

An Interview with Mark Z. Jacobson on the Climate Change Imperative

by Diane Eaton, MCIS



Mark Z. Jacobson (Photo: Mariaelena Comoroto)

I spoke with Dr. Jacobson about where we are in this enormous effort and what more we need to do. [*Lightly edited for space and clarity.*]

Researcher, speaker, Stanford University professor and winner of multiple awards for significant contributions to climate research, Mark Z. Jacobson, Ph.D., has spent three decades identifying the fastest, cleanest and most efficient path for all sectors of the U.S. economy to switch to renewable energy production from fossil fuels. In addition to developing scientific models—one has been used by nearly a thousand researchers—he has worked with the Sierra Club, which has, in turn, worked with 176 cities and towns to pass resolutions and laws targeting 100% renewable electricity production. Jacobson is also the keynote speaker at the Get Off the Grid Fest in Chattanooga, Tennessee, on August 20 to 22.

The time is now. Without a huge, comprehensive pivot to renewable energy sources, the Earth's atmosphere will climb to 1.8°F warmer by 2050 than it was at the turn of the 20th century. Climate change is already making a noticeable impact around the globe with record-breaking weather patterns of all kinds. In years to come, no one will remain unscathed from the fallout.

First things first: How are we doing? You've set the bar at achieving 100% clean, renewable energy nationwide by 2050, but fossil fuels currently produce more than 80% of the nation's energy consumption. We have quite a mountain to climb. Are we on pace to get there?

We're only about 8% there. We've transitioned about 8% of our infrastructure compared to what we need to do to get to 100% renewable energy and heat by 2050 or 80% by 2030. So, we need to do a lot more a lot faster. We can't wait 25 years before we start. We need a rapid transition timeline, and that requires people knowing that the problem is serious enough to convince our policymakers to make laws and regulations that accelerate the transition rapidly.

We have 15 U.S. states and territories that have laws or executive orders to get to 100% renewable electricity—but electricity is only 20% of all end-use energy. There are 176 cities in the U.S. that have

committed to 100% renewables, but that's only electricity, not all energy. We need to involve all energy sectors—transportation, building and industry as well as electricity. It's still progress, but we need a much faster transition than we have now.

President Biden seems to have heard you. His Clean Energy Plan aims to achieve 100% clean energy and net zero emissions by 2050. His budget proposal aims to pour money into clean water, transportation and power infrastructures. Are you encouraged?

He's certainly made progress compared to previous administrations, and I applaud that. But I'm concerned that a lot of money is going toward what I call "all of the above" policies—things that don't really work, like carbon capture, direct air capture, nuclear power, bioenergy and bio-fuels. Those are not going to help solve the climate or air pollution problems. They're money pits.

Why is that?

Those other technologies are not efficient, either. They still require some burning of fuels, and they require more energy to run. So, where does that energy come from? From mining and burning more fossil fuels, so you have more air pollution and more mining and more combustion emissions. They're not acceptable solutions.

You've said that we have what we need—the technology and the financial resources—to achieve 100% renewable energy production by 2050. So why aren't we moving faster?

The main barriers to transitioning are not technological or economic. We have 95% of all the technologies we need right now. The cost of energy production is really expensive now, so we'll definitely save money compared with not transitioning. We will reduce energy use so much due to the efficiency of electricity over burning things, and so, because we use so much less

energy, costs will be at least 60% lower with a clean, renewable energy system.

So, why aren't we doing it faster? There are a lot of people still entrenched in the fossil fuel industry, a lot of lobbyists impeding efforts to transition to clean, renewable energy. There's also an information gap. Most people are not aware of what you can do in your own home or in life to make the shift. We need to provide assurances to people that the transition will make their lives the same or better; it will reduce their health impacts, reduce climate impacts. This is needed to convince people to vote for policymakers who will [build] a trend or rapid transition.

Most people are complacent and aren't sure how fast we need to go. They support changes, but they don't realize we need to support policies that require rapid changes, like 80% within nine years.

The cost of renewables—solar especially—is falling rapidly. Is this helping the cause?

Yes, it is driving the purchasing of lots of wind and solar around the world. Certainly, the drop in the cost of renewables, electric vehicles, heat pumps and battery storage has really helped to drive the transition. Something like 94% of all the new installed electricity-generating capacity in the U.S.—from January to April of 2021—was wind, water and solar. That's because the costs have come down and because there are lots of laws and renewable portfolio standards in some states.

Wind energy is one of the technologies within your trifecta solution of what you call “WWS” for wind, water and solar. Many argue that the amount of land needed to provide any significant amount of power from wind turbines is unfeasible and unattractive. How do you answer them?

To power the entire U.S. with wind, water and solar, we only need about 0.6% of the U.S. land mass, and the space between the turbines can be used for agriculture and farmland. In comparison, the fossil fuel industry takes up 1.3% of the land.

Wind is the lowest-cost form of electric-

WHAT IS CLIMATE CHANGE?

The Earth's atmosphere has warmed by 1°C (1.8° F) since 1900, according to National Oceanic and Atmospheric Administration, and if unimpeded, it will climb to 2°C by 2050. The impact will unquestionably be devastating to human life around the globe. *The New England Journal of Medicine* says that, conservatively, 250,000 people will die each year due to the rising temperature. Other consequences include rising sea levels, coastal flooding, supercharged hurricanes, glacier and sea-ice melting, hotter and more frequent wildfires, longer and deeper droughts, famine, agricultural shifts, migration due to environmental changes, species extinction and more.

FOSSIL FUEL ENERGY PRODUCTION...

- Consumes dwindling natural resources
- Generates deadly pollution and toxins
- Can be mined and monetized only in a few locations
- Will see dramatically increasing prices across all sectors
- Requires installations that damage the terrain
- Comes with disruptions to service and grid instability

RENEWABLE ENERGY SOURCES...

- Use virtually inexhaustible natural resources
- Are available nearly everywhere
- Cause virtually no environmental damage
- Are 60% cheaper than fossil fuels
- Are more energy-efficient than fossil fuel production
- Will not increase in price over time
- Offer grid stability and continuous supply

COMPARING LAND USE

The fossil fuel industry takes up 1.3% of the U.S. land mass. With renewables, only about 0.6% of U.S. land would be needed to power the entire U.S. for all purposes. Plus, any empty space can be used for agriculture and farmland.

PROGRESS IN ATLANTA AND GEORGIA

- Atlanta adopted its Clean Energy Resolution in 2017, with the goal of powering municipal buildings with 100% renewable sources by 2025 and going community-wide by 2035. The Plan focuses on decreasing energy bills, creating jobs, improving air quality and public health and stimulating economic development.
- Georgia is among the top 10 states for solar production and produces more electricity from wood and wood waste than any other state. In 2019, Dalton installed the largest solar panel manufacturing plant in the Western hemisphere. State lawmakers are reticent to put initiatives into law but are supporting businesses in adopting green policies.

YES, YOU CAN MAKE A DIFFERENCE. HERE'S HOW:

1. Next time you buy a car, buy all-electric.
2. Make your home as energy-efficient as possible: Weatherize, seal and insulate.
3. Purchase energy-efficient appliances and switch to LED bulbs.
4. Consider solar panels for your home or solar projects in your community.
5. Buy from a utility company that uses or supports renewable sources.
6. Educate yourself about what is being done in your city and state.
7. Take action: Urge your elected officials to enact renewable energy initiatives.
8. Reduce commute times.

ity in the U.S. by far. It's half the cost of new natural gas, it takes the least amount of physical land on the ground, and it doesn't have any air pollution associated with its operation nor climate-relevant emissions. It's efficient, clean, low-cost. There's really little downside to using it.

Does nuclear play a role in the switch to renewables?

There are a lot of problems with nuclear reactors. For one, it takes too long and they're too expensive to build. The cost is about five times higher per unit of

All these things combined, we can keep the grid stable, we can create jobs, save money, and reduce land use by going to clean renewable energy.

energy compared with wind or solar. There are just a few in the U.S.—two are in Georgia—and it takes an average of 15 to 16 years for planning and operation of any nuclear plant, so if we plan a new one today, it won't be ready until 2037. We can't wait that long. On top of that, there's unresolved waste issues, nuclear weapons proliferation issues, meltdown issues and mining risk issues. Why should we do it?

How can we feel empowered to be a part of the change when it seems like corporations and government have the most control and make the most impact?

It's important to remember that people are buying things that industry is making; people are living in homes that require energy; people are driving and that requires transportation; all sectors are involved with the use of energy by individuals.

So, individuals can do a lot to help solve the problem. First, you don't need both electricity and gas in your home; there's no reason to have two energy sources. It saves you a lot of money not to put gas in your home. If you don't have gas, you don't need to put pipes in, you don't need to pay hookup fees, you don't need to dig ditches for gas pipes. Even if you have gas now, you can retrofit your home by using heat pumps, electric cooktops instead of a gas stove, and electric cars. Whatever you use gas for in your home, you can go through an electric alternative.

You can make your home energy efficient by simple things like caulking windows and doors to stop up leaks of air. You can save a lot of energy using LED light bulbs and energy efficient appliances. ♻️

30% off all crystals
 rare • healing • protection
 By appointment only. Contact us for info:
 inga's 770-952-0905
 comerelax@msn.com



Feel the JOY of LOVE again!

Join the Largest Online Community of Holistic-Conscious Singles who value

- ◆ **Authentic & Loving Relationships**
- ◆ **Natural Health & Sustainable Living**
- ◆ **Living a Conscious Life** ◆ **Honoring Diversity**

Try for FREE at NaturalAwakeningsSingles.com

natural awakenings singles™