



**AMERICAN  
ENERGY  
SOCIETY**

2020 AMERICAN ENERGY SOCIETY  
**ENERGY AWARDS**

## ***Energy People of the Year***

In case you missed it ...

### **Energy Writer of the Year 2020: [Daniel Yergin](#)**



### **Energy Person of the Year, United States: [Mary Nichols](#)**

The hardest part about selecting Mary Nichols as the winner of this award was when to nominate her. For 25 years, no one has been a more tireless advocate to decouple California's economic juggernaut with the most ambitious emissions reduction programs in the world.

Ms. Nichols is the Chair of the California Air Resources Board, serving under three governors. She opened the Los Angeles office of the Natural Resources Defense Council, led the Office of Air and Radiation at the US EPA in the Clinton Administration, and served as Secretary of Natural Resources under Governor Gray Davis. In 2013, *Time* magazine named her one of the 100 most influential people in the world.



2020 was a typically busy year for Nichols. Among her many Herculean achievements, she successfully defended California's strict auto emissions standards against the Trump Administration's effort to weaken them, standards that are followed by 12 other states. Also in 2020, Nichols helped set and steer a course to phase out the internal combustion engine. In a conversation with the president of the American Energy Society, Eric Vettel, Ms. Nichol's mentioned that she is also proud of CARB's recent efforts to serve overlooked communities. "In addition to state-wide efforts to decarbonize, we are also targeting local communities and neighborhoods in need: dense housing along freeways, near manufacturing plants, and in the middle of industrial centers. These communities deserve cleaner air and affordable energy."

Some don't support Nichols pro-market approach to environmentalism, while others take issue with her activist approach, but both sides appreciate her negotiating style. Embodying an unusual combination of ferocious advocacy and unfailing collegiality, she will on occasion use some unique weapons to forge common ground: a Tupperware container of chocolate chip cookies and her furry sidekick Mutti (a dog).

## Energy Person of the Year, International: **Trude Sundset**

For her outstanding professional achievements, Trude Sundset has been chosen our Energy Person of the Year, International.

Sundset is the CEO of Norway's state enterprise [Gassnova](#), one of the largest and longest-running carbon capture programs in the world.



Though the mission is straightforward, there are layers of complexity that make this particular carbon capture and sequestration project a daunting challenge for leadership: it is a demonstration project but at a massive scale; it is government funded but must be responsive to industry sponsors like [HeidelbergCement](#), [Fortum Oslo Varme](#), [Total](#), [Equinor](#) and [Shell](#); it must meet formal bureaucratic protocols but also shares its results on an open-source platform and teaches best practices to the world. The program must also meet the high expectations of those who see it as the world's best chance to decarbonize. In addition, Sundset has an important role building an entirely new global industry from scratch. Norway's pride in the program's transformative potential is reflected in the names given to project phases, such as "[Northern Lights](#)" and "[Longship](#)," both references to an exceptional region and its heroic Vikings.

Sundset was selected for this award not only for her contributions at Gassnova, but also for what she represents. She is a standard-bearer for the energy transition. No country has traveled farther or been more successful in reducing emissions than Norway. Once a country powered by oil and gas, it is now the leading electric-vehicle capital of the world by an order of magnitude many times over. It is also introducing electric buses and ferries, and next in line are electricity powered heavy transport and hydrogen fueled ships. Norway has decoupled its economy from emissions, and welcomes the opportunity share its best practices with the world. Under Sundset's leadership, Gassnova and its industry partners

have set ambitious low-carbon goals that they are meeting surprisingly well, and now they are building the preeminent carbon capture and sequestration project as a model for Europe and the world.

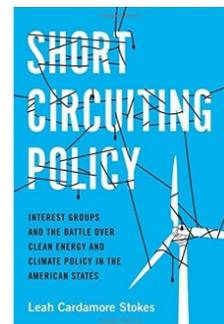


## Best book about energy (excluding [The New Map](#), by Dan Yergin)

The nominees:

- [Apocalypse Never](#): Why Environmental Alarmism Hurts Us All, by Michael Shellenberger.
- [The Bridge](#): Natural Gas in a Redivided Europe, by Thane Gustafson.
- [Building a Resilient Tomorrow](#): How to Prepare for the Coming Climate Disruption, by Alice Hill.
- [Commanding Hope](#): The Power We Have to Renew a World in Peril, by Thomas Homer-Dixon.
- [Energizing America](#): A Roadmap to Launch a National Energy Innovation Mission, by Varun Sivaram, Colin Cunliff, David Hart, Julio Friedmann, and David Sandalow.
- [The Future We Choose](#): Surviving the Climate Crisis, by Christiana Figueres and Tom Rivett-Carnac.
- [Short Circuiting Policy](#): Interest Groups and the Battle Over Clean Energy and Climate Policy in the American States, by Leah Stokes.
- [Switching Gears](#): The Petroleum-Powered Electric Car, by Dan Eberhart.

Winner: [Short Circuiting Policy](#), by Leah Stokes



## Best peer-reviewed article about energy (for a general audience)

- "[Five thermal energy grand challenges for decarbonization](#)" *Nature Energy* (note: abstract in draft mode). This peer-reviewed article by researchers at Massachusetts Institute of Technology, Stanford University, and Lawrence Berkeley National Laboratory outlines five grand challenges for thermal energy.
- [The Environmental Bias of Trade Policy](#), Joseph Shapiro. In most countries, import tariffs and non-tariff barriers are substantially lower for the fossil fuel sector rather than clean energy industries.

## Best Indie-Energy Blogs

- [Energy Institute Blog](#) (by the Energy Institute at Haas, UC Berkeley)
- [Morning Sankey](#) (deep analytical dive inspired by relevant questions)
- [Steve Blank](#) (a cybersecurity blog that often intersects with energy)
- [Chester Energy & Policy Blog](#) (a thoughtful policy blog for the less wonky)



# Energy technologies of the year

## Most interesting energy-tech developments of 2020

*(by projected fastest-to-market and long-term impact)*

- **Rare Earth Elements from coal gobe piles:** A NETL-supported project, researchers extracted rare earth elements (REE) for clean energy technologies from coal refuse. The project [successfully produced a solution](#) containing a final REE concentrate of 15% - 18% by weight, exceeding the objective of 2% REE.
- **Methane management:** As a greenhouse gas, methane is 36 times more potent than carbon dioxide. The amount of methane that leaks during production, processing and transport of natural gas in the US is greater than the amount of power consumed by Virginia. There are at least [ten new detection technologies](#), and more specifically, the deployment of next generation sensors (e.g., SeekOps, Kairos) and satellite-based sensing (e.g., GHGsat) will be interesting to watch.
- **Carbon capture:** Carbon capture and storage is becoming economical, mostly in Europe. For instance, there are [ten large CCS projects](#) in various stages of development, all around the North Sea in Norway, the UK, Denmark and the Netherlands; there are also CCS projects proposed in Ireland and Italy.



## Most promising energy-tech developments to watch in

**2021** *(by projected fastest-to-market and long-term impact):*

- **Low-carbon solutions that scale.** President-elect Biden and the US Senate may not be aligned, but the most powerful energy legislation has already been passed: the [Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010](#). This legislation, known for creating public safeguards against financial wrongdoing, also empowers key agencies including the Treasury Department, the Federal Reserve and the Securities and Exchange Commission to implement monetary and spending policies that protect against economic disruptions caused by the changing climate.

- **Photocatalysis.** [Sunlight-activated catalysts](#) is a process that breaks the resistant double bond between carbon and oxygen in carbon dioxide. This is a critical first step in creating “solar” refineries that produce useful compounds from the waste gas—including “platform” molecules that can serve as raw materials for medicines, detergents, fertilizers and textiles. The approach employs sunlight to convert waste carbon dioxide into these needed chemicals, potentially reducing emissions in two ways: by using the unwanted gas as a raw material and sunlight, not fossil fuels, as the source of energy needed for production. The most active photocatalysis programs are at Caltech, UC Berkeley, Max Planck Institute in Germany, and the Sunrise consortium in the Netherlands.
- **Quantum sensors.** Quantum sensors achieve extreme levels of precision by exploiting the quantum nature of matter—using the difference between, for example, electrons in different energy states as a base unit. A new generation of smaller, more affordable sensors are beginning to open up new applications. Last year, researchers at the Massachusetts Institute of Technology put a diamond-based quantum sensor on a silicon chip. One sector that will apply quantum sensors is autonomous vehicles which will allow them to “see” in bad weather or around corners.



## "The way-too early" energy-tech development in 2022:

- **Hydrogen.** Two methods produce hydrogen: the most common method exposes fossil fuels to steam, which is not zero-carbon. The second uses electrolysis to split water into hydrogen and oxygen; it has no carbon by-products but is extremely expensive. However, electrolyzer technologies are getting more efficient. For instance, a consortium of companies is planning to equip Ørsted's Hornsea Two offshore wind farm with 100 megawatts of electrolyzers to generate green hydrogen at industrial scale. Australia has three pilot projects producing hydrogen using solar and wind power and Chile has a pilot hydrogen production project. China is planning to manufacture one million hydrogen fuel-cell vehicles, and similar early-phase projects are underway in South Korea, Malaysia, Norway and in California.

## Most underperforming energy-tech of the year:

- **Energy storage in Europe:** In 2014, Europe dominated the utility-scale energy storage market (44% of global deployment); in 2020, other energy-tech fields have surged (most recently, hydrogen), but the region's share of energy storage deployments has declined and is now less than 30% the world's total.

## Most over-hyped energy-tech of the year:

- [Energy data](#). Data does not have inherent value. It is always important to ask "who, how and why" was the data collected? For instance, there is always a person behind the data: writing the algorithm, the script, the protocols. What was their motivation? Their intent? Did they take the time to ensure that the data is reliable, verifiable, and cyber-secure?



## *The best from American Energy Society*

### Best original report:

1. [Top Energy Universities 2020](#) - an examination of all notable energy programs in the US. TEU2020 includes, a comprehensive directory, evaluations, and rankings that highlights rising stars and lesser-known programs making outside contributions.
2. [Silicon Valley Energy Ecosystem 2020](#) - a survey of all 1,465 unique enterprises as well as evaluations of energy subsector trends and the 253 top "Influencers".
3. [Water Works](#) - A balanced assessment of the benefits and risks of hydropower.

### Top energy story, *Energy Matters* (by open-click-share rates):

1. [Hedging the oil markets](#) (April 20): Tankers are being used to store crude oil in anticipation of higher prices in the future. (Note: as a result of the oil price war, oil supertanker charter rates (VLCCs) skyrocketed, up 678%.)

### Top energy article, *Energy Today* (by open-click-share rates):

1. [Norway and the Ah-Ha Moment](#)
2. [Ten Years of Analyzing the Duck Chart](#)
3. [We Need Instigators](#)



# The Best of Energy in the Arts

## The best movies (almost) about energy

The nominees:

- [1982](#) (*Oil geopolitics as a backdrop*). In 1982, Israel invaded Lebanon, but an 11-year-old boy is more interested in drawing than the geopolitical crisis around him.
- [A Son](#) (*Oil geopolitics as a backdrop*). It's early September 2011, and Fares Ben Youssef and his family are enjoying new freedoms ushered in by the fall of the Tunisian dictator ... until their son is accidentally shot by Islamic militants.
- [Da 5 Bloods](#) (*The search for rare earth metals*). Part war film, part adventure thriller, four African-American soldiers reunite in search of a cache of gold they abandoned in the Vietnam jungle long ago.
- [Project Power](#) (*Energy generation*). A former soldier teams up with a cop to find the source of temporary superpowers.
- [Uncut Gems](#) (*The search for rare earth metals*). A reckless diamond dealer owes money all around town can't help but make yet more deeply dangerous decisions.
- [The Vast of Night](#) (*The physical laws of energy*). A homage to *The Twilight Zone*, a phone operator and a local radio DJ discover an unusual radio frequency while the rest of their New Mexico town is preoccupied with a basketball game.



Winner: *A Son*

## Best documentary about energy and/or the environment.

The nominees:

- [David Attenborough: A Life on Our Planet](#). A reflection on the defining moments of his career and the devastating changes he has witnessed.
- [Kiss the Ground](#). A study of "regenerative agriculture" that draws carbon dioxide from the atmosphere as a way to restore soil health.
- [Juice: How Electricity Explains the World](#). Poverty, women's rights, climate change — indeed, many of the world's most pressing challenges — can be explained by answering one question: Can you turn your lights on in the morning?
- [Maxima](#). In Peru's highlands, the Yanacocha open-pit mine sits like a scar. It has one obstacle. She stands less than 5 feet tall and is dwarfed by her hat but cowed by no one. She is illiterate but eloquent. She is Máxima.



- [SwitchOn](#). The sequel to Switch (2012), SwitchOn explores the energy transition in the developing world.

Winner: *Juice*

## Best work of fiction (almost) about energy and/or the environment.

The nominees:

- [Weather](#), by Jenny Offill. Part-time librarian Lizzie Benson has plenty of time to practice as a "fake" shrink for "clients" worried about climate change or the fall of civilization.
- [Total Power](#), by Vince Flynn. CIA agent, Mitch Rapp, chases down the evil villain consultant hired by the Department of Energy to assess the possibility of a massive nationwide electricity outage.
- [A Burning](#), by Megha Majumdar. Three unforgettable characters seek to rise -- to the middle class, to political power, to fame -- in contemporary India. The backstory: unequal access to electricity undermines access to equality.
- [How Much of These Hills Is Gold](#), by Pam Zhang. Set against the twilight of the American gold rush, two siblings are on the run in an unforgiving landscape — trying not just to survive but to find a home. The backstory: a frantic race to acquire rare Earth elements.



Winner: *Weather, a novel*

## Best song (almost) about energy and/or the environment.

The nominees:

- [Above the Storm](#), by Stick Figure (reggae)
- [All the Good Girls Go To Hell](#), by Billie Eilish
- [Earth](#), by Lil' Dicky (hip-hop)
- [Earth To God](#), by John Rich (country)
- [Feels Like Summer](#), by Childish Gambino (hip-hop)
- [Light On](#), by Maggie Rogers (techno folk-pop)
- [Only the Young](#), by Taylor Swift (pop)
- [Nose to the Grindstone](#), by Tyler Childers (folk-country)
- [Shut It Down](#), by Neil Young (classic rock)
- [Waves](#), by Miguel (R&B)

Winner: *Nose to the Grindstone, by Tyler Childers*

(About a son who doesn't listen to his father's lessons about surviving as a miner in coal country.)



## Contacts

[The American Energy Society](#) website

American Energy Society [LinkedIn Group](#)

American Energy Society introductory [video](#)

[Contact us](#) with comments about the Society or this issue of Energy Matters.

*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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