

A stylized illustration of a tree with green leaves and a branch with lightbulbs. The tree is positioned on the left side of the page. The branch extends from the bottom left towards the center, with several lightbulbs hanging from it. The lightbulbs are drawn in a simple, sketchy style, with some showing a filament. The background is a light, hazy green, suggesting a natural setting.

IPRO 347: ROBBINS COMMUNITY POWER

the spark bringing green to energy



INTRODUCTION

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OVERVIEW



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:

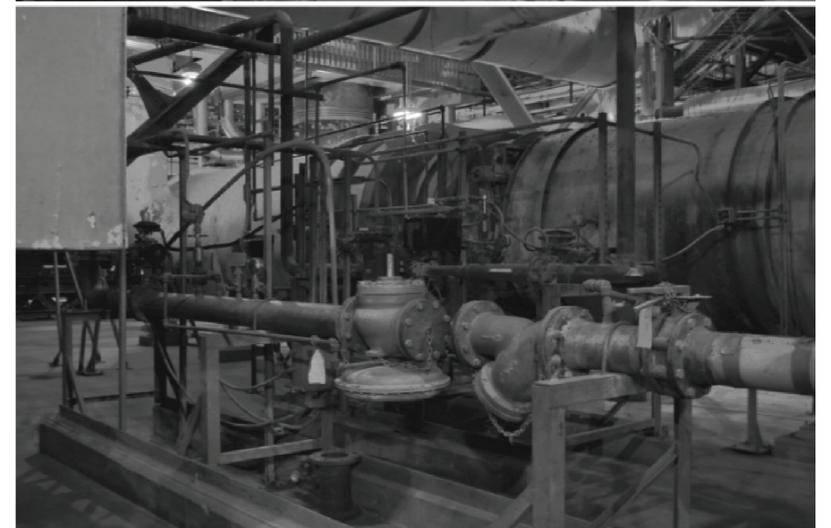
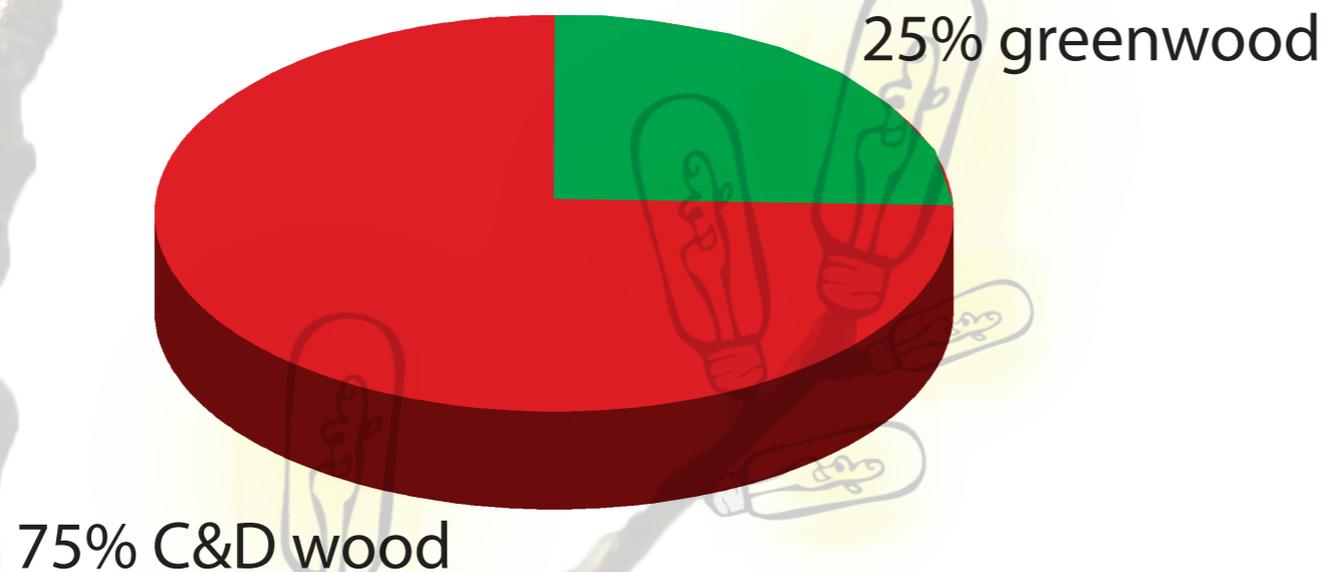
Waste Heat and CO2 Utilization for Robbins Community Power

NEEDS

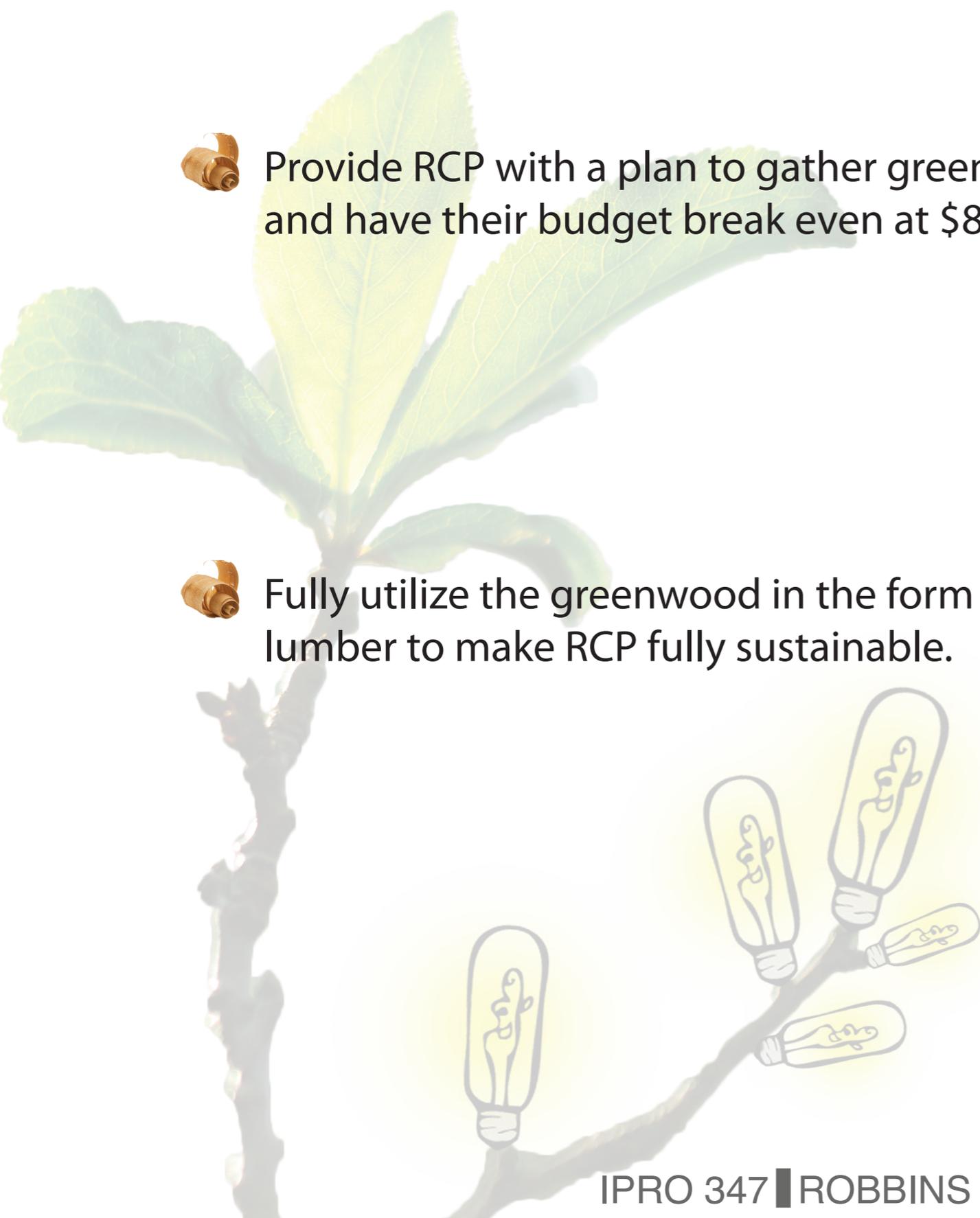
 Client: Robbins Community Power

 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



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

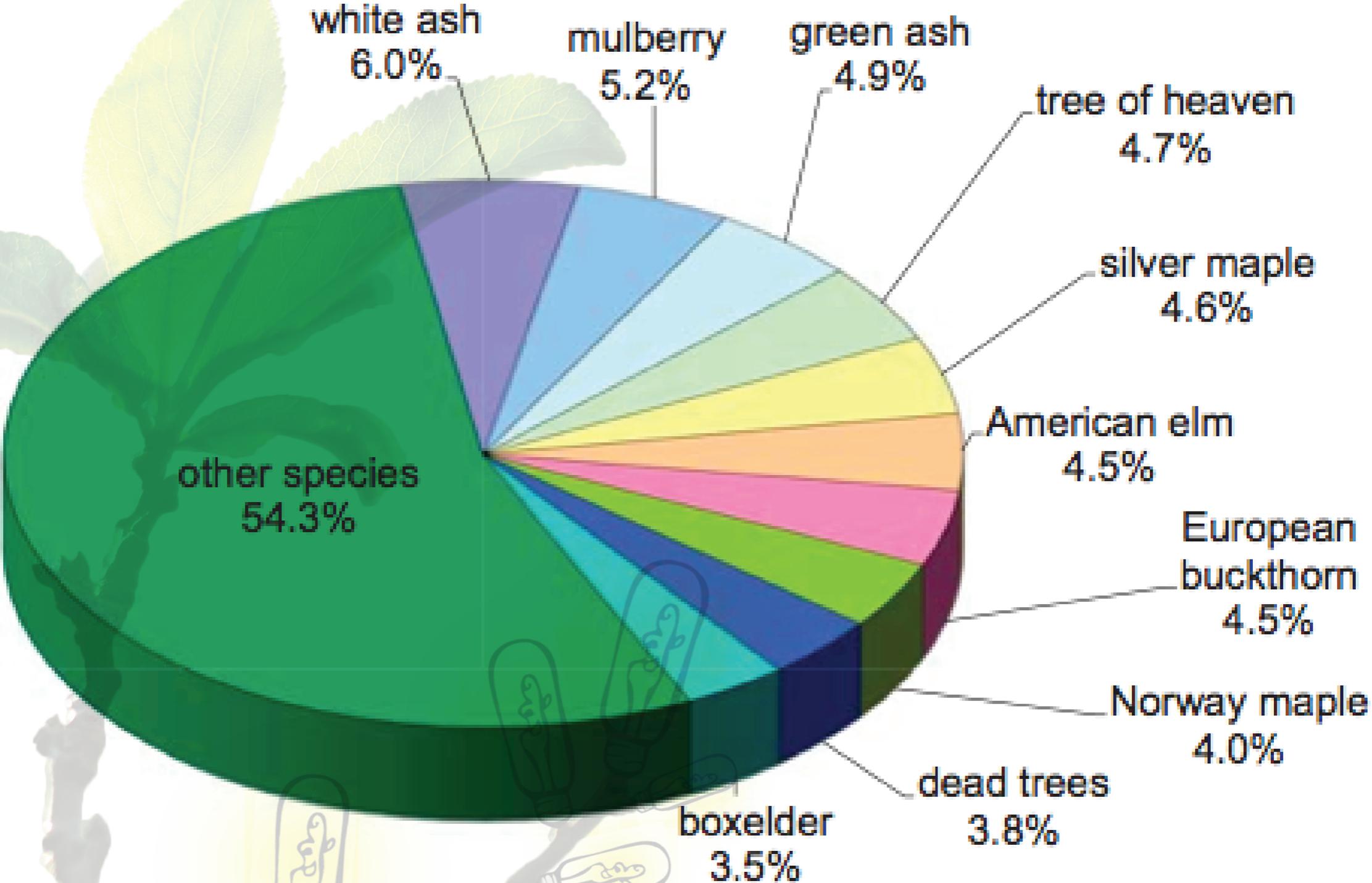
Project: Robbins Community Power

Weeks Tasks	week 1	week 2	week 3	week 4	week 5	week 6	week 7
Project Plan	█	█					
Midterm		█	█				
IPRO Final			█	█	█	█	█
Exhibit Poster					█	█	█
Abstract						█	█
Brochure						█	█
Facebook Page		█	█	█	█	█	█
Youtube Video		█	█	█	█	█	█
Business Plan	█	█	█	█	█	█	█
Site Visit		█					
Equipment Pricing	█	█	█				
Gather List of Potential Suppliers	█	█	█				
Contact Real Estate Developers to Determine Site			█	█	█		
Research Other Sawmill Business Models	█	█	█				
Morton Arboretum Wood Grading Program	█	█	█				
Tasks Weeks							

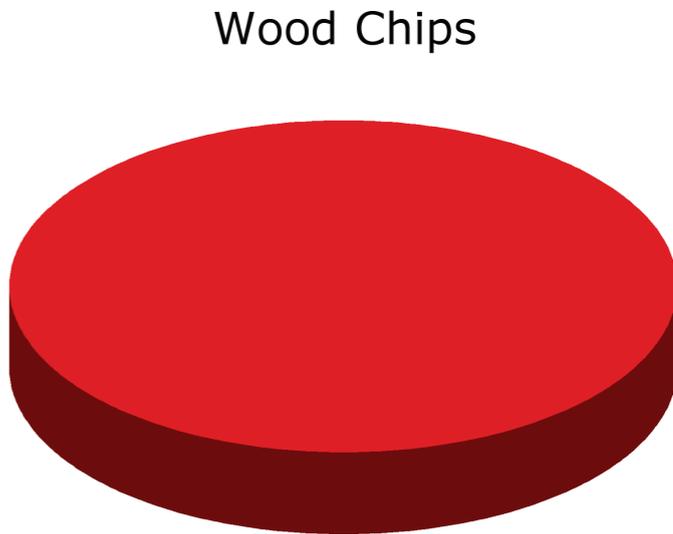
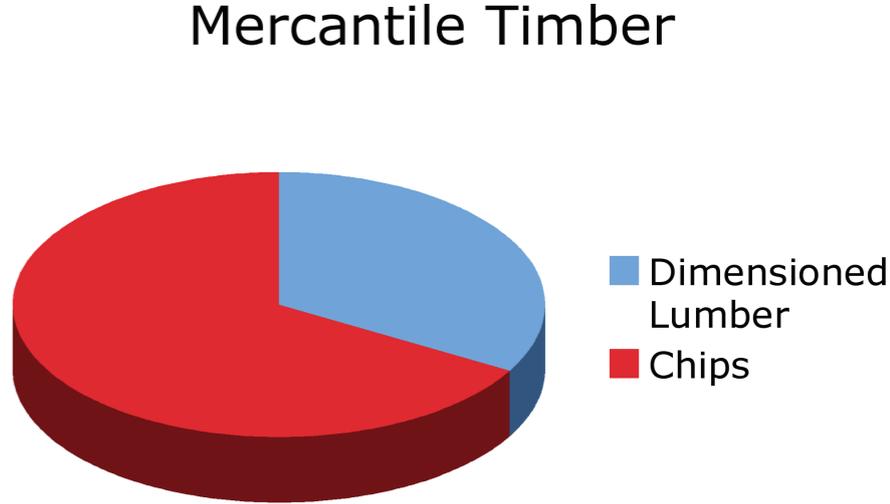
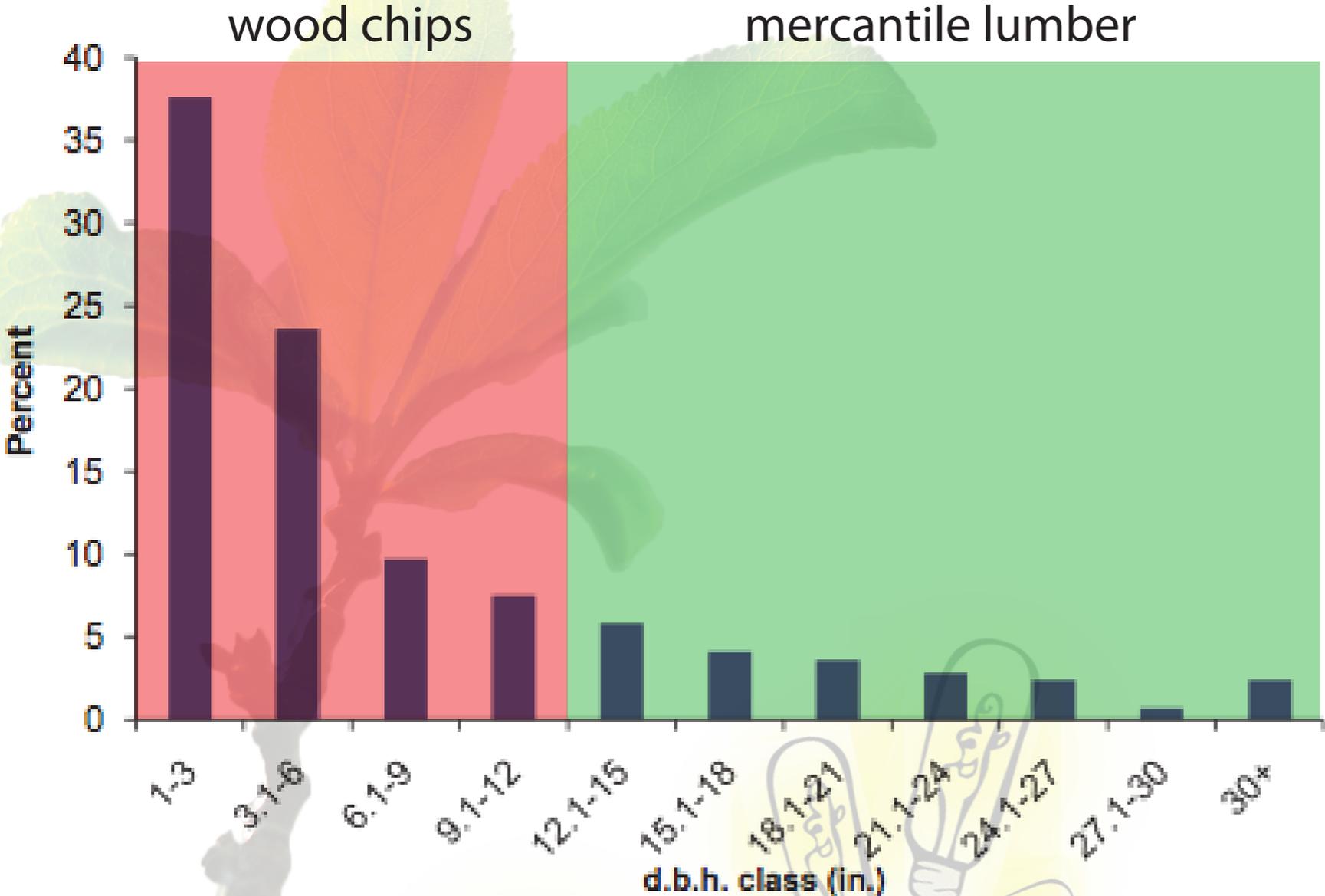


RESEARCH

CHICAGO'S URBAN FOREST



CHICAGO'S URBAN FOREST



SUPPLY PROCESS



weigh in load



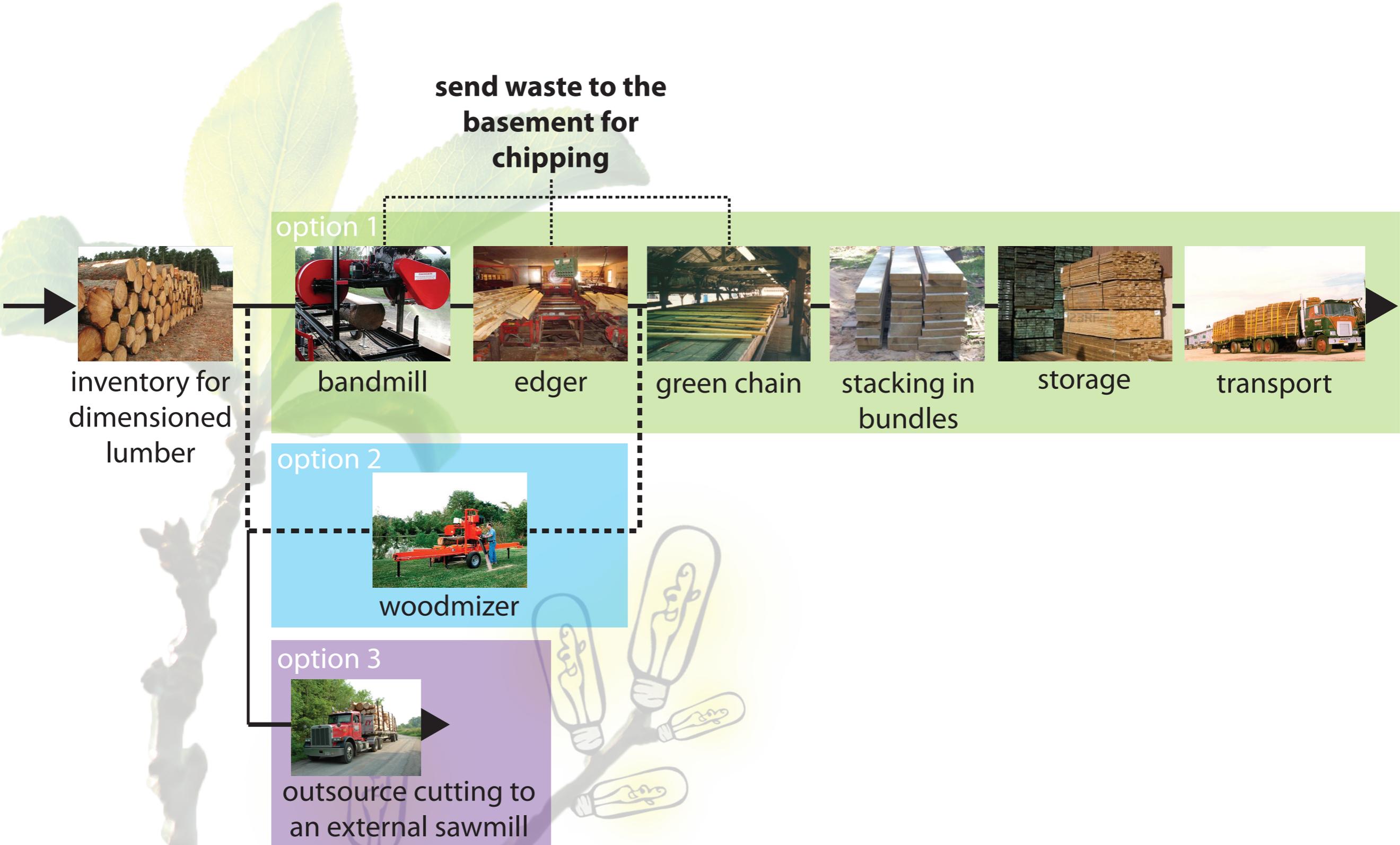
unload logs



graded/sorted



MODIFIED SAWMILL MODEL



WOOD CHIP PROCESS

wood suited for chipping



inventory for woodchips



basement to convey wood to chipper



tub grinder



wood chip trailer



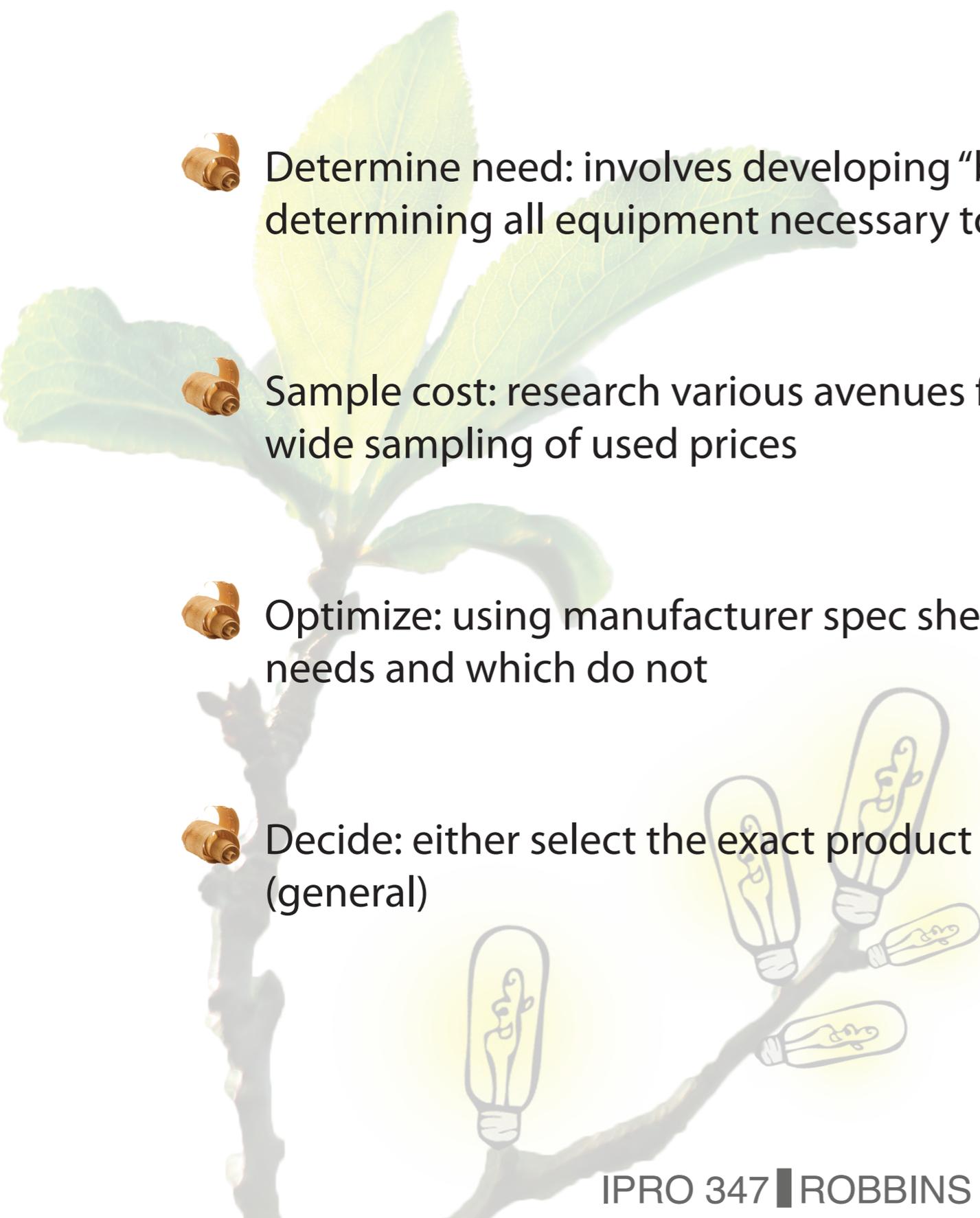
sawdust trailer



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

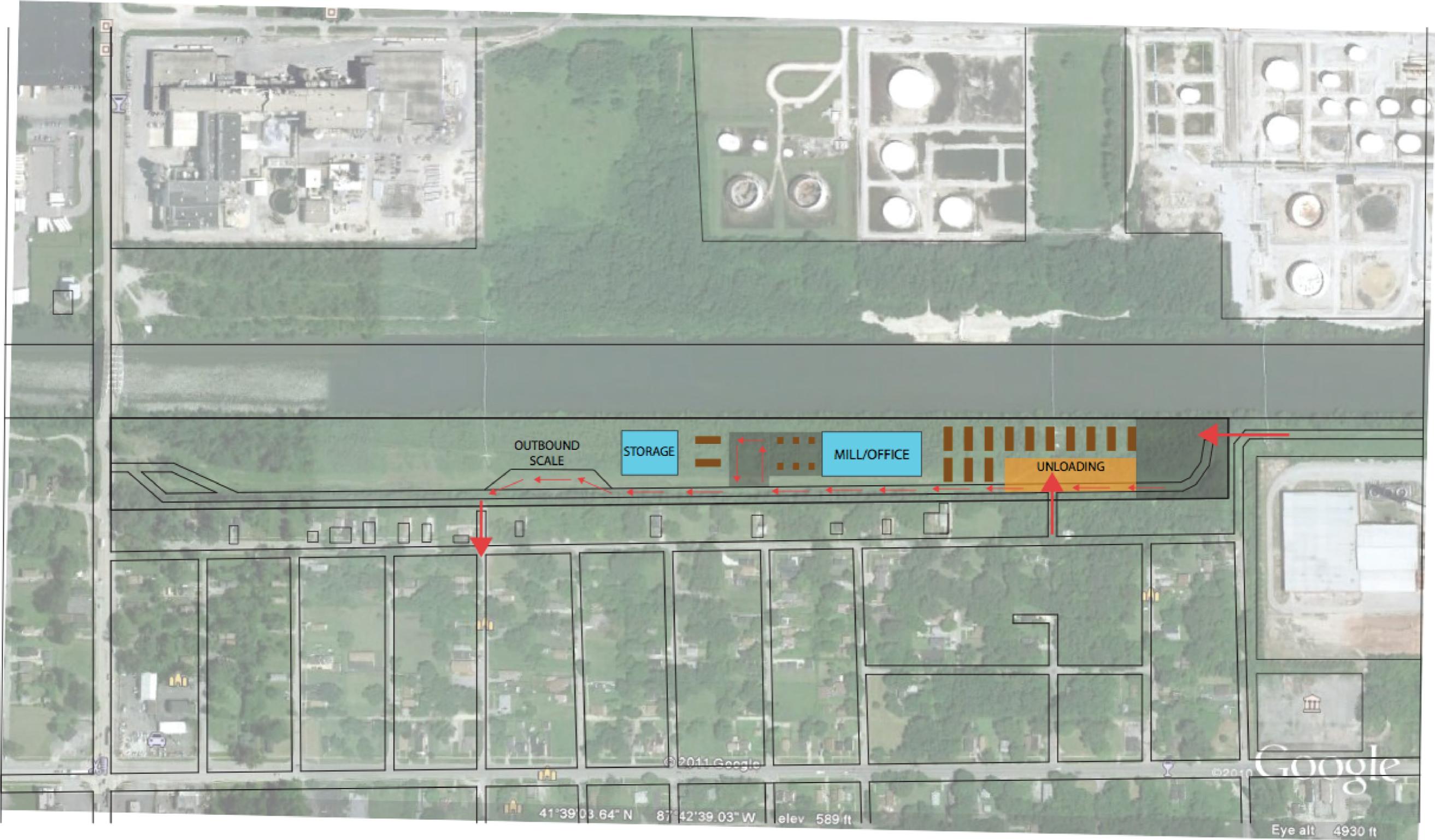
Wood Acquisition

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

Processing

-  Kiln
-  Sawmill (Bandmill)
-  Edger
-  "Green Chain"
-  "Basement"
-  Tub Grinder

SITE PROGRAM



WORKERS

- 🌀 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)



sawyer



off bearer



edgerman



stacker



stacker



grader

ADDITIONAL USES FOR SAWDUST



Mulch/Compost



Bedding for animals



Charcoal ingredient



Pelletizing



Mushroom farming



Spill clean up

LICENSES AND PERMITS

 Tax Registration

 Employer Identification Number (EIN)

 Illinois Tax Registration

 Timber Tax

 Business Licenses

 Local Permits

 Business licenses/Tax permits

 Building Permit

 Health Permit

 Occupational Permit

 Alarm Permit

 Zoning Permit

 Transportation Permit

 Insurance

ENVIRONMENTAL REGULATIONS AND PERMITS



Air Pollution Permit



Waste Management's Permit



Public Water Supply Permit



Land Pollution Control Permit



Water Pollution Control Permit



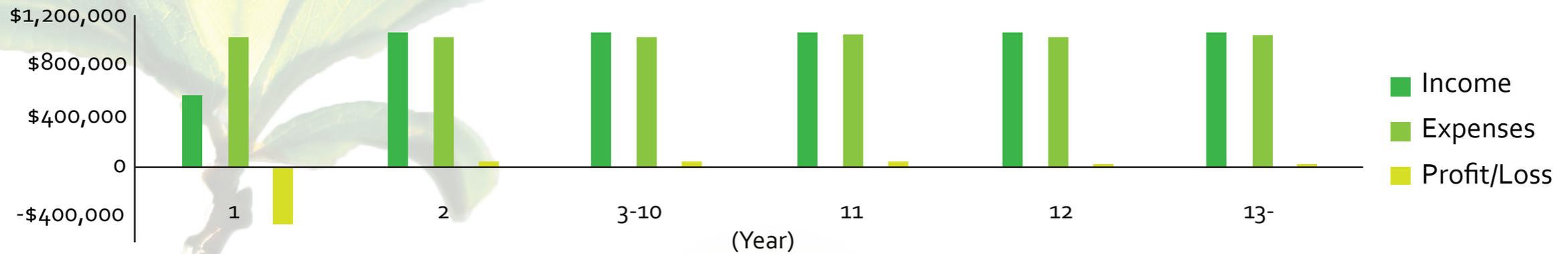
EPA Permit



Noise Pollution

PROFIT/LOSS OVER THE YEARS

Income/Expenses/Profit Diagram



**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.

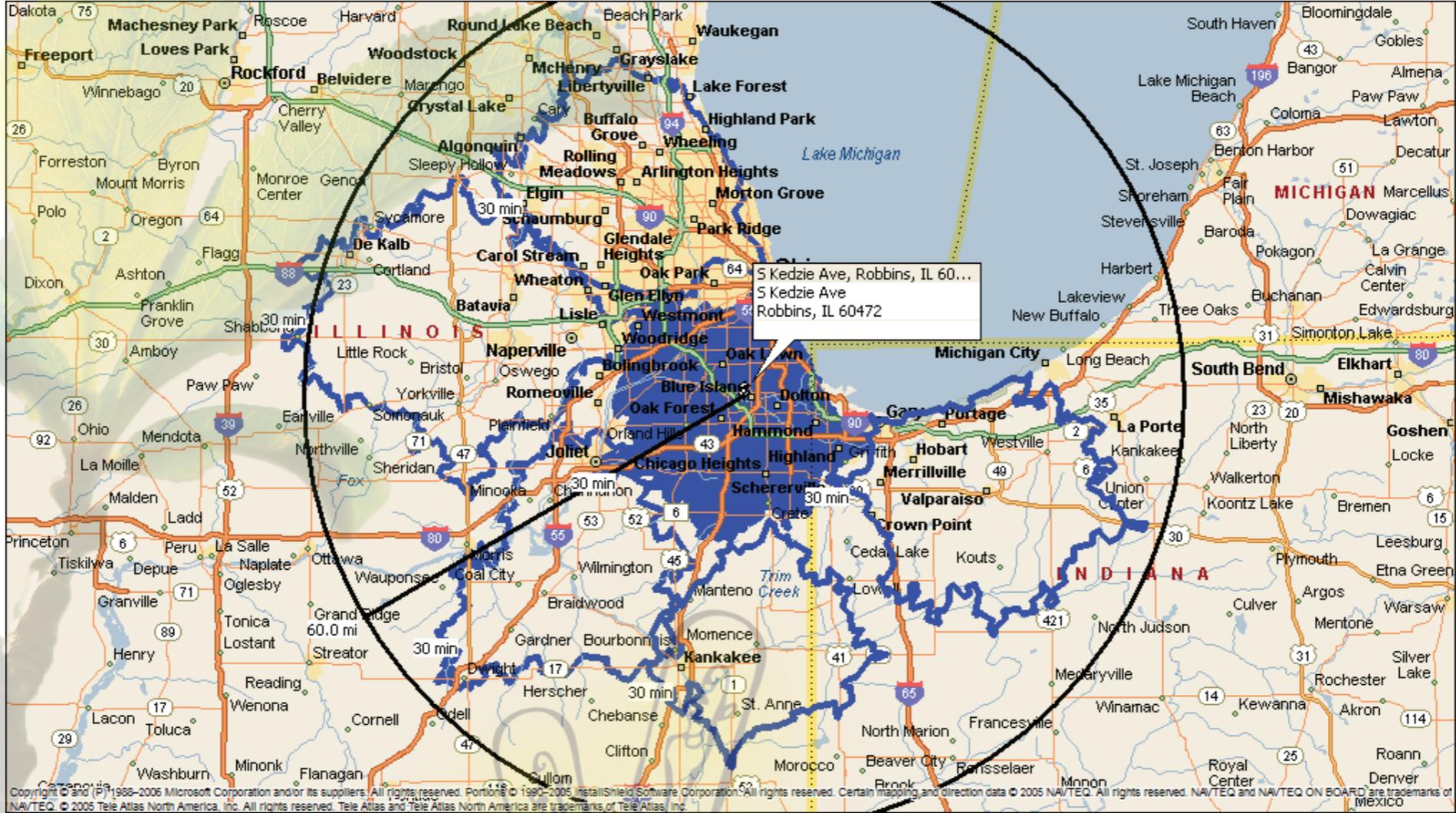


CONCLUSIONS

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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Sharon Armwood

Napolean Haney

