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Relations between the k -Hessian energy $\mathcal{E}_k[u] = \int_{\mathbb{R}^n} -u F_k[u]$ and the fractional Laplacian energy $E_k[u] = \int_{\mathbb{R}^n} |(-\Delta)^{\frac{k}{k+1}} u|^{k+1} dx$ will be discussed. Here F_k ($k = 1, \dots, n$) is the k -Hessian operator, i.e., the sum of all the $k \times k$ principal minors of the Hessian matrix of u , and u is a k -convex function on \mathbb{R}^n vanishing at ∞ . (Received August 06, 2010)