Flood of Worry." Photo: TVA.

"Over the span of eight years, the TVA transformed the Tennessee Valley region, consisting of all or parts of Tennessee, Kentucky, Virginia, North Carolina, Georgia, Alabama,and Mississippi. It brought the people living in the TVA region into the modern industrial and agricultural era, from a standard of living and culture that was little different than that in the Third World. Between 1933 and the end of World War II, the TVA directors managed the biggest construction project on Earth.

The TVA Service area

Photo: Tennessee Valley Authority archives

More important, and recognized as such by those involved, was the lasting legacy of the TVA. It became the model for large-scale, integrated economic development projects in dozens of countries around the world. After World War II, TVA engineers were called into service by governments in Asia, the Middle East, Ibero-America, Africa, and even Europe, to reproduce the remarkable uplifting of a population through government-directed construction of large-scale infrastructure projects, which the TVA exemplified.

Uplifting an American 'Third World'

In 1933, when President Roosevelt took office, fewer than3% of the households in the Tennessee Valley had electric power. The average farmer's income was $639, when the national average was $1,835. Malaria affected up to 30% of the population in some areas. The average expenditures per child for education were about one-third that of the United States as a whole.

The region was totally vulnerable to the ravages of nature. Unchecked fires burned 10% of its woodlands every year. One and a half million acres were cropped only intermittently. Due to soil depletion, 4.5 million acres were on the decline, and 300,000 acres were practically destroyed. The unpredictable periodic flooding of the Tennessee River and its tributaries prevented the development of cities along the river banks.

In the eight years following the establishment of the TVA,the number of households with electricity went from about 6,000 to almost half a million in the seven-state region. In its first 20 years, the authority built 20 dams, requiring the use of 113 million cubic yards of concrete, rock, and earth, which consumed 12 times more construction materials than was used in the building of the seven great Egyptian pyramids. Nearly 200,000 men and women were employed at various times by the TVA over its first two decades.

In order to gain control over the Tennessee River and its tributaries, an intricate system of dams and reservoirs was built, which can store 22 million acre-feet of water—an amount which could cover the entire state of Illinois to an eight-inch depth. In order to reshape the land, 15,000 families had to be moved from the backwater areas that were to be flooded. More than 19,000 graves were moved from cemeteries, along with 170 schoolhouses and 180 churches; in some instances, whole towns and villages were relocated or physically reorganized to make way for the lakes that were created behind the dams.

TVA built multipurpose dams for both flood control and power, “a policy deprecated by many prominent engineers of that day. In recruiting engineers to bring life to this idea—multiple-purpose dams—those who believed in the feasibility of this approach were sought and found,” according to Gordon Clapp, who was general manager of TVA.

The centerpiece of the TVA’s regional development plan,after the rivers were brought under control, was the introduction of electricity. The TVA’s electrification plan was based on the idea that the way to provide the cheapest possible electricity to all the households and farms in the valley, which was mandated in its charter, was through “mass production,”which had proven so effective in the automobile industry, and by the economy of scale which is possible from a continuously growing demand for power.

In order to create this growing demand, the TVA had to teach farmers, housewives, extension service workers from the Department of Agriculture, and children in schools, how to use electricity. The Authority created a promotional pro-gram to accomplish this. “The Authority indeed keeps a very watchful eye on the annual sales of electric appliances in its area, as these are the yardstick of its success,” was the way the promotional program was described.

The TVA induced appliance dealers to arrange promotional displays and demonstrations of refrigerators, washing machines, and other household appliances, as well as electric heating and hot water systems, in high schools and other public facilities. TVA had home economists visit households to advise on the use of appliances.

Agricultural productivity in the Tennessee Valley in 1933, virtually without the benefit of electrical equipment or chemical fertilizers, was not substantially different than it had been in the previous century. In addition to bringing electric power to each farm, the TVA approached increasing agricultural productivity from the standpoint of improvements in fertilizers and the use of demonstration farms to teach farmers how to use electricity, fertilizers, and more advanced farming methods.

The TVA organized farmers to work with the Authority to set up “test demonstration” farms. In exchange for free fertilizers and technical advice,demonstration farmers agreed to adopt intensive,five-year farm management programs, to keep careful records, and invite their neighbors in for tours. Between 1933 and 1943, more than 15,000 demonstration farms produced yields that were three times higher than before.

As electric power became available, small and medium-sized raw materials-processing and manufacturing industries grew up in the Tennessee Valley, absorbing the increasing excess population on the land,as the productivity of agriculture improved.

In 1930, the valley had four farm workers for every factory worker. By 1960, factory employees outnumbered farm workers by almost 2 to 1, and manufacturing income was nearly three times that of agriculture. The major growth industries were apparel, food, chemicals, electrical machinery, furniture, primary metals, leather, non-electrical machinery,pulp and paper, and transportation equipment.

In all, TVA-created industrial growth generated almost a half-million jobs in business and industry between 1933 and 1950. For those “free marketeers” who would complain that this was all developed “at the expense of the taxpayer,” bear in mind that the annual income taxes paid into the Federal treasury by the TVA, or the “return on investment” from the Federal spending, is almost six times the yearly investment in TVA.

The new industrial development also stemmed the tide of emigration from the region. Between 1920 and 1930, 120,000 people left the valley. In the following decade, 31,000 people emigrated.

Managers of the TVA recognized that in order for the people of the Tennessee Valley to be able to take advantage of more scientific farming methods and to develop modern manufacturing, there would have to be cultural changes First, was health. Malaria was endemic in more than half the valley area and there were infection rates up to 60% in some parts.

The TVA established its own Health and Safety Department, recognizing that malaria had destroyed the economic potential of whole regions around the world. It undertook extensive investigations into malaria in cooperation with the Department of Preventive Medicine of the University of Tennessee, which it helped to establish. By the mid-1940s, malaria had nearly been eliminated in the valley. The government health departments and the TVA together planned programs with special emphasis on sanitation, and immunization against smallpox, typhoid, and diphtheria.

One of the most important things the TVA brought to the people of the Tennessee Valley was books. When the Watts Bar Dam was under construction, the Tennessee Division of Libraries and County Library Board of Knoxville were contracted with the TVA to provide library services, at the expense of the Authority. The dam library started with 2,000 books.

Libraries were set up at every construction site, eventually in each of the 13 counties in east Tennessee. Only one of these counties had had public facilities for reading books before. Mobile library units reached construction workers at their homes, and also non-employees living in the remote areas.

In 1942, a member of a local library board stated at a meeting about the future of the book services TVA had established: "We have 6,000 people in Megis County, and no railroad,no telephones, and no newspapers. If we lose the library bookmobile, how will we know what is going on in the world?"

When the dams were completed, and TVA could no longer contribute to the library services it had established, it worked with other government agencies to make them permanent.

After intense lobbying by the citizens, on Feb. 9, 1943, the governor of Tennessee signed a measure setting up an east Tennessee library regional office, with an initial appropriation of $20,000. At that time, there were already libraries with 52,000 books distributed from 200 locations. There were 22,000 people registered as borrowers, who, in January 1943, read 250,000 books. By 1951, there were regional library services in 63 counties, servicing a population of more than 1.5 million.

The TVA's legacy

Near the end of World War II, in 1944, the TVA's first director, David Lilienthal, wrote his book,TVA: Democracy on the March. In the preface, he stated, "There is almost nothing, however fantastic, that (given competent organization) a team of engineers, scientists, and administrators cannot do today. Impossible things can be done, are being done in this mid-twentieth century."

David Lilienthal, the first director of the TVA

The most important “impossible things” to Lilienthal, were those which harnessed the creative energy of men to transform their circumstances: “No longer do men look upon poverty as inevitable, or think that drudgery, disease, filth, famine, floods, and physical exhaustion are visitations of the devil or punishment by a deity,” he wrote.

“The quantity of electrical energy in the hands of the people is a modern measure of the people’s command over their resources and the best single measure of their productiveness,their opportunities for industrialization, their potentialities for the future. A kilowatt-hour of electricity is a modern slave, working tirelessly for men.

”Identifying the philosophical issue, Lilienthal wrote: “The basic objection to all efforts to use the machine for human betterment lies in an attitude of absolute pessimism: that life is an evil in itself; that therefore anything which seeks to mitigate its inescapable pain and utter dullness is misdirected and futile. . . . Democracy is a literal impossibility without faith that on balance the good in men far outweighs the evil. Every effort to cherish the overtones of human imagination in music, painting, or poetry rests upon that same faith,makes that same assumption.”