



## Legal Strategies for Sustainability

Spring 2016 • Law

Sustainable Procurement • Food Proofing • Xeriscaping  
Tiered Water Pricing • Infill Development • Redmond Reduces

Kelsey Zlevor • Planning, Public Policy, and Management  
Jonathan Rosenbloom • Environmental & Natural Resource Visiting Professor • Law

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## About SCI

The Sustainable Cities Initiative (SCI) is a cross-disciplinary organization at the University of Oregon that promotes education, service, public outreach, and research on the design and development of sustainable cities. We are redefining higher education for the public good and catalyzing community change toward sustainability. Our work addresses sustainability at multiple scales and emerges from the conviction that creating the sustainable city cannot happen within any single discipline. SCI is grounded in cross-disciplinary engagement as the key strategy for improving community sustainability. Our work connects student energy, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

## About SCYP

The Sustainable City Year Program (SCYP) is a year-long partnership between SCI and one city in Oregon, in which students and faculty in courses from across the university collaborate with the partner city on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner city through a variety of studio projects and service-learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCYP's primary value derives from collaborations resulting in on-the-ground impact and expanded conversations for a community ready to transition to a more sustainable and livable future.

## SCI Directors and Staff

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## About Redmond, Oregon

Redmond, located in Deschutes County on the eastern side of Oregon's Cascade Range, has a population of 27,427 and is one of Oregon's fastest growing cities. The City's administration consists of an elected mayor and city council who appoint a City Manager. A number of Citizen Advisory Groups advise the City Manager, mayor, and city council.

From its inception, Redmond has had its eyes set firmly on the future. Redmond was initially founded in 1905 in anticipation of a canal irrigation project and proposed railway line. Redmond is on the western side of the High Desert Plateau and on the eastern edge of the Cascade mountain range. Redmond lies in the geographic heart of Oregon. Redmond focuses on its natural beauty, reveling in the outdoor recreational opportunities (camping, hiking, skiing) offered by the Cascade mountain range, four seasons climate, and 300+ days of sunshine annually.

Redmond has been focused on innovative, sustainable growth and revitalization while preserving the city's unique history and culture. In 1995, the City of Redmond began to make critical investments in revitalizing its downtown core. The initial phase of renovations strove to balance growth, livability and historic preservation by rerouting Oregon State Highway 97, improving critical infrastructure, and improving the facades of over 100 buildings in the historic center. The City of Redmond has worked with local businesses to revitalize retail, job creation and housing. To facilitate private sector buy-in, Redmond offers innovative incentive programs such as the Façade Rehabilitation and Reimbursement Grant and the "Downtown Jumpstart" loan competition, as well as Design Assistance.

Often referred to as "The Hub" of Central Oregon, Redmond is situated at the crossroads of US Highway 97 and US Highway 126. It is served by the Burlington Northern Sante Fe Railway, Cascades East Transit Regional Public Transportation Service, as well as a state of the art regional airport served by multiple commercial airlines and FedEx and UPS. In addition to its geographic location, Redmond is viewed as central to business growth in the region. In 2014, Central Oregon Community College opened a 34,300 square foot Technology Education Center to recruit new businesses and expand existing businesses in Central Oregon. Above all, Redmond prides itself on being a family-friendly city which was the motivation for the work presented in this report.



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*This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Redmond. Text and images contained in this report may not be used without permission from the University of Oregon.*

## Executive Summary

Sustainable development is development that enables the economic, environmental, and equitable health of the current population without compromising the ability of future generations to meet these needs. To accommodate new growth in the coming years, the City of Redmond can implement its own type of sustainable development to ensure a healthy future for all residents.

Through partnership with the Sustainable Cities Initiative, students in the Sustainability and the Law class at the University of Oregon in spring 2016 term identified several key sustainable development principles that the City of Redmond can consider, and performed an analysis of current legal provisions around these topics to determine how the legal structure serves as a barrier or support to addressing these topics. Student work also included an investigation into best practices and case studies of how other cities across the country have addressed these topics. Student research ultimately culminated in proposals for ordinance development or revision to further the advancement of their topic in Redmond. Topics include:

Group 1: Sustainable Procurement

Group 2: Food Proofing

Group 3: Xeriscaping

Group 4: Tiered Water Pricing

Group 5: Infill Development

Group 6: Redmond Reduces

By considering how these elements can be further incorporated into Redmond's legal framework, the proposed ordinances can help shape Redmond as the sustainable Hub of Oregon.

# Introduction

Sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”<sup>1</sup> This need for sustainable development is increasing as cities grow and resources become more restricted. To accommodate new growth in the coming years, the City of Redmond can implement its own type of sustainable development principles to ensure a healthy future for all residents. Some principles to consider include use of natural resources, provision of food, waste management practices, and future growth with limited land supply. While making sustainable changes can lie in the culture and decisions of the local community, how the law is structured in the community can either facilitate these changes, or inhibit them.

To begin addressing Redmond’s legal structure around sustainable development principles, students in the Sustainability and the Law class in the spring 2016 term divided into six teams to address different sustainable aspects of Redmond. Each team identified an activity or topic that would positively contribute to the future economic, environmental, and social fabric of Redmond and performed an analysis of various ordinances and city codes applicable to that topic. From this research, teams then used case studies and best-practices from around the country to inform suggestions for new, or edited ordinances to better facilitate the realization of their topic.

The following report highlights the work and process of each student team around their topic:

Group 1: Sustainable Procurement

Group 2: Food Proofing

Group 3: Xeriscaping

Group 4: Tiered Water Pricing

Group 5: Infill Development

Group 6: Redmond Reduces

After consideration and potential implementation of the proposed ordinances, Redmond can begin creating a city where future Redmond residents will also thrive.

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<sup>1</sup> United Nations, (1987) Our Common Future - Brundtland Report. Oxford University Press, p. 204.



## Conclusion

The vitality of Redmond's future is contingent on accommodating new development and growth in a sustainable way. By considering how those legal structures and provisions can positively facilitate development, Redmond can meet the needs of the present population without compromising the needs of future residents. Students recommend that Redmond consider adopting and implementing legal support for sustainable procurement, local food, xeriscaping, tiered water pricing, infill development, and waste reduction measures in the coming years in order to shape Redmond into the sustainable Hub of Oregon.



# **Buying Better for a Brighter Future Sustainable Purchasing in Redmond Spring 2016 • Law**

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# Executive Summary

Public procurement is commonly defined as the “process to timely meet user minimum needs with the delivery of best-value products or services, while ensuring the highest standards of integrity in order to maintain the public’s trust and fulfill state and local government public policy objectives.”<sup>1</sup> Traditional procurement strategies have focused on purchase price as a driving force for product and service selection, but many cities and states have recognized that considering environmental factors in making procurement decisions has distinct benefits.

Institutional sustainable purchasing has emerged to capitalize on these benefits, and is defined as “purchasing a product that has a lesser or reduced negative effect or increased positive effect on human health and the environment when compared with competing products that serve the same purpose.”<sup>2</sup> Among other benefits, sustainable purchasing practices can reduce purchasing volume, reduce maintenance costs, and lower disposal costs. Sustainable purchasing has grown in importance as cities recognize the economic and social value to buying sustainable products. Buying more sustainable products within local government benefits the environment, saves money, promotes local development of green business, and increases overall city efficiency.

This report will describe how sustainable procurement can benefit Redmond and it will outline approaches that Redmond can take to adopt a strategy that works best for the city. This report will be a guide for the city including strategies, tools, and references. While we have specific recommendations explained in steps to follow, we also encourage city stakeholders to use the resources we provide to further craft a policy that fits the city’s needs.

The goal of this proposal is to give Redmond language for an ordinance that will maximize the benefits of sustainable purchasing and establish requirements for continued assessment and development of a sustainable purchasing policy. The report proposes the following steps for implementing a sustainable purchasing program:

1. Ordinance
2. Sustainable Purchasing Committee
3. Sustainable Purchasing Policy

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<sup>1</sup> Sustainable Procurement Policies and Practices at the State and Local Government Level, Danielle M. Conway; Greening Local Government, K.H. Hirokawa & P. Salkins eds., 2012, 43

<sup>2</sup> National Association of State Purchasing Officials, Green Purchasing Guide, <http://www.naspo.org/green/index.html>

With these goals in mind, we find this project important for Redmond because it will give the city's procurement officers a comprehensive set of tools to accomplish more sustainable purchasing. City employees often meet resistance in transitioning to sustainable purchasing; therefore, a comprehensive ordinance and policy plan for Redmond will ensure that all city employees are fully supported in implementing changes.

## Introduction

Redmond is growing and now is a great time for the city to implement a sustainable purchasing plan that will grow with it. According to the City of Redmond's 2014/2015 annual report, the city's vision is to "be a model for Northwest communities by being innovative in the creation of a high quality of life, ample family wage jobs and a safe environment in which to raise and educate families." Adopting a sustainable purchasing plan is a great way for the city to begin meeting these goals. Further, city purchasers who may currently feel constrained to use only price preferences when choosing goods will have the ability to make comprehensive, sustainable changes to the way they purchase for their city. In adopting a sustainable procurement plan, the City of Redmond can reduce environmental impacts, foster social improvements, improve spending efficiency by the city, and save money.<sup>3</sup>

The City of Redmond has a budget of over \$94 million dollars and is projecting more growth for this coming year. As one of the largest purchasers in the region, the City of Redmond could make a significant difference in instituting a sustainable purchasing policy. As the States of Oregon and Washington have been active in seeking out sustainable procurement solutions, if Redmond joins other cities and state agencies already implementing sustainable purchasing, it will strengthen the market for environmentally preferable products, making purchasing those products more efficient and cost effective. Because so many other state and local governments have been making great gains in sustainable procurement, there are many resources from which Redmond can draw in implementing its plan. For example, the City of Portland has extensive resources demonstrating their sustainable purchasing initiatives and successes including product specifications and sourcing.<sup>4</sup>

Further, the City of Redmond, Oregon saw growth in residential housing last year and made some significant capital improvements. With this growth, the city will likely face increased demands on administrative resources, overall demand on city resources such as energy, land use, transportation and

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<sup>3</sup> "Why buy sustainably? - Sustainable Procurement Resource ..." 2011. 23 Apr. 2016 <<http://www.sustainable-procurement.org/about-spp/why-buy-sustainably/>>

<sup>4</sup> "Sustainable Procurement | The City of Portland, Oregon." 2015. 23 Apr. 2016 <<http://www.portlandoregon.gov/brfs/37732>>

materials. Implementing a comprehensive sustainable purchasing program will help Redmond balance those demands on resources with state climate goals and community well-being. To continue growing in a manner that aligns with the city's overall goal for the health and well-being of its citizens along with the economy, sustainable purchasing should be considered an essential tool. While there are state laws in place to allow for responsible purchasing, Redmond will ideally adopt an ordinance and policy plan mandating some degree of responsible purchasing along with a system for regular assessment of standards. With this report, we will describe the tools that Redmond can use to get the maximum benefits of sustainable purchasing.

Because federal, state, and local governments are the largest purchasing group in the country, representing over 20% of the Gross National Product, this gives these entities tremendous influence in increasing the availability of environmentally preferable products through sustainable procurement policies.<sup>5</sup> If more communities tie their purchasing to sustainability requirements, sustainable purchasing in local government will be increasingly cost effective and efficient.<sup>6</sup> An impressive example of the impact of this market power was seen on a national scale when the U.S. federal government mandated that all newly purchased federal computers meet Energy Star requirements. The demand for these products, with higher environmental standards, led to the total production phase out of less efficient models.<sup>7</sup> Manufacturers have responded to demand for sustainable products. Similarly, when Alameda County, California, first started buying recycled paper, it was significantly more expensive. Now it is nearly equal in cost to conventional paper.<sup>8</sup> Because sustainable public procurement is a market-based tool, both buyers and vendors have incentives to work on increasing availability of sustainable products.<sup>9</sup>

State and local agencies in the Pacific Northwest have made significant progress in sustainable purchasing. The States of Oregon and Washington have been active in seeking out sustainable procurement solutions and Redmond can use those gains in forging its own plan. In 2013, Oregon and Washington teamed up with the Responsible Purchasing Network and the

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<sup>5</sup> "NASPO Green Purchasing Guide - NASPO's." 2014. 23 Apr. 2016 <<http://www.naspo.org/green/>>

<sup>6</sup> Why buy sustainably? - Sustainable Procurement Resource 2011. 23 Apr. 2016 <<http://www.sustainable-procurement.org/about-spp/why-buy-sustainably/>>

<sup>7</sup> "The Procura+ Manual - BuySmart Network." 2011. 23 Apr. 2016 <[http://www.buysmartbc.com/\\_Library/Resources/resource\\_iclei\\_procura\\_manual.pdf](http://www.buysmartbc.com/_Library/Resources/resource_iclei_procura_manual.pdf)>

<sup>8</sup> "Alameda County uses its dollars to go green Page 1 of 5 ..." 2014. 23 Apr. 2016 <[https://www.acgov.org/sustain/documents/OaklandNorth\\_062011.pdf](https://www.acgov.org/sustain/documents/OaklandNorth_062011.pdf)>

<sup>9</sup> Journal of Cleaner Production, Assessment of criteria development for public procurement from a strategic sustainability perspective, 52(2013) at 309. ht

National Association of State Purchasing Officials to negotiate a contract for environmentally preferable janitorial supplies. The contract was pursued in accordance with Governor Kitzhaber's 2012 executive order "Environmentally Friendly Purchasing and Product Design" which aims to reduce the amount of toxic substances used in order to preserve health and well-being of citizens and protect the environment.<sup>10</sup>

***“Environmentally preferred’ doesn’t mean green at any cost, we want goods and services that get the job done, at a fair price, with less harm to people and the environment — that’s best value for state taxpayers.” - Gov. Jay Inslee, Washington***

Cities nationwide are adopting sustainable purchasing strategies and they consistently see not only a reduction in waste, energy use, and emissions, but also overall cost savings.<sup>11</sup> The City of Corvallis, Oregon, implemented a comprehensive sustainable purchasing plan and reduced landfill waste from city operations by 10.3 percent.<sup>12</sup> The City of San Diego, California reported saving \$5.6 million dollars through sustainable purchasing in 2006.<sup>13</sup>

Redmond has a decentralized system for purchasing; therefore, creating a strong Sustainable Purchasing Committee is particularly important to implement a successful sustainable purchasing policy. Currently, each department selects the products it purchases independently. While information may get shared, this sharing is not mandatory or regular. The city can continue to allow departments to make their own choices but in order to maximize the benefits of sustainable purchasing, they will have to work more collaboratively in sharing information and strategizing.

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<sup>10</sup> "Oregon (PDF) - Responsible Purchasing Network." 2014. 23 Apr. 2016 <[http://www.responsiblepurchasing.org/resources/state\\_profiles/oregon.pdf](http://www.responsiblepurchasing.org/resources/state_profiles/oregon.pdf)>

<sup>11</sup> Alicia Culver, *Buying Smart Experiences of Municipal Green Purchasing Pioneers*, Green Purchasing Institute, 2008.

<sup>12</sup> "2013 & 2014 - City of Corvallis, OR." 2015. 23 Apr. 2016 <<http://www.corvallisoregon.gov/modules/showdocument.aspx?documentid=9384>>

<sup>13</sup> "FY2009 EP<sup>3</sup> Annual Report - City of San Diego." 2016. 23 Apr. 2016 <<https://www.sandiego.gov/sites/default/files/legacy/environmental-services/pdf/ep3/FY09AnnualReport.pdf>>

# I. What are the Best Strategies for Sustainable Procurement?

The examples above explain some of the approaches state and local governments can take to make governmental purchasing practices more sustainable. As seen, different cities choose different approaches to transition into a plan that works best for their city. In the literature discussing the best way to transition from a traditional purchasing plan to a more sustainable plan, four techniques reappear as being used most often and most successfully. These strategies include: Using a price preference mechanism that favors sustainable products, incorporating environmental language in criteria for product and service specifications, choosing products and services based on their whole life cycle cost, and forming purchasing teams to streamline purchasing across governmental departments.<sup>14</sup> This section will explain how these strategies work, and how other cities have utilized each approach.

## A. Price Preferences

Price preferences are used to incentivize the purchase of slightly more expensive products when they are sustainable and have the same function and quality as a comparable, less environmentally preferable product. As seen in ORS 279A.125, a specific price preference is set and applied across all products and services, and is typically between five and 15%.<sup>15</sup> If a product falls in this price range, and it has similar function and quality to another product or service, preference is given to that product over the cheaper, non-sustainable purchase.<sup>16</sup>

The price preference provision in Philadelphia, Pennsylvania's city code is an example of a very strongly written price preference provision for sustainable products. This provision does not include a specific price preference range, but instead, provides the criteria: wherever the price is "reasonably competitive" and the "quality is adequate," the department shall purchase (1) Paper and paper products with recycled material, and (2) alternative fuel or hybrid-electric vehicles.<sup>17</sup> While this only applies to specific products, it is still a strong provision for ensuring the initial price point of a product does not inhibit a city's purchase of a more sustainable, comparable product.

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<sup>14</sup> [http://sustainca.org/sites/default/files/publications/Local\\_Government\\_Green\\_Procurement\\_Guide.pdf](http://sustainca.org/sites/default/files/publications/Local_Government_Green_Procurement_Guide.pdf)

<sup>15</sup> Or. Rev. Stat. § 279A.125 (2013)

<sup>16</sup> Or. Rev. Stat. § 279A.125 (2013).

<sup>17</sup> Philadelphia, Pennsylvania, Municipal Code Title 17, §17-602, <<http://phillycode.org/17-602/>>



More frequently seen is the practice of setting a specific price preference range. This is seen in Alameda County's city code; the county places a 10% price preference on sustainable products, which include products such as: recycled paper products, compost and co-compost products, recycled glass, recycled oil, and recycled solvents and paints.<sup>18</sup> When the financial barrier for choosing a more sustainable product is reduced in this way, it makes switching to better products much more feasible. While this type of price preferences will not guarantee a more sustainable product is selected, this technique still gives sustainable products a competitive advantage in obtaining procurement contracts when competing against less sustainable, function-comparable products and services.

## **B. Environmental Criteria in Bid Specifications**

Unlike price preferences, environmental criteria in bid specifications will guarantee the acquired good or service has the desired sustainable qualities. In general, when a governmental department issues a solicitation for goods and services, the procurement officials include the mandatory criteria that will be used to evaluate the bids.<sup>19</sup> The officials are also responsible for explaining, in each bid, the weight given to each criterion to decide who is awarded the city contract.<sup>20</sup>

To guarantee more sustainable purchases, city procurement officials can include environmental criteria in their bids, while also placing a strong weight on these factors. These types of criteria might include necessary minimums for how much material in a product is recycled, the level of toxicity of a product, or how energy efficient a product or service may be.<sup>21</sup> Once these environmental criteria are set and included in a bid solicitation for products or a service, the procurement process would proceed as with traditional procurement, where the contract is awarded to the lowest bidder who also meets these criteria.

Boulder, Colorado, is an excellent example of a city that seeks to include environmental criteria in every bid. The city has a comprehensive environmental policy that acts as a guide to departmental purchasing. While it is not binding on the departments, it represents an initiative to shift the culture of purchasing. The purchasing policy urges departments to take the following action if a product or service isn't listed on the city's list for mandatory recyclable purchases: "make vendors aware of our environmental values. One way you can do this is to make sure all bid documents have information about the City's environmental

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<sup>18</sup> <https://www.acgov.org/admin/documents/charterprintable.pdf>, Sec. 64.120: Recycled Product Purchase Preference Program

<sup>19</sup> *Sustainable Procurement Policies and Practices at the State and Local Government Level*, Danielle M. Conway; Greening Local Government, K.H. Hirokawa & P. Salkins eds., 2012, 56

<sup>20</sup> *Id.*

<sup>21</sup> Rosenbloom, Cost Analysis of Sustainability Procurement Memo, May 29, 2015, p. 2

goals, as well as our hope to use more recycled and environmentally preferable products.”<sup>22</sup> This strong wording will guide departments to include explicit environmental criteria in their bids.

Falmouth, Maine, is an example of a city that included strong environmental criteria in a bid solicitation, despite not having an overarching code provision or policy requiring such an inclusion. The city solicited bids for an LED streetlight retrofit project, and included strong language regarding energy savings and life cycle cost considerations in order for a contractee to be awarded the bid.<sup>23</sup> While the results will undeniably make for a more sustainable city, having an overarching policy, like Boulder, that sets minimum environmental standards for all bid solicitations will be more comprehensive and more beneficial for the triple bottom line (environmental, equity, and economic considerations) of a city.

### C. Life Cycle Cost Analysis

Life cycle cost analysis is a sustainable procurement strategy that moves away from choosing the lowest bid based on just the initial purchase price of products and services; it expands the lowest bid analysis to all costs the product or service would incur in its entire life cycle. This forces a city to be more proactive and far-reaching in its lowest-bid assessments. Rather than look at cost as an isolated event that affects a city budget only at the time of purchase, whole life costing takes into account the lifetime operating and maintenance costs, disposal costs, and the cost of subsequent necessary purchases, so the city can get a more accurate idea of cost. This allows a city to pick the lowest bid based on the holistic, whole life performance of the product and service beyond the isolated purchase price.



<sup>22</sup> *Environmental Purchasing Policy*, City of Boulder (2016), <https://bouldercolorado.gov/purchasing/environmental-purchasing-policy>

<sup>23</sup> Request for Qualifications: LED lights, Cities of Rockland, S Portland, Biddeford, Falmouth (January 28, 2016) [http://www.falmouthme.org/sites/falmouthme/files/uploads/streetlightrfqdec212015\\_final\\_0.pdf](http://www.falmouthme.org/sites/falmouthme/files/uploads/streetlightrfqdec212015_final_0.pdf)

<sup>24</sup> Boulder, Colorado, Municipal Code Chapter 8, § 2-8-7,

Boulder, Colorado has already taken steps to incorporate a life cycle analysis into its consideration for a “lowest bid” selection. The code states: “the definition of ‘lowest bid’ will include consideration of initial cost and, when applicable, life-cycle cost, including, without limitation, maintenance cost, over the normal lifetime of the product and energy-efficiency in consumption of non-renewable fuels.”<sup>24</sup> This explicit inclusion of life-cycle language is crucial for cities to establish a purchasing system that accounts for the triple bottom line, not just the initial economic value.



Corvallis, Oregon, is an example of a city that has taken steps to address the life-cycle costs of electronics without any specific language for sustainability in its city code. The city addressed the extensive costs incurred from the production, use, and disposal of electronics, and thus tailored its purchasing strategy to address these costs.<sup>25</sup> The city now purchases all of its computer equipment through the Electronic Procurement Environmental Assessment Tool (EPEAT), as the standards for energy and efficiency and reduced toxicity are more cost effective, and more environmentally friendly, when the entire life cycle is considered. While this is an excellent example of a city making sustainable purchasing decisions without an explicit mandate in the city code, incorporating life cycle costs into a city’s code would help make all purchasing decisions this informed.

#### **D. Procurement Teams**

Sustainable procurement is greatly aided and improved when a team of interdisciplinary players can convene and advise one another about the best

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<sup>25</sup> *City of Corvallis Sustainability Annual Report 2013 & 2014*, City of Corvallis (2015), 8, <http://www.corvallisoregon.gov/modules/showdocument.aspx?documentid=9384>

ways to implement the above strategies. The team helps a city decide what combination of sustainable criteria, price purchasing, and whole life costing works best for the city, in addition to identifying specific market options the city may take advantage of in its procurement process. These teams may be comprised of city department purchasers, industry and energy experts, vendors, environmental and sustainability representatives, and technical personnel; the members of the team will work together to streamline the procurement process from start to finish, and make it more sustainable.<sup>26</sup> A Sustainable Purchasing Committee, sometimes called a “green team,” allows a city to consult with qualified experts to organize purchasing data in one place, create a baseline of purchasing, and monitor the development of whatever proposed sustainable procurement code and policy the city adopts.

King County, Washington, has a very comprehensive section in its code that demonstrates a great way to require the formation of a Sustainable Purchasing Committee, and to ensure the team has clear objectives to follow for optimal performance. The provision brings together people from different departments to create a baseline of purchasing information, and to research and evaluate opportunities for purchasing more environmentally preferable products. It mandates communication between government departments, the inclusion of sustainability criteria in bid documents and meetings to compile an annual report that evaluates the results of purchasing more environmentally preferable products.<sup>27</sup> This type of detailed, mandatory language for a Sustainable Purchasing Committee in city code is crucial to actually implementing and maintaining a successful sustainable purchasing program.

### **King County’s Two-pronged Approach to Paper**

**King County, WA saved over \$209,000 on paper over two years by implementing a two-pronged legal approach**

- They mandated an increase in the amount of 100% recycled paper purchased**
- Then coupled that with mandated paper use reduction**

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<sup>26</sup> Danielle M. Conway, *Sustainable Procurement Policies and Practices at the State and Local Government Level*, Greening Local Government, K.H. Hirokawa & P. Salkins eds., 2012; See Alicia Culver, *Buying Smart: Experiences of Municipal Green Purchasing Pioneers*, [http://www.calpsc.org/policies/green\\_purchasing.html](http://www.calpsc.org/policies/green_purchasing.html)

<sup>27</sup> King County, Washington, Municipal Code Title 18, § 18.20.070; § 18.20.090

## II. Laws: How Sustainable is Redmond's Procurement System?

Overall, Redmond has several options for modifying its city code to make a more comprehensive, sustainable purchasing system. While the current code does not explicitly favor unsustainable practices, introducing rules and policies that clearly state sustainable objectives can help Redmond transform its purchasing plan.

### Redmond's Procurement System

Redmond's city code cites directly to the governing state procurement statutes directly: ORS 279A, 279B, and 279C. Within these statutes, a few sections directly refer to sustainable preferences for products. These are important to note, as they preempt any rules adopted by Redmond. ORS 279A.125 requires a governmental agency to give preference to recycled materials if the product is available, of a similar function and quality as the non-recycled material product, and if the recycled material product does not exceed five percent of the price of the non-recycled product.<sup>28</sup> ORS 279B.025 requires departments to purchase products that can be recycled or reused when discarded, to the extent it is economically feasible, and ORS 279B.225 requires lawn and landscaping contractors to salvage, recycle, or compost yard waste material when economically feasible and cost effective.<sup>29</sup> These provisions are useful because they show Oregon's recognition of the importance of environmentally preferable products, and because they bind how Redmond purchases.

While these ORS provisions lay the minimum foundation for procurement, Redmond's city code also includes certain procurement policy provisions. Currently, Redmond's procurement policies do not expand on environmental provisions. They do, however, describe how the city selects its products and services. The City Manager is designated as the purchasing agent for the City of Redmond.<sup>30</sup> The Manager or the Manager's designee is delegated and authorized to exercise all procurement and contracting authorities granted under ORS 279A, 279B, 279C, the Attorney General's Model Rules, and by ordinance or resolution.<sup>31</sup>

Redmond uses two main approaches for selecting procurement contracts for goods and services, which are dependent on the price threshold of the contract. For contracts \$10,000 and under, the City Manager or the Manager's designee has the liberal authority to select a contract in the manner deemed most practical or convenient.<sup>32</sup> For contracts \$150,000 and under, the City Manager

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<sup>28</sup> Or. Rev. Stat. § 279A (2013).

<sup>29</sup> Or. Rev. Stat. § 279B (2013).

<sup>30</sup> Redmond, Oregon, Municipal Code § 2.404

<sup>31</sup> *Id.*

<sup>32</sup> Redmond, Oregon, Municipal Code § 2.408

or the Manager’s designee must seek at least three informally solicited price quotes or proposals from prospective contractors.<sup>33</sup> The purchasing official selects a bid based on the broad qualification of “what the manager deems to best serve the interest of the city.”<sup>34</sup> In deciding what is best for the city, the procurement official is to take into account price, experience, expertise, product functionality, suitability for a particular purpose, and contractor responsibility.<sup>35</sup>

Aside from the steps already identified, there are other opportunities for Redmond to shift to a more sustainable procurement policy. To start, the city has legal freedom and flexibility to expand its provisions and try new things, as Redmond’s charter bestows a general grant of power to the city council. Unless state or federal laws expressly preempt the policies, Redmond can experiment as it chooses—even modeling itself as a leader for sustainable procurement in Central Oregon.

### III. Solutions: How can Redmond incorporate sustainable procurement strategies?

The question remains: how does Redmond take in and respond to the myriad of sustainable purchasing strategies explained above? While it may seem complicated at first, sustainable purchasing can be easy for a small city government. Because Redmond’s purchasing is decentralized, adopting a strong mechanism for cooperation is a key part of having a successful sustainable purchasing policy. Aside from saving money and preserving the environment, one of the strongest benefits of adopting a sustainable purchasing program is increasing efficiency in purchasing.

After looking at the multitude of examples of how other cities have implemented sustainable purchasing plans, the best practices for making a seamless transition, and Redmond’s current laws and the gaps in this law, we can address the best action plan for Redmond. Below are the best ways for Redmond to create a more robust, sustainable purchasing program.

#### **Redmond’s Best Action Plan:**

1. Introduce an ordinance that incorporates life cycle cost language into Redmond’s purchasing code.
2. Form a Sustainable Purchasing Committee.
3. Create a sustainable purchasing policy that outlines how to:
  - a. Conduct a baseline inventory.
  - b. Incorporate environmental language into purchasing criteria.
  - c. Incorporate environmental language into bid specifications.

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<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

## 1. Introducing an Ordinance

Redmond's city council has the authority and flexibility to expand its provisions and try new things, as Redmond's charter bestows a general grant of power to the city council.<sup>36</sup> Unless state or federal laws expressly preempt the policies, Redmond can experiment as it chooses—even modeling itself as a leader for sustainable procurement in Central Oregon. Therefore, adding life cycle cost language to its procurement policies can go a long way in transforming the city's purchasing policy. For example, for the contracts under \$10,000, outlined in Redmond City Code 2.404, there is room to include an explicit reference to sustainability as a qualifier for "practical." Adding explicit life-cycle language as a factor for determining what is most practical and convenient would be a great way for Redmond to choose more sustainable products and services. For contracts under \$150,000, the code provision could easily facilitate more sustainable purchasing by incorporating life cycle costs into the considerations for what makes a contract in the best interest of the city. By utilizing the strategy of including mandatory life cycle language in the city code, Redmond can start considering more of the environmental and long-term economic costs of goods and services at the time of purchase.

## 2. Form a Sustainable Purchasing Committee

With a decentralized purchasing system, having a strong Sustainable Purchasing Committee is even more important to maximize the efficiency benefits of sustainable purchasing. Establishing a committee represented by each department the first step. That committee will then meet to identify products to include in a best products directory, and to establish minimum sustainable criteria for future bid solicitations. Products that are used by all departments, such as paper, cleaning supplies, and janitorial paper supplies, are especially good products to assess first. Because the field of sustainable products is growing rapidly, the committee will meet regularly to re-evaluate product options and add products to the portfolio of sustainable supplies. Each department will begin by taking a baseline inventory as shown in the policy plan in Appendix B, Section 5, and Appendix D. By compiling inventory information from all departments, the city can identify which products could make the most impact if switched to a sustainable alternative.

Once main products are identified, the committee shall develop sustainability specifications that all departments must meet in purchasing such products. Not only will the committee identify sustainability specifications, but it will also develop language that will embed those specifications into any bid for such products. To develop the product standards, the committee will use third party certifications such as EnergyStar, EcoLogo, Forest Stewardship Council, Green Seal, and the EPA.

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<sup>36</sup> Redmond City Charter, 2010, 4, <http://www.ci.redmond.or.us/home/showdocument?id=4>

The committee will be responsible for communicating these new standards to all departments, providing education and training for employees, and ensuring that all employees are actively working to advance the goals of the sustainable purchasing policy. One of the committee's most important functions will be to monitor and assess progress using data compiled from all of the departments. The intention of this organization is to ensure that sustainable purchasing program is efficient, and that it can respond to a growing city with dynamic needs.

### **3. Create a Sustainable Purchasing Policy**

A sustainable purchasing policy, as official guidance, is essential for ensuring consistent application of sustainable purchasing procedures. This document will be the central location for all of the information gathered by the Sustainable Purchasing Committee across departments. The sustainable purchasing policy is important because it will be updated regularly and contain real guidance for implementation of the sustainable purchasing ordinance. The success of a comprehensive sustainable purchasing plan depends on consistent evaluation and updating based on experiences by city employees and administrators. The information garnered by employees will determine which product specifications and certifications are used for city bids and purchases. This guide will make it easy for employees to find sustainable options for purchasing.

## **IV. Conclusion**

Redmond is well situated to take into account the proposed changes for a more sustainable purchasing plan. To help facilitate the passing of an ordinance, the formation and continuation of a sustainable purchasing committee, and the creation and implementation of a comprehensive sustainable purchasing plan, we have created resources that are attached as appendices. In Appendix A, we provide a model ordinance that, if adopted, will help Redmond incorporate life cycle costs into its specific purchasing code provisions. Additionally, it will define, and therefore help clarify and keep consistent, sustainability language that will appear in the sustainable purchasing policy. The ordinance will also mandate the formation of the Sustainable Purchasing Committee. The tasks and functions of this committee will be laid out in the ordinance, to ensure the most seamless facilitation of committee so that it functions immediately upon approval.

Appendix B provides Redmond with a model sustainable purchasing policy. This is meant to help make sense of the dense amount of information delivered in the report. It presents, in a comprehensive format, how Redmond can proceed once the ordinance is in place. This detailed roadmap, including third party resources and directories of products, will be crucial to the initial and continued success of a sustainable purchasing plan in Redmond.

Finally, Appendix C and Appendix D serve to elucidate some of the more complicated sections of the sustainable purchasing policy. Appendix C



addresses product bid specifications. As Section III (b) of this report only described sustainable bid criteria in terms of its benefits, this appendix provides concrete examples of what this language actually looks like within a bid. This inclusion gives Redmond a model for fashioning its own sustainable bid criteria. Appendix D provides Redmond with a suggestion for conducting a baseline inventory survey. Having a standardized means of collecting and recording data across departments will be crucial for analyzing where Redmond can make its purchasing more sustainable. Redmond can either use this tool to conduct a baseline inventory, or can utilize its own system—the important part is that this Appendix can help start the process of streamlining this data collection.

Overall, Redmond is ready to start taking steps, at its own pace, to incorporate more sustainable purchasing practices into its city-wide purchasing plan, to grow as a model for sustainable purchasing in Central Oregon.

# Appendix A

## Sustainable Purchasing Ordinance

### A. Definitions

1. “Alternative Environmentally Preferable Paper” is paper with environmental attributes beyond those of the U.S. Environmental Protection Agency’s (EPA) Comprehensive Procurement Guidelines (CPG). These attributes include paper that is unbleached or is bleached without the use of chlorine compounds, goes beyond the EPA CPG post-consumer recycled content standard, is not derived from genetically modified organisms, or is made with fibers that come from certified, well managed forests, agricultural residues, sustainably-produced tree-free crops, or recycled non-tree fibers.
3. “Energy Star® compliant” products mean products that meet or exceed the U.S. Environmental Protection Agency’s (EPA) Energy Star® criteria for energy efficiency.
4. “Environmentally Preferable” means products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or services.
6. “Life Cycle Analysis” means the comprehensive examination of a product’s environmental and economic aspects and potential impacts throughout its lifetime, including raw material extraction, transportation, manufacturing, use, and disposal.
8. “Post-Consumer Waste,” means a finished material that would normally be disposed of as solid waste, having completed its life cycle as a consumer item. “Post-consumer waste” does not include manufacturing waste.
9. “Price Premium Payback Period” means the number of years it takes for the savings in operating costs to offset any additional upfront price of the product versus a lower price, less-energy efficient model. It is calculated by dividing the price premium by the annual savings in operating costs.
10. “Readily Biodegradable” shall be defined according to the Organization for Economic Cooperation and Development’s (OECD) measurement guidelines.
12. “Recyclable Product” means a product that, after its intended end use, can demonstrably be diverted from the solid waste stream for use as a raw

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<sup>1</sup> Portland, Oregon, Municipal Code § 5.33.080 Environmentally Preferable Procurement. 2016. 24 Apr. 2016 <<https://www.portlandoregon.gov/citycode/article/552961>>

material in the manufacture of another product, preferably higher value uses.

18. “Recycled Product” means all materials, goods and supplies, not less than 50% of the total weight of which consists of secondary and post-consumer waste with not less than 10% of its total weight consisting of post-consumer waste. “Recycled product” includes any product that could have been disposed of as solid waste, having completed its life cycle as a consumer item, but otherwise is refurbished for reuse without substantial alteration of the product’s form.

### **B. Amend the language of Redmond Municipal Code § 2.408 (1) and (2) to incorporate life cycle cost language**

- (1) The language for § 2.408 (1) shall be amended to read:

To enter into contracts for procurement of goods or services not to exceed \$10,000 by any manner deemed practical or convenient including by direct selection or award. Life cycle costs will be considered when determining what is deemed practical or convenient.

- (2) The language for § 2.408 (1) shall be amended to read:

To enter into contracts for procurement of goods or services, or contract amendments, not to exceed \$150,000 by seeking at least three informally solicited competitive price quotes or competitive proposals from prospective contractors. The City shall keep a written record of the sources of the quotes or proposals received. If three quotes or proposals are not reasonably available, fewer may be accepted, but the City shall make a written record of the effort made to obtain the quotes or proposals. The contract shall be awarded to the contractor whose quote will best serve the interests of the City, taking into account price as well as life cycle costs, experience, expertise, product functionality, suitability for a particular purpose and contractor responsibility.

### **C. Environmentally Preferable Procurement General Policy**

In developing plans, drawings, work statements, specifications, or other product descriptions, Redmond shall insure, to the maximum extent economically feasible, the purchase of sustainable products or services. In doing so, the city shall purchase products and services based on long-term environmental and operating costs, and find ways to include environmental and social costs in short-term prices. Furthermore, the city shall first seek to reuse, repair, or refurbish existing equipment and products prior to purchasing new, to the extent reuse is fiscally sound and complements other city safety and sustainability policies.<sup>2</sup>

(1) For purposes of this section, each of the following is a sustainable characteristic:

- a. Durable;
- b. Made of recycled materials, recyclable, or refurbished;
- c. Upgradable as opposed to replaceable;
- d. Non-toxic or minimally toxic;
- e. Biodegradable;
- f. Compostable;
- g. Bio-based;
- h. Highly energy efficient in production and use;
- i. Highly water efficient in production and use;
- j. Shipped with minimal packaging, and with packaging preferably made of recycled or recyclable materials;
- k. Manufactured in an environmentally sound and sustainable manner by companies with good environmental track records; and
- l. Any other characteristic deemed by the [Procurement Administrator] to further the intentions of this Section.

#### **D. Recycled Materials and Products Price Preference.<sup>3</sup>**

1. In accordance with ORS 279A.125, notwithstanding provisions of law requiring the City to award a contract to the lowest responsible bidder or best proposer or provider of a quotation, the City shall give preference to the procurement of goods manufactured from recycled materials, and goods where the whole life cycle cost has been considered.
2. In comparing goods from two or more Bidders or Proposers, and at least one Bidder or Proposer offers goods manufactured from recycled materials, and at least one Bidder or Proposer does not, the City shall select the Bidder or Proposer offering goods manufactured from recycled materials if each of the following conditions exists:
  - a. The recycled product is available.
  - b. The recycled product meets applicable standards.
  - c. The recycled product can be substituted for a comparable non-recycled product.

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<sup>2</sup> Portland, Oregon, Municipal Code § 5.33.080 Environmentally Preferable Procurement. 2016. 24 Apr. 2016 <<https://www.portlandoregon.gov/citycode/article/552961>>

<sup>3</sup> *Id.*

- d. The recycled product's costs do not exceed the costs of non-recycled products by more than five percent, or higher if a written determination is made by the City and set forth in the Solicitation Document.
- e. Offerors, when required in the Solicitation Document, certify in their submitted Offers the minimum, if not exact, percentage of post-consumer waste and total recovered materials content in the products offered.<sup>4</sup>

## **E. Sustainable Purchasing Committee Responsibilities**

1. A Sustainable Procurement Committee ("Committee") shall be formed for the purpose of facilitating the purchase of sustainable materials, products, and services within the City.

2. The Committee shall be comprised as follows:

- a. The [Procurement Administrator], or a designee thereof, shall be the chairperson of the Committee;
- b. The [City Manager], or a designee thereof, shall be a member of the Committee; and
- c. The [Director] of each department, or a designee thereof, shall be a member of the Committee.

3. The Committee shall carry out the following duties:<sup>5</sup>

- a. Publicize the City's Sustainable Procurement Code and the City's sustainable objectives to suppliers, contractors, and other relevant parties.
- b. Develop educational and outreach programs for the City's departments, buyers, vendors, and staff.
- c. Prepare a baseline study, create a data collection system, and publish an annual report.
- d. Develop procedures to continuously evaluate sustainable materials, products, and services purchased, and review and recommend changes to sustainable procurement activities as needed.

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<sup>4</sup> Portland, Oregon, Municipal Code § 5.33.080 Environmentally Preferable Procurement. 2016. 24 Apr. 2016 <<https://www.portlandoregon.gov/citycode/article/552961>>

<sup>5</sup> King County, Washington, Municipal Code Title 18, § 18.20.070; § 18.20.090, 24 Apr. 2016 <[http://www.kingcounty.gov/council/legislation/kc\\_code/21\\_Title\\_18.aspx](http://www.kingcounty.gov/council/legislation/kc_code/21_Title_18.aspx)>

## F. Responsibilities of departments

1. All departments are responsible for:
  - a. Assigning appropriate personnel to evaluate opportunities for buying recycled and other environmentally preferable products and to represent each department on the Sustainable Purchasing Committee.
  - b. Purchasing recycled and other environmentally preferable products whenever practicable; and
  - c. Reporting evaluation results and purchases of recycled and other environmentally preferable products to the Sustainable Purchasing Committee and Central Services department.
2. The Central Services department is responsible for:
  - a. Overseeing the formation and progress of the Sustainable Purchasing Committee as outlined in the Sustainable Purchasing Policy.
  - b. Assigning appropriate personnel to fulfill the requirements of this policy.
  - c. Preparing or revising bid documents and contract language where necessary to implement this chapter;
  - d. The Central Services department shall encourage the incorporation of standards set by the Sustainable Purchasing Committee into purchase order specifications.
  - e. Collecting data on purchases by departments of recycled and other environmentally preferable products; and
3. Annual report.
  - a. The Sustainable Purchasing Committee shall transmit by June 30 of each year a report on the sustainability purchasing committees purchases and progress, in addition to the future objectives to continue to purchase in a way that reduces energy use, climate emissions and resource use....<sup>6</sup>

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<sup>6</sup> King County, Washington, Municipal Code Title 18, § 18.20.070; § 18.20.090, 24 Apr. 2016 <[http://www.kingcounty.gov/council/legislation/kc\\_code/21\\_Title\\_18.aspx](http://www.kingcounty.gov/council/legislation/kc_code/21_Title_18.aspx)>

# Appendix B

## Sustainable Purchasing Policy

### 1. Purpose

The City of Redmond is a large consumer of goods and services. These purchases have environmental impact resulting from the product's manufacture, use, and disposal. The goal of this policy is to reduce the adverse impact on the environment and human health while supporting a diverse, equitable, and vibrant community and economy with our purchasing decisions. In doing so, the City will include environmental considerations in purchasing decisions along with conventional considerations such as price, performance, and availability. Overall, this plan will allow the city to make purchasing decisions that will be financially responsible while promoting practices that benefit public health and safety, reduce pollution, conserve natural resources, and reward vendors and producers of such goods.

### 2. Definitions

Sustainable purchasing means that Redmond will buy products and services that have a reduced effect on health and environment when compared to conventional products that serve the same purpose. When comparing the products, all phases of the product's life cycle will be considered including raw materials, manufacturing, packaging, distribution, operation, maintenance and disposal.

This means purchasing products that have reduced environmental impact, do not harm human health, pollute less, minimize waste, maximize use of recycled materials, conserve energy and water and reduce use of hazardous materials. The following environmental attributes shall be considered in any purchasing decision:

- Biobased
- Biodegradable
- Carcinogen-free
- Chlorofluorocarbon-free
- Compostable
- Durable
- Energy-Efficient
- Heavy metal-free
- Locally manufactured
- Low volatile organic compound content
- Made from rapidly renewable materials
- Recyclable
- Recycled content

- Reduced Greenhouse gas emissions
- Reduced packaging
- Refurbished
- Resource efficiency
- Reusable
- Upgradable
- Water efficient

### **3. Environmental considerations, performance, availability, and cost**

Redmond is committed to buying more sustainable goods and services as long as they meet performance needs and are available at a reasonable cost. When comparing cost, the City of Redmond will not focus exclusively on the initial price rather we will calculate and compare total costs over the life cycle of the product. These costs are initial costs, along with the cost of maintenance, operation, insurance, disposal, replacement, and potential liability costs. The total cost of ownership shall be considered before making decisions. This means that the city may pay a higher initial cost for goods with superior environmental performance.

### **4. Establishing a Sustainable Purchasing Committee**

Within one month of enacting this policy, the City Manager shall designate a leader of the Sustainable Purchasing Committee and every department head shall assign a staff member to participate. The Sustainable Purchasing Committee shall meet at least four times each year. The team will be responsible for the following:

- Tracking the development of environmental standards and specifications that Redmond can integrate into bid specifications
- Establish an initial inventory of city purchases and develop metrics for measuring progress in implementing the sustainable purchasing policy
- Prioritize a list of products and services to address
- Prepare educational and outreach materials to promote sustainable purchasing within city government and for all city contractors and vendors
- Prepare an annual report documenting city sustainable purchasing initiatives. The report will include a list of all products or services that Redmond has incorporated environmental considerations; the volume spent, quantity purchased, or purchasing trends

### **5. Baseline Study**

Within 12 months of the date this policy is enacted the Sustainable Purchasing Committee shall conduct a baseline study and set priorities for product and



service standards. The baseline study shall include the amount and cost of each product and service purchased in the last fiscal year, products and services the city is currently purchasing that meet third party sustainability standards such as EPA, Energy Star, or USDA Biobased.

The Sustainable Purchasing Committee shall, based on the study, prioritize integration of sustainability considerations into the city's purchase of the following products and services:

- Recycled content products designated by the US EPA, [www.epa.gov/cpg](http://www.epa.gov/cpg)
- Energy-efficient products listed by the Energy Star program, [energystar.gov](http://energystar.gov)
- Biobased products designated by the USDA.
- Building renovation and construction.
- Cleaning products and services
- Furniture
- Hybrid electric or alternative fuel vehicles
- Landscaping products and services
- Paint and painting services
- Paper, recycled content, and reduced use
- Pest management products and services
- Renewable electricity
- Vehicle maintenance products and services

## **6. Reviewing Existing Specifications**

Within six months from the date this policy is enacted, the head of the Sustainable Purchasing Committee shall ensure procedures are in place to review upcoming purchases so that wherever possible, specifications, solicitation language and purchasing regulations are amended to expand the use of more sustainable products.

- All generic solicitation language shall be reviewed and revised to acknowledge sustainability goals
- All products for which the US Environmental Protection Agency has developed recycled content recommendations shall be required to meet or exceed those recommendations
- All products for which the Energy Star program has developed energy-efficiency standards shall be required to meet or exceed the Energy Star standard if not cost-prohibitive
- All products for which the US Department of Agriculture (USDA) has developed biobased recommendations shall be required to meet

or exceed USDA's recommended biobased percentages, unless costs are prohibitive or other environmental considerations are more important

- All products and services selected by the environmental purchasing task force shall be required to meet or exceed Sustainable Purchasing Committee recommendations unless costs are prohibitive

## **6.1 External Reference Standards**

The Sustainable Purchasing Committee shall use standards established by government or other widely recognized authorities including but not limited to:

- Energy Star, [www.energystar.gov](http://www.energystar.gov)
- Eco Logo, [www.terrachoice-certified.com](http://www.terrachoice-certified.com)
- Forest Stewardship Council, [www.fscus.org](http://www.fscus.org)
- Green Seal, [www.greenseal.org](http://www.greenseal.org)
- US EPA, [www.epa.gov/waste/conserve/tools/cpg/index.htm](http://www.epa.gov/waste/conserve/tools/cpg/index.htm)
- USDA, [www.ars.usda.gov/bbcc](http://www.ars.usda.gov/bbcc)
- Responsible Purchasing Network, [www.responsiblepurchasing.org/purchasing\\_guides/all/](http://www.responsiblepurchasing.org/purchasing_guides/all/)

## **6.2. Where no External Reference Standards Exist**

If there are no acceptable third-party standards, the Sustainable Purchasing Committee shall assess products according to the following factors: Life cycle costs, waste generation, toxicity, energy consumption, human health impacts, use reduction, product performance, and impact on staff time and labor.

## **7. Promoting Environmental Purchasing**

Every department shall ensure its employees are familiar with the educational and outreach materials developed by the Sustainable Purchasing Committee. Every department shall require their contractors and consultants to use environmentally preferable products whenever cost effective and to the extent practicable for all work completed on behalf of the City of Redmond.

## **8. Evaluating the Policy**

Within five years of adopting this sustainable purchasing policy, the City of Redmond will undertake a comprehensive review of the guidelines, goals, and action plans.

Resources/Model Sustainable Procurement Policies

- a. City of Portland Sustainable Procurement Policy: <http://www.portlandoregon.gov/shared/cfm/image.cfm?id=204110>

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<sup>7</sup> Modified largely from CA Sustainability Alliance model, <https://www.acgov.org/sustain/what/purchasing/policy.htm>

- b. CA Sustainability Alliance Local Government Green Procurement Guide: [http://sustainca.org/sites/default/files/publications/Local\\_Government\\_Green\\_Procurement\\_Guide.pdf](http://sustainca.org/sites/default/files/publications/Local_Government_Green_Procurement_Guide.pdf)
- c. Alameda County Sustainable Purchasing Policy and Resolution: <https://www.acgov.org/sustain/what/purchasing/policy.htm>

## Appendix C

### Product Bid Specifications

The city shall establish product specifications and require all bids to address such specifications.

**Example 1:** Alameda County includes the following language regarding environmental specifications for janitorial supplies:

**Background:** The County uses certified green cleaning products in order to help create a healthy work environment for janitorial staff and building occupants. We require that products be certified to one of the following third-party green cleaning standards: EcoLogo (now part of UL Environment), Green Seal, and the U.S. Environmental Protection Agency’s Design for the Environment (DfE) program. This provides us assurance that we receive products that perform well and achieve their claims of being environmentally preferable. We structure the bid as a Request for Proposal (RFP) so that we are able to evaluate the vendors based on best value. Some of the criteria we evaluate in the RFP are product effectiveness (as field tested by our janitors), dispensing systems, customer service, and training plan.

<https://www.acgov.org/sustain/what/purchasing/bids/excerpts.htm>

#### Example 2

Portland Janitorial Cleaning Supplies and Support Services product specifications bid excerpt:

<b>Product Type</b>	Multi-Surface Cleaner - Concentrate
Description	All-in-one product for use on almost every surface, including glass. Different dilution ratios are used according to the surface to be cleaned.

<b>Example</b>	<b>Diversey Alpha-HP</b>
<b>Dispenser Specification</b>	No wall-mounted dispensers. Product must be supplied with a portable, closed-loop dilution & dispensing system, either integrated into product packaging or attached separately. If attached separately, it must be an easy, one or two step process to attach, where end-user would not come in contact with the concentrated chemical at any time when used according to manufacturer instructions. The portable dilution control system shall accommodate a direct connection to a water supply hose and have a spout that accommodates bottle filling. Portable dispensers must incorporate built-in metering guides for end-users.
<b>Chemical Specification</b>	1. No ingredients that have been identified as asthmagens; 2. No added fragrance; 3. Green Seal GS-37 certified; and/or Environmental Choice CCD-146 certified.

Janitorial Product Specifications, Exhibit B, <http://www.portlandoregon.gov/brfs/article/449667>

# Appendix D

## Conducting a Baseline Inventory

When adopting a sustainable purchasing plan, it is important to start with a baseline inventory from which progress can be tracked and measured. There are many ways to do this depending on the current purchasing and accounting system. We encourage the City of Redmond to conduct a baseline inventory which could be a survey, questionnaire, or checklist. This would help keep purchasing consistent across departments, and would provide a foundation for purchasing more sustainable products. Below is one example from the City of Ontario, CA.

[http://sustainca.org/tools/green\\_procurement\\_toolkit/baseline\\_inventory](http://sustainca.org/tools/green_procurement_toolkit/baseline_inventory)

Office Supplies	ENVIRONMENTALLY PREFERABLE				YES	GREEN STATE CONTRACT		RECOMMENDED NON-STATE CONTRACT GREEN PRODUCTS	
	ALL (YES)	SOME (YES)	NONE	NOT SURE		CONTRACT INFO	ADDITIONAL INFO. REGARDING CONTRACT/CONTRACTOR	PRODUCT & PROVIDER	ENVIRONMENTAL ATTRIBUTES
Binders					X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog; <a href="http://www.community.officedepot.com/environment.asp">http://www.community.officedepot.com/environment.asp</a>		
Calendars		X			X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		
Computer Monitors					X	MONITORS CONTRACT #1S-05-70-05	Look for products with Electronic Product Environmental Assessment Tool (EPEAT) certification ( <a href="http://www.epeat.net/Search.aspx">http://www.epeat.net/Search.aspx</a> )		
Computers-Desktop					X	DESKTOP & WORKSTATIONS CONTRACT #1S-05-70-01	Electronic Product Environmental Assessment Tool (EPEAT)		
Computers-Notebook					X	NOTEBOOK COMPUTER CONTRACT #1S-05-70-02	Electronic Product Environmental Assessment Tool (EPEAT) certification		
Copiers	X				X	COPIERS CONTRACT #1S-05-36-20	Sharp Electronics Corporation's products: U.S. EPA's environmental criteria, automatic duplexing, multi-functional upgrade: <a href="http://www.documents.dgs.ca.gov/pd/strategic/SharpCatalog.pdf">http://www.documents.dgs.ca.gov/pd/strategic/SharpCatalog.pdf</a>		
Copy/Printer Paper		Most			X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		
Desk Accessories				X	X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		

The California Sustainability Alliance, a Navigant Consulting Project | Market Street, Spear Tower Suite 1200, San Francisco, CA 94105

Office Supplies	ENVIRONMENTALLY PREFERABLE				GREEN STATE CONTRACT		RECOMMENDED NON-STATE CONTRACT GREEN PRODUCTS		
	ALL (YES)	SOME (YES)	NONE	NOT SURE	YES	CONTRACT INFO	ADDITIONAL INFO. REGARDING CONTRACT/CONTRACTOR	PRODUCT & PROVIDER	ENVIRONMENTAL ATTRIBUTES
Electronic Waste Recycling Services					X	E-WASTE CONTRACTS	Designed to process Electronic Waste, Cathode Ray Tubes (CRT's), fluorescent light tubes, and batteries		
Envelopes			X		X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		
File Folder		X			X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		
Index Cards		X			X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		
Letterhead & Business Cards			X					1) GreenerPainter 2) GreenPostCards	Company is 100% wind-powered; all shipping is certified carbon-free; recycled products; soy ink based Recycled products, soy-based ink, energy efficient press
Lockers and storage cabinets								1) California State Prison Industry authority sells metal lockers and file cabinets.	70% postconsumer content
Office Furniture		X			X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		
Post-It Notes		X			X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		

2

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Office Supplies	ENVIRONMENTALLY PREFERABLE				GREEN STATE CONTRACT		RECOMMENDED NON-STATE CONTRACT GREEN PRODUCTS		
	ALL (YES)	SOME (YES)	NONE	NOT SURE	YES	CONTRACT INFO	ADDITIONAL INFO. REGARDING CONTRACT/CONTRACTOR	PRODUCT & PROVIDER	ENVIRONMENTAL ATTRIBUTES
Printers	X				X	PRINTER CONTRACT #1S-05-70-04	Look for products with an automatic duplexing feature and Blue Angel Certification: <a href="http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm">http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm</a>		
Toner/Printer Cartridges		X			X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		
Writing Pads/ Notebooks		X			X	OFFICE SUPPLY CONTRACT #1S-06-75-55	Office Depot's "The Green Book" catalog		
Vehicle Maintenance									
Antifreeze								1) Activ. Inc. 2) City Radiator, Inc. 3) EET Corporation	Recycled antifreeze/engine coolant Recycled antifreeze/engine coolant Recycled antifreeze/engine coolant
Hydraulic Fluid/Oil								1) Coast Oil Company 2) Congress Enterprises 3) Moore Oil	Total recycled content: 99% Postconsumer content: 99% Total recycled content: 75% Postconsumer content: 75% Total recycled content: 75% Postconsumer content: 75%

3

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Vehicle Maintenance	ENVIRONMENTALLY PREFERABLE					GREEN STATE CONTRACT		RECOMMENDED NON-STATE CONTRACT GREEN PRODUCTS	
	ALL (YES)	SOME (YES)	NONE	NOT SURE	YES	CONTRACT INFO	ADDITIONAL INFO. REGARDING CONTRACT/CONTRACTOR	PRODUCT & PROVIDER	ENVIRONMENTAL ATTRIBUTES
Hydraulic Fluid/Oil (continued)								4) Superior Lubricants Co.	Total recycled content: 75% Postconsumer content: 75%
								5) The Medallion Group	Total recycled content: 75% Postconsumer content: 75%
Motor Oil								1) Canadian Tire Corporation- MotoMaster ECO passenger car motor oil	Total recycled content: 50% Postconsumer content: 50%
								2) Coast Oil Company - Heavy duty diesel motor oil	Total recycled content: 89% Postconsumer content: 89%
								3) Congress Enterprises- passenger car motor oil	Total recycled content: 80% Postconsumer content: 80%
								4) Lyondell Lubricants - Enviroil heavy duty motor oil	Total recycled content: 40% Postconsumer content: 40%
								5) Lyondell Lubricants - Enviroil passenger car motor oil	Total recycled content: 40% Postconsumer content: 40%
								6) Safety-Kleen Corporation - Diesel motor oil	Total recycled content: 100% Postconsumer content: 100%
								7) The Medallion Group - passenger car motor oil	Total recycled content: 80% Postconsumer content: 80%

4

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Facility/ Grounds Maintenance	ENVIRONMENTALLY PREFERABLE					GREEN STATE CONTRACT		RECOMMENDED NON-STATE CONTRACT GREEN PRODUCTS	
	ALL (YES)	SOME (YES)	NONE	NOT SURE	YES	CONTRACT INFO	ADDITIONAL INFO. REGARDING CONTRACT/CONTRACTOR	PRODUCT & PROVIDER	ENVIRONMENTAL ATTRIBUTES
Tire (continued)		X						1) Tehama Tire Service, Inc.- re-treaded tires for light truck	Total recycled content (the percentage of preconsumer recycled-content plus the percentage of postconsumer recycled-content): 100% Postconsumer content (the percentage of postconsumer material in a product): 70%
								2) Tehama Tire Service, Inc.- re-treaded tires for medium truck	Total recycled content: 100% Postconsumer content: 65%
								3) Bray's Recapping Service, Inc.- retreaded tires	Total recycled content: 70% Postconsumer content: 70%
								4) Casselberry Tire Co.- retreaded tires	Total recycled content: 70% Postconsumer content: 70%
								5) Frank Fargo Tire & Rubber Company	Total recycled content: 100% Postconsumer content: 96%
Vehicles (Hybrids, 2008 Model year)		X			X	HYBRID VEHICLES CONTRACT 1-08-23-11			
Vehicles (Compressed Natural Gas and Bi-fueled)		X			X	ALTERNATIVE FUELED VEHICLES CONTRACT 1-08-23-22			

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Facility/ Grounds Maintenance	ENVIRONMENTALLY PREFERABLE					GREEN STATE CONTRACT		RECOMMENDED NON-STATE CONTRACT GREEN PRODUCTS	
	ALL (YES)	SOME (YES)	NONE	NOT SURE	YES	CONTRACT INFO	ADDITIONAL INFO. REGARDING CONTRACT/CONTRACTOR	PRODUCT & PROVIDER	ENVIRONMENTAL ATTRIBUTES
	Window Cleaner				X	X	MRO Contract #1S-06-79-55	Grainger Industrial Supply's list of Environmentally Friendly Products: <a href="http://www.grainger.com/Grainger/static.jsp?page=rc_greenproducts.html">http://www.grainger.com/Grainger/static.jsp?page=rc_greenproducts.html</a> Grainger's MRO Contract 1S-06-79-55 info: <a href="http://www.grainger.com/Grainger/static.jsp?page=fos_cacontract.html">http://www.grainger.com/Grainger/static.jsp?page=fos_cacontract.html</a>	
Graffiti Remover				X	X	MRO Contract #1S-06-79-55	Grainger Industrial Supply		
Other Cleaners			X		X	MRO Contract #1S-06-79-55	Grainger Industrial Supply		
Deodorizer			X					1) Core Products Company - Green Logic Products	Specially formulated to provide a premium environmentally preferred deodorizing; Biodegradable
Disinfectant			X					1) Spartan Chemical Company, Inc. - Green Solutions High Dilution Disinfectant 256	
Urinal Digesters			X					1) Nilodor Inc. - Bacteria Enzyme Urine Digester	
Pesticide			X					1) EcoSMART Technologies, Inc.	Organic
Fertilizer								1) Tascon, Inc. - EnviroSoil-Rx Soil/ Fertilizer (Compost)	Total recycled content: 97% Postconsumer content: 97%

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Facility/ Grounds Maintenance	ENVIRONMENTALLY PREFERABLE					GREEN STATE CONTRACT		RECOMMENDED NON-STATE CONTRACT GREEN PRODUCTS	
	ALL (YES)	SOME (YES)	NONE	NOT SURE	YES	CONTRACT INFO	ADDITIONAL INFO. REGARDING CONTRACT/CONTRACTOR	PRODUCT & PROVIDER	ENVIRONMENTAL ATTRIBUTES
	Fertilizer								2) Winzinger Recycling - Topsoil 3) NaturalLawn of America
Paint, Aerosol			X		X	MRO Contract #1S-06-79-55	Grainger Industrial Supply		
Other Paints			X		X	MRO Contract #1S-06-79-55	Grainger Industrial Supply		
Fluorescent Lamps				X	X	LAMP CONTRACT #1-06-62-31	Contract covers T-12, T-8, and compact fluorescent lights (CFL). Also, retrofitting can be accomplished through this contract (ballasts for T-8s included). The manufacturers are: T-12s, Sylvania; T-8s, Phillips, CFLs, Sylvania.		
Paper Towels		X			X	MRO Contract #1S-06-79-55	Grainger Industrial Supply		
Toilet/Facial Tissue				X	X	MRO Contract #1S-06-79-55	Grainger Industrial Supply		
Toilet/Facial Tissue				X	X	MRO Contract #1S-06-85-34	American Tex-Chem: Toilet tissue		
Trash Bags					X	MRO Contract #1S-06-79-55	Grainger Industrial Supply		
Signs								1) California State Prison Industry authority sells signs with high postconsumer content	50% postconsumer content

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## **Food Proofing: Integrating Local Food into Redmond's Policy and Regulatory Frameworks**

**Spring 2016 • Law**

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*This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Redmond. Text and images contained in this report may not be used without permission from the University of Oregon.*

## Executive Summary

Many people believe that individual lifestyle choices and private business actions drive food consumption patterns. However, food systems are highly influenced by public policies related to land use, transportation, and planning, among others. In turn, food directly influences the economy, environment, public health, equity, and overall quality of life, making it a vital factor in defining the sustainability of a community.

There is consensus that the demand for local food is gaining momentum in Redmond. While this is encouraging for local producers and others involved in local food systems, there are a number of barriers to developing localized food systems. Local farmers have singled out regulatory barriers as a major impediment to their growth coupled with processing, marketing, distribution, and consumer education challenges that in turn limit the growth of a thriving local food system.

The underlying objective of this project is to realize a thriving sustainable local food system facilitated by city policy and regulations. Our goals are to educate consumers on the food cycle and benefits of local purchasing; facilitate sustainable production systems; increase financial contributions to local economies; and promote cohesiveness and a sense of community in Redmond. We intend to realize these goals by proposing guidelines for a Food Action Plan and an Urban Agriculture Ordinance in order to integrate local food into city policy and regulatory frameworks.

It is important to note from the onset that the current regulatory framework in Redmond and the lack of a political mandate limit opportunities to improve the local food system and exposes the need for food integration in city regulations to incentivize the growth of a sustainable local food system. To give our project context, we chose an institution as a case study; the Redmond School District, the largest food consumer whose food purchasing decisions affects almost all residents in Redmond. We will illustrate how the schools initiatives to purchase local food can be enhanced by the city council through partnerships that address regulatory barriers and create incentives.

Local governments can play a pivotal role in the development of local food systems by facilitating systems for small-scale farmers using sustainable methods. We will demonstrate that numerous cities across the country are contributing to the growth of food systems through innovative public policy including plans, regulatory tools, fiscal and social incentives, and institutional mechanisms.

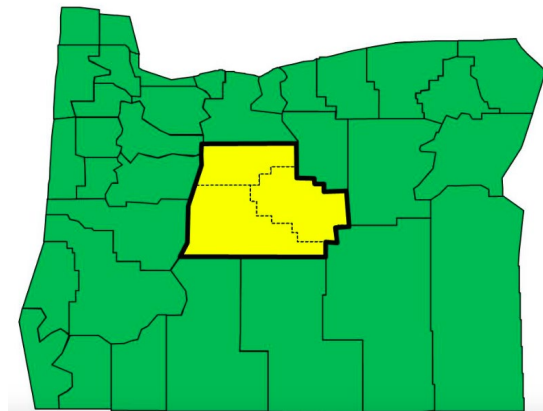
This report exemplifies the needs and benefits of an enabling policy and regulatory framework that promotes a vibrant local food system. It lays out the goals of the project, brief facts on food production in Central Oregon, challenges faced by local farmers with a focus on regulatory barriers, and the

current Redmond legal framework as it relates to food. The report lays out best-case practices from other cities demonstrating various approaches that local governments have in place to support local food systems and specific food proofing proposals for the Redmond City Council. It concludes with a case study on the school district's local food purchasing initiatives that offers an opportunity for partnership to promote local food.

## I. Study Area

The term “local” can be interpreted variously as it lacks a universally accepted definition. For purposes of our project, the geographical and political boundaries delimit our area of study and we have selected food grown in Central Oregon. This was informed by our case study's (Redmond School District) definition of local. The Central Oregon region consists of Deschutes, Jefferson, and Crook Counties as illustrated in the figure below.<sup>1</sup> These counties consist of six cities: Redmond, Bend, Sunriver, La Pine, Sisters and Prineville.

*Figure 1: Central Oregon Counties: Crook, Deschutes, Jefferson*



Source: <http://www.central-oregon.com/business.html>

## II. Goals

We envision a vibrant and sustainable local food system in Redmond that emphasizes, strengthens, and makes visible the interdependent and inseparable relationships between individual sectors (from production to waste disposal)<sup>2</sup> embedded in progressive and adaptable policy and regulatory frameworks.

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<sup>1</sup> Available at: <http://www.central-oregon.com/business.html>

<sup>2</sup> American Planning Association, 'Principles of a Healthy, Sustainable Food System' Available at <https://www.planning.org/nationalcenters/health/foodprinciples.htm>

## 1. Educate consumers on the food cycle and local purchasing

A number of surveys and interviews in Central Oregon emphasized the need for community involvement in problem solving related to local food.<sup>3</sup> The producers in the survey indicated that there is need for consumer education around familiarity with farm products, seasonality and availability, reasons behind cost, how buying local supports the local economy, how to prepare or use the product, general education about why local food is important, consumer awareness of how to access local products, creating more accessing venues, and more advertising.<sup>4</sup>

Local food systems rely on relationships built on honesty and trust to succeed. **A foremost step in the promotion of local food is consumer knowledge on the food cycle and local purchasing.** Local food education through civic engagement on community nutrition, media campaigns, farm field trips, school/ community gardens, local food taste tests, and cooking with local foods, is an effective way to teach the community where their food comes from and to provide them with positive associations around healthy eating while building connections to agricultural heritage.

*Figure 2: Consumer education can build trust in the local food system*



Source: <http://blogs.cdфа.ca.gov/TalesFromTheField/>

## 2. Increase financial contributions to local economies

A recent survey<sup>5</sup> indicated that **the majority of respondents described the current state of agriculture in Central Oregon as “struggling.”** The highest level of dissatisfaction with the current state of agriculture came from Deschutes County producers with 69% choosing “struggling.” “Increased profitability for farmers” surfaced as the most important variable for increasing the viability of

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<sup>3</sup> Pioneering a Local Food System in Central Oregon, A Community Food Assessment Report. Available at <http://coic2.org/community-development/food-systems/>

<sup>4</sup> Ibid.

<sup>5</sup> Available at: <http://coic2.org/community-development/food-systems/>

a local food system in Central Oregon. This could be described as a focus on the need for the economic viability of local agriculture to sustain a local food system.

Figure 3: Most of local agricultural producers are struggling with the food system in Deschutes County

	Thriving	Surviving	Struggling
Crook	7%	40%	53%
Deschutes	7%	40%	69%
Jefferson	0%	47%	53%
Tri-County	5%	35%	60%

Source: [http://www.hdfffa.org/wp-content/uploads/Central-OR-Food-Assessment\\_Part1.pdf](http://www.hdfffa.org/wp-content/uploads/Central-OR-Food-Assessment_Part1.pdf)

These data illustrates that there is need to revive the agricultural sector particularly in Deschutes County where Redmond is located.

Studies have shown that **small, locally owned farms have a multiplier effect: For every dollar the farm spends, a percentage remains in the local economy, contributing to the economic health of the community.** A thriving local food system empowers farmers; inputs providers, processors, distributors, retailers, consumers, and food preparers; and keeps food dollars closer to home. It can create jobs and circulate money within communities. It also allows consumers the opportunity to put their dollars directly into farmers' pockets, cutting out cooperate middlemen from the food chain.

### 3. Facilitate sustainable production systems

Local food initiatives promote sustainability through decreased 'food miles' which is the distance that food travels from the location where it is grown to the location where it is consumed. Agriculture and food systems are significant energy users and contributors to greenhouse gas emissions, which in turn are driving climate change. A large portion of this energy is used to transport food products to their final destinations. A study conducted showed that air-freighted fruit and vegetables emit 33 times more carbon than locally-sourced produce.<sup>6</sup>

Another benefit of local food is the decreased need for packaging. According to the U.S. Food and Drug Administration, 55% of all packaging made in the U.S. is for food products.<sup>7</sup> In 2005, containers and packaging of all types accounted for 31.7% of total municipal solid waste by weight.<sup>8</sup> When food is delivered fresh, or is covering less miles, there is less need for the individual packaging required for retail sale and the bulk packaging necessary for long-distance

<sup>6</sup> East Anglia Food Link 2008

<sup>7</sup> Purdue University, *Plastic*. Available at: <http://www.purdue.edu/dp/envirossoft/housewaste/house/plastic.htm>.

<sup>8</sup> Environmental Protection Agency. 2005. Municipal Solid Waste Generation, Recycling, and Disposal in the United States

transport. In addition, package recycling is encouraged and is more feasible when consumers and producers are relatively close geographically and known to one another.

#### 4. Promote a cohesive and interconnected community

When a survey asked agricultural producers if they felt that the local public is supportive, 32% agreed that they were neutral as illustrated below. These percentages do not indicate a high level of support from the community, thus there is need to create platforms to promote more cohesiveness.

Figure 4: Local producers do not get adequate support from the public

Tri-County	Crook	Deschutes	Jefferson
Neutral (38%)	Neutral (40%)	Neutral (28%)	Neutral (58%)
		Very Supportive (28%)	

Source: [http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment\\_Part1.pdf](http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment_Part1.pdf)

Farmers’ markets and Community Supported Agriculture (CSA) create new spaces within communities for people to socialize. **In fact, sociologists estimate people have ten times more conversations at farmers’ markets than supermarkets.**<sup>9</sup> Direct marketing by farmers to consumers builds relationships, creating customers who care about “their” farmers and farmers who work hard to provide the very best food for “their” customers. As local food markets grow, farmer networks will likely form to increase supply by grouping their products together. Several studies indicate that both producers and consumers view their direct relationship to one another as one of the main reasons why they choose to participate in local food systems.<sup>10</sup>

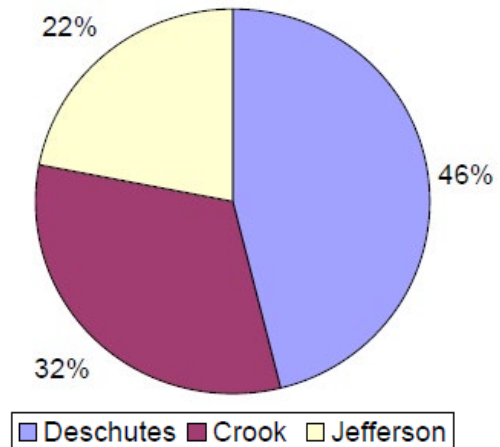
<sup>9</sup> La Trobe & Friends of the Earth 2002: 21-30

<sup>10</sup> PHalweil. Brian. 2003. “The Argument for Local Food.” *World Watch*. May/June, Vol 16, Issue 3

### III. Food Production in Central Oregon

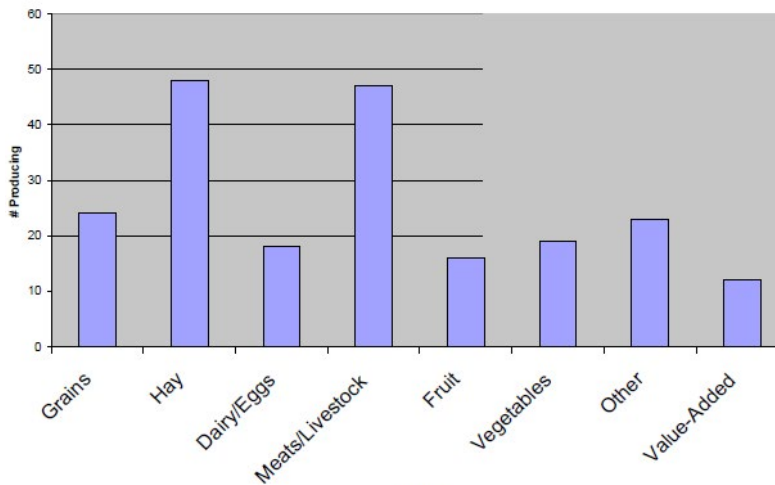
While discussing a local food system, it is important for a community to assess its production capacity in order to derive advantage from its assets, improve shortcomings, and make informed viable policy decisions. Hay, meats and livestock, followed by grains, are the top three groups of food produced in Central Oregon as illustrated in figure six below. Central Oregon farms and ranches vary in size, needs, aspirations, marketing, distribution, and production models. As illustrated in figure five, **the majority of the farms and ranches are located in Deschutes County at 46%**, while Crook and Jefferson are 32% and 22% respectively.

Figure 5: Farms and ranches were predominantly located in Deschutes County, so it is a good opportunity for Redmond to display leadership in supporting the local food system



Source: [http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment\\_Part1.pdf](http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment_Part1.pdf)

Figure 6: Hay, meats and livestock, and grains are the top three groups of food produced in Central Oregon



Source: [http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment\\_Part1.pdf](http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment_Part1.pdf)

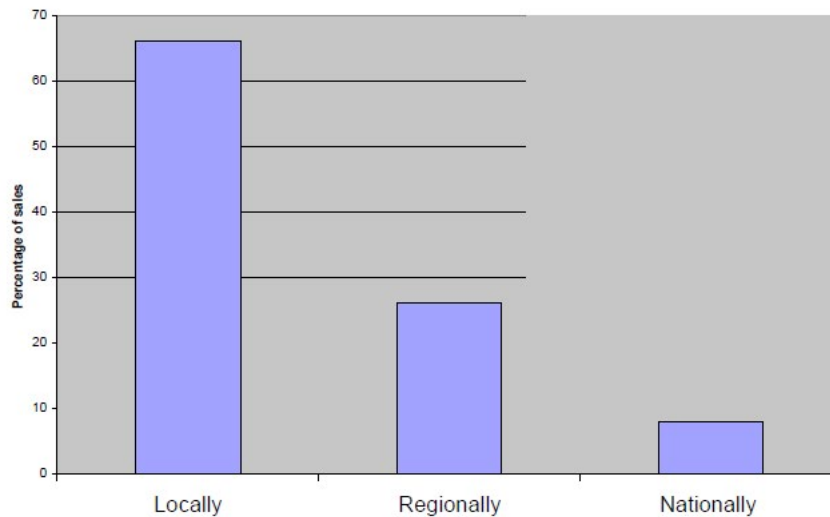
This data strengthens our proposal since **Redmond is in Deschutes County where the majority of farms and ranches are located; there is opportunity for the city to display leadership through progressive regulations that will propel a sustainable local food system.**



## Selling Locally

Survey results revealed that the majority of farm products are being sold in Central Oregon (66%), with 26% sold “regionally” within the Pacific Northwest, and only eight percent is sold nationally. Eighty-two percent of the respondents (producers) indicated that they are interested in selling more products within the tri-county region.<sup>11</sup> These data are informative and support our goal to promote local food purchases to the extent that despite farmers selling most of the food in Central Oregon, they still have the desire and recognize the potential to increase the volumes sold locally.

Figure 7: Most of local agriculture producers sell their products in Central Oregon



Source: [http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment\\_Part1.pdf](http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment_Part1.pdf)

## IV. Challenges by Local Farmers

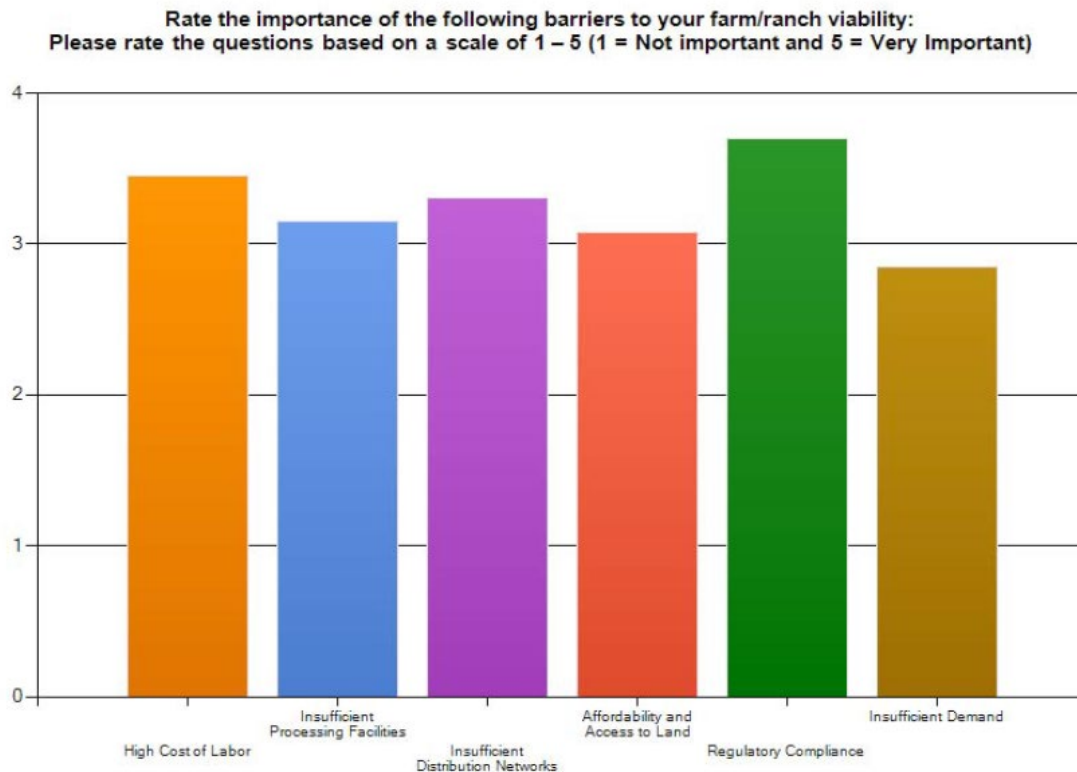
**Farmers in Central Oregon cited regulatory compliance barriers as having the highest impact on their farm viability.** Other barriers included high labor costs, insufficient distribution networks, insufficient processing facilities, affordability, access to land, and insufficient demand.<sup>12</sup> It is clear that creating an enabling regulatory framework as envisioned in this project will have a significant impact in facilitating a vibrant local food system. Local farmers noted that insufficient demand is an insignificant barrier, thus implying that there is potential for the community to support local food systems.

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<sup>11</sup> Pioneering a Local Food System in Central Oregon, A Community Food Assessment Report. Available at <http://coic2.org/community-development/food-systems/>

<sup>12</sup> Ibid.

Figure 8: Regulatory barriers are the top list among local food producers' challenges



Source: [http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment\\_Part1.pdf](http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment_Part1.pdf)

## Regulatory Barriers

Since the project focuses on regulatory solutions, we will examine in closer detail some of the regulatory barriers that the city can address, as this will inform our recommendations. The following are specific regulatory issues mentioned by producers that are within the purview of local governments: High cost of fees and permits for farming activities, lack of suitable zoning practices for small plots and beginner farmers, regulations on fencing, parking, farm structures, and regulations around eggs.

## V. Current Redmond Legal Framework

### Code of the City of Redmond

The only provisions in the code that facilitate food production to a very limited extent are exemptions from nuisance and fire hazard of animal excrement from livestock and agricultural grasses and commercial crops respectively. The best-case practices highlight how cities integrate provisions into their codes to foster local food production through various incentives explicitly targeted at supporting local farmers.<sup>13</sup>

<sup>13</sup> Section 5.335 (1) (2) Public Nuisances, City of Redmond Code

## Redmond 2020 Comprehensive Plan

The Redmond Comprehensive Plan is a guide for the future growth, development and redevelopment of the Redmond urban area within a framework of goals and policies consistent with the physical characteristics, ideas, and resources of the community. In Oregon cities, “food” is not included in comprehensive plans unlike many local governments in the country who are including it under land use and agricultural sections. A few cities have adopted standalone food comprehensive plans to foster sustainable local food systems and Oregon cities may explore this option.

## Redmond Development Code

The Redmond Development Code caters to ordinances controlling the use and construction on the land, such as building codes, sign ordinances, subdivision, and zoning ordinances. The code supports urban agriculture through provisions on keeping of fowl, chicken, and bees.

The following provisions, if modified, will create incentives and address barriers that will in turn enhance urban farming:

- allowing multiple accessories and structures associated with urban agriculture in the residential district zoning codes;<sup>14</sup>
- waiving building permits for accessories and structures associated with urban agriculture;
- allowing community and commercial gardens in mixed-use zones;<sup>15</sup>
- revising yard and accessory setback standards to cater to small residential lots;
- enhancing the provisions on chicken to support smaller lot sizes;
- providing for compost and waste management standards for home and community gardens
- waiving fencing, landscaping, and parking requirements for community and commercial gardens.

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<sup>14</sup> Redmond Development Code allows only for detached greenhouses. Section, 8.0135 Table A, Residential Zones, Uses Permitted, P.39

<sup>15</sup> Section 8.0250 Redmond Development Code.

## VI. Proposals

Our proposals are two-pronged. The first approach is to guide the development of a food comprehensive plan and the second is for the adoption of an Urban Agriculture Ordinance. Plans and policies expressing the desire to realize a sustainable food system often precede direct regulatory tools.

### A. Food Comprehensive Plan Guide

#### Step 1: Involve Stakeholders

It is important to obtain input from all stakeholders to reflect current needs of the community. A preliminary step in this public engagement process is to create a strategy based on clear objectives. Thereafter, educating residents about local food and the food cycle is crucial in establishing a successful local food system. Through this process, we will realize our first goal on promoting consumer education and address the gap expressed by producers regarding the need for increased consumer awareness on local food benefits.

*Figure 9: Public engagement is a fundamental step to develop a food comprehensive plan*



Source: [http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment\\_Part1.pdf](http://www.hdffo.org/wp-content/uploads/Central-OR-Food-Assessment_Part1.pdf)

It is important to coordinate among departments of health, planning, public works, economic development, transportation, and solid waste in the development of food comprehensive plan language. The city may find that collaborating with other organizations, businesses, and with related missions or goals can improve their ability to implement such policies once adopted.

#### Step 2: Define Local Food

In this report, we defined local food as food grown in the Central Oregon region. However, it is best that wide consensus on what is “local” is agreed upon by all stakeholders. Defining local food precedes identifying benefits of the same. **The**

**distance component is what sets local food apart from food that arrives to communities from other regions or other parts of the world.**

Figure 10 a, b: Local produce at farmers markets



Source: <http://usconnect.biz/blog/category/food/nutrition/page/2/>



Source: <https://floridaculture.wordpress.com/2015/04/27/detwilers-market-one-stop-buy-local-destination-in-sarasota-area/>

Local food is often defined by policies and strategies such as farmers' markets, community gardens, urban agriculture, and/or animal husbandry. These strategies and policies are important, but they represent only some aspects of a larger local food system. A local food system is more than the physical food product and includes the land the food grows on, transportation between farm and market, processing or packaging, and the creation of markets. In addition, Redmond may also wish to define a "local food system."

### **Step 3: Outline the Benefits**

The City of Redmond may use our goals as a starting point as they offer a glimpse on the major benefits of a local food system. Particular topics may emerge as priority areas in the stakeholder engagement process and this will inform the strategies adopted as a means to achieve them.

### **Step 4: Set Goals**

Public input should be expanded to specifically include farmers, distributors, food outlet (such as grocery store) owners, schools, health departments, and other related non-profits, and community groups with local food-related missions.

Local food goals are often qualitative than quantitative, and describe how local food will positively affect a community. They are broad in range and define the desired future outcome once local food has become a vibrant asset to the community.<sup>16</sup>

<sup>14</sup> See examples in City of Madison Comprehensive Plan, 2006. <http://bit.ly/NvyGqB>. Community Health and Wellness, City of Richmond General Plan Element 11, pages 11.1-11.18, 2010. <http://www.ci.richmond.ca.us/DocumentView.aspx?DID=6791>. Baltimore Sustainability Plan, April 2009. <http://bit.ly/NB2b4p>.

## Step 5: Evaluate Current Conditions

After the goals are established, the next step is to evaluate the current condition of local food in the community. The Central Oregon Food Assessment report cited throughout this report forms a good base for Redmond to evaluate current conditions. Below are suggestions on the data that can describe existing conditions.

**Food production data:** Inventory a community's agricultural land, inventory the current number of farms in a community, and inventory vacant land and parcels.

**Food access data:** Inventory retail local/fresh food outlets, inventory food deserts/low access areas, inventory commercial land availability.

**Health-related data:** It may be useful to provide general information about current health trends at the county level as context and support for local food strategies. This may include estimates for diagnosed diabetes, obesity, and physical inactivity.

**Socioeconomic and demographic data:** It may be useful, for example, to compare populations living in an identified food desert to the entire population.

**Ordinance and Policy Review:** This entails reviewing all local ordinances that affect the production, packaging, transporting, marketing, sale, and purchase of local food products. An ordinance review helps to identify specific institutional barriers that may inhibit the production and availability of local food at the residential, community, and commercial level. Below are a few common topics and sample questions Redmond may evaluate as it gets started:

Land purchase policies: Can land be purchased to produce local food with minimal restrictions?

Land use policies: *Are community and commercial gardens a valid land use?*

Landscaping requirements for homeowners/HOAs: *Is having a food garden in the front yard prohibited?*

Commercial accessory buildings: *Are greenhouses permitted?*

Nuisance restrictions: *Can a resident raise chickens, bees, or other small animals with minimal restrictions?*

## Step 6: Develop Recommendations

Comprehensive plans typically include recommendations for action to achieve the community's goals.

**Recommendations that increase production of local food:** These recommendations should identify how a community will support local food production. Several strategies may potentially increase production:

- **Create zoning code and ordinance language that supports (and**

**does not hinder) local food production.** Most recently, these types of ordinances have focused on urban agriculture as shown in the best-case practices

- **Re-purpose appropriate vacant lots and other underutilized land for food production.** It is important to ensure that these parcels are vetted through a robust stakeholder and public engagement process to understand potential conflicts with surrounding land uses. Likewise, it will be important to consider market conditions that may prevent local food production from being economically viable on some sites.
- Create incentives for farmers and practitioners to increase either **their current local food production or transition to local food.** These incentives could be in the form of property tax rebate. The city may also consider working proactively with local institutions, such as the school district and municipal buildings with cafeterias, to procure a certain percentage of local food. Having an official, stable contract with a municipality or school district can incentivize local farmers to produce more food for local consumption.

Figure 11 a, b, c: Local produce at farmers markets



Source: <http://honors.utah.edu/students/engaged-learning/praxis-labs/2015and2015/local-food-and-human-diets/>



Source: <https://stateimpact.npr.org/new-hampshire/2012/07/02/monadnock-region-snapshot-a-growing-local-food-movement-doesnt-translate-to-prosperity/>



Source: <http://blogs.extension.iastate.edu/wellness/2014/07/16/buying-and-selling-local-foods/>

### Recommendations that increase access to healthy and/or local food:

- **Create incentives to increase fresh food retail outlets:** One example of an incentive system is called fresh food financing, an emerging strategy that both supports local food production and provides greater access to fresh food;<sup>17</sup>
- **Link hunger assistance programs to local food:** Linking local food policy with anti-hunger strategies can provide mutual support to both systems. For example, linking urban agriculture programs with food pantries could combine solutions to provide workforce development, increase nutritional

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<sup>17</sup> For example, the City of Chicago provided \$5.5 million dollars in assistance by selling city-owned land, appraised for \$6.5 million, for \$1 million. In return the purchaser, Pete's Fresh Market, will open a 55,170 square foot full service grocery store on the near west side. The new store will provide 120 full-time and 30 part-time jobs.

education, and mitigate hunger.

- **Support local food demonstration programs:** Redmond can support and expand demonstration programs that provide better food access in such locations as farmers' markets, farm carts and stands, fresh food delivery trucks, food cooperatives, on-site school programs, direct sales from community vegetable gardens, and other alternative retail options. On-site school farms may also be used to increase access and develop a local food curriculum.

**Recommendations that raise awareness about local food:** It is important to approach awareness broadly, including not only residents but also business owners, public officials, local organizations, and municipal staff.

- Support for more data collection and research
- Create a public information campaign to support local food initiatives

### **Step 7: Define Indicators and Targets**

Indicators are data aligned with the local food goals. Ideally, indicators should be publicly available data that authorities produce at regular intervals; however, at the local level, this will be hard to come by unless the city collects data internally. Targets are set as the desired outcome that would signify that a goal has been reached. As illustrated in the best-case practices, indicators and targets help to facilitate tracking progress of goals set and allow for informed decision-making.

## **B. Regulatory Tool: Urban Agriculture Ordinance Guide**

The best-case practices in the next section will illustrate that local governments are successfully promoting urban agriculture as means of fostering local food. **“Urban agriculture/farming” is the practice of cultivating, processing, and distributing food in or around a village, town, or city.** It may involve horticulture, animal husbandry, aquaculture, agroforestry, and urban beekeeping.

As mentioned earlier, the Redmond Development Code has provisions that if modified will allow for enhanced urban farming in Redmond. We have identified factors to enhance food production in Redmond's residential zones by creating incentives and addressing barriers for farmers who comply with the facilitative standards set by regulations.

The following proposals focus on enhancing urban agriculture in the residential zoning district of Redmond. The city has the option of permitting urban agriculture as-of-right waiving land use approvals, grant permits under an urban agriculture conditional use holding or a hybrid approach integrating the two



holdings by selecting which activities are permitted outright or are conditionally allowed. See Appendix A for proposal summary.

## Preliminary Issues

### 1. Identify urban agriculture uses

Varieties of definitions are used to distinguish urban agriculture activities and their related components. The definition of an activity or use relates directly to the regulations Redmond establishes.

**Home Garden:** Most cities do not provide definitions of home gardens, especially if there are no restrictions other than the underlying zoning and other regulations that apply to the dwelling unit (single or multi-family) or neighborhood. The ordinance may specify allowable locations such as front and backyards, rooftops, courtyards, balconies, and windowsills. It may allow for on-site sale within a reasonable time of its harvest or donation of only whole, uncut, fresh food.

**Community garden** definitions usually specify that products cannot be sold, or can be sold on a limited basis. Surplus food may be sold, on condition that selling produce is not the primary purpose of the garden.

**Commercial garden/urban farm:** Definition allows for growing, washing, packaging, and storage of fruits, vegetables, and other plant products for wholesale or retail sales. Products can be sold for profit. It may be the only use on a site or it may be on the same site as a house or building. The city may specify language on locations allowing these urban farms:

Figure 12: Greenhouse may be the structure that the city support through ordinances



Source: <http://www.rodalesorganiclife.com/garden/tending-greenhouse>

**1. Indoor operation.** All allowed activities must be conducted within completely enclosed buildings. Typical operations include greenhouses, vertical farming, hydroponic systems, and aquaponics systems.

**2. Outdoor operation.** Allowed activities are conducted in unenclosed areas or partially enclosed structures. May include indoor operations in conjunction with outdoor operations. Typical operations include growing beds, growing fields, hoop houses, and orchards.

**3. Rooftop operation.** All allowed activities occur on the roof of a principal building as a principal use or accessory use. Typical operations include growing beds and growing trays.

## 2. Identify size limits

Ordinances typically base size restrictions on the type of agricultural activity (e.g., community gardens, urban farms, nurseries) and/or the zoning district where allowed.

**Community gardens:** When a maximum size limit is included in the ordinance, it is often in the one-half to five-acre range. The city may consider a number of factors when determining an appropriate size limit, such as density of development. This allows size limits to be determined case by case, or with specific conditions, and/or with the input of neighboring property owners.

**Commercial gardens:** Since commercial garden use includes selling products grown in the garden, Redmond may base size limitations on the zone in which they are allowed in order to control potential impacts on neighboring uses. Different limits may apply, for example, to residential and commercial zones. Redmond may want to focus less on size restrictions than the physical and operational standards for the activity.

## 3. Specify allowed uses and sale of products

The definition of community gardens in most ordinances specifies that selling produce is not the primary purpose of the garden, and its use is limited to gardeners and neighbors, and/or is donated. It is typical, however, to allow gardeners to sell surplus produce from the gardens. A number of factors, such as the proximity to homes, traffic, volume, and availability of parking may be factored in. Redmond may also consider allowing community gardens to sell produce consistent with regulations for garage sales in residential zones.

Factors for commercial gardens: Additional factors to consider in regulating sales may include, but are not limited to: hours of operation, number of days/months/seasons, size of space devoted to selling products where sales can take place (indoors or outdoors, for example), presence of residences on the property, allowed zoning districts, extent of processing or value-added allowed (if any), and parking traffic.

## Provisions for modification under Redmond Development Code

### 1. Describe structures/accessory buildings allowed

Redmond may require conformance to other ordinance sections for regulations on some or all structures allowed in different zoning categories, and/or add to the list of allowable structures in existing ordinances to support urban agriculture activities. In defining permitted structures, the city may take into consideration the zoning districts where farms and gardens are allowed and activities they wish to support, such as on-site sales, visitors, extending growing seasons, composting, beekeeping, and raising animals.

Examples of structures include: Greenhouses, hoop houses, cold-frames, raised planting beds, compost bins, tool sheds, barns, restrooms with

composting toilets, planting preparation houses, seasonal farm stands, chicken coops, beehives, and rain barrels. Factors to consider when developing regulations for structures include, but are not limited to, setback of structures from property lines, size (e.g., floor area, percent of site covered, and height), location and placement on property, off-street parking, maintenance, temporary versus permanent structures, and number of structures.

## 2. Landscaping

Redmond should consider *modifying landscaping standards*<sup>18</sup> to support community and commercial gardens in residential zones provided it is acceptable to the Community Development Department. This is because height limits for lawns and vegetation are often deterrents.

## 3. Fencing

Fencing regulations may similarly hamper the development of community and commercial gardens. A common approach is to modify fencing standards for these urban agriculture uses.<sup>19</sup> However, gardens that have large parking areas may be required to install fencing or other landscaping features. Fences installed voluntarily have to conform to the fencing and building permit requirements.

## 4. Parking

Parking regulations related to urban agriculture activities tend to differ according to type of agriculture activity, number of employees (if applicable), the zoning district, and existing parking conditions. The city may create incentives by waiving parking requirements for small-scale commercial and community gardens in residential areas.

## 5. Specify regulations on keeping chickens

This section focuses on keeping backyard chickens in residential areas. Many cities that do include language or ordinances on chickens typically specify requirements such as licenses or permit, limits on the number of chickens allowed (by lot or square feet), setbacks, and prohibition of roosters. The coop structures may also be subject to requirements, such as, easy access for cleaning, watertight structures,

Figure 13: Coop structures can be subject to requirements on keeping chicken



Source: <http://www.williams-sonoma.com/shop/agrarian-garden/agrarian-garden-chicken-coops/>

<sup>18</sup> An example is the Urban Agriculture Ordinances of City of Chicago

<sup>19</sup> An example is the Urban Agriculture Ordinances of City of Chicago and Sacramento

ventilation, minimum square footage per chicken, and protection from predators. As an incentive, the city may allow for increased chicken per lot in coops and impose shorter setback standards to cater for residents in small lots who desire to raise chickens. The Model Ordinance lays out specific requirements.

## **6. Composting regulations**

The city may provide for garden composting in home and community gardens that follow minimum standards. These standards ensure compliance with public health regulations and promote sustainable agricultural practices. Large-scale commercial gardens, however should follow the local, state, and federal composting standards.

# **VI. Best-Case Practices**

The aim of this section is to demonstrate how cities are prioritizing food using two broad categories: i) incorporating it in official plans and ii) a variety of regulatory strategies to strengthen their food systems. Stated earlier, food directly influences the economy, environment, public health, equity, and overall quality of life hence a vital factor in a community's sustainability. Some include food as an element, or, sub-element, within their comprehensive plans, sustainability or environmental plans, adopting stand-alone food systems plans, while others are adopting plans for a particular component of the food system such as urban agriculture.<sup>20</sup>

Similarly, some cities are using regulatory tools such as zoning and permitting. We will give examples from each of the different approaches. We place a lot of emphasis on plans that give better insight into the foremost steps cities are taking towards food proofing because Redmond is at an early stage of this process and may progressively seek to employ direct regulatory tools in the near future.

## **A. Food in Comprehensive Policies and Plans**

### **i) Food as an element in comprehensive plans**

Within comprehensive plans, references to the food system commonly appear in sections on natural and agricultural resources, environmental stewardship, or energy.<sup>21</sup>

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<sup>20</sup> See the American Planning Association's Planning Advisory Service Report Number 563 for a detailed analysis of plans that support urban agriculture. 1. Hodgson, K., M.C. Campbell, and M. Bailkey, Urban Agriculture: Growing Healthy, Sustainable Places, in Planning Advisory Service. January 2011, American Planning Association. p. 145.

<sup>21</sup> Examples: Boise, ID; Dillingham, AK; Dane County, WI; Madison, WI; Marin County, CA; New Orleans, LA; Southern California Association of Governments, CA

### **The New Orleans 2030: Plan for the 21st Century (Louisiana)**

The objective of the plan is to achieve a resilient community; resilience and sustainability are closely interconnected. The plan addresses food in a subsection on “Urban Agriculture, Gardening, and Open Space.” To improve food security and safety, the plan proposes to:

- Remove zoning and regulatory barriers to both urban agriculture and farmers’ markets;
- Perform an inventory of possible gardening sites;
- Establish a schoolyard greening program;
- Provide incentives to encourage reuse of vacant properties for urban agriculture.

An interesting feature that promotes the impetus to realize sustainability is the “force of law” of the plan. Zoning and other land use actions must be consistent with the land use section of the plan. Therefore, the city council and administration officials are barred from making any zoning or land-use decisions that conflict with the goals, policies, and strategies in the section of the plan dealing with land use.<sup>22</sup>

Currently, there is a generation of urban thriving farmers, most of whom operate through the New Orleans Food and Farm Network (NOFFN). The group made national headlines with its DIY food maps post-Katrina. This is a good illustration of how resilience goes hand in hand with sustainability.

### **The Marin Countywide Plan (California)**

To guide conservation and development, the Marin Countywide Plan<sup>23</sup> includes a subsection on “Agriculture and Food” that includes three food-related goals: “preservation of agricultural lands and resources,” “improved agricultural viability,” and “community food security.” The plan recommends, among other things, that the county: Amend the Development Code to require space for on-site community gardens in [all] new residential developments of 10 units or greater.

A good feature of the plan is inclusion of specific indicators, benchmarks, and targets to measure and evaluate progress towards goals (see example below). We chose this model because of its emphasis on quantitative measures to realize sustainability and to promote reliability of data which could lead to more informed decision making.

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<sup>22</sup> Available at [http://www.nola.com/politics/index.ssf/2011/01/new\\_orleans\\_master\\_plan\\_earns.html](http://www.nola.com/politics/index.ssf/2011/01/new_orleans_master_plan_earns.html)

<sup>23</sup> Available at [http://www.marincounty.org/~media/files/departments/cd/he/cwp\\_cd2.pdf](http://www.marincounty.org/~media/files/departments/cd/he/cwp_cd2.pdf)

Figure 14: Indicators and targets for supporting the local food system are included in Marin County's Comprehensive plan

Marin County Comprehensive Plan – Indicators and targets for strengthening the food system		
Indicators	Benchmarks	Targets
Acres preserved with agricultural easements.	28,377 acres preserved in 2000	Increase by 25,000 acres by 2010 and by 12,500 additional acres by 2015
Acres of land farmed organically	357 acres in 2000	Increase by 1,500% by 2010 and 1,700% by 2015
Annual sales of identified Marin farmers' markets: Civic Center, Downtown San Rafael, Novato, and Fairfax	\$9,860,000 in 2005	Increase annual sales 10% by 2010 and 15% by 2015

source: [http://www.marincounty.org/~media/files/departments/cd/he/cwp\\_cd2.pdf](http://www.marincounty.org/~media/files/departments/cd/he/cwp_cd2.pdf)

## ii) Food in Environment, Sustainability, and Climate Change Plans

### The Baltimore Sustainability Plan (Maryland)

The Baltimore Sustainability Plan was approved by the city council in 2009. It aims to “establish Baltimore as a leader in sustainable, local food systems”. Some strategies are to:

- Increase demand for locally-produced, healthy foods by schools, institutions, supermarkets, and citizens;
- Develop an urban agriculture plan;

There are several approaches proposed, such as creating a mapping resource used to help institutions and supermarkets identify what local farms are interested in direct marketing, and using the work of the existing. A unique feature is the presence of the Baltimore Office of Sustainability that oversees and tracks the implementation of the Plan.<sup>24</sup> This encourages accountability and transparent governance.

According to a survey, 85% of respondents said that they ate more vegetables and fruits while participating in a CSA program<sup>25</sup> in 2014. Sixty percent said that during the program, most of produce they ate was grown locally.<sup>26</sup> Additionally, more local farms are participating in this program.<sup>27</sup>

<sup>24</sup> <http://www.baltimoresustainability.org/about/>

<sup>25</sup> The Homegrown Baltimore Employee Wellness Community Supported Agriculture (CSA) Farmshare

<sup>26</sup> Baltimore Food Policy Initiative 2015 Reader, October 2015. Available at [http://www.usmayors.org/foodpolicy/uploads/Baltimore\\_Food\\_Policy\\_Initiative\\_2015\\_Reader.pdf](http://www.usmayors.org/foodpolicy/uploads/Baltimore_Food_Policy_Initiative_2015_Reader.pdf)

<sup>27</sup> Baltimore Office of Sustainability official website, Wellness CSA.

### **iii) Food in Comprehensive System Plans- Standalone Food Plans**

#### **Oakland, CA Transforming the Oakland Food System**

In 2010, the Oakland Food Policy Council released the first strategic plan providing recommendations to the city to address the local food system.<sup>28</sup> A unique feature contributing to informed decision making is a projection of the fiscal impacts of each action as well as best practices supporting it.

In promoting urban farming, the City Council approved changes to the city planning code to expand areas where residents can grow crops and produce honey without needing to obtain a special permit in an effort to recognize “Right to Grow.”<sup>29</sup> The revised rules removed a major permitting obstacle to urban agriculture.<sup>30</sup>

#### **iv) Plans for a Component of the Food System**

When resources for preparing a comprehensive food system plan are limited, local governments may prepare and adopt plans focusing on a particular component of the food system such as production, processing, distribution, consumption, or disposal of food.

#### **Minneapolis City Council (Minnesota) Urban Agriculture Policy Plan**

The plan aims to support residents’ efforts to grow, process, distribute, and consume more fresh, sustainably produced, and locally grown foods.<sup>31</sup> It focuses on the production component and recommends prioritizing local food production and distribution through altering the existing zoning code to define and permit urban agriculture related activities, incorporating urban agriculture into the city’s long range planning efforts, and reviewing the city’s land inventory to find opportunities for urban agriculture.

Other related sub-recommendations found in The Homegrown Minneapolis Report are to integrate farmers markets into the City’s development plans, incentives to encourage (or require) developers to include space for food production and distribution, and composting in new developments. This proposal for developers is a unique feature that brings into play the role of private sector in boosting the growth of a local food system. Reports indicate that the region has an impressive number of “local foods” businesses.<sup>32</sup>

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<sup>28</sup> Neuner, Kailee, Sylvia Kelly, and Samina Raja. Planing to Eat?: Innovative Local Government Plans Policies to Build Healthy Food Systems in the United States, September 2011. P8.

<sup>29</sup> Cultivating Resistance: An Urban Agriculture Toolkit. Accessed in March 27, 2016. Available at <http://www.cityslickerfarms.org/cultivating-resistance-toolkit>

<sup>30</sup> Zigas, Eli. Oakland Clears the Path for New Urban Agriculture, December 7, 2014. Accessed in March 27, 2016. Available at <http://www.spur.org/news/2014-12-07/oakland-clears-path-new-urban-agriculture>

<sup>31</sup> Available at [http://www.minneapolismn.gov/www/groups/public/@cped/documents/webcontent/convert\\_276069.pdf](http://www.minneapolismn.gov/www/groups/public/@cped/documents/webcontent/convert_276069.pdf)

<sup>32</sup> <https://www.mcknight.org/system/asset/document/120/pdf-2-4-mb.pdf>

## B. Food in Regulatory Tools

Local government regulations play a significant role in facilitating or hindering a healthy food system through permitting (or, prohibiting), licensing, monitoring, or otherwise regulating food-related activities in a community. Local governments are using a variety of regulatory tools to support production, processing, distribution, and consumption of healthy foods as well as to support sustainable forms of food waste disposal. Below are a few examples:

**Decatur, Georgia, Community Gardens Guidelines:** Decatur, Georgia, is the county seat of DeKalb County with an estimated population of 20,000 residents.<sup>33</sup> It has seen an increase in community gardening over the past few decades. In 2009, the city established guidelines for community gardens.<sup>34</sup> These guidelines were requested by the city commission as a way to help elected officials and staff communicate with and educate residents who were leading the efforts to ensure that they aware of the various considerations to keep in mind.

They include an application, scope of work, information on liability, acknowledgement of garden responsibilities, and guidance from the Decatur Environmental Sustainability Board on urban agriculture. Its success hinges on the trust developed between those partners to honor agreements and be transparent in their dealings.

**Topsham, Maine:** The town of Topsham lies just off Maine's southern coast near the Merrymeeting Bay tidal basin with an estimated population of 8,000 residents.<sup>35</sup> The city added a seasonal retail provision to Topsham's code in 2006. The provision seeks to create an opportunity for local agricultural producers to sell their products in expanded areas in town where previously restricted. This is done in an expanded farmer's market' manner, and allows on- and off-site sales subject to a set of criteria related to lot size, hours, parking, and other operational characteristics.<sup>36</sup> Topsham's story equally illustrates that "it is possible to support local food without major commitments of resources. Personal relationships have been cited as critical to the success of efforts to promote local agriculture."<sup>37</sup>

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<sup>33</sup> Responsibilities and Guidelines for Communities Gardens on City-Owned Properties. City of Decatur, Georgia. Adopted in 2009. <http://www.decaturga.com/Modules/ShowDocument.aspx?documentid=1973>.

<sup>34</sup> Ibid.

<sup>35</sup> Ibid.

<sup>36</sup> Topsham, Maine, Municipal Code, § 225-60.11 & § 225-60.12 (2008). <http://ecode360.com/10391067> & <http://ecode360.com/10391068>

<sup>37</sup> Rich Roedner, Town Manager, Town of Topsham



Figure 15: Topsham's code creates an opportunity for local agricultural producers to sell their products in currently restricted areas and expanded farmer's market.



Source: <http://mainetoday.com/eat-drink/even-farmers-markets-occasionally-need-help/>

**Little Elm, Texas**, permits farmers markets *as-a-right* in light commercial and industrial districts and designated town parks in the zoning code.<sup>38</sup> Farmers markets are permitted uses in multiple zoning districts subject to specific operational and site standards.

In **Kansas City**, Missouri, the **zoning code allows the on-site sale of food and horticultural produce grown in residential zoning districts**. Sale is allowed either by-right or with a special use permit depending on whether the food production occurs on a home garden, community garden, or community supported agriculture farm. Whole, uncut, fresh food and horticultural products grown on home gardens, which are defined as *“a garden maintained by one or more individuals who reside in a dwelling unit located on the subject property, may be donated or sold on-site in all residential districts within a reasonable time of its harvest...”*<sup>39</sup>

In **Indianapolis**, Indiana, the Indianapolis Office of Sustainability, the Department of Metropolitan Development, and the Indianapolis Land Bank developed the Indy Urban Garden Program to convert abandoned and underutilized land to community gardens. The city facilitates communication

<sup>38</sup> City of. Code of Ordinances. Chapter 106: Zoning, Article I: In General. Section 106-33.5: Farmers Market Regulations. Available At: <http://municode.com/index.aspx?clientid=13870&stateId=43&stateName=Texas> (last accessed April 26, 2011).

<sup>39</sup> Kansas City Department of Planning and Development, 88-312-01 and 02: Crop and Urban Agriculture, in Kansas City, MO Zoning and Development Code. 2011.

between interested community members, urban gardeners, and farmers markets, and hosts an annual Urban Farming Forum. **The city has recently set aside over 100 city-owned plots with five-year leases for the creation of community gardens.**

These examples illustrate how different cities are choosing the most appropriate methods to integrate food into their plans and regulations informed by their priorities and underlying circumstances.

Figure 16: Urban Agriculture



Source: <http://www.themediaconsortium.org/2010/10/21/weekly-mulch-where-sustainability-meets-self-reliance/>

## VI. Potential Partnerships: Redmond School District Case Study

The City of Redmond also expressed a desire to look into all sources for food in the city and to consider how they could revise the system to promote local products.<sup>40</sup> **To demonstrate areas of potential partnership to foster local food purchasing, we selected the school district, the largest food consumer catering to over 7,000 students and serving approximately 1,000,000 pounds of food annually.** The school district's purchasing affects virtually all households in Redmond. The information is extracted from an interview we conducted with Keith Fiedler of the School District Nutrition Services.<sup>41</sup>

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<sup>40</sup> This section is not directly related to our proposal on Urban Agriculture but can serve as a method of promoting local food.

<sup>41</sup> Interview on local food purchasing with Keith Fiedler, Nutrition Services, Redmond School District

The school district has a number of initiatives to support local food purchasing. These include the USDA 2012 updated standards for school meals, Farm to School Program, community gardens, student of the month program, community participation, and integrated nutrition education.

However, various challenges affect the purchase of local foods. Limited budgetary allocations from the federal and state governments is a major issue. In order to avoid suffering losses, the School cannot purchase local food if it is two percent more expensive than other available options. Further, common problems faced with local small scale farmers, in addition to those previously mentioned, is capacity, seasonality, lack of processing, storage facilities, and consistency.

To address some of these challenges, the school district initiated innovative strategies such as flexible contractual agreements, box rotation, wash and pack shed, and marketing farmers' products. The flexible contractual agreement is a hand-holding process where the school facilitates and does not dismiss local farmers from supplying products because of lack of sufficient capacity, rather they make agreements on how much of the product the farmer can produce at a certain time and slowly increase their demand.

The box rotation is based on the principle of re-using packaging material. Upon delivery of a consignment, the school stores the boxes for the farmers who use re-use their boxes upon delivery of the next order. The school offsets a few cents from its costs because of the storage space it give to farmers. Due to economies of scale, the cents offset with each consignment makes an impact on reducing the cost for the school and the farmer benefits from not only storage facilities but also saves money that he/she may have spent on new packaging. Additionally, this method significantly reduces waste and promotes sustainable environmental practices.

As mentioned, processing facilities are a big challenge for small-scale farmers. In order to support these farmers, the schools set up a simple wash and pack shed with sinks and a table where farmers can wash their produce and pack them before delivery to schools because health and safety regulations demand minimum requirements for purchases to institutions. Like the box rotation, the school offsets some costs by providing this facility and the farmers benefit from provision of processing facilities at almost no cost.

The city council has raised public health and safety concerns relating to fire and pest hazards arising from the storage of boxes and permit requirements for the wash and pack shed. These concerns may limit the school's effort to support local farmers by innovative inexpensive ways. It demonstrates that the city council is in a position to enhance partnerships, create incentives, and address barriers that limit the growth of local food.

# Appendix A: Summary of Proposals and Best-case Practices

Issues	Redmond Development Code	Proposal	Best Case Practices
<b>Identifying and defining multiple agricultural uses</b>	Section 8.0020 provides for <i>Farm Use</i> that only covers food production for income generation	The city may include 3 distinct urban agriculture uses: <i>home gardens, community gardens, and commercial gardens</i> as permitted uses either out rightly or conditional in all residential districts	<p><b>Kansas City, Kansas</b> Zoning and Development Code divides agricultural uses into several types and scales as follows: i) Urban Agriculture: home garden, community garden, or community supported agriculture ii) Crop and iii) Animal Agriculture.</p> <p><b>San Francisco, California</b> Planning Code recognizes multiple forms of food production including neighbourhood gardens, community gardens, large-scale urban agriculture, plant nurseries, and truck gardens as permitted uses in all residential districts.</p>
<b>Identify size limits of the 3 urban agriculture uses</b>	Not provided	<p>Home gardens typically have <i>no size restrictions</i>.</p> <p>Community gardens determined on a <i>case-by-case basis</i> depending on the scale of operations, outreach and education purposes.</p> <p>Commercial gardens determined by the <i>physical and operational standards for the activities</i>.</p>	<p><b>Oakland, California</b> permits community gardens less than one acre in size to operate by right in residential.</p> <p><b>Seattle, Washington</b> permits commercial gardens up to 4,000 square feet as an accessory use in residential districts.</p>
<b>Specify allowed uses and sale of products</b>	Not provided	<p>The city should identify: i) the types of urban agriculture uses that may include sales on site; ii) the types of residential districts permit sales by right or by special use permit; iii) the types of products that may be sold (e.g., fresh produce, horticulture, value-added products); iv) the permissible hours or dates of sales activity; v) the structures related to sales.</p> <p>Home gardens primarily not for sale but <i>on-site sale</i> of surplus or donation of <i>whole uncut fresh fruit and vegetable</i> may be permitted.</p> <p>Community gardens may also <i>sell surplus produce or donate</i> consistent with regulations for <i>garage sales in residential zones</i>.</p> <p>Commercial gardens: <i>permitted regulated sale</i> of their produce compliance with public health regulations, set hours of operations, management of farm.</p>	<p><b>Kansas, Missouri</b>, Zoning Code allows on-site sale of food and/or horticultural produce grown in residential zoning districts either by-right or with a special use permit depending on whether the food production occurs on a home garden, community garden, or community supported agriculture farm.</p> <p><b>Topsham, Maine amended its zoning code to</b> allows local agricultural producers to sell their products in expanded areas in town where previously restricted.</p> <p><b>Little Elm, Texas</b> permits farmers' markets outright in light commercial and industrial districts and designated town parks in the zoning code.</p> <p><b>Seattle, Washington</b> Municipal Code permits Urban Farms in residential districts, "retail sales and all other public uses of the farm that shall begin no earlier than 7:00 a.m. and end by 7:00 p.m. every day of the week."</p>
<b>Identify structures /accessory buildings allowed</b>	Section 8.0135 permits sheds outright in all residential zones and detached greenhouses.	Include additional permitted structures that support urban agriculture activities such as hoop houses, cold-frames, raised planting beds, compost bins, barns, coops.	<b>Cleveland, Ohio</b> allows multiple structures in the Urban Garden District such as greenhouses, hoop houses, cold-frames, raised planting beds, and chicken coops.

<b>Issues</b>	<b>Redmond Development Code</b>	<b>Proposal</b>	<b>Best Case Practices</b>
<b>Landscaping standards</b>	Section 8.0141(6) provides for landscaping requirements for all lots on which new single family dwellings or duplexes are constructed	Waiving or modifying landscaping standards in all residential zones with urban agriculture uses provided it is acceptable to the Community Development Dept. Since height-limits for lawns and vegetation may be a deterrent.	<b>Chicago, Illinois</b> exempts urban agriculture sites from some of the landscaping requirements placed on other uses, provided the design is acceptable to the Dept. of Housing and Economic Development.
<b>Fencing standards</b>	Section 8.0141 (7) and Section 8.0340 identify standards on scale, location, and appearance of fencing in all residential zones.	Waiving fencing standards for community and commercial gardens.	<b>Sacramento, California</b> fencing requirement is waived for private community gardens and commercial gardens.
<b>Parking</b>	Section 8.0141(5)(B)(5) identifies design and size requirements of parking	The city may waive parking requirements for community gardens and commercial gardens	<b>Milwaukee, Wisconsin</b> grants a waiver for minimum parking requirement for community gardens.
<b>Regulations on keeping chickens</b>	Section 8.0135 allows keeping chickens outright in all residential zones and Section 8.0365 provides for no: of chickens allowed per square feet and sanitation.	The city may allow for increased chicken per lot in coops and impose shorter setback standards to provide incentives for residents in small lots who desire to rare chicken. In order to conform with public health and nuisance regulations, the model ordinance has laid out minimum standards from hygiene, watertight, ventilation, square footage, noise, protection from predators, food storage, to conform to public health and nuisance regulations.	<b>Somerville, Massachusetts</b> has regulations on numbers, roosters, odors, food storage, storage of eggs, hygiene, wandering of hens, and information to neighbors, among others.
<b>Composting</b>	Not provided	The city may provide exempted from permit requirements for garden composting of less than five cubic feet in home and community gardens where materials are generated and reused on site.	<b>Chicago, Illinois</b> City's Municipal Code allows for composting of plant material that is generated and used on-site. The amount of compost material cannot exceed 25 cubic yards at any given time.

# Appendix B: Model Ordinance for Urban Agriculture

## Appendix B: Model Ordinance for Urban Agriculture

The following section contains model language for communities to tailor and adopt as amendments to their existing zoning laws, or as part of a comprehensive zoning update.<sup>1</sup>

### 1. Use definitions

	Home Garden	Community Garden	Commercial garden/ Urban Farm
<b>1.1 Definitions</b>	<p>A home garden shall mean the property of a single-family or multi-family residence used for the cultivation of fruits, vegetables, plants, flowers, or herbs by the residents of the property, guests of the property owner, or a gardening business hired by the property owner.</p> <p><b>Comment:</b> This definition is drafted specifically for residential properties. It is broad enough to include on-site gardens at home daycare sites or board and care homes, without permitting a home gardening business.</p> <p>Few communities place restrictions on the growing of produce in backyards. Some communities, however, restrict landscaping in front yards. In Sacramento, Calif., for example,</p>	<p>A community garden shall mean privately or publicly owned land used for the cultivation of fruits, vegetables, plants, flowers, or herbs by multiple users. Community gardens may be divided into separate plots for cultivation by one or more individuals or may be farmed collectively by members of the group and may include common areas maintained or used by group members.</p> <p><b>Comment:</b> Community gardens may be cultivated on a wide variety of sites, including underutilized or vacant public or private property, schools, universities, hospitals, or private companies, and as a temporary or permanent use. Community gardens may be used to fill different needs: A food source or recreation for individuals lacking access to home gardens, community building, education (such as school gardens), or to support an institution's food services (such as hospital or institutional gardens). This definition is broad enough to encompass all of these types of community gardens. Some communities may wish to expressly include institutional gardens in their definition of community gardens.</p>	<p>An urban farm shall mean privately or publicly owned land used for the cultivation of fruits, vegetables, plants, flowers, or herbs, [and/or for animal products, livestock production, or value increase] by an individual, organization, or business with the primary purpose of growing food for sale.</p> <p><b>Comment:</b> This definition is drafted to identify urban farms as commercial enterprises (including both for-profit and nonprofit), regardless of the type of land upon which they are sited and the type of entity operating the site (i.e., individual, private, or nonprofit corporation).</p> <p>From a land use perspective, a profit-making enterprise is distinguished from the primarily non-commercial activities of home and community gardens by the scale of activities and intensity of use. Whether the farm is owned or operated by a for-profit or not-for-profit entity does not affect the actual use of property. Some communities, however, may wish to distinguish farms based on type of corporate structure. In that event, the community could subdivide the urban farm category into two categories (for-profit and nonprofit commercial enterprises.)</p>
<b>1.2 Alternative or Additional Definitions</b>	<p>Describe property more specifically: Home gardens include the front or backyard, rooftop, courtyard, balcony, windowsills, fence, and walls.</p>		<p>Alternate terminology: Market Gardens Commercial Gardens Small-Scale Entrepreneurial Agriculture</p> <p><b>Comment:</b> In some communities, state laws may limit "agricultural" uses in urban areas. For this reason as well as local preference or political palatably, communities have used other terms for urban farms. Cleveland uses the term "market garden," defined as "an area of land managed and maintained by an individual or group of individuals to grow and harvest food crops and/ or non-food, ornamental crops, such as flowers, to be sold for profit."</p> <p>Nashville uses the terms "commercial community gardening" and "non-commercial community gardening"</p>

<sup>1</sup> Excerpted from "Seeding the City: Land Use Policies to Promote Urban Agriculture," Public Health Law and Policy, 2011.

			<p>to distinguish between agriculture for personal consumption and agriculture where the intent is growing food for sale.</p> <p>Kansas City defines “Community Supported Agriculture” as “an area of land managed and maintained by an individual or group of individuals to grow and harvest food and/or horticultural products for shareholder consumption or for sale or donation.”</p>
<b>1.3 Size Limits</b>	<p>There are typically no size restrictions for home gardens.</p>	<p>Community gardens may consist of lot sizes of no more than [number of square feet/acres]. Allows size limits to be determined case by case, or with specific conditions, and with the input of neighboring property owners.</p> <p><b>Comment:</b> Some communities may prefer to distinguish community gardens from urban farms by size limitations rather than by commercial and noncommercial activity.</p> <p>If the community is allowing sales on- or off-site at community gardens, it needs to make sure that the community garden can be distinguished from an urban farm. Some communities may wish to limit the size of community gardens to ensure they remain primarily noncommercial activity.</p> <p>In San Francisco’s urban agriculture law, urban agriculture is divided into two categories: Neighborhood agriculture and large-scale urban agriculture. “Neighborhood agriculture” is defined as an urban agricultural activity that is less than one acre in size, including backyard gardens, community gardens, community-supported agriculture, market gardens, and private farms, and allows limited sales and donation on the site of production.</p> <p>“Large-scale urban agriculture” is defined as a use of land for the production of horticultural crops that occurs on a site greater than one acre or on lots smaller than one acre but that do not meet the physical and operational standards for the neighborhood agriculture use.</p> <p>Pittsburgh requires a minimum lot size of three acres for urban agriculture use.</p>	<p>Urban farms may consist of lot sizes of no more than [number of square feet/acres].</p> <p>Focus less on size restrictions than the physical and operational standards for the activity.</p>
<b>1.4 Where Use Is Allowed</b>	<p>Home gardens are permitted as-of-right use in all residential zoning districts.</p> <p><b>Comment:</b> To promote and protect urban agriculture, it is important to make sure home gardens are included in all residential districts, including multi-family and public housing.</p>	<p>Community gardens are permitted under the urban agriculture conditional use in residential zoning districts. The city may consider expanding permits for community gardens to mixed-use, open space, and industrial zoning districts subject to regulations.</p> <p><b>Comment:</b> To promote and protect urban agriculture, it is important to make sure community gardens are an allowed use in all appropriate districts. Provided the garden use is subject to adequate regulations, a community</p>	<p>Urban farms shall be a conditional use in residential districts under the urban agriculture conditional use permit and subject to regulations in all other zoning districts where the city may consider expanding permits.</p> <p><b>Comment:</b> Communities may be comfortable with allowing all farms or smaller urban farms as a permitted use in certain districts, including residential.</p>

		garden should need no additional land use authorization.	San Francisco’s ordinance permits the Neighborhood Agriculture use, defined as an urban agricultural activity that is less than one acre in size, in nearly all zoning districts (subject to physical and operational standards) and requires conditional use authorization for urban industrial agriculture in residential districts.
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**2.Regulation of Uses/ Operating Standards**

	Home Garden	Community Garden	Commercial garden/ Urban Farm
<b>2.1 Compliance with All Laws</b>	[No regulation]	<p>All community gardens and their users must comply with all federal, state, and local laws and regulations relating to the operation, use, and enjoyment of the garden premises. Site users may not introduce heavy metals or other harmful contaminants to garden or farm sites. Site users may use pesticides only to the extent permitted by law.</p> <p><b>Comment:</b> Generally, municipalities are preempted from regulating pesticide use. Consult with your local government attorney before prohibiting all pesticide use.</p>	<p>All urban farms and their owners, lessees, employees, volunteers, and visitors must comply with all federal, state, and local laws and regulations relating to the operation, use, and enjoyment of the farm premises. Site users may not use materials such as inappropriate fill that introduce heavy metals or other harmful contaminants to garden or farm sites. Site users may use pesticides only to the extent permitted by law.</p> <p><b>Comment:</b> See comment on pesticide use under “Community Gardens.”</p>
<b>2.2 Soil Testing</b>	[No regulation]	<p>Prior to establishment, site users [or municipal employees] shall inquire into historical use of the property and undertake soil testing to measure nutrients, heavy metals, and any other harmful contaminants that may be present. The soil testing results and proposed remediation methodology (if needed) shall be provided to and kept on file with the city [insert department name] Department.</p> <p><b>Comment:</b> Soil safety is one of the most difficult issues facing municipalities when developing urban agriculture programs. Municipalities and advocates need to consider what requirements to impose before converting property into an agricultural use. The EPA’s interim guidelines for safe gardening practices suggests that historical property assessments, soil testing for hazardous materials, and mitigation measures are all methods for determining site safety.</p> <p>The language listed above, essentially a modified form of an ESA, is suggested by the EPA. Municipalities need to consider who should do the assessment – the municipality or site users – and who should interpret the testing results and determine what, if any, mitigation measures are required. Many municipalities lack staff with expertise in soil testing. Municipalities should consider partnering with local gardening organizations and universities.</p> <p>In practical terms, any requirement to submit information prior to establishing an urban</p>	<p>Prior to establishment, site users shall inquire into historical use of the property and undertake soil testing to measure nutrients, heavy metals, and any other harmful contaminants that may be present. The soil testing results and proposed remediation methodology (if needed) shall be provided to and kept on file with the city [insert department name] Department.</p> <p>Alternate soil testing requirement: Site users must provide a Phase I Environmental Site Assessment (ESA). Any historical sources of contamination identified in the ESA must be tested to determine type and level of contamination; appropriate remediation procedures must be undertaken to ensure that soil is suitable for cultivation.</p> <p><b>Comment:</b> See the comments on soil safety under “Community Gardens.” The option above is an informal version of the Phase I ESA, suggested by the EPA.</p> <p>Alternate soil testing requirement:</p> <p>Site users must provide a Phase I Environmental Site Assessment (ESA). Any historical sources of contamination identified in the ESA must be tested to determine type and level of contamination; appropriate remediation</p>



		<p>agriculture use is likely to go hand-in-hand with urban agriculture as a conditional, rather than permitted, use. Applicants would submit their findings as a component of the conditional use process.</p>	<p>procedures must be undertaken to ensure that soil is suitable for cultivation.</p> <p><b>Comment:</b> Alternatively, localities could require a Phase I ESA. This is a potentially more resource-intensive requirement for the urban farm applicant. A Phase I ESA is a historical search of the property to determine if there are any past uses that could have caused contamination to the soil. To minimize costs, the municipality could conduct the assessment. Or, they could require those wishing to establish a new urban farm to have an assessment conducted.</p>
<p><b>2.3 Operating Standards</b></p>	<p>[No regulation]</p>	<p>Site users must have an established set of operating rules addressing the governance structure of the garden, hours of operation, maintenance, and security requirements. Users must have a garden coordinator to perform the coordinating role for the management of the community gardens and to liaise with the city. They must assign garden plots in a fair and impartial manner according to the operating rules established for that garden. The name and telephone number of the garden coordinator [or those of the leadership team members] and a copy of the operating rules shall be kept on file with the city [insert department name] Department [or the lead community garden nonprofit organization, as appropriate].</p> <ul style="list-style-type: none"> <li>• The land shall be served by a water supply sufficient to support the cultivation practices used on the site.</li> <li>• The site must be designed and maintained so that water and fertilizer will not drain onto adjacent property.</li> <li>• All seed, fertilizer, and animal feed shall be stored in a sealed, rodent-proof container [and housed within an enclosed structure].</li> </ul> <p>To the extent permitted under federal and state law, site users must use organic and sustainable growing practices.</p> <p><b>Comment:</b> To function effectively, a community garden must have established operating rules and a garden coordinator or leadership team. In this ordinance, a municipality could 1) require that gardens have rules, as the model language does above; 2) provide a complete listing of rules; or 3) give authority for a particular city or county department or officer to establish community garden rules and require each community garden to adhere to those rules. A municipality could also choose to address some or all of the requirements for operating a community garden in this or an accompanying ordinance.</p> <p>As described more fully in the section on “Pesticide and Environmental Laws,” pesticide use is regulated under federal and state law. A</p>	<p>Management plan required. Urban farms must prepare a management plan, to be reviewed as part of the conditional use process, to address how activities will be managed to avoid impacts on surrounding land uses and natural systems. The management plan must include:</p> <ul style="list-style-type: none"> <li>• A site plan, including lighting;</li> <li>• Operating hours;</li> <li>• A description of the type of equipment necessary or intended for use in each season and the frequency and duration of anticipated use;</li> <li>• Disclosure of any intent to spray or otherwise apply agricultural chemicals or pesticides, frequency and duration of application, and the plants, diseases, pests, or other purposes they are intended for;</li> <li>• Disclosure of the spreading of manure;</li> <li>• A proposed sediment and erosion control plan;</li> <li>• Disclosure of parking impacts related to the number of staff on-site during work hours, and the number of potential visitors regularly associated with the site;</li> <li>• A proposed composting and waste management plan.</li> </ul> <p><b>Comment:</b> Not all communities will want to require management plans. Communities could instead set forth standards regulating the above practices and impose them as regulations. Take care to ensure that any environmental or pesticide regulations are consistent with federal and state law and that composting, waste management, equipment use, and operating hours are addressed.</p>

		city may be prohibited from regulating pesticide use through local law. A city may be able to restrict or prohibit pesticide use in community gardens on its property in its proprietary capacity (as the property owner as opposed to as a regulator). Consult with your local government attorney.	
<b>2.4 Compost and Waste Management</b>	Compost materials shall be stored [at least ___ feet from adjacent property] and in a manner that is not visible from adjacent property (shielded from view by shrubbery or an enclosure), controls odor, prevents infestation, and minimizes runoff into waterways and onto adjacent properties.	Compost materials from the garden or gardeners shall be stored [at least ___ feet from adjacent property] and in a manner that is not visible from adjacent property (shielded from view by shrubbery or an enclosure), controls odor, prevents infestation, and minimizes runoff into waterways and onto adjacent properties. The municipality shall collect waste regularly. Gardeners shall ensure that they place containers in specified location to assist municipality in waste removal.	Composting and waste management must be managed according to the farm management plan.
<b>2.5 Accessibility</b>	[No regulation]	The garden must comply with Americans with Disabilities Act design standards for accessible entrance routes and accessible routes between different components of the garden and must follow universal design principles whenever possible. [A minimum of ___ percent of the garden must contain raised beds that are designed for access by gardeners using wheelchairs or with other mobility impairments.]  <b>Comment:</b> Communities are using different strategies to address the needs of gardeners with disabilities. The Palm Desert, Calif., community garden has an entire garden (151 plots) that is handicapped accessible; Cambridge, Mass., requires that all newly established community gardens have a minimum of 5 percent, but not less than one, raised bed plots. Communities should ensure that all residents have access to community gardens.	The farm must comply with Americans with Disabilities Act design standards for accessible entrance routes and accessible routes between its different components and must follow universal design principles whenever possible.
<b>2.6 Landscaping and Setback Requirement</b>	<b>Comment:</b> Some communities have particular landscaping or setback requirements, such as limits on tree or plant heights, which may restrict the type of plants used in home gardens. Some restrictions serve important purposes such as fire safety; others are purely aesthetic. Communities should be sure to reconcile new urban agriculture provisions with existing landscaping requirements.  Kansas City, Miss., prohibits row crops in the front yard of some residentially zoned and occupied property.	<b>Comment:</b> Some communities have particular landscaping or setback requirements and may want to require urban agriculture uses to blend with neighboring properties. Communities should consider existing requirements to determine their impact on the agricultural uses and whether the standards need adjusting.	<b>Comment:</b> See comment under “Community Gardens.”

### 3. Incidental and Accessory Uses

	Home Garden	Community Garden	Commercial garden/ Urban Farm
<b>3.1 Fencing</b>	Fences are permitted as regulated in the residential zoning district.	Fences are permitted as regulated in the underlying zoning district. Alternative: Fences shall not exceed [__ feet] in height, shall be at least [__ percent] open if they are taller	Fences are permitted as regulated in the underlying zoning district. Alternative: Fences shall not exceed [__ feet] in height, shall be at least [__ percent]

		<p>than [__ feet], and shall be constructed of wood, chain link, or ornamental metal. For any garden that is [__ square feet in area or greater] and is in a location that is subject to design review and approval by the [City Planning Commission or Landmarks Commission], no fence shall be installed without review by the [City Planning Director, on behalf of the Commission], so that best efforts are taken to ensure that the fence is compatible in appearance and placement with the character of nearby properties.</p> <p><b>Comment:</b> Municipalities usually have requirements regarding fences in their zoning or building codes. If the municipality has existing regulations, it may not need this provision, unless the preferred fencing for urban agriculture differs from existing law.</p> <p>In many urban areas, community gardeners prefer the security of locked gates to prevent vandalism and theft; in other areas, garden users might oppose fencing due to the cost and the desire to allow public access to gardens or portions of gardens.</p>	<p>open if they are taller than [__ feet], and shall be constructed of wood, chain link, or ornamental metal. For any garden that is [__ square feet in area or greater] and is in a location that is subject to design review and approval by the [City Planning Commission or Landmarks Commission], no fence shall be installed without review by the [City Planning Director, on behalf of the Commission], so that best efforts are taken to ensure that the fence is compatible in appearance and placement with the character of nearby properties.</p> <p><b>Comment:</b> Municipalities usually have requirements regarding fences in their zoning or building codes. If the municipality has existing regulations, it may not need this provision, unless the preferred fencing for urban agriculture differs from existing law.</p>
<p><b>3.2 Structures</b></p>	<p>Structures are permitted as regulated in the residential zoning district.</p>	<p>Definitions:  A <b>greenhouse</b> shall mean a temporary or permanent structure typically made of, but not limited to, glass, plastic, or fiberglass in which plants are cultivated.  A <b>hoop house</b> shall mean a temporary or permanent structure typically made of, but not limited to, piping or other material covered with translucent plastic, constructed in a “half-round” or “hoop” shape, for the purposes of growing plants.  A <b>cold frame</b> shall mean an unheated outdoor structure consisting of a wooden or concrete frame and a top of glass or clear plastic, used for protecting seedlings and plants from the cold.</p> <p>Only the following accessory uses and structures shall be permitted: [sheds for storage of tools limited in size to [__] or subject to the requirements of section __], greenhouses, hoop houses, and cold frames, in which plants are cultivated, benches, bike racks, raised/accessible planting beds, compost or waste bins, picnic tables, seasonal farm stands, fences, garden art, rain barrel systems, [beehives, chicken coops, barbecue grills, outdoor ovens, and children’s play areas] shall be permitted. The combined area of all buildings or structures shall not exceed [__ percent] of the garden site lot areas.</p>	<p>Definitions:  A <b>greenhouse</b> shall mean a temporary or permanent structure typically made of, but not limited to, glass, plastic, or fiberglass in which plants are cultivated.  A <b>hoop house</b> shall mean a temporary or permanent structure typically made of, but not limited to, piping or other material covered with translucent plastic, constructed in a “half-round” or “hoop” shape, for the purposes of growing plants.  A <b>cold frame</b> shall mean an unheated outdoor structure consisting of a wooden or concrete frame and a top of glass or clear plastic, used for protecting seedlings and plants from the cold.</p> <p>Only the following accessory uses and structures shall be permitted:</p> <ol style="list-style-type: none"> <li>Benches, bike racks, raised/accessible planting beds, compost bins, picnic tables, garden art, rain barrel systems, [chicken coops, beehives, and children’s play areas];</li> <li>Greenhouses, hoop houses, cold frames, and similar structures used to extend the growing season;</li> <li>Buildings, limited to tool sheds, shade pavilions, restroom facilities with composting toilets, planting preparation houses and [barns], in conformance with [reference regulations or requirements relating to building and setback standards here], [provided that maximum lot coverage of all buildings, structures, and paved areas does not exceed [__ percent] of the farm lot area].</li> <li>Roadside stand, farm stand: The stand</li> </ol>

			<p>may not be permanently affixed to the ground and must be readily removable in its entirety.</p> <p>e. The maximum area of a roadside stand shall be [ ] square feet in ground area. No more than one roadside stand is allowed on any one premise.</p> <p>f. Off-street parking and walkways, in conformance with [reference regulations or requirements related to parking and walkways here].</p> <p><b>Comment:</b> Erection of buildings or other structures is governed by state and local building laws. The municipality should make sure that any provision regarding structures conforms to other applicable laws (e.g., allowing annual or biannual sales as a fundraiser).</p>
<b>3.3 Signage</b>	No signage permitted	<p>Any signs shall comply with applicable [City/County] ordinances.</p> <p>Alternative:</p> <p>[One] unilluminated sign not exceeding [ ] square feet or [ ] feet in height] in conformance with the regulations of [reference other sign laws or requirements].</p> <p><b>Comment:</b> Sign requirements may raise First Amendment issues. Be sure to consult with your local government attorney on sign requirements.</p>	<p>Any signs shall comply with applicable [City/County] ordinances.</p> <p>Alternative:</p> <p>Allowed [ ] temporary, unilluminated sign not exceeding [ ] square feet or three feet in height] is permitted on-site, in conformance with the regulations of [reference other sign laws or requirements].</p> <p><b>Comment:</b> See signage comment under "Community Garden."</p>
<b>3.4 Use of Produce/ Produce Sales</b>	<p>Produce shall be grown [primarily] for resident's use or donation [only].</p> <p>Alternative:</p> <p>Food and/or horticultural products grown in the home garden may be used for personal consumption, and [only whole, uncut, fresh food] and/or horticultural products grown in a home garden may be donated or sold on-site within a reasonable time of its harvest. The sales may only take place during [add seasonal or time of day limitations on sales].</p> <p><b>Comment:</b> Some communities enable home gardeners in certain districts to sell homegrown produce from their homes. Kansas City, Miss., allows home growers to sell whole, uncut fresh food from May 15 through October 15.</p> <p>Communities considering home sales should consider the following issues:</p>	<p>Produce shall be grown primarily for personal or shared use or donation [or for sale].</p> <p><b>Comment:</b> One option is for communities to prohibit sale of community garden produce; another is to allow limited sales of community garden produce on- or off-site.</p> <p>(e.g., allowing an annual sale as a fundraiser). If so, it is important to ensure that related laws are addressed (see comments under "Home Garden") and that the community garden is distinguishable from a commercial farm, if both definitions will be used in the code.</p>	<p>Retail sales [of plants and produce grown on-site or products that are processed off-site but made from products grown on-site] and other public use of the farm may occur between [ ] and [ ] [add hours] every day of the week during [ ] and [ ] [add months or seasons].</p> <p><b>Comment:</b> If needed to accommodate neighboring property owners, communities may want to limit sales according to growing seasons.</p>

	<ul style="list-style-type: none"> <li>• Whether commercial activity is compatible with the other uses in the district;</li> <li>• The potential for increased pedestrian and automobile traffic;</li> <li>• State food retail codes (which may require a food retail permit to sell produce or products made from produce).</li> </ul>	
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**4. Animal**

	Home Garden	Community Garden	Commercial garden/ Urban Farm
<b>4.2 Chickens</b>	<p>The keeping of hens is a [permitted accessory] use to a home garden, subject to the following regulations:</p> <p>The chicken owner is properly registered and licensed pursuant to [state/local] law;</p> <p>Animal care practices are consistent with the standards of [enter reference to animal welfare laws or organization name here];</p> <p>There must be no less than [ ] square feet allocated per chicken;</p> <p>The coops or cages housing the chickens may not be located in the front or side yard areas and shall not be located within [ ] feet of the property line.</p> <p>The chickens, coops, and cages must be adequately maintained to control odor and prevent infestation.</p> <p>[No more than [ ] hens may be permitted per home garden.]</p> <p><b>Comment:</b> Some communities permit the raising of hens in home gardens for personal use (i.e., no chicken or egg sales or slaughtering) as a permitted accessory use (i.e., without requiring any land use permits).</p>	<p>The keeping of hens is a [permitted accessory] use to a community garden, subject to the following regulations:</p> <p>The chicken owner(s) is properly registered and licensed pursuant to [state/local] law;</p> <p>There must be no less than [ ] square feet allocated per chicken;</p> <p>The coops or cages housing the chickens may not be located in the front or side yard areas and shall not be located within [ ] feet of the property line.</p> <p>The chickens, coops, and cages must be adequately maintained to control odor and prevent infestation.</p> <p>[No more than [ ] hens may be permitted per community garden.]</p> <p><b>Comment:</b> See comments under “Home Garden.” Like beekeeping, some communities will not want to permit the keeping of chickens in community gardens without further approvals.</p> <p>Allowing animals in community gardens presents the problem of oversight as gardeners may not attend to the garden every day.</p> <p>Some cities only permit animals on property where there is residence, presumably to ensure that caretakers manage the animals regularly and are more easily identified and held accountable for nuisance or animal welfare violations.</p>	<p>The keeping of hens is a [permitted accessory] use to an urban farm, subject to the following regulations:</p> <p>The chicken owner is properly registered and licensed pursuant to [state/local] law;</p> <p>There must be no less than [ ] square feet allocated per chicken;</p> <p>The coops or cages housing the chickens may not be located in the front or side yard areas and shall not be located within [ ] feet of the property line.</p> <p>The chickens, coops, and cages must be adequately maintained to control odor and prevent infestation.</p> <p>[No more than [ ] hens may be permitted per urban farm.]</p> <p>One must live at the residence where they are keeping hens. If one is a tenant, they will need written permission from the property owner.</p> <p>No roosters may be kept in Redmond.</p> <p>Any noise from your hens needs to conform to the City’s Noise Regulations.</p> <p>The odor from your chickens cannot be noticeable at the property boundaries. Chicken waste needs to be composted with a material such as hay, bedding, or leaves in a rodent-proof composter or stored in a sealed container until it is removed from the property.</p> <p>Henhouses need to be cleaned at least once a week.</p> <p>Hens need to stay on the property. They can’t wander onto another property, the street or public</p>

		<p>Hen feed must be stored in a rodent-proof container inside your home.</p> <p>Henhouses and pens need to keep predators and rodents out.</p> <p><b>Site specific:</b></p> <p>Hens can be kept on residential properties. Hens on a commercial property will be evaluated based on the primary use of the property and may require a special permit.</p> <p>You must inform your neighbours if you are keeping hens.</p> <p>You can't keep hens inside your house.</p> <p>Henhouses can't be closer than (X) feet from any property line.</p> <p>Hens and henhouses are not permitted in front yards or in side yards that abut streets.</p> <p>Structures need to meet all building code requirements. Structures that are more than 100 sq feet or (X) feet in height require building permits. Any hen structures with electrical or plumbing also require the appropriate permits.</p> <p>An enclosed henhouse needs to provide at least two square feet per chicken of space. Needs to provide at least four (4) square feet of permeable surface per chicken.</p> <p>Henhouses can't interfere with any utilities or other property features that need access.</p> <p>Henhouses must be located in a well-drained area that does not discharge to a public way or a neighbour's property.</p> <p>All outdoor roaming areas for chickens need to be enclosed and screened from the street and neighbouring properties</p> <p><b>Comment:</b> See comments under "Home Garden" and "Community Garden." Depending upon where the urban farms are located, communities may wish to permit additional hens and require fewer square feet per chicken and lesser setbacks from adjoining property.</p>
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## **Xeriscaping for Redmond, Oregon**

**Spring 2016 • Law**

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*This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Redmond. Text and images contained in this report may not be used without permission from the University of Oregon.*



## Executive Summary

This proposal presents ordinances to address long-term water conservation for the City of Redmond, Oregon. In light of recent widespread drought in Oregon, these ordinances point to changes in outdoor landscaping requirements for commercial, civic, and residential properties. For all three property types, low-water-use landscaping – commonly called, xeriscaping – is suggested as a minimum percentage of the property’s total landscape.

Currently, the City of Redmond has no requirements or incentives for xeriscaping. Precedents established in cities of comparable sizes and climates are discussed in support of instituting a minimum xeriscaping requirement or incentive. The hope is that by introducing and proposing these ordinances, we can help move Redmond to a more sustainable future, while also allowing for growth and management of vital natural resources, such as the “Blue Whale” aquifer.

## Introduction

Across the American West, water is becoming an increasingly scarce resource. The images and effects of severe, persistent drought have been most affiliated with California, where Governor Jerry Brown issued mandatory statewide water use reductions of 25% in April 2015. Through lawn removal, decreased indoor water usage, and a multitude of other methods, many of California's 400 local water agencies were able to meet – or exceed – this goal during the driest months of last year. However, drought is not California's problem alone; it also significantly impacts Oregon.

Despite a substantial winter snowpack, 34% of Oregon was still listed as under "severe drought" in the most recent report on the region by the U.S. Drought Monitor. When declaring emergency drought conditions in counties across Oregon last summer, Governor Kate Brown urged for "a proactive approach to the continuing challenges of climate change." In the summer months, nearly half of residential water use in Oregon is used to irrigate lawns and landscaping. Similar landscaping in commercial and civic areas uses just as much water. With the ongoing threat of drought, landscaping in Redmond needs to be reconsidered. In its future development, the City of Redmond must take measures to ensure its own adequate water supply, as well as the most efficient and responsible use of this essential resource.

*Figure 1: Wickiup Reservoir, in Deschutes County, at 14% capacity in October 2015.*



Source: <http://www.tothewild.com/what-were-working-on-the-pacific-nw-drought/>.

## Goals

In our proposal for the City of Redmond, we aim to address long-term irrigation water use by implementing local ordinances that require the use of xeriscaping on any prospective commercial, civic, or residential property that features landscaping. Sustainable Sources, an online green building resource, defines xeriscaping as “quality landscaping that conserves water and protects the environment.” The site lists seven principles associated with xeriscaping:

- 1) planning and design
- 2) soil improvement
- 3) appropriate plant selection
- 4) practical turf areas
- 5) efficient irrigation
- 6) use of mulches
- 7) appropriate maintenance.

Xeriscaping requires significantly less water – if any – than traditional garden landscapes. By introducing xeriscaping into Redmond’s local ordinances, as well as its commercial and residential land use zones, the measure can serve as both a visual symbol of sustainable civic action and a cost-effective method of water conservation.

*Figure 2: A xeriscape landscape, requiring significantly less irrigation than traditional outdoor gardens.*



Source: <http://blackthumbgardener.com/xeriscaping-using-plants-and-water-wisely/>

## Current Laws

Xeriscaping is not preempted by state law; pursuant to Oregon Revised Statutes (ORS) 105.980, local cities and counties may mandate or allow xeriscaping on commercial or industrial property provided the xeriscaping does not interfere with property previously designated for storm-water management, the preservation of natural habitat, and/or controlling invasive species. Currently, Redmond requires a minimum setback of two feet for downtown commercial property which must be of a similar nature to the adjoining sidewalk. Additionally, Redmond permits a maximum setback of 10 feet for downtown commercial property. The property between the minimum setback and the maximum setback must be “landscaped or treated with decorative pavers”; asphalt is prohibited. Finally, Redmond does not require a minimum amount of landscaping for downtown commercial property. For properties outside of the downtown overlay, Redmond requires a minimum of 15% of landscaping for commercial properties, but does not require a minimum amount of landscaping for residential properties. For all prospective developments and renovations/redevelopments, Redmond has established an inspection and approval process.

These laws are unsustainable because they do not sufficiently address water conservation regarding landscaping in Redmond. Because Redmond receives minimal rainfall and marginal snowfall annually, addressing water use for landscaping allows for improved water conservation with minimal modification. These laws are not broad enough in scope to adequately manage landscaping water use in a sustainable manner. These laws limit the applicability of any water management resources for downtown commercial properties to a maximum eight feet between the minimum and maximum setbacks. Furthermore, these laws are merely permissive in nature by not setting a minimum xeriscape percentage and contingently limiting required water management resources to permeable pavers. While permitting water management and providing minimal water management requirements is a step in the right direction, additional efforts could further the intended benefits of these laws.

## Proposal

We propose two ordinances that set a minimum percentage of xeriscaping for all prospective commercial, civic, and residential properties, and any sales, additions, and/or major renovations thereto. Future developments, and sales or redevelopments, that choose to implement landscaping will be subject to a minimum amount of xeriscaping as part of the planned landscaping. For commercial properties, our proposed ordinance would require 75% of all planned landscaping to be xeriscaping. For residential properties, our proposed ordinance would require 25% of all planned landscaping to be xeriscaping.

These ordinances would require any minimal xeriscaping, and any irrigation, to be approved by the City of Redmond pursuant to the inspection procedures already in place. The approved landscaping would include xeriscaping with native Oregon plants. A manual similar to the examples shown in “An Introduction to Xeriscaping in the High Desert and Pictorial Plant Guide for Central and Eastern Oregon,” with both pictures and descriptions of previously approved plants, would aid both developers and city officials in smoothly navigating the approval process.

This manual would not limit the possible landscaping options, however, as variances would be permitted on a case-by-case basis with review by the same officials who approve of proposed landscaping and irrigation plans.

The ordinances would also require inspection of the minimal amount of xeriscaping, and any irrigation, to ensure the minimum amount of xeriscaping is achieved, the plants used are water-efficient, and the plants are actually sown. This inspection process would be integrated with existing property inspections.

We also propose revising the existing development code to allow landscaping, and xeriscaping, up to the adjoining sidewalk on commercial properties in the downtown overlay, but our proposed ordinances would not alter the required or permitted setback distances. Finally, we propose a method of enforcement that includes administrative remedies and pecuniary penalties, consistent with Nuisance Code Enforcement.

These ordinances would substantially increase the water sustainability of Redmond by significantly increasing the water management resources required by the city. These ordinances would also reduce the cost of landscaping and maintenance over time. Furthermore, the proposed ordinances would increase the landscaping and aesthetic appearance of Redmond overall by incentivizing property owners to implement beautiful, native landscaping.

Because literature is pre-existing, cost-effective to obtain, and particularized to the climate of Redmond, implementation of an approval process would be seamless and economical. The approval process would be implemented by the city development office as part of building and property inspections, thus the inspection element of the proposed ordinance would also be inexpensive and uncomplicated.

Finally, the fiscal penalties included in the ordinances could help offset any inaugural costs and perhaps fund future developments by Redmond. These costs will continue to increase as more and more properties use less and less water for irrigation.

The City of Redmond may choose to establish an incentive program to incentivize existing property owners to implement the proposed xeriscaping requirements prior to redevelopment or sale. Redmond may choose to establish this program because the long-term reduction in water usage will result in less stress on the existing wastewater management resources and because the

current scope of the proposed ordinances may not produce those benefits as soon as the city would desire. Implementing a retroactive incentive program in addition to the scope of our proposed ordinance would assist in achieving reduced pressure on wastewater resources as soon as possible. Overall, we expect these ordinances to reduce the reliance on water for landscaping and maintenance by increasing the concern for xeriscaping and its impacts on water usage. By requiring xeriscaping, restricting the amount of traditional landscaping permitted, and enforcing these mandates, the City of Redmond would acknowledge the long-term importance of water management and take affirmative measures to reduce the reliance on water for landscaping purposes.

*Figure 3: Xeriscaping outside a commercial property in Salt Lake City, Utah.*



Source: <http://ridgelineLandscapingSLC.com/xeriscaping/>

## Best Practices

One method of assisting Redmond to develop the best practices for a new ordinance is to see what other cities of similar size and climate are doing. For this report, we have focused on three cities. All three have similar conditions as Redmond, though slightly different populations. The criteria for choosing the cities focused on the purpose of the ordinances and whether those purposes matched with the goals that Redmond has as a community. The three cities that

fit the criteria were, Corinth, TX; Wichita, KS; and Turlock, CA. In the following section, the ordinances of those cities will be explored and the components of the ordinances that have been put into the proposed ordinances for Redmond will be highlighted.

### **Corinth, Texas**

The first city we will look at is Corinth, Texas. Corinth is a city that has similar climate conditions as Redmond, and therefore faces similar sustainability challenges. One significant measure that Corinth has taken to address the challenge of drought conditions is to adopt a xeriscaping ordinance – something, as indicated above, that Redmond has not done. Ordinance 07-03-15-08 came into being because the City of Corinth needed to conserve water, protect the environment, and increase the overall attractiveness of the city.

In this ordinance, Corinth recognized the need for drought tolerant plants. Given how Redmond suffers from drought conditions at times, this would be a good measure to follow.

This ordinance builds on seven principles that are outlined in the text of the ordinance itself. The principles are:

- 1) the desire for planned design;
- 2) improvement of soil;
- 3) creation of practical turf areas;
- 4) planting of appropriate plants;
- 5) efficient use of water;
- 6) the increased usage of organic mulch;
- 7) the proper maintenance of the landscape.

Section 158.04 of the ordinance lists the plant selection allowed under the xeriscaping plan. These plants are tailored to the plants that are natural to the climate of Texas and the area that Corinth occupies. Also, Corinth has partnered with the local nursery industry to give residents access to plants that are native to the local environment.

The next section in the ordinance outlines the xeriscaping that is allowed. The ordinance states, “The City seeks to encourage each landowner to create and sustain a condition of ecological stability on his or her land, that is, a state of good health and vigor, as opposed to one of impairment and decline. It is not the intent of this ordinance to allow vegetated areas to be unmanaged or overgrown in ways that may adversely affect human health or safety, or pose a threat to agricultural activity.” As far as the enforcement of this ordinance is concerned, Corinth has implemented a notice of violation method. The ordinance states, “If it is determined that the provisions of this ordinance have

not been followed, notice of violation will be given to the owner, tenant, agent or person (hereinafter "owner")." Furthermore, "In the event any owner responsible for the planting of xeriscaped plants as an accent area fails to comply with the permitted use areas and provisions of this Ordinance, the City of Corinth, by and through its Code Enforcement Division or designee, shall give notice of the violation to such owner. Such notice shall be given to the owner in any one of the following ways:

- 1) A verbal or written notification provided to the owner;
- 2) A notification posted at the site or sale location; or
- 3) A letter addressed to the responsible owner on said application and/or property owner at premises as recorded in the appraisal district records of the appraisal district in which the property is located." The remedies that can be pursued by the city are through another portion of the Corinth City Code.

### **Wichita, Kansas**

The second city whose ordinance was explored was Wichita, Kansas. The purposes of the Ordinance are:

- 1) Enhance the attractiveness of the community through the establishment of landscape requirements for urban development projects;
- 2) Improve neighborhoods;
- 3) Enhance appearance of commercial areas;
- 4) Increase property values;
- 5) Improve relationships between non-compatible uses;
- 6) Screen undesirable views;
- 7) Soften effects of structural features; and
- 8) Create a positive overall image of the community.

The ordinance applies to:

- 1) New development;
- 2) Re-development;
- 3) Renovations;
- 4) Additions; and
- 5) Corporate boundaries.

The ordinance has three exceptions listed: 1) Single family residences; 2) Two family residences (duplexes); and 3) Existing developments. The requirements under this ordinance are: 1) Landscaped street yard; 2) the placement of buffers; 3) parking lot screening; 4) Proportional parking lot landscaping; 5) 55% coverage in living materials; and 5) Maintenance of landscaped areas. The enforcement mechanism that Wichita has adopted is much more stringent than that of Corinth. The penalty for violations of the ordinance is a misdemeanor,



and there is a separate offense for each day of the violation, and the ordinance has a built in appeals process.

The Wichita ordinance clearly has many aspects to it which match with the goals set forth by the Redmond community. Although the penalties outlined in this ordinance are harsh, and have not been put in the proposed ordinances, many of the purposes have.

### **Turlock, California**

The final city that we compare with Redmond is Turlock, California. Turlock is a city that is located in central California, with a population and climate that is similar to that of Redmond. The ordinance in Turlock is part of a larger statewide California initiative for efficient water usage. The main purposes of the Turlock Ordinance are:

- (1) Enhance the aesthetic appearance of development in all areas of the City by providing standards relating to quality, quantity, and functional aspects of landscaping and landscape screening.
- (2) Increase compatibility between residential and abutting commercial and industrial uses.
- (3) Reduce the heat and glare generated by development.
- (4) Establish a water conservation plan to reduce water consumption in the landscape environment using conservation principles.
- (5) Protect public health, safety, and welfare by minimizing the impact of all forms of physical and visual pollution, controlling soil erosion, screening incompatible land uses, preserving the integrity of neighborhoods, and enhancing pedestrian and vehicular traffic and safety.

It can be seen from the list above that the main purpose for the Turlock Ordinance matches a main goal for Redmond, that being the enhancement of the aesthetic appearance of the community. Another key aspect of the Turlock Ordinance that we have taken as part of our ordinance is the percentage requirements. The ordinance in Turlock requires a 25% limitation of turf in the total landscaped area for residential properties and a 75% limitation of turf in the total landscaped area for commercial properties. This forms one of the main components to our ordinance, because it allows for the flexibility that is required within the Redmond community. The percentage requirements work to ensure a smoother transition while allowing for the diversity of the land use zones to be taken into account.

## Conclusion

In conclusion, this proposal presents an ordinance to address long-term water conservation for the City of Redmond, Oregon. In light of recent widespread drought in Oregon, these ordinances point to changes in outdoor landscaping requirements for commercial, civic, and residential properties. The proposed ordinances call for xeriscaping as a water management tool, which is the main issue Redmond faces given the availability of “The Blue Whale” aquifer. Implementation of the proposed ordinances will allow the City of Redmond to use the natural resource that it has in a sustainable manner while also ensuring growth of the community in the near and the long-term future in a sustainable manner. Through this implementation, the citizens of Redmond can be ensured a brighter future belonging to the Hub of Oregon.

*Figure 4: An entrance to Redmond, with proposed xeriscaping.*



Source: Google Earth.

# Appendix A: Xeriscape Ordinance for Residential Properties

The City of Redmond ordains as follows:

## SECTION 1.

The Redmond Code is hereby amended by the addition of the following sections:

### 8.0142. Xeriscaping for Residential Properties

#### 1. Purposes.

- a. These standards are adopted for the purposes of:
  - i. Create a more financially viable, easily-maintained downtown landscape
  - ii. Help increase property values through xeriscaping
  - iii. Conserve water
  - iv. Improve outdoor downtown aesthetics and walkability in a more sustainable manner
  - v. Bring water conservation to the public's attention in order to address long-term water supply concern

#### 2. Definitions.

- a. **Additions.** Any change(s) to existing residential developments and/or surrounding property which adds any new structure(s).
- b. **Guide.** The guide published by Oregon State University, titled: "An Introduction to Xeriscaping in the High Desert and Pictorial Plant Guide for Central & Eastern Oregon" and updates.  
  
Link: [http://extension.oregonstate.edu/yamhill/sites/default/files/an\\_introduction\\_to\\_xeriscaping.pdf](http://extension.oregonstate.edu/yamhill/sites/default/files/an_introduction_to_xeriscaping.pdf)
- c. **Living Plants.** Plants that are grown and maintained. This excludes all wild growth, such as weeds.

- c. **Living Plants.** Plants that are grown and maintained. This excludes all wild growth, such as weeds.
  - d. **Notice of Violation.** Physical and visual notice posted on property, and/or virtual notice delivered to property owner, informing of violation and methods of remedy and further enforcement measures if violation persists.
  - e. **Proposed Plants.** Plants submitted for approval pursuant to Redmond City Code provisions, including 9.025.
  - f. **Proposed Xeriscaping.** Landscaping plans submitted for approval pursuant to Redmond City Code provisions, including 9.025.
  - g. **Renovations.** Any change(s) to existing residential developments and/or surrounding property.
  - h. **Xeriscaping.** Quality landscaping that conserves water and protects the environment.
3. **Requirements.**
- a. 25% of proposed landscaping must be approved xeriscaping.
    - i. Approval to be determined by Redmond City Code provisions, including 9.025.
      - 1. **Plants:**
        - a. Proposed plants must be approved.
        - b. Plants listed in Guide are pre-approved and exempt from approval process.
        - c. Variance process for plants not listed in Guide shall be established.
      - 2. **Inspection:**
        - a. Inspection is required for landscaping plans including any xeriscaping requirements and any plants, proposed or living, prior to and after implementation.
      - 3. **Enforcement:**
        - a. Enforcement to be determined by Redmond City Code, including the Redmond City Nuisance Code Enforcement.
        - b. Enforcement method shall be through progressing measures

- i. Notice of Violation
  - 1. Remedy to Notice of Violation shall be Voluntary Compliance.
  - ii. If violation persists, then there will be Civil Infraction Citation.
  - iii. If violation persists, there will be progressing Civil Violations:
    - 1. D Class Civil Violation: \$50 fine.
    - 2. C Class Civil Violation: \$100 fine.
    - 3. B Class Civil Violation: \$250 fine.
    - 4. A Class Civil Violation: \$500 fine.
  - iv. Each day of violation constitutes a separate violation.
  - ii. This subsection applies to:
    - 1. New residential developments.
    - 2. Transfer of existing developments to new owners.
    - 3. Renovations of existing developments which affect more than 50% of the landscaped area of the development or both.
    - 4. Additions to existing developments which affect more than 50% of the landscaped area or the development or both.
- b. Aesthetic Assurance: 25% of any xeriscaping requirement must be living plants.

# Appendix B: Xeriscape Ordinance for Commercial Properties

**AN ORDINANCE AMENDING CODE SECTION NUMBERED 8.0175.**

**The City of Redmond ordains as follows:**

## **SECTION 1.**

**Chapter 8.0175(4)(A) is amended to be read as follows:**

“Minimum Building Setback: Two (2) feet.”

## **SECTION 2.**

**The Redmond Code is hereby amended by the addition of the following sections:**

### **8.0196 Xeriscaping for Commercial Properties**

1. **Purposes.**
  - a. These standards are adopted for the purposes of:
    - i. Create a more financially viable, easily-maintained downtown landscape.
    - ii. Help increase property values through xeriscaping.
    - iii. Conserve water.
    - iv. Improve outdoor downtown aesthetics and walkability in a more sustainable manner.
    - v. Bring water conservation to the public’s attention in order to address long-term water supply concern.

## 2. Definitions.

- a. **Additions.** Any change(s) to existing residential developments and/or surrounding property which adds any new structure(s).
- b. **Guide.** The guide published by Oregon State University, titled: “An Introduction to Xeriscaping in the High Desert and Pictorial Plant Guide for Central & Eastern Oregon” and updates.  
  
Link: [http://extension.oregonstate.edu/yamhill/sites/default/files/an\\_introduction\\_to\\_xeriscaping.pdf](http://extension.oregonstate.edu/yamhill/sites/default/files/an_introduction_to_xeriscaping.pdf)
- c. **Living Plants.** Plants that are grown and maintained. This excludes all wild growth, such as weeds.
- d. **Notice of Violation.** Physical and visual notice posted on property, and/or virtual notice delivered to property owner, informing of violation and methods of remedy and further enforcement measures if violation persists.
- e. **Proposed Plants.** Plants submitted for approval pursuant to Redmond City Code provisions, including 9.025.
- f. **Proposed Xeriscaping.** Landscaping plans submitted for approval pursuant to Redmond City Code provisions, including 9.025.
- g. **Renovations.** Any change(s) to existing residential developments and/or surrounding property.
- h. **Xeriscaping.** Quality landscaping that conserves water and protects the environment.

## 3. Requirements.

- a. 75% of proposed landscaping must be approved xeriscaping.
  - i. Approval to be determined by Redmond City Code provisions, including 9.025.
    - 1. **Plants:**
      - a. Proposed plants must be approved.
      - b. Plants listed in Guide are pre-approved and exempt from approval process.
      - c. Variance process for plants not listed in Guide shall be established.

2. **Inspection:**

- a. Inspection is required for landscaping plans including any xeriscaping requirements and any plants, proposed or living, prior to and after implementation.

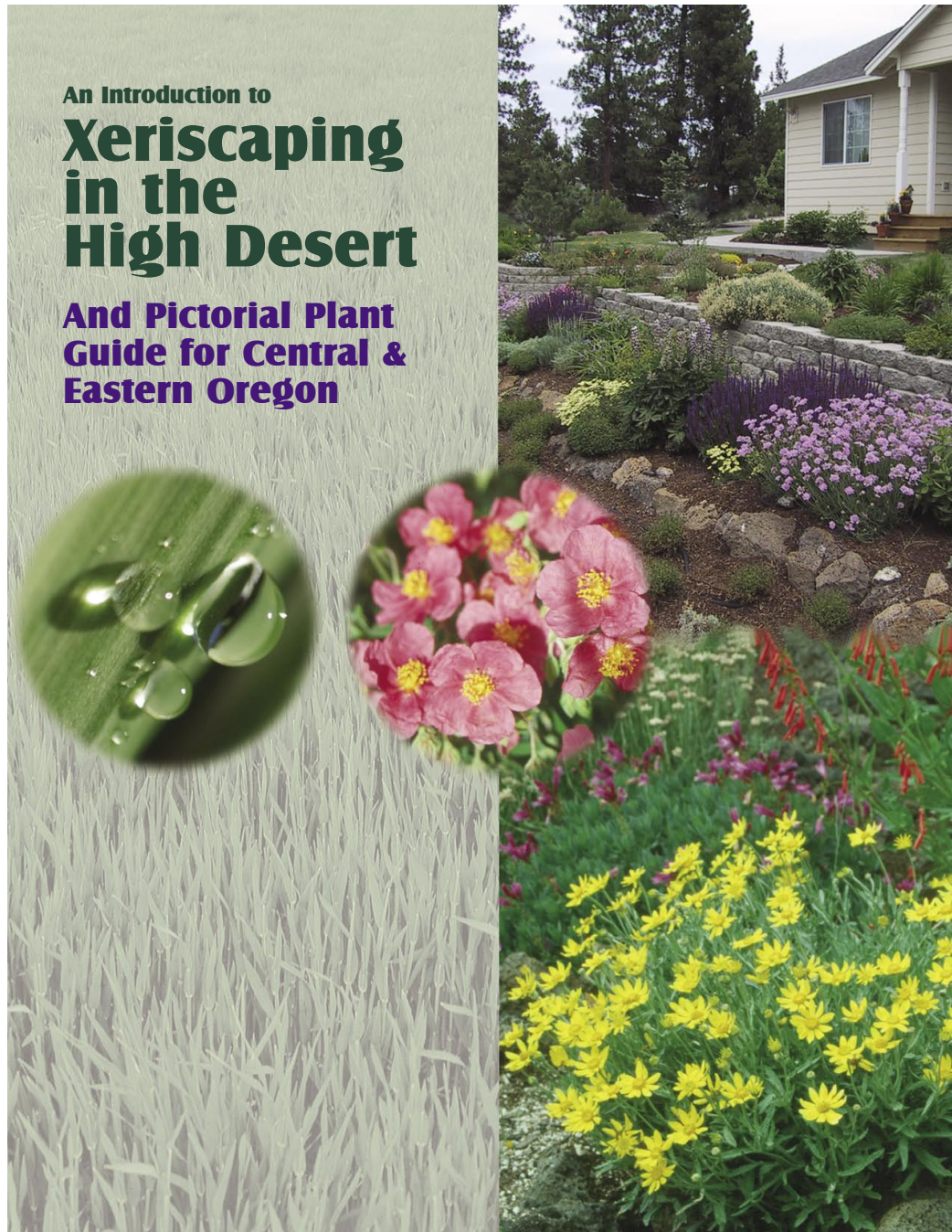
3. **Enforcement:**

- a. Enforcement to be determined by Redmond City Code, including the Redmond City Nuisance Code Enforcement.
- b. Enforcement method shall be through progressing measures.
  - i. Notice of Violation
    - 1. Remedy to Notice of Violation shall be Voluntary Compliance.
  - ii. If violation persists, then there will be Civil Infraction Citation.
  - iii. If violation persists, there will be progressing Civil Violations:
    - 1. D Class Civil Violation: \$50 fine.
    - 2. C Class Civil Violation: \$100 fine.
    - 3. B Class Civil Violation: \$250 fine.
    - 4. A Class Civil Violation: \$500 fine.
  - iv. Each day of violation constitutes a separate violation.



- ii. **This subsection applies to:**
  - 1. New commercial developments in all land use zones.
  - 2. Transfer of existing developments to new owners
  - 3. Renovations of existing developments which affect more than 50% of the landscaped area or the development or both.
  - 4. Additions to existing developments which affect more than 50% of the landscaped area or the development or both.
  - 5. All new civic commitments.
    - a. Exception upon approval for historical sites.
- iii. **Aesthetic Assurance:** 50% of any xeriscaping requirement must be living plants.

# Appendix C: An Introduction to Xeriscaping in the High Desert



## Mayors of the Central Oregon Cities Organization

### Welcome

We live in one of the most beautiful regions in the West. It is also one of the fastest growing areas in the country. With natural precipitation less than 5 inches during the April through October growing season, consideration of water use for our landscapes is very important. The water resources of our region are shared by all, and as such we each have a responsibility to use it wisely. The typical resident uses over 50% of the water they use annually, outside for landscaping. Landscapes add value, beauty and livability to our homes and keeping them WaterWise is a critical part of being a good steward in this incredible region. We all need to become WaterWise partners in order to protect our water resources for our grandkids.

This Xeriscape™ guide, put together by our regional horticulture, irrigation and water conservation experts, is one tool to assist you in effective water management. By adopting the seven steps of xeriscaping, from design – to ongoing maintenance, not only can you plan a gorgeous landscape for your home or business, but you can do it in a low impact, sustainable way. Less water, less maintenance, less chemicals, less runoff, less energy use, less worry. These are just some of the benefits that can allow you more time to enjoy the many amenities of this region.

Whether landscaping a new home or business, or revisiting your existing landscape, please consider this Xeriscape guide as a place to begin your effort to turn your landscape into a WaterWise work of beauty.

Remember, when you are WaterWise, water isn't all you save!

Signed:

The 2005 Mayors of the Central Oregon Cities Organization, also known as COCO.

Bend -	Mayor Bill Friedman	Culver -	Mayor Dan Hamden
Madras -	Mayor Rick Allen	Maupin -	Mayor Dennis Ross
Metolius -	Mayor Sandy Toms	Prineville -	Mayor Mike Wendel
Redmond -	Mayor Alan Unger	Sisters -	Mayor David Elliot



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**An Introduction to Xeriscaping in the High Desert And Pictorial Plant Guide for Central and Eastern Oregon**

**Whether you are** an experienced gardener or a newcomer to the high desert, learning how to successfully garden here can be an exciting challenge. With minimal annual precipitation, a short growing season, and fluctuating temperatures, maintaining an attractive, healthy landscape can keep you on your toes. Most gardeners value the natural beauty of our native landscapes, but are interested in enhancing it with additional plants to add more color and texture. Can a more beautiful landscape be created and still be water efficient and sustainable? The answer is YES.



Xeriscaping, is a seven step method that combines innovative water conservation techniques with sound horticultural practices. Not only is it possible to have a colorful and beautiful landscape while conserving water, but it can become more sustainable while saving you time, energy, and money.

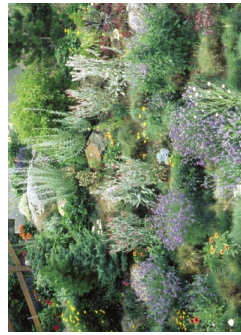
**The Meaning of Xeriscape**

What does xeriscaping (pronounced zeri-skap-ing) mean? It's commonly referred to as water-wise or water-smart gardening. Xeros is derived from the Greek word meaning dry. However, do not let the Greek derivative conjure up images of a dry, desert-like, "blandscape." In fact, a well-planned Xeriscape can be attractive, colorful and very rewarding. Often it is thought that a Xeriscape means the use of all native or low water use plants, resulting in limited plant selection. However, Xeriscapes can incorporate hundreds of plant choices including trees, shrubs, evergreens, perennials and grasses.

**Efficient Irrigation – The Heart of Xeriscaping**

At the heart of xeriscaping is a focus on efficient irrigation practices and grouping plants together with the same water requirements (hydrozoning). There is also an emphasis on conserving all natural resources and proper plant selection. In this guide we will describe the seven steps for creating a successful Xeriscape and also provide an in-depth look at plant choices for your Xeriscape in the high desert. This guide is intended as an introduction to WaterWise landscaping.

For additional information refer to the resource section of this guide. (pg.22)



## Seven Principles of Xeriscaping

The seven principles of xeriscaping present gardening concepts you most likely have heard before. However, the key to a successful Xeriscape is incorporating **all seven** steps with careful consideration. Eliminating any one of the steps reduces your chance of water conservation and a healthy Xeriscape.

1. Planning and Design
2. Zoning Plants
3. Soil
4. Efficient Irrigation Alternatives
5. Turf and Turf
6. Mulching
7. Maintenance



### Step 1 Planning and Design

- Let the fun begin! Taking the time to carefully plan your landscape will result in a beautiful landscape for many years. When beginning to plan, consider your needs and activities. A short list of considerations include:
  - How do you want to use your landscape?
  - How much time and money will you want to spend to maintain your landscape?
  - Will you use a professional maintenance service?
  - What do you want your water bill to be?
  - Do you want to attract wildlife?

- Do you want to grow vegetables or have a cutting garden?
- How will your landscape impact landscapes, utilities and public right-of-ways?
- You can design the area yourself or enlist the help of a landscape professional. For additional resources use the local extension service.

### Types of Hydrozones

Hydrozone	Supplemental Water Requirements	Plant type examples
Very Low	Required for plant establishment	Most natives
Low	Some required during growing season	Fruit perennials, some trees & shrubs
Moderate	Regular amounts required during growing season	Fruit trees, ornamental trees & shrubs
High	Regular amounts required during growing season	Turf grass, vegetable gardens

3

yard, consider its native environment. Then ask yourself, "Is this something I can mimic in my own yard?" If it will take a lot of resources and time to keep that plant alive, it is probably not a good choice. Choose plants that can survive with existing or minimal supplemental resources.



### Step 3 Soil

Knowing what kind of soil you have and how to improve it is critical for a successful Xeriscape. Properly amended soil provides a nutrient-rich planting area, improved water holding capacity, improved aeration, and addresses drainage concerns.

There are three types of soil: sand, loam and clay. Each of these three soil types absorbs or takes in water in a different way. In sandy types, water moves quickly through the profile going straight down through the soil. In loamy soil, the water intake spreads down and out in the soil, which is ideal for plant roots to absorb water. In clay type soils, the water penetrates slowly and spreads out to the sides.

Determine what type of soil you have in your yard and amend accordingly. In Central Oregon, the soil is typically a sandy, sterile soil with lots of rock! Water tends to drain right through the soil if no amendments are added. Regardless of soil type, the general rule

of thumb is to amend your native soil with 1/3 organic matter (compost or well-aged manure work well).

When preparing a new area for plants or trees, till into the native soil 1-2 inches of organic matter to a depth of 6 or more inches, depending on the specific size and type of plant (3 cubic yards per 1000 square feet). Mix the native soil with the amendment and backfill the hole. Your soil is now ready to plant with beautiful Xeriscape plants.



### A Special Note for Use of Native Plants

Native plants are adapted to our region and typically require additional soil amendment when planting.

### Step 4 Efficient Irrigation

Efficient irrigation is the heart of a successful Xeriscape. You will save water, time, and money with a well-planned irrigation system. If carefully managed, both manual and automatic irrigation can be efficient. Generally, automatic irrigation is more time efficient and can save water if properly installed and managed. Unfortunately, research has shown that automatic systems can use 30% more water than already have one.



a manual (garden hose based) system because often homeowners set the timer once for the entire season, rather than adjusting their irrigation run times based on the weather or actual plant water requirements. The goal is to design the irrigation system such that plants are receiving only the water they actually need. For manual irrigation, use a sprinkler attachment that best fits the shape of your yard. Avoid using sprinklers that throw water high into the air, as much of the water is lost to evaporation, which means you will have to run your sprinkler longer to get enough water down into the soil. Sprinkler systems that keep water close to the ground are more efficient.

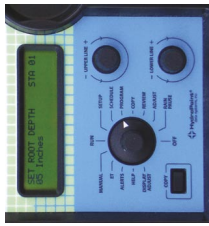
If you are installing a new landscape it is best to layout your automatic irrigation system at the same time. Separate your turf grass watering zones from other planting zones, dividing them into hydrozones. The best types of irrigation for turf grass areas include low pressure, low-angle sprinklers that provide head to head coverage. For trees, shrubs, and perennials use micro-sprays, drip emitters, or bubblers. Avoid the "set it and forget it" syndrome that can accompany automatic irrigation. Adjust your automatic system's controller throughout the season based on the plants watering needs (i.e. less water in the spring and fall). Install a rain shut-off device if your system does not already have one.

4

### New Technology Update – What Are Smart Irrigation Controllers?

Traditional irrigation system controllers are really just timers. They turn the water on and off when they are told, regardless of weather conditions or actual plant water needs.

Smart irrigation controllers, on the other hand, monitor and use information about environmental conditions for a specific location and landscape. This information includes soil moisture, rain, wind, the plants



evaporation and transpiration (ET) rates, and, in some cases, plant type and is used to determine when to water – providing exactly the right amount of water to maintain lush, healthy growing conditions.

Because smart irrigation controllers are more efficient than traditional, timer-based controllers, they also reduce overall water usage, typically by 30% or more, saving you time, money, energy and making a large, positive impact on your community's conservation efforts and water supply.

The Irrigation Association has coined the phrase Smart Watering Application Technology (SWAT) as the best way to describe these new innovations in irrigation timers (<http://www.irrigation.org/swat/>). This new technology uses

Changing Plant Water Requirements (ET) Bend, OR Agrimet Station 2004

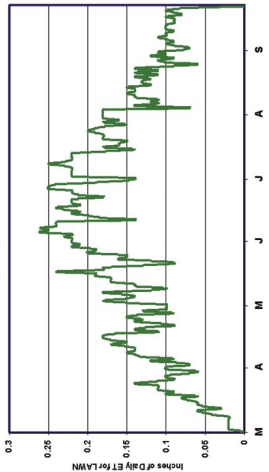


Figure 1. This graph shows how often the watering requirements change based on the weather in Bend for 2004. Today, new smart controllers adjust automatically based on weather station input.

information from regional weather stations to calculate your landscape evapotranspiration (ET) rate, to predict real time plant watering needs. Your smart controller processes this information and automatically adjusts your irrigation run time. In addition, some manufacturer's controllers account for slope factors that may prevent wasteful irrigation runoff for your specific site. Smart controllers continue to adjust automatically throughout the entire irrigation season to use just the amount of water your plants need, no matter the weather.

During a typical growing season you would have to adjust your clock manually over 100 times to be most efficient (see Figure 1). These smart controllers are currently the most efficient way to irrigate. This technology is changing fast. For more information, contact a local irrigation professional or check the Irrigation Association Website for their section on Smart Watering Application Technology.

### Other hints for efficient irrigation:

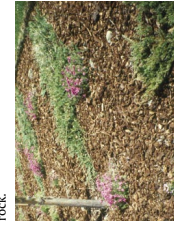
- Remember the water requirements for turf are different than those for other plants.



### Step 6 Mulching

The sixth step requires the use of mulch as a top dressing for all of your trees, shrubs, and flowers. Mulch helps to reduce weeds, minimize evaporation water loss from the soil, cools soil, and prevents soil erosion. What kind of mulch is the best to use? It really depends on your preferences. There are advantages and disadvantages with every choice as mulches are available in many shapes, sizes and colors including bark chips, post, peellings, compost and stone or rock.

Avoid planting trees and other plants within the lawn area; their water requirements are usually different from those of turfgrass; and mowers and string trimmers can damage trees.



### Wood and Organic Mulches

Wood and other organic mulches allow for oxygen to get to the root system more easily than rock or stone mulches. Wood and organic mulches will also return some nutrient

components back to the soil over time as it breaks down. Course compost can also be used as a mulch, but be sure to ask for weed-free certified compost.

### Rock or Stone Mulches

Rock or stone mulches can also be used selectively. Rock mulch will stay in place more effectively, especially in windy areas. Rock mulches also absorb more heat and may scorch the roots or leaves of heat sensitive plants. Like any other mulch, it must be selected to fit its place of use.



### Combinations and Weed Barriers

You can do a combination of mulches by placing wood mulch around the base of the plant and by placing rock or stone in between the plants. The ideal application for a mulch layer is adding between two and five inches on top of the soil. Do not exceed five inches or you risk cutting off the oxygen supply to the plant's root system which can result in root death. Better yet, the addition of a quality landscape fabric covered by mulch in your beds will suppress weeds and minimize evaporation so you end up watering less often. Quality landscape fabric should be strong not stretchy, breathable, and allow water to flow through it.

### Step 6 Mulching

rgrass, and Kentucky bluegrass. If you already have an existing lawn, consider reducing these areas and replacing them with low water use planting beds, natural areas or incorporating handscaping into the area with boulders or pavers. Other alternatives to turf include wildflower areas or low growing perennials.

Avoid planting trees and other plants within the lawn area; their water requirements are usually different from those of turfgrass; and mowers and string trimmers can damage trees.

Different types of grass require different amounts of water, so adjust your irrigation schedule accordingly. Proper site preparation in establishing turf is essential in maintaining a healthy, water efficient lawn. If the site is prepared properly before putting down seed or sod the soil will act as a reservoir for your turf. Properly amended soil will allow the roots from the turf to go deep.

For more information on site preparation read *Practical Lawn Establishment and Renovation* at: [https://esc.orst.edu/agcomwebfile/edmat/EC\\_1550.pdf](https://esc.orst.edu/agcomwebfile/edmat/EC_1550.pdf)

## Step 7

### Maintaining your Xeriscape

All gardens, including Xeriscapes, need routine, seasonal maintenance to preserve the beauty and health of your landscape. Maintenance includes pruning, mowing, watering, weeding, fertilizing and integrated pest management (IPM). In general, Xeriscapes require less maintenance than traditional landscapes, and even less as the Xeriscape matures. A healthy, maintained landscape is also more resistant to drought, heat, freezing, disease, and insects. Below are just some of the tips to help you maintain your Xeriscape. You can find more information on these tips at the websites listed on our resource page.

#### Maintenance Tips for:

**Irrigation System Maintenance** - Many people use Xeriscape principles in order to save water but fail to maintain their irrigation systems and end up using more water. Sprinkler heads can break or become misadjusted. Drip systems can be cut or get moved. Plants and turf can grow over heads or prevent systems from working as originally designed. Winters in Central and Eastern Oregon can also take their toll on irrigation systems and proper spring startup and winter shut-off procedures are vital for keeping your irrigation system as efficient as possible. Irrigation systems that are not properly maintained can waste up to 50% or more water.

**Pruning** - Pruning is often done for shaping, rejuvenation, to eliminate future problems, and for safety issues. In general, pruning of deciduous trees,



ornamental grasses, and perennials is done in early spring. Prune evergreens in late summer or fall.

**Mowing** - Make sure you are mowing at the right height for your type of grass and do not overwater or over-fertilize your turfgrass area. Turf-type tall fescues, Kentucky bluegrass, perennial ryegrass, and fine fescues can all be mowed at a height between 2-3 inches.

**Lawn Care** - Routinely de-thatch and aerate turf to mitigate compaction and remove thatch, this will assist water, nutrients and oxygen in getting to the root zone.

**Watering** - Winter watering is critical in a high desert environment where plant materials tend to desiccate through the winter months. Be sure to water your new plantings every 6-8 weeks when the ground is warm enough to absorb water.

**Weeding** - Eliminate weeds to prevent them from competing with your desirable plants for water and nutrients. Preventing weeds from going to seed is critical. Once a weed seed bank is established, seeds can stay viable for many seasons.

**Fertilization** - Trees, shrubs, and perennials can be fertilized once during the growing season in spring or early summer with a slow release fertilizer. Avoid late summer, early fall feedings. Apply a minimum amount of organic fertilizer to your turf to avoid additional water use and increased mowing as a result of too much nitrogen. Your light green grass will make high maintenance lawns green with envy.

#### Retrofitting Your Existing Landscape

If you already have a developed landscape there are several ways to adapt your landscape to a Xeriscape. You can start by adjusting or upgrading your sprinkler system to a more efficient system. Also take note of

your irrigation schedule and adjust according to weather conditions. You can continue to add low water use plants to your landscape, you can also reduce the turf areas that you do not use, converting them to a hardscape or planting bed.

#### A Note About Hardiness Zones

When you are selecting plant material for your landscape, be sure and choose plants that are adaptable to your area and right for your hardiness zone. You may be wondering, what is a hardiness zone?

The term "hardiness" refers to the ability of a plant to withstand an average minimum temperature.

Often times when we go to purchase plants, the catalog or plant tag will indicate hardiness zone followed by a number. This number is based upon the hardiness zones derived from a map put out by the United States Department of Agriculture (USDA). They prepared a map based on the average annual minimum temperatures recorded throughout North America from 1974-1986. Generally, there are eleven designated zones with one (1) being the hardest (coldest) and eleven (11) being the least hardy.

Each zone has a designated approximate range of average annual minimum temperatures, for example zone 9 is 20° - 30° F). When choosing a plant, you would want to pick a plant that falls within your zone or is smaller in number. There are other climate zones of hardiness maps in existence, but these are not utilized universally as is the USDA hardiness zone map. Hardiness ratings or zones are meant to be used only as a guide, not an absolute for plant selection and survivability. Especially being the case,

your irrigation schedule and adjust according to weather conditions. You can continue to add low water use plants to your landscape, you can also reduce the turf areas that you do not use, converting them to a hardscape or planting bed.

here in Central and Eastern Oregon, where we have several microclimates.

There are numerous factors that contribute to whether or not a plant will survive besides just minimum temperatures. Some of these factors include soil type, rainfall, heat tolerance, and exposure to wind and sun. According to the USDA hardiness zone map, Central Oregon is placed in zone 5 (20° to -10°F). Most other areas in Eastern Oregon are placed in hardiness zones 5 or 6 (-20° to 0°F). However, these placements are really oversimplified given our many microclimates. For example, Bend,

Redmond, and Prineville are placed in hardiness zone 5, however a more accurate placement would be zones 3 to 4 (-40° to -20°F). Remember to think about your own microclimates within your yard. Check with your local extension office or garden center to find out the most accurate hardiness zone for your local area. This information will assist in buying more adaptable plant material for your landscape. See *Central Oregon Climate and How it Relates to Gardening* at: [http://extension.oregonstate.edu/describes/horticulture/documents/COClimac\\_000.pdf](http://extension.oregonstate.edu/describes/horticulture/documents/COClimac_000.pdf) (case sensitive)

## SPECIAL PRECAUTION !

### Landscaping around utilities

#### The Right Plant in the Right Place

















Understand how a plant will grow and change over time is perhaps more important than how it looks when first picked out at the nursery and installed. Before you purchase a particular plant species, take the time to learn about its growth characteristics. The amount of time that you spend in the future maintaining your outside living space, including the vegetation and hardscapes such as patios, driveways and sidewalks. For example, will the plant develop roots that grow near the surface? If so, will the plant's height exceed 30' and be planted near or under overhead power lines? If yes, select a shorter plant species for this site – or move the selected plant to another area of your site. In doing so you will avoid maintenance activities that are harmful to the plant and are an inefficient use of time for the utility companies involved. Selecting species of plants that are well matched both to the planting space and to the site conditions reduces the future maintenance activities needed to maintain healthy plants, beautiful landscapes and safe, efficient utilities.

**Who's Property Is It?** Prior to designing your new landscape, make sure to know whose property you are on. If there are power lines above or land to landscape between the sidewalk and the street, it is part of the public owned right-of-way. It is also wise to determine if there are any local restrictions that would effect how, where or what you plant, build or install. For example, your community may have restrictions on what can be planted within utility easements. Remember, it is easier to change a landscape plan yet to be installed, than to remove plants and other landscape features already in place!

**Call Before You Dig** It is critical that before digging for the installation of any landscape material, especially trees or irrigation systems, that you call for utility lines. A free service known as "one-call" exists for locating utilities. CALL BEFORE YOU DIG! The toll free number is 1-800-332-2344. You need to allow a minimum of two business days for this work to be done.

### Key for symbols

Each plant description will include one or more symbols to assist you in selecting the best plants for your yard. Each symbol is defined below and designates adaptability, plant use, and other notes of interest for that plant.

-  Prefers full sun (6 or more hours)
-  Prefers full sun to part shade
-  Prefers full shade (6 or more hours)
-  Very low water use plant
-  Performs well in dry sites
-  Low water use plant
-  Performs well with minimal supplemental irrigation
-  Moderate water use plant
-  Performs well with supplemental irrigation
-  Attracts butterflies
-  Attracts birds
-  Deer Resistant
-  Fire Resistant
-  Performs well in rock gardens
-  Excellent shrub border or hedge
-  Native to Oregon

ORNAMENTAL TREES

ORNAMENTAL TREES

are usually smaller than shade trees and add variety to the landscape. These trees can provide showy flowers, decorative fruit, attractive fall color, and winter texture. A great choice for smaller areas and single specimen trees.

**Aspen, Quaking**

*Populus tremuloides*  
Light bark and trembling green leaves make this a popular tree. Trees will sucker and produce groves. Ideal for larger areas. Yellow fall color. Susceptible to many diseases and

☀️ 🌧️ 🌨️ 🌞  
Height: 30-40' / Spread: 12-15'  
Hardiness Zone: 1-8

'Erecta' - Swedish aspen has an upright columnar growth habit and does not sucker. Orange-yellow fall color.



Swedish Aspen

**Buckeye, Ohio**

*Ascarinus glabra*  
Large showy flowers in spring followed by the large, flat, winged seeds. Leaves are large, green and turn yellow to red in fall.

☀️ 🌧️ 🌨️ 🌞  
Height: 20-30' / Spread: 15-20'  
Hardiness Zone: 3-7



ORNAMENTAL TREES

**Pear, Gallery**

*Pyrus calleryana* cvs.  
An ornamental pear with dark, glossy green foliage. White flowers in spring followed by a small pear-sized green fruit. Can be multi-stemmed or single stem depending on variety.

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Height: 20-30' / Spread: 15-20'  
Hardiness zone: 4-9

'Arcticocrat' - rounded pyramidal growth habit. 'Charicee' - uniform narrow, pyramidal growth habit.



**Serviceberry**

*Amygdalopsis* species  
A multi-stemmed shrub or tree that bears white flowers in spring followed by edible purplish-black fruit. Excellent fall colors of red-orange.

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Height: 20-25' / Spread: 10-15'  
Hardiness zone: 4-5



**Hawthorn, Russian**

*Crataegus ambigua*  
A very hardy variety displays white flowers, red fruit and finely cut leaves.

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Height: 15-20' / Spread: 10-15'  
Hardiness zone: 4-6



**Hawthorn, Winter King**

*Crataegus viridis* 'Winter King'  
Displays white flowers followed by a bright red fruit. The leaves turn yellow in fall. The stem has thorns but other hawthorns.

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Height: 20-30' / Spread: 10-15'  
Hardiness zone: 5-7



**Lilac, Japanese Tree**

*Syringa reticulata* 'Ivory Silk'  
Bears fragrant, cream-white flowers in early summer. This variety has a compact, oval growth habit.

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Height: 15-20' / Spread: 10-12'  
Hardiness zone: 4-7

(PHOTO NEXT COLUMN)

**Crabapple, Flowering**

*Malus hybrids*  
Many varieties to choose from, these trees have beautiful spring flowers in many colors including rose, pink, red and whites. Green or yellow fall color. Some fruitless varieties available.

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Height: 15-20' / Spread: 15-20'  
Hardiness Zone: 4-8

'Bechtel' - double pink, blooms seldom bears 'Bandyvine' - double rosy-pink blooms. 'Royalty' - red flowers, purplish foliage. 'Spring Snow' - white flowers, seldom bears fruit, to ardrop shaped growth habit.



Bechtel

**Hawthorn, English**

*Crataegus laevigata* 'Paul's Scarlet'  
Rounded, thorny tree with bright red flowers followed by red fruit.

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Height: 15-20' / Spread: 15-20'  
Hardiness Zone: 5-8



**Chokecherry, Amur**

*Prunus maackii*  
Attractive, shiny, coppery-red peeling bark. Clusters of white flowers, followed by purplish-red fruit, yellow fall color.

☀️ 🌧️ 🌨️ 🌞  
Height: 10-25' / Spread: 18-20'  
Hardiness Zone: 3-7



**Chokecherry, Canada Red**

*Prunus virginiana* 'Schubert'  
Compact, rounded tree with red flowers in spring followed by purplish-red fruit which can be used for jams, jellies and wines. Also sold as a large shrub.

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Height: 20-30' / Spread: 15-20'  
Hardiness Zone: 3-8



**Maple, Amur**

*Acer ginnala*  
Small tree or large shrub with irregular shape and finely cut leaves. Can be used in a small area, can be used to create a hedge. A subspecies of tatarian maple.

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Height: 15-20' / Spread: 15-20'  
Hardiness Zone: 2-8



**Maple, Rocky Mountain**

*Acer glabrum*  
Small tree or large shrub with attractive dark green foliage and red twigs. The "helicopter" fruit is reddish in summer. Attractive red fall color.

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Height: 10-15' / Spread: 10-15'  
Hardiness Zone: 3-7





## EVERGREEN TREES & SHRUBS

### SHADE TREES

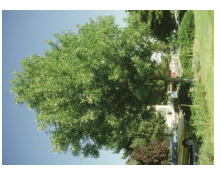
These larger trees provide shade as they mature, cooling your home in summer and can provide excellent fall color in the landscape.

**Ash, Green**  
*Fraxinus pennsylvanica*

Large upright shade tree with rounded growth habit and nice yellow fall color. Good for streets and parks. All varieties are male and fruitless.

Height: 40-60' / Spread: 20-40'  
Hardiness zone: 3-9

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"Marshall's Seedless" – rounded habit with dark green leaves.  
"Patriot" – rounded habit, very cold hardy.  
"Patriot" – upright and narrower than the other varieties.



**Ash, Autumn Purple**  
*Fraxinus americana*

Similar to green ash, dense rounded shade tree with beautiful red fall color. Seedless. Requires more water than green ash.

Height: 40-60' / Spread: 20-40'  
Hardiness zone: 3-9



**Honeylocust, Thornless**  
*Gleditsia triacanthos inermis*

These trees provide a filtered shade environment with their fine leaves. There are many thornless and seedless cultivars available in various sizes and growth habits. Potential for midge-pod gall.

Height: 35-40' / Spread: 30-50'  
Hardiness zone: 3-9

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"Shademaster" – a more dense, larger variety with yellow fall color.  
"Skyline" – growth habit is more pyramidal and upright.  
"Patriot" – this variety has golden yellow leaves on the new growth eventually changing to green.



**Linden, Littleleaf Greenspire**  
*Tilia cordata*

A very attractive tree with a distinct pyramidal growth habit. Dark, glossy green leaves, smaller than those on American Linden. Yellow fall color.

Height: 30-40' / Spread: 20-30'  
Hardiness zone: 3-7



**Maple, Autumn Blaze**  
*Acer freemanii*

A tree that is cross between red maple and silver maple. Excellent red fall color.

Height: 30-50' / Spread: 20-30'  
Hardiness zone: 3-8



**Maple, Norway**  
*Acer platanoides*

Large, attractive, stately tree with dense foliage. One of the harder types of maple. In many cultivars and hybrids with various shapes and colors and many with yellow, orange, green, maroon, or variegated. Usually yellow fall color.

Height: 40-60' / Spread: 30-50'  
Hardiness zone: 3-7

☀️ 🌿 🌧️ 🐛  
"Crimson King" – maroon leaf color during the Emerald Queen" – fast growing, dark, glossy green leaves, changing to yellow in the fall.



**Oak, Bur or Mossycup**  
*Quercus macrocarpa*

A deciduous tree with irregular growth habit and interesting moss-like covered acorns. Dark green leaves. Very adaptable in tough environments and long-lived.

Height: 50-70' / Spread: 40-60'  
Hardiness zone: 3-8



### EVERGREEN TREES & SHRUBS

Evergreens will keep their needles throughout the year providing winter color in your landscape. They also provide for an excellent windbreak if planted on western or northern exposures.

**Juniper**  
*Juniperus* species

A wide range of sizes, shapes, and colors. These fast growing, cold hardy plants can be utilized for windbreaks, groundcovers, or hedges. There are many cultivars available. The foliage on juniper comes in shades of silver, blue, green, and gold. Fruit is typically round and blue. Most species of juniper are drought tolerant, however winter watering is advised.

Height: 3-12' / Spread: 3-12'  
Hardiness zone: 3-9

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**Juniper, Chinese**  
*Juniperus chinensis*

A spreading or upright type of juniper available in all shades of blue, green, blue, and gold.

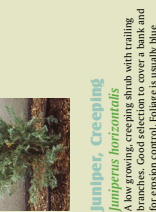
"Old Gold" – golden foliage all season. Height 3-4' / Spread 4-6'  
"Pfitzeriana" – green to gray foliage, fast growing. Height 8-12' / Spread 10-12'

(PHOTO NEXT COLUMN)

**Juniper, Creeping**  
*Juniperus horizontalis*

A low growing, creeping shrub with trailing branches. Good selection to cover a bank and for erosion control. Foliage is usually blue during the winter months.

Height: 30-70" / Spread: 40-60"



**Juniper, Blue**  
*Juniperus horizontalis*

"Prince of Wales" – green foliage, purplish in winter.  
"Wilton's Blue" – blue foliage.  
"Wilton's Blue" – blue foliage.  
Height: 4-6' / Spread: 5-6'



**Juniper, Savin**  
*Juniperus sabina*

A spreading type of juniper with peeling bark. The foliage is typically all scale type needles giving these junipers a softer look.

Height: 12-15' / Spread: 12-15'



**Pine, Austrian**  
*Pinus nigra*

Evergreen with a dense, oval growth habit, similar to Ponderosa Pine when young. Needles are dark green in color, from 3-5" long.

Height: 40-50' / Spread: 15-20'  
Hardiness zone: 4-7



**Pine, Bristlecone**  
*Pinus aristata*

Evergreen with an irregular, dense growth habit. Very slow growing, the branches produce small, round cones. One of the smaller pines for a landscape.

Height: 10-30' / Spread: 15-20'  
Hardiness zone: 4-7



## EVERGREEN TREES & SHRUBS

### Pine, Limber

*Pinus flexilis*  
Very flexible branches on this evergreen, hence the name. Needles in groups of five are bluish-green. Attractive silver bark and large cones.

Height: 30-40' / Spread: 12-15'  
Hardiness zone 4-7

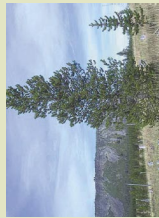
"Vanderwolf's Pyramid" – an attractive, upright form.



### Pine, Lodgepole

*Pinus contorta latifolia*  
Needles come in groups of two on this evergreen. Open, tall, narrow growth habit. Prefers additional moisture.

Height: 20-70' / Spread: 20-30'  
Hardiness zone 4-7



### Pine, Mugo

*Pinus mugo*  
Slow-growing tree with variable height and sizes. Green needles come out in groups of two. Several dwarf cultivars available.

Height: 2-20' / Spread: 3-20'  
Hardiness zone 2-7



### Colorado Blue Spruce

*Picea pungens var. glauca*  
Evergreen with strong pyramidal growth. Several cultivars with various colors and growth habits, from peonibrous to round. Several dwarf cultivars also available.

Height: 50-70' / Spread: 30-35'  
Hardiness zone 2-8

"Blue Atlas" – more dense growth habit. Height: 20-40'  
"Glauca globosa" – a round, compact bush. Height: 3-5' / Spread: 5-6'  
"Floppah" – extremely blue-silver variety with a dense, irregular growth habit.



### Broadleaf Evergreens

This group of plants will retain their leaves throughout the winter months. Their foliage may take on a winter color and then green up again in spring. Winter watering recommended.

### Grape Holly, Oregon

*Maihonia aquifolium*  
Name upright evergreen with shiny dark green leaves. Yellow flowers in the fall followed by bluish-black berries.

Height: 5-6' / Spread: 3-6'  
Hardiness zone 3-9



### Holly, Creeping

*Maihonia repens*  
Spreading, prostrate, but smaller in size. Spreading green leaves turning purplish-red in fall. Yellow flowers followed by bluish-black berries.

Height: 12-18" / Spread: 2'  
Hardiness zone 3-8



## BROADLEAF EVERGREENS

### Mountain Mahogany, Cur-leaf

*Cercocarpus ledifolius*  
Bright, coarse-textured shrub with small, dark green, lanceolate leaves. In winter, the stems are interesting with a silky, corkscreeved shaped tail.

Height: 10-15' / Spread: 10-15'  
Hardiness zone 4-9



### Yucca

*Yucca* species  
Rock plants with sword-like leaves in various shades of green, gray-green, or variegated green and yellow. Produce stalks of white flowers during the growing season.

Height: 2-4' / Spread: 2-4'  
Hardiness zone 4-10



### Kinnikinnick

*Arctostaphylos uva-ursi*  
A variety of shrubs with glossy green leaves, a pinkish-white flower in spring, followed by a red berry in the fall. A reddish fall color.

Height: 4-8' / Spread: 10-15'  
Hardiness zone 2-6



### Manzanita, Greenleaf

*Arctostaphylos patula*  
Dwarf, somewhat spreading shrub with flattened, shiny, bright green leaves. Very distinct smooth reddish-brown bark which provides interesting winter texture. Pinkish flowers in spring. May be difficult to transplant.

Height: 4-6' / Spread: 4-6'  
Hardiness zone 4-9



## FRUITS & BERRIES

## VINES

**VINES**  
Vines can create privacy in your landscape covering a fence, at the same time providing beautiful flowers and foliage.

**Clematis species**  
One of the most ornamental vines available. Known for its beautiful flowers, both large and small in a rainbow of colors. Several varieties to choose from for the high desert. Some species are more hardy than others. Some species are more drought tolerant than others. Some species will need support. Requires full sun on the top growth and cool, shaded roots. Planting in spring to aid in establishment is recommended. Prune down to one foot the first couple of years. Can grow several feet in one season.

**Hardiness zone 4-9**  
\*Helen's\* – large, dark purple flowers.  
\*Nelly Moser\* – large, light pink flowers with a dark pink stripe.  
\*Ranmar\* – very large, pale blue flowers.

**Yellow lantern clematis**  
*Clematis integrifolia*  
Produces small lantern-shaped golden flowers in summer followed by wispy seeds, more drought tolerant than the large flowering clematis.

**Trumpet Vine**  
*Campyloclis*  
A shrub-like vine with green foliage. Produces beautiful orange, tubular, trumpet-shaped flowers in summer. May be difficult to establish. Very fast growing reaching a maximum of 30-50 feet during its life span.

**Virginia Creeper**  
*Viticocis quinquefolia*  
Strong, vigorous vine that will cover walls, trees, and other structures. Produces leaves which turn brilliant fall colors of red, orange, and yellow. Purple berry fruit. Very fast growth rate reaching a maximum of 40-50 feet during its life span.

**Silver Lace Vine**  
*Polygonum albertii*  
A fast growing vine with green heart-shaped leaves. Produces big clusters of small, white flowers. Can be used as a screen for metal fences. No known disease or insect problems. Can potentially grow 8-12 feet per growing season. Adaptable to most environments. Can be cut back to control growth.

## FRUITS AND BERRIES

**Apple**  
*Malus spp.*  
Fruit trees and berries are the most reliable for fruit and hardiest of fruit trees for the high desert. There are several hybrids available. Be sure and have the required pollinator for your tree.

**Raspberry**  
*Rubus cvs.*  
Thorny, multi-stem shrubs bearing edible red, black or yellow fruits used fresh or in jams or jellies. There are both summer-bearing and everbearing cultivars available.

**Strawberry**  
*Fragaria virginiana cvs.*  
A perennial ground cover that produces edible sweet berries used fresh or in jams or jellies. There are June-bearing and day-neutral (bears fruit several months) available.

**Currant and Gooseberries**  
*Ribes spp.*  
Currants or gooseberries are attractive shrubs that provide edible berries used in making jams or jellies. Typically very drought tolerant, but require additional irrigation if grown for fruit.

**Small Shrubs**  
Small shrubs are typically between one and five feet in height.

**Coralberry, Indian Currant**  
*Symphoricarpos orbiculatus*  
A semi-deciduous evergreen. Dark shiny green leaves changing to burgundy in the fall. Interesting mounding type of growth habit. Edible sweet berries used fresh or in jams or jellies. Fruit persists into winter. East side exposure is best.

**Cotoneaster, Cranberry**  
*Cotoneaster apiculatus*  
A semi-deciduous evergreen. Dark shiny green leaves changing to burgundy in the fall. Interesting mounding type of growth habit. Edible sweet berries used fresh or in jams or jellies. Fruit persists into winter. East side exposure is best.

## SHRUBS

**Pear**  
*Pyrus corymbosa*  
Ornamental trees that have glossy green leaves and attractive white spring blooms. Pear trees prefer well-drained soils. Some varieties are self-fertile and some require pollinators.

**Plum**  
*Prunus cvs.*  
Ornamental trees that produce sweet to sour plums depending on variety. Some varieties are self-fertile but yield better fruit with a pollinator, others require a pollinator.

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# SHRUBS

## Currant Alpine

*Ribes alpinum*  
 Small shrub used in mass plantings to create a shrub border. Dense with bright green foliage and bland yellow fall color.

☀️ 🌿 🐇  
 Height 3.5' / Spread 4-5'  
 Hardiness zone 2-7



## Fernbush

*Chamaenerion nuttallianum*  
 Semi-evergreen shrub with four-angled, fernlike green leaves. Produces white flowers in summer. Irregular, unattractive looking growth habit.

☀️ 🌿 🐇 🇺🇸 🇨🇦  
 Height 3-6' / Spread 3-6'  
 Hardiness zone 4-10



## Potentilla or Cinquefoil

*Potentilla fruticosa*  
 Hardy bushy shrub with small grayish-green leaves. Produces flowers all summer long in shades of yellow, gold, white, pink, red, and orange. Many varieties available in different colors. Tolerant of frost. Prone to root rot in wet with additional moisture.

☀️ 🌿 🐇  
 Height 2.4' / Spread 2.4'  
 Hardiness zone 2-7

'Abbotwood' - white flowers.  
 'Gold Drop' - bright yellow flowers.  
 'Red Ace' - red flowers.



## Rabbitbrush, Gray

*Chrysothamnus nauseosus*  
 Late blooming, irregular shaped shrub. Produces yellow flowers which attract bees and butterflies. Bluish-green in early spring. Can be pruned each season in spring. In winter, the shrub turns to a dense, gray rabbitbrush but has more compact green leaves.

☀️ 🌿 🐇 🇺🇸 🇨🇦  
 Height 2.6' / Spread 2.4'  
 Hardiness zone 4-6



## Sage, Russian

*Phacelia ruficarpa*  
 Fine textured, rounded shrub that performs more like a perennial. Silvery gray, finely dissected leaves with a sage-like aroma. May die back in winter and can be cut back in early spring. In winter, the shrub turns into a bluish shrub. Flowers in late summer. Do not overwater.

☀️ 🌿 🐇  
 Height 1.5' / Spread 3-4'  
 Hardiness zone 4-8



## Spiraea, Blue Mist or Bluebeard

*Caryopteris x clandonensis*  
 Dense, rounded shrub with grayish-green leaves. Produces lavender flowers in late summer. In winter, the shrub turns to a color for late season. Attracts bees. Can die back in winter, then be cut back like a perennial in early spring.

☀️ 🌿 🐇  
 Height 3-5' / Spread 3-5'  
 Hardiness zone 5-10

'Dark Knight' - deep blue flowers with silvery gray foliage.



## Spiraea

*Spiraea speciosa*  
 Flowering shrub which produces bowl-shaped flowers in shades of white or pink. Leaves are generally green but can be tinted in shades of red or yellow. Many varieties available.

☀️ 🌿  
 Height 2-4' / Spread 2-4'  
 Hardiness zone 4-8

'Froehlii' - deep pink flowers, green foliage, red young leaves.  
 'Goldflame' - pink flowers with bright lime-green foliage.



## Sumac, Gro-Grow

*Rhus typhina*  
 Mourning shrub with dark green leaves. Fall color is orange to red to purple. Tiny yellow flowers changing to fuzzy red fruit. Prefers additional moisture.

☀️ 🌿  
 Height 2.5' / Spread 5.7'  
 Hardiness zone 4-9



## MEDIUM SHRUBS

Medium shrubs are typically between three and six feet in height.

## Apache Plume

*Follicia paradoxa*  
 Excellent shrub for a hot, dry environment. Tiny leaves give this shrub a fine-textured appearance with an open mounding habit. Produces small, white flowers in late summer followed by an interesting wiry red seed head. Does not like to be overwatered.

☀️ 🌿  
 Height 3.5' / Spread 3-5'  
 Hardiness zone 3-10



## Barberry

*Berberis speciosa*  
 Common shrub or medium sized shrub with a dense, rounded growth habit. Branches have spines and small leaves in various foliage colors. Produces small yellow flowers followed by bright red berries. Leaves turn into winter. Prefers additional moisture.

☀️ 🌿 🐇  
 Height 4-6' / Spread 4-6'  
 Hardiness zone 4-8

'Crimson Pygmy' - dwarf variety with purplish-red foliage. Height 1.2' Spread 2.3'  
 Minor barberry - green leaf variety. Height 3.5' Spread 4.5'  
 'Rose Glow' - foliage variegata with purplish-red splashes.



## Bitterbrush

*Purshia tridentata*  
 A native semi-evergreen shrub with grayish-green leaves. Produces small flowers in spring followed by reddish berries. Very drought tolerant.

☀️ 🌿  
 Height 5-8' / Spread 4-6'  
 Hardiness zone 4-9



# SHRUBS

## Burning Bush, Dwarf

*Elaeagnus 'Compacta'*  
 Rounded shrub with red, waxy, waxy bark. Excellent scarlet fall color. Creates a nice shrub border. Does best with east side exposure.

Height: 4-6' / Spread: 4-6'  
 Hardiness zone: 4-8



## Currant, Golden

*Ribes aureum*  
 A native shrub with pale green leaves. Produces clusters of small, edible purple fruits. Fall color can be red to yellow.

Height: 4-6' / Spread: 4-6'  
 Hardiness zone: 4-8



## Plum, Cistena or Purpleleaf

*Prunella 'Cistena'*  
 Fast growing, medium sized shrub with purple foliage during the summer. Produces pinkish white flowers in spring. Will send up suckers from the ground.

Height: 4-6' / Spread: 4-6'  
 Hardiness zone: 4-8



## Rose, Hardy Shrub

Rose hips  
 A group of roses that are low maintenance compared to regular roses. Usually have green foliage, masses of flowers in various colors, and an arching type of growth habit. May bloom in late fall or early winter. Some varieties display excellent fall color and ornamental rose hips in late fall. Below are just a few of the many shrub roses that will work in a Xeriscape.

Height: 2-6' / Spread: 2-6'  
 Hardiness zone: 2-9

Meridau series - this series is known for its variety of colors and blooms in shades of red, pink, white and coral.

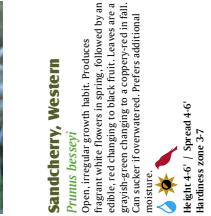
\*William Baffin - hardy climbing rose with double-pink blooms, slightly fragrant.



## Sandcherry, Western

*Prunus besseyi*  
 Open, irregular growth habit. Produces clusters of small, round, black fruit. Leaves are grayish-green changing to a copper-red in fall. Can sucker if overwatered. Prefers additional moisture.

Height: 4-6' / Spread: 4-6'  
 Hardiness zone: 3-7



## Spirea, Vanhouttei

*Spiraea vanhouttei*  
 A large, spreading shrub with clusters of white flowers which cover the entire branch in spring. Very ornamental with a vase-like growth habit and arching branches. Green leaves in summer changing to purple in fall. Can be used as a hedge.

Height: 4-8' / Spread: 4-8'  
 Hardiness zone: 3-7



## Viburnum, Compact

*Viburnum trilobum 'Compactum'*  
 An excellent compact, rounded shrub. Green, glossy leaves with a black fruit. Leaves are red in fall. Produces white flowers followed by minimal red fruit. East side exposure is best. Compact European Camberry bush is very similar.

Height: 4-6' / Spread: 4-6'  
 Hardiness zone: 2-7



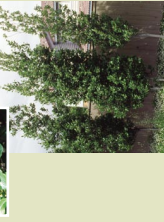
## LARGE SHRUBS

Large shrubs are generally six feet or taller.

### Buckthorn, Columnat or Tallhedge

*Rhamnus frangula 'Columnaris'*  
 A tall, narrow shrub for a hedge or shrub border. Glossy green leaves.

Height: 8-12' / Spread: 3-4'  
 Hardiness zone: 2-7



### Buckthorn, Fernleaf

*Rhamnus frangula 'Asplenifolia'*  
 A fine-leaved buckthorn provides a feathery textured shrub, dark green, long narrow leaves.

Height: 10-12' / Spread: 6-10'  
 Hardiness zone: 2-7



## Forsythia

*Forsythia*  
 Known for its abundance of yellow flowers down the entire branch in early spring. Large shrub with a vase-shaped growth habit which can be used as a shrub border. Flowers may get nipped with spring frost.

Height: 6-8' / Spread: 6-8'  
 Hardiness Zone: 4-8



## Honeysuckle, Arnold Red

*Lonicera tatarica 'Arnold Red'*  
 A large, bushy shrub with beautiful dark red flowers in summer followed by a red fruit set. Prefers additional moisture.

Height: 8-10' / Spread: 8-10'  
 Hardiness zone: 3-8



**SHRUBS** | **ORNAMENTAL GRASSES**

**Lilac, Common**

*Syringa vulgaris*  
 Shrubby plants for their beautiful, fragrant blooms in spring. Available in many varieties with flowers in shades of white, lavender, purple, and pink. Can be used for a hedge.

☀️ 🌿 🐇  
 Height: 8-12' / Spread: 6-12'  
 Hardiness zone: 3-7

'Charles Joly' – double, magenta blooms.  
 'President Lincoln' – single, blue blooms.  
 'Sensation' – single, purple flowers with white edges.



Sensation

**Peashrub, Siberian**

*Cytisus sibiricus*  
 Cool-tolerant, spiny upright shrub or small tree. Produces beautiful yellow pea-like flowers in summer. Can be used to create a hedge.

☀️ 🌿 🐇  
 Height: 10-15' / Spread: 6-8'  
 Hardiness zone: 2-8



**Privet, European**

*Ligustrum vulgare*  
 Tall semi-evergreen shrub with glossy green leaves. Excellent choice for a sheared hedge, produces white flowers followed by black fruit.

☀️ 🌿 🐇  
 Height: 10-12' / Spread: 10-12'  
 Hardiness zone: 4-7



**Ninebark**

*Physocarpus opulifolius*  
 Shrubby type plant with dense, green foliage. Available in many varieties with flowers in shades of white, pink, and purple. Prefers additional moisture.

☀️ 🌿 🐇  
 Height: 6' / Spread: 6-8'  
 Hardiness zone: 3-7

'Monto' (Diablo®) – dark, purple foliage.  
 'Dart's Gold' – gold summer foliage.



Dart's Gold

**Sadebrush**

*Adiantum pedunculatum*  
 Woody based shrub with soft, aromatic, silvery-grey foliage. White to yellowish feathery flowers in spring. Can be pruned to be kept tidy.

☀️ 🌿 🐇  
 Height: 6-8' / Spread: 6-8'  
 Hardiness zone: 3-9



**Serviceberry, Saskatoon**

*Amelanchier alnifolia*  
 An upright, less dense, native shrub with green leaves. White flowers in spring followed by and edible bluish-purple berries good for jams or jellies. Excellent fall color of yellows, orange and red.

☀️ 🌿 🐇  
 Height: 8-12' / Spread: 15-20'  
 Hardiness zone: 4-5



**Sumac, Staghorn**

*Rhus typhina*  
 Similar to sumac but branches are covered in fine hairs to produce a velvety touch. Will sucker to produce a grove. Excellent fall colors of red, yellow, and orange.

☀️ 🌿 🐇  
 Height: 8-15' / Spread: 10-15'  
 Hardiness zone: 3-8



**Viburnum, Nannyberry**

*Viburnum lentago*  
 Large ornamental shrub with glossy green leaves. Produces large clusters of white flowers in late spring followed by fruit that emerges green and changes from red to purple to black form. Excellent fall color in red and purple.

☀️ 🌿 🐇  
 Height: 15-18' / Spread: 6-10'  
 Hardiness zone: 2-8



**Viburnum, Wayfaring Tree**

*Viburnum cassinii*  
 Large ornamental shrub with fuzzy, leathery green leaves. Used as a hedge or specimen plant. Produces large clusters of white flowers in late spring followed by fruit that begins to ripen in late summer. Excellent fall color in the season. Excellent purplish red fall color.

☀️ 🌿 🐇  
 Height: 10-15' / Spread: 10-15'  
 Hardiness zone: 4-8



'Mohican' – a more compact, hardy variety.  
 Height: 6-8' / Spread: 6-9'



Avena Grass

**Feather Reed Grass, Karl Foerster**

*Calamagrostis acutiflora*  
 A new growing ornamental grass. Used as a hedge or specimen plant. Green blades with a feathery, purplish plume blooming in summer. The flower changes to a tan seed head in late summer. Provides excellent winter interest. Excellent fall color in the ground in early spring. Sterile and will not reseed. Prefers additional moisture.

☀️ 🌿 🐇  
 Height: 3-6' / Spread: 1-2'  
 Hardiness zone: 4-10



**ORNAMENTAL GRASSES**

Increasingly more popular, ornamental grasses can be used effectively as specimen plants, to add texture, create movement, and provide winter interest to any landscape. Grasses can be kept up through the winter months and cut back down to the ground in early spring.

**Avena Grass, Blue or Blue Oat Grass**

*Helictotrichon sempervirens*  
 Dense, rounded clump grass. Bluish green blades that become graceful, arching with maturity. Produces brown oat-like seed heads. Overwatering effects leaf color.

☀️ 🌿 🐇  
 Height: 2-4' / Spread: 2-3'  
 Hardiness zone: 4-9

(PHOTO: NEXEY COLUMN)



## ORNAMENTAL GRASSES

**Fescue, Blue**  
*Festuca ovina glauca*  
 An arching, rounded ornamental grass. Blue blades are a nice contrast in the landscape. Produces a light tan flower in summer. Can provide winter texture.  
 Height: 10-12" / Spread: 10-12"  
 Hardiness zone 4-9  
 \*'Elijah's Blue' a compact, very blue variety



**Fountain Grass**  
*Pennisetum alopecuroides*  
 An arching, rounded ornamental grass. Produces a light tan flower in summer. Also available in some annual varieties.  
 Height: 2-3' / Spread: 2-3'  
 Hardiness zone 4-9  
 \*'Lambert' - dwarf, hardy variety. Height: 1-2' / Spread: 1-1.5'



**Indian Grass**  
*Sorghastrum nutans*  
 Upright clump forming grass with airy seed heads. Great for a dry, rocky location. Produces airy purple flowers.  
 Height: 3-6' / Spread: 1-2'  
 Hardiness zone 4-9  
 Photo Not Shown

**Indian Ricegrass**  
*Orzopsis hymenoides*  
 Upright clump forming grass with airy seed heads. Great for a dry, rocky location.  
 Height: 1-2' / Spread: 2-3'  
 Hardiness zone 3-7



**Miscanthus Grass or Maiden Hair Grass**  
*Miscanthus sinensis*  
 A clump forming grass of ornamental habit. Green to dark green blades. Produces airy plumes of white to russet in late summer depending on variety.  
 Height: 5-8' / Spread: 3-5'  
 Hardiness zone 4-7  
 \*'Gracillime' - more drought tolerant variety. \*'Morning Light' - bronze plumes.



**Switch Grass, Heavy Metal**  
*Panicum virgatum*  
 A clump forming grass with blue blades of grass changing to yellow in fall. Produces airy purple flowers.  
 Height: 3-4' / Spread: 3-4'  
 Hardiness zone 4-9  
 Photo Not Shown

**GROUNDCOVERS**  
 Ground covers are low growing perennials which often provide excellent coverage in banks, aid in erosion control, provide interesting foliage and beautiful flowers. The plants listed in this section are generally 12" or smaller.

**Candytuft**  
*Iberis sempervirens*  
 Spreading, mounding growth habit with dark flowers. Produces a profusion of white flowers in early spring.  
 Height: 6-12" / Spread: 10-24"  
 Bloom time: May-June



**Dianthus, Garden Carnation or Pink**  
*Dianthus* species  
 A large group of succulent plants in many shapes and sizes, often covered with spines. Winter hardy cactus.  
 Height: 3-48" / Spread: 3-48"  
 Flower: purple, pink, red, yellow, white  
 Bloom time: May-July



**Hardy Cactus**  
*Cactaceae* family  
 A large group of succulent plants in many shapes and sizes, often covered with spines. Winter hardy cactus.  
 Height: 3-48" / Spread: 3-48"  
 Flower: purple, pink, red, yellow, white  
 Bloom time: May-July



**Hens and Chicks**  
*Saxifraga* species  
 A unique groundcover with green succulent rosette shaped foliage. The parent plant produces flowers and smaller plants or "chicks", excellent in rock walls.  
 Height: 2-6" / Spread: 6-10"  
 Flower: pink, star-shaped rise up on a stalk from the "chick"  
 Bloom time: June-August



**Iceplant, Purple**  
*Delosperma cooperi*  
 Groundcover with succulent green foliage that changes to purplish red in winter. Does not tolerate foot traffic.  
 Height: 1-4" / Spread: 24-30"  
 Flower: purple, daisy-like  
 Bloom time: June



**Iceplant, Yellow**  
*Delosperma elaeagnifolium*  
 Very hardy groundcover with succulent green foliage that changes to reddish bronze in winter. Not suitable for areas with snow cover. More cold-hardy than purple iceplant.  
 Height: 1-3" / Spread: 24-30"  
 Flower: yellow, daisy-like  
 Bloom time: June



**Mount Atlas Daisy or Mat Daisy**  
*Atocytus depressus*  
 Feathery, silvery-green foliage. Will self-seed and fill in an area.  
 Height: 1-2" / Spread: 10-12"  
 Flower: small white, daisy-like with crimson on the underside of the petals  
 Bloom time: May-June



## GROUNDCOVERS

**GROUNDCOVERS**

**Penstemon, Pineleaf**  
*Penstemon purifolius*  
 Bright green, pine-needle-like foliage. Long blooming (6-8 weeks) perennial.  
 Height: 6-12" / Spread: 15-24"  
 Bloom time: July-September



**Puppy Mallow**  
*Callitriche involucrata*  
 Fine, green leaved foliage, with trailing stems blooms for several months.  
 Height: 6-8" / Spread: 2-3"  
 Flower: magenta, cup-like flowers  
 Bloom time: June-August



**Pussytoes or Cat's Ears**  
*Achillea millefolium*  
 A mat-forming perennial with silvery-white, hairy foliage. Works well in rock walls and between pavers.  
 Height: 2-12" / Spread: 8-10"  
 Flower: pink or white  
 Bloom time: May-July



**Sea Thrift**  
*Aster in marginifolius*  
 Clump forming perennial with grass like foliage. Flowers rise up above the mound with pink or white pom-pom type flowers.  
 Height: 6-10" / Spread: 8-12"  
 Flower: bright pink, white  
 Bloom time: May-June



**Speedwell**  
*Veronica species*  
 Low growing groundcover with glossy green leaves or fuzzy leaves. Very showy in fall bloom.  
 Height: 1-6" / Spread: 12-18"  
 Flower: blue, pink or white  
 Bloom time: May-June



**Petiwinkle**  
*Viola major variegata*  
 Popular groundcover with glossy green or variegated leaves. Also used in hanging baskets as a trailing plant.  
 Height: 8-24" / Spread: 2-4"  
 Flower: purplish-blue or white  
 Bloom time: May-June



**Primrose, Mexican Evening**  
*Oenothera biennis* - 'Siskiyou'  
 Large blooms during the summer, work well in hot dry areas. Does not tolerate excessive winter moisture.  
 Height: 6-8" / Spread: 18-24"  
 Flower: large, 2" pink, cup-like blossom  
 Bloom time: July-September



**Rock Cress**  
*Albreteria deltoidea*  
 A mat-forming perennial with grayish green foliage. Attractive masses of flowers in spring.  
 Height: 2-8" / Spread: 10-15"  
 Flower: purple, pink  
 Bloom time: May-June



**Snow-in-Summer**  
*Cerastium tomentosum*  
 Fast growing, covers a large area quickly, woolly foliage.  
 Provides a nice contrast with silvery gray, woolly foliage.  
 Height: 6-12" / Spread: 2-3"  
 Flower: white  
 Bloom time: June-July



**Stonecrop**  
*Sedum species*  
 Groundcover with succulent foliage in shades of green through bright, resistant varieties. Great for rock gardens.  
 Height: 2-12" / Spread: 6-24"  
 Flower: pinkish-red  
 Bloom time: May-September



**Phlox, Creeping or Moss**  
*Phlox subulata*  
 A very popular spring bloomer. Linear, green leaves form a low growing mat.  
 Height: 4-6" / Spread: 18-24"  
 Flower: white, blue, pink, striped  
 Bloom time: April-June



**Thyme, Woolly**  
*Thymus pseudolanuginosus*  
 Very low growing, mat-forming ground cover. Sage-green, woolly leaves which change to a purplish color in winter. Tolerates light foot traffic. Used between flagstones, pavers, and in rock walls.  
 Height: 1-1" / Spread: 12-18"  
 Flower: pinkish-purple  
 Bloom time: July-July



**Sun Rose**  
*Helianthemum species*  
 This plant has a mound-like growth habit with gray-green foliage. It prefers dry, more alkaline soils.  
 Height: 8-12" / Spread: 12-16"  
 Flower: red, pink, yellow, orange, multi  
 Bloom time: June-August



**Thyme species**  
 Low growing groundcover with fragrant leaves in shades of light to dark green, yellow or purple. Tolerates light to medium foot traffic. Work well between pavers and in rock walls.  
 Height: 1-4" / Spread: 6-18"  
 Flower: purple  
 Bloom time: May-August



(PHOTO NEXT COLUMN)







# PERENNIALS

## PERENNIALS

Perennials survive two or more years in your landscape, often dying back in the winter, only to emerge again in spring. They provide a variety of colors, textures, shapes and sizes. There are literally hundreds of perennials that are low water use and work well in a xeriscape. Listed below is just a sampling of these plants.

### Artemesia or Wormwood

*Artemisia* species  
Perennial ground cover for its interesting texture, attractive foliage and ability to fill in a border. Leaves in shades of green, grayish-green, or silver. Leaf textures are fine, lacy, or feathery depending on variety.





     
Height: 2-3' / Spread: 2-3'+  
Flower: white or green, small and insignificant  
Bloom time: July-September

\*Silvermound – soft, silky silvery-green leaves.  
\*Powis Castle – feathery silver leaves.



### Balloon Flower

*Platycodon grandiflorus*  
Clump forming perennial with bluish green leaves. Unique balloon shaped buds opening into a bell shaped flower.

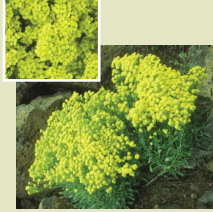
     
Height: 18-24" / Spread: 12-18"  
Flower: deep blue, white or pink  
Bloom time: June-August



### Basket-of-Gold





*Aureinia anatifolia*  
Green grass foliage. Provide spring color with blooms in shades of gold to light yellow. Pruning is suggested after flowering to maintain shape. Excellent in rock gardens or in mass.

     
Height: 8-18" / Spread: 6-12"  
Flower: gold to yellow, tiny flowers in clusters  
Bloom time: April-May



### Bellflower

*Campanula* species  
Group of perennials in many shapes and sizes. Provide color in color. Adaptable to many environments.

     
Height: 6-8' / Spread: 8-18"  
Flower: blue, purple, or white blooms, bell-shaped or in clusters  
Bloom time: June-September



### Black-eyed Susan





*Rudbeckia hirta*  
Lance-oblance perennials that look excellent in mass. Bright golden daisy-like flowers with black-yellow centers. Good as a cut or dried flower.

     
Height: 1-4' / Spread: 1-2'  
Flower: golden yellow, orange with a black, brown, green, or yellow center.  
Bloom time: August-September



### Blanket Flower

*Gaillardia* varieties  
Group of perennials with daisy-like flowers in various colors. Very drought tolerant. May be short-lived. Fuzzy, round seed head follows flowering. Keep deadheaded for continuous bloom. Long blooming perennial.

     
Height: 8-26" / Spread: 12-24"  
Flower: red petals tipped in gold, all gold, or burgundy with reddish-brown centers  
Bloom time: June-September



### Columbine

*Aquilegia* species  
Many perennial varieties. A dainty perennial with a unique shaped flower in multi-colored blooms. Foliage is grayish-green with shamrock-like foliage. Deadhead to encourage drought tolerance. Short-lived but will reseed.

     
Height: 10-36" / Spread: 10-12"  
Flower: pink, white, yellow, red, blue, orange, double blooms  
Bloom time: May-July



### Coneflower





*Echinacea purpurea*  
A perennial herb with large daisy-like flowers in various colors. Late blooming. Makes a good cut or dried flower.

     
Height: 2-3' / Spread: 1-5-2'  
Flower: purple, pinkish, or white  
Bloom time: July-September



### Coreopsis




*Coreopsis* species  
Attractive daisy-like or maroon foliage with scalloped edges. Flower stalks rise up above the foliage and produce delicate blooms. Performs best in light shade.

     
Height: 12-20" / Spread: 12-15"  
Flower: red, white, or pink  
Bloom time: June-September



### Coreopsis or Tickseed

*Coreopsis* species  
Either a short-lived or long-lived perennial depending upon variety. Produce single and double flowers in many colors.  
Green foliage and wiry stems.

     
Height: 10-24" / Spread: 12-18"  
Flower: golden yellow, light yellow, or pink  
Bloom time: July-September

\*Moonbeam – light yellow flowers, mound-forming perennial.  
\*Zagreb – light yellow flowers



### Cranesbill





*Geranium* varieties  
Known as the perennial geranium. Mounding type of growth habit with green foliage.

     
Height: 12" / Spread: 12"  
Flower: red, white, or blue  
Bloom time: June-July



### Daisy, Painted

*Tanacetum coccineum*  
Beautiful flowers arise from green, fernlike foliage. Work well in a perennial border.

     
Height: 18-30" / Spread: 14-18"  
Flower: daisy-like with deep pink, pink, red, or white petals and yellow centers  
Bloom time: June-August



**PERENNIALS**

**Daisy, Shasta**

*Leucanthemum superbum*  
Old-fashioned perennial with green foliage in various heights.  
Height: 2'-4' / Spread: 12-24"  
Flower: white, yellow, pink, red, mixed colors  
Bloom time: June-September  
\*'Aunt' - produces fringed flowerheads  
\*'Miss Miller' - grows to 12"  
\*'Snow Lady' - flat, growing to 16"



**Daylily**

*Hemerocallis* species  
Very popular perennial that works well in a border or in mass plantings. Long, wide type of growth habit. Large flowers bloom for only one day, die and are replaced by new blooms the following day. Many flower colors available. Better the presentation with additional foliage.  
Height: 1-4' / Spread: 1-3'  
Flower: white, yellow, pink, red, gold, mixed colors  
Bloom time: July-August  
\*'Sells de Oro' - gold flowers, one of the longest blooming daylilies.



**Delphinium**

*Delphinium* varieties  
Extremely popular for their tall upright growth habit and beautiful spike flowers in various shades. Work well in a border.  
Height: 1-7' / Spread: 1-2'  
Flowers: blues, purples, whites, pinks  
Bloom time: June-September



**Flax, Blue**

*Linum catharticum*  
A native, self-seeding wildflower with delicate leaves and stems. Excellent in mass plantings or meadows. Deadhead to promote longer blooming, present reseeding, and keep tidy.  
Height: 12-20" / Spread: 12-14"  
Flower: light blue or white  
Bloom time: May-June



**Globe Thistle**

*Echinops* spp.  
Tall perennials that work well in a border. Gray to green, prickly foliage and unique rounded flowerheads.  
Height: 2-3' / Spread: 2-3'  
Flowers: pink, purple, blue, globe-shaped  
Bloom time: July-August



**Hummingbird Mint or Hyssop**

*Agastache* species  
A tall border perennial with grayish-green, mint-scented leaves. Produces beautiful, fragrant, tubular flowers.  
Height: 2-3' / Spread: 1-2'  
Flower: shades of orange, pink, rose  
Bloom time: June-August



**Hosta Lily**

*Hosta* species  
A shade perennial with attractive foliage in various shades of green to blue. A flower stalk rises up from the leaves with a fragrant, bell-shaped flower.  
Height: 6-36" / Spread: 20-24"  
Flower: purple, lavender, or white flowers hang from a spike  
Bloom time: July-August



**Iris, Tall Bearded**

*Iris* hybrids  
Bluish green, sword like leaves. Large, sophisticated flowers in every shade and often bicolor and fragrant. Lift and divide clumps every 10-15 years to keep maintained. Make a nice cut flower.  
Height: 16-30" / Spread: 14-24"  
Flower: purple, blue, black, white, cream, yellow  
Bloom time: May-June



**Knautia**

*Knautia arvensis*  
One of the few perennials that will continue to bloom throughout summer. Stiff, waxy green foliage with punchy type flowers. Deadhead for continued bloom.  
Height: 24-36" / Spread: 18-24"  
Flower: deep burgundy  
Bloom time: May-June



**Lupine**

*Lupinus* varieties  
A tall border perennial with dark green foliage and very showy flowers. This plant may need staking.  
Height: 18-4' / Spread: 2-2.5'  
Flower: multiple colors including blue, yellow, pink  
Bloom time: May-July



**Pasque Flower**

*Pulsilla* species  
A rounded, bushy perennial with feathery leaves, a cup-shaped flower and silky seed head.  
Height: 4-8" / Spread: 8"  
Flower: pink, purple, white  
Bloom time: May-July



**Penstemon or Beardtongue**

*Penstemon* species  
Excellent perennial for a dry garden in several varieties and flower colors. Great specimen plant.  
Height: 4-8" / Spread: 6-36"  
Flower: pink, purple, blue, red, white  
Bloom time: June-August



**PERENNIALS**

## PERENNIALS

### Pincushion Flower

*Scabiosa* species  
A rounded, upright plant with sherry gray foliage. One of the few perennials that will continue to bloom throughout the summer if deadheaded. Fringed flowers arise from woody stems.



Height: 18-30" / Spread: 12-18"  
Flower: pink, lavender, blue, or white  
Bloom time: June-October



### Poppy, *Oriental*

*Papaver orientale*  
Very ornamental perennial with large, papery, cup-shaped flowers. Interesting capsule type seed for fallow flowering.



Height: 2-3' / Spread: 1-2'  
Flower: orange, white, red, pink or purple  
Bloom time: June-July



### Prairie Coneflower or Mexican Hat

*Ratibida columnifera*  
An upright, bushy plant with lacy, green foliage. Petals droop down from the tall, center flower disk. Biennial.



Height: 18-24" / Spread: 12-24"  
Flower: yellow, red, pink, or purple  
Bloom time: July-October



### Salvia or Sage

*Salvia* species  
Perennial herb with a shrub like growth habit and grayish-green or multi-colored foliage. Formal, spike-like flowers in various colors. Attracts bees. Deadhead to encourage a second bloom.



Height: 18-28" / Spread: 24-34"  
Flower: purple, rose, blue, spikes  
Bloom time: June-September



### Torch Lily or Red-hot Poker

*Lilichrysum*  
Stiff, bushy perennial, grass like foliage. Unique flower clusters arise on spikes above the foliage.



Height: 1-4' / Spread: 2-3'  
Flower: orange, yellow, white, green, or multi  
Bloom time: June-August



### Yarrow

*Achillea* species  
Fern-like foliage in shades of green to gray. Long blooming and very drought tolerant. Make nice cut or dried flowers.



Height: 6'-8' / Spread: 12-24"  
Flower: white, red, yellow or pink  
Bloom time: May-September

\*'Carnation Gold' - golden yellow blooms.  
\*Summer Pastels - several colors on one plant; pink, yellow, white.



## References & Resources

Here are recommended links to more resources on Xeriscaping, water efficient landscaping, irrigation and other related topics.

City of Bend  
[www.waterwiseips.org](http://www.waterwiseips.org)  
[www.clb.bend.oregon.gov](http://www.clb.bend.oregon.gov)

Oregon State University Extension Service in Central Oregon  
<http://extension.oregonstate.edu/descriptions/index.php>

Oregon State University Extension Service Horticulture Program in Central Oregon  
<http://extension.oregonstate.edu/descriptions/Horticulture/index.php>

OSU Water Conservation Publications  
<http://esc.oregonstate.edu/waterwise/>

Oregon Landscape Contractors Association  
<http://www.oregonlandscape.org>

Water Saving Resources – Portland Regional Water Providers Consortium  
<http://www.watersave20.org/resources.html>

Irrigation Association – training and more information  
<http://www.irrigation.org>

Oregon Landscape Contractors Board – List of licensed professionals and more information  
<http://www.oregon.gov/LCB/index.shtml>

Bend's Agrimet Station – current weather data and plant water information  
<http://www.wuhsrb.gov/pn/agrimet/agrimetmap/bewoda.html>

Irrigation Association – Smart Controller Site – Frequently asked Questions  
<http://www.irrigation.org/swat/homeowners/faq.asp>

Denver Water Bureau – Busting Xeriscape Myths  
<http://www.water.denver.co.gov/xeriscapeinfo/xeriscapeframe.html>

Denver Water – Additional Water Conservation Tips  
<http://www.water.denver.co.gov/xeriscapeinfo/xeriscapeframe.html>

### Copyright Information

Please Note: The word "xeriscape," was coined by the Denver Water Department in 1981 to help describe a water conserving landscape. The word is a combination of "landscape" and the Greek word "xeros," which means "dry." Denver Water holds the copyright to the name "xeriscape" and the Xeriscape logo. Neither may be used as part of a business name or product. However, we welcome the use of the word in books, articles and speeches promoting water conserving landscape. For permission to use the term, "xeriscape," please email or call 303-656-6336.



**An Introduction to  
Xeriscaping in the High Desert  
And Pictorial Plant Guide for Central  
and Eastern Oregon**

Whether you are an experienced gardener or a newcomer to the high desert, learning how to successfully garden here can be an exciting challenge. By adopting the seven steps of xeriscaping, from design – to ongoing maintenance, not only can you plan a gorgeous landscape for your home or business, but you can do it in a low impact, sustainable way.



Retail Price: \$3.00

## References

Central Oregon Cities Organization, "An Introduction to Xeriscaping in the High Desert and Pictorial Plant Guide for Central and Eastern Oregon." Oregon State University Extension Service, 2005. April 23, 2016. [http://extension.oregonstate.edu/yamhill/sites/default/files/an\\_introduction\\_to\\_xeriscaping.pdf](http://extension.oregonstate.edu/yamhill/sites/default/files/an_introduction_to_xeriscaping.pdf).

City of Redmond, Public Works Dept.; Water Division. "Irrigating for a Healthy Lawn and Practicing Water Conservation." April 24, 2016. <http://www.ci.redmond.or.us/home/showdocument?id=3996>.

Corinth, Texas, Xeriscape Practice and Principals Ordinance No. 07-03-15-08.

Ibid. at §158.04.

Ibid. at §158.05.

Ibid. at §158.07.

Ibid.

Nagourney, Adam. "California Imposes First Mandatory Water Restrictions to Deal With Drought." The New York Times. The New York Times, 01 Apr. 2015. Web. 12 Mar. 2016.

"Oregon Water Resources Department Weekly Drought Updates." Oregon Water Resources Department, 7 Mar. 2016. Web. 12 Mar. 2016.

ORS 105.980(2).

Redmond City Code.

Ibid.

Redmond City Code 9.025.

Redmond Dev. Code 8.0175(4)(A).

Redmond Dev. Code 8.0175(4)(B).

Redmond Dev. Code 8.0175(a)(D).

"Two-thirds of Oregon Counties Now in Drought Emergency." KTVZ. 21 July 2015. Web. 27 Mar. 2016. <<http://www.ktvz.com/news/twothirds-of-oregon-counties-now-in-drought-emergency/34282672>>

Turlock, California, Landscape and Irrigation Ordinance §9-2-109.

Ibid. at §9-2-109(f)(3)(iii).

Ibid. at §9-2-109(f)(12).

21. Wichita Kansas, Landscaping and Parking Lot Screening Ordinance §10.32.010.

22. Ibid.

23. Ibid. at §10.32.090.

24. Ibid. at §10.32.030.

25. Ibid. at §10.32.130.

26. Ibid. at §10.32.140.

Wichita Kansas, Landscaping and Parking Lot Screening Ordinance  
§10.32.010.

Ibid.

Ibid. at §10.32.090.

Ibid. at §10.32.030.

Ibid. at §10.32.130.

Ibid. at §10.32.140



## **Tiered Water Pricing**

**Spring 2016 • Law**

Shannon Wilhite • Law

Jakob Wiley • Law

Filip Simak • Law

Jonathan Rosenbloom • Environmental & Natural Resource Visiting Professor • Law



Sustainable Cities Initiative

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*This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Redmond. Text and images contained in this report may not be used without permission from the University of Oregon.*



## Introduction

Prices can reveal the worth of a product or service and can be a central tool in guiding customer decisions. In contrast to other goods and services, water costs are low because they do not fully reflect all costs connected to delivery and because affordable water is considered a public good. However, the low costs of water do not reflect current and future global water scarcity concerns. Nations, states, cities, and communities are planning and implementing water reduction strategies. These water conservancy tools are helping to increase the “value” of water by regulating or incentivizing

water use. Water conservation can be defined as the beneficial reduction in water use, water waste, and water loss. For a water utility, conservation-oriented rate structures or tiered rate structures communicate the value of limited water resources. Tiered rate structures are intended to reduce water usage for discretionary purposes and encourage users to choose more efficient ways to meet their water needs. Residential demand often, as it is in the case of Redmond, represents the greatest portion of water use. Therefore, a water conservation program should target the residential sector, which has the most customers and comprises the majority of water use. Water from toilets, clothes washers, showers, and faucets account for more than 80% of indoor water use.<sup>1</sup> The greatest use of water however is outdoor use, on average about 45% greater than the amount used for indoor.<sup>2</sup> Although programs that focus on water conservation through technological solutions such as low-flow toilets statistically are able to demonstrate water savings, implementation of the tiered rate structure itself has demonstrated a significant reduction in water use.<sup>3</sup> Both technological and ideological changes to addressing outdoor irrigation will reduce of the cost of the household water bill and allow for the city to capitalize

Figure 1: Deshutes River near Redmond



[https://commons.wikimedia.org/wiki/File:Deschutes\\_River\\_near\\_Redmond.JPG](https://commons.wikimedia.org/wiki/File:Deschutes_River_near_Redmond.JPG)

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<sup>1</sup> Environmental Protection Agency, Water Research Foundation, Water Conservation: Customer Behavior and Effective Communications, 1-350, 21, 2010 (“Water Conservation”).

<sup>2</sup> Id.

<sup>3</sup> Baerenklau K, Schwabe K, Dinar A., Do Increasing Block Rate Water Budgets Reduce Residential Water Demand? A Case Study in Southern California, Water Science and Policy Center Working Paper, 1-22, 3, 12, 2013.

on long-term water conservation goals. Water saved from use in the present will increase supply for the new water permit and extend the date for expected water use past 2031, the projected time period for the city's current and future permitted water.<sup>4</sup>

## Goals

This project proposal sets forth three general goals. First, it should secure water for Redmond's future. Second, the proposal tries to guide the city toward water conscience growth, encouraging development that efficiently uses water use and implements the newest technologies. Finally, the proposal aims to be budget neutral, since the city and its customers both have tight financial considerations.

Resilience for Redmond's water supply is important for the future of the city. Since Redmond will grow in the future, water supplies will have additional pressures. Water may be harder to find or may be subject to strict environmental regulations and legal actions. Worldwide water shortages are predicted in the next century, and central Oregon may be subject to these pressures. city legislators could be forced to take immediate actions towards restricting water use, and early conservation would allow the city to remain a vibrant community. If actions are taken sooner, cost can be reduced by avoiding emergency actions. Because of the increases in environmental regulations about water quantity and quality, Redmond could expect future changes in state and federal law. Also, environmental organizations may challenge the local governments, alleging inefficient water use and argue for additional restrictions. For these reasons, Redmond should take action to efficiently use its water now so there is more available in the future.

For the project's second goal, our proposal attempts to encourage water-savvy construction in Redmond. Guiding the growth of the city toward efficient water use will be vital for a stable community. Our proposal should inform developers and future business owners that water efficient construction is important to the city's future. With respect to residential areas, this goal aims to promote of water-efficient homes, landscaping, and gardens. In commercial and industrial parts of the city, this proposal hopes to increase awareness of water use,

Figure 2



<https://agriculture.ks.gov/images/doc---pictures/wtap-4.png?sfvrsn=2>

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<sup>4</sup> Water Solutions, Inc., Water Management and Conservation Plan, prepared for the City of Redmond, 1-65, 61, 2013 ("WMCP").

but, at the same time, preserve a business friendly community. Our proposal should guide the growth in the city, so that water efficiency is considered early, during planning and construction. By building water conservation into the city's growth, it prevents future retrofit costs. Avoiding harsh water restrictions and the expenses of future retrofits will save the city and the community money in long term. In addition, the saved water can be used for additional growth, without the expense and regulatory effort to acquire additional water supplies.

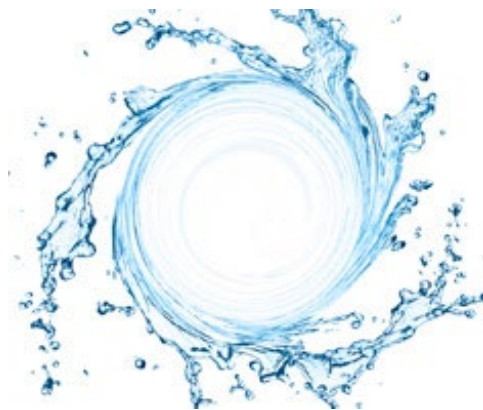
Our third goal considers the financial burdens on the city and proposes to accomplish the previous goals without adding more costs to the community. Because adding costs to residences and businesses will weigh down the growth of the city and the community, our proposal should keep budget neutrality in mind. Redmond's growth will, in part, be limited by the costs of doing business in the community. Developers should not be discouraged by our proposal for changes in water use. Our proposal needs to guide and support, rather than prevent, development of the city.

While these three goals provide guideposts for our proposal to Redmond, a more concrete goal provides a target for water use. With a specific target, the city can show how it is progressing and whether additional changes need to be made.

## Specific Target

In addition to three general goals, the project comes up with a specific target to free up 10 to 20% of current water used by households for summer irrigation. This target relates to the previous three goals. This number represents the first goal by adjusting the amount of water that is used by the city's citizens. With the second goal, the target shifts this amount of water towards more economically-beneficial activities. The reduction would also be enough to make real progress, but also minimizing the financial burdens on the community. Redmond can transfer the saved water towards other residential, commercial, and industrial development, which will bring additional revenue and jobs to the city.

Figure 3



<http://www.bnamericas.com/en/news/infrastructure/peru-to-invest-us570mn-in-central-jungle-infrastructure/?position=2&aut=false>

Figure 4: The Story of Water in Redmond



Water division, <http://www.ci.redmond.or.us/government/departments/public-works/water-division>

## Redmond Utility and Water Rights

The City of Redmond Public Works Department - Water Division is responsible for the operation and maintenance of the community water system.<sup>5</sup> The service area receives approximately nine inches of precipitation in an average year and 15 inches of snowfall per year on average.<sup>6</sup> Groundwater from the Deschutes Formation, a highly permeable volcanic and sedimentary aquifer, is the sole water source. Currently, the city withdraws groundwater using seven wells, which are active year round. The wells are between 300 - 860 feet deep.<sup>7</sup> The combined capacity of the wells is approximately 12,900 gallons per minute (gpm). The reservoir capacity is 10 million gallons (MG). The water delivery area is delineated by the Urban Growth Boundary and serves a population of almost 27,000.<sup>8</sup>

The city has 9,154 residential, multi-family, and commercial customers.<sup>9</sup> Water consumption is divided into billed (revenue producing) and unbilled categories.<sup>10</sup> Unbilled consumption includes public use. Due to the high irrigation water use in public facilities, it should be targeted for a reduction at some point.

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<sup>5</sup> WMCP at 14-15.

<sup>6</sup> Climate Data 2016, Redmond, Oregon Weather Data, (April 25, 2016, 6:36 AM), <http://www.usclimatedata.com/climate/redmond/oregon/united-states/usor0284>.

<sup>7</sup> WMCP at 24-27.

<sup>8</sup> Portland State University, Oregon Population Report, Population Estimate 2013, (April 25, 2016, 6:36 AM), <https://www.pdx.edu/prc/population-reports-estimates>.

<sup>9</sup> WMCP at 26-17.

<sup>10</sup> *Id.* at 18-19.

The city has approximately 8,132 residential customers, 255 multi-family residential customers, 767 commercial customers (commercial accounts include commercial facilities and city accounts).<sup>11</sup> About 64% of total water consumption is accounted for by residential customers, 11% by multi-family, and 25% by commercial/city (Figure 5).<sup>12</sup> Total water consumption for all categories increased almost 5X in the summer with single-family residential use having the largest impact of 3.6X its winter use (Figure 6).<sup>13</sup> The city's largest users of water are: A largest school facility (21.4 MG), followed by several multi-family complexes, industrial, hospital, and other schools. The city expects a population increase for its water delivery area in 10 years to be 38,807 and in 20 years about 51,661.

Figure 5: Percentage of Water Use By Consumption Category, 2011

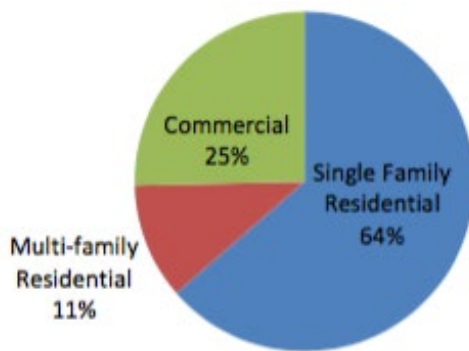
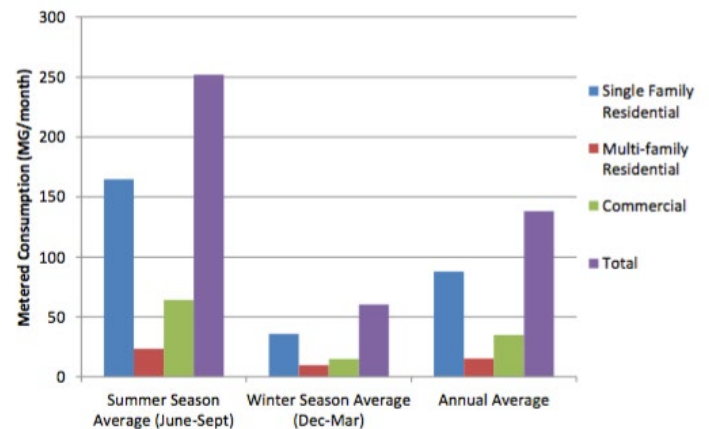


Figure 6: Seasonal Water Consumption by Customer Category, 2011



The local water supply comes from five water rights totaling 19.87 cubic feet per second (cfs).<sup>14</sup> The city also has one pending application for a permit demanding 25 cfs. In addition, a limited use license for the use of 9.7 cfs is being used to bridge between the current and future water use permits. Once these rights are in place, Redmond will have a total of 44.9 cfs and will be able to meet its projected maximum day demand (MDD) for 20 years (2031) of 43.5 cfs. Maximum day demand is used to calculate projected water use because it is based on the highest amount of water, which could be consumed in one day, and for which a city must have sufficient water infrastructure to accommodate. Certificate 2016, which the city is not currently using, authorizes the use of 35 cfs from the Deschutes River. Redmond also holds water rights on the

<sup>11</sup> *Id.* at 10-26.

<sup>12</sup> *Id.* at 27.

<sup>13</sup> *Id.* at 28.

<sup>14</sup> *Id.* at 6-36.

Deschutes River for non-potable water municipal and irrigation, through the Central Oregon Irrigation District.

*Figure 7: Deschutes River at Cline Falls State Park*



[https://commons.wikimedia.org/wiki/File:Deschutes\\_River\\_at\\_Cline\\_Falls\\_State\\_Park,\\_Oregon.JPG](https://commons.wikimedia.org/wiki/File:Deschutes_River_at_Cline_Falls_State_Park,_Oregon.JPG)

The Upper Deschutes River is currently listed as impaired by the Oregon Department of Environmental Quality mandated under the US EPA Clean Water Act.<sup>15</sup> The river contains several species of fish Federally listed as threatened or sensitive under the Endangered Species Act, which are found within the reach of the water right Certificate 2016. The surface water rights will eventually be used as mitigation for the additional permitted water supply under the Deschutes Basin Groundwater Mitigation Program.

Currently, none of Redmond's wells are within designated critical groundwater areas.<sup>16</sup> Water level monitoring of the city's wells shows no significant change in water levels and the Oregon Water Resources Department (OWRD) has never restricted groundwater use. However, one well permit, modified in 1996, requires a monitoring plan, which includes a stipulation to discontinue use under specific conditions. The OWRD and U.S. Geological Survey indicate that decline could be related to changes in climate over the recent years, irrigation canals, and other groundwater withdrawals.

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<sup>15</sup> WMCP at 34-35.

<sup>16</sup> *Id.* at 35-36.

# Water Audit and Current Conservation Measures

Redmond conducts an annual water audit comparing water produced by the utility to the annual amount of water consumption to determine the amount of unaccounted for water, which is water loss through system leakage. The audit is made possible by the installation of the Automated Meter Reading (AMR) system. More recently, mandated by the state's requirement of water conservation measures, the City of Redmond has purchased an on-line water-measuring tool called AquaHawk. This system measures citizens' consumption of water on a day-to-day basis, maximum daily demand, find leaks and water overuse, and allows the citizens and the city access to this information. Even though the participation in the system is voluntary, the city can currently track about three percent of its citizens in respect of how much, where, and when water is being consumed. Such statistic data may highly serve to develop a system of structured rates for pricing.

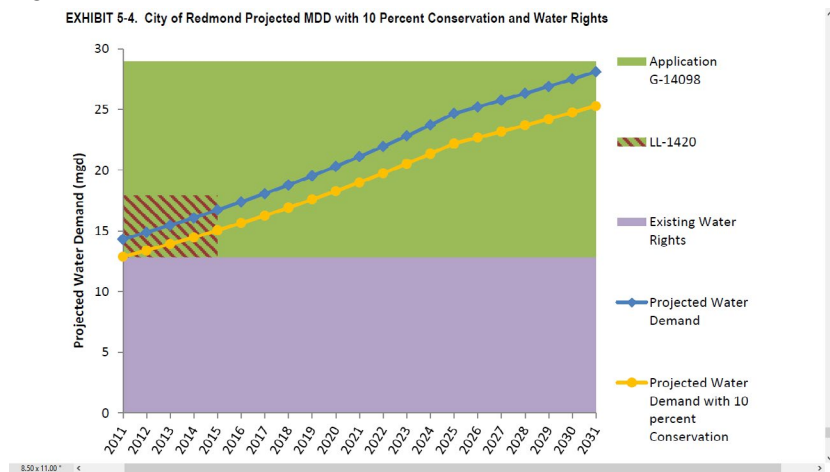
Figure 8



<http://www.lbcwd.org/Home/ShowImage?id=287&t=635600382480930000>

Redmond, in accordance with OAR 690-086-0150(1)-(6), has implemented and reported to OWRD specific conservation measures and benchmarks taken by the city and written down in the Water Management and Conservation Plans 2000 and 2013. The projection of the Redmond's water needs shows that the city, if it has the same allocation of water rights, may substantially extend their good-standing with water supplies. By shifting 10-20% of water to a more conservancy area, it may secure the water for several more years.

Figure 9



WMCP at 63

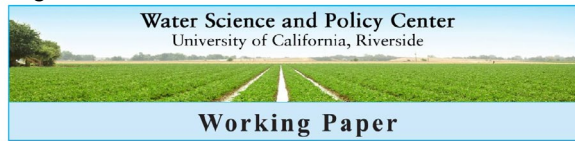
# California Study of Tiered Rate Structures and Water Use

A promising solution can be found with tiered rates structures. The study shows that there can be an 18% reduction in residential use after the introduction of tiered rate structures.<sup>17</sup> The Water Science and Policy Center at the University of California, Riverside, has completed a comprehensive study on how tiered rate structures can promote efficient water use. Tiered rate structures are a way of designing the prices charged to customers for their water use. Commonly, cities use a flat-rate structure, which assigns each unit of consumed water the same price. Tiered rate structures create multiple prices charged between certain thresholds. Higher tiers are priced higher than lower ones. The thresholds are placed at points that encourage consumption at certain levels. This pricing system is flexible, allowing a city to customize the prices and thresholds to match the goals of the city.

An analogy can be used to explain the difference between the two pricing systems. The flat-rate structure is similar to how gasoline is sold. Each gallon of gasoline costs the same amount, regardless of how much is purchased overall. When gas prices go up, the prices go up for everyone equally. Tiered rate structures change the price at certain thresholds the more the customer purchases. To continue with the gasoline analogy, the price would increase for volumes above the first ten gallons in one trip to the gas station. While the prices would not change for each type of automotive that arrived, it would charge more for large, inefficient vehicles. Small, efficient cars would not purchase enough gas to reach the higher price tiers. The effect creates an incentive for large vehicles to switch to a smaller car or to simply purchase less gasoline. Customers change their decisions about fuel consumption at the ten-gallon threshold, where the price increases. The same kind of price structure can be used to encourage efficient water consumption in cities.

The tiered prices are not based directly on indoor and outdoor consumption, but instead an inference from average water use volumes. Because there is no way to tell how the water is being used at a specific location, the tiers are an estimate based on expected water use. The first tier is roughly what an average customer uses indoors. The second tier is roughly what a customer uses

Figure 10



01-0913, September 2013

**Do Increasing Block Rate Water Budgets Reduce Residential Water Demand?  
A Case Study in Southern California**

*Baerenklau et al.*

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<sup>17</sup> *Id.* at 3-12.



outdoors. The final tiers are roughly what is considered inefficient and wasteful use for an average customer.

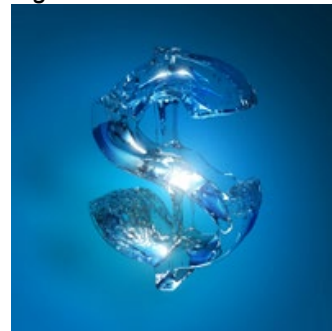
The study suggests using multiple tiers to modify water consumption. The first tier is the lowest charge. The thresholds for the first tier roughly correlate with the desired indoor consumption level. For example, if the average customer in a city uses eight CCF (hundred cubic feet) inside the home, the first tier's threshold would be around seven to nine CCF. In the summer, the average customer would use more than the eight CCF and possibly consume up to 20 CCF. The second tier would encompass water consumption from eight CCF to 20 CCF. The price for the second tier would be higher than the first tier to encourage customers to use water efficiently outdoors. The additional tiers are any use above 20 CCF. These tiers have the highest prices, because it represents uses outside the typical residences' need.

The typical residence in Redmond uses 10 CCF in the winter when outdoor watering is not likely occurring. For the purposes of this proposal, 10 CCF is assumed to be the typical domestic use. In the summer, the typical residence begins watering outdoors and goes beyond the 10 CCF. In Redmond, water use for the average residence in the summer jumps to 25 CCF. It can be assumed that water use from 10 CCF to 25 CCF is probably outdoor use. These two numbers provide guideposts for the price thresholds for the tiers in our proposal.

Many tiered rate structures have a base charge connected with a fee for delivery to a customer. In Redmond, \$14.32 is billed as a service fee, followed by \$1.15 per each 100 cubic feet (or CCF) of delivered water. The price per volume does not change the more the customer uses water. If these were used as the thresholds for the tiered rate structure, from 0 CCF to 10 CCF, the price would be average. From 10 CCF to 25 CCF, there would be a new price that would be higher than the last tier. This price represents the city's effort to discourage inefficient outdoor water uses. Water consumption above 25 CCF would be even higher. The prices do not have to increase at each threshold, but can be adjusted to target certain kinds of water use and discourage inefficient uses.

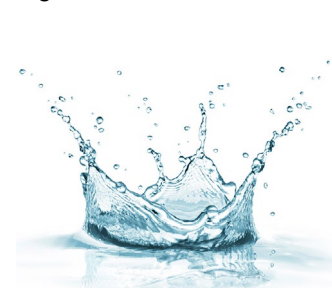
But, since our proposal has the dual goal of reducing outdoor use and encouraging growth, the generic model used in the study should be modified to incorporate the economic and development goals of the City of Redmond. Other cities in Oregon provide examples of how this model can be customized to Redmond's present and future goals.

Figure 11



<https://filtercon.wordpress.com/2013/04/02/the-rising-cost-of-water/>

Figure 12



<http://social.cummins.com/wp-content/uploads/2014/12/Water-droplet-350x350.jpg>

## Other Cities that Use Similar Rate Structures

Other cities have successfully implemented tiered rate structures in Oregon. Lake Oswego, Tigard, and Albany provide examples that show how the concept could help conserve water and encourage water-conscious development in the city. While each city has its own needs and individual requirements, the cities provide analogous water use demands and regulatory burdens. Because these examples are within Oregon, they have similar legal requirements and agency reviews. However, some components of these cities' pricing systems may differ from the aims of this project, because these cities do not incorporate commercial and industrial development into the pricing system. Albany's price structure actually lowers the cost as consumption goes up. Since our proposal wishes to combine water conservation with economic growth, a hybrid of these price structures may be the best for the individual needs of Redmond. The following examples provide guidance in applying the tiered rate structure to the city.

For a real world application of this structure, Lake Oswego, Oregon, uses a tiered rate structure with increasing prices for each tier.<sup>18</sup> The base charge is \$24.96. The first tier charges customers \$2.62 per each CCF between zero CCF to eight CCF. The second tier, from nine CCF to 16 CCF, charges customers \$3.77 per CCF. Any water consumption above 17 CCF is charged \$7.06 per CCF, forming the third tier. Like in the California Study mentioned earlier, the three tiers roughly correspond to different types of use. The typical customer would stay within the first tier (from zero CCF to eight CCF) with indoor uses. The second tier is triggered from nine CCF to 16 CCF, which is the volume typically associated with outdoor uses. The third tier is priced higher because the uses above 17 CCF are usually beyond a typical household's needs.

The City of Tigard, Oregon, also uses a tiered rate structure.<sup>19</sup> The typical base charge is \$26.67. The rate structure for average residences starts from \$3.45 for consumption between one CCF to six CCF. The second tier imposes a cost of \$5.04 per each CCF in range from seven CCF to 15 CCF. Tier three demands an amount of \$5.76 for each CFF above 16 CCF. While the individual expenses are more than Lake Oswego, Oregon, the basic concept is similar. The lowest threshold encourages normal household's uses to remain under six CCF. This threshold is lower than typical indoor household uses, which means the city is trying to discourage inefficient interior uses. The second tier has a higher upper threshold, which means customers may use up to 15 CCF for additional uses without reaching the highest price tier.

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<sup>18</sup> City of Lake Oswego, Oregon, *Water Consumption Cost Calculator*, (Apr. 24, 2016, 3:25 PM), <https://www.ci.oswego.or.us/finance/water-consumption-cost-calculator>

<sup>19</sup> City of Tigard, Oregon, *Water Rates and Information*, (Apr. 24, 2016, 2:49 PM), [http://www.tigard-or.gov/city\\_hall/water\\_rates.php](http://www.tigard-or.gov/city_hall/water_rates.php).

Albany, Oregon, presents an interesting specimen of a tiered rate with only two tiers for residential users.<sup>20</sup> There are different prices for various classes of customers. For the typical residence, the base charge starts at \$17.93. For the first six CCF of water, the billed amount counts of \$3.99. Any use above six CCF is \$2.53. By reducing the costs after six CCF, consumption above is not discouraged. However, the decreasing price does allow water demanding customers to use water without being unduly punished. Even though outdoor water conservation is not discouraged, Albany’s concept allows more economic growth for industrial and commercial uses.

Figure 13: Comparing Cities

CCF Consumed	Redmond	Tigard	Lake Oswego	Albany
0	14.32	26.67	24.96	17.93
5	20.07	43.92	38.06	37.88
6	21.22	47.37	40.68	41.87
10	25.82	67.53	53.46	51.99
15	31.57	92.73	72.31	64.64
20	37.32	121.53	104.32	77.29
25	43.07	150.33	139.62	89.94
30	48.82	179.13	174.92	102.59

*The above graph compares the rate structures of Lake Oswego, Tigard, Albany, and Redmond. The charge is based on a typical customer, but these cities use additional pricing criteria in some circumstances.*

Taking the best parts of said examples, this project suggests a three-tier structure using both the water conservation, contained in Lake Oswego and Tigard rate structures; as well as the economic-growth fostering pricing thresholds, seen in Albany’s structure. Redmond can have both targeted water conservation as well as economic support for water-intensive commercial and industrial growth by bringing aspects of both into its own tiered rate structure.

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<sup>20</sup> City of Albany, Oregon, A Resolution Setting Rates for Water Use and Repealing Resolution No. 6373, (Apr. 24, 2:50 PM), [https://www.cityofalbany.net/images/stories/publicworks/utility-billing/rate\\_resolutions/July15water-rate\\_Res6411.pdf](https://www.cityofalbany.net/images/stories/publicworks/utility-billing/rate_resolutions/July15water-rate_Res6411.pdf).

## Benefits of a Tiered Rate Structure

Implementation of the tiered rate structure targeting high summer water use will be beneficial to the Redmond community and the water utility. Due to worldwide water uncertainty, water resilience is now a necessary community goal. Sharing common ground brings communities together to work towards their goals. Here, the benefit to the community is both financial and societal. A decrease in water use is beneficial to many who want to save money on their water bill. Society also has an interest in maintaining equity, offering fair prices to all regardless of class or economic status. By making water conservation a priority, citizens of Redmond can foster community pride, knowing they are protecting a limited resource for the years to come.

There are also benefits to the city itself. The water permits Redmond has secured are finite. The amount has been determined to be sufficient, however, water conserved now can be available for future development. Redmond may be able to extend their water right past 2031.

The city's supply facilities (pipelines, reservoirs) and water rights must be capable of meeting the maximum day demand (MDD).<sup>21</sup> Using a tiered rate structure will reduce the MDD and total system demand. If the MDD exceeds the combined supply capacity on any given day, water storage levels will be reduced. Consecutive days at or near the MDD can result in a water shortage. The MDD is strongly influenced by weather patterns and the economy. Unusually hot and/or dry weather results in more outdoor irrigation, which increases the MDD.

The economy can affect the MDD as well. Customers may choose to irrigate less to save during an economic downturn. The economy also influences the number of new homes with landscapes needing intense irrigation, the landscaping choices made by commercial and industrial sites, and the opening or closing of facilities that use water in their operations. Reducing the MDD can save the city substantial amount of money on infrastructure and change the future water use prediction. The structure is also good fit with the Redmond Water Management and Conservation Plan,<sup>22</sup> which specifically suggests considering the tiered rate structure.

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<sup>21</sup> WMCP at 19-20.

<sup>22</sup> State of Oregon, Water Resources Department, *Municipal Water Management*, (Apr. 24, 2016 2:52 PM), [https://www.oregon.gov/owrd/pages/mgmt\\_muni\\_wmcp.aspx](https://www.oregon.gov/owrd/pages/mgmt_muni_wmcp.aspx).

## Guidelines for the Rate Structure

Redmond's annual production in million gallons increased between 2006 and 2007, and then by 2011 had decreased to below 2006 levels,<sup>23</sup> see Table 1 [Table 1: Average Day Demand, Maximum Day Demand, 3-day Maximum, Maximum Monthly Demands, and Peaking Factor, 2006-2011.] (Figure 14). The increase in water use between 2006 and 2007 was likely due to the upturn of the economy.

Figure 14: Annual Production from Redmond WMCP

Year	Annual Volume Produced (MG)	ADD (mgd)	MDD (mgd)	3-d MDD (mgd)	3-d MDD percentage of MDD (%)	MMD (mgd)	MMD (MG)	Peaking Factor MDD:ADD
2006	1842.3	5.0	12.0	11.0	91.7	10.2	316.7	2.4
2007	2028.4	5.6	13.5	11.9	88.1	11.0	341.4	2.4
2008	1984.4	5.4	13.2	12.2	92.4	11.3	350.3	2.4
2009	1914.8	5.2	13.7	12.7	92.7	11.2	346.6	2.6
2010	1812.6	5.0	13.2	11.2	84.8	11.1	343.5	2.7
2011	1825.6	5.0	12.9	12.1	93.8	10.2	316.5	2.6
Average	1901.4	5.2	13.1	11.9	90.6	10.8	335.8	2.5
Highest	2028.4	5.6	13.7	12.7	93.8	11.3	350.3	2.7

*Id. at 20*

In 2007, the beginning of an economic downturn,<sup>24</sup> led to a decrease in water use between 2007 and 2011 with water conservation education by Redmond as a possible influence. However, even with the economic downturn and conservation education, Redmond summer water consumption average of 25 CCF is still high. Although the city has taken steps to reduce water waste by restricting irrigation to only the cooler parts of the day,<sup>25</sup> conserving water otherwise lost to evaporation, most of the increased water consumption still occurs during the summer.<sup>26</sup> Currently, Redmond shows a household average of summer (June through September) water use (160 million gallons) 150%

<sup>23</sup> WMCP at 20-21

<sup>24</sup> Oregon Secretary of State, Oregon BlueBook, Oregon's Economy Overview, 1, 1, 2016, (Apr. 24, 2016, 3:27 PM), <http://bluebook.state.or.us/facts/economy/economy01.htm>.

<sup>25</sup> Redmond City Code 4.129(1)(2) Irrigation Season, which mandates watering of even numbered houses on even days and odd numbered houses on odd days with no watering on the 31st of any month, also 4.131(1)(2) Irrigation Regulations, which mandates no irrigation for lawns or gardens is allowed between the hours of 11 AM and 4 PM for metered and unmetered watering. Unmetered and manually operated irrigation is not allowed between 11 PM and 4AM. (2003).

<sup>26</sup> WMCP at 28.

greater in comparison to winter indoor use (about 40 MG)<sup>27</sup> (Figure 15). And in Figure 16, Redmond's outdoor water use clearly exceeds indoor use.<sup>28,29</sup>

Figure 15: Seasonal Water Consumption by Customer Category, 2011

Redmond Average Household Water Use

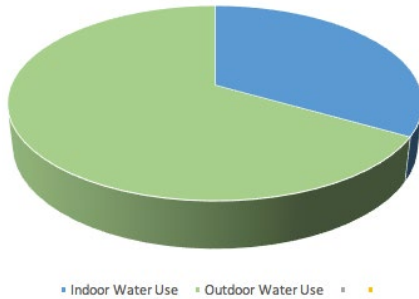
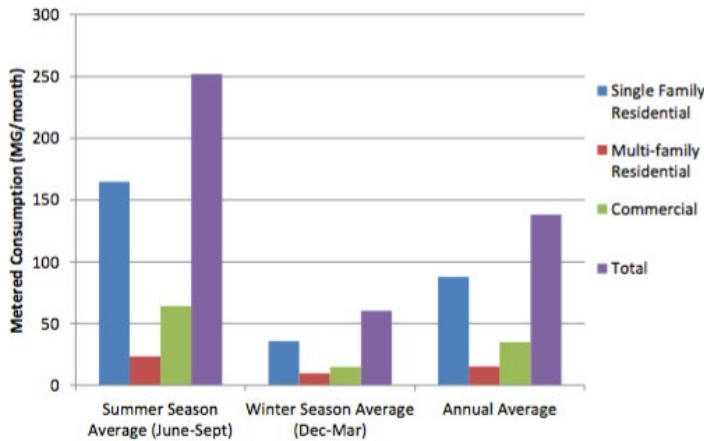


Figure 16: Redmond Seasonal Water Use, from Redmond WMCP



Therefore, it is suggested targeting summer outdoor irrigation when water use exceeds around 10 CCF per household. The rates should be structured to make the costs to the majority of customers' decreased or budget neutral over a year. Costs can be lowered in the winter and increased in the summer to encourage reduction in summer use. This project proposes a 10-20% decrease. This percent can be increased as people become more comfortable with water conservation; ideally a greater percent reduction would be a long term goal. The rate structure should also match Redmond's desire to increase commercial and industrial growth.

<sup>27</sup> Id. at 25-28.

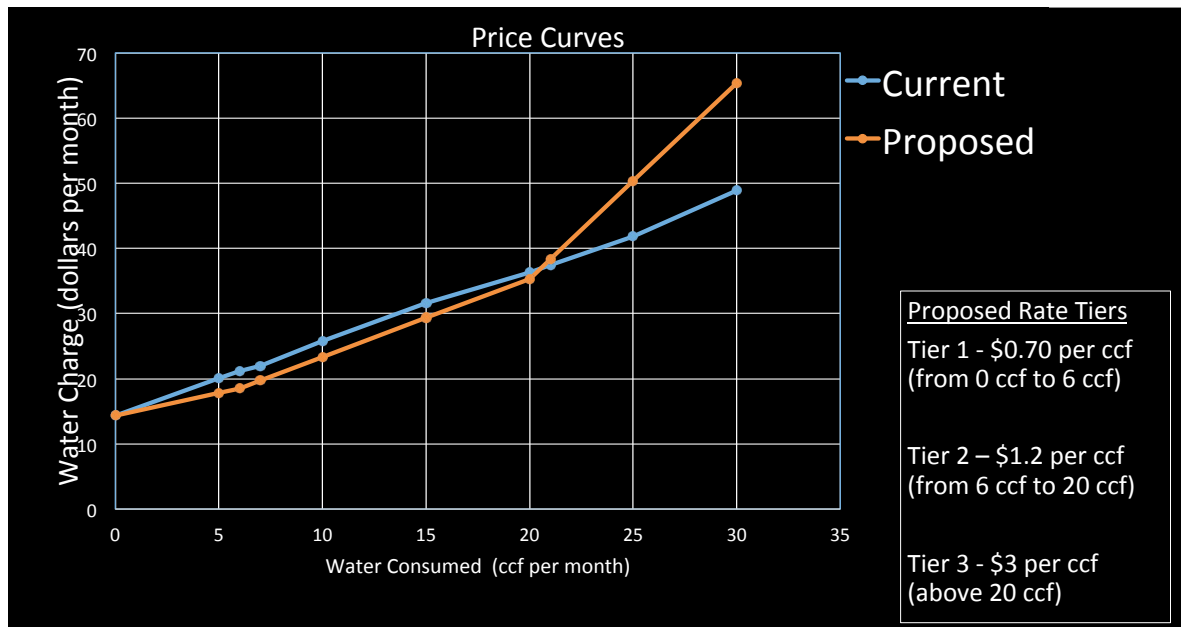
<sup>28</sup> City of Redmond, Utility Billing, Water, Stormwater, and Sewer Rates, (April 24, 2016 9:69 PM), <http://www.ci.redmond.or.us/government/departments/finance/utility-billing-information/water-sewer-rates>.

<sup>29</sup> WMCP at 28.

# Conceptual Example

Figure 17 shows what a 10-20% reduction could look like for Redmond. The bottom x-axis shows total household water use in CCF. The vertical axis describes the cost of water charged to the household. Our proposal is represented by the red line and the blue line is what exists currently in Redmond. For the first 13 CCF the cost, \$1.00 per 100 cubic feet (CCF), is below what Redmond currently charges. The first tier allows for low costs for winter and some summer use, and accounts for use between 0-13 CCF. Water charges are higher for the second tier, \$2.00 per CCF, encouraging users to decrease their summer irrigation by using water conserving methods for irrigation and landscaping with drought resistant plants. This tier accounts for use between 13-20 CCF. Tier three drops down to a lower charge, \$1.15, which targets industrial and commercial. The rate begins at 20 CCF and is open ended allowing these users to continue to have a fair cost for water.

Figure 17: Conceptual Example of Redmond's Tiered Rate Structure



## Determining The Rate Structure

Redmond has the responsibility both through Oregon’s legal mandate to conserve water and through the precautionary principle to protect the longevity of water resources for its future generations. Redmond must also be aware of safeguarding an equitable future for its citizens. To do this, Redmond must create equitable pricing in its tiered rate structure. Equitable pricing is critical to the success of a conservation program and the basic operation of a utility.<sup>30</sup> Rate structures must be set in a way that does not undermine the ability of all users, regardless of income, to have access to affordable water and service. Research of community needs will help the city to avoid imposing inequitable rates. The utility rates must also be sufficient to generate current and future revenues and cover operation, maintenance, capacity, customer service, and administrative costs. The revenue requirements should be separate from the volume of water used above the tier which was designed to promote water conservancy. For Redmond, in order to accommodate large water users such as commercial and industrial the second tier should be set at the highest cost to the user in order to discourage excessive summer water use. The third tier may be set lower to accommodate larger water users.

Determining a rate requires setting revenue requirements, assessing the cost of water services, evaluating alternative conservation-oriented rate structures, and finally selecting and implementing the conservation rate best for Redmond.

First the city should determine its revenue requirements.<sup>31</sup> Revenue requirements are the total costs that must be recovered through water rates and charges. Data from a “representative year” are needed to determine growth of service, costs for expansion, inflationary costs, and pre-funded capital. A representative year is usually the most recent 12-month period or it can also be a future year, which may provide an accurate estimate of costs and growth. Next the cost of service must be determined. Rates should be designed so that users pay for the costs they impose on the water system. Redmond must consider the increase of costs associated with their projected expansion, including the marginal costs from the new water well. Often high, marginal costs are not accounted for in the base charge, which often uses the average costs of the water service. In short, customers do not pay for the true cost of this additional water. Because of this, water users may consume more water than they would with accurate pricing and suppliers may have to add capacity to meet this increased demand. To cover marginal costs, the utility should take into account the average cost and separate billing volumes into multiple tiers.

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<sup>30</sup> Georgia Environmental Protection Division, Watershed Protection Branch, Conservation-Oriented Rate Structures, EPD Guidance Document, 1-11, 5, 2007 (“GA Conservation-Oriented Rate Structures”).

<sup>31</sup> *Id.*



The base rate should be below average cost and the higher tiers above average cost, so that the appropriate revenue is generated. The primary goal is to set the tiers to assure coverage of water costs. Excess revenue based on higher rates of Tier two will offset the minimal rate charged for Tier one. Finally, to assess the cost of water service, a future demand analysis should be done. The end uses of water should be divided into categories of: Single-family residential, multi-family residential, commercial, etc. Future water can be calculated with information pertinent to the above categories and must also meet the revenue requirement. Variations in weather and the customers' response to price should be accounted for in determining the water sales. The top 5-10% of residential customers with the highest water usage rates should be used to determine the high end of Tier two. The majority of customers should receive a lower or unchanged bill. Down the road Redmond may wish to address commercial, public, and industrial high end use by adding a fourth tier.

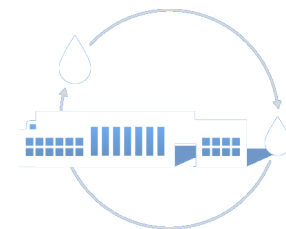
Non-economic goals should be included in the ratemaking decision.<sup>32</sup> These goals include, the knowledge that water resources are limited and may require higher prices to reflect intrinsic values; public and political acceptance; conservation goals in-line with community goals, which for Redmond include economic development and community equity.

## Metrics For Efficiency

Redmond has many tools to measure the success of the tiered rate structure and through updates to the pricing, tailor the rates to encourage conservation. Redmond has the opportunity to utilize AquaHawk as a metric, which will be of great use and importance to the city. AquaHawk capabilities include providing vital information about each user's specific water consumption and notice of possible high water consumption can be used by the water utility to meet rate structured requirements. Other data that should be gathered by the city to fit the tiered rate structure are: The number of users billed in each tier, water consumption in each tier, maximum day demand, and maximum monthly demand.

The city will use these data to analyze if an actual decrease has occurred. This is a complex method accounting for changes socio-economic differences, climate variability, and other factors which may influence a personal water use decision, like decisions to use a particular type of technology.<sup>33</sup> If done

Image 18



<http://www.hitachi.com/environment/showcase/select/>

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<sup>32</sup> GA Conservation-Oriented Rate Structures at 9.

<sup>33</sup> Baerenklau at 3.

correctly, the city will be able to show its rates are working efficiently and toward the goal of summer use reduction.

AquaHawk is also a metric for the household. AquaHawk users can log on and see hour by hour, day by day, and month by month household/business water use.<sup>34</sup> In addition, AquaHawk provides an estimate of the bill, notice of possible high water consumption to customer, and allows the customer to set a water use threshold that they do not want to exceed, alerting the customer to change their consumption practices before they are charged the high rates.<sup>36</sup> AquaHawk statistical data analysis can provide the user consumption patterns, indicating water leaks, water restriction violations, and potential over-irrigation.<sup>37</sup> AquaHawk can also show a comparison to users with similar landscape area and number of occupants and compare household monthly and accumulated use to the city's conservation target.<sup>38</sup> Water Use Reports can also be sent to customers who are using water inefficiently or are exceeding utility specified water use or conservation budget.<sup>39</sup> Customers can be alerted through their own preferred method such as email or cellphone.<sup>40</sup> Residents' use of AquaHawk in itself shows progress toward the goal of water conservation and more specifically to the user's interest in becoming familiar with the tiered rate structure once in place.

The city and the household measure their successes toward water conservation by understanding household prioritization of water use. Redmond should offer a free on-site or self-water audit, which is being considered as a five-year benchmark goal.<sup>41</sup> This information can be put into the AquaHawk customer's database and then used by the utility to manage the rates. Oro, Arizona, acknowledges this system to conduct onsite irrigation audits (with the use of an iPad or tablet) which include number and type of sprinklers, landscape area, and information about how water is used outdoors.<sup>42</sup>

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<sup>34/48</sup> American Conservations & Billing Solutions, Inc., *Case Study, Oro Valley Water Utility Engages Its Customers with AquaHawk Alerting*, 1-3, 2, 2013 ("Oro Valley").

<sup>35/49</sup> Dublin San Ramon Services District, *AquaHawk Customer Portal*, (Apr. 24, 2016, 2:55 PM), <http://www.dsrsd.com/your-account/aquahawk-customer-portal>; Oro Valley at 2.

<sup>37/50</sup> Oro Valley at 2.

<sup>38/51</sup> AquaHawk Alerting, *Customer Portal Demonstration*, 2015, (Apr. 24, 2016 2:53 PM), <https://www.youtube.com/watch?v=xBnSSbEPqXQ&feature=youtu.be.>; AquaHawk Alerting, *AmCoBi Launches New Water Conservation Solution for Utilities*, (Apr. 24, 2016, 2:54 PM), <http://www.aquahawkalerting.com/water-conservation/water-use-reports>.

<sup>39/52</sup> AquaHawk Alerting, *AmCoBi Launches New Water Conservation Solution for Utilities*, (Apr. 24, 2016, 3:16 PM), <http://www.aquahawkalerting.com/water-conservation/water-use-reports>.

<sup>40/53</sup> Oro Valley at 2.

<sup>41/54</sup> WMCP at 49.

<sup>42/55</sup> *Id.*

The audit forms can be integrated into the AquaHawk database as part of its water conservation management module.<sup>43</sup> Through AquaHawk and an on-site audit, water users can decide for themselves how to conserve their water use guided by their own information, thereby empowering the customer to create his/her success.

A final way to measure success is by conducting water survey before and after conservation efforts have been made. To be the most comprehensive, the survey should include many aspects concerning water conservation to allow the city to understand the community level of conservation awareness. The U.S. Geological Survey offers one example of a survey that concerns water use habits and is included in Appendix A. This survey asks questions such as “do you limit how much water you use for any of these reasons,” and “have you done any of these actions to conserve water?” Understanding the community’s water use outlook will help Redmond measure its citizens’ reaction to water conservation and tailor education to fit its needs.

## Education

Educating customers about the rate structure should begin before the tiered structure is initiated. Customers should be provided with the information about not only that the rates are changing, but why they are changing, and how it will impact them. By providing the customer with information regarding the tiered costs to deliver water, the water conservation goals, and the personal benefits of water-wise use, the water utility can gain understanding and support for this measure from the community. The rate structure provides fundamental information that will influence individual water use decisions. This can include the use of water saving equipment and appliances, types of landscaping, and irrigation tools. To be the most effective, a tiered rate structure should also be combined with conservation incentives and other educational tools.

Education is vital to any water conservation campaign. If a tiered rate structure is implemented to decrease summer water use, then the consumers must have more motivation to do so other than a financial one. This is because in part, as is stated earlier, an upward economic trend usually results in more water being consumed. Therefore, teaching water conservation for the sake of current and future declines in water resources is of utmost importance. The city must convey to its community the need and importance of wise water use and stewardship by moving forward with a plan to encourage and normalize water conservation through effective communication. A good education program encourages

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<sup>43/56</sup> *Id.*

<sup>44/57</sup> USGS, Residential Water Use Project, Residential Water Use Survey, available at <http://nh.water.usgs.gov/project/seacoast/survey.pdf>.

behaviors and practices that diminish water waste, reduce demands, and create a community that shares similar value of water conservancy.<sup>45</sup>

The city has a public education program, which includes: Water conservation publications in print and on the city's website, outreach at community events, presentations, and partnerships. Redmond has developed pamphlets, brochures, and door hangers prompting efficient water use. The city council voted in new regulations restricting time and days for outdoor irrigation. Redmond code 4.125-4.155 mandates irrigation.<sup>46</sup> The city promotes xeriscaping by offering a downloadable guide to xeriscaping on their website<sup>47</sup> and also offered on the website is a free low-flow showerhead giveaway.<sup>48</sup> These tools can be expanded and updated; some of the education was carried out as far back as 1997.<sup>49</sup>

Other cities' successes have depended on the quality and persistence of educating their community.<sup>50</sup> In one study on effective communication in relation to water conservation, customers that did the following behaviors such as using a broom to clean pavement rather than water, changing behavior during drought conditions, watering no more than one inch per week, and receiving pressure to conserve water from neighbors, were successful in reducing water use.<sup>51</sup> Redmond should be prepared and willing to allocate more time, energy, and money to educating its community about the tiered rate structure and its function as a water conservation tool.

Redmond should educate the community before the rate structure is in place by using printed material inside the water bill, mailing brochures to customers, and/or providing information on the internet. Offering a public meeting is also an effective way to inform the customers about why the rates are important and the mandate behind adopting them.

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<sup>45/58</sup> Water Conservation at xvii.

<sup>46/59</sup> Redmond City Code 4.129(1)(2) Irrigation Season, which mandates watering of even numbered houses on even days and odd numbered houses on odd days with no watering on the 31st of any month, also 4.131(1)(2) Irrigation Regulations, which mandates no irrigation for lawns or gardens is allowed between the hours of 11 AM and 4 PM for metered and unmetered watering. Unmetered and manually operated irrigation is not allowed between 11 PM and 4AM. (2003).

<sup>47/60</sup> City of Redmond, Public Works, Water Division, *Landscaping Guide*, link to "An Introduction to Xeriscaping in the High Desert", (Apr. 24, 2016, 3:07 PM), <http://www.ci.redmond.or.us/government/departments/public-works/water-division/watering-guide>.

<sup>48/61</sup> City of Redmond, Public Works, Water Division, *Free water-saving showerheads*, (Apr. 24, 2016, 3:08 PM), <http://www.ci.redmond.or.us/government/departments/public-works/water-division/water-conservation>.

<sup>49/62</sup> WMCP at 8.

<sup>50/63</sup> Water Conservation at 18-19.

<sup>51/64</sup> *Id.* at 115.

Once the rate structure is in place, it provides customers with information on their bill such as how much water they used, cost per gallon or cubic feet of water for each tier, the total amount of the bill, how they can get more information about the rates, how to reduce their usage, and a comparison of their current charges to the last year or their charges compared to others in the neighborhood.<sup>52</sup> In fact, peer pressure from neighbors was found to be the most effective educational tool in decreasing water use, more than radio or TV advertising.<sup>53</sup> Holding community activities related to water conservation such as a booth at a festival or farmers market, educational programs for K-12, and workshops are also educational tools Redmond can use.<sup>54</sup>

Many other cities have created successful education programs in which Redmond can draw from. A common educational tool is a water survey. To be the most comprehensive the survey should include many aspects concerning water conservation to allow the city to understand the community level of conservation awareness. This will give a place to start from. Understanding the community's water use outlook will help tailor education to fit the needs.

The best educational tool that Redmond has is AquaHawk Alerting (AquaHawk). The utility can use AquaHawk to alert customers quickly through the customer's preferred mode of communication. This allows immediate action to be taken and reduces unnecessary water loss. If AquaHawk as a conservation tool can be effectively promoted, the city's customers will have a wealth of information at hand. The best part is that Redmond has already paid for this service. In order to promote AquaHawk, Redmond can send an insert describing the program in the paper bill, promote it on the utility website, and hold information sessions. Also offering a free water audit to customers is a great way to communicate with the customer one-on-one the benefits of using the system. Because people can use AquaHawk to pay their bill online, online bill paying should be promoted as well.

AquaHawk is a great educational tool because it not only gives hour-by-hour and day-by-day water use consumption information to the user, but it also can alert its customers to possible high water consumption (i.e. over-watering), a bill estimate, and conservation tips and targets. Perhaps the most influential determinant of water use reduction, measuring success against what other neighbors are doing to conserve water. If AquaHawk is used by the customers, successful progress towards water conservation can be made.

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<sup>52/65</sup> GA Conservation-Oriented Rate Structures at 10.

<sup>53/66</sup> Water Conservation at 115.

<sup>54/67</sup> GA Conservation-Oriented Rate Structures at 10.

## Other Tools

For Redmond, a town where it is common to see home vegetable gardens, decreasing its summer water use may seem in conflict with other societal factors. Home gardens save people's money, generally increase the nutritional intake a family is receiving, and build neighborhood community. These are things that this project does not want to disturb. Redmond must keep its gardens alive and there is a way to do it. Many cities have been faced with similar issues. Water conservation is now understood to be essential yet water consumption by large agricultural farms and the process to get that food to people's door requires far more water and also other finite natural resources. But how can water make the difference between high and low summer water use? Watering plants efficiently is a successful water conservation tool which Redmond can promote through not only education, but more successfully through free city giveaways of water efficient tools, such as drip line and low water use sprinklers. Automatic irrigation systems may use twice as much water as manual watering.<sup>55</sup> Therefore, Redmond should consider creating ordinances requiring water-smart irrigation controllers if an irrigation system is being added to a new residence, commercial, industrial or city site. This "controller" is a simple device that adjusts watering to meet local climate conditions and can reduce water from 10-25%.<sup>56</sup> Another ordinance which would be beneficial for the city to consider is a requirement to xeriscape a percentage of the outdoor area of a new development. Xeriscaping the entire outdoor area has been found to decrease yearly total household use by 30%, which is a 50-60% reduction in outdoor water use. In addition to using smart irrigation tools, there is another ingenious way to decrease household, business, and commercial water use. This is a grey water irrigation system. A grey- water irrigation system re-uses water from sinks and laundry directly connect to an outside irrigation use. The water can be stored and used at a later time or moved directly onto the outdoor area needing irrigation. This method has not been promoted in Redmond but can be done through a Oregon Department of Environmental Quality permit.<sup>57</sup>

Image 19: EISI Deschutes River Module



Available at [https://www.wou.edu/las/physci/taylor/eisi/eisi\\_su12.htm](https://www.wou.edu/las/physci/taylor/eisi/eisi_su12.htm)

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<sup>55/69</sup> EISI Deschutes river module, available at [https://www.wou.edu/las/physci/taylor/eisi/eisi\\_su12.htm](https://www.wou.edu/las/physci/taylor/eisi/eisi_su12.htm).

<sup>56/70</sup> *Id.* at 28.

<sup>57/71</sup> State of Oregon, Department of Environmental Quality, Reusing Greywater in your Landscape, A Guide for Oregon Homeowners, 1-17 (2013), available at <http://www.deq.state.or.us/wq/reuse/docs/graywater/GraywaterGuideHomeowners.pdf>.

## Plan Reviews and Update

Redmond Code 4.104 states that water rates are to be set by resolution, and an example resolution is available in Appendix II. These rates, per the standard, should be reviewed annually and an updated every five years. A committee should provide the annual review and plan updates, which can be presented to the city council. To do this, Redmond should approve an ordinance to form a Sustainable Water and Economics Committee to oversee the changes to the rate structure. The creation of this committee is included as Appendix III. This requirement is based on adaptive management, which relies on the city's commitment to reviewing and updating the rates.

*Adaptive management is a type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices.<sup>58</sup>*

Adaptive management approach recognizes the limitations of current knowledge regarding future situations, and the inevitability of change. The tiered rate structure, implemented tomorrow, will be based on the best available data and will need to be updated and adjusted as better information or new conditions arise. The annual plan will identify and discuss implementation challenges to determine if there is a need for plan amendments. This process provides stakeholders including constituents the opportunity to discuss concerns about any particular element of the rate structure. This project wants Redmond be flexible in its decision making abilities.

## Conclusion

This proposal should be adopted by the City of Redmond because it is a first step towards a sustainable water future for the city. Economically, the plan allows for more growth based on current water availability. Socially, tiered rate structure protects community members that struggle to afford utilities. The plan also assists the city in preserving natural resources for the city's children and grandchildren. The proposal works with the city's current efforts and is a natural next step. We encourage the city to consider a tiered rate structure, like other cities in Oregon have already done. Because our plan is customized to Redmond's specific needs and goals, the proposal would bring Redmond into the cutting edge of water pricing and encourage sustainable growth for the future of the city.

"When the well's dry, we know the worth of water"  
-Benjamin Franklin, Poor Richard's Almanac

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<sup>58/72</sup> Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management, 65 Federal Register 202, 62566-62572, 2000.

## Appendix I

This is an example customer water survey developed by USGS, which Redmond can use as a guide in creating their own.

### *Residential Water-Use Project*

# Residential Water-Use Survey



## Residential Water-Use Survey

To help better assess current water needs and plan for the future, please answer each of the following questions. This information is being collected for **research purposes** by the U.S. Geological Survey. Results of this survey will be reported only in **anonymous summary form**. Thank you for taking time to help us compile this important information.

**PLEASE CHECK (✓) OR PROVIDE YOUR MOST APPROPRIATE RESPONSE FOR EACH AND EVERY QUESTION.** When you have answered all of the questions, please return to your teacher no later than May 1, 2004.

Street Address \_\_\_\_\_ Town \_\_\_\_\_

School \_\_\_\_\_ Grade \_\_\_\_\_ Teacher \_\_\_\_\_ Lot size \_\_\_\_\_ acres

### Source of water

<input type="checkbox"/> Town water supply	<input type="checkbox"/> Housing Development supply	<input type="checkbox"/> Own Private wells
--	---	--

### Disposal of wastewater

<input type="checkbox"/> Town sewer	<input type="checkbox"/> Housing Development septic system	<input type="checkbox"/> House septic system
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Name of town water supplier or housing development \_\_\_\_\_

Number of private wells at this address \_\_\_\_\_

**If you have town or development-supplied water, who pays for your water?**

<input type="checkbox"/> Family	<input type="checkbox"/> Landlord
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### Is your water use metered?

<input type="checkbox"/> No	<input type="checkbox"/> One meter for indoor and outdoor water use	<input type="checkbox"/> One meter for indoor use and a second meter for outdoor use
-----------------------------	---	--

### Number of people living in your household

Over 19 years of age \_\_\_\_\_ From 4 to 12 years \_\_\_\_\_  
 From 13 to 18 years \_\_\_\_\_ Less than 4 years \_\_\_\_\_

### What type of residence do you live in?

<input type="checkbox"/> Single family house (1-4 bedrooms) <input type="checkbox"/> Single family house (5+ bedrooms)	<input type="checkbox"/> Single family house with shared walls between units (townhouse or townhouse-style condominium) <input type="checkbox"/> Two-family house	<input type="checkbox"/> Mobile home <input type="checkbox"/> Apartment or apartment-style condominium
---	--	---

**INDOOR USE**

**In your home, how many of the following do you have?**

**Non-low-flow toilets? (6 gallons—pre-1980 toilets that take a long time to flush)**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
-------------------------------	------------------------------	------------------------------	--------------------------------	--

**Low-flow toilets? (3.5 gallons—manufactured during 1980's and 1990's )**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
-------------------------------	------------------------------	------------------------------	--------------------------------	--

**Ultra low-flow toilets? (1.6 gallons)**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
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**Bathtubs with shower?**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
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**Bathtubs only?**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
-------------------------------	------------------------------	------------------------------	--------------------------------	--

**Showers only?**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
-------------------------------	------------------------------	------------------------------	--------------------------------	--

**Whirlpool bathtubs with jets?**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
-------------------------------	------------------------------	------------------------------	--------------------------------	--

**Indoor utility/basement/garage sinks?**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
-------------------------------	------------------------------	------------------------------	--------------------------------	--

**Low-flow faucets or showerheads?**

<input type="checkbox"/> None	<input type="checkbox"/> One	<input type="checkbox"/> Two	<input type="checkbox"/> Three	<input type="checkbox"/> More than three
-------------------------------	------------------------------	------------------------------	--------------------------------	--

**How many of the following water-using appliances are used in your home?**

<input type="checkbox"/> Garbage disposal	<input type="checkbox"/> Dishwashing machine
<input type="checkbox"/> Top-loading clothes washing machine	<input type="checkbox"/> Front-loading clothes washing machine

**On average, how many times a week is a load of dishes *hand* washed in your home?**

<input type="checkbox"/> None	<input type="checkbox"/> 1-4	<input type="checkbox"/> 5-9	<input type="checkbox"/> 10-14	<input type="checkbox"/> More than 14
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**WATER-USE HABITS**

**Do you limit how much water you use for any of these reasons?** *(Please check all that apply)*

<input type="checkbox"/> Not sure well has enough water	<input type="checkbox"/> Not sure septic system can handle all wastewater
<input type="checkbox"/> Keep electrical bill down	<input type="checkbox"/> Want to conserve water to protect the resource
<input type="checkbox"/> Keep water bill down	<input type="checkbox"/> Other (Please specify) _____

**Have you done any of these actions to conserve water?** *(Please check all that apply)*

<input type="checkbox"/> Take shorter showers	<input type="checkbox"/> Water outdoors during early morning or evening
<input type="checkbox"/> Installed low-flow plumbing fixture(s)	<input type="checkbox"/> Installed a water efficient irrigation system
<input type="checkbox"/> Reduced landscape area irrigated	<input type="checkbox"/> Other (Please specify) _____

**How do you deal with running or leaky toilets and faucets?** *(Please check all that apply)*

<input type="checkbox"/> Never had the problem	<input type="checkbox"/> Fix leaks within one week
<input type="checkbox"/> Repair running toilet immediately	<input type="checkbox"/> Fix leaks eventually
<input type="checkbox"/> Call a plumber immediately	<input type="checkbox"/> Close the door and turn up the TV
<input type="checkbox"/> Try to remember to jiggle toilet handle	<input type="checkbox"/> Other (Please specify) _____

**Do you run water continuously for any of these reasons?** *(Please check all that apply)*

<input type="checkbox"/> Until it's cold	<input type="checkbox"/> While using garbage disposal
<input type="checkbox"/> Until it's hot	<input type="checkbox"/> While hand-washing dishes
<input type="checkbox"/> To keep pipes from freezing	<input type="checkbox"/> Other (Please specify) _____

**Are you concerned about the quality of your water?** *(Please check all that apply)*

<input type="checkbox"/> No	<input type="checkbox"/> Yes, we look at the water quality report sent by our water company
<input type="checkbox"/> Yes, we drink only bottled water	<input type="checkbox"/> Yes, we have our own treatment system
<input type="checkbox"/> Yes, we have had our well water tested during the past year	<input type="checkbox"/> Other (Please specify) _____

**OUTDOOR USE****How much of your lot area is watered (irrigated)?**

<input type="checkbox"/> None	<input type="checkbox"/> One quarter	<input type="checkbox"/> Half	<input type="checkbox"/> Three quarters	<input type="checkbox"/> All
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**During a typical summer season, how frequently do you irrigate?**

<input type="checkbox"/> Less than once a week	<input type="checkbox"/> Once a week	<input type="checkbox"/> Every other day	<input type="checkbox"/> Daily
--	--------------------------------------	--	--------------------------------

**When do you irrigate?**

<input type="checkbox"/> Early morning	<input type="checkbox"/> Late morning	<input type="checkbox"/> Afternoon	<input type="checkbox"/> Evening
--	---------------------------------------	------------------------------------	----------------------------------

**How do you irrigate? (Please check all that apply)**

<input type="checkbox"/> By hand (hose or bucket)	<input type="checkbox"/> In-ground sprinkler
<input type="checkbox"/> Manual sprinkler (one you move around)	<input type="checkbox"/> Other (please specify)

**How is the sprinkler activated?**

<input type="checkbox"/> By hand
<input type="checkbox"/> Automatic timer <b>without</b> soil moisture or rain sensor
<input type="checkbox"/> Automatic timer <b>with</b> soil moisture or rain sensor

**Do you use any additional sources for irrigation water? (Please check all that apply)**

<input type="checkbox"/> No	<input type="checkbox"/> Rain barrel
<input type="checkbox"/> Nearby surface water (stream, pond, river, lake)	<input type="checkbox"/> Purchase water

**How were you affected by last year's drought?**

<input type="checkbox"/> No problem	<input type="checkbox"/> Couldn't irrigate at all
<input type="checkbox"/> Not enough water to irrigate as much as I wanted to	<input type="checkbox"/> Well(s) went completely dry

**Do you have any of the following pools or gardens?**

<input type="checkbox"/> No	<input type="checkbox"/> Inside swimming pool	<input type="checkbox"/> Fountain
<input type="checkbox"/> Outside above-ground pool	<input type="checkbox"/> Hot tub/whirlpool	<input type="checkbox"/> Water garden
<input type="checkbox"/> Outside in-ground pool	<input type="checkbox"/> Greenhouse	<input type="checkbox"/> Other?

**Where do you get the water to fill your pool?**

<input type="checkbox"/> Well	<input type="checkbox"/> Delivered by tanker truck	<input type="checkbox"/> Public water supplier
-------------------------------	--	--

Do you wash your 

<input type="checkbox"/> sidewalks	<input type="checkbox"/> driveway	<input type="checkbox"/> vehicles
------------------------------------	-----------------------------------	-----------------------------------

 ?

**Thank you – your participation is appreciated!**

*Please return to your teacher no later than May 1, 2004.*

## Appendix II

This is an example resolution for the implementation of a tiered rate structure. It is a modified version of the City of Albany, Oregon’s water price resolution. This example is a basic, conceptual model resolution for the City of Redmond, Oregon, and will require further customization and refinement.

Resolution No. XXX

WHEREAS, The City of Redmond’s water system is entirely dependent on water charges for its funding; and

WHEREAS, The City seeks to ensure water availability for the future economic and social needs; and

WHEREAS, the City’s current price structure does not specifically represent the kind of water use that would allow for more water efficient growth in the future; and

WHEREAS, the City seeks to become more sustainable by implementing a tiered rate structure for its water charges; and

WHEREAS, the City is interested in balancing economic growth, equity for low and middle income residence, and water saving efforts.

NOW, THEREFORE, BE IT RESOLVED by the City of Redmond that the water rates and service charges for water service as specifically detailed in Exhibit “A” (attached hereto) are hereby adopted,

Mayor XXX

### EXHIBIT “A”

#### I. Residential, Commercial, and Industrial Water Service

Applicable to all water customers within the City of Redmond within the city limits. The monthly water bill is the sum of the base charge plus the volume of water consumed by the customer according to the following table:

Monthly Rate:

Customers Size/Meter Size	Base Charge	Tier 1 - \$X.XX per CCF	Tier 2 - \$X.XX per CCF	Tier 3 - \$X.XX per CCF
¾ inch or less	\$14.32	First 10 CCF	Next 10 CCF	After 20 CCF
1 inch	\$XX.XX	First XX CCF	Next XX CCF	After XX CCF
...	...	...	...	...

## Appendix III

This example ordinance is based on other committee ordinances within the city of Redmond, Oregon. Blanks are provided to customize the ordinance to the city's needs.

### **Redmond Sustainable Water and Economics Committee**

4.XXX Purpose. The purpose of the Redmond Sustainable Water and Economics Committee is to review water price rates and tier adjustments. The Committee considers changes based on water demand, infrastructure costs, conservation need, and community development. The Committee bases its suggestions on a balance of economics, equity, and water conservation goals.

4.XXX Responsibilities / Scope. The Redmond Sustainable Water and Economics Committee in an advisory capacity to City Council shall:

1. Foster participation of citizens and local officials in making decisions on the City of Redmond's water use programs through the Citizen Participation Plan, public hearings and other means.
2. Evaluate and make recommendations regarding the city's water rates, tiers, and base charges.
3. Evaluate the impacts of water costs on city development.
4. Evaluate future water needs and water availability.
5. Any other activities which are consistent with the above responsibilities.

4.XXX Duties and Powers. The Redmond Sustainable Water and Economics Committee shall advise the City Council by:

1. Monitoring and assessing the continuum of water needs of the community, and utilize this information to advise the City Council regarding policy and funding strategies relating to water use and needs.
2. Fostering public knowledge and support of official City water conservation programs.
3. Enhancing partnerships between the public and private sectors by promoting integrated approaches that provide affordable water for low and moderate-income persons.

4. Investigating federal, state, county and private funding for implementation of water conservation programs.
5. Evaluating, reviewing, and recommending to the Planning Commission and the City Council innovative land use strategies and programs targeted at promoting water conscious development.

#### 4.XXX Membership.

1. Number of Members. The Redmond Sustainable Water and Economics Committees shall be comprised of [X] members.
2. Residency. A majority of the members should reside within the Redmond Urban Growth Boundary.
3. Representation. Members shall come from [various departments, divisions of the City, and members of the public].
4. Appointments. The Mayor, with the approval of the City Council, shall appoint all members.
5. Terms. All terms are for four years. All full terms shall begin on January 1, with four of the original Committee being appointed for a term of two years, and five members being appointed for a term of four years. Thereafter, all members shall be appointed for four year terms. Any vacancy on the Redmond Sustainable Water and Economics Committee shall be filled by the appropriate governing body for the unexpired term.
6. Removal. A committee member may be removed by the appointing governing body for misconduct, nonperformance of duty, or three successive unexcused absences from regular meetings. The non-appointing body may, by motion, request that a member be removed by the appointing body. If the appropriate governing body finds misconduct, nonperformance of duties or three successive unexcused absences from regular meetings by the member, the member shall be removed. The Mayor can recommend, with Council approval, the removal of any committee member without cause.

#### 4.XXX Officers.

1. Chairperson / Vice-Chairperson. At its first meeting of each year, the Redmond Sustainable Water and Economics Committee shall elect from among its membership a chairperson and vice-chairperson. The Chairperson or vice-chairperson, acting as chairperson, shall have the right to make or correct motions and vote on all matters before the Committee. A majority of the Committee may replace its chairperson or vice-chairperson with another member at any time during the calendar year.
2. Annual Report to City Council. The Chairperson of the committee shall make an annual report to the Redmond City Council outlining accomplishments for the past year and work plan for the upcoming fiscal year, or more often as the Chairperson deems appropriate, or at the request of the Council.
3. 5-Year Review. The Chairperson of the committee shall suggest changes to the prices and tiers to the Redmond City Council needed to achieve the water use goals. The Review includes changes to the regulatory and legal system that impact water use. The Chairperson shall include a suggested water use goals for the next 5-year period and the any predicted change in water consumption within the City. If the goals for water use have not been met, the Chairperson shall present the probable reasons for the failure to meet the goals.

#### 4.XXX Meetings / Quorums.

1. Meeting Schedule. The Committee shall meet as required to accomplish their objectives.
2. Meeting Conduct. The Rules of Parliamentary Law and Practice as in Roberts Rules of Order Revised Edition shall govern each committee meeting.
3. Open to the Public. All meetings shall be open to the public.
4. Quorum. A majority of the members of the Committee shall constitute a quorum.
5. Quorum will be based on the number of people officially appointed to the Committee at the time and should not include vacancies.



4.XXX Expenses / Reimbursement. Committee members shall receive no compensation. Any expense incurred by a committee member must be pre-authorized by the City Manager or designee prior to incurring the expense, including reimbursements.

4.XXX Special Provisions.

1. The Redmond Sustainable Water and Economics Committee shall operate within the laws and guidelines of the federal government, the state government, Deschutes County and the City of Redmond.
2. The Mayor may appoint an ad-hoc committee to address issues that are not under the purview of the existing committee.

4.XXX Staff Support. Staffing shall be determined by the City Manager or City Manager designee.



## **Inventing Opportunity: Legal Means of Achieving Infill Development in Redmond, Oregon**

**Spring 2016 • Law**

Alexis Biddle • Planning, Public Policy, and Management  
Kelsey Zlevor • Planning, Public Policy, and Management

Jonathan Rosenbloom • Environment & Natural Resource Visiting Professor • Law



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*This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Redmond. Text and images contained in this report may not be used without permission from the University of Oregon.*

## Introduction

Redmond, Oregon, is a city that prides itself on innovation. From its humble beginnings as a pioneering town, Redmond has embodied a spirit of industriousness and do-it-yourself attitude that has propelled the city into the twenty-first century. Currently Redmond is seeking to tackle several issues pertaining to sustainability, and as part of Sustainable City Year Program, this report represents one proposal for Redmond's potential sustainable development through the 2016 spring semester Sustainability and the Law class.

As Redmond grows in population, the importance of responsible land use decisions becomes more critical. By allotting space for homes, businesses, and green space, Redmond will remain a hub for families and entrepreneurs alike. One critical way Redmond can ensure land reaches its highest use is by seeking and implementing targeted, creative, and pragmatic legal strategies to promote infill development in order to take advantage of vacant lots in the city proper. Redmond targeted infill development as a key area of improvement, and this project seeks to address how ordinances can be created and adjusted to reduce barriers to infill development.

This report provides a concise snapshot of how Redmond can reduce barriers by first addressing the goals of the proposed infill plan, describing infill development and how it relates to sustainability, an analysis of current local laws in Redmond, best practices and examples of infill ordinances around the country, and the final proposal for Redmond. With this compendium of information, Redmond can tailor a strategy that encourages small business, and forges a relationship between budding entrepreneurs and downtown Redmond.



## Goal Outline

A large component of Redmond's infill development opportunity is based on how the Redmond City Code enables or hinders vacant lot development. In order to provide Redmond a vision for its infill development framework, our proposal seeks to achieve the following goal through the subsequent objectives and strategies pertaining to the Redmond City Code.

**Goal:** Help Redmond ensure effective use of vacant or underutilized space within its existing urbanized downtown C-2 zone.

**Objective 1:** Remove logistical barriers in city code for the development of vacant urban land.

### Strategies

- Identify relevant zoning ordinances and analyze how they affect current vacant lot development
- Contact and collect information from relevant stakeholders on development barriers
- Propose new permitting process to streamline vacant lot development

**Objective 2:** Create appropriate incentives for development on vacant urban land.

### Strategies

- Identify issues that prevent development of vacant lands
- Develop process for distributing incentive
- Create flexible and effective means of allowing creative uses on vacant property

## What Is Infill Development and How Does It Relate to Sustainability?

Vacant land is inevitable in most cities. As businesses change, residents fluctuate, and the needs of communities transform, some land parcels are bound to be left behind. Especially in dynamic urban centers, the redevelopment of these vacant spaces is referred to as infill development, where the vacant gaps in a downtown are filled in with new uses. Infill development can be the utilization of any vacant property, or the redevelopment of blighted property for new use.

Redeveloping vacant land and promoting infill development can enhance sustainability in Redmond in five primary ways:

1. Increase revenue for the city: Often cities are unable to collect property taxes from vacant lands, leading to an actual financial loss for the city. When these spaces are redeveloped, property tax can be collected to increase city revenue.
2. Provide jobs, housing, and shopping downtown: When new uses are built on vacant lots, this provides new jobs, shopping, and even housing opportunities in the downtown core that enhance the downtown character.
3. Reduce the cost of infrastructure: Building on vacant lots also reduces infrastructure costs, as vacant lots downtown are usually already connected to amenities like utilities and water. When building on brand new property, connecting to these amenities is an additional cost.
4. Protect farm and forest land: Promoting infill development also focuses development in the downtown core, which prevents the spread of development into natural resource land on the outskirts of town like farm and forest land.
5. Create more walkable environments: Ultimately infill development can increase land use interdependence. When downtown centers are developed in a mixed-use fashion, this creates a more walkable downtown, where people can reach a wide range of goods and services in a small radius. This encourages walking and biking as opposed to driving, and creates more vibrant and economically profitable downtowns. Redeveloping vacant land also makes it possible to revitalize communities with more green space, and provide social cohesion as lots are redeveloped to create a less fragmented landscape.



## Current Local Laws

In order to quantify the potential for infill development in Redmond, an understanding of the current city code and how it treats vacant land is needed. To begin, Redmond's Comprehensive Plan serves as a foundation for all planning decisions. Under Oregon law, all cities must adopt a comprehensive land use plan. The comprehensive plan designates future land uses and the city's development code and zoning must be consistent with the plan. Redmond's Comprehensive Plan goal that most directly relates to vacancy and infill development is Goal 6:

*Goal 6. Provide for an attractive, interesting, and convenient downtown as a place to do business, work, shop, reside, visit, socialize, and celebrate the community.*

Infill development can certainly assist Redmond in meeting this goal and is in fact a valuable component. For example, the Goal 6 emphasis on a variety of uses supports the development of vacant property downtown because these lots can provide more employment and commercial opportunities that enable residents to live closer to jobs and shopping centers. As mentioned earlier, this interdependence of uses is critical in a city anticipating growth, and Redmond's Comprehensive Plan supports this concept.

Additionally, Goal 6 focuses on providing an attractive and interesting downtown, which directly correlates to this proposal's goal of ensuring effective use of vacant or underutilized space within existing urbanized area. Vacant space has often been found to deter business and development in an area because of its association with inactivity, isolation, and even potential for crime (University of Washington, 2010). Instead, by targeting and encouraging development in these spaces, vacant lots can become catalytic forces for additional neighboring development.

In addition, Chapter 9 of the Comprehensive Plan provides commentary on commercial development where the city emphasizes the role of the Central Business District (CBD) as a driver for Redmond's economy. This section addresses Goal 6 in that it supports redevelopment to "maximize customer access, exposure, and convenience" (19), which further supports land use interdependence.

More specifically, the Redmond Code (Redmond Code, 8.0020) defines infill development as "development or redevelopment of vacant, parcels of land in otherwise built-up areas." After reviewing Redmond's Code and talking with several planners, economic development specialists, business owners, and realtors, several barriers for infill development became apparent. This proposal will augment opportunities within these sections of the code to promote more infill development, and specific sections of the code are detailed below.

The first section of code that may pose a barrier to developers interested in infill is the determination of specific lot size requirements. According to the Chapter 8 Development Regulations of the Redmond Code for C-2, the minimum lot size shall be determined based on demonstration of the ability to develop the site in accordance with the zone standards, off-street parking standards, site & design review standards, and other applicable Chapter 8 Development Regulations (Redmond Code, 8.0195). While this is encouraging for vacant lot developers, the exception ordinance suggests the need to apply for a variance or other permit if the minimum lot size is still not sufficient:

*8.0550 Exception to Lot Size Requirements: If a lot or the aggregate of contiguous lots has an area or dimension which does not meet the requirements of these standards, the lot or aggregate holdings may be put to use permitted subject to the other requirements of the zone in which the property is located.*

It may be difficult to determine a minimum lot size for an individual vacant parcel in C-2, and this can create an issue for developers who only need to develop a small space. Instead of requiring that lots be of a minimum size to be developed, more flexibility could be introduced into the code to allow for smaller-than-average lots without a specific lot size exemption permit. As an incentive to infill development, Redmond can consider creating an ordinance that enables vacant properties to be exempt from lot size requirements or the need for a specific exemption when they are developed. This results in one less hoop to jump through for developers and reduces the threshold of difficulty for redevelopment.

In speaking with one of Redmond's City Planners, a key code change and subsequent incentive for developers would also be the possible exemption of infill development from site design and review. Currently, exemptions from site design and review standards are listed (Redmond Code, 8.3010), which include normal maintenance and repair, hangar development on airport property, single family dwellings or duplexes unless located on a lot within 100 feet of the canyon, manufactured home in an approved manufactured home park, additions to an existing building of less than 25% of the total building square footage, any development that does not include the construction or alteration of a building which will have a negligible impact on the land, and overhead electrical power transmission lines and poles. Also including vacant lots is imperative because currently there is only one fee category for the site planning process according to the Redmond fee schedule. Regardless of whether the project is big or small, anyone looking to develop a property must pay the same site plan fee. More specifically, the fee schedule states that for a commercial or industrial use for a structure of up to 50,000 square feet, the site plan fee is a flat \$7,300. This means that a small food stand of approximately 2,000 square feet would be charged the same \$7,300 as a large business utilizing over 30,000 square feet. This results in a very cost-prohibitive barrier at the very beginning of the process that could deter small businesses from starting the



process at all. The way the code is structured may limit economic development in Redmond because small businesses and developers may not want to pay such a high fee for a small property. By creating a more tiered or flexible fee structure, Redmond can remove the barrier earlier in the process.

While variances do help add some flexibility to the Redmond Code, the standards to get a variance are not designed to encourage infill development. Variances are granted when a special or unusual circumstance related to a property creates a situation where the owner is deprived of rights enjoyed by other properties within the same zone (Redmond Code, 8.0705). Variances only consider adjusting the requirements of the code for “peculiar” aspects of a property. If a developer wanted a variance that would allow for a creative building and use of space, but the property was not unusual, their application would be denied. Additionally, an application for a variance can only be submitted by the property’s owner; a developer who does not own a property but wants to propose a site plan that requires a variance, cannot submit the application.

Finally, currently there are no provisions in the Redmond Code for mixed-use development. While it is generally stated in Goal 6 of the Comprehensive Plan, there is little to no language in the code to help this goal be realized. This sentiment was echoed by Tom Kemper, Housing Works Executive Director, who pointed to the issue of the city’s maximum density allowance. The maximum density allowed in Redmond is 17.4 units per acre; whereas in Bend, medium density is classified as up to 20 units per acre. “Exceptionally dense” zoning in Bend is classified as 43 units per acre. Redmond’s maximum density could strive towards greater parity with Bend in allowing slightly denser development. From Kemper’s perspective, the biggest impediment to development is this density issue, and how Redmond’s code is ill-equipped to address it. This is an especially important standard when considering small lots (less than one acre) where a small number of units can exceed maximum density.

In sum, after speaking with Redmond’s planners, developers, and urban renewal experts about challenging aspects of the code, it is clear that there are several parts of Redmond’s code that suggest a need for additional flexibility and consideration in relation to vacant lots. Since these sites may be smaller than average and developers may have different needs that cannot be addressed by the current code, the result is sizeable barriers to development. In order to streamline adjustments to the code, Redmond can consider implementing a new process for infill sites that addresses these concerns.

## **Why aren’t these sustainable?**

Based on research of Redmond Code, the typical barriers can be distilled into the following list:

- Zoning and building codes can inadvertently restrict infill, either because development ideas are not easily achievable by following the code, or the process is cost-prohibitive
- Regulations for density, parking, or other site design aspects may prohibit or severely limit development
- The need for waivers or multiple variances can slow the approval process, and deter a project
- Building permits may be denied if a lot is undersized based on minimum lot sizes

All of these barriers point towards a need for a concise, appropriately priced, and flexible approval process within the Redmond Code targeted towards infill sites. As these barriers currently stand, Redmond is using a system that is also more challenging for the city as there is likely more paperwork, staff, and time involved in sorting through options that developers can try to pursue to complete their project. By creating a new system, facilitating infill development can be easier for everyone.

## Best Practices and Examples

In order to generate a larger scope of what is possible for Redmond, case study examples from Maryland, Arizona, and North Carolina are used to explore options for how cities are facilitating infill development around the country. Several of the key tactics highlighted below, regardless of location, can be applicable to Redmond and help spur successful infill development.

### Creating Development Awareness

Oregon's commitment to Smart Growth principles is evidenced by Urban Growth Boundaries (UGBs) in cities around the state. However, for cities without UGBs, it can be difficult to value compact development when additional land lays on the outskirts of the city. The first step to putting a premium on infill development opportunities that exist inside the city is to include legislation that acknowledges infill as its own type of development. The State of Maryland is one of the more progressive states for managing infill development at a local scale through comprehensive ordinances. Motivated by Smart Growth principles that emphasize the need for efficient use of space and encouraging localized development that limits sprawl, Maryland developed a template for a suite of ordinances particularly for infill, and this collection of ordinances can be tailored to each city to provide provisions for infill development (see Appendix I). These ordinances focus on accommodating growth by encouraging and facilitating new development on vacant land while taking into consideration local needs and economic development goals.

Maryland suggests a ten-part infill ordinance chapter, which outlines the permitted uses on infill properties, such as commercial and residential, and development standards for these properties in conjunction with regulations for parking and utilities. Maryland's comprehensive ordinances serve to highlight infill development as a specific genre of land use development, and encourages use of existing property and utilities in city centers to increase density. While Redmond may not need a full compendium of ordinances to highlight infill, Maryland's statutes serve to demonstrate the importance of including separate provisions for infill development to address code barriers.

### **Incentivizing Development**

While highlighting vacant infill parcels as a lucrative property stock is crucial to enabling such development, providing incentives is the true key to attracting development. With this in mind, Mesa, Arizona, created two separate chapters of infill development ordinances that work in tandem to accomplish 1) the creation of infill development districts and 2) the creation of the Development Incentive Permit (DIP).

The infill development (ID) district functions similarly to an overlay zone, where the zone and its subsequent provisions can be applied to a property in the district upon submitting an application to city council. An ID District may be established where the city council finds that the property meets definitions of vacancy, without regard to lot size. The district's provisions enable establishment of specific land uses, development standards, alternative fees, and streamlined review processes on these sites. Mesa splits the district into two types.

ID-1: The ID-1 District is for use with small sites of less than five acres that need relief from only a few development standards in order to develop or redevelop.

ID-2: The ID-2 District is for use with sites of 2.5 acres or more that would benefit from a more comprehensive modification of standard development requirements in order to develop or redevelop.

Mesa takes these districts one step further by also creating a DIP to address the concern that smaller properties can become economically nonviable without incentives (see Appendix II). Creating this new process allows vacant parcels to be individually assessed as to how the current code and building standards affect the property, and for amendments to be granted. Essentially, what would normally require the application for several variances on a developer's part is streamlined into one process that has the potential to grant the equivalent of multiple variances in one application. Sites that meet the definition of "infill" may be reviewed for a DIP, and to qualify for DIP consideration, sites must meet specific conditions.

The DIP fees are cheaper in Mesa than applying for separate variances, and the amendments and modifications to development requirements authorized by

a DIP are for building setbacks, landscaping design, on-site parking, building height, and right-of-way dedication. While DIP applications are effective for hurdles that limit development due to dimensional or quantity requirements related to development standards (such as building setbacks, build-to lines, or compliance with minimum parking ratios), DIP requests do not address questions related to land uses, utility infrastructure, or transportation/traffic improvements (engineering standards, Uniform Fire Code requirements, or requirements of the Uniform Building Code).

To create a successful application, the burden of proof is on the applicant to show the end condition of the new project will result in an overall development that meets all four of the following criteria:

1. The proposed development is consistent with the General Plan, permitted uses;
2. The incentives provide only for development that is commensurate with existing development within the definitional boundary of the infill property;
3. The incentives are necessary to accommodate the proposed development;
4. The architectural elements, construction and landscape materials, and other site improvements of the proposed development meet the intent of the provisions of the Design Guidelines chapter of this Ordinance.

According to Mesa's planning staff, the major advantages to a DIP are time and money. Typically, a DIP application is reviewed by the city's Board of Adjustment, a process that takes about eight weeks from the application deadline to a public hearing and decision, and the Board of Adjustment decides the merit of a DIP application. ID applications however involve changing the city's zoning map, where ordinances must be passed by city council. In Arizona, this is a two-hearing process: one by an advisory board (Planning and Zoning Board in Mesa parlance), and then a second hearing (and decision) by city council. A rezoning process takes a minimum of four months in Mesa. The fees for rezoning applications are also generally double to triple a DIP application fee, typically because of more staff time spent on the application. The key advantage to an ID district however is the flexibility of tailoring the zoning district and engineering requirements to the specific context of the site. The land use component of the zoning requirements and the engineering requirements both cannot be addressed by a DIP application.

Mesa's DIP process serves as one of the more compelling examples of facilitating infill development in the U.S., and provides foundational information for the proposal for Redmond. By creating a separate application process for infill development, Mesa acknowledges that vacant sites have different needs than other sites, and builds flexibility into the system to work more cohesively with developers.

## Influencing Development

Once spotlighting infill development is built into the code, cities can also consider what development is best for vacant spaces, and how these specific types of uses can be incentivized. One of the most common types of incentives for certain uses is encouraging green building in exchange for financial benefit. Catawba County in North Carolina uses this approach through their Green Construction Permitting Incentive Plan. The Catawba County Board of Commissioners adopted the Green Construction Permitting Incentive Program as a policy and included it as part of the Building Services fee schedule. It technically is not codified as part of the County Code.

Under the Catawba County Building Services Fee Schedule (Table 1), the county provides a rebate off of blanket permit fees for new construction if the project achieves certification in a specific green building program. New structures are eligible for a 25% rebate from fees for meeting one of five different energy efficiency certifications such as the USGBC Leadership in Energy & Environmental Design (LEED) Certification, or the U.S. EPA Energy Star Certification. Owners of existing structures are eligible for a 50% rebate off permit fees for the installation of efficient energy and water systems. Developers of new commercial buildings can also receive a 50% rebate on plan review fees upon an inspection that the structure fulfills the requirements for certification. While this example is not specifically targeted at infill development, Catawba County provides a framework for implementing an incentive system that encourages specific project characteristics on new development.

**Table 1.** Catawba County Building Services Fee Schedule  
**New Structure**

Certification Agency	Incentive
USGBC Leadership in Energy and Environmental Design (LEED)	25% Rebate of Blanket Permit Fee (Not to Exceed \$500.00)
NC HealthyBuilt Home	25% Rebate of Blanket Permit Fee (Not to Exceed \$500.00)
USEPA Energy Star	25% Rebate of Blanket Permit Fee (Not to Exceed \$500.00)
NAHB Model Green Building Home Guideline	25% Rebate of Blanket Permit Fee (Not to Exceed \$500.00)
ICC/NAHB National Green Building Standard	25% Rebate of Blanket Permit Fee (Not to Exceed \$500.00)

# Proposal: Redmond Holistic Urban Building (HUB)

Based on Redmond's current codes and the national best practice examples, Redmond can build its image as an infill-friendly city by increasing its flexibility around permitting for vacant spaces, and providing incentives to developers who meet criteria that will benefit Redmond's downtown atmosphere. Our proposal, Redmond Holistic Urban Building (HUB), is broken into two parts: Infill development permits, and infill incentives. Together, these components merge into a comprehensive proposal that welcomes new development, and provides social and aesthetic benefit to Redmond's downtown.

## Infill Development Permits (IDP)

Redmond can encourage infill development by creating a specific portion of its code that provides flexibility and incentives for the type of development it wants. Our model ordinance (See Appendix III) envisions a process where developers propose creative solutions to use vacant or abandoned properties. We propose the HUB system that augments the site review and variance processes in the code to create a more efficient process where more high quality developments are viable. This system will allow developers to propose a project that does not meet the exact requirements of the code but serves the purpose of creating desired infill development. Standards of review for these proposals will be based on consistency with the Redmond Comprehensive Plan and deemed appropriate for the surrounding neighborhood by city council.

Our proposal is based on the Mesa, Arizona example with Development Incentive Permits, and Infill Overlay Districts. Mesa's processes stand out nationally in intentionally encouraging infill development, and catalyzed the proposed combination of flexibility and incentives to promote infill development in Redmond. The first question we addressed is, where should greater flexibility in the Redmond Code be used to encourage infill development? Since Redmond has a need for more development to occur downtown, we decided to use an overlay only on the existing C-2 zone. We chose C-2 downtown as the testing ground for this new proposal, however the overlay can be expanded to other zones at Redmond's discretion. The decision to propose an overlay within the existing downtown overlay was based on the definition of the Downtown Design Overlay:

*8.0065 Downtown Design Overlay: To create and preserve areas within the C-2 Central Business District Zone that is vibrant and pedestrian-friendly where people can shop, work and play in a traditional downtown setting. In general, this district will encourage a vibrant mix of pedestrian-oriented uses, including residential, shopping and entertainment uses and increase in the density and intensity of development.*

The purpose of this proposal fits perfectly within the definition of the downtown overlay and augments Redmond's ongoing effort in this area.

We want to ensure that the developments proposed under the HUB process is high quality and desired by the community. The proposed ordinances require that the city council find that any proposal is consistent with the Redmond Comprehensive Plan and the character of the existing neighborhood. Redmond may want to consider getting approval from adjacent properties (or properties within a certain distance), or allow the city council to determine consistency independently.

The HUB process differs from standard variances of the code in three respects. First, the HUB process is geared towards encouraging infill development. The variance process may allow infill development, but its standards are more stringent and infill is less likely to occur under a variance standard because variances do not include the incentives that are part of the HUB process described below. Second, variances only seek to allow property owners the same enjoyment of their property as the property owners in the same zone. The HUB process on the other hand may allow a property owner an enjoyment that is not permitted on a similarly situated non-infill site. Third, while variances are allowed to occur in any zone on any parcel that is necessary, we've restricted these incentives to only lots in the downtown overlay, and to lots that have been vacant or abandoned for at least five years. This prevents developers from buying a lot, destroying a useful building, and building another in its place with the incentives allowed in this ordinance. Of course, developers can still raze a building and build another in its place, but only under the existing Redmond Code.

### **Infill Incentive**

While development of vacant space is encouraged, not all development is better than none. Redmond can consider utilizing an incentive tactic to further guide the types and amenities of development projects based on Catawba County. Redmond can incentivize uses or qualities we have identified as possibly being good for the commercial downtown, such as:

- Development/uses with late night amenities such as outdoor restaurant seating
- Developments with affordable housing opportunities, such as second-floor lofts
- Development with green space or pedestrian connection
- Higher density development
- Temporary/trial uses that could become permanent

With these uses as an example, Redmond can facilitate an incentive process based on the status quo. Relevant components of Redmond's current fee schedule are as follows:

Item	Cost
Redmond Variance Minor	\$2,983.42
Redmond Variance Major	\$5,537.29
Commercial Site Plan 0-50,000 sq. ft.	\$7,175.33
Commercial Site Plan 50,001-200,000 sq. ft.	\$16,656.39
Commercial Building Permit Fee for Valuation: \$1.00-\$500.00	\$25
Commercial Building Permit Fee for Valuation: \$501.00-\$2,000.00	\$25.00 for the first \$500.00 plus \$1.95 for each additional \$100.00 or fraction thereof, to and including \$2,000.00
Commercial Building Permit Fee for Valuation: \$2,001.00-\$50,000.00	\$54.25 for the first \$2,000.00 plus \$3.75 for each additional \$1,000.00 or fraction thereof, to and including \$50,000.00
Commercial Building Permit Fee for Valuation: \$50,001.00-\$100,000.00	\$234.25 for the first \$50,000.00 plus \$4.00 for each additional \$1,000.00 or fraction thereof, to and including \$100,000.00
Commercial Building Permit Fee for Valuation: \$10,001.00-\$200,000.00	\$434.25 for the first \$100,000.00 plus \$2.25 for each additional \$1,000.00 or fraction thereof, to and including \$200,000.00
Commercial Building Permit Fee for Valuation: \$20,001.00-\$300,000.00	\$659.25 for the first \$200,000.00 plus \$2.00 for each additional \$1,000.00 or fraction thereof, to and including \$300,000.00
Plan review fee	65% of permit fee



A key aspect of the current fee structure is that the commercial site plan is the same straight fee for any project up to 50,000 square feet. This becomes very cost-prohibitive for small developments considering that vacant lots downtown will likely be under 20,000 square feet. Bearing all of these costs in mind, Redmond can consider 1) ensuring the IDPs are less costly than variances similar to Mesa, and 2) implementing financial rebates or waivers similar to Catawba County, as seen in the following sample fee adjustments table:

**Table 2.** Proposed Redmond Fee Schedule

<b>Item</b>	<b>Incentive</b>
Development/use with late night amenities such as outdoor seating	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Development with housing opportunities, such as second-floor lofts	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Development with green space or pedestrian connection	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Density bonuses	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Temporary/trial uses that could become permanent	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Commercial Building Permit Fee for Valuation: \$1.00-\$500.00	Example: Fee waived

While incentives may not be a large sum in comparison to the full price tag of a new development project, they can help positively influence the types of development Redmond wants to encourage downtown. Redmond can further shape this table by identifying other, more specific key items that are desirable in a development project, and adjust the incentives column to meet an appropriate budget. Although providing incentives similar to Catawba may appear to result in an initial financial loss to Redmond, an eventual long-term increase in funds can accrue through property taxes and enhanced economic activity downtown as vacant space is rehabilitated into productive use.

## Conclusion

Businesses and entrepreneurs are attracted to vibrant downtowns that are full of amenities that attract customers; and residents are attracted to living in places with flourishing commercial and recreational opportunities. Redmond can attract both businesses and residents in the Downtown Overlay by offering flexibility and incentives. It will be important to shape this ordinance in a way that is connected with the desires of the community, and its further modification can only enhance its potential for the city and businesses alike. With thoughtful drafting and implementation, this ordinance can help Redmond continue its innovative infill history as the HUB of Oregon.

## End Notes

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# Appendix A: Maryland Infill Development Overlay Zone Chapter Model Ordinances

Jurisdictions may adopt the following model infill ordinance, craft it to fit their particular needs, or identify an alternative approach to supporting infill. The appendix contains additional ordinance language such as parking guidelines, accessory units and live/work provisions, which may be ‘plugged-in’ to the model ordinance as jurisdictions see fit. Local governments may already have regulations that support infill and require little or no modification in order to qualify for the incentives. The State does not require local jurisdictions to adopt the model Infill Ordinance.

This model is intended for use in residential areas and also provides for commercial and mixed- use infill development. It may also be applied to situations where demolition has created opportunities for existing structures to be replaced with new construction, or where new street patterns can seamlessly be integrated with existing adjacent communities.

## Section 1: INTENT

It is the general intent of this Ordinance to:

(OTHER STATEMENTS OF INTENT MAY BE SUBSTITUTED HERE)

- 1) Accommodate growth in (NAME OF LOCAL JURISDICTION) by encouraging and facilitating new development on vacant, bypassed and underutilized land within areas that already have infrastructure, utilities, and public facilities, while addressing the needs of (NAME OF JURISDICTION) residents.
- 2) Encourage efficient use of land and public services in the context of existing communities.
- 3) Stimulate economic investment and development in older established communities.
- 4) Provide developers and property owners flexibility so that they can achieve high quality design and develop infill projects that strengthen existing communities.
- 5) Create a high quality community environment that is enhanced by a balanced compact mix of residential, commercial, recreational, open space, employment and institutional uses and building types.
- 6) Implement the goals, objectives, and policies of the comprehensive plan, or the small area plan.

- 7) Improve approval certainty for infill development by providing clear development standards.
- 8) Encourage compact development that is pedestrian-scaled and, if applicable, transit-oriented.

## **Section 2: GENERAL REQUIREMENTS**

General: The site plan shall incorporate the following elements to enhance compatibility with the surrounding community:

- (1)
  - (a) Sidewalks that connect to the adjacent sidewalk system;
  - (b) Public streets that connect to the adjacent street pattern;
  - (c) Preservation of architecturally significant structures whenever feasible;
  - (d) Inclusion of, or relationship to, civic spaces;
  - (e) Street furniture, lighting and landscaping that is primarily oriented to pedestrian use; and
  - (f) Setbacks, building envelopes, use and parking compatible with surrounding community.
- (2) All new buildings (except accessory structures) shall have the primary entrance oriented to the street or public walkway, with direct, barrier-free and convenient pedestrian connections.

## **Section 3: PERMITTED USES**

General: (CERTAIN TYPES) of uses and building types are allowed, including accessory dwellings and accessory buildings if they are consistent with the comprehensive plan.

Residential (EXAMPLE FOR ACCESSORY DWELLINGS AND HOME OCCUPATIONS)

- (1) One Accessory dwelling unit per lot may be allowed in addition to the principal dwelling unit.
- (2) Home occupations are allowed if the use is clearly incidental and secondary to the use of the dwelling for residential dwelling purposes, and does not change the residential character of the dwelling.

Commercial/Employment (EXAMPLE FOR LIVE/WORK UNITS)

- (1) Commercial/employment may be mixed vertically or horizontally with residential. First floor space (Live/work units) restricted to non-residential use in areas of predominantly commercial use.

Institutional/Civic/Public uses are permitted for not-for-profit uses.

Mixed Use may include dwelling types and uses other than what is permitted in the underlying zone by right, subject to consistency with the comprehensive plan. Mixed use should be planned for in the context of existing walkable amenities in the neighborhood.

- (1) Residential uses are the predominant element, unless the project plan demonstrates how the development contributes to and strengthens the overall mix of uses of the surrounding neighborhood.
- (2) Residential uses can be mixed vertically with commercial/employment, including single structure live/work units.

**Section 4: DEVELOPMENT STANDARDS**

General: Density, design, materials, use and scale should reflect local style, climate, heritage and materials unique to (NAME OF LOCAL JURISDICTION).

- (1) Density: may exceed the underlying zone (BY xx UNITS PER ACRE) for the purpose of creating a neighborhood having a variety of housing types.
  - (a) Total number of dwelling units as well as location to be established at the time of preliminary plan approval.
  - (b) Lot Size. Lot areas established in the preliminary plan shall be dependent on proposed densities, floor area ratios, setbacks, building heights and community compatibility.
    - (i) Existing Small Lot Amnesty. A legal lot of record that existed prior to the date of this Ordinance, may use Infill Ordinance minimum buildable lot standards.
    - (ii) Minimum Buildable Lot Standards. See sample Ordinance language in Appendix B.
- (2) Building Height.
  - (a) Buildings restricted to (X) stories or (XX) feet in height, or the average of adjacent buildings.
    - (i) Heights allowed by right or by special exception in the underlying zone.
    - (ii) If greater than the allowed maximum, the proposed building or structure must meet the following criteria for community compatibility:
      1. Neighborhood scale
      2. Privacy
      3. Light and shadow
      4. Views
      5. Architectural compatibility

- (3) Building Setback.
  - (a) Setbacks as allowed by right in the underlying zone.
  - (b) Contextual setback option. May use an average of the setbacks of adjacent or abutting lots.
- (4) Bulk and Scale shall be similar to and consistent with the surrounding neighborhood as evaluated by the bulk of buildings adjacent, abutting and surrounding the proposed development. Larger buildings should be designed to adhere to the existing architectural pattern of the surrounding neighborhood.
- (5) Flexible development standards to reduce lot areas, widths and yards and to increase building heights may be permitted for infill developments at the discretion of the approving agency(s), subject to proof of good cause and benefit to the development and community, to encourage a variety of land uses, and to address difficult sites which incorporate infill and redevelopment or rehabilitation. Building height and coverage may vary so long as the project average is consistent with the neighborhood scale and architectural rhythm and does not constitute a disruptive condition in the identity of the area (See Section 5).

### **Section 5: COMPATIBILITY STANDARDS**

General: Provides exemplary site design, architectural design and high quality materials that are compatible with, and does not negatively alter the character of, the existing neighborhood.

- (1) All permitted uses conform to the purposes of the Ordinance (Section 1) and are compatible with uses, existing or proposed in the comprehensive plan in the general vicinity of the proposed development. The following requirements shall apply:
  - (a) Building Size, Height, Bulk, Mass, Scale. Similar in height and size or articulated and subdivided into massing that is more or less proportional to other structures in the area, and maintains the existing architectural rhythm.
  - (b) Building Orientation. Primary facades and entries face the adjacent street with a connecting walkway that does not require pedestrians to walk through parking lots or across driveways.
  - (c) Privacy. Optimize privacy of residents and minimize infringement on the privacy of adjoining land uses by considering the placement of windows and door entrances. Create opportunities for interactions among neighbors in common pedestrian circulation areas of the project.
  - (d) Building Materials shall be similar to materials of the surrounding neighborhood or use other characteristics such as scale, form, architectural detailing, etc. to establish compatibility.

- (2) All planned uses, building types, and landscaping will be included on the preliminary plan and will demonstrate the relationships of the proposed development with existing off-site development in the context of the adjacent community. Compliance with these requirements shall in and of itself be deemed to create a presumption of compatibility.

### **Section 6: OPEN SPACE and LANDSCAPING**

General: All open space, recreational amenities and landscaped areas shall be shown on the plan.

*Open space.* Infill development shall provide common public open space, if planned, except as follows:

- (1) Proximity to public park. An open space credit may be granted if a project is connected to, and located within 1/4 mile of, an improved public park by a continuous public sidewalk.

*Landscaping.* Natural vegetative features and existing trees shall be incorporated into the site design if practicable. Long term management and maintenance plans for natural areas, street trees, and common open space shall accompany the project.

### **Section 7: PUBLIC FACILITIES and UTILITIES**

General: Existing and planned public facilities should be shown on the plan.

- (1) All public streets, walkways and alleyways shall be shown on the plan. All through streets and walkways must be public. The local street and walkway system shall be safe, efficient, convenient, attractive and shall accommodate use by all segments of the population.
  - (a) The street and walkway system provides multiple, direct and continuous intra- and inter-neighborhood connections between destinations.
  - (b) The street network shall include sidewalks on both sides of the street.
  - (c) Closed street systems are prohibited, but short 'keyhole' cul-de-sacs that connect to the main grid system are allowed when consistent with the surrounding community.
  - (d) Street widths should be consistent with the surrounding community and sized to promote walkability and multi-modal use.
- (2) Roads, lighting, sidewalks, street furniture, utilities and other public facilities should enhance pedestrian circulation.



## **Section 8: PARKING**

General: Flexibility for the number of parking spaces shall be considered if the project is pedestrian-oriented and serviced within 1/4 mile by a transit stop.

- (1) Parking for private automobiles is provided based on safety, convenience, pedestrian and vehicular circulation, and proximity of public parking and public transportation.
- (2) The parking plan may provide a combination of off-street and on-street spaces. On-street parking is encouraged.
- (3) Shared parking is encouraged.
- (4) Sub-grade single garages may be allowed at the front of the building, subject to local design standards.
- (5) As is practicable, at-grade off-street parking areas should be located at the rear of the dwelling, with alley access.
- (6) All parking spaces shall be shown on the site plan.
- (7) Bicycle spaces shall be provided for commercial/employment and mixed-use projects.
- (8) Parking requirements can be waived where ample public parking is available in close proximity.

## **Section 9: FINDINGS REQUIRED**

The jurisdiction shall approve the plan upon finding that:

- (1) The plan accomplishes the purposes, objectives and minimum standards and requirements of the overlay;
- (2) The plan is in accord with the area master plan;
- (3) The plan is internally and externally compatible and harmonious with existing and planned land uses in the area;
- (4) Existing or planned public facilities are adequate to service the proposed development;
- (5) The development staging program is adequate in relation to the provision of public facilities and private amenities to service the proposed development; and
- (6) The plan is consistent with the purposes and provisions of the Smart Growth areas act and other applicable Smart Growth legislation.

## **Section 10: PROCEDURES FOR AMENDMENT**

<<TO BE DEVELOPED AS NEEDED>>

# Appendix B: Mesa Infill Districts and Development Incentive Permit Model Ordinances

## Chapter 12 ID - Infill Development Districts

### 11-12-1: Purpose

- A. General Purpose. The purpose of the Infill Development (ID) Districts is to promote and facilitate the development and redevelopment of by-passed, underutilized, or abandoned properties. This district provides for the establishment of specific land uses, development standards, alternative fees and streamlined review processes as incentives to stimulate reinvestment and development of these properties in a manner that will contribute to the creation of a high quality context for employment opportunities and improve the overall economic viability of that area of the city. The ID Districts may be used when other tools available in the Zoning Ordinance will not work to address the needs of the properties involved. It is the intent of this district to:
1. Encourage flexibility in the development, redevelopment, investment and reinvestment of by-passed, underutilized and/or abandoned properties that meet the criteria below for establishment of this district through the use of Infill Incentive Plans.
  2. Encourage the use of innovative approaches to development that utilize sustainable development practices and incorporate environmental performance standards.
  3. Where an urban form is anticipated or desired, encourage a mix of uses in close proximity of each other to promote pedestrian activity and reduce vehicle miles traveled. This goal includes consideration of off-site activities.
  4. Facilitate the development, redevelopment, and use of properties in Mesa where the public infrastructure is in place.

### B. Specific Purposes of Each District

There are two Infill Development districts:

1. ID-1. The ID-1 District is for use with small sites of less than 5 acres that need relief from only a few development standards in order to develop or redevelop.
2. ID-2. The ID-2 District is for use with sites of 2.5 acres or more that would benefit from a more comprehensive modification of standard development requirements in order to develop or redevelop.

### 11-12-2: Applicability

An ID District may be established for any area where the City Council finds that the property meets the definition of “by-passed parcel” as defined in this Ordinance, without regard to lot size. The Council must also find that the area within the district meets at least 3 of the following requirements:

1. There is a high percentage of vacant older or dilapidated buildings or structures;
2. There is a high percentage of vacant or underused parcels of property, obsolete or inappropriate lot or parcel sizes, buildings designed for obsolete land uses, or environmentally contaminated sites;
3. There is a high percentage of buildings or other places where nuisances exist or occur;
4. There is an absence of development and investment activity compared to other areas in the City;
5. There is a high occurrence of crime; or,
6. There is a continuing decline in population.

### **11-12-3: Land Use Regulations**

- A. ID-1 Districts. Land use regulations will be established for a given ID-1 district by referencing a base zoning district established in this Ordinance in the Infill Incentive Plan (IIP) and in the ordinance adopting the zoning designation. The uses allowed in that referenced district will be allowed on the property following approval of the rezoning. Example, the adopting ordinance would state that the uses permitted would be the same as the LC, Limited Commercial District.
- B. ID-2 Districts. The land uses permitted in a given ID-2 district will be established uniquely for that district based on the Infill Incentive Plan (IIP) approved by City Council with the adoption of the ID district. The requirements for the IIP are described in Section 11-12-5.

### **11-12-4: Development Standards**

- A. ID-1 Districts. The General Development Standards established in this Ordinance and the specific development standards for the base zoning district are required, unless specifically modified by the City Council with the approval of the ID-1 district.
- B. ID-2 Districts. The General Development Standards and specific development standards for property zoned ID-2 shall be established through the review and approval of an IIP as described in Section 11-12-5.

- C. Standards not in the Zoning Ordinance. Modifications to development standards not established within the Zoning Ordinance shall be in accordance with procedures and processes established in the Mesa City Code (MCC). With the application of the ID District, certain modifications may be sought in accordance with MCC Sections 9-5-3(C), 9-6-7(C), and 9-8-4(C).

#### **11-12-5: Infill Incentive Plan (IIP)**

The request for an ID shall be accompanied with an Infill Incentive Plan (IIP). The IIP shall be reviewed and approved as the regulating document for property development within the ID. The adopted IIP will establish objectives, land uses, development standards, and incentives for the specific infill district. The IIP shall be submitted concurrently with the application for the ID, and shall include the following:

- A. IIP Map. A map, which may consist of multiple sheets, drawn to a suitable scale and that includes the following elements:
  - 1. Required map elements for ID-1 and ID-2.
    - a. Boundary of the proposed ID District.
    - b. The approximate location of existing and proposed transit and bus routes, bike lanes, freeways, parkways, arterial streets, and streets which provide connectivity between ID District area other major transportation and transit corridors.
    - c. Existing site improvements, including adjacent street improvements.
    - d. Requested deviations from General Development Standards and other development standards not established by the Zoning Ordinance, pursuant to Section 11-12-4.
  - 2. Additional required map elements for ID-2.
    - a. Major drainage elements within the proposed ID-2 District and vicinity.
    - b. Existing and proposed utility corridors.
    - c. Any major trails and/or bikeways, including their proposed connections to conceptual trail locations identified in the Mesa General Plan and other relevant documents.
    - d. Location of any known significant historical, cultural, and archaeological features of the site.

- B. Statement of Need. The statement of need shall describe the existing conditions of the area proposed for inclusion in the ID and address the items listed in Section 11-12-2 that establish the reasons for use of this district.
- C. Development Goals. The IIP shall contain a description of the goals to be accomplished through the adoption and implementation of the ID. This description may be written and/or graphic and include a description of the final developments envisioned for the property that will meet the intent of this zoning district.
- D. Development Regulations. The IIP shall list permitted General Development Standards and land use options, which may be assigned to specific parcels. Multiple development and land use options may be assigned and described as available alternatives.
  - 1. ID-1 applications shall state the zoning district or districts, as listed in Section 11-3-1(A) Base Zones, being used to establish the uses permitted on the property. If more than one district is utilized, then the boundaries of each district shall be delineated on the IIP Map. The development standards associated with the designated district(s) shall govern development on the site unless deviations are requested as part of the application and approved with the adoption of the ID. If applicable, a character designation, as listed in Section 11- 3-1(C), Community Character Designators, may be used to define the default development standards. The application must also include any requests for modification of development standards contained in, or authorized by Title 9 of the Mesa City Code.
  - 2. ID-2 applications shall submit either of the following:
    - a. A list of base district(s) and/or character designator(s), as described in 1, above, or
    - b. A specific land use plan including allowed land uses and activities that may or may not necessarily correspond to specific base zoning districts. If this option is chosen, the adopted IIP shall govern allowed land use activities for the project site.
- E. General Development Standards. The IIP may, but is not required to include deviations to Chapter 30, General Development Standards, as defined in Chapter 87 - Definitions of this Title. In the event the IIP does not specify deviations to General Development Standards, the IIP shall specify how and when General Development Standards apply to specific sites.

- F. Design Guidelines. The IIP may, but is not required to include IIP Design Guidelines for the development of property, including illustrations of proposed architectural, urban design, streetscape, and landscape concepts, thematic design elements such as architectural materials, building colors and landscape plants, and any proposed variation from the Design Standards or guidelines contained in this ordinance. The IIP Design Guidelines may describe broadly based design or architectural themes and concepts, sufficient to convey an idea and general pattern of development. In the event an IIP does not include Design Standards or guidelines specific to that Infill District, then the requirements of the declared base district and Article 4 Chapters 30 through 33 of this Ordinance shall apply.
- G. Review and Development Procedures. The adoption of the ID-2 District allows for the specification of review procedures for future rezoning, site planning, design review and/or construction permit review and approval as well as waivers from other City ordinances and/or fees. If modifications are not included in the approved IIP, standard City procedures will apply. Options include:
1. Zoning Procedures. Procedures for expedited zoning or rezoning of a site, if desired.
  2. Scheduled Timeframes. Customized or expedited building plan review and permitting schedule, if desired.
  3. Waivers. A provision for waivers of certain municipal fees for development activities as long as the waivers are not funded by other development fees, if desired.
- H. Additional Information/Requirements. Additional information that may be required by the City as part of the IIP for the ID-2 District are:
1. Infrastructure Element. An infrastructure element, which includes plans for incorporating transportation, storm water drainage and utility options may be required by the City Engineer and City Traffic Engineer to evaluate current conditions and consider requested modifications.
  2. Supplemental Reports. Each IIP shall be accompanied by the following supplemental reports, as determined by the Planning Director, City Engineer and City Traffic Engineer at the time of the Pre-Submittal Conference.
    - a. Applicability Analysis: a narrative explaining how the area within the ID District complies with the Applicability Criteria specified in Section 11- 12-2.

- b. Additional information as necessary to facilitate understanding, review and action on the application by the City Council and administration of the implementation of the IIP by the Development and Sustainability Department.
3. Neighborhood Compatibility. The IIP shall include criteria and requirements to ensure that future development plans; will facilitate development compatible with adjacent properties and surrounding neighborhoods, will facilitate the implementation of the IIP, will facilitate appropriate transitions between differing developments, and will not overburden the transportation system, utility infrastructure or community facilities.

### **11-12-6: Review of ID District and Infill Incentive Plan**

- A. The City Council may approve an application for an ID after review and holding public hearing in accordance with ARS § 9-499.10 and the requirements of Article 7 of this Ordinance. The required IIP shall be reviewed concurrently with this application. In addition to the Planning & Zoning Board, the Council, at its discretion, may request that Design Review Board or any other citizen advisory board or committee identified by Council, review and make recommendations on any or all parts of the application for compliance with the applicability and evaluation criteria, and the general appropriateness of the IIP.
- B. Evaluation: The Planning & Zoning Board and City Council shall consider at a minimum the following goals and objectives when evaluating the proposed ID District and IIP. The proposed IIP shall:
  1. Conform to applicable policies, land use map designations, and land use definitions of the Mesa General Plan;
  2. Conform to the purposes and intents of the ID District as listed in Section 11- 12-1.
  3. Address the concerns outlined in the statement of need in support of the ID district.
  4. Provide a land use, or a combination of land uses that are arranged and designed in such a manner as to be well integrated with other land uses, the immediate surrounding area, the planned thoroughfare system, and other public facilities such as water and sewer systems, parks, schools, transit routes and utilities.
  5. Adequately, reasonably, and conveniently integrate into existing and planned streets, transit systems, and public services, utilities, and public facilities.

6. Promote development that is appropriate to and well integrated with its environmental setting, including existing vegetation, soils, geology, topography, and drainage patterns.
7. Justify any deviations from Standard Development Requirements based upon the overall quality of the plan provided, the need to address specific concerns outlined in the Statement of Need, and the need to address other conditions that may affect the viability of reasonably developing the property in a manner consistent with stated objectives of the Mesa General Plan.
8. Provide superior design and environmental sustainability in comparison with development reviewed under other base zoning district regulations.
9. Be compatible with, and not detrimental to, adjacent properties or the surrounding neighborhood(s).

## **Chapter 72 - Development Incentive Permits**

### **11-72-1: Purpose and Applicability**

This chapter is intended to provide incentives for the development of smaller tracts of land that would have difficulty meeting current development standards, having been bypassed by previous developments, and where land assembly either is not available, or is available only to a limited extent. Development Incentive Permits (DIPs) may be approved to allow incentives for the development of parcels that meet the following criteria:

- A. Area.
  1. Total area of the parcel does not exceed 2.5 net acres, and the parcel has been in its current configuration for more than 10 years; or
  2. Total area of the site does not exceed 5 net acres and was created by the assembly of 2 or more individual, contiguous parcels.
- B. Utilities. The parcel is served by, or has direct access to, existing utility distribution facilities.
- C. Surrounding Development. The parcel is surrounded by properties within a 1,200 feet radius in which:
  1. The total developable land area is not more than 25 percent vacant; and
  2. Greater than 50% of total numbers of lots or parcels have been developed 15 or more years ago.

### **11-72-2: Incentives**



Development incentives that may be granted by the DIP shall be limited to modifications to building setbacks, landscaping design, onsite parking, building height, right-of-way dedication, and other site development provisions contained in this Ordinance.

### **11-72-3: Required Findings**

A DIP shall not be granted unless the Zoning Administrator, acting at the Hearing Officer, or Board of Adjustment shall find upon sufficient evidence:

- A. The proposed development is consistent with the General Plan, any other applicable Council adopted plans and/ policies, and the permitted uses as specified in this Ordinance;
- B. The incentives do not allow development that is more intense than the surrounding neighborhood; commensurate with existing development within a 1200 foot radius of the by-passed property; and,
- C. The architectural elements, construction and landscape materials, and other site improvements of the proposed development meet the intent of the Design Standards of this Ordinance.

### **11-72-4: Conditions of Approval**

After the conclusion of the hearing, the Board of Adjustment or Zoning Administrator Hearing Officer may approve, modify, approve with conditions or deny the proposed Development Incentive Permits. The Board or Hearing Officer may condition any approval, and such conditions may include, but are not limited to: review by the Design Review Board; conditions to assure implementation of the submitted plan in accordance with the Mesa General Plan, and other applicable policies and plans adopted by the City; conditions to achieve the purpose and intent of the requested zoning district; and conditions to achieve reasonable compatibility with the proposed use and adjacent land uses.

### **11-72-5: Appeals; Expiration and Extensions; Modifications**

- A. DIPs are subject to the appeal provisions of Chapter 77, Appeals.
- B. DIPs are subject to the expiration and extension provisions of Section

### **11-67-9: Expiration and Extension**

- A. A minor modification of a DIP granted pursuant to this Chapter may be approved under Section 11-67-10(A), Modifications of Approvals. Changed plans, including changes in conditions of approval of a DIP shall be treated as a new application; see Section 11-67- 10(B), Changed Plan.

## Appendix C: Proposed HUB Ordinance for Redmond

**General Purpose.** The purpose of the Infill Development Permit (IDP) is to promote and facilitate the development and redevelopment of by-passed, underutilized, or abandoned properties. This process provides for the establishment of development standards, alternative fees, and streamlined review processes as incentives to stimulate reinvestment and development of these properties. IDPs may be used when other tools available in the Redmond Code will not work to address the needs of the properties involved. It is the intent of the HUB system to:

1. Encourage flexibility in the development, redevelopment, investment and reinvestment of by-passed, underutilized and/or abandoned properties.
2. Encourage the use of innovative approaches to development that utilize sustainable development practices and incorporate environmental performance standards.
3. Where an urban form is anticipated or desired, encourage a mix of uses in close proximity of each other to promote pedestrian activity and reduce vehicle miles traveled. This includes consideration of off-site activities.
4. Facilitate the development, redevelopment, and use of properties in Redmond where the public infrastructure is in place.

**Applicability.** This process is available for C-2 properties in the existing Downtown Overlay Zone. Within this zone, the process can be applied to properties that City Council deems as “by-passed.” By-passed parcels must be:

1. Vacant, abandoned, or in severe disrepair
2. In the same state for the last five years
3. Served by existing utilities

**Incentives.** Development incentives that may be granted by the IDP shall be limited to modifications to:

1. Minimum lot size
2. Building setbacks
3. Street frontage
4. Onsite parking
5. Building height
6. Maximum density

These modifications may be eased for the purpose of a proposed development by the zoning administrator (or Planning Commission or City Council) according to the standards set out in the required findings section below.

**Rebates.** In addition to requesting limited exceptions for the purpose of their development, a developer may request the following rebates if their proposed use is consistent with each associated item. Determination of whether the application is viable for the below incentives is under the jurisdiction of the Zoning Administrator (or Planning Commission or City Council).

Item	Incentive
Development/use with late night amenities such as outdoor seating	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Development with affordable housing opportunities, such as second-floor lofts	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Development with green space or pedestrian connection	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Density bonuses	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Temporary/trial uses that could become permanent	X% Rebate of Site Plan Fee (not to exceed \$XXX)
Commercial Building Permit Fee for Valuation: \$1.00-\$500.00	[Insert Incentive]

The IDP application can also serve as an application for funding or assistance from Redmond’s Urban Renewal Agency.

**Required Findings.** An IDP shall not be granted unless the Zoning Administrator (or Planning Commission or City Council) shall find upon sufficient evidence:

1. The proposed development is consistent with the Comprehensive Plan, any other applicable Council adopted plans and/policies, and the permitted uses as specified in this Ordinance;
  - a. The proposed development is consistent with all statewide planning goals
2. The incentives do not allow development that is out of character with the surrounding neighborhood

- a. The architectural elements, construction and landscape materials, and other site improvements of the proposed development meet the intent of the General Purpose of this Ordinance.
3. The incentives are necessary to accommodate the proposed development.

**Conditions of Approval.** After the conclusion of the hearing, the Board of Adjustment or Zoning Administrator Hearing Officer may approve, modify, approve with conditions, or deny the proposed Development Incentive Permit(s). The Board or Hearing Officer may condition any approval, and such conditions may include, but are not limited to: Review by the Design Review Board; conditions to assure implementation of the submitted plan in accordance with the Redmond Comprehensive Plan, and other applicable policies and plans adopted by the city; conditions to achieve the purpose and intent of the requested zoning district; and conditions to achieve reasonable compatibility with the proposed use and adjacent land uses.

*"An ounce of prevention is worth a pound of cure." (Benjamin Franklin)*



## **Redmond Reduces**

**Spring 2016 • Law**

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Jonathan Rosenbloom • Environmental & Natural Resource Visiting Professor • Law

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*Cover Image: Plastic bags in the fence of the Deschutes County Knott Landfill, representing 50% of the landfill litter. How many resources were consumed to produce them? For how long were they used? Where will the wind take them? For how long will they last in the environment? Source: Laura Palmese.*

*This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Redmond. Text and images contained in this report may not be used without permission from the University of Oregon.*

## Introduction

Municipal solid waste is one of the most important by-products of an urban lifestyle.<sup>1</sup> It is no surprise, then, that every city has ordinances for waste control. Whether they impose fees for collection services, prohibit unsanitary disposal practices or mandate specific designs for new constructions, each city has had its ways to deal with waste. Over the time, however, cities have been changing their perspective and willingness to collect and dispose any amount or type of waste the citizens produce. Lately, waste controls have evolved to address generation at source, aiming for reduction and, therefore, embracing sustainability.

Waste controls oriented to reduce the consumption of certain types of materials prevent the generation of waste to be managed by the local institutions and the pressure on the local and global ecosystems. This is a front-of-the-pipe solution for waste management, as opposed to collection and disposal services that deal with materials at the end of their life cycle. Waste minimization has multiple implications for achieving sustainability, as it will be explained in this report. The wastes subject to prevention controls, which will be addressed in this proposal, are those that were designed accounting for an infinite availability of non-renewable resources and endless disposal land. Continuing the use of those products means the perpetuation of linear systems in a finite, limited, circular world.

Many cities, big and small, have already started to walk the path of reducing waste. Some even have embraced the controversial Zero Waste movement, acknowledging that the concept of “waste” is human-made and that, in fact, “waste” should not exist. Even though a Zero Waste initiative can sound unachievable, the question remains valid: *If we are not for zero waste, for how much waste are we for?*

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<sup>1</sup> Nina Schuler et al., WHAT A WASTE A Global Review of Solid Waste Management (World Bank 2012).

## Goals

To create an enabling legal framework to **prevent waste generation** and **encourage reuse** of certain products, to **improve consumption patterns**, as a precursor for Zero Waste in the City of Redmond.

Currently, the waste management of the city consist of a garbage service focusing on collection and disposal. The current laws do not encourage the prevention of the generation of single-use, non-recyclable, disposable materials that are buried in the landfill, the least preferable alternative in the waste management hierarchy.<sup>2</sup> This project will focus on minimizing the generation of certain types of disposable products, particularly plastic bags and expanded polystyrene (a.k.a. Styrofoam) containers, of which the City of Redmond has expressed interest. As a result, the project will encourage reuse and improve the consumption patterns among the residents of the City of Redmond.

*Figure 2: Garbage can in a Redmond sidewalk.*



*Source: City of Redmond website*

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<sup>2</sup> US EPA and OSWER, Sustainable materials management: Non-hazardous materials and waste management hierarchy (Nov. 19, 2015), <http://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy>.

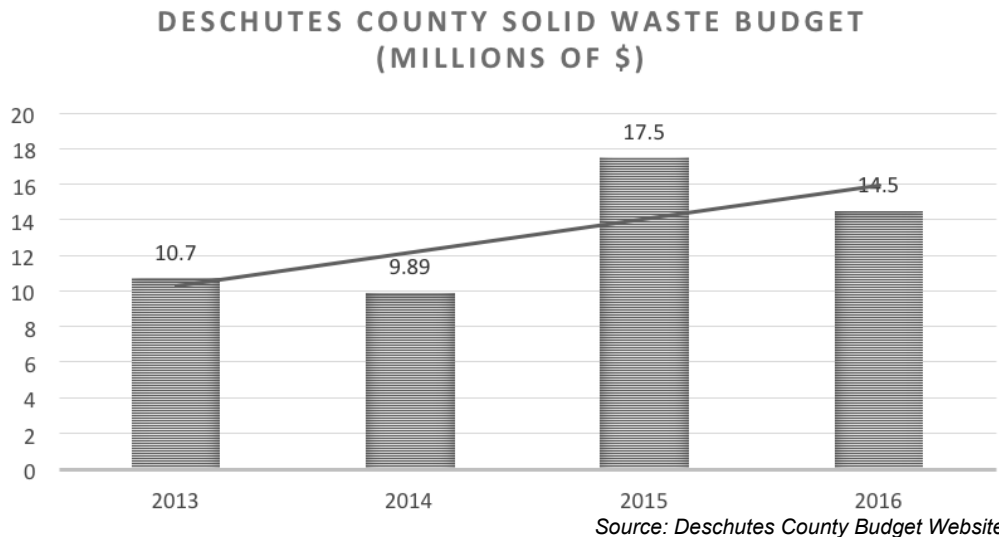


# The Triple Bottom Line for Waste Prevention

Ordinances for waste prevention have a direct influence in editing the current unsustainable production and consumption patterns to make them more sustainable. The implementation of the proposal for the selected materials, and its adaptation to further materials that the City of Redmond deems fit, has repercussions for all three aspects of sustainability, as it will be explained below.

## Economy

Figure 3: Waste disposal costs millions of dollars.



Less waste results in **reduction of waste management costs**. As the Knott Landfill fills up, the need to build a new facility is likely to increase the operation costs, because of the upgraded building requirements, initial expenses, and closure of the old facility. The Deschutes County budget for solid waste includes: Landfill and transfer station operation and maintenance, long-term funding (equipment purchases, cell construction, site closure, post-closure maintenance and other high-cost expenses), and recycling services, among others. Landfill is an important part of the overall expense: in 2015, about \$5.7 million went directly to landfill operations related expenditures.

Less non-recyclable waste also reduces the cost for recycling programs. Light weight, non-recyclable plastic products create issues for operators of landfills, recycling and composting facilities, which increases solid waste management costs. About 50% of the litter or pollution found in the fences of the Deschutes County Knott Landfill are plastic bags, and the composting project located next to the landfill is also being contaminated by plastic bags.<sup>3</sup> Windy days require

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<sup>3</sup> From onsite visits and interviews to Brad Bailey, from Deschutes Recycling and Chad Centola, from Deschutes County Solid Waste Department.

cleanup efforts, and there was an incident when a plastic bag wall on the fence blew it away.<sup>4</sup> Pioneer Recycling Services, one of the Materials Recovery Facilities to which recyclables from Redmond are brought, estimates a three to five percent contamination level, plastic bags being the number two problem, for which they spend an hour a day to cleanup. The number one problem is hypodermic needles and the third one is just debris that do not belong in recycling at all. Information found for the Larimer County Landfill in Colorado reveals an expense of over \$21,000 in 2011 and in 2012 (and a \$35,000 budget for 2013) on site clean-up, and similarly, about half of that cost is attributed to plastic bags.<sup>5</sup> The regional Material Recovery Facility (MRF) also incurs costs to address plastic bag contamination in the recycled material stream (cleaning screens, sorting, machine repairs, and disposal of separated bags).<sup>6</sup> Eco-Cycle, an organization supporting recycling efforts in the City of Boulder, estimated the total cost of plastic bag contamination to Boulder's MRF to be between \$200,000 and \$524,000 per year.<sup>7</sup> Far West Fibers, which handles a significant amount of the recycling from the Portland metropolitan region, estimates that 25 to 30% of total labor costs are spent on shutting down the recycling machinery and manually removing the jammed plastic bags and film.<sup>8</sup> Other estimates note that plastic bags cost local MRFs between \$30,000 and \$40,000 every month, because of equipment clogging and contamination of recovered materials, reducing the quality and market value of the materials.<sup>9</sup> In Portland, plastic recycling facilities were also reporting jams in the machinery due to of plastic bags, causing "tens of thousands of dollars a month in maintenance and labor to fix the mess."<sup>10</sup>

Related to the above, less waste could result in lower rates for collection and disposal services, an important expense for the food provider sector particularly, and every household or business more broadly. In communities with pay-as-you-throw (PAYT) programs – also known as unit pricing or variable-rate pricing, residents are charged for the collection of municipal solid waste based on the amount they throw away, and this creates a direct economic incentive to recycle

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<sup>4</sup> From an interview to Brad Bailey, in charge of Deschutes Recycling, whose facilities neighbor the Knott landfill.

<sup>5</sup> Brendle Group, Triple Bottom Line Evaluation: Plastic Bag Policy Options (City of Fort Collins, 2012) Available at: <http://www.fcgov.com/recycling/pdf/triple-bottom-line-evaluation-plastic-bag-policy-options-10-2012.pdf>

<sup>6</sup> Id.

<sup>7</sup> "Options for reducing disposable checkout bag use in Boulder", Boulder City Council Meeting Agenda, May 15, 2012. <http://www.bouldercolorado.gov/files/05152012Agenda/AgendaFINALWeb.pdf>

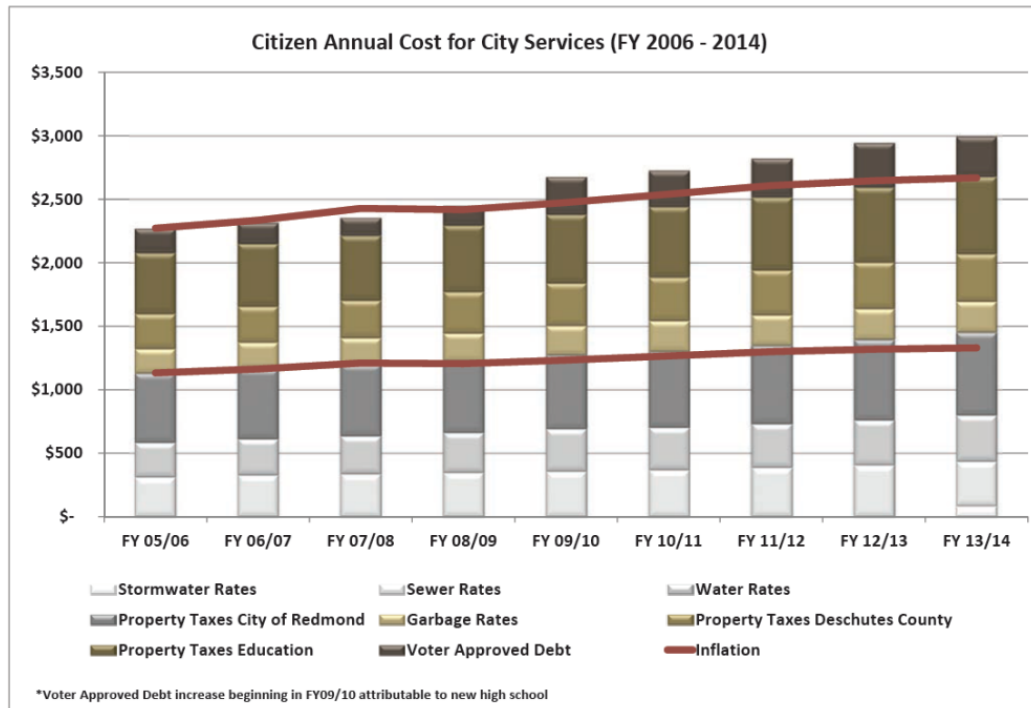
<sup>8</sup> From the findings of the Portland City Ordinance 184759.

<sup>9</sup> Id.

<sup>10</sup> Adam Chimeo, Eugene considers a plastic bag ban, (Eugene Daily News Aug. 30, 2012), <http://eugenedailynews.com/2012/08/eugene-considers-a-plastic-bag-ban/>.

more and to generate less waste.<sup>11</sup> PAYT systems can be based on bin volume, collection frequency, and weight,<sup>12</sup> but they are generally based on can size (volume). Due to the light weight of plastic products, the volume base for service fee calculation – currently used in Redmond – is more appropriate than a weight based. A differentiation price can be made between collection prices for compostables and landfillables, this way there would be an incentive to reduce the wastes that are sent to the landfill, which management costs are higher than a compost or recycling project, which can also generate revenue.

Figure 4: Annual costs for garbage rates increase for citizens to receive city services.



Source: City of Redmond, OR Budget FY 2014-15

The use of alternate materials will allow internalization of costs of single-use products. The hidden cost of single-use plastic carryout bags in Los Angeles, CA, was estimated to be approximately \$3.25 per person annually, assuming approximately 433 plastic bags are used per capita at an average cost of \$0.008 per bag, a cost that retailers, and therefore retail customers, were already paying for 'free' single-use plastic carryout bags.<sup>13</sup> Paper and reusable

<sup>11</sup> US EPA et al., Conservation tools, <https://archive.epa.gov/wastes/conservation/tools/payt/web/html/index.html>

<sup>12</sup> Pay-as-you-throw (PAYT) scheme in Schweinfurt, Germany (Pre-waste fact sheet 108) (2011), [http://www.prewaste.eu/index.php?option=com\\_k2&view=item&id=356&Itemid=101](http://www.prewaste.eu/index.php?option=com_k2&view=item&id=356&Itemid=101).

<sup>13</sup> AECOM, Project Report: Economic Impact Analysis, Proposed Ban on Plastic Carryout Bags in Los Angeles County Ordinance to be placed in Title 12 of the Los Angeles County Code (Sapphos Environmental, Inc. Pasadena, California: 2010)

bags, however, cannot be given away for free: the average price of a paper bag is \$0.10, while reusable bags may cost around \$0.87.<sup>14</sup> Encouraging the use of reusable bags over plastic or paper bags can lead to cost savings that accrue to the retailer, because they then do not have to purchase, store, and provide carryout bags to customers.<sup>15</sup> For consumers, according to a report for San Diego, CA, there is an estimated cost of \$7.70 per household in the first year after the ban, to purchase reusable bags and to account for any fees associated with paper bag usage; however, recurring costs should decrease over time due to the long lifespan of reusable bags.<sup>16</sup> In Rhode Island, conservative calculations of the social cost of litter, CO2 emissions from bag production, landfilling, and improper recycling of plastic bags reveals that each 1 cent plastic bag used at a retail outfit costs over 10.52 cents for society as a whole, which lead to a recommendation of a tax of at least 11 cents on all disposable bags.<sup>17</sup>

Also, the need for alternative reusable products and recycling projects can **prompt entrepreneurial innovation** and **foster green job creation**, preferably in green manufacturing. For example, in the face of a state-wide plastic bag ban in California, Command Packaging, a North American manufacturer, instituted a “unique process [that] eliminates millions of agricultural plastic waste into a reusable bag solution” and created “hundreds of green jobs to support the recycling, resin production, distribution and reusable bag manufacturing.”<sup>18</sup> In 2015, the US Environmental Protection Agency also recognized Command Packaging’s efforts with a Small Business, Honorable Mention in the national US EPA Waste Wise Awards.<sup>19</sup> Considering that plastic bags and expanded polystyrene are made of petroleum and natural gas and Oregon’s economy is not based on petroleum extraction or manufacturing, using paper products is supportive of the local economic activities such as logging.<sup>20</sup> Furthermore, according to the Blue Green Alliance, 1.1 million new jobs would be created if the US diverted 75% from landfill.<sup>21</sup>

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<sup>14</sup> Id.

<sup>15</sup> Id.

<sup>16</sup> Equinox Center, Executive Summary: Impacts of Plastic Bag Bans. Available at: [https://energycenter.org/sites/default/files/Plastic\\_Bag\\_Bans\\_Analysis\\_of\\_Economic\\_and\\_Environmental\\_Impacts\\_October\\_2013.pdf](https://energycenter.org/sites/default/files/Plastic_Bag_Bans_Analysis_of_Economic_and_Environmental_Impacts_October_2013.pdf)

<sup>17</sup> Adam Akullian et al., Plastic Bag Externalities and Policy in Rhode Island. (Brown Policy Review, 2006) Available at: <http://seattlebagtax.org/referencedpdfs/en-akullianetal.pdf>

<sup>18</sup> Julieun Kawasaki, Mass media success story of an American company, Available at: [http://www.commandpackaging.com/command\\_updates.cfm?Mass-Media-Success-Story-of-an-American-Company&NewsletterCode=kompSEC21700893rmCbsFZ](http://www.commandpackaging.com/command_updates.cfm?Mass-Media-Success-Story-of-an-American-Company&NewsletterCode=kompSEC21700893rmCbsFZ).

<sup>19</sup> US EPA et al., 2015 WasteWise awards, Available at: [https://www3.epa.gov/epawaste/conservesmm/wastewise/2015\\_ww\\_awrds.htm](https://www3.epa.gov/epawaste/conservesmm/wastewise/2015_ww_awrds.htm).

<sup>20</sup> Damian Mann, Fight the foam (DailyTidings.com Jul. 23, 2014), <http://www.dailytidings.com/article/20140723/LIFE/407230301>

<sup>21</sup> Tellus Institute with Sound Resource Management, More Jobs, Less Pollution: Growing the Recycling Economy in the U.S. (BlueGreen Alliance 2011). Available at: <http://www.bluegreenalliance.org/news/publications/document/MoreJobsLessPollution.pdf>.

Figure 5: Workers at Pioneered Recycling Services, one of the Material Recovery Facilities (MRFs) to which recyclables from Redmond are sent.



Source: Pioneered Recycling Services Website

## People

Waste prevention has a direct link with intergenerational equity as the future generations will inevitably inherit all the waste produced by previous generations, whether it is properly disposed (landfilled) or not. Landfills are one of the most important problems in waste management with respect to the implementation of sustainability criteria, as they produce intertemporal external costs for future living individuals.<sup>22</sup> In dry environments, the length of the time horizon has to be carefully chosen in order to capture all external effects caused by the emissions of landfills, and the current state of knowledge requires an extension of the horizon for the analysis as long as physical effects could occur, which automatically leads to an intergenerational setting of many centuries.<sup>23</sup>

Research on the migration of chemical substances present in plastic products when heated<sup>24</sup> reveals the need to apply the precautionary approach when it comes to food and plastic containers. Substances added during the disposable

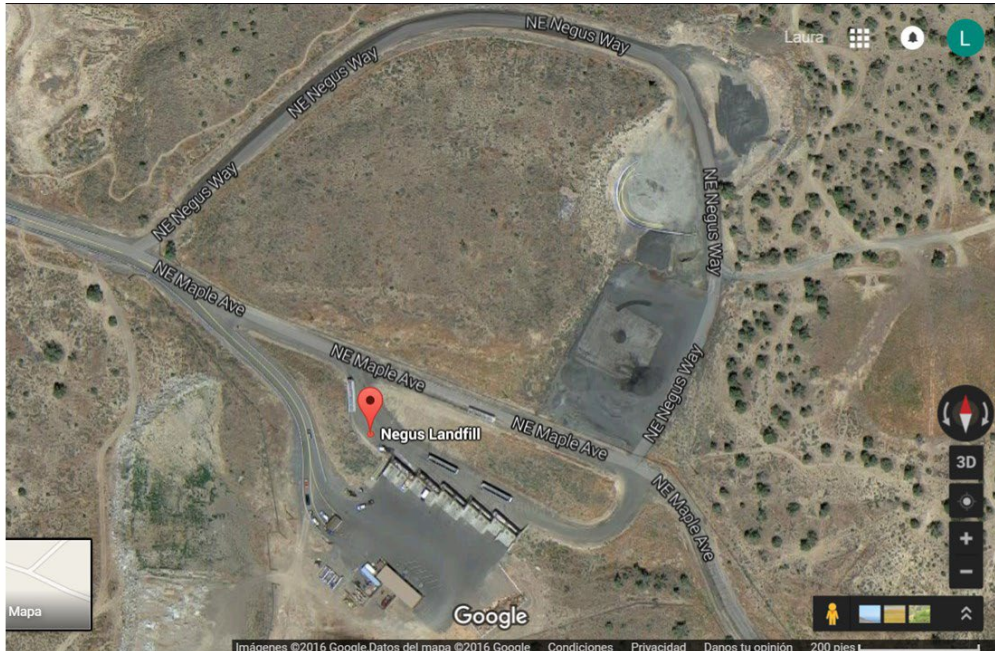
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<sup>22</sup> Stefan Bayer and Jacques Méry, Sustainability gaps in municipal solid waste management: The case of landfills (University of the Federal Armed Forces Hamburg, Department of Economics: 2006)

<sup>23</sup> Id.

<sup>24</sup> Harvard Health Publications, Microwaving food in plastic: Dangerous or not? - Harvard health (Harvard Health Dec. 9, 2015), <http://www.health.harvard.edu/staying-healthy/microwaving-food-in-plastic-dangerous-or-not>.

Figure 6: Negus Transfer Station. Negus used to be a dumpsite where Redmond disposed of its garbage. It was closed in 1993 due to the risks it posed to groundwater as it did not have the protective layers and other technical infrastructure of a proper landfill.



Source: Google Maps.

plastic manufacturing, such as bisphenol A (BPA), can have harmful health effects.<sup>25</sup> The U.S. Food and Drug Administration (FDA) issued a statement saying that “recent studies provide reason for some concern about the potential effects of BPA,”<sup>26</sup> and there are on-going studies on potential harms for other additional components of plastics.<sup>27</sup> Styrene monomer, from which Polystyrene is made, is a known neurotoxicant, reasonably anticipated to be also a human carcinogen.<sup>28</sup> Styrene monomer has a proven ability to migrate from packaging to food, and has been found in adipose samples.<sup>29</sup>

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<sup>25</sup> Renee Cho, What happens to all that plastic? (Jan. 31, 2012), <http://blogs.ei.columbia.edu/2012/01/31/what-happens-to-all-that-plastic/>

<sup>26</sup> U.S. Food and Drug Administration. Bisphenol A (BPA): Use in Food Contact Application. Available at: <http://www.fda.gov/newsevents/publichealthfocus/ucm064437.htm>.

<sup>27</sup> Emily J. North and Rolf U. Halden, *Plastics and Environmental Health: The Road Ahead*, 28 *REVIEWS ON ENVIRONMENTAL HEALTH* 1 (Walter de Gruyter GmbH 2013).

<sup>28</sup> See the US Department of Health and Human Services, *12th Report on Carcinogens* (2011), Available at: <http://ntp.niehs.nih.gov/?objectid=03C9AF75.E1BF.FF40.DBA9EC0928DF8B15>

<sup>29</sup> Styrene Chapter, *Air Quality Guidelines*. 2nd Edition, WHO Regional Office for Europe, Copenhagen, Denmark, 2000

Source reduction **prevents the risk of incorporation of chemical into the trophic (food) chain**. Plastic items tends to accumulate a surface layer of chemicals from sea water, whether those chemicals come from inland activities or plastic themselves, for example the above mentioned BPA, styrene monomer, or styrene trimer, a polystyrene byproduct and suspected carcinogen.<sup>30</sup> Marine animals are known for swallowing plastic bags which they confuse with jelly fish, and small pieces of expanded polystyrene can be mistaken for food as well.

Reducing consumption of single-use plastics would also **prevent the social impacts of extractive projects** in rural communities that surround them, many of which are located outside of the city limits, and in countries where the rule of law is weak or nonexistent. Research reveals that poor countries that are oil dependent often have slower rates of economic development, higher levels of corruption, higher military spending, worse performance in reducing child malnutrition and adult illiteracy, and are more vulnerable to economic shocks.<sup>31</sup> In terms of impact distribution, studies show that oil exploration has a disproportionate impact on indigenous populations,<sup>32</sup> whose livelihoods rely heavily on the integrity of local ecosystem affected by oil and gas operations.<sup>33</sup> Communities surrounding oil and gas projects, and workers, particularly, experience health impacts, due to the exposure to radioactive materials and other pollutants.<sup>34</sup> Furthermore, the existence of adequate regulatory and efficacy of enforcement systems to solve these problems – a.k.a. rule of law – both in the United States and developing countries, is under question.<sup>35</sup>

## Environment

Reducing consumption of plastic disposable products will help **delay the depletion of non-renewable natural resources** from which those products are made. Oil is an important source of raw materials for making plastics,<sup>36</sup> as well as natural gas and hydrocarbon gas liquids (HGL), by-products of oil

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<sup>30</sup> Plastic breaks down in ocean, after all -- and fast (Oct. 28, 2010), <http://news.nationalgeographic.com/news/2009/08/090820-plastic-decomposes-oceans-seas.html>.

<sup>31</sup> Ross M. 2001. Extraction Sectors and the Poor. Boston: Oxfam Am

<sup>32</sup> Kretzmann S, Wright S. 1998. Drilling to the Ends of the Earth: The Ecological, Social and Climate Imperative for Ending Oil Exploration. Berkeley, CA: Rainfor. Action Netw. Proj. Undergr.

<sup>33</sup> Legborsi Saro Pyagbara, The Adverse Impacts of Oil Pollution on the Environment and Wellbeing of a Local Indigenous Community: The Experience of the Ogoni People of Nigeria (2007)

<sup>34</sup> Epstein PR, Selber J. 2002. Oil: A Life Cycle Analysis of Its Health and Environmental Impacts. Boston: Center Health Glob. Environ., Harv. Med. Sch

<sup>35</sup> Dara O'Rourke and Sarah Connolly, *JUST OIL? THE DISTRIBUTION OF ENVIRONMENTAL AND SOCIAL IMPACTS OF OIL PRODUCTION AND CONSUMPTION*, 28 ANNUAL REVIEW OF ENVIRONMENT AND RESOURCES 587 (Annual Reviews 2003).

<sup>36</sup> There's more in a barrel of oil than just gasoline (ExxonMobil's Perspectives Blog 1970), <http://www.exxonmobilperspectives.com/2011/06/05/theres-more-in-a-barrel-of-oil-than-just-gasoline/>.

and gas refining and processing.<sup>37</sup> According to the U.S. Energy Information Administration (EIA), in 2010, 191 million barrels of HGL and 412 billion cubic feet (Bcf) of natural gas were used to make plastic products in the U.S., accounting for 2.7% and 1.7% of the U.S. oil and gas consumption, respectively.<sup>38</sup> It has to be noted, however, that China and Europe are leading regions in plastic manufacturing, followed by the NAFTA region (Canada, Mexico and the United States) and the rest of Asia.<sup>39</sup> China produces nearly a quarter of the world's plastics,<sup>40</sup> but no comprehensive data on the type of products manufactured was found. Europe, ranking the second in the global plastic materials production, reports that packaging is the largest application sector for the plastics industry, representing 39.6% of the total plastics demand.<sup>41</sup> Although the percentages of global oil and gas use for plastic products remain low in comparison to electricity and transportation – around eight percent including the power for the manufacturing processes<sup>42</sup> (but not the fuels for transportation and distribution) – the amount of barrels can be very significant. Several environmental advocacy groups quote a study by the University of Indiana stating that more than 1.6 billion gallons of oil are used each year for plastic bags alone,<sup>43</sup> although the study was not found online. Other information found estimates that nearly 12 million barrels of petroleum oil (or fuel equivalents such as natural gas) are used to produce 100 billion plastic bags.<sup>44</sup> Expanded polystyrene is made of 98% of air, so the oil use is actually low – only 0.1% of total oil consumption for manufacturing, according to the industry data,<sup>45</sup> but it is unclear whether the energy and transportation is included in this percentage.

Reducing oil and gas use for single-use plastic manufacturing will also **moderate the pressure on the natural ecosystems** in which those resources can be found. The construction and land disturbance required for oil and

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<sup>37</sup> How much oil is used to make plastic? - FAQ - U.S. Energy information administration (EIA) (Jul. 10, 2015), <http://www.eia.gov/tools/faqs/faq.cfm?id=34&t=6>.

<sup>38</sup> Id.

<sup>39</sup> Distribution of global plastics materials production in 2014, by region\* (Statista 2016), <http://www.statista.com/statistics/281126/global-plastics-production-share-of-various-countries-and-regions/>.

<sup>40</sup> Id.

<sup>41</sup> Plastics Europe, Plastics - the Facts 2014/2015. An Analysis of European Plastics Production, Demand and Waste Data (2015). Available at: [http://www.plasticseurope.org/documents/document/20150227150049-final\\_plastics\\_the\\_facts\\_2014\\_2015\\_260215.pdf](http://www.plasticseurope.org/documents/document/20150227150049-final_plastics_the_facts_2014_2015_260215.pdf)

<sup>42</sup> Worldwatch Institute, Global Plastic Production Rises, Recycling Lags. (2015)

<sup>43</sup> Plastic bags and oil consumption (Food Democracy Jul. 16, 2008), <https://fooddemocracy.wordpress.com/2008/07/16/plastic-bags-and-oil-consumption/>.

<sup>44</sup> The plastic bag problem (Sustainable America Jun. 9, 2014), <http://www.sustainableamerica.org/blog/the-plastic-bag-problem/>.

<sup>45</sup> British Plastics Federation 2016, Expanded and extruded polystyrene (EPS / XPS) (2016), [http://www.bpf.co.uk/Packaging/Position\\_Statements/Expanded\\_and\\_Extruded\\_Polystyrene\\_Position\\_Statement.aspx](http://www.bpf.co.uk/Packaging/Position_Statements/Expanded_and_Extruded_Polystyrene_Position_Statement.aspx).



gas drilling alters land use and harms local ecosystems through erosion of dirt, minerals, and other harmful pollutants into nearby streams, thereby fragmenting wildlife habitats and migration patterns.<sup>46</sup> Additionally, offshore drilling infrastructure causes permanent alterations to ocean floor habitats and contaminates ecosystems with sedimentation. Dangers to marine wildlife range from physical injuries from colliding vehicles and permanent hearing loss, to exposure to hydrocarbons, which causes bioaccumulation of organic pollutants and metals.<sup>47</sup> Risks from hydraulic fracturing for extraction include water contamination and scarcity.<sup>48</sup>

Another important effect of source reduction is the **reduction of the greenhouse gas emissions** from the Raw Materials Acquisition and Manufacturing (RMAM) and end-of-life management. The acquisition of derivatives from refined petroleum and natural gas (extraction and refining) results in energy and non-energy GHG emissions, while transportation to plastic manufacturers and retailers, and manufacturing processes such as cracking, processing, and molding results in transportation and manufacturing GHG emissions, respectively.<sup>49</sup> If plastic use is avoided, all of those could be avoided as well. EPA's Waste Reduction Model (WARM) has estimated the GHG emissions per ton of material source reduced for different types of plastics: 1.95 metric tons of CO<sub>2</sub> Equivalent (MTCO<sub>2</sub>E) for a ton of High Density Polyethylene (HDPE)<sup>50</sup> – from which check-out plastic bags are commonly made of. For the case of expanded polystyrene (PS), EPA's WARM model estimates 2.5 MTCO<sub>2</sub>E, not considering transportation emissions.<sup>51</sup> Information was found that general sources pin the production of carbon emissions to plastic production close to 5:1 ounces.<sup>52</sup> All of the upstream impacts of plastic production become unsustainable for products that are used once before landfilled, and landfilling generates 0.4 MTCO<sub>2</sub>E per ton for each of those plastic products.<sup>53</sup>

<sup>46</sup> Williams, H.F.L., D.L. Havens, K.E. Banks, and D.J. Wachal. 2008. Field-based monitoring of sediment runoff from natural gas well sites in Denton County, Texas, USA. *Environmental Geology* 55:1463–1471.

<sup>47</sup> Defenders of Wildlife, Outer continental shelf drilling, impacts to air, water, wildlife, coastal economies and climate. Available at: [https://www.defenders.org/publications/impacts\\_of\\_outer\\_continental\\_shelf\\_drilling.pdf](https://www.defenders.org/publications/impacts_of_outer_continental_shelf_drilling.pdf)

<sup>48</sup> Mike Jacobs, Environmental impacts of natural gas (Union of Concerned Scientists), [http://www.ucsusa.org/clean\\_energy/our-energy-choices/coal-and-other-fossil-fuels/environmental-impacts-of-natural-gas.html#references](http://www.ucsusa.org/clean_energy/our-energy-choices/coal-and-other-fossil-fuels/environmental-impacts-of-natural-gas.html#references).

<sup>49</sup> EPA, Plastics and WARM (Waste Reduction Model) <https://www3.epa.gov/climatechange/wycd/waste/downloads/plastics-chapter10-28-10.pdf>

<sup>50</sup> Id.

<sup>51</sup> According to the WARM Microsoft Office Spreadsheet, available at EPA, Waste Reduction Model, updated March 2015. For online download: <https://www3.epa.gov/warm/index.html>

<sup>52</sup> Samantha Staley, The link between Plastic Use and Climate Change: Nitty gritty. (2005) *Stanford Magazine*. Available at: [https://alumni.stanford.edu/get/page/magazine/article/?article\\_id=30619](https://alumni.stanford.edu/get/page/magazine/article/?article_id=30619)

From an end-of-the-pipe perspective, less waste generation will **decrease the amount of non-biodegradable waste that could end in natural ecosystems** affecting wildlife and the landscape. Although plastic products are made of bio-material (petroleum, the end product of millions of years of natural decay of once-living organisms), they do not biodegrade, because of the carbon-carbon bonds made during the manufacturing process.<sup>54</sup> In addition to long-lasting life of disposable plastics, their light weight makes it easily carried off by the wind or float in water streams, adorning trees, road sides, rivers, and beaches. As a result, landscapes littered by plastic packaging have become common in many parts of the world.<sup>55</sup> Furthermore, the United Nations Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), estimated that land-based sources account for up to 80% of the world's marine pollution, 60 to 95% of the waste being plastics debris.<sup>56</sup>

Even considering 100% disposal through landfilling as the best case scenario, less waste will result in **less landuse** for such definite purposes. Landfilling of plastic is space and time intensive. Although the number of landfills has declined over the years, the average landfill size has increased and some areas of the country experience limitations to landfill capacity.<sup>57</sup> Even after recovery efforts, nationwide analysis reveals that landfilled plastics weight 29.52 million tons and account for 17.7% of the discarded municipal solid waste.<sup>58</sup> Another way to analyze the amount of plastic in landfills was explored by the American Chemistry Council, whose report stated that the amount of energy contained in the millions of tons of plastic in U.S. landfills is equivalent to 36.7 million tons of coal, 139 barrels of oil or 783 cubic feet of natural gas.<sup>59</sup> Also, although the duration of plastic bags in landfills is unknown, estimates range from 500 to 1,000 years.<sup>60</sup> The estimations for expanded polystyrene are as high as 1

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<sup>53</sup> Stefan Bayer and Jacques Méry, *supra* note 22.

<sup>54</sup> Natalie Wolchover, Why doesn't plastic biodegrade? (LiveScience.com, 2011) Available at: <http://www.livescience.com/33085-petroleum-derived-plastic-non-biodegradable.html>

<sup>55</sup> Charles Moore, Plastic Pollution (Encyclopaedia Britannica) Available at: <http://www.britannica.com/science/plastic-pollution>

<sup>56</sup> Claire Le Guern Lytle, When the Mermaids cry: the great plastic tyde (<http://plastic-pollution.org/>)

<sup>57</sup> EPA, Advancing Sustainable Materials Management: 2013 Fact Sheet. Assessing trends in material generation, recycling and disposal in the United States. (2015) Available at: [https://www.epa.gov/sites/production/files/2015-09/documents/2013\\_advncng\\_smm\\_fs.pdf](https://www.epa.gov/sites/production/files/2015-09/documents/2013_advncng_smm_fs.pdf)

<sup>58</sup> *Id.*

<sup>59</sup> N.J. Themelis, M.J. Castaldi, J. Bhatti, and L. Arsova, Energy and Economic Value of Nonrecycled Plastics (NRP) and Municipal Solid Wastes (MSW) that are currently landfilled in the fifty states. (Columbia University, Earth Engineering Center, 2011) Available at: [http://www.seas.columbia.edu/earth/wtert/sofos/ACC\\_Final\\_Report\\_August23\\_2011.pdf](http://www.seas.columbia.edu/earth/wtert/sofos/ACC_Final_Report_August23_2011.pdf)

million years.<sup>61</sup> Also, for every ton of MSW landfilled, 71 tons of manufacturing and production waste are disposed of in other ways.<sup>62</sup>

*Figure 7: Truck unloading garbage from Redmond at the Deschutes County Knott Landfill.*



*Source: Laura Palmese*

## Connection Between This Project and the Existing Structures

In Oregon, the Department of Environmental Quality (DEQ) has upgraded its Solid Waste Program to a Materials Management Program, recognizing that the previous program traditionally focused more attention on managing products and materials at the end of their useful life, when they were considered “solid waste.” As it will be explained in this section, this old approach is much like the focus of the City of Redmond up to this point, while DEQ’s new vision is the way to embrace sustainability. DEQ issued a 2050 Vision for Materials Management in Oregon, in which Oregonians “produce and use materials responsibly

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<sup>60</sup> Brie Cadman, In a landfill, how much does trash really last? (2008)

<sup>61</sup> Joe Fier, How long does it take to decompose?

<sup>62</sup> City and County of San Francisco, Resolution for 75% Waste Diversion Goal (2002). Available at: [http://sfenvironment.org/sites/default/files/editor-uploads/zero\\_waste/pdf/sfe\\_zw\\_zerowaste\\_resolution\\_signed\\_by\\_mayor.pdf](http://sfenvironment.org/sites/default/files/editor-uploads/zero_waste/pdf/sfe_zw_zerowaste_resolution_signed_by_mayor.pdf)

conserving resources, protecting the environment, living well.” A framework for action<sup>63</sup> was adopted by the Environmental Quality Commission, calling for a life-cycle analysis, including upstream, design and production, consumption and end-of-life management.

## **From Waste Management to Materials Management**

Solid waste management is the one thing just about every city government provides for its residents.<sup>64</sup> To do so, cities have the prerogative to implement different types of waste controls,<sup>65</sup> by issuing ordinances that may address various aspects of the waste management process. Even though waste management practices have improved considerably over the last 50 years, since the implementation of the Resource Conservation and Recovery Act (RCRA)<sup>66</sup> a shift from traditional waste management approaches towards materials management remains a nation-wide challenge. The starting point for this shift is, precisely, waste prevention, also known as source reduction.<sup>67</sup> However, the general focus has been improving disposal sites and recovery opportunities, and both are ways to deal with waste once generated.

Waste control ordinances may have different goals and methods of enforcement, but have traditionally focused on the end-of-life management. Typically, waste control ordinances address:

- Litter/illegal dumping and burning
- Waste collection and separation guidelines
- Rules and requirements for waste disposal facilities
- Waste disposal prohibitions (also called “land-bans”)<sup>68</sup>

The methods of enforcement for such ordinances can be voluntary and/or mandatory, going from education programs and incentives, to citations and penalties. For example, while the City of Redmond holds the exclusivity over waste collection services, the City of Bend allows independent-minded residents

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<sup>63</sup> Available at: <http://www.oregon.gov/deq/LQ/Documents/SWdocs/MaterialsManagementinOregon.pdf>

<sup>64</sup> US EPA and OSWER, *supra* note 2.

<sup>65</sup> Cathleen Condon, *Enforcing Local Recycling and Solid Waste Ordinances Guidance and Case Studies* (2005).

<sup>66</sup> Garrick E. Louis, *A Historical Context of Municipal Solid Waste Management in the United States*, 22 WASTE MANAGEMENT & RESEARCH 306 (SAGE Publications 2004).

<sup>67</sup> US EPA et al., *Waste prevention*, <https://www3.epa.gov/epawaste/conservesmm/wastewise/wrr/prevent.htm>.

<sup>68</sup> See Massachusetts example: <http://www.mass.gov/eea/agencies/massdep/recycle/solid/massachusetts-waste-disposal-bans.html>

to haul their own waste. Also, while separate compostable collection services are available for Redmond residents to opt-in,<sup>69</sup> the residents of Seattle can be fined if they waste food.<sup>70</sup>

While the current structure of law in the City of Redmond will be explained in the following section, a review of the Redmond 2020 Comprehensive Plan,<sup>71</sup> gives a hint of the need to shift from a waste management approach to a materials management approach. The plan was adopted by the Redmond City Council in 2001, and amended in 2006 and 2007. The plan considers Solid Waste Disposal on Chapter 11, Public Facilities and Services. The policies pertaining to waste are the following:

- *Encourage the County to protect the future of the Negus Sanitary Landfill and transfer station.*
- *Encourage a continued cooperative recycling effort within Redmond Urban Growth Boundary.*
- *Explore methods to gain 100% disposal of waste at appropriate landfill sites and discourage the dumping of wastes on public and private lands.*

The enlisted policies not only focus on waste management (disposal and recycling), but also dismiss the impacts of the city activities beyond its borders. The referred Negus Sanitary Landfill is actually an old dump located in the city limits, closed in 1993 when the regulations for dumpsites were upgraded and the Deschutes County Knott Landfill was built. From the language in the policy, it is unclear whether the comprehensive plan considered the maintenance of the dump, but only the transfer station remains in place and Redmond's appropriate disposal happens in another jurisdiction. As it will be explained below, the current legal structure has a strong mandate to discourage the dumping of wastes on lands others than a landfill, but a materials management approach with a focus on waste prevention would also consider the discouragement of landfilling as the preferable alternative.

Waste prevention is the most environmentally preferable alternative in the materials management hierarchy,<sup>72</sup> but its benefits go beyond environmental

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<sup>69</sup> See Residential Yard Debris Service for residential customers at <http://highcountrydisposal.com/services-2/residential-services/yard-debris-service/> and Food Waste Collection for commercial customers at <http://highcountrydisposal.com/services-2/commercial-services/food-waste-collection/>

<sup>70</sup> Jack Broom, Seattle talks trash: New garbage rules, potential fines start Jan. 1, Local News (The Seattle Times Dec. 23, 2014), <http://www.seattletimes.com/seattle-news/seattle-talks-trash-new-garbage-rules-potential-fines-start-jan-1/>.

<sup>71</sup> The 2020 Comprehensive Plan is available at: <http://www.redmond.or.us/government/city-services/2020-comprehensive-plan>

<sup>72</sup> US EPA and OSWER, Sustainable materials management: Non-hazardous materials and waste management hierarchy (Nov. 19, 2015), <https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy>

gains, as it was explained in the previous section. While waste control ordinances aim for sanitary reforms, pollution regulation, or guidelines for management, waste prevention seeks to edit the choices of the society and influence them to become more sustainable. The ultimate goal of waste prevention ordinances is not to make some activities or products illegal, but rather contribute to a vision of materials management over waste management, encouraging reuse, and improving consumption patterns.

## **Current Structure of Law in Redmond**

Solid waste management regulations are contained in Oregon statutes, statewide rules and city ordinances. While statewide regulations lay out the goals of solid waste management, the waste hierarchy and specific rules for sanitary disposal to which each county needs to conform, the city ordinances have the burden to specify the rules of management for the local waste generation. In Redmond, those rules pertain mostly to collection, prohibitions for some disposal methods, and recycling (and composting) opportunities. The latter represent the only diversion initiative from the landfill, which gives room to expand the efforts that could make Redmond's solid waste practices more sustainable. However, the laws in Redmond currently focus on collection and disposal.

Chapter 459 of the Oregon Revised Statutes (ORS) deals with solid waste management. ORS 459.015 contains legislative findings and declarations oriented to encouraging waste prevention and volume reduction, accounting for the limitations of the environment to absorb the impacts of increasing waste generation and specifically acknowledging a shortage of appropriate sites for landfills in Oregon. Thus, generation reduction, reusing, recycling, composting, and energy recovery are preferable alternatives to disposal (landfilling or other disposing methods), mimicking EPA's waste hierarchy. The authority for collection service franchising and regulation is delegated to cities and counties.

ORS 459A.030 of the ORS commands the Department of Environmental Quality (DEQ) to provide technical assistance to cities in the development, revision, amendment, and implementation of local solid waste reduction, reuse and recycling, and waste prevention programs and solid waste management programs. DEQ's rules pertaining to municipal solid waste are contained in the Oregon Administrative Rules (OAR) Chapter 340, Divisions 90, 91, 93, 94, and 95. DEQ is in charge of issuing the permits for disposal sites, but has a strong mandate to promote opportunities to recycle.

The Redmond City Code defines 'garbage disposal service' as a public service, for which there is a public service charge (Section 4.005). Sections 4.400 to 4.420 define how the garbage service is to be provided. The garbage service focuses on directions for collection and disposal activities. The city executes this service through a private contractor or franchisee (currently High Country Disposal), who has the exclusivity of the management of the waste. Section 4.408 commands that every person shall dispose of all garbage promptly

through the services of the collector of refuse, while section 4.410 specifies the containers to be used. Section 4.412 prohibits disposal methods such as burning and dumping in streets, alley, public places or private property within the city limits.

Section 4.414 establishes the right of the city to require separation of certain types of refuse, a provision that is complemented by Section 4.420 about the recycling collection service and education for recycling. While the franchisee must provide a recycling durable container, separation at source remains a prerogative for the city residents. Pursuant to this mandate, High Country Disposal provides the residents with a 95 - gallon commingle roll cart in which they can put paper, plastic and aluminum products. A recycling preparation guide issued by the contractor specifies a list of non-recyclable products that must be kept out of the commingle roll cart. These products are: Styrofoam, plastic bags, saran wrap, frozen food packaging, pet food bags, plastic clamshells, bakery containers, foil wrapping paper and ribbons, paper or plastic plates and cups, paper napkins, waxed cardboard, plastic lids and caps, liquid in containers, glass bottles and jars (although these are collected separately for recycling), lightbulbs, and batteries.

The Redmond Development Code establishes trash enclosure buildings, location and size requirements for new developments, based on the projected amount of refuse, zoning, and type of development. The collection and disposal regulations for new developments are the same included in the city code explained above.

## **Why It Is Not Sustainable**

In terms of ecosystem services, urban systems – cities – are primarily areas of consumption.<sup>73</sup> While achieving sustainability goes beyond reducing consumption, over time, unsustainable materials management remains at the core of the unsustainable practices of the current world, and of cities particularly. In 1992, world leaders participating in the Earth Summit declared that “a principal cause of the continued deterioration of the global environment is the steady increase in materials production, consumption and disposal.”<sup>74</sup> We extract, process, transport, consume to then transform valuable natural resources and materials into waste. Furthermore, with time, more and more of those resources and materials are non-renewable: in the 1900s, 41% of the new materials entering the US economy were renewable, while in the 2000s, only 5% were.<sup>75</sup> This linear system of management of resources and materials

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<sup>73</sup> Gordon McGranahan et al., Urban Systems. <http://www.ciesin.org/documents/urbansystems.pdf>

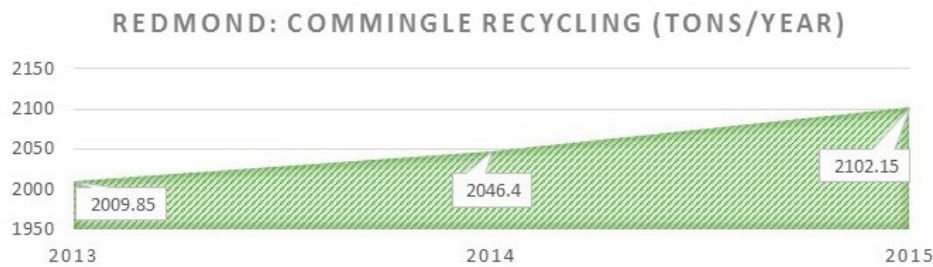
<sup>74</sup> United Nations, Report of the Conference on Environment and Development (Agenda 21). 1992.

<sup>75</sup> Wagner, Lorie. “Materials in the Economy—Material Flows, Scarcity, and the Environment.” U.S. Geological Survey Circular 1221. 2002. Online : <http://pubs.usgs.gov/circ/2002/1221/report.pdf>

is inconsistent with the way natural ecosystems work, replenishing, reusing, and recycling resources, in a rather circular way.<sup>76</sup>

In Redmond, an adequate collection system prevents urban pollution and sanitary problems within the borders of the city. However, the sustainability of a city can no longer be considered in isolation from the sustainability of the areas surrounding it, as well as those from which the city obtains its resources.<sup>77</sup> Making a link between the city's activities and the ecosystems surrounding it, including the sites where the city takes its wastes, must account for changing and improving the way we produce, consume and dispose. Waste prevention and source reduction are an important part of that change.

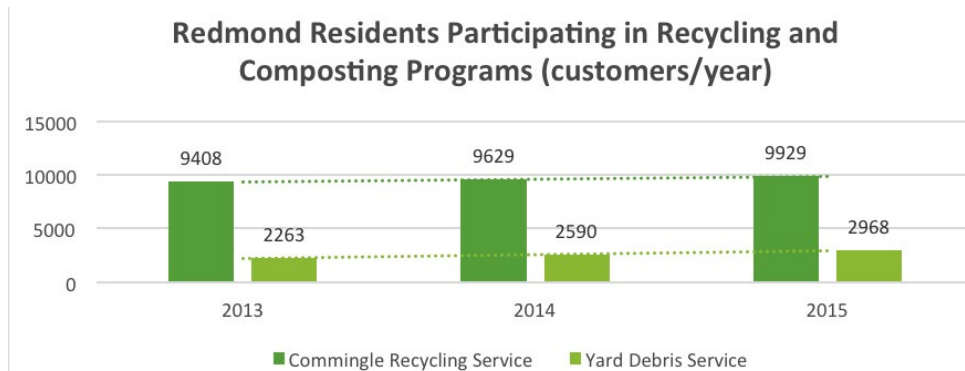
Figure 8: Tonnage of materials sent to the MRF's from Redmond.



Source: High Country Disposal.

As explained above, the City Code of Redmond has a strong focus on collection and disposal, complemented with voluntary recycling and composting opportunities to divert recyclable and compostable materials from the landfill. Every customer receives a recycling bin along with the garbage bin. As far as yard debris and other compostable waste, customers can voluntarily sign up for a small fee. Although recyclable and compostable materials are undeniably still entering the landfill, the staff of High Country Disposal (the city contractor) and the Utilities Department of the City of Redmond considers that the voluntary programs in place have been successful. However, only about 1,123.43 yards of yard debris were composted in 2015.

Figure 9: Redmond residents diverting their waste from the landfill.



Source: High Country Disposal.

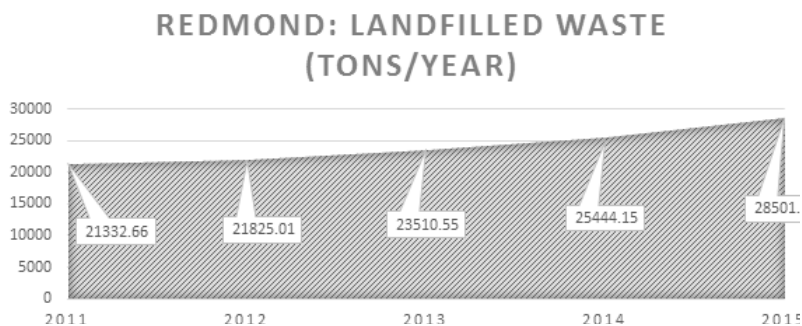
<sup>76</sup> Maxine Perella, 10 Things You Need to Know about the Circular Economy, The Guardian, Jun. 26, 2014, <http://www.theguardian.com/sustainable-business/10-things-need-to-know-circular-economy>.

<sup>77</sup> Sybil P. Seitzinger et al., Planetary Stewardship in an Urbanizing World: Beyond City Limits, 41 AMBIO 787 (Springer Science + Business Media 2012).



Still, there is a significant, increasing amount of waste to be managed and ending up in the landfill (the least preferable alternative for management). In Redmond, after collection, wastes are transported to the Negus Transfer Station and finally to the Deschutes County Knott Landfill. Data provided by the Deschutes County Department of Solid Waste reveals that in 2015, 28,501.67 tons of garbage coming from Redmond entered the Knott Landfill, located in Bend. A review of the Solid Waste Transfer Reports reveals that the tonnage diverted to the landfill has increased about 33% over the last five years for the City of Redmond alone.

Figure 10: Tonnage of waste sent from Redmond to the Deschutes County Knott Landfill.



Source: Negus Transfer Station Data Sheets provided by the Deschutes County Department of Solid Waste.

Considering the county’s current disposing trends, it is predicted that this landfill will be out of room by the year 2029. However, “the search for a new site must start within a couple of years”, said Chad Centola, Operations Manager at Deschutes County Department of Solid Waste. According to Centola, it takes about 10 to 12 years to obtain permission for a new landfill, bearing in mind the opposition from potential neighbors (a.k.a. NIMBY – not in my backyard). Ironically, the High Dessert Middle School is a current neighbor, presumably because of the low prices of land.

Figure 11 a) and b): Explosion to build new cell at the Deschutes County Knott Landfill, multi-liner system that goes into each cell.



Source: Chad Centola & Laura Palmese.

The technical requirements for the conditioning of the site include mining and the building of the liner system to prevent air and groundwater pollution. The issue with landfilling in this region is actually the dryness, which makes it difficult to decompose the wastes. This requires longer term management of the disposal sites. Notwithstanding the steps to build an adequate landfill, the waste generation rates will always determine its duration. Increasing rates of waste generation are not compatible with the current disposal constraints. Waste management practices have space and time limitations, which must be addressed through waste prevention.

Expanded polystyrene containers and plastic bags are made from non-renewable sources and are among the non-accepted items in the recycling facilities. Being built for disposal, they are often used once before being thrown “away.”<sup>78</sup> If products like these continue to be used and need disposal, the unsustainable practice of landfilling will be perpetuated, keeping the city from evolving to a circular economy. Better, recyclable and reusable products must substitute single-use, disposable ones, fostering sustainability. Recyclable and compostable products should not enter the landfill but be recycled and composted.

There is an opportunity to improve the recovery of recyclable and compostable items; and there is also an opportunity to prevent some materials from ever entering the waste stream. Both of these opportunities will be addressed as proposals in this report. One, to increase recycling and composting, and the other, to ban some disposable materials and prohibit their use.

## What Other Cities Are Doing

Waste minimization has been listed as a sustainability goal by the Sustainable Tools for Assessing and Rating Communities (STAR) Community Index. The measures to be proposed have already been adopted by several cities across the United States and around the world, having several positive impacts in achieving sustainability, beyond the reduction of the amounts of waste.

The Pacific Northwest is, in fact, a leading region in sustainable materials management. Over 150 cities, in Washington, Oregon, and California, have plastic bag and expanded polystyrene bans. Major cities such as Los Angeles, San Diego, San Francisco, Oakland and Seattle have even adopted Zero Waste Plans, Resolutions, and Goals. This section looks at selected city ordinances as well as proposals for waste prevention control. The analysis starts with cities in Oregon, which share the state legislation with Redmond, and have implemented similar initiatives: Portland,<sup>79</sup> Corvallis, Eugene,<sup>80</sup> Ashland, and Medford. In

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<sup>78</sup> ‘Away’ in this context means: 51050 South East Ave 27st. Bend, OR.

California, a leading state in waste prevention, over 150 cities have adopted plastic bag bans and expanded polystyrene bans respectively. The analysis will focus on the bans in Monterey, with similar population size to Redmond, and San Francisco, a leading city in Zero Waste initiatives. In Washington, another neighboring state, over 10 cities have banned single-use plastic bags and at least three cities that have banned polystyrene foam. Seattle's ordinance, as part of its Zero Waste Strategy, will be explored.<sup>81</sup> Because polystyrene bans have been treated differently by the courts, a separate explanation of the considerations of the New York State Supreme Court decision overturning the New York City ban, will be included.

Different city sizes and states are taken as a model. Waste actions have been adopted in many big cities as urgent and unpostponable measures. An analysis of San Francisco and Seattle is provided to show that the large amounts of waste are not a disincentive to take action, but, contrarily, a very strong motivation to embrace Zero Waste initiatives, even though the efforts must be tremendous. Redmond might not be a big city yet, but there is no need to wait for the problem to become bigger. Redmond's goal of income rise and economic development will cause more waste: The higher the income level and rate of urbanization, the greater the amount of solid waste produced.<sup>82</sup> Furthermore, the city has expressed an interest in promoting food carts, a type of industry that might increase the use of expanded polystyrene, plastic bags, and other disposables.

## Plastic Bag Bans

While statewide ban initiatives have experienced strong blockages, the local governments have only reaffirmed their authority over the local issues. The latest example is next door. After over 100 cities and counties had adopted the single-use plastic bag ban, a statewide ban passed the Californian legislature and was signed into law in 2014. Plastic companies have gathered signatures to qualify the law for a referendum on the November 2016 ballot, but the number of cities and counties adopting the local ban has only increased since then. The present report includes the experience of the City of Monterey, whose population is similar to the City of Redmond, and who adopted the local ordinance after efforts to pass a statewide ban failed.

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<sup>79</sup> Ordinance available at: <https://www.portlandoregon.gov/bps/article/422527>

<sup>80</sup> Ordinance available for download at: <http://www.eugene-or.gov/2060/Plastic-Bags>

<sup>81</sup> Ordinance available at: <http://clerk.seattle.gov/~scripts/nph-brs.exe?s3=&s4=122751&s5=&s1=&s2=&S6=&Sect4=AND&l=0&Sect2=THESON&Sect3=PLURON&Sect5=CBO RY&Sect6=HITOFF&d=ORDF&p=1&u=%2F~public%2Fcbor1.htm&r=1&f=G>

<sup>82</sup> Nina Schuler et al., *supra* note 1.

In Oregon, a similar effect occurred. Portland's initiative to ban plastic bags was supported as Senate Bill 536 in the Oregon State Legislature, but after it didn't pass,<sup>83</sup> the city took immediate action using its own means. In Corvallis, the city had resolved that in case the bill didn't pass, the city would enact a local ordinance. Then came Eugene, and Ashland more recently. Plastic bag bans in these four Oregon cities are estimated to keep nearly 272 million plastic bags out of waste stream annually.<sup>84</sup> There are also initiatives in Salem and Bend. The bill aimed to level the playing field across the state in terms of prohibiting single-use bags, and was evidently coherent with the path many cities are taking. Leveling the playing field is particularly relevant in cases of bordering cities: For example, Springfield, Eugene's neighboring city, does not have a ban.

The local bans, nevertheless, have been successful in preventing waste, promoting reuse, and improving consumption patterns. Furthermore, every new local ban plays an important role in motivating another to city jump on the bandwagon and setting new definitions, new limitations and new standards. A comparison table among bans is available on the following page.

## **Portland, Oregon**

Portland was the first city adopting a plastic bag ban in Oregon.

In 2007, the city initiated a public involvement process on the issues caused by plastic bags. City staff convened stakeholder meetings, including representatives from the plastic bag industry, paper bag industry, grocers and retailers, recyclers, environmental advocates and other interest groups. The city also held a community forum and facilitated a task force on this issue. The Reusable Bag Outreach, Education, and Distribution Task Force included education and outreach professionals, environmental and reuse advocacy organizations, minority and senior advocacy groups, neighborhood coalition representatives, and local and regional government representatives. Public input was solicited at a community forum, through poll research, and public comment.

In 2011, after four years of public involvement and in recognition of the environmental impacts of plastic bags in watersheds and the economic impacts in the waste management and recycling efforts undertaken by the city, the ordinance was finally adopted. For the enactment of the ordinance, Portland also reviewed its previous resolutions on Sustainability City Principles (1994), the adoption of the Watershed Management Plan (2006), the Portland Recycles! Plan (2006)<sup>85</sup> and the City's Climate Action Plan (2009), all of which contained

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<sup>83</sup> Portland Chapter of the Surfrider Foundation., Senate Fails to Pass Bag Ban – Local Govs Move Forward, BAN THE BAG (Jun. 10, 2011), <http://www.banthebagspdx.com/?p=174>.

<sup>84</sup> Ashland becomes the fourth Oregon city to ban plastic bags (May 6, 2014), <http://www.environmentoregon.org/news/ore/ashland-becomes-fourth-oregon-city-ban-plastic-bags>.

<sup>85</sup> The Portland Recycles! Plan is available at: <https://www.portlandoregon.gov/bps/article/230043>

Figure 12: Comparison of plastic bag bans.

City/ Definitions	Single-use plastic checkout/carry out bag	Exempt plastic bags	Other bags allowed	Fee for paper bag
Portland, OR	Plastic bag provided by a store to a customer and is not reusable, except for	Bags provided by pharmacists and non-handled bag used to protect a purchased item from damaging other purchased items or others made of durable plastic that is at least 4.0 mils thick.	Paper bags that contains an average 40% recycled content and is accepted for recycling in the City of Portland Recycling program; and bags with handles made of cloth or other machine washable fabric.	Not included initially, then after the city noted a recycled paper checkout bag use increase of 491 percent, the ordinance was amended to include a five cent charge.
Corvallis, OR	Plastic bags made from synthetic or natural organic material, provided by retail establishments to a customer to carry away purchases.	Reusable bags with handles, made of durable plastic of 2.25 mils thickness and other plastic bags provided at a time other than check out and pharmacy bags.	Paper bags 100% recyclable and capable of composting within the American Society Testing and Materials' specifications and bags made of cloth or other machine washable material.	A minimum five cent charge.  Customers with a voucher under the Women, Infant and Children Program, may receive a recyclable or reusable bag at no cost.
Eugene, OR	Plastic bags provided at the point of sale at retail establishments or city events.	Plastic bags with handles made of plastic of 4.0 mils thickness, and others used inside retail establishment for bulk items, frozen foods, plant wrap, laundry cleaning, packaged, product bags and provided by pharmacies	Paper bags 100% recyclable and with minimum of 40% recycled content, and capable of composting within the American Society Testing and Materials' specifications, and bags made of cloth (machine washable).	Cost of five cents indicated in receipt.  Customers with a voucher under the Women, Infant and Children Program, may receive a recyclable bag at no cost.
Ashland, OR	Same as Eugene	Same as Eugene	Same as Eugene	Cost of ten cent, indicated in receipt.
Monterey, OR	Plastic bags provided at the check stand, cash register,	Bags of a maximum of 11 inches by 17 inches, without handles provided to the customer (1) to transport	Paper bags 100% recyclable, containing no old growth fiber and a minimum of 40 percent	Cost of ten cents initially and 25 cents from the second year of the

waste reduction provisions. For this particular city council meeting, written testimony from industry and businesses associations, environmental groups, and the general public was received, and a number of people also spoke during the city council meeting. Because the on-going use of single-use plastic shopping bags is harmful to the public welfare: the city declared the ordinance as an emergency.

The purpose of the ordinance was to prohibit stores from distributing single-use plastic checkout bags to their customers, to encourage the distribution and use of reusable bags, and to permit stores to sell to consumers recycled or compostable bags for checkout use. The city exempted stores who requested a temporary waiver to draw down an existing inventory, and other retail establishments with gross annual sales of less than 2 million (selling dry grocery, canned goods, or nonfood items and some perishable items), having less than 10,000 square feet of retail space that generates sales and do not have a pharmacy.

The enforcement of the ordinance is under administration of the Director of the Bureau of Planning and Sustainability. Upon the first violation, the director would issue a written warning notice, and subsequent violations would cause \$100, \$200 and \$500 penalties. However, no more than one penalty would be imposed within a seven-day period. The implementation strategies also included distribution of reusable bags and educational materials in five different languages for low income residents and seniors.

*Figure 13: Ryan Cruse, (from left) Gregg Hayward, Jacque Rodriguez and Mark Gamba take their seats in Portland City Council chambers before the council approved a ban on plastic bags used by large retailers.*



*Source: Tyler Tjomsland/The Oregonian*

The ordinance also ordered the issuance of a one-year report regarding the results of the enactment and making recommendations as to any potential expansions. The report found that the ordinance had applied to about 167 stores and less than five consumer complaints regarding non-compliance were received. The report also found that reusable checkout bag use increased 304% and highly recycled paper checkout bag use increased 491%. Considering the goal of the ordinance to promote reusable bags and reduce plastic bag use, some changes needed to be made. The report recommended to expand the ordinance to all retailers and require a five-cent charge on paper bags.

Claiming that the initial scope represented only a modest share of total single-use checkout bag use, the new ordinance passed in 2012, included all grocery stores, all retail establishments and food providers, although the smaller ones had a longer period to comply.

To assist in the implementation of the ordinance, the City of Portland website contains FAQs and recommendations for customers. The website also states that since the initial ban went into effect, a 300% increase in reusable bag use was seen and that “many Portlanders have already made the switch to reusable bags.” The newest ordinance aimed to “even the playing field and ensure that all retailers and food providers be subject to the same regulation. As a result, fewer unnecessary plastic checkout bags will litter Portland’s neighborhoods and natural areas.”

### **Corvallis, Oregon**

Corvallis was the second city in Oregon to enact a Plastic Bag Ban.

In 2011, a representative of the Sierra Club presented to the city council of Corvallis, Oregon, a draft ordinance that would ban single-use carryout plastic bags and impose a fee on paper bags. The city prepared a timeline for the process to be conducted by the Administrative Services Committee (ASC) and scheduled several meetings to gather public input from affected stakeholders. The council reviewed three options aimed at reducing single-use carryout bags: Ban on plastic with a fee on paper bags, fee on plastic and paper bags, and, voluntary education of and by retailers about the plastic problem to encourage use of reusable bags. The ASC conducted surveys on the community and retailers to better understand the impacts of each and found greater support for the first option.

Enforcement mechanisms were challenging due to legal and resource constraints: there was no authority who could impose fees and the legal costs were higher than the penalties potentially collected. Nevertheless, the ASC drafted the ordinance including an enforcement clause and presented it to the city council, the first time obtaining eight to one favorable votes to the enactment, and unanimous votes the second. The ordinance<sup>86</sup> was

finally adopted in the mid-2012 and implementation began in two phases: the beginning of 2013 for bigger retailers and mid-2013 for smaller retailers.

The purpose of the ordinance was to prohibit retail establishments from distributing single-use plastic carryout bags to their customers and encourage the distribution and use of reusable options in order to avoid the negative environmental consequences found with the use of single-use plastic carryout bags. The ban, however, exempted establishments where the primary business is the preparation of food or drink and allowed businesses who had a previous stock to get rid of it.<sup>87</sup>

The enforcement of the ordinance is under supervision of the city manager. Violations are considered Class A infractions, with a minimum \$200 fine for each separate offense (each bag). As part of the implementation of the ban, the city's created signs for points of sale and an employee flyer to display in employee areas of retail establishments. The city's website also provides FAQs lists for Shoppers and Retailers and the ordinance history.

The city also held a bag and logo design contest to accompany the introduction of the single-use bag ban.<sup>88</sup>

### Eugene, Oregon

Eugene's ban took the example of what the City of Portland had enacted the year before and became the third city in the State banning single-use plastic carryout bags.

In 2012, the Eugene City Council ordered the writing of a report to analyze the triple bottom line effects of a plastic bag ban. The

Figure 14: Winning reusable bag logo design by Emily Rose.



Source: Andy Cripe/Corvallis Gazette-Times

<sup>86</sup> The Corvallis Ordinance is available at: <http://archive.corvallisoregon.gov/0/doc/368308/Electronic.aspx>

<sup>87</sup> GAZETTE-TIMES, Jun. 29, 2013. Available at: [http://www.gazettetimes.com/news/local/corvallis-bag-ban-kicks-in-monday-for-small-business/article\\_db4ade26-e05b-11e2-afd3-001a4bcf887a.html](http://www.gazettetimes.com/news/local/corvallis-bag-ban-kicks-in-monday-for-small-business/article_db4ade26-e05b-11e2-afd3-001a4bcf887a.html)

<sup>88</sup> Andy Cripe, Winners of Reusable Bag, Logo Contest Announced, CORVALLIS GAZETTE-TIMES, Feb. 14, 2013. Available at: [http://www.gazettetimes.com/news/local/winners-of-reusable-bag-logo-contest-announced/article\\_bd0f0d82-7676-11e2-8fc3-0019bb2963f4.html](http://www.gazettetimes.com/news/local/winners-of-reusable-bag-logo-contest-announced/article_bd0f0d82-7676-11e2-8fc3-0019bb2963f4.html)



report recommended data gathering on the number of businesses impacted and the major concerns in terms of environmental, equity, and economic impacts. The city then administered two surveys for retail and customers. The city also proposed to include a fee for paper bags. In the writing of the ordinance, the city had to revise several times the definitions of the bags in question and businesses affected, exemptions, rulemaking and penalties, considering the experiences of other cities. The ordinance was subject to public comment and was finally adopted at the end of 2012. Beginning in May 2013, the city implemented the ordinance to encourage the use of reusable bags and ban single-use carryout bags in all retail establishments within the city limits. The ordinance exempts businesses retail establishments who prove undue hardship, food providers and pharmacies.

***“We performed a six-month review after the bag ban took effect in May 2012, and we estimated that Eugene created 67 million plastic bags each year. That is the general number that we use to estimate how many bags we are no longer creating.”***

**Stephanie Scafa - Waste Prevention and Green Building, City of Eugene**

Enforcement is complaint-based. City staff explains that they start with a phone call or visit to get an understanding of the issue and usually that is enough. If it were to be a larger or more entrenched problem, code enforcement would handle it like any other code violation. As part of the implementation of the ban, the city’s provides Shoppers and Retailers FAQs and background about the ordinance in its website, and also applied a campaign called “Bring your bag, Eugene!” reinforcing that the goal of the ban is not promoting the use of paper bags or allow retailers to collect money from their customers, as it has been argued to overturn the statewide ban in California. Rather, the ban promotes the habit of bringing reusable bags and being responsible customers. A six month implementation update revealed that since the implementation of the ban:

- Half of the shoppers never purchase a bag.
- One third of the shoppers purchase a bag 25% of the time or less.
- Only 2% of the people purchase a bag all of the time.
- Seniors, those with no children, and those with two in the household are more likely than others to never purchase a bag.

Apart from this update, the city has not followed up with any further indicators related to the bag ban’s environmental, social, or economic impacts. Michael Wisht, Solid Waste and Green Building Analyst in the city, says that “*While*

*occasional enforcement cases pop up throughout the year (usually smaller retailers), the program is considered a success. We have not discussed any changes to enforcement or expansion of the program.”*

## **Ashland, Oregon**

In 2013, upon receipt of a request by the non-governmental organization Environment Oregon, which had collected 500 signatures from citizens and endorsements from nearly 100 local businesses,<sup>89</sup> the Ashland Conservation Commission started encouraging the city council to pursue a ban on plastic bags. The city council then created an ad hoc subcommittee which had to develop a recommendation containing a pro/con report on the merits and impacts of the proposal, besides research/feedback from the local businesses that had voluntarily eliminated plastic bags as an option for customers and an implementation process.

The ordinance was titled “Bring Your Own Bag (BYOB)”, as opposed to a plastic bag ban. The commission explained before the city council that while single use plastic bags represent one discrete element of the local waste stream, they are a particularly visible reminder of the negative impacts of products specifically designed for a one-time use: Single-use plastic bags function as a very visible symbol of a short-term convenience based, disposable item that almost immediately becomes a part of the waste stream. The intention was to shift behavior and promote the use of reusable bags.

The ad hoc subcommittee identified the following pro/con list for retailers and customers. For customers, the only positive impact identified was the elimination of a potential source of waste to store or dispose of, while the negative impacts identified referred to the initial costs of purchasing a reusable bag and the fee charged when bringing that bag was forgotten. For retailers, the following impacts were identified:

PROs	CONs
<b>Cost savings from elimination of single-use plastic bag inventory</b>	Additional communication and time required of staff to explain the rules/standards
<b>Revenue stream to offset increased per bag cost to meet minimum recycled content specifications for paper bags</b>	Potential point of sale software programming costs to address cost pass through fee for paper bags
<b>Additional promotional opportunities and revenue from reusable bag sales</b>	Record keeping maintenance costs associated with the cost pass through fee
<b>Level playing field - All retail businesses operating under the same rules/standards for point of sale bags</b>	

<sup>89</sup> Supra note 83

To address the negative impacts, the commission proposed that the funds collected from customer fees for paper bag use be retained by the retailer to offset the costs of providing the more expensive paper bags rather than the less expensive plastic bags that would no longer be allowed. A key objective of the program was always to reduce the use of single-use bags regardless of their type so it was anticipated that the revenue off-set created by the paper bag fee would decline over time. According to the commission, such a regulation could also function as a launching pad for the development of a more comprehensive local waste prevention and reduction strategy that aligns with the regional watershed and state waste prevention and reduction strategies.<sup>90</sup>

At the first reading of the ordinance, the council chambers were filled to capacity with supportive Ashland residents.<sup>91</sup> The ordinance<sup>92</sup> was approved in 2014. The definitions and exemptions contained in the ordinance are the same as the ones in the Eugene ordinance. To avoid costs for the city, the flyers and posters used by the City of Eugene were adapted to Ashland (with the consent from the City of Eugene), and used along with an outreach effort.

***“Aside from the tangible benefits of phasing out the use of this specific product, the regulation could function as a community awareness tool promoting the use of reusable products in the daily lives of Ashland residents.”***

**City of Ashland - Conservation Commission**

The ordinance ordered two evaluations, one in May 2015 about the plastic bag ban and another one in January 2016 about the paper bag fee. Adam Hanks, Staff Liaison for the Recycling and Waste Reduction ad hoc Committee in the City of Ashland said that the first year was educational, without enforcement by the city, but after that, the city sent out letters as a reminder that the ordinance would be enforced.

For the one year review, the city did a partnership with a local university and a public poll in the city’s website. When inquiring at the five to six grocery stores about volume, they said “they buy half the pallets of bags,” meaning they have reduced the use of paper bags. Because the stores keep the fee for the paper bags, some stores collect them for donation, while others use the fee to

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<sup>90</sup> City of Ashland Council Communication, April 15, 2014, Business Meeting. Available at: [http://www.ashland.or.us/files/BYOB\\_Council.pdf](http://www.ashland.or.us/files/BYOB_Council.pdf)

<sup>91</sup> Supra note 84.

<sup>92</sup> The Ashland BYOB Ordinance is available at: [http://www.ashland.or.us/Files/3094\\_.pdf](http://www.ashland.or.us/Files/3094_.pdf)

subsidize the cost of reusable bag. Mr. Hanks says the Downtown Specialty Retail stores have complained about the 10 cents fee, which is required to show up in the receipt. Those stores have claimed that tourists, as out of town people, do not know about the ordinance and they would prefer not to be charged for a bag if they are already consuming other products from the store. Mr. Hanks says “The ten cent fee was a problem, not the ban.” However, the fee serves the purpose of encouraging reusable bags and penalizing the use of new disposable bags. The affected stores might ask the city council to exempt them, but the City has no intention to proactively amend the ordinance in that respect.

### **Monterey, California**

In 2010, the City of Monterey had deferred to pass an ordinance in its jurisdiction in anticipation of the statewide ban’s approval. When the bill failed, the city staff members looked at a several ordinances, including a model ordinance prepared by a large coalition of jurisdictions, aiming to remove plastic single-use bags from their waste stream. The staff also considered court rulings for lawsuits focused on the impacts of using paper bags instead of plastic bags (for the City of Manhattan Beach, Marin’s County, and the County of Santa Cruz). Furthermore, city staff met with the California’s Grocers Association and was informed that the San Jose ordinance proposed a solution to the plastic and paper bag issue that was acceptable to their industry. The city staff then decided to emulate that ordinance, but tailoring it to the local specific consumer behavior. The city staff conducted surveys to determine the current estimated use of plastic and paper bags in the community, finding that the 190 existing business that would be affected utilized approximately 87,000 single-use carryout bags weekly. Almost 63% of those bags (54,500) were plastic and 37% were made of paper. The city estimated the ordinance would eliminate the use of 2.8 million plastic bags annually and reduce paper bag consumption to approximately 924,000 annually.<sup>93</sup>

During the 20-day public review period, the city received several comment letters from non-governmental environmental organizations and a letter from the National Oceanic and Atmospheric Administration (NOAA) supporting the ordinance and asking an extension to restaurants. The city also received Life Cycle Assessments (LCAs) for three types of grocery bags - recyclable plastic; compostable, biodegradable plastic; and recycled, recyclable paper filed by The Progressive Bag Alliance,<sup>94</sup> and another LCAs from Ecobilian. The city maintained that the purpose of the ordinance was not to promote the use of

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<sup>93</sup> City of Monterey Council Agenda Report. Available at: <http://monterey.org/Portals/1/recycling/pdfs/bags/Staff-Report-Dec-6-2011.pdf?ver=2015-08-18-082655-917>

<sup>94</sup> Chet Chaffee and Bernard R. Yaros, Life Cycle Assessments (LCAs) for Three Types of Grocery Bags - Recyclable Plastic; Compostable, Biodegradable Plastic; and Recycled, Recyclable Paper (Boustead Consulting & Associates Ltd., 2007) Available at: <http://monterey.org/Portals/1/recycling/pdfs/bags/BousteadLCA.pdf?ver=2011-09-02-153723-577>

paper bags, but to promote reusable bags instead. To achieve that objective, the fee for the paper bag was set at ten cents initially and 25 cents from the second year of the ordinance. The city noted that the ten cent fee would not achieve the level of participation wanted. Taking the example from the City of San Jose, the City of Monterey predicted that the imposition of a higher charge would ensure a major shift to reusable bags, and the percentage of customers using reusable bags (or no bag) would increase to 89%. The fee would be retained by the retailers.

The city ordinance exempted public eating establishments (restaurants, take-out food establishments, or any other business that receives 90% or more of its revenue from the sale of food which is prepared on the premises, to be eaten on or off its premises); and nonprofit charitable re-users (charitable organizations) that re-use and recycle donated goods or materials and receive more than 50% of its revenues from the handling and sale of those donated goods or materials.

The ordinance<sup>95</sup> also mandated that all retail establishments keep records of the purchase and sale of recycled paper bags, available for inspection. As far as penalties and fines, the first violation results in a written warning giving the provider 14 days to comply. Upon failure to comply, the city may pursue enforcement utilizing any of the remedies set forth in the city's Administrative Fine Resolution. In case of special events, the provider accrues a graduated administrative fine depending upon the number of persons attending.

To implement the ordinance, the city planned to do community education, including the distribution of approximately 8,000 free reusable shopping bags. city staff also worked with the Central Coast Media Recycling Coalition (CCRMC) to produce attractive metal signs to remind shoppers to bring their reusable bags while shopping. The city's website includes a video, flyers, FAQs, and details of the ordinance. Because some plastic bags were exempt from the ordinance and are still used for packaging of many products, the City of Monterey has a recycling program for those. They ask the residents to place clean and dry filmy plastic shopping bags, clean sandwich and vegetable bags, shrink wrap and bubble wrap into one bag, tie it at the top, and place it in the recycling bin

## **Polystyrene Foam (PSF) or Expanded polystyrene (EPS) Bans**

The present report contains examples of several cities who have adopted a polystyrene ban in the Pacific Northwest. It must be said that such bans also seem to be popular in the east coast, particularly in large cities. For example, New York City and, lately, Washington, D.C. have adopted bans. The New

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<sup>95</sup> City of Monterey ordinance available at: <http://www.codepublishing.com/CA/Monterey/html/Monterey14.html>

York ban, however, was overturned by a New York Supreme Court Judge, who found that the Department of Sanitation's determination on the recyclability of the expanded polystyrene containers was arbitrary, capricious and irrational.<sup>96</sup> The Sustainable DC Omnibus Amendment Act of 2014, enacted by the Council of the District of Columbia, prohibits the sale, use, or provision of expanded polystyrene containers for food service, and requires disposable food service ware provided by food service businesses to be compostable or recyclable. A consideration to extract from the New York and Washington D.C. cases is the importance of determining the real motivation behind a ban: Is it to prevent waste or to promote recycling?

The National Recycling Coalition has proposed a new waste hierarchy in which landfilling and incineration are not an option, and recycling (considering composting as organic recycling) is the highest and best use for materials. This matches the claims of the Solid Waste Association of North America (SWANA) that technically everything can be recycled. It also matches the three triangle arrows we can find in almost every product and package. However, the practical and economic feasibility has to be considered too. Recycling can also become 'down-cycling' meaning the creation of products with less value and functionality than the original item.

Recycling rates in the U.S. have reached a plateau of about 34% since 2010,<sup>97</sup> and depend on voluntary separation at source and markets. Furthermore, even though recycling can be a considered green business, contributing to job generation, those benefits can be overridden by environmental costs. Depending on the item to be recycled, the use of energy and transportation to the recycling facility can cause significant greenhouse gas emissions that need to be taken into account. In New York City, for example, there are no local recycling opportunities for expanded polystyrene, and this is what justified the ban. Cities like San Francisco and Seattle do not have recycling opportunities for polystyrene, but they do for many other products. Thus, they didn't limit their efforts to ban expanded polystyrene containers. In addition to promoting recyclable or compostable food serviceware, they enhanced their recycling and composting programs to ensure that less waste was put into landfills.

The goal of a product ban must be to promote 'pre-cycling', this is preventing the need for recycling. It may also be to encourage the use of recyclable, compostable, and reusable products, and this must be matched with efforts to improve recovery and reduce diversion to the landfill. In short, the goal behind a ban must be to change unsustainable practices to make sustainable cities.

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<sup>96</sup> Kate Taylor, New York city's Styrofoam ban overturned (Entrepreneur Sept. 24, 2015), <http://www.entrepreneur.com/article/251004>.

<sup>97</sup> According to EPA, information available at: [https://www.epa.gov/sites/production/files/2015-09/smm\\_graphic\\_recyclingrates.jpg](https://www.epa.gov/sites/production/files/2015-09/smm_graphic_recyclingrates.jpg)

## Portland, Oregon

Portland's efforts to ban polystyrene foam began in 1988, being one of the first cities to undertake such initiative in the United States.<sup>98</sup> Portland is a case of particular interest because of the considerable amount of food carts present within the city limits.<sup>99</sup>

The city council considered that: Foam products are not biodegradable, their nature makes them a major contributor to litter, when littered they are detrimental to wildlife that ingests them and recycling them is not practical. No prior scientific studies on environmental impacts were made, although a task force to recommend policies, programs, and ordinances was appointed. The task force had to consider public education and promotion; alternative product recycling/energy conversion; financial assistance and alternative products research.<sup>100</sup> Pursuant to the task force recommendations, the ordinance was passed in 1989, followed by litigation from plastic and food industry in 1991. However, the Oregon Court of Appeals upheld the ordinance concluding that the prohibition of sale of prepared food in polystyrene foam containers was not preempted by state law calling for recycling of solid waste before sending it to landfill, even assuming polystyrene foam was recyclable and alternative packaging products were not.<sup>101</sup> Thus, the ordinance was not inconsistent with the state policy of recycling.

The ordinance<sup>102</sup> prohibits restaurants, retail food vendors, non-profit food providers and packagers to serve or packaged food in polystyrene foam (PSF) containers manufactured with chlorofluorocarbons (CFCs) which do not reduce the potential for ozone depletion by more than 95%, compared to the ozone depletion potential of CFC 12 (dychlorodifluorothane). The ordinance contains exemptions for undue hardship, when there were no acceptable alternatives, in situations unique to the vendor. The violations result in written notice and a penalty: A fine of \$250 the first time and of \$500 in subsequent times within one year period. However, while a significant amount of food and drink products were prohibited to be packaged in PSF, products packaged outside of the city lines were not regulated, which resulted in the continuous use of PSF without the city able to regulate it.

To implement the ban, the city prepared outreach material consisting in handouts and information on the city's website. The city has a complaint based

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<sup>99</sup> A practical guide to Portland Food Carts can be found at: <http://www.foodcartsportland.com/>

<sup>100</sup> Nguyen, Linda D., "An Assessment of Policies on Polystyrene Food Ware Bans" (2012). Master's Projects. Paper 266. Available at: [http://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=1265&context=etd\\_projects](http://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=1265&context=etd_projects)

<sup>101</sup> See *Denton Plastics, Inc. v. City of Portland*, 804 P.2d 1199, 105 Or.App. 302 (1991)

<sup>102</sup> The text of the ordinance can be found at <http://www.portlandoregon.gov/citycode/article/215460>

system to promote enforcement, most of the times resulting in education and follow up visit.<sup>103</sup> The city staff reports that the waste stream has changed, thus the initiative has been a success in improving consumption. However, alternative compostable materials are still found in the landfill, which calls for improvement of efforts for separation at source.<sup>104</sup>

## **Ashland, Oregon**

In 1989, joining the global efforts to address the depletion of the ozone layer and climate change, the City of Ashland gave approval to an ordinance banning polystyrene foam cups, fast-food containers, packaged meat trays, and egg cartons.<sup>105</sup>

The ordinance<sup>106</sup> prohibits restaurants, retail food vendors, non-profit food providers, and food packagers to serve or package food (except for meat) in polystyrene foam containers or sell the containers themselves, if those were manufactured with chlorofluorocarbons (CFCs) which do not reduce the potential for ozone depletion by more than 95%, compared to the ozone depletion of CFC-12. Food vendors have to furnish a written statement from the manufacturer or supplier of polystyrene foam products indicating that the chemical compounds used in the manufacturing process comply with the ordinance.

Exceptions to the ordinance are when the business using the PSF package has developed a method for recycling said package used on-site. However, the package could not be used for carry-out service or leave the premises of the vendor or provider. According to the Staff Liaison for the Recycling and Waste Reduction ad hoc Committee in the City of Ashland, Mr. Adam Hanks, the implementation of the ordinance “was not a pain for the businesses [at the time, and that] it doesn’t come up anymore.” Although the ordinance addressed one product, it motivated supply changes. Several years have gone by after the ordinance was passed and Mr. Hanks says the city might consider to review it.

## **Medford, OR**

Since 2014, 18-year-old Sam Becker, had been in contact with city council members regarding a possible ban on polystyrene foam. City Councilor Daniel Bunn had told him that the enactment of such an ordinance was “unlikely.”<sup>107</sup> But that didn’t stop him from going forward with his efforts. He founded the

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<sup>103</sup> Nguyen, Linda D., supra note 95.

<sup>104</sup> Id.

<sup>105</sup> Polystyrene Ban Voted by Council, SPOKANE CHRONICLE, Aug. 3, 1989.

<sup>106</sup> The Ordinance enacted by the City of Ashland is available at: <http://www.ashland.or.us/CodePrint.asp?CodeID=2452>

<sup>107</sup> Damian Mann, Mail Tribune, Medford council votes to ban Styrofoam (MailTribune.com), <http://www.mailtribune.com/article/20150206/NEWS/150209730>

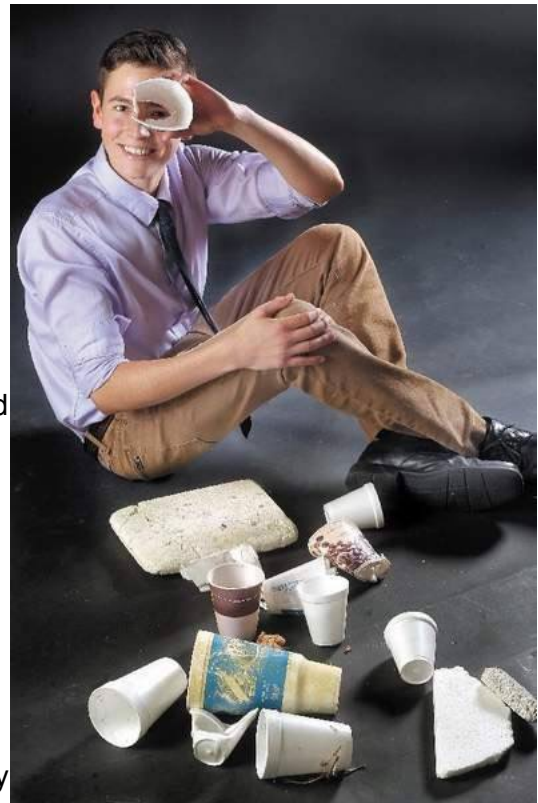


Environmental Committee to Outlaw Styrofoam – ECOS, and after gathering more than 3,500 signatures to qualify the proposal for a ballot, he addressed the Medford City Council in early 2015. In explaining his reasons to bring forward the issue, he reviewed his volunteer work and cleanup efforts, noting an on-going occurrence of polystyrene foam (PSF) products in the trash collected along Bear Creek. He encouraged the council to adopt the ordinance and to set an example by not using PSF at any public facilities. Supportive and non-supportive restaurant owners attended the public hearing in which Becker presented his initiative. The majority were supportive, some had already stopped using PSF voluntarily. Others called for additional studies regarding costs, specifically for public facilities like hospitals and jails, as well as small businesses. The proponent, and other attendees, referred to the experience in San Francisco – explained below in the present report.

Becker, who was also student body president at a local high school, had already met with stakeholders including the Chamber of Commerce, elected officials, Water Reclamation Facility staff, League of Women Voters, and many restaurant owners in the community. Notwithstanding the signatures for the ballot, the city determined that having an election would be too costly and decided to approve the ordinance unanimously. The City also sent letters to 500 businesses to find out their reactions on the ban. In the long run, it was big business, such as Kentucky Fried Chicken, who opposed, but a majority remained supportive.<sup>108</sup>

The ordinance<sup>109</sup> prohibits all “food vendors” to “provide” “prepared foods” in “polystyrene foam” containers. Each of those terms are defined in the ordinance, which also provides exceptions for food vendors that generate less than \$300,000 annually or cannot find a substitute for polystyrene. According to a news article,<sup>110</sup> businesses were also allowed to use up their existing stock of foam containers as they

*Figure 15: Sam Becker, with the Styrofoam he picked along the Bear Creek Greenway.*



*Source: Mail Tribune / Bob Pennell*

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<sup>108</sup> Id.

<sup>109</sup> The ordinance enacted by the City of Medford is available at: <http://www.ci.medford.or.us/Code.asp?CodeID=4545>

<sup>110</sup> Damian Mann, *Supra* note 102

transition to another product. A violation of the ordinance results in a penalty to be determined by the municipal court.

According to city staff, when the ordinance was passed, the city began a one-year educational period, to get voluntary compliance. As that time has just recently passed from the moment this report been written, the city says they “have not had much time to weigh the results of the ordinance, as [they] are just starting to begin actual enforcement.” City staff reports that they have spoken to a few businesses that continued to use the PSF and they have changed over, concluding that “to some degree it is working.” When interviewing the proponent of the ordinance, Sam Becker, he said “It is not working exceptionally well because of the ‘small businesses clause.’”

### **Monterey, California**

In 2005, a Litter Abatement Task Force was formed in Monterey County, to develop and implement measures that would reduce litter and cleanup littered sites. The efforts included “Beach Cleanup Day” and the “Adopt a Highway Program,” among other events. The task force concluded that one of the most pervasive litter issues was food service take-out containers made from polystyrene.

In 2008, the Solid Waste Program Manager and the Recycling Coordinator of the City of Monterey presented before the City Council a staff report recommending the preparation of an ordinance requiring the use of environmentally acceptable food packaging. Upon hearing of favorable public comment, the city council authorized the staff to prepare an ordinance.<sup>111</sup> As part of the preparation process, and in compliance with state laws, the city prepared an environmental review. The American Chemistry Council (ACC) prepared a lengthy letter claiming that a prohibition on polystyrene food containers “would not affect change and will have adverse impacts on the environment [...] in addition to raise business costs significantly [...] during a national recession.”<sup>112</sup> ACC, along with Dart Container Corporation (the world’s largest foam manufacturer), also filed a Monterey Green Plan,<sup>113</sup> which proposed recycling mechanisms for polystyrene. The city regrouped the ACC’s claims

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<sup>111</sup> Monterey City Council Minutes, April 1, 2008. Available at: <http://monterey.org/Portals/1/recycling/pdfs/eps/1209PolystyreneCCMinutes.pdf?ver=2011-05-05-122957-753>

<sup>112</sup> American Chemistry Council. Letter of November 24, 2008. Available at: <http://monterey.org/Portals/1/recycling/pdfs/eps/1209PolystyreneACCLetter.pdf?ver=2011-05-05-122957-627>

<sup>113</sup> The Plastic Food Packaging Group of the American Chemistry Council and Dart Container Corporation, Monterey Green Plan. Available at: <http://monterey.org/Portals/1/recycling/pdfs/eps/1209PolystyreneACCMontereyGreenPlan.pdf?ver=2011-05-05-122957-737>

in 20 comments.<sup>114</sup> In response, the city staff considered that polystyrene was a serious problem in the community and that a ban would address it.<sup>115</sup> The city maintained that although some polystyrene products could be recycled, food containers were not accepted in such recycling facilities, recycling was not economically feasible and a recycling program would not address the litter problem. The city also upheld that it had a responsibility to protect its natural environment, its economy and the health of its citizens.<sup>116</sup>

The “Environmentally-Friendly Food Packaging Ordinance”<sup>117</sup> was finally adopted in 2009. It prohibits food providers, promoters and participants of special events, City of Monterey contractors, and the City of Monterey itself to provide food in any disposable food service ware that contains or utilizes polystyrene foam. Biodegradable, compostable, or recyclable food service ware has to be used instead, unless there is no affordable alternative or a food provider proves undue hardship for a one-year exemption.

Aware that business establishments located outside the city limits could hamper the city efforts, the ordinance established as a policy goal of the city that such businesses that may sell their products within the City of Monterey, should not package any food product in any package that contains or utilizes polystyrene foam. The City of Monterey promotes and encourages, on a voluntary basis, the elimination of all polystyrene foam disposable food service ware by these outside business establishments.

The first violation results in a written warning, giving the food provider 30 days to comply. Upon failure to comply, violations of the ordinance can be prosecuted as misdemeanors, or be subject to the administrative citation process. A fine can be set forth in the City’s Administrative Fine Resolution or the city may allow the violator to submit receipts demonstrating the purchase of at least \$100 worth of biodegradable, compostable, or recyclable products, as an alternative disposable food service ware for the items which led to the violation. In case of special events, the fines increase in amount depending on the number of attendees. The ordinance also allows the city attorney to seek legal, injunctive, or any other relief for enforcement. The food vendors are subject to inspections and have to file statements of compliance in their annual business license renewal forms.

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<sup>114</sup> This is known as Extended Producer Responsibility (EPS) and is a principle in Sustainable Materials Management that has been adopted successfully in Germany, motivating manufacturers to produce more sustainable products.

<sup>115</sup> Planning Commission Meeting, Response to ACC Letter dated November 24, 2008. (2008) Available at: <http://monterey.org/Portals/1/recycling/pdfs/eps/1209PolystyreneResponsetoACCLetter.pdf?ver=2011-05-05-123138-220>

<sup>116</sup> City of Monterey Commission Meeting, December 9, 2008. Available at: <http://monterey.org/Portals/1/recycling/pdfs/eps/1209PolystyreneReport.pdf?ver=2011-05-05-123138-190>

<sup>117</sup> The City of Monterey ordinance is available at: <http://monterey.org/Portals/1/recycling/pdfs/eps/PS-Ordinance3426.pdf?ver=2011-05-05-123317-16>

For the implementation of the ban, as part of the outreach efforts, the city's website contains a link to report Styrofoam use, FAQs and explanations on the ordinance.<sup>118</sup> When asking the Sustainability Coordinator of the City of Monterey about the challenges of implementing the ordinance, Mr. Ted Terrasas said: *“one of the major concerns was the price of alternative materials, which has become less and less of an issue with the passage of time.”* About the results, Mr. Terrasas says: *“As a result of the ban, cleanup groups often report significantly less polystyrene at beach or roadside cleanups and there is less of the material showing up in local recycling and recovery centers. Of course, polystyrene was not banned entirely, so packaging materials and other items can still be seen from time to time.”*

***“A ban may not be a cure-all, but it is a step in the right direction. We want to get people thinking about the far-reaching consequences of the simple decisions made every day. We want people to consider the life cycle of the products they are buying - what they are made from, the energy that goes into the production and what happens after the garbage truck hauls them away.”***

**Website of the City of Monterey**

## **Issaquah, Washington**

In 2009, the Issaquah City Council adopted an ordinance<sup>119</sup> to prohibit food service businesses from using polystyrene foam (Styrofoam™) and non-recyclable or non-compostable packaging and service ware in connection with food service in Issaquah. Businesses must also participate in a commercial food waste composting program. Recycling and compost containers for consumers are required where food is served for consumption on premise in disposable packaging. Fines for non-compliance amount to \$250.

According to the informational flyer<sup>120</sup> prepared by the city, the objective of the ordinance was to help protect the environment by avoiding the use of

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<sup>118</sup> City of Monterey website on the Environmentally-Friendly Food Packaging Ordinance. Available at: <http://monterey.org/en-us/Environmental-Programs/Zero-Waste/Environmentally-Friendly-Food-Packaging-Ordinance>

<sup>119</sup> The ordinance is included in chapter 8.07 of the City Code which is available at: <http://www.codepublishing.com/WA/Issaquah/>

<sup>120</sup> City of Issaquah's informational flyer available at: <http://www.issaquahwa.gov/documentcenter/view/62>

polystyrene and non-recyclable disposable food service packaging. The city also lists the following economic benefits:

- Businesses and residents can reduce trash volumes and service costs
- Reducing garbage through compost and recycling can save businesses up to 50% - or more - on garbage service costs

The city also provides business with free assistance to find suitable food service ware, identify reductions in garbage, waste audits, on-site training for staff, setting up food recycling programs, and free signage, among others. To encourage the use of recycling, the city also provides businesses with a free recycling service up to 200% of their garbage collection container size, as part of the basic garbage service. Participating businesses include restaurants, coffee shops, cafes, cafeterias, delis, grocery stores, quick-serve food establishments, caterers, vendors at fairs, food trucks, all city facilities, contractors, and other food service businesses.

The ordinance has some exemptions. Initially, utensils (forks, spoons, and knives), foil backed and composite papers used to wrap hot food, straws, cocktail picks, portion cups two ounces and less when used for hot food or requiring lids were exempt until 2012. Currently, foods that are pre-packaged before they are received by a business are not included, and in some cases waivers may be considered, for which the city provides the Polystyrene Styrofoam Waiver Form.<sup>121</sup> The requester must demonstrate that suitable products conforming to the requirements of the ordinance and meeting performance and food safety standards are currently unavailable.

### ***Why change the law?***

***While polystyrene foam food packaging and service ware is often used and disposed of within minutes or days, it continues to exist in the environment for thousands of years... Locally, there are no meaningful ways of recycling polystyrene foam food packaging.***

**City of Issaquah, Informational Flyer**

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<sup>121</sup> The Polystyrene Styrofoam Waiver Form is available at: <http://www.issaquahwa.gov/documentcenter/view/63>

## Waste Bans and Zero Waste Goals

### San Francisco, California: Goals First

The City of San Francisco has defined Zero Waste as simply as “sending nothing to landfill or incineration.” This means that disposal is not part of the equation. In 2001, the city had exceeded the state mandated 50% diversion rate and in 2002, it proceeded to adopt a goal of 75% landfill diversion by the year 2010. In 2003, the goal became more and more ambitious: Zero Waste for 2020.

The city has implemented a range of ground-breaking legislation, including resolutions, ordinances, administrative bulletins, regulations, and executive orders. A list and explanation of those is included below.

#### ZERO WASTE LEGISLATION IN SAN FRANCISCO

- Resolution Adopting Zero Waste Goal: Adopts goals of 75% landfill diversion citywide by 2010 and zero waste.
- Resolution Setting Zero Waste Date: Sets the date of 2020 for zero waste goal.
- Mandatory Recycling & Composting Ordinance: Requires separating recyclables, compostables, and landfill-bound trash.
- Adequate Space for Trash, Recyclable, and Compostable Materials: Provides standards for adequate space requirements and chute design for recycling, composting, and trash handling systems.
- Producer Responsibility Resolution: Supports statewide efforts to hold producers responsible for product waste and agencies to include producer responsibility language in city purchasing contracts.
- Producer Responsibility Framework Resolution: Urges state to enact an extended producer responsibility framework.
- Marine Plastic Pollution Producer Responsibility: Supports a California Statewide producer responsibility program to minimize marine plastic pollution.
- Plastic Bag Reduction Ordinance: Requires the use of compostable plastic, recyclable paper and/or reusable checkout bags by supermarkets and drugstores.
- San Francisco’s Extended Bag Reduction Ordinance: Requires the use of compostable plastic, recyclable paper, and/or reusable checkout bags by all retail establishments and requires these establishments to charge a minimum of ten cents.

- Food Service Waste Reduction Ordinance: Prohibits the use of Styrofoam or polystyrene foam food service ware and requires the use of food ware that is compostable or recyclable.
- Cigarette Litter Abatement Fee Ordinance: Establishes a fee of \$0.20 per pack of cigarettes sold in San Francisco to recover the cost of cigarette litter clean-up from city streets, sidewalks, and other public properties.
- Yellow Pages Ordinance: Requires Yellow Pages distributors to get the approval, or opt-in agreement of all San Francisco residents before delivering phone book directories.
- City Government Construction Recycled Content Ordinance: Requires recycled content materials to be used in public works and improvement projects.
- Construction & Demolition Debris Recovery Ordinance, Regulations, and Forms: Requires C&D projects to use city-registered transporters and processing facilities to increase debris recovery.
- Demolition Notice Ordinance: Provides notice of demolition to recycling companies.
- Disaster Debris Recycling Resolution: Mandates city departments to maximize reuse and recycling of debris in the event of a disaster.
- Green Building Requirement for City Buildings: Requires city government construction to manage debris and provide adequate recycling storage space in buildings.
- Bottle Filling Stations: Requires new buildings that have drinking fountains to provide bottle filling stations.
- Resource Conservation Ordinance: Requires city departments to prevent waste, maximize recycling, buy products with recycled content and appoints a Zero Waste Coordinator to lead these efforts.
- Mayor's Executive Order on Recycling and Resource Conservation: Summarizes existing zero waste legislation, expands on the role of the city's Zero Waste Coordinators and requires defaults on multi-function devices to be set to double-sided printing.

- Mayor’s Executive Order Enhancing Recycling and Resource Conservation: Requires departments to purchase 100% post-consumer recycled content paper, to reduce paper usage, and to purchase only approved green products.
- Mayor’s Executive Order on Bottled Water: Prohibits San Francisco city departments from using public funds to purchase bottled water.
- Bottled Water Ordinance: Restricts the sale or distribution on City property of drinking water in plastic bottles of 21 ounces or less, set city policy to increase the availability of drinking water in public areas, and bar the use of city funds to purchase bottled water.
- Environmentally Preferable Purchasing Ordinance: Requires an environmentally preferable purchasing program for commodities purchased by the City.
- Precautionary Purchasing Regulation: Sets recycled content and other guidelines for commodities regularly purchased by city departments.
- Surplus Disposal Ordinance: Establishes a reuse and recycling hierarchy for redistributing excess city equipment and supplies.

Of particular interest is San Francisco’s project on expanded polystyrene bans, since the use of those products was very much expanded when the ordinance was adopted in 2006. The “food service waste reduction ordinance” requires food packaging that is recyclable or compostable, in order to prevent the new packaging to continue to be sent to the landfill. Efforts began by ensuring that efficient compost and recycling programs were in place. As preparation for the ordinance, the city also reviewed similar ordinances passed by the neighboring cities of Berkeley and Oakland. The city also conducted an outreach campaign through letters and notices in newspapers and channels, meetings and partnerships with many stakeholders, to prevent resistance.<sup>122</sup> The implementation of the ordinance continued through outreach, educational visits, informational tables, multilingual handouts and website information on alternatives.<sup>123</sup> According to city staff, the rate of compliance has been getting progressively better; about 80% the first year, reaching about 98% just 5 years later.<sup>124</sup>

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<sup>122</sup> Nguyen, Linda D., *supra* note 95.

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*



San Francisco's Zero Waste Program also awards funding to non-profit organizations working in source reduction, reuse, recycling, and composting.<sup>125</sup> The incentives provided by the city have resulted in big community involvement, which has been key to achieve the city's ambitious goals. San Francisco has achieved the highest landfill diversion rate of any major city in North America: 80%.<sup>126</sup> According to the Green Cities Index, San Francisco is at the top, scored as the Greenest City in North America.<sup>127</sup> Waste reduction is a major consideration in this score.

### **Seattle, Washington: Bans First.**

The City of Seattle adopted a Zero Waste Resolution in 2007, where it considered the need to conduct a comprehensive study of products, packages, and ingredients that could be banned or otherwise discouraged through taxes or other means.<sup>128</sup> Later in the same year, the city hired an external consultant firm to study the initial products considered in the resolution: Non-compostable plastic shopping bags and Styrofoam food containers. The need to ban these items was foreseeable for the City of Seattle and analyzing that possibility was the first concrete action taken.

The consultants prepared a report which they provided to the Seattle Public Utilities. The report initially analyzed plastic bags too but then that part was excluded because of public opposition. The issue was revisited a few years later, as it will be explained below. Regarding expanded polystyrene, and food service items in general, the report contained the following key findings:

- All food service items result in environmental burdens higher than the status quo, but plastic is more persistent and its use should be minimized.<sup>129</sup>

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<sup>125</sup> Zero waste grants (sfenvironment.org - Our Home. Our City. Our Planet Apr. 11, 2016), <http://sfenvironment.org/article/education-equity/zero-waste-grants>.

<sup>126</sup> Mayor Lee announces San Francisco reaches 80% landfill waste diversion, leads all cities in North America (sfenvironment.org - Our Home. Our City. Our Planet Oct. 6, 2012), <http://sfenvironment.org/news/press-release/mayor-lee-announces-san-francisco-reaches-80-percent-landfill-waste-diversion-leads-all-cities-in-north-america>.

<sup>127</sup> San Francisco tops the North American green cities index (sfenvironment.org - Our Home. Our City. Our Planet Jan. 16, 2013), <http://sfenvironment.org/video/san-francisco-tops-the-the-us-canada-green-cities-index>.

<sup>128</sup> City of Seattle Zero Waste Resolution (30990) adopted in July 16, 2007. Available at: [http://www.seattle.gov/util/cs/groups/public/@spu/@garbage/documents/webcontent/02\\_015860.pdf](http://www.seattle.gov/util/cs/groups/public/@spu/@garbage/documents/webcontent/02_015860.pdf)

<sup>129</sup> Herrera Environmental Consultants, Alternatives to Disposable Shopping Bags and Food Service Items Volume I (Seattle Public Utilities), Jan. 2008. Available at: [http://www.seattle.gov/util/cs/groups/public/@spu/@garbage/documents/webcontent/spu02\\_014615.pdf](http://www.seattle.gov/util/cs/groups/public/@spu/@garbage/documents/webcontent/spu02_014615.pdf).

- A shift from disposable food service items to biodegradable food items service (with a faster rate of degradation) may reduce the impacts of litter on the marine environment.<sup>130</sup>
- All education on disposable food service item use should emphasize minimizing packaging and avoidance of littering, the utilizing of compostable or recyclable products, and increasing composting and recycling rates.<sup>131</sup>
- An Advance Recovering Fee (ARF) on all non-compostable, non-recyclable clamshells reflects less environmental impacts than bans, because it incentivizes compostable products, like polylactic acid (PLA), which results in lower impacts than paper and PET.<sup>132</sup>

In 2008, the city council adopted its first product ban ordinance,<sup>133</sup> starting by polystyrene. The ordinance prohibited polystyrene foam and promoted compostable and recyclable food service ware in all food establishments. The ordinance would go into effect in three phases: First, a ban on expanded polystyrene food containers and cups; secondly, a requirement of food service ware that is compostable or recyclable; and thirdly, the end of a temporary exemption for utensils, straws, small portion cups, and foil-faced, insulated wrap. But the City of Seattle wouldn't risk its efforts, continuing to send recyclable or compostable waste to the landfill. The requirements for food service ware expands to accruing responsibility to landlords operating food courts, or similar settings, to provide conveniently located and clearly marked containers where customers can discard the compostable and recyclable food service ware. Landlords must also provide for the collection and delivery of these materials to appropriate processing facilities. The implementation of the ordinance also involves an outreach program with quarterly stakeholder meetings and events with food service businesses, waste service providers, and food packaging manufacturers.<sup>134</sup> City staff attends trade shows to interact with the distributors of alternative products and stakeholder groups submit reports on the prices, performance, and availability of alternatives.<sup>135</sup> In return, the city helped develop an approach to bring the prices down and increase availability of the alternatives,<sup>136</sup> also providing a list of alternative products and their providers, handouts in various languages and key information on the city's website.

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<sup>130</sup> Id.

<sup>131</sup> Id.

<sup>132</sup> Id.

<sup>133</sup> The ordinance may be found at: [https://www.municode.com/library/wa/seattle/codes/municipal\\_code?nodeId=TIT21UT\\_SUBTITLE\\_IISOWA\\_CH21.36SOWACO\\_SUBCHAPTER\\_IISOWACO\\_21.36.086COREFOSEWARE](https://www.municode.com/library/wa/seattle/codes/municipal_code?nodeId=TIT21UT_SUBTITLE_IISOWA_CH21.36SOWACO_SUBCHAPTER_IISOWACO_21.36.086COREFOSEWARE)

<sup>134</sup> Nguyen, Linda D., *supra* note 95.

<sup>135</sup> Id.

<sup>136</sup> Id.

According to city staff, in 2011, one year after the ban, less than 5% of businesses were out of compliance.<sup>137</sup> However, site visits performed by Cascadia Consulting Group on the same year showed that many businesses had reverted to polystyrene use due to the cost of the alternatives and lack of enforcement,<sup>138</sup> which shows the importance of a continuous proactivity from the city.

***“What’s our goal for waste? Less. And next year? Less.” Tim Croll, Solid Waste Director for Seattle Public Utilities***

The plastic bag ban was also adopted (in 2012), but because the ordinance is very similar to those explained before, it will not be explained in detail. It prohibits all retailers to give away single-use carryout bags, mandates to charge five cents for paper bags, has exemptions for some types of plastic bags, and also imposes a \$250 fine for violations.

But the effects of the Zero Waste Resolution did not stop in product bans. Disposal was also banned in various phases and including penalties. The disposal of yard waste from the garbage has been prohibited since 1988;<sup>139</sup> recyclables from residential, commercial and self-haul garbage have been prohibited since 2005,<sup>140</sup> and all organics were added to that prohibition in 2015. In a public opinion poll, 74% of Seattle residents supported that new ordinance while just 11% were opposed.<sup>141</sup> Furthermore, the city estimated that 100,000 tons of what was going into the landfill every year was compostable, even though a curbside compost collection program was in place since 2005.<sup>142</sup> In 2015, enforcers began to stick red warning tags on food-filled trash bags, and by April the same year, Seattle had already collected an additional 19,000 tons of compost.<sup>143</sup> Currently, more than 125,000 tons of food and yard waste go to composting processors.<sup>144</sup>

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<sup>137</sup> Id.

<sup>138</sup> Cascadia Consulting Group, Expanded Polystyrene Food Service Take-Out Container Study Apr. 26, 2011. Available at: [http://www.ci.milpitas.ca.gov/\\_pdfs/eng\\_EPS\\_Study\\_FINAL.pdf](http://www.ci.milpitas.ca.gov/_pdfs/eng_EPS_Study_FINAL.pdf)

<sup>138</sup> City of Seattle, Food ban FAQs--Seattle public utilities (1995), <http://www.seattle.gov/util/MyServices/Garbage/AboutGarbage/SolidWastePlans/AboutSolidWaste/BanOrdinance/FoodBanFAQs/index.htm>.

<sup>140</sup> Zero Waste Seattle. History of Waste Reduction in Seattle. Available at: <http://www.zerowasteseattle.org/history-of-waste-reduction-in-seattle>

<sup>141</sup> Seattle Now Shaming Residents for Not Composting Food Waste, FOX NEWS, Jan. 29, 2015. Available at: <http://www.foxnews.com/leisure/2015/01/29/seattle-now-shaming-residents-for-not-composting-food-waste/>

<sup>142</sup> Sara Bernard, Why Seattle Still Has a Huge Garbage Problem, GRIST, Jun. 15, 2015. Available at: <http://grist.org/cities/why-seattle-still-has-a-huge-garbage-problem/>

<sup>143</sup> Id.

<sup>144</sup> City of Seattle, *supra* note 131.

Seattle waste reduction efforts have resulted in a diversion rate of at least 57.1% in 2014,<sup>145</sup> representing more than 20% in comparison to the national number. The efforts continue; according to the Seattle Solid Waste Management Plan, by 2022, the city plans to divert 70% of its waste to recycling and composting.

## Proposals

This project makes proposals in two areas — policy and bans — the former establishing the underlying principles for the latter. The policy proposal sets the foundation for the phase-out on single-use products, starting with plastic bags and polystyrene foam containers. The policy also provides for other concrete actions that the City of Redmond can undertake to prevent waste, encourage reuse and improve consumption patterns, particularly considering the impact of outreach and education.

The Redmond Reduces! Resolution contains the basic framework to analyze local environmental, social, and economic impacts of different components of the waste stream, bringing together the stakeholders and gathering public input to identify alternatives and select the most suitable options for the city. In their visits to the Sustainability and the Law Class, city staff acknowledged the importance of forming partnerships, and this is key to continue to push forward the recycling and composting programs that are already in place. Also, enhancing and recognizing the local voluntary initiatives to reduce single-use products, promote the use of reusable ones, and recover what is valuable for compost or recycle, can have a spread effect. As Matt McRae, Climate and Energy Analyst for the City of Eugene, said: “It takes all of us.”

As another incentive to achieve the reduction goals, the city might consider to prohibit wasteful behaviors. The dependence on single-use disposable products is a new practice, struggling to become part of the Oregonian culture. But Oregon’s history is one of being a leader in green practices... That is “Oregon Pride.” The City of Redmond can join other cities in Oregon that have banned two of the most popular representations of a wasteful behavior: Single-use plastic bags and expanded polystyrene foam containers.

Overall, the recommendation for the City of Redmond is to be proactive in this issue. The Redmond City Code establishes that education on the need for recycling is a joint responsibility of the city, schools, community, and volunteer organizations, the franchisee, the county and others, but no information on this matter can be found on the city’s website. It is unsustainable for the city to

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<sup>145</sup> Seattle Public Utilities, 2014 Seattle Recycling Rate Report Jul. 1, 2015. Available at: [http://www.seattle.gov/Util/cs/groups/public/@spu/@garbage/documents/webcontent/1\\_040673.pdf](http://www.seattle.gov/Util/cs/groups/public/@spu/@garbage/documents/webcontent/1_040673.pdf)

just continue to issue payments to collect and dispose all the garbage that is generated, as if the economic, environmental, and social costs were invisible. The city can reduce these costs by reducing the amount of waste that needs to be collected and disposed.

*See Appendix 1: Proposed Redmond Reduces! Resolution*

*See Appendix 2: Proposed Single-use Plastic Bag and Polystyrene Foam Ban Ordinance*

## **Conclusion**

Redmond Reduces is an ambitious project. Banning expanded polystyrene and plastic bags, as emblematic single-use disposable products, is a huge step in preventing harmful materials from entering the waste stream. At the same time, it is only one piece of a bigger puzzle. Moving from the Solid Waste Management paradigm to a Sustainable Materials Management vision requires an elimination the human-made, unsustainable concept of waste in the first place. Big cities, where large amounts of tax-dollars were being wasted in garbage bills, grasped impatience. Zero Waste Plans have been adopted in cities where the path is anything but easy; and it won't be easy for Redmond either. But it is time for Redmond to embrace impatience as well. It is time for Redmond Reduces!

# Appendix 1: Redmond Reduces! Model Resolution

CITY OF REDMOND  
RESOLUTION NO. \_\_\_\_\_

A RESOLUTION ESTABLISHING NEW WASTE REDUCTION GOALS FOR THE CITY OF REDMOND AND PROVIDING DIRECTION ON WASTE-REDUCTION PROGRAMS.

WHEREAS, The Redmond City Council adopted the Redmond 2020 Comprehensive Plan in May 22, 2001, amended August 22, 2006 and June 8, 2007, which encouraged a continued cooperative recycling effort within the Redmond UGB; and

WHEREAS, The Redmond 2020 Comprehensive Plan also established as a policy to explore methods to gain 100% disposal of waste at appropriate landfill sites and discourage the dumping of wastes on public and private lands; and

WHEREAS, no comprehensive plan can remain completely appropriate for twenty years, as the attitudes and desires of people change, as well as economics and technology; and

WHEREAS, rapidly changing conditions indicate that reconsideration of the Plan's Goals and Policies is warranted between the required Periodic Review periods, and modifications may be initiated by the City Council or Planning Commission at any time, and any citizen or group may request the Council or Commission to initiate a Plan amendment, but formal direction for study may only come from these official bodies; and

WHEREAS, aiming for gaining 100% disposal of waste at appropriate landfills contradicts the waste prevention programs promoted by the Environmental Protection Agency and the Department of Environmental Quality, as well as sustainability principles that account for intergenerational equity and the triple bottom line of environmental, social and economic impacts of policies; and

WHEREAS, notwithstanding the recycling and yard debris collection service, the disposal rates by the City of Redmond at the Deschutes County Knott Landfill have experienced a 33 percent increase over the period of five years comprising 2010 to 2015, and the current trends of the county predict that the landfill will be filled by 2029; and

WHEREAS, Section 459.015 of the Oregon Revised Statutes (O.R.S.) contains legislative findings and declarations highly oriented to encouraging waste prevention and volume reduction, accounting for the limitations of the environment to absorb the impacts of increasing waste generation and specifically acknowledging a shortage of *appropriate sites for landfills* in Oregon; and

WHEREAS, there must be a substantial recycling and composting progress to warrant the highest and best use for materials and decrease the amounts disposed in a rapidly filled landfill; and that such progress should be encouraged and monitored; and

WHEREAS, the City Council and Mayor seek to further reduce disposed waste so that the City can invest taxpayers money in more sustainable practices relating to materials and waste management; and

WHEREAS, the City Council and Mayor seek to expand recycling, composting and move forward with waste reduction programs by applying zero-waste principles to the City's management of solid waste;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF REDMOND, OREGON, AS FOLLOWS:

SECTION ONE. Goals. The City establishes the following goals for recycling and waste reduction.

A. The City will recycle \_\_\_% of the waste produced within the city by 2025, and \_\_\_% of the waste produced within the city by 2030.

B. The City will not dispose of any more total solid waste in future years than went to the landfill in 2015 (28,501.67 tons of municipal solid waste ("MSW")).

C. For the next five years, the City will reduce the amount of solid waste disposed by at least 1% per year.

D. Future waste-reduction goals for the period 2025-2030 will be set based on the experience of the first five years, with the aspiration of achieving a steady reduction in the amount of waste disposed each year.

Section 2. Waste-Reduction Strategies. The action strategies adopted to achieve City goals shall apply zero-waste principles. Zero-waste principles entail managing resources instead of waste; conserving natural resources through waste prevention and recycling; turning discarded resources into jobs and new products instead of trash; promoting products and materials that are durable and recyclable; **and discouraging products and materials that can only become trash after their use.** Action strategies should include elements that:

**A.** Actively encourage and support a system where producers minimize waste during product design and take responsibility for the reuse or recycling of used products;

**B.** Promote the highest and best use of recycled materials;

**C.** Minimize the environmental impacts of disposed waste; and

**D.** Implement actions in a sequence that: 1) starts by simultaneously offering any new recycling service for customers to use on a voluntary basis, implementing incentives to encourage participation, and pursuing product stewardship approaches to avoid waste or remove waste from the City waste stream and 2) as a second step consider prohibiting disposal of the targeted materials as garbage in order to ensure full participation of all customers.

Section 3. Waste-Reduction Actions. A Recycling and Waste Reduction Ad-Hoc Committee shall propose specific waste-reduction actions, consistent with the strategies described above, to achieve City recycling goals as part of future rate proposals, budgets, and solid waste plan updates. The proposed rates and budgets for 2018, 2019, and 2020 shall include, at minimum, the actions in Attachment A. Additional actions shall be proposed as part of future rates, budgets, and solid waste plans as needed to meet City goals.

ADOPTED by the City Council and SIGNED by the Mayor this \_\_\_ day of \_\_\_\_, \_\_\_\_.

\_\_\_\_\_  
\_\_\_\_\_, Mayor

ATTEST:

\_\_\_\_\_  
\_\_\_\_\_, City Recorder

\* \* \*

ATTACHMENT A: WASTE-REDUCTION ACTIONS

TO RESOLUTION \_\_\_\_\_ ESTABLISHING NEW WASTE REDUCTION GOALS FOR THE CITY OF REDMOND AND PROVIDING DIRECTION ON WASTE-REDUCTION PROGRAMS.

The following actions shall be implemented to achieve waste-reduction goals. The first years of implementation are shown in parentheses.

ALL WASTE

- A. All City agencies will meet or exceed all requirements for waste reduction and recycling placed on commercial and residential customers (\_\_\_\_).
- B. The City will institute a \$\_\_\_\_ annual Waste Reduction/Recycling Matching Fund for community recycling/waste reduction initiatives (\_\_\_\_).
- C. The Recycling and Waste Reduction Ad-Hoc Committee will be consulted on design and implementation strategies for education and outreach programs, and the City shall consult with other appropriate stakeholders as needed to provide input into the analysis of actions for implementation or beyond.
- D. The City of Redmond through the designated department will expand education, outreach, inspection and enforcement actions for the bans on single-use products, and mandatory separation for recyclables and organics (\_\_\_\_).
- E. The City of Redmond through the designated department will increase opportunities for waste reduction audits and waste reduction/recycling education to commercial customers (\_\_\_\_).
- F. The City of Redmond through the designated department will increase opportunities for waste reduction audits and waste reduction/recycling education to residential and multi-family customers. (\_\_\_\_).
- G. The City will expand recycling services available for customers outside the city borders (\_\_\_\_).
- H. The City will explore ways to cooperate with other governments in Deschutes County to coordinate waste reduction, product stewardship, and other efforts across jurisdictions (\_\_\_\_).

ORGANICS

- A. The City will continue to promote the commercial food waste program by working with customers and the collection company to provide incentives and design programs to facilitate, promote, and increase the cost-effectiveness of commercial organics collections. Among the incentives to be evaluated will be designing rates to encourage organics recycling, including decreasing the per unit organics charge as quantities of organics increase (\_\_\_\_).
- B. The City will continue to promote the residential yard debris collection program for residential customers and expand it to include all kinds of food waste (\_\_\_\_).
- C. The Recycling and Waste Reduction Ad-Hoc Committee will review and propose incentives and education programs that will encourage participation by property owners and residents in the organic collection program (\_\_\_\_).
- D. Collection frequencies for garbage, recycling and organics will be determined in \_\_\_\_ as part of negotiations with service providers. The evaluation criteria for different collection alternatives (and costs, benefits and operational impacts associated with collection frequencies) will be determined in time for implementation in the \_\_\_\_ collection contract. If weekly organics and every other week garbage are not part of the baseline \_\_\_\_ collection contract, then pilots on these frequencies will be performed in \_\_\_\_\_ (\_\_\_\_).
- E. The City of Redmond through the designated department will conduct a study by the end of \_\_\_\_, to be done with the Recycling and Waste Reduction Ad-Hoc Committee or any other advisory group, to determine the costs, benefits, operational impacts and effectiveness of a potential mandatory organics collection program which could be implemented by the end of \_\_\_\_\_. The scope of work for the study will include a requirement to develop evaluation criteria (\_\_\_\_).
- F. The City will implement a mandatory organics collection program on \_\_\_\_, including:



- \* All single-family customers, unless the customer is actively composting food in the yard (an exemption process will be developed).
- \* A tiered can rate will be established for organics.
- \* All food waste will be included in organics collections.
- \* A future ban of all organics from single family garbage will be considered once the collection system has been fully established (\_\_\_\_).

#### CONSTRUCTION AND DEMOLITION (C&D) WASTE

- A. The City will increase reuse/waste reduction/recycling of C&D waste through the modification of the City's current demolition permit by the end of \_\_\_\_\_. The permit modifications will emphasize and give priority to steps that would lead to the salvage and reuse of building materials. The City of Redmond through the designated department will work with the Building Division to develop the permit modifications and to explore incentives and disincentives to developers and contractors to accomplish waste-reduction goals. Permit development will identify the minimum project size (in square feet) for which a demolition permit will be required (\_\_\_\_\_).
- B. By \_\_\_\_\_, the City will explore incentives such as grants, tax reductions, and development assistance to encourage private companies to develop facilities for sorting and recycling C&D waste (\_\_\_\_\_).
- C. By \_\_\_\_\_, the City will analyze potential waste reduction/recycling opportunities available to the City for C&D waste through development of a publicly owned C&D facility and use of the City's flow control authority (\_\_\_\_\_).
- D. The Mayor and Council will make a decision by \_\_\_\_\_ on whether to issue a potential Request for Proposals (RFP) for either private or public C&D processing plant (s), based on the analyses detailed above (\_\_\_\_\_).
- E. The City will consider providing incentives and requirements for larger development projects to promote recycling of C&D waste and use of recycled materials in construction, and/or adopting a City requirement that a given percent of C&D waste from each construction site be reused or recycled. This could include requiring a recycling plan and fee deposit when issuing building and demolition permits, with a portion of the fee refunded based on the amount of C&D waste recycled (\_\_\_\_\_).
- F. The City will also consider grants, tax reductions, and other incentives to encourage businesses to reuse C&D materials (such as roofing and drywall) or reprocess them into new products (\_\_\_\_\_).
- G. The City will review benefits, costs, operational impacts, and possible implementation time frames in recommending whether to pursue a prohibition on disposal of C&D recyclables as garbage at City stations (\_\_\_\_\_).
- H. The City will review benefits, costs, operational impacts, and possible implementation time frames for increasing tipping fees for disposal of mixed C&D waste while decreasing the fee for transfer station drop-off of source-separated recyclable C&D materials (\_\_\_\_\_).

#### PRODUCT STEWARDSHIP

- A. The City of Redmond through the designated department and the Recycling and Waste Reduction Ad-Hoc Committee will conduct a study to determine the most effective strategies for local stewardship activities (\_\_\_\_\_).

B. The Mayor and Council will identify and consider potential state legislation regarding product stewardship for the \_\_\_\_ state legislative session (\_\_\_\_).

C. The City of Redmond through the designated department and the Recycling and Waste Reduction Ad-Hoc Committee will evaluate the feasibility of implementing producer takeback programs and recommend appropriate action steps for packaging take-back, manufacturer/retailer take-back of used carpet and possible tax incentives or other business development incentives to promote local carpet-recovery markets, producer take-back and reprocessing for paint, and improvements to regional mercury containing product recycling/take-back for mercury-containing products such as fluorescent light bulbs and thermometers (\_\_\_\_).

#### PRODUCT BANS

By \_\_\_\_, the City of Redmond through the designated department and the Recycling and Waste Reduction Ad-Hoc Committee will conduct a comprehensive study of products, packages and ingredients that could be banned or otherwise discouraged through taxes or other means. This study will include:

- Identification of potential products, packages and/or ingredients that could be banned or discouraged in the near future.
- Legal alternatives for banning, restricting, or discouraging the use of products, packages, and/or ingredients.
- Criteria for evaluating such actions, including the actions' costs and benefits' including water quality benefits to the Puget Sound basin.
- An evaluation of available substitutes for anything for which actions are proposed.
- Recommendations for an implementation/action plan based on a prioritized list (\_\_\_\_).

If the ban has not been adopted, initial products for review will include single-use plastic bags and polystyrene foam food containers, for which the City of Redmond will complete its study and recommendations by \_\_\_\_.

#### ACTIONS TO BE INCLUDED IN THE \_\_\_\_ RATE.

The following actions will be among those incorporated into the \_\_\_\_ rate:

- Education and outreach programs;
- Community waste-reduction matching grants;
- Inspection and enforcement for the bans on single-use products, and mandatory separation for recyclables and organics;
- Rate study that evaluates rate designs for organics including variable can rates and tiered commercial rates;
- Develop Building Division permit requirements including the recycling and reuse opportunities for Construction and Demolition debris.
- Product stewardship study/services
- Study on potential bans of certain materials; and
- Market development for problem materials.

# Appendix 2: Plastic Bag and Polystyrene Foam Ban Model Ordinance

CITY OF REDMOND  
ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE AMENDING THE REDMOND CITY CODE CHAPTER 4, ADOPTING A PROHIBITION ON THE DISTRIBUTION OF SINGLE USE PLASTIC BAGS AND POLYSTYRENE FOAM FOOD SERVICE WARE.

WHEREAS, Section 459.015 of the Oregon Revised Statutes (O.R.S.) contains legislative findings and declarations highly oriented to encouraging waste prevention and volume reduction, accounting for the limitations of the environment to absorb the impacts of increasing waste generation; and

WHEREAS, the City of Redmond City Council has determined that it is necessary and appropriate to prevent waste generation to mitigate negative impacts on the environment and the general public, as well as the repercussions of the increasing garbage collection bills in the City's budget; and

WHEREAS, the City of Redmond City Council desires to encourage waste prevention through the reduction of many single-use items that negatively impact the local environment and likewise encourage the use of reusable products when safe and practical to reduce the volume of the community's waste stream; and

WHEREAS, single use plastic bags and polystyrene foam containers increase litter, degrade local wildlife habitat and are not recycled by the local recycling service; and

WHEREAS, the City Council finds that the attached code amendments are necessary to further these interests and desires.

NOW, THEREFORE, THE CITY OF REDMOND ORDAINS AS FOLLOWS:

SECTION ONE: The City of Redmond hereby amends the Redmond City Code, Chapter 5, adopting a prohibition on the distribution of single use plastic bags and polystyrene foam food service ware in the city limits. The amendments and adopted text are attached hereto as "Exhibit A."

SECTION TWO: SEVERABILITY. The provisions of this Ordinance are severable. The invalidity of any section, clause, sentence, or provision of this Ordinance shall not affect the validity of any other part of this Ordinance which can be given without such invalid part or parts.

SECTION THREE: EMERGENCY. This Ordinance being necessary because the on-going use of plastic bags and polystyrene foam is harmful to the public health and welfare, an emergency is declared to exist, and this Ordinance takes effect on its passage.

PASSED by the City Council and APPROVED by the Mayor this 9th day of June, 2015

ATTEST:

\_\_\_\_\_  
\_\_\_\_\_, Mayor

\_\_\_\_\_  
\_\_\_\_\_, City Recorder

\* \* \*

EXHIBIT A

(ORDINANCE \_\_\_\_\_)

Proposed Code Amendment – Chapter 5, Utilities, Garbage Service

Code Amendments (new text is in red, deleted text is ~~struck through~~, unless otherwise stated):

**4.430. Waste prevention - Definitions:** For the purposes of Sections 4.430 to 4.435, the following words and phrases mean:

**ASTM standard.** The American Society for Testing and Materials (ASTM)'s International D-6400

**Carryout bag.** Any bag that is provided by a retail establishment at the point of sale to a customer for use to transport or carry away purchases, such as merchandise, goods or food, from the retail establishment. "Carryout bag" does not include:

(a) Bags used by consumers inside retail establishments to:

1. Package bulk items, such as fruit, vegetables, nuts, grains, candy or small hardware items;
2. Contain or wrap frozen foods, meat, fish, whether packaged or not;
3. Contain or wrap flowers, potted plants, or other items where dampness may be a problem;
4. Contain unwrapped prepared foods or bakery goods; or
5. Pharmacy prescription bags;

(b) Laundry-dry cleaning bags or bags sold in packages containing multiple bags intended for use as garbage waste, pet waste, or yard waste bags;

(c) Product bags.

**City sponsored event.** Any event organized or sponsored by the city or any department of the city.

**Customer.** Any person obtaining goods from a retail establishment or from a vendor.

**Disposable service ware.** A single-use disposable product used by the food vendor for serving prepared food that includes, but is not limited to, plates, trays, bowls, cups, lids, straws, utensils, and hinged or lidded containers (clamshells).

**Food provider/vendor.** Any person in the city that provides prepared food for public consumption on or off its premises and includes, without limitation, any retail establishment, shop, sales outlet, restaurant, bars, pubs, coffee shops, cafeterias, caterers, convenience stores, liquor stores, grocery store, supermarkets, delicatessen, non-profit organizations, or mobile food trucks, vehicles or carts, catering truck or vehicle, and roadside stands.

**Grocery store.** Any retail establishment that sells groceries, fresh, packaged, canned, dry, prepared or frozen food or beverage products and similar items and includes supermarkets, convenience stores, and gasoline stations.

**Pharmacy.** A retail use where the profession of pharmacy by a pharmacist licensed by the state of Oregon's Board of Pharmacy is practiced and where prescription medications are offered for sale.

**Polystyrene foam.** A thermoplastic petrochemical material made from a styrene monomer and expanded or blown using a gaseous agent (expanded polystyrene) including, but not limited to, fusion of polymer spears (expandable bead polystyrene), injection molding, form molding, an extrusion blown molding (extruded from polystyrene).

**Prepared foods.** Includes, but is not limited to, food or beverages that are packaged, cooked, chopped, sliced, mixed, brewed, frozen, squeezed, and otherwise prepared on the premises. "Prepared foods" do not encompass:

- (a) Any raw meat product unless it can be consumed without any further preparation; or
- (b) Pre-packaged food that is delivered to the food vendor wholly encased, contained, or packaged in a container or wrapper, and sold or otherwise provided by the food vendor in the same container or packaging.

**Product bag.** Any bag provided to a customer for use within a retail establishment to assist in the collection or transport of products to the point of sale within the retail establishment or to protect a specific single purchased item for transport. A product bag is not a carryout bag.

**Provide.** Includes, but is not limited to, active serving, giving away, selling, delivering, packaging, and providing.

**Recyclable paper bag.** A paper bag that meets all of the following requirements:

- (a) Contains no old growth fiber and a minimum of 40 percent post-consumer recycled content; and
- (b) Is 100% recyclable and accepted for recycling by the City Contractor; and
- (c) Has printed in a highly visible manner on the outside of the bag the words "reusable" and "recyclable," the name and location of the manufacturer, and the percentage of post-consumer recycled content; and
- (d) Is capable of composting consistent with the timeline and specifications of the ASTM Standard as defined in this section.

**Retail establishment.** Any store or vendor located within or doing' business within the geographical limits of the city that sells or offers for sale goods at retail.

**Reusable bag.** A bag made of cloth or other material with handles that is specifically designed and manufactured for long term multiple reuse and meets all of the following requirements:

- (a) If made of natural or synthetic fabric, is washable or otherwise able to be sanitized; or
- (b) If plastic, has a minimum plastic thickness of 4.0 mils.

**Single-use plastic carryout bag.** Any plastic carryout bag made available by a retail establishment to a customer at the point of sale. It does not include reusable bags, recyclable paper bags, or product bags.

**Vendor.** Any retail establishment, shop, restaurant, sales outlet or other commercial establishment located within or doing business within the geographical limits of the city, which provides perishable or nonperishable goods for sale to the public.

**Undue hardship.** Circumstances or situations unique to the particular retail establishment such that there are no reasonable alternatives to single-use plastic carryout bags or a recyclable paper bag pass-through cannot be collected.

**4.431. Plastic Bag Use - Regulations.** Except as exempted in Section 4.433 of this code:

- (a) No retail establishment shall provide or make available to a customer a single use plastic carryout bag;
- (b) Retail establishments that choose to provide customers a paper bag at the point of sale must provide a recyclable paper bag meeting or exceeding the minimum standards defined in Section 4.430.
- (c) No person shall distribute a single-use plastic carryout bag at any city facility, city managed concession, city sponsored event, or city special events permit activity.

**4.432. Plastic Bag Use - Cost Pass-Through.** When a retail establishment makes a recyclable paper bag available to a customer at the point of sale pursuant to section 4.431(b) of this code, the retail establishment shall:

- (1) For the first twelve month of effect of this ordinance, charge the customer a reasonable pass through cost of not less than 10 cents per recyclable paper bag provided to the customer; twelve months from the ordinance codified in this Article's final passage and adoption, [the retail establishment shall] raise the cost it charges a customer for a recycled paper bag to a minimum charge of \$0.25; and
- (2) Indicate on the customer's transaction receipts the total amount of the recyclable paper bag pass-through charge.

**4.433. Plastic Bag Use - Recordkeeping.** All retail establishments shall keep complete and accurate records or documents of the purchase and sale of any recycled paper bag by the

retail establishment, for a minimum period of one year from the date of purchase and sale, which record shall be available for inspection at no cost to the City during regular business hours by any City employee authorized to enforce this Section. Unless an alternative location or method of review is mutually agreed upon, the records or documents shall be available at the retail establishment address. The provision of false information, including incomplete records or documents, to the City shall be a violation of this Section.

**4.434. Disposable Food Service Ware Use - Prohibitions.** No food provider/vendor shall provide prepared food in polystyrene foam.

**4.435. Waste prevention - Exemptions.** Notwithstanding sections 4.431 to 4.434 of this code:

(a) Retail establishments may distribute product bags and make reusable bags available to customers whether through sale or otherwise.

(b) A retail establishment shall provide a reusable bag or a recyclable paper bag at no cost at the point of sale upon the request of a customer who uses a voucher issued under the Women, Infants and Children Program established in the Oregon Health Authority under ORS 409.600.

(c) Vendors at retail fairs such as a farmers' market or holiday fair are not subject to indicating on the customer's transaction receipt the total amount of the recyclable paper bag pass through charge required in section 4.432(1) of this code.

(d) The city administrator or the designee may exempt a retail establishment or food provider/vendor from the requirement set forth in sections 4.431 to 4.434 of this code for a period of not more than one year upon the retail establishment showing, in writing, that this code would create an undue hardship or practical difficulty not generally applicable to other persons in similar circumstances. To qualify for a financial hardship exemption, the food vendor must demonstrate with respect to each specific and necessary polystyrene foam disposable food service ware, that there is no feasible alternative that would cost less than 15% more than polystyrene foam disposable food service ware. The decision to grant or deny an exemption shall be in writing, and the city administrator's or designee's decision shall be final.

**4.436. Enforcement and Penalties for Violations - Separate Offense.** Each Single-use Plastic Carryout Bag or non-Recyclable Paper Bag, and Polystyrene Foam Disposable Food Service Ware provided or made available to customers, without charging the minimum fee each in the case of the paper bags, is a violation of this section and accounts for a separate offense.

**4.437. Enforcement and Penalties for Violations - Written Warning.** For the first violation, a written warning shall be issued to the provider specifying that a violation of this ordinance has occurred,

and which further notifies the provider of the appropriate penalties to be assessed in the event of future violations. The provider will have 14 days to comply.

- 4.437. Enforcement and Penalties for Violations - Failure to comply.** Upon failure of the provider to comply within the 14-day period set forth in subsection (a) of this section, the City may pursue enforcement of this Article utilizing any of the remedies set forth in the Redmond City Code.
- 4.438. Enforcement and Penalties for Violations - Fine.** Notwithstanding any other remedies set forth in the Redmond City Code, a violation of sections 4.431 to 4.434 of this code will accrue a minimum fine for each separate offense of not less than \$200. Providers who violate this Article in connection with special events, as defined in this Article, shall be assessed a graduated administrative fine which shall increase in amount depending upon the number of persons attending said special event. The amount of the graduated administrative fine shall be established and set forth in the Redmond City Code.