Hydropower Turbine
Ocean Energy to Electric Current

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Project Goals

- Utilize ocean current energy as a source
- Provide storage capability
- Advance current ocean energy technology and contribute to existing research
Energy extracted from fluid flow

Extracted energy becomes mechanical energy

Mechanical energy becomes electrical energy

Water Flow

Turbine

Generator
<table>
<thead>
<tr>
<th>Laws</th>
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<tbody>
<tr>
<td><strong>Michal Faraday’s Law</strong></td>
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<tr>
<td>○ Electromotive force (EMF) generated is proportional to the rate of magnetic flux through the circuit</td>
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<td>○ Electrical current will be induced in a closed circuit when magnetic flux through a conductive surface changes</td>
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<td><strong>Heinrich Lenz’s Law</strong></td>
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<td>○ Gives relationship to the direction of the induced EMF and current resulting from electromagnetic induction</td>
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<td>○ &quot;An induced current is always in such a direction as to oppose the motion or change causing it&quot;</td>
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Ocean Energy Forms

- Three types of Ocean Energy Sources:
  - Waves
  - Tidal
  - Current

Lastly...Our Choice....
Option 3 – Paddle Wheel Type Blades

- Multiple blade design gives for easier rotation and adaptability to air or water
- Lighter design gives for less initial momentum and less force while in rotation
- Larger surface area ideal for maximum motion
Modifications

Anchor Support Legs

Motor Removal and Extension
Final Design