

## Where Is Nuclear In The Climate Change Conversation?

### Findings:

- Despite the significant role nuclear energy plays in our low-carbon energy portfolio, it is underrepresented in most climate change coverage in the media.
- Concerns about the safety of nuclear energy should be weighed against the benefits of its ability to support an emissions-free future.
- Climate change solutions likely lie in a combination of strategies and breakthroughs in technology.

Matt McDonald  
 Lauren Claffey  
 Stratton Kirton  
 Kelly Ogburn  
 Chris Doege

*The views expressed in this document represent those of the authors alone.*

**POLICYMAKERS** in Washington and around the globe have been debating climate change for years. There is a full range of policy proposals to address this issue from the simple to the complex, and from the practical to the extreme.

The proposals that are being discussed in serious circles include everything from universal vegan diets, to seeding the sky, to tinkering with volcanoes. For example, the EAT-Lancet commission recommends radically shifting diets away from meat and dairy to support planetary health. Other experts, including researchers at Harvard, are suggesting even more extreme steps, like geoengineering, to dim the skies and offset the effects of climate change. Although the threat of climate change has never

been more explicit, the most prominently discussed zero-emissions solutions still do not meet our energy needs.

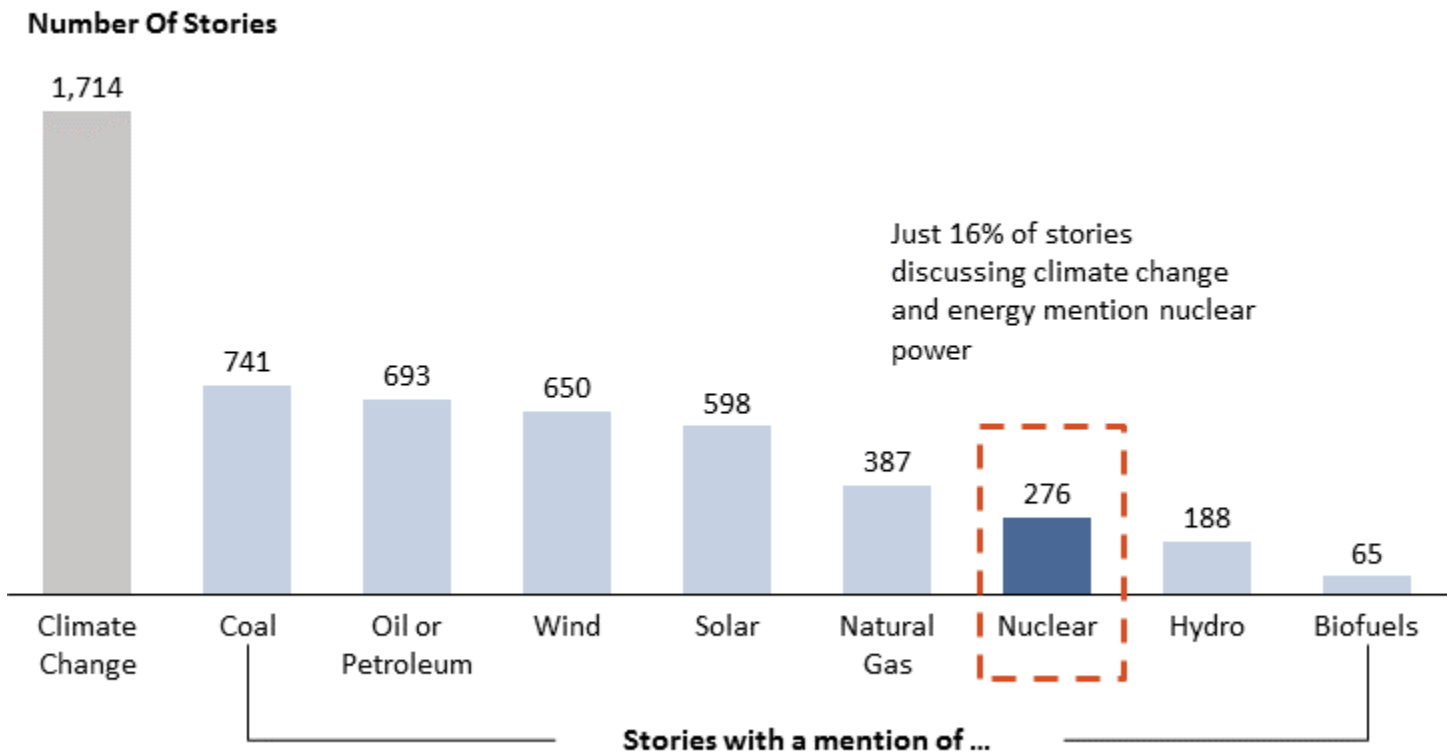
Zero-emissions energy sources, such as solar and wind power, have seen significant growth over the past decade. Since 2008, wind generation has increased five-fold while solar generation has increased 39-fold. However, even after years of rapid growth, solar and wind still only make up approximately 8 percent of electricity generation in the U.S., and just 3 percent of all energy consumption. In contrast nuclear energy currently accounts for 19.3 percent of electricity generated in the United States, and represents more than half (53 percent) of all zero-emissions electricity. In terms of all energy consumed, nuclear

---

**The proposals that are being discussed in serious circles include everything from universal vegan diets, to seeding the sky, to tinkering with volcanoes.**

---

**Fig. 1: Discussion Of Nuclear Power Is A Small Part Of The Public Conversation On Climate Change And Energy Sources**



Source: HPS analysis of top tier news sources, Nov. 2018 – Apr. 2019

amounts to nearly 10 percent.

While public debate has focused on alternative energy sources that provide only a small fraction of our electricity portfolio, it is an incomplete debate if we fail to weigh the viability of nuclear energy and its zero-carbon footprint.

### The Missing Conversation

Despite the significant role nuclear already plays in our low-carbon energy portfolio, it accounts for a fraction of climate change coverage in the media. We reviewed about 1,700 stories covering climate change and energy published in top-tier

publications over a six month period. In those stories, mentions of nuclear energy

**When nuclear provides nearly three times the clean energy as wind and solar, but makes up a small fraction of climate change coverage, it's worth taking a harder look at our debate on climate and energy.**

appeared in just 16 percent of stories, in contrast to mentions of wind energy and solar energy, both of which appeared in over a third of stories.

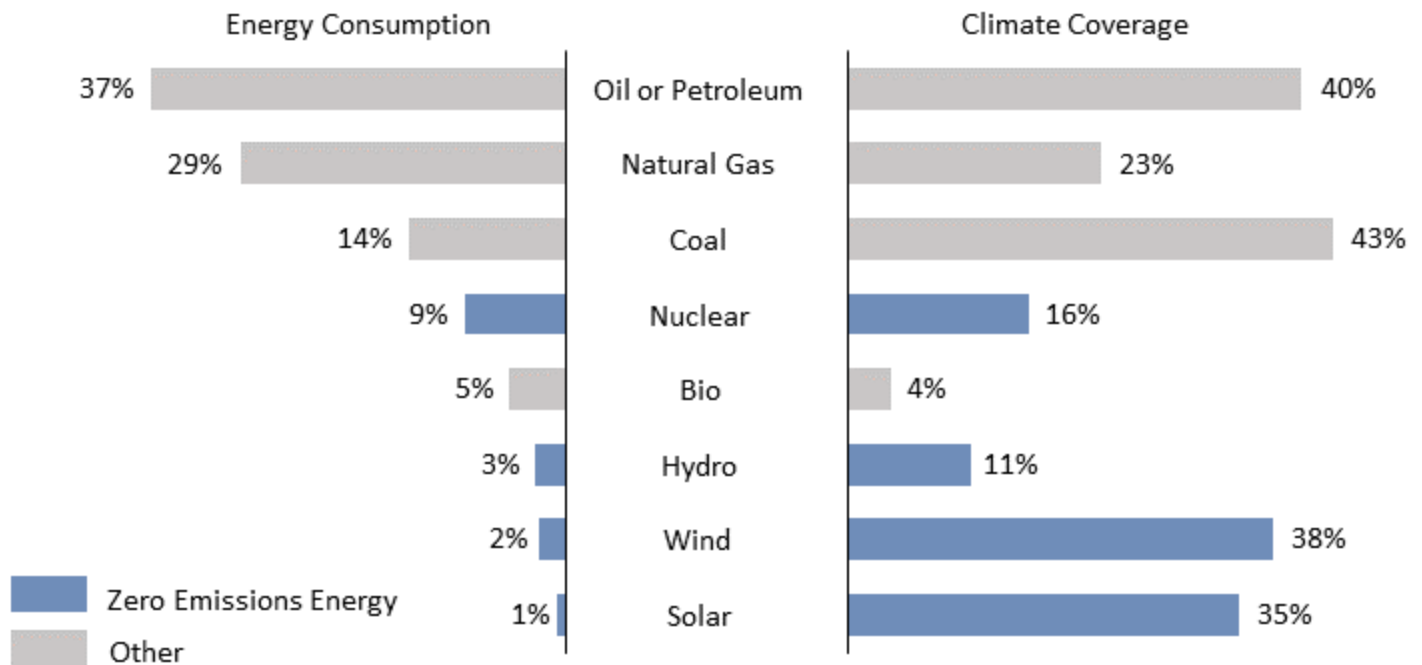
When nuclear provides nearly three times the clean energy as wind and solar, but makes up a small fraction of climate change coverage, it's worth taking a harder look at our debate on climate and energy.

### The Debate

It's true that nuclear energy poses some serious challenges, including questions about cost, safety, and sustainability. However, these concerns should not be discussed without weighing them against the benefits of nuclear energy and its ability to support an emissions-free future.

**Fig. 2: The Coverage Of Energy Sources In The Climate Discussion Does Not Always Mirror The Reality Of U.S. Energy Consumption**

**Share Of Energy Consumption VS Share Of News Coverage**



Source: U.S. Energy Information Administration, HPS News Analysis

Some estimates place the cost of new nuclear plant construction as high as \$9 billion. But it is important to consider that nuclear energy is the only conventional energy source that fully incorporates the cost of externalities (pollution, waste, etc.) into the overall price tag. While cost should be considered, it is just one factor in the larger cost-benefit analysis. We know that nuclear produces zero emissions during its operations. Even when viewed through a lifecycle analysis of greenhouse gas emissions, nuclear energy’s footprint is on par with wind and significantly less than solar.

While nuclear energy skeptics have raised safety concerns, they are largely unfounded. Since 1977, the Nuclear Regulatory Commission has had resident inspectors stationed at every nuclear power plant, carrying out inspections on a day-to-day basis. This focus on safety has resulted in zero deaths in the U.S. from nuclear-related incidents.

Moreover, the industry has developed solutions to handle the externalities of nuclear energy generation. Nearly forty years ago Congress designated a location to serve as a permanent repository for nuclear waste. Thirty-seven years and more than \$40

billion (paid by industry) later, there has yet to be any spent fuel moved into the permanent storage facility due to political gridlock.

Despite this, spent fuel has been safely stored on site and at interim storage facilities in dry casks. These casks are so resilient that the Nuclear Regulatory Commission recently adopted a rule that fuel can be safely stored for 60 years, 100 years, and even indefinitely. Storage is only one option for spent fuel. Other countries have tackled waste by adopting a closed-loop fuel system, and new reactor designs hold the promise of producing substantially less (or no) waste.

## Looking Forward

The U.S. only has two nuclear reactors under construction. With six plants set to close between 2017 and 2025, if nuclear does not become a more prominent part of the climate change conversation soon, we are at risk of losing a significant portion of our zero-emissions energy portfolio. And under current conditions, when nuclear plants close down, they are likely to be replaced by fossil fuels.

If nuclear energy becomes a more prominent solution to climate-change, next-generation nuclear plants, with updated technology and high safety standards, can play a significant role in an emissions-free future. But we will not achieve these important goals without the human capital and infrastructure that are currently supported by the existing fleet.

The solutions for climate change likely lie in a combination of strategies – increasing zero emissions energy sources, improvements in energy efficiency, and breakthroughs in new technology. Regardless of what that solution is, we are doing ourselves, and the planet, a disservice by leaving nuclear energy out of the debate.

## Sources:

“EAT-Lancet Commission Brief For Everyone,” EAT-Lancet Commission, Accessed 4/3/19.

Stephen Fleischfresser, “6 Ways Geoengineering Could Fight Climate Change,” *Cosmos*, 7/27/18.

“Renewables On The Rise,” *Environment America*, Accessed 4/3/19.

“What Is U.S. Electricity Generation By Energy Source?” U.S. Energy Information Administration, Accessed 4/3/19.

“Cheap Dreams, Expensive Realities,” *Union Of Concerned Scientists*, Accessed 4/3/19.

“Life Cycle Assessment Harmonization,” *NREL*, Accessed 4/3/19.

“Backgrounder On Oversight Of Nuclear Power Plants,” *United States Nuclear Regulatory Commission*, Accessed 4/3/19.

Dr. Elizabeth K. Ervin, “Nuclear Energy Statistics,” *University Of Mississippi*, Accessed 4/3/19.

Sonal Patel, “NRC Issues Final Rule To Replace Waste Confidence Decision, Ends Licensing Suspension,” *POWER*, 8/26/14.

“Plans For New Reactors

Worldwide,” *World Nuclear Association*, 2/19.

Brad Plumer, “How Retiring Nuclear Power Plants May Undercut U.S. Climate Goals,” *The New York Times*, 6/13/17.

“U.S. Energy Facts Explained,” *U.S. Energy Information Administration*. Accessed 6/26/19

“Under Construction Reactors,” *International Atomic Energy Agency (IAEA)*, Accessed 6/26/19.