RUNNING AUS ON SOLAR ENERGY
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[OVERVIEW]

- The Middle East depends on oil based reserves, and as the UAE is expected to run out of non-renewable energy sources by 2030[1][2], there is a need to start using renewable energy. In this project, the American University of Sharjah (AUS) is planned to run on Solar Energy.
- AUS uses immense amount of energy to power the entire campus which includes all the different colleges, dorms and sports facilities. By switching over to solar energy, not only will it be beneficial to the environment, but also will prove to be cost effective for the university.
- If the university does not begin to convert to renewable energy sources, then in the coming years the cost of electricity will keep increasing with the resultant financial burden.
- Alternative energy refers to any way of producing energy that does not require fossil or nuclear fuels. Alternative energy is non-polluting and helps to decrease the emissions of gases. Since these energy sources are natural and do not need to be processed, they have very little effect on the environment.

[PROBLEM]

- The production of electricity has increased because of the increasing demand despite the introduction of new technologies such as Wind, Solar Energy and Nuclear Power Generations. Energy costs continue to increase as shown in Table 1.
- Electricity costs increase when production is dependent on fossil fuels.
- Diminishing reserves.
- The university will also be contributing to global warming and harming the environment, which is compromising the future of Earth.
- Fuel is one of three major causes of CO₂ emission, other two being industry and transportation.

Table 1: Electricity production in UAE [3]

<table>
<thead>
<tr>
<th>Year</th>
<th>Electricity Production (1000 MWh)</th>
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</thead>
<tbody>
<tr>
<td>2000</td>
<td>20,000</td>
</tr>
<tr>
<td>2005</td>
<td>25,000</td>
</tr>
<tr>
<td>2010</td>
<td>30,000</td>
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[1. Solar Plant]

Solar power plant is based on the conversion of sunlight into electricity, directly using photovoltaic, or indirectly using concentrated solar power.

- Large land area
- Energy loss while being transferred to locations of use
- Entire campus can be compromised during a system failure
- Needs specialists to install

[2. Solar Towers]

They use mirrors to focus sunlight on the bottom of the tower which heats the liquid that forms the steam to rotate the turbines

- Need to be distributed on different parts of campus
- Alters the landscape
- Safety concerns from authorities due to location (close to Sharjah International Airport)


Solar panels are a system of photovoltaic cells wired together to form a large system called an array.

- Least expensive of all three solutions
- Does not need a dedicated land
- Does not need specialists to install and run

[REFERENCES]