Let A be a compact subset of R^p with Hausdorff dimension d. For $0 < s < d$, let $I_s(\mu)$ denote the double integral over $|x-y|^{-s}$ with respect to μ. It is known that there is a unique *equilibrium measure*, μ_s, that minimizes I_s over the set $\mathcal{M}(A)$ of Borel probability measures supported on A. For $s \geq d$, the quantity I_s is not finite for any measure μ in $\mathcal{M}(A)$. We show that, for a class of sets, which includes compact C^1-manifolds, the normalized d-energy defined as

$$\tilde{I}_d(\mu) := \lim_{s \uparrow d}(d-s)I_s(\mu)$$

exists as an extended real number for any measure in $\mathcal{M}(A)$, and is minimized by normalized Hausdorff measure restricted to A denoted by λ_d. Further, we show that μ_s converges in the weak-star topology to λ_d as s approaches d from below.