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Leveraging Renewable Energy for Improved Continuity of Operations

Power outages are a disruption to nearly all aspects of daily life, including basic safety, and contribute to incident destabilization.

The City & County of San Francisco operates using 44% renewable energy, but still requires connection to the utility grid. Building battery storage to supplement renewable energy would create a way to utilize this power during an interruption of grid operations, and the jurisdiction would be in a much stronger position to maintain continuity of operations during an emergency.

Pre-identified sites deemed to be critical infrastructure (clinics, shelters, sources of government services), were studied to determine emergency system size, using the buildings' electrical load during emergency operations, property size, existing infrastructure, and age. Sites were selected to be case studies in which battery storage was coupled with existing solar infrastructure, to test the feasibility of continuing operations during a utilities interruption.

Utilization of battery storage in conjunction with renewable energy sources, particularly solar, is both technologically and financially feasible, and will continue to become more accessible as both the renewable energy market progresses, and technological advances allow infrastructure to become more affordable. Policy can accelerate this process further, allowing for improvements in grid resilience to happen even sooner.

Renewable energy sources coupled with battery storage form a powerful combination well suited to improving energy resilience, especially in times of emergency.

Jurisdictions of all sizes should investigate local renewable energy options to diversify their power utilities, and pursue energy storage options such as batteries to increase grid resilience.

List of Collaborators, Advisor(s), and Department(s) assisting with this research.

Major Collaborators and Stakeholders:

ARUP; City and County of San Francisco (CCSF): City Administrator's Office; CCSF: Department of Building Inspection; CCSF: Department of Emergency Management; CCSF: Department of the Environment; CCSF: Department of Public Health; CCSF: Mayor's Office; CCSF: Planning Department; CCSF: San Francisco Public Utilities Commission; Lawrence Berkeley National Laboratory; Pacific Gas & Electric; Stratagen

Additional Participants:

Alameda County; CCSF: Fire Department; CCSF: Public Library CCSF: Recreation & Parks Department; Celtic; Center for Sustainable Energy; City of Berkeley; City of Oakland; Clean Coalition; Geli; Luminalt; SFFD Neighborhood; Emergency Response Team; Occidental Power; PowerTree; Pristis Sustainability; Advisors; Renewable Funding; Rocky Mountain Institute; Sandia; SF CARD Solar City; Sonnen; Sunverge Energy Inc.; Tesla; UC Berkeley, Energy Resources Group
U.S. Department of Energy; VoteSolar

Funding Sources: U.S. Department of Energy, SunShot Initiative, Solar Market Pathways Grant