



ZERObyFIFTY

Missoula's Pathway To Zero Waste

CITY OF MISSOULA ZERO WASTE PLAN



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ZERObyFIFTY

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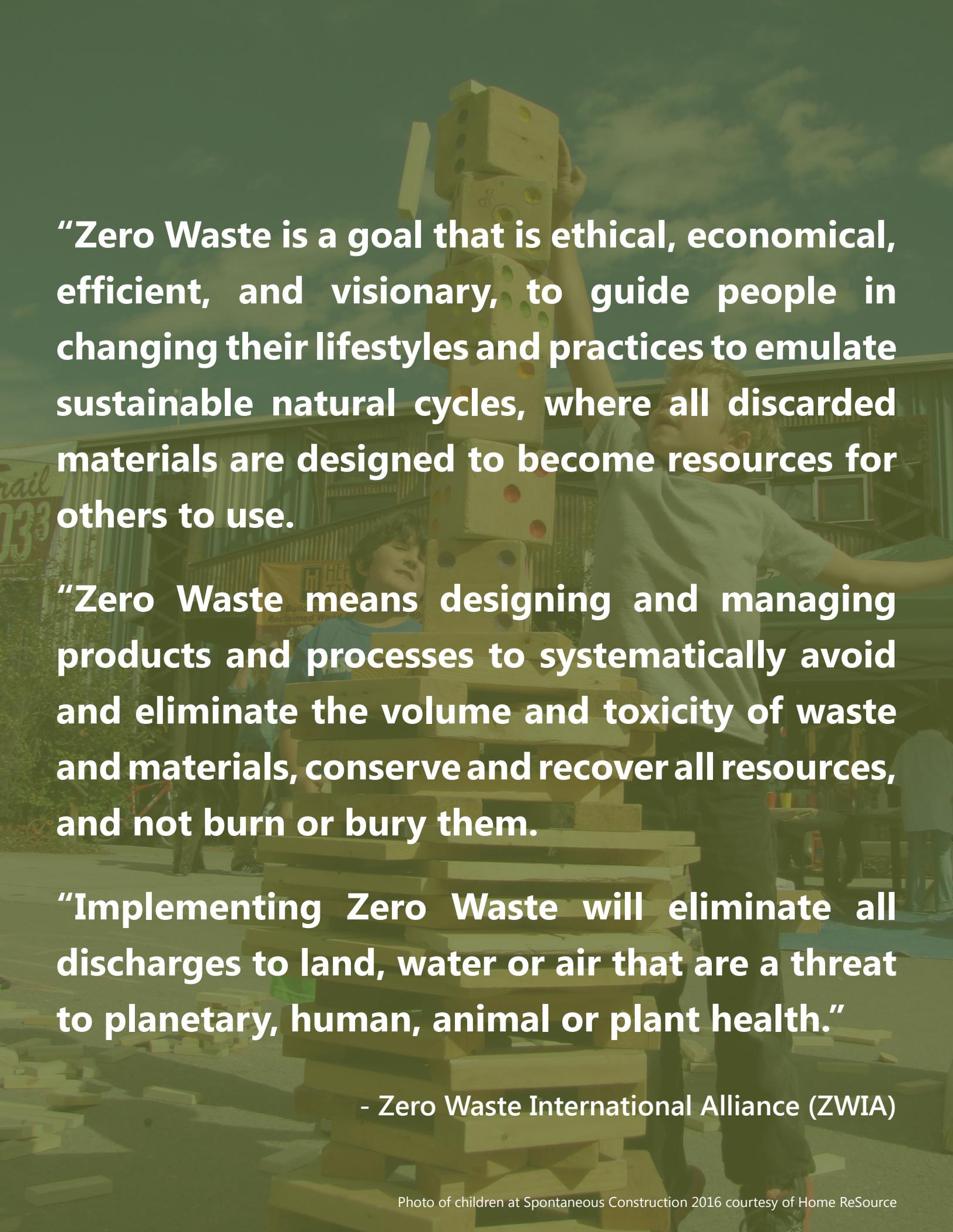
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A photograph of children at an outdoor event, likely a construction site or a recycling project. In the foreground, a tall, narrow tower of cardboard boxes is being built. A young boy in a light blue shirt is reaching up to place a box on top. Another child in a blue shirt is visible behind the tower. The background shows a building with corrugated metal siding and other people. The text is overlaid on the image in white, bold font.

“Zero Waste is a goal that is ethical, economical, efficient, and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

“Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

“Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.”

- Zero Waste International Alliance (ZWIA)

EXECUTIVE SUMMARY

Resource conservation, open space preservation, climate action, public health, and smart growth are long-held Missoula values. Zero Waste is a global movement that supports those values through practical measures that can be implemented at the local level. Zero Waste is a community priority for Missoula's institutions, businesses, nonprofit organizations, and citizens. After years of collaborating and planning, these values and visions have coalesced into a City of Missoula ZERO by FIFTY Zero Waste plan.

ZERO by FIFTY: Missoula's Pathway to Zero Waste is already in motion, with Zero Waste making its way to local businesses, parks, and schools. With a guiding framework and prioritized recommendations, this ZERO by FIFTY plan provides a formal starting line for an earnest and concerted Missoula Zero Waste effort. Together, Missoula's residents and institutions can join the City in taking concrete, collective steps along this pathway to achieve community sustainability.

Zero Waste emerged as a community goal during the City's Conservation & Climate Action Planning. Community organization began in 2015 with Zero Waste Missoula, a coalition convened by Home ReSource whose goals included the creation and adoption of a City Zero Waste resolution. In February 2016, City Council unanimously adopted Resolution 8044, the Missoula Zero Waste Resolution. The City thereby committed to a Zero Waste goal: a community-wide 90 percent reduction in landfill disposal by 2050. The resolution tasked the City to design a Zero Waste plan and complete a community baseline waste study.

The Zero Waste Leadership Team engaged Missoulians in the planning that followed, convening a Zero Waste Advisory Committee of key community stakeholders to support plan development and public outreach. During spring 2016, the City hosted community listening sessions, engaged with numerous community audiences, and solicited feedback online. Over 300 Missoulians participated in the development of the final ZERO by FIFTY plan, described in detail below.

Four guiding principles inform the ZERO by FIFTY plan:

1. Waste is not inevitable, and wasting resources is an unsustainable contemporary cultural norm,
2. Involving all Missoulians in ZERO by FIFTY will require equitable implementation of Zero Waste strategies,
3. "Upstream" and "midstream" solutions must be prioritized over "downstream" solutions like recycling, and
4. Transparency and accountability in ZERO by FIFTY will ensure that the plan remains rooted in Missoula's values.



Photo courtesy of Missoula Downtown Partnership

Visions, objectives, and actions are outlined in four complementary and overlapping “paths”, which were identified during the ZERO by FIFTY research and stakeholder engagement processes. Visions and objectives for the four paths include:

Access: Missoulians will adopt and normalize Zero Waste behaviors with the increase of convenient, affordable Zero Waste services and programs.

- *Create universal access to Zero Waste systems, services, and programs*

Infrastructure: Missoula’s Zero Waste economy will be supported by a network of facilities and businesses that together provide the framework for sustainable materials management.

- *Enhance and develop Zero Waste infrastructure*
- *Create opportunities to jump-start local Zero Waste markets and business development*

Education: Missoulians who understand the benefits of Zero Waste and how to get there will drive the community toward achieving its Zero Waste goal.

- *Educate the Missoula community about Zero Waste in general and ZERO by FIFTY in particular*
- *Encourage Zero Waste education and skill-building across the community in our homes, schools, businesses, and organizations*

Policy: The City’s careful use of incentives, policies, safeguards, and restrictions will ensure continuous community progress toward its Zero Waste goal.

- *Lead by example in implementing Zero Waste across all City operations*
- *Stimulate and support Zero Waste activities across the community*
- *Compel community-wide participation in Zero Waste*
- *Reduce availability of problematic materials and limit inappropriate disposal options*

Plan objectives are accompanied by 42 researched and prioritized actions. Of these, 25 actions are designated as short-term (1-3 years), two as short/medium-term (1-5 years), nine as medium-term (3-5 years), one as medium/long-term (3-10 years), and five as long-term (5-10 years).

The plan continues by detailing the immediate path forward for implementation. Identified first steps include ensuring staffed support for the plan, conducting a baseline waste study, and creating a budgeting and financing strategy. Finally, the plan offers considerations for tracking and evaluating progress. Supplementary appendices include the Missoula Zero Waste Resolution and a summary of the ZERO by FIFTY stakeholder process, in addition to Zero Waste resources referenced elsewhere in the plan.

As evidenced by the ZERO by FIFTY plan and the ever-growing network of community support for Zero Waste, Missoula is well-positioned and well-equipped to become Montana’s first Zero Waste city and to inspire other communities to embark on similar journeys of their own. Missoula is already on the path to Zero Waste, and with the ZERO by FIFTY plan as a starting line for concerted efforts to achieve Zero Waste, residents and the City can collectively realize their values and visions for the community.

ZERO WASTE IN MISSOULA: AN OVERVIEW

The City of Missoula established Zero Waste as a community priority with the adoption of Resolution 8044 in February 2016.¹ Missoula's Zero Waste goal is to reduce what the community sends to the landfill by 90 percent by 2050.

The phrase Zero Waste may be new to Missoula, but resource conservation, open space preservation, climate action, public health, and smart growth are long-held Missoula values. Zero Waste is a global movement that supports those values through practical measures that can be implemented at the local level. In addition, entrepreneurial opportunities often arise along the path to Zero Waste that support a sustainable, livable community with a diversified economy, improved infrastructure, and enhanced environmental quality.

The Missoula Zero Waste Resolution directed City staff to develop a Zero Waste plan to "include a baseline study of the City of Missoula's current rate of disposal" and to "identify objectives and to recommend short-, medium-, and long-term actions to reach the designated Zero Waste goals" while ensuring public involvement in the planning process.

To that end, the City formed a Zero Waste Leadership Team to steward the plan development process. The team identified a Zero Waste Advisory Committee (ZWAC), composed of multiple stakeholders representing the City; the County; Missoula institutions, businesses, and nonprofits; and interested citizens.² With support from ZWAC members, the leadership team developed and tested a stakeholder process to engage and educate the community about Zero Waste as well as to elicit ideas for Missoula's Zero Waste plan.

In the Missoula Zero Waste Resolution, the City of Missoula adopted the Zero Waste International Alliance (ZWIA) definition—the only peer-reviewed, internationally-accepted definition—of Zero Waste.³

"Zero Waste is a goal that is ethical, economical, efficient, and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

"Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

"Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health."

ZERO by FIFTY Waste Reduction Targets

Goal:
90% by 2050

Target 1:
30% or better by 2025

Target 2:
40% or better by 2030

Target 3:
60% or better by 2040

"Zero Waste...or darn near"

Eric Lombardi. Eco-Cycle International. Boulder, CO.

ZERO WASTE EXPLAINED: TOXICS

Many products people buy and use on a daily basis contain chemicals and heavy metals known to be toxic to humans, animals, and the environment. Such products include electronics, compact fluorescent light bulbs, batteries, mercury thermostats, oil-based paints and solvents, and motor oil. When disposed of, these products are classified using terms

such as Household Hazardous Waste (HHW), E-Waste, and Universal Waste. Two ways the Zero Waste approach seeks to create healthier communities are reducing the amount of toxins in products by design and ensuring toxic materials are kept out of the landfill so as to avoid future threats to public health and the environment.

THE BASELINE STUDY: QUANTIFYING THE GOAL

The City of Missoula appropriated funding for the completion of a baseline study of Missoula's municipal solid waste (MSW) stream in the FY18 budget. The purpose of the study is to accurately assess the weight, types, and sources of materials Missoula currently landfills and to establish the metrics necessary to track progress toward the 90 percent reduction in landfilled materials. The resulting data will allow the City to track and report on progress toward the targets. The baseline study is anticipated to be completed by 2019.

As Missoula grows, its waste stream will also grow. Therefore, applying the ZERO by FIFTY goal to waste generation per Missoulian will allow the City to track progress toward waste reduction even as the

population increases.⁴ Per-capita waste generation is a widely recognized and easily understood metric that acknowledges the dynamic relationship between population and disposal rates.

The baseline study will allow the City to assess progress by calculating the reduction by weight, in total and per capita, of discarded materials. A simple formula to calculate per capita waste generation is:

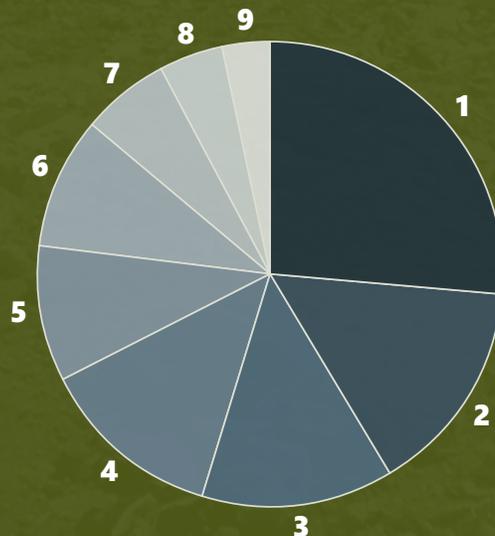
$$\text{Total landfilled MSW in year} \div \text{Population that year} = \text{Landfilled MSW per capita that year}$$

Without actual disposal data for Missoula, is difficult to calculate this metric. However, using statewide disposal data from the Montana Department of Environmental Quality,⁵ the City estimates that Missoulians will landfill between 91,124 tons and 112,387 tons of MSW in 2018.⁶

Municipal Solid Waste by Material Type

The EPA reported nationwide municipal solid waste (MSW) generation by material in 2014 (see chart below).⁷ Typically, MSW does not include industrial, hazardous, or construction and demolition (C&D) waste. However, all unregulated waste generated in Missoula goes to the Missoula Landfill, which is the only landfill in the region. The EPA estimates that the amount of C&D debris generated in the U.S. is more than twice the amount of MSW.⁸ While C&D materials are not represented on this chart, they likely represent a significant portion of Missoula's wasted resources (see page 27 for more information on C&D materials).

U.S. Waste Characterization (2014)

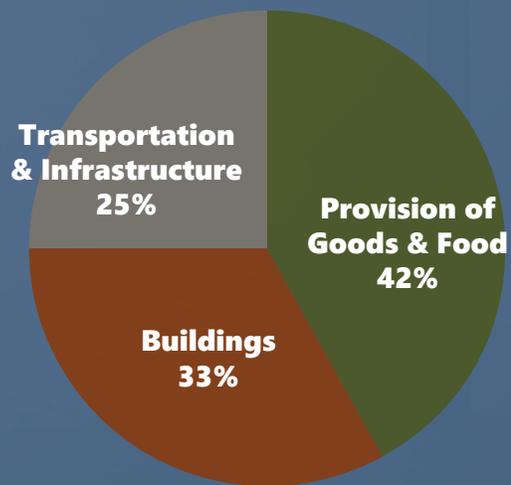


1. Paper – 27%
2. Food – 15%
3. Yard Trimmings – 13%
4. Plastics – 13%
5. Rubber, Leather, Textiles – 10%
6. Metals – 9%
7. Wood – 6%
8. Glass – 4%
9. Other – 3%

ZERO WASTE EXPLAINED: CLIMATE ACTION STRATEGY

Both process and transportation energy and embedded energy (i.e., energy content of raw materials) are represented in manufactured materials.⁹ When assessed from a systems perspective,¹⁰ 42 percent of all U.S. greenhouse gas emissions are generated in resource extraction, manufacturing, and distribution of goods and food. This statistic points to Zero Waste as an effective climate action strategy. According to the Missoula Community Climate Smart Action Plan v1.0, nine percent of our community's greenhouse gas emissions are generated through the landfill disposal of solid waste alone.¹¹

U.S. Greenhouse Gas Emissions: A Systems-Based View



ZERO WASTE & URBAN SUSTAINABILITY

The City of Missoula is the first city in Montana to adopt a goal of Zero Waste. In doing so, Missoula joins a small group of communities in the Northern Rockies and dozens across the country that are implementing Zero Waste as an urban sustainability solution. These communities see the connectivity of various sustainability challenges and understand the value of the tangible, accessible, and practical solutions that a Zero Waste goal contributes to achieving overall sustainability.

ZERO by FIFTY: Missoula's Pathway to Zero Waste is in line with the City's commitment to create a more sustainable community and is in alignment with

several of the City's existing plans and goals. Waste reduction has been a City priority since the Missoula Energy Conservation and Climate Action Plan was adopted in 2012. The Our Missoula City Growth Policy adopted in 2015 introduced Zero Waste into City policy by declaring the environmental goals to "achieve Zero Waste within the Missoula Community" and to "reduce the community's solid waste to the point that the landfill is only minimally necessary."¹² In 2015, the City Hall Zero Waste Plan marked a conscious shift toward a new Zero Waste paradigm within City facilities operations. Finally, the Missoula Community Climate Smart Action Plan v1.0 [2015] identified Zero Waste as one of the 12 "buckets" or focus areas to "guide Missoula area Climate Smart activities for years to come."¹³

WORKING TOGETHER TOWARD ZERO WASTE: CITY AND STAKEHOLDER ROLES

This plan will not do the work of reducing Missoula's waste itself; achieving Zero Waste will require a concerted, sustained effort led by the City and involving numerous stakeholders working toward a common vision. All Missoulians have a role to play in the plan's success. Based on understandings of the interdependent relationships that exist in model Zero Waste communities, we suggest the following roles the City and various stakeholders can take to work together toward a Zero Waste Missoula.

THE CITY OF MISSOULA

The City's role is to coordinate the implementation of this plan with local government and community partners to ensure Missoula meets its Zero Waste goal. By implementing this plan, the City will intentionally create the conditions necessary for the community to keep moving toward Zero Waste for years to come. Specific activities include, but are not limited to, leading by example, continuing to champion and articulate the Zero Waste vision, providing resources to inform and educate, spearheading collaborative partnerships to develop Zero Waste infrastructure, ensuring equitable delivery of strategic programs and services, exploring incentives, adopting policies as deemed necessary, tracking progress toward the goal, communicating progress to the community, and engaging local and state government.

INSTITUTIONS

When large institutions engage in significant waste reduction measures, they significantly accelerate a community's movement along the path to Zero Waste. Educational and healthcare institutions, for example,

collectively engage tens of thousands of Missoulians on a daily basis. By adopting ZERO by FIFTY goals, policies, and programs at their facilities as well as educating and training employees and constituents to understand and engage in Zero Waste practices, Missoula's institutions can significantly reduce Missoula's waste stream while fostering awareness and supporting Zero Waste behavior-building across the community.

BUSINESSES & ORGANIZATIONS

Globally, businesses have blazed the trail to Zero Waste. Businesses have proven that Zero Waste is feasible, fiscally prudent, and invaluable to brand identity.¹⁴ Wasting resources not only wastes money, it wastes the opportunity to connect with a growing number of consumers for whom environmental stewardship is a core value. By incorporating Zero Waste principles and policies across operations, Missoula's businesses and organizations can reduce waste, realize cost savings, and enhance the value of their brand regardless of how Zero Waste intersects with their own values. By making it easy for employees, customers, and patrons to reduce, reuse, recycle, and compost, businesses and organizations can also play a significant role in providing access to Zero Waste choices where people live, work, and play. Furthermore, nonprofit organizations can ensure that their programs and events are informed by Zero Waste principles and continue to embrace sustainability in their missions. Finally, materials collection services and other Zero Waste-aligned service businesses are essential stakeholders who provide logistical support for Zero Waste programs and help businesses and organizations realize Zero Waste goals.

RESIDENTS

Missoula residents have already played a significant role in moving Missoula toward Zero Waste by organizing the grassroots effort that led to the passage of the Missoula Zero Waste Resolution and by participating in the community listening sessions that informed this plan (see Appendix 2). Residents can continue to inform ZERO by FIFTY by

providing feedback on proposed programs, services, and regulations and by seeking opportunities to further develop Missoula's Zero Waste economy through entrepreneurial initiatives. At the very least, residents can be active participants in ZERO by FIFTY by reducing, reusing, recycling, composting, and by patronizing Zero Waste service providers and facilities.



COMMUNITY SPOTLIGHT: PROVIDENCE ST. PATRICK HOSPITAL

Although health care waste is complex, often regulated, and expensive, Providence St. Patrick Hospital keeps 39% of its waste out of the landfill through source reduction, reuse, recycling, and composting—and saves money while doing it!

Strategies to reduce waste upstream include reusable foodservice ware in the cafeteria, reusable containers for sharps such as needles, and 10 bottle-filling stations at water fountains throughout the hospital.

Strategies to reduce waste midstream include an exchange cart where staff members can place items they don't need and others can pick them up; donations of goods including furniture,

coolers, boxes, blue wrap, and packing materials within the Missoula community; and mission donations of clean reusable items to hospitals in need around the world.

Strategies to reduce waste downstream include proper segregation of infectious and hazardous waste, food scraps composting, and a 25-year-old recycling program for conventional recyclables as well as for shredded paper, required for protection of privacy.

While St. Patrick Hospital's efforts make them a "top performer" according to Practice Greenhealth statistics, the hospital is currently undertaking a thorough analysis of its materials streams to identify—and reduce further—amounts and sources of contamination.

THE ZERO BY FIFTY FRAMEWORK

The ZERO by FIFTY framework consists of a set of guiding principles and a set of connected focus areas or “paths.”

GUIDING PRINCIPLES

Four key principles¹⁵ frame the objectives and guide implementation of the recommendations in this plan.

Rethink: Wasted materials = resources

This plan is informed by two assumptions: waste is not inevitable, and wasting resources is an unsustainable contemporary cultural norm. The vast majority of materials discarded in U.S. landfills every day are simply misplaced resources.¹⁶ The success of ZERO by FIFTY will rely on the extent to which current and future Missoulians’ perceptions of materials can

be cognitively reframed from “waste”-in-waiting to “resources” that have significant value in a circular economy.

Maintain equity

This plan is informed by the belief that achieving Zero Waste is a community effort. Involving all Missoulians in ZERO by FIFTY will require equitable implementation of Zero Waste strategies in a manner that eliminates barriers to participation, encourages ownership of a shared vision, and causes no extraordinary burden on any particular group.

The City of Missoula recognizes that some of the actions necessary to achieve community Zero Waste goals recommended in this plan require additional

CITY SPOTLIGHT: MISSOULA’S MUNICIPAL ZERO WASTE EFFORTS

In the spirit of leading by example, the City of Missoula has begun steering municipal operations toward Zero Waste.

In 2016, City Hall initiated a pilot program of All-In-One recycling to collect plastics, cardboard, paper, and aluminum cans for recycling. Between September 2016 and January 2017, City Hall diverted 9,350 pounds of materials from the landfill, 36% of the total discarded materials. From May to August 2017, the diversion rate increased

39%, signaling increased participation in the program.

In 2017, the City of Missoula Parks and Recreation Department unanimously approved the Zero Waste policy for their operations (see Appendix 5). Under this policy, priority will be placed on Caras Park, Fort Missoula Regional Park, and McCormick Park for new Zero Waste initiatives. Moving forward, all Parks and Recreation sites will work towards implementing Zero Waste policies and practices.

costs to implement and maintain. While Zero Waste services and actions are largely positive for Missoula, extra costs can be an unintended burden, especially for low- and fixed-income households and other vulnerable Missoulians. Recognizing this important tension will be a guiding consideration in ZERO by FIFTY implementation, and every effort will be made to mitigate those negative externalities.

Prioritize upstream and midstream solutions

This plan is informed by the awareness that we cannot recycle our way to Zero Waste.¹⁷ Upstream solutions are source-reduction strategies that equate to using fewer resources through selection of durable, long-lasting goods and those made with minimal toxicity and minimal volume of material. Midstream solutions include reuse, repair, refurbishing, repurposing, and other strategies that retain or increase the value of existing value-added goods and materials.

Incorporate transparency and accountability

ZERO by FIFTY is rooted in Missoula's values, and in the recognition that our community is better when government policy and service is a reflection of, and is informed and shaped by, constituents, stakeholders and staff from the public and private sectors in an open and inclusive process and venue. This transparency underpinned the process to the ZERO by FIFTY plan development and will continue as a foundation moving forward with implementation.

Accountability is the natural complement to transparency, especially as the City and partners move ZERO by FIFTY from planning to execution. Accountability provides a measure of performance and demonstrates a commitment to providing context and background for how and why decisions are being

made. Accountability is also a commitment to sharing accomplishments and acknowledging lessons learned to provide an iterative, flexible process and strategy that ensures resiliency and success.

Transparency and accountability will be accomplished by:

- Establishing clear goals and performance measures
- Regularly measuring progress toward goals and performance measures
- Producing, presenting, and distributing annual progress reports
- Providing multiple channels and means for community access to view and request information and to provide ideas for and participate in policy and service decisions
- Ensuring engagement of a diverse cross-section stakeholders and citizens

Transparency and accountability maintain and grow confidence in government and ensure essential collaboration and public engagement.

THE FOUR PATHS TO ZERO BY FIFTY

The recommended actions in this plan are organized into four connected focus areas or "paths." These four paths represent the priorities identified by Missoulians at the ZERO by FIFTY community listening sessions, and they align with best practices identified through research of model Zero Waste communities.¹⁸

The paths are:

- ***Access***
- ***Infrastructure***
- ***Education***
- ***Policy***

On the following page, the vision for each path is described briefly and accompanied by identified objectives.



Photo of Clark Fork River cleanup courtesy of Off Route Photography

THE FOUR PATHS TO ZERO BY FIFTY

PATH A: ACCESS

Vision: Missoulians will adopt and normalize Zero Waste behaviors with the increase of convenient, affordable Zero Waste services and programs.

- *Objective A1: Create universal access to Zero Waste systems, services, and programs*

PATH B: INFRASTRUCTURE

Vision: Missoula's Zero Waste economy will be supported by a network of facilities and businesses that together provide the framework for sustainable materials management.

- *Objective B1: Enhance and develop Zero Waste infrastructure*
- *Objective B2: Create opportunities to jump-start local Zero Waste markets and business development*

PATH C: EDUCATION

Vision: Missoulians who understand the benefits of Zero Waste and how to get there will drive the community toward achieving its Zero Waste goal.

- *Objective C1: Educate the Missoula community about Zero Waste in general and ZERO by FIFTY in particular*
- *Objective C2: Encourage Zero Waste education and skill-building across the community in our homes, schools, businesses, and organizations*

PATH D: POLICY

Vision: The City's careful use of incentives, policies, safeguards, and restrictions will ensure continuous community progress toward its Zero Waste goal.

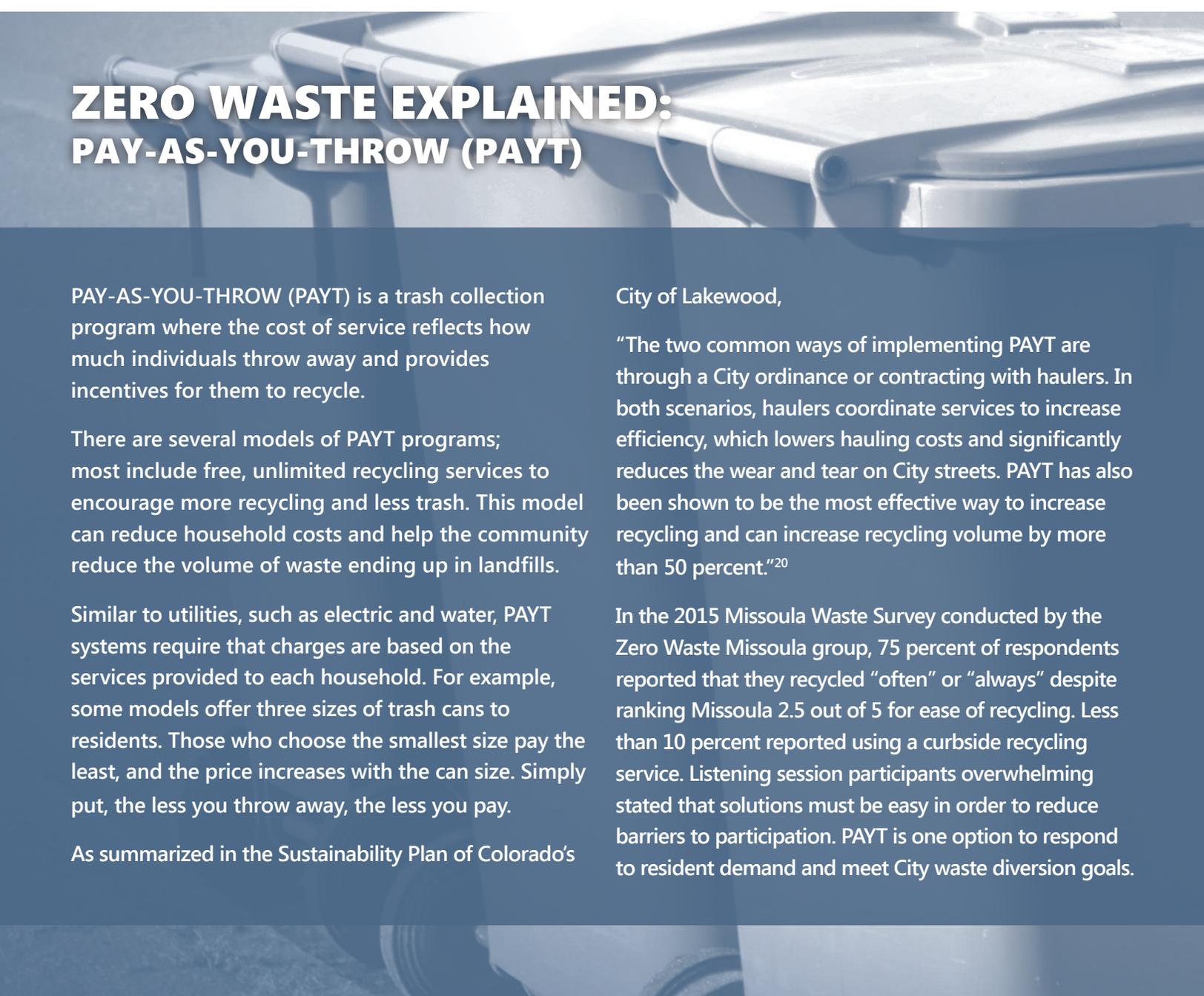
- *Objective D1: Lead by example by implementing Zero Waste across all City operations*
- *Objective D2: Stimulate and support Zero Waste activities across the community*
- *Objective D3: Compel community-wide participation in Zero Waste*
- *Objective D4: Reduce availability of problematic materials and limit inappropriate disposal options*

THE ZERO BY FIFTY ACTIONS

The following recommended actions are designed to collectively achieve the objectives identified in each of the ZERO by FIFTY paths. The actions represent best practices implemented by communities across the United States. Many of these actions are used by model Zero Waste communities in our region. The majority of the recommended actions and accompanying descriptions in this plan come from the EPA's Managing and Transforming Waste Streams: A Tool for Communities.¹⁹

The tables that accompany each path include estimates from the EPA tool on tonnage diversion potential from landfill and potential reduction of upstream climate impacts (greenhouse gas emissions generated by raw materials extraction and product manufacturing).

As per Resolution 8044, the tables also prioritize short-, medium-, and long-term actions to reach the designated Zero Waste targets wherein short-term is 1-3 years, medium-term is 3-5 years, and long-term is 5-10 years.



ZERO WASTE EXPLAINED: PAY-AS-YOU-THROW (PAYT)

PAY-AS-YOU-THROW (PAYT) is a trash collection program where the cost of service reflects how much individuals throw away and provides incentives for them to recycle.

There are several models of PAYT programs; most include free, unlimited recycling services to encourage more recycling and less trash. This model can reduce household costs and help the community reduce the volume of waste ending up in landfills.

Similar to utilities, such as electric and water, PAYT systems require that charges are based on the services provided to each household. For example, some models offer three sizes of trash cans to residents. Those who choose the smallest size pay the least, and the price increases with the can size. Simply put, the less you throw away, the less you pay.

As summarized in the Sustainability Plan of Colorado's

City of Lakewood,

"The two common ways of implementing PAYT are through a City ordinance or contracting with haulers. In both scenarios, haulers coordinate services to increase efficiency, which lowers hauling costs and significantly reduces the wear and tear on City streets. PAYT has also been shown to be the most effective way to increase recycling and can increase recycling volume by more than 50 percent."²⁰

In the 2015 Missoula Waste Survey conducted by the Zero Waste Missoula group, 75 percent of respondents reported that they recycled "often" or "always" despite ranking Missoula 2.5 out of 5 for ease of recycling. Less than 10 percent reported using a curbside recycling service. Listening session participants overwhelmingly stated that solutions must be easy in order to reduce barriers to participation. PAYT is one option to respond to resident demand and meet City waste diversion goals.

PATH A: ACCESS

MISSOULIANS WILL ADOPT AND NORMALIZE ZERO WASTE BEHAVIORS WITH THE INCREASE OF CONVENIENT, AFFORDABLE ZERO WASTE SERVICES AND PROGRAMS.

OBJECTIVE A1: Create universal access to Zero Waste systems, services, and programs

ACTION A1.1: Transform the current collection infrastructure to support the ZERO by FIFTY goal

Engage Missoula's waste collection service provider(s) to develop a plan to transition to a Pay-As-You-Throw (PAYT) model.

ACTION A1.2: Ensure availability of recycling and compost collection service to all Missoula households, businesses, & multi-family residential housing units (MFUs)

Increase recycling and compost collection services. Careful consideration of practicality and economics is needed to determine the best strategies for Missoula.

ACTION A1.3: Support expansion of diversion options for Household Hazardous Waste (HHW), E-Waste, and Universal Waste disposal

Work with the Missoula City-County Health Department to collect as many types of hazardous and toxic materials as possible. Encourage retailers to "take back" products they sell that become hazardous waste upon disposal (a precursor to Policy Action D3.4). Promote sound disposal options and collection events as widely as possible.

ACTION A1.4: Install Zero Waste Stations in public parks and other public spaces such as Downtown

Provide equipment and technical assistance to parks and public areas, public venues, and events hosted in public areas to transform users' experience at the point of disposal to increase recycling and/or composting behaviors and rates. Communicate with City staff and collection service providers to identify services needed to maintain stations.

ACTION A1.5: Work with waste collection service provider to implement Every-Other-Week (EOW) trash collection

Following the proliferation of recycling and compost collection, the next step is to increase participation by reducing the frequency of trash collection service. Various models exist. One model is based on weekly compost collection with recycling and trash collected on alternating weeks. Communities with EOW trash collection often refer to trash as "residuals" or what's left over after composting and recycling. Ask waste collection service provider(s) to provide enhanced customer service in the form of technical assistance to customers to help them select containers that are the right size for the amount of trash, recyclables, and compostables produced.

TABLE A1: ACCESS Actions

ACTION	TIMEFRAME	DIVERSION POTENTIAL	UPSTREAM IMPACTS
A1.1: Transform the current collection infrastructure to support the ZERO by FIFTY goal	Short	Medium – High	Low – Medium
A1.2: Ensure availability of recycling and composting collection service to all Missoula households, businesses, & multi family residential housing units (MFUs)	Short	Medium – High	Low
A1.3: Support expansion of diversion options for household hazardous waste (HHW), e-waste, and universal waste disposal	Short	Low – Medium	Low
A1.4: Install Zero Waste stations in public parks and other popular public spaces such as Downtown	Short	Low	Low
A1.5: Work with waste collection service provider to implement Every-Other-Week (EOW) trash collection	Medium	Medium	Low

Adapted from the EPA's Managing and Transforming Waste Streams Tool



ZERO WASTE EXPLAINED: ZERO WASTE STATION

Zero Waste Stations provide people access to waste reduction solutions at the point of disposal. The most basic station is a recycling bin paired with a garbage can. Where appropriate, a third bin for composting is present. Some Zero Waste Stations provide users the opportunity to source-separate into multiple streams

such as paper, bottles and cans, food scraps and food-soiled paper, and more. The City of Missoula is leading by example by co-locating recycling bins with every garbage can in City Hall and at Fort Missoula Regional Park.

PATH B: INFRASTRUCTURE

MISSOULA'S ZERO WASTE ECONOMY WILL BE SUPPORTED BY A NETWORK OF FACILITIES AND BUSINESSES THAT TOGETHER PROVIDE THE FRAMEWORK FOR SUSTAINABLE MATERIALS MANAGEMENT.

OBJECTIVE B1: Enhance and develop Zero Waste infrastructure

ACTION B1.1: Work to expand materials accepted at Garden City Compost

The acquisition of the operation now known as Garden City Compost was a major step toward Zero Waste for the City of Missoula. Finding a sustainable solution for the organic portion of MSW is commonly one of the biggest challenge in communities striving for Zero Waste. Improvements at Garden City Compost are underway, and the facility has already expanded materials accepted beyond biosolids and yard debris (including leaves and Christmas trees). Expand Garden City Compost's list of accepted materials to also include all food scraps & food-soiled paper, organic C&D debris (e.g. naily lumber), and BPI-certified compostable products and packaging.

ACTION B1.2: Assist with development of HHW facility

A Missoula City-County Health Department Hazardous Household Waste facility would serve as a collection hub in the community for hazardous products. The facility could divert problematic products including oil, antifreeze, paint, tires, batteries, pharmaceuticals, carpet, medical waste, and possibly others from the MSW stream. To reduce disposal costs, identify opportunities for materials reuse and encourage management of collected items by manufacturers or retailers in advance of Policy Action D3.4.

ACTION B1.3: Ensure availability of materials & technical support for Zero Waste events

Invest in portable collection bins and signage for pop-up Zero Waste Stations that can be deployed at all events in public parks and areas and made available for private events as well for temporary use. Provide training and technical assistance to venue and event coordinators.

ACTION B1.4: Support expanded drop-off options for recyclables & reusables

Encourage nonprofit agencies, local businesses, e-Steward recyclers, B-corporation certified recyclers, or those that adhere to documentable ethical practices to accept and/or establish locations in the community for drop-off of recyclable and reusable items.

ACTION B1.5: Support a more complete and comprehensive food recovery network

Act on recommendations from "An Emerging Blueprint for a Food Waste Free Community"²¹ to identify implementation actions that address reducing food waste and increasing food security.

ACTION B1.6: Explore development of additional Zero Waste facilities

Possible facilities include: Center for Hard to Recycle Materials (CHaRM); Construction, Demolition, and

Deconstruction (CDD) reuse & recycling facilities; Materials Recovery Facility (MRF); and/or Resource Recovery Park (RRP). Determine gaps in infrastructure to efficiently and economically divert materials. Where necessary, develop or contract for a facility or facilities to: accept hard-to-recycle materials for reuse, refurbishing and/or recycling (CHaRM); recover reusable, value-added building materials as well as inert C&D materials, e.g., rock, asphalt, concrete, bricks (CDD facility); sort recyclables for highest market value (MRF); and co-locate reuse, recycling, and compost processing with manufacturing and retail businesses (RRP).

OBJECTIVE B2: Create opportunities to jump-start local Zero Waste markets and business development

ACTION B2.1: Develop Zero Waste start-up assistance program

Align and connect existing small business development agencies to provide support for Zero Waste start-ups.

ACTION B2.2: Investigate development of a Zero Waste Business Park

A Zero Waste Business Park could intercept materials destined for the landfill and transform them into marketable products. Possible uses could include a Zero Waste business incubator site for niche recycling, reuse or repair, upcycling, and valued-added small manufacturing operations that would provide local green-collar jobs. Explore siting adjacent to the Missoula Landfill.

TABLE B1: INFRASTRUCTURE Actions			
ACTION	TIMEFRAME	DIVERSION POTENTIAL	UPSTREAM IMPACTS
B1.1: Work to expand materials accepted at Garden City Compost	Short	Medium – High	Low
B1.2: Assist with development of HHW facility	Short	Low	Low
B1.3: Ensure availability of materials & technical support for Zero Waste events	Short	Low – Medium	Low – Medium
B1.4: Support expanded drop-off options for recyclables & reusables	Short	Low	Low – Medium
B1.5: Support a more complete and comprehensive food recovery network	Medium	Low – Medium	Medium
B1.6: Explore development of additional Zero Waste facilities	Medium	Low – High	Low – Medium
B2.1: Develop Zero Waste start-up assistance program	Short	Medium	High
B2.2: Investigate development of a Zero Waste Business Park	Short	Medium	Low

Adapted from the EPA’s Managing and Transforming Waste Streams Tool

INFRASTRUCTURE SPOTLIGHTS: CHaRM CENTER FOR HARD-TO-RECYCLE MATERIALS

What is one to do when discarding materials that are not conventionally recyclable such as paper, cardboard, plastic, or aluminum? The City of Boulder, Colorado has found a solution in the Center for Hard to Recycle Materials (CHaRM) hosted by the City's nonprofit partner, Eco-Cycle. 36,000 residents utilize the CHaRM facility each year to recycle more than is typically collected curbside or dropped off at a standard recycling center. The facility currently accepts 24 types of materials, and it has an operational goal to accept

at least one new material per year.

At Eco-Cycle's CHaRM, local citizens can drop off scrap metal, conventional recyclables, and compostables at no charge. A \$3.00 facility fee allows drop-off of plastic bags, books, bikes, clothing, shoes, large durable plastics, and cooking oil. Electronics, fire extinguishers, plastic appliances, mattresses, and yoga mats are among the other items accepted for an additional fee. The facility is subsidized by funds from the City of Boulder trash tax, Eco-Cycle, and residents who pay to use the facility.

BOULDER COUNTY HAZARDOUS MATERIALS MANAGEMENT FACILITY

To mitigate improper disposal of HHW, the Boulder County Hazardous Materials Management Facility offers residents an opportunity to safely dispose of their household—and some business—hazardous waste. The facility helps residents safely recycle unconventional materials, such as compact fluorescent lightbulbs, household sharps, art supplies, pesticides and herbicides, and paint, among others. Additionally, the facility provides information regarding proper use and cleanup

of materials like motor oil and other vehicle wastes, fertilizers, pesticides and herbicides, and pet waste. The Boulder County Hazardous Materials Management Facility aims to provide services and education that protect community and environmental health. This facility is located adjacent to the rest of Boulder's comprehensive Zero Waste infrastructure, including Eco-Cycle's Center for Hard to Recycle Materials (CHaRM), for increased convenience to residents and landfill diversion opportunities.

PATH C: EDUCATION

MISSOULIANS WHO UNDERSTAND THE BENEFITS OF ZERO WASTE AND HOW TO GET THERE WILL DRIVE THE COMMUNITY TOWARD ACHIEVING ITS ZERO WASTE GOAL.

OBJECTIVE C1: Educate the Missoula community about Zero Waste in general and ZERO by FIFTY in particular

ACTION C1.1: Develop community-focused, cross-platform education campaign

Maintain consistent messaging and branding across all facets of ZERO by FIFTY including, but not limited to, Zero Waste Stations, facilities, and marketing.

- Update and maintain the Moving Missoula Toward Zero Waste²² guide online and possibly in print.
- Create an informative, comprehensive ZERO by FIFTY website. Publish best practices for source reduction, reuse, recycling, and composting.
- Create a searchable local directory for how and where to recycle or drop off used consumer products.
- Develop a social marketing/behavior change marketing program to find the best means to motivate people to reduce, reuse, recycle, and compost.



COMMUNITY SPOTLIGHT: ZOO CITY APPAREL

Several years ago Zoo City Apparel, a local screen printing business, cut its paper usage in half. "The key to going paperless is to go all the way," according to owner Chris Johnson, a self-proclaimed early adopter of cloud-based applications, which he considers a key factor in making Zoo City's paperless office work. On the production floor, tablets mounted at each printing station allow Zoo City to eliminate printed work orders for press operators. While some phases of

the operation still rely on paper for tracking, Johnson remains on the lookout for developments in cloud-based apps that will help further minimize paper usage. Additional benefits he cites include reduced clutter and increased accessibility of cloud-based documents such as mock-ups, estimates, and invoices. "I think it's important for companies to begin to reduce their waste immediately without expecting 100 percent elimination in the near term," reflects Johnson, "It's a process."

ZERO WASTE EXPLAINED: SOURCE REDUCTION & REUSE STRATEGIES

Some examples of source reduction and reuse initiatives include:

- Conducting outreach on paperless office strategies
- Developing a network of local businesses to repair, refurbish, market, and sell used products
- Promoting local resale markets and garage sales for sale of reusable items and swaps for household goods (e.g., clothing, toys)
- Helping promote services that provide short-term lending and rentals of reusable goods such as tools, sports equipment, and party equipment (e.g. tables, chairs, serving utensils) and sharing websites
- Conducting outreach to grocery stores, restaurants, school cafeterias and other food service vendors on opportunities and practices to prevent food waste and reduce disposable food ware packaging
- Promoting alternatives to disposable diapers

Photo of 'Mer(i)c(an) Table built by Team TBD at SponCon 2017 courtesy of Home ReSource

ACTION C1.2: Support integration of the ZERO by FIFTY goal and framework across Missoula

Identify other institutions and businesses in the community who may be potential partners and help them take steps toward adopting the ZERO by FIFTY goal.

ACTION C1.3: Promote expansion of source reduction & reuse initiatives

Help the community understand that Zero Waste is more than simply recycling through a combination of promotion and outreach, and by developing strategic programs. Offer strategies to reduce materials consumption at home, at work, and at play.

ACTION C1.4: Provide guidance for construction, demolition, and deconstruction (CDD) reuse and recycling service options

Update the Deconstruction & Demolition Resources page of the Deconstruction Resource Guide for City of Missoula Development Services.²³ Explore ways to more fully use the guide as an educational tool for builders and contractors. Enhance Development Services staffs' ability to provide guidance on and incentives for CDD reuse and recycling service options.

ACTION C1.5: Develop & deploy outreach program & resources to support businesses moving toward Zero Waste

Conduct or contract best-practices training, which may include site visits, walk-through audits, and

distribution of ZERO by FIFTY-branded displays and signs, to encourage source reduction and increase rates of recycling and/or composting at businesses. Support evaluation and redesign of Missoula-made products and packaging to prevent waste. Encourage businesses to take back products and associated packaging, especially items that are toxic in their manufacture, use, or disposal that are not currently reusable, recyclable, or compostable locally (a precursor to Policy Action D3.4).

OBJECTIVE C2: Encourage Zero Waste education and skill-building across the community in our homes, schools, businesses, and organizations

ACTION C2.1: Support implementation of Zero Waste in K-12 schools

The City has already supported MCPS by sharing the ZERO by FIFTY targets, framework, and guiding principles for use in the development of the MCPS Zero Waste Plan. Further support MCPS and other K-12 schools in and around Missoula by: providing ZERO by FIFTY branding for Zero Waste Stations; being an informational resource; supporting Zero Waste curriculum, lessons, and educational programming; giving presentations; and collaborating with school faculty, staff, and administrators to include student voices in ZERO by FIFTY.

ACTION C2.2: Support community opportunities to gain Zero Waste skills

Provide more opportunities to train and deploy Zero Waste Ambassadors at events hosted at public venues. Offer training support for private venue events. Partner with local organizations or service clubs to sponsor or promote product repair workshops, such as the Gallatin Solid Waste Management District Fix It Clinics, or reuse workshops, such as those offered by Home ReSource.



EDUCATION SPOTLIGHT: FIX IT CLINICS

The Gallatin Solid Waste Management District (SWMD) serves an area of southwest Montana around Bozeman, providing processing and disposal of MSW. In 2017, in an effort to inspire and empower citizens to reduce waste through repair, the Gallatin SWMD began a series of Fix-It Clinics. At each clinic hosted by a community partner, residents with household items and articles of clothing in need of light repairs work alongside community members with repair skills, know-how, and tools to mend what is broken

and save value-added products from the landfill. The November 2017 clinic boasted 14 volunteers, 26 visitors, and 45 successful repairs. Gallatin SWMD reports that each fix is met with the ringing of a bell and a victorious cheer from all participants, followed by a photo of the fixed item and its owner. Reducing landfilled resources and demand for new materials, building skills and community, and increasing organizational exposure are some of the benefits from Fix-It Clinics recognized by Gallatin SWMD.

ZERO WASTE EXPLAINED: CONSTRUCTION, DEMOLITION, AND DECONSTRUCTION (CDD)

The EPA estimates that C&D debris represents at least two-thirds of all discarded materials in the United States.²⁴ Deconstruction is a practice that reduces wasted materials in the building sector; it is the systematic dismantling of a structure for maximum reuse and recycling. Missoula is unique for a city of its size in that there are multiple deconstruction services available that provide full-service demolition of both residential and commercial buildings.

Historically, deconstruction services and reuse options for discarded materials from the U.S. building sector have been limited and therefore such materials are commonly referred to as C&D “debris”. C&D debris includes aluminum, asphalt, brick, buckets, cardboard, carpet and carpet padding, concrete, land clearing debris, lumber, pallets, paper, pipe, plastic, roof tile, steel, shingles,

wallboard, and wood.²⁵ Deconstruction salvages high-value building components, including lumber, doors, windows, cabinets, and lighting & plumbing fixtures, among others. In this plan, “C&D” refers to materials from the building sector that are commonly recycled, and “CDD” refers to recyclable materials as well as reusable, high-value building components.

With the Missoula Landfill the only disposal site available to our community, the likelihood is high that all debris from Missoula’s formal and informal building sector that is not recovered for reuse or recycling is discarded along with MSW. While C&D recycling ordinances exist in 128 municipalities across the U.S., there is no such current ordinance in Missoula. Missoula’s building materials reuse and recycling infrastructure remains limited.

Photo of former Five Valleys Bowling Center and Lucky Strike Casino courtesy of Home ReSource

TABLE C1: EDUCATION Actions

ACTION	TIMEFRAME	DIVERSION POTENTIAL	UPSTREAM IMPACTS
C1.1: Develop community-focused, cross-platform education campaign	Short	Low – Medium	Low
C1.2: Support integration of the ZERO by FIFTY goal and framework across Missoula	Short	Medium	Medium
C1.3: Promote expansion of source reduction & reuse initiatives	Short	Low	Low
C1.4: Provide guidance for construction, demolition, and deconstruction (CDD) reuse and recycling service options	Short	Low	Low
C1.5: Develop & deploy outreach program & resources to support businesses moving toward Zero Waste	Short/Medium	Low – Medium	Low – High
C2.1: Support implementation of Zero Waste in K-12 schools	Short	Medium	Medium
C2.2: Support community opportunities to gain Zero Waste skills	Short	Low	Low

Adapted from the EPA’s Managing and Transforming Waste Streams Tool

PATH D: POLICY

THE CITY'S CAREFUL USE OF INCENTIVES, POLICIES, SAFEGUARDS, AND RESTRICTIONS WILL ENSURE CONTINUOUS COMMUNITY PROGRESS TOWARD ITS ZERO WASTE GOAL.

OBJECTIVE D1: Lead by example by implementing Zero Waste across all City operations

ACTION D1.1: Encourage environmentally preferable purchasing (EPP) practices

Encourage EPP practices across all City departments. Adopt the precautionary principle for purchases and services. Reduce use of toxic products by replacing them with non-toxic alternatives. Consider pursuing regional purchasing cooperatives to buy recycled products in bulk to reduce cost.

ACTION D1.2: Adopt and implement ZERO by FIFTY goals and action plans for all public venues and events

Adopt and implement similar protocols wherever public events take place. Events generate a significant amount of waste in a short period of time, making them prime targets for actions to increase diversion and educate the public. Missoula Parks & Recreation has already adopted a Zero Waste protocol developed by City staff (see Appendix 5).



POLICY SPOTLIGHT: MRA DEMOLITION ALTERNATIVES POLICY

In 2016, the Missoula Redevelopment Agency adopted a Demolition Alternatives Policy “to encourage conservation, sustainability and the reuse of existing structures and materials” (see Appendix 4). The policy points to the

Development Services Deconstruction Resource Guide (see Appendix 3) as a resource for applicants requesting tax increment assistance for the removal of structures on a redevelopment project.

ACTION D1.3: Integrate reuse, recycling, and deconstruction into all City-supported construction and demolition projects

Ensure full consideration of materials reuse and recycling options during planning for all future projects. Intentionally remove timing barriers to deconstruction by beginning all projects with the assumption that any structures requiring removal are candidates for deconstruction. Evaluate early to factor in time needed for deconstruction with the goal of maximum recovery of all CDD materials.

ACTION D1.4: Require environmentally preferable purchasing (EPP) practices and incorporate Zero Waste objectives into all contractual purchases and services

Require EPP practices across all City departments. Require that all contractual agreements between the City and suppliers or service providers align with ZERO by FIFTY guiding principles and recommended actions.

ACTION D1.5: Incorporate reusable and recycled materials into municipal road construction and maintenance projects

Research best practices for road construction and maintenance projects using reusable and recycled materials. Work with county, state, and federal partners to pilot road construction projects and maintenance projects using locally-sourced materials such as glass or recycled concrete. Normalize procedure for road construction and maintenance projects using reusable and recycled materials.

OBJECTIVE D2: Stimulate and support Zero Waste activities across the community**ACTION D2.1: Integrate the ZERO by FIFTY actions into existing comprehensive City & City partner planning documents**

ZERO by FIFTY is a reflection of Missoula's community values, a response to partner and citizen contribution, and a consequence of high-level intention set forth in thoughtful, comprehensive City and community planning. ZERO by FIFTY provides detailed information and strategy applicable to objectives found in the City's Our Missoula Growth Policy and Missoula's Climate Smart Community Action Plan. As these plans and other comprehensive planning documents are implemented or updated and new plans crafted, ZERO by FIFTY should be formally incorporated to serve as an important foundational lens to community growth, development, and health. When plans are cross-pollinated and cross-referenced, efficiencies are realized, resources are maximized, and synergies strengthened, placing Zero Waste as a cornerstone to Missoula's future and leading to widespread goal achievement in City and community planning.

ACTION D2.2: Develop incentives for new Zero Waste business start-ups

Develop a grant program to inspire Zero Waste entrepreneurs and help remove barriers such as upfront capital costs. Launch/participate in a regional initiative to encourage businesses to use recycled materials in their manufacturing processes for new products. Collaborate with local economic development groups to provide financial, siting, permit, and marketing assistance and incentives to businesses.

ACTION D2.3: Provide incentives to developers & contractors who include reuse, recycling, and deconstruction in project plans

Provide incentives to developers to support adaptive reuse of older or historic buildings to new uses.

Provide incentives to developers who use materials made from recycled content or for on-site reuse and recycling. Review development process to integrate appropriate incentives into the process.

ACTION D2.4: Encourage and provide incentives for homes, neighborhoods, schools, and businesses to compost

While Garden City Compost is a major asset to the City, backyard or on-site composting of yard trimmings and food scraps is a source reduction activity with upstream impacts that may help additional Missoulians adopt Zero Waste behaviors. Provide or partner with an organization that can provide composting workshops to the public. Subsidize the cost of compost bins to offer bins at reduced costs to workshop attendees. Explore opportunities for neighborhood composting. Explore recognition programs for schools and foodservice establishments that choose to compost their food scraps and food-soiled compostable packaging. Consider incentives for foodservice establishments that subscribe to compost collection services.

ACTION D2.5: Offer incentives for use of local compost

Host annual compost giveaway event at Garden City Compost. Offer no-cost compost to contractors for use in filter socks on construction sites to prevent runoff. Support carbon farm projects such as the Hybrid Poplar Tree Project by offering no-cost compost as a soil enhancer.



**POLICY SPOTLIGHT:
RECOGNITION PROGRAMS**

Every year since 2008 in the City of Lakewood, Colorado, the City's Sustainability Awards program has recognized the community's sustainability leaders. Since 2016, the Pennsylvania Resources Council (PRC) has

presented annual Zero Waste awards to those who adopt and utilize strategies to achieve Zero Waste, including waste avoidance, reuse, recycling, and composting in and around Pittsburgh, Pennsylvania.

ACTION D2.6: Develop a recognition & reward program for outstanding Zero Waste businesses & institutions

Provide or partner with an entity that can provide recognition for successes through a Green Business program or a Zero Waste Businesses or Schools program.

ACTION D2.7: Provide incentives for use of C&D recycling facilities

Require C&D processing facility(ies) to provide financial incentives to increase recovery rates (e.g., lower tipping fees, pre-sorting discounts, coupons, and/or expedited service).

OBJECTIVE D3: Compel community-wide participation in Zero Waste

ACTION D3.1: Adopt a community-wide Universal Zero Waste Ordinance

This ordinance will be phased in and will seek to expand recycling and composting to all Missoula residents, employees, and visitors by requiring the following:

- All single-family homeowners to subscribe to trash collection services by a date TBD
- All haulers who provide trash collection service to also provide curbside recycling and compost collection service for their customers
- All property managers to provide adequate trash, recycling, and composting service to their tenants and occupants
- All businesses and institutions to separate recyclables and compostables from trash, providing properly placed containers and signage to facilitate the collection of recyclables and compostables
- All public events, festivals, and fairs in Missoula to provide both recycling and compost collection
- All landlords/owners/property managers of rental dwellings occupied by UM students to sign up for "six-day review" special trash collection periods, one in August during move-in and one in May during move-out, during which haulers are required to provide increased recycling and trash collection service.
- Phased-in mandatory compliance for all households to properly separate recyclables and compostables from trash

ACTION D3.2: Identify a path to a Universal Deconstruction Ordinance

This ordinance will seek to require deconstruction of all structures in Missoula identified for removal in demolition and building permit applications. Determine existing legislative barriers and identify a process to overcome them. Research and develop code language to require deconstruction of all buildings slated for demolition.

ACTION D3.3: Establish minimum reuse and recycling requirements for CDD projects

Identify materials diversion requirements. Require businesses engaged in CDD projects to submit a Waste Minimization Plan with building permit applications. Develop system for tracking and reporting. Determine enforcement and penalties.

ACTION D3.4: Implement mandatory retailer take-back

Require businesses that sell items that must be collected as HHW or are not currently reusable, recyclable, or compostable locally to take those items back for proper reuse, recycling, or disposal.

ACTION D3.5: Adopt an Equal Space policy that requires new construction to provide space for source separation of materials for collection

Require by ordinance that new commercial and/or MFUs be constructed with adequate space for on-site aggregation and collection of recyclables and compostables.^{26, 27}

ACTION D3.6: Support Extended Producer Responsibility (EPR) laws for hard-to-recycle items and toxics

In 2009, the State of Montana passed EPR legislation that banned the sale of mercury thermostats.²⁸ Advocate for more Producer Responsibility legislation and programs by adopting local resolutions or by participating in or convening a Product Stewardship Council for Montana.

OBJECTIVE D4: Reduce availability of problematic materials and limit inappropriate disposal options**ACTION D4.1: Restrict free distribution of single-use disposables**

Adopt ordinances that limit or ban sales or distribution of toxic and hard-to-recover products and product packaging such as plastic bags, plastic straws, and expanded polystyrene foodservice packaging. Alternatively, further explore options of fees or taxes on single-use disposables.

ACTION D4.2: Ban landfill disposal of E-waste

Adopt an ordinance to ban landfill disposal of electronic devices and require sites receiving E-waste to manage used electronic devices in a manner that prevents the release of waste or waste constituents into the environment.

ACTION D4.3: Ban landfill disposal of reusable and recyclable materials from CDD projects

Adopt an ordinance to ban landfill disposal of CDD materials. Seek to include commonly recycled C&D materials such as aluminum, asphalt, brick, buckets, cardboard, carpet and carpet padding, concrete, land clearing debris, lumber, pallets, paper, pipe, plastic, roof tile, steel, shingles, wallboard, and wood as well as high-value building components including lumber, doors, windows, cabinets, and lighting & plumbing fixtures, among others.

ACTION D4.4: Ban landfill disposal of compostable organics

Adopt an ordinance to phase in a ban on compostable organics from refuse collection and the landfill including yard trimmings, food scraps, food-soiled paper, BPI-certified compostable foodservice ware, and discarded lumber from CDD projects.

TABLE B1: POLICY Actions

ACTION	TIMEFRAME	DIVERSION POTENTIAL	UPSTREAM IMPACTS
D1.1: Encourage environmentally preferable purchasing (EPP) practices	Short	Low	High
D1.2: Adopt and implement ZERO by FIFTY goals and action plans for all public venues and events	Short	Medium	Low
D1.3: Integrate reuse, recycling, and deconstruction into all City-supported construction and demolition projects	Short/Medium	High*	Medium*
D1.4: Require environmentally preferable purchasing (EPP) practices and incorporate Zero Waste objectives into all contractual purchases and services	Medium	Medium	High
D1.5: Incorporate reusable and recycled materials into municipal road construction and maintenance projects	Medium/Long	Medium	High
D2.1: Integrate the ZERO by FIFTY actions into existing comprehensive City & City partner planning documents	Short	Medium	Medium
D2.2: Develop incentives for new Zero Waste business start-ups	Short	Medium	High
D2.3: Provide incentives to developers & contractors who include reuse, recycling, and deconstruction in project plans	Short	Low – Medium	Low – High
D2.4: Encourage and provide incentives for homes, neighborhoods, schools, and businesses to compost	Short	Low – High	Low – Medium
D2.5: Offer incentives for use of local compost	Short	Medium	Medium
D2.6: Develop a recognition & reward program for outstanding Zero Waste businesses & institutions	Medium	Low	Low
D2.7: Provide incentives for use of C&D recycling facilities	Long	High	Low
D3.1: Adopt a community-wide Universal Zero Waste Ordinance	Short	Medium – High	Low – Medium
D3.2: Identify a path to a Universal Deconstruction Ordinance	Medium	Low*	Low*
D3.3: Establish minimum reuse and recycling requirements for CDD projects	Medium	Medium	Low
D3.4: Implement mandatory retailer take-back	Medium	Medium	Low
D3.5: Adopt an Equal Space policy that requires new construction to provide space for source separation of materials for collection	Long	Medium	Low
D3.6: Support Extended Producer Responsibility (EPR) laws for hard-to-recycle items and toxics	Long	Low	Medium
D4.1: Restrict free distribution of single-use disposables	Short	Low – Medium	Medium – High
D4.2: Ban landfill disposal of E-waste	Medium	High	High
D4.3: Ban landfill disposal of reusable and recyclable materials from CDD projects	Long	High*	High*
D4.4: Ban landfill disposal of compostable organics	Long	High	High

Adapted from the EPA's Managing and Transforming Waste Streams Tool; *adapted from other sources

THE IMMEDIATE PATH FORWARD

Implementing the recommended actions in this plan will position the City to achieve the targets outlined in Resolution 8044. Progress can and should begin immediately. Below are crucial first steps to facilitate implementation.

ESTABLISH AND FUND A FULL-TIME, DEDICATED STAFF POSITION TO IMPLEMENT THIS PLAN

A dedicated, full-time staff member is needed to oversee this plan to successfully implement recommended actions and produce the desired results and expected benefits. The model Zero Waste communities researched during the development of this plan have full-time, dedicated staff in place to implement their respective Zero Waste plans. A City of Missoula Zero Waste staff member would take responsibility for the coordination of the ZERO by FIFTY effort. Duties would include strategic planning, action implementation, and timely evaluation and updates based on the targets. The staff member would interact and collaborate where appropriate with all levels of City government including the Mayor/ Administration, City staff, City Council, City Attorney, and other stakeholders to ensure success. After evaluating the capacity of the full-time employee, the City could consider additional FTEs or a dedicated Energy Corps Member as needed. The City must objectively assess the staffing needs to ensure success and continuity of ZERO by FIFTY initiatives.

CONDUCT A COMMUNITY BASELINE WASTE STUDY

A Missoula MSW baseline study is needed to begin tracking progress toward the ZERO by FIFTY targets. The City approved funding for the completion of

a baseline study in the FY18 budget. This study is anticipated to be completed by 2019. The baseline study will evaluate the community waste stream and provide the data against which all progress will be measured. Criteria covered by the study will include quantity, composition, and sources of MSW. Understanding sources of MSW generation by sector can help staff decide where to focus resources to make swift advances in waste reduction. An assessment of existing facilities, programs, and services will help identify relevant infrastructure and systems currently in place. The resulting metrics will include an estimated figure for per-capita MSW generation in Missoula. Considering the high priority of this study, it is ideal but not essential that coordination of the study be the first task of the Zero Waste staff member.

CREATE A BUDGET AND FINANCING STRATEGY

The four paths of this plan present a wide variety of strategies and thus require a robust mix of funding mechanisms. Many recommended actions will require both financial and human investment. Below is a list of commonly used mechanisms to be included and used as appropriate and available.

- Integration and inclusion in annual City budget
- Waste Hauler Occupation Tax²⁹
- Waste Hauler Franchise Fees
- Solid Waste Tax³⁰
- Landfill Surcharge
- Grants
- Revolving Loan Funds
- Bonds
- Public/Private Partnerships

TRACKING & EVALUATION

Considering that ZERO by FIFTY is a community-wide effort involving numerous stakeholders, the City will be required to develop transparent systems with clear lines of accountability to track progress toward targets and evaluate program efficacy.

Metrics & Tracking

The most essential tool to measure progress will be an effective methodology for tracking disposal and diversion activities. Several methodologies exist; the City of Missoula will need to select the ones that work best to meet the demands of evaluation and the particulars of Missoula's waste sector. Creating a foundation for comprehensive tracking of disposal and diversion activities will require cooperation from haulers and materials handling facilities. Missoula could explore hauler franchise agreements, hauler permits, or business licenses that require metrics tracking and reporting as a method to obtain the necessary data. From there, additional systems to quantify participation in Zero Waste programs and services, efficacy of education and outreach programs, and other ZERO by FIFTY strategies can be developed.

Development, monitoring, coordination, and adjustment of metrics tracking systems would fall under the responsibilities of the Zero Waste staff member. Landfill disposal data will be the cornerstone for evaluating progress toward ZERO by FIFTY targets.

Sector-based tracking can be helpful to monitor sector-specific reductions from the baseline in MSW generation. Sectors include single-family residential, multi-family residential, institutional, commercial, and industrial sources. This information will help inform policy developments, education, outreach, and other programs and initiatives. The data collected through

these efforts can also inform community greenhouse gas emissions calculations in support of goals outlined in the City of Missoula Conservation and Climate Action Plan and the Missoula Community Climate Smart Action Plan v1.0.

Evaluation & Communication

Metrics will provide the data necessary to evaluate the efficacy of ZERO by FIFTY actions. Evaluation will also dovetail with community outreach and provide the opportunity for transparency in public engagement around ZERO by FIFTY progress. Details including shifts in per-capita MSW generation, quantities of materials composted and recycled, and quantities of materials diverted for reuse will help Missoulians understand the impacts of programs and policies and the impacts of their actions as participants in ZERO by FIFTY. The Zero Waste staff member will use online resources and social media to engage the community with information relevant to this initiative.

REFERENCES

- ¹ Missoula City Council. "Resolution No. 8044: A Resolution Supporting the Creation of a Zero Waste Plan and Setting Waste Reduction Goals for the City of Missoula." 2016.
- ² The Zero Waste Leadership Team included: Chase Jones, City of Missoula; Katie Deuel, Home ReSource; Jeremy Drake, Home ReSource; and the Energy Corps Service Members Britt Holewinski, Sean Doty, and Chris Essman with City of Missoula and Katie Anderson, Alexa Holliday, and Becca Boslough with Home ReSource. ZWAC members included: Emi Kodama, Good Food Store; Aaron Hansen, Axmen Recycling; Jen Bernosky; Republic Services; Eva Rocke, University of Montana; Amy Cilimburg, Climate Smart Missoula; Beth Schenk, Providence St. Patrick Hospital; Claudia Weise, Hellgate High School S.A.V.E.; Cola Rowley, Missoula County Commissioner; Blake Nicolazzo, Community Member at Large; Laval Means, City of Missoula Planning Services Manager; Marilyn Marler, Former Missoula City Council President (Resolution Sponsor); Don Verrue, Assistant Director and Building Official, City of Missoula Development Services; Eran Fowler Pehan, Director, Office of Housing and Community Development, City of Missoula; and Peter Nielsen, Former Missoula City-County Health Department Environmental Health Supervisor
- ³ Zero Waste International Alliance. "ZW Definition." 2009. <http://zwia.org/standards/zw-definition/>.
- ⁴ The City of Missoula's City Growth Policy, adopted in 2015, reported that, "The population of the urban growth area is estimated to be 107,000 Missoulians [...] by 2035 – an increase of about 18,800 people."
- ⁵ Montana Department of Environmental Quality. "State of Montana: 2014 Recycling and Waste Diversion Summary." 2014.
- ⁶ Using the most recent data on landfill disposal from the Montana Department of Environmental Quality, calculations estimate that Montanans landfilled 8.5 pounds of MSW per capita per day in 2014.
- ⁷ EPA. "Advancing Sustainable Materials Management: 2014 Fact Sheet." 2016.
- ⁸ EPA. "Sustainable Management of Construction and Demolition Materials." 2018. <https://www.epa.gov/smm/sustainable-management-construction-and-demolition-materials>.
- ⁹ EPA. "Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM)." 2018.
- ¹⁰ EPA Office of Solid Waste and Emergency Response. "Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices." 2009.
- ¹¹ The City of Missoula and Climate Smart Missoula. "Missoula Community Climate Smart Action Plan v1.0." 2014.
- ¹² City of Missoula. "Policy 2035: City Growth Policy". 2015.
- ¹³ The City of Missoula and Climate Smart Missoula (2014).
- ¹⁴ GrassRoots Recycling Network. "Zero Waste Business Profiles." N.d. <http://www.grrn.org/page/zero-waste-business-profiles>.
- ¹⁵ The principles were informed by the ZWIA definition of Zero Waste, as well as Zero Waste Community Principals listed on the ZWIA website.
- ¹⁶ Tellus Institute with Sound Resource Management. "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S." 2011.
- ¹⁷ As of April 2018, Missoulians are feeling the effects of China's National Sword policy, which has disrupted the global recycling economy by banning the import of 36 material types, including post-consumer plastics. Implemented in 2017, the policy is a bold statement that China is no longer the de-facto destination for the world's refuse. As a result, the future of recycling is uncertain. Perhaps this uncertainty may bring more equitable, sustainable solutions.
- ¹⁸ To identify best practices, the ZERO by FIFTY leadership team visited and researched model Zero Waste communities including, but not limited to: Boulder, Fort Collins, Longmont, and Lakewood, Colorado; San Francisco, California; and Seattle, Washington. The EPA's Managing and Transforming Waste Streams tool further informed objectives and actions for ZERO by FIFTY. This online resource provides and evaluates 100 measures to reduce waste and recover materials. It references over 300 implementation examples from communities across the United States.
- ¹⁹ EPA. "Managing and Transforming Waste Streams: A Tool for Communities." 2018. <https://www.epa.gov/transforming-waste-tool>.
- ²⁰ City of Lakewood. "Zero Waste." City of Lakewood Sustainability Plan. 2015.
- ²¹ Home ReSource. "An Emerging Blueprint for a Food Waste Free Community: Report from the 2016 'Fate of the Plate' Community Discussion." 2016.
- ²² Sustainable Business Council. "The SBC's Online Guide to Moving Missoula Toward Zero Waste." 2015.
- ²³ City of Missoula Development Services. "Deconstruction Resource Guide." 2015.
- ²⁴ EPA (2018).
- ²⁵ Northeast Recycling Council. "Summary of U.S. State and Municipal C&D Regulations and Requirements." 2012.
- ²⁶ Eco-cycle. "Make Room for Recycling with an Equal Space Policy." 2018. <http://ecocyclesolutionshub.org/making-room-for-recycling/>.
- ²⁷ Zero Waste Design. "Zero Waste Design Guidelines: Design Strategies and Case Studies for a Zero Waste City." 2017.
- ²⁸ Environmental Quality Council. "Montana Recycling." 2010.
- ²⁹ City of Boulder. "Trash Tax Information." 2018. <https://bouldercolorado.gov/climate/trash-tax-information>.
- ³⁰ Washington State Department of Revenue. "Refuse (solid waste) tax." 2017. <https://dor.wa.gov/find-taxes-rates/other-taxes/refuse-solid-waste-tax>.

APPENDICES

Appendix 1: ZERO by FIFTY Actions Timeline

Complete ZERO by FIFTY Actions Timeline			
ACTION	TIMEFRAME	DIVERSION POTENTIAL	UPSTREAM IMPACTS
A1.1: Transform the current collection infrastructure to support the ZERO by FIFTY goal	Short	Medium – High	Low – Medium
A1.2: Ensure availability of recycling and composting collection service to all Missoula households, businesses, & multi family residential housing units (MFUs)	Short	Medium – High	Low
A1.3: Support expansion of diversion options for household hazardous waste (HHW), e-waste, and universal waste disposal	Short	Low – Medium	Low
A1.4: Install Zero Waste stations in public parks and other popular public spaces such as Downtown	Short	Low	Low
B1.1: Work to expand materials accepted at Garden City Compost	Short	Medium – High	Low
B1.2: Assist with development of HHW facility	Short	Low	Low
B1.3: Ensure availability of materials & technical support for Zero Waste events	Short	Medium	Medium
B1.4: Support expanded drop-off options for recyclables & reusables	Short	Low	Low – Medium
B2.1: Develop Zero Waste start-up assistance program	Short	Medium	High
B2.2: Investigate development of a Zero Waste Business Park	Short	Medium	Low
C1.1: Develop community-focused, cross-platform education campaign	Short	Low – Medium	Low
C1.2: Support integration of the ZERO by FIFTY goal and framework across Missoula	Short	Medium	Medium
C1.3: Promote expansion of source reduction & reuse initiatives	Short	Low	Low
C1.4: Provide guidance for construction, demolition, and deconstruction (CDD) reuse and recycling service options	Short	Low	Low
C2.1: Support implementation of Zero Waste in K-12 schools	Short	Medium	Medium
C2.2: Support community opportunities to gain Zero Waste skills	Short	Low	Low
D1.1: Encourage environmentally preferable purchasing (EPP) practices	Short	Low	High
D1.2: Adopt and implement ZERO by FIFTY goals and action plans for all public venues and events	Short	Medium	Low
D2.1: Integrate the ZERO by FIFTY actions into existing comprehensive City & City partner planning documents	Short	Medium	Medium
D2.2: Develop incentives for new Zero Waste business start-ups	Short	Medium	High

Complete ZERO by FIFTY Actions Timeline (continued)

ACTION	TIMEFRAME	DIVERSION POTENTIAL	UPSTREAM IMPACTS
D2.3: Provide incentives to developers & contractors who include reuse, recycling, and deconstruction in project plans	Short	Low – Medium	Low – High
D2.4: Encourage and provide incentives for homes, neighborhoods, schools, and businesses to compost food scraps and yard trimmings	Short	Low – High	Low – Medium
D2.5: Offer incentives for use of local compost	Short	Medium	Medium
D3.1: Adopt a community-wide Universal Zero Waste Ordinance	Short	Medium – High	Low – Medium
D4.1: Restrict free distribution of single-use disposables	Short	Low – Medium	Medium – High
C1.5: Develop & deploy outreach program & resources to support businesses moving toward Zero Waste	Short/Medium	Low – Medium	Low – High
D1.3: Integrate reuse, recycling, and deconstruction into all City-supported construction and demolition projects	Short/Medium	High*	Medium*
A1.5: Work with waste collection service provider to implement Every-Other-Week (EOW) trash collection	Medium	Medium	Low
B1.5: Support a more complete and comprehensive food recovery network	Medium	Low – Medium	Medium
B1.6: Explore development of additional Zero Waste facilities	Medium	Low – High	Low – Medium
D1.4: Require environmentally preferable purchasing (EPP) practices and incorporate Zero Waste objectives into all contractual purchases and services	Medium	Medium	High
D2.6: Develop a recognition & reward program for outstanding Zero Waste businesses & institutions	Medium	Low	Low
D3.2: Identify a path to a Universal Deconstruction Ordinance	Medium	Low*	Low*
D3.3: Establish minimum reuse and recycling requirements for construction, demolition, and deconstruction (CDD) materials	Medium	Medium	Low
D3.4: Implement mandatory retailer take-back	Medium	Medium	Low
D4.2: Ban landfill disposal of E-waste	Medium	High	High
D1.5: Incorporate reusable and recycled materials into municipal road construction and maintenance projects	Medium/Long	Medium	High
D2.7: Provide incentives for use of C&D recycling facilities	Long	High	Low
D3.5: Adopt an Equal Space policy that requires new construction to provide space for source separation of materials for collection	Long	Medium	Low
D3.6: Support Extended Producer Responsibility (EPR) laws for hard-to-recycle items	Long	Low	Medium
D4.3: Ban landfill disposal of reusable and recyclable materials from construction, demolition, and deconstruction (CDD) projects	Long	High*	High*
D4.4: Ban landfill disposal of compostable organics	Long	High	High

Adapted from the EPA's Managing and Transforming Waste Streams Tool; *adapted from other sources

Appendix 2: Resolution Number 8044, “Missoula Zero Waste Resolution”

RESOLUTION NUMBER 8044

A Resolution Supporting the Creation of a Zero Waste Plan and Setting Waste Reduction Goals for the City of Missoula.

WHEREAS, Montana’s current recycling rate of 22% is well below the national average of 35% and anecdotal evidence shows that the City of Missoula’s recycling rate is below the state average; and

WHEREAS, in an average year the Missoula Landfill is lined with over 210,000 tons of material from the City of Missoula and surrounding communities, which represents a waste of valuable resources, increases the emission of greenhouse gases, and will transfer the liabilities associated with disposal to future generations after the responsibilities of the current operator have been fulfilled; and

WHEREAS, the Missoula City Council recognizes the life span of the open area of the Missoula Landfill is estimated to be 15 years at the City of Missoula’s current rate of growth and disposal and the lifespan of the landfill property is estimated to be 79 years when fully developed; and

WHEREAS, the cost of landfill disposal is likely to continue to increase; and

WHEREAS, increasing reuse, recycling and composting can create new entrepreneurial and employment opportunities in the City of Missoula; and

WHEREAS, reducing disposal in landfills reduces emissions such as those required to convert natural resources into new goods and transport them to market as well as fugitive landfill emissions caused by discarded organic matter including food scraps, grass clippings, cardboard, and carpet; and

WHEREAS, through education, engagement of local business and non-profit leaders, leadership from citizens and local government, the Missoula community can lead the region in moving toward Zero Waste; and

WHEREAS, Zero Waste is a goal and guiding principle that places a value on materials that would otherwise be thrown away; and

WHEREAS, Zero Waste principles strive to avoid excess production, reduce volume of waste, and promote conservation and recovery of resources by not burning or burying them; and

WHEREAS, a Zero Waste goal aligns with IPP-12 Waste Stream Reduction Policy of the City of Missoula Conservation & Climate Action Plan, and the City of Missoula Growth Policy highlights Zero Waste as one of its Environmental Quality Goals and references community waste reduction education as one of the “near term” actions;

WHEREAS, a working group including City staff, community members and representatives from local non-profit and for profit entities, will be formed to create the Zero Waste plan;

NOW THEREFORE BE IT RESOLVED, that the Missoula City Council supports the creation of a Zero Waste Plan and the setting of waste reduction goals for the City of Missoula “the organization,” and the City of Missoula, “the community and geographic area;” and

BE IT FURTHER RESOLVED, the City of Missoula hereby adopts the concept of Zero Waste as defined by Zero Waste International Alliance as a guiding principle for all municipal operations, outreach, and programs and actions within the community; and

BE IT FURTHER RESOLVED, the Missoula City Council hereby directs staff/employees to facilitate the development of a Zero Waste Plan to be completed two years from the date of adoption; and

BE IT FURTHER RESOLVED, the Zero Waste Plan will be designed to achieve the goal of waste diversion for the City of Missoula to 90% by the year 2050, with interim goals of 30% or better by 2025, 40% or better by 2030, and 60% or better by 2040; and

BE IT FURTHER RESOLVED, the Zero Waste Plan will include a baseline study of the City of Missoula's current rate of disposal; identify objectives; and recommend short-, medium-, and long-term actions to reach the designated Zero Waste goals. The Zero Waste Plan will, within budget constraints, seek to effectively, efficiently, and quickly address the issues identified, as well as allow for a public process to address recommended actions.

This resolution shall become effective upon adoption.

Passed by the City Council of the City of Missoula, Montana, this 8th day of February, 2016.

/s/ John Engen

John Engen
Mayor

/s/ Martha L. Rehbein

Martha L. Rehbein
City Clerk, CMC

Appendix 3: ZERO by FIFTY Stakeholder Process

Throughout spring 2017, the City provided multiple opportunities for community engagement and launched Zerobyfiftymissoula.com to share information about the planning effort and to provide an additional forum for public input via an online survey. In March, the City hosted community listening sessions at three venues across Missoula and engaged with audiences at an MDA luncheon, City Club Missoula, and the Missoula Federal Credit Union annual staff meeting. In October, the City elicited feedback from the community on the resulting ZERO by FIFTY framework and initial strategies with hosted tables at First Friday and the Clark Fork Farmers Market, followed by a ZERO by FIFTY open house at Home ReSource. Overall, more than 300 Missoulians participated in the process of developing this plan. The planning effort generated media attention across multiple outlets though print, broadcast, and online channels.



Deconstruction Resource Guide



Steps to Successful Deconstruction:

1. Contact City of Missoula Development Services for permitting information and general assistance.
2. Create a deconstruction work plan for your project. Consult *Deconstruction Best Practices Guide* for helpful tips
3. Review Deconstruction and Demolition Recycling Resources on backside of this page.
4. Contact appropriate Deconstruction or Recycling service for pickup or delivery of materials.

Deconstruction Beats Demolition

1. **Saves Money.** Donating and recycling construction materials saves money by cutting disposal costs.
2. **Tax deductions.** You can deduct the value of donated construction materials to the extent the law allows.
3. **Creates Local and Affordable Materials Stream.** Recycling and reusing building material creates a local source of affordable building supplies, and reduces demand for new materials.
4. **Reduces Waste.** Prevents valuable materials from unnecessarily going to the landfill, preserving economic value and land.
5. **Good for Community Health.** Fully using resources contributes to clean air, clean water and less toxins.
6. **Local Business Development. Local Jobs.** Creates demand for local business services and resulting jobs.



City of Missoula
Development Services
435 Ryman St.
(406)-552-6630
ci.missoula.mt.us

Deconstruction & Demolition Recycling *Resources*

Company	Address	Phone	Tax Deduction	Cash	Fee	Deconstruction Contractor	Job Site Recycling Container	Untreated Wood	Reclaimed Wood	Building Material (incl. brick and marble)	E-Waste	Rechargeable Batteries	Metals	Appliances	Bulbs	Concrete	Landscape Trimmings
Ace Hardware	2301 West Brooks St. & 905 East Broadway St.	728-3030													X		
Axmen	7655 US Highway 10W	728-7020									X		X	X			
Batteries Plus	2100 Stephens Ave.	829-8286										X					
Best Buy	2640 North Reserve St.	829-0409									X						
Donation Warehouse	1804 North Avenue West	240-4842	X											X			
Eko Compost	1125 Clark Fork Lane	721-1423			X			X									X
Goodwill	2300 Brooks St	549-6969	X											X			
Heritage Timber	808 W Pine St	830-3966				X			X								
Home Resource	1515 Wyoming St	541-8300	X			X		X	X	X				X			
Lowe's	3100 North Reserve St.	329-1800										X			X		
LS Jensen	4685 Mullan Road	728-1400			X											X	
Opportunity E-Cycling	6900 Kestrel Drive #14	329-1790	X		X						X						
Pacific Steel and Recycling	2828 Palmer St.	542-0381		X									X				
Republic Services	3207 W Broadway St	721-1121											X				
ReStore	3655 Highway 200 East, East Missoula	549-8215								X							
Staples	2501 Brooks St. & 2230 North Reserve St. Suite 300	728-2485									X						
Waste Less Works	507 Minnesota Ave	396-1710				X		X	X			X					

Additional Resources:

Missoula Urban Demonstration Project (MUD): tool library and truck share, accepts donations of used tools
1527 Wyoming Street, 751-7513

*The City of Missoula does not endorse any of the products or services referenced in this flyer which are for informational purposes only

Appendix 5: Missoula Redevelopment Agency Demolition Alternatives Policy

Demolition Alternatives Policy

The removal of buildings to make way for redevelopment is an eligible expense under Montana statutes governing the use of tax increment revenues. The Missoula Redevelopment Agency (MRA) has approved multiple projects that involved building demolition or deconstruction when a building has reached the end of its useful life or is no longer appropriate for its current location. The MRA has also provided assistance to relocate sound buildings to new locations.

It is the policy of the MRA to encourage conservation, sustainability and the reuse of existing structures and materials. However, MRA recognizes that reuse, deconstruction or relocation is not always feasible due to the condition of the existing structures, lack of salvageable materials, or timing issues. Applicants requesting tax increment assistance for the demolition and/or removal of structures are advised to take time constraints into account when planning their project and make reasonable efforts to allow for adequate time for deconstruction.

Applicants for assistance for demolition of a structure must demonstrate to MRA that they have taken the following actions and must provide the following information:

Applicants must consult with a deconstruction contractor to determine whether there are materials in the building that can and should be salvaged.

Where appropriate, applicants must consult with a building relocation contractor to determine whether the structure can be relocated.

Applicants must identify the extent and nature of materials that can be salvaged and reused or must provide a clear explanation as to why deconstruction and reuse of materials is not feasible.

Applicants must identify any salvageable materials and the method of disposals of materials. In the event that materials are not going to be recycled, applicants must provide a detailed explanation of the reasons for not recycling.

If time constraints are a factor in the applicant's decision to demolish an existing structure, applicants must provide an explanation of why timing is a deciding factor and a description of the steps taken to work around time constraints in an effort to avoid demolition.

Zero Waste in the Parks

Adopted by Missoula Parks and Recreation Board – February 2017

Zero Waste Policy

The City of Missoula has adopted the concept of Zero Waste defined by the Zero Waste International Alliance as a guiding principle for all municipal operations and programs. This concept reads as follows:

“Zero Waste is a goal that is ethical, economical, efficient, and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.”

Missoula Parks and Recreation serves thousands of visitors each year in numerous facilities, sites, lands and programs. Thus, the Department is uniquely positioned to educate, encourage, and at times, require compliance with best practices for reducing, eliminating, or even preventing waste.

See exhibits for background information and current practices. (Attached)

Locations

The Department will prioritize Caras Park, Fort Missoula Regional Park and McCormick Park as new, or additional, key locations for Zero Waste efforts. Existing sites such as Currents Aquatic Center, Splash Montana, and the City’s open space conservation lands continue to be, or work toward, Zero Waste via existing programs and policies. As success is achieved, the Department will add sites and develop plans to phase in the rest of Parks and Recreation system over time.

Events/Programs

A three tiered system based on event size and/or type of permit* requested will determine the Zero Waste requirements.

*Park shelters will remain pack it in, pack it out, whenever possible and effective.

- 0-100 (all events)
 - Provide an on-line brochure and checklist which walks event organizers through zero waste activities before, during and after the event.
 - Provide site plan/map of zero waste facilities as helpful and appropriate
 - Provide verbal orientation to event coordinator,
 - Provide any additional education and resource materials to enhance recycling/reuse and support SITES certification

- >100 (special use permits, events, fun runs, etc.)
 - Same provisions as note above, plus...
 - Establish an excess waste/trash can disposal fee for permitted events
 - Require provision of recycling containers and/or include as part of reservation services (add to fee schedule)
 - Work with event hosts/coordinators to create a site and event specific Zero Waste Plan and implement. Provide measure/metrics when possible.

- Ban use of certain kinds of materials for catered events in parks – e.g., non-reusable/non-recyclable plastic cups, Styrofoam cups, other items that are long-lived/toxic in the waste stream. Use of banned items may include loss of deposit for

failure to substantially comport. Single use glass beverage containers are already banned by ordinance.

Event Options

- (Require or offer) a third party pickup familiar with park facility service
 - Provide 3rd party lists to customers
- Provide Option of Using specific volunteer groups to help with recycling efforts.
 - Work with nonprofit organizations and students to help event organizers obtain volunteers on a regular basis
 - Volunteers at events can assist in educating the public about where to discard different materials/products at venues and special events.(Zero Waste ambassador concept)
 - Youth fundraising opportunities (for example youth softball team assists in recycling and earns money for services)
- Provide messaging to a broad audience. Example: Post zero waste education signage on back of bathroom stalls and throughout facilities

Upstream (prevention the creation of waste) Event Options

Encourage, through incentives, preventing the creation of waste, thereby reducing not only waste but the efforts to reduce and manage waste.

Reusable Containers/Flatware & Dishware

- **Option A:** Require/Incentivize use of durable/reusable serving-ware and provide dishwashing service for the serving-ware. If food services are in one central location, deposits can be charged for durables to be returned at the dishwashing station.
 - Educate and encourage caterers
 - Create a fund for buying down vendor rates and/or offer incentives for this action
- **Option B:** Require vendors to use and distribute only compostable dining ware and utensils or those materials made from recycled content.
 - Require/incentivize vendors to sell refillable beverage containers as an alternative to disposable containers.
 - Incentive through the Request for Proposals programs by requiring or scoring best practices toward Zero Waste measures.

Plastic Beverage Containers

- **Option A:** Ban, or at least incentivize reduction of, single use plastic beverage containers
 - **Use/encourage** branded reusable beverage containers for sale at concessions
 - Encourage the use of water beverage container filling stations
 - Encourage the use of side line water/beverage jugs (5 gallon Gatorade type)
 - Provide Water Trailer where appropriate
- **Option B:** Offer discount/incentive for events that do not use plastic beverage containers
 - Due to staff and enforcement limitations, apply a disincentive fee.

Excess Food

- Develop a contract with the Food Bank, or other similar non-profits, to have meals and extra food picked up at the end of the event

Bins (Recycle containers)

- Use a simple two can system – Recyclable Plastic Beverage container & Cans and Landfill
 - Not applicable to “mutt-mitt” stations as these are often remote and encourage dumping of unauthorized waste. Also, remote cans lead to higher levels of contamination making recycling unrealistic.
- Keep permanent bins color-coordinated (and sized if possible) so they are consistent throughout the City and Parks – this will cost to convert entire system, but will also enhance messaging and recycling. Recommendations:
 - Sloped can design to discourage things left on top
 - Overarching Zero Waste branding and messaging
 - Individualize with individual park logo (could extend to downtown, BID, etc.)
- Apply for grants to supplement costs
- Utilize recyclable recycling bins where/when appropriate (For example: pop up cardboard bins)
- Purchase extra recycling bins/zero waste stations for customers/events if normal facility bins are not enough to accommodate party size for rental.

Signage

Use correct terminology where it applies: Zero Waste Vs. Recycling

- Use prominent and comprehensive signage above bins with graphics and narrative to reduce confusion
- Use consistent look, language and graphics/images (standardized plaques)

Design for the Future and Future Phases

- Replace current public space trash cans with Zero Waste stations.
- Compost and Glass should be phased-in as the systems become available.
- Continue efforts to increase recycling, with emphasis on reducing, or preferably eliminating the creation, of waste.
- Design all new parks and major renovations to accommodate for zero waste policy

Maintenance and Measures

- Develop policy and seek solutions for common maintenance considerations
 - Contamination
 - Materials that don't easily fit in can. Example: Cardboard
- Understand benefits and costs
 - Audit (Waste characterization)
 - Ongoing measurement and metrics
- Educate and train staff – Safety of employees remains the priority at all times.

AN EMERGING BLUEPRINT FOR A FOOD WASTE FREE COMMUNITY

REPORT FROM THE 2016 "FATE OF THE PLATE" COMMUNITY DISCUSSION

MISSOULA, MONTANA



PREPARED BY:



I. Introduction

Home ReSource convened the “Fate of the Plate” on March 10, 2016 with a simple intention: to begin a community conversation to reduce food waste and increase composting in Missoula, Montana. As a nonprofit building materials reuse center with a mission to reduce waste and build a vibrant and sustainable local economy, we felt compelled to bring people together to discuss an important low-hanging fruit of waste reduction in our community: wasted food. Why? Because food waste is excessive, expensive, and environmentally harmful. Addressing this issue can put food and money back into our communities, improve food security, save the energy embodied in food, and reduce social and environmental impacts wrought by the 133 billion pounds of food wasted every year in the United States.

More than 40 stakeholders from local restaurants, nonprofit organizations, governmental agencies, and city government joined concerned citizens for two hours to eat, drink, and discuss. After a brief introduction to establish a shared context of the problems of food waste, participants split up into eight facilitated discussion groups in an effort to capture existing knowledge and to tap the community imagination around reducing food waste and increasing

composting. The groups discussed what is happening now and what barriers exist – real and perceived – around reducing food waste and keeping food out of the landfill through composting and other means. The groups also brainstormed the policies, programs, and activities they believed were components of a Food Waste Free community and generated a list of priority ideas.

This report is part vision, part catalog, and part workbook. We call it *An Emerging Blueprint for a Food Waste Free Community* and hope people fill in the blanks and continue to build upon the good work already being done in this community. We believe this report provides a rough yet detailed sketch of Missoula’s existing efforts and highlights opportunities to do more.

We recognize this report is just the beginning. We look to our great community to rise to the challenge of reducing food waste and keeping food out of the landfill through advocacy, action, art, or whichever means speaks to your heart. In the end, we hope this document is a catalyst that helps propel Missoula toward becoming a Food Waste Free community.

II. Summary & Community Recommendations

One month before the Fate of the Plate, Missoula City Council passed a Zero Waste Resolution, which set a goal to reduce Missoula’s municipal solid waste stream by 90% by 2050 with interim goals along the way. We began the Fate of the Plate discussion with the assumptions that reducing food waste and increasing composting are necessary steps toward achieving the

goals set out in the Resolution and are issues critical to the sustainability of our community. What we learned from the discussion supported our assumptions. The conversation confirmed that working to reduce food waste connects us to a complex system including food and agricultural policy, hunger, disposal, land use, transportation, education, ecology, and more. The vision that

emerged is of a system where people, policies, programs, resources, and infrastructures intentionally align in a manner that is sensible, equitable, economical, and respectful of the environmental footprint of our consumption.

Recommendations

1. Adopt two interrelated community goals:

- Prevent food waste – **UPSTREAM GOAL**
- Keep food out of the landfill – **DOWNSTREAM GOAL**

2. Identify leadership

Dedicated leadership is necessary at two scales:

1. Community leadership to keep people engaged in dialogue and working collaboratively toward comprehensive solutions, and;
2. Individual and organizational leadership in specific sectors to actively identify and implement solutions.

3. Collaborate

Based on the importance of this issue for our community's sustainability and waste reduction goals, we offer the following recommendations to the Missoula community.

Identify existing and potential synergies between public and private entities; Build relationships to create the intentional alignment necessary to achieve the goals.

4. Prioritize

For each goal, prioritize opportunities that can create early wins based on feasibility, ease of implementation, and possible impact. For example, interest is high around the **UPSTREAM GOAL** of food recovery and around the **DOWNSTREAM GOAL** of establishing a citywide composting facility for food scraps.

5. Ensure equity

Throughout the process, strive for solutions that increase access to local food and waste reduction opportunities for all while creating local jobs that support a Food Waste Free community.

An Emerging Blueprint

The Fate of the Plate discussion generated a wealth of ideas that together articulated an emerging blueprint for a Food Waste Free community. The foundation of this emerging blueprint are six key ingredients that were revealed by the numerous strategic priorities and concrete activities captured during the discussion.

Our hope is that this blueprint will reveal existing structures, identify opportunities, and guide actions for the people of Missoula to engage with, explore, and act upon to make the Garden City a Food Waste Free community.

Key Ingredients for a Food Waste Free Community

- **Localization**
- **Engaged & Educated Citizenry**
- **Supportive Policies**
- **Supportive Programs**
- **Integrated Infrastructure & Land Use**
- **Comprehensive & Collaborative Network**

III. Blueprint for a Food Waste Free Community

In this section, short descriptions flesh out the intended **OUTCOME** of each key ingredient, provide context, and/or summarize key points. Simple charts organize priority ideas (**PRIORITIES**) by **UPSTREAM** or **DOWNSTREAM** goals. We matched data collected during the discussion to each priority to provide context as to the

extent to which the idea is in action in our community (**STATUS**), who is implementing it and what implementation looks like (**ACTIONS**), real and perceived **BARRIERS**, and **OPPORTUNITIES**. For the purposes of this report, we will refer to all priority ideas identified by the discussion participants as “priorities.”¹

Localization

OUTCOME: By supporting our local food shed and a local food economy, we reduce waste from spoilage in transport, redirect edible food to animals, and return carbon and nutrients back to local soils. Missoula has a strong local culture that embraces everything from food to beverages to four-oh-six shirts. Our community could build upon existing actions and develop new opportunities.

GOAL: UPSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
Consumers buy local	Widespread, room for expansion	<ul style="list-style-type: none"> Farmers’ Markets Double Snap Dollars program Community Supported Agriculture (CSA) Programs (Garden City Harvest, WMGC, Harlequin Produce, Missoula Grain & Vegetable Co., Lower Crossing Farm, etc.) Local purveyors of meat & dairy (Diamond Bar Meats, Lifeline Farms, Bitterroot Bison, Cloven Hoof, etc.) 	<ul style="list-style-type: none"> Locally-produced food can be expensive compared to mass-produced food, which is abundant and relatively inexpensive 	<ul style="list-style-type: none"> Build more networks to connect consumers with local food producers Grow gourmet mushrooms in spent brewers grains prior to use as animal feed Expand local sourcing in restaurant sector, particularly for meats Big buyers support the food shed we want Buyers use Forward Contracting to support local farms

¹ Please note that some priorities, barriers, and opportunities are followed by a number in parentheses, which indicates the number of break-out groups that identified this as a priority, barrier, or opportunity. No number means it was identified by one group only. In some cases, we added priorities that participants identified as components of a food waste free

community yet were omitted from the final list of priority ideas. We added those priorities in retrospect because, based on our analysis of all of the discussion data, we deemed them to be key elements of the blueprint. We matched barriers and opportunities with priorities as made sense to us.

			<ul style="list-style-type: none"> Restaurants buy/use whole animals 	
Redirect discards to animal feed	Limited	<ul style="list-style-type: none"> Cows/Pigs – barley waste as feed (Big Sky Brewing feeds 600 cows; Big Sky HS Ag Dept pigs also fed spent brewers grains) Goats/Pigs – non-edible food (Food Bank Refeed program sends what they can't use) Chickens – veggie scraps as feed (Freedom Gardens) 	<ul style="list-style-type: none"> USDA regulation restricts feeding animals with off-site food 	<ul style="list-style-type: none"> Divert more food waste streams to animal feed

GOAL: DOWNSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
Return composted food scraps to local soils	Limited	<ul style="list-style-type: none"> Institutions <ul style="list-style-type: none"> UM Dining Somat system pulps and dehydrates all food scraps from the Food Zoo; used as compost feedstock at PEAS Farm; saves transportation, Somat system reduces grey water by recycling water Restaurants & Food Businesses <ul style="list-style-type: none"> Restaurant food scraps to compost (Romaine's, Scotty's Table, Burns St. Bistro Thurs Night dinners) Coffee grounds composting Farm & Farmers <ul style="list-style-type: none"> Farmers Market - growers take produce back to farm (produce only) Compost collection for CSA customers (Missoula Grain & Vegetable Co.) Home & Office <ul style="list-style-type: none"> Backyard composting Office composting (Home ReSource & MUD) Residential compost collection (i.e. Recycling) 	<ul style="list-style-type: none"> Attempts to install Earth Tub in-vessel composting systems at Hellgate and Sentinel High Schools have both failed due to resistance from administration and facilities operators; need maintenance & scale to operate properly 	<ul style="list-style-type: none"> Educate community leaders about the benefits of compost in soil health, carbon sequestration, climate change mitigation, remediation, and restoration to build support for actions that lead to more composting

Engaged & Educated Citizenry

OUTCOME: People understand why it is important and how to reduce food waste and compost. Everyone knows how to be creative with and appreciate food and how to cook, preserve, repurpose, and use produce “ends.” A Community Food Waste Reduction Coordinator could help coalesce educational efforts, identify and assist with implementation of viable policies and programs, and direct available resources.

GOAL: UPSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
Education/engagement of consumers	Limited	<ul style="list-style-type: none"> Health Department messaging equates reducing waste with community health Food preservation workshops (MUD) Zero Waste Missoula <ul style="list-style-type: none"> Engaging community in conversation 	<ul style="list-style-type: none"> We live in a “throw-away” culture where trash goes out of sight, out of mind Lack of “upstream” thinking Lack of knowledge and education about food use to reduce food waste and composting Lack of funding for a Community Food Waste Reduction Coordinator 	<ul style="list-style-type: none"> Generate and implement school curriculums (2) Form education group ala Missoula in Motion dedicated to reducing food waste through awareness building and incentives Community Food Waste Reduction Coordinator position created and funded Creatively educate at public events Educate around perceptions of expiration dates
Teach everyone to cook	Limited	<ul style="list-style-type: none"> Food preservation workshops (MUD) Good Food Store classes 	<ul style="list-style-type: none"> Time & interest 	<ul style="list-style-type: none"> Expand all-ages opportunities to learn techniques to reduce food waste

Supportive Policies

OUTCOME: Local businesses, institutions, and government have policies and procedures that guide community practices and behaviors toward our goals. Reducing food waste becomes the norm and it is easy for everyone to do their part. Our community could adopt policies that guide our practices and behaviors toward our goals. Research on best practices from other communities would make ideal pursuits for Missoula’s academic community.

GOAL: UPSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
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Change policy around expiration dates (2)	No activity	<ul style="list-style-type: none"> No current known actions 	<ul style="list-style-type: none"> Dates are arbitrary Misconception/lack of knowledge - Is it OK to feed children post-dated food? Social service orgs won't accept donations of expired food 	<ul style="list-style-type: none"> Research best practices from other communities; identify existing legislation and regulations
Food Waste Free schools/hospitals/institutions	Limited	<ul style="list-style-type: none"> Trayless dining @ UM Food Zoo cut post-consumer food waste by 62% 	<ul style="list-style-type: none"> Large volume of food waste – St. Patrick Hospital 	<ul style="list-style-type: none"> Research best practices from other communities
Political will exists to reduce food waste	Unknown	<ul style="list-style-type: none"> No current known actions 	<ul style="list-style-type: none"> Policies/regulations are designed to protect against exceptional circumstances 	<ul style="list-style-type: none"> Outreach to elected officials in state and local government
Regulations drive & incentivize desired outcome				
<ul style="list-style-type: none"> Food outlets required to donate excess or post-dated food for redistribution (2) Relaxed regulations on donations and animal feed All households required to donate uneaten food 	No activity	<ul style="list-style-type: none"> No current known actions 	<ul style="list-style-type: none"> Catering industry generates significant food waste (2) 	<ul style="list-style-type: none"> Research best practices from other communities; identify existing legislation and regulations

GOAL: DOWNSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
Food Waste Free schools/hospitals/institutions	Very limited	<ul style="list-style-type: none"> Trayless dining @ UM Food Zoo cut post-consumer waste by 62% 	<ul style="list-style-type: none"> Large volume of food waste – St. Patrick Hospital 	<ul style="list-style-type: none"> Compost collection service able to meet institutional needs
All households required to compost, à la Seattle and SF, CA	No activity	<ul style="list-style-type: none"> No current known actions 	<ul style="list-style-type: none"> Stigma exists – yuck factor, attracts pests 	<ul style="list-style-type: none"> Research best practices from other communities
Policies to encourage waste reduction	No activity	<ul style="list-style-type: none"> No current known actions 	<ul style="list-style-type: none"> Disposal behaviors are hard to change 	<ul style="list-style-type: none"> Implement Pay As You Throw trash collection fee structure to create incentive to reduce
Landfill ban on compostables	No activity	<ul style="list-style-type: none"> No current known actions 	<ul style="list-style-type: none"> Regulation and monitoring of disposal 	<ul style="list-style-type: none"> Research other communities for efficacy of landfill ban

Supportive Programs

OUTCOME: Food businesses and institutions have formalized, efficient programs and processes for keeping edible food out of the waste stream. According to the Missoula Food Bank, one in six people in Missoula face the threat of hunger in their daily lives. Ironically, food is abundant in our community. Our community could expand programs that redirect edible food to hungry people and address food security while reducing food waste.

GOAL: UPSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
Food recovery programs with a focus on grocery stores (3)	Limited	<ul style="list-style-type: none"> • Donation of edible food <ul style="list-style-type: none"> ○ Grocery stores (Good Food Store, Missoula Fresh Market), other food businesses donate food to nonprofits that address food security (Food Bank, Poverello Center) ○ Property managers request departing tenants leave behind shelf-stable food to be collected and delivered to the Food Bank by staff (Summit Property Management) • Salvaging edible food <ul style="list-style-type: none"> ○ Gleaners salvage discarded food from grocery stores while fresh (Blue Sky Stewardship) ○ Ugly vegetables grab bag (Garden City Harvest) 	<ul style="list-style-type: none"> • Logistics of food recovery collection programs 	<ul style="list-style-type: none"> • Expand food recovery programs in general • Replicate property management food recovery program • Connect food recovery efforts, particularly of fresh food, to SnackPack Program for MCPS high school students in need • Business to process food for storage when its abundant – freeze, dehydrate, ferment, etc.
Close the loop on waste / hunger	Limited	<ul style="list-style-type: none"> • Redistribution of edible food to hungry people <ul style="list-style-type: none"> ○ Food Bank Grocery Rescue program redistributes post-dated food from grocery stores ○ Food Bank Food Circle program redistributes already prepared food from several businesses • Poverello Center 	<ul style="list-style-type: none"> • Logistics of food redistribution programs 	<ul style="list-style-type: none"> • Expand existing & identify opportunities for new programs
Progressive grocery store policies	Unknown	<ul style="list-style-type: none"> • No current known actions although some may exist 	<ul style="list-style-type: none"> • Requires organizational leadership to implement 	<ul style="list-style-type: none"> • Provide outlet for ugly produce and de-stigmatize “uglies” through marketing

More consumer choices (portion size, sell by weight, bulk buy)	Limited	<ul style="list-style-type: none"> Offer variable portion sizes (Romaine's) Sell by weight (Good Food Store deli) 	<ul style="list-style-type: none"> People expect giant portions at restaurants We are forced to buy too much by pre-determined packaging sizes 	<ul style="list-style-type: none"> Replicate existing actions and identify others to implement
Food is labeled with potential emissions if wasted to raise awareness	No activity	<ul style="list-style-type: none"> No current known actions 	<ul style="list-style-type: none"> Leadership and capacity is required to take on this project 	<ul style="list-style-type: none"> UM student project to develop and help local producers implement at Farmers' Markets – may be replicable in other communities

Integrated Infrastructure & Land Use

OUTCOME: Development of both upstream and downstream infrastructure creates a multi-faceted, integrated system that makes it easy to reduce food waste and increase composting. Infrastructure could include more space for growing, storing, and distributing food as well as facilities for collecting and composting food scraps.

GOAL: UPSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
Communal food processing/storage - dry/fridge/freezer	No activity	<ul style="list-style-type: none"> No current known actions 	<ul style="list-style-type: none"> Leadership, resources, and capacity is required to take on this project 	<ul style="list-style-type: none"> Neighborhood refrigerators based on "Little Free Library" model Fresh food is abundant during the growing season – farm to freezer Large-scale value-added food processing center (3)

GOAL: DOWNSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
Citywide composting facility for food scraps (5)	No activity	<ul style="list-style-type: none"> Food scraps compost pilot program between EKO Compost and WalMart Feasibility study on possible city acquisition of EKO Compost in 	<ul style="list-style-type: none"> Apartments/lack of space/access to composting Lack of time/energy to take compost elsewhere myself 	<ul style="list-style-type: none"> Expand food scraps composting at EKO Compost

		<p>progress (<i>UPDATE</i>: Missoula City Council has voted to acquire EKO Compost under the City of Missoula Public Works Department)</p>	<ul style="list-style-type: none"> • Individuals not involved; lack of buy-in • Low priority • No incentive or system for renters to compost • Limited space and labor for downstream management • Lack of food waste composting facilities 	
<p>Curbside compost collection (2) with focus first on large generators of inedible food waste</p>	<p>Limited</p>	<ul style="list-style-type: none"> • Restaurant food scraps collection (Freedom Gardens) • Residential food scraps collection (i.e. Recycling, Missoula Grain and Vegetable Company CSA members) 	<ul style="list-style-type: none"> • Cost of curbside collection service adds to existing garbage collection expense • Stored food waste at businesses is an attractant for pests and gleaners • Restaurant employee buy-in • Lack of private collection service to meet restaurant needs – 2x or more/week • Cost & labor demands of a bike-powered curbside food scraps pick-up service 	<ul style="list-style-type: none"> • Expand curbside compost collection across sectors (5)
<p>Methane capture for energy production (anaerobic digestion) (2)</p>	<p>Very limited</p>	<ul style="list-style-type: none"> • Anaerobic digestion system for farm & greenhouse in construction phase (Blue Sky Stewardship) 	<ul style="list-style-type: none"> • High capital cost 	<ul style="list-style-type: none"> • Research other communities that have invested in anaerobic digestion systems
<p>Community composting sites</p>	<p>Limited</p>	<ul style="list-style-type: none"> • Community garden plot holders can bring kitchen scraps to compost piles at gardens (GCH) 	<ul style="list-style-type: none"> • Compost can be a wildlife attractant, particularly in Bear Zones 	<ul style="list-style-type: none"> • Expand community garden composting options • Fund position for Community Compost Manager

Comprehensive & Collaborative Network

OUTCOME: An integrated network of people actively collaborate – facilitated by technology and shared resources – to ensure edible food is channeled to hungry people and inedible food, food scraps, and other organic discards are returned to the soil.

GOAL: UPSTREAM/DOWNSTREAM

PRIORITIES	STATUS	ACTIONS	BARRIERS	OPPORTUNITIES
Build network to connect stakeholders: <ul style="list-style-type: none"> • Gleaners • Volunteers • Food producers • Institutions • Large-scale food processing facilities • Storage facilities 	Limited	<ul style="list-style-type: none"> • Missoula City Council passed a Zero Waste Resolution in February 2016 	<ul style="list-style-type: none"> • Coordination 	<ul style="list-style-type: none"> • Create online communication system • Develop mutually beneficial partnerships between stakeholders • City Coordinator position created to cultivate network & align resources

A word about Food Packaging

Participants also identified reducing single-use disposable food packaging as a priority that is connected to reducing food waste. Specific ideas included a citywide program for reusable takeout containers (like the ones offered at the Good Food Store) that would include grocery stores and restaurants (3) and clear Health Department policy on takeout packaging that may help alleviate

“greenwashing” in the practice of prepared foods for takeout. Participants also identified a related problem in that currently “compostable” takeout containers and “bioware” utensils are included in the City’s municipal waste stream as they have nowhere to go to be composted.

THE FATE OF THE PLATE WAS FACILITATED BY:

Abby Huseeth, Program Associate, Climate Smart Missoula; **Amy Cilimburg**, Director, Climate Smart Missoula; **Becca Boslough**, Former Energy Corps Service Member with Climate Smart Missoula & Home ReSource; **Beth Schenk**, PhD, MHI, RN-BC, Nurse Scientist, Providence St. Patrick Hospital; **Caroline Lauer**, Program Associate, Climate Smart Missoula; **Chase Jones**, Energy Conservation Coordinator, City of Missoula; **Jeremy Drake**, Community Engagement Manager, Home ReSource; **Katie Deuel**, Executive Director, Home ReSource

THANKS TO EVERYONE WHO PARTICIPATED IN THE FATE OF THE PLATE

Please direct any questions or follow up to Jeremy Drake: jeremy@homeresource.org; 406-541-8301. Additional components of a Food Waste Free community identified during the discussion are available upon request.

THE FATE OF THE PLATE WAS CONVENED BY:



Home ReSource is a building materials reuse center in Missoula that is committed to reducing waste and building a vibrant and sustainable local economy. As a triple-bottom-line nonprofit business, we bring environmental, social, and economic benefits to the community through our retail store and Deconstruction Services as well as our Community Sustainability Programs. Those programs provide educational activities, community Zero Waste support, job skills training, and volunteer opportunities to community members and material donations to school, churches, and organizations.

WITH SUPPORT FROM THESE COMMUNITY PARTNERS:



We are the hub that fosters partnerships and actions to address climate change in our community. We envision a vibrant and resilient Missoula that has a zero carbon footprint and the crucial networks to address future climate-related issues in an equitable way.



ZERO WASTE MISSOULA

Our mission is to lead our community in the effort to conserve and recover all landfill-bound resources in ways that contribute productively to the natural systems and economies of Western Montana.



We envision a prosperous, collaborative community that fulfills the promise of the triple bottom line: a healthy society, economy, and environment.

AND SUPPORT FROM THESE FINE LOCAL BUSINESSES — THANK YOU!

Good Food Store, The Dram Shop, Big Sky Brewing Co., The Loft of Missoula

AN EMERGING BLUEPRINT FOR A FOOD WASTE FREE COMMUNITY



ZERObyFIFTY

Missoula's Pathway To Zero Waste



zerobyfiftymissoula.com