

# Design Elements for a Methow Valley Community Garden

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## EXECUTIVE SUMMARY

### **Problem Statement**

The Methow Valley, located east of the North Cascades in Washington State, is a rural string of towns including Mazama, Winthrop, Twisp, Carlton, and Pateros, with an overall population of around 10,780 people.<sup>1</sup> The Methow Valley is a popular destination for second homes and retirees due to its low density, relative isolation from big cities, and abundant recreation opportunities. This translates to many of the towns' resources catering to tourists and retirees, leaving average full-time community members lacking resources. One study showed that while only 13% of the general population lives in poverty, almost a third of children in the Methow Valley live below the poverty line.<sup>23</sup> An even higher percentage (estimated to be around 50-60%) of children's households do not reach the Self-Sufficiency Standard (a metric used to calculate an individual's ability to meet basic needs without private or public assistance) according to a study from the town of Twisp.<sup>4</sup> This translates to a large portion of local community members struggling to make ends meet, with local children also struggling with the stress of poverty and a lack of resources.<sup>5</sup>

### **Description**

The following multi-faceted report offers design considerations for a Methow Valley Community Garden. Our goal in writing this report was to outline what a future community garden in the Methow Valley could include, and how that garden could increase local food sovereignty by providing a space for underserved individuals and landless community members to produce their own food. This essay is a collection of our research through finding studies about community gardens, their benefits, costs, setbacks and what would be needed in order to implement one in the Methow Valley. Our recommendations are informed based on benchmarking currently active community gardens all across the country as well as in-depth research on the benefits of community gardens and the ideal infrastructure for their continued success. Our team worked alongside two local stakeholders to develop this document for any future community garden projects in the Methow Valley.

### **Summary of Recommendations**

Our research has shown that a community garden in the Methow Valley would be highly beneficial to increase food sovereignty of residents, accessibility of healthier food and a place to build community connections. Community gardens can also serve as an education tool for students and adults alike, to help bolster mental health and to provide a space for showcasing art and hosting community events. Our research found a mix of individual and communal garden plots to be ideal, depending on the community's needs. For a small community like the Methow Valley, smaller gardens (1-2 acres) would be recommended. Accessible raised beds promote inclusivity, and shaded garden areas are good for a high-desert environment like the Methow Valley as some plants cannot handle the solar intensity.

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<sup>1</sup> (Grialou, 2021)

<sup>2</sup> (U.S. Census Bureau, 2019)

<sup>3</sup> (McCreary, 2016)

<sup>4</sup> (*What it Really Takes to be Self-Sufficient in the Methow*, 2019)

<sup>5</sup> (*What it Really Takes to be Self-Sufficient in the Methow*, 2019)



## INTRODUCTION

### Statement of Need

Throughout the entire United States, communities are plagued with a lack of healthy, fresh food. In the Methow Valley alone, 30% of all children ages 0-5 live below the poverty line.<sup>6</sup> This translates to children not having adequate access to resources needed to thrive, including a lack of regular access to nutritious food even though a high amount (about half) of all private land use in the Methow Valley is agricultural.<sup>7</sup> With dramatic climate change on the horizon, food security and self-sufficiency are also becoming increasingly valuable in case rural places like the Methow Valley become cut off, partially or completely, from the rest of society due to a natural disaster. Efforts such as community gardens help to bolster food security while providing space to grow food for those without access to farmable land. In a time where the future of our food is uncertain, educating people about where food comes from and how to grow their own food will make isolated communities like the Methow Valley more resilient while boosting people's connection to the natural world. Teaching neighborhoods to garden side-by-side helps develop strong community bonds while also improving people's mental states.<sup>8</sup>

However, a self-sufficiency study based in Twisp, one of the towns in the Methow Valley, showed that those working the minimum wage in the Methow Valley make only \$24,960 annually, well below the Self-Sufficiency Standard of \$47,729 and just barely above The Federal Poverty Line of \$21,330.<sup>9</sup> This means that a local minimum wage worker must work 75 hours per week to meet basic family needs. As a result, the Methow Valley has a significant population living with a low Self-Sufficiency Standard, creating further need for increased food sovereignty.

Community gardens stimulate community development by providing a gathering space for shared activities between community members. Being a member of a community garden is linked to higher rates of well-being, resilience and optimism than at-home gardening.<sup>10</sup> Public shared spaces are linked to individual health as well as community resilience and bonding.<sup>11</sup>

### Project Goals

Our main goal for this project was to culminate research into a document that would help people interested in making their own community garden. We have had a couple of main focus points throughout this process. First, we did extensive research on various community garden models and how they translate to real life in order to suggest an organizational structure for potential community gardens moving forward. We were also highly interested in identifying different funding sources for community gardens, as funding the initial design and construction of community gardens can be costly.

Our goals are as follows:

- 1) research various community garden models in order to suggest an organizational

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<sup>6</sup> (Room One, 2021)

<sup>7</sup> (*Methow Conservancy Land Use*, n.d.)

<sup>8</sup> (Koay, 2020)

<sup>9</sup> (Twispworks Study, 2019)

<sup>10</sup> (Koay, 2020)

<sup>11</sup> (Koay, 2020)

structure for a community garden project going forward

- 2) collect information on physical infrastructure (construction, soil, water, etc.)
- 3) identify different funding sources that have the potential to make the eventual proposal more financially sound and feasible

### **Background Research**

The research that we have been conducting about potential community gardens in the Methow Valley is inspired by the work that other change makers have been doing all around the country building community gardens for their communities. These gardens promote food sovereignty and self-sufficiency. The Methow Valley used to be relatively self-sufficient, but now relies on large corporations for food and supplies. Due to the increase of second homes and higher income families coming into the Valley, the wealth gap is widening which is affecting those who have been here for generations. This, alongside the already high poverty rate, has created a new need for easily accessible food. The development of this research for the Methow Valley helps the Valley work towards achieving the United Nations Sustainable Development Goals.



## METHODOLOGY

### **Process for Data Collection and Organization**

We have organized our data collection into three categories: 1) benchmarking other community gardens, 2) researching specific benefits of community gardens related to the needs we intend to address, and 3) researching physical design elements of community gardens such as fencing, water and soil health. The main criteria we've used to benchmark existing community gardens include:

- Garden structure (i.e.: farm, individual plots, etc.)
- Staff (volunteer, paid, other)
- Size (in acres)
- Location (urban, suburban, or rural)
- Plot types and sizes
- Funding (donations, rentals, grants, other)
- Fun facts (such as seasonal use, what happens to leftover crops, etc.)
- Other uses (education, public art, etc.)

### **Why Methods Were Chosen:**

The benchmarking research provided examples of features from other community gardens that we can replicate for our specific goals and needs. Alongside regular online research, we contacted individual community gardens by phone, email, and even had the opportunity to visit some gardens in person. Research pertaining to food security, community development, mental health, and education benefits of community gardens was also gathered. This was done via articles, books, and reputable internet sites. Additionally, we collected data by conducting a stakeholder interview with Mark Easton, a Methow Valley community member who has had hands-on experience creating and maintaining a community garden.

Our research prioritized gardens in rural settings similar to the Methow Valley. We wanted to focus on gardens that had a mix of individual as well as community plots in order to get a well-rounded estimate on costs. We also focused on volunteer-driven gardens that have ample opportunities for ecological education.

To better understand and explain the specific benefits of community gardens, we've also reviewed scientific studies, books and articles for concrete statistical information. Finally, to align the community garden goals with a more global picture, the United Nations Sustainable Development Goals were researched and taken into account when conducting the background research for this project.



## RESULTS

Based on our extensive research, the Methow Valley would be a great place to develop a community garden program. A community garden in the Methow Valley would offer numerous benefits by increasing local food sovereignty, food security, improving residents' mental health, and providing opportunities for people to come together and engage in sustainable practices as a community. There are various considerations to be made when developing a community garden and our research has consolidated these factors in relation to potential construction of a garden in the Methow Valley. The components needed for the garden include, but are not limited to, irrigation systems, soil health, fencing, community tools, overall planning of the garden for the land available and education on how to tend the garden.

It is imperative that we note the potential biases that our team has before we present the information in our report. Our team is composed of college-aged students that have a vested interest in environmental issues. We specifically chose to research this topic because we are passionate about it, and so our enthusiasm and positive bias for community gardens might be reflected in our dissemination of the information that we have gathered.

### **Benchmarking**



*(Mirrormont Photo History)*

Across the board, there are a lot of different ways that community gardens structure their

plots, organization, culture and values. Some community gardens are all individual plots, some are all communal plots and many are a mix of both. Almost every single community garden benchmarked had an organized volunteer group that took care of the garden; at least four out of the 14 benchmarked gardens required volunteer hours as a caveat for getting a plot. These volunteer systems help to reduce labor costs while fostering community connection and development. Many community gardens also integrate education into their garden's core values. In the examples benchmarked, this looks like teaching classes, setting aside plots for school groups or clubs to use, workshops, internships and even team bonding work parties.

14 community gardens from all around the country were benchmarked for our research. Data on several key factors was collected, including the surrounding population density (urban/suburban/rural), land ownership, staff structure, size, plot types/sizes/prices, funding, other uses for the garden and any fun facts. Below, we will dissect the different sections that we took into account for benchmarking to clarify the results of our research. [Click here](#) to view the original benchmarking documents with all of the raw data. We highly recommend that you refer back to the benchmarking document for increased comprehension while reading the following results:

*Population Density:* Out of all 14 community gardens, the majority of the gardens we benchmarked were urban. We attempted to focus our efforts on rural community gardens, but the majority of community gardens are urban as well as those with enough resources to have a website or web page. Out of all of the gardens, eight were urban, four were suburban, and two were rural.

*Land Ownership:* Although many of the gardens did not list their land ownership, we noticed some general themes: out of nine listed ownerships, four are with nonprofits, one is leased and four are owned by the local parks department.

*Staff Structure:* Although many community gardens did not directly list their staff structure, it can be garnered that the vast majority of staff are volunteers and not paid. Out of the 14 community gardens listed, eight had volunteer-only staff, four had non-profit staff and two had parks department staff. It is unclear if nonprofit staff are paid or not, but we assumed that they were not as gardens are generally not profitable enough to keep a permanent staff.

*Size:* Although five of the gardens did not list their size, we can still make some assumptions about the average sizes of gardens that were benchmarked. The largest garden, Shiloh field, is 14.5 acres. This is also the largest community garden in the country, so it can be counted as an outlier. The second largest garden researched is the Fenway Victory Gardens at 7.5 acres while the smallest is the Cesar Chavez Community Garden at less than an acre. More rural gardens, such as the Estes Valley Community Garden, have a population density closer to the Methow Valley. The Estes Valley Community Garden is about 100'x126' which is a little more than a quarter of an acre.

*Plot Types:* Out of all of the gardens benchmarked, seven were entirely individual plots, six were mixed communal and individual plots, and one was only communal plots. However, it should be taken into account that "mixed" gardens have mostly individual plots. Most community gardens put a larger emphasis on single plots than community or farm-style plots, but the communal plots that are kept most often donate all of their produce to local food banks rather than distribute the grown produce to the gardeners.

*Plot Sizes:* Not all of the community gardens had their plot sizes listed, but from those listed, the standard areas ranged from 4'x8' to 10'x40'. The most common plot size was 4'x8'

with 8'x16' and 10'x10' also being used in different gardens. In some gardens, the plots were all the same size, but others like Virginia Ave Community Garden and Mirrormont P-Patch had multiple types of plot sizes.

*Plot Prices:* Plot prices also varied wildly, ranging on average between \$10 to \$55 per plot. The Marymoor Community Garden's plots are extremely large, at 10'x40', and so they charge \$90/plot. Generally, the smaller the plot, the less money is charged, but the amount of money per square foot is not consistent and depends on the funding needs of the garden and the relative wealth of the patrons. Some gardens offered scholarship programs, where patrons could apply to get free or reduced cost for their plot if they qualified.

*Funding:* Only a few of the community gardens described how they raised the initial construction costs for their gardens. These, which include Fairbanks, Mirrormont, and Estes Valley, received grants between \$10,000 and \$30,000. For general funding and garden upkeep, most gardens rely on donations and plot rental income. There are a few special cases, like Almany Farm, which has a "fiscal sponsor" with the *Earth Island Institute*. The gardens that are run through the local Parks and Recreation departments move their budgets through these departments and don't have to solely rely on external sources of revenue.

*Other uses & Fun facts:* Three of the gardens benchmarked had set up some sort of program that would harvest gardeners' crops for them for donation if they could not pick them themselves. One garden in particular, Marymoor Community Garden, has a TLC (Tender Loving Care) program that will tend to the beds and harvest the crops of gardeners in good standing with medical/other issues. As was stated before, education is also a very large component of a lot of these gardens, and a large portion had information about classes offered on their websites. In addition to plots and necessary infrastructure, some gardens also featured open gathering areas, children's areas, public art, and/or honeybees. Many of the gardens also stated that they were strictly organic, and would not allow any fertilizers, pesticides, or herbicides that were not natural.





(Down to Earth Community Gardens, 2021)

## Stakeholder Interview

For the stakeholder interview, our group interviewed Mark Easton, one of the project sponsors who has prior knowledge and experience from starting community gardens, specifically in Spokane, WA. We wanted to learn more about his previous community garden and garner any valuable insight that he might have into how we could move forward in our research project. Being directly involved in the formation of the Spokane Community Garden, Mark had several recommendations and valuable insight. For plot sizes, their garden used 4'x8' sized plots for ease of access, especially for newbie gardens, rather than 4'x12' or 4'x16'. A couple recommendations with regard to plot sizes were possibly using 2'x10' planks for plots in addition to using 4'x8' to start for efficiency and maintain interest in gardening. He also mentioned using raised beds for efficiency and ease of access, and including a mix of individual and communal plots. With regard to water, a couple suggestions he offered were looking into installing panels above raised beds in order to relieve plants from the direct sunlight and allow plants to soak up more water (rather than being quickly evaporated from the surface). Additionally, he suggested researching drought gardens and seeing what principles could be applied to a potential community garden.

A couple of different factors that were considered when creating structure for the Spokane garden included land ownership, fencing, soil, tools, and ideal types of plants to grow in the garden. For tools, a community member donated a shed, and tools such as a wheelbarrow and shovels. The system they had in place was you had to ask one of the three core members (such as Mark) to borrow tools by asking for them in advance, and then returning the tool to them back before leaving the garden. There was also loam soil that was bought and brought in. Some of the ideal plants for that community that Mark mentioned were items that could be stored long-term

such as squash, carrots, beets, and other root vegetables. Additionally, he emphasized the importance of planting for shade in central/eastern Washington with the intense summer heat, as water is not enough to help the smaller plants survive.<sup>12</sup>

### **Benefits of having a community garden**



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Community gardens have been proven to offer many social, personal and environmental benefits to individual people as well as communities at large. Historically, community gardens have been used as meeting places and places of inclusivity, and have even been used in the fight against racial and economic inequality by creating a positive and safe environment for the community to gather. Giving people the opportunity to grow their own food directly yields easy access to fresh foods, as those with a garden are 1.4 more times likely to eat fresh fruits and vegetables than those without.<sup>14</sup> These home-grown fruits and vegetables are also 3-5 times more nutritious than grocery store fruits and vegetables.<sup>15</sup> Impoverished populations often have to choose easy store-bought options, which is problematic because store-bought fruits and vegetables are harvested while still green and therefore do not contain all of the possible

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<sup>12</sup> (Mark Easton Interview, 11 August 2021)

<sup>13</sup> Koay, Way Inn & Denise Dillon (2020)

<sup>14</sup> (Bradley, n.d.)

<sup>15</sup> (Berardi, 2020)



nutrients. This is especially detrimental for the growing younger generations and older generations.<sup>16</sup>

Environmentally, community gardens are extremely beneficial. When introduced to a new area, especially an urban or dry area, it creates a water- and green-rich area that would not have occurred naturally. They help combat the “heat island” effect and provide cooler areas for fauna to escape poor air quality and human inhabited zones.<sup>17</sup> The plants in the garden help filter the poor-quality city air, which essentially creates a carbon sink. This is especially relevant to low-income areas that are already disproportionately affected by polluted air. Thanks to the filtering being done by the garden’s plants and the increased local humidity due to constant watering, the hyper-local temperature near a community garden is reduced which then reduces the “heat-island” effect. The leaves shading the ground and soil also help create cool spaces to combat heat reflecting off of the ground. During the very hot dry season, this can be utilized by local small fauna and avians to protect themselves against the sun, which in turn benefits the garden by helping to keep pests out.<sup>18</sup> This doubles as a general protector for small song birds from birds of prey in both urban and dry rural settings. While the Methow Valley is not urban, it is very dry during the summers, and the wet, cool setting of the garden can encourage wild creatures and humans alike to seek shelter in the garden’s shade.<sup>19</sup>

Just being in a green space outside has numerous benefits. Studies have shown that when people are outside in a richly green area, serotonin levels rise and vitamin D intake improves. Recently, scientists have even discovered microbes in the soil that help raise serotonin levels when worked with and inhaled. Low serotonin levels are directly correlated with a number of mental illnesses, such as anxiety, depression, and OCD. When people work in the dirt and are exposed to these microbes, the microbes can work in the same way that antidepressants do.<sup>20</sup>

Community gardens can also be used as a form of therapy for mental illness, trauma, and addiction. Studies have shown that when people, particularly youth, participate in some kind of volunteer work, especially community gardens, they experience more “life satisfaction, self-esteem, socioeconomic achievement, civic engagement, and reduced likelihood of engaging in detrimental behaviors.”<sup>21</sup> The consistent care required in a garden requires a lot of attention. For people who are prone to relapsing when feeling ungrounded, it can be a positive distraction and a tool to feel present and fill a sense of purpose; this can help them take care of their mind and body. Maintaining a garden requires a lot of physical energy, which is known to destress, relax, and help reduce blood pressure. When combined with the benefits of being outside, such as decreasing anxiety and depression, it creates a very good source of healing, whether that be from mental illness, trauma, or addiction.<sup>22</sup>

## **Infrastructure**

Three important pillars to a solid and sustainable garden were identified from research collected about different physical structures: soil health, irrigation, and fencing. This type of

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<sup>16</sup> (Nicklett, E. J., & Kadell, A. R., 2013)

<sup>17</sup> (National Geographic Society, 2012)

<sup>18</sup> (Mayntz, 2020)

<sup>19</sup> (Environmental Protection Agency, n.d.)

<sup>20</sup> (Paddock, 2007)

<sup>21</sup> (Ober Allen, Julie, Alaimo, Katherine, Elam, Doris and Perry, Elizabeth, 2008)

<sup>22</sup> (Weir, 2011)

detailed information was not gathered in the benchmarking research that we did, and so this section is informed more by scholarly research than benchmarking.

*Soil Health:* According to the Soil Science Society of America, amending the soil is an important step when preparing for a community garden.<sup>23</sup> Whether you are using existing soil, raised beds, or imported soil, it is vital to tune into the soil's health and make amendments to have a healthy and productive garden. Often in urban areas, organic waste can find new life in community gardens by reviving and improving soil that may have previously been neglected, compacted, and now lacks organic material. Common soil amendments include biosolids, compost and manure. Biosoil is 100% recycled as it is the solid portions extracted from wastewater treatment which is full of macro and micro nutrients that boost the health of the soil. While biosolids meet the Environmental Protection Agency's stringent standards, they are only used in farmland settings at the moment. However, there are a number of cities researching ways to make biosolids clean enough to use in urban areas, such as personal and community gardens.<sup>24</sup> "Compost is organic material that has decomposed into a stable state that's then available for adding to soil." Compost can be used in urban settings, and some of the most common sources are like yard debris and food scraps.<sup>25</sup> Similar to biosolids, manure is a great nutrient source to boost the health of the soil, and often can be sourced from local agriculture organizations.<sup>26</sup>

*Irrigation:* There are several irrigation systems options available for gardens. One option is overhead sprinklers, which are fast and easy to set up in a community garden. There are typically three options for the type of sprinkler: impact, rotary and micro-sprinklers. A downside to using this type of irrigation is water is easily wasted since the sprinklers are not targeting a specific area.

"Overhead watering with impact sprinklers is great from the point of view of installation cost and ease of use. Unfortunately, water is truly "thrown" into the air -- some lands on plants, some lands on pavement or walkways and some simply evaporates. Since water is landing on top of the plants instead of directly on the roots where it is taken up by the plant, there is additional potential for evaporation. Also, when leaves remain wet for an extended period of time there is an increased likelihood of disease problems."<sup>27</sup>

Another type of irrigation is hand watering, which has both pros and cons. A couple of the pros are the water can be directed to the ground rather than the tops of plants (like with overhead sprinklers) and hand watering allows for flexibility, so that multiple people can be simultaneously watering their individual plots in a community garden. However, a disadvantage is running the risk of over or under watering plants if the person is inexperienced, and how the task can be time intensive which is not accessible to people without a lot of free time. The third type of irrigation is a drip irrigation system. Drip irrigation is very efficient because it does not require very much pressure to operate, and only uses a low flow of water. Additionally, there is less/no risk of the

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<sup>23</sup> (*Community Gardens*)

<sup>24</sup> (*Community Gardens*)

<sup>25</sup> (*Compost Cooperative Training*)

<sup>26</sup> (*Community Gardens*)

<sup>27</sup> (Berle & Westerfield, 2013)

soil drying up, and the leaves stay drier which helps prevent disease. It is a simple system to install since it just requires a couple pieces: “pressure regulator, filter (those holes in the tube are very tiny and can be clogged by soil particles) and tube connector”.<sup>28</sup> However the disadvantages of a drip irrigation system is in a community garden environment, it can present a tripping hazard as the tubes run along the top of garden rows, especially if there are raised beds in the garden. Another issue is rodents or other small animals may chew holes in the tubing.

*Fencing:* When thinking about fencing, it is important to take into consideration what kind of atmosphere a fence could create. On one hand, some research has shown community members feel more ownership when a garden is unfenced, and on the other hand some feel more secure with having the garden be fenced and closed during the night. Another factor to consider is wildlife, especially with the high deer population in the Methow Valley. It is also important to consider city regulations for fencing such as height requirements or material.<sup>29</sup> There are two options that could potentially be used for a community: one is standard wood plank or chain link, another is natural fencing options such as trees and shrubbery. Alternatively, use both so while the trees and shrubbery are growing and maturing, the garden is still protected. Benefits of natural fencing include it is a cheaper alternative to manufactured fencing, it supports ecological diversity, acts as a natural pest control, acts as a windbreak, and strengthens the soil. The two main types of natural fencing are live fence posts, which are plants supported by other fencing material, or live barriers, which are completely made up of trees and shrubs.<sup>30</sup>

## **Water Use and Conservation**

Considering the dry and arid climate of the Methow Valley, it is very important to consider different methods to conserve water, especially during the hot summer season. An article written by the University of Georgia details different sources of water for gardens and describes amounts of supplemental water needed depending on the season and rainfall.<sup>31</sup> Each of these sources come with pros and cons. Municipal water is clean, safe and requires no pumps or filters. However, it would require a waterline nearby and connection within a few hundred feet of the garden. River water is a great natural source of water, however a pump and filter would need to be installed to get the water to the garden and filter out sediment and other contaminants. This often requires permits and creates environmental disruptions. Rainwater can also be used to water gardens. Methods for rainwater collection could include rainwater barrels around the garden, and including gutters on structures that filter into barrels to be distributed around the garden. However, rainwater is often not enough to keep a garden watered throughout the year, and therefore the above alternatives need to be considered. The article mentions different factors that need to be considered when measuring the amount of water that will be needed, including soil type, crops being grown, rainfall throughout the year, and overall gardening practices.

The following helpful quote is from a journal article from *Water Well Journal*. This is part of a six part series that helps build an understanding of the relationship between soil, water and plant relationships, and helps calculate how much water would be used in an area depending on soil type:

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<sup>28</sup> (Berle & Westerfield, 2013)

<sup>29</sup> (*Community Gardens*)

<sup>30</sup> (Worst, 2021)

<sup>31</sup> (Berle, 2013)

“In general, plan for water needs based on the average water used by a vegetable garden in the middle of the summer when there is little rain -- about 1.5 inches per week, which translates to about 1 gallon of water for every square foot of garden space. A small 10 x 20 garden plot would require 200 gallons of water per week to continue growing at a healthy rate. A raised bed with improved drainage will require even more water.”<sup>32</sup>

In an article, NeighborSpace discusses different techniques that can be used in a community garden in order to preserve water resources and make the most of every drop. Some of these strategies include watering in the early morning or evening to avoid evaporation, investing in high quality hoses, spray nozzles and other tools to reduce leaks, and communicating with gardeners what types of irrigation can be used (drip lines, hand watering, etc.) and turning the water off at the source (facet, etc.) after every use.<sup>33</sup>

Different water conservation strategies are explained in an article by Aurora Water, where they focus on the benefits of building healthy soil to help retain water and nutrients. One of the strategies is composting, and the article states that adding just 2 to 3 inches of compost every year can not only help reduce water use, but can also help keep out mildew and weeds, and retain nutrients for the soil and plants. Wood chips, fresh grass clippings, and peat moss are not recommended as a replacement for compost, as they are either nonrenewable or deplete soil's nitrogen. Another strategy is mulching, which helps keep soil cooler and also helps prevent weeds. However, this article warns that if applied too early, mulch can slow the growth of plants, so gardeners should wait until they are at least 6 inches tall.<sup>34</sup>

### **United Nations Sustainable Development Goals<sup>35</sup>**

Created in January of 2016, The United Nations Sustainable Development Goals (SDGs) are a set of goals to “achieve a better and more sustainable future for all” by 2030.<sup>36</sup> Thanks to the COVID-19 Outbreak, many unknown inequalities were revealed around the world, and now these goals have a renewed interest. Completing a community garden project can make progress towards achieving a majority of the 17 United Nations Sustainable Development Goals, but there are six goals that are incredibly applicable. In order to do align the potential community garden with these goals, the following goals will be outlined in detail of how they correlate with the garden: “No Poverty” (1), “Zero Hunger” (2), “Good Health and Well Being” (3), “Reduced Inequalities” (10), “Sustainable Cities and Communities” (11), and “Responsible Consumption and Production” (12).

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<sup>32</sup> (Price, 2019)

<sup>33</sup> (*Community Garden Water Audit*)

<sup>34</sup> (*Water conservation tips for community gardens*)

<sup>35</sup> (United Nations, n.d.)

<sup>36</sup> (United Nations, n.d.)



# SUSTAINABLE DEVELOPMENT GOALS



(United Nations, n.d.)

The first Sustainable Development Goal and goal that fits best with a potential community garden project is the goal of “No Poverty”. No poverty means that everyone has adequate resources to live a fulfilling life. This is oftentimes emphasized by a lack of funds, and as a consequence less food in the household. Community gardens help battle poverty the same way they help battle food insecurity: it helps get better fruits and vegetables in peoples homes. Most community run gardens work with local food banks in order to help get more fresh foods into people's diets as opposed to the nutrient-lacking canned food that frequents donation centres. Many community gardens have a separate garden plot just for donation to local resources. Canned foods often hold chemicals that either break down necessary nutrients, which puts strain on the body to compensate for making them themselves, or hold processing chemicals that are bad for the human body in the first place, such as BPA.<sup>37</sup> Fresh fruits and vegetables contain nutrients that are necessary for the human body when growing, which is something that many impoverished children lack.

Sustainable Development Goal number two is “Zero Hunger”. According to the Food and Agriculture Organization, more than 690 million people around the world suffer from hunger, and over 135 million of them suffer from acute hunger.<sup>38</sup> Thanks to COVID, many more have fallen into hunger due to people being let go from their jobs, stores closing, or shelves being empty. With a majority of the people suffering from hunger being from urban areas, the best thing to curb the growth of hunger is to help provide good, clean, and easy to get to foods. Community gardens, when put in low income areas, have shown to help get people more involved with growing and cooking their own foods. While it may not stop hunger, it will help the fight against nutritionally stunted children who are growing up in such harsh conditions. Store fruits and vegetables are grown in such a way that they’re picked before coming into the proper nutrients,

<sup>37</sup> (Environmental Protection Agency, n.d.)

<sup>38</sup> (United Nations, n.d.)

and canned foods tend to lack even more nutrients than that.<sup>39</sup> Community gardens can help provide easy foods to those participating in the growing of the foods, and if the excess food is donated to the local food banks, it can grow the reach beyond that.

The third Sustainable Development Goal is also the third in our list: “Good Health” and “Well-Being”. This SDG has been a very high focal point in the past year and a half due to COVID-19. While a community garden might not be able to help with COVID, it can help with the epidemic of unnourished and mentally unwell people that is slowly becoming more and more of a concern. Mental health is something many people are unable to receive support for, especially due to high medical costs. However, you can get healing right in your garden. Studies have shown that mental health has a much higher impact on bodily health than most people realize.<sup>40</sup> People with depression and anxiety are more likely to have cardiovascular issues later on in life than those without, and people with issues like schizophrenia are 3 times more likely to die of respiratory disease than those without.<sup>41</sup> Most of the mental health issues today are related to some kind of serotonin deficiency, an answer to which can be found in the dirt. Studies have found microbes in the soil that when interacted with or inhaled, helps release serotonin and reduce stress.<sup>42</sup>

The fourth Sustainable Development Goal we are focusing on is “Reduced Inequalities.” This is especially visible now, as the COVID outbreak has shown and deeply emphasized just how unequal situations are for people all across the globe. This is prevalent in low income communities and communities of color, both of which are at high risk of being hit with hunger and poverty. Many children of color and children in low income households spend less time interacting with natural and clean environments than their higher income counterparts. This lack of time in nature can lead to developmental issues later in their life, which results in further subdignation and continues the cycle of poverty over again for their children. The best way to combat this is by getting those in less fortunate circumstances out in natural environments, the second best way is to get them interacting with gardens as soon as possible. Time in nature helps children grow socially and creatively, their being outside helping promote productive brain growth that will help them later on in life.<sup>43</sup>

Sustainable Development Goal number 11 is the fifth one goal for the garden, which is “Sustainable Cities and Communities.” According to the UN, “more than half of the world lives in cities”, and due to the rapid expansion of people moving to cities, there has been a boom in people living under poor conditions in dangerous communities.<sup>44</sup> This incredible amount of sprawl means that much of these poor conditions are due to nearby factories, the air and land quality tends to be extremely unhealthy, and creates what is known as an Urban Heat Island. Urban Heat Islands are what forms when there is a lot of energy in one area, and most of it gets let off as heat. Urban heat islands tend to be warmer and under worse air quality due to pollutants opposed to their rural counterparts.<sup>45</sup> Community gardens are the second best way to combat them other than taking away anything that might contribute to the heat island. Community gardens absorb heat and pollution and put out food, and when put somewhere that absorbs a lot of

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<sup>39</sup> (Berardi, G. M., 2020)

<sup>40</sup> (Bradley University Online, 2018)

<sup>41</sup> (Bradley University Online, 2018)

<sup>42</sup> (Paddock, 2007)

<sup>43</sup> (Cohen, 2020)

<sup>44</sup> (United Nations, n.d.)

<sup>45</sup> (Environmental Protection Agency, n.d.)

heat, such as roofs, can help reduce the heat island effect.<sup>46</sup> Concrete and metal absorb and relay heat very well, so when covered by foliage and dirt, both poor heat conductors but wonderful absorbers, it helps reduce the heat aspect. The plants will absorb the pollutants in the air and release clean air in return. They can also act as a carbon sink, which is just a location that takes in more carbon than it releases, and when surrounded by nothing but carbon producing objects, works very well.<sup>47</sup>

The final and 12th Sustainable Development Goal that this project is focusing on is “Responsible Consumption and Production”. The planet we live on is finite in resources, and so we must do what we can to be smart about what we have. The way the agricultural systems are structured are very unsustainable, both in production and consumption. Agricultural production is largely monoculture, which leads to a number of problems, including a lack of nutrients in the soil, erosion, and bug and pesticide issues, all of which are unsustainable. Agricultural consumption has a number of related issues all relating to the beauty standards of fruits and vegetables.<sup>48</sup> Fruit and vegetable companies have a set standard for what their produce should look like, and anything that looks less than acceptable gets trashed. In many community gardens, there can be community compost piles for those who have old food, rotted produce, old plants, and anything that could be composted instead of thrown in the trash. Gardens help provide a circular system that can be used by those working in it, starting from taking seeds from the plants, growing the seeds in the compost, and helping the plant produce by taking its fruit.



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<sup>46</sup> (Environmental Protection Agency, n.d.)

<sup>47</sup> (Environmental Protection Agency, n.d.)

<sup>48</sup> (Berardi, 2020)

<sup>49</sup> Shiloh Field. (n.d.)

## RECOMMENDATIONS

### **Benchmarking**

Based on the information gathered from the benchmarking research of other gardens regionally and nationally, we have several recommendations for a potential community garden in the Methow Valley. Considering the majority of the gardens researched were in urban areas, some of these recommendations may need to be modified for the Methow Valley rural areas.

First recommendation for a hypothetical Methow Community garden would be to create a structure in which it is easy for volunteer groups to sign up and help work at the garden, as several of the garden examples included volunteers being the majority of the staff. These groups could be nonprofit staff, plot renters, society members, citizen-lead groups, or just families who want to volunteer and work for the day.

Second recommendation is to have a mixture of plots be designated as individual plots people can rent out, and another section of plots that is designated for food to be grown for local food banks, schools, etc. One garden sampled in benchmarking designated 10% of their plots to community food growing, and since food security is sovereignty is a focus for this hypothetical garden, it would be recommended to designate at least that many plots to community food growing whether it's for donations or simply shared plants (like apple trees).

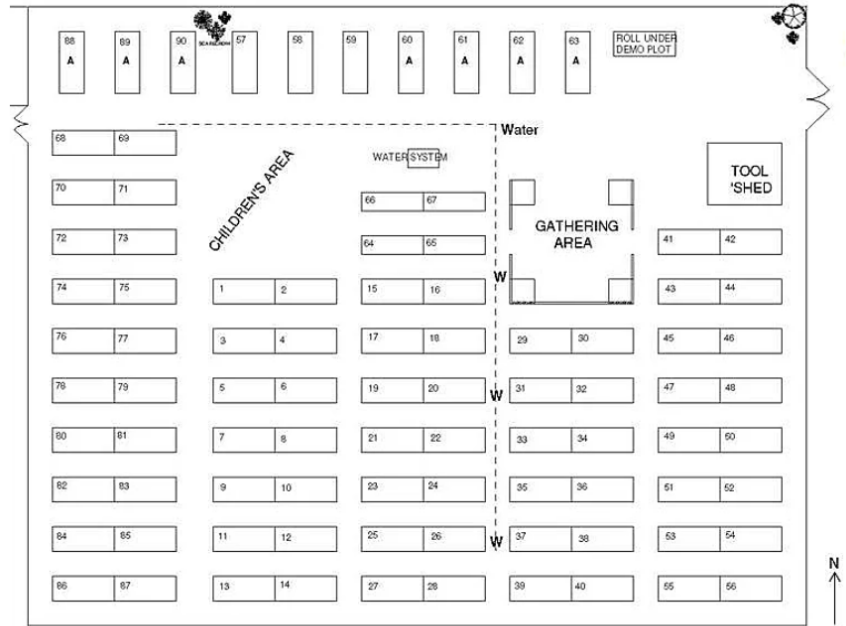
Third recommendation is to offer several ways for people to “own” plots. Some of the gardens sampled had an annual payment for plots, others had a minimum amount of volunteer hours to have a plot, and others offered no payment if the person was a resident of the town. Considering the need for people to be committed to a community garden, it is recommended to have a minimum amount of volunteer hours, like 1-2 hours a month (12 over the course of the year) to show commitment to the success of a community garden.

Fourth recommendation is to offer smaller “vanity” sizes for plots in the garden to help newer gardeners not be as overwhelmed. A good starter size is 4'x8', though other larger sizes could also be offered in conjunction; potentially a double plot, or just different plots that are some size larger.

Fifth recommendation is finding multiple sources for funding. This could include plot payments, grants, fundraiser events, classes, and other opportunities for people to donate or an open donation box.

Sixth recommendation is to emphasize the importance of community involvement. Several of the gardens sampled in the benchmarking research mentioned being a destination for workshops, internships, and community events. Therefore, there need to be amenities within the garden so that it is easily accessible for all to visit, including bathrooms, easy to use walkways, and accessibility within plots such as raised beds.





*(Estes Valley Community Garden)*

### **Benefits of having a Community Garden**

On a personal, social, and environmental level, community gardens offer endless amounts of benefits. They offer opportunities for increased food security, food sovereignty, social justice and equity, and mental health benefits. With these benefits, and more, it is recommended that events are hosted in a community garden in order to foster community involvement. This could come in the form of work parties, kids craft days, educational workshops, and/or groups coming to play music. Additionally, it is recommended that opportunities are presented within the garden to bring in many demographics of people. This could be through being a space to host mental health groups, offering volunteer opportunities, and accessible ways to participate in the garden.

### **Infrastructure: Soil health, Irrigation, Fencing**

Out of the three types of soil boosters, using compost or manure in a community garden is most applicable in the Methow Valley in order to create healthy, nutritious soil to plant fruit, vegetables and other plants in. For the three irrigation systems mentioned above, there are pros and cons to each. With water conservation in mind, a drip irrigation system would be the best system as it does not require very much pressure to operate, only uses a low flow of water, and there is less to no risk of the soil drying up and the leaves stay dry which prevents disease. However, it is physically more intensive to install and could create tripping hazards depending on the overall structure of the garden. Therefore, the next recommended irrigation system would be overhead sprinklers, as they are much easier to install and maintain. With regard to fencing, it is recommended to have fencing in order to keep deer from eating people's crops and creating a sense of security within the garden. For the building of fences, a mix of man-made and natural fencing would be recommended. To start, man-made fencing would be needed to keep wildlife out of the garden, but it could be dual purpose as supports for baby shrubs and trees to grow and mature. As the natural fence grows and matures, it'll offer multiple benefits including acting as a

windbreak, increasing soil nutrients, increasing biodiversity, and increasing opportunities for food (apple trees, etc.).

### **Water Use and Conservation**

It is highly recommended to create systems to efficiently collect rainwater to be used as much as possible throughout the year. This could include rainwater barrels around the garden and gutters to direct rainwater from roofs of a tool shed or other shade structures. The most applicable sources of water for the Methow Valley, in addition to rainwater collection, include municipal water, a well, and utilizing nearby rivers. As mentioned above, the pros and cons of each would need to be weighed for a garden project, and the location of the garden would help determine which would be the most efficient. If there is a waterline near the potential garden, municipal water is a great option, or if it's closer to the river then that would be another option. Something to consider when deciding between the two options is the cost of either permits for municipal water, or filters and pumps for river water.

Strategies that are recommended to efficiently use and conserve water include watering in the early morning or evening to avoid evaporation, investing in high quality hoses, spray nozzles and other tools to reduce leaks, and turning the water off at the source (facet, etc.) after every use.<sup>50</sup> Additionally, communicating with gardeners what types of irrigation can be used (drip lines, hand watering, etc.) is important for conservation. A way this communication could occur is a handbook when someone rents a plot, and having reminder signs around the garden like at the gate, facet, etc. Another method to conserving water, which goes along with soil health, is maintaining a healthy layer of compost, about 2 to 3 inches a year, to reduce water usage and promote healthy soil.

### **United Nations Sustainable Development Goals<sup>51</sup>**

The Methow Valley Community Garden Project was inspired by the benefits that can be felt far beyond our small project. The United Nations Sustainable Development Goals (SDGs) is a checklist of goals that all signed nations are attempting to reach by 2030. As almost 30% of the Methow Valley lives in poverty, these goals are very connected to the project.<sup>52 53</sup> The first two SDGs that this project comes in contact with are “No Poverty” and “Zero Hunger”. It is recommended that in order to confront the growing issues of poverty and hunger in the agriculturally rich valley, the valley must first confront the disconnect between its citizens and its food systems. If a garden was started in the Methow Valley, communal plots to be donated back to the community would be beneficial. Poverty and hunger increase one's stress levels, which in turn reduces one's immune system and increases health issues. In order to fulfil these SDGs, it is recommended that a community garden focus on getting fresh foods to the locals who might not have easy access to garden fresh produce.<sup>54</sup>

The goals of “Good Health and Well-Being” and “Reduced Inequalities” are another two that can be tackled together. People's health and what inequalities they face are directly correlated, especially when money is involved. In a community where many who work are

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<sup>50</sup> (*Community Garden Water Audit*)

<sup>51</sup> (United Nations, n.d.)

<sup>52</sup> (*What it Really Takes to be Self-Sufficient in the Methow*, 2019)

<sup>53</sup> (McCreary, 2016)

<sup>54</sup> (Koay, Way Inn & Denise Dillon, 2020)

impoverished, additional medical fees can drive impoverished populations further into poverty, and keep them from getting to a better place, health-wise.

The goals “Sustainable Cities and Communities” and “Responsible Consumption and Production” both overlap in regards to turning the economy and the food systems into circular systems. “Each year, an estimated one third of all food produced - 1.3 billion tonnes... Ends up rotting in the bins of consumers and retailers”, and the Methow Valley is no exception.<sup>55</sup> That combined with “land degradation, declining soil fertility, unsustainable water use, overfishing and marine environment degradation are all lessening the ability of the natural resource base to supply food” means that fully utilizing gardens is the key to creating a healthy community.<sup>56</sup> In order to help combat this, it is recommended to have a communal compost bin or compost system of some kind, as well as garden masters to help educate those who might not know how to fully utilize their plots.



*(Murphy, 2016)*

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<sup>55</sup> (United Nations, n.d.)

<sup>56</sup> (United Nations, n.d.)

## MONITORING AND EVALUATION

The success of community garden projects can be tracked in several steps. The first three steps describe how one can successfully set up the garden for community use. The fourth step details how to measure the garden's continued success and evaluate the effect that the garden has on the community.

*Step one: Define the scope of the project and assess the community's needs and interests.* This step includes conducting surveys and communicating with local stakeholders in order to evaluate if a community garden would meet the community's needs. Based on this gathered information, it is then appropriate to formulate a proposed garden plan, including a design, proposed funding, and community involvement. Success for this step would result in a developed comprehensive plan for the project that is supported by relevant stakeholders.

*Step two: Receive approval for the project.* Many community gardens benchmarked for this report were on public land, so presenting to and receiving approval from the local jurisdiction for the garden is crucial. This might include a town or city council, public works department, and town or city planner. Proposed community gardens on private land should also seek government approval to make sure that the design follows local land-use laws. Success in this step would also include verifying a long-term funding plan that includes initial construction, as well as upkeep and maintenance.

*Step three: Plan implementation and construction.* After design and approval, construction of the garden brings the project to life. Involving stakeholders as design plans change is important to make sure that the end result will reflect the needs of the community, as well as the spirit of the original vision. The success of step three depends on gathering building materials and staff and volunteers to build and prepare the garden for use. This could include doing soil pH adjustments, building raised beds, fences, and a compost bin, setting up watering systems, and other purchases of tools and supplies for the garden. It will be clear when this step is successfully completed because the garden will be ready for use by community members, and a staff structure will be in place to smoothly transition into community use.

*Step four: Community use and project vitality.* This isn't as much of a step as an ongoing process measuring the long-term success of the project. The success of a public garden can be measured by the continued use and community support of the garden. This could be monitored through surveys about how satisfied the community members are with the garden, tracking how many plots are being used (and how long the waiting list is if applicable), tracking the number of events/classes that the garden hosts per season, recording the number of pounds of food is donated to local food banks, and recording the progress of the budget (under/over budget). Research can also be done noting the change in local food sovereignty and food neediness, change in local access to land for gardening, and comparing local food sovereignty levels to regional and national food sovereignty. These can be assessed by surveying the general population, and comparing neediness demographic information before and after a community garden began. One other easy indicator of garden success, specifically of communal plots, is tracking the amount of food donated each year, most likely in pounds. Many of the gardens with communal plots that our researchers benchmarked listed the amount of pounds per year that the garden has been able to donate to local nonprofits.

## BUDGET

A concise list of expected expenses for initial construction of a community garden is listed below. We have also compiled a list of potential expenditures and sources of revenue for a community garden.

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### *Example Expenses for Initial Garden Construction*

1. Land Acquisition
  2. Construction
    - Fencing
    - Compost pile
    - Raised beds
    - Irrigation system
    - Shed
  3. Tools and gear
    - Gloves
    - Trowels, shovels
    - Clippers
    - Rakes
    - Hoes
    - Hammer and nails
    - Miscellaneous
      - Ex: Garden signage
  4. Perennial perimeter trees/shrubs
  5. Site preparation
    - Rock removal, ground leveling
    - Soil restoration
      - pH testing
      - Soil conditioning
- 

For the initial construction of the garden, there are three main categories of expenses that apply to every garden: construction, tools and gear, and site restoration. Some expenses that fall under construction would include fencing, building a compost pile, raised beds, building a shed, and irrigation systems. In regards to tools and equipment, some expenses would include gloves, trowels, shovels, clippers, rakes, hoes, hammers and nails, wheelbarrows, and miscellaneous items. Site preparation expenses would include soil restoration, such as pH testing for soil health, soil conditioning, and potentially rock removal and ground leveling, depending on the state of the land. Additional expenses could include perennial perimeter trees/shrubs for natural fencing. These can act as a community resource if fruiting plants are placed, and can reinforce existing fencing to keep pests out.

Another potential expense is land acquisition. However, if the land does not have to be purchased, this could become mainly a yearly expense as it would require yearly lease payments and/or property taxes.

Out of all of the initial expenses required to set-up a community garden program, preparing the land and building the physical infrastructure seems to be the most expensive, though pretty much all costs can vary based on the preferences of the designers. A recurring theme, however, is that raised beds, tool sheds, and site preparation with backhoes are all relatively expensive. The costs of irrigation and irrigation set-up vary widely based on the circumstances and budget that is allowed; a single spigot where individual gardeners can fill their watering cans is an option, or drip-tape irrigation might be a more worthwhile investment.

A recurring theme throughout the gardens our researchers benchmarked is donations or discounts that were offered by local garden/building supply stores. Gardens such as the Mirrmont P-Patch in Issaquah, WA, list on their website local businesses and community members that donated items such as compost, design services, backhoe use, wood chips, picnic tables, and discounts on lumber and irrigation tape.<sup>57</sup> These donations are very helpful in reducing the large initial cost of starting a community garden, and should be explored by all potential garden designers.

One main difficulty with beginning community gardens is the large start-up cost. About 30% of the gardens that we benchmarked were started with grants, ranging in size as large as \$20,000.<sup>58</sup> While the grants that helped to start these gardens are no longer available, it is worth mentioning where these grants came from in case they become active in the future, or that similar local grants become available to potential garden planners. Out of the 14 benchmarked gardens, grants were given to the Fairbanks Community Garden in Fairbanks, AK, the Mirrmont P-Patch in Issaquah, WA, the Estes Valley Community Garden in Estes Park, CO, and to the E. Lorene Young Community Garden in Leavenworth, WA. Fairbanks received a \$20,000 one-time unspecified state grant to clear land, the P-Patch received a \$10,000 grant from the King County Partnerships and Grants program, the Estes Park garden received a one-time \$30,000 and the E Lorene Young garden received an unspecified amount from the Community Foundation of North Central Washington (NCW).<sup>59</sup> At the time of publication, our researchers thought it pertinent to include active community garden grants, particularly in the Methow Valley region. We also did an interview with a Methow Valley community member about a community garden program that he was a part of starting in Spokane, WA. His Spokane program's starting funds were covered by a grant from the WSU County Extension program, specifically for developing community gardens.

## **Grant Opportunities**

The following is a list of potential grant opportunities and funding resources:

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<sup>57</sup> (Shepherd, 2021)

<sup>58</sup> (Fairbanks community garden, 2021)

<sup>59</sup> See benchmarking table in Appendix for more information.

| Organization Name:                          | Type:                  | Link and relevant information:   |
|---|------------------------|--|
| US Economic Development Administration      | Funding                | <a href="https://www.eda.gov/about/investment-priorities/">https://www.eda.gov/about/investment-priorities/</a> <ul style="list-style-type: none"> <li>• Main categories include: equity, recovery and resilience, workforce development, manufacturing, technology-based economic development, environmentally sustainable development, exports and FDI</li> </ul>  |
| Packard Foundation                          | Funding resource ideas | <a href="https://www.packard.org/what-we-fund/climate/what-were-doing/innovation/">https://www.packard.org/what-we-fund/climate/what-were-doing/innovation/</a> <ul style="list-style-type: none"> <li>• Features The Climate Breakthrough Project which has its own website</li> <li>• Seems like a fairly selective process for selecting awardees</li> </ul>  |
| Nature Conservancy                          | Grant opportunity      | <a href="https://www.nature.org/en-us/what-we-do/our-priorities/tackle-climate-change/climate-change-stories/natural-climate-solutions-accelerator-grant/">https://www.nature.org/en-us/what-we-do/our-priorities/tackle-climate-change/climate-change-stories/natural-climate-solutions-accelerator-grant/</a> <ul style="list-style-type: none"> <li>• The Nature Conservancy launched the U.S. Natural Climate Solutions Accelerator program in 2018</li> <li>• Has funded 15 projects since then</li> <li>• Again, seems very selective</li> </ul> |
| US Climate resilience toolkit funding page  | Funding resource ideas | <a href="https://toolkit.climate.gov/content/funding-opportunities">https://toolkit.climate.gov/content/funding-opportunities</a> <ul style="list-style-type: none"> <li>• Links to many various funding opportunities with varying applicability to community gardens</li> <li>• EPA smart growth grants may be a viable option</li> </ul>  |
| Center for Health and Environmental Justice | Grant opportunity      | <a href="http://chej.org/chej-small-grants-program/">http://chej.org/chej-small-grants-program/</a> <ul style="list-style-type: none"> <li>• Smaller scale than other links here</li> <li>• Emphasis on environmental health and justice</li> <li>• Seems like a more realistic choice than others here</li> </ul>   |
| Mosaic                                      | Grant opportunity      | <a href="http://mosaicmomentum.org/movement-infrastructure-grantees/">http://mosaicmomentum.org/movement-infrastructure-grantees/</a> <ul style="list-style-type: none"> <li>• Investment infrastructure with an interest in promoting just communities</li> <li>• Their goals include “(1) build relationships, (2) sort and select joint priorities, and (3) collaborate on effective scaled action”</li> </ul>  |
| Temboo                                      | Funding Blog           | <a href="https://blog.temboo.com/environmental-grants/">https://blog.temboo.com/environmental-grants/</a> <ul style="list-style-type: none"> <li>• Many options for grant opportunities from large philanthropic groups such as Bill &amp; Melinda Gates Foundation, Google Impact Awards, Bloomberg Philanthropies, etc.</li> </ul>   |

|  |   |   |
|--|---|---|
| USDA Funding Resources                           | Resources                                 | <a href="https://www.nal.usda.gov/ric/guide-to-funding-resources">https://www.nal.usda.gov/ric/guide-to-funding-resources</a> <ul style="list-style-type: none"> <li>• Distinct from all other links here; this page explains how to apply for various grants, funding sources, etc.</li> </ul>   |
| NW Fund for the Environment                      | Funding                                   | <a href="http://www.nwfund.org/community-response-fund/">http://www.nwfund.org/community-response-fund/</a> <ul style="list-style-type: none"> <li>• Emphasis on growth management and aquatic ecosystem programs</li> <li>• Local, community-based; may be appropriate for community garden purposes</li> <li>• Awards grants of up to \$3,000 per year</li> </ul>                                       |
| EPA  | Community Grant Calendar                  | <a href="https://www.epa.gov/grants/epa-grant-competition-calendar-community-grants">https://www.epa.gov/grants/epa-grant-competition-calendar-community-grants</a> <ul style="list-style-type: none"> <li>• Has a link to EPA grants and grants.gov through which you can search for grants</li> </ul>   |
| Rural Community Assistance Corp                  | EFI/ funding                              | <a href="https://www.rcac.org/environmental/environmental-finance-center/">https://www.rcac.org/environmental/environmental-finance-center/</a> <ul style="list-style-type: none"> <li>• Environmental Finance Center</li> <li>• Regionally-based</li> <li>• Emphasis on community infrastructure funding</li> <li>• Perhaps the best option for grant opportunities</li> </ul>                           |
| Aspen Rural Innovation Hub Federal Resource page | Federally funded programs for rural areas | <a href="https://www.aspeninstitute.org/programs/community-strategies-group/rural-in-the-american-rescue-plan/">https://www.aspeninstitute.org/programs/community-strategies-group/rural-in-the-american-rescue-plan/</a> <ul style="list-style-type: none"> <li>• Emphasis on rural America</li> <li>• Simple, easy to read page with various grants listed, some more applicable than others</li> </ul> |
| WSDA Grants and Funding                          | Grant opportunities & Funding             | <a href="https://agr.wa.gov/departments/business-and-marketing-support/farm-to-school-toolkit/school-gardens-and-farms/grants-and-funding-en">https://agr.wa.gov/departments/business-and-marketing-support/farm-to-school-toolkit/school-gardens-and-farms/grants-and-funding-en</a> <ul style="list-style-type: none"> <li>• List of various specific grants, mostly education-oriented</li> </ul>      |

One other program that can help save on labor costs during initial construction as well as upkeep is the Master Gardener program. To become a Master Gardener, a certain amount of volunteer hours gardening need to be fulfilled. The WSU extension site has more information specific to Okanogan County.<sup>60</sup>

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<sup>60</sup> (Master Gardener Program)



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*Example Annual Garden Balance Sheet*

**Expenses**

Water Bill  
Tool upkeep/replacements  
Land lease payments/ property taxes  
Contingency fund

*Farm- specific:*

Seeds/starts for the garden  
Mulch/ soil conditioning

**Revenue**

Plot Rental fees  
Gardener Donations  
Sponsor Donations  
Classes  
Events

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For the annual garden balance sheet, we have included both expenses, as well as potential revenue sources. The expenses listed include the water bill, tool upkeep, land payments/taxes, and a contingency fund. If the proposed garden also includes a communal farm, then seeds/starts and mulch/soil conditioning are required. As for revenue, we have identified five different potential revenue sources: plot rental fees, gardener and sponsor donations, classes, and events.

Some expenses are, generally speaking, more expensive than others. Over all of the gardens that we have looked at, the water bill is a significant expense. In both of the sample garden budget sheets that our researchers found, the water bill was more than triple all other expenses.<sup>61</sup> <sup>62</sup> No other obvious trends in expenses were apparent. Regarding garden revenues, the most common form of revenue for community gardens is through plot rentals. Some community gardens are able to subsist upon plot rentals alone, while others seek out donations from larger sponsors or individual people. Another, albeit relatively small, potential source of revenue is from events and classes hosted in conjunction with the garden.

The official approved 2020 budget for the Marymoor Community Garden in Redmond, WA is listed below. Evidently, the water bill is a significant expense, and the rental income is a significant gain. We would like to make a note that the IRS penalty/tax expense is not typical of community gardens, and do not anticipate that it is a regular issue for a well-organized community garden. Besides that oddity, this is a good example of a community garden budget.

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<sup>61</sup> (*Proposed Starting Budget for Discussion*, 2020)

<sup>62</sup> (*Community Garden Budget Template*, 2017)

MCGA  
**PROPOSED STARTING BUDGET FOR DISCUSSION**  
**FOR THE YEAR ENDING DECEMBER 31, 2020**

| Income                     | 2020 Proposed |         | Actual     |            |            |            | Projection |  | Actual Total to Date |
|----------------------------|---------------|---------|------------|------------|------------|------------|------------|--|----------------------|
|                            | Original      | 2020    | Q1         | Q2         | Q3         | Q4         |            |  |                      |
| <b>Rental Income</b>       | \$            | 19,800  | \$ 17,828  | \$ 400     | \$ 1,000   | \$ -       |            |  | \$ 18,228            |
| Less: Refunds              |               |         | \$ -       |            |            |            |            |  |                      |
| <b>Restricted Income</b>   | \$            | 500     | \$ 500     |            |            |            |            |  | \$ 500               |
| <b>Other Income</b>        |               |         |            |            |            |            |            |  |                      |
| Straw Buy In (net)         | \$            | 300     |            |            |            | \$ 300     |            |  | \$ -                 |
| Compost/Top soil           | \$            | 1,200   | \$ 2,440   | \$ 1,347   |            |            |            |  | \$ 3,787             |
| Less: Cost of Soil/Compost |               |         | \$ (2,490) |            |            |            |            |  | \$ (2,490)           |
| <b>Total Income</b>        | \$            | 21,800  | \$ 20,268  | \$ (243)   | \$ 1,000   | \$ 300     |            |  | \$ 20,025            |
|                            |               |         |            |            |            |            |            |  | 20,025 Proof         |
| <b>Expenses</b>            |               |         |            |            |            |            |            |  |                      |
| KC Maint. & Plot Rental    | \$            | 2,600   |            |            | \$ 2,000   | \$ 600     |            |  | \$ -                 |
| KC Water (\$45/PLOT)       | \$            | 9,000   |            |            | \$ 3,500   | \$ 3,500   |            |  | \$ -                 |
| Admin Expenses             | \$            | 1,200   | \$ 540     | \$ 202     | \$ 200     | \$ 200     |            |  | \$ 742               |
| Special Projects           | \$            | 2,100   | \$ -       |            | \$ 2,100   | \$ -       |            |  | \$ -                 |
| Food Bank                  | \$            | 1,400   | \$ 141     |            | \$ 750     | \$ 510     |            |  | \$ 141               |
| Tools, Supplies            | \$            | 1,000   | \$ -       | \$ 529     | \$ 250     | \$ 221     |            |  | \$ 529               |
| Work Parties               | \$            | 300     | \$ -       | \$ (22)    | \$ 150     | \$ 150     |            |  | \$ (22)              |
| Water Sys Rep/Maint        | \$            | 500     |            |            | \$ 250     | \$ 250     |            |  | \$ -                 |
| IRS PENALTY/TAXES          | \$            | 5,608   |            |            | \$ 5,608   |            |            |  | \$ -                 |
| <b>Total Expenses</b>      | \$            | 23,708  | \$ 540     | \$ 850     | \$ 9,200   | \$ 5,431   |            |  | \$ 1,390             |
| <b>Net Income</b>          | \$            | (1,908) | \$ 19,728  | \$ (1,093) | \$ (8,200) | \$ (5,131) |            |  | \$ 18,634            |

C:\Users\maxru\OneDrive\Desktop\MCGA\BOARD ACTIVITY\FINANCES\2020\Budget and YTD as of 5-31-20

6/16/2020

(Marymoor Community Garden Association, 2020)

## CONCLUSION

The Methow Valley Community Garden project was started with the goal of collecting information and research to address the needs of the community and plan the potential of a community garden in the future. The three main goals for a potential community garden would include increasing food security and food sovereignty, increasing community development, and improving mental health and education. The main focuses of the research include 1) benchmarking various community garden models in order to suggest an organizational structure for a community garden project going forward, 2) collecting information on physical infrastructure (construction, soil, water, etc.) and 3) identifying different funding sources that have the potential to make a hypothetical proposal more financially sound and feasible. To achieve a deeper understanding of these needs and goals, benchmarking was conducted to research existing garden models, which included data on funding, water consumption, other uses, plot numbers and sizes, ownership, staff, structure, and any other necessary information. Additionally, scientific studies, books and articles were reviewed for specific information on statistical and structural information for gardens, as well as the social, mental, and emotional benefits community gardens provide. Based on the information from the benchmarking, recommendations were made regarding planning, creating and eventually running the garden.

From the benchmarking research, the most important points to take into account when considering the construction of a community garden include tailoring it to the Methow Valley's environmental and community needs. From specific research papers, some of the most important recommendations are focused on food security and mental health. To align the community garden goals with a more global picture, the United Nations Sustainable Development Goals (SDGs) were aligned with our background research for this project. A number of SDGs aligned well with the goals that we had in researching this project. These include "No Poverty," "Zero Hunger," "Good Health and Well-Being," "Reduced Inequalities," "Sustainable Cities and Communities," and "Responsible Consumption and Production." These SDGs were deemed fit for our project due to how well they fit in together, and all hold up our goals for the project. Working towards the goals "No Poverty," "Zero Hunger," and "Good Health and Well-Being" is important in the Methow Valley because of the child poverty crisis, as roughly 30% of children in the valley remain impoverished.<sup>63</sup> "Reduced Inequalities" aims to stop the cycle that poverty and hunger induce. "Sustainable Cities and Communities" and "Sustainable Consumption and Production" reiterate that with the growing concerns over climate change and the continually rising temperatures during the summer months, a community garden to promote food sovereignty in the Methow Valley would be appropriate.

Even after spending an academic quarter on this research and benchmarking, there are still several factors and questions that need to be addressed in the future before the creation of a community garden in the Methow Valley is possible. For ease of reading, they are included in a numbered list below.

1. Certain plants need a much more controlled climate compared to others, and when starting a garden, seed starts prefer being grown in controlled areas. Would there be a physical structure, such as a greenhouse, for the plants that would need it? Or, would the seed-starts be grown in someone's home?

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<sup>63</sup> (McCreary, A., 2016)

2. In the interactions we had with locals of the Methow Valley, there was an overwhelming positive response to a community garden. Conducting a well-rounded survey to gauge interest and collect input that might be helpful for the creation of a community garden.
3. The Methow Valley is an ever moving and changing community, so finding a way to be self-sufficient without losing any of its original values is important to take into consideration.
4. One resource that could be utilized is the food bank and shelter The Cove. They have a history of working with different farms and gardens in order to get fresh produce out to those in need.
5. One aspect of community gardens is how they bring people together. Art, benches, and music are different ways to connect people, but we also love the idea of a fall garden feast/picnic to celebrate the garden and the community.
6. Looking ahead, what is the garden responsible for if someone gets hurt? What would the liability policy be if something happens, and what should it look like?
7. Our main hope is to create a space that would serve the community, especially communities that don't have easy access to fresh, home-grown foods, or don't have enough space in their living situation to grow foods. The targets could be the low income housing, apartments, and those without the land access to grow their own garden. Therefore, it would be important to hear low-income and affordable housing needs for a potential community garden.

APPENDIX

Benchmarking Research Table

| Garden Name            | Ownership             | Urban or Rural? | Staff   | Size       | Plot Types   | Plot Sizes   | Funding                        | Fun Facts   | Other Uses  | Contact Information   |
|------------------------|-----------------------|-----------------|---|------------|--|--|--------------------------------|---|---|---|
| Shiloh Field           | Not listed            | Urban-Denton    | Volunteers  | 14.5 acres | Large Farm, Individual plots also offered to locals free of charge with water, training included | N/a  | Donation                       | They are the largest community garden in the US. "Cornucopia plan" to feed the hungry population in Denton. | Popular outing among school groups for education purposes | No contact information listed, however, here is a link to their facebook group: <a href="https://www.facebook.com/friendsofshilohgarden">https://www.facebook.com/friendsofshilohgarden</a> |
| Fenway Victory Gardens | Fenway Garden Society | Urban-Boston    | Society members, volunteers (you must volunteer for the society before you can have a plot) | 7.5 acres  | Individual plots (500 total)   | Not listed. \$40/plot regular, \$25/plot with senior discount (ages 65+) | Donation + class, plot revenue | Oldest Surviving WWII victory gardens   | Offers gardening, pruning classes                         | Contact form available on their website.<br><br>Phone: 857-244-0262<br><br>Email: <a href="mailto:info@fenwayvictorygarden.org">info@fenwayvictorygarden.org</a>                            |

|                               |                          |                       |                                   |            |   |  |  |   |  |  |
|-------------------------------|--------------------------|-----------------------|-----------------------------------|------------|---|--|--|---|--|--|
| Fairbanks Community Garden    | Unlisted local nonprofit | Urban (ish)-Fairbanks | Three nonprofit staff, volunteers | 2.5 acres  | Individual plots  | \$50/plot + \$50 refundable deposit (returned after 3 hours of community service). 600 Square feet of plot space per rental. | One-time \$20,000 state grant to clear the land and build the garden. Fees from plot rentals fund upkeep | Growing season is only 90 days! They have a newsletter that they send out to members. If you cannot harvest your plot, a local nonprofit will be contacted to harvest it for you. | N/a  | People to contact are listed on the website.             |
| Almany Farm                   | Not listed               | Urban- San Francisco  | Volunteers                        | 3.5 acres  | Farm  | N/a  | Donations, has a "fiscal sponsor"- (Earth Island Institute)  | Volunteers take home produce, any leftovers are donated for food security! Largest urban farm in san fran   | Ecological education, workshops, internships, corporate volunteer/ team-building activities              | Email: community.gardeners@gmail.com Phone: 415-494-9368 |
| Virginia Ave Community Garden | Not listed               | Urban- Washington, DC | Volunteers/ not listed            | Not listed | 80 individual plots, 15 fruit trees for community consumption/ care, they also have more plots that are communal. | 4 options: XL (10x10) \$75, L (3.5x20) \$52, S (3.5x12) \$31, XS (3.5x10) \$26   | Volunteer community service required for plot rentals, member dues, help from DC parks department        | Plots available for schools, scouts, other organizations free of charge, excess produce donated to homeless and community organizations   | Education and classes offered, highly developed signage and integration with local government/ community | Email: commgarden@yahoo.com                              |

|                         |   |                        |                              |                |   |  |  |   |  |  |
|-------------------------|---|------------------------|------------------------------|----------------|---|--|--|---|--|--|
| Mirrormont Pea Patch    | Mirrormont Country Club-land is leased to the City. | Suburban- Issaquah, WA | Citizen-lead volunteer group | Not listed     | 38 Individual plots,4 community plots. There is an aerial photo of the garden on their website. | 24 4x8 plots, 3 8x8 plots, and 11 8x16. They may be cultivated year round. The annual application fee is \$15, plus \$10 for up to three 4x8 plots, one 8x8 plot or one 8x16 plot. | \$10000 grant from King County Partnerships and grants, local businesses offered discounts and some gifts. | Includes 4 beds devoted to organic food for the Issaquah food bank. | N/a  | Not listed. Contact the Town for more information. |
| Spring Street Pea Patch | Seattle Department of Neighborhoods                 | Urban- Seattle         | Volunteers                   | 1,900 sq. ft.  | 13 plots, individual use  | Not listed   | Various funding opportunities through SDN  | Designed in 2008 for both gardeners and community                   | Youth gardens and accessible raised beds   | Contact the city of Seattle for more information.  |
| Picardo Farm            | Seattle Department of Neighborhoods                 | Urban- Seattle         | Volunteers                   | 98,000 sq. ft. | 259 individual use plots  | Not listed   | Various funding opportunities through SDN  | First and largest p-patch Seattle garden                            | Accessible raised beds, bathrooms, giving gardens, honeybee, outdoor meeting space, orchard, public art, youth garden, | Contact the city of Seattle for more information.  |

|  |  |                           |                  |                                     |  |  |   |  |                 |   |
|--|--|---------------------------|------------------|-------------------------------------|--|--|---|--|-----------------|---|
|  |  |                           |                  |                                     |  |  |   |  | water catchment |   |
| City of Auburn<br>Community gardens (8th St and Garna Botting Jones gardens) | City of Auburn, Parks, Arts, and Recreation Department | Urban/suburban-Auburn, WA | Parks department | Varying sizes [SEE MAPS ON WEBSITE] | 41 plots at J street, 140 plots at 8th st. | \$55 Auburn resident, \$63 Non-resident, Price includes \$25 refundable cleanup deposit, 10'x20' plots | Parks department sponsored, revenue from plot rental fees | Local youth corps can be called if renters have extra produce they want to drop off, or produce that needs to be picked in order to donate to the local food bank. | N/a             | City of Auburn Parks, Arts, and Recreation Department. Phone: 253-804-5052, Email: communitygarden@auburnwa.gov |



|  |                                 |                                     |  |                               |  |   |   |  |  |  |
|--|---------------------------------|-------------------------------------|--|-------------------------------|--|---|---|--|--|--|
| Marymoore community garden association | Not listed                      | Suburban-Redmond, WA Marymoore park | Marymoore community garden association (12 staff-unsure if they're volunteers or not). | Not listed                    | over 236 plots, including 11 community plots for the local food bank [SEE MAP ON WEBSITE]              | \$90 for a 10x40 plot, \$45 for a half plot. 8hr annual community service requirement | Rental income from plots, soil and supply buy-in.                             | "Tender Love and Care" TLC committee will help gardeners in good standing that have medical/other issues that prevent them from harvesting their crops/tending or watering their beds. | 8,000-10,000 lbs of produce for hopelink Redmond each year!<br>Education: classes over zoom: their website listed container gardening and integrated pest management | mcgaboard@gmail.com                    |
| Eagle Ridge Community Garden           | Down to Earth Community Gardens | Suburban-Lake Stevens, WA           | Volunteers   | 1/2 acre [SEE MAP ON WEBSITE] | 78 plots, ten beds are exclusively reserved to grow organic produce for the local community food bank. | 4'X8' \$40 annually, ADA raised bed plots available for \$20 annually                 | Rental income from plots, city's general revenue funds, park midigation funds | Offers "free farmers markets, baskets of produce for delivery for seniors, people with disabilities, access to emergency food boxes, an open gate for garden grocers"                  | In 2017, grew and gave 21,765 lbs of organic produce to local area food banks, taught 343 individuals to grow food and gave 945 hours of community service.          | Lake Stevens City Hall at 425-334-1012 |

|                                 |  |                        |  |   |   |                         |  |  |   |   |
|---------------------------------|--|------------------------|--|---|---|-------------------------|--|--|---|---|
| E Lorene Young Community Garden | Was donated by a past mayor (E Lorene Young) to the Barn Beach Reserve. Managed by Wenatchee River Institute | Rural- Leavenworth, WA | Volunteers                                     | Not listed  | 33 raised beds, \$35 for new members \$40 for returning | 4' x 8' plots           | Donations and grant from Community Foundation of NCW, fees from plots  | Shared section of herbs and berries. Also, includes a scholarship program for gardeners that cannot afford to pay at full price (mostly funded by other gardeners)   | Includes a community space! All organic garden! | For Wenatchee River Institute: Phone is (509) 548-0181, email is info@wenatcheeriverinstitute.org |
| Estes Valley Community Garden   | Not listed   | Rural- Estes Park, CO  | Volunteer EVCG Board-members listed on website | 100'x126', great diagram on the site, under "About, The Garden" | 90 plots total, 80 Individual                           | 4'x10' raised bed plots | \$30,000 of initial construction costs, covered by "gifts, grants, donated materials, and volunteer labor." Yearly budgets on their website. | As of 2020, had 18 high plots- 34" tall instead of 8" tall, in order to make more accessible for some gardeners. 15 of the plots were sponsored! Low-income people and organizations can get plots sponsored | Gathering area and children's area in garden    | Email: evcg@evcg.org  |

|                                     |   |                                |                              |   |   |               |  |   |     |                          |
|-------------------------------------|---|--------------------------------|------------------------------|---|---|---------------|--|---|-----|--------------------------|
| Cesar Chavez<br>Community<br>Garden | Wenatchee<br>Parks,<br>Recreation and<br>Cultural<br>Services | Mid-Urban-<br>Wenatchee,<br>WA | Parks<br>Department<br>Staff | Long ways in<br>between a<br>street and<br>parking lot.<br>Not<br>necessarily a<br>dedicated<br>garden space. | 26 individual<br>plots. There is<br>also another<br>Wenatchee<br>garden<br>(Kiwanis<br>Methow Park)<br>that has 9<br>plots, with<br>different size<br>ranges. | 10'x10' plots | \$10/plot for<br>city<br>resident,<br>\$11/plot for<br>non-city<br>resident. 8<br>hours of<br>volunteer<br>service<br>required per<br>plot rented. | All organic.<br>The diagram is<br>interesting-<br>both Wenatchee<br>garden<br>locations are<br>not necessarily<br>dedicated<br>garden spaces. | N/a | Phone: (509)<br>888-3284 |
|-------------------------------------|---|--------------------------------|------------------------------|---|---|---------------|--|---|-----|--------------------------|

**Information on water audits, use assessment, and usage differences between lawns, gardens, etc.**

*Irrigation efficiencies grant PROGRAM (IEGP)*. Washington State Conservation Commission. (2018, January). <https://www.scc.wa.gov/irrigation-efficiencies-grant-program>.

“The Irrigation Efficiencies Grants Program (IEGP) provides an effective, voluntary solution that improves on-farm irrigation and helps vulnerable salmonid populations. Water-right holders use program funding and resources to increase the efficiency of their on-farm water application and conveyance systems. The saved water is returned to drought-prone streams that are home to ESA-listed fish species, without risk of relinquishing irrigators’ water rights.”

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“The Okanogan Watershed Plan is the result of five years of work by the Okanogan Watershed Planning Unit, which was formed in response to the 1998 Watershed Management Act (RCW90.82). This statute provided the framework for locally-based watershed planning with a shared governance goal of giving local interests a voice and forum for collaboration on water resource issues. Through the process the stakeholders in the Okanogan Watershed have reached common ground in creating recommendations and strategic actions that address water quantity, water quality, in-stream flows, habitat, and multi-purpose water storage. It is expected that the early action items and recommendations presented in this Plan will be further refined in the implementation phase (Phase IV) of the watershed planning process.”

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[https://www.townoftwisp.com/files/8116/0935/3096/2021\\_utility\\_rate\\_increase\\_FINAL\\_\\_002.pdf](https://www.townoftwisp.com/files/8116/0935/3096/2021_utility_rate_increase_FINAL__002.pdf).

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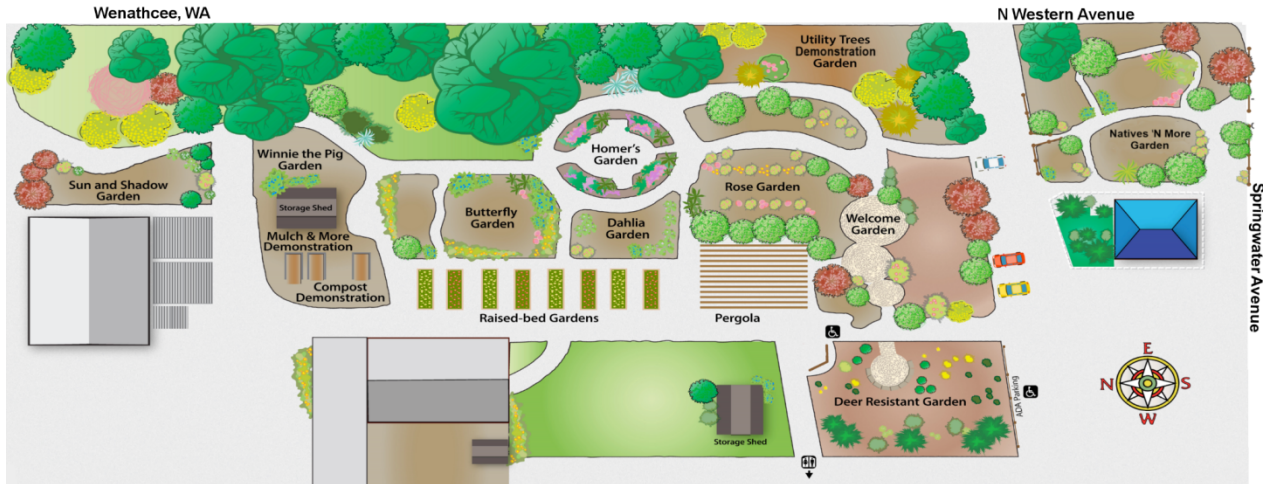
“To meet State and Federal Drinking Water requirements, we contract with an outside laboratory to test your water every month. In 2019, the water system was classified as “green” which means it is in compliance with all applicable drinking water requirements. We are planning several upgrades to the water system so as to improve and maintain water quality and quantity to all of our customers. In June of this year we will begin the third of four consecutive years of improvements to the distribution system. The total cost for the water distribution improvements is \$2.6 million dollars, and is funded by a 45% grant/55% loan from USDA. We have submitted a Water Use Efficiency (WUE) Report that compares water produced to water consumed. In 2019, we produced 83,109,646 gallons, which is up 3.6% from 2018.”

Denham, A. (2020, June 8). *Water Use Efficiency Annual Performance Report-2019*. Town of Twisp.

[https://www.townoftwisp.com/files/2915/9294/0851/2019\\_Water\\_Use\\_Efficiency\\_Report.pdf](https://www.townoftwisp.com/files/2915/9294/0851/2019_Water_Use_Efficiency_Report.pdf).

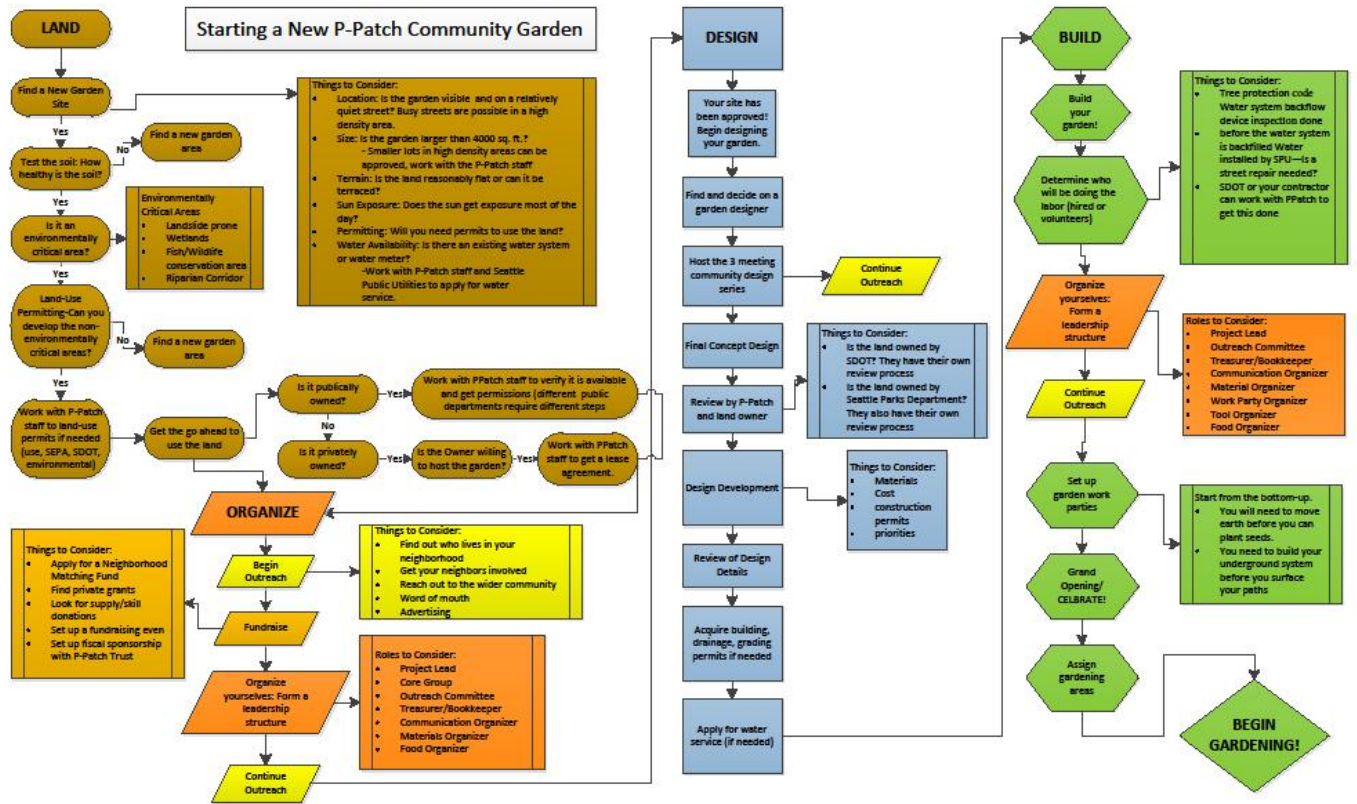
Two page report of statistics on Annual water use efficiency

**Sample educational garden from the WSU Extension program:**



*(Community education garden: Chelan & Douglas Counties: Washington State University)*

# Flowchart example for starting a new P-Patch



(Create a new p-patch community garden)

## Pie Chart from Seattle P-Patch Community



*(About the p-patch program)*

### Benefits of Garden: Visual

This visual helps convey that community gardens not only contribute to nutritional needs, but also social ones, and that can be adapted to each community's different needs. One need that could be added is specific information about social aspects of the garden, which could include education and history about indigenous peoples and learning from the practices they want to share. Another would be incorporating a native plant garden, and more education about what grows in the Methow Valley. Another would be incorporating a bee yard into the garden.



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(Egli et al., 2016)



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