Harnessing Wind Energy From Recycled Materials

Presentation 2
Concept Generation and Selection

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Overview

- Problem statement
- Concept generation
- Concept selection
- Updated timeline

Problem Statement

- **Customer Need**: Inhabitants of third world countries have limited access to electricity.
- **Goal:** Provide inexpensive electricity to citizens of third world countries.
- **Scope:** Design an inexpensive, portable wind turbine system to harness and store wind energy.

General Concept of Windmills

- Vertical vs. Horizontal Axis

www.onpointpro.biz

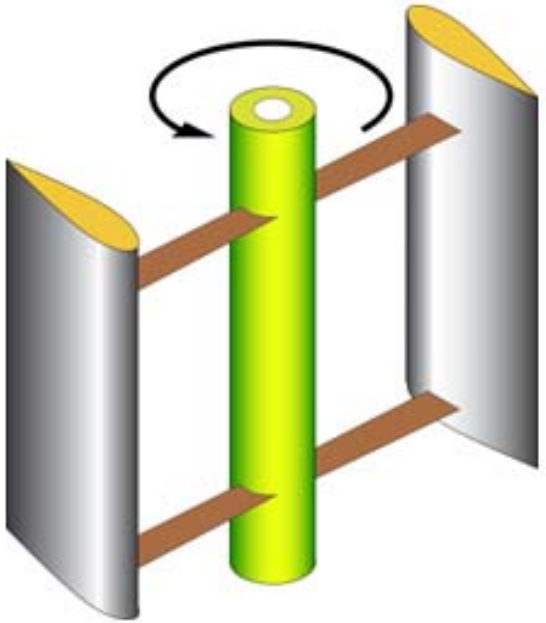
Concepts and Designs

- PVC turbine

www.mdpub.com

Concepts and Designs

- Eggbeater or Darrieus turbine

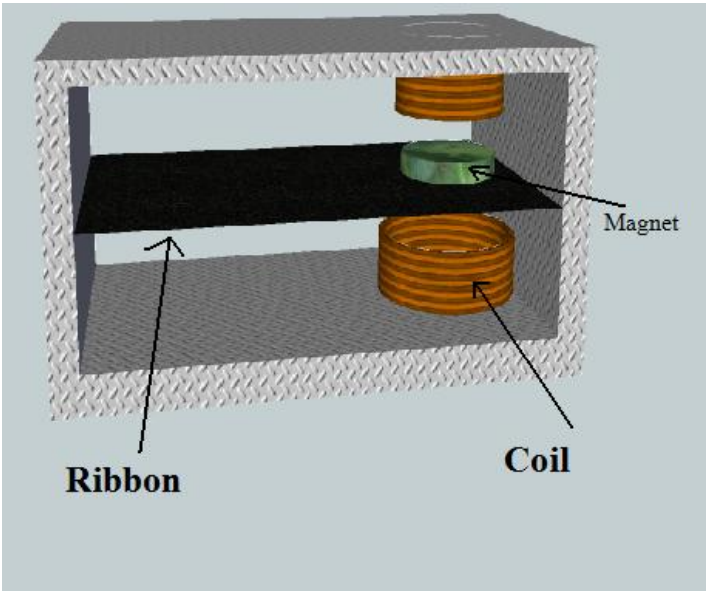


www.interdisciplinaryenergystudy.wiki.lovett.org

www.alternatuva.blogspot.com

Concepts and Designs

- Wind Belt



www.wolvespage.yolasite.com/green

Concepts and Designs

- Bike wheel turbine

www.thebackshed.com

Concepts and Designs

- Steel 55 gallon drum

www.sufficientself.com

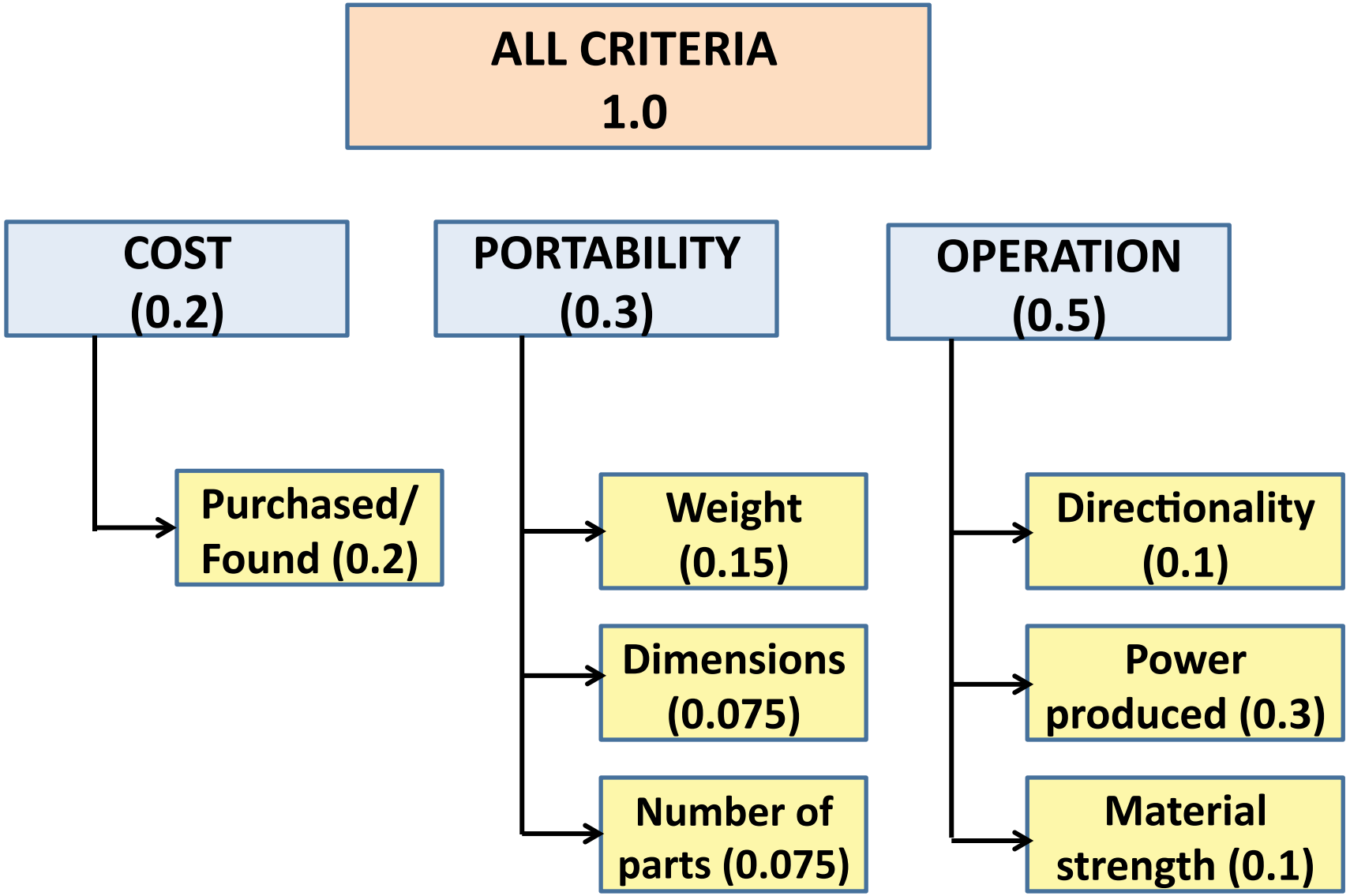
Concept Selection

Criteria

- Portability
  - Weight
  - Dimensions
  - Number of parts
- Cost
  - Purchased or found

Operation

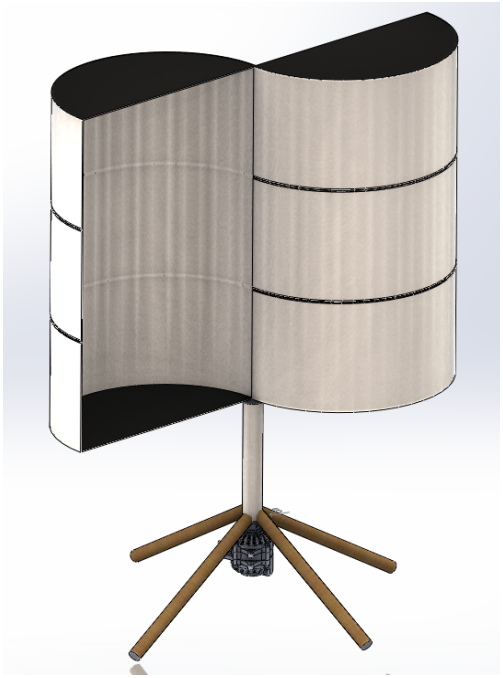
- Directionality
- Power produced
- Material strength


ALL CRITERIA
1.0
COST
(0.2)
PORTABILITY
(0.3)
OPERATION
(0.5)
Purchased/
Found (0.2)
Weight
(0.15)
Dimensions
(0.075)
Number of
parts (0.075)
Directionality
(0.1)
Power
produced (0.3)
Material
strength (0.1)

Criteria	Criteria Weight	Steel 55 Gallon Drum	PVC Traditional Turbine	Vertical Turbine	Rubber Wind Belt	Bike Wheel Turbine
Portability						
-Weight	0.15	3	4	4	5	5
-Dimensions	0.075	3	4	2	5	4
-Number of parts	0.075	5	2	2	3	2
Cost						
-Purchased/found	0.2	4	4	3	4	4
Operation						
-Directionality	0.1	5	2	5	1	4
-Power produced	0.3	5	5	4	1	5
-Material strength	0.1	4	5	5	4	5
		4.25	**4.05**	**3.7**	**2.94**	**4.4**

Top Concepts Conclusions

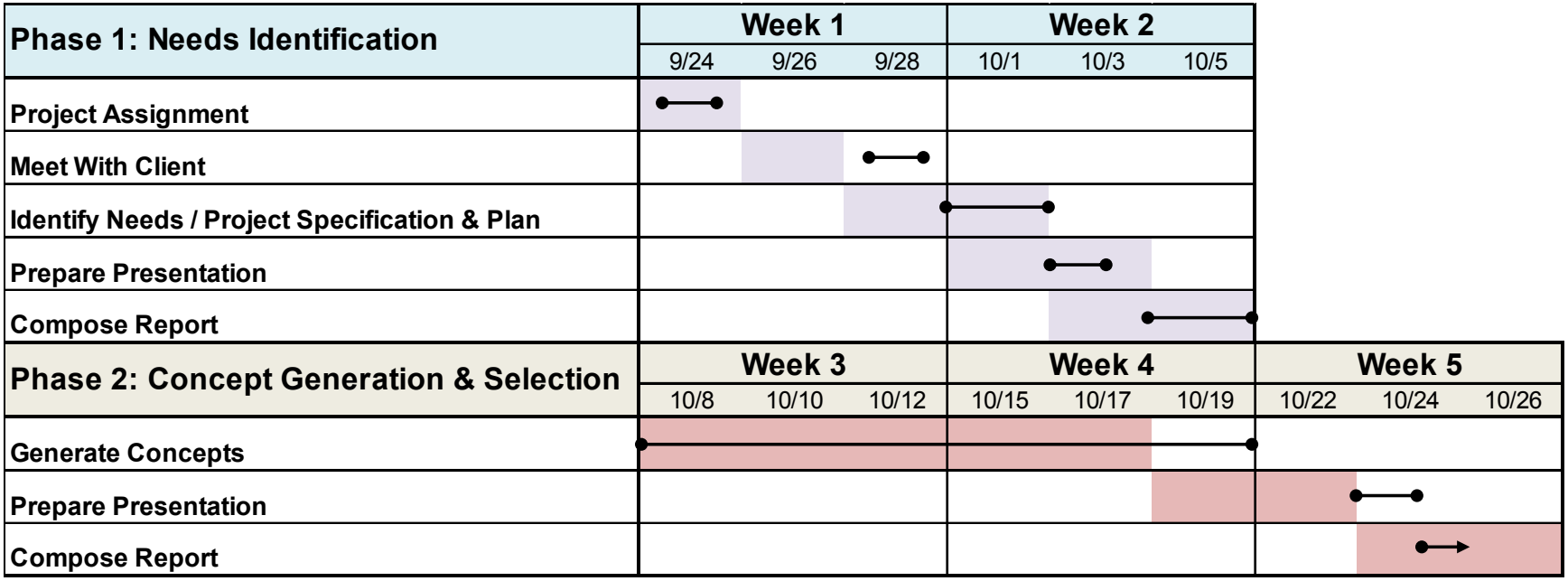
- From decision matrix, the top concepts are



Steel 55 Gallon Drum

Bike Wheel Turbine

Updated Project Timeline



Questions?