Spotlight on Climate

Solutions for a Clean Energy Future

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(700 words)

As individuals and as a society, we have a choice to make: continue with an energy system built on polluting and finite fossil fuels, or choose a clean energy future. Fortunately, viable solutions exist. The road to achieving a clean energy future will require sustained political effort, but it has many rewards and is increasingly in reach.

Our modern society was built on coal, oil, and natural gas, but with significant costs to our health and wellbeing. Air pollution from combustion of fossil fuels is the leading source of toxins in our air. These include benzene, mercury, arsenic, and lead compounds-- all known to be carcinogens or contributors to birth defects. Combustion of fossil fuels also pollutes our air with dangerous particulate matter. A 2021 study from the Harvard School of Public Health estimated 212,000-490,000 US deaths per year attributable to this long-term particulate exposure. By comparison, in 2021, the opioid crisis caused 80,000 deaths. Closer to home, a 2023 study attributed 12.7% of childhood asthma cases in the US to pollution from indoor gas use. Overall, fossil fuel pollutants impose significant financial costs on families, exceeding $820 billion annually and falling disproportionately on lower-income neighborhoods. The costs are very much higher when we include the climate change impacts of spreading vector-born diseases and extreme weather and climate events.

Fortunately, viable solutions exist that can quickly reduce the public health burdens of our fossil fuel use and simultaneously address the climate crisis. The solution in a nutshell: use less energy, use it more efficiently, electrify everything (e.g. buildings, transportation, industry), and power our electrical grid with clean energy and storage. Fifteen years ago, these solutions were not financially, technologically, or politically feasible. Today, due to political mobilization and investments, these solutions are within reach. The unsubsidized costs of wind and solar electricity have dropped 72% and 90% respectively and are now cheaper than fossil fuels. In 2022, 75% of new electrical generating capacity in the US was provided by renewable energy and four of Arizona's five neighboring states have adopted 100% clean energy mandates before 2050. Also, rapidly dropping energy storage costs combined with modernizing the grid ensure that these renewable resources can reliably and affordably meet our needs.

So, we ***can*** power our grid with 100% clean energy. What about conservation, efficiency, and electrification? Currently US residents consume twice the energy per person and produce two times more CO_2 per dollar of GDP than the United Kingdom and Germany—two highly industrialized modern societies. The take-home message is that we waste a lot of energy that does not produce useful benefits to individuals or society. Addressing this energy waste requires significant upfront costs as well as behavioral changes.

The recently passed federal Inflation Reduction Act (IRA), the city of Flagstaff, and APS, provide households and businesses with significant rebates and tax credits to weatherize our buildings with insulation and high-performance windows. The IRA also provides financial incentives to convert gas stoves, water heaters, and furnaces to high performance electric appliances when they need replacing. These investments in conservation, efficiency, and electrification will reduce annual household utility costs and improve local air quality, but only if households, business, and organizations take advantage of these incentives. Why not have better indoor air quality and lower utility bills?

Solutions for transportation include prioritizing alternative modes of mobility, driving less, and electrification. The City of Flagstaff is currently making strategic investments in smart urban planning and multi-modal travel (the big shift), but more is needed. The IRA also incentivizes a more affordable conversion to electric mobility through tax credits for new and used electric vehicles (EVs). While EV battery technologies have environmental costs of their own, first-generation EV batteries are already being repurposed and recycled, and EVs are increasingly powered by clean electricity.

Fossil fuel interests oppose these solutions, but the writing is on the wall. Even for those who do not accept the scientific consensus on the causes and consequences of climate change, we are reaching a social tipping point-- 69% of Americans support taking steps to become carbon neutral. It will take all of us working together to achieve a clean, more just, energy future that saves money, lives, and livelihoods.

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