CARBON FREE AND NUCLEAR FREE FUTURE: A Roadmap for U.S. Energy Policy

THE CLEAN DOZEN

The 12 most critical policies that need to be enacted as urgently as possible for achieving a zero-CO2 economy without nuclear power are:

1) Enact a physical limit of CO2 emissions for all large users of fossil fuels (a "hard cap") that steadily declines to zero prior to 2060.[1]

2) Eliminate all subsidies and tax breaks for fossil fuels and nuclear power.[2]

3) Eliminate subsidies for biofuels from food crops.

4) Build demonstration plants for key supply technologies.[3]

5) Leverage federal, state and local purchasing power to create markets for critical advanced technologies, including plug-in hybrids.

6) Ban new coal-fired power plants that do not have carbon storage.

7) Enact at the federal level high efficiency standards for appliances.

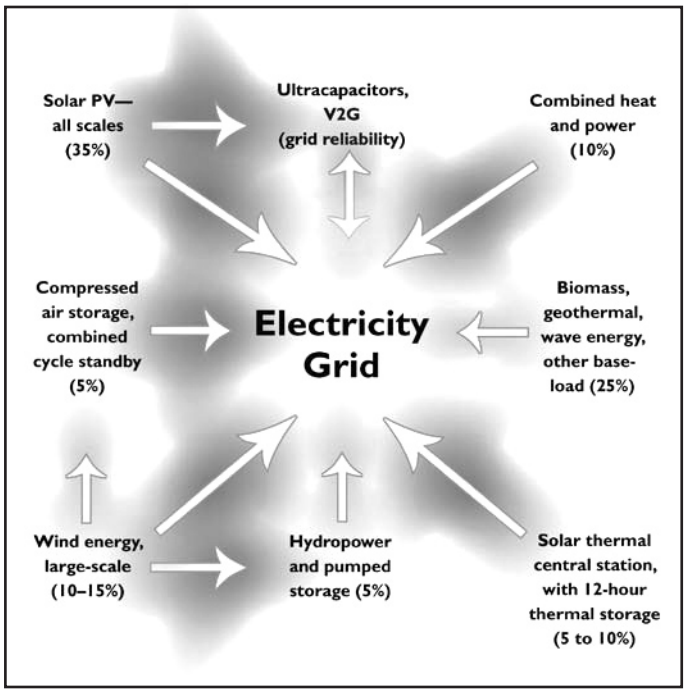
8) Enact stringent building efficiency standards at the state and local levels, with federal incentives to adopt them.

9) Enact stringent efficiency standards for vehicles and make plug-in hybrids the standard U.S. government vehicle by 2015.

10) Put in place federal contracting procedures to reward early adopters of CO2 reductions.

11) Adopt vigorous research, development, and pilot plant construction programs for technologies that could accelerate the elimination of CO2.[4]

12) Establish a standing committee on Energy and Climate under the U.S. Environmental Protection Agency.



One Possible Future U.S. Electric Grid Configuration Without Coal or Nuclear-Power in the Year 2050 Source: IEER

[1] The time schedule for tightening should be assessed periodically according to climate, technological, and economic developments. The cap should be set at the level of some year prior to 2007, so that early implementers of CO2 reductions benefit from the setting of the cap. Emission allowances would be sold by the U.S. government for use in the United States only. There would be no free allowances, no offsets and no international sale or purchase of CO2 allowances. The estimated revenues - approximately $30 to $50 billion per year - would be used for demonstration plants, research and development, and worker and community transition.

[2] This includes guarantees for nuclear waste disposal from new power plants, loan guarantees, and subsidized insurance.

[3] Central station solar thermal with heat storage, large- and intermediate-scale solar photovoltaics, and CO2 capture in microalgae for liquid fuel production should be included.

[4] These would include direct solar hydrogen production, hot rock geothermal power, and integrated gasification combined cycle plants using biomass with a capacity to sequester the CO2.

CENTRAL FINDING

The overarching finding of this study is that a zero-CO2 U.S. economy can be achieved within the next thirty to fifty years without the use of nuclear power and without acquiring carbon credits from other countries. In other words, actual physical emissions of CO2 from the energy sector can be eliminated with technologies that are now available or foreseeable. This can be done at reasonable cost while creating a much more secure energy supply than at present. Net U.S. oil imports can be eliminated in about 25 years. All three insecurities – severe climate disruption, oil supply and price insecurity, and nuclear proliferation via commercial nuclear energy – will thereby be addressed. In addition, there will be large ancillary health benefits from the elimination of most regional and local air pollution, such as high ozone and particulate levels in cities, which is due to fossil fuel combustion.

SUMMARY OF MAIN FINDINGS

1. A goal of a zero-CO2 economy is necessary to minimize harm related to climate change.

2. The use of nuclear power entails risks of nuclear proliferation, terrorism, and serious accidents. It exacerbates the problem of nuclear waste and perpetuates vulnerabilities and insecurities in the energy system that are avoidable.

3. A hard cap on CO2 emissions - that is, a fixed emissions limit that declines year by year until it reaches zero - would provide large users of fossil fuels with a flexible way to phase out CO2 emissions. However, free allowances, offsets that permit emissions by third party reductions, or international trading of allowances, notably with developing countries that have no CO2 cap, would undermine and defeat the purpose of the system. A measurement-based physical limit, with appropriate enforcement, should be put into place.

4. A reliable U.S. electricity sector with zero-CO2 emissions can be achieved without the use of nuclear power or fossil fuels.

5. The use of highly efficient energy technologies and building design, generally available today, can greatly ease the transition to a zero-CO2 economy and reduce its cost. A two percent annual increase in efficiency per unit of Gross Domestic Product relative to recent trends would result in a one percent decline in energy use per year, while providing three percent GDP annual growth. This is well within the capacity of available technological performance.

6. Biofuels, broadly defined, could be crucial to the transition to a zero-CO2 economy without serious environmental side effects or, alternatively, they could produce considerable collateral damage or even be very harmful to the environment and increase greenhouse gas emissions. The outcome will depend essentially on policy choices, incentives, and research and development, both public and private.

7. Much of the reduction in CO2 emissions can be achieved without incurring any cost penalties (as, for instance, with efficient lighting and refrigerators). The cost of eliminating the rest of CO2 emissions due to fossil fuel use is likely to be in the range of $10 to $30 per metric ton of CO2.

8. The transition to a zero-CO2 system can be made in a manner compatible with local economic development in areas that now produce fossil fuels.

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