



## CLEAN ENERGY VISION

# Improved Human Health

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.

We have boundless opportunities to generate and distribute electricity in ways that won't make us sick.

And it makes economic sense to invest in clean, safe, and reliable Western power system that increases our wealth and improves our health. The Clean Energy Vision shows us how.

### ENERGY BUSINESS-AS-USUAL: THE HUMAN TOLL

Nearly 85% of our energy comes from burning fossil fuels: half of that comes from coal. The poisons released when coal is mined, moved, and burned, and its wastes are stored are exacting a tremendous human toll. Toxic mercury, miniature but deadly particles, and rising ozone levels are destroying people's health and killing people now. Add in the increasing threats posed by climate disruption, and a serious health challenge turns dire.



**Food- and water-borne illnesses will become more prevalent due to extreme and prolonged heat events**

**Coal plants are responsible for nearly two-thirds of this country's mercury pollution.**

### BY THE NUMBERS: HEALTH IMPACTS

#### Business as Usual

**Mercury emissions.** Mercury exposure causes vision, hearing and coordination problems, along with asthma, heart disease and cancer. More than half a million children face neurological or developmental disorders due to mercury exposure. Coal plants are responsible for nearly two-thirds of this country's mercury pollution.

**Particulates.** The particulate matter emitted by fossil-fueled power plants are too small for the body's defenses to detect, and often pass directly into people's lungs. In 2004 alone, the smallest particulates from coal plants caused an estimated 554,000 asthma attacks, 38,200 heart attacks, 3.2 million lost workdays and 24,000 premature deaths in the United States.

**Ozone.** The increase in toxic pollutants and temperatures with the business-as-usual development will increase the amount of

ozone in the air. Ground-level ozone is a primary cause of smog, and inhaling it damages people's lungs, leading to asthma emergencies and premature deaths.

**Carbon Dioxide.** Rising carbon-dioxide levels—from coal and natural gas-fired power plants—will increase global temperatures that lead to a myriad of harmful effects on human health:

- World hunger will increase due to declining crop yields—at least 30% in the U.S. by 2100.
- Food- and water-borne illnesses (salmonella, cryptosporidium, giardia) will become more prevalent due to extreme and prolonged heat events. Vector-borne illnesses such as malaria, West Nile and dengue fever are also concerns.
- Declining air quality and extreme heat events will lead to greater respiratory illnesses and deaths, disproportionately impacting lower-income and ethnic-minority populations in the U.S.

## BY THE NUMBERS: HEALTH IMPACTS

### Clean Energy Vision

Transitioning just 30% of Utah's coal fired generation to clean energy would prevent scores of asthma-related emergency room visits and more than 100 premature deaths every year. It also would cut health costs about \$850 million over the lives of the coal plants. Imagine expanding those savings—in lives and money—to the West's entire coal fleet!

Clean air rules put in place since 2004 cut particulate-related deaths and emergency-room visits by 45% or more by 2010.

Reduced reliance on coal-fired power has immediate effects because most deaths from coal particulates occur within two years of exposure.

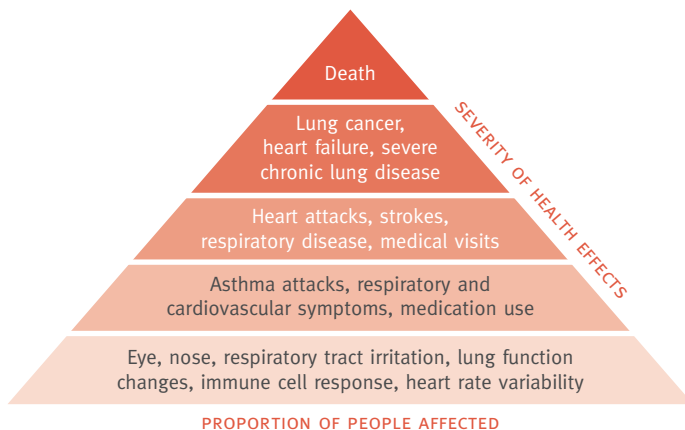
The emissions reductions that come from realizing the Clean Energy Vision will not just stabilize harmful ozone levels, but actually reduce them.

Reducing carbon dioxide and other greenhouse gas emissions will maintain crop yields, keep food and water-borne pathogens at bay, and slash annual heat-related deaths.

### THE CLEAN ENERGY VISION: A HEALTHIER FUTURE

A huge body of medical data shows that moving away from coal provides a wealth of human health benefits, and often provides those benefits almost immediately.

#### AIR POLLUTION HEALTH EFFECTS PYRAMID



Reduced reliance on coal-fired power has immediate effects because most deaths from coal particulates occur within two years of exposure. The Clean Energy Vision moves us quickly to non-polluting power sources.

### CLEAN ENERGY VISION REPORTS AND DOCUMENTS

**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.

#### Transition Plan

**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

Using less energy and utilizing resources that emit few toxics, have very low emissions and use little water can produce major public health and ecosystem benefits. The following are a sample of what actions regulators can take.

- Recognize public health and ecosystem costs and benefits inherent in public and private utility decisions. Then apply these currently “external” costs as critical components “internal” to all utility decision making.
- Account for carbon liabilities by including a carbon price in procurement planning.
- Develop and apply metrics that determine how and to what extent utility investment decisions impact public and private health costs.

The CEV Policy transition plan *Lower Risk, Lower Cost Electric Service: Policies Western States Can Build On* has a complete discussion of tested and suggested policies and regulation.