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Mend It, Don't End It: It's Time to Reset Clean Energy Policy by Focusing on Price/Performance Parity (P3)

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The Trump administration and Congress have a golden opportunity to put clean energy policy on a new, more viable track by adopting an innovation-based strategy to spur technologies that can compete with fossil fuels on both price and performance.

KEY TAKEAWAYS

- U.S. clean energy policy has been dominated by Green New Deal thinking, which has sought to force clean technologies into the marketplace with subsidies and mandates. That approach is too costly, and therefore unsustainable and ineffective.
- Instead of overcorrecting by rejecting clean energy or ignoring climate change, policymakers should adopt an innovation-driven strategy for spurring new technologies that can compete with fossil fuels on price and performance.
- Price/performance parity (P3) should be the focal point for U.S. clean energy policy. But markets alone cannot deliver new, competitive technologies. Government has a key role to play across the entire span of technology development and deployment.
- The path forward is to cut unnecessary or misdirected incentives and mandates, then redeploy resources to a more cost-effective clean energy innovation strategy.
- The strategy should entail launching Manhattan Projects to develop better technologies, creating tools to evaluate them through a P3 lens, enacting regulatory reforms to remove hurdles, and developing an industrial policy toolkit to bridge market gaps.

INTRODUCTION

President Trump has signaled a clean break with past U.S. energy policy, rejecting its prior focus on spurring a green transition.[1] But while the administration and Republicans in Congress are right to be skeptical of a national energy strategy that attempts to address climate change by forcing clean energy technologies into the marketplace with subsidies and mandates, it would be a terrible mistake to overcorrect by ignoring clean energy.

To reset America's clean energy policy, the administration and Congress should focus on identifying and accelerating technologies that can successfully compete with fossil fuels on both price and performance. That is the only realistic way to spur a green transition.[2]

WHY DO WE NEED A NEW START ON CLEAN ENERGY?

The premise Green New Deal policies has been that we face a "climate emergency" so severe that we must do everything possible to cut emissions—right now, everywhere, all at once—including limiting oil drilling, mandating EV adoption, and requiring companies to make green disclosures. But the Green New Deal misses three fundamental realities:

1. The only clean energy technologies that will be adopted globally, and hence the only technologies that will be sustainable, are those that can reach price/performance parity (P3) with fossil fuels.
2. Not all clean energy technologies are ready for deployment. Some need a lot more work. Deploying them now on the back of heavy subsidies will be enormously expensive, and will set innovation in those technologies back, perhaps for decades.
3. When it comes to climate change, what matters is not just what happens in the United States, even though it's the world's biggest economy, but how emissions evolve in fast-growing newly industrialized countries in the global East and South—and only low-cost technologies will be viable there.

Ignoring these three basic realities, U.S. clean energy policy has been dominated by Green New Deal thinking: "Deploy, deploy, deploy" has been the mantra, and that has meant subsidies, more subsidies, and mandates. Most environmental advocates, the media, many government officials, and especially progressive Democrats have fully committed to this well-intentioned, but failed paradigm.

The Trump administration and Republicans in Congress have a golden opportunity to put clean energy policy on a new track by adopting an innovation-based strategy that focuses on spurring technologies that can compete effectively with fossil fuels on both price and performance, without costly and unsustainable long-term subsidies or mandates.

WHAT IS PRICE/PERFORMANCE PARITY (P3)?

All new technologies must displace existing tools. Cars replaced horses, refrigerators replaced iceboxes, telephones replaced the telegraph. In every case, the new technologies reached and then exceeded the capabilities of previous technologies, at a reasonable price. Mobile phones were useful, but they had to get smaller and cheaper before they dominated.

Price/performance parity (P3) is a quick way to identify the point at which a new technology becomes fully competitive with an existing one. It could be cheaper, or offer better performance, or both. Either way, the overall package must reach P3 to be competitive.

Technologies don't usually reach P3 immediately. Scientific and engineering discoveries and improvements must be made. A technology may need a long period of experimentation. Eventually it standardizes, becomes cheaper, then scales quickly to become ubiquitous: Even old people have adopted cell phones now. But technologies must reach P3 to succeed.

WHY CAN'T WE SUBSIDIZE AND REGULATE OUR WAY TO P3?

The Biden administration relied heavily on subsidies and regulations to drive U.S. adoption of clean energy technologies such as electric vehicles (EVs) and heat pumps. It aimed for quick deployment, hoping that scale would bring down costs. But that model won't work:

- **Scale is not enough for many clean technologies to reach P3.** For example, green hydrogen won't reach P3 because even at enormous scale its final costs wouldn't move very much.[3] So, we need more innovation to develop *better* technologies.
- **Climate change is a global issue.** Emissions have been falling in the United States and Europe, but they are rising fast in lower-income countries, as these countries drive growth with cheap energy. For example, India is rolling out solar—but it also licensed 121 new coal mines last year.[4] Similarly, China's manufacturing juggernaut still relies on cheap energy from coal, despite huge investments in solar, hydro, and nuclear. Low-income countries simply will not pay for more expensive energy; so subsidizing and forcing clean energy into U.S. and European markets won't be enough to drive a global green transition.
- **Even rich countries have low tolerance for paying a green premium.** Just as President Trump plans to dismember costly green energy subsidies and mandates in the United States, rocketing energy costs are leading the UK, Germany, and other European countries to a major re-think of their energy policies.
- **Forcing change through regulation is highly unpopular.** Hair-shirt policies that force consumers to abandon popular products like internal combustion cars and trucks, airplanes, gas stoves, and meat have totally failed to gain popular traction anywhere in the world.
- **Clean energy is different from other new technologies,** because it offers users no new features except for lower emissions. Without better capabilities, only competitive prices lead to adoption, so getting to P3 is all that matters.

DON'T WE HAVE TO REDUCE EMISSIONS TO "NET ZERO" BY 2050?

Let's be very clear: Climate change is real. Human activity is helping to warm the planet, and cheap and abundant clean energy should be a strategic objective. But declaring an emergency and throwing the kitchen sink at it won't work. NetZero is a meme—a very successful mobilizing meme—but not a strategy.

The truth is all policies have costs. The huge expenditures committed to energy tax credits in the Inflation Reduction Act (IRA) could be used elsewhere—including the acceleration of clean

energy innovation. The Congressional Budget Office has estimated that the IRA's energy tax credits will cost at least $800 billion through 2033, and it could reach $1.1 trillion.[5] Meanwhile, the Energy Department's *total* R&D budget for 2025 is just $23.4 billion.[6]

Why the huge costs? Because the Biden administration sought to deploy technologies that are not even close to P3. The IRA production subsidies are about one-third of the levelized cost of production for nuclear power, for example, and an even higher percentage for hydrogen.

It's too expensive and too ineffective to subsidize everything. Instead, we should support technology development and boost technologies that are on the path to P3 and avoid technologies (like hydrogen) that will never become competitive. Pouring money into technologies that low-income countries cannot use is a massive waste of scarce resources.

WON'T THE MARKET DO ALL THE HEAVY LIFTING BY ITSELF?

No. New energy technologies are difficult and expensive to develop, and—unlike, say, software—they take a long time to mature. Solar and wind do have lower costs now, but that's after more than two decades of research, innovation, and scaleup, while intermittency adds system costs and limits the ceiling for deployment. Small Modular Reactors being developed today won't be deployed until the early 2030s (or later). Batteries are expensive and still need improvement.

These new technologies are risky in many respects: There is technology risk (that it won't work as expected); market risk (that demand for won't materialize at sufficient scale, or on the supply side that it will cost too much or be too difficult to scale); regulatory risk, because most energy deployment is regulated, often at both the federal and state level; and political risk (that supportive administrations will be replaced by those with other priorities).

Taken together, those risks are huge, the costs are also huge, and deployment can take a decade or more. Few private investors can cope with investment at that level of risk across that length of time. Government must help.

The academic literature also shows that innovators capture only a small percentage of the benefits from their inventions. Imagine a new green technology that provides clean energy 24/7 that is 10 percent cheaper than gas. The inventor can keep that 10 percent, but society would benefit much more from replacing fossil fuels with better clean energy. Because private investors focus only on private gains, governments have a stake in supporting new technologies beyond the level that the market will support. This is especially true for early-stage research that the private sector naturally avoids.

SO, WHAT SHOULD GOVERNMENT DO?

Government plays different roles across the decades-long span of technology development and deployment. Government is effectively the only large-scale funder of basic and often early-stage applied research through universities and DOE's 17 National Laboratories. It is the dominant funder of applied research as well, while the National Labs offer innovators access to expertise and facilities that start-ups cannot afford. DOE's total annual funding for basic and applied research is currently about 0.25 percent of the construction cost of one standard nuclear reactor.

As energy innovations move out of the lab toward commercialization, they go through pilot projects, testing, evaluation, certification, and above all, iteration. Government can support here

in multiple ways—for example through the Small Business Innovation Research (SBIR) program, National Labs testing, and NIST and FERC certification. However, there are currently big gaps in government support during the pilot and testing phase.

As technology enters the market, companies face a chicken-and-egg problem: They cannot find buyers (and energy projects are *very* expensive) until they have been proven. But technologies can't be proven until they are deployed. Government can break that vicious circle by de-risking various elements of the project. DOE's Office of Clean Energy Demonstrations (OCED) was set up to address part of the problem. Unfortunately, OCED has been less than effective (partly due to congressional requirements), but should be a critical tool once excesses have been trimmed and mandates realigned.

Finally, government can help with scaleup. The Loan Program Office (LPO) provides funding through loan guarantees, but it too has been distracted into funding a wide range of end users rather than focusing on technology development. Still, using the government's borrowing power effectively will be a key component of green energy policy.

THE PATH FORWARD: CUT, INVEST, AND FOCUS ON P3

Here are six steps the Trump administration and Congress should follow to reset America's clean energy strategy:

1. Don't Overcorrect

Climate denial and rejection is not a viable strategy. Yes, many climate advocates have engaged in fearmongering, and some have been overzealous in trying to change the way Americans live their lives. That was wrong. But that doesn't mean climate change is not real: There are policy solutions consistent with conservative principles, especially the principle of innovation.

2. Cut Unnecessary or Misdirected Funding, and Redeploy It to a More Cost-Effective Clean Energy Innovation Strategy

The huge funding provided by the IRA and Bipartisan Infrastructure Law reflects the "NetZero now" mindset, spending heavily to cut any and all emissions. This is ill-advised. Instead, we need to focus on the supply side, developing clean energy technologies that can reach P3. That is the true path to clean, cheap, energy. In changing course, we should review all current funding to ensure that it meets the P3 test, targeting in particular long-term demand-side operational subsidies, including tax expenditures. Those are largely a mistake, although there can be good reasons to offer time-delimited supply-side support to help new technologies overcome incumbents' built-in advantages.

3. Launch Manhattan Projects for Better Technologies

We don't spend nearly enough on clean energy R&D, and on the earliest stages of clean energy deployment. The Trump administration should consider a threefold increase in DOE's R&D budget, focusing partly on basic and applied R&D and partly on developing new programs to support the "missing middle" of funding: pilot applications in the $10–$100 million range (emphasizing the low end). DOE also should make it easier to access the National Labs, and encourage the labs to fully support technology deployment.

4. Enact Regulatory Reforms

Across the entire spectrum of clean energy, developers struggle with the demands of regulation. This falls much more heavily on new technologies and new deployments. Sometimes—as with nuclear power and transmission infrastructure—federal agencies such as the Nuclear Regulatory Commission (NRC) and FERC play leading roles (and significant reforms are under way at the NRC). But state regulation and the impact of the National Environmental Policy Act (NEPA) and subsequent NEPA-driven litigation exerts a powerful drag on clean energy deployment. Simplifying, streamlining, and even eliminating regulation should be a primary priority. That will be needed to ensure that the president's recent emergency executive orders are not simply reversed by a future president.

5. Develop a Full Industrial Policy Toolkit for Government

Currently, the U.S. government uses a very limited selection of financial and industrial policy tools to support clean energy. We need to expand the toolbox, for example to include new financing tools like contracts for difference (CfDs), risk tranching, and production partnerships. Many other tools will be needed, too, such as pre-competitive collaborations, and easier cooperative research and development agreements with the National Labs. Procurement reforms can also play a big role, along with a more strategic vision of how all these tools can be used together to pursue a P3 agenda. Some existing tools and resources—like OCED and LPO—will be critically important once they have been aligned with the P3 framework

6. Develop Tools to Conduct P3 Assessments

It is relatively easy to see that hydrogen will never be price competitive. But other cases are not that obvious. So, DOE will need to develop much more sophisticated tools to undertake effective P3 evaluations of clean energy technologies, and to identify useful milestones along the path to commercial success. NREL and Sandia National Laboratory are well placed to lead this effort, along with specialized expertise at various Labs, such as Idaho National Lab and Oak Ridge on nuclear. However, they will need to make sure that they avoid capture by industry interests.

CONCLUSION

The new administration and Congress have an opportunity reset U.S. policy by adopting a P3 strategy to identify and accelerate clean energy technologies that can compete with fossil fuels on market terms. Doing so would be a major victory for America's energy security, technology leadership, and our national interest in driving realistic solutions to global climate change.

About the Author

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ENDNOTES

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