



AMERICAN  
ENERGY  
SOCIETY

# THE lighter side OF ENERGY

## Q. Who had the "Worst Year in Energy"?

### A. PG&E

Things got so bad that California's largest utility was blamed for nearly everything - California Governor Gavin Newsom implied that PG&E was responsible for [traffic](#) in Southern California.



*Honorable mention: Bob Murray, President/CEO of the largest coal mine in the US. The year opened with bankruptcy and ended on an episode of [Last Week Tonight](#).*

## Q. Who had the "Strangest Year in Energy"?

### A. Rick Perry

The year started out strong...

- January - President Trump selected Rick Perry as the "designated survivor" during the State of the Union, which meant that Energy Secretary Perry watched the speech from a separate location. The assignment "designated survivor" suggests that the administration considered Sec. Perry to be the strongest cabinet member.
- February - Featured keynote speaker at the World Government Summit in UAE.
- March - Considered the leading candidate to replace a number of agency directors, including Homeland Security.

Then Rick Perry's year turned ....

- September - President Trump says he placed a call to Ukrainian President Volodymyr Zelensky because US Secretary of Energy Rick Perry "told me to."
- October - Resigned from the Administration.
- November - Received US Congressional subpoena.

## The "2019 Energy Dunce" award goes to ...

### Beyond Extreme Energy

The anti-fossil fuel activist group staged a protest outside the home of FERC Commissioner Cheryl LaFleur, protesting new natural gas infrastructure. However, LaFleur had already announced that even though she opposed the proposal she wouldn't be voting on it ... because she had already retired from the Commission.



## Q. What was the most "Head-Spinning" story of 2019?

### A. The Saudi Aramco IPO

The Saudi Aramco IPO ...

On ([January](#))

Off ([February](#))

On ([March](#))

Off ([April](#)) ...

"Reconsideration" ([August](#))

Off ([September](#))

"Pending" ([October](#))

On ([November](#))....

*Honorable mention:* The ongoing debate about the Renewable Fuel Standard mandates/waivers, according to the White House ...

Favorable ([January](#))

Unfavorable ([February](#))

"Under review" ([March](#)) ...

Favorable ([June](#))

Unfavorable ([August](#))

Favorable ([September](#))

"Reset" ([October](#))

Favorable ([November](#)) ....

## Q. What was the worst energy idea in 2019?

### A. Any city that wants to buy PG&E.

The city governments of San Francisco and San Jose are bidding to buy bankrupt PG&E. (Perhaps solve homelessness or the urine problem before taking over a massive public utility?)



*Honorable mention:* Embed solar cells a few millimeters under the surface of roads to generate solar power that can be transferred to traveling cars. What could go wrong?

### Q. The 2019 energy "conundrum"?

#### A. Tie: plastics and air conditioners.

Plastics: The world is drowning in plastic (every minute, 1 million plastic bottles are purchased); yet, cars are more fuel efficient because plastic accounts for more than half of their total volume, but only 10% of their weight. Air conditioners contribute GHGs that warm the world.

### Q. Which Roman emperor would have been most comfortable in 2019?

#### A. Nero.

- Fires burned out of control in Africa, Europe, Asia, Latin America ... and California.
- This summer there were 74,000 wildfires in Brazil.
- Summer temperatures in Greenland were often 40 degrees F above normal.
- Earth had its second warmest year on record.
- High temperature records were more frequent: Yuma, Arizona (124°); Ahvaz, Iran (129°); Oodnadatta, Australia (123°); Marrakech (120°); Phoenix, Arizona (122°) ...



### Q. The "2019 Janus-face" energy award goes to ...

#### A. Silicon Valley (you can't be both).

Half of Silicon Valley wants to invent new food (lab grown plants and meat); the other half of Silicon Valley wants to de-invent food (promote organic/back to nature farming). Note: the carbon footprint under both scenarios would likely expand.



### Q. Who won the Pyrrhic Energy War of 2019?

#### A. No one, of course.

The successful fight to end coal-generated power hurts new technologies like Carbon Capture and Storage (CCS), which aren't given a real chance to develop because the technology has been branded as "coal-friendly."

### Q. How to talk "climate change" in 2019?

#### A. "Squirrel frying hot".

Offer examples, like temperatures above 100 Fahrenheit for 24 consecutive hours:

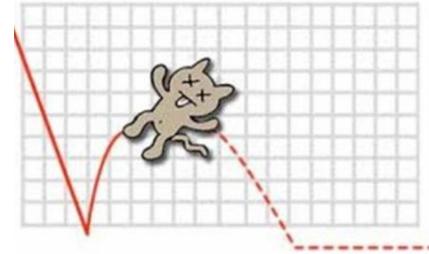
- McAllen, Texas (22 straight days above 100 F)
- Lake Charles, Louisiana (18 straight days)
- Pensacola, Florida (15 days).



According to the Chinese zodiac, 2019 was the year of the pig, but for energy, it was ...

The "Year of the Cat" ...

- Dead-cat bounce: when a falling market (coal?) experiences a temporary and short-term upswing.
- Cat-fight: President Trump vs California (auto-emissions, wildfires, FEMA funds, federal aid ...)
- Stray-cats: One of the few species that will thrive in a warmer world.



At 3:00 pm on May 28, 2019, during a panel discussion about "resilience," FERC had to evacuate its building due to HVAC failures. It remained closed on May 29.

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## The 2019 Energy Grab Bag

More of this: [John B. Goodenough](#)

Less of that: **Elon Musk**

More of this: **Emissions in the U.K. are at the lowest levels since 1888.**

Less of that: Soy, corn-ethanol, and grass lawns. (**Lawns are the largest irrigated "crop" in the US**, requiring about 9 billion gallons of water/day.)

More of this: **The hole in the ozone layer is about 3.9 million square miles; experts say the hole is usually around 8 million square miles.**

Less of that: "**Yang Laji**" noun (Chinese philosophy): the active male principle of the universe. Mandarin slang: "foreign garbage." Translation: East Asian countries will no longer accept trash from the West.

And a lot less of that, too: **Every day the building/construction industry pours enough concrete that would fill anew China's Three Gorges Dam.**



## The Good. The Bad. The Ugly.

- *The Good* - **Factories in eastern China are no longer manufacturing trichlorofluorocarbons (CFC-11, a gas banned under the Montreal Protocol because it was most harmful to the ozone).**
- *The Bad* - **There are 300 gigawatts of coal-fired generating capacity under construction across Asia.** To put that into context, that is a bit more than all the coal-fired power plants operating in the US right now.
- *The Ugly* - For six months, **Russia sent millions of barrels of contaminated oil** through its Druzhba pipelines to refineries across Europe and to China. (The oil contained chlorides that permanently damage refinery systems if processed.)

## The most interesting new business opportunity of 2019.

- *1st place:* Demand for [microgrids](#) is surging in regions like California that have been repeatedly hit by power outages.
- *2nd place:* The federal government is awarding multi-million/multi-year [contracts](#) to construction companies to decommission retired nuclear reactors.
- *Dishonorable mention:* Cyberterrorism, even though the City Council for Riviera Beach, Florida, paid hackers a \$600,000 ransom to recover data that was stolen.

## Dear economists, "Was energy a 'rational' market in 2019?"

- Total electric vehicle sales worldwide increased in 2019, yet the volume of gasoline sold increased, too.
- Wholesale electricity prices declined, but retail electricity prices [increased](#). Again.
- Constant geopolitical disruptions in the Middle East had no effect on oil markets.

## Environmental consumerism isn't working ...

- Netflix uses 15% of all the internet bandwidth.
- Shoppers return 35% of all online purchases.
- The polyester clothing industry emits as much CO<sub>2</sub> as 185 coal-fired power plants.
- A single fleece garment can shed 100,000 plastic microfibers in one washing.
- There are 4.3 billion email accounts that send 196 billion emails every day.

## Can't we all just get along?

To PG&E management: c'mon - it's not that hard.

To critics of PG&E: it's a lot harder than it looks.

**Energy's moral hazard problem.** All energy generating facilities (oil and gas fields, coal mines, decommissioned solar panels, offshore oil platforms, obsolete wind-turbines, underground EOR) face a [moral hazard problem](#): when their time runs out and there are no more revenues to earn, it is easy to abandon the asset and just walk away with no accountability.

## Finally, one last question ...

### Q. What in the world are we measuring?

The four most [efficient/sustainable](#) large cities in the US are considered to be:

1. Boston
2. San Francisco/San Jose
3. Seattle
4. Washington, D.C.



### Yet, the same "efficient/sustainable" cities have the worst traffic in the country:

- Boston has the 10th worst [traffic](#) in nation (it takes 28% more time to commute under normal circumstances than it would without traffic).
- San Francisco/San Jose has the 5th worst traffic (32% more time).
- Seattle has the 4th worst traffic (34% more time).
- Washington, D.C. has the 9th worst traffic (29% more time).

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## Looking back at 2018: *The Energy Hunger Games*

The story of energy in 2018 is not about the rise and fall and rise again of gasoline prices, or slumping investment in renewables, or the geopolitical turmoil that disrupted oil markets, or the unrelenting decline of coal, or ....? Rather, it is about the arc of innovation that is providing more affordable electricity for more people than ever before.

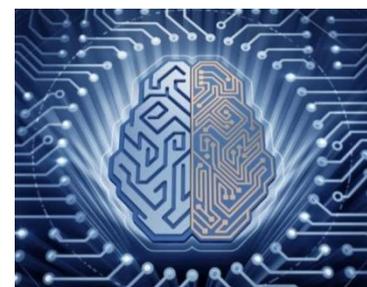


In the years ahead, new innovations will continue to drive energy prices down. But will the market mechanisms finally create more equitable distribution? Will new and more aggressive policies force greater equity? Or, will the climate change so dramatically that it makes the Energy Hunger Games of 2018 look tame by comparison.

## Looking ahead to 2020: *Ready or not?*

**All next-gen emerging industries will require enormous amounts of power:**

- Artificial intelligence
- Advanced manufacturing (robotics)
- Electrified transportation
- Quantum information science
- Smart cities
- Universal memory
- 5G networks
- Bitcoin



**Oil supermajors will face even more powerful headwinds and yet the world will consume more oil in 2020 than it did in 2019.** History has shown that it is extremely difficult for societies to move from one form of power to another, typically about four or five decades.

**It will be hard to admit that we should probably be focusing less on climate change and more on "climate resiliency."** The odds of keeping global warming under 2 degrees Celsius (3.6 F) are 1:20. If by some miracle we are able to stay under this threshold, we will "only" have to negotiate the extinction of the world's tropical reefs, sea-level rise of several feet, and the abandonment of the Persian Gulf, long-term disaster is the best-case scenario. Three-degree Celsius warming (or 5 degrees Fahrenheit) - the more realistic outcome - is a prescription for short-term disaster: forests in the Arctic and the loss of most coastal cities. The consequence of four-degree warming is catastrophic.

**Future historians** will look back on the 2020 US Presidential campaign and will no doubt ask, "Seriously? Those were the topics the Presidential candidates debated while the Earth boiled?"

- And one last reminder as we head into 2020: ***Mother Nature always bats last.***

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In case you missed it, be sure to check out the [2019 Energy Awards](#)



## Thank you for another great year

*With greatest appreciation ...*

Katy	Vaclav Smil
Stacy	Melanie Kenderline
Zack	Jamey Rosenfield
Travis	Jacque Martin
Irv	Ian Forraker
Jacob	Dan Poneman
Boss Lady	Sheila Zuehlke
Deborah	Ray Rothrock
Karla	Bob O'Conner
Charisma	Dave Danielson
Wendy	Mike Brownell
Barry and the Align Expo team	Don Cuffel
The Energy ConFusion team	Scott Magargee
Ed and the IFG team	Greg Allen
The Moery team	Pete Appel
Sally and Arun and the Precourt team	Dan Burke
Jane and the MAP team	Don Proctor
The NIH team	Matt Chester
Courtney and Jacque	Sean Ness
Tomkat	Mark Mills
Micah and Mike	Brad Ritts
Wade and Juliann	Mark Lerdal
Johann and Kate	Scott Jespersen
Carol, Claire and Amber	Energy Vaasa
Ted	George Crabtree
Beth	Peggy Brannigan
Of course, Heidi	Definitely, all Members of AES

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## Contacts

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*Note:* Eric J. Vettel, Ph.D., President and Editor of American Energy Society, is available for speaking engagements. Please [contact us](#) with questions or to schedule an event.

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