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# The Evaluation of Homer as a Marine Corps Expeditionary Energy Pre-Deployment Tool

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### THE EVALUATION OF HOMER AS A MARINE CORPS EXPEDITIONARY ENERGY PRE-DEPLOYMENT TOOL

— RESEARCH PROJECTS —

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#### Research Objectives

The purpose of this study is to assess the potential of using the HOMER Micropower Optimization software by the Marine Corps

- It involves the development of controlled experiments to evaluate the HOMER modelling scheme for solar and wind energy generation.
- It proves utility by integrating HOMER into the Experimental Forward Operating Base (ExFOB) process.

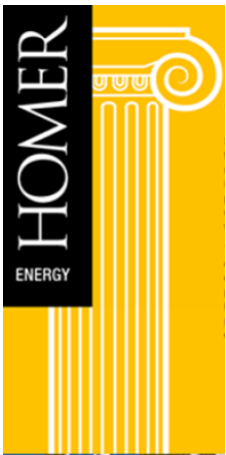
#### Description

- Devise experiments to evaluate HOMER modelling
- Track energy production of a grid-tied-PV (photovoltaic) system and a wind-PV system aboard Naval Postgraduate School
- Construct HOMER models of each system and develop a calibration process to match HOMER energy estimates to measured data from the actual systems
- Develop the concept of expeditionary energy density as metric to value a system’s energy production vs. area consumed
- Integrate HOMER into the ExFOB process to assess benefit to the Marine Corps

#### Conclusions

- HOMER models should be calibrated to specific power systems in order to effectively estimate energy production for future locations
- HOMER’s solar modelling strategy is effective
- HOMER’s hourly wind modelling strategy may be insufficient due to the dynamic variance of small wind turbines
- Expeditionary energy density, using HOMER estimates, should be used to effectively compare systems
- Integration of HOMER into the ExFOB process would have improved the power generation selection process.
- HOMER can empower planners to adequately estimate energy production capability of systems for possible deployment locations.





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