# MADDIE MCGEES MOUNTAIN MUNCHIES

EMPLOYER: CHRIS MCGEE INTERN: LILY MACFARLANE P2 ADVISOR: ALISTAIR STEWART

# **About Myself**

I am studying Conservation Biology and Ecology at MSU and am interested in nonprofit conservation work in the future.

I applied for this internship because I believe pollution prevention is a key part of land and wildlife conservation.



MONTANA

STATE UNIVERSITY





# About Maddie McGee's

Maddie McGees Mountain Munchies is a pet treat manufacturing company that repurposes beef organs and fish skins to make their pet treats.

All products are made from other companies food waste, and don't contribute any food waste of their own.



## **P2 Interest**

Chris McGee created Maddie McGee's and has been running the business for about a year.

His current market is in whole food pet treats and his business is relatively new, so our first P2 interest was his manufacturing process as a one-man operation.

Our second interest was energy usage from Chris' freezers and freeze dryers.

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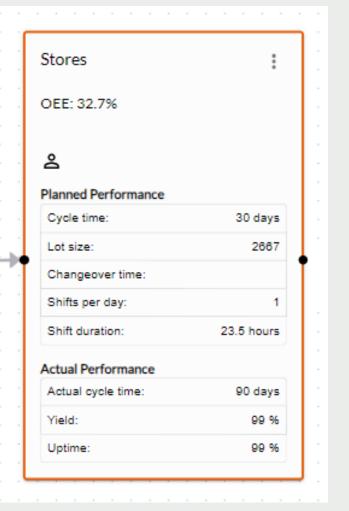
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## **Meat Storage**

Primary Constraint on VSM

About 1500 lbs. of beef was delivered each month, but only about 205 lbs. were processed and sold. Extra beef was stored in freezers for at least 90 days.

Solution: Stop buying beef and deplete stocks until only one month of beef is stored at a time and beef is bought based off need.

## **Freeze Dryers**

#### Secondary Constraint

One full cycle of meat in the freeze dryers takes 24-36 hours when the shop is cool (below 70 degrees), and 36-48 hours when the shop is warm (above 70 degrees). The machines also produce a lot of heat when they're drying which warms up the shop.

Solution: Close off an area of the shop and put air conditioning in that area to keep the room cold and reduce freeze drying time in the summers.

# EXPECTED SAVINGS

#### **Freeze Dryers:**

(1500 watts x 96 hrs.)/1000 = 144 kwh/month144 kwh x .86 lbs. CO2/kwh = 124 lbs. CO2 per large freeze dryer per month

 $(1000 \text{ watts } \times 96 \text{ hrs.})/1000 = 96 \text{ kwh/month}$ 96 kwh x .86 lbs. CO2/kwh = 83 lbs. CO2 per small freeze dryer per month

144 kwh x 0.117/kwh = 16.85 per large freeze dryer per month 96 kwh x 0.117/kwh = 11.23 per small freeze dryer per month

Total (2 large and 1 small freeze dryer): \$45 and 331 lbs CO2 per month

#### **Freezers:**

(1150 watts x 730 hrs.)/1000 = 839.5 kwh/month 839.5 kwh x .86 lbs. CO2/kwh = 722 lbs. CO2 per freezer per month

839.5 kwh x \$0.117/kwh = \$98 per freezer per month Additional \$80/month to rent both freezers

Total for 2 Freezers: \$276 and 1,444 lbs. CO2 per month

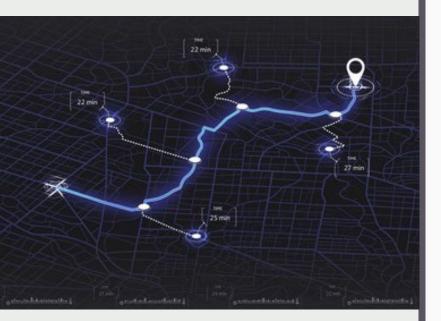


## **5S Audits and Standard Operating Procedures**

Since Chris works alone, he doesn't have many standard methods recorded for organization or use of his workshop.

We created a 90-day plan for organization of the shop based on a 5s audit of each room. We also started on some standard operating procedures for manufacturing process.

This will make work more manageable for a possible new employee.



## **Deliveries**

One part of the process that was standardized is deliveries.

We created a schedule for delivering products or mailing products only once a week and found an app that can be used to plan a delivery route depending on locations.

This saves time and transportation costs for the business.

	If Implemented:	If not
P2 Actions		Implemented:

\$
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Action	One time Cost	Annual Savings	Hazardou s material input (lbs)	Hazardous Waste (lbs)	Air emissions (lbs)	Water pollutio n (lbs)	MTCO2e emissions (Tons)	Water use (gal)	Barrier to impleme nt	Plans to impleme nt within 5 yrs
Freezer Removal	\$0	\$3312			17,328				Inventory level	Yes
Close off freeze dryers	\$500	\$540			3,972				Time	Yes



EMPOWERING BUSINESSES TO BE PART OF THE SOLUTION, NOT THE POLLUTION.

## **Reflection:**

- Stay on task, remember the program goal.

- Ask questions and use your advisors as often as you can.

## THANK YOU

Thank you to the EPA for funding this research.

I acknowledge that the work I've done in this area is located on the homeland of many indigenous nations and recognize that it is essential to understand the history of this place and its people as I grow and learn upon the land.