Greenhouse Proposal

Changing the world one greenhouse at a time!

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Mission Statement

At our school, 7th and 8th graders have a student-run hot lunch business that serves lunch for about 50 people twice a week. Currently, we buy all of our produce and approximately 40% of our meat from large chain stores. Our goal is to make our business more sustainable by building a greenhouse that will allow us to grow seasonal produce year-round, increasing our business' profits while at the same time reducing our carbon footprint and providing our customers with fresh organic produce.

Statement of Need:

CLAIM: **A greenhouse will make our hot lunch program more sustainable by increasing profit and lowering our carbon footprint.**

EVIDENCE:

- **Currently we spend about $120 on store-bought produce for our Hot Lunch business monthly**
- **A greenhouse will allow us to reduce produce costs by over 70%**
- **Greenhouse = Produce without fossil fuels and harmful pesticides**
- **Educating future students on sustainability practices**

REASONING: **We will be able to lower our business costs by over $900 each year. We will put that money towards re-investing in our business to make it even more sustainable and we will also use it to better educate our students**

Greenhouse Options

- **Greenhouse dimensions:** 16ft x 8ft
- **Price:** $5,000 + 10% discount= $4,500
- **Materials:** Steel frame with polycarbonate siding
- **Special Features:**
  - Designed for 120 mph wind
  - Snow load
  - Cold climate growing
  - Indoor fan
  - Pre-made 16X8 ft kit

THRIVING ROOTS

Jacob O'Farrell!

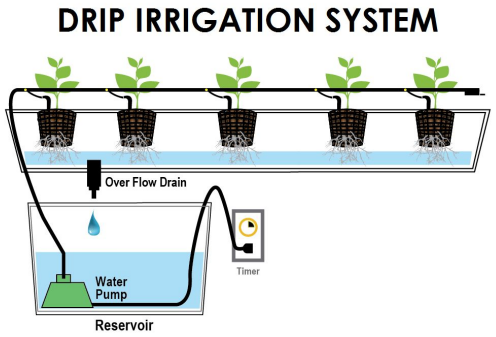
How Will We Install Our Greenhouse?

1. **We talked with Jacob O'Farrell from Thriving Roots, and we have two optimal options for installation**

Elementary building by soccer field

Behind adolescent building and kitchen

2. **We will buy a premade greenhouse kit for $4,500 (labor costs included)**
3. **It will only take about a day to install with Thriving Roots helping us**
4. **Once our greenhouse is in place we will form a committee to care for the plants and recruit students in the elementary class to assist us with it**



How will our greenhouse be environmentally friendly?

- Drip irrigation system
- No pesticides and organic produce
- Pre-made greenhouse is a more efficient option
- greenhouse will be in the direct line of sunlight

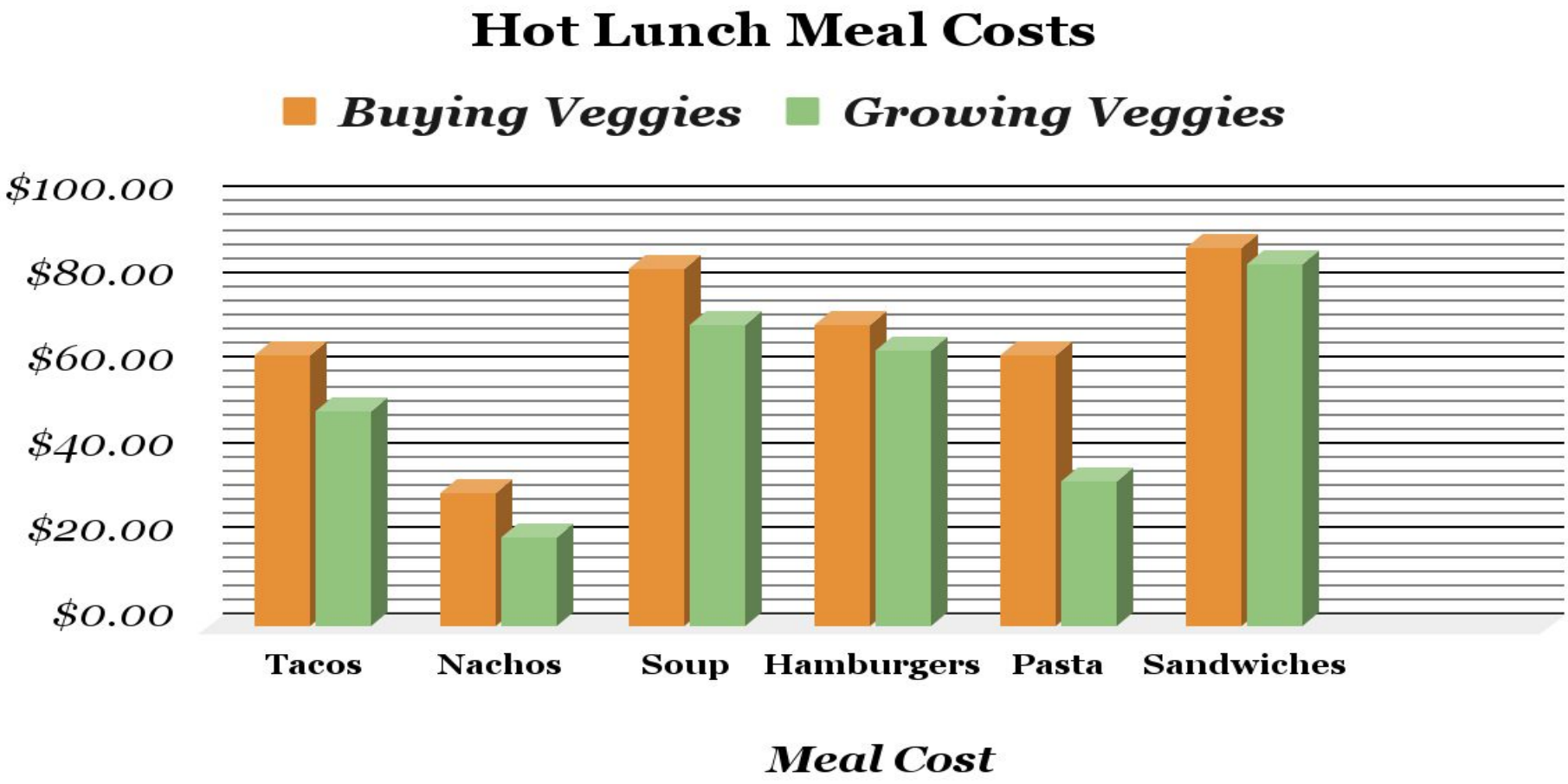
Reduces water use by 30-70%

Less chemicals on our food!

Saves 70% of time, money and energy during construction!

Reduces our greenhouse heating needs!

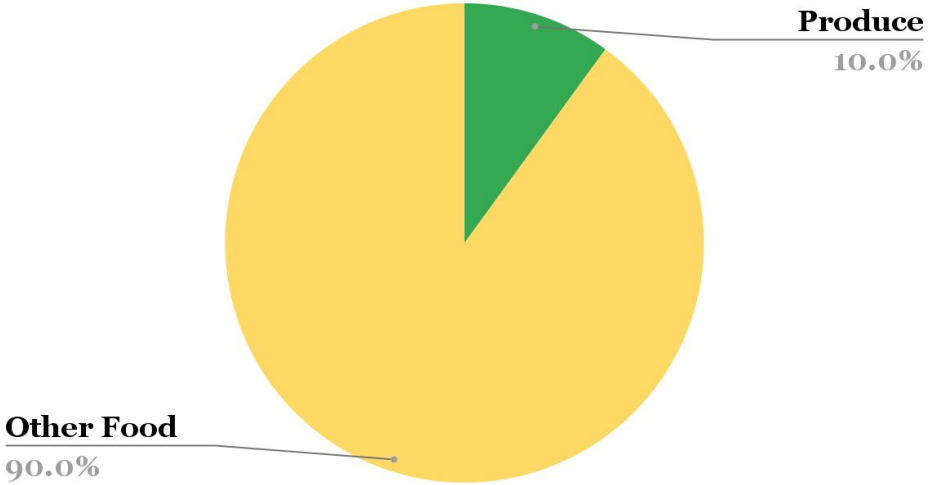
How will a greenhouse grow our profits?



The chart above shows the cost of making a meal, if we buy vegetables versus if we grow them

Profit Charts

How Is Our Money Distributed Each Month?



This chart shows how much of our expenses are spent on produce

Yearly Spending on Produce Reduction

$1,800 → **$500**

This Year

$1,300 Reduction

72%

Next Year

This shows how our produce costs will be reduced with a greenhouse

Produce Costs	
Yearly	$1,800
Monthly	$120
Weekly	$30

This chart shows how much we spend on produce (on average)

What plants will we grow?

- Carrots
- Celery
- Potatoes
- Onions
- Lettuce

How long would it take to payback the greenhouse?

$5,710÷$120= 48 months

Extra Startup Costs

Drip irrigation system= $140-$220
Seeds = about $30
Soil= about $480
Garden boxes= about $480

= $1210 in all

* We won't be able to grow 100% of our produce in the greenhouse, but we will be able to grow roughly 72%

How does the food industry affect the environment?

The average person produces 2.2 tons of CO2 due to food

With a greenhouse……

We'll save = about 94.6 tons of CO2 every year

Benefits for the Environment

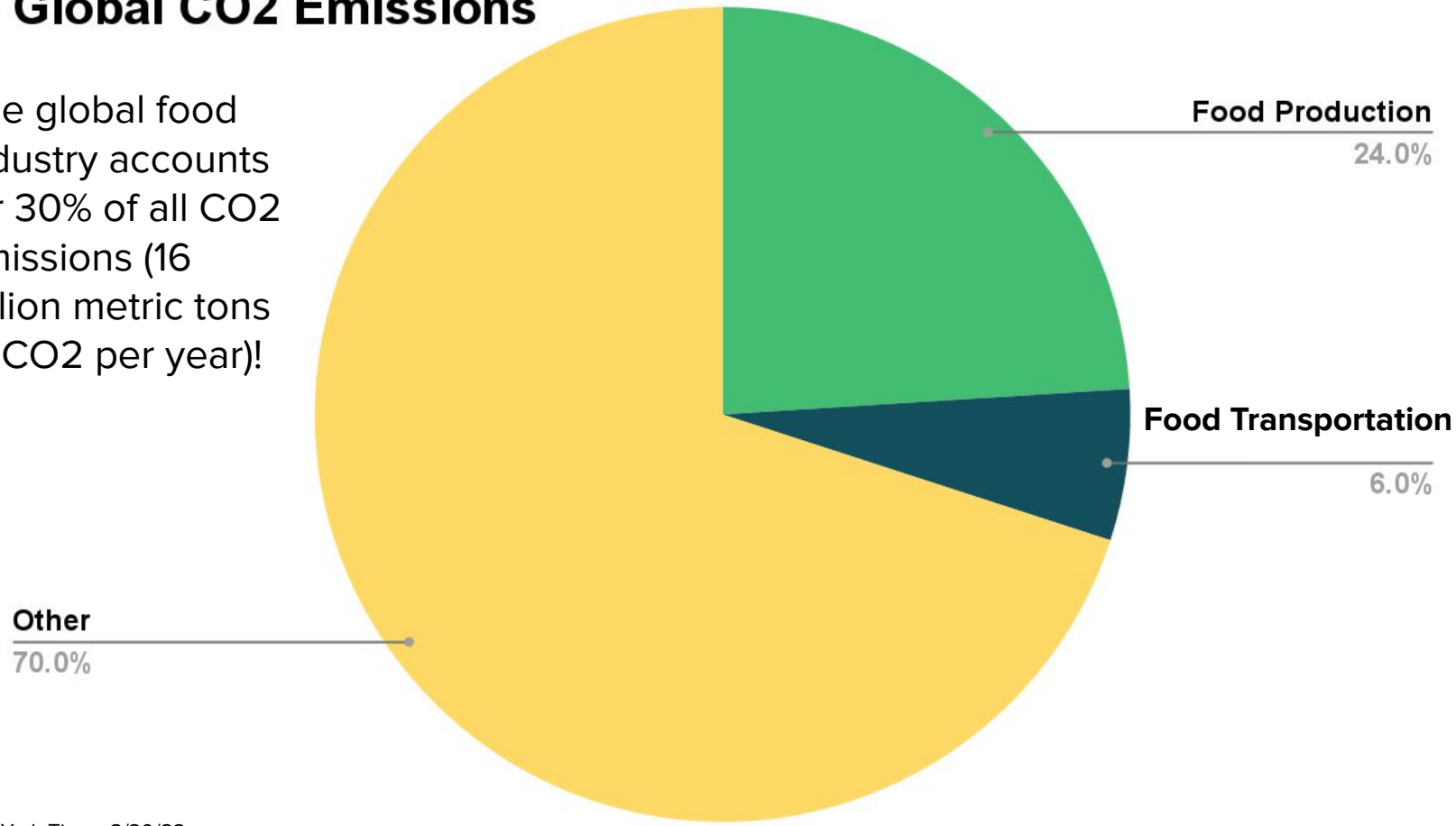
- Greenhouses help preserve the environment
- Sustainable food production
- Reduces carbon footprint

Impacts of Food Production

- Transporting food releases 6% of global CO2 emissions every year
- Food industry produces another 24%

Global CO2 Emissions

- The global food industry accounts for 30% of all CO2 emissions (16 billion metric tons of CO2 per year)!



Source: New York Times 3/30/23

Impact Analysis

A greenhouse means less harmful gasses entering our environment.

A greenhouse is a fun way to teach students about agriculture, and becoming self-sustainable.

- Our community will have access to fresh organic produce!

By building a greenhouse we lower our grocery costs. What we save will help to support our school.

$$$

Meal Cost Graph

$84 ← cost of ingredients for soup

- $12.93 ← cost of produce

$71.07 ← cost of meal without produce

Profit Pie Chart

$489 ← grocery costs

- $49 ← produce costs

$440 ← other food costs

Percentages

$\frac{\$49}{WN} \times 489 = 10\%$

$\frac{\$440}{WN} \times 489 = 90\%$

Yearly Spending Reduction Chart

$1800 ← yearly produce costs

-$500 ← ingredients we can't grow

$1300 projected savings

Average CO2 Savings

2.2 x 43 = 94.6 tons

- 2.2: Average CO2 production per person yearly
- 43: Average people we serve every month
- 94.6 tons: Average CO2 we might save

Data from carbonindependent. org

Data Collection

Timeline of Project Activities

3/14	*Class brainstorm- Selected two Sustainability Proposals and formed groups*
3/15	*Wrote project abstract and started researching the benefits of greenhouses*
3/16	*Researched local greenhouse companies and greenhouse designs for cold climates*
3/21	*Calculated produce costs from Hot Lunch Program receipts and created data table and graph of spending*
3/23	*Contacted Christin Cohee the Assistant Manager of The Greenhouse Project and Jacob O'Farrell with Thriving Roots*
3/23-3/30	*Began organizing information in Google Slides and collecting more information from research and experts.*
4/6	*Field trip to The Greenhouse Project at Carson City High School*
4/7	*Met with Jacob O'Farrell owner of Thriving Roots at our school site to select a greenhouse location and finalize pricing.*

The greenhouse project at Carson High 4-6-2023

Greenhouse Proposal Works Cited

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