



**The fossil-fuel-friendly folk have a list of 10 reasons why we don't need hydroelectric power. You can view their egregious claims here:**

[https://www.ern.org/wp-content/uploads/sites/52/2020/02/NAMRA-2019-10-Reasons-Why-Climate-Initiatives-Should-Not-Include-Large-Hydropower-Projects\\_-2.pdf](https://www.ern.org/wp-content/uploads/sites/52/2020/02/NAMRA-2019-10-Reasons-Why-Climate-Initiatives-Should-Not-Include-Large-Hydropower-Projects_-2.pdf)

But in fact, all 10 arguments are flagrantly false. Well, nine of them are, anyway. One is just plain hilariously misleading.

**False claim #1.**

**Reservoirs produce methane gas that drives climate change.**

Just how can dams make CH<sub>4</sub> out of concrete and water? That's as ridiculous an idea as making gold from lead by alchemy.

All waterways - streams, lakes, reservoirs and rivers – collect plant plant material which, regardless of where it is transported, releases CO<sub>2</sub> and CH<sub>4</sub> as it decays. The amount of carbon ending up in the atmosphere is not particularly sensitive to the pathway of plant decay. It's all part of the natural carbon cycle.

What is not part of nature's cycle is digging up coal, petroleum and CH<sub>4</sub> (natural gas) from deep within the Earth. Nature has been carefully locking those hydrocarbons into the Earth's crust for hundreds of millions of years, in order to make ours a habitable planet. If you want a stable climate, stop extracting those fuels from the ground. We need to respect the boundary between carbon that is deeply buried, and carbon that is already in the biosphere. Because we have transgressed that boundary by dumping carbon into the atmosphere, we are now experiencing rapid climate change.

<http://www.dreamgreen.ca/sourceorsink.html>

**False Claim #2:**

**Hydropower projects and other dams impair the role of rivers to remove carbon dioxide from the atmosphere.**

Carbon dioxide dissolves in water, and slowly reacts with the water to produce carbonic acid, which in turn can react with rocks to produce carbonates that precipitate out as solids. There is no clear reason why forming a reservoir would impair this process. Because of the larger area of surface contact between air and water that a reservoir offers, the removal of CO<sub>2</sub> from the atmosphere may be actually be more efficient there.

<https://advances.sciencemag.org/content/2/10/e1601278>

**False Claim #3:**

**"Hydropower dams make water and energy systems more vulnerable to climate change."**

Exactly the opposite is true: dams and reservoirs give us protection from the extremes of climate change.

What do dams do? They control the flow of water. They don't consume water, they contain it until it can be safely released, thereby protecting us from flood and drought that climate change is bringing on.

We already have clear evidence that our combustion of fossil fuels is exacerbating the extremes of precipitation the planet is now experiencing. More atmospheric CO<sub>2</sub> causes a stronger greenhouse effect, causing stronger atmospheric convection, causing more extremes of precipitation, with more drastic drought and flooding.

**False Claim #4**

**"Dams cause severe and often irreversible damage to critical ecosystems."**

This blanket statement is simply invalid. Depending on local topography and species, control of water flow may increase the productivity of wetlands and riparian zones, providing habitat for all kinds of species. Water is the basis of all living plants and animals. A stable fresh water supply is a boon to all living things.

**False Claim #5**

**"Large hydropower projects have serious impacts on local communities and often violate the rights of Indigenous peoples."**

Perhaps we should recall that fossil fuels have created some of the worst environmental disasters, ever.

Clean energy opens myriad possibilities for local development. An example of positive social impact from an immense hydroelectric project might be found in Hydro Quebec's James Bay Project:

[https://en.wikipedia.org/wiki/James\\_Bay\\_Project#Social\\_impact](https://en.wikipedia.org/wiki/James_Bay_Project#Social_impact)

While bad outcomes are always possible, it is more true to say that improved outcomes are more likely. Doing or building anything always entails risks, most of which are avoidable by careful planning. For example, the risk from methylmercury contamination is largely avoidable by clearing the land before flooding. Much has been learned from the mistakes of the past.

#### **False Claim #6**

**"Large hydropower projects are not always an effective tool to expand energy access for poor people."**

Ever since Rockefeller founded the Standard Oil Company in 1870, the petroleum industry has been the biggest creator of wealth extremes, concentrating proprietary wealth into the hands of the few. So the above statement shows the extreme chutzpah that the fossil fuel industry holds over the general populace

Wind, solar and hydro energy are non-proprietary, and sustainable in perpetuity. SolarPV is especially scaleable, able to power a single-home or a large city. The rise of sustainable energy offers an historic opportunity to mitigate wealth inequalities, because the energy of sun and wind are freely available to all.

#### **False Claim #7**

**On average large dam projects experience huge cost overruns.**

Cost overruns are common in infrastructure, building, and technology projects. Somehow, that hasn't stopped us from building skyscrapers and subways, or from going into space.

[https://en.wikipedia.org/wiki/Cost\\_overrun](https://en.wikipedia.org/wiki/Cost_overrun)

#### **Claim #8 isn't false... It's merely hilarious!**

**"Unlike wind and solar power, hydropower is no longer an innovative technology."**

Well, actually, this statement is indeed true. Gravity can hardly claim to be innovative.

Gravity has powered the universe for all of its 13.8 billion years. It formed our Galaxy, and 4.6 billion years ago it formed the planet we live on. A great thing about gravity is that it's available 100% of the time, forever. But innovative, no.

Since forever, the sun's heat has evaporated water from Earth's surface and deposited at high elevation as precipitation. As it descends toward sea level, every drop of water releases that energy back, the total energy release depending only on the mass and vertical distance. We've been able to extract this gravitational energy of water to make electricity, at efficiencies approaching 100%, for many decades now. It's hard to improve on something so perfect.

Hydropower is the best manifestation of solar-powered gravitational energy release we can imagine.

#### **False Claim #9**

**"As grids become smarter and the cost of battery storage drops, new hydropower projects are no longer needed to balance intermittent sources of renewable energy."**

This is the most subversive falsehood of all. As we move to wind and solar energy to displace fossil energy, the reliability of supply offered by hydro storage becomes ever more important. The experiences of Denmark and Germany clearly show this. Those countries are decades ahead of North

America in their embrace of wind & solar, but their efforts to achieve 100% nonfossil energy stalled at around fifty percent of grid power, due to fluctuations of demand and supply. They are now overcoming that limit using hydropower imported by undersea cable from Norway.

Remember, when the sun sets over the Pacific Ocean, all of North America is in darkness. Japan isn't going to supply us with electricity at night.

As for battery storage, a look at the periodic table of elements quickly crushes that myth. Because of the unique electron shell configuration of carbon, it is the only element that densely packs chemical energy per unit mass. That's the reason that humans and all living things are formed from carbon compounds. To access the same amount of chemical energy from any other element typically requires about 50 times as much mass of material.

To put it another way, carbon compounds store a lot of chemical energy per unit mass, but no other element does this. On a large scale, battery storage simply cannot ever compete with hydrostorage for electricity: never in price, and never in capacity.

[https://en.wikipedia.org/wiki/Specific\\_energy](https://en.wikipedia.org/wiki/Specific_energy)

### **False Claim #10**

**"Hydropower projects absorb significant support from other climate initiatives."**

Well, let's give credit where credit is due. Fossil fuels are wonderful, because they can always be available when you need them. Electricity from wind and solar generation is cheaper and cleaner, but it isn't always there when you need it. But with hydrostorage in reservoirs, we can compensate for that in real time, balancing supply and demand in seconds, for a reliable power supply.

The bottom line is that hydropower is the essential support system for wind and solar generation.

### **Summary**

So here's the story: the fossil fuel lobby knows they are facing a zillion dollars in stranded assets, as the world migrates to sustainable energy. If they can slow the adoption of solar and wind energy by emphasizing its intermittency, and blocking the hydro storage solution, the present generation of CEOs can retire rich anyway, and leave the world to burn from climate change after they've gone.

We cannot let that happen. Hydro capacity can ensure it does not happen.

Think about that, next time you are fueling up at your local gas pump. Wouldn't you rather power your vehicle at a fraction of the cost, and leave a sustainable world for your grandchildren?

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