Che Ramsubhag and Christopher Stinson

~ 17334 sq. ft.
3 Floors
197 (studio) + 55 (lab/office)
2022 TOTAL ANNUAL ENERGY USE
152,407.1334 kWh

Estimated Use Breakdown
- HVAC: 42%
- LIGHT: 21%
- PLUG LOADS: 37%

Chart showing monthly energy use from January to December, with peaks in July and August.
SWOT

(S) Strength
Building orientation maximizes solar exposure on east/west

(O) Opportunity
There are a lot of inefficient energy systems that can be replaced, and renewable energy can be generated

(W) Weakness (W)
Poor Window Condition with poor passive strategies and energy waste

(T) Threats (T)
Safety issue in controlling mold if the use of passive cooling is implemented through windows

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- Peak load near the beginning of the fall semester
- Peak load during studio times
- Largest loads are the computer lab and studio load
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Plugging Load

Current VS Estimated Demand

- **X 200 Devices**: 30 kWh/device/year, 5,997 kWh/year Saving
- **X 51 Devices**: 1,100 kWh/device/year, 56,098 kWh/year Saving
- **X +1/-1 Devices**: 6,600 kWh/device/year, 6,600 kWh/year Saving

**Estimated Total Annual Energy Savings**: 70,565 kWh/year
**Estimated Total Annual Energy Savings**: $7,056 /year
SMART POWER STRIPS
These are power strips that automatically turn off power to devices that are not in use, eliminating standby power consumption.

OCCUPANCY SENSORS
These sensors detect when a room is empty and turn off power to devices, such as lights and fans, that are not needed.

TIMERS
These can be used to schedule devices, such as lights or appliances, to ensure they are only used when needed.

ENERGY MONITORING SYSTEMS
These systems track energy usage in real-time and provide feedback to users on how to reduce energy consumption.
Strategy

Implementation of Solar Panels on Lake (Floatovoltaics)

Miami experiences approximately 3154 sun hours annually.

- A “Sun-Hour” is “1000 watts of energy shining on 1 square meter of surface for 1 hour”
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168,665 kWh/Year

Miami experiences approximately 3154 sun hours annually.

• A "Sun-hour" is "1000 watts of energy shining on 1 square meter of surface for 1 hour."

7800 sqft

Monthly Electricity Consumption VS Generation

<table>
<thead>
<tr>
<th>kWh</th>
<th>Current Demand</th>
<th>Solar Production</th>
<th>Estimated Demand</th>
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104'

75'
Window Replacement

- All windows are currently fixed
- Operable windows can be used to naturally ventilate a space removing warm air and providing comfort, reducing the need for mechanical ventilation
- U-Value of 0.4 or less
- SHGC of 0.25 or less
Thank You