



US Army Corps
of Engineers®
Fort Worth District



FORT WORTH DISTRICT

POTENTIAL RENEWABLE TECHNOLOGIES FOR CONSIDERATION

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Renewable Energy Technologies for Consideration

**Fort Benning
Georgia**

Building Capacity: Site Specific

Building Type: Unaccompanied Enlisted Personnel Housing (UEPH)

Project year: 2020

Options:

1. Wind Generation (Amber)

- a. Although optimum results are obtained by using a larger model wind generator based on location and installation capabilities a small commercial model will optimize output potential and put this form of energy technology in the “recommended” category. Model S.64/950 was selected as being the most efficient, considering size, cost, and returns on investment. A savings-to-investment ratio was calculated to be above 1.0; therefore, it is recommended this project be considered and more closely investigated.

2. Solar Water Heating (Red)

- a. This area is classified under ASHRAE, climate zone 3A (warm-humid), which requires solar panel “C” rating. After accounting for local weather and selecting the optimum evacuated tube collector, this form of renewable energy technology is “not recommended.”

3. Photovoltaic (PV) (Red)

- a. Based on the location of the installation, the amount of incoming solar radiation (insolation) that is available is rather small. PVs were not found to be a cost effective technology due to a very low rate of return, and the fact that the life expectancy of even the most sophisticated PV cells is 20 years or less.

4. Combined Heat and Power (Red)

- a. Due to the high cost of gasoline and the possible inflation of fuel prices in the future, this project should not be considered as an efficient energy alternative. In fact, since all Combined Heat and Power systems are less than 100% efficient, they will actually increase the total energy and fossil fuel use.

5. Skylights and Windows (Red)

- a. Using the most efficient parameters for skylights and windows (degrees of tilt and rotation) at this installation, a “do not recommend” conclusion can be drawn based on the negative rate of return and nearly negligible savings per year. This is due, in large, to the lack of insolation, based on the ASHRAE classification of Fort Benning.

Strongly Recommended (Green)

Recommended (Amber)

Not Recommended (Red)

6. Ground Source Heat Pump (Red)

- a. An accurate evaluation of the performance of Ground Source Heat Pumps (GSHP) requires a test well to be drilled and a complete test of diffusivity and conductivity of the soil to be made. Therefore, this is a very close educated guess on the efficiency of a GHSP. Using the average local atmospheric temperature as a gauge in determining ground temperature, the utility costs are such that the system indicates a negative favorable return on investment.

Note: Proposed materials for the construction of renewable energy materials may vary based on previous contracts with other government agencies, independent contractors, etc. Based on these parameters, a general report can be made.

To request a project specific report that can be tailored to a specific region, campus, complex, or individual facility, please contact the SWD Regional Energy Manager:

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