

(3) Which is greater, the least energy required to remove a person from the Solar System or the energy required to feed the person for life?

Removing a 70-kg body from Earth costs at least $70 R_g$, or 4×10^9 J. It is now orbiting the Sun at a speed of 30 km/s, with kinetic energy $(70/2)(3 \times 10^4)^2$, or 3.1×10^{10} J. This equals the minimum energy required to remove the body from the Solar System. The total investment required, starting with the body on Earth, is 3.5×10^{10} J. That is almost enough to provide a person with 2500 food calories (kilocalories) per day for 10 years.