

STATISTICAL SIGNIFICANCE

Statisticians provide policymakers with a range of information that covers energy production, consumption, imports, exports, inventories, prices, and environmental effects. They also provide projections for future activities and analyses of the possible effects of changes in technology, regulations, and tax policies. Statistical analyses based on high-quality data promote sound policymaking, efficient markets, and public understanding of energy and its place in the economy and environment.

Energy Policy

TRACKING ENERGY PRODUCTION AND CONSUMPTION:

One of the most basic activities of statisticians in the energy area is tracking energy production and consumption on a global, national and regional basis. This poses many challenges. For example, because it is impractical to measure end-use consumption across millions of homes and businesses, consumption must be estimated from measures such as withdrawals from inventories at fuel storage points. Estimates of production and consumption have implications for the price of energy as well as broader issues such as our national exposure to disruptions in energy supplies.

DETERMINING ENERGY EFFICIENCY:

Statisticians design surveys of end users in the residential, manufacturing, and commercial building sectors to learn about differences in energy consumption. These data can be used to identify the best opportunities for energy savings and measure the effects of energy efficiency programs. Statisticians can distinguish the effects of efficiency programs from the effects of other factors by comparing energy usage among groups with and without efficiency program interventions, or by using



analyses that statistically control for other differences among groups.

PROJECTING FUTURE ENERGY SUPPLY AND DEMAND:

How much energy might we need to satisfy U.S. and global demand in 10, 20, or 30 years? What energy supplies might be available to meet this demand? The answers to these questions have profound implications, ranging from the expected costs of energy to greenhouse gas mitigation to what kinds of industries will be profitable and what kinds of transportation will be economical. Statisticians answer these questions by drawing on projections of resource availability, technological capabilities, and economic activity, all pulled together with sophisticated models of energy production and consumption.

MODELING EFFECTS OF POLICY INTERVENTIONS:

The complex models used to project energy supply and demand can be used to help determine the potential effects of policy initiatives. Policymakers can ask “what if” questions: What if we change automotive fuel efficiency requirements? What if we mandate that electric utilities use some percentage of renewable energy? What if we invest in developing clean fuel technologies? Statisticians can project the possible effects on variables such as the cost of producing energy (which affects economic activity and household energy costs) and energy-related emissions of greenhouse gases.

“Statistics Informs Energy Policy” is part of Statistical Significance, a series from the American Statistical Association documenting the contributions of statistics to our country and society. For more in this series, visit www.amstat.org/outreach/statsig.cfm. The American Statistical Association is the foremost professional society of statisticians, representing 18,000 scientists in industry, government, and academia: www.amstat.org. This *Statistical Significance* was produced under the supervision of the ASA Committee on Energy Statistics.

