IPRO 347:
ROBBINS COMMUNITY POWER

the spark bringing green to energy
INTRODUCTION

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Julieann Young
Mission Statement:

“To develop a process which supplies the Robbins Community Power plant with a large portion of the wood that it needs, and resells useable green wood from landscaping companies. This would include solid research on suppliers, purchasers, the facility and equipment, the costs and potential profits, the employees needed, and the financing.”

Past IPROS:
Waste Heat and CO2 Utilization for Robbins Community Power
Client: Robbins Community Power

Objective:
Supply the percentage of greenwood needed by RCP to offset the dryness of the C&D wood chips and have the proper moisture content for the boilers to operate most efficiently.

Wood Chips

- 25% greenwood
- 75% C&D wood
**GOALS**

- Provide RCP with a plan to gather greenwood from Chicago’s urban lumber and have their budget break even at $8/ton for wood chips.

- Fully utilize the greenwood in the form of chips, sawdust, and dimensioned lumber to make RCP fully sustainable.
## PROJECT PLANNING

### Project: Robbins Community Power

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<th>Weeks Tasks</th>
<th>week 1</th>
<th>week 2</th>
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<td>Gather List of Potential Suppliers</td>
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<td>Contact Real Estate Developers to Determine Site</td>
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<td>Research Other Sawmill Business Models</td>
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### IPRO 347 Robbins Community Power: The spark bringing green to energy
RESEARCH
CHICAGO’S URBAN FOREST

wood chips

mercantile lumber

Mercantile Timber

- Dimensioned Lumber
- Chips

Wood Chips

percent

1.3
3.1-6
6.1-9
9.1-12
12.1-15
15.1-18
18.1-21
21.1-24
24.1-27
27.1-30
30+

d.b.h. class (in.)

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SUPPLY PROCESS

weigh in load

unload logs

graded/sorted

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MODIFIED SAWMILL MODEL

inventory for dimensioned lumber

send waste to the basement for chipping

option 1
bandmill
edger
green chain
stacking in bundles
storage
transport

option 2
woodmizer

option 3
outsource cutting to an external sawmill

send waste to the basement for chipping
WOOD CHIP PROCESS

- Wood suited for chipping
- Inventory for woodchips
- Basement to convey wood to chipper
- Tub grinder
- Wood chip trailer
- Sawdust trailer
- Transport

Waste from sawmill, edger, and green chain
METHODOLOGY

- Determine need: involves developing “big picture” of operations and determining all equipment necessary to fulfill goals.

- Sample cost: research various avenues for acquiring equipment, taking a wide sampling of used prices.

- Optimize: using manufacturer spec sheets, determine which products meet needs and which do not.

- Decide: either select the exact product (specific) or settle on price range (general).
LIST OF EQUIPMENT

Wood Acquisition

- Truck Scale
- Front End Loader
- Rough Terrain Forklift
- Grapple Truck
- Semi-Trailer
- Bobcat

Processing

- Kiln
- Sawmill (Bandmill)
- Edger
- “Green Chain”
- “Basement”
- Tub Grinder
A single sawmill will require a part time office administrator, a yard foreman (to assist the gen. mngr. in log grading and to supervise and personally unload most inbound log trucks and to supervise and personally load most outbound trucks with – lumber, sawdust, mulch, chips, and misc.

Sawyers paid on production level, roughly $35k-$45k
Laborers paid minimum wage with production and safety bonuses

Average of 5 laborers per sawmill (trained on site) + grader (trained off site)
ADDITIONAL USES FOR SAWDUST

- Mulch/Compost
- Bedding for animals
- Charcoal ingredient
- Pelletizing
- Mushroom farming
- Spill clean up
## LICENSES AND PERMITS

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<tr>
<th>Permits/Registration Types</th>
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<td>Tax Registration</td>
<td>Building Permit</td>
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<td>Employer Identification Number (EIN)</td>
<td>Health Permit</td>
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<td>Business licenses/Tax permits</td>
<td>Insurance</td>
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**IPRO 347 ROBBINS COMMUNITY POWER**
ENVIRONMENTAL REGULATIONS AND PERMITS

- Air Pollution Permit
- Waste Management’s Permit
- Public Water Supply Permit
- Land Pollution Control Permit
- Water Pollution Control Permit
- EPA Permit
- Noise Pollution
PROFIT/LOSS OVER THE YEARS

Income
Expenses
Profit/Loss

<table>
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<th>Year</th>
<th>Income</th>
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Total Capital Needed for Start Up: $700,000
ETHICAL ISSUES

- Providing an incentive for waste materials will drive up the price of these materials.
- Suppliers may feel like they’re not properly being recompensated.
- It is not sustainable to only cut down trees. A replanting program needs to be offered to make this project truly sustainable.
CONCLUSIONS
NEXT STEPS FOR RCP...

- Find a way for landscapers to cut in longer lengths.
- Set up a central yard that serves the immediate area.
- Plan to set up the additional yards to supplement the central yard.
FUTURE SATELLITE YARDS

Satellite yards each with 30 minute drive zone area
ACKNOWLEDGEMENTS

Robbins Community Power
Ed Kalebich

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Carter Sterling

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Village of Robbins
Sharon Armwood
Napolean Haney