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**Ben Fusaro\*** ([fusaro@math.fsu.edu](mailto:fusaro@math.fsu.edu)), Dept of Mathematics, Florida State University,  
Tallahassee, FL 32306-4510. *Embodied Energy, Energy Return on Investment, and Sustainability.*

The embodied energy of a unit of energy is the number of units of solar energy that it took to produce that unit of energy. For example, the embodied energy in a Cal(orie) of wood, coal, crude oil is about 20K, 40K, 55K solar Cal, resp. The embodied energy in one Cal of electricity produced by a coal-fired power plant is about 150K Cal. (Since these are ratios, any physical unit – BTU, kilowatt-hour, etc. may be used.) Embodied energy introduces the concept of ecological quality of energy to input/output processes. This concept will be used to generalize the ROI of business to Energy ROI. Embodied energy and EROI will be used to get a realistic estimate of the feasibility of replacing fossil fuels by sources of energy such as wood, palm oil and wind. (Received September 22, 2011)