

# Time to Get Serious

By George Erickson 10-20-22

We are in deep trouble with  
climate change.

Expanding nuclear power is the safest,  
most effective way to cut back on  
carbon.

**2,000 years ago, when there were just**

**300 million people, Seneca warned,**

**“A bull is content with a meadow,**

**and a forest is enough for 100 elephants,**

**but the little body of a man devours**

**more than all other living creatures.”**



An aerial photograph of a sprawling informal settlement, likely in Mexico City, built on a steep hillside. The terrain is densely packed with small, makeshift structures. In the foreground, a large area is covered with a thick layer of garbage and debris, including plastic waste and discarded materials. The background shows more of the settlement extending up the hillside under a hazy sky.

**Mexico City**  
**Think about the garbage.**

**Let's also look closer to home**



Sustainable



Sustainable?

Garbage barges

10,000 tons/day



# Extreme weather events - Nebraska 2019

2022 Pakistan flood  
20 million homeless  
1,200 dead





# Lake Mead 2021



Lake Powell, which feeds Lake Mead, is **down 75%.**



A satellite view of Earth at night, showing the curvature of the planet and the glowing lights of cities and continents. The Nile River is visible as a bright, winding line of light through the dark landscape of Egypt.

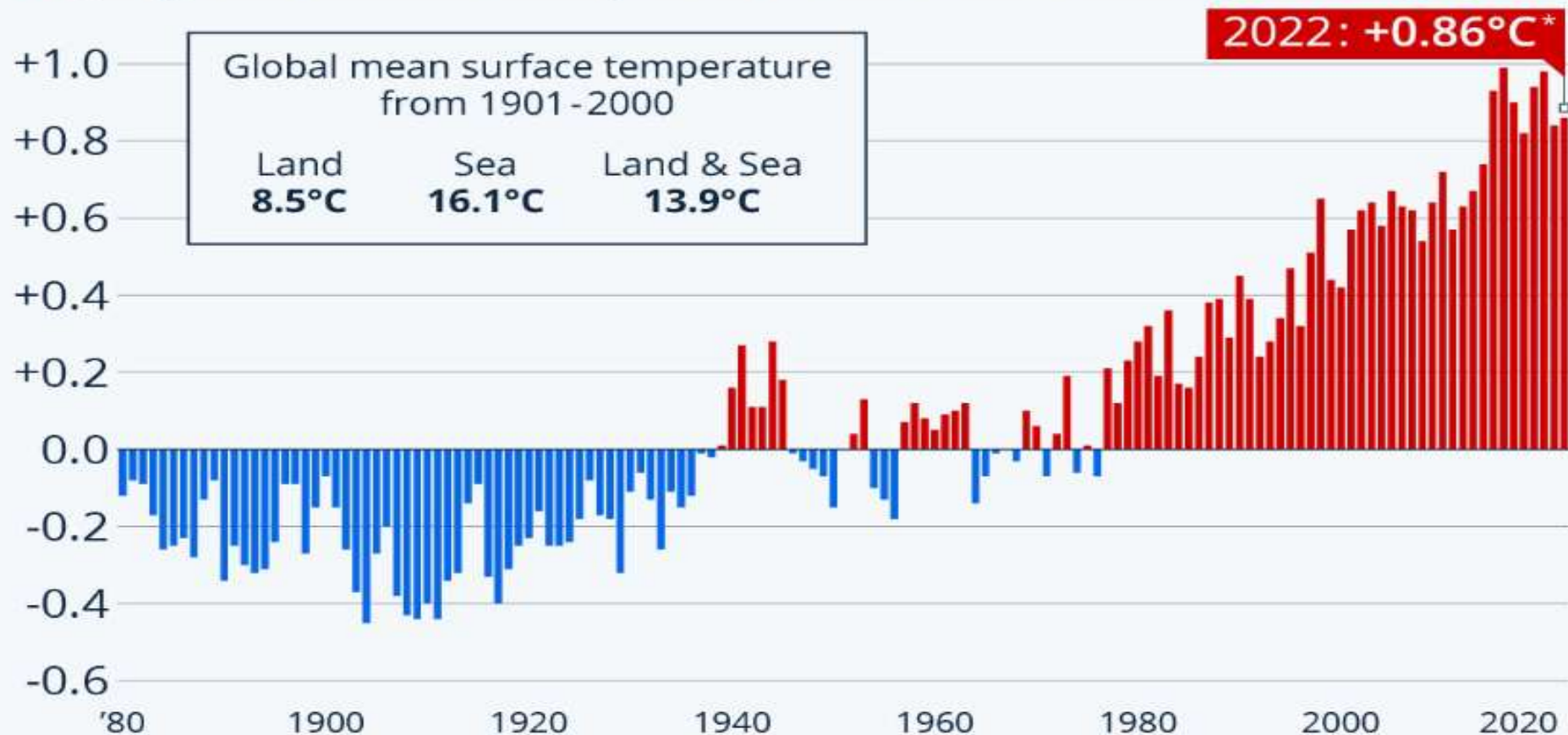
By **2025**, Cairo, population **20,000,000**,

will be short of water,

by **2050**, the **4 billion** people who depend  
on dwindling mountain runoff  
will be desperate.

# The Last 8 Years Have Been the Warmest on Record

Global land and ocean surface temperature anomalies (degrees Celsius compared to the 20th century average)



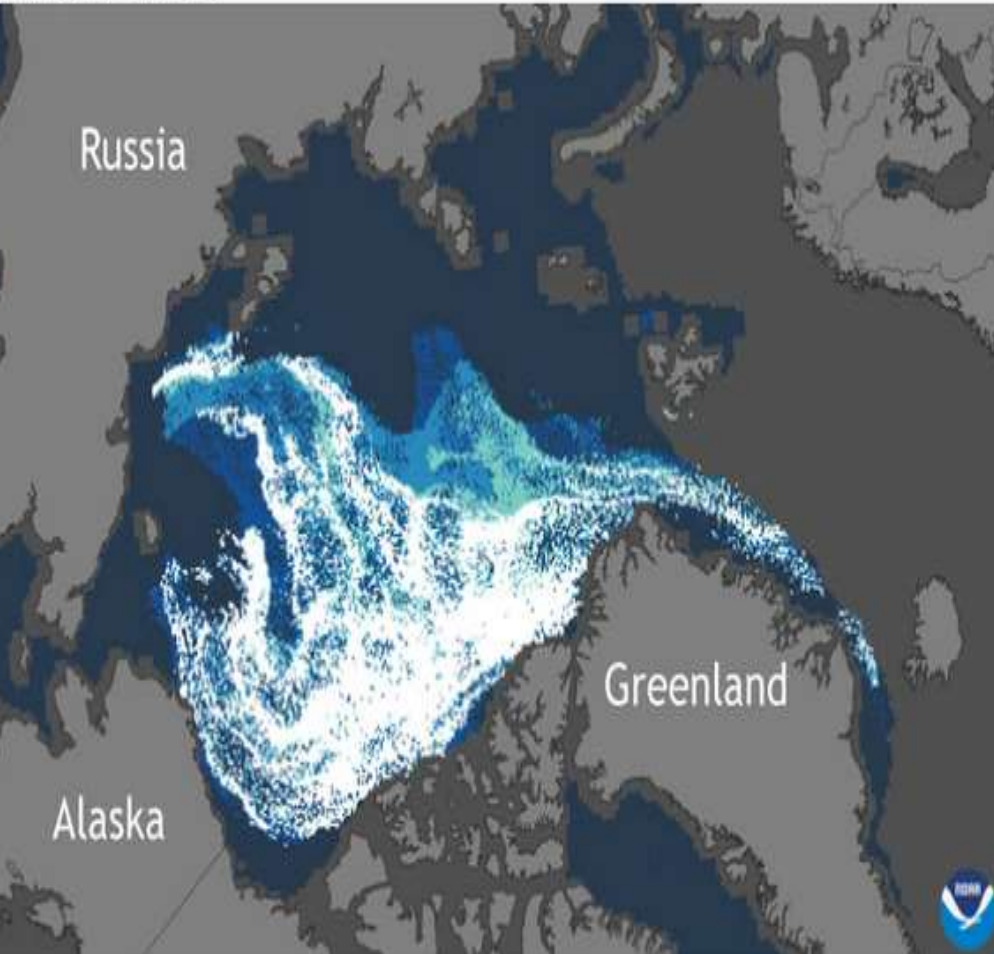
\* 2022 figure refers to the temperature anomaly for January through September

Source: NOAA

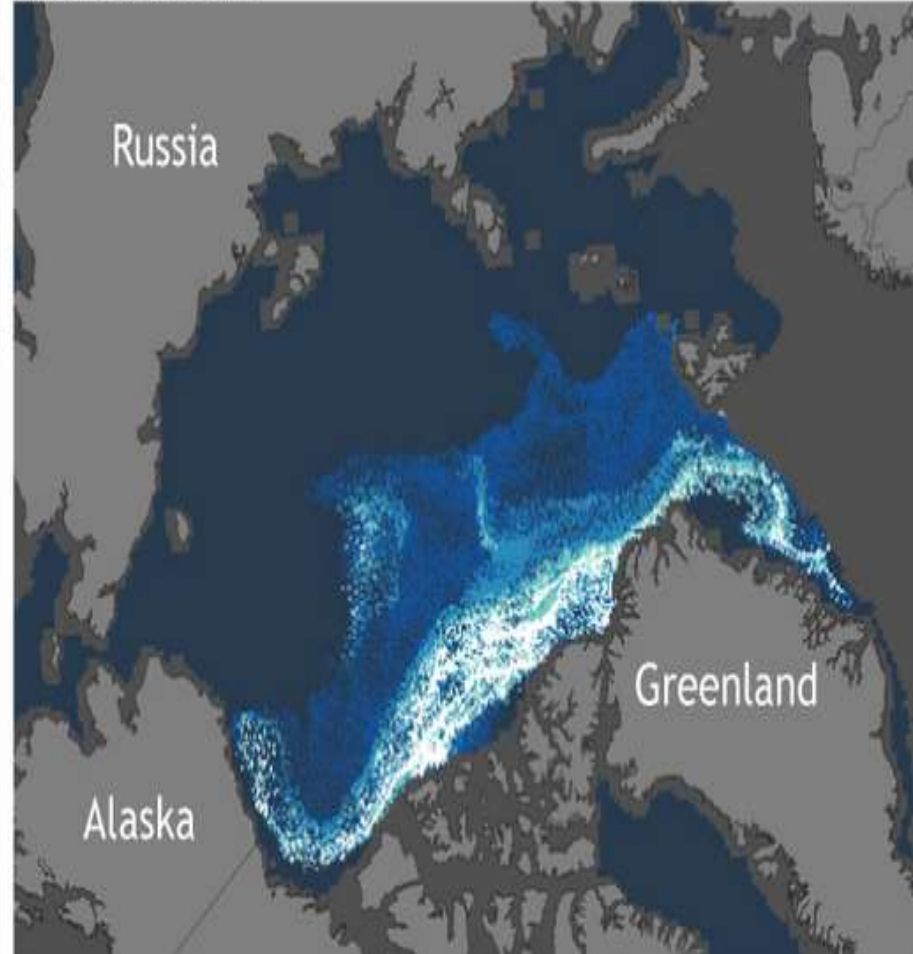


In **March 1950** the Arctic ocean was **100% ice**, but note the decrease from 2000 – 2020, and it's worse now!

March 2000



March 2020



**Ice reflects heat, but water absorbs it, and warm water holds less oxygen.**



**Without ice, starving polar bears and birthing seals will be driven ashore, becoming prey for foxes, wolves & grizzlies.**

**Even a healthy polar bear is no match for a grizzly.**



# California - the Golden State - 2020



Bark beetles, once held in check by cold winters, are surviving.


We are on the road to climate hell.” U N Sec. Gen. Guterres

Worldwide, we create ~ 85% of our electricity and heat for buildings and industry by burning carbon, so why are we expanding carbon-dependent, inefficient wind and solar farms instead of expanding carbon-free, highly efficient nuclear power?





# Canada's Tar Sands – one of North America's worst GHG emitters.



We have created **2 trillion tons** of Industrial Age  $\text{CO}_2$  to which we are adding **50 billion tons/yr.** 1/3 has already dissolved in our seas, making them increasingly hostile to the life that provides **20% of our protein and 50% of our oxygen!**



**Russia, China, Korea, Turkey, India, and 15 other nations are expanding nuclear power.**

**but, led by BP, Exxon and willfully ignorant “greens,” we have closed 4 nuclear plants while fighting to keep Diablo Canyon open!**

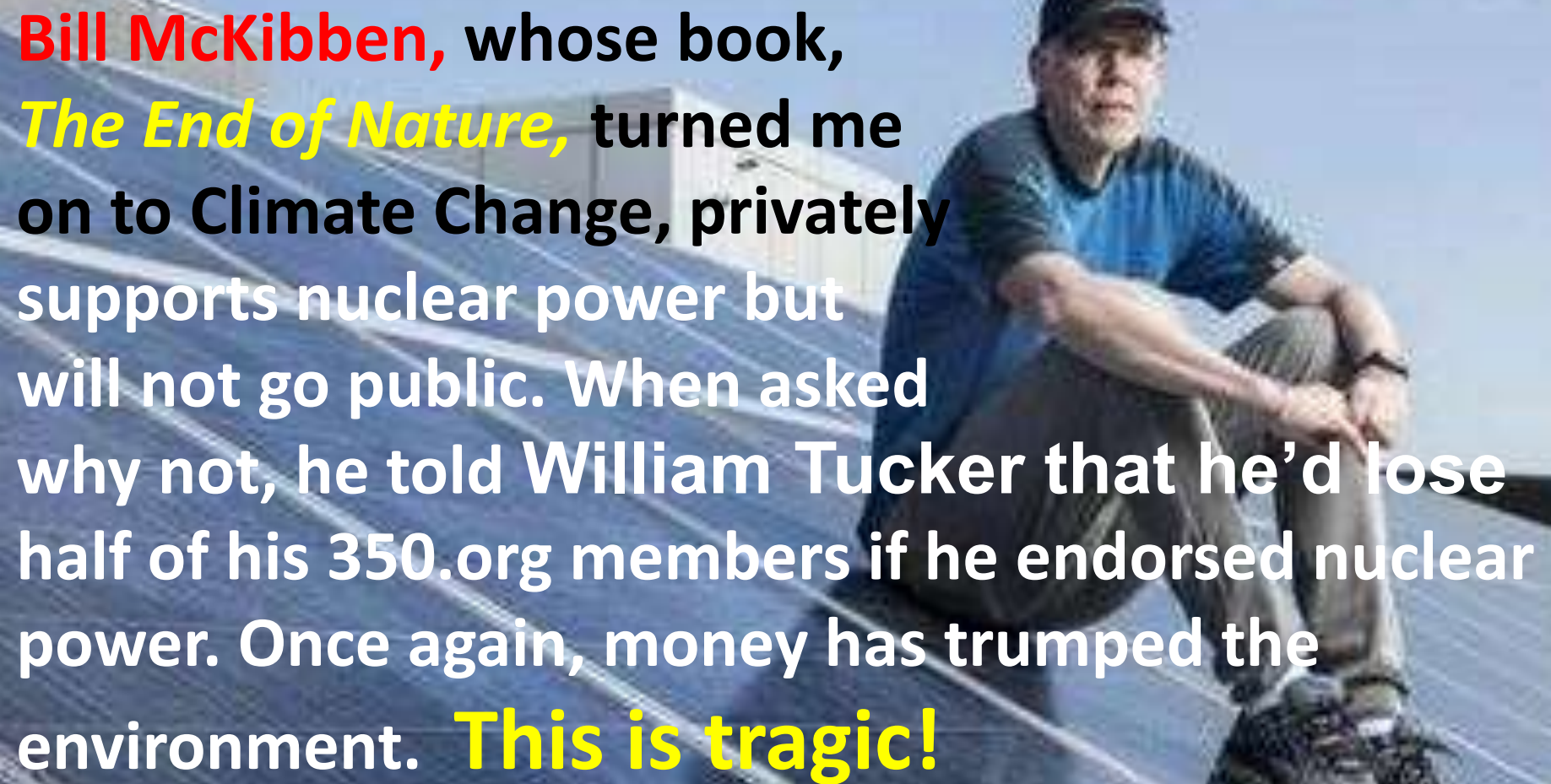






Yes, “willfully ignorant.”  
The Sierra Club and its clones that take money from oil companies refuse to watch presentations on the superiority of nuclear power and the defects of wind and solar.



A man wearing a blue t-shirt, a dark baseball cap, and khaki pants is sitting on a large array of solar panels. He is looking towards the camera. The background shows a clear blue sky and some distant structures.

**Bill McKibben**, whose book, *The End of Nature*, turned me on to Climate Change, privately supports nuclear power but will not go public. When asked why not, he told William Tucker that he'd lose half of his 350.org members if he endorsed nuclear power. Once again, money has trumped the environment. **This is tragic!**

Watch Michael Moore's *Planet of the Humans*.  
It's **FREE** on the web.



# Nuclear Power vs. Solar/Wind

UK's Hinkley Point C, Typical LWR  
<http://tinyurl.com/cbzfz8l>  
Energy Versus Solar & Wind Farms

Hinkley C, 3.2GWe,  
25TWHrs/year  
430 Acres



Solar farms =  
**130,000 acres**

Onshore wind farms =  
**250,000 acres\***

**London Telegraph**

<https://www.youtube.com/watch?v=zc7rRPrA7rg>



# Protecting Mining Jobs and Communities



## A message from Australia's coal miners

Climate change is real and we need a Government that will tackle it.  
Doing nothing is no longer an option.

Voters have a choice at the election:

### Labor

- ☒ Support \$1.5 billion investment in Clean Coal Technology
- ☒ No nuclear power station

### Coalition

Continue to neglect Clean Coal Technology  
Develop nuclear power stations that would replace the coal industry.

## Nuclear Power Will Kill the Coal Industry

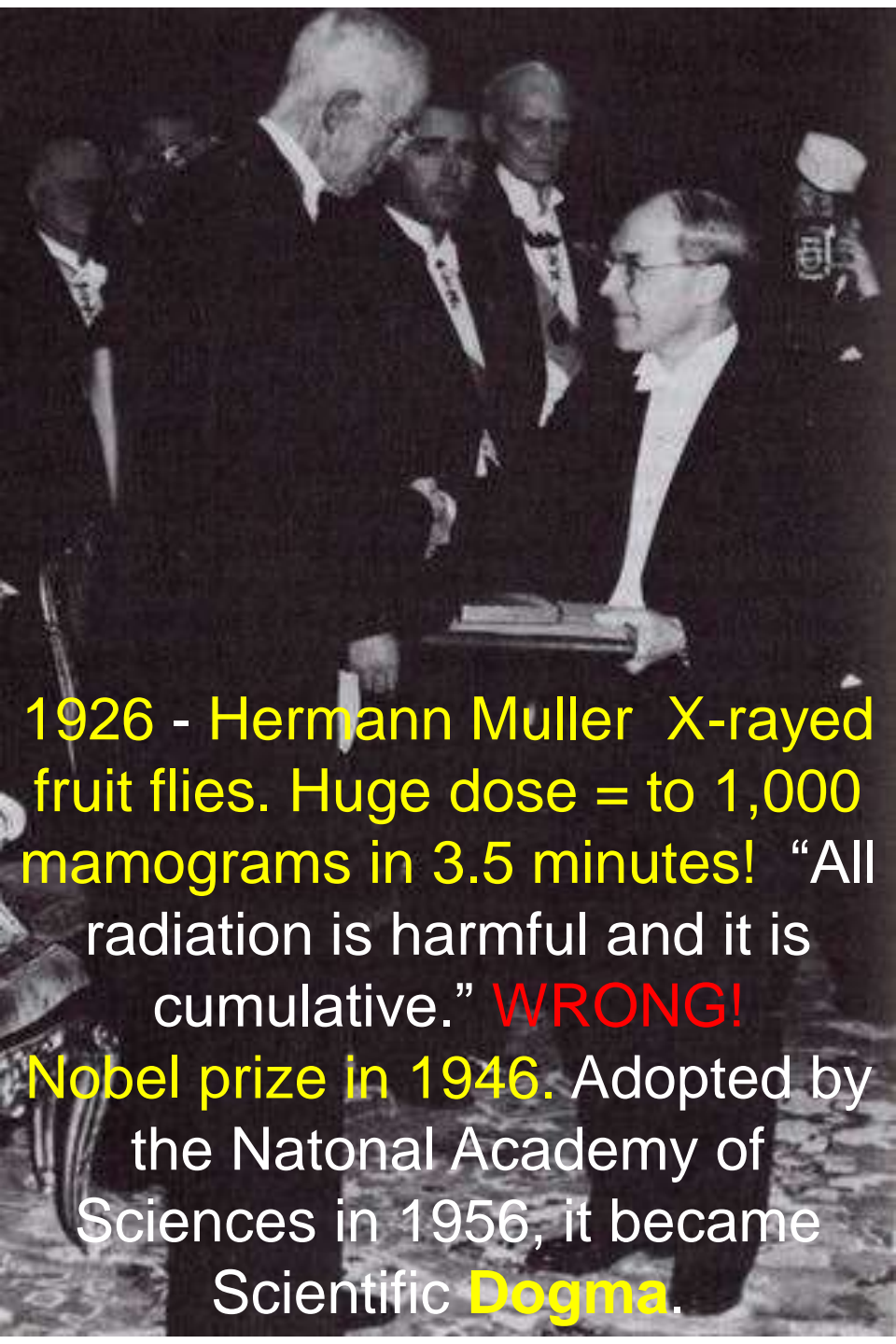
communities don't support the Liberal and National parties' plans to introduce nuclear power stations.

Going nuclear is dangerous and will mean the end of our coal industry. Choose a party.



It's all about jobs, money and nuclear **FEAR**  
that began in 1926 with Hermann Muller





1926 - Hermann Muller X-rayed fruit flies. Huge dose = to 1,000 mamograms in 3.5 minutes! “All radiation is harmful and it is cumulative.” **WRONG!** Nobel prize in 1946. Adopted by the Natonal Academy of Sciences in 1956, it became Scientific **Dogma**.

# Nuclear: The Safest Energy Source of All

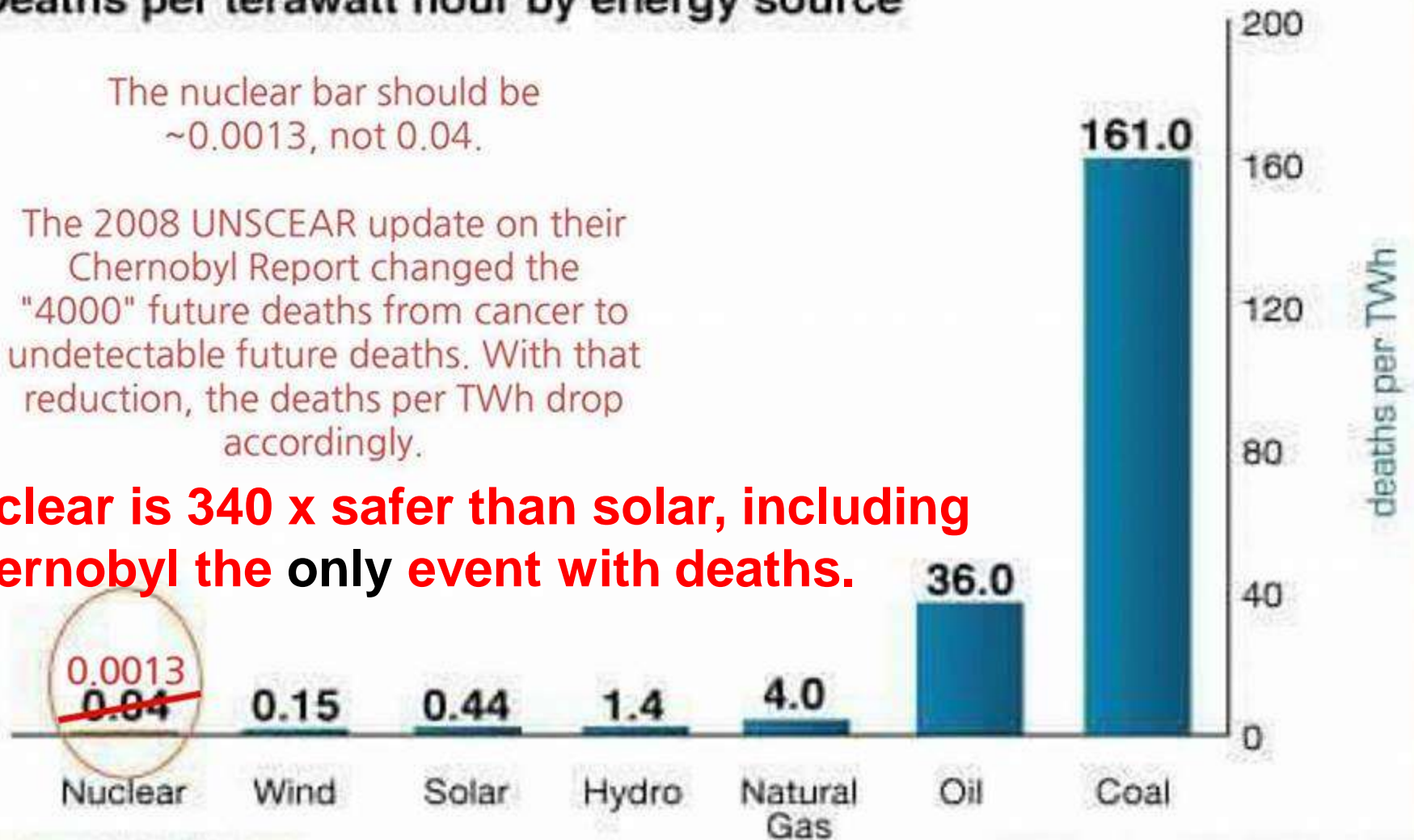
## World Health Organization

### Deaths per terawatt hour by energy source

The nuclear bar should be  
~0.0013, not 0.04.

The 2008 UNSCEAR update on their  
Chernobyl Report changed the  
"4000" future deaths from cancer to  
undetectable future deaths. With that  
reduction, the deaths per TWh drop  
accordingly.

**Nuclear is 340 x safer than solar, including  
Chernobyl the only event with deaths.**





**All methods of creating electricity are evaluated in two ways: the first reveals how much electricity can be generated under ideal conditions. The second measures how much is created long term, usually 1 yr.**

**Nuclear power generates ~92% of its rated capacity.**

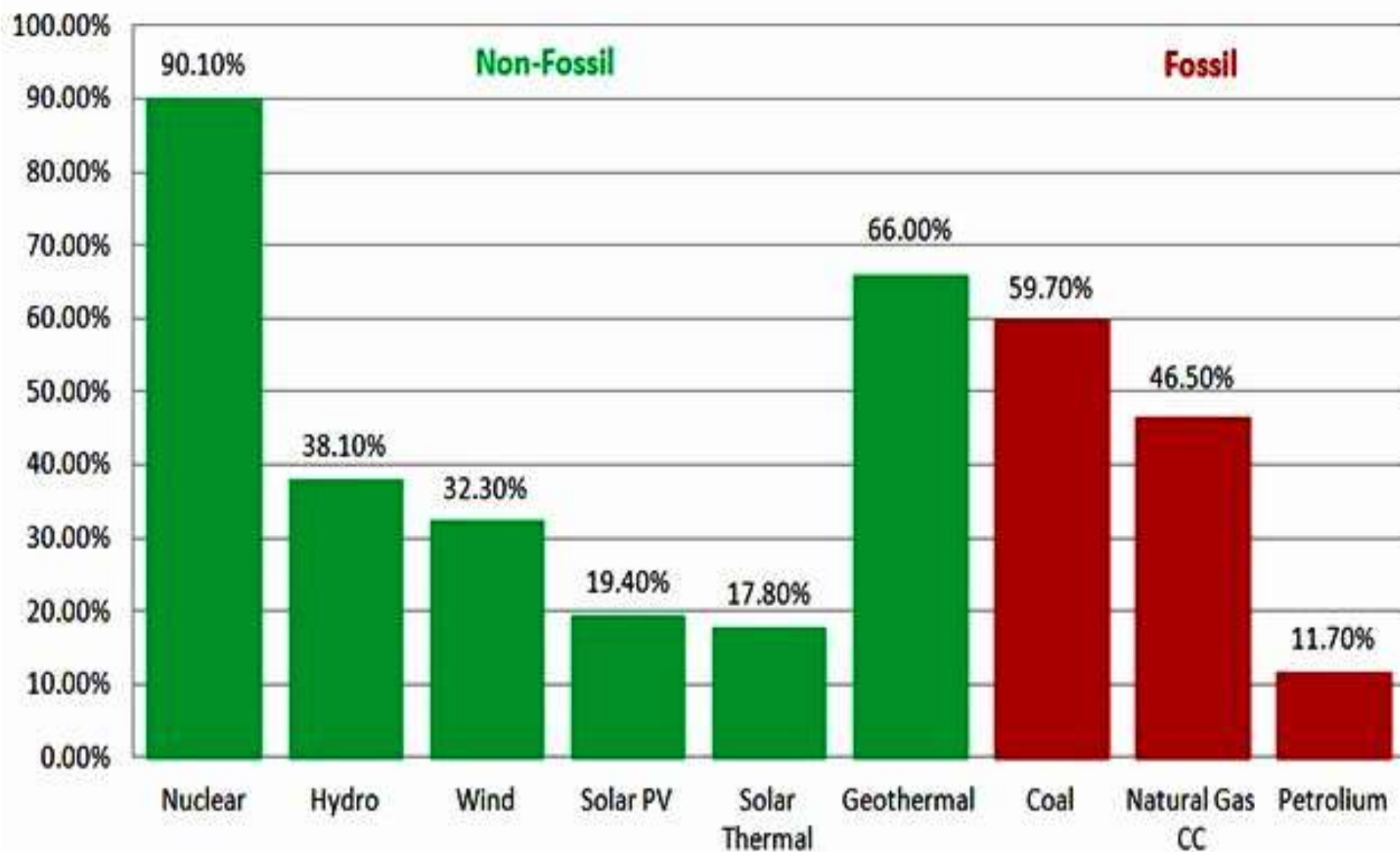
**Wind and solar generate only 33% and 20% respectively, with the rest being created primarily by power plants that burn carbon. They are not “green.”**

**They are carbon-dependent!**

**The proof is in the next image.**

# 2013 Capacity Factors by Energy Source

(Source: U.S. Energy Information Administration)







The “green” fix for intermittent wind  
and solar: Build more + batteries.

24/7 Nuclear doesn't need batteries.

We must determine the carbon footprints  
of all projects, including Carbon Capture  
projects, beginning with mining.

**Teslas Australian Battery Array**  
**129 Megawatt hours of storage**  
**50 million dollars**

**\$388,000 /MWhr**

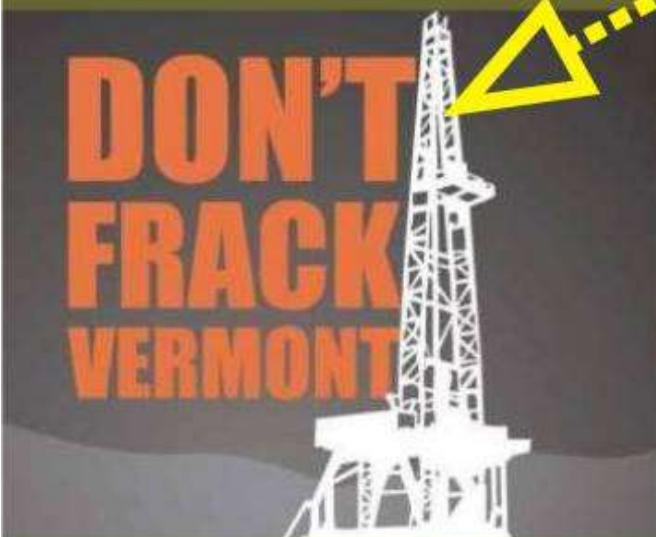
**Ball of Thorium**  
**4,200 Megawatt hours of stored energy**  
**Less than 2,000 dollars**

**47.6 cents/MWhr**

**We have enough uranium  
and thorium to last at least 100,000 years**

**Batteries have huge  
environmental consequences.**





**Wind and solar are  
carbon-dependent!**

**VPIRG**

1,317 likes · 147 talking ab

Non-Profit Organization

VPIRG is Vermont's largest grassroots advocacy organization. We work to protect Vermont's citizens and environment, and need your help. Check out



Natural gas is 90% methane, which is **80 x worse than CO2** for decades.

**Fracking pollutes groundwater**

Wind turbines are flying high. But how do you keep the lights on when the wind stops blowing? At BP, we see a simple answer: We see cleaner-burning natural gas. It's a perfect partner to renewables.



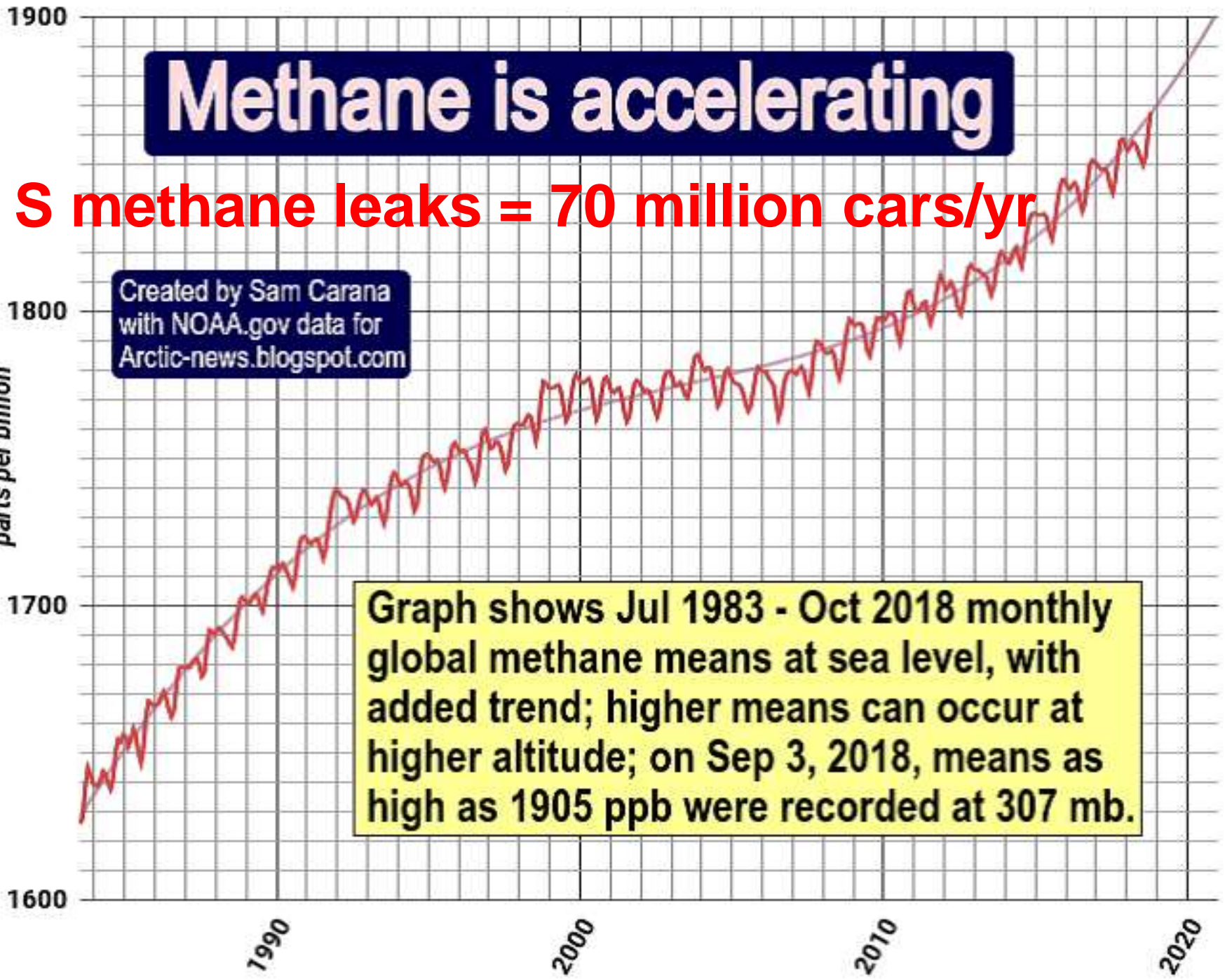
# Methane is accelerating

U S methane leaks = 70 million cars/yr

Created by Sam Carana  
with NOAA.gov data for  
Arctic-news.blogspot.com

parts per billion

Graph shows Jul 1983 - Oct 2018 monthly global methane means at sea level, with added trend; higher means can occur at higher altitude; on Sep 3, 2018, means as high as 1905 ppb were recorded at 307 mb.





# 2012 Boston area methane leakage.

An aerial photograph of the Boston area, including parts of Massachusetts and Rhode Island. The map is overlaid with red outlines representing city boundaries and numerous yellow vertical lines of varying heights, indicating methane leakage points. The lines are most densely packed in the urban areas of Boston, Cambridge, and Somerville.

**CNN 2018: “1 dead, 24 injured  
in 30 natural gas explosions in  
three Boston area towns.”**

In Boston, thousands of measurements made  
in 2012 suggest methane leaks are everywhere.



CANADA

U.S.A

Bakken Shale Activity

**Bakken flaring could  
power Chicago and  
Washington DC.**

**It's cheaper to flare it than  
pipe it to market.**

Minneapolis - Saint Paul

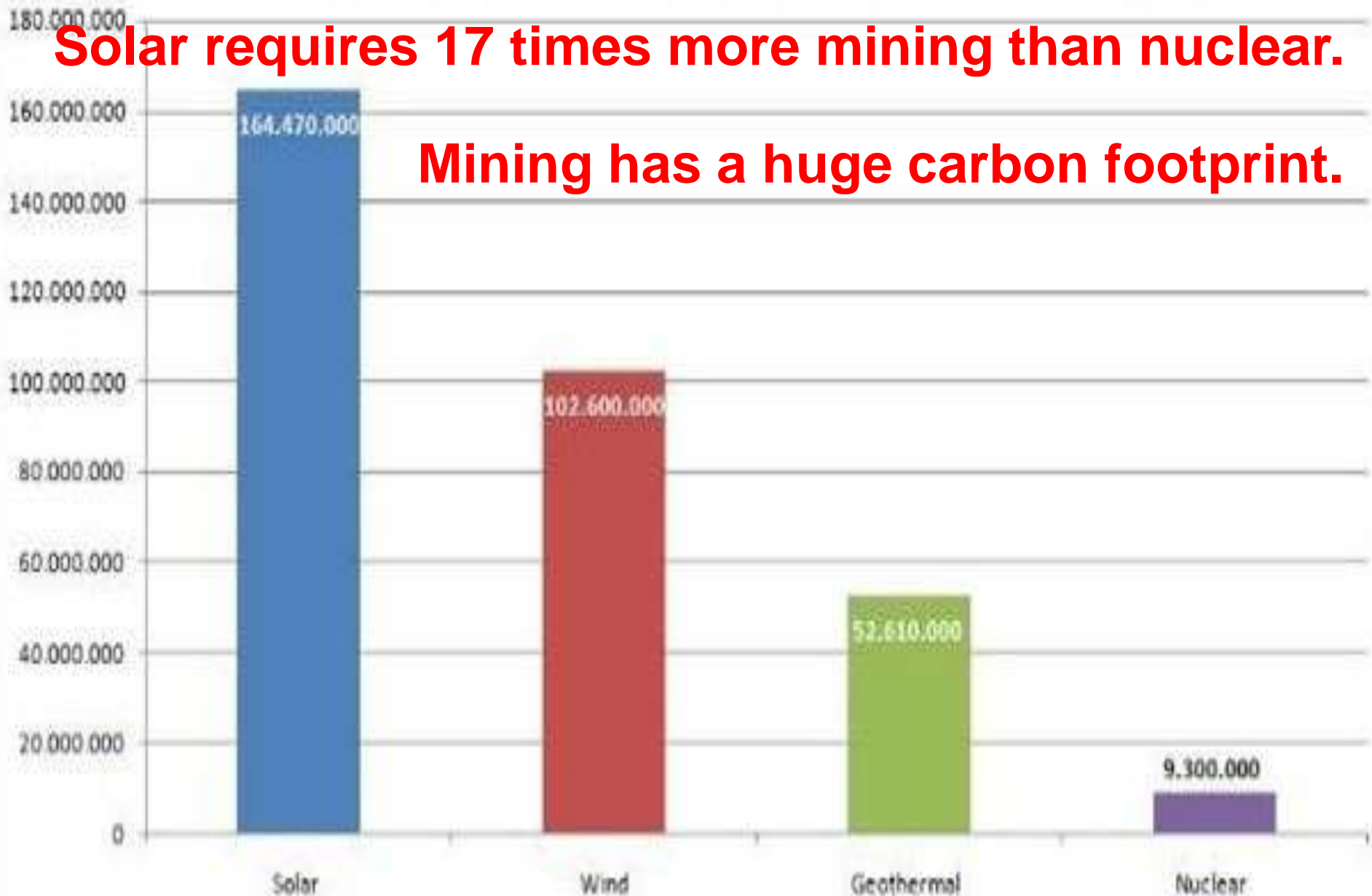
Denver



## Total tonnage required to build 10.000 TWh generation capacity

**Solar requires 17 times more mining than nuclear.**

**Mining has a huge carbon footprint.**





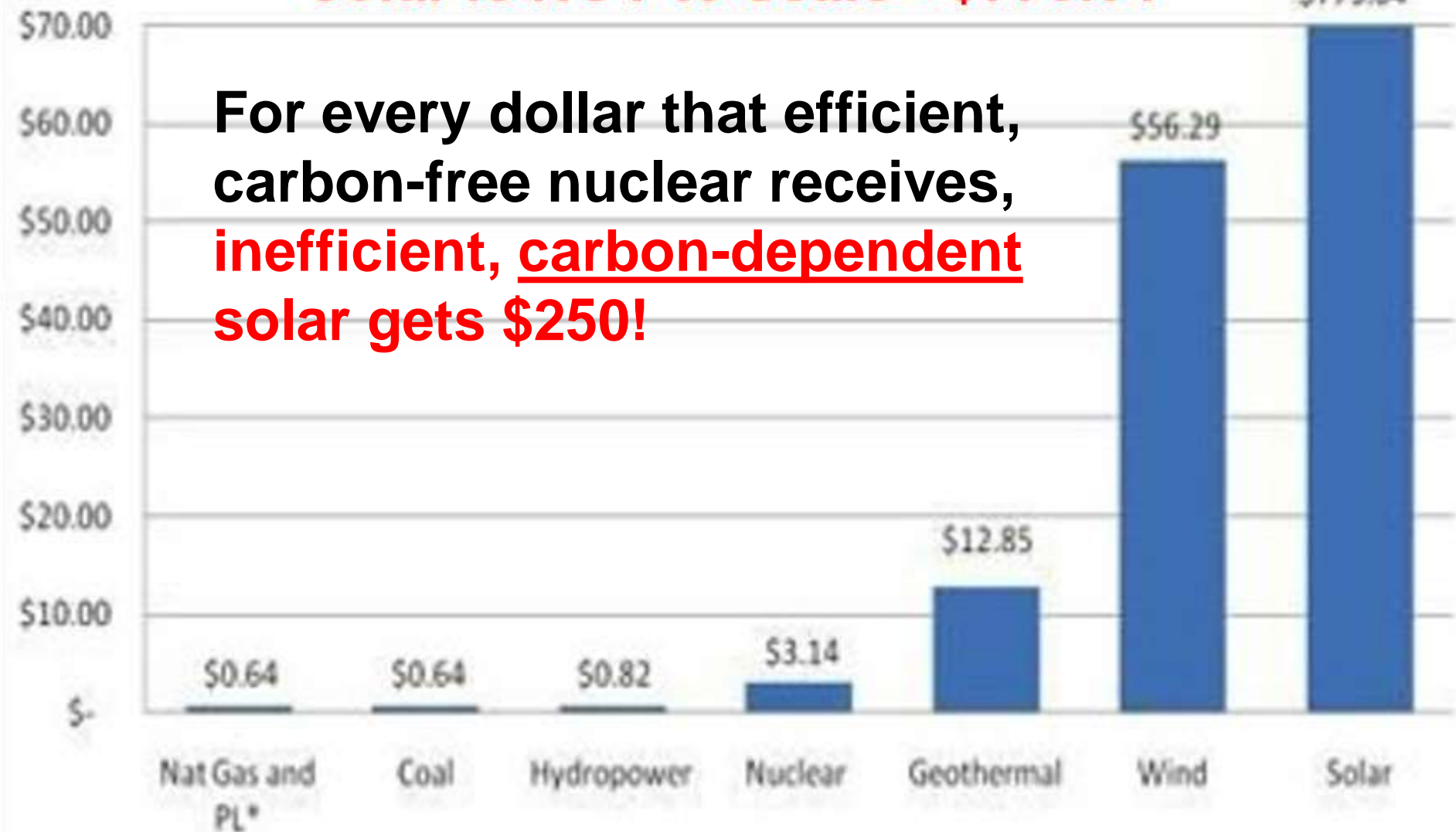
# Federal Electric Subsidies per Unit of Production

(2010 dollars per megawatt hour)

**Solar is NOT to Scale - \$775.64**

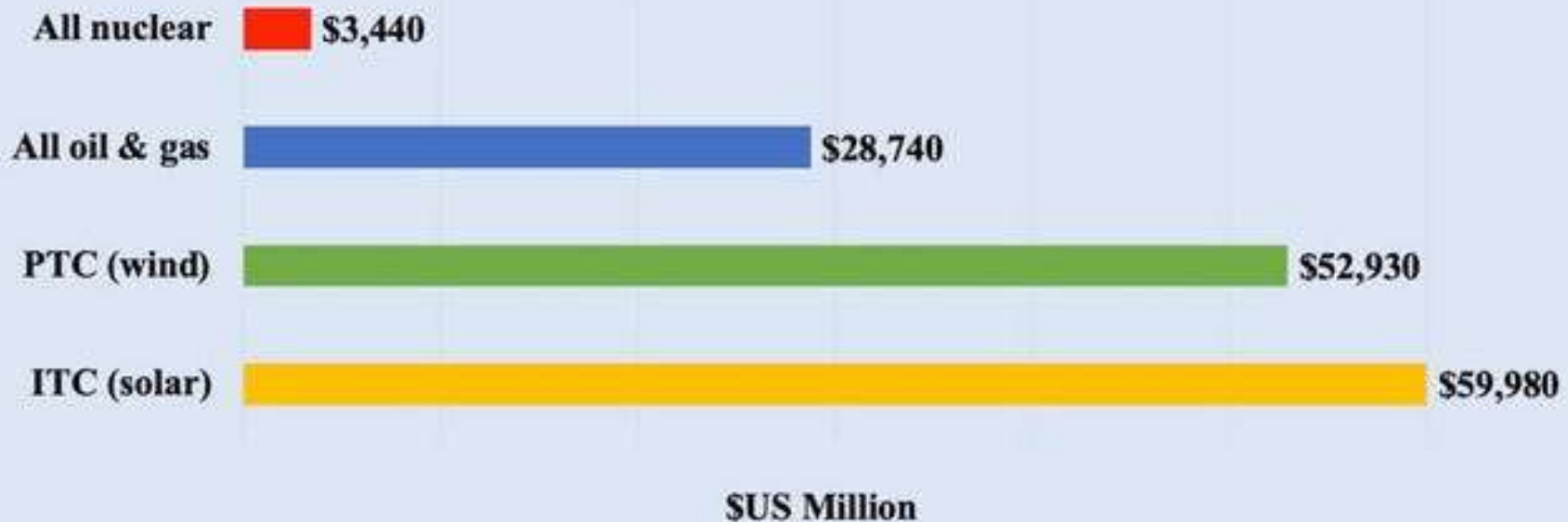
For every dollar that efficient, carbon-free nuclear receives, inefficient, carbon-dependent solar gets \$250!

Solar Not  
to Scale-  
\$775.64



# Cost Of Federal Energy-Related Tax Incentives 2021-2031

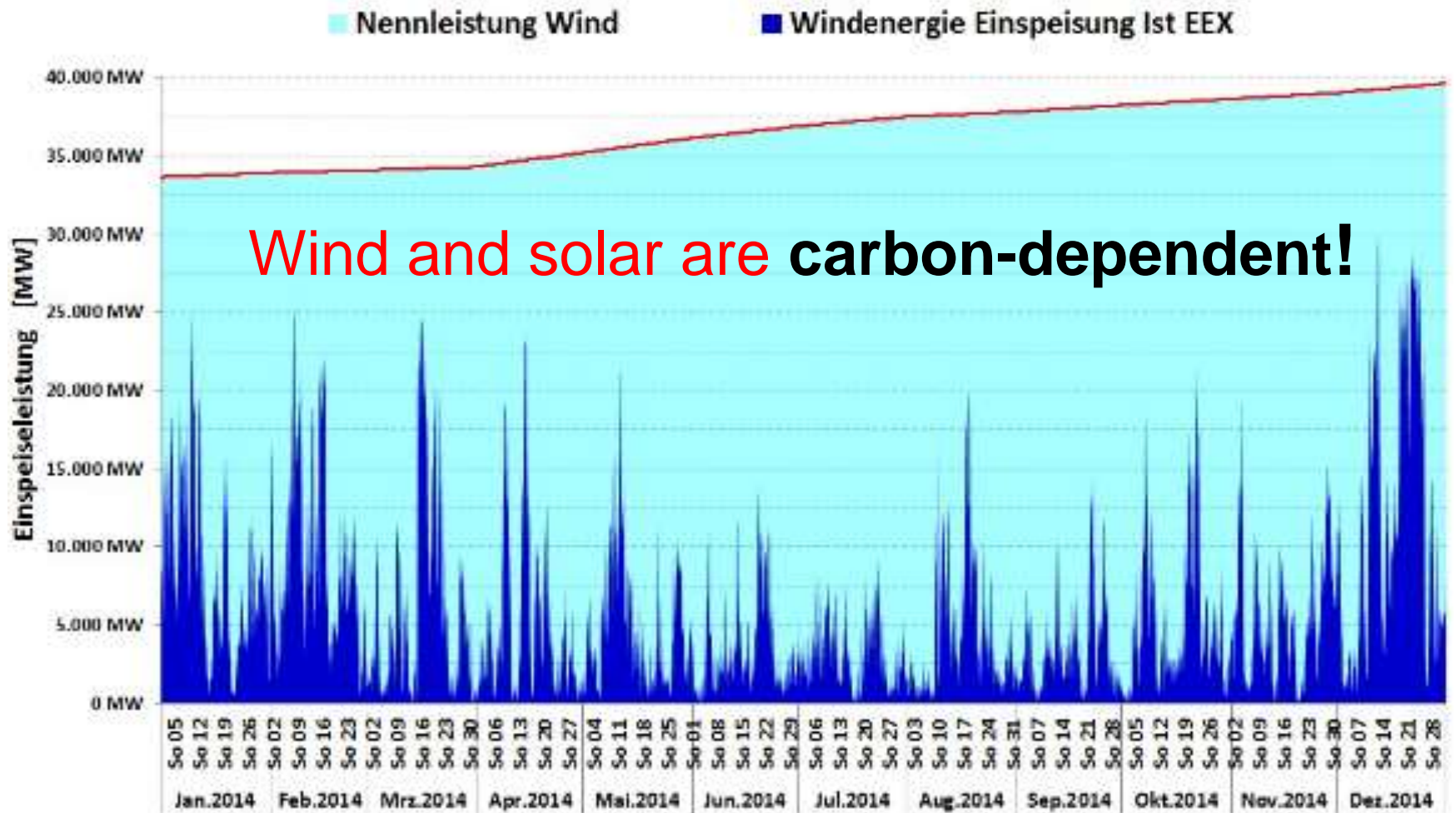
<https://home.treasury.gov/policy-issues/tax-policy/tax-expenditures>



© Robert Bryce

The projected subsidies are even worse!  
**Oil + gas will receive 9 x more than nuclear!**





Datenquelle: EEX-Leipzig

Auflösung: Viertelstundenwerte

Darstellung: Rolf Schuster

Germans paid for the “plate rating” (the red line) but only got the blue spikes, so they make up the difference by burning coal, lignite or gas, which makes more CO<sub>2</sub>.

Germany burns **lignite** – the dirtiest runt of the coal family.



CHRISTOF KOEPEL

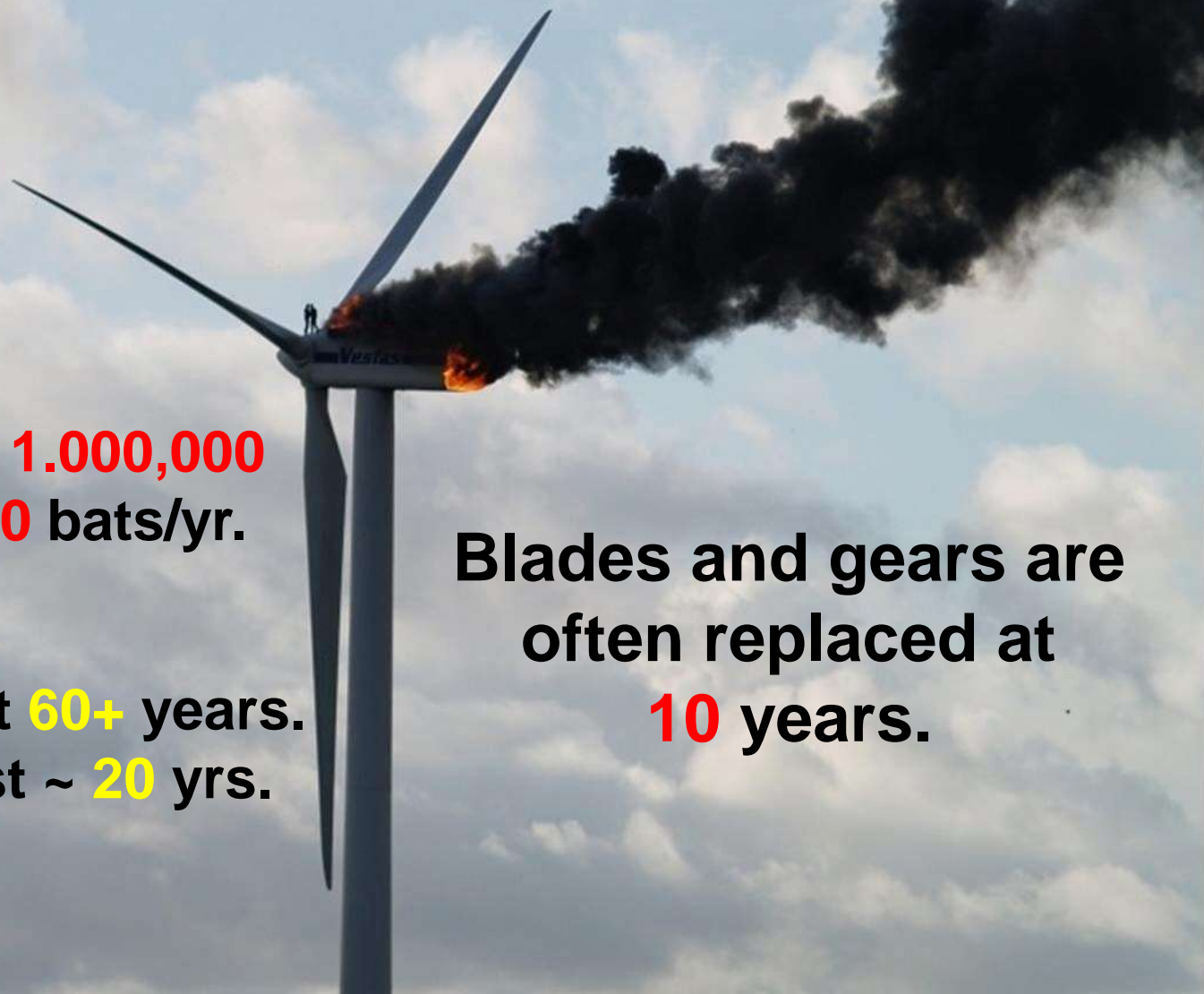


# 2 Dutch engineers waiting to die!

U S Windmills kill **1,000,000** birds and **1,000,000** bats/yr.

Nuclear plants last **60+** years.  
Wind and solar last ~ **20** yrs.

Blades and gears are  
often replaced at  
**10** years.



**Wyoming Blade cemetery.**  
**Think carbon footprint!**







Ivanpah "bird-broiler" cost more than \$1.6 billion. Terminated due to gross inefficiency. Also Tonapah in NV!



**Michigan** – Think species displacement - Panels can get  
50 degrees **hotter than their surroundings.**

**Think Global Warming!**





# S C solar farm and global warming



**1.2 million watts of heat per acre per day.**





# Hurricane damage

**Panels must be recycled as hazardous waste at a cost of ~\$30 per panel.**

**Panels contain toxic elements!**



**Immense pollution at Lake Baotou, China.**  
**Rare earth mining for wind and solar**

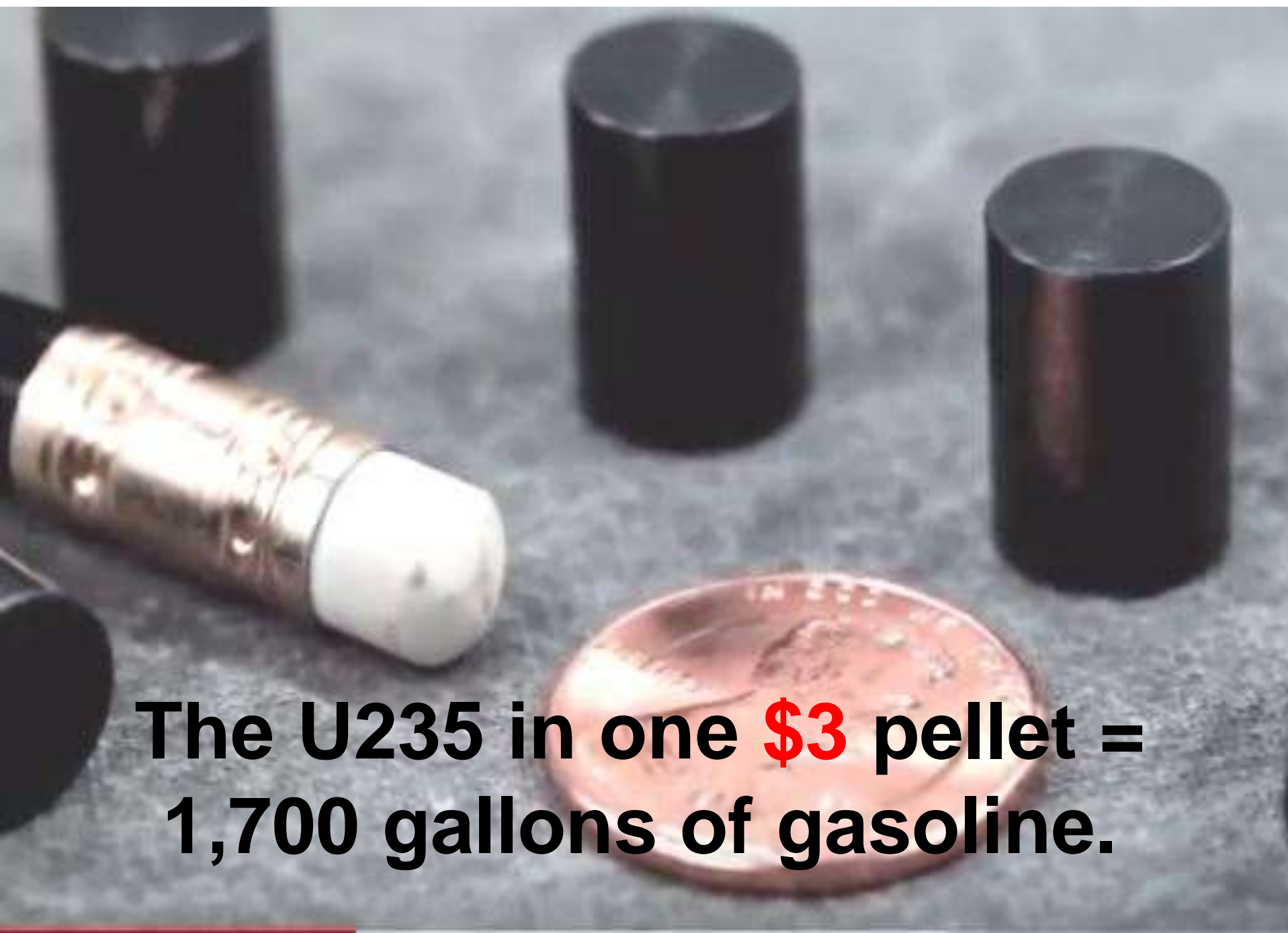


**Species extinctions are rising, and we are on the list!**

**Monoculture forests are replacing mixed forests that were home to thousands of species. Chips or pellets are sent to Germany.**



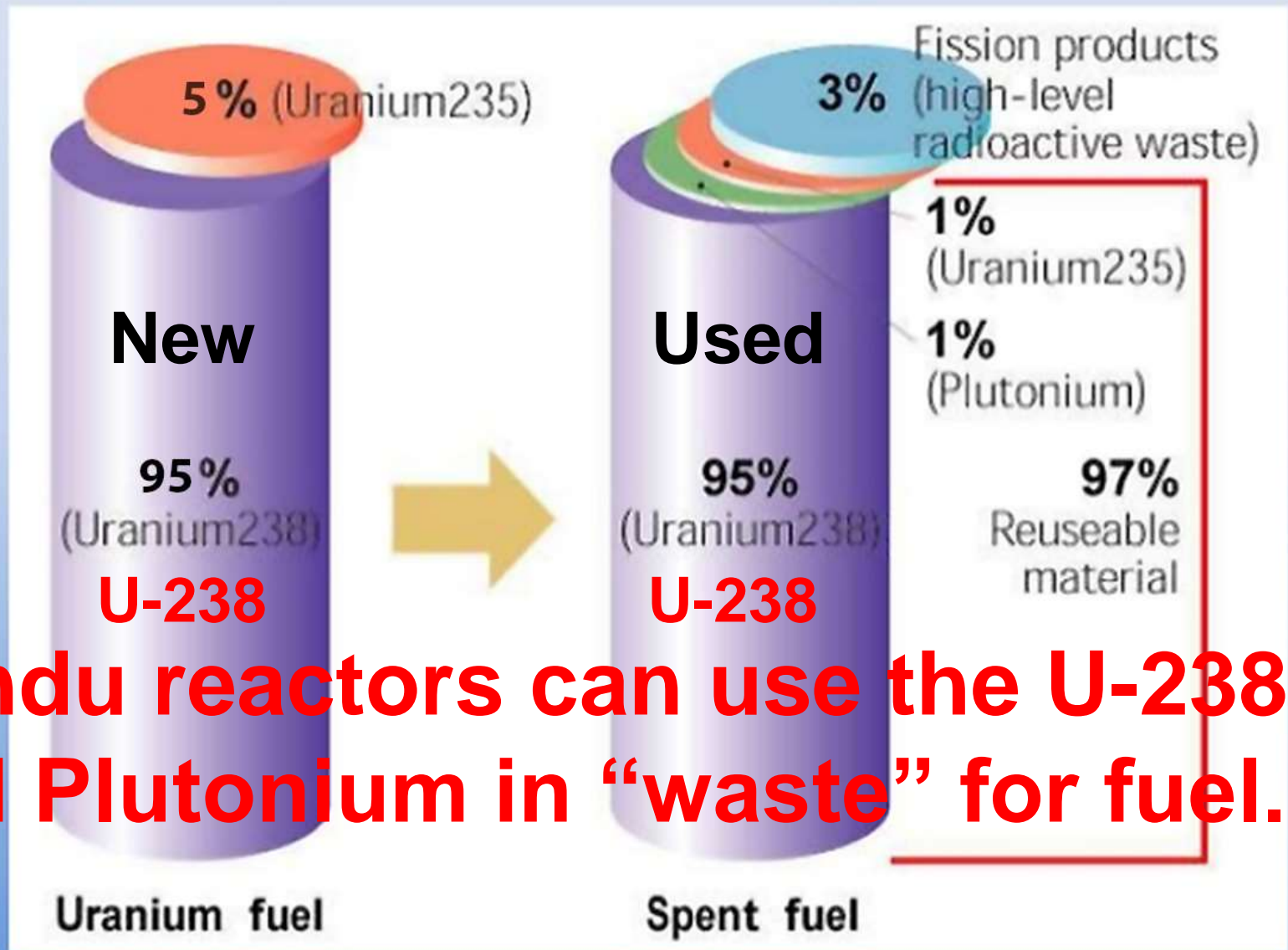




**The U235 in one \$3 pellet =  
1,700 gallons of gasoline.**

# Used Nuclear Fuel Anatomy

**Let's look inside**



**Candu reactors can use the U-238 and Plutonium in “waste” for fuel.**



**Our 70 years of U. S. spent fuel could be stored on 1 football field.**



**Workers do not need protective clothing.**

Very

# Greenjacked!

The derailing of  
environmental action  
on climate change

How anti-nuclear activists  
misused our love of nature  
to deliver us into the grip  
of coal and a deadly  
climate future

Geoff Russell



Good!



Expanding safe, highly efficient, environmentally benign, resource sipping, long lived, 24/7, **carbon-free nuclear power is our single most effective way to slow climate change** – but we are foolishly expanding less-safe, intermittent, grossly inefficient, environment-wrecking, resource-gobbling, short lived, **carbon-dependent** wind and solar farms.

If we truly care for the environment and the species that depend upon it, we must **publicize** the science that proves the superiority of nuclear power. **We must become active ambassadors for nuclear power by writing op-eds and offering presentations to colleges, schools and service clubs. NOW!**

# Unintended Consequences

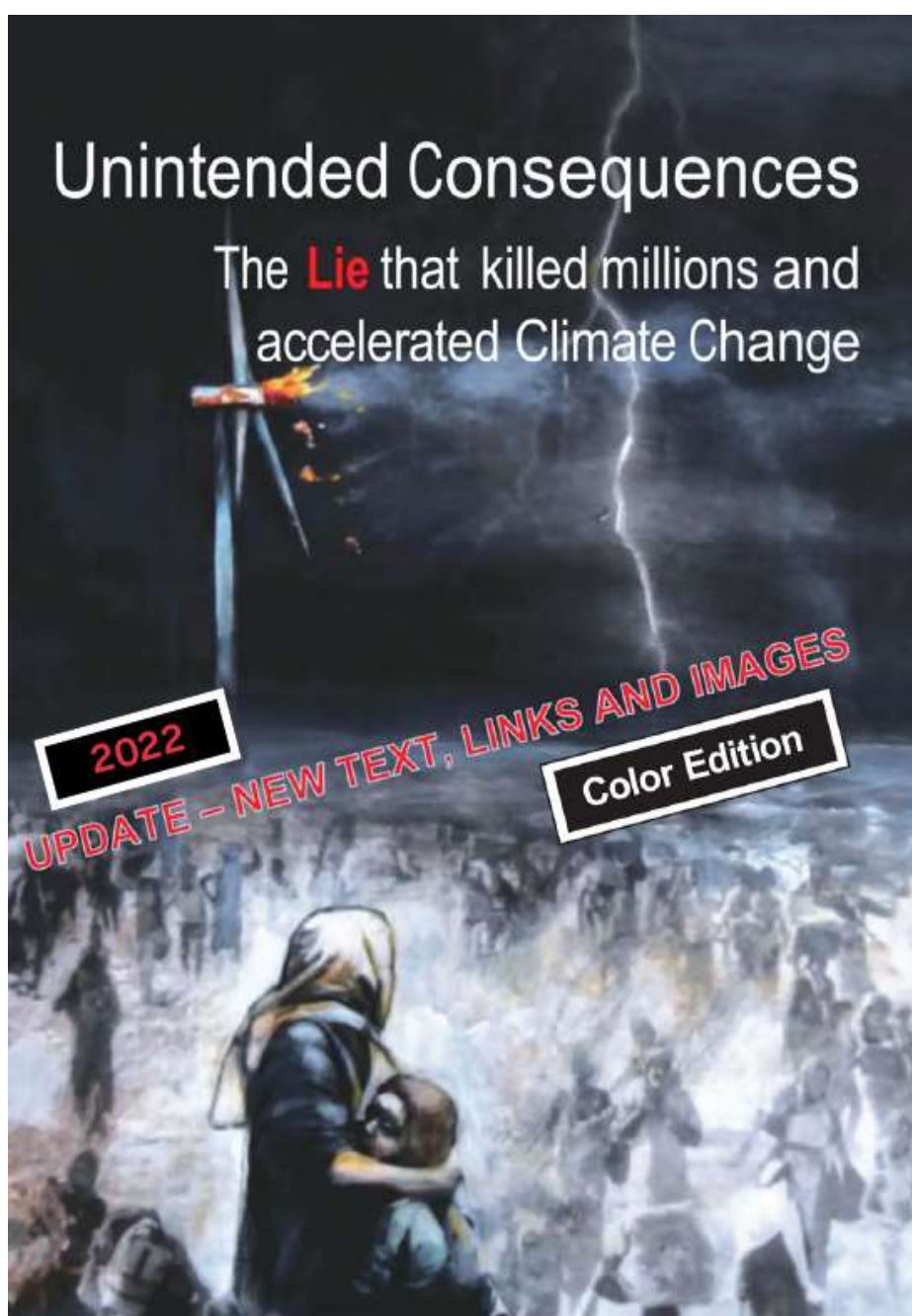
The **Lie** that killed millions and  
accelerated Climate Change

2022

UPDATE - NEW TEXT, LINKS AND IMAGES

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by Best Selling Author George Erickson



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Consequences* from the homepage of  
[www.tundracub.com](http://www.tundracub.com) or request it  
from [tundracub7@gmail.com](mailto:tundracub7@gmail.com).**

**Dr James Hansen, former Chief  
Climate Scientist at NASA – “Your  
writing is brilliant and so clear.”**

**Cree saying - Only when the last tree has died, the last river has been poisoned and the last fish has been caught, will we realize that we cannot eat money.**



**I need your  
help.**



A close-up photograph of a baby monkey sitting on the ground. The monkey has dark fur, large expressive eyes, and a small pink nose. It is looking directly at the camera with a slight smile. The background consists of dry leaves and forest floor debris. Two text overlays are present: 'Me, too!' in yellow at the top left and a longer white text block at the bottom center.

Me, too!

Each and every  
animal on earth  
has as much right  
to be here  
as you and me