



CLEAN ENERGY VISION

Energy Security

The western U.S. will spend \$200 billion over the next 20 years to maintain and enhance our electric system. We can continue Business as Usual (BAU). Or instead, we can begin orderly transition to more secure and sustainable resources. The choices we make now will enormously affect our health, our economy and the planet.

Our economy, our health and our safety depend more than ever on assured delivery of electricity. It's easy not to think about the vulnerabilities and risks of our power system—so far, we've been lucky.

But: In 20 years, is electricity likely to cost more, or less than today? Will risk of outages be greater, or lower? Will electricity generation produce more emissions and greater environmental impacts than today, or less? Will the effects of climate disruption be larger or smaller?



Today's power system is antiquated, vulnerable and unsustainable.

True energy security can only be built on indigenous, inexhaustible and non-polluting resources—energy efficiency, solar, wind, geothermal and biomass generation.

ENERGY SECURITY IMPACTS

Business as Usual

Vulnerable Design. The grid today is organized around large, centralized power plants and long-distance transmission. This inflexible system design is vulnerable to equipment failures, weather events and attack. Adding more large fossil plants compounds these vulnerabilities.

Outages Cost Billions. Every day, roughly half a million Americans spend two hours without electricity. Brownouts, power spikes and interruptions shut down computers and disrupt high-tech production lines, at a cost to the economy estimated to be \$150 billion every year. In 20 years, will risk of outages be greater, or lower?

Risky Fuel Supply. Recent, fatal gas pipeline explosions. Freezing spells that shut down gas generation. Railroad accidents and delays that threaten coal plant supply—an average plant burns 14,600 rail cars of coal each year. One fire per day at coal plants due to coal dust explosions. Higher volumes of fuel delivery built into BAU puts fuel delivery even more at risk.

At War With Our Health and Environment. Fossil-based electricity, which has unsustainable impacts, can never be secure.

Clean Energy Vision

Securing Reliability. Decentralized, intelligent grids are more reliable and less vulnerable to outage or attack. Modernizing electric service can provide more secure and higher quality power and spur innovation.

Securing Competitiveness. Large-scale wind and solar projects are made up of thousands of geographically-dispersed, modular units. Wind and solar generators have higher mechanical availabilities than any fossil generator. Both factors improve system reliability and reduce risk of instantaneous loss of power.

Securing Supply. Indigenous and inexhaustible resources—solar, wind, geothermal and biomass power in our states and under our control—keep our energy dollars at home and provide the foundation for true energy security.

Securing Our Health. Organizing transportation and electric supply around energy efficiency and non-fossil resources promotes cleaner air and public health, conserves water and reduces liabilities and risks from carbon emissions and ecosystem disruption.

MILITARY LEADERSHIP

“The nation’s heavy use of fossil energy leaves American unacceptably vulnerable to hostile nations and is detrimental to foreign policy.”

—CNA Military Advisory Board

“Enhancing energy security is a basic responsibility of every Army soldier and every civilian.”

—U.S. Army Energy Security Implementation Strategy

“The Army is answering and leading the call to the nation to face one of the great challenges of our time: confronting our dependence on foreign oil, addressing the moral, economic and environmental challenge of global climate change, and building a clean energy future that benefits all Americans.”

—General Martin Dempsey, *Chairman of the Joint Chiefs of Staff, Pentagon Energy Security Forum*

The U.S. military cannot tolerate the vulnerabilities and risks of grid power. It is working to make all military bases energy independent. The U.S. economy—which depends more than ever on assured delivery of electricity—can follow the military’s lead. Doing so creates huge opportunities and reduces the risks of prolonged outages and major environmental disasters.

Nellis Air Force Base in Nevada is home to a 14 MW photovoltaic array.

Base Commander Colonel Michael Bartley, said, “Our base and indeed our entire nation will benefit from the predictable, secure supply of clean energy that this landmark power plant is now generating.”

These solar projects are part of the DOD’s commitment to achieve energy independence for its domestic bases and training facilities, which are currently 99% dependent on our vulnerable commercial power grid.

US ARMY ENERGY SECURITY IMPLEMENTATION STRATEGY

To increase its own energy security, the Army has adopted these Strategic Energy Security Goals:

1. Reduced energy consumption
2. Increased energy efficiency
3. Increased use of renewable energy
4. Assured access to sufficient supplies
5. Reduced adverse impacts on environment

Key military tactics include increasing energy efficiency and generating power with renewables. Some bases are already 100% self-sufficient.

One Army motto: “Savings energy saves lives.”

CLEAN ENERGY VISION REPORTS AND DOCUMENTS INCLUDE:

Report. *Western Grid 2050: Contrasting Futures, Contrasting Fortunes* is a comprehensive comparison of CEV and BAU development trajectories for western electric service.

Fact Sheets on *Economy & Jobs, Energy Security, Climate, Public Health and Cost* outline differences between CEV and BAU.

Moving to Clean Energy: Plan for an Orderly Transition

Grid - *Modernizing the Grid: How Our Electric System Can Welcome New Resources, Improve Reliability and Reduce Costs*

Policies - *Lower Risk, Lower Cost Electric Service: Policies Western States Can Build On.*

Investments - *Clean Energy Investments and Incentives: Choices for Investors, Utilities and Regulators.*

POLICY CHOICES

Diversifying Resource Portfolios Reduces Risks

Most western utilities now get more than 90% of the electricity they provide from just four resources: coal, gas, hydro and nuclear. To reduce risks, costs and environmental and health impacts, regulators can encourage or require utilities to add clean resources to their portfolios.

Making room for more efficient, less risky and more sustainable resources means retiring coal and using gas-fired generation differently, to supply operational flexibility rather than energy.



For other fact sheets, the Western Grid 2050 report, Transition Plan papers on the Grid, Policies and Investments and more information about the Clean Energy Vision Project, go to: www.cleanenergyvision.org.