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Soldier Power on the Battlefield

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The views expressed herein are those of the author and do not reflect the position of the United States Military Academy, the Department of the Army, or the Department of Defense.

Author Note: Coree Aten, Andrew Michalowski, Maurice Williams, and Cody Stamm are all participating in their senior capstone in the Department of Systems Engineering at the United States Military Academy. It is a yearlong project under the advisement of Paul Evangelista. Paul Evangelista is a lieutenant colonel in the U.S Army and currently serving as an Academy Professor in the Department of Systems Engineering and the Director of the Operations Research Center at USMA.

Abstract: In support of PEO Soldier's Project Manager Soldier Warrior (PM SWAR), this research analyzes small unit power (SUP) equipment designed to improve power generation, conservation, and overall power management strategies for dismounted military units. An operational benefit analysis is presented in detail. The operational benefit analysis will ultimately support the development of a decision support tool that helps commanders employ effective dismounted tactical power management strategies. The operational benefit analysis examines four tactical scenarios and considers a naïve power management strategy and a SUP enabled power management strategy. The major findings and conclusions discussed in this paper include: specific conservation and generation strategies for select dismounted tactical scenarios; the importance of proper solar blanket employment; identification of a capability gap between 100W and 1000W in the power generation spectrum; the benefits of using conformal batteries; and the impact of inefficient PRC 154 battery swaps in the naïve case.

Keywords: tactical power, operational benefit analysis, decision support tool