

Implementing Comprehensive Urban Forest Management Plans: Lessons from Washington State

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**Abstract**

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Urban forest management plans (UFMPs) are developed by many communities in order to provide a common vision for urban forest health and sustainability, establish goals, and coordinate actions toward achieving them. This multiple-case study used document analysis and semi-structured interviews with staff in six cities to investigate how UFMPs have been implemented in Washington State. Results indicate that staff actively use UFMP documents to guide and justify action, solve disputes, and promote awareness of urban forestry issues within city bureaucracies and to the community at large. Positive and negative social impacts of implementation efforts influence the political standing of urban forestry programs, suggesting that the political and social skill of city staff, their superiors, and community advocates are key factors in the success of implementation. In some cases, informal implementation strategies focus on associating urban forestry activities with community identity, public safety, and storm water management. In others, implementation is highly dependent on regulatory mandates specified by local ordinance.

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# 1. Introduction

*“You know, in urban forestry you run into a lot of fear of change. Everywhere you go it's always fear of change, fear of, like, this is new and different, oh my God, I can't do this. Which has pretty much been everything I run in to the whole way. And I don't have a problem because there's been enough to implement and there's always enough to do that I can just find a new direction to go in.”*

—An urban forester interviewed for this study, 2014

In Washington State and other parts of the country, urban forest management plans (UFMPs) are often developed by cities seeking to strengthen urban forestry policy. UFMPs are said to achieve this through providing the public with a common vision of a healthy and sustainable forest, a roadmap for getting there, motivation for involvement, and support for sustainable tree practices and policies (Washington State Department of Commerce, 2009). However, policy in practice often differs from policy on paper, and to date there have been no systematic analyses of UFMP implementation or how implementation has affected public policy in cities.

Implementation is an assumption. We can assume that at the minimum, UFMPs indicate that a groups of people exist who are engaged in a strategic and comprehensive process focused on improving urban forest management in their cities. However, these documents do not necessarily indicate that management has changed. Instead, UFMPs are more appropriately thought of as outputs of planning processes. Unless we know something about the outcomes associated with UFMPs, we cannot say what these outputs signify.

Planning is a word with many meanings, and previous research on plan implementation contains contrasting views on the purpose and efficacy of planning. The American Planning Association defines planning as “a dynamic profession that works to improve the welfare of people and their communities by creating more convenient, equitable, healthful, efficient, and attractive places for present and future generations” (APA, 2014). The focus of plans can be broad, as with comprehensive plans, or specific, as with neighborhood plans. In practice, some plans are designed to control the future by setting strategic *performance* goals, some focus on the present by encouraging *conformance* to standards of practice, and some attempt both (Faludi & Alexander, 1989). The challenges involved in evaluating the form and function of UFMPs are similar to those of other types of municipal planning documents. In *Urban Forestry: planning and managing urban greenspaces*, Robert W. Miller (1988) defines planning as the “thinking out a course of action in anticipation of the future.” Content analysis of UFMPs in Washington State reveals that plans commonly contain both operational and strategic elements (Gibbons, 2014). And, like other plans, the empirical evidence describing the extent and value of UFMP implementation is lacking.

## **1.1 Research Questions**

While the efficacy of planning in municipal governance as a whole is a matter of significant debate, few empirical studies evaluated plan implementation according to any standard, whether performance or conformance (Brody & Highfield, 2005; Talen, 1996). UFMP implementation is a black box. Plans are worth studying because in order to better manage and direct public investment in the development and success of urban forestry programs, we need to know where the value proposition of UFMP planning lies. The objective of this thesis is to help

improve understanding of the value and impact of municipal urban forest management planning by describing how six UFMPs have been implemented in Washington State. As such, this thesis uses in-depth interviews and document analysis in order to explore the following research questions:

1. What action steps have city personnel taken to implement UFMPs?
2. How do cities evaluate the performance of UFMPs?
  - A. What impacts are monitored?
  - B. What criteria are used to evaluate impacts?
3. How do evaluations feed back into city institutions?

The goal of answering these questions is to provide information that will enhance UFMP design and implementation in Washington State. By focusing primarily on the actions that describe implementation, and then on evaluation and feedback processes that emerge from actions, this research helps identify constraints faced by implementers and the strategies used to overcome them. It helps to illuminate the institutions (rules, norms, and strategies) that guide urban forest management. City leaders, administrators, and planners considering UFMPs as a tool for program and policy development can benefit from learning from the experiences of other jurisdictions. State agencies, extension service providers, and philanthropic organizations can use this information to improve the design and administration of grants, better target investments, and frame consultation with stakeholder groups on how to best tailor programs for their specific communities.

Answering these questions will also help reveal how cities can leverage institutions in order to adapt to emerging growth management policies and demographic challenges. More than 80 percent of the US population now lives urban areas, and rapid expansion urban land area

across the country is predicted to result in a corresponding decline in ecosystem services, even as the need for those services increases (Nowak & Walton, 2005). For these reasons, managing the form and nature of urban growth and development is a central concern of policymakers, planners, and public officials. A variety growth management policies in the Unities States (mostly at the state level) focus on reducing urban sprawl and its consequent impacts on natural resources and open space. This is mainly accomplished by encouraging the redevelopment and growth within existing urban areas in order to accommodate higher population densities (Bengston, Fletcher, & Nelson, 2004). While these policies focus on sustainability *among* cities and other populated areas, urban forestry is a common solution for addressing sustainability *within* them. As cities grow, community preferences for public services and amenities are also changing. Nationwide, three-quarters of people aged 18-36 expect to move in the next five years, and of these people 56 percent identify green space as a “top” or “high” priority in deciding where to live (ULI, 2015).

## **1.2 Thesis Overview**

The remaining chapters of this thesis are organized as follows:

Chapter 2 begins by providing background on the practice of urban forestry, describing urban forest policy in Washington State, and describing the relationship between UFMP planning practices and policy development in cities. The following section presents literature relating to different stages of implementation, including institutional forces that affect implementation actions, forms of monitoring and evaluation, and policy feedback. The final section of Chapter 2 presents an approach for evaluating for UFMP implementation. Chapter 3 explains the methodology used in conducting this research, and Chapter 4 presents and discusses

research findings. Concluding the thesis, Chapter 5 summarizes this research, presents management recommendations, and suggests directions for future research.

## **2. Background and Literature Review**

How can an activity as broad and abstract as “implementation” be observed and interpreted? More importantly, how can observations and interpretations be applied systematically to plans that vary in both specific content and implementation context? In order to better understand what UFMPs are, how they are deployed, and how they work to change the behavior of urban forest stakeholders, this chapter covers several areas of research. The first section provides background information on urban forestry and urban forestry planning, describes state-level efforts to develop and support urban forestry programs, and concludes by suggesting three stages of UFMP implementation process that may be observed: 1) actions, 2) impact monitoring and evaluation, and 3) policy feedback. The second section of this chapter presents literature relevant to understanding each of these three stages, and the final section summarizes the issues to be addressed by this research.

### **2.1 Urban Forest Practice and Planning in Washington State**

#### ***2.1.1 Urban Forestry***

Similar to roads, traffic lights, stop signs, and sewer systems, trees are a fundamental part of the infrastructure that organizes civic life, enhances public health and safety, and promotes livability. Like other components of infrastructure, trees require management. Urban Forestry is defined as “the planning and management of trees, forests, and related vegetation within communities to create or add value” (McPherson, 2006). The value that urban forests provide is often described in terms of ecosystem services, or the outputs of natural environments that

provide specific benefits for human populations (Boyd & Banzhaf, 2007). A large and growing literature describes these benefits. When properly managed, urban forests and urban greenery have been shown to improve local air quality (Nowak, Crane, & Stevens, 2006), enhance consumer experiences in commercial districts (Joye, Willems, Brengman, & Wolf, 2010), increase property values (Donovan & Butry, 2010; Tyrväinen & Miettinen, 2000), and reduce demands on storm water infrastructure (Booth, Hartley, & Jackson, 2002; Xiao, McPherson, Simpson, & Ustin, 1998).

Urban forest management faces unique challenges that distinguish trees from other types of infrastructure. Commonly, UCF programs face inadequate funding and lack of political and public support (Driscoll, Ries, Tilt, & Ganio, 2014). However, challenges are also institutional. Dwyer and Nowak (2000) describe the challenges that face urban forests in terms of the diversity, connectedness, and dynamics of trees. Trees exist on a diversity of land uses in cities, both public and private. These land uses are associated with equally diverse management objectives and patterns of social behavior. The connectedness of urban forests with other physical and architectural features of the urban environment requires urban forest managers coordinate with those managing for other objectives. As a result urban forest stakeholders include a wide variety of agencies, offices and departments within cities: community development departments, planning and development departments, parks and recreation departments, transportation departments, public utilities, mayor's offices, city councils, public commissions and more. Finally, the slow dynamics urban tree growth and decline relative to the fast-moving and ever-changing cities around them lead to difficulty in balancing the needs of trees with the needs of other infrastructure. Urban forests face attrition as urban areas undergo redevelopment and expansion (Kromroy, Ward, Castillo, & Juzwik, 2007), and limited vigor as

tree growth is impeded by urban “hardscapes” (Quigley, 2004). While the sum of its parts can mean that urban forest can provide great public value, the balkanized nature of tree ownership and tree management make coordinated and strategic investment in this resource problematic.

### ***2.1.2 Urban Forest Management Planning Processes***

Urban forest management planning is commonly used to overcome the challenges above because it presents an opportunity to pursue a comprehensive and inclusive approach to management. To focus efforts, the “Clark” model of urban forest sustainability (Clark, Matheny, Cross, & Wake, 1997) is commonly-used to organize planning. The Clark model suggests three broad measures urban forest sustainability:

- The *Vegetation Resource* produces benefit through function, and function is determined by composition, extent, distribution, and health of urban vegetation.
- The *Community Framework* is measured in terms of public awareness of urban forest values and the extent to which communities cooperate locally and regionally to protect those values.
- *Resource Management* describes the public resources committed to tree care, the standards and practices adopted by managers, and the policies that support management programs.

Describing planning as “an ongoing process that is continuously open to new data and changes in values,” Miller (1988) presents a model for urban forest planning based on three questions:



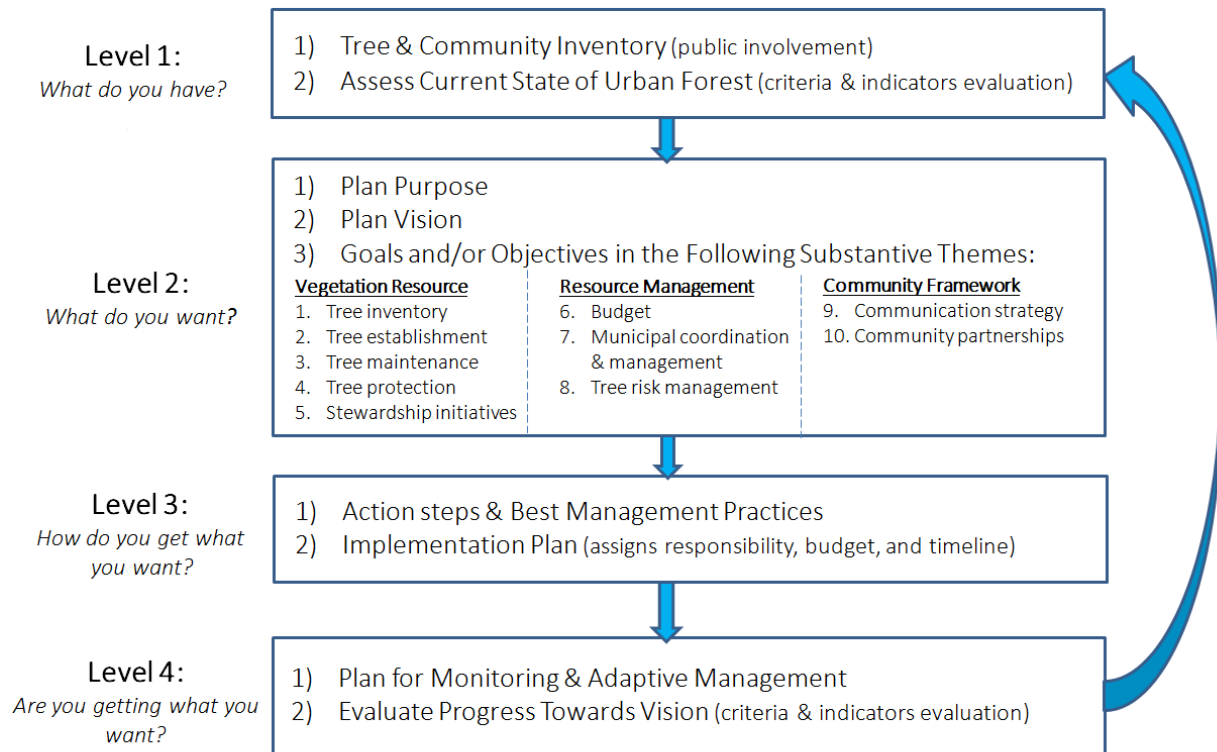
1. *What do you have?* Answering this question helps describe the current context of management, provides baseline data, and helps managers make inferences about future conditions.
2. *What do you want?* Knowledge of current and projected conditions allows the community to engage in a dialogue about vision and values and to set management goals.
3. *How do you get what you want?* Tools that communities can use to achieve goals include regulation, incentives, education, and direct investment in management activities.

Miller's planning process ends in policy feedback (Miller, 1988). Soss and Moynihan (2014) define policy feedback as a "perspective that encourages us to ask how policy implementation transforms the webs of political relations that constitute governance." Put differently, administrators who implement plans must first translate the policies they describe into actions. The impacts of actions may be measured and interpreted differently by various stakeholder groups. Further complicating matters, these individuals may have wildly different views of the acceptability of actions taken to carry out plans (Jones, Davis, & Bradford, 2013). The feedback process ends where the planning process started, with the question, *what do we have?*

### ***2.1.3 UFMPs in Washington State***

In a systematic review of Washington State UFMPs, Gibbons (2014) presented a framework for evaluating and developing comprehensive urban forest management plans, and applied the framework to 39 UFMPs in Washington State (Figure 1).

## A Framework for Comprehensive Urban Forest Management Plans



**Figure 1.** A framework for comprehensive urban forest management plans (Gibbons, 2014)

Gibbons’ framework is based on Miller’s three questions, and adds a fourth—*are you getting what you want?*—while incorporating guidance from the literature on criteria of sustainable urban forest management (Clark et al., 1997; Kenney, van Wassenae, & Satel, 2011). Gibbons found that while Washington municipal UFMPs identify diverse goals relating to substantive themes, plans also lacked specific and detailed action steps associated with these goals.

UMFP development also plays an important role in state-wide efforts to support urban and community forestry. In 2008, the Washington State Legislature passed the Evergreen Communities Act (ECA), stating that “the preservation and enhancement of city trees and urban

and community forests is one of the most cost-effective ways to protect and improve water quality, air quality, human well-being, and our quality of life” (Legislature, 2008). As the state’s main policy effort to assist communities in the management of urban and community forest resources, the ECA directs the Department of Commerce (formerly Community, Trade, and Economic Development) to coordinate with other State agencies to provide urban forestry guidelines for storm water management. Specifically, Commerce was required to convene a statewide task force to create model urban forest ordinances and management plans. These tools would then be available as guidance to Washington cities and towns that currently lack clear goals and standards for their urban forests. Model plan requirements under the ECA include:

- recognition of ecoregional differences between communities,
- flexibility for the diversity of urban character as well as relative differences in density and zoning,
- private landowner access to existing inventories and DNR assistance programs,
- vegetation management practices that prevent conflict with utilities and other public infrastructure, and
- overall coordination with state growth management policy.

Although the ECA is currently an unfunded mandate (requirements of the act are contingent upon the state appropriating financial resources for its purposes), the effort to support UCF programs continues through the Department of Natural Resources (DNR). The DNR administers federally-funded community forestry assistance (CFA) grants through its Urban and Community Forestry Program to promote comprehensive urban and community forest planning,

among other activities.<sup>1</sup> Of the 39 comprehensive UFMPs in Washington, 56 percent were partially or entirely funded by a CFA grant (Gibbons, 2014). For this reason, the development of model plans at the State level has the potential to impact the majority of activity surrounding urban forest management and planning in the state, making ECA’s model plan requirements particularly important.

## **2.2 Implementing Urban Forest Management Plans: Three Themes**

While the standards and specifications described by the ECA, Gibbons, and others are designed to promote coordination, flexibility, and policy concurrency, they are ultimately focused on controlling the content of planning documents, as opposed to what happens with documents after they are produced. However, these authors and sources do suggest how UFMPs might be implemented. The following section describes three themes of implementation that form the basis for the three main research questions this thesis will address. Together, they form the bases for “observing” implementation. The first theme is Action. Planning processes ask the question, *how do you get what you want?* Although UFMPs in Washington do not always provide specific answers to this question (Gibbons, 2014), UFMP content suggests or implies that certain actions or activities should take place. The second theme is Evaluation. This theme is associated with the question, *are you getting what you want?* Evaluation implies both observations of impacts and the application values or standards by which impacts are interpreted. The third and final theme is Feedback. As we will see, feedback is a process that is common in

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<sup>1</sup> For more information, visit [http://www.dnr.wa.gov/ResearchScience/Topics/UrbanForestry/Pages/rp\\_urban\\_commandurbanforestry.aspx](http://www.dnr.wa.gov/ResearchScience/Topics/UrbanForestry/Pages/rp_urban_commandurbanforestry.aspx)

the literature on policy implementation and institutional analysis, as well as the literature on urban forest management and planning.

The following sections describe each theme each them in more detail, as well as the literature that suggests how these processes function.

### **2.2.2 *The Action Theme***

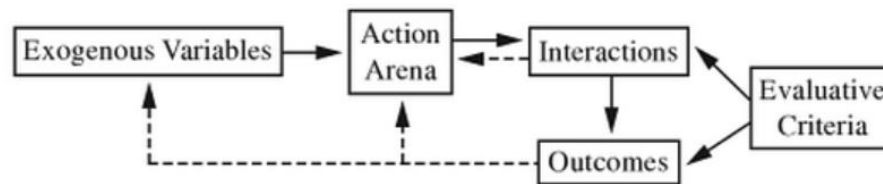
According to Peter May (2003), public policies “set forth courses of action for addressing problems or for providing goods and services to segments of society.” While UFMPs do define courses of action, they should not be mistaken for public policy. Rather, urban forest management planning is just one component of the institutional and contextual factors that collectively define urban forest policy in cities. As a result, several factors, aside from plans, influence the decisions made by public officials to address urban forestry issues.

Institutions, or the rules, norms, and strategies that determine human decision-making, play a key role in determining how implementers translate guidance from plans into action on the ground. However, the institutional forces that act on plan development and implementation can be exceedingly complex. When plans are written, and implementers translate those plans into policy, their decisions are inextricably linked to the mix of institutional, social, environmental, political, and financial conditions in a given community. Consider the following passage from Mincey et al. (2013):

Unless a community—individual actors, associations, and governments—has established institutions that operate across scales (from parcels to neighborhoods and city-wide) to incentivize sustainable management of urban trees, it may struggle to influence the structure of the urban forest as a whole and its functional provision of ecosystem services. Moreover, unless urban ecosystem researchers have carefully considered

institutional forces at play within a research site, their policy prescriptions have the potential to misguide solutions and do more harm than good.

Elinor Ostrom's Institutional Analysis and Development (IAD) Framework enables analysis of complex institutional settings by providing a structured and consistent approach to categorizing institutions and their impact on how people make decisions (Ostrom, 2009). IAD centers on an "action area," defined as participants whose positions grant them some level of authority over decision-making. The action area interacts with exogenous variables (i.e., rules, biophysical/material conditions, or community attributes), producing interactions that lead first to outcomes and then to policy feedback (Figure 2).



**Figure 2.** The Institutional Analysis and Development Framework (Ostrom, 2009).

The IAD framework is applicable to UFMP implementation for two reasons. First, the action arena suggests a unit of analysis for investigating implementation processes, (that is, individuals whose positions give them responsibility over UFMP implementation). Second, IAD defines a mechanism by which implementation actions can influence or act upon the original decision-making context. Like Miller's framework for urban forest planning and Gibbons' framework for developing and analyzing UFMPs, IAD contains an evaluation and feedback processes that explains the evolutionary nature of iterative decisions.

IAD suggests that implementation outcomes are influenced by the context of action situations. While plans are not tantamount to policy, the literature on policy implementation provides guidance on what it is *about* the context that may be most important. For example, May and Jochim (2013) suggest that, beyond institutions, *shared ideas* and *interest support* are important contextual factors that can influence the overall strength of policy regimes (these concepts will be defined later). Another possible factor is the design and quality of the planning process. Some argue that it is the process of planning, and not the products that processes produce, which has the most influence on decision-making (Baer, 1997). Mazmanian and Sabatier (1983) suggest six other conditions of effective implementation, several of which may also influence planning processes:

- Legal mandates from a legislative or administrative authorities
- A sound causal theory linking policy design to desired outcomes
- The support of organized constituency groups and key actors
- The technical, managerial, and political skill of leaders
- Strategic sequencing of policy implementation within a larger set of administrative activities
- The priority of the policy regime within a set of conflicting issue areas or policy agendas

It is important to remember that these are factors that *could* be relevant to a given context, and therefore do not belong in the explanatory/deductive framework for this research. At the same time, this list provides a guide for describing and analyzing what Robert Stake calls the “casual texture” of each case (2013).

### **2.2.3 *The Evaluation Theme***

Frameworks for UFMP development and analysis (Miller, Gibbons) suggest that the monitoring and evaluation of impacts are important aspects of the planning process. Observing these activities is therefore essential to understanding how UFMPs are implemented, and how real-world implementation experiences compare to the assumptions of model planning processes.

However, Faludi and Alexander (1989) recognized that implementation of well-defined policies (backed by strong legal and administrative structures) and vaguely-defined plans (which commonly lack such structures) should not be evaluated using the same methods. When policies are well-defined, evaluation can be structured to analyze conformance to those policies, taking for granted the theoretical link between the language of policy and the real-world outcomes that they designed to produce (Laurian et al., 2004). Lacking the benefit of strong legal structures and mandates, regulation becomes less feasible and planning becomes the favored option. Rittel and Webber describe the dilemma behind these “wicked” problems: “pluralities of objectives held by pluralities of politics makes it impossible to pursue unitary aims” (1973). According to Faludi (1997), plans are alternatives, not substitutes, to well-structured policy, and should therefore be evaluated using a “performance principle.” In other words, the true character and value of plans is defined by the favorability of outcomes, and not by how well stakeholders conform to specific action steps. If results of plans are judged favorably, then the ends justify the means.

The Clark model of sustainable urban forest management suggests broad performance metrics that managers can use to evaluate the success of their urban forest management activities (Clark, et al., 1997). Citing low use of this model’s original metrics, Kenney, van Wassenauer, and Satel (2011) updated these criteria and indicators in order to provide a more useful tool for evaluation and strategic planning (Table 1).



**Table 1.** Criteria and Indicators for Strategic Urban Forest Planning and Management Success (Kenney, van Wassenae, and Satel, 2011).

<b>Community Framework</b>	<b>Resource Management</b>	<b>Vegetation resource</b>
<ul style="list-style-type: none"> <li>• Public agency cooperation</li> <li>• Involvement of large private and institutional landholders</li> <li>• Green industry cooperation</li> </ul>	<ul style="list-style-type: none"> <li>• Tree inventory</li> <li>• Canopy cover assessment</li> <li>• Citywide management plan</li> </ul>	<ul style="list-style-type: none"> <li>• Canopy cover</li> <li>• Age distribution of trees</li> </ul>
<ul style="list-style-type: none"> <li>• Neighborhood action</li> <li>• Citizen-municipality business interaction</li> <li>• Awareness of trees as a community resource</li> <li>• Regional cooperation</li> </ul>	<ul style="list-style-type: none"> <li>• Municipality-wide funding</li> <li>• City staffing</li> <li>• Tree establishment planning and implementation</li> <li>• Tree habitat suitability</li> </ul>	<ul style="list-style-type: none"> <li>• Species suitability and distribution</li> <li>• Use of native species</li> <li>• Percent potential canopy cover</li> <li>• Condition of publicly managed trees</li> </ul>

#### **2.2.4 The Feedback Theme**

In addition to actions and impact monitoring and evaluation, policy feedback is another perspective that can be used to “observe” urban forest management plan implementation. Policy feedback is a common theme within the literature on urban forest management planning, policy analysis and evaluation, institutional analysis, and implementation. According to Gibbons’ framework for developing comprehensive urban forest management plans (2014), UFMP documents should be set up to include policy feedback as a formal process. After impacts are measured and evaluated, the effects of actions are better known, and stakeholders can adapt the tactics of future plans accordingly. However, policy formation is said to “continue” with implementation (Hill & Hupe, 2002), and both Gibbons and Miller acknowledge that implementation is an ongoing process that continually alters the environment in which decisions are made. Clearly, UFMPs are not re-written every time decision-makers gain new information. This leads to what Frank Coffield calls “the necessity of informal learning” (Coffield, 2000). This concept suggests that in order to make best use of new information, management systems must be flexible enough to incorporate new information in real-time.

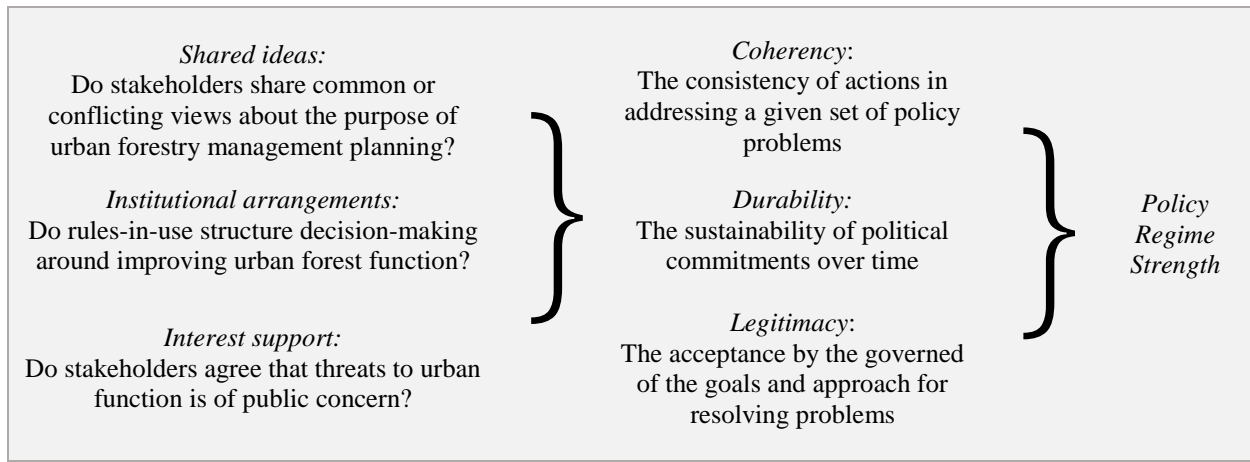
Regardless of the pathway that policy feedback takes, the purpose of feedback is to leverage implementation experiences in order to improve urban forest policy. The Policy Regime Perspective of Peter May and Ashley Jochim (2013) can be used to characterize policy in terms of overall capacity for addressing a problem of public interest. Policy Regimes Perspectives are both descriptive and analytic, used to “enable backwards mapping of governing arrangements for a given policy problem” and to reveal “how public policies set in place feedback processes that reshape the political environment” (May & Jochim, 2013). Regimes, or governing arrangements for addressing policy problems, can be mapped by describing three characteristics:

- 1) **Shared ideas** and commitments concerning policy purpose
- 2) **Institutional arrangements**, or “rules-in-use” that structure authority, attention, information, and relationships
- 3) Constituencies that provide **interest support** or opposition for addressing the problem in question

These characteristics collectively determine the overall strength of policy regimes in terms of their durability, coherence, and legitimacy (Figure 3). If implementation increases the sustainability of political commitments to urban forestry issues over time, then the durability of the policy regime has increased. If implementation moves management toward a more consistent and structured approach to addressing ongoing issues, then the coherency of the regime has increased. Finally, the more that the general public accepts the management choices being made with respect to urban forest problems, the more legitimate the regime is said to be (May & Jochim, 2013).

The Policy Regime Perspective can be used to unite all cases of UFMP implementation by providing a common definition of the “work” that UFMPs are intended to do in cities. That is,

increasing the durability, coherence, and legitimacy of the set of associated policies focused on the establishment and maintenance of sustainable urban forests.

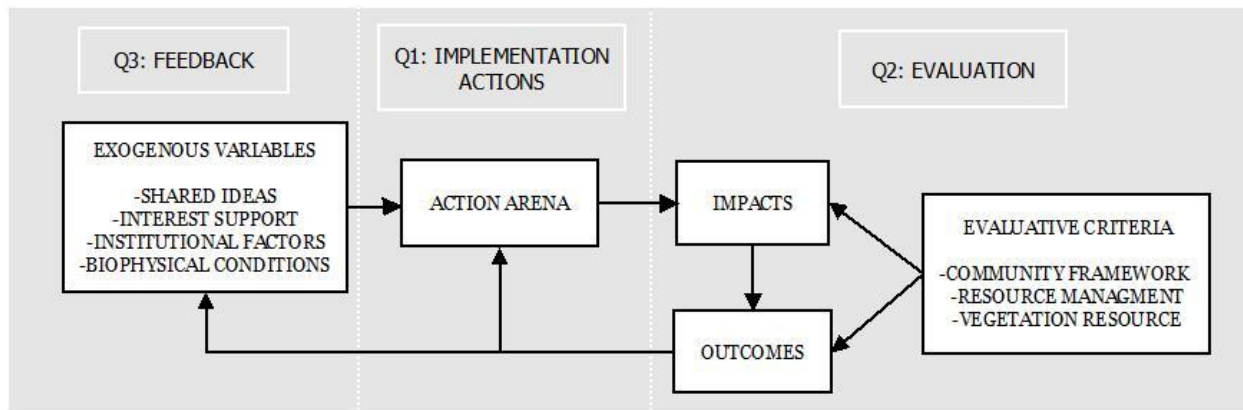


**Figure 3.** Policy regime perspectives applied to urban forest management planning. Adapted from May and Jochim (2013)

### 2.3 Summary of Issues to be Addressed by this Research

Plans call for different things from different people. For example, a single plan may call for both a broad public outreach campaign educating citizens on private tree management, and an effort to improve coordination with utility companies managing trees near power lines. In addition to having different goals and management priorities for their urban forest, cities start from different points in terms of the quality of forest resources, levels of community support, economic conditions, density of development, and land uses within their borders. Furthermore, some plans are written by city personnel, while others were written by outside consultants. These inconsistencies make judging the relevant strength of UCF programs, from one city to the next, problematic. In order to overcome these challenges and to provide useful account of UFMP implementation processes in Washington State, this section presents an approach to evaluating UFMP implementation that is adapted from the Institutional Analysis and Development

Framework and informed by the literature on urban forest management and planning, policy implementation, and policy regime perspectives (Figure 4).



**Figure 4.** An approach to evaluating urban forest management plan implementation. Adapted from Ostrom (2009).

Figure 4 represents the connections between actions, evaluations, and feedback implicit in the Miller and Gibbons frameworks. It also implies that rules exist that provide individuals with discretion over implementation, as well as incentives driving them to action. Although we might expect that the reality of implementation is inevitably less clean, this idealization provides two essential pieces of information that are needed to evaluate real cases: what to look for, and where to look for it. Most importantly, it provides a basis for asking three essential questions to understanding UFMP implementation:

➤ *Question 1: What action steps have city personnel taken to implement UFMPs?*

Answering this question will:

- Help evaluate whether it is important that many UFMPs lack specific action steps, timelines, and budgets (Gibbons, 2014)
- Help us understand what conditions drive implementation actions (Mazmanian and Sabatier, 1983)

- Help us understand differences between activities suggested by UFMPs and actual implementation behavior (Miller, 1988; Gibbons, 2014)

➤ *Question 2: How do cities evaluate the performance of UFMPs?*

Answering this Question will:

- Help us understand how real-world observations and evaluations of urban forest management activities relates to criteria and indicators recommended by research (Clark, et al., 1997; Kenney, van Wassenauer, and Satel, 2011)
- Help us to evaluate whether UFMPs constitutes well-formed policy, or whether weak administrative and legal structures limit conformance (Faludi, 1997; Laurian, et al., 2004)

➤ *Question 3: How do evaluations feed back into city institutions?*

Answering this Question will:

- Suggest whether policy feedback resulting from UFMP implementation is characterized by formal or informal processes (Coffield, 2000)
- Reveal how UFMP implementation may influence the community and institutional characteristics that determine the strength of urban forestry programs (May and Jochim, 2013)

### **3. Research Design & Methodology**

This chapter describes the design and execution of this thesis. Beginning with a review of the research questions, the chapter proceeds to discuss overall research design, including a discussion of multiple case study methodology and methods for selecting cases. The following sections describe sources of data, data collection methods, and data analysis. The final section presents the methodological challenges and limitations of this research.

#### **3.1 Research Questions**

This thesis addresses the following primary research questions in order to explore how UFMPs are implemented and how they interact with their institutional environments in Washington State:

1. What action steps have city personnel taken to implement UFMPs?
2. How do cities evaluate the performance of UFMPs?
  - A. What impacts are monitored?
  - B. What criteria are used to evaluate impacts?
3. How do evaluations feed back into city institutions, and therefore decision-making?

As noted in Chapter 2, these questions are designed to explore the extent to which UFMP implementation actions promote the idealized pattern of urban forest policy regime development shown in Figure 4. Rather than suggesting or identifying causal relationships they are intended to open the black box of a process that has not previously been investigated. Consequently, this thesis does not propose formal hypotheses concerning the relationships between of specific UFMP elements, the actions taken by cities to implement UFMPs, and the ultimate impacts that

plans and actions have on the strength and success of urban forestry policy regimes. However, the literature on urban forest management and planning does suggest that certain sequences of program development are more likely to yield successful results. For example, urban forest management literature suggests that the development of tree inventories and data management systems—a key part of answering the question, what do you have?—should be developed prior to planning (Miller, 1988). Likewise, it is suggested that plans be developed concurrently and coordinated with tree ordinances (Washington State Department of Commerce, 2009). We would therefore expect that cities that have followed these sequences *are more likely* to experience better results. This is a *probabilistic* statement, and answering it is beyond the scope of this research (see White, 1992).

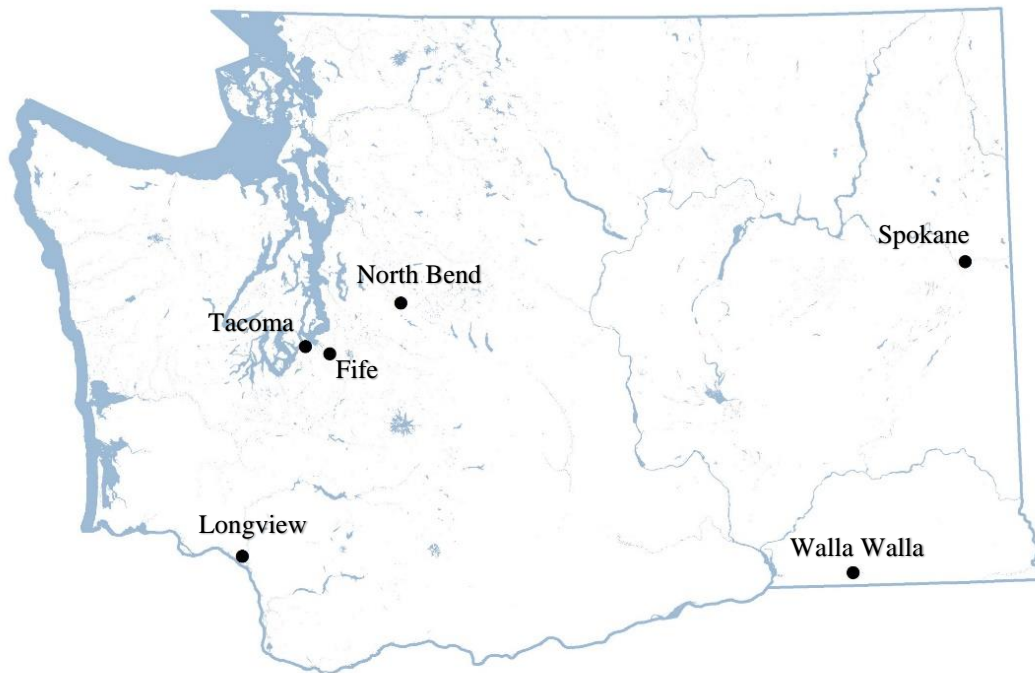
### **3.2 Research Design**

This thesis uses a multiple case study methodology to fulfill the descriptive goals of this research. According to Yin (2014), case study research “arises out of the desire to understand complex social phenomena” and is often the most appropriate choice for “how” and “why” questions. Because this research is focused on urban forest management planning broadly, and because of the peculiarities of both individual cities and individual plans, a single case would be insufficient, and therefore multiple cases will be discussed. Robert E. Stake (2013) calls the object of such research (in this case, how UFMPs are implemented in cities) a *Quintain*:

*“Each case is studied to gain understanding of that particular entity as it is situated. The Quintain is studied in some of its situations. It is supposed that the complex meanings of the Quintain are understood differently and better because of the particular activity and contexts of each case.”*

### 3.3 Case Selection

In order to ensure that the findings represent a diversity of city conditions and plan types, a stratified random sampling scheme was used to select cases. Gibbons (2014) identifies 39 cities that have UFMPs in Washington State. This group was sorted according to city size and comprehensiveness of plan, and one city was randomly selected from each group (Table 2). They are the cities of Fife, North Bend, Longview, Walla Walla, Spokane, and Tacoma.



**Figure 5.** A Map of Washington State shows the locations of the six cities where UFMP implementation was evaluated for this research.



City size may influence implementation in several ways. For example, many studies suggest that city size influences rates of political participation and volunteerism (Kelleher & Lowery, 2009; Tavares & Carr, 2013). Urban innovation, or “a policy or program which has the quality of being new to the urban governmental community in question,” has also been positively correlated with population size (Franzel, 2008). The impact of plan comprehensiveness is less clear. However, Gibbons’ comprehensiveness index focuses on elements that are recommended for inclusion in high-performing plans, as opposed to specific requirements or action steps included in plans. Cities that contain more of recommended elements of UFMPs will have higher comprehensiveness scores. Therefore, more comprehensive plans may indicate different forms of capital (technical, social, experiential, financial) that may be of value during implementation. At the least, using comprehensiveness to stratify selection frames ensures that cases are not over-representative of more or less comprehensive plans.

**Table 2.** Cases were randomly selected from subsets of Washington State UFMPs identified in Gibbons (2014). Numbers in cells represent the total number of cases within each grouping of city size and Gibbons’ Comprehensiveness.

<b>Population</b>	<b><u>Small Cities</u></b> 100-9,999	<b><u>Medium Cities</u></b> 10,000-49,000	<b><u>Large Cities</u></b> >50,000
Number of plans above median Comprehensiveness ( $\geq 16$ )	4	9	6
Selected cases Comprehensiveness:	Fife 22	Walla Walla 16	Spokane 19
Number of plans below median comprehensiveness ( $< 16$ )	9	9	2
Selected cases Comprehensiveness:	North Bend 15	Longview 11	Tacoma 13

While city size and comprehensiveness were used to ensure that a broad range of planning contexts were represented by the cases, it is important to recognize other contextual factors that may impact plan implementation (Table 2). Half the plans—Spokane, Longview and

Walla Walla—are older, written from 2002 to 2003.<sup>2</sup> The remainder were all produced within the last four years. Cities are also distinguished in terms of the sequencing of planning processes with the development of backing regulations and tree inventories. Plans in Fife, Walla Walla, Longview, and Spokane are all backed by municipal ordinances. Among these, Longview’s inventory is the least current. While North Bend and Tacoma do not have substantive ordinances, their inventories were developed more or less concurrently with their plans.

**Table 3.** Cases selected for investigation represent a variety of planning contexts.

City	Population	Plan Name	Plan Year	Policy Support	Inventory Status
North Bend	5,947	<i>Urban forestry Plan</i>	2011	No street tree ordinance; development ordinance contains canopy retention incentives	2011 street tree inventory
Fife	9,173	<i>Urban Forestry Management Plan</i>	2012	Municipal street tree ordinance coordinated with plan	2011 inventory of city property and major streets
Walla Walla	32,148	<i>Urban Forest Management Plan</i>	2003	Municipal street tree ordinance coordinated with plan	2008 street tree inventory
Longview	36,672	<i>Urban Forest Maintenance Management Plan</i>	2003, revised 2010	Plan passed as binding ordinance	1990 street tree inventory
Spokane	210,103	<i>Vegetation Management Plan</i>	2002	Municipal street tree ordinance coordinated with plan	1997; 2012
Tacoma	202,010	<i>Strategic Urban Forest Management Plan Neighborhood Business District</i>	2011	Weak 1960 pruning and removal regulations. Strong comprehensive plan element.	2011 inventory of street trees in Neighborhood Business Districts

### 3.4 Data Sources and Analysis

Plan implementation was evaluated in each city using two primary sources of data: planned actions represented by UFMP documents, and semi-structured interviews with key city personnel.

<sup>2</sup> Longview’s plan was officially updated in 2010, but changes were minor and the vast majority of the current plan resembles the 2003 text.

### **3.4.1 UFMP Documents**

UFMP documents from each city were collected and analyzed in order to develop an understanding of the actions and standards of practice that were suggested or required by plans. The goals of characterizing planned actions were to provide a sense of how expected actions compare to actions in practice, and to investigate any patterns in aspects of plans that cities find more or less difficult to implement. This process also assisted with preparation for interviews by increasing the interviewer's ability to engage in dialogue with participants about local programs and policies. Coding of UFMP documents began with in vivo coding of phrases in UFMPs that describe suggested or required actions or standards of practice for implementation. Similar codes were then re-coded into "action elements" that describe more general areas of activity. Finally, action elements were organized into "action areas." Action areas provide a basis for comparing the broad focus of UFMPs.

### **3.4.2 Interviews**

The following series of steps were used to identify interviewees in each city. These steps are designed to ensure that interviewees selected for this research include people who have discretion over any actions relating to the implementations of UFMPs, those who are directly involved in those actions, and any managers or administrators whose authority has bearing on the support or lack thereof for UFMPs and related city programs. In the case that the first step failed, the next step was used, and so on.

1. Review plans for guidance on individuals or departments directly engaged in and responsible for plan implementation. Gibbons' (2014) comprehensiveness index includes 4 criteria that relate specifically to implementation, including an implementation plan,

responsibility for implementation, a budget for implementation, and a timeline for implementation. Pursue interviews with the individuals and heads of departments explicitly responsible for implementation.

2. Perform an internet search of city websites in order to identify city departments and offices conducting work directly related to activities and policies identified in UFMPs. Make inquiries into these departments about individuals with primary/direct responsibility for UFMPs. Pursue interviews with these individuals.
3. Use expert witness from State DNR officials to identify key informants. State DNR officials have regular contact with city officials with regard to grant applications, issuance, and monitoring. Pursue interviews with these individuals and their direct supervisors.

Informants were contacted by email or phone and invited to participate in a 40-60 minute interview. In some cases, snowball sampling was used to identify additional informants. Anywhere from two to five interviews were conducted in each of the six cities, for a total of 19 interviews (Table 4). Interviewees most commonly worked in parks and recreation and public works departments of cities. Each interviewee was asked about their involvement in the development of plans, and any actions they have taken to implement plan elements.

**Table 4.** The number of interviewees and groups represented each city.

City	Number of Interviewees	Groups Represented
Fife	2	Parks and Recreation; Public Works
North Bend	2	Planning and Development; Public Works
Longview	3	Parks and Recreation; Executive Management
Walla Walla	2	Parks and Recreation; Public Works
Spokane	4	Parks Department; Planning Department; Parks Board
Tacoma	5	Planning and Development Services; Environmental Services

The majority of interviews were conducted over the course of two months in 2014 in each of the six cities selected, while the remainder were interviewed afterward over the phone. The average interview length was 45 minutes. Before all interviews, informants were provided information about their rights as human subjects and requested to sign two copies of consent forms. When interviews began, a brief statement was read restating the confidentiality guarantee. Interviews were recorded using Voice Recorder+, a free and effective voice recording application available on Windows phones. This application allows conversations to be immediately uploaded to the Cloud after interviews are completed. A backup Canon voice recorder, with spare batteries, was brought to every interview.

A pre-designed interview guide (Appendix II) and research proposal was submitted to the University of Washington's Human Subjects Internal Review Board, and the research was granted exempt status (HSD Study #48140). With the help of the interview guide, in-depth interviewing methods were used to guide data collection. During in-depth interviewing, interviews take the form of conversations, where research guides the general topics while also giving the respondent ample opportunity to influence the flow and direction of the exchange (Marshall & Rossman, 2010). These methods allow the researcher to create room in the conversation for emergent information and ideas that were not anticipated in literature review. Meanwhile, the interview guide helps to ensure that conversations with participants do not stray from areas of deductive importance to the three primary research questions of this study.

Data transcription and analysis began concurrently with initial interviews. After each interview was transcribed, transcripts were read and re-read using Atlas.ti 7 qualitative data analysis software. During this stage, some data were coded with preliminary notes and impressions. After interviews were complete and all data were transcribed, first cycle coding

methods (Saldaña, 2012) were used to organize the explicit content of the data. Specifically, descriptive coding identified topics of statements, and process coding identified actions taken by participants. In second cycle coding, deductive and inductive methods were used to further organize the data. Deductively, actions identified in first cycle coding were identified according to the institutional classification scheme in Ostrom (2009). These codes were further organized using pattern coding (Saldaña, 2012) into clusters associated with “themes” (segments of data associated with primary research questions). Inductively, this process also resulted in the identification of “factors,” or, widely found variables that influence themes (Stake, 2013). Probing questions were particularly helpful in identifying factors. For example, after describing an action taken to implement a plan, interviewees were often asked follow-up questions about events, resources, or requirements that triggered the action or made the action possible. This coding process facilitates the organization of data so that categories become internally consistent (omnipresent in interviews and between cities), but broad enough in order to identify the distinctions between both individual respondents and cities (Marshall & Rossman, 2010).

### **3.5 Research Limitations**

This study is limited in the following ways:

While the professional and social positions of the individuals interviewed for this study make them uniquely suited to provide important information about how UFMPs are implemented, their testimony is neither a comprehensive account of city activity nor representative of their broader communities. Clearly, city governments are not closed systems. Non-profits, neighborhood business districts, and community groups all have a role to play in UFMP implementation. Research has shown that planning process elements, such as the degree

that community groups and private stakeholders are included, influence the likelihood that plans are implemented (Burby, 2003), as well as overall plan comprehensiveness (Gibbons, 2014). In order to better explain the impacts of UFMPs on cities, it would have been helpful to speak with some of these stakeholders.

This research investigates the actions taken to implement six UFMPs in the state of Washington. These actions form the basis for further investigation into impacts, evaluation, and feedback of UFMPs. However, findings from this research cannot be used to describe the experiences of other Washington State cities. Furthermore, it is not certain that reported actions would not have occurred if UFMPs had not existed. Like all research that attempts to evaluate plan implementation the context of urban governance, this research faces the issue of *multicausality*, which occurs when multiple factors influence outcomes beyond the ones being controlled by plans (Talen, 1996). For example, the backgrounds, abilities, and experience of individuals responsible for implementation is also likely to influence action taken on behalf of the urban forest.

## **4. Findings**

Interviews and document analysis resulted in a variety of interesting findings with important policy implications. In each city, including those with older plans, interviewees showed a detailed awareness of UFMPs. In many instances, interviewees personally initiated, led, or participated in planning process. With the exception of North Bend, where the city council declined to approve the plan or provide necessary resources for an implementation effort, plans were kept “off the shelf,” and many interviewees kept plans in printed binders on their desks, or accessed them through shortcuts on the desktops of their computer screens.

This chapter presents findings for each of the three research questions. Findings for each question are presented in two sections: 1) results from interview and UFMP content analysis, and 2) a discussion of how results related to issues raised in Chapter 2. In the final section, common factors influence implementation at multiple stages are presented.

### **4.1 Research Question 1: What Action Steps have City Personnel Taken to Implement UFMPs?**

In order to understand the actions taken by cities to implement UMFPs, it is necessary to understand what actions the UFMPs suggest and/or require. Content analysis resulted in a wide variety of actions. These can be summarized in five categories: 1) budgeting and finance, 2) community engagement and education, 3) program capacity and policy development, 4) hazard risk management, and 5) tree establishment and maintenance.



While these categories represent the broad focus of planned actions, more specific information on how each city has planned to address each category are presented as “action elements” in Table 5. The breadth of action elements helps characterize the similarities and differences between UFMPs. For example, most UFMPs include at least one element in each action category. Exceptions include the budgeting and finance category (no elements from Longview or Tacoma) and the community engagement and education category (no element from Longview). Of the 29 elements, only three were represented by all six UFMPs. These include actions relating to the identification and removal of hazard trees, actions relating to operational standards (such as tree selection and standards for installation, management and removal), and actions focused on cyclic pruning (strategic pruning of all trees on an established cycle).

Importantly, none of these elements are presented by UFMPs as specific components of implementation plans, with assigned responsibility, budgets, or timelines. This is reflected in Table 4, which does not include any action element relating to these types of activities. This is the norm for Washington State, where over 60 percent of UFMPs do not include implementation plans (Gibbons, 2014). The excerpt from Fife’s UFMP provided in Figure 6 demonstrates how UFMPs suggest or require *what* actions should occur while providing little guidance on *how* actions are implemented.

The following Goals, objective and action items offer a framework for developing a sustainable urban forest for the citizens of Fife now and in the future.

**1. Protect and maintain the existing urban forest resource.**

- a. Develop Habitat Management Plans for all natural parks and open space to follow the goals and parameters of the Comprehensive Parks Plan and provide focused attention on the unique characteristics and requirements of individual locations. [Adapt management to specific land uses]
- b. Complete Fife’s public tree inventory. [Maintain/enhance inventory and mapping capacity]
  - i. Prioritize tree care and planting based on inventory data.
  - ii. Develop maintenance and pruning cycles for trees in street rights-of-way and other developed City properties. [Work toward cyclic pruning]

**Figure 6.** Excerpt from the City of Fife Urban Forestry Management Plan (2012). Red text is added to indicate how UFMP content was coded as “action elements.”

**Table 5.** Mapping of 29 action elements explicitly addressed in six urban forest management plans from Washington State. Dots indicate the presence of plan elements in the UFMP documents for each city.

<b>Action category :</b> Action elements (number of cities):	Fife – Urban Forestry Management Plan (2012)	North Bend – Urban Forestry Plan (2011)	Longview – Urban Forest Maintenance Management Plan (2003/10)	Walla Walla – Urban Forest Management Plan (2003)	Tacoma – Strategic Urban Forest Management Plan Neighborhood Business District (2011)	Spokane – Vegetation Management Plan (2002)
<b>Budgeting and finance:</b>						
Seek new funding sources (4)	•	•		•		•
Improve tracking of urban forestry expenditures (2)	•	•				
Stabilize funding sources (1)	•					
<b>Community engagement and education:</b>						
Engage residents and businesses in tree maintenance (4)	•			•	•	•
Engage with community partners (4)	•			•	•	•
Expand planting and care education opportunities (4)	•			•	•	•
Establish volunteer development programs (2)	•			•		•
Improve relationships with utilities (1)				•		
<b>Program capacity and policy development:</b>						
Include trees in design phase of public projects (5)		•	•	•	•	•
Enhance interdepartmental coordination (3)			•	•		•
Adapt management to specific land uses (3)	•				•	•
Develop development plan review tools and criteria (3)	•				•	•
Contractor certification for public projects (3)	•			•		•
Train city staff on urban forestry practices (3)	•	•		•		
Replace all public trees removed (2)			•	•		
Develop policy on tree density or canopy cover targets (1)	•					
Promote locating of utilities underground (1)				•		
Require tree protection measures at construction sites (1)			•			
Standardize tree inspection methods (1)					•	
<b>Hazard risk management:</b>						
Identify hazard trees and prioritize removal (6)	•	•	•	•	•	•
Develop a hazard tree mitigation policy (1)				•		
Develop program for hazard tree mitigation on public property (1)	•					
<b>Tree establishment and maintenance:</b>						
Follow guidelines: species, planting, pruning, removal (6)	•	•	•	•	•	•
Work toward cyclic pruning (6)	•	•	•	•	•	•
Include tree planting in public projects and developments (4)		•	•	•	•	
Maintain/enhance inventory and mapping capacity (4)	•	•		•		•
Prepare of annual work plans (4)	•	•		•		•
Schedule regular tree inspections (4)	•	•			•	•
Number of elements present (out of 28):	19	11	8	19	12	16
Gibbons (2014) Comprehensiveness Index (out of 30):	22	15	11	16	13	19

Interview findings indicate that, in general, cities are pursuing actions under all five categories identified in plan analysis. The following sections present the implementation actions reported by interviewees, and is organized according to the five action categories identified through UFMP content analysis.

#### ***4.1.1 Budgeting and Finance Actions***

Implementation of UFMPs implies the allocation of resources, including staff time, materials, and capital costs. Four of the six plans, with the exceptions of Longview and Tacoma, directed cities to seek new funding sources, improve tracking of urban forest expenditures, and to stabilize resource flows (Table 5). However, all cities took some action in this area. Interviewees reported seeking new funding partnerships with public utilities, securing private grants to fund operational activities and capital improvements, and pursuing development mitigation fees (Table 6). Spokane and Tacoma—the largest cities—found additional sources of funding through storm water utilities. One employee of the City of Spokane explains utilities’ interest working with other departments, and the benefit that this can have for urban forestry programs:

*“Utilities need land to be able to have storm water facilities because what we're trying to do is keep storm water out of the sewer system so you don't have to be treating so much volume. They approached us and said...what if we sighted some of our storm water facilities on Park Property, and we compensate you for that? We said, great. So there's two parts to the deal. We think that agreement might land somewhere in the area of \$1 million a year, and then only a percentage of that will go to urban forestry.*

In Tacoma, however, new revenue came from increases in storm water rates paid by property owners and is being used to fund management actions on specific properties that are not covered by Tacoma’s UFMP. Funding was also site-specific in Fife. In an innovative approach to

program funding, the Parks and Recreation and Public Works Departments lobbied city council for use of a locally-designated fund generated by photo-enforced traffic fines. After the City Council passed a rule designating the fund for public safety, city administrators saw an opportunity:

*Street trees in planter strips are...you can make a pretty good case that they're a safety feature, because they separate pedestrians from traffic, whereas it's really hard to make a case that the landscaping around city hall is a safety feature....*

**Table 6.** Interview findings for Budgeting and Finance actions reported by urban forestry staff in six Washington State Cities.

Subtheme	Cities	Actions Reported by Interviewees
Funding from storm water utilities	Longview:	Increased rates to replace general fund expenditures on UF in order to avoid competition for funds with other city departments.
	Tacoma:	Transferred “passive” properties between departments and increased rates 0.5% to pay for management.
	Spokane:	A \$250,000 one-time investment completed the street tree inventory; \$1 million/year is paid to Parks Dept. for using land to build storm water mitigation facilities.
Private Grants	Walla Walla:	Until 2014, 100 percent of street trees planted were donated from large nursery; \$300,000 grant from local trust for complete inventory, data management system, laptops, and 3000 trees following 2008 storm.
	Tacoma:	\$100,000 Anonymous donation for “Hilltop Diversitree” neighborhood redevelopment project
Budget tracking	Fife:	Working towards update of payroll system in order to track labor expenses by activity and location.
Capital budget requests	Longview:	Regular allocations for one-to-one replacement of removed street trees. Unsuccessful requests for inventory development allocations.
	Walla Walla:	\$350,000 for pruning in Pioneer Park in 2003
Development mitigation fees	North Bend, Fife:	Collect fees from developers who fail to achieve tree retention standards

#### **4.1.2 Community Engagement and Education Actions**

Document analysis revealed interesting differences in the amount of focus plans put on engaging and educating external stakeholders. Both Fife and Walla Walla focused heavily on these types of actions, while North Bend and Longview did not (Table 5).

Interviewees in several cities recognized the importance of engaging with external stakeholders. Reported actions in this area focused heavily on improving relationships with private tree care companies and utilities that do work on power lines near public trees. Staff in Walla Walla and Spokane pursued improved private tree care practices through contract negotiation and franchise agreements that specify standards of care aligned with UFMPs. Once in place, standards and agreements must also be actively enforced. The following statement from an employee of Longview demonstrates how informal communication has been used to promote compliance:

*It was not a good situation...and we just had a meeting...this can't happen. You're supposed to be a certified arborist, you're following a code of ethics. You know better than to leave stubs and rips and tears and, you know, all this stuff. If you can't do that then we need to back up the cart here and talk some more. And it got increasingly better immediately after that.*

Walla Walla has also been successful in working with local groups (Rotary, Sherwood Trust, and Whitman University) to organize large-scale planting projects. However, these types of projects are particularly important to Tacoma. Tacoma's UFMP is unique in that it focuses specifically on co-development of urban forest renewal projects with Neighborhood Business Districts, which have an important political role in the City. To date, one such project, "Hilltop Diversitree," has been carried out:

*That project, not only does it meet several of our policies... it's in a business district, it's a demonstration project, it's been a partnership with the private [landowners] and with the business district association itself ... we were also doing a demonstration planting under power lines around Safeway. So we also had the education/outreach element, there will be signs, when it's all said and done...and it's a really diverse planting.*

**Table 7.** Community engagement and education actions reported by urban forestry staff in six Washington State Cities

<b>Subtheme</b>	<b>Cities</b>	<b>Actions Reported by Interviewees</b>
Public outreach	Spokane, Walla Walla:	Open visiting hours with city staff and tree commission members
	Tacoma:	Co-development of planting projects with NBDs; Signs, advertisements, marketing for projects
Private partner relationships	Walla Walla:	Annual ride-along with utility forester to survey issues and plan activities; franchise agreement restructuring; strong city ties to Rotary Club and Whitman University
	Longview:	Communicate standards of care to tree care companies; handshake agreements with utility foresters
	Spokane:	Established on-call arborist service contract for tree protection and work inspection on public projects
Technical assistance	Fife:	Sought extension services from Washington State University to reduce street tree mortality; Use of TC USA sample spreadsheets to develop annual work plans
Volunteer opportunities	Walla Walla:	Annual street tree planting projects with local Rotary chapter
	All cities:	Arbor day events (a Tree City, USA requirement)

#### **4.1.3 Program Capacity and Policy Development Actions**

Each UFMP included action elements relating to improving the internal capacity to carry out urban forest management functions, establishing new standards for tree care, and developing new policies (Table 5). The largest number of actions reported by interviewees fall into this category. Similar to the external engagement category, many of these responses focused on building and developing relationships. These efforts were met with varying degrees of success.

One Spokane employee, who spent several years developing a 12-step checklist for interdepartmental coordination, discussed the challenges of an element in the UFMP that called for coordinating all construction activities that affects trees and shrubs with the Urban Forestry Department:

*When I came in and I looked at that one I was like, wow...that one's going to be hard. That one's going to be really hard. And...so the first thing I did was I went to the people and the departments who I knew hated us the most, who can't stand us, who hate working with us...who wish we would just go away ... I would say [it was] a cultural thing, of big departments that build roads and sidewalks and lay water and sewer pipes...and then this little tiny urban forestry department that is asking or demanding cooperation and concessions... So when I came in I just said, tell me...tell me what's broken. Tell me what you hate. Tell me the history, and let's figure it out.*

Other reported program capacity and policy development actions included continuing education opportunities for staff (Fife, Walla Walla), establishing tree nurseries in order to reduce material costs (Longview and Tacoma), and the restructuring of departments in order to remove barriers to communication and coordination (Spokane). In a move that was supported by the Mayor of Spokane, the Urban Forester position was changed from half-time to full-time, while the Urban Forestry department was moved out from under Park Operations. Reporting directly to the Parks and Recreation Director, the Urban Forester commanded a stronger position within the city:

*[The position was] brought out from under a layer of supervision...and that was critical to success. And that also gave this position more access to all the other city departments and staff members, so it was easier to go speak to people directly.*

Similar efforts to establish a central coordinating position for urban forestry activities were less successful elsewhere. North Bend’s UFMP called for providing urban forestry training to an existing staff member, and changing the title of that employee to “Tree Steward.” One employee of North Bend described what happened:

*The plan went through the Parks Commission, which is also our tree board, and then our Planning Commission, and then it got to city council and [they] felt like it was an over-reach. They didn't like the idea of having a Tree Steward, or a key contact to deal with the management of the city's trees. So they did not ultimately pass the urban forestry plan.*

**Table 8.** Program capacity and policy actions reported by urban forestry staff in six Washington State Cities

<b>Subtheme</b>	<b>Cities</b>	<b>Actions Reported by Interviewees</b>
Improve interpersonal relationships	Spokane:	Address past grievances, adopt customer service orientation
Departmental reorganization	Tacoma:	Moved urban forestry group from Public Works to Environmental Services (Surface Water Management Division)
	Spokane:	Elevated urban forestry division from Park Operations, became exclusive division of Parks and Recreation, moved office location to City Hall
Staff development and training	Fife:	Public works staff and parks staff attend conferences/workshops on tree-compatible road design, urban forestry practices and pruning techniques
	Walla Walla:	Parks staff trained public works staff on tree care; sponsored arborist training for a park operations employee
Interdepartmental coordination	Fife:	Co-management of street tree program with (Parks and Public Works)
	Longview, Fife:	Information sharing between tree care staff and development departments
	Spokane:	12-point checklist for coordinating tree work and protection on public projects
	Tacoma:	Clarify departmental roles and responsibilities
Policy Development	North Bend:	Planning Department and development policies according to tree protection and preservation standards of UFMP



#### **4.1.4 Risk Management Actions**

Managing various risks is a critical component of urban forestry programs. The US Forest Service has provided guidance to communities on risk management systems in order to reduce public liability and enhance public safety (Pokorny et al., 2003). Each city in this study included a risk management element in their UFMPs (Table 4), and interviewees in several cities stressed that this was an important aspect of plan implementation efforts. For example, Fife focuses limited resources for tree pruning on areas where tree failure is more likely to result in damage to people or property. In Longview and Walla Walla, in particular, interviewees suggested that strong ordinances granting authority to make removal decisions was essential to moving forward with implementation. In Walla Walla, tree risk assessment expertise is also offered as a service to other departments. A manager from the city of Walla Walla stated:

*Between the plan and the ordinance, it gives me the authority to try to run a good program...we're responsible for all tree removals in the community, you know...except for on private land. So yeah, I can say yes and no. I can say that's a hazard, or not.*

A final subset of activity within the risk management area is legal review of actions by city lawyers. Interestingly, this type of action does not appear in UFMP documents and is not given significant attention in the planning literature. In Fife, interviewees reported that even as implementation of certain plan elements proceeds (the scheduling of activities, implementation of management standards, changes to planting plan designs), City Council awaits input from the legal department before deciding whether to officially adopt the plan:

*On one hand the City wants to employ BMPs related to our urban forestry program. On the other hand, what we strive to do and what actually gets done, based on priorities and available resources, are most often very different. Do we move forward and adopt the*

*plan because it is what we ultimately strive for or do we not because it may be used against us in the event of a claim for damages?*

**Table 9.** Risk Management actions reported by urban forestry staff in six Washington State Cities

Subtheme	Cities	Actions Reported by Interviewees
Legal review	Fife:	Review risk of financial liability that may occur as a result of official UFMP adoption
	Tacoma:	Legal department approval of urban forest element of Comprehensive Plan
Hazard Tree Management	Walla Walla, Longview:	Exercise authority to declare and remove hazard trees
	Fife, Walla Walla:	Management focus on high-traffic areas
	Walla Walla:	Conducts tree risk consultations with other departments

#### **4.1.5 Tree Establishment, Maintenance, and Protection Actions**

In many cases, tree establishment, maintenance, and protection actions were reported as the *impacts* of more direct implementation actions focused on increasing program support and capacity. As one interviewee put it, “...*there's no magic behind getting trees pruned. You either hire a contractor, with funding, or you dedicate staff resources to doing it.*” The clearest example of how impacts can appear as actions comes from Fife, where the Parks Department’s ability to perform plan-recommended tree maintenance depended on their ability to partner with the local school district:

*Down at Dacca Park, we have a maintenance contract with the Fife School District, and they do perform the majority of basic grounds maintenance down there...and we pay them X number of dollars a year to do that for us under the terms of this contract. But*

*one of the things we do find is when we have large projects, we partner. We put our maintenance resources together with their maintenance resources, and we can accomplish much bigger projects.*

However, some interviewees did discuss other forms of direct implementation of these elements. The most common examples related to the *enforcement* of standards specified by plans and/or backing ordinances. One interviewee from the City of Fife described coordinating Parks and Recreation and Development Department efforts in order to hold developers accountable to tree retention and establishment requirements:

*[The Development Department] comes to us a lot of the time, so yeah I've got this opportunity, I can't get these guys to plant trees on their own property...let's go after the section of code that says they provide us resources to plant these elsewhere.*

Enforcement of management standards defined by UFMPs also works in the opposite direction. In the City of Longview, one employee described Tree Board oversight over management actions carried out by Parks Operations staff: *"The Park Board is well aware of what's going on in this document ... and they [keep] me in line to follow it."*

A final subtheme of direct implementation of establishment and management standards involves species selection rules and tree protection protocols. Relative to other actions called for by plans, these types of actions appear to be some of the easiest to implement. Despite political opposition to the plan itself, North Bend implemented standards by reviewing development plans and policies according to the UFMP:

*When new developments come through, we do review those against the policies in the plan to make sure that we are providing the diversity that we need, and trying to think about the care and management of the resource.*

**Table 10.** Tree establishment, maintenance, and protection actions reported by urban forestry staff in six Washington State Cities

Subtheme	Cities	Actions Reported by Interviewees
Actions as Impacts	Fife:	Contract and partnership actions enable tree maintenance projects recommended by UFMP
	Walla Walla, Longview, Spokane:	Informal communication and relationship-building actions promote awareness and compliance with management standards
Enforcement of standards	Fife:	“Go after code” relating to tree retention standards
	Longview:	Tree board oversight of city management decisions
Species selection, planting, and maintenance BMPS	North Bend:	Review of development policies relating to tree establishment

#### **4.1.6 Question 1 Summary and Discussion**

In order to understand the extent of UFMP implementation and the driving forces behind implementation actions, this study evaluated categories of actions suggested by UFMP documents, and then asked city staff what actions they had taken to implement UFMPs. Findings indicate that in most cases, cities have taken some action in each of the “areas” targeted by UFMPs. This section discusses the relevance of findings with respect to the literature.

##### *Plan Specificity and Implementation Actions*

One criticism of UFMPs in the state of Washington is that they lack specific action steps that are clearly associated with goals (Gibbons, 2014). The six UFMPs evaluated in this research follow this trend. As a whole, however, reported implementation actions do appear to cover the broad scope of plan goals characterized by the action five categories in Table 5. Additionally, city staff appear to face social barriers to implementing certain aspects of programs. The

following statement from an urban forester interviewed for this study seems to represent the experiences of many cities:

*You know, in urban forestry you run into a lot of fear of change. Everywhere you go it's always fear of change, fear of, like, this is new and different, oh my God, I can't do this. Which is pretty much been everything I run in to the whole way. And I don't have a problem because there's been enough to implement and there's always enough to do that I can just find a new direction to go in.*

This statement and others suggests that in the face of challenges, staff responsible for implementation require the flexibility afforded by choice. For example, by choosing to dedicate time to activities such as building and maintaining positive relationships across departments, staff appear to position themselves to take better advantage of unexpected opportunities (such as the anonymous donation that helped fund the DiversiTree Project in Tacoma, and the opportunity to lease land to the storm water utility in Spokane).

The prominence of projects among reported actions is another reason flexibility is important. Projects can act as focusing events, or moments when plans get “used.” For example, the Bernard Street project in Spokane prompted stakeholders beyond urban forestry staff to become aware of the plan and to learn about its connection to city ordinances and policies. Projects are also often the focus of fundraising actions (Table 6), indicating that projects play an important role in implementing plan elements. This was especially true in Tacoma, where projects in specific neighborhood business districts are at the center of the city’s urban forestry strategy. Projects are also occasions for community engagement. In Fife, operational efficiencies achieved through partnerships with the local school district made large projects possible. Finally, projects were also presented as ways that urban forestry programs can interact with development

activities in cities. Developments regulated by cities, whether they become politicized or not, represent opportunities for urban forestry programs to influence activities that continually impact urban forest structure.

### *Conditions Driving Implementation Actions*

Mazmanian and Sabatier (1983) suggest several conditions for successful policy implementation. Interview findings suggest that these conditions do have some applicability to actions taken to implement UFMPs. When plans have been backed by strong mandates (Walla Walla, Longview) actions appear to focus heavily on *enforcement* of rules and standards of practice. In other cities, implementation actions appear to be more driven by long-term objectives and the support of leaders. For example, North Bend and Fife both have pursued urban forest management planning in order to kick-start programs and to get away from “fire alarm” approaches to management. Neither city has officially adopted the plan. However, while Fife’s leadership generally support the plan, North’s Bend’s city council has actively opposed it. In many areas, implementation has proceeded in Fife, while in North Bend it has been very limited. This suggests that adoption, for some plans at least, is a symbolic action that signals political support to both staff and the public. However, because UFMPs contain broad and diverse elements, some of which fall under the existing purview of city staff, political support is not always essential for implementation.

Finally, findings suggest that some conditions that drive implementation are state-wide. For example, the idea that trees are tools for managing storm water appears to be an emerging idea among urban forestry stakeholders across several cities. Tacoma, Longview, and Walla

Walla, and Spokane have all used these ideas, in some way, to legitimize the use of storm water management dollars for tree management (Table 6).

### *Deviations from Planned Actions*

A significant limitation of this research is the extent to which reported actions can be attributed to UFMPs or to the processes that produced them. In some cases, interviewees reported taken actions focused on action categories that plans did not cover (i.e., budgeting actions in Tacoma and Longview). At the same time, differences in the level of implementation between cities whose political leadership did and did not support UFMPs indicates that plans do have a strong influence on activity.

## **4.2 Question 2: How Do Cities Evaluate the Performance of UFMPs?**

Monitoring and evaluation are important areas of activity because they transform actions into impacts, allowing us to answer the question, *are we getting what we want?* The approach to evaluating for UFMP implementation (Figure 4) suggests that monitoring activities involve two stages. First, stakeholders observe impacts that result from implementation actions. Second, evaluative criteria are applied to those impacts.

In order to investigate monitoring, interviewees were asked, what results, effects, or impacts of implementation they have observed, and how these have been measured or monitored. These questions were intended to explore what changes to biophysical and social conditions are of interest to program staff, and in many cases, led to opportunities to direct conversations toward the challenges of implementation.

#### 4.2.1 Impacts of Implementation

Interview results indicate that, in general, cities do not systematically track progress toward specific goals and outcomes identified in UFMPs. Exceptions to this were monitoring conducted through tree inventory updates, which is performed when permits are issued, trees are planted and removed, or when high-traffic areas are evaluated for tree hazards. However, cities report difficulty in consistently performing these activities on a wide scale. Instead, the majority of reported monitoring actions were casual and unofficial. For example, several interviewees reported informally tracking developments and construction projects in order to take advantage of opportunities to intervene on behalf of the urban forest. These activities seemed to leverage relationships with other city departments. From Longview:

*Everybody that's going to be involved in this...whatever it [is] ... It could be putting in a new water line, you know, somebody is getting upgrading for a new meter. If there's going to be digging or anything that's going to affect that tree, they have to involve this department just like they would permitting, Community Development, the Water Department, [and the] Sewer Department...*

Another form of informal monitoring occurred in the City of Fife, where Public Works staff report observing changes in the condition of trees planted during road construction projects. This monitoring occurred after program managers changed the technical specifications of construction designs in order to avoid tree mortality observed in previous plantings:

*I'm basically a lay person with respect to trees. But certainly you can very easily see, gee, all the trees on this road are not quite completely healthy. And those four are dead. It's much more...effort to get the material, more good material there, but hopefully the next*



*street we did won't look like that in another three years, [and] those tree will be successful, good, growing trees.*

While most UFMP actions were not monitored officially, interviewees nevertheless demonstrated a broad, intuitive awareness of impacts. Relatively few reported impacts focused on biophysical characteristics of the urban forest, and many seemed to take these types of impacts “on faith.” Exceptions to this include Fife, where Public Works staff monitor results of improved planting designs (discussed in the last section), Walla Walla, where interviewees reported observing improved resistance to storm damage after a pruning project in a park, and Tacoma, where the Hilltop Diversitree project was designed to make a large and immediate impact on the Hilltop Business District. In this sense, the project was very successful. Hilltop Diversitree resulted in an estimated 13,000 square feet of removed concrete, three new landscaped medians, 54 dead and damaged trees removed, and 242 new trees planted. When new trees become mature, the tree canopy within the Hilltop right-of-way will be increased by an estimated 28.9 percent (Tacoma, 2014).

Interviewees provided a diverse set of impressions about the social impacts of implementation. Most commonly, answers focused on increased awareness of urban forestry as a legitimate endeavor that many departments have a role in. Interviewees from each of the six cities in the case reported awareness as an impact, including the City of Fife:

*“It plants that seed of always being aware and staying on top of the list of projects that are in the pipeline... are there any opportunities within that development agreement that we are potentially going to be able to take advantage of to get trees...whether it's on development property or it's street trees in front of there, or perhaps another fee-in-lieu situation where we can get some money to buy trees to plant elsewhere.”*

Increased awareness was attributed to planning processes. A public works employee from the City of Fife discussed how the planning process increased his awareness of urban forestry issues:

*“The planning process that brought me in contact with the folks that were doing that plan. And they were actually one of our resources ... And so [the Parks Director] was the lead and with respect to the Tree Plan, it does specifically address street trees, and the landscape trees around buildings...and those are the ones that I have to deal with so I remember reading those, and reading the reports, and frankly...taking to heart some of their comments.”*

While reported social impacts were almost universally positive, multiple interviewees from Tacoma did mention negative consequences of Hilltop Diversitree, despite the positive biophysical impacts of that project. Reported problems with the project included difficulty in scheduling and sequencing work from multiple departments, unstructured decision-making, and lack of a coordinated response to community concerns and feedback:

*“Nobody says, you don't need a sewer pipe there. But with trees it's different. I don't want a tree there. No, I want a tree there. No, I don't want that one to go. And so, every side of the coin exists for trees. Nobody cares about pipes until they back up, so internally there's a little bit of...because the community got upset. And it's our own fault that the community got upset, honestly.”*

However, the great majority of social impacts reported by interviewees were positive. Besides awareness, respondents discussed improved relationships, information sharing, and increased trust and respect. In many cases, social impacts led to positive impacts on labor and

material resources. Sometimes achieving impacts was a simple matter of reaching out, as is evidenced from the experience of outreach to utility foresters in Longview:

*“[Our] tree crew knows their tree crew, because they're down the street from each other a lot of the time. If we have an issue on a city tree that's in line with a power pole and system, they'll work with us to disconnect the power for us. Their equipment is bigger, taller, can do work that we can't touch. They will do the top half, and leave the brush for us to clean up...and then we'll take it from there. We have a great relationship that way.”*

In Spokane, improved relationships came with greater difficulty. However, by focusing on responsiveness and service to other departments and contracted firms, urban forestry staff has been able to identify solutions that benefit trees while simultaneously minimizing headaches for others:

*“Historically, the general contractor for the construction project would hire an arborist to do the work. That was disastrous because the general contractor doesn't have an interest in tree protection. So we made a decision very early on to...have a separate contract for on-call arborist services for these projects. So I assigned the commercial arborist company to the project and said...it is your job to protect these trees in the same way that I would if I were on-site for this project. And that has made all the difference in the quality of tree protection. And it's given the contractors and the field engineers again, more access to services more quickly.”*

**Table 11.** Interview findings for biophysical and social impacts of UMFP implementation reported by urban forestry staff in six Washington State Cities.

<b>Impacts Subtheme</b>	<b>Cities</b>	<b>Impacts Reported by Interviewees</b>
Biophysical	Fife:	Healthier trees in improved tree pits in street construction sites
	Walla Walla:	Perceived increased storm-hardiness after pruning projects
	Tacoma:	Canopy improvements in Hilltop Business District (monitored)
	Longview:	Number of vacant street tree planting sites (monitored)
Social	Fife, North Bend, Longview:	Awareness: self-identification as urban forest stakeholder, identification of opportunities to intervene on behalf of trees.
	Tacoma:	Negative feelings/confusion associated with project goals; burnout
	Longview, Spokane:	Improved information sharing, enhanced standing of urban forestry personnel among peers, increased access to service for contractors

#### **4.2.2 Evaluating Implementation**

In the plan implementation framework, evaluations are distinguished from impacts. While impacts are stakeholder observations of plan effects, evaluations describe how stakeholders react to and interpret impacts. To investigate how impacts were evaluated, interviewees were asked about how they define success, and how they know whether implementation is successful.

Interestingly, while several respondents communicated a sense of accomplishment at having taken steps to improve urban forest condition, they rarely based evaluations on whether plan implementation promotes increased canopy and tree health. Exceptions are Longview and Walla Walla. Both cities have policies that require one-to-one replacement of removed trees. In Longview program managers also evaluate performance based on the number of vacant planting sites identified in their street tree inventory, a number that is highlighted in reports to City Council and the Tree Board.

However, even when respondents focused on biophysical impacts of actions, evaluations of those impacts inevitably strayed from biophysical criteria. In Walla Walla, one interviewee said, *“It’s a good plan. It’s really straightforward, with the primary goal of just continuing to replace canopy and planting as much big canopy as we can.”* At first glance, this statement can be interpreted as being based on biophysical criteria—whether the city is able to replace trees as they are removed, and focusing on larger-growing species—but the last three words, *“as we can,”* speak to a much larger body of evaluative statements provided by interviewees that focuses on *realistic goals*. One interviewee from Fife said:

*“I would evaluate [success on]...the amount of work we can get done with the resources that we have. And I try to weigh those two things against each other, understanding that we’ll probably never be able to accomplish everything that’s in the plan.”*

A similar vein of responses focused on evaluating actions, and the impacts of actions, based on whether they were focused on short-term (reactive) or long-term (proactive) goals. In Tacoma, where implementation of the Hilltop Diversitree project resulted in significant internal strife, one administrator framed these problems in terms of a long-term process that would lead to greater effectiveness, and demonstrated an optimistic view of the future:

*“I think the challenge that we encountered was that we were stepping on so many toes of so many programs...that it necessarily had to get partnered and kind of parsed out a little more, and so I think that in the future as we figure out the individual roles to go forward...who’s planting here and responsible, who’s maintaining here or there... I have great hopes.”*

While this statement focuses on learning from mistakes, other respondents focused on evaluating their ability to make forward-thinking choices. The mechanics of focusing on long-

term impacts are described well by an interviewee from the City of Spokane who described criteria used for deciding how to focus efforts:

*“Just knowing and being intentional about what is urgent versus what is important. Doing right now the things that are both urgent and important. Then, secondly doing the things that are important. And then thirdly, doing the things that are either not urgent or not important. And then not doing at all the things that are neither urgent nor important. But it takes that...rather than just reacting to what's being thrown at you when you walk in the door at the beginning of the day, taking that moment to be thoughtful about, what is happening here? Is it urgent? Is it important? Is it both or is it neither? And then making the choices that way.”*

Public safety is another evaluative criteria that several interviewees focused on. Public safety was expressed in the way that managers have decided to allocate limited resources for tree management, in the way that appeals were made to city councils for money, and also in the way that employees interpreted their mandates as public servants. A public works employee in North Bend described his role:

*“[In] my role, always public safety is the most important to me, and to my department. That's what I preach. So, trees are included in that. And so if there are hazard trees, we're going to take them down.”*

However, public safety concerns were not always addressed through removal and pruning. In Fife, interviewees expressed interest in the possibility to use trees in street design in order to enhance public safety:

*“As we have more streets with trees you start to get more people to recognize just how much nicer it is. Projects we've done have tended to be very busy streets...and people*

*comment that you go out there with your little kids, you go out there pushing a baby in a stroller. So you may have a semi rolling by, but there's 10 feet of bike lane and street trees between you and that semi...and they make a difference.”*

Community feedback is a final form of evaluation that was expressed by interviewees. Feedback was evaluated in various ways. In Tacoma, one interviewee regarded negative community feedback as a reflection on the skill with which the City executed the Hilltop Diversitree project. Another interviewee, in the City of Fife, showed sentiments of validation and esteem:

*“We've had complements from our citizens. We had a complement up on the dais, it was fun to see...our mayor commented in front of the rest of council that he had been together with the mayor of Puyallup, and adjoining city, that [said] 'I'm jealous when I come to Fife and see that street, because it looks so good!'”*

The open-ended style of interviewing used in this study offered many occasions for interviewees to speak freely about their general perspectives on urban forestry, and several interviewees discussed the relationship between urban forestry and the unique identity of their city (See Appendix III). While these statements can be interpreted in a variety of ways, they suggest that deeply-held beliefs influence the way that different stakeholders view and evaluate the nature and purpose of urban forestry programs.

**Table 12.** Interview findings for criteria used to evaluate UMFP implementation reported by urban forestry staff in six Washington State Cities.

Subtheme	Cities	Evaluative Criteria Described by Interviewees
Compliments and complaints	Fife:	Public works staff valued positive feedback from neighbor cities on appearance of road projects that included trees.
	Tacoma:	Efficacy in handling of community complaints over Hilltop Diversitree project
Alignment with legal mandates	North Bend, Fife:	Public works responsibility to protect public safety influences perspective on tree management
	Tacoma:	Alignment of roles and responsibilities with department mandates and missions
Resource Condition	Longview, Walla Walla:	Ability to fill vacant street tree sites, successful one-to-one replacement of removed trees
Long vs short term impacts	Spokane:	Ability to say no to small crises in favor of work toward long-term objectives
	Longview:	Ability to plan for future needs as many trees begin to decline at once
	North Bend:	Goal to move away from “fire alarm” approach to management
Realistic Goals	Walla Walla, Fife, Longview	Recognition that resources will never match need, focus on efficient use of available resources, managing expectations
City Identity	Fife, North Bend, Walla Walla:	Interviewees shared perspectives on how urban forest management activities relate to the unique identities of their cities (Table 13)

### 4.2.3 Question 2 Summary and Discussion

Impact monitoring and evaluation is important to UFMP planning processes because it allows stakeholders to track progress against criteria (explicit or implicit) that reflect the values of community stakeholders. Such an approach may result in the development of performance benchmarks associated with plan objectives, and systematic observations of progress towards benchmarks.



### *Actual vs. Recommended Criteria and Indicators*

Monitoring and evaluation actions reported by interviewees indicate that the logical connections between actions and formal monitoring activities are extremely weak. Instead, the impacts described by interviewees are better characterized as informal observations. Using the Clark Model as a lens, these impacts can be described according to impacts on Vegetation Resource, Community Framework, and Resource Management constructs.

Observations of direct UFMP impact on Vegetation Resource (urban forest structure and health) were tenuous and rare. Biophysical impacts, instead, tended to be taken on “faith.” The following statement from an interviewee in Tacoma demonstrates how shared ideas about the effect of trees on storm water management, as opposed to hard data, drive implementation activities:

*OK. So we don't have per se a monitoring plan in place. A lot of it we got to take on faith, right? Right now, for instance, Schuster Slope is the first area we're tackling. Schuster Slope, every year, has slides. And those slides end up dumping a bunch of mud on Schuster Parkway, which ultimately gets washed out into [Commencement] Bay. And also you have landslides...a lot of our open spaces is unstable landslide type...prone areas. And there's some that are not...more of the ravines, but we're focusing first on those. I mean, just the idea that you could take out and plant species that would stabilize slopes, add needed trees that soak up a lot of water...those are all benefits.*

It is likely that UFMP implementation has greater impact on Community Framework and Resource Management values. Given the prevalence of relationship-building actions reported by interviewees, and the admission that formal monitoring is not valued by decision makers, it is not surprising that the most commonly reported impact of UFMP implementation was *awareness*—of

urban forest function, of services associated with function, of stakeholder agency with regards to urban forest management, and of how urban forestry relates to city goals and identity. While awareness is a key measure of the Community Framework that supports and protects urban forest values, interview findings suggest that UFMPs promote awareness in cities internally as well as externally, blurring the line between the Community Framework and Resource Management constructs. Internally, increased awareness appears as a *precursor* to reported implementation actions presented in Chapter 4. For example, increased awareness within the Fife Public Works Department that resulted from the planning process led to greater coordination between departments, increased training for staff, and increased policy support for improved data tracking systems. Internal awareness, as opposed to external awareness, can be said to expose weaknesses in Resource Management.

#### *What Evaluation Says About Policy*

Findings indicate that weak administrative and legal structure limit conformance-based evaluation of UFMP goals and objectives. Formal tracking of progress toward planned goals, or tracking of management behavior in general, was extremely rare. Instead, forms of evaluation reported by interviewees (Table 12) reinforce the social bias suggested by such reported impacts as “awareness,” “negative feelings/confusion,” and “information sharing.” Evaluations reflect a sensitivity to community opinion with regards to urban forest management efforts, and a tendency to manage expectations with regards to how far UFMP implementation can be taken. At the same time, implementers look to the future, evaluating their capacity to make forward-thinking decisions that reflect both their mandates as public servants and the need to address

long-term concerns that may not be readily apparent to the public. These results indicate a clear tendency toward performance-based evaluation.

### **4.3 Question 3: How Do Evaluations Feed Back into City Institutions?**

The final theme of UFMP implementation is policy feedback, a mechanism that involves adapting behavior, either formally or informally, based on UFMP implementation experiences. Policy feedback was defined in Chapter 2 as a “perspective that encourages us to ask how policy implementation transforms the webs of political relations that constitute governance” (Soss & Moynihan, 2014). Feedback is also process that is anticipated by model planning processes (Gibbons, 2014; Miller, 1988). Furthermore, feedback effects are “mediated by the perceptions of the core ideas behind the policies, the experience with the institutions that deliver the policies, and the images put forth by the interests that support or oppose the policies (May & Jochim, 2013).

Interview findings suggest that policy feedback resulting from UFMP implementation is most often an informal process. Interviewees from one city out of six—the city of Longview—reported using implementation experiences to formally update an existing plan. In this case, the changes were limited in scope, centering on the rules used to determine whether trees were owned by the city or by private property owners, and the list of tree species that could legally be planted along city streets.

In contrast to formal feedback, informal feedback is more difficult to interpret from the statements provided by interviews. For example, it is not possible to say with confidence whether a reported action was a result of efforts to implement elements of UFMPs, or whether an action is

actually the result of changes in rules, norms, and strategies brought about by UFMP implementation. Nevertheless, a few interviewees did provide statements that shed light on how urban forest governance may be changing in cities that have produced UFMPs. This form of change involves both the way that cities support for urban forestry program development, and the ideas that people share about the purposes of these programs. In Spokane, one interviewee described a large public project as a “turning point” in the implementation of the plan:

*By having [the plan] as a tool to communicate the goals of our program...we were able to drastically change the way the project went in regards to keeping the trees we could. It was the turning point for our program and this plan, because that one incident really helped more people within the city understand the goals, our manuals, our ordinances, in relationship to street trees...it created an opportunity for our department to work much more closely with... all the other departments.*

This statement suggests that plans can play a role in mediating public disputes and promoting multi-dimensional accountability between city leaders, city agencies, and the public. City departments may use plans to justify holding the public accountable for street tree regulations. UFMP guidance may push city staff to “go after code” that requires developers to provide mitigation or compensation for urban forestry impacts (Fife). At the same time, plans empower public boards and commissions to scrutinize the actions of cities. The impacts of awareness, trust, service, and accountability between departments may also lead to new norms of behavior such as information sharing (Longview). Plans also become tools for the public (through tree boards and commissions) to hold cities accountable to their own policies (Longview).

In North Bend, interviewees suggested that UFMP implementation experiences (or lack thereof) have changed the way that planners interact with political leaders. While development policies (specifically relating to species selection and tree protection) were reviewed according to UFMP recommendations, planning department staff recognize that the planning process could have been used to improve the chances of more complete implementation. According to one city employee, the mistake was not working with council earlier:

*The big disconnect was we didn't talk to council before applying for the [DNR] grant. We should have done that. We do that more carefully with other grants now...just identifying the needs ahead of time rather than putting much effort into a plan that they didn't support in the end.*

However, full participation may be more of a luxury than a choice. In Tacoma, interviewees indicated that previous experiences with urban forestry planning processes had been met with limited interest from internal city stakeholders. For example, when a group of city employees created an urban forestry policy element, which was approved by city council and included in the 2009 update of the city's comprehensive plan, certain departments came forward to protest the details of the policy only after it was passed, suggesting limited awareness of the relevance and reach of urban forestry policies across departments.

#### **4.3.1 Question 3 Summary and Discussion**

More than actions, impacts, and evaluations, the way that UFMP implementation results in policy feedback is open to interpretation. The approach to evaluating UFMP implementation presented in Chapter 2 recognizes both formal and informal feedback mechanisms (Figure 4).

Interview findings indicate that formal feedback, as seen in the city of Longview, is rare. This form of feedback appears to depend on the strength of the regulations behind the plan. Meanwhile, evidence of informal feedback resulting from a persistent focus on internal city relationship-building and promotion of awareness is strongest in Fife and Spokane. While this type of feedback appears more common, it is also more difficult to describe.

This study makes the assumption that the purpose of UFMPs is to increase the strength of the policy regimes focused on urban forest problems (May and Jochim, 2013). According to the policy regime perspective, this can be accomplished by influencing three determinant factors:

1. *Interest support*, or the strength and orientation of stakeholder opinion about urban forest issues.
2. *Shared ideas* that stakeholders have about the purpose of urban forestry
3. *Institutional arrangements* used to deliver urban forest policy

Using this lens, it appears that UFMP implementation most strongly affects policy regimes by influencing shared ideas and institutional arrangements. Establishing shared ideas about the purpose of urban forestry was a success of implementation in Fife, and a failure of implementation in North Bend. In Fife, stakeholders in Parks and Recreation, Public Works, and Planning and Development departments appear to agree that urban forestry issues are also public safety issues. While municipal staff in North Bend share this perspective, elected officials had diverging views, and the UFMP planning process did not recognize or correct this. UFMP implementation also appears to promote shared ideas about the shortcomings of institutional arrangements used to deliver policy, leading to agendas or efforts to correct or change institutions. These processes are demonstrated by the largest cities, Spokane and Tacoma, which face challenges to interagency collaboration not seen in North Bend and Fife. Institutional

change in Spokane focused on altering the hierarchical position of the urban forester, increasing the *legitimacy* of urban forestry efforts in the eyes of key city collaborators. In Tacoma, difficulties experienced in implementation of the Hilltop Diversitree project revealed weaknesses in collaborative capacity and confusion over roles and responsibilities. Institutional changes therefore focused on the *coherence* of the way that urban forest tasks are divided among agencies. At the same time, findings suggest that *interest opposition* to urban forest policy may have increased due to negative implementation experiences.

## 5. Conclusion and Recommendations

This final chapter provides a summary of research design, execution, and results, discusses the implications of findings for urban forest practitioners, planners, and policy makers, and suggests directions for future research.

### 5.1 Thesis Summary

This thesis has sought to answer the question of how urban forest management plans are implemented in Washington State, and how implementation activities have interacted with the institutional environments of cities. In order to ensure that evaluation was sensitive to variation in the content of plans and the peculiarities of different cities, Chapter 2 developed an approach to evaluating urban forest management plan implementation that focuses on “observable” themes, including *actions*, *evaluations*, and *feedback*. This approach was used to evaluate the actual experiences of six Washington State cities based on content analysis of UFMPs and in-depth interviews with municipal employees.

Model planning frameworks suggest that urban forest program development can be controlled through iterative, ongoing planning processes that use trial and error to systematically improve practices and standards. The main contribution that this thesis makes to the literature is illuminating the differences between the assumptions that underlie the structured, systematic forms of planning expressed by these frameworks, and the operational realities of acting on plan recommendations.



Findings indicate that UFMP implementation is strongly characterized by the discretionary and strategic choices of key city staff, as opposed to rote execution of UFMP-specified actions. At the same time, the actions taken to implement UFMPs are representative of the broad scope of comprehensive plans (Gibbons, 2014). Evidence of implementation activity covered each of the five “action categories” identified through UFMP content analysis.

After this stage, however, the assumptions of the UFMP implementation framework break down. Findings indicated that formal analysis of implementation impacts are severely limited, and informal observations focus almost entirely on social, as opposed to biophysical impacts. Stakeholders evaluate efforts vis-a-vis their social responsibilities to promote public safety and reflect the identity of their communities. Feedback, which is characterized by both formal and informal processes in the original framework, is almost entirely informal, and only one of the six UFMP in this study has been updated as a result of implementation experiences.

However, the discrepancies between the idealized planning process presented in the framework and the activities reported by individuals interviewed for this study do not necessarily mean that UFMP implementation is an unstructured process. Instead, differences indicate that the “planned” structure of implementation does not sufficiently recognize the realities of developing coordinated urban forestry programs in cities. Despite discrepancies, results affirm the value of urban forest planning processes in cities. UFMPs are used in a variety of ways. They structure the enforcement of municipal codes, prioritize the use of resources, illuminate management weaknesses, mediate controversial decisions, and provide latent policy agendas and projects that can be pursued when opportunities arise.

## 5.2 Management Recommendations

The following management recommendations can help stakeholders make best use of findings from this research:

➤ *Prioritize actions, but provide many alternatives.*

Because plans function as tools for communicating community values and expectations relating to urban forest management, it is important that they identify specific actions and objectives that are most likely to support these standards. However, uncertainty about future challenges and opportunities can limit a city's ability to anticipate what the best actions will be. By providing a comprehensive and prioritized set of directions, planners can increase the ability of urban forestry managers to act in flexible and meaningful ways.

➤ *Connect to larger issues.*

Urban forest management can be perceived as supporting or opposing deeply-held beliefs about the role of local government and the mandates of government employees. Stakeholders engaged in planning processes should consider how their city manages storm water, how it plans to address future storm water infrastructure needs, and whether urban forestry activities are aligned with storm water management goals. Likewise, stakeholders engaged in planning processes should take care that policy proposals are aligned with stakeholder beliefs about city identity and public safety. While research has come a long way in describing the benefits of urban forests, some benefits may resonate with cities more than others. Storm water benefits and public safety benefits, in particular, may be having the most impact on urban forestry policy in cities.

➤ *Learn to embrace informal monitoring and feedback processes.*

The implementation of UFMPs is defined by informal processes. Even when strong ordinances support UFMPs, many of the goals and objectives of comprehensive plans require a level of attention and support above and beyond what most cities can accomplish through formal monitoring and enforcement. This increases the importance of interpersonal relationships in developing leadership and accountability within programs. UFMP planning groups should recognize conflict resolution, project management, and political leadership as critical competencies of urban forest managers. Higher-level managers and administrators should also consider the ability of urban forestry staff to gain meaningful access to key actors. Lastly, managers should embrace performance-based metrics suggested by urban forest management research (Table 1). When asked how they evaluate success, several individuals interviewed for this research replied that success means doing what is possible with available resources. Criteria and indicators suggested by Kenney, van Wassenaer, and Satel (2011) are designed so as to be applicable to programs at all stages of development. In order to maintain flexibility, program managers can develop and set criteria through annual work plans with specific interest groups focused on particular goals.

➤ *City size matters.*

Because projects are an important category of action cities take to implement UFMPs, interdepartmental project management is an important capacity for cities to develop and maintain. In larger cities, with more developed bureaucratic systems and individualized agency cultures, stakeholders may lack sufficient understanding of the capacities and responsibilities of key partners, resulting in more difficult coordination. Consequently, stakeholders should anticipate greater challenges in implementing projects, and project teams

should invest time in negotiating roles and responsibilities before projects break ground. In smaller cities, urban forestry activities are likely to amount to a very small portion of staff time and energy. In these cases, competing demands on time, money, and other resources may be more important to implementation outcomes. As a result, planners in smaller cities might pay closer attention to partnership and training opportunities that can reduce management burdens and increase staff capacity to use time well.

➤ *Legal exposure appears to inhibit implementation.*

Future state-level efforts to produce model plans should address the uncertainty some cities face with regards to how adopting UFMPs will expose cities to liability.

### **5.3 Research Recommendations**

Future research can build off of these findings by focusing on three main areas that were not addressed in this study:

➤ *Evaluate other stakeholders*

Interviewees in this study referenced several partner groups and organizations that play key roles in UFMP implementation and urban forestry policy development in cities. Examples include Neighborhood Business Districts (Tacoma), Rotary International (Walla Walla), and a local school district (Fife). Future research might investigate community stakeholder group awareness of UFMP planning processes, motivations for becoming involved in planning, and satisfaction with implementation outcomes.

➤ *Local-regional policy interactions*

Results from this research indicate that state-level policy decisions influence the perceptions and actions of urban forest stakeholders at the local level. Specifically, Washington State Department of Ecology rules controlling the use of storm water mitigation funds appear to be changing the way that public works departments approach urban forestry. As a result, utilities in some cities appear to be increasing their focus on urban forestry programs. Future research might investigate local awareness of state-level rule changes, attitudes about change, and resources needed to take full advantage of new ideas and technologies.

➤ *Project-specific impacts*

Given the importance of projects to UFMP implementation, future research might focus specifically on project impacts by investigating community perceptions and use of public space before, during, and after project implementation. In this way, research might suggest ways that cities can learn how to better manage projects, sequence project implementation with communication and outreach, and increase community involvement through project design.

## **5.4 Conclusion**

In urban forestry, broad planning is important. Planners cannot always anticipate the management circumstances that will be faced by city staff who are tasked with UFMP implementation. Likewise, urban foresters cannot always anticipate what challenges and opportunities they will face as their cities grow, as city council seats turn over, and as economic

conditions change. In taking one small step toward understanding the complex factors that contribute a city's ability to carry out their best-laid plans, this research endeavored to nudge urban forest management and planning toward a broader recognition of the complex institutional and political realities that determine program outcomes.

At the same time, researchers, policy makers, and other urban forest stakeholders should endeavor to simplify, not confuse, management. Given the importance of choice, flexibility, and opportunity to the implementation and achievement of UFMP goals and objectives, stakeholders might begin to look at plans more as toolboxes, and less as roadmaps. With broader input and participation in planning processes, more comprehensive and flexible plans might be produced.

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## APPENDIX I – Coding Outline

Actions	Budgeting & finance	Storm water
		Private grants
		Budget tracking systems
		Capital budget requests
		Enterprise fees
	Community engagement & education	Public outreach
		Private partnerships
		Technical assistance
		Volunteering
	Program capacity/Policy development	Relationship building
		Departmental restructuring
Training		
Risk Management		
Tree establishment/maintenance		
Impacts	Social	Information sharing
		Awareness
		Negative social impacts
	Biophysical	
Evaluations	Long vs short term impacts	
	Legal alignment	
	Resource condition	
	Esteem/recognition	
Feedback	Formal	
	Informal	
Projects		
Events		

## APPENDIX II – Interview Guide

### INTERVIEW GUIDE

#### Introductory script:

I am a graduate student from the University of Washington, and I am conducting research on urban forest management plan implementation in Washington State. You have been selected to participate in this research because of your professional position in one of several cities chosen for this study. In each city, I will ask a variety of people about their involvement in urban and forestry programs in their cities. The information you provide today will be helpful to the community of public and private stakeholders interested in improving urban forestry programs and planning in Washington State. The records of this interview will be kept confidential, and information related to your identity will not be included in any report or publication. However, information you provide, including direct quotations, will be linked to the city you work in. That said, participation in this interview is completely voluntary. Should you choose to participate, you are free to not answer any question, or withdraw from the interview at any time.

#### Introductory Questions (5-10 minutes)

1. How did you become involved in urban and community forestry?
2. Could you describe your work with the city?
  - What percentage of your time do you spend on urban forest-related work?

#### Key Questions (30-40 minutes)

*These questions are designed to address the implementation actions the interviewee has been involved with and the context surrounding implementation.*

3. Could you tell me about how you are involved with the implementation of the plan?
4. Could you tell me about things you do to implement the plan?
  - What caused you to take these steps?
  - What was your goal in doing these things?
  - What happened after you took these steps?
  - What made this work possible?
  - Is there anything you would like to be doing that you aren't?
5. When you think about how the plan is being implemented, what do you think is going well, and what do you think needs improvement? (*guide attention to monitoring*)

*These questions investigate how implementation actions are monitored and evaluated.*

6. Could you tell me about any impacts or effects of the plan?
  - Do you monitor impacts? (*evaluation*)
    - What kind of information is kept track of?
    - How is this information used?

- Does the city monitor progress toward implementation?
  - Is progress satisfactory?
  - How do you know?
  -

*These questions investigate the influence of implementation outcomes on city institutions*

7. (Ask if plan was written by a consultant) Why a consultant was hired to produce the plan? (***Planning process***)
  - How was the city consulted during the planning process?
  - Are things happening the way people thought they would happen?
  - Could you tell me about any ongoing or future planning efforts?
  
8. (Ask if plan was written by city staff) Could you tell me about how the plan was produced? (***Planning process***)
  - Were you involved?
  - Are things happening the way people thought they would happen?
  - Could you tell me about any ongoing or future planning efforts?
  
9. Has the plan affected the resources available for urban forestry in any way? (***Feedback/Resources***)
  - How so?
  
10. What is the most important source of support for implementation? (***Leadership***)
  - How effective is the support?
  - How do leaders influence others?
  - How do leaders connect you with resources?

**Final Questions – If time permits (5-10 minutes)**

11. Is there anything else you want to say about urban forestry?
12. What is the most important thing a UFMP has to get right?

Thanks for taking the time to speak with me today. If you think of anything else you wanted to say, or have any questions at all, you are welcome to contact me.

## APPENDIX III – City Identity Statements

Open-ended interviews led to in-depth discussions about urban forestry, and how urban forestry concepts relate to interviewee perceptions about the unique characteristics of their cities. Interviewee statements about city identity suggest underlying ideas about the nature and purpose of urban forestry in cities.

City	Identity statements	Interpretation
Fife	<i>Fife is along the Puyallup River Valley, and had a century of being the vegetable source for western Washington, and still there are guys growing lettuce, you know, all kinds of wonderful things, even within the city limits. But it's a lousy road building material, and so when you build the road, they bring in all kinds of gravel and just build a big gravel pad to support the road. And of course, it is not good for planting trees.</i>	Tree planting is an engineering challenge.
North Bend	<i>I think you take a city like Seattle, or Kirkland, that's mostly built-out...they want to keep their trees that are left. North Bend is starting to go through a development transition, but it is surrounded by forests and trails, to the north, to the south, to the east. I know several councilmembers, they love the trees but I don't know if it's as heavy a priority, compared to other cities.</i>	Urban forestry is about growing more trees, rather than managing risk and minimizing costs.
Walla Walla	<i>Trees are really important here. They were planted by the influential women in the community. They made Pioneer Park. This is 1909, and they sold buttons for a dollar a piece, and raised \$100,000. These ladies started planting trees immediately, and so it started a love affair with trees. They really blessed us.</i>	Urban forestry is about is about valuing heritage