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Going Green: A Renewable Energy Future for High Energy Physics at the South Pole

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Renewable energy sources are widely recognized for their ability to provide affordable, reliable energy with reduced environmental impact. As existing and future High-Energy Physics (HEP) experiments probe the Snowmass science drivers over the coming decades, renewable energy must be considered for integration into the supporting infrastructure. Each experimental site will offer challenges to such a transition and the South Pole site used by the cosmic frontier presents particularly singular conditions. Argonne National Laboratory and the National Renewable Energy Laboratory have combined their unique multidisciplinary expertises to evaluate the economic viability and technical challenges of renewable energy operation in this extreme environment. Through a detailed, customized analysis and system co-optimization, we find that significant decarbonization as well reduced operational cost is possible using mature, commercially available technologies. In these remarks, I will highlight the conclusions of this analysis and the opportunity of renewable energy.

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