

Executive Summary

Securing a Clean Energy Future for America An Agenda for the First 100 Days

It is critically important that the next President embrace a true clean energy revolution for electric power generation. Our current reliance on fossil fuel-fired and nuclear power is exacting a heavy toll on human health, the economy and the environment. Coal, natural gas and nuclear power are water-intensive, highly polluting and ultimately expensive technologies, and they can, over time, be replaced by a new, sustainable electric grid design. A modern electric power system must rely primarily on low-risk, affordable, much less water-intensive and renewable technologies. Its feasibility has been extensively documented, and extensive polling data show the public supports it.

In his first 100 days, the next President must:

- First, work to establish a much-needed national water policy in order to avert or mitigate the current and future water scarcity problems that face the nation if today's electric generation mix remains unchanged or becomes even more dependent on fossil-fuel-fired and nuclear power. Power generation in the U.S. currently accounts for 50 percent of all water withdrawals and 41 percent of all fresh water withdrawals.
- Secondly, the President must establish sustainability criteria to guide the choice and deployment of new electricity generating technologies. Americans require and support a power system that is affordable and reliable, consumes modest volumes of water, substantially reduces public health impacts, improves environmental quality and addresses climate change. The incoming administration should work to eliminate all public support for energy technologies that do not meet these criteria.
- Third, the next administration must begin to make energy efficiency and non-combustion-based renewable energy technologies the core of the electric power system and adopt policies and programs that lead to eventual replacement of fossil fuel-fired and nuclear power plants.
- Fourth, and finally, the next President must make it a priority to ensure that the United

States becomes the acknowledged global leader in job-creating clean energy technologies and in confronting the challenge of climate change.

The transition to a true clean energy future is doable, but not without the political will, vision and determination of political leaders willing to stand up to powerful economic interests invested in business as usual.

Report

The First 100 Days Agenda¹

Securing a Truly Clean Energy Future for America

In the first 100 days of a new administration, the President outlines his agenda and mobilizes the government to work toward his goals and objectives. It is a unique moment in every President's term, a time to set out an actionable agenda for the rest of his term.

At this critical juncture, the electric power sector of the economy requires decisive leadership. Its heavy reliance on fossil fuels and nuclear power makes our current system unaffordable and exacts an unacceptable toll on public health and the environment. The costs of new and existing coal-fired and nuclear power plants are skyrocketing. Our electric generation mix and its attendant fuel cycles are increasing water scarcity and diminishing water quality across the country. The power sector's voluminous greenhouse gas emissions at every stage of the fuel cycle, from mining and drilling to combustion, contribute substantially to climate change.

However, the ubiquitous and severe negative effects of our electric generation mix can, by and large, be avoided. Americans want² and deserve a more precautionary energy path that protects their communities' health and safety, conserves and protects their water resources and is affordable and reliable. Americans deserve a true Clean Energy Agenda.

American ingenuity has already provided the opportunity to begin a new American industrial revolution driven by smart, sustainable energy technologies. Solar photovoltaic and wind technology have already become or will soon be competitive with conventional power plants. Better batteries and other storage technologies are on the verge of commercialization. Energy efficiency technologies, ever present but often ignored, are available, inexpensive and easy to adopt. Energy conservation is tried and true and assuming an ever greater role in keeping the

lights on. We are on the cusp of a technological revolution and should take full advantage of it.

The next President must seize this potent opportunity to tackle the issues important to Americans: affordability, public health, water availability and quality, environmental quality and climate change. Failure to begin this necessary transition with urgency will severely weaken our economy and perpetuate degradation of our health and exhaustion of our resources.

We call on the next President to rise to the challenge and adopt the policies and programs necessary to advance a true, sustainable, Clean Energy Agenda.

Achieving a Sustainable Electric Power Sector is Feasible

There is overwhelming evidence that a sustainable electric grid is achievable. Most recently, the National Renewable Energy Lab projected that current renewable technologies could supply 80 percent of the grid's power needs by 2050 at reasonable cost. In all cases, reliability would be sustained. The mix of energy resources in this study included energy efficiency, wind and solar, hydro, biomass and storage technologies. Although the mix of power sources may not be optimal (such as the inclusion of utility-scale biomass), NREL did not, for the most part, include any technologies not already commercialized. Similarly, Professor Mark Jacobson (Stanford University) and Research Scientist Mark Delucchi (University of California, Davis) described in 2009 how wind, water and solar technologies could replace fossil fuels globally by 2030 at a cost less than projected for business as usual at the time.³ A concerted national effort to bring more storage, highly efficient solar PV and offshore wind technologies to commercialization would change the game entirely and further ease the process of replacing fossil fuel and nuclear resources.

Sustainability Criteria

The electric generation mix must be based on technologies/measures that:

- are affordable or have the greatest potential to come down in cost;
- use and consume the least amount of water;

- generate the least pollution;
- effectively reduce greenhouse gas emissions;
- maintain electric grid reliability.

Top Priorities for a New Energy Roadmap

1. Invest in Technologies that will Make Possible a Sustainable Electric Grid

To meet the sustainability criteria, the next administration should focus its efforts and public resources on energy efficiency,⁴ energy conservation, renewables (particularly wind and solar technology),⁵ distributed power (power generation at homes or businesses), and electric storage and grid technologies sufficient to achieve 50-60 percent renewable energy penetration on the electric grid nationwide by 2030, and 100 percent penetration by 2050. These resources are the least water-intensive, least polluting and most affordable (when all societal costs are taken into account) that can effectively address climate change and maintain grid reliability.

2. Phase Out Exports of Natural Gas, Coal, Oil and Uranium

Whether for domestic or foreign use, mining and drilling activities have severe impacts on local populations and water and other resources. The next President should propose policies to prevent the export of fossil fuels and uranium to other countries so as to:

- take a true leadership role in shifting energy investments here and abroad;
- make the United States a world leader in reducing greenhouse gas emissions;
- shield American consumers from volatile and unpredictable energy prices on the global market;
- protect public health here and abroad;
- credibly advance the goal of nuclear non-proliferation.

3. Phase Out Utility-Scale Biomass-Fired Power

The next administration must acknowledge that not all renewable power is created equal. Utility-scale biomass-fired power plants (large, low-efficiency facilities operated solely for electricity generation) have the same problems as any combustion technology. Air emissions can be severe to toxic, depending on the fuel. A single wood-fired facility requires hundreds of thousands of tons of fuel per year, the equivalent wood as yielded by clear-cutting thousands of acres of forest. Cooling water demands can stress local resources and require taxpayer-funded upgrades of water and wastewater treatment infrastructure. Finally, utility-scale biomass-fired power plants are not carbon neutral and should not be considered a renewable source of power. Construction of new plants should be halted and those in existence phased out because they do not meet the sustainability criteria outlined in this document.⁶

The Role of Government

The new Administration must adopt a public investment approach to energy policy, moving away from subsidies and putting taxpayer funds to work in ways that produce returns that accrue to the public's benefit. Public investment in emerging energy technologies is essential.⁷ The private sector simply will not take the risks without government assistance.

Administrative Actions

1. Adopt a National Water Policy

Establishing a national water policy should be a high and urgent priority in the first 100 days. The nation's essential and irreplaceable supply of groundwater is under threat, and current withdrawal rates are unsustainable. Coal, nuclear and natural gas plants account for almost 50 percent of daily withdrawals.⁸ Competition for the available water is intensifying and will get worse, according to both the Department of Defense and the Energy Department's Sandia National Laboratories. Global warming adds to the pressure. Yet the United States has no national water policy. The new administration must make developing one a top priority.

Accordingly, early in his term the new President should issue an executive order directing the Energy and Interior Departments and Environmental Protection Agency to produce a comprehensive water/energy report that would include:

- a nationwide inventory of available water and water quality;
- withdrawal and consumption data for thermoelectric power plants;
- an accurate measurement of water withdrawals for natural gas drilling using hydraulic fracturing;
- an assessment of aquifers' ability to recharge;
- a state-by-state evaluation of the water needs of agriculture;
- an analysis of existing or potential competition among water users;
- an assessment of the impact on water quality of fracking and thermal pollution and water discharges from power plants; and
- an evaluation of water contamination from "produced water" used in fracking.

This report should be publicly available and meet a tight deadline.

In addition, the President should also order the two agencies to:

- publicize information previously gathered by Sandia National Laboratories on the critical questions concerning diversion of water for energy;
- project water demands and supply for the next 50 and 100 years at current usage rates;
- assess the adequacy of water supplies in every region of the country in order to help set priorities for phasing out existing utility-scale thermoelectric plants and/or halting construction of new ones;
- determine the impact of conventional and unconventional oil and natural gas drilling on water quality and water availability for other users;
- ensure that the Environmental Protection Agency's ongoing study of hydraulic fracturing's impact on drinking water is completed on schedule.

2. Hidden Costs Study

In conjunction with the water study, the President should issue an executive order to have the Office of Science and Technology Policy coordinate assessments of the full social,

environmental, economic and health costs of every electric energy resource. The order should require appropriate agencies to identify information gaps and commission research to fill them, including the costs of water withdrawals and consumption. It should set a deadline of one year.

This study should be used to create a baseline of data to inform policymakers about the true costs of our current and future energy choices.

3. Phasing In Sustainable Energy Technologies

Within current budgetary constraints, the administration should set parameters for U.S. energy policy and direct all executive agencies to adhere to them.

The Departments of Energy and, more recently, Defense, are the key agencies in energy R&D, demonstration and commercialization. The Energy Department oversees research laboratories (e.g. the National Renewable Energy Lab) and the Advanced Research Projects Agency – Energy, which provides funding in conjunction with the private sector to assist in commercializing targeted technologies.⁹ The Department of Energy awarded \$43 million in R&D funds to further develop offshore wind technology and reduce market barriers for deployment in 2011. ARPA-E awarded \$14.7 million in grants in 2011 to reduce the cost of utility-scale PV systems by 50% and residential systems by 80% by enhancing the efficiency of the panels. ARPA-E recently awarded \$43 million for grid-scale battery storage and vehicle batteries designed to bring down the cost and enhance the longevity of these systems.

The Defense Department is heavily invested in efficiency, renewables, distributed power, micro-grids and water conservation. It has become a technology agency dedicated to testing and validating emerging technologies for commercialization and deployment at home and abroad. It also considers climate change a national security threat of utmost importance.

In every important electric power technology area, the President should move aggressively to promote the speedy development and deployment of sustainable, renewable resources. Specifically, the President should establish bold clean energy goals along the following lines:

Energy Efficiency/Energy Conservation and Renewables

- existing federal buildings be LEED Gold-certified by 2025;

- new construction be set at net zero energy use by 2025;
- annual audits be conducted to ensure that existing buildings meet energy use goals;
- all federal campuses and military bases have the ability to operate independently of local utility companies by 2025;
- all appliance efficiency standards be updated as appropriate and opportunities for additional efficiency improvements be identified.

Distributed Power Technology

- the Department of Energy survey non-combustion distributed power technologies and select those that can reasonably be commercialized in 5-to-7 years for R&D and demonstration support.

Storage Technology

- the Department of Energy identify storage technologies (such as batteries, flywheels, compressed air) that can be commercialized quickly for ARPA-E support in order to increase the penetration of wind and solar on the grid.

Microgrid Development

- continued demonstration of micro-grid technology at federal facilities.

4. Phase-out of Fossil Fuel, Nuclear Power and Utility-Scale Biomass Plants

The President should accelerate the phase-out of fossil fuel, nuclear power and utility-scale biomass plants, by establishing clear and ambitious timelines for the following measures:

Coal-Fired Power

- final adoption of all pending EPA air and water-cooling regulations;

- final adoption of pending EPA rule that combustion waste be regulated as hazardous waste;
- a moratorium on permitting or expansion of mountaintop removal mining unless studies can show that there is no danger to public health or water supplies;
- a suspension of further coal leasing on federal lands pending a full investigation of the DOI leasing practices, fair market value and failure to accomplish successful reclamation as measured by release of bonds under the Surface Mining Control and Reclamation Act;
- a halt to the siting of coal export terminals in Washington and Oregon pending a comprehensive environmental impact statement for the region;
- a National Academies of Science study of the potential impact of carbon sequestration and enhanced oil recovery on water supplies and public health;
- a moratorium on all pipeline construction related to enhanced oil recovery and carbon sequestration pending completion of the study.

Nuclear Power

- a halt to life-cycle extensions of operating permits and a ban on building new plants until the high-level nuclear waste issue is resolved;
- revision of Nuclear Regulatory Commission policy to require the use of hardened, on-site storage for spent fuel;
- more extensive safety inspections and enforcement, including shutting down plants that violate safety protocols in consecutive inspections, depending on the violation;
- reliability studies of all plants and shut-down of plants most threatened by earthquakes within five years;
- assessment of the funding and support needed to accomplish this, including replacing generating capacity as necessary and new efficiency measures;
- a reassessment of nuclear plant safety in light of the increasing threat that cooling water intake temperatures will rise above safe limits;
- expansion and maintenance of EPA's network for detecting ionizing radiation.

Natural Gas and Oil

- suspend approval of federal oil and gas drilling permits until the Bureau of Land Management has conducted NEPA analysis that identifies overall freshwater demands for drilling and fracking and the source of the water, in addition to all other environmental impacts, and has considered alternatives to reduce freshwater demands;
- investigation of the full economic and environmental regional costs from increased extraction of natural gas and oil drilling;
- suspension of new pipeline projects related to export of natural gas and oil and approval of liquefied natural gas facilities until this investigation is completed;
- propose legislation to Congress that would rescind oil and gas drilling exemptions to federal environmental laws, including the Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response and Recovery Act, Safe Drinking Water Act, Emergency Planning and Community Right-to-Know Act and the National Environmental Policy Act;

Biomass

- Revise federal renewable energy policies, tax incentives, and other subsidies to promote only highly efficient small combined-heat-and-power biomass facilities, and remove incentives to build utility-scale biomass plants that have unsustainable fuel demand and high net greenhouse gas emissions.

5. Wholesale Electricity Markets

The Federal Energy Regulatory Commission has jurisdiction over interstate transmission lines and wholesale electricity rates (power that is sold between utilities or to utilities by independent, non-utility power plant operators). Accordingly, the next President should:

- require the Federal Energy Regulatory Commission (FERC) to review its orders related to transmission, power plant operation, demand response programs and flexible resources (e.g. battery storage); identify provisions of current laws or regulations that facilitate or impede deployment of sustainable technologies; and recommend regulatory and legislative changes;

- direct FERC to mandate regional transmission organizations to collect data on energy efficiency measures, demand response programs, distributed power, and renewable deployment from utilities in their regions;
- direct FERC to adopt uniform interconnection standards for renewable wholesale electric generators to encourage deployment of utility-scale wind and solar power on the transmission system.

Conclusions

Thanks to the innovative capacities of the public and private sectors, we have the technology and research capacity to provide for our energy needs while protecting public health and safety. The transition to a clean energy future will not be achieved, however, without the political will, vision and determination of a new generation of leaders willing to stand up to powerful economic interests invested in business as usual. A President who leads the country toward a new energy economy will have the support and gratitude of the American people.

References

1. The “First 100 Days Agenda” will be released in two parts. This document outlines the top administrative actions the next President should take to begin the shift toward a sustainable power regime. The second installment will outline the legislative proposals he should submit to Congress early in his first term to firmly establish energy efficiency and renewable energy as the cornerstones of the electric generation mix.
2. The Civil Society Institute has conducted 28 surveys the last six years asking Americans about their attitudes towards energy policy. The majority of Americans support a shift in energy policy to a sustainable future. <http://www.civilsocietyinstitute.org>
3. See “Renewable Energy Futures.” http://www.nrel.gov/analysis/re_futures/ and Mark Jobcobson, Mark Delucchi, “A Path to Sustainable Energy.” Scientific American, November 2009. <http://www.stanford.edu/group/efmh/jacobson/Articles/I/sad1109Jaco5p.indd.pdf>
4. Energy efficiency should be used as the bridge to achieving renewable energy goals. It provides more short-term jobs and stimulates the US manufacturing base. Over the last 40 years, efficiency measures have saved the US economy multiple hundreds of billions of dollars a year, but far more is possible. Increased efficiency it is also a key component of efforts to shift to renewable energy sources, since less demand means fewer generating units.
5. The technologies the administration should focus on are: building and appliance efficiency, offshore and onshore wind, solar PV, geothermal, electric storage, micro-grid and smart grid , distributed generation, combined heat and power and hydro (wave and distributed hydro).
6. See “Clear Cut Disaster.” <http://www.ascension-publishing.com/BIZ/EWG-clearcut.pdf>
7. For a history of government investment in new technologies see “Where Good Technologies Come From: Case Studies in American Innovation.” Breakthrough Institute, December 2010. <http://thebreakthrough.org/blog/Case%20Studies%20in%20American%20Innovation%20report.pdf>
8. See “Hidden Costs.”
9. See <http://bipartisanpolicy.org/sites/default/files/AEIC%20Report.pdf>. The American Clean Energy Agenda does not envision continued federal support for nuclear power. Despite decades of subsidies, the costs of nuclear power continue to rise and cost overruns during construction continue to be the norm. The precise financial and budgetary implications of phasing out conventional fossil fuel and nuclear power and phasing in clean, safe energy sources need to be calculated and are beyond the scope of this initial paper. However, these calculations should become an integral part of the process of preparing the Federal Budget to demonstrate a methodical move toward a truly clean energy agenda.