METHOW VALLEY

Community Compost Project

SUMMER OF 2022

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Executive Summary

We are the Methow Valley Community Compost Project team, and we are here in the Methow Valley to help Methow Recycles, a local non-profit, to create a community compost program.

Currently, agricultural and woody compostable waste gets processed for apple maggots and then dumped into a landfill. At the landfill, compostables take a long time to decay and they emit several greenhouse gasses. Essentially, those nutrients are taken out of circulation and locked in the landfill instead of being used in a more sustainable manner. We aim to divert those nutrient-rich compostables to compost facilities instead, to capture both the emissions and nutrients that would otherwise be lost.

While the benefits of composting are clear, our main driver for bringing compost to the valley is the community itself. A 2020 survey performed by Methow Recycles shows that the community overwhelmingly desires a composting waste option and access to compost products. It is our job to take some of the earliest steps to assist Methow Recycles with starting a program to collect and dispose of compostables. Although we will not be here for the implementation of the program, our goal has been to advance the research and develop a list of recommendations for starting a compost program in Methow Valley.

Through multiple interviews and outreach to stakeholders, we have been able to narrow the scope of our project. Our sponsor, Sarah Jo Lightner, executive director of Methow Recycles, has been guiding us throughout this project. Sarah Jo provided the current Compost Action Plan and introduced us to our network of stakeholders. One of these stakeholders is Kate Wynne, a community member who started a private composting project in Winthrop. Casey Bouchard, the executive director of WasteWise, is another valuable stakeholder. WasteWise is partnered with Methow Recycles to haul recycling and waste in the Methow Valley. Through our conversations with our stakeholders, we have determined that constraints on location, water, and funding prevent certain traditional composting strategies from being feasible in the Methow Valley.

We have been forced to develop creative solutions to work around these roadblocks. Our recommendations for Methow Recycles include utilizing Winton Manufacturing, a large-scale composting operation located in Leavenworth. The program is forecasted to go online in a years time and will be willing to take in the post-consumer food waste from the Methow Valley. The year-long delay gives Methow Recycles time to provide composting education in the valley as well as solidify a transportation partnership with WasteWise. We also recommend a community dispersed compost system, spread among the valley's resident composters. The compost sites would be owned and run by smaller, established composters in the valley, each taking in a portion of the communities food waste. Our final recommendation centers around a gravel pit lot in the valley: a possible location for either a biosolid processing plant or an anaerobic digester.

We suggest a series of strategies that may assist with starting a successful compost program in the valley. An education strategy will help ensure only compostable waste is in the compost bins. Strategies for acquiring funding will supplement Methow Recycles's budget. We also suggest a strategy that uses a membership program for outreach, education, and collection. Our final strategy consists of resources to obtain for compost permitting.

We have identified ways that a future compost program's success can be measured effectively. A membership program can be used to determine the percentage of the population who are engaged in composting. The next measurement method would be useful after a program milestone, such as a town hall meeting; Methow Recycles could conduct another survey or host several focus groups to determine public satisfaction with the composting program.

Introduction

Statement of Need

The Methow Valley Climate Action Plan has prioritized starting a community compost facility to meet their goal to "improve resilience and reduce emissions" (Resilient Methow, August 2022). Methow Recycles took the first steps toward implementing the community compost strategy in 2020 with a survey aimed at gauging community interest in a new composting project. The results show an overwhelming amount of desire and support for compost and composting in the Methow Valley. We have been invited to the Methow Valley to help Methow Recycles take the next steps toward establishing a community compost facility.

It is important to note that Methow Recycles' compost goals align with several of the United Nations' Sustainability Development Goals (SDGs). It is the U.N.'s hope that the SDGs provide "a global blueprint for dignity, peace and prosperity for people and the planet, now and in the future."(U.N., 2022)

For the Methow Valley to be sustainable, the community must have appropriate ways to dispose of waste. By using compost methods to dispose of organic waste, Methow Recycles can divert waste from landfills and ensure that organic material and nutrients can be used again by the agriculture in the region.

Part of establishing a responsible consumption pattern in the Methow Valley is having systems in place to handle a product's end-of-life in the Methow Valley. Having community compost provides home kitchens, restaurants, agriculture, and retailers a sustainable way to ensure waste stays local.

Decomposition of organic waste in landfills is a known source of the greenhouse gases CO2 and Methane. By diverting organic waste from landfills to compost facilites, those emissions can be captured and sequestered back into the soil, reducing the greenhouse gas emissions of the Methow Valley.

Project Goals

One of our main goals as a team when starting this project was to be able to identify the important stakeholders in the area and connect them to one another. This goal was assisted by Sarah Jo, as she introduced us to many of these stakeholders and resources. Most of these stakeholders were already in contact with one another or at least knew of each other. Ideally, as a team, we would have liked to organize a meeting to have all of these ideas and perspectives in one room but this goal wasn't feasible due to the time limit of our project. We were, however, able to utilize these diverse skillsets and perspectives to develop a list of recommendations for our sponsor and future members of this project.

Providing a thorough document of research and recommendations was another important goal for this project. We wanted to create something tangible out of the work we have done this summer and be able to contribute to the future of the project. This report acts as such a document, identifying our research findings, recommendations, and strategies to successfully implement those recommendations.

Lastly, for this project, we wanted to be able to develop a compost education curriculum for residents of the Methow Valley. Unfortunately, this goal was unattainable due to the time constraints of the project. We were, however, able to identify important resources and ideas to utilize in a future compost education program.

Sponsor

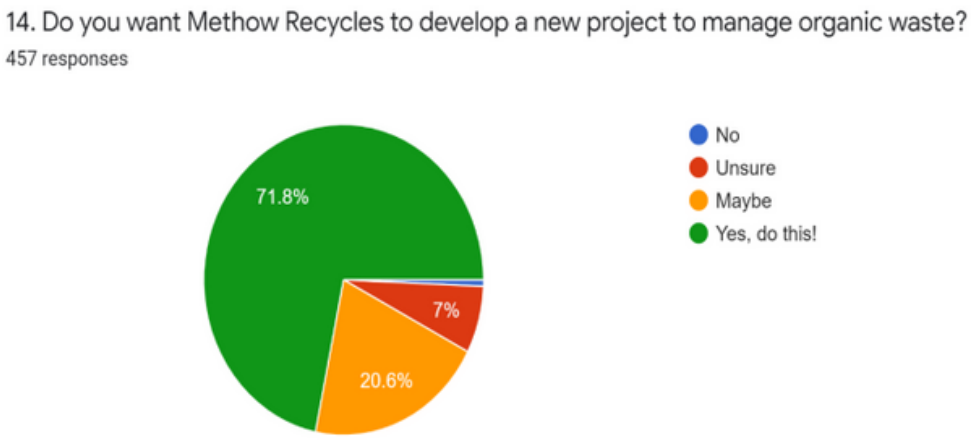
Sarah Jo, Methow Recycles: Executive Director

Stakeholders

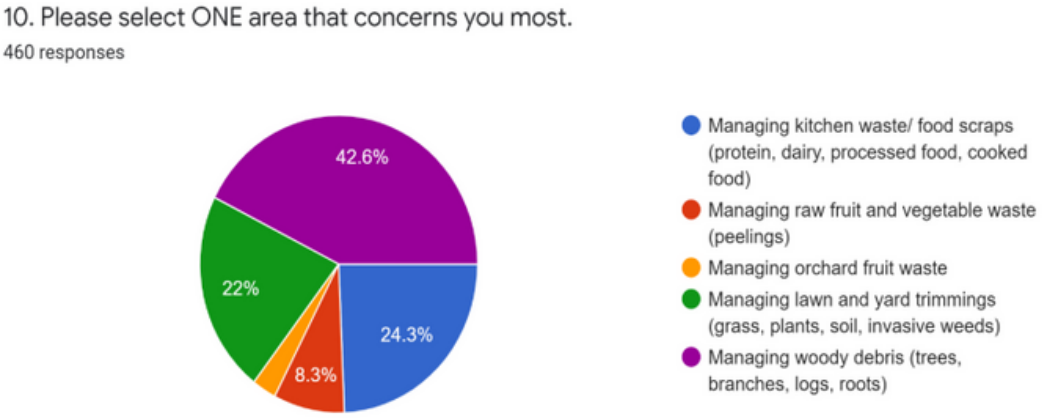
- Kate Wynne & Brown to Green
- Casey Bouchard & WasteWise

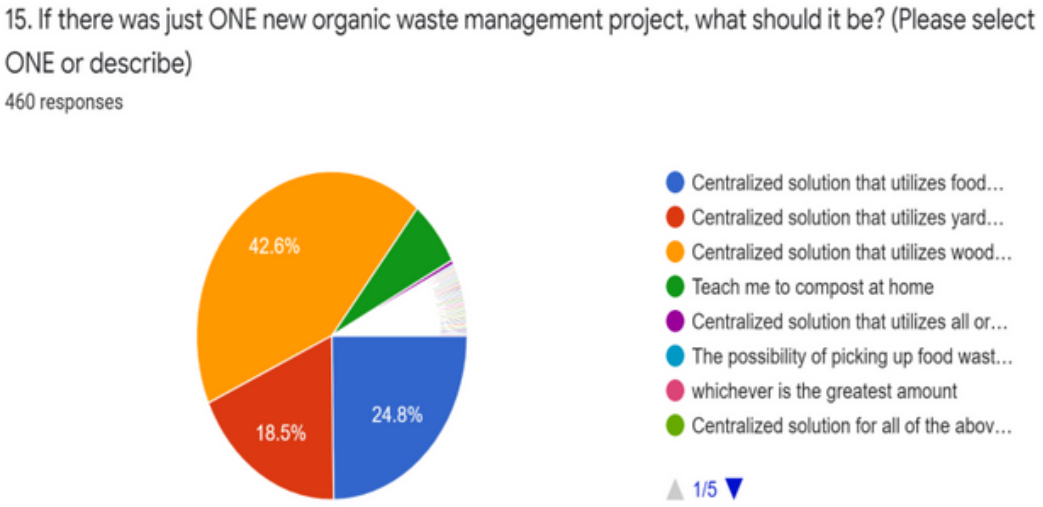
Methow Valley Household Organics Survey

Before we arrived, the Methow Valley Household Organics Survey was developed by Betsy Cushman, Gwen Vernon, and Maggie McKenna to gauge community interest in a future project to address organic waste.



The community sent in 460 responses over a 3 week period ending on July 6th, 2020. The above image shows that 71.8% of respondents stated "Yes, do this!" when asked directly about starting a new waste management project.





The survey results show a strong community desire to begin a new organic waste project in the Methow Valley. Most of the community desire is directed toward handling yard wastes. Concern over woody waste disposal and desire to begin a woody waste disposal project were the highest ranked in the community, at ~43% in the above graphs. About 25% of the community also showed positive desire in starting a community project for composting food waste.

Methodology

Evolution of Methodologies

Our initial approach to methodologies was to utilize benchmarking, interviews, and focus groups. We determined that interviews were our strongest resource; we found six people with important skillsets to our project to answer our questions about composting.

Benchmarking was going to be used to compare multiple community compost programs to determine the best components of those programs to implement into a compost program in the valley. We determined that benchmarking would not be beneficial for our project since Methow Valley has such unique circumstances and the composting programs we were looking at weren't transferable to the valley.

Focus groups were going to be used to identify community networks and connect stakeholders in addition to directing the conversation toward group goals. We determined that this methodology was not feasible in the time span that we had for this project.

Our plan for interviews was to collect insight and information from local stakeholders to help us narrow our project scope and develop project ideas. We ended up using individual interviews as our main form of methodology to expand our network of stakeholders as well as engage with expert knowledge to compile a list of recommendations. Our August 3rd field trip, as well as our interviews with Casey and Kate, resulted in several important revelations that changed the direction of our project with each new perspective. From Casey, we learned of the availability of gravel pits in Pateros. From Kate, we found out about how local compost programs work. On August 3rd, we learned of Entiat's low-cost biosolid disposal method, Waste Loop's compost disposal partnership, and Winton Mfg.'s industrial composting operation.

Interviews

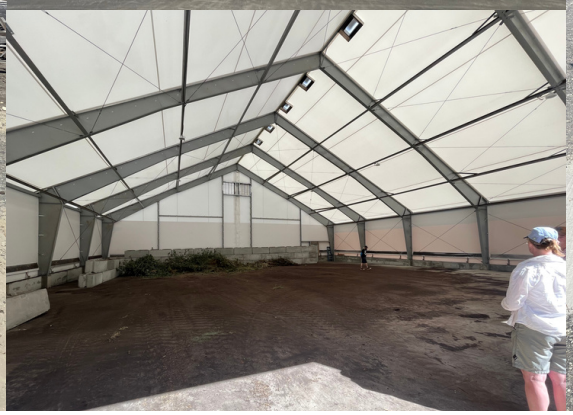
Sarah Jo Lightner	**Methow Recycles** Executive Director http://methowrecycles.org/
Kate Wynne	**Brown to Green** Founder Private Compost Operation
Casey Bouchard	**WasteWise** Executive Director http://www.wastewisemethow.com/
Thad Schutt	**Winton Manufacturing** https://www.wintonmfg.com/
Ariahna Jones	**WasteLoop** Executive Director https://www.wasteloop.org/
Mark Botello	**Public Works Community Development** City of Entiat

EXPERT INTERVIEWS	NOTES
Sarah Jo Lightner Weekly Check-ins	• Offered multiple conversations as project advisor • Knowledge of budgets, barriers, constraints • Expertise with running Methow Recycles membership program • Connected with community and stakeholders • Explain and relate feasibilty study and survey
Kate Wynne 07.15.2022 (see Appendix A)	• Has created a self-funded/self-run compost operation in Winthrop, WA • Scaling up operation with aerated static piles (ASP) on a newly built recycled asphalt pad • Receives pre-consumer food waste from local businesses and restaurants • Receives wood debris from arborists and fire wising operations which is chipped on-site with a wood chipper • Current waste volume intake is low enough to qualify from the exception of waste permits
Casey Bouchard 07.28.2022	• Will do what it takes to be our hauler • Department of ecology requirements ◦ old gravel pits (good foundation) • Can connect us with gravel pits locations • Prefers location in Pateros • Need to consider a scaleable facility for a growing population • The location needs to be considered (how far, not in proximity of housing) • Consider contamination rates
Thad Schutt 08.03.2022	• Started a industrial compost facility - previous industrial compost experience • Is fully post-consumer food waste permitted • Has no water issues • Passed on anaerobic digestors due to start-up and maintenance costs • Uses "Gore" liner system and ASPs to trap emissions • Willing to take on Methow Valley region food scraps if AMQ extends
Ariahna Jones 08.03.2022	• Executive Director of Waste Loop • Waste Loop membership program operations experience • Established Waste Loop & Winton Mfg. partnership • Education and outreach material collaboration
Mark Botello 08.03.2022	• Owns Entiat biosolid disposal program • Provides biosolids and branch disposal for community • Processed biosolids delivered to lot once a week from Entiat Waste Utilities • Once a year branches are mulched and mixed with biosolids $5k • Entire years worth of biosolids composted at once • Compost used in green spaces in community

Aug 3 Field Trip

Winton Manufacturing Compost Works

- Leavenworth, WA -



Public Works Community Developmentment

- Entiat, WA -

Results

1

Permitting

Through our research into permitting, it became clear that obtaining the correct permits was going to be a long process. Depending on what type of compost program is going to be implemented in the valley, different permits are required. According to the Washington State Legislature website, there are a variety of aspects in creating a composting program that require permitting. For example, construction, operation, and design all have different permits (wa.gov, 2022). In addition, the type of system coincides with a certain set of regulations. Solid waste permitting and anaerobic digester permitting are completely different processes.

2

Land Availability

During an interview with Casey Bouchard, who has conducted a feasibly study on having a compost Facility in the Methow Valley, we learned some vital information. From his study, he informed us that basing compost on a gravel pit is great foundational work which is a Department of Ecology requirement.

Our initial plan for a compost facility location was at Methow Recycles. However, after our discussion with Casey, we learned that there was no capacity to build a facility at Methow Recycles, according to his feasibility study. (Bouchard, 2022)

3

Costs

We have found that one of the largest barriers to starting a compost project in the valley is available funding. Currently, Methow Recycles does not have the funding for an extensive compost project budget. (Lightner, 2022)

Previous feasibility studies have been performed in the Methow Valley by WasteWise and Methow Recycles. WasteWise has found that a single, private operation would not be profitable at current waste production levels. (Bouchard, 2022) The Methow Recycles study priced several options for a low-cost compost facility, and found that extensive fundraising would still be necessary for startup. (O'Neill, 2020)

4

Working Partnerships

Every compost operation that we have contacted for this project has formed a partnership between public and private entities. Entiat Public Works was able to clear land for its lot for free by offering the dirt to a local company. They also take in trees and yard waste from the community.(Botello, 2022) Brown to Green has developed relationships with restaurants and arborists in the Methow Valley to supply their compost feedstock(Wynne, 2022), and WasteWise is a private company that provides public waste transport services, also in the Methow Valley. WasteLoop and Winton Mfg have come together to provide low cost community compost services for the Leavenworth area.

Recommendations

1

Partnership with Winton Manufacturing

Winton Mfg. will have the capacity and desire to handle our organic wastes in a year's time. Use that lead time for education and outreach.

2

Community Dispersed Compost System

There is already widespread at home composting in the Methow Valley. Encourage and support community members who take composting burdens.

3

Gravel Pit Site

By utilizing a gravel pit site as the location for a composting operation, we can apply one of the most economically feasible options for keeping the compost site within the valley.

3B
Anaerobic Digester

3A
Biosolid Processing Plant

1

Pursue Winton Mfg. Partnership

Winton Mfg. has already covered all of the startup costs and purchased the equipment required to compost organic waste sustainably (Schultt, 2022). On the other hand, Methow Recycles would need to perform significant fundraising to purchase entry level composting infrastructure. (Lightner, 2022) There may even be a cash inflow for Methow Recycles instead, as Winton Mfg. would pay for the waste that is transferred to their facility.

Even if Methow Recycles could obtain approriate funding, acquiring large scale post-consumer food compost permitting is a long and difficult process. The Washington Department of Ecology has only approved 3 "kitchen scrap" permits in East Washington, including Winton Mfg (DOE, 2022). It is unlikely that, in the near future, Methow Recycles will obtain the administrative resources required to pursue and maintain large-scale kitchen scrap compost permitting.

Winton Mfg has experience partnering with non-profits in small communities to provide compost waste services. Currently, Winton Mfg. is partnering with Waste Loop, a non-profit based out of Leavenworth. Their partnership is a part of Waste Loop's goal of turning Leavenworth into a zero waste community. (Jones, 2022) Because Waste Loop and Methow Recycles will be using the same compost services, they can also use this opportunity to connect through Winton Mfg to form a compost education partnership.

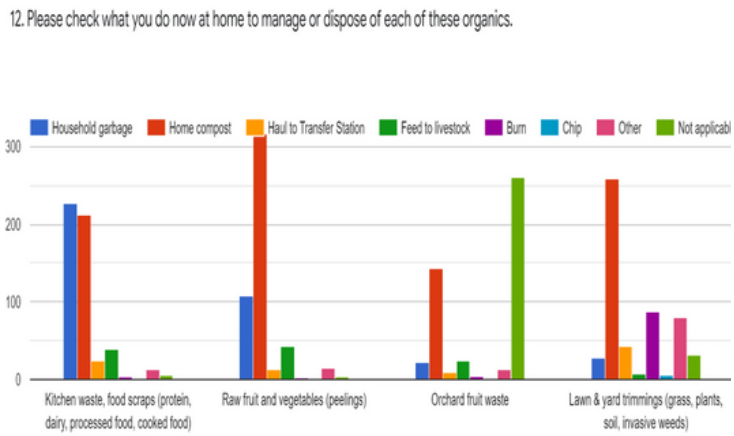
There are a couple significant barriers to developing a partnership with Winton Mfg. Unfortunately, there is currently a year-long lead time before Winton Mfg. can start accepting waste, due to equipment manufacturing delays. (Schultt, 2022) However, if a partnership is reached, this lead time can be used advantageously by Methow Recycles to provide directed compost education before services begin to ensure that compost waste collection and sorting starts off smoothly.

Another barrier is the Apple Maggot Quarantine (AMQ). The AMQ currently prevents woody organic waste from travelling between the Methow Valley and the Leavenworth area. This means that, while Winton Mfg. will still be able to accept the Methow Valley's food waste, woody waste disposal may require a different method. However, Thad Schultt believes there is a strong possibility that, within 1-3 years, the AMQ will expand to cover the east half of Chelan County and the portion of Highway 97 that connects the Methow Valley to Leavenworth (2022).

Winton Mfg Partnership One-Year Timeline

- Begin Partnership with Winton Mfg.
- Create WasteWise Collection Partnership
- Begin Collection Membership Enrollment
- Create community compost education material
- Begin Compost Collection

2 Community Dispersed Compost System



This graph to the left is where the community dispersed compost idea started. 316 community members responded that they already compost food peelings in their own homes. Over 250 residents also compost lawn trimmings, and about 200 also compost other kitchen waste.

Methow Recycling should reach out to the community's composters and assist them with expanding current composting infrastructure to keep waste local. This can look like assistance with grant writing, permit qualifications, administrative guidance, and community networking.

Community Composters in the Valley

Brown to Green

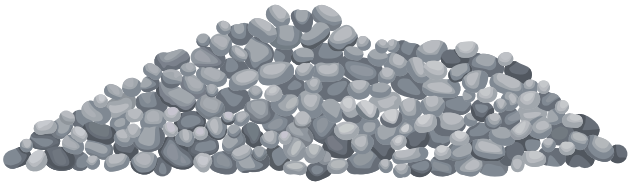
Kate Wynne is the owner and operator of Brown to Green, a compost facility in Winthrop, whose goal is to compost as much of the valley's waste as possible. Kate wants to set up a composting system that will continue to work for the valley longer than she will. Her goal is to transform the "moon dust and bowling balls" of the Methow Valley by providing a compost product that's made from clean & organic scraps, wood chips, and industrial leftovers from private entities in the valley. Kate recently expanded her operation with the addition of a 10,000 sq ft composting lot that, once fully upgraded, will be able to handle 10-20 cu yds of feedstock per week, about 10 times her current size.
When asked if she was willing to participate in a compost program that was divided among the community, her answer was simple. "Yes." (2022)

WasteWise

Casey Bouchard 's goal is to use his company, WasteWise, to provide sustainable waste collection services in the Methow Valley. WasteWise currently provides landfill and recycling collection for the Methow Valley, and they are interest in transporting food waste for community composting as well. In order to establish a regional compost facility, Casey has researched composting regulations and performed multiple feasibility studies out of his own pocket. Unfortunately, it does not appear that the Methow Valley can establish and sustain a central compost facility at this time. Instead of an central facility, Casey believes that, "What makes everything work is partnerships where people really invest and build out in their area of expertise." Casey and WasteWise have shifted tactics since they've started looking at composting in the valley. They want to focus on providing their expertise, collection and transportation, to support compost efforts. They are, in their own words, "ready to haul when the facility is in place"(2022)

3

Gravel Pit Site



During our meeting with Casey Bouchard, he discussed his findings from his feasibility study for a compost facility in the valley. He mentioned “there are many gravel pits in that area (Pateros). Which tend to have some of the foundational requirements (according to the department of ecology for commercial composting permit).” He then mentioned, “I can help you connect with people…who own them and you know are interested- the problem is the permitting and construction”. Using this information, we came to the conclusion that having a gravel pit could be a great foundation to start a composting facility. This type of location would be helpful since the Methow Valley is going through a housing crisis; there is not enough available land and the land that is available is too expensive for most people to purchase. This means that the location would need to be far enough from the city, where the crisis is most prevalent, which is why Pateros or another location would be a great option.

3A

Biosolid Processing Plant

Composting biosolids is one of the beneficial ways to treat wastewater solids. There are multiple methods in which this can happen, including aerated static piles, windrow, and in-vessel composting. Since this recommendation is intended to be on a gravel lot, **aerated static piles** would be the best way to process biosolids on-site. This process combines dewatered solid waste with a bulking agent such as wood chips and food waste. This method results in a biosolid humus-like material that can be used as compost. According to the EPA, if the composting process abides by the time and temperature regulations to produce a Class A product, that product is considered an "exceptional quality" biosolid and can then be sold (Biosolids, 2022).

By utilizing aerated static piles, the compost system is easily adaptable to the type of bulking agent and production rate. In addition, this method is relatively cost-effective in terms of construction. Although the system is mechanically simple, it requires relatively high maintenance. However, funding for operating this system could be aided by the sale of biosolid compost (in addition to grant funding) (Biosolids, 2022).

Mark Botello showing Methow Recycles a year's worth of biosolid accumulation

Mark Botello, of Entiat Public Works, has a low maintenence solution for Entiat's biosolids. On a 150 x 100 sq ft lot in town, processed biosolids from Entiat's waste treatment plant and ground branches from the community create a compost that is used in parks and other green spaces in town.

Sarah stands in front of collected branches from the community. These branches will be chipped and mixed with the biosolids.

3B
Anaerobic Digester

How do Anaerobic Digesters work?
Anaerobic digesters are a type of composting system but can have different models. AD is the process of microorganisms breaking down organic material in the absence of oxygen. The 'digester' is the built system where this process takes place (EPA, 2022).

Materials that can be processed in a digester include (EPA, 2022):

- Animal manure
- Food scraps
- Fats, oils, grease
- Industrial organic residuals
- Biosolids

Biogas is generated during this process, which is usually what pollutes the air when food scraps enter a landfill. However, the digester takes these biogases (methane and carbon dioxide) and separates it from the produced material- digestate. The carbon dioxide and water vapor is removed from the biogas, leaving methane- which increases the energy value of the biogas. Biogas is a renewable energy source that can be used to produce heat and power (EPA, 2022).

The **digestate** product is a wet mixture that can be divided into solid and liquid. Digestate can be used for a variety of products such as livestock bedding, flower pots, soil amendments, and fertilizers. This can open a variety of markets for compost/food waste products (EPA, 2022).

An article published by *Cogent Engineering* in 2016 provides in-depth analysis of the process of anaerobic digestion, including the four main steps: hydrolysis, acidogenesis, acetogenesis, and methanogenesis (Mir, et al., 2016). This article determined that of the three main types of digesters: batch, complex mix, and plug flow digester, **batch digesters** are the most cost-effect means of processing food waste.

An anaerobic digester doesn't come without its faults. For example, there are financial and operational barriers that come with using an anaerobic digester to process waste. Anaerobic digesters need consistent labor to manually load and empty the digester. In addition, constructing an anaerobic digester requires establishing capital investments since there are so many expenses in the process. Fortunately, there are a few avenues that can be explored to obtain the needed funds. For instance, applying to a series of grants such as those provided by the USDA. In the year 2022, the EPA awarded $2 million to 11 organizations to fund food diversion programs using anaerobic digesters (EPA, 2022). Researching funding opportunities through the EPA is a viable funding option in the future.

For the process of developing an anaerobic digester, Methow Recycles should pursue multiple grants. These types of grants include renewable energy grants, rural development grants, and anaerobic digester-specific grants.

Strategies

This section provides a list of strategies to employ when developing and implementing the previous list of recommendations. As a team, we have determined that these four strategies are the most important to incorporate in any future compost program.

1

FUNDING

2

PERMITTING

3

EDUCATION & OUTREACH

4

MEMBERSHIP

1 Funding

Since the budget for creating a composting program in Methow Valley is so minimal, we have determined that obtaining grants and loans are the most feasible options for funding. The USDA and DOE provide various grant and loan opportunities every year. We have complied a list of possible grants to apply to in the coming years. Most of these applications are through the USDA since DOE grants are not accessible until an organization has been approved prior. There are a number of grants and loans available specifically for rural communities, which would be a great avenue to utilize.

Title: **Composting and Food Waste Reduction (CFWR) Cooperative Agreement,** (USDA, 2022)
This is a 2022 USDA grant funding opportunity, investing $10.2 million in cooperative agreements. This grant supports local and municipal governments; might be a more feasible option after a conversation with the city council.
Grant applications close Sept. 1, 2022. Deadline coming up soon; check for grant renewal in 2023.

Title: **Community Facilities Direct Loan and Grant Program,** (USDA, 2022)
This program provides affordable funding to develop community facilities in rural areas. This program can be applied to community-based nonprofit corporations. This would be a great grant to use when building a community-based compost operation as one of the highlighted funding uses is local food systems. There is also a state-specific version of this grant.
The grant application closes on Sept. 22, 2022.

Title: **Rural Community Development Initiative,** (USDA, 2022)
This program funds rural communities to develop and improve community facilities and programs in rural areas. This grant is currently closed for the year 2022 but is a grant opportunity every year and would be a great option to apply for in 2023.
Grant award from $50,000 to $250,000

Title: **Water & Waste Disposal Loan & Grant Program,** (USDA, 2022)
This program provides funding for various projects in rural areas including solid waste disposal, which would be a great funding opportunity when creating a biosolid compost system.
This application is open year-round. This program is most likely to provide long-term, low-interest loans, sometimes with a grant provided.
Water & Waste Disposal Loan & Grant Program in Washington | Rural Development (usda.gov) Grant specific to Washington State

Title: **Funding for Food Waste Reduction Projects** (USDA, 2022)
This is a 2016 report for funding for food waste reduction projects and can help determine which programs are viable for USDA grants.

2

Permitting

A major requirement in creating a composting program is to obtain the correct permits and follow regulations. Washington State has multiple permits necessary to build and operate a composting facility. There are general permit requirements for all compost facilities, though some facilities require further permitting and others are exempt from such permits. All of the following permits are attainable through the Washington State Legislature website (Legislature Home (wa.gov, 2022)).

General permit requirements:
-All general permit requirements are listed under the Washington Administrative Code (WAC) 173-350-040

- Location
- Operation
- Design
- Documentation

Permit exemptions:
-Permit exemptions are listed under the Revised Code of Washington (RCW) 70.95.305.

- Solid waste handling
- Agricultural farm operations

Specific facility permits:

- Anaerobic digesters: This permit can be found under WAC 173-350-250
- Biosolid management: The general permit addressing biosolid management can be found under Chapter 173-308 WAC

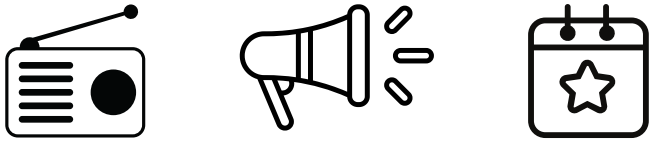
Compost product policy:
-The **House Bill 2713** was passed in 2020 regarding compost procurement and use. The revised version of this legislation can be found under RCW 43.19A.120. Washington State legislatures concluded that compost manufacturing provides numerous benefits, including diverting organic waste from landfills and carbon sequestration. This legislation is meant to assist composting operations by encouraging state and local governments to purchase and use local compost. Revisions to this code require government-funded projects to utilize compost if applicable. In addition, the Department of Agriculture will provide a program that reimburses farming operations that purchase and use composting to stimulate compost use in Washington State. The DOA pilot program ends on June 30, 2023. Methow Recycles should connect with the city council to determine how well local government is following this legislation. This bill could stimulate the purchasing of compost products on a larger scale.

3

Education & Outreach

Since education is key to ensuring that composting is done properly, here are the steps

1. Reach out to the people of the Methow valley to inform them about composting resources available to them. Reaching out through ads on the radio and events (such as tours or educational classes)



2. Create an educational guide on how to properly compost accordingly to the system in place. As you can see in the photos below they are all examples of how to inform future composters in the valley. The core parts are what can be composted and have enough information on contaminates.

Tell New England. (2016, November 28)

Jung Seed's Gardening Blog. (2021, March 11)

KS Environmental. (2018, May 07)

3. Education is essential to delivering important information to people. That is why compost training programs such as this one from Compost Research & Education Foundation may be a program to look into; they have a great training program to educate their members on starting an effective composting system.

Compost
Research &
Education Foundation

4

Membership

Methow Recycles should require compost waste producers (families, restauraunts, groceries) who want waste pickup to join a membership program. Methow Recycles should also invite local, established composters to participate in the program, which would allow Methow Recycles to create libraries to help connect composters directly to waste sources.

The idea for a composting membership springs from two main examples. Waste Loop's compost membership program and Methow Recycles own recycling membership program have both been successful tools for outreach, education, and waste collection. Each membership program has taken different directions towards serving their small rural communities, and valuable lessons can be learned and applied from both.

Waste Loop's program is not performing collection duties at this time because Winton manufacturing is not online yet. However, that hasn't stopped them from using their membership as an effective tool.
In order to join Waste Loop's community compost program, applicants must pass an educational quiz that informs potential members about important compost information. Waste Loop also provides a free 5-gallon bucket with each subscription (2022, Waste Loop).
For those who cannot join the membership, Waste Loop offers educational material on starting at-home compost solutions.

Methow Recycles has a strong recycling membership program. Currently, applicants may sign-up online or with a membership sign-up form. From there, members may either choose to pay a tipping fee for each visit or pay a yearly lump sum, which is an estimate of a year's worth of tipping fees. Once the lump sum is paid, the member may come and go as they please (2022, Methow Recycles).
It is important to note that ease-of-use was a very important comment on the recent survey. Bringing this idea forward into the new composting program may help alleviate some of the frictions of organic collection.

Monitoring & Evaluation

Membership Participation

Membership enrollment may be used as an indicator of community engagement. As Methow Recycles accepts membership enrollment, they should compare the enrollment numbers to the population of the areas that they will be able to serve. This will give them a proportional percentage of the members of the community who are joining the compost program in any given area. By analyzing current recycling membership data, Methow Recycles should be able to estimate enrollment percentages that they should consider successful for compost enrollment.

Follow-Up Survey

Methow Recycles has shown that residents of the Methow Valley are willing to respond to surveys. Once a compost plan is solidified, it will likely be presented to the town in a town hall meeting or other community event. Surveys can be used after important program milestones, such as town halls and educational events, to gauge community response and engagement.
Focus groups could also be used, instead of broad surveys, as the project scope narrows. They could be an effective method to determine community engagement and compost education effectiveness.

Conclusion

As the Methow Valley Compost Initiative team, we set out to research the most viable options for a compost facility and connect with stakeholders in the community. We conducted interviews to learn about local composting operations around the region and gain insight on how to effectively develop recommendations. We also consulted the Methow Valley Household Organics Survey, conducted in 2020 by Methow Recycles, to narrow our project scope.

Through our interviews and research, we determined the four main components necessary to operate a compost program. These include permitting, land availability, costs, and partnerships. Exploring these categories helped us identify the roadblocks of this process and brainstorm ways to overcome them.

We concluded that there are three recommendations most feasible for a Methow Valley compost program. The first recommendation is to partner with Winton Manufacturing in Leavenworth, WA to utilize their already existing facility to process the valley's food waste. The second recommendation is to develop a distributed composting system in the valley, using multiple composters and composting systems to divide the work of processing the communities' food waste. Our last recommendation is to use a gravel pit site in the Methow Valley as the location for a composting facility. This facility could either be a biosolid processing plant or an anaerobic digester.

We gathered four strategies that can be applied to each of the recommendations in order to successfully operate. These include funding, permitting, education and outreach, and membership. We hope that this report will assist in the future of this compost project and provide new resources and solutions.

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Appendix

Appendix A:
Personal communication with Kate Wynne
August 14, 2022

Hi Heather, thanks for the note- you are welcome to include me as a datapoint!
I have made a few corrections below in red.

From our initial conversation with you and the tour of your operation, we were inspired by the work you have completed as a self start-up in such a short period of time. Since we are planning to use some of the information we had gathered from you during that visit, we would first like to ask your permission to use the information. SURE Second, we'd like to make sure that the information we are using is correct.SEE BELOW - correct as-is, unless noted

From what we have deducted, your current operation is run entirely by you and is self- funded. So far. You are in the process of scaling up your operation by using the ~~cement~~ recycled-asphalt lot that you have recently created. You are currently manually turning the compost piles with shovels as well as utilizing that machine under the shed and 30hp Kubota tractor. You gather food scraps from local businesses and restaurants as well as receive yard debris that you use your woodchipper to chip. Most of the wood chips I use have come from arborists and fire wising operations.You are working on obtaining permitting to upscale your operation. This is my plan and how I am designing the new site but I haven't begun the process yet because my volume is still low enough to qualify me for an exemption to the waste permit .**Is this information correct? Is there anything important that we are missing?**

We also have a few clarifying questions:
What has the permitting process entailed for your private operation?Same as for any off-farm operation: the permit conditions and stipulations gets more onerous as the volume handled increases and when you process food waste vs yard waste/manure alone. On-farm operations have very few requirements re: testing, monitoring, and facility SOPs.
What type of composting system are you hoping to utilize on the cement lot? aerated static piles (ASP) in bays with positive aeration. I hope to build a large fabric building over curing piles before snow flies.
We know you have been looking into gortex liners; is that your main focus? I had explored the potential use of Gore covers as well as in-vessel composters but start-up costs were prohibitive for both. I will stick with ASP until a more expensive automated system is justified and affordable.
One of our recommendations in our final report for Sarah Jo includes a divided composting system across the valley, utilizing multiple composting operations. Are you interested in participating in that process and is it even feasible for you to take on more food waste? Yes. I plan to continue handling only PRE-CONSUMER food waste but hope to collect clean kitchen scraps from residents as well as a greater number of restaurants and commercial generators (breweries, wineries, coffee roasters, etc). After my ASP bay system is built on the pad, I should be able to process 10-20cu yds of feedstock per week (approx 10 times my current volume). This volume will mandate acquisition of a permit enhancement/modification.

We thank you for all your support and information! you are welcome. I can't wait to see the product of your efforts!
Hope to hear from you soon,
Community Compost Project Team

Appendix B:
Kate Wynne Brown to Green Tour Recap
August 3rd, 2022

We met at Kate's property to take a tour of Brown to Green, Kate's composting business. We discussed why Kate started Brown to Green, her composting methods, how she collected feedstock, some of the partnerships she had made in town, and some of the barriers, such as permitting and costs, that Kate overcame along the way.

Some of the more specific information we gathered includes:

The smallest gore cover, 20x25x8 ft, would cost approximately $80,000 and that cost would be too hard to recoup at Kate's smaller scale.

Kate already handles a significant input of compostable waste. She has multiple partnerships in place with private businesses that produce much of the organic waste around town; she specifically has partnerships to receive clean & organic scraps, wood chips, and industrial leftovers from private entities in the valley. Some of her partners can produce up to a thousand pounds a week of organic material a week. She wants to take on even more organic waste too.
She wants to set up a composting system that will continue to work for the valley longer than she will. Her goal is to transform the "moon dust and bowling balls" of the Methow Valley by providing a compost product she calls "Methow Gold" (even though marketing is not a priority for her right now) that's made from the organic waste of the community.
To that end she just finished the installation of a 10,000 ft square lot onto her business's property where she can perform more advanced and efficient composting techniques such as using large quantities of mulch to simulate covered air raid ecstatic piles or by performing the compost process under the floorboards of a greenhouse in order to heat the greenhouse through the winter.

She doesn't think there's a lot of funding for small private composts right now. She thinks it would be a good idea to pitch for small community compost funding to be included in the okanogan county waste Management plan.

She noted that there are significantly different regs between private composting and agricultural composting. Farmers are subject to fewer and different regulations on their farms, which makes it easier for them to start composts and maintain larger compost size.

Kate uses a combination of straw and wood chips for aeration and carbon The wood chips are generally reusable as they take some time to break down and the straw will compost along with the rest of the pile. This means that by controlling the ratio of wood chips to straw Kate can change the compost product. Kate has a section of her property that she uses almost exclusively for compost pile composition testing.

So you're saying like that. There's a lot of gravel pits in that area. There are there are gravel pits in the area OK those tend to have some of the foundational requirements OK, some of them have.
Water run off capture and stuff like that, and that's one thing you have to have for commercial compos.
You have to capture the Leech eight the material, the moisture that either falls from the sky and runs through it, or that's already in it and drains out of it.
So Leech eight is the moisture Yeah. You have to capture that and make sure that it doesn't get into the groundwater so ok, and that's a Department of Ecology requirement commercial composting permit.
So think in terms of opportunity where how does this think about gravel pits? There's there's several around.
I can help you connect with people OK who own them and you know are interested.
I will tell you. There have been conversations over many years with those people about those locations, and it's not that I mean they're all in favor.
The problem is the permitting and construction.
Part of it is incredibly expensive because of all that because of what's required on the regulations to meet those regulations, it's a very expensive build out.
When you compare that to the scale of the community, the Metho Valley, just the input doesn't economically you know like I said, there's kind of three factors.
There's the will and the sensibility for it, which is very high.
Here. There's the environmental motivation which is very high, and then there's the economic viability.
And so it's a very unbalanced equation. Yeah, it's you know like the economic viability is weighing it way down and a big part of that is the scale the amount it costs to build this kind of a facility for the scale of material in this very isolated, landlocked region is difficult.
I think want you to think about composting in the men How valley might be a more central location like maybe down along the Columbia.
Or something like that, as as a way to accomplish this and serve a greater geographic harriet and maybe increase the scale OK that's kind of my current thinking about it now short of that now I'm talking full scale commercial, co hosting there.
Short of that there are efforts underway. There's a Biochar group. Here you know they have, so they have links. They're definitely growing and they have vision and they have staff now, so they've got capacity to sort of move forward.
I think that's going to be a great thing. I think I've no doubt in my mind based on who's involved, and it's going to come to fruition.
You know whether or not you know. Everything always turns out a little differently than you imagined at the beginning, and I think it's going to evolve and be very successful OK.

You know there's Kate Wynn is doing yeah chipping and that kind of stuff and that matters Yeah.
That's great yeah. She's amazing and she's so motivated, and she's doing.
She's kind of filling a really important niche and that's for like yard, waste, room, type stuff.
That's a that's a step short of full scale, commercial composting.
You know like she doesn't take food scraps or compostable containers and that kind of stuff yeah.
But she could take branches and write needles and stuff like that.
She's got a chipper. I think she's Yeah Yeah. She does. I was able to like to her place and it was huge Yeah great.
So I mean that's a huge step forward that didn't exist before a kid started it.
You know like last summer that didn't exist. I think she's just kind of getting going. So you know those those are positive steps in the right direction.
For sure Yeah, I agree a digester is interesting that was certainly on the list of options in the past, and that we looked into you know like.
I said I've always just been like a citizen casey looking for a way to help create the facility as wastewise.
You know we're ready to haul when the facility is in place.
You know whether that facility is in the terrace or you know in twist or wherever it is OK.
Digester is interesting. I mean that's certainly an option. They're also expensive, but they're not outrageously expensive.
You can post them in a more confined area. You can scale them. You know they're scalable to the appropriate size, so there's a lot of benefits.
I think that is definitely a path to explore further in terms of like a really local type of solution.
So when you were, I know that you did a a feasibility study Yeah, you've done it a couple of times OK, so when you did the feasibility, studies kind of like what you were talking about like when you were kind of looking at like digestors or other options.
Is this was that part of your feasibility study Yeah, so everything that I just kind of shared all in context is basically a summary of the feasibility studies that we've done, and we did one originally like I think it was in two thousand and eleven or twelve, and it was just like the economic viability of it just completely sucked the ship at that time.
We revisited it a few years later. I think it was twenty sixteen or so just fresh eyes.
You know things that changed maybe the equation would be more balanced.
We learned about some new options like the digester.
We did some research on that at the time. And it was sort of at that point after that second feasibility, then I realized you know I needed to kind of divide my efforts here like thinking as the steward of wastewise.
I just needed. I can't really focus on the creation of the facility.

It's outside of the scope of what we do. You know like. I said it's like in a small community. What makes everything works is partnerships where people really invest and build out in their area of expertise and in partner with other people who have complimentary areas of expertise so that you don't duplicate capacity.
You really scale up by complementing each other and you grow your capacity that way. And so that's kind of After that two thousand and sixteen feasibility, I realize waste wise role in this will be the hauling, and when the facility gets set up separate topping Wastewise will be ready to do the holiday so check that off.
That's OK. Well we're here for that Gotcha. That's good to know, so the facility is the separate and more difficult thing.
And that's where you know. I just I think. The like the effort that Kate is making that's a really important step forward here if you want to take it to the next level and do more food waste and possibly containers, Digest is a scalable option here, depending on funding and location.
If you want to do a full scale commercial composting permitted department of Ecology, type of facility, you know I'm not sure it makes instead located up way up here in the met how valley it might mix.
It's to look a little farther down okay where it's more central to larger population areas. So what kind of like how you're talking about what location you're saying well.
The terrorist comes to mind because it's kind of like it's it's at the base of the menu Valley you've got.
You've got access to. Brewster Bridgeport Terrace itself How you know working your way up the Okinagan, you've got Omaha and Okay.
The equation changes there because this sensibility, the will weighs less I would say in the equation OK, but the scale is there.
So there's opportunity and then you've Also you know you're pretty close to Chelan and and I just don't know what's happening there, though it might not be happening on a degree there that or maybe Yeah that I have a friend who lives inland.
I don't think they're doing much. I think they just throw everything in the garbage.
I don't think they have recycling either in Chilan.
Oh really yeah from Yeah. She like goes over there occasionally just to go visit, family and stuff.
She's part of my cohort too. OK, Yeah, Yeah. I don't know much from it. I don't know a ton about what's going on in. I thought that they had recycling, but it might be pretty limited.
It's a tough like I said what we do here is very unique is a tough thing to get to work out. You know so that's but basically my those are my takeaways regarding compost and greenways.
Those are kind of my takeaways, just having done a couple of feas, abilities and just kind of been here.

Now I will also say like a feasibility might not be a bad idea oh, and then we did a third one.
Actually I forgot about this. Gwynn, a member of the Methor Cycles Board when she did one more recently, probably like in twenty nineteen.
So she did a feasibility study Yeah OK another one That's right.
Do you have any like copies of these feasibility studies or I don't have that one OK Serjeot can connect you with Gwen OK, and if Serjeot doesn't have it when we'll have it, okay, I can't remember the outputs from that one.
I'm not even sure where that one landed so okay that would be a good one to pick up on it just see where it's at.
And then the other thing is like it never hurts to revisit these topics because things change even like I've been mentioning you know that the waste stream and the recycling stream here we've noticed significant changes in the last couple of years, so maybe the equation has changed.
Now you know it's always these fields of feasibility.
Studies in my mind are just their efforts to try to get the equation to balance.
You can get the equation to balance and you've got a path forward Yeah and we just haven't found that balance yet for full commercial compounds.
So what when you were doing your feasibility study like what did you find the most in important that could help create like a composting system in the valley? I think you know locating it in the right area where you have access to the scale that will be required to make it viable okay.
I would say that is the most important thing OK to getting it on track.
And then, when you, when you were looking at like, we're looking at multiple different composting because of like or different types of composting like because you said that you were looking at digestors and then do you see any other types of compost that also made sense to you? I mean I was very open for the silver bullet like that's what I was hoping for and there wasn't one thing that stood out.
The digestor was really interesting because it was available, and I like that for our the size of our community, and I think you can you can add to it too as time goes on or add additional units like it's also you know like facility wise.
It's a little easier. I mean you still need the space and everything, but it's yeah.
You don't have all of the environmental requirements with it that you do with the other type that we were thinking about was like the traditional you'd have like a concrete pad with drains, and you would have wind rows of material.
You know blended in layers according to a recipe, so that your nitrogen and your carbon balance and the right way and then you you'd have to physically work them and turn them over.

You have to keep them warm in the winter, so they need to be under some kind of like in some type of a greenhouse, or you know something that could be erected in the winter to keep them warm or maybe heated from beneath.
I mean we thought of a lot of different yeah possibilities Yeah you know, but those were kind of the two.
Biocharr was another thing that's been part of the conversation for a long time, and then there's a group that has kind of taken that up.
And then you know just chipping and mulch and that kind of stuff that seemed like a more realistic entry point And like I said that step is being taken, which is which is great Yeah.
It's a huge step forward with Kate Yeah. It was so cool. And when you were like looking at Bioterror did you see that being something in the future that would make sense Yeah? I mean there's a lot of dependencies.
I think you know what I liked about it is it's sort of like do well by doing good kind of thing, so there's multiple benefits to it.
On the input side, you have the opportunity to be part of the wildfire management world and like.
Appropriate sustainable management of the forests in terms of thinning and everything, and then you bring this material in you process it, and then you have a product.
That's a good soil supplement that you can sell to agriculture.
So you know you have your. You have a revenue stream and a good. You're doing a good thing a service providing a service on the intake side Yeah and then you're also creating a product that has value at a market on the output side Yeah, So that is what was really attractive to me about the Biocharm model.
Now Yeah, what I don't know. I don't know much about it. I don't know how the scale works here. I don't know if it's realistic to to say that you know we're going to partner with the US service and pull all the foresting into this plant.
I don't know if that is even a thing Yeah, if I had something we would have to ask about, it's theoretical and conceptual if it could work, I really like that model where you've gone like.
You're providing a good service and you have some cash flow and revenue on the intake side.
And then you're creating a valuable product and you have some cash flow on the output side like that from a business standpoint Yeah that helps the equation down.
That's a lot more. Yeah Sarah Joe is definitely talking about warming like this composting system to like pay for itself in a way by having like some kind of product to like sell the compost to farms.
But we have to consider that a lot of farms want like stuff that are organic.
It's people don't want to take like the compost, so we have to consider that a factor and talk to those people.

And then there's another player in this equation that I'm trying to.
And that's Casey Smith cutting his men. Yes BCS haven't met him by a stock. It's really hard to get in contact with him. Yeah, he's busy, yes, he's busy. He's done a lot of things going actually. But do you have a recommendation of how I get called Do you have a cell number? We have an email.
We do not have a cell number. I don't know if that's. You'll make sure it's within the right now. If I contact him, you know that and that helps like try to connect.
You guys Okay Okay that would be helpful because I you don't leave his number away.
Yeah. I don't think that's right yeah, but um, I will thank you.
I just appreciate that Yeah, so he started making compost just out of necessity.
His parents have a sheep and lamb farm, and they needed to grow more grass to feed and then they had like what they call the oaf fall or oval, which are like the carcasses of the animals, either the babies who don't make it or the ones that age out or whatever yeah and so he started doing.
He came up with a recipe that hadn't some components of the manure oh and that's the other thing.
They had a lot of manure, so he had the manure the old fall, and and then he started mixing in the emer holes from Bluebird Grain Farms, which is like a byproduct of their processing.
It's like it's the thing at the seed. The grain comes in after you sort it. It's like this OK papery. I think it's a high carbon skip is that right. Is the whole high carbon or yeah. It's a high carbon thing so like for him, where he's got all this nitrogen in the manure.
It was a good balance, and so he started making windrows on his parents' ranch and you can see him like on your way to Mazam on the left hand side, where the sheet branches, you'll see his compost files there and in the winter he doesn't cover him or anything.
They're cooking you know. They're scamming and Snow's melting off like he's got him cooking nice and hot throughout the winter Yeah, he makes it OK and he participated like.
When Gwynn was doing her study, there was kind of a group of us.
We're talking about how to make this work, and he was part of that group.
I think it was too. Long for him like to theoretical, so he just went out and started making his own.
So ok. I think want to consider your time is there. Anything else that you think that we might have missed like talking about or anything else you wanted to mention.
In terms of the organics Yeah Yeah, I mean I've talked a lot.
I think that OK probably said everything OK anything that you might seem that might be helpful like thinking about this project or anything just be Yeah.
I mean be open minded be realistic about that equation.
I can't stress that enough you know, and there may be more inputs.

I tend to think of it in terms of social will, the environmental motivation, and then the economic viability.
And you know the goal is to get those to sort of balance out and right now I feel like the equation is heavenly laid down by the economic ability, the biggest part of that lead, the lack of scale, and so to me in my way of thinking that.
So it's like location like how do you locate this in an area where you have the potential for that scale? OK? And do you think it's possible maybe like in like a week or in two weeks or something to have another meeting with my other two classmates would be here because I think that they would also have a lot of ideas.
There's one of them in particular. I think they would have a lot of questions okay that I don't have sure OK and I will send you a email and see how about two weeks out.
You say, maybe like a week a week out. We could just take a peak OK let's see if I could OK glaring.

Appendix D:
Entiat Compost Lot Tour Recap
August 3rd, 2022

Mark Botello is the public works director for Entiat. He currently maintains a 100 by 150 ft ft² lot where he provides branch waste disposal and bio solid waste disposal for the city. Once a week a member of public works gets in a truck and transports processed waste from Entiat's waste treatment facility to the lot. Entiat also collects yard waste in the form of branches and other woody waste and once a year make grind that woody waste to make wood chips. Then once the grinding is accomplished and a year of processed waste is added to the lot they mix the mulch with the biosolids, create a windrow, and let it sit. Management of the windrow is as simple as physically observing the site for integrity while the compost pile sits and turning the piles a couple more times throughout the year. Once the process is completed the compost is spread as fertilizer in city parks and other green spaces.

Appendix E:
Winton Mfg. Tour Recap
August 3rd, 2022

Winton manufacturing is a large scale composting facility built on an old sawmill lot off highway 2 north of Leavenworth.

They are partnered with Wasteloop to accept and dispose of post-consumer food waste in the greater Leavenworth area. Wasteloop provides some basic sorting and transportation, as well as educational services and community outreach. Winton manufacturing focuses on accepting the town's food waste and composting it into several usable composts.

Thad will be operational in approximately a year. He is fully permitted. Post consumer food waste permits are prohibitively difficult to get. Only four operations including his have food waste permits on the east side. He is only waiting on delivery of equipment to begin operations. Water will not be an issue with Winton unlike composting here in the valley.

Winton Mfg. uses gore brand windrow covers that allow moisture in but not moisture out. This effectively deals with composting emissions by trapping the greenhouse gases with the moisture and precipitating it back down into the compost.

Winton Mfg. cannot be sustained only by the local Leavenworth area. Thad must reach out to food waste producers on the west side for their overflow in order to meet compost feed stock intake goals. They would be willing to take twisp and Winthrop's food waste but the Apple magot quarantine has not yet extended to the highway that links the two cities. Thad believes that the Apple magic quarantine may expand to cover that highway within the next year and would be willing to take in the valleys food waste as soon as the facility comes online.

Thad is also willing to take in yard waste and has his own large grinder for the operation. Woody material is easier to come by than food scraps on the east side though.
Thad has done research into anaerobic digesters as part of his business startup. He has found that, without constant government subsidies, anaerobic digesters do not become profitable due to high initial cost and high maintenance costs. Also anaerobic digesters do not complete the compost process in some cases. He would still need the current space for the windrows as well as investing the space and money for the anaerobic digester. The large gore covers are cheaper and work directly on the windrows so they save him both space and money while performing the same task.