

# Unnatural gas and electricity

by Mark Robinowitz

[www.PeakChoice.org](http://www.PeakChoice.org)

The campaign to switch unnatural gas to electricity for powering buildings overlooks the fact that **unnatural gas is the largest energy source for electricity generation** on the western power grid that includes Eugene.

Oregon climate groups promote the popular misconception that we get our electricity mostly from dams (which are hardening the arteries of the Earth). While it is true the country's largest concentration of hydropower is in Cascadia, we are on the **Western Electricity Coordinating Council**, an interconnection that stretches from B.C. to Denver to Tijuana, across three countries and two time zones. **WECC generates more electricity with gas than dams.** [wecc.org](http://wecc.org)

The eastern grid and the Texas grid also have gas as their largest energy source. **The largest use of gas nationally is for electricity. Electricity uses two and a half times more gas than residential use.** Most home use of gas is for heat. Cook stoves use trivial amounts in comparison, so switching stoves is mostly virtue signaling.

## USA electricity generation 2021

|   |                  |
|---|------------------|
| Thousand Megawatt hours (largest sources) |                  |
| peak electricity (2018)                   | 4,180,988        |
| <b>total (2021)</b>                       | <b>4,108,303</b> |
| <b>unnatural gas</b> (mostly fracked)     | <b>1,579,361</b> |
| coal: ore is depleting, dirtiest burn     | 897,885          |
| nukes: most dangerous way to boil water   | 778,188          |
| hydro                                     | 251,585          |
| solar                                     | 115,258          |
| wind and biomass (combined)               | 448,424          |

data:

[www.eia.gov/electricity/annual/html/epa\\_03\\_01\\_a.html](http://www.eia.gov/electricity/annual/html/epa_03_01_a.html)

## quads of energy (quadrillion BTUs)

|  |             |
|--|-------------|
| peak energy used in USA (2007)         | 101.5       |
| <b>total energy used in USA (2021)</b> | <b>97.3</b> |
| <b>electricity, all sources</b>        | <b>36.6</b> |
| <b>unnatural gas, all uses</b>         | <b>31.3</b> |
| <b>gas for electricity</b>             | <b>11.6</b> |
| <b>gas, residential</b>                | <b>4.82</b> |
| gas, commercial                        | 3.38        |
| gas, industrial                        | 10.4        |

data: <https://flowcharts.llnl.gov>

Lawrence Livermore Nat'l Lab, Dept of Energy

**Natural gas is not only polluting, it is also depleting. Conventional gas peaked in 1973**, just three years after domestic conventional oil peaked. In 1973, it was at 19 trillion cubic feet, in 2021 it was about 6 trillion.

The increase in gas over the past decade and a half was due to fracking, which ramped up in the Obama Biden administration and now has surpassed the previous peak of conventional gas. This fueled more economic growth including sustaining the plateau of peak electricity. **Gas powered electricity is the backbone of American electric grids** as coal reserves decline, nukes get old and brittle, and hydropower is challenged by desertification.

Fracked wells are more expensive, more energy intensive, more polluting and faster depleting than conventional drilling. **In 2021, 72% of nat. gas domestic production was fracked because that is what is left to drill.**

Climatology is a science. Geology is also a science. Thermodynamics is a science.

## USA unnatural gas by end use, 2021

|  |                   |
|--|-------------------|
| million cubic feet (excluding smallest uses) |                   |
| <b>total consumption</b>                     | <b>30,664,952</b> |
| <b>electricity</b>                           | <b>11,270,552</b> |
| <b>residential</b>                           | <b>4,716,208</b>  |
| commercial                                   | 3,298,222         |
| industrial                                   | 8,294,683         |

data:

[www.eia.gov/dnav/ng/NG\\_CONS\\_SUM\\_DCU\\_NUS\\_A.htm](http://www.eia.gov/dnav/ng/NG_CONS_SUM_DCU_NUS_A.htm)

The "electrification" campaign assumes solar and wind and dams can power everything, there's no need for fossil inputs and this is just a political choice that progressives can mobilize for. Unfortunately, it is more complicated.

Solar panels are ideal but they work much better around June 21 than December 21. Regionally, Cascadia's peak electric loads are the coldest time of the year when solar electric and hot water are least relevant. Accelerated insulation retrofits of homes (both owner occupied and rental properties) might have more impact on winter electric heating demands.

**When I learned to use solar panels a third of a century ago the first lesson was to use LESS electricity. It is sad to see environmentalists campaigning to use MORE.**

Wind farms are cheap per megawatt hour because the fuel is free, but large electric grids cannot run solely on variable power.

Electric grids require that generation and demand be balanced in real time to avoid brown outs and voltage spikes. Coal and nukes provide lots of baseload but are difficult to throttle up and down, and both have severe pollution and safety problems. The wind farms along the Columbia River rely on nearby dams and gas generators to keep regional generation roughly aligned with distant demand.

Shifting natural gas combustion from the point of use to generators on the east side of the Cascades (or even further) makes the problem seem out of sight to urban residents. Climate chaos is a global problem of interconnections.

In November 2022, Warren Buffett's Pacificorp utility agreed to remove four dams on the Klamath river along the Oregon — California border. The Klamath and other first nations have campaigned for decades for their removal to restore fisheries they depend upon. Several non-governmental organizations were key promoters, based in distant urban areas. The local small towns are mostly against this. details: <http://klamblog.blogspot.com>

These four dams generate 163 megawatts. Not mentioned in the media coverage is 620 MW of nat. gas generation was installed on the river just south of Klamath Falls over a decade ago.

Keno dam, just upstream of the four, will not be removed even though it doesn't generate electricity and contributes to toxic algae that damages the fishery. (It helps maintain flows into nearby agricultural canals.)

A larger proposal for removing four dams on the lower Snake River has been proposed to help salmon fisheries in the Columbia River system. These four dams total 3 gigawatts of electricity at maximum power. (In contrast, all Willamette River watershed dams combined are about the size of a single Snake River dam.). The campaigns to remove these dams don't suggest Portland, Seattle, Spokane and Boise could use 3 gigawatts less electricity to make their removal less disruptive.

Dworshak dam, upstream of those four, is the third tallest dam in the country. The NGOs have not proposed removing it even though the dam destroyed steelhead runs in part of central Idaho.

Hydroelectricity peaked in the USA because the best sites were dammed decades ago and desertification threatens generation. In August 2021, Oroville dam in California was turned off for a few months due to lack of water. Hoover dam on the Colorado near Las Vegas is approaching "dead pool." Many dams will see permanent declines as climate chaos intensifies.

## Five stages of accepting limits to growth

### 1. the river of denial has many tributaries

Climate denial is one part of refusals to acknowledge ecological overshoot embedded in the American Way of Life (AWOL). Peak denial is nearly universal.



### 2. pique: anger about symptoms, not root causes

### 3. bargaining

There are many claims that technological substitution can sustain the unsustainable. "100% renewable" supposedly can power 100% of "current" consumption. Nuclear power is safe, cheap and carbon free (all lies, of course). The government is hiding huge oil deposits that will fuel industry for centuries (never mind the pollution or the geology that refutes this). These and other fantasies make societal cohesion less likely on the downslope as they divert attention and resources needed for mitigation. The 2008 "recession" and more recently, Covid closures, cut energy use more than climate activism.

### 4. PTSD (President Trump Spread Disease)

The economic consequences of the end of growth are causing severe social problems, including rising levels of mental illness.

### 5. Earth is abundant and finite

Understanding root causes will not, by itself, solve the symptoms but it might reduce toxic levels of scapegoating and anger. Ideally it could invigorate **practical and fractal** responses at all levels toward societal resilience as the "polycrises" intensify. These include learning to live within what is possible, relocalizing food production, regenerative agriculture, steady state economies, "degrowth," protecting farmland so people can eat as fossils deplete.

- **We are damned if we drill, because of pollution and climate chaos.**
- **We are damned if we stop, because concentrated finite fossil carbon runs everything, including food systems.**
- **We are damned as concentrated energy declines, because we are unprepared logistically and psychologically.**

Fracking postponed rationing.