

THE ENERGY GAP

WHAT GOVERNMENT FORECASTS SUGGEST ABOUT U.S. ENERGY INDEPENDENCE

→ **SINCE LONG BEFORE** the rise in big data, the U.S. Energy Information Administration has tracked the country's energy consumption and production [thick lines]. The size of the gap between the two reflects how close the country is to energy independence. The EIA also projects energy production and usage into the future to help guide industry regulations and policy decisions. A computer program—which took the EIA nearly two decades to build and requires 35 analysts to run—generates its predictions [thin lines] based on current energy laws and regulations. While it's impossible to predict influential events such as wars and recessions, the general trend suggests that since 2005—when the energy deficit [red] peaked—the U.S. is making more of its own energy and using less overall. "We as a society are valuing energy independence more," said Steven Wade, an economist for the EIA.

PREDICTING THE FUTURE

Since 1977, the EIA has published annual projections of U.S. energy needs. In many cases, the forecasts [thin lines] depart from actual values [thick lines] in the very year the report was published—predictions of even the current year's consumption and production often prove inaccurate.

MODEL REVISIONS The first prediction shown, for 1980, was calculated with a different computer program than the one currently in use. The EIA then revised the simulation method and prediction length, initially running shorter forecasts until the software improved.

ENERGY CRISES Petroleum resources became inconsistent following the 1973 Arab Oil Embargo and the 1979 Iranian Revolution, and U.S. energy consumption dropped as a result.

SELF-SUFFICIENCY The difference between supply and demand is an approximate indicator of the country's dependence on energy imports. When the U.S. attains energy independence, the red line will dip below zero.

FINANCIAL CRISIS The financial crisis of 2008 preceded a sharp dip in consumption and a slight dip in production. Most of the decrease in demand came from the industrial and transportation sectors.

NATURAL GAS The recent uptick in U.S. production is largely attributable to natural gas, captured through hydraulic fracturing and horizontal drilling. In 2012, drillers extracted 700,000 barrels per day, equivalent to approximately one quadrillion BTUs annually.

MODEST GROWTH Since 2007, analysts have revised their estimates for U.S. energy consumption, accounting for the economic downturn as well as standards passed by the Obama Administration that will double fuel efficiency in cars by 2025.

CASE BY CASE In addition to making its main predictions [thin lines], the EIA runs its model to see how various scenarios might affect the country [dotted lines]. This year, the EIA tested which conditions would make the U.S. oil independent [low oil import]. Self-reliance requires limiting consumption to a 3.5 percent increase while revving up oil production 36 percent by 2020, to 10 million barrels per day.

THE FUTURE Based on the business-as-usual projections, the U.S. is not on track to attain energy independence before 2040. The projected deficit that year—9.18 quadrillion BTUs—could be overcome by doubling the country's current renewable energy production.

