

# RARE EARTHS

## THE HIGH-DEMAND METALS

21 Sc	39 Y	57 La	58 Ce	59 Pr	60 Nd
61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy
67 Ho	68 Er	69 Tm	70 Yb	71 Lu	

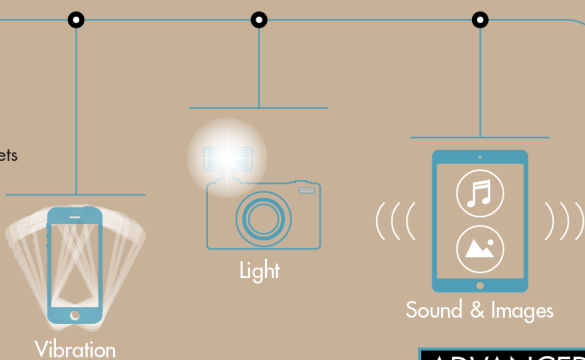
### WHAT ARE RARE EARTH MINERALS?

Rare earths refer to 17 elements that are abundant in the Earth's crust, but whose minable concentrations are less common than many other minerals. Rare earths are in high demand because they are critical to U.S. high-tech innovation, advanced energy and national security.



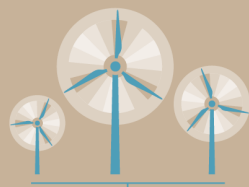
### HIGH-TECH INNOVATION

Rare earths make devices vibrate, light up, and transmit sound and images. Smart phones, digital cameras, tablets and flat-panel displays all contain rare earths.



### ADVANCED ENERGY

Rare earths are used to make the permanent magnets and rechargeable batteries for hybrid and electric vehicles. Permanent magnets containing rare earths are also used in generators for wind turbines.



Wind Turbines



Hybrid Toyota Prius  
There are 2 million Priuses on the road



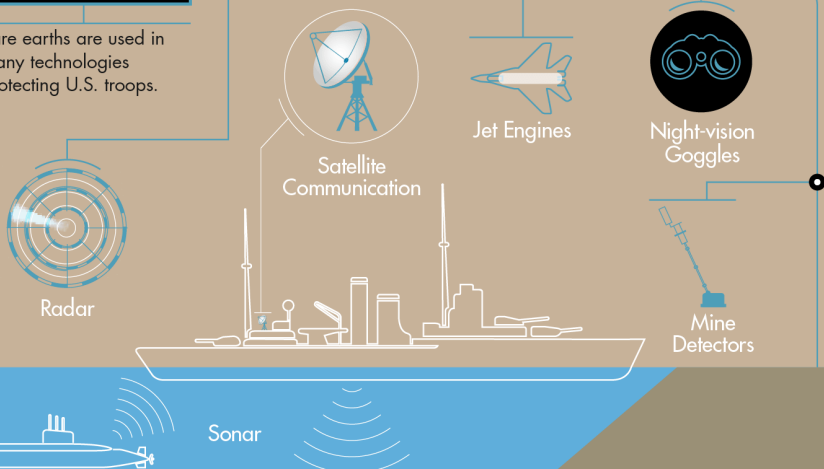
= 20 Pounds of Rare Earths



= 40 Million Pounds of Rare Earths<sup>1</sup>

### NATIONAL SECURITY

Rare earths are used in many technologies protecting U.S. troops.



### What does growing demand for rare earths mean for the U.S.?

By 2015, world demand for rare earths is expected to reach 210,000 tons per year, up from 136,100 tons in 2010 — a problem for U.S. manufacturers who are almost completely import reliant for rare earths.<sup>2</sup>

A more efficient U.S. minerals mine permitting process would help facilitate the production of an estimated 13 million metric tons of domestic rare earths and support the innovators, manufacturers and security structures that depend on them.

<sup>1</sup> <http://www.pbs.org/wgbh/nova/next/physics/rare-earth-elements-in-cell-phones/>  
<sup>2</sup> <http://www.fas.org/sgp/crs/natsec/R41347.pdf>