WORK SO FAR...
PERMACULTURE
• Lawn mowing
• Produce Harvest:
  • Tomatoes
  • Chard
  • Ginger
  • Potatoes
  • Onions
• Farmer's Market
RESEARCH WORK AT THE OFFICE
COMMON ROOF MATERIALS

• Asphalt
• EPDM
• Turbo seal
• Modified Bitumen
• PVC Membranes
• FTPO
• TPO
• GRP
SUMMARY - SUGGESTED ROOF MATERIALS
TPO

- As good as EPDM - UV rays & heat-resistance.
- Many benefits same as PVC - energy efficiency & low cost.
- Lower carbon footprint.
- 5 star by the Cool Roof Rating Council.
- **Advantages:** Economical, Durable, UV-resistant, energy saver in summers, completely recyclable, chemically inert, unwanted fumes are not released to atmosphere over time.
FIBERGLASS FLAT ROOF (GRP ROOF)

- Good environmental profile; much less energy is used to produce.
- Do not give off harmful substances.
- No toxic by-products.
- Advantages: Light weight, Impact resistant, Chemical resistant, Fire resistant, Great insulator-thermal and electrical, nonconductive, maintenance free.
SOLAR FLAT ROOFS

- Can generate electricity
- Harvest rain water.

Advantages: Cost saving on electricity, chemically inert, water can also be utilized for drinking purpose with less to almost no filtration and/or treatment, can be used with flat roofs as well, long life span.
A1 = 8.5' x 58' = 4930 sq ft
A2 = \frac{1}{2} (32 + 41) \times 49

Total Area = 6700 sq ft (approx)
≈ 622 m²

This can fit 833 kW solar system for 6700 sq ft.
Max. Capacity

OFFICE FOR SUSTAINABILITY
FIRST FLOOR PLAN
INPUTS

- Previous research
- Found important factors:
  - University wide solar potential
  - OFS solar potential.
  - Predicted annual kWh @ 10% fill

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**Rooftop Solar Potential at OFS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Yearly kWh Usage</td>
<td>21,048 kWh</td>
</tr>
<tr>
<td>Average Yearly CO₂ Production</td>
<td>43,779.8 lbs</td>
</tr>
<tr>
<td>Average Monthly Electricity Bill</td>
<td>256.44 $</td>
</tr>
<tr>
<td>OFS Building Floor Print</td>
<td>662.4 m²</td>
</tr>
<tr>
<td>kW per Meter Squared</td>
<td>0.08 kW / m²</td>
</tr>
<tr>
<td>Rooftop Potential @ 50% Fill</td>
<td>15.87 kW</td>
</tr>
<tr>
<td>Kilograms per Meter Squared</td>
<td>5.86 kg / m²</td>
</tr>
<tr>
<td>Predicted Annual kWh</td>
<td>20,273 kWh</td>
</tr>
</tbody>
</table>

**Rooftop Solar Potential University Wide**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMU Campus Floor Print</td>
<td>324,847 m²</td>
</tr>
<tr>
<td>Rooftop Potential @ 10% Fill</td>
<td>2,775.59 kW</td>
</tr>
<tr>
<td>Predicted Annual kWh</td>
<td>3,544 MWh</td>
</tr>
</tbody>
</table>
Thank you