# LAKEWOOD CITY COUNCIL
# STUDY SESSION AGENDA

Monday, May 22, 2023
7:00 P.M.
City of Lakewood
Council Chambers
6000 Main Street SW
Lakewood, WA 98499

Residents can virtually attend City Council meetings by watching them live on the city's YouTube channel: https://www.youtube.com/user/cityoflakewoodwa

Those who do not have access to YouTube can call in to listen by telephone via Zoom: Dial +1(253) 215-8782 and enter meeting ID: 868 7263 2373

Page No.

## CALL TO ORDER

## ITEMS FOR DISCUSSION:

(3) 1. 2023 State Legislative Session Report. – *Shelly Helder, Gordon Thomas Honeywell Governmental Affairs*

(37) 2. 2023 Urban Forestry Program Establishment. – (Memorandum)

(144) 3. Joint Parks and Recreation Advisory Board meeting. – (Work Plan)

(145) 4. Review of Clover Creek Engineering Alternatives Evaluation Final Report. – (Memorandum)

## ITEMS TENTATIVELY SCHEDULED FOR JUNE 5, 2023 REGULAR CITY COUNCIL MEETING:

1. Proclamation recognizing Juneteenth National Freedom Day.

2. Proclamation recognizing the month of June as LGBTQ+ Pride Month. – *Matthew Wilson and Siggy Frank, Oasis Youth Center*

3. Youth Council Report and Recognition.

4. Clover Park School District Report.

*Persons requesting special accommodations or language interpreters should contact the City Clerk, 253-983-7705, as soon as possible in advance of the Council meeting so that an attempt to provide the special accommodations can be made.*

5. Accepting a $5,000 sponsorship from Amazon Summer for Nights at the Pavilion program. – (Motion – Consent Agenda)

6. Authorizing $2500.00 in American Rescue Act Plan (ARPA) funding for the 9th and 10th Cavalry Buffalo Soldiers Museum 2023 Labor Day Festival Event. – (Motion – Consent Agenda)

7. Authorizing the execution of an agreement for the 2023 Waughop Lake Alum Treatment project. – (Motion – Consent Agenda)

8. Authorizing the execution of an agreement for the Opioid Abatement Council (OAC) formation for Pierce County. – (Motion – Consent Agenda)

9. Authorizing the execution of an amendment to the interlocal agreement with the Department of Social and Health Services for community partnerships and the police protection program. – (Motion – Consent Agenda)

10. Ordinance Approving International Building Code amendments. – (Ordinance – Regular Agenda)

**REPORTS BY THE CITY MANAGER**

**CITY COUNCIL COMMENTS**

**ADJOURNMENT**

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GORDON THOMAS HONEYWELL
GOVERNMENT RELATIONS

Return to Agenda

# City of Lakewood

## End-of-Session Report

**May 9, 2023**

## Overview of 2023 Legislative Session

The 2023 Legislature convened for a 105-day session that was conducted in person for the first time since the onset of the COVID-19 pandemic. This year's session was the first of the two-year legislative cycle, and legislators were keen to resume their policymaking work at the Capitol campus. Over 2,100 pieces of legislation were introduced this session, and the Legislature approved 484 bills.

The Legislature also enacted the Capital, Operating, and Transportation budgets for the 2023-25 biennium.

On the final evening of the legislative session, the House of Representatives debated a compromise version of Senate Bill 5536 sponsored by Senator June Robinson (D- Everett), concerning possession of controlled substances. The bill did not pass, and Washington's current law on drug possession is set to expire at the end of June. Governor Inslee has called for a special session of the Legislature to begin on May 16th to give lawmakers another opportunity to set forth a statewide policy before the current statute expires.

The Association of Washington Cities has provided a summary of legislative action related to the AWC priorities, available on the AWC website.

## Budget Highlights

***2023-25 Biennial Operating Budget***: The state's Operating budget funds all state agency operations, including K-12 education, higher education, human service programs, and more. The 2023-25 biennial Operating budget appropriates $69.8 billion, a net increase of $2.4 billion. Approximately $412 million in Climate Commitment Act revenues are budgeted for policy-level items in the budget. An ending fund balance of $1.4 billion in general funds is projected for the 2023-25 biennium, and total reserves are projected at $3.6 billion.

The Legislature considered the changing fiscal environment in developing the biennial Operating budget. Federal funding streams that were temporarily enhanced due to the COVID-19 pandemic are beginning to phase out as the declaration of federal public health emergency expires on May

11th. Inflation and forecasts indicating slower than average revenue growth over the next two biennia also factored into the budget considerations.

The Operating budget makes significant investment in the K-12 education system, higher education, behavioral health, health care, long-term care, child welfare, carbon reduction, public safety, and housing and homelessness supports. Highlights of investments related to local governments include:

**Public safety**:

- $3.4 million for six additional Basic Law Enforcement Training Academy (BLEA) classes, for a total of 23 classes in both 2024 and 2025
- $11.3 million for six additional BLEA classes beginning in 2024 at three new regional training academies (Pasco, Skagit County, and Clark County)
- $3 million for grants to local law enforcement for vehicle pursuit management technology
- $1 million for King County Sheriff's Office Air Support Unit
- $5.3 million for cities and counties to assist with alternative response team programs
- $115.8 million to assist with vacating and resentencing under the *State v. Blake* decision and refunding legal financial obligations
- $29.6 million for therapeutic courts

**Behavioral health**:

- $108.7 million for forensic mental health and continued implementation of the *Trueblood* settlement
- $21.5 million for crisis triage, relief, or stabilization centers
- $44 million for the recovery navigator program
- $44.4 million for behavioral health mobile crisis response teams
- $69.3 million for 988 crisis response
- $1.1 million for design and planning activities for the new forensic hospital being constructed on the grounds of western state hospital
- $270,000 for DSHS to maintain an on-site safety compliance officer, at western state hospital, to provide oversight and accountability of the hospital's response to safety concerns regarding the hospital's work environment
- $15.7 million for DSHS to reopen and operate a bed ward for civil patients at western state hospital

**Housing and homelessness**:

- $150 million for the new Covenant Homeownership Program
- $150 million to transition individuals living in encampments to housing
- $130 million for the Housing and Essential Needs program
- $111 million for emergency housing and rental assistance

**Climate and Energy**

- $138 million for community electric vehicle charging infrastructure
- $10 million to support municipalities in siting and permitting clean energy projects
- $6 million to increase capacity for urban forestry programs

- $35 million for utility assistance through the existing low-income home energy assistance program (LIHEAP) network

***2023-25 Biennial Capital Budget***: The Capital budget funds brick-and-mortar construction, excluding transportation. The 2023-25 biennial Capital Budget authorizes total expenditures of $9 billion. Of this amount, $4.7 billion is financed with general obligation bonds. Additionally, $95.4 million in bond capacity is reserved for a supplemental capital budget. The Capital budget reappropriates $7.6 billion for projects that were previously authorized but not yet completed.

Housing, behavioral health, and infrastructure are key areas of investment in the enacted Capital budget.

**Housing**

- $400 million for the Housing Trust Fund
- $60 million for Connecting Homes to Infrastructure program (CHIP) grants to local governments
- $50 million to match private investment for grants to support transit-oriented development

**Behavioral health**

- $613 million to the Department of Social and Health Services (DSHS) for phased construction of a new 350- bed forensic hospital at Western State Hospital.
- $211 million for behavioral health capacity grants, including $133 million for 18 projects across the state that will provide regional behavioral health and substance use services.
- $2.5 million for DSHS to conduct a hospital water system assessment and determine the long term cost benefits of transitioning the water system to the City of Lakewood

**Infrastructure and built environment**

- $400 million for the Public Works Assistance Account
- $68 million for the Stormwater Financial Assistance program
- $115 million for Remedial Action Grants
- $670 million for the Water Pollution Control Revolving Loan program
- $25 million for the Community Economic Revitalization Board
- $200 million for broadband grants and loans
- $95 million for Salmon Recovery Funding Board grants and $25 million for riparian area grants
- $120 million for the Washington Wildlife and Recreation program
- $48.4 million for the Fish Barrier Removal Board
- $150 million for various clean energy and energy efficiency efforts

***2023-25 Biennial Transportation Budget***: The Transportation budget funds capital facilities investments as well as operating programs for the transportation system in the state. The budget includes total appropriations of approximately $13.5 billion, including approximately $970 million in Climate Commitment Act funding. CCA funds are appropriated to support carbon-reducing projects and programs, such as multi-modal facilities, public transit, and transportation electrification efforts.

Highlights of importance for local governments include:

- $287 million for the Transportation Improvement Board, including $14.6 million for Complete Streets grants and $9 million in preservation funding for cities
- $54 million for Safe Routes to Schools grants
- $51.9 million for Pedestrian and Bicycle Safety programs
- $45.7 million for the Freight Mobility Strategic Investment Board
- $11.5 million to address homeless encampments within state-owned rights-of-way in coordination with local governments
- $1 billion for state fish passage

The 2023-25 Transportation budget also provided phasing for many projects included in the 16-year Move Ahead Washington transportation package passed by the Legislature in 2022. The updated project list can be viewed here.

For additional detail on aspects of the three biennial budgets relevant to local governments, refer to the Association of Washington Cities budget matrix.

# Legislative Agenda Items

### Capital Budget Request: Partnership with Nisqually Indian Tribe on Fort Steilacoom Park Improvements

The City requested $250,000 for art and signage improvements at Fort Steilacoom Park related to the history and culture of the Nisqually Indian Tribe. Rep. Mari Leavitt sponsored the City's funding request in the House and Senator T'wina Nobles sponsored the request in the Senate. Both the House and Senate proposed budgets included $309,000 for this project and that level was retained in the final budget. This adds to the long list of investments the state has made toward improvements at Fort Steilacoom Park.

### Capital Budget Request: LASA Affordable Housing Project

In partnership with Living Access Support Alliance, the City requested $500,000 toward a 25 unit affordable housing facility in Lakewood. Initially, there was some resistance from the City's legislators about the state's contribution to a project that did not have commitment of City funding. In early February when the City Council voted to allocate $1 million toward the project, Rep. Mari Leavitt and Sen. T'wina Nobles agreed to sponsor the funding request. Senator Nobles also shared the project with the Pierce County delegation and advocated that it be one of the county's capital budget priorities. Ultimately, the final budget includes the full $500,000 toward the project!

### Public Safety

The Legislature grappled with controversial policies in the public safety arena that were outstanding from the 2021 legislative session. The primary issues were peace officer vehicular pursuits and new legislation in response to the *State v. Blake* Supreme Court decision, which struck down Washington's law on possession of controlled substances as unconstitutional. The latter issue presented an especially urgent matter for the Legislature, as the 2021 law classifying possession of controlled substances as a misdemeanor is set to expire at the end of June 2023.

*Peace officer vehicular pursuits*:

In 2021, the Legislature passed legislation requiring probable cause, rather than reasonable suspicion, to believe that a person in the vehicle has committed certain offenses for an officer to engage in a vehicular pursuit. Law enforcement agencies expressed concern about this higher threshold and continued to do so, prompting follow-up legislation in the 2022 session to restore the standard of reasonable suspicion. The policy was not supported by police reform advocates and did not pass during the short session.

Policy dialogue around the vehicular pursuits issue continued to be contentious this session. The Washington Association of Sheriffs and Police Chiefs and many local governments advocated for restoration of the reasonable suspicion standard, citing examples of individuals who had eluded police apprehension since the 2021 law went into effect. Police reform advocates held the position that vehicular pursuits represent a danger to the public and noted that the number of people injured or killed from vehicular pursuits has decreased since 2021. The Chair of the Senate Law and Justice Committee refused to hold a hearing on ESB 5352 sponsored by Senator John Lovick (D- Mill Creek), out of concern that reverting back to the reasonable suspicion threshold would result in more dangerous pursuits.

Senate Bill 5352 was ultimately passed by the Legislature, its forward progress aided by a suspension of the rules in the Senate that brought the bill up for floor debate just in time for the house-of-origin cutoff. It lowers the evidentiary threshold for engagement in vehicular pursuits from probable cause to reasonable suspicion for specific crimes: a violent offense, a sex offense, a vehicular assault offense, an escape offense, driving under the influence, or a domestic violence assault offense. The pursuit must be necessary for the purpose of identifying or apprehending the person, and the fleeing person must pose a serious risk of harm to others. Its companion bill, HB 1363 sponsored by Representative Alicia Rule (D- Whatcom County), was advanced by its assigned policy committees but because the Senate version advanced out of its chamber of origin, it became the vehicle for enacting the final policy.

Proposals establishing a work group on the vehicular pursuits issue were also introduced and considered this session but did not pass. SB 5533 sponsored by Senator John Lovick (D- Mill Creek), would have directed the Criminal Justice Training Commission (CJTC) to convene a work group to develop a model vehicle pursuit policy and establish a grant program for modern vehicle pursuit technology. HB 1586 sponsored by Representative Roger Goodman (D- Redmond), would have directed the CJTC to convene a work group to develop legislative policy recommendations on vehicular pursuits and establish a grant program similar to what was proposed in SB 5533. However, the Legislature appropriated $3 million in the 2023-25 Operating budget to fund a law enforcement technology grant program for modern vehicle pursuit management technology.

*State v. Blake/possession of controlled substances*:
The Senate took the lead on introducing policy approaches to the possession of controlled substances issue. Four proposals were introduced, and all would have repealed the current statute classifying drug possession as a misdemeanor and requiring law enforcement to make referrals to substance use assessment and treatment on two occasions before charges may be filed. Aside from that common thread, the four bills differed in their perspectives on how the offense should be classified and handled through the justice system.

SB 5035 sponsored by Senator Mike Padden (R- Spokane) would have classified possession of a controlled substance as a class C felony. SB 5467 sponsored by Senator Jesse Salomon (D- Shoreline) would have classified drug possession as a gross misdemeanor and focused on directing individuals toward treatment in lieu of jail. SB 5624 sponsored by Senator Manka Dhingra (D- Redmond) would have enacted the recommendations of the Substance Use and Recovery Services Advisory Committee, decriminalizing possession of a personal amount of controlled substances.

Another bill, SB 5536 sponsored by Senator June Robinson (D- Everett), was chosen to advance in the legislative process. As passed by the Senate, the bill classified possession of controlled substances as a gross misdemeanor and contained provisions outlining the procedure for pretrial diversion and vacation of convictions. The bill passed the Senate by a narrow margin of 28-21, with a bipartisan mix of votes on both sides of the tally. In the House, the bill was amended to reduce the crime of possession down to a simple misdemeanor, which carries a sentence of up to 90 days in jail, rather than the gross misdemeanor sentence of up to 364 days. The House version also added the crime of drug use in a public place as a misdemeanor. The House passed the bill 54-41, with a few Democrats joining the Republicans in voting against it. The Senate refused to concur with the House's amendments, so the bill then went to conference.

The conference committee's recommendation went back to classifying possession as a gross misdemeanor as passed by the Senate, with the addition of classifying use in a public place as a gross misdemeanor as passed by the House. The bill was brought up for floor debate in the House on the final evening of the legislative session. The conference committee's recommendation was defeated by a vote of 43-55, with 15 Democrats joining the Republicans in opposing the bill. There was robust debate on the House floor and legislators expressed a variety of perspectives. Broadly, Democrats expressed concern that not enacting a statewide solution would lead to a patchwork of city ordinances around the state, while others objected to the higher gross misdemeanor offense due to the potential disproportionate impact on communities of color and harm caused by jail time. Republicans expressed concern about the lack of behavioral health treatment resources in their districts, and some also did not believe the bill went far enough in terms of penalty.

On the evening of Sine Die, both Governor Inslee and Senate Democratic leaders held press conferences on Sunday evening after the Legislature adjourned sine die, and both talked about the possibility of special session. As expected, Governor Inslee has called for a special session of the Legislature to begin on May 16th. As of the writing of this report, a bipartisan agreement has been reached and the Legislature is expected to pass the proposal during a one day special session.

### Western State Hospital Community Partnership Program

The city has operated the Community Partnership Program at Western State Hospital (WSH) since 2007. Since the program is not codified, funding to operate the program must be included in each new state budget. This year, the City requested maintenance funding of $621,000 to continue the program's operation. In addition to the funding, we requested a change to the budget proviso language that provides guidance to WSH on how to administer the funds. This language had not been updated since the program's inception and was necessary for the ongoing success. The final Operating budget appropriates $621,000 for the Western State Hospital

community partnership program. The language in the budget was updated in alignment with the City's request and states that the funding is provided for salaries, benefits, supplies, and equipment for the City of Lakewood to produce incident and police response reports, investigate potential criminal conduct, assist with charging consultations, liaison between staff and prosecutors, provide staff training on criminal justice procedures, assist with parking enforcement, and attend meetings with hospital staff. This outcome is the result of support from the 28th district legislators.

# Additional Legislative Issues

### Housing/Homelessness Services

Enacting policies and budgets that meaningfully address the housing shortage was a top priority for the Legislature this session. Policy makers were guided by a report by the Department of Commerce stating that Washington State needs about one million additional homes by 2044 to adequately accommodate projected population growth. Of those one million homes, approximately 525,000 of those units need to be either affordable to households at or below 50 percent of area median income or affordable to extremely low-income households. Legislators cited these data points in committee hearings throughout the legislative process to underscore the urgent need for housing policy solutions.

In addition to the budget investments in housing and homelessness supports outlined above, the Legislature also included the following housing-related items in the Operating budget:

- $18 million to help address the Document Recording Fee revenue shortfall for local governments to implement homeless services
- $45.6 million to increase homeless service grantee contracts
- $5 million for eviction prevention, including tenants' right to counsel
- $4 million in one-time funding for the Homeless Prevention and Diversion Fund
- $2 million for the Homeless Student Stability program
- $1 million for the Washington Youth and Families Fund

The Legislature considered several policy approaches aimed at bringing more housing to market, tenant protections and other policies aimed at keeping individuals housed, and boosting homeownership. Additionally, Governor Inslee introduced a proposal to issue bonds to generate $4 billion for affordable housing and other types of housing to address homelessness over a six-year period. The concept was given serious consideration by the Legislature but would have required voter approval. Instead, legislators chose to increase its support for housing through budget appropriations and passed several policy bills to respond to the housing shortage.

*Bringing more housing to market*:
**Condominiums:** SB 5058 sponsored by Senator Mike Padden (R- Spokane Valley), and E2SSB 5258 sponsored by Senator Sharon Shewmake (D- Bellingham), work in tandem to reduce barriers to condominium and townhouse development, which was viewed as an avenue for increasing homeownership opportunities for first-time homebuyers and seniors seeking to downsize into a more manageable property. Senate Bill 5058 exempts buildings with 12 or fewer units that are no more than two stories from condominium liability. Senate Bill 5258 contains several provisions aimed at boosting construction and homeownership of condominiums and

townhomes. It modifies the requirements for claims regarding construction defects and makes the qualified warranty program available to developers subject to the Uniform Common Interest Ownership Act. It exempts certain sales of condominiums and townhomes from the real estate excise tax (REET) and creates the Down Payment Assistance Account for buyers purchasing a condominium or townhome. The REET exemption does not apply to sales of condominiums and townhomes that are constructed in buildings qualifying for the multi-family property tax exemption.

**Middle housing types**: E2SHB 1110 sponsored by Representative Jessica Bateman (D-Olympia) requires cities to authorize minimum housing development densities in residential zones depending on their population size, ranging from a minimum of two to at least six units per lot. The bill provides an alternative to the density requirements by allowing cities to implement the requirements in at least 75 percent of lots zoned single-family if the remaining portion of lots meet certain criteria. Under the alternative density option, any areas at high risk of displacement may be excluded from the 75 percent of lots subject to minimum density requirements. Cities may allow accessory dwelling units to achieve the unit density required and can limit the areas subject to the density requirements in accordance with water supply capacity. Cities may apply objective development regulations currently applied to single-family residences in accordance with existing ordinances intended to protect critical areas and public health.

While the bill had bipartisan backing that carried it to the finish line, local governments took varying and nuanced positions on the legislation. The prime sponsor held stakeholder discussions with the Association of Washington Cities and individual cities which resulted in key changes, including allowing the Department of Commerce to approve comprehensive plans from cities with land use regulations that are substantially similar to the bill's provisions and providing for an alternative compliance pathway. The Association of Washington Cities arrived at a supportive position in the waning weeks of the legislative session. The Operating budget appropriates $2 million for grants to implement the bill.

**Accessory Dwelling Unit regulations:** EHB 1337 sponsored by Representative Mia Gregerson (D- SeaTac) requires cities and counties planning under the Growth Management Act to allow the construction of at least two accessory dwelling units (ADUs) per lot within urban growth areas. Local governments are prohibited from imposing certain regulations or restrictions on ADU construction, including gross floor area requirements and roof height limits. The bill prohibits owner-occupancy requirements as well as off-street parking requirements within one-half mile walking distance a major transit stop. Local governments may restrict the use of ADUs for short-term rentals and prohibit the construction of ADUs on lots not served by public sewers. Of the two proposals mandating the allowance of ADU construction, local government stakeholders generally preferred the other bill, SB 5235, because it was less prescriptive, but the Legislature ultimately chose this bill as the vehicle for enacting ADU policy.

**Use of existing buildings for residential purposes**: ESHB 1042 sponsored by Representative Amy Walen (D- Kirkland) prohibits cities from imposing certain restrictions on existing buildings zoned for commercial or mixed use. Cities must allow the addition of housing units at a density up to 50 percent more than what is allowed in the underlying zone if built entirely within the building's envelope and cannot impose additional parking requirements. Cities may not prohibit the addition of housing units in any specific part of a building except ground floor

commercial retail spaces along a major pedestrian corridor. The bill advanced quickly in its house of origin despite concerns raised by local governments regarding provisions contained in the original draft. The Senate amended the bill to address many of the concerns.

**SEPA exemption for housing**: 2SSB 5412 sponsored by Senator Jesse Salomon (D- Mountlake Terrace) expands the infill development categorical exemption from the State Environmental Policy Act (SEPA) to include housing development. All project actions that propose to develop residential housing units within the incorporated portions of urban growth areas or middle housing within the unincorporated areas of urban growth areas are categorically exempt from SEPA. Before adopting the categorical exemptions, jurisdictions must satisfy certain criteria, including that the development is consistent with development regulations under the comprehensive plan and that the city or county has prepared an environmental analysis that considers the proposed use or intensity of use in the area and that analysis has been conducted regarding multi-modal transportation impacts. The Association of Washington Cities was a strong proponent of the legislation as it reflected a policy recommendation of the AWC Housing Solutions Work Group. The Operating budget appropriates $20 million for grants to assist with updating comprehensive plans, including the requirements contained in this bill.

**Consolidating local permit review processes**: 2SSB 5290 sponsored by Sen. Mark Mullet (D-Issaquah), requested by the Governor's Office, establishes a consolidated permit review program for local governments to issue final decisions for residential permit applications within specified time frames. Local governments are required to exempt project permits for interior alterations from site plan review under certain conditions. The bill requires local governments to refund a proportion of the permit fees if they have not issued a final decision by the established time period. The requirements take effect after January 1, 2025. A grant program is established in the legislation to support local governments' transition from paper to digital permit filing systems. The Operating budget provides $3 million for grants to assist local governments with implementation of the bill.

**Did not pass**: Not reaching the finish line this session was SB 5466 sponsored by Senator Marko Liias (D- Mukilteo), which would have required cities planning under the Growth Management Act to allow multi-family housing projects within transit station areas to be developed at transit-oriented density maximum floor area ratios. The bill was introduced at the request of the Governor's Office and the Seattle-area business community was the primary proponent. Local governments held mixed perspectives on the bill. Some were supportive of its policy goals while others expressed concern about the floor area ratios and potentially broad application based on the many types and frequencies of public transit service as outlined in the original draft. The Puget Sound Regional Council created a map illustrating the areas where such development would be allowed according to the availability of transit service as defined in the bill that indicated almost the entire Central Puget Sound region would be subject to its provisions, raising alarm among many stakeholders. The bill was amended late in the process to include an affordability requirement for housing development that did not receive broad support from the construction and real estate industries, which had been supportive of the legislation. A compromise to address stakeholder's diverging perspectives on the bill could not be reached by the time the Legislature adjourned.

**Did not pass**: Another bill aimed at increasing housing construction, HB 1245 sponsored by Representative Andrew Barkis (R- Olympia), also failed to pass this session. The bill would have required cities planning under the Growth Management Act to allow the splitting of a single residential lot into two residential lots. While there was momentum behind this legislation as a viable tool to foster more infill residential development, it was unclear how the policy would interact with the middle housing and accessory dwelling unit bills.

*Affordable housing*:
**Surplus public property for affordable housing**: HB 1695 sponsored by Representative Emily Alvarado (D- Seattle) updates the definition of affordable housing for a public benefit purpose in the context of local governments' authority to dispose of surplus public property for public benefit. As outlined in the legislation, affordable housing refers to rental housing, including rent and utilities, whose cost does not exceed 30 percent of the household's monthly income. For permanently affordable homeownership, the total cost of mortgage principal and interest, property taxes, homeowner's insurance, homeowner's association fees, and land lease fees must not exceed 38 percent of the household's monthly income.

**Did not pass**: Many local governments supported HB 1628 sponsored by Representative Frank Chopp (D- Seattle), which would have modified the state real estate excise tax (REET) and allows a county or city to impose an additional 0.25 percent REET for the construction of affordable housing, but the bill did not pass this session. A significant opposition effort was undertaken by the real estate community to stop the bill and it did not advance out of its assigned fiscal committee.

*Tenant protections and housing retention*:
**Flexibility on affordable housing and mental health funding**: SSB 5604 sponsored by Senator June Robinson (D- Everett) allows all jurisdictions to use revenue from the affordable and supportive housing sales tax for rental assistance, and allows counties to use chemical dependency and mental health services tax revenue for modifications to existing facilities to address health and safety needs. Local governments may retain up to 10 percent of the affordable and supportive housing tax for administrative costs.

**Relocation assistance for tenants of closed manufactured/mobile home parks**: HB 1771 sponsored by Representative Brandy Donaghy (D- Mill Creek) extends the time period in which tenants have to take necessary actions to receive relocation assistance from within 90 days of receiving the initial cash assistance to until the park closure date. Tenants who reinstall their home within 12 months are also eligible to receive the remainder of eligible assistance.

**Sale or lease of manufactured/mobile home communities**: E2SSB 5198 sponsored by Senator Noel Frame (D- Seattle) sets forth notice requirements when a landlord plants to close or convert a manufactured/mobile home community (MHC). It requires landlords to provide two years' notice for closure or conversion of an MHC and written notice of opportunity to compete to purchase when selling or leasing the MHC.

**Foreclosure protections**: HB 1349 sponsored by Representative Tina Orwall (D- Des Moines) modifies the timeline for referral to pre-foreclosure mediation to provide that a borrower may be referred to mediation no later than 90 days before the date of sale is listed in the Notice of

Trustee Sale, instead of no later than 20 days from the date the Notice is recorded. The bill makes it unlawful to seek or receive financial compensation for locating or purporting to purchase surplus funds held by a court or county resulting from a foreclosure where the fee is in excess of five percent of the value reasonably expected to be recovered.

**Tenant protections**: Two bills concerning tenant protections were approved. HB 1074 sponsored by Representative My-Linh Thai (D- Bellevue), requires landlords to provide documentation substantiating the cost of any damages withheld from a tenant's deposit. The bill was passed in both chambers on party-line votes. ESSB 5197 sponsored by Senator Patty Kuderer (D- Mercer Island) modifies several aspects of the eviction process, including allowing remote participation by any party in forcible and unlawful detainer actions, and allowing tenants who provide a pledge of financial assistance letter to satisfy an unlawful detainer judgment and have their tenancy restored.

**Did not pass**: Three proposals concerning residential rent practices were considered, but not passed, this session. HB 1388 sponsored by Representative Nicole Macri (D- Seattle) would have prohibited landlords from charging excessive rent or higher rent based on the terms of payment or whether the lease was month-to-month or longer term. HB 1389 sponsored by Representative Alex Ramel (D- Anacortes) would have prohibited landlords from increasing rent in an amount greater than the rate of inflation or three percent, up to a maximum of seven percent above the existing rent. HB 1124 sponsored by Representative Strom Peterson (D- Edmonds) would have required landlords to provide at least 180 days' notice for rent increases of more than five percent. The bills were supported by low-income housing advocates, but strongly opposed by landlords.

*Boosting homeownership*:
**Creating the covenant homeownership account**: 2SHB 1474 sponsored by Representative Jamila Taylor (D- Federal Way) establishes and funds the Covenant Homeownership Program to provide down payment and closing cost assistance to economically disadvantaged households. The Covenant Homeownership Program is funded through a $100 document recording fee collected by county auditors. The Department of Commerce must contract with the Washington State Housing Finance Commission to create a Special Purpose Credit Program to provide down payment and closing cost assistance to economically disadvantaged homebuyers. An oversight committee is established in the bill and the Housing Finance Commission must complete an initial study of the new program by March 2024 and every five years after. The bill passed on party lines in both the House and Senate. Support from the real estate community for the underlying policy despite the imposition of the document recording fee was important for the bill's momentum.

## Community and Economic Development

The Legislature considered legislation that would have created a Public Works Revolving Trust Account in the State Treasury to be used for loans or grants to local governments for financing public works projects through the Public Works Board. If the legislation had been approved, the measure would have gone before the voters to amend the state Constitution. The policy did not receive enough support to advance this session. However, as noted above, the enacted budgets appropriate funding for infrastructure needs, including:

- $400 million for the Public Works Assistance Account
- $25 million for the Community Economic Revitalization Board
- $2.8 million from the Economic Development Strategic Reserve Account appropriated for the Department of Commerce Office of Economic Development

**Technical corrections to the local tax increment financing (TIF) program**: HB 1527 sponsored by Representative Sharon Wylie (D- Vancouver) makes several technical changes to the TIF legislation passed in 2021. It defines "real property" as it relates to local TIF areas and clarifies that an increment area takes effect on June 1st following the adoption of the ordinance designating the increment area. The legislation provides local taxing districts the authority to increase their property tax levy capacity for increases in assessed value in certain situations. Finally, it modifies the definition of "public improvements" to include the relocation and construction of a government owned facility, under certain circumstances. This last change will more easily allow this tool to be used for the potential future relocation of the WSDOT maintenance facility on Pacific Highway.

**Incentivizing annexation of unincorporated urban growth areas**: 2SHB 1425 sponsored by Representative April Berg (D- Mill Creek) re-authorizes the credit against the state sales tax as an incentive for cities to annex unincorporated areas within their urban growth areas. The prior requirements in state statute that a city be within a county with a population of at least 600,000 and that an annexation area have a population of at least 10,000 are removed through this bill. To impose the tax, a city must have entered into an interlocal agreement with the county. The maximum levy amount that may be imposed is 0.1 percent for annexed areas with populations between 2,000 and 10,000, and 0.2 percent for annexed areas with a population size above 10,000. Cities may not begin to impose the tax after July 1, 2028.

**Climate change in comprehensive planning**: E2SHB 1181 sponsored by Rep. Davina Duerr (D-Bothell), is Governor-request legislation that amends the Growth Management Act to add a goal of climate change and resiliency to the list of elements required in comprehensive plans. It requires jurisdictions to identify actions to reduce greenhouse gas emissions and vehicle miles traveled. Jurisdictions required to review their comprehensive plans by June 30, 2025, must implement the bill's requirements. The policy for integrating climate change into the Growth Management Act has been introduced in previous legislative sessions but did not make it to the finish line. The bill's provisions were refined over time through stakeholder engagement until it reached its final form. Although the building industry still had reservations about the bill, it was able to build enough support to finally pass this session. The Operating budget provides $41 million for grants to assist with implementation.

### Parks, Recreation, and Community Services

The 2023-25 enacted Operating budget appropriates approximately $30.6 million for the Washington State Recreation and Conservation Office from general funds and various other accounts. Additionally, the Capital budget provides:

- $120 million for the Washington Wildlife and Recreation Program ($20 million more than the current biennium)
- $5.8 million for the Aquatic Land Enhancement Account ($3.7 million less than the current biennium)

- $10.4 million for Youth Athletic Facilities grants for specific projects ($800,000 less than the current biennium)

The final Capital budget appropriates funding for grant programs at levels that will result in the following awards to the City:

*Wards Lake Park*

- $1.25 million from the Land and Water Conservation Fund
- $500,000 from the Washington Wildlife and Recreation Program
- $350,000 from the Youth Athletic Facilities Grant

*Harry Todd Park*

- $350,000 from the Youth Athletic Facilities Grant

## Transportation and Infrastructure

**I-5 JBLM Corridor Improvements**: The final Transportation budget maintains funding for the projects included in the I-5 JBLM Corridor Improvements during the passage of the 2015 Connecting Washington package. The budget appropriates approximately $206.9 million in the 2023-25 biennium and $61.4 million in the 2025-27 biennium.

**I-5 High Occupancy Vehicle Lanes**: The Transportation budget plans for $260.5 million to be expended in future biennia (post-2029) for high occupancy vehicle lanes from South 38th Street in Tacoma to JBLM. This timing is in alignment with the city's request, as outlined in the policy manual.

**I-5 Mounts Road to Tumwater & Nisqually River Delta:** The final Transportation budget phases funding for the I-5 Nisqually Delta project at $32.5 million in 2025-27 and $26 million in 2027-29. Additionally, $21 million is provided in the 23-25 biennium for the three roundabouts on ST 507, to be completed by Pierce County, Thurston County and City of Yelm.

Additionally, as noted above, the Transportation budget funds several transportation infrastructure programs of importance to local governments:

- $287 million for the Transportation Improvement Board, including $14.6 million for Complete Streets grants and $9 million in preservation funding for cities
- $70.8 million for Safe Routes to Schools grants, resulting in $1.14 million for sidewalks on 112th St SW from Farwest Dr. to Holden Rd to improve safety near Lake Louise Elementary School
- $72.2 million for Pedestrian and Bicycle Safety programs
- $138 million for development of community electric vehicle charging infrastructure

**Future Commercial Airfields:** House Bill 1791, sponsored by Rep. Jake Fey (D-Tacoma), suspends the work of the Commercial Aviation Coordinating Commission, creates a new Commercial Aviation Work Group and resets the work. The new work group is directed to evaluate the long range commercial aviation needs of WA State and consider expansion of existing aviation facilities and possible siting of new greenfield facilities. Rather than providing a single recommendation, the workgroup is directed to provide a report on the strengths and weaknesses of various options. The workgroup is given explicit guidance that any options shall not include: expansion of SeaTac International Airport or expansion of an existing airport or

siting of a new airport that would be incompatible with the operations of a military installation. The workgroup shall perform outreach to and make efforts to collaborate with the Department of Defense, Federal Aviation Administration, Environmental Protection Agency and US Department of Energy. The workgroup is directed to provide a progress report to the Legislature by July 1, 2024 and annually thereafter. The first report of the work group shall include a list of areas that will not have further review if they conflict with the operations of a military installation.

## Finances

**State-shared revenues**: The enacted 2023-25 Operating budget provides for the following state-shared revenues:

- Liquor Revolving Account (liquor profits): $98.9 million (same as current biennium)
- Liquor Excise Account (liquor taxes): $89.4 million (increase of $2.1 million over current biennium)
- Municipal Criminal Justice Assistance Account: $51.2 million (increase of $6 million over current biennium)

**Apprenticeship utilization requirements**: ESHB 1050 sponsored by Representative Marcus Riccelli (D- Spokane) requires public works contracts awarded by a municipality estimated to cost more than $2 million to include specifications that no less than 15 percent of the labor hours be performed by apprentices beginning Jul 1, 2024. Beginning July 1, 2026, until July 1, 2028, apprenticeship utilization requirements apply to public works contracts estimated to cost over $1.5 million. Beginning July 1, 2028, apprenticeship utilization requirements apply to public works contracts estimated to cost over $1 million.

**Did not pass:** Three proposals were introduced this session that would have lifted the one percent limit factor on property tax for local governments, but none were passed. SB 5618 sponsored by Senator Patty Kuderer (D- Mercer Island), revised the property tax cap for local governments to account for inflation and population growth up to three percent. The bill was heard, but not advanced out of committee. HB 1670 sponsored by Representative Timm Ormsby (D-Spokane), would have revised the property tax cap for local governments from one percent to three percent, but did not contain provisions related to inflation or population growth. The bill did not advance out of the House Rules Committee. SB 5770 sponsored by Senator Jamie Pedersen (D- Seattle) was introduced late in the session and took a similar approach to Senate Bill 5618, adjusting the property tax limit to account for inflation and population growth up to three percent. The bill did not receive any action in its referred fiscal committee.

## Public Safety

**Funding for body worn cameras**: The enacted Operating budget appropriates $1.6 million for the WA Association of Sheriffs and Police Chiefs to implement a body worn camera grant funding to local law enforcement agencies.

**Funding for behavioral health:** As outlined above, the final Capital and Operating budgets contain many appropriations for building capacity in the behavioral health system throughout the state. Additional notable items for the City of Lakewood include:

- $14.8 million for direct care staffing at Western and Eastern State Hospitals
- $13.2 million for state hospital violence reduction
- $117.1 million for crisis and residential treatment services for individuals with mental health and substance use disorders, including funding to expand mobile rapid response crisis services to enhance the 988 behavioral health crisis response system

**Traffic enforcement cameras**: The Transportation budget bill authorizes the Washington Traffic Safety Commission to oversee a pilot program in up to three cities implementing the use of automated vehicle noise enforcement cameras in zones that have been designated by ordinance as "Stay Out of Areas of Racing." Programs must be authorized by December 31, 2024. Additionally, the Legislature passed SB 5272 sponsored by Senate Transportation Committee Chair Marko Liias (D- Mukilteo) authorizing the use of speed safety cameras in state highway work zones.

**Basic Law Enforcement Academy (BLEA)**: As noted above, the Legislature included provisions in the Capital and Operating budgets to respond to the shortage of peace officers by boosting BLEA capacity.

- $3.4 million for six additional Basic Law Enforcement Training Academy (BLEA) classes, for a total of 23 classes in both 2024 and 2025
- $11.3 million for six additional BLEA classes beginning in 2024 at three new regional training academies (Pasco, Skagit County, and Clark County)
- $500,000 for pre-design work for future Criminal Justice Training Commission training facilities
- $2.7 million for regional training facility capital needs

**Jail and court costs**: The Legislature appropriated just over $147 million in the Operating budget for the Office of Public Defense. Of this amount, $1.8 million is allocated for the purpose of improving the quality of trial court public defense services. The Office is directed to distribute $450,000 per fiscal year to counties and $450,000 per fiscal year in grants to cities.

***Trueblood* settlement- Competency evaluations and restoration services to persons suffering from behavioral health disorders**: E2SSB 5440 sponsored by Senator Manka Dhingra (D-Redmond), establishes diversion and behavioral health treatment pathways to attempt to reduce caseload for forensic cases needing restoration in a state-owned behavioral health hospital. The bill requires courts to determine if there is genuine doubt as to competency before ordering a competency evaluation and requires jails to allow access for clinical intervention specialists to provide direct services for defendants waiting for competency restoration services. It requires courts to dismiss non-felony charges and refer the defendant for services recommended in a diversion program recommend by a forensic navigator if the defendant is amenable and can safely receive services in the community. The bill underwent significant amendments during the legislative process. In its original form, the competency restoration services would have been provided in jails although the legislation did not provide resources to carry out these functions, imposing a tremendous burden on counties. The City expressed concern with earlier versions of the bill and ended in a neutral position with the final version. Additionally, the Washington State Association of Counties and many individual counties undertook an advocacy effort to daylight these issues that resulted in the changes

reflected in the bill's final form. The enacted Operating budget provides $108.7 million for forensic mental health and continued implementation of the *Trueblood* settlement.

**23-hour crisis relief centers**: 2SSB 5120 sponsored by Senator Manka Dhingra (D- Redmond) requires the Department of Health to license 23-hour crisis relief centers, facilities that are open 24 hours per day, seven days a week, offering behavioral health to adults for no more than 23 hours and 59 minutes at a time. The centers will accept walk-ins and drop-offs from first responders and individuals referred through the 988 system and have a no-refusal policy for individuals dropped off by law enforcement.

***Blake* response**: The enacted Operating budget provides $6 million to assist counties with public defense services related to vacating the convictions of defendants and/or resentencing for defendants whose convictions or sentences are affected by the *State v. Blake* decision.

### Military Affairs

**Defense Community Compatibility Account**: SB 5324 sponsored by Senator Steve Conway (D-Tacoma) moves the deadline for submitting the Defense Community Compatibility Account (DCCA) to November 1st of each even-numbered year. Grant recipients must have a non-federal funding source, and DCCA grants may only be awarded to capital projects. Priority will be given to grant applications that have secured non-state funding, leverage a higher proportion of non-state funding, or where a federal grant requires timely state matching funds. Additionally, $35.8 million is provided in the Capital budget for seven projects that promote land-use compatibility between communities and military installations, including $900,000 to the City of Lakewood for the McChord North Clear Zone.

**Military Spouse Employment Act:** 2SHB 1009 sponsored by Representative Mari Leavitt (D-University Place) requires licensing authorities to issue a license to a qualified military spouse within 30 days of receipt of a completed application. Licensing authorities must issue a temporary license to qualified military spouses within 30 days of receipt of a completed application.

**Compact Legislation Signed into Law**:

- HB 1001sponsored by Representative Mari Leavitt (D- University Place) enters Washington into the Audiology and Speech-Language Pathology Interstate Compact.
- HB 1069 sponsored by Representative Mari Leavitt (D- University Place) establishes the Counseling Compact for licensed professional counselors.
- HB 1576 sponsored by Representative Michelle Caldier (R- Gig Harbor) enacts the Dentist and Dental Hygienist Compact.
- SB 5499 sponsored by Senator Mark Mullet (D- Issaquah) enacts the Interstate Nurse Licensure Compact.

**Military/Defense Sector Economic Impact**: SSMCP has been leading an effort to have the state conduct a military/defense sector economic impact analysis of all of Washington's major military installations. Due to SSMCP's advocacy, the Operating budget includes the requested $250,000 for the Office of the Lieutenant Governor to complete the study and provide a report to the Legislature by September 2024.

## State Leadership Announcements

On May 1st, Governor Jay Inslee announced that he would not seek a fourth term. He is one of only two Washington Governors to have served three consecutive terms. On May 2nd, Attorney General Bob Ferguson announced that he had initiated an exploratory campaign for potential gubernatorial bid.

Additionally, on the final day of the legislative session, House Minority Leader J.T. Wilcox (R- 2nd LD) and Deputy Minority Leader Joel Kretz (R- 7th LD) announced that they would be stepping down from their leadership positions. On April 24th, the House Republican Caucus met and elected new leaders. Representative Drew Stokesbary (R- 31st LD) and Representative Mike Steele (R- 12th LD) were selected to be the new Minority Leader and Deputy Minority Leader, respectively. Representative Stokesbary has been the House Republican lead on the Operating budget for the last four years and Representative Steele has been the House Republican lead on the Capital budget for the last two years.

# Lakewood Bill Status Report: Bills that Passed the Legislature

### Community & Economic Development

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| 2SHB 1425 | Municipal annexations | Facilitating municipal annexations. | C 351 L 23 | Berg | Support |
| HB 1527 (SB 5539) | Tax increment financing | Making technical corrections to the local tax increment financing program. | C 354 L 23 | Wylie | Support |

### Housing/ Homelessness Services

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| ESHB 1042 | Use of existing buildings | Concerning the use of existing buildings for residential purposes. | C 285 L 23 | Walen | |
| E2SHB 1110 (SSB 5190) | Middle housing | Increasing middle housing in areas traditionally dedicated to single-family detached housing. | C 332 L 23 | Bateman | |
| EHB 1337 | Accessory dwelling units | Expanding housing options by easing barriers to the construction and use of accessory dwelling units. | C 334 L 23 | Gregerson | |
| 2SSB 5290 (HB 1296) | Local permit review | Concerning consolidating local permit review processes. | C 338 L 23 | Mullet | |
| 2SSB 5412 | Land use permitting/local | Reducing local governments' land use permitting workloads. | C 368 L 23 | Salomon | |
| SSB 5604 | Mental health & housing/tax | Concerning county sales and use taxes for mental health and housing. | C 101 L 23 | Robinson | Support |

### Military Affairs

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| HB 1001 (SB 5021) | Audiology & speech compact | Concerning the audiology and speech-language pathology interstate compact. | C 53 L 23 | Leavitt | Support |
| 2SHB 1009 | Military spouse employment | Concerning military spouse employment. | C 165 L 23 | Leavitt | Support |

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|---|---|---|---|---|---|
| SHB 1069 | Mental health counselor comp | Adopting the mental health counselor compact. | C 58 L 23 | Leavitt | Support |
| ESHB 1576 | Dentist compact | Concerning the dentist and dental hygienist compact. | C 297 L 23 | Caldier | Support |
| ESHB 1791 | Commercial aviation services | Studying the need for increased commercial aviation services. | Del to Gov | Fey | |
| SB 5324 | Defense compatibility acct. | Concerning the defense community compatibility account. | Del to Gov | Conway | Support |
| SSB 5499 | Multistate nurse licensure | Concerning the multistate nurse licensure compact. | C 123 L 23 | Mullet | Support |

**Public Safety**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| HB 1265 (SB 5302) | Adult family homes/prop. tax | Establishing a property tax exemption for adult family homes that serve people with intellectual or developmental disabilities and are owned by a nonprofit. | C 69 L 23 | Ramos | |
| 2SSB 5120 | Crisis relief centers | Establishing 23-hour crisis relief centers in Washington state. | Del to Gov | Dhingra | |
| ESB 5352 (SHB 1363) | Vehicular pursuits | Concerning vehicular pursuits. | C 235 L 23 | Lovick | |
| E2SSB 5440 | Competency evaluations | Providing timely competency evaluations and restoration services to persons suffering from behavioral health disorders. | Del to Gov | Dhingra | Oppose |

**Transportation & Infrastructure**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| ESHB 1050 | Apprenticeship utilization | Expanding apprenticeship utilization requirements. | C 342 L 23 | Riccelli | |

# Lakewood Bill Status Report: Bills that Died

**Community & Economic Development**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| HB 1611 (Dead) | Local government permitting | Concerning local government permitting. | H Finance | Reed | Oppose |
| HB 1723 (Dead) (SSB 5651) | GMA/equity and env. justice | Concerning equity and environmental justice in the growth management act. | H Local Govt | Duerr | |
| SB 5418 (Dead) | Definition of public work | Expanding the definition of public work. | S State Govt & E | Conway | |
| SB 5456 (Dead) (SHB 1351) | Minimum parking requirements | Prohibiting the imposition of minimum parking requirements except under certain circumstances. | S Loc Gov, Land | Frame | Oppose |
| SB 5539 (Dead) (HB 1527) | Tax increment financing | Making technical corrections to the local tax increment financing program. | S Ways & Means | Cleveland | Support |
| SSB 5609 (Dead) | Housing approval | Establishing housing approval requirements that will eliminate Washington's housing shortage. | S Ways & Means | Braun | Oppose |
| SSB 5651 (Dead) (HB 1723) | GMA/equity and env. justice | Concerning equity and environmental justice in the growth management act. | S Ways & Means | Lovelett | |

**Finances**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| HB 1670 (Dead) | Property tax limit factor | Raising the limit factor for property taxes. | H Rules R | Ormsby | Support |
| SB 5059 (Dead) | Prejudgment interest | Concerning prejudgment interest. | S Ways & Means | Kuderer | Oppose |
| SB 5568 (Dead) | Liquor revenue/local gov. | Restoring liquor sales revenue distributions to local governments. | S Labor & Comm | Wagoner | |
| SB 5618 (Dead) | Local property tax limit | Increasing the local property tax revenue growth limit. | S Loc Gov, Land | Kuderer | Support |

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|---|---|---|---|---|---|
| SB 5770 (Dead) | Property tax | Providing state and local property tax reform. | S Ways & Means | Pedersen | Support |

**General Government**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| SHB 1012 (Dead) | Extreme weather events | Addressing the response to extreme weather events. | H Rules 3C | Leavitt | Support |
| HB 1597 (Dead) (SB 5571) | Public records act requests | Limiting frivolous claims by modifying administrative and judicial review processes for public records request responses. | H State Govt & T | Springer | |
| SB 5571 (Dead) (HB 1597) | Public records act requests | Limiting frivolous claims by modifying administrative and judicial review processes for public records request responses. | S State Govt & E | Rivers | |

**Housing/ Homelessness Services**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| E2SHB 1167 (Dead) | Residential housing | Concerning residential housing regulations. | H Rules 3C | Duerr | |
| ESHB 1245 (Dead) (SSB 5364) | Lot splitting | Increasing housing options through lot splitting. | H Rules 3C | Barkis | Oppose |
| HB 1276 (Dead) (SSB 5235) | Accessory dwelling units | Concerning accessory dwelling units. | H Housing | Pollet | |
| HB 1296 (Dead) (2SSB 5290) | Local permit review | Concerning consolidating local permit review processes. | H Approps | Peterson | |
| SHB 1351 (Dead) (SB 5456) | Minimum parking requirements | Prohibiting the imposition of minimum parking requirements except under certain circumstances. | H Rules R | Reed | Oppose |
| HB 1517 (Dead) | Transit-oriented development | Promoting transit-oriented development. | H Housing | Reed | |

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|---|---|---|---|---|---|
| (ESSB 5466) | | | | | |
| 2SHB 1628 (Dead) | Real estate excise tax | Increasing the supply of affordable housing by modifying the state and local real estate excise tax. | H Rules R | Chopp | |
| SHB 1633 (Dead) | Homes for heroes program | Creating a homes for heroes program. | H Cap Budget | Connors | |
| HB 1817 (Dead) (SB 5741) | Housing gap voucher pilot | Establishing a housing gap voucher pilot program. | H Housing | Rule | |
| SSB 5060 (Dead) | Rental & vacant properties | Requiring the registration of rental and vacant housing units. | S Ways & Means | Kuderer | |
| SB 5118 (Dead) | Multifamily property tax ex. | Concerning modifying the multifamily property tax exemption to promote development of long-term affordable housing. | S Housing | Kuderer | |
| SSB 5190 (Dead) (E2SHB 1110) | Middle housing | Increasing middle housing in areas traditionally dedicated to single-family detached housing. | S Ways & Means | Trudeau | |
| SSB 5235 (Dead) (HB 1276) | Accessory dwelling units | Concerning accessory dwelling units. | S Rules 3 | Shewmake | |
| ESSB 5334 (Dead) | Affordable housing funding | Providing a local government option for the funding of essential affordable housing programs. | S Rules 3 | Lovelett | |
| ESSB 5466 (Dead) (HB 1517) | Transit-oriented development | Promoting transit-oriented development. | S Rules 3 | Liias | |
| SB 5473 (Dead) | Project permit timelines | Concerning project permit timelines. | S Loc Gov, Land | Gildon | |

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|---|---|---|---|---|---|
| SSB 5657 (Dead) | Kit home permitting | Concerning city and town permitting of kit homes. | S Rules X | Wilson | |

**Military Affairs**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| SHB 1417 (Dead) | Multistate nurse licensure | Concerning the multistate nurse licensure compact. | H Approps | Volz | Support |
| HB 1437 (Dead) | Interstate massage compact | Concerning the interstate massage compact. | H Postsec Ed & W | Kloba | Support |
| SB 5021 (Dead) (HB 1001) | Audiology & speech compact | Concerning the audiology and speech-language pathology interstate compact. | S Health & Long | Wagoner | Support |
| SB 5180 (Dead) | Teacher mobility compact | Adopting the interstate teacher mobility compact. | S Rules 3 | Hunt | Support |
| SB 5219 (Dead) | Counseling compact | Enacting the interstate counseling compact for licensed mental health counselors. | S Health & Long | Muzzall | Support |

**Public Safety**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| 2SHB 1025 (Dead) | Police/private actions | Creating a private right of action for harm from violations of the state Constitution or state law by peace officers. | H Rules C | Thai | |
| HB 1053 (Dead) | Vehicular pursuits | Concerning vehicular pursuits. | H Community Safe | Robertson | |
| SHB 1363 (Dead) (ESB 5352) | Vehicular pursuits | Concerning vehicular pursuits. | H Rules R | Rule | |
| HB 1380 (Dead) | Law enf. officer funding | Providing funding for the recruitment, retention, and support of law enforcement officers. | H Approps | Stokesbary | |

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|---|---|---|---|---|---|
| ESHB 1387 (Dead) | Law enf. applicant pool | Requiring the criminal justice training commission to establish a program to recruit and train a pool of applicants who may be employed by certain law enforcement agencies in the state. | H Rules 3C | Ramos | |
| HB 1415 (Dead) | Controlled sub. possession | Making the knowing possession of a controlled substance a gross misdemeanor offense under criminal violations of Title 69 RCW. | H Community Safe | Maycumber | |
| 2SHB 1445 (Dead) | Law enf. misconduct | Concerning law enforcement and local corrections agency misconduct through investigations and legal actions. | H Rules C | Hansen | |
| 2SHB 1586 (Dead) | Vehicular pursuits work grp. | Requiring the criminal justice training commission to establish a work group and grant program related to vehicular pursuits. | H Rules R | Goodman | |
| HB 1613 (Dead) (SB 5467) | Controlled sub. possession | Encouraging treatment for possession of certain counterfeit drugs or controlled substances. | H Community Safe | Rule | |
| HB 1650 (Dead) | Cannabis prohibitions | Requiring voter approval for local government prohibitions on cannabis businesses. | H Rules R | Wylie | Oppose |
| HB 1654 (Dead) (SSB 5506) | Behavior support homes | Establishing an enhanced behavior support homes model. | H Human Svc, You | Harris | |
| HB 1734 (Dead) (SB 5544) | Alt. placement contracting | Providing notice regarding less restrictive alternative placement contracting. | H Community Safe | Couture | |

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|---|---|---|---|---|---|
| HB 1751 (Dead) | Sex offender facility siting | Concerning siting of sex offender and sexually violent predator facilities. | H Community Safe | Couture | |
| HB 1813 (Dead) | Community transition facs. | Establishing a moratorium on the siting and use of secure community transition facilities. | H Community Safe | Griffey | |
| SB 5034 (Dead) | Vehicular pursuits | Concerning the authority for a peace officer to engage in a vehicular pursuit. | S Law & Justice | Padden | |
| SB 5035 (Dead) | Controlled sub. possession | Concerning possession of controlled substances. | S Law & Justice | Padden | |
| SB 5302 (Dead) (HB 1265) | Adult family homes/prop. tax | Establishing a property tax exemption for adult family homes that serve people with intellectual or developmental disabilities and are owned by a nonprofit. | S Rules X | Mullet | |
| SSB 5361 (Dead) (HB 1446) | Law enf. officers/increase | Incentivizing cities and counties to increase employment of commissioned law enforcement officers. | S Ways & Means | Holy | |
| SB 5467 (Dead) (HB 1613) | Controlled sub. possession | Encouraging treatment for possession of certain counterfeit drugs or controlled substances. | S Law & Justice | Salomon | |
| SSB 5506 (Dead) (HB 1654) | Behavior support homes | Establishing an enhanced behavior support homes model. | S Ways & Means | Kauffman | |
| SSB 5533 (Dead) | Model vehicle pursuit policy | Concerning the creation of a model vehicle pursuit policy. | S Ways & Means | Lovick | |
| E2SSB 5536 (Dead) | Controlled substances | Concerning controlled substances, counterfeit substances, and legend drug possession and treatment. | S Rules 3 | Robinson | |

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|---|---|---|---|---|---|
| SB 5544 (Dead) (HB 1734) | Alt. placement contracting | Providing notice regarding less restrictive alternative placement contracting. | S Human Services | MacEwen | |
| SB 5624 (Dead) | Substance use recovery serv. | Implementing the recommendations of the substance use recovery services advisory committee. | S Law & Justice | Dhingra | |
| SB 5676 (Dead) | Behavioral health siting | Siting intensive behavioral health treatment facilities. | S Health & Long T | Short | |
| SB 5682 (Dead) | State hospitals/police costs | Concerning policing costs driven by proximity to state hospitals. | S Law & Justice | Holy | |
| SB 5739 (Dead) | Sex. violent predator notice | Providing notice to members of the community where a sexually violent predator will reside. | S Human Services | Fortunato | |

**Transportation & Infrastructure**

| Bill # | Abbrev. Title | Short Description | Status | Sponsor | Position |
|---|---|---|---|---|---|
| HB 1099 (Dead) | Public works wages | Requiring certain wages in public works contracts to be at least the prevailing wage in effect when the work is performed. | H Cap Budget | Berry | |
| HB 1198 (Dead) (SB 5402) | PTBA/limited law enforcement | Authorizing public transportation benefit areas to become limited authority Washington law enforcement agencies. | H Community Safet | Bronoske | Support |
| SSB 5303 (Dead) | Public works trust account | Creating the public works assistance revolving account. | S Rules 3 | Mullet | |
| SB 5402 (Dead) (HB 1198) | PTBA/limited law enforcement | Authorizing public transportation benefit areas to become limited authority Washington law enforcement agencies. | S Law & Justice | Randall | Support |

Return to Agenda

# CITY OF LAKEWOOD

# 2023 LEGISLATIVE SESSION

Shelly Helder
May 22, 2023

GORDON THOMAS HONEYWELL
GOVERNMENT RELATIONS

# PURPOSE

Return to Agenda

- Overview of the 2023 Legislative Session
- Outcome of Lakewood Priorities
- Policy Manual Issues
- Next Steps

Return to Agenda

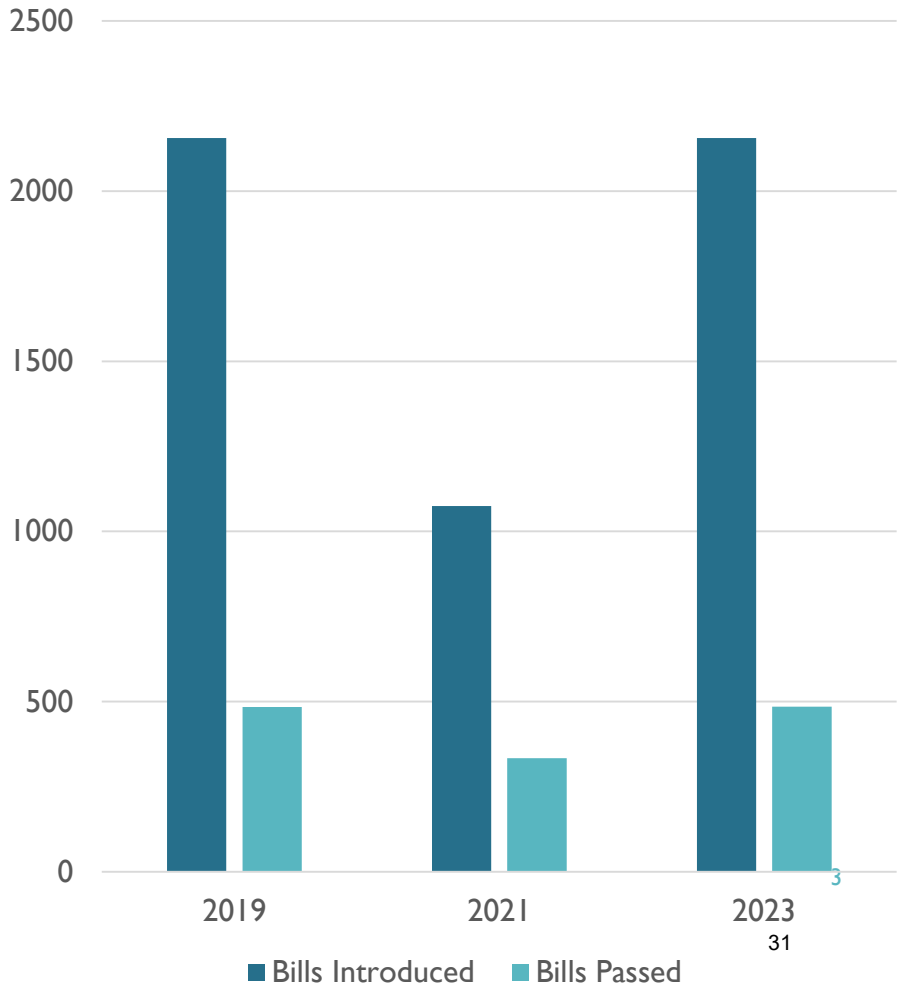
# OVERVIEW OF 2023 LEGISLATIVE SESSION

## General Context

- First year of the biennium, 105-day session
- Adopted 2023-25 operating, capital, and transportation budgets
- 2,156 bills introduced, 484 passed the legislature
- Any legislation that did not pass, will be reconsidered next session

## Political Context

- Democrats held the majority in House and Senate
- New caucus leaders and Committee Chairs



# OVERVIEW OF 2023 LEGISLATIVE SESSION: BUDGETS

Return to Agenda

## Operating

- Funds all state agency operations
- $69.8 billion total budget, net increase of $2.4 billion, $3.6 billion in reserves
- Notable Investments: Comp plan grants, housing & homelessness services, encampment response, crisis response services and facilities, BLEA, therapeutic courts, etc.

## Capital

- Funds public and nonprofit construction projects (excluding transportation)
- $9 billion total budget
  - Combination of bond capacity, federal funds, MTCA, CCA, etc.
- $231.8 million allocated for local community projects ($160 million in 2021)
- Key investments in housing & homelessness, behavioral health, education, and recreational grants

## Transportation

- $13.5 billion budget
- First full biennium of revenues and investments from Move Ahead WA
- March revenue forecast continued decline, primarily stemming from fuel taxes.
- Honors delivery of many commitments from Connecting WA & Move Ahead WA
- CCA revenues: investments in carbon-reducing programs such a Safe Routes to School, Pedestrian and Bicycle Safety, Complete Streets

# LAKEWOOD'S 2023 LEGISLATIVE PRIORITIES

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| Partnership with Nisqually Indian Tribe | LASA Affordable Housing Project | Public Safety | WSH Community Partnership Program | Geographic Equity |
|---|---|---|---|---|
| • $309,000 for signage, art and interpretative information throughout Fort Steilacoom Park | • $500,000 for a 25-unit affordable housing development in Lakewood | • Vehicular pursuits – Senate Bill 5352<br>• *Blake* fix – Senate Bill 5536 | • $621,000 in the state operating budget and an update to the proviso language | • Requested legislation to address loopholes in geographic inequity for discharge from state facilities<br>• No progress |

# POLICY MANUAL ISSUES

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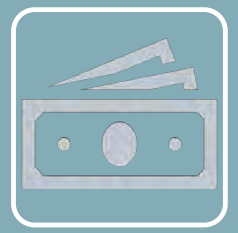
## Housing

- Middle housing, condo liability, SEPA exemption, permit streamlining, ADUs, etc.



## Grant Funding for City of Lakewood

- Wards Lake Park – $2,100,000
- Harry Todd Park - $350,000
- Lake Louise Elementary School Sidewalks on 112th - $1,142,720
- North Clear Zone - $900,000

## Military Communities

- Defense Community Compatibility Account - $35.8 million
- Military/Defense Sector Economic Impact Analysis - $250,000
- Occupational Licensing Improvements
- I-5 Mounts Road to Tumwater & Nisqually River Delta

# NEXT STEPS

Return to Agenda

- Thank the City's legislative delegation
- Implement new policies & projects funded with state awards
- Prepare for 2024 Legislative Session, begins January 8th

# QUESTIONS?

Return to Agenda

***Shelly Helder***
shelder@gth-gov.com
360-209-3338

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TO: City Council

FROM: Tiffany Speir, Long Range & Strategic Planning Manager

THROUGH: John Caulfield, City Manager
Dave Bugher, Assistant City Manager for Development Services

DATE: May 22, 2023

SUBJECT: 2023 Urban Forestry Program Establishment

ATTACHMENTS: "Establishing the Roots of Urban Forestry in Lakewood, WA: An Implementation Guide" Introductory Note (**Attachment A**); Full Report (**Attachment B**)

---

**BACKGROUND**

Per Ordinance 756, the City Council adopted an updated Energy & Climate Change Chapter for the City's Comprehensive Plan. Per Ordinance 775, the City Council adopted updates to the City's development regulations related to trees; this ordinance updated the uses of the established tree fund to include funding urban forestry education (see LMC 18A.70.340(B).)

Per Ordinance 776, the Council adopted a 3 year work plan to implement the Energy and Climate Change Chapter. Item 15 on the plan is to "develop/promote an urban forest management/master reforestation plan." In early 2023, Lakewood engaged the UW Evans School of Public Policy and Governance to draft a plan regarding how to launch a new urban forestry program in the City.

**DISCUSSION**

Included as **Attachment A** is an introductory note from the UW Evans School student team that developed the "Establishing the Roots of Urban Forestry in Lakewood, WA: An Implementation Guide." The full report is included as **Attachment B**.

Subject: Summary - Urban Forestry Implementation Guide

Date: May 16, 2023

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Dear Lakewood City Council Members,

We are delighted to present our report on urban forestry in the City of Lakewood. The report is titled "Establishing the Roots of Urban Forestry in Lakewood, WA: An Implementation Guide," which contains valuable insights and recommendations for the future of Lakewood's trees and green spaces.

As you are likely aware, urban forestry plays a vital role in enhancing the quality of life for community members by providing numerous benefits, such as improved air quality, reduced energy costs, and climate change resiliency. This report provides a comprehensive guide for the development and maintenance of an urban forestry program, with the aim of ensuring that it continues to serve the community's needs for generations to come.

The report covers a wide range of topics, including benefits of urban forestry, the current state of Lakewood's urban forest, strategies for engaging residents in urban forestry initiatives, and recommended best practices for urban forestry. It also provides a detailed roadmap for the implementation of urban forestry programs and policies, along with estimated costs and potential funding sources.

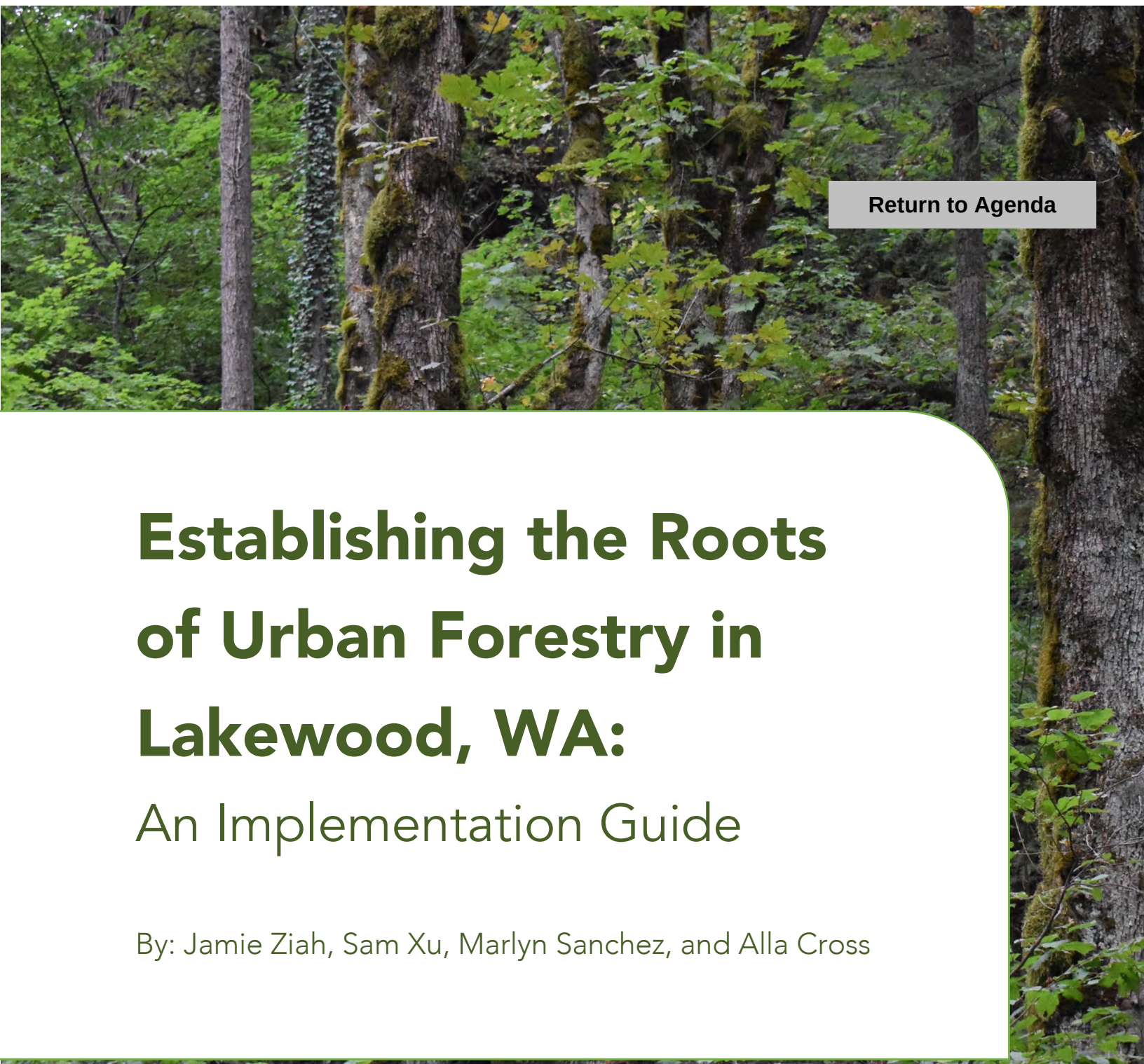
**Our Executive Summary can be found on pages eight through 10 of the full report. The Executive Summary provides an overview of the report and recommendations.**

Thank you for your attention to this matter, and we look forward to discussing our report with you.

Sincerely,

Jamie Ziah, Sam Xu, Marlyn Sanchez, Alla Smilnak Cross

University of Washington Evans School Student Consulting Lab



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# Establishing the Roots of Urban Forestry in Lakewood, WA:

## An Implementation Guide

By: Jamie Ziah, Sam Xu, Marlyn Sanchez, and Alla Cross

# Acknowledgments

We would like to express our deepest gratitude to the following people who provided invaluable support and guidance over the last five months, without whom this report would not have been possible.

First and foremost, we would like to express our deepest gratitude to our main contacts at the City of Lakewood, namely **Dave Bugher**, **Tiffany Spier**, and **Michael Vargas**. Their unwavering dedication, invaluable insights, continuous feedback, and collaborative partnership throughout the last five months have been instrumental in shaping and creating this report.

We would also like to extend our heartfelt appreciation to our Capstone Advisor, **Dr. Ann Bostrom**, for her guidance throughout this project. Dr. Bostrom's contributions greatly enhanced the quality and depth of our research and analysis, and we are truly grateful for her support and commitment.

Thank you to staff members of the **Washington Department of Natural Resources**, the **City of Issaquah**, the **City of Vancouver**, and **Forterra** for their generous contributions of time and expertise. Their dedication to the promotion and conservation of urban forests in Washington has been a true inspiration to us. The valuable insights they shared greatly enriched our understanding and were instrumental in shaping the content of this report.

To our **capstone seminar colleagues** we are grateful for your peer feedback and unwavering support throughout this entire process. Your constructive input and encouragement kept us motivated over the past five months. We are truly grateful for the collaborative and safe environment that you have fostered, and we extend our deepest thanks to each and every one of you.

Last, but certainly not least, thank you to our respective **families**, **friends**, and **partners** for your enduring love and support. We could not have completed this project without it.


EVANS SCHOOL
OF PUBLIC POLICY & GOVERNANCE
UNIVERSITY of WASHINGTON

# Meet the Team

## Jamie Ziah

Jamie is a second-year master's student at the Evans School of Public Policy and Governance, where she is studying Environmental Policy. She is the Communications Director for GreenEvans, which is the environmental policy student group. She received her Bachelor of Natural Resources and Environmental Science from the University of Illinois at Urbana-Champaign. Her professional experience includes ecological restoration, environmental advocacy, and data analysis. Most recently she interned at the Environmental Protection Agency working on climate change data integration.

## Sam Xu

Sam is a second-year international student earning his Master of Public Administration at the Evans School of Public Policy & Governance. Sam completed his undergraduate education in Beijing, China where he obtained a bachelor's degree in finance along with a dual degree in English. His expertise spans across international and cross-cultural communications, consultancy in environmental policy and financial evaluation, as well as investment advisory. As part of his academic journey at the Evans School, he interned as a policy analyst at an education policy-focused consulting firm.

## Marlyn Sanchez

Marlyn is a second-year masters candidate in Public Administration and Vice Chair of the Evans School Student Organization. She is a Fulbright Scholar from the Dominican Republic. Marlyn is also a Chevening alumni and holds a MSc in International Development from the University of Edinburgh. Her professional experience and interests involve policy analysis, project management, and evaluation work in the public and nonprofit sectors especially around development, gender, youth, and education.

## Alla Smilnak Cross

Alla is a second-year MPA candidate at the Evans School of Public Policy and Governance. She is the Co-Chair of the Evans Student Budget Council and the Vice Chair of the UW Chapter of the International City/County Management Association. Alla served as the UW ICMA Local Government Finance Fellow in the City of Burien. Originally from rural Southeast Georgia, Alla lived in Nashville, TN for ten years before moving to Seattle. Her professional and policy interests include public financial management, performance management, policy analysis, and anti-violence and gender equity policy.

# Table of Contents

# Abbreviations and Glossary

Throughout this guide, there are several concepts that share similarities but have distinct differences that are crucial to differentiate and understand:

## What is an Urban Forest?

An Urban Forest includes the forest resources available in urban areas, offering various benefits that contribute to the overall quality of life in cities. Urban forests include public and private properties, public community spaces, street trees, and yards (Dwyer et al., 2003; City of Issaquah & Forterra, 2020; City of Seattle, 2020).

## And how is that different from Urban Forestry (UF)?

Urban Forestry refers to the planning and management of trees and forest resources in and around urban community ecosystems, including street trees and urban woodlands. Urban Forestry also recognizes the physiological, sociological, economic, and aesthetic benefits associated with trees (Konijnendijk et al., 2006; Konijnendijk et al., 2005).

Local governments can implement Urban Forestry Programs **(UFP)** and Urban Forest Management Plans **(UFMP)** to manage forest resources in cities. UFPs and UFMPs can establish clear goals, activities, financial resources, and outcomes to start, grow, and maintain a sustainable urban forest.

Other key concepts and abbreviations included in this report:

- **BIPOC:** Black, indigenous, and people of color
- **CBO:** Community-based organizations
- **ECCC:** Energy and Climate Change Chapter of the City of Lakewood's Comprehensive Plan
- **GIS:** Geographic Information System
- **M&E:** Monitoring and Evaluation
- **ROW:** Right-of-Way
- **UF:** Urban Forestry
- **UFMP:** Urban Forest Management Plan
- **UFP:** Urban Forestry Program
- **UTC:** Urban Tree Canopy or canopy cover refers to the percentage of the city that's covered by trees from an aerial view.

# Executive Summary

## Introduction

The City of Lakewood updated the Energy and Climate Change Chapter (ECCC) of its Comprehensive Plan in 2021. The ECCC outlines specific goals and tasks to address climate change impacts, energy use, and greenhouse gas emissions. The city's ECCC update includes two main urban forestry goals: (1) increasing Lakewood's urban tree canopy cover from 26% to 40% by 2050 and (2) developing and promoting an urban forest management plan in the near-term (i.e., beginning between 2021 and 2025). This report provides an urban forestry program (UFP) implementation guide for the City of Lakewood.

## Research Question and Methods

To best develop an implementation guide for the City of Lakewood, we aimed to answer the following question:

> How should the City of Lakewood structure a UFP to meet its environmental goals, considering existing city frameworks, climate change implications, and financial constraints?

We used a mixed methods approach for our research, using qualitative and quantitative data from sources in private, public, and nonprofit sectors, as well as academic papers. We primarily used benchmarking case studies conducted on three cities in western Washington state that have established UFPs. In addition to the case studies, we analyzed secondary data on the city's tree canopy and relevant urban forestry expenditures. We also conducted semi-structured interviews with key actors to understand how other cities implemented UFPs in Washington.

## Literature Review and Case Studies

Our literature review explores the importance of urban forestry and its impacts on climate, environment, and public health. The benefits of urban forests include heat mitigation, reduction in air pollution, energy savings, carbon sequestration and storage, biodiversity, stormwater management, and public and social support spaces. The literature review also provides an overview of best practices for tree selection, planting, maintenance, and community engagement approaches for the sustainable and equitable development of urban forests.

## Roots of Effective Urban Forestry Programs

Through our research, we identified three foundations of sustainable UFPs: comprehensive resource assessments, community engagement, and administrative capacity. We used these foundations as our case study objectives and further delineated them into seven criteria that we used to analyze the existing UFPs and provide recommendations for Lakewood. Table 1 summarizes our key findings across the three objectives and seven criteria.

*Table 1: Summary of Roots of Urban Forestry Program Analysis*

| Objectives | Criteria |
|---|---|
| **Resource Assessment:** UFPs typically begin by conducting a comprehensive resource assessment that includes gathering data on the urban forest's general and specific conditions. | **Tree Population Assessment:** Lakewood contracted a high-level analysis of the current tree canopy in 2022. However, many UFPs begin by conducting an additional on-the-ground assessment of current tree health before restoration, maintenance, or planting. |
| **Community Engagement:** Community participation is essential to the sustainability of UFPs as they rely on ongoing community support and involvement to thrive. | **Strategies:** The city can utilize many community engagement strategies to implement and manage a UFP, including hosting community meetings and conducting public surveys to gather feedback. Many cities construct volunteer systems, including a Forest Stewardship Program, to train community members to lead volunteer activities. |
| | **Equity Considerations:** All three of our case study cities emphasized equity considerations as a critical focus for their UFPs, with a commitment to finding ways to engage diverse populations and address environmental justice. Our report offers various ways the city can implement an equitable UFP. |
| **Administrative Capacity:** Creating capacity within the current city organizational structure through advisory boards, staffing, and financial resources is common among UFPs. | **Plan Updates:** Most urban forest management plans are updated every three to five years. |
| | **City Departments:** Each of the case study cities houses its urban forestry program within a different department or departments, reflecting variations in organizational structure and priorities. All cities have either an advisory board or a commission, which can be essential to prioritizing UFP activities. |
| | **Staff:** Lakewood could consider hiring a full-time administrator, utilizing existing employees, or contracting with AmeriCorps to support the program. |
| | **Budget:** UFP expenditures vary depending on the size and scope of the program. Potential funding sources for UFP activities include:<br>• reallocated revenue from storm and surface water utility fees<br>• city Tree Fund<br>• general fund revenue<br>• government and nonprofit partnerships |

## Recommendations

Based on our analysis, we developed four recommended actions for implementing a UFP in the City of Lakewood.

### Recommendation 1:

Develop a mission, vision, and goals for urban forestry in the City of Lakewood.

We recommend the city develop mission and vision statements for urban forestry work. We have provided draft statements in Chapter 6 of this report. The city should also prioritize specific program goals and outcomes. We suggest the goals of forest health, tree population expansion, community engagement, equitable access to urban forest benefits, and sustainability.

### Recommendation 2:

Complete a comprehensive resource assessment and begin restoration practices in the city.

The city should complete a comprehensive resource assessment before beginning urban forestry fieldwork. A thorough, on-the-ground evaluation will provide the city with essential data on the health of the city's urban tree canopy. An ISA Certified Arborist should complete the assessment. We detail additional fieldwork steps in Chapter 6 of this report.

### Recommendation 3:

Develop a comprehensive community engagement strategy.

The city should develop a UFP that aligns with the interests and needs of Lakewood's community, as a successful UFP depends heavily on robust support and active participation from the people of Lakewood. We recommend three main strategies to involve the Lakewood community in developing and implementing an urban forestry program: hosting community meetings, launching public surveys, and constructing a robust volunteer system.

### Recommendation 4:

Create administrative capacity within the existing city organizational structure.

Based on the three case studies, Lakewood's current structure, and our research, we developed three alternative organizational structures the city can consider for carrying out UFP activities:

- Option 1: Develop a standalone Urban Forestry Advisory Board (UFAB) to oversee urban forestry activities in the city.
- Option 2: Lakewood's Parks and Recreation Advisory Board (PRAB) expands its responsibilities to include urban forestry priorities.
- Option 3: Hire a full-time program administrator instead of a standalone board or PRAB expansion.

Based on these organizational structures and the plan outcomes defined in Recommendation 1, we developed priorities and preliminary budgets for years one through five of the UFP.

This executive summary serves as a concise overview of our research, analysis, and recommendations. For a more comprehensive understanding and additional context, we encourage readers to refer to the full report. The full report provides an in-depth exploration of the findings and insights gathered throughout our research process.

# Chapter 1: Introduction

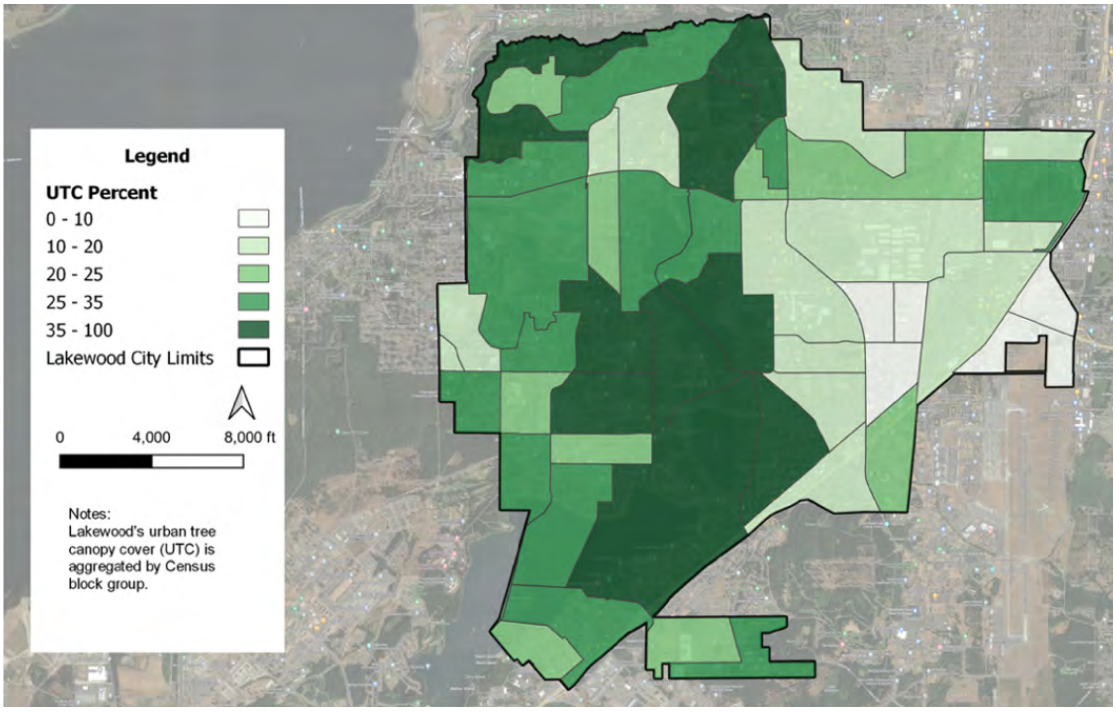
The City of Lakewood updated the Energy and Climate Change Chapter (ECCC) of its Comprehensive Plan in 2021. The ECCC outlines the city's specific goals and tasks to address climate change impacts, energy use, and greenhouse gas emissions. The city's ECCC update includes two main urban forestry goals: (1) increasing Lakewood's urban tree canopy cover from 26% to 40% by 2050 and (2) developing and promoting an urban forest management plan in the near-term (i.e., beginning between 2021 and 2025). In support of these goals, the city contracted the University of Washington Evans School Student Consulting Lab to develop this report, including an urban forestry program (UFP) implementation guide and preliminary budget for the first five years of official urban forestry activities. The following chapters include details on our research methods, findings, and recommendations for implementing a UFP in the City of Lakewood.

## 1.1 Background

Over the past several years, the City of Lakewood has actively worked towards achieving the goals outlined in its ECCC. In 2021, the city commissioned the Evans School Student Consulting Lab project titled *A Study on Climate Change Perceptions in Lakewood, WA.* The project focused on understanding climate change perceptions in the city and making recommendations for engaging citizens in climate change efforts (Thompson et al., 2022).

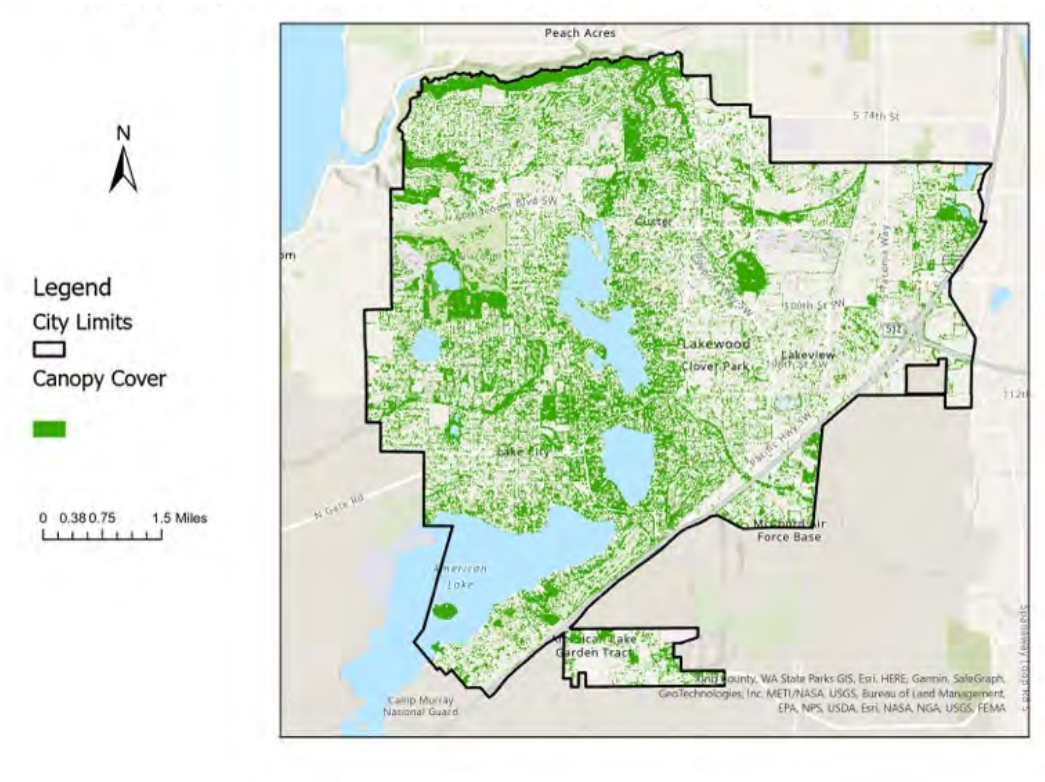
The city recently updated its municipal code related to preserving the city's urban tree canopy (UTC) and protecting significant trees. The Lakewood City Council adopted Ordinance 775 on November 7, 2022, and it went into effect on March 1, 2023. As part of this update, the city contracted PlanIT Geo to analyze the city's current UTC, which was estimated to be at 26.3%. Of the total UTC, 72% is on private land, and 28% is on public land (Peiffer et al., 2022). See Figure 1 for the distribution of UTC in Lakewood grouped by census blocks.

*Figure 1: City of Lakewood – Current Tree Canopy Distribution (PlanIT Geo, 2022)*



PlanIT Geo's analysis provides an aggregated view of the tree canopy data, using census blocks to simplify the data visualization and analysis (Peiffer et al., 2022). Figure 2 presents Lakewood's UTC using Google (n.d.) Insights Explorer data. Google's data offers a more detailed and granular depiction of the city's tree canopy compared to Figure 1. It provides precise information on the location of individual trees, allowing for a more comprehensive understanding of the distribution and extent of UTC in Lakewood

*Figure 2: City of Lakewood – Google (n.d.) Insights Tree Canopy Data*




The city set an ambitious goal to increase UTC from 26% to 40% by 2050, resulting in a 14-percentage point increase and 1,500 acres of new canopy. PlanIT Geo estimates $1.2 million in additional benefits over the next 25 years, including lower energy costs due to lower surface temperatures and decreased stormwater maintenance resulting from trees intercepting and storing runoff, thus reducing the burden on stormwater systems (Peiffer et al., 2022).

The updated tree ordinance includes new regulations on removing and maintaining significant trees throughout Lakewood, particularly the Oregon White Oak (Ordinance No. 775, 2022). The Oregon White Oak is the only oak native to the state of Washington and is considered a priority species for conservation and management by the Washington Department of Fish and Wildlife (WDWF, 1998). The new regulations are crucial for the city to maintain and increase its tree canopy due to the Oregon White Oak's high population in the area. As outlined in the ordinance, other allowable activities include removing diseased trees and trees that present an imminent threat to properties with an approved tree removal permit, trimming guidelines and uses for commercial, industrial, multifamily, institutional, or other developments (Ordinance No. 775, 2022).

The city established a tree fund to collect donations and penalty fees related to regulations outlined in the ordinance. Funds can be used for purchasing, planting, and maintaining trees, as well as other urban forestry-related activities such as education programs and tree canopy monitoring. The city sought community feedback through a public comment process during the ordinance development. The public comment process and the

city's dedication to maintaining and preserving trees throughout the city renewed community interest in a UFP in the city.

The City of Lakewood's initiatives, such as establishing a long-term UTC goal and implementing preservation guidelines, provide valuable insight and inform our urban forestry implementation guide. Through the efforts of elected officials, city staff, and the larger Lakewood community, the city is part of an active and ongoing effort to become a climate-resilient community.

## 1.2 Research Question

The City of Lakewood aims to establish a sustainable approach to preserve existing trees, increase the current tree canopy, and implement best practices in urban forest management. The city requested an initial five-year implementation guide and budget to achieve this goal. This report examines the city's organizational structure, including its capacity to undertake new initiatives and collaborate across departments, as well as relevant regulations, codes, and ordinances to inform the design of the implementation guide. Based on the City of Lakewood's goals, we developed the following research question to guide our work:

> How should the City of Lakewood structure an urban forestry program to meet its environmental goals, considering existing city frameworks, climate change implications, and financial constraints?

To help answer this research question, we identified the following sub-questions to guide our research and recommendations:

- What is the current status of the City of Lakewood's tree canopy? What are the current challenges and opportunities for improving the city's tree canopy?
- What are the best practices and necessary components for a UFP in the City of Lakewood?
- What are the costs associated with developing and implementing a UFP?

## 1.3 Client Objectives and Deliverables

The city seeks an in-depth report outlining the necessary components for implementing a UFP in the city. This report aims to provide actionable steps for the City of Lakewood to implement the program and a detailed understanding of the financial commitment required for the UFP's first five years. Based on the city's objectives and our research questions, this report provides the following deliverables:

- analysis of current tree canopy status in the City of Lakewood, produced in collaboration with the City of Lakewood
- recommendations on management, evaluation, equity, and community engagement to develop and maintain a UFP; and
- recommendations for UFP structure in the first five years of implementation, including staffing, function, budget, and revenue recommendations.

## 1.4 Report Structure

We divided the remainder of this report into five chapters:

**Chapter 2: Research Methods** provides a detailed explanation of our research approach and the various tools we used to address our research question.

**Chapter 3: Literature Review** provides an overview of the literature that informed our research and analysis, including the benefits of urban forestry and management best practices.

**Chapter 4: Case Studies** provides an overview of the case studies we conducted to examine existing UFPs and assess best practices.

**Chapter 5: Analyzing the Roots of Effective Urban Forestry Programs and Opportunities for Lakewood** provides an analysis of the city's current tree canopy, fieldwork, community engagement, monitoring, and budgetary considerations.

**Chapter 6: Urban Forestry Implementation Guide** details the proposed implementation details for the UFP, including recommended resource assessment, community engagement strategies, city structures, and financial estimates.

# Chapter 2: Research Methods

This chapter provides a detailed description of our research approach and the specific tools we used to answer our research question. We identified and analyzed qualitative and quantitative data from private, public, nonprofit, and academic sources through a mixed methods approach. The results from our research methods inform the analysis of the City of Lakewood's current canopy and context and the UFP implementation guide.

We applied diverse research methods to achieve our specific objectives. Our primary method was a benchmarking case study of Washington UFPs, specifically those in Seattle, Issaquah, and Vancouver. These case studies informed our analysis and recommendations for developing a UFP and estimating expenditures for the City of Lakewood. We also conducted a secondary analysis of tree canopy data and budget estimates produced by the City of Lakewood, nonprofits working in the environmental field, and the private sector. Finally, we conducted semi-structured interviews with key actors to understand other cities' processes for establishing their UFPs in the State of Washington.

## 2.1 Case Studies Approach

Several cities in Washington have implemented UFPs that are now at different stages of development. While some programs are still in their initial phases, others have progressed to more advanced stages of maturity. To design appropriate recommendations for Lakewood, we learned about how other cities are implementing their UFPs, how they got to where they are today, and the resources cities are investing in to take care of their public open spaces and tree populations. The case study cities were selected in consultation with our client.

We limited our case studies to western Washington State because of the shared environmental characteristics of the region and the framework provided by the Evergreen Communities Act and House Bill 1216. Therefore, all three cities are in the Pacific Northwest Region and share similar habitats and environmental characteristics. Each city is either in or near temperate rainforest ecosystems with common tree species like Douglas fir, Western Red Cedar, and Western Hemlock (Washington Forest Protection Association, n.d.).

We also based our selection on each city's performance in renowned indexes such as the American Forests' Tree Equity Score and the Arbor Day Foundation's Tree City recognition. The Tree Equity Score is a tool that measures "whether there are enough trees in a neighborhood for everyone to experience the health, economic and climate benefits that trees provide. Scores are based on tree canopy, surface temperature, income, employment, race, age, and health factors" (American Forests, 2021a, What do the Scores Mean section). Arbor Day's Tree City recognizes cities based on four core standards: 1) form a tree board or department; 2) establish a tree care ordinance; 3) maintain a community forestry program with an annual budget of at least $2 per capita; and 4) proclaim and observe Arbor Day. All four standards require a strong commitment to tree preservation (Arbor Day Foundation, n.d.-a).

Our three case study cities, Issaquah, Vancouver, and Seattle, have Tree Equity Scores of 88, 78, and 91, respectively (American Forests, 2021b). Additionally, these cities have been recognized as Tree Cities for 29, 33, and 37 years, respectively (Arbor Day Foundation, 2021). Vancouver and Seattle have received Arbor Day's Growth Awards for 22 years. The Arbor Day Growth Award recognizes cities for high levels of work in annual activities in five categories that support sustainable programs and community engagement: building the team, measuring trees, planning, performing the work, and having a community framework (Arbor Day Foundation, n.d.-b). In addition to the cities' performance on the Tree Equity Score and their recognition as a Tree City, we looked at each city's budget and environmental context to ensure each offered appropriate comparisons or context to the City of Lakewood.

Evaluating other UFPs was essential to answering our research question and fulfilling our objectives, especially in developing the program structure and determining recommendations regarding staff, budget, and revenue. The case studies were particularly informative about plan structure, community engagement, budgetary considerations, maintenance guidelines, and evaluation approaches.

The case studies analysis was guided by three overarching objectives: resource assessment, community engagement, and administrative capacity. We defined these three objectives through our interview with the Washington Department of Natural Resources (DNR). DNR expressed that these three objectives were essential to effective and sustainable UFPs. Using Lakewood's priorities, we further delineated these objectives into seven criteria, as seen in Table 2. The following definitions of objectives and criteria are the frame for the case study analysis in Chapter 4.

*Table 2: Case Studies Objectives and Criteria*

| Objectives | Criteria |
|---|---|
| Resource Assessment | Tree Population Assessment |
| Community Engagement | Strategies |
| | Equity Considerations |
| Administrative Capacity | Plan Updates |
| | City Departments |
| | Staff |
| | Budget |

## Resource Assessment

This objective refers to identifying the existing tree canopy within city limits and assessing the health conditions of the tree population. The criterion under this objective is *Tree Population Assessment*, which refers to the process of a specialist assessing the conditions of the existing tree population. A comprehensive tree assessment is a foundation for designing management steps for a UFP. The assessment is foundational because it is the tool that allows the city to know where to prioritize restoration and maintenance to keep trees healthy and ensure suitable planting conditions for new trees.

## Community Engagement

This objective refers to the public's role in developing and managing a UFP. The first criterion is *Strategies,* which refers to participation methods and spaces cities use to integrate the community into urban forestry efforts. The second criterion is *Equity Considerations*. We decided to include equity as a criterion because one challenge of urban forests is that tree population tends to be more prominent in affluent areas and smaller in low-income and vulnerable neighborhoods (American Forests, 2021b). Therefore, we consider equity an essential piece of community engagement, especially considering our use of the Tree Equity Score to this report.

## Administrative Capacity

This objective refers to the indicators, organizational structure, budgets, and human resources that are necessary to implement and sustain a UFP. The first criterion, *Plan Updates*, focuses on the frequency and process of revising urban forest management plans in cities, including the involvement of stakeholders. The second criterion is *City Departments,* which refers to the position of the UFP within the city's organizational

chart, including the department responsible for managing and overseeing the program. It also considers the presence of accountability mechanisms like volunteer advisory boards or city commissions. The third criterion is *Staff*, which refers to the number of Full-Time Employees (FTE) working on the UFPs and their specific responsibilities. The aim of the Staff criterion is to understand the amount of staff work required to implement a UFP and how cities navigate staffing as the program grows. The final criterion is *Budget*, which refers to the program's allocated resources and the distribution of those resources to program activities. This criterion also outlines funding sources cities use to fund their UFPs, including fees, grants, and taxes.

Chapter 4 analyzes each case study through the lens of the objectives and criteria defined in this section and summarizes the results for each case.

## 2.2 Secondary Analysis of Data

We used data produced by leading organizations working in urban forestry and technological tools to understand Lakewood's current canopy coverage, including where the city needs to prioritize increasing the canopy in the future. The analysis included:

- an assessment of the canopy analysis completed by PlanIT Geo for the City of Lakewood's tree ordinance update, which includes city demographics, current canopy coverage, and recommended planting locations;
- a comparison of Google Insight Explorer canopy data and PlanIT Geo's to ensure the highest accuracy for the canopy analysis;
- a review of American Forests' data, including the Tree Equity Score, to understand Lakewood's challenges in terms of equitable distribution of the benefits of their urban forest; and
- A review of budgetary information from Lakewood's 2023-2024 Biennial Budget to estimate maintenance costs, supplies, and personnel requirements for the UFP.

Chapter 5 in this report focuses on analyzing the outlined quantitative and qualitative data, which informed our recommendations for the city.

## 2.3 Semi-structured Interviews

We conducted four semi-structured interviews with experienced professionals who work with and in cities to design and implement UFPs. The interviewees were two Washington Department of Natural Resources (DNR) staff members, the City of Vancouver's Urban Forester, the City of Issaquah's Parks and Community Services Director, and Forterra's Managing Director for Restoration and Stewardship. These interviews informed our recommendations for managing and restoring land and existing trees in urban settings. We also identified priorities and important considerations for the early stages of a UFP, such as community engagement approaches and determining where to house the program within the city. These interviews gave us insight into budgeting considerations and cost estimates for UFP activities.

We contacted UFP professionals in Issaquah and Vancouver, as listed on their websites and online program materials. In consultation with our client, we prioritized those two cities based on their potential to inform the program's initial stages and budgeting. Specific questions around program expenditures were central to our decision to conduct the interviews and to prioritize Issaquah and Vancouver. The City of Seattle's budget is significantly larger than what Lakewood might consider at this stage. Given time limitations, the scope of this report, and client preferences, this project does not include any outreach to Lakewood's community. However, community outreach and spaces for public participation are central to our recommendations, as discussed in Chapters 5 and 6.

## 2.4 Limitations

Given the fixed timeline of five months for this project, certain methods that could have been beneficial in the development of Lakewood's UFP, like semi-structured interviews with community members, were not included. Getting input from the community is a critical element for developing, implementing, and sustaining a UFP. In lieu of including this method in our research design, we supported our analysis with relevant survey data obtained from Lakewood's community on climate change perceptions (Thompson et al., 2022). Additionally, we recommend in Chapter 6 that the City of Lakewood collect additional input from the community.

Another significant limitation was the lack of a comprehensive tree assessment containing specific information on the condition of the existing tree population, including invasive species presence and forest health. Conducting a tree assessment is a crucial first step in implementing an effective UFP. Therefore, our recommendations in this report will be subject to the findings of a future tree assessment that can provide accurate information on maintenance needs in Lakewood. Without the assessment, we estimated budgetary expenses and developed maintenance goals and indicators based on the case studies, Lakewood's context, and resources available to Lakewood. Finally, we relied on data produced by PlanIT Geo, American Forests, and Google's Environmental Insights Explorer to estimate management units and tree conditions.

# Chapter 3: Literature Review

We began our research by conducting an in-depth literature review to provide a comprehensive understanding of urban forestry in the context of sustainable urban development. This chapter is comprised of three main parts:

1. a broad introduction to urban forestry, including its definition and fundamental concepts;
2. an exploration of the benefits of urban forestry from three critical perspectives: climate impacts, environmental impacts, and public health impacts, as well as how equity should be considered through all these lenses; and
3. a synopsis of best practices in urban forestry, including:
    - basic principles
    - a comparison between adaptive management and traditional ecosystem management
    - effective community engagement strategies

This literature review aims to provide a comprehensive understanding of these interrelated themes to establish a solid foundation for implementing a successful and sustainable UFP for the City of Lakewood.

We used keywords like “urban forestry,” “urban forestry management,” and “ecosystem management” to find scholarly articles in the University of Washington online library holdings and Google Scholar to inform our research, as well as consulted references from other cities’ UFPs. In Chapter 4, we outline further analysis of UFP best practices by reviewing the three case studies in detail.

## 3.1 What is an Urban Forest?

There are various definitions for the concepts of Urban Forests and Urban Forestry. The Green Issaquah Partnership indicates: “An urban forest encompasses all the trees in a defined urban area, such as a city” (City of Issaquah & Forterra, 2020, p. 6). We can broadly define urban forests as encompassing a wide range of tree populations, including those situated within municipal parks, along metropolitan roadways, and in residential zones, both in private yards and communal living spaces. Urban forests also extend to trees present in public community areas, such as libraries and public gardens, as well as in greenways, wetlands, river corridors, nature preserves, and natural areas. Tree shelter belts and working trees at industrial brownfield sites also contribute to the overall concept of urban forests (City of Issaquah & Forterra, 2020). Seattle’s Urban Forest Management Plan states that Seattle’s urban forest consists of the trees and associated understory plants in the city, as well as the ecosystem services that they provide. The urban forest extends across public and private properties and rights-of-way, including trees in yards, parks, natural areas, and along streets (City of Seattle, 2020). In general, we define an Urban Forest as the collection of trees, vegetation, and green spaces within a city or urban environment that contribute to the development of the overall ecosystem, providing critical environmental, social, and economic benefits to communities.

## 3.2 The Importance of Urban Forestry

Urban Forestry is the planning, managing, and maintaining of urban forests to optimize their benefits for the community and the environment. The City of Vancouver (2007) has defined urban forestry in its Urban Forestry Management Plan as the study and management of the city’s urban forest, which is comprised of the trees, shrubs, and other vegetation in parks, along streets, in yards, on unbuilt properties, and in urban natural areas. The presence of an urban forest provides significant benefits to every city inhabitant. Incorporating trees into a city substantially enhances communities’ overall quality of life and vitality. Urban trees can also provide various

environmental benefits, such as mitigating air pollution, reducing greenhouse gas emissions, and mitigating stormwater runoff (City of Vancouver, 2007).

Nitoslawski et al. (2019) state that the benefits of urban forests include, but are not limited to, heat mitigation, reduction in air pollution, energy savings, carbon sequestration and storage, biodiversity, stormwater management, and public and social support spaces. Urban forests also offer a sense of place and belonging, which is vital for the general well-being of people living in cities (Nitoslawski et al., 2019). Urban forestry aims to promote the health and resilience of urban ecosystems while enhancing the quality of life for residents and addressing issues related to climate change, air and water quality, and public health. The following sections analyze the impacts of urban forestry, specifically through the lenses of climate, environment, and public health.

## Climate Impacts

Climate change is already affecting the Pacific Northwest and, as a result, the City of Lakewood. Climate change has significant implications for UFP implementation in Lakewood, particularly considering the increased intensity and frequency of heat waves and other extreme weather events, such as flooding (Snover, 2013). Scientists expect the average temperature in the Puget Sound Region to increase by 5.0°F to 8.6°F by the end of the 21st century, resulting in an estimated average between 57.4°F and 61.0°F. The increase is in relation to the historic average temperature of 52.4°F from 1971 to 2000 (Rutledge & Brandt, 2022). Littell et al. (2009) report that Washington State will have increasingly hot summers with decreased rainfall, potentially leading to a significant increase in the area burned in forest fires, from 425,000 acres annually on average from 1916 to 2006 to an increase of an average of 1.1 million by 2040. The increase in temperature will result in more air pollution from fires, along with other heat-caused air pollution. Increased air pollution and extreme heat are predicted to cause over 100 deaths per year in Seattle alone in 2025 (Littell et al., 2009). Air pollution unfairly impacts the most disadvantaged communities; if left unchecked, these climate impacts will threaten Lakewood's poorest and most vulnerable population (WA DOH, n.d.).

Urban forests play a critical role in adapting to and mitigating the impacts of climate change for future generations. As humans continue to emit more greenhouse gases (GHGs), GHG concentrations in the atmosphere are rising, and the atmosphere is trapping more heat. Urban forests sequester carbon dioxide, removing it from the atmosphere, which is essential to fighting climate change. Trees act as natural carbon sinks by absorbing carbon dioxide from the atmosphere and storing it in their biomass (USDA, 2018). Nowak & Crane (2002) argue that increasing the number of trees could lead to a slower accumulation of atmospheric carbon, which would lessen the warming effect of climate change. Urban forests have an average carbon storage density of 25.1 tC/Hr (a ton of carbon per hectare) throughout the United States. UFPs in the Pacific Northwest are known to sequester even more carbon than the national average, making the area uniquely equipped to combat climate change (Nowak & Crane, 2002).

One of the most essential benefits of urban forests is their climate change adaptation capabilities. As previously mentioned, two of the leading climate change threats facing the Pacific Northwest are increased temperatures and an increased number of severe weather events. Increased temperatures leave urban communities especially vulnerable to the heat island effect, where impervious, dark surfaces (i.e., streets and buildings) trap heat, creating higher temperatures in the surrounding area. Trees provide shade over urban areas and create a natural cooling effect through evapotranspiration that can reduce temperatures by 1°C (Kurn et al., 1994). This drop in temperature can decrease energy usage, reduce strain on the power grid during heat waves, and extend the life of street pavement (Safford et al., 2013). Lower-income neighborhoods often have less tree coverage and are more susceptible to heat islands and their adverse effects (Subramanian, 2016). Utilizing urban forestry

to alleviate heat stress can particularly benefit marginalized communities that bear the disproportionate impact of urban heat islands.

Adverse weather effects from climate change will increase flooding in the Puget Sound area (Littell et al., 2009). Lakewood is currently engaged in evaluating strategies the city could use in the event of a 100-year flood in the area. Urban forests can reduce the intensity of these floods in multiple ways. Tree canopies create a barrier that rain must pass through before hitting the pavement of a road and going into the city's drainage system (Kurn et al., 1994). This delay helps relieve the sewers and the soil from having to absorb more water quickly. The same effect happens with fallen branches and leaves that trees leave behind: rain is further delayed from running into the soil, which reduces flooding. Trees also reduce storm runoff by absorbing water into their leaves, bark, and roots (Fazio, 2010). An urban forest can even reduce the erosion and effects of high winds during storms (Safford et al., 2013). These benefits will reduce the costs associated with more frequent severe weather events due to property damage, which poorer communities would struggle to pay.

## Environmental Impacts

Not only do urban forests provide communities with climate change protection, but they also create habitat for local wildlife and promote biodiversity. Habitat degradation is a significant cause of biodiversity loss across the globe (Roeland et al., 2019). St. Clair & Howe (2009) argue that urban forests are an opportunity to connect the old-growth forests of the Pacific Northwest with different, more urban regions. Creating habitat through an UFP provides space for biodiversity to thrive. Biodiversity is nature's primary tool against disasters and other environmental shocks. Maintaining high biodiversity leads to a more resilient ecosystem, thus leading to a healthier environment overall (St. Clair & Howe, 2009). As climate change continues to stress local environments at higher rates, preserving the Pacific Northwest's biodiversity is more important than ever.

Fragmentation is one of the main challenges that wildlife and plant life face when creating a healthy ecosystem. Fragmentation occurs when the habitat is segmented into small plots of land that can be very far away from each other. The smaller the land fragment or the farther away from another habitat fragment, the more likely it is that biodiversity loss will occur in that land fragment (Fahrig, 2003). When land is fragmented, species often struggle to find mates or suitable lands for their offspring to survive. Most species thrive if they can travel over land; this includes plants spreading seeds and animals finding food and partners. Therefore, an urban forest can decrease the spaces between habitat fragments and increase the habitat size (Dwyer et al., 1992).

Implementing a UFP allows the City of Lakewood to adopt an adaptive management strategy for improving the local ecosystem's health. Ecosystems in urban areas typically require more resources to carry out their natural processes. For instance, very few trees grow naturally in urban areas without first being planted. Therefore, old-growth forests will require adaptive (or active) management techniques to be replenished, enabling those forests to continue to provide ecosystem services to the urban areas and the wildlife in the greater Pacific Northwest. Urban areas are subject to invasive species choking out native plants and preventing them from growing new natives. Adaptive management techniques involve removing harmful invasives as well as planting and maintaining native trees like Douglas-firs and Gary Oaks.

## Public Health Impacts

Urban forests have many public health benefits including mental health benefits, air pollution filtration, and even increased public safety. Trees can naturally filter the air around them by absorbing multiple hazardous air pollutants. Such hazardous air pollutants include ground-level ozone, nitrogen oxides, sulfur dioxide, and particulate matter (Zupancic et al., 2015). These pollutants are classified as criteria air pollutants under the Clean Air Act, which the Environmental Protection Agency regulates. These pollutants can cause many adverse

health effects, such as respiratory illness, asthma, heart disease, and even death (Axelrad et al., 2013). Urban areas are exposed to a higher concentration of these air pollutants than other more rural areas (Zupancic et al., 2015). Lower-income neighborhoods in the City of Lakewood face a higher risk of exposure to air pollutants. The Washington Department of Health's Health Disparities Map categorizes most of Lakewood under the highest risk category for health disparities, including air pollution (WA DOH, 2023). Urban forests create a natural filtration system that helps reduce the risk of exposure. One tree in an urban area can filtrate out 50 pounds of air particulates in a single year (Dwyer et al., 1992).

There is overwhelming evidence that green spaces and urban forests positively affect mental health (USDA, 2018). Exposure to nature has been shown to leave people feeling less stressed and less depressed overall. Living near natural areas also encourages more outside physical activity, leading to a healthier life and improving mental health. Natural spaces have also been shown to help prevent children from developing learning disorders, such as attention deficit hyperactivity disorder. Exposure to nature helps reduce stress, leading to higher memory retention and an increased attention span. Urban forests can help people manage stress, anxiety, and mood disorders while providing a recreation space for increased physical fitness (USDA, 2018). It is important to recognize that due to the unequal distribution of current green spaces, lower-income communities reap fewer benefits than high-income areas (Subramanian, 2016).

Urban forestry can also increase public safety by increasing an area's sense of community. Natural spaces tend to increase property values and the desirability of living in specific neighborhoods. This allows for more resources for the community and for the green space to be well maintained. As mentioned before, urban forests also provide recreational areas for people to experience nature. All this feeds into a sense of community which leads to more public safety (Brunson, 1999).

## 3.3 Best Practices

This section expands on best practices for urban forestry management from the perspective of academic literature, highlighting general strategies and approaches that ensure sustainable and equitable development of urban forests. We have organized the discussion into three main parts: firstly, an overview of basic best practices that encompass tree selection, planting, and maintenance; secondly, a comparison between adaptive management and traditional ecosystem management, detailing their respective advantages and limitations in the context of urban forestry; and finally, a summary of community engagement best practices, emphasizing the importance of inclusive and participatory approaches to urban forest management. This section aims to provide a general yet comprehensive understanding of some of the most effective methods for managing urban forests and fostering their long-term health and resilience by examining these key elements.

The specifics of urban forestry management or how to implement a UFP are addressed in our case study analysis in Chapter 4 instead of this section.

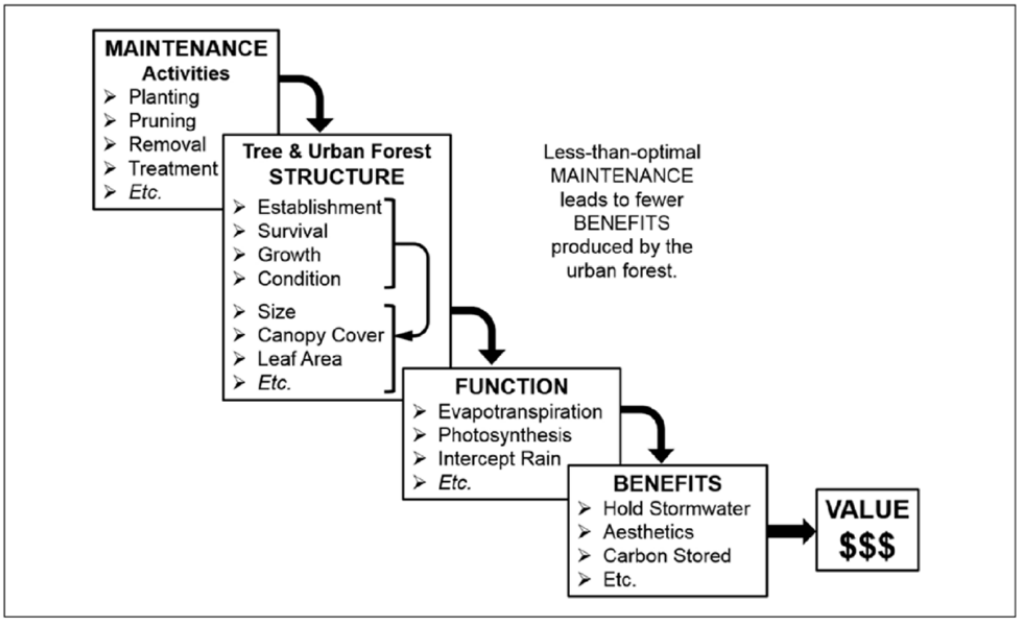
### General Best Practices

Tree selection is a fundamental component of urban forestry management. The effectiveness of urban forestry hinges on the trees' ability to perform as designed, even in stressful environments (Sæbø et al., 2003). Consequently, the selection and utilization of appropriate tree species is an essential element in an approach focused on enhancing the quality of and reducing expenses associated with establishing and managing urban green spaces. Sæbø et al. (2003) identified several criteria for the selection of trees for urban forestry. Among those, the basic properties of the trees are (1) climate adaptation; (2) resistance to diseases; and (3) large phenotypic plasticity in the plant materials. Specific properties related to trees in urban settings are (1) aesthetic characteristics; (2) social factors; (3) root quality; (4) growth potential and form; (5) wind resistance; (6) drought

resistance; (7) resistance to breakage of limbs and (8) tolerance of air pollution (Sæbø et al., 2003). Equally crucial in urban forestry management is the implementation of proper tree-planting techniques.

Finally, having solid tree maintenance strategies directly impacts the tree structure, which in turn impacts the functions and benefits provided by the urban forest. Implementing a regular maintenance program that includes watering, pruning, mulching, and monitoring for pests and invasive species can prolong the life of trees and maximize their benefits to the urban environment. Vogt et al. (2015) produced Figure 3 to demonstrate how maintenance is linked to the benefits and costs of trees, which concludes that less-than-optimal maintenance may lead to decreased benefits produced by the urban forest.

*Figure 3: The Logic of Tree Maintenance (Vogt et al., 2015, p. 295)*




Vogt et al. (2015) also concluded that in the initial stages of a tree's existence, specifically during the establishment and immature phases, it is crucial to provide sufficient maintenance to ensure its early survival and integration within the urban environment. As the tree matures, the focus of maintenance shifts towards prolonging its life span and averting potential collapse, which can effectively postpone the costs associated with tree removal (Vogt et al., 2015).

## Adaptive Management vs. Traditional Ecosystem Management

When discussing best practices in urban forestry, an important distinction is the difference between adaptive and traditional ecosystem management. Historically, formal management approaches to valuing the natural world were based solely on commodities like timber and fish until the late 1800s. At that time, analysts began to include the intrinsic value of nature as a consideration (Robbins et al., 2014). To correct the depletion of natural resources, the United States government adopted what is now called a "traditional" approach to protect the natural world. This traditional approach led to preservation efforts, such as establishing the first national parks. The new management practice was focused on the preservation of the natural world and conserving resources for future generations. Conservation marked the beginning of government consideration regarding sustainability. Historical conservationist Gifford Pinchot described conservation as "the greatest good for the greatest number" (Robbins et al., 2014, p. 70).

A significant aspect of conservation and preservation involves leaving nature in its untouched state, free from human intervention. The issue is that humans, as a highly impactful species, have already made substantial

impacts on most of the land, altering it from its natural state (Robbins et al. 2014). The concept of adaptive management stems from the idea that effective ecosystem management involves more than just extracting necessary resources or simply leaving land unaltered. It emphasizes the importance of monitoring, planning, and implementing measures to restore and maintain the health of the land even after humans have altered it (Haney & Power, 1996).

In urban areas, the need to actively maintain the land becomes even more crucial due to the extensive alterations that occur to the natural environment. Native ecosystems in urban settings often face challenges that they may not be able to overcome without intervention and assistance. Therefore, it is essential to implement measures to support and enhance urban ecosystems, ensuring their sustainability and resilience in the face of urbanization and human activities. Adaptive management is described as “learning by doing”. It is the process of learning from the ecological, socioeconomic, institutional, and cultural issues of an area and developing a plan to address those issues (Haney & Power, 1996). The plan to address these issues is put in place, evaluated, changed, and re-implemented. Evaluation and adaptation are at the heart of this process and are directly related to successful practices in urban forestry. Adaptive management provides cities with a framework to evaluate the existing health of their ecosystems and tree canopy, enabling them to develop strategies for maintaining and enhancing a healthy urban environment.

## Community Engagement Best Practices

Community engagement is essential in developing and implementing a UFP. The City of Issaquah and Forterra (2020) state in the Green Issaquah Partnership that the program’s success greatly depends on the engagement and endorsement of the public. They argue that creating a program that resonates with and caters to the needs and interests of the community it serves is essential. They also estimate that if every Issaquah resident contributed just 2.5 hours over the course the 20-year program, the city would achieve its community engagement and restoration goals, illustrating the importance of community engagement. The City of Vancouver (2007) also mentions in its UFMP that the successful implementation of their plan requires broad support and participation from diverse segments of the community. Vancouver specifically states that property owners, business owners, and neighborhoods can all contribute to the realization of the goals of the plan. Property owners can strategically plant new trees and properly maintain trees to maximize benefits. Business owners can sponsor local tree-planting projects and encourage their employees to participate in volunteer activities. Neighborhoods can help educate people about the benefits of trees and proper maintenance practices while coordinating neighborhood tree-planting projects. Throughout the various stages of development, the input and feedback from residents, forestry experts, and business stakeholders played a significant role in shaping the goals and strategies for Vancouver’s UFP (Vancouver, 2007).

Scholars agree with the importance of community engagement in UFPs. Campbell-Arvai and Lindquist (2021) support the significance of community engagement in the development and long-term support of urban green spaces and green stormwater infrastructure. Similarly, Morgan and Ries (2022) highlight the role of community involvement in promoting tree survival and sustained stewardship, ultimately leading to the long-term benefits of increased canopy coverage. Furthermore, Nitoslawski et al. (2019) emphasize the importance of smart city trends and technologies in enhancing urban forest management and involving various stakeholders, including governmental authorities, non-governmental organizations, businesses, citizens, and local associations.

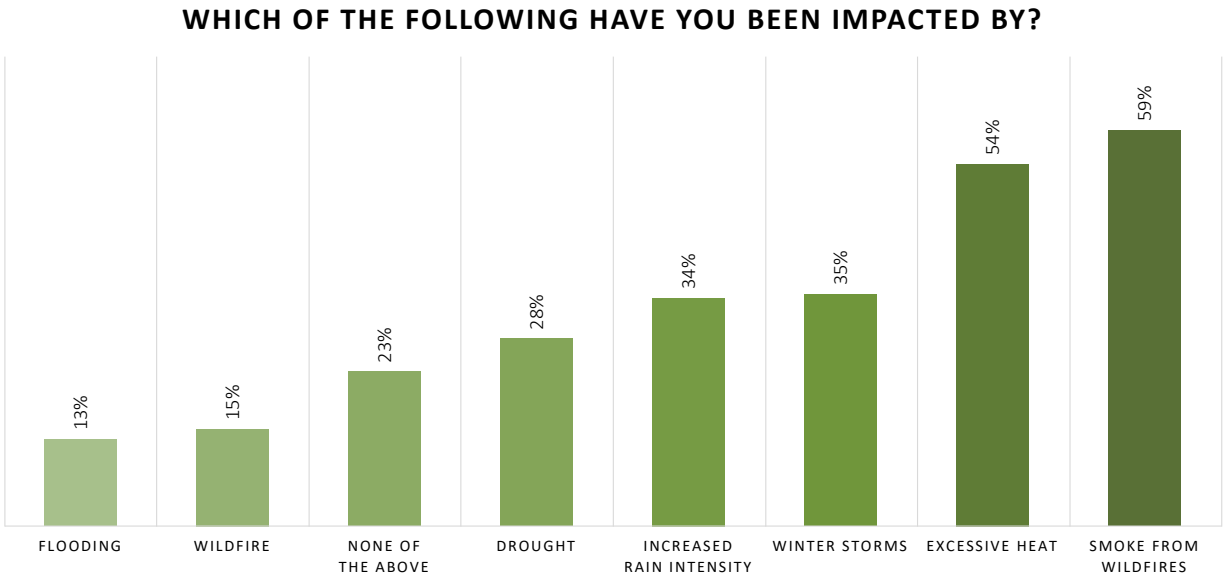
Cities must find proper motivating factors to encourage UFP involvement from community members. Morgan & Ries (2022) found that people love trees for various reasons, including the aesthetic appeal, environmental contributions, and health benefits of trees. Therefore, emphasizing these motivating factors in marketing and outreach efforts is crucial to engage community members in tree-related initiatives.

## Lakewood's Community Engagement Research

In 2022, the Evans School Student Consulting Lab produced a report titled *A Study on Climate Change Perceptions in Lakewood, WA*. This report aimed to help the city improve its communication and outreach efforts regarding climate change by exploring how residents engage the issue and understanding their primary concerns and expectations regarding the city's actions. We reviewed this report to gain insight into the recommendations for improving communication with Lakewood's residents regarding climate change. We aim to incorporate these suggestions into our community engagement recommendations for implementing a UFP.

The report indicates that among the weather events that may have the most impact on the lives of residents, "smoke from wildfires" (59%) and "excessive heat" (54%) are two extreme weather events that residents in Lakewood are concerned about the most, as shown in Figure 4 (Thompson et al., 2022). These results suggest that explaining the benefits of urban forestry to reduce those weather events may help attract the community's support.

*Figure 4: Lakewood Climate Survey Response (Thompson et al., 2022).*




The report also provided several recommendations for governmental communication and outreach. Firstly, governmental discourse on climate change should emphasize the benefits of potential climate initiatives and educate the public about feasible lifestyle changes, giving special attention to the simplest and most accessible ones for everyday citizens. Secondly, the government should establish communication strategies that recognize people's concerns and associate them with specific actions at the local level. Thirdly, employing clear language that firmly anchors the city's climate-related communications in scientific resources may enhance residents' faith in the city's reliance on credible sources for climate-related decision-making. Lastly, future climate change public perception studies should not only inquire about respondents' sources of climate information but also seek to identify their most trusted sources (Thompson et al., 2022).

For outreach and equity consideration, the report highlighted several recommendations for the city to consider during community engagement, including but not limited to the following:

1. Use a more personal approach (such as canvassing) and offer incentives for engagement (such as gift cards);
2. Continue to provide the primary non-English languages spoken in Lakewood with translations in addition to Spanish and Korean;

3. Consider capitalizing on all existing relationships the city maintains with individuals or organizations representing or serving these populations;
4. Have one-on-one conversations with community members;
5. In the engagement process, the City of Lakewood should acknowledge the historical relationship between the government and these communities;
6. Provide compensation to community members who give their time, effort, and knowledge in the City's outreach process; and
7. Contract community-based organizations (CBOs) that 1) are in neighborhoods of interest, 2) serve Lakewood's low-income and BIPOC residents, or 3) represent the needs of residents with marginalized identities. (Thompson et al., 2022, p. 59).

## 3.4 Literature Review Summary

This chapter presents an in-depth literature review using the University of Washington online library and various cities' UFPs. Our goal was to establish a general understanding of urban forests, emphasize the significance of urban forestry, and outline best practices for urban forestry management.

First, based on the definition provided by other cities' UFPs, we defined "urban forest" as the collection of trees, vegetation, and green spaces that exist within a city or urban environment that contribute to the development of the overall ecosystem, providing critical environmental, social, and economic benefits to local communities.

We also utilized scholarly articles from the University of Washington online library and Google Scholar to carry out an in-depth exploration of the benefits provided by Urban Forestry. Specifically, we discovered that urban forests play an important part in climate change adaptation capabilities and create habitat for local wildlife, thereby fostering biodiversity. Urban forests also absorb multiple hazardous air pollutants to generate positive effects on people's both physiological and psychological health, while also nurturing a strengthened sense of community cohesion.

Finally, we summarized several overarching practices that could improve urban forestry management. These include the selection and deployment of appropriate tree species, the implementation of effective tree maintenance strategies, the benefits of employing adaptive management in an urban forestry context compared with traditional ecosystem management, the importance of community engagement, and some general practices. We also summarized previous studies on the design of Lakewood's community engagement strategies.

The next chapter presents a detailed analysis of existing UFPs in Issaquah, Vancouver, and Seattle.

# Chapter 4: Case Studies

We reviewed best practices and strategies in urban forestry from three other Washington cities to develop a UFP implementation guide for the City of Lakewood that maximizes benefits for its citizens and creates the healthiest urban forest possible. In this chapter, we summarize UFP practices in each city to determine the most essential implementation considerations for Lakewood.

The three cities we selected for our research were Issaquah, Vancouver, and Seattle, Washington. Each city's UFP is at a different stage, meaning each is more or less advanced in reaching its ultimate objectives. The differences in size and scope, as well as the variation in local government organizational characteristics and budget size, were instrumental in understanding the possibilities, costs, and benefits of implementing a UFP, as well as the main priorities during implementation.

We analyzed each city against three objectives and seven criteria as explained in Chapter 2:

- Resource Assessment: Tree Population Assessments
- Community Engagement: Strategies and Equity Considerations
- Administrative Capacity: Plan Updates, City Departments Involved, Staffing, and Budget

This chapter, along with the benefits of UFPs outlined in the literature review, is central to the recommendations provided in Chapter 6.

### *Forterra*

The Green Cities Partnership is a key factor in understanding the organization and implementation of the UFPs in Issaquah and Seattle. Forterra (n.d.-b) established the "Green City Partnerships" program in 2004 to address the need for more proactive efforts to maintain urban parks and natural areas. During our interview with Forterra's Interim Managing Director, we learned that the connection between the Green Cities Partnerships and Forterra's mission is that "Forterra was thinking about broader sustainability issues – how people were living in cities and towns […] Forterra realized cities didn't have resources to do broad assessments of city tree canopy (inside and outside of parks)". This program created a network of cities dedicated to protecting forested parks, natural areas, and communities in Washington State. Today, the network contains a total of 14 Green Cities, logging over 115,000 volunteer hours at more than 1000 events each year. The goal of this network is to improve quality of life and enhance forest benefits in cities by restoring forested parks and natural areas, galvanizing an informed and active community, and ensuring long-term sustainable funding and community support. Forterra currently works closely with the 14 Green City municipalities to develop achievable goals, shared visions, long-term plans, and community-based stewardship programs to care for the valuable forests and natural areas in urban environments. Forterra also supports this network by hosting annual summits and quarterly meetings to exchange ideas and offer solutions.

Forterra's Green Cities Department has historically supported all Green City Partnerships and worked to keep all partnerships connected through the Green Cities Network (Forterra, n.d.-b). However, within the last few years, Forterra has started to shift its organizational priorities. During our interview with Forterra, we learned that the organization is currently assessing whether to pursue expansion of the Green Cities initiative or to prioritize existing Green Cities and ensuring the long-term effectiveness of their urban forestry efforts. We discuss the implications of this development in our Partnership Guide in Appendix A.

# 4.1 City of Issaquah, WA

## Introduction

The City of Issaquah, through a collaboration with Forterra, began an evaluation of the general condition of Issaquah's forested parks and natural areas in 2019. At that time, they established the Green Issaquah Partnership: a program to protect, enhance, and sustain Issaquah's forested parks, natural areas, and scenic resources (City of Issaquah & Forterra, 2020). The intent of the Green Issaquah Partnership 20-Year Implementation Guide is to describe the challenges facing urban forests today, as well as the benefits of restoring and enhancing those forests. This guide also shares important results of the health assessment of Issaquah's forested parks and natural areas, sets goals to restore Issaquah's forested parks and natural areas, and recommends actions and benchmarks to reach those goals to benefit Issaquah's people and ecosystem (City of Issaquah & Forterra, 2020).

### *Issaquah and Forterra*

Issaquah joined the Green City Partnerships network in 2019. Since then, Forterra has worked collaboratively with the city on urban forestry activities, including conducting outreach activities to solicit input specifically for the Green Issaquah Partnership, providing training guides applicable to both city staff and Forest Stewards in forest restoration projects, assisting Issaquah in estimating program costs, and coordinating initial volunteering programs using the networks' existing model (City of Issaquah & Forterra, 2020). As of 2023, Forterra is no longer working directly with Issaquah on Green Issaquah Partnership activities. This change is due to Forterra's recent organizational shifts.

In an interview with Issaquah's Parks and Recreation Director we learned that the city is now partnering more closely with city communities to recruit, train and support volunteer stewards to lead forest restoration projects in priority parks.

## Resource Assessment

The City of Issaquah used the Forest Landscape Assessment Tool (FLAT) to conduct its resource assessment. There are three main steps Issaquah took to utilize FLAT: forest-type mapping, on-the-ground forest assessment, and management strategies prioritization (City of Issaquah & Forterra, 2020).

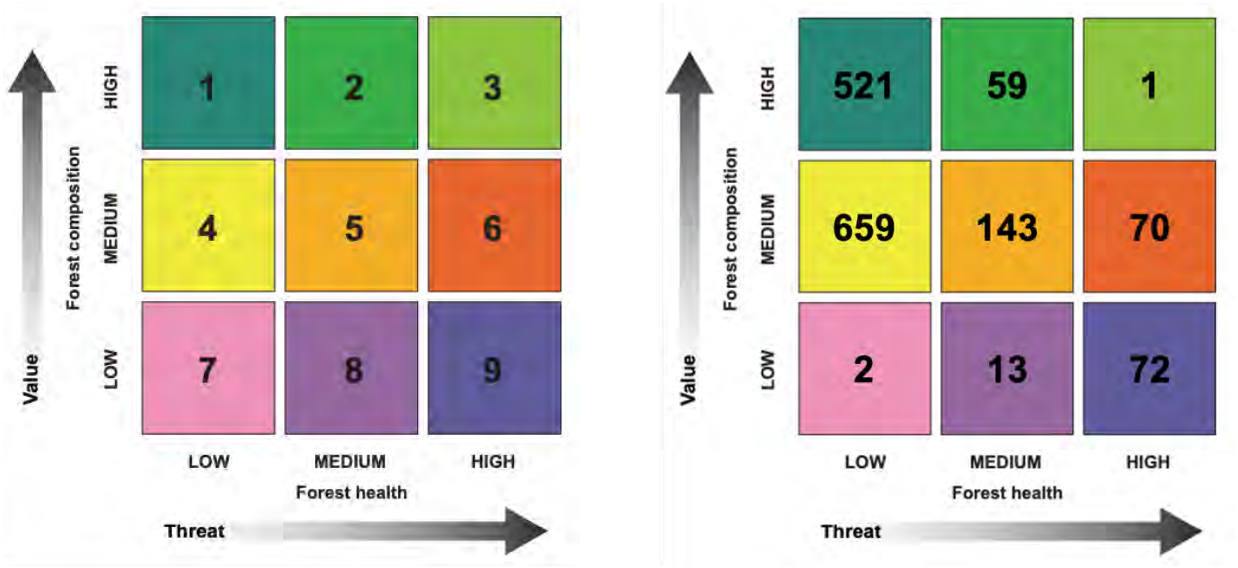
First, using GIS analysis, the city classified natural areas within the partnership project area through digital orthophoto interpretation and divided each stand into one of five categories: forested, natural, open water, hardscaped, or landscaped (City of Issaquah & Forterra, 2020). The final delineated stands are called Management Units (MU), and all MUs were assigned to unique letter combinations for future restoration planning and data tracking.

Next, the Green Issaquah Partnership used FLAT, a prioritization tool that uses habitat composition and invasive plant cover as the two parameters, to prioritize restoration to conduct a forest health assessment (Ciecko et al. 2016). This assessment includes characterizing conditions across Issaquah's forested parks and natural areas, documenting the presence of regenerating trees (i.e., canopy species less than 5 inches in diameter at breast height) and stocking class (i.e., estimated number of trees per acre and spacing between trees). Using this assessment, the city was able to produce a general picture of the overall condition at any given site and on a landscape or city scale, which serves as a high-level baseline from which finer-scale, site-specific restoration planning can be conducted (City of Issaquah & Forterra, 2020). In the field, the city surveyed each MU to identify its specific habitat type (e.g., conifer forest, deciduous forest, riparian, shrubland) and to capture information on the dominant overstory species and tree canopy cover (City of Issaquah & Forterra, 2020). The city then

assigned a value (i.e., high, medium, or low) to each MU based on habitat composition. Details on how values are assigned can be found in Chapter 6 of this report.

After assigning values to all MUs, the city hired a professional urban forester who used the Tree-iage matrix system to assign a tree-iage category or priority rating to the MUs. Categories range from 1 to 9, with 1 representing high-quality habitat and low invasive species threat, and 9 representing low-quality habitat and high invasive species threat (City of Issaquah & Forterra, 2020). By summing the acres in each row and column, the city was able to have a clear understanding of the total distribution of the project acres, as shown in Figure 5. The tree-iage matrix was then used to develop future management strategies and prioritize MUs.

*Figure 5: FLAT assessment Tree-iage Matrix (left) and Distribution of Issaquah Project Acres by Tree-iage Category (right) (Ciecko et. al., 2016; City of Issaquah & Forterra, 2020)*




## Community Engagement

The main community engagement strategies that the City of Issaquah used were conducting community surveys to gather information on residents' priorities and outreach to gain support from its existing partners for its UFP. The city then incorporated the needs of partners, residents, and volunteers into several goals and objectives for the partnership. For instance, one of the most common themes that emerged from surveying Issaquah residents was the hope that the city would work with the school district to engage students in restoration projects, both as in-school outdoor-classroom activities and for service hours outside of school hours (City of Issaquah & Forterra, 2020). As a response to this theme, the seventh community objective for the partnership is to seek opportunities to engage youth and provide education. Specifically, the Green Issaquah Partnership will work with Issaquah Public Schools to engage youth in outdoor experiences and environmental stewardship. The city hopes that opportunities like this will serve as pilot projects and guides for other potential collaborations with schools.

The Green Issaquah Partnership also includes the structure for a centralized volunteer system, making it easier for the community to get involved (City of Issaquah & Forterra, 2020). Additionally, individuals can become a Forest Steward for any city park. As Forest Stewards, volunteers will receive training, tools, and resources supported by the Green Issaquah Partnership to operate their restoration project and lead other volunteers at events. We discuss the Forest Steward Program in-depth in Chapter 5. The Green Issaquah Partnership also provides educational resources and training to private property owners and residents to encourage them to be

good stewards of the forest and their property. The accomplishment of Issaquah's UFP activities will tracked, reported, and celebrated by the city each year.

## Equity Considerations

One of the community objectives of the Green Issaquah Partnership is to "develop and implement community outreach and engagement strategies to equitably serve Issaquah's residential population" (City of Issaquah & Forterra, 2020). The partnership hopes to provide various ways to equitably engage every resident by building relationships with community groups and local organizations. Community members are encouraged to participate in caring for the shared public urban forests and natural areas regardless of age, income, ethnicity, or language spoken at home. The partnership also highlights that volunteer restoration projects are opportunities for neighbors, families, friends, and newcomers to unite in revitalizing their parks, fostering community bonds through shared experiences, and deepening ties to the natural world and each other (City of Issaquah & Forterra, 2020). In addition to seeking opportunities to work with existing successful community organizations and programs, the Green Issaquah Partnership emphasizes employing new and creative strategies over the life of the program as one of the goals to equitably engage the city's diverse population.

## Implementation Logistics

### *Plan Updates*

The first five years of the Green Issaquah Partnership focus on building and supporting a volunteer base, spreading program awareness, and demonstrating restoration and planting results on the ground. After those five years have passed, staff time will be reallocated to fieldwork like volunteer management and coordination of field crews. The Partnership also requested that the city establish a Community Advisory Committee to help involve community members in the partnership (City of Issaquah & Forterra, 2020).

The Green Issaquah Partnership relies on both hired staff and volunteer partners that include public, nonprofit, and public organizations. Issaquah uses a four-phase approach to restoration fieldwork that was developed in the Green Seattle Partnership (City of Issaquah & Forterra, 2020). The four phases are:

- Phase 1: Invasive plant removal
- Phase 2: Secondary invasive removal and planting
- Phase 3: Plant establishment and follow-up maintenance
- Phase 4: Long-term stewardship and monitoring

Each phase is planned to take several years and is tracked through work logs to track the progress of the plan and the canopy. More details about the four-phase restoration approach can be found in Chapter 6.

### *Staffing*

The Issaquah program places significant reliance on volunteers to support various aspects of their urban forestry activities, including on-the-ground fieldwork and coordination of other volunteers. The Issaquah program aims to recruit approximately 100,000 volunteer hours throughout the 20-year program duration (City of Issaquah & Forterra, 2020). The original staffing recommendations outlined in the guide suggest Forterra could provide volunteer hours instead of hiring paid staff.

The Green Issaquah Partnership outlines the need for a dedicated city staff member that can allocate at least half of their time to managing and coordinating volunteer efforts. This staff member would spend a portion of their time coordinating the Forest Steward Program, which involves training stewards, working with them to develop site plans, providing support and encouragement, and coordinating their efforts with other staff

members. The staff member would also dedicate time to education and outreach, with the possibility of receiving support from Forterra or the city's Communications Department.

Their program requires at least a part-time position in the first few years to coordinate field restoration, which will need to be a full-time position by 2025. There could be a need for a part-time or full-time staff member dedicated to fund development and management whose main job is finding and applying for grants and funding opportunities. The high-end estimate of staffing suggestions for the Issaquah plan for the first 5 years is 4-5 paid full-time staff members within the Parks and Community Services Department (PCSD) whose main responsibilities are the Green Issaquah Partnership.

Per the City of Issaquah's 2023-2024 Proposed Biennial budget, the city is planning to hire one FTE Urban Forest Supervisor and one FTE 0.5 Volunteer Coordinator to manage the Forest Steward Program starting in 2023(City of Issaquah, 2022).

### *City Departments*

Issaquah's PCSD has housed the UFP since its implementation. However, the program consists of coordinated efforts amongst multiple city departments, including Community Planning & Development and Public Works. In 2023, the city will establish a Natural Resource Team within PCSD. The Natural Resource Team will work to coordinate efforts across departments. The Urban Forest Supervisor and Volunteer Coordinated will be held in the Natural Resource Team.

The City of Issaquah does not currently have an advisory board or commission.

### *Budget*

The city's urban forestry expenditures are relatively low compared to the other two case study cities due to the relative age and size of the program. According to our interview with a city staff member, the city initially invested approximately $100,000 into a comprehensive resource assessment in 2018 that was used to inform the Green Issaquah Partnership Implementation Guide. In the city's 2023 proposed budget, the city budgeted approximately $360,000 for urban forestry activities, which includes hiring a full-time Urban Forest Supervisor, a part-time Volunteer Coordinator, and development of an Urban Forestry Management Plan.

In 2019 and 2020, the city received funding from Forterra to be used for implementing the UFP. The city received $100,000 in 2019 and $50,000 in 2020 (City of Issaquah, 2019). Based on our interview, we know the remaining expenditures were funded through city resources. Urban forestry activities primarily take place within PCSD so we can assume that most of the funding came from the city's General Fund as PCSD is 86% funded with General Fund revenue (City of Issaquah, 2022). The new Urban Forest Supervisor position will be fully funded through the city's Stormwater Fund (City of Issaquah, 2022). We discuss the use of Storm and Surface Water Utility Fees as a revenue source more in-depth in Chapter 5.

The exact breakdown of the city's UFP expenditures can be seen in Table 3. Please note that these expenditures do not include regular, ongoing tree maintenance and planting in the city (e.g., tree pruning related to repaving streets). The expenditures outlined are specifically defined within the city's budget as relating to urban forestry.

*Table 3: City of Issaquah, WA - 2023 Urban Forestry Expenditures*

| Department | Expenditure Detail | 2023 Adopted |
|---|---|---|
| Parks and Community Services | New Position - Full-Time Urban Forest Supervisor | 185,686 |
| Parks and Community Services | New Position - Part-Time Volunteer Coordinator | 77,547 |
| Parks and Community Services | Development of Urban Forestry Management Plan | 100,000 |
| | **Total** | **363,233** |

## 4.2 City of Vancouver, WA

### Introduction

The City of Vancouver's UFP is part of the city's Department of Public Works and works closely across all departments. The city first developed its Urban Forestry Management Plan in 2007, which provided a foundation and guideline for its future program and activities. In 2021, the city produced an annual report, a tree canopy assessment, as well as its Urban Forestry Work Plan. As stated by the City of Vancouver (2022a), the current UFP "seeks to improve the quality of life in the city by enhancing tree canopy to provide clean air and water for current residents, visitors, and future generations" (p. 4). The City of Vancouver is currently engaged in initiatives to expand tree canopy throughout the city. However, at the program's inception in 2007, the city was primarily focused on the restoration and maintenance of the existing tree canopy and green spaces. Over the past 15 years, since the program's inception, the city has continued its restoration practices while gradually expanding its public and private UTC expansion efforts.

The program is supported by the Urban Forestry Commission, a seven-member volunteer commission appointed by the Vancouver City Council. The Commission helps the city to develop management methods to preserve the trees and forests, educate residents on the importance of urban trees, and organize tree plantings (City of Vancouver, 2022a).

### Resource Assessment

There are three parts to the tree canopy assessment for Vancouver. The first is to quantify the city's existing tree canopy cover. Using high-resolution multispectral imagery from the U.S. Department of Agriculture's National Agriculture Imagery Program (NAIP) collected in 2019 and 2020, the city was able to derive the land cover dataset and classify all types of land cover (City of Vancouver & PlanIT Geo, 2021). The city also used tree canopy and land cover data from the EarthDefine US Tree Map to classify a five-class land cover, including urban tree canopy, soil and dry vegetation, other vegetation, impenetrable surfaces, and surface water. These data were then used to extract generalized tree species composition using a Normalized Difference Vegetation Index (NDVI), supervised training, and an iterative machine learning approach (City of Vancouver & PlanIT Geo, 2021). Google StreetView also provided street-level images for the city to obtain training and verification samples of deciduous and evergreen trees.

The second is to identify areas where the tree canopy could be expanded. All land areas in Vancouver that did not have existing tree canopy coverage were classified as either possible planting area (PPA) or unsuitable for planting (City of Vancouver & PlanIT Geo, 2021). PPAs were estimated from the non-canopy vegetation layer. Unsuitable areas and areas that are not viable to plant trees due to biophysical or land use restraints were manually delineated and overlaid with the existing land cover data set. The City of Vancouver and PlanIT Geo (2021) reported the results as "PPA Vegetation, Unsuitable Vegetation, Unsuitable Impervious, Unsuitable Soil, and Total Unsuitable" (p. 4). This process is conducted on both private land and public land. Some of the results

show that 66% of all UTC in Vancouver is found on private land, with public land and rights-of-way (ROW) occupying the remaining 34% evenly. Similarly, private land contains 74% of all PPA, while 14% is found in the ROW and just 12% on public lands. (City of Vancouver & PlanIT Geo, 2021).

Finally, tree canopy change between 2011 and 2019/2020 was analyzed across the same geographic assessment. Both tree canopy data sets were created from the EarthDefine US Tree Map. Using machine learning techniques to produce highly comparable datasets, the city was able to find the canopy changes in percentages during the period. And in 2021, Vancouver hired PlanIT Geo to perform a full tree canopy assessment and a partial park tree inventory.

## Community Engagement

The first step in community engagement has been outlined in the 2007 Urban Forestry Management Plan, which delineated four primary outreach methods:

1. review of two citizen-based planning efforts conducted between 2004 and 2006
2. public opinion survey completed in November 2006
3. stakeholder interviews
4. community meetings were conducted during October 2006 and February 2007 (City of Vancouver, 2007)

An electronic version of the draft plan was posted on the city's website requesting residents' comments via email.

In the latest 2021 report, the city marked promoting an urban forest stewardship ethic in the community as one of the four goals in its urban forestry work plan. Apart from the existing partnerships with neighborhood associations, faith-based organizations, nonprofit organizations, public agencies, and private businesses, the city planned to strengthen and expand community partnerships with underserved organizations and communities, local businesses, regional partners, etc. For instance, the city decided to foster civic involvement through the Neighborhood Tree Stewards program, a comprehensive training and education program that empowers neighborhood volunteers to become leaders in urban forest management. Also, by offering Tree Talk workshops on various tree-related topics monthly throughout the year, the city planned to expose participants to knowledge on a variety of trees to plant in landscapes that offer a myriad of benefits (City of Vancouver, 2021).

## Equity Considerations

In the first draft of its 2023 Urban Forestry Management Plan, Vancouver highlights the importance of fostering equity and environmental justice by addressing the uneven distribution of canopy resources and benefits. The plan acknowledges that existing tree canopy coverage tends to be larger and more established in wealthier neighborhoods since canopy expansion and maintenance largely depend on tax dollars. The plan points out that communications that build trust with disadvantaged communities should begin months before tree planting starts. The plan argues that by engaging with respected community leaders to introduce the concept of tree canopy expansion, organizing community outreach events at an earlier stage, and soliciting local input on tree species selection, a strong partnership with the community's residents can be established. The plan asserts that identifying areas in most need of tree canopy covers, tree plantings, and urban forestry services (e.g., a program assisting low-income property owners with the management of hazardous or invasive trees) will address community equity and environmental justice (City of Vancouver & PlanIT Geo, 2023).

## Implementation Logistics

### *Plan Specifics*

The City of Vancouver's UFP has been actively working in the city since 2007. As of its 2021 plan update, the Urban Forestry Division's main goals are categorized into three overarching responsibilities: planning, education, and management (City of Vancouver, 2007). Planning refers to reviewing site development applications, partnering with agencies and professionals to grow the tree canopy, and assessing and monitoring the health of the forest resources. Community outreach and education are outlined more above but entail the promotion of learning about trees, coordinating their NeighborWoods Program, and hosting community events and training. The management responsibility involves coordinating with city departments, enforcing policies, identifying funding, and customer service.

In order to understand current and future opportunities and challenges, the City of Vancouver implemented a Strengths, Weaknesses, Opportunities, and Threats (S.W.O.T.) assessment in 2007 (City of Vancouver, 2007). This assessment was a way to organize and synthesize comments from the public, agency and local organization staff, and the Urban Forestry Commission. Based on this feedback and the needs of the community the Urban Forestry Division established four main goals to guide the direction of the program:

- Preserve existing trees and institutionalize planning, maintenance, and operating principles that improve canopy health.
- Restore canopy-deficient areas through tree planting to provide equitable distribution of urban forest benefits to all Vancouver residents.
- Promote an urban forest stewardship ethic within the community.
- Adhere to City of Vancouver's Operating Principles and establish Vancouver Urban Forestry as a leader in Pacific Northwest municipal forest management.

The city developed a priority-level system to gauge the timeline of specific action steps under each of its four main goals (City of Vancouver, 2007). They developed a matrix of all the planned steps they determined would let them achieve their goals. The priority levels correspond to an approximate timeline as follows:

| **Priority** | **Timeline (approx.)** |
|---|---|
| High | immediately to 3 years |
| Medium | within next 3 to 10 years |
| Low | as budget, staffing and other resources allow |

### *Staffing*

The City of Vancouver's Urban Forestry Program currently consists of four full-time staff members, including one Urban Forester, two Urban Forest Specialists, and one Urban Forest Outreach Coordinator. This staffing equates to about one full-time employee per 46,548 residents. The city also contracts with AmeriCorps and currently has two AmeriCorps members supporting UFP activities.

### *City Departments*

The Vancouver City Council has appointed a seven-member volunteer commission called the Urban Forestry Commission to advise their City Council on urban forestry efforts. The commission helps the city to develop good management practices to preserve community trees, educate citizens, and organize tree plantings. Commission members are appointed for four-year terms.

In Vancouver, the commission was created as a result of community interest in an urban forestry program but limitations regarding organizational capacity. In an interview with the program's Urban Forester, we learned that at the time the city's parks department did not consider urban areas outside of parks as integral to their mission Therefore, urban forestry activities were not prioritized within the parks budget, and instead the department allocated more resources to their core activities. As a result, the community pushed for a voluntary board that could prioritize the UFP and advocate for appropriate budgetary allocation while supporting program implementation.

Similar to the Green Issaquah Partnership, the Vancouver Urban Forestry Program has relied on multiple partnerships with nonprofits, public agencies, and neighborhood associations to help implement coordination of planting efforts and develop the plan itself. UFP activities are centrally managed by the Urban Forestry Division, which is housed in the city's Public Works department. The division works closely with the Vancouver-Clark Parks & Recreation, Transportation, and Development Review departments.

### *Budget*

Vancouver is the only city of our three case studies that had a standalone urban forestry department at the time of this report. As a result, we were able to easily identify 2023 expenditures related to urban forestry activities within the city's 2023-24 Biennium Budget. Total projected expenditures for UFP activities were estimated at approximately $1.9 million (City of Vancouver, 2022b). This was a 97% increase from previous years' total expenditures of approximately $900,000. This increase was due, at least in part, to a comprehensive update to the city's Urban Forestry Management Plan for the first time since 2007, which required significant investment in contract labor and plan development (City of Vancouver, 2022b; Ellenbecker, 2023)

According to the city's budget, an estimated 95% of program expenditures in 2023 will be funded through the city's Surface Water Management Fund (City of Vancouver, 2022b). The primary revenue source for this fund is city storm and surface water utility fees. UFP expenditures account for approximately 7.5% of the total estimated fund revenue in 2023 (budget p. 99). The remaining 5% of UFP expenditures will be funded through the City Tree Reserve Fund. The fund is primarily funded through penalties and fees related to the city's tree ordinance and donations (municipal code 20.770.040 City Tree Account).

The city's 2023 UFP expenditures are outlined by revenue source in Table 4. Since all UFP activities are held in a single department within the city, expenditures are instead delineated based on revenue source. Please note that these expenditures do not include regular, ongoing tree maintenance and planting in the city (e.g., tree pruning related to repaving streets). The expenditures outlined are specifically defined within the city's budget as relating to urban forestry.

*Table 4: City of Vancouver, WA - 2023 Urban Forestry Expenditures by Revenue Source*

| Revenue Source | Expenditure Detail | 2023 Adopted |
|---|---|---|
| SWM Fund | Salaries and Benefits | 693,250 |
| SWM Fund | Supplies and Services | 770,620 |
| SWM Fund | Interfund | 353,052 |
| | **Total** | **1,816,922** |
| **Revenue Source** | **Expenditure Detail** | **2023 Adopted** |
| City Tree Reserve Fund | Supplies and Services | 80,155 |
| City Tree Reserve Fund | Other Intergovernmental | 3,000 |
| City Tree Reserve Fund | Interfund | 3,264 |
| | **Total** | **86,419** |

## 4.3 City of Seattle, WA

### Introduction

The City of Seattle originally developed its UFMP in 2007 and more recently produced an update in 2020. The update provided a framework for policies and actions that guide the city's decision-making to help preserve, maintain, restore, and enhance its urban forest. The core of the plan is a set of outcomes, strategies, actions, and indicators that support a healthy and sustainable urban forest across Seattle's publicly and privately owned land. The UFMP was produced by the joint effort of the City of Seattle Urban Forestry Core Team, which is a group representing city departments with tree management and regulatory responsibilities, and the Urban Forestry Commission (City of Seattle, 2020).

### Resource Assessment

The city undertook a comprehensive canopy cover assessment in 2016 using light detection and ranging (LiDAR) data, which is a surveying method that uses lasers to create a 3D model (City of Seattle, 2020).

The plan first defined nine management units that cover all the land in the city, which allowed for easy coordination of GIS mapping layers and related planning initiatives. The units include eight distinct areas selected based on physical characteristics:

1. Single-Family Residential
2. Multi-Family Residential
3. Commercial/Mixed-Use
4. Industrial
5. Institutional
6. Downtown
7. Developed Parks
8. Parks' Natural Areas

A ninth unit, the Right-of-Way, goes through each of the other eight units. With the criteria of these management units, the city was able to construct a detailed table of canopy cover, as shown in Table 5.

*Table 5: Seattle Canopy Coverage by Management Unit in 2016 (Seattle UFMP, p.13)*

| Management Unit | Land area (acres) | % of city land area | 2037 UFMP Goal (set in 200) | 2016 Canopy Cover |
|---|---|---|---|---|
| Single-Family Residential | 29,918 | 56% | 33% | 32% |
| Multi-Family Residential | 5,646 | 11% | 20% | 23% |
| Commercial / Mixed Use | 4,522 | 8% | 15% | 14% |
| Downtown | 815 | 1% | 12% | 10% |
| Industrial | 6,191 | 11% | 10% | 6% |
| Institutional | 1,101 | 2% | 20% | 25% |
| Developed Parks | 2,578 | 4% | 25% | 37% |
| Parks' Natural Areas | 2,356 | 7% | 80% | 89% |
| Citywide | 54,379 | 100% | 30% | 28% |
| Right-of-Way | 14,682 | 27% | 24% | 23% |

In addition to measuring citywide canopy cover, the city initiated an ongoing process of developing inventories of certain public and street trees. The Seattle Department of Transportation (SDOT) aims to complete a 100 percent inventory of all street trees in Seattle by the end of 2024, which will enable SDOT and other

departments that manage urban forestry activities to better prepare for street tree-related emergencies and enhance the future of street trees across Seattle communities.

In a parallel effort, the Green Cities Research Alliance assessed Seattle's urban forest to quantify the regional impact of trees on pollution reduction, carbon storage, and energy conservation. Researchers randomly selected a total of 223 plots of trees throughout Seattle on both private and public land to assess. Researchers were able to capture the size and condition of Seattle's urban forest, which they used to quantify the public benefits and economic value of the ecosystem. This comprehensive assessment was vital for understanding the current and future management needs of the city's urban forest to infer the development of solid management policies (City of Seattle, 2020; Ciecko et al., 2012).

## Community Engagement

Public engagement around the city's UFMP was shaped by the Equity and Environment Initiative and the city's Race and Social Justice Initiative (City of Seattle, 2020). Several key commitments were identified, including intentional engagement with historically underrepresented communities before plan update drafting, reviewing, and valuing all feedback from historically underrepresented communities, transparency, and engaging the public in developing the plan.

According to the City of Seattle (2020), before the UFMP was developed, the city worked with various governmental agencies to "engage native peoples, as well as the African American, East African, Chinese, and Latinx communities living in and around the Greater Seattle region" (p. 6). Throughout the drafting process, the city kept close contact with members of nine environmental-justice priority communities (African American, Chinese, disabled, East-African, Latino, Native American, seniors, Southeast Asian Cham refugees, and unhoused populations), presenting ideas and collecting feedback so that the goals and strategies could reflect on racial and social equity.

## Equity Considerations

During the plan update process, the city's Equity and Environment Initiative recognized the disproportionate impact of past policies and practices on communities of color, which were referred to as "environmental justice priority communities" in their UFMP. Therefore, the city stated the determination to provide clean, healthy, resilient, and safe environments for communities of color, native peoples, immigrants, refugees, people with low incomes, youth, and individuals with limited English proficiency.

The Race and Social Justice Initiative (RSJI) is the city's current initiative that ensures the Seattle government realizes its vision of racial equity. According to the City of Seattle (2020), RSJI is "a citywide effort to end institutional racism in city government, and to achieve racial equity across the community" (p. 22).

The city also launched the Equity and Environment Initiative and produced the Equity and Environment Agenda, which is a blueprint to progress racial equity in Seattle's environmental work. The agenda lays out four key goals and recommended strategies in areas like healthy environments for all, jobs, local economies, youth pathways, equity in city environmental programs, and environmental narrative and community leadership (City of Seattle, 2020).

## Implementation Logistics

### *Plan Specifics*

Seattle's Urban Forest Management Plan is a 30-year plan that is divided by Management Units that are based on different types of land (i.e., residential, downtown, mixed-use, etc.). Their plan started off by utilizing the

Model of Urban Forest Sustainability to guide the design of their management plan (City of Seattle Urban Forestry Coalition, 2007). This model outlined four principles that Seattle followed for their management plan:

- Sustainability is a broad, general goal that results in the maintenance of environmental, economic, and social functions and benefits over time;
- Urban forests primarily provide services rather than goods;
- Sustainable urban forests require human intervention; and
- Trees growing on private lands compose the biggest part of urban forests.

Using the sustainability model, the City of Seattle also incorporated three main management elements for their plan. The plan began by assessing these three elements:

1. **Tree Resource**: the trees themselves, as individuals or in forest stands
2. **Management Framework**: the policy, planning and resources— including staff, funding, and tools — brought to bear on the tree resource; and
3. **Community Framework**: the way residents are engaged in planning and caring for trees. Because most trees in the urban forest are on private property, a successful program requires that the community plant and maintain trees on their property.

Seattle's plan then goes through the different conditions, issues/opportunities, and goals/actions for each of the nine "Management Units" that they identified. This way they could have different strategic approaches for the different types of land use in the city.

### *Staffing*

The city established the Urban Forest Coalition in 1994, which was a cooperative effort of nine city departments that shared different tree management responsibilities before the UFMP was ultimately developed. The coalition was responsible for implementing other tree-related policies, programs, and budget initiatives. In 2007, the coalition was tasked with the implementation of the UFMP. Today, this coalition has been replaced by the city's Urban Forestry Core Team which manages the bulk of cross-departmental coordination on UFP activities (City of Seattle Urban Forestry Core Team, 2020). It is unclear how many staff members are fully dedicated to implementing Seattle's UFMP. According to the City of Seattle (2022), the city will establish a City Urban Forester position in 2023. This new position will be housed in the Office of Sustainability and Environment, and they will work with staff across city departments to coordinate urban forestry efforts throughout the city.

### *City Departments*

The city also has an urban forestry commission. The Seattle Urban Forestry Commission (UFC) is a voluntary space with 13 members appointed by a majority vote of the City Council (6), the mayor (5), by a majority vote by the UFC members (1) or by a special process (1). Members serve three-years terms and positions are a mixture of specialists such as Wildlife Biologist, Urban Ecologist, Natural Resource Agency or University Representative or community representatives.

Due to the size and resources available to Seattle, there are many departments that are responsible for implementing different aspects of the UFMP, and representatives from each department make up the Core Team. The departments involved in Seattle's UFMP are as follows: Finance and Administrative Services, Office of Planning and Community Development, Office of Sustainability and Environment, Seattle Center, Seattle City Light, Seattle Department of Construction and Inspections, Seattle Department of Transportation, Seattle Parks and Recreation, Seattle Public Utilities, and Trees for Seattle (City of Seattle Urban Forestry Coalition, 2007).

## *Budget*

The City of Seattle's decentralized approach to urban forestry is also reflected in its budgeting practices. Each individual department manages a separate budget that includes that department's urban forestry expenditures. This budget structure does not allow us to provide a single urban forestry budget for a given year as many expenditures may be recorded under broad, high-level activities that are not explicitly labeled as urban forestry. However, the City of Seattle's 2023-2024 Adopted Budget did provide insight into the city's current spending for activities that are explicitly earmarked for urban forestry.

As outlined in the city's 2023-2024 Adopted Budget Summary, Mayor Bruce Harrell is launching a One Seattle Tree Strategy that "will provide a framework needed to maintain the city's commitment to a 30% tree canopy cover goal" (City of Seattle, 2022). This strategy includes close to $800,000 over the next two years for improving the city's tree canopy. The first and second components of this strategy are under the jurisdiction of the Seattle Department of Sustainability and Environment. The first initiative supports greening and tree planting on private properties for industrial and industrial-adjacent areas of the city. This initiative has a proposed budget of $300,000 in 2023 and an additional $300,000 in 2024 (City of Seattle, 2022). The One Seattle Tree Strategy also includes $150,000 for the development of a Tree Canopy Equity and Resilience Plan. This plan will identify locations for increasing tree canopy on private and public land, with a specific focus on low-canopy neighborhoods in environmental justice priority areas (p. 41). The third component of the program provides $320,000 to Seattle Parks and Recreation to increase capacity for tree planting, specifically in Seattle Parks.

Most expenditures outlined above, including all activities in the One Seattle Tree Program, will be funded through the JumpStart Payroll Expense Tax, which is a funding Green New Deal programs throughout the city (City of Seattle, 2022). Other urban forestry activities are funded through the city's general fund or through revenues specific to each department.

The city's 2023 UFP expenditures are outlined in Table 6. Please note that these expenditures do not include regular, ongoing tree maintenance and planting in the city (e.g., tree pruning related to repaving streets). The expenditures outlined are specifically defined within the city's budget as relating to urban forestry.

*Table 6: City of Seattle, WA - 2023 Urban Forestry Expenditures*

| Department | Expenditure Detail | 2023 Adopted |
|---|---|---|
| Office of Sustainability and Environment | New Position - Full-Time City Urban Forester | 147,000 |
| Office of Sustainability and Environment | Development of Tree Canopy Equity and Resilience Plan | 150,000 |
| Department of Transportation | Tree Planting in Right-of-Way Initiative | 250,000 |
| Department of Construction and Inspections | Additional Capacity for Tree Protection | 54,961 |
| Office of Sustainability and Environment | Greening of Industrial Properties in Equity Focus Areas | 300,000 |
| Parks and Recreation | Increased Tree Planting and Maintenance in Parks | 637,000 |
| | **Total** | **1,538,961** |

## 4.5 Case Studies Summary

We analyzed each city according to our seven criteria (Table 1): tree population assessments, strategies, equity considerations, plan updates, commission, city departments involved, staffing, budget, and funding sources. At the end of this section, Table 7 synthesizes the content of each case study and summarizes key information for each city based on our criteria.

### Resource Assessment

All three cities conducted a tree assessment early in the design process of their forestry program. In Issaquah's case, the approach was a FLAT assessment that focused on identifying trees' conditions to create management units. Meanwhile, Vancouver did an assessment that focused on creating additional imagery data of the canopy and land covers, and a tree inventory which is more detailed than a flat assessment. Finally, Seattle completed a canopy assessment and is in the process of doing a tree inventory of street trees. In each case, the resource assessment looks different, and each approach carries specific benefits and costs. Issaquah's case centers more on the management units throughout the city; thus, the assessment supports the management efforts for the plan. However, for Vancouver and Seattle, the assessment goes further as it also includes a tree inventory which adds additional information on the types of trees in the city. Tree inventory is costly, as it requires more work on the ground to identify trees.

### Community Engagement

#### *Strategies and Equity Considerations*

All three cases implement steward programs to integrate volunteers, which are integral to successful implementation and long-term program sustainability. Aside from steward programs, cities also carry out periodic surveys, meetings, or other spaces to gather feedback from the public to inform the plan. In Issaquah and Vancouver, volunteers have been central to gathering community insight and integrating community perspectives throughout the program, allowing volunteers to develop ownership of the urban forest and ensure the program's sustainability. All three cities emphasize the significance of considering feedback from minority communities and plan to integrate this into their community outreach efforts.

### Administrative Capacity

#### *Plan Updates*

Cities release updates to their programs every three to five years to integrate resident feedback, make budgetary adjustments, as well as any other technical adjustments related to tree maintenance or public versus private land. There is no clear rationale for why they update the plans at three or five-year increments, but there is an implicit agreement that frequent revision is important to stay on track with the cities' long-term plans for their urban forest.

#### *City Departments*

The City of Issaquah manages its UFP within its Parks, Recreation and Community Services Department. The City of Vancouver houses its program within Public Works. However, both cities work closely across city departments to prioritize urban forestry activities and coordinate city efforts. The benefit of this approach is that program goals and activities are prioritized because it has staff and funding dedicated solely to the program.

It is worth mentioning that Vancouver is able to maintain a department with four full-time employees and considerable annual expenditures because of the stable stormwater fee revenue stream Vancouver uses to fund its program. However, Vancouver's approach involves coordination among multiple departments, recognizing the need to work collaboratively with different teams that may have varying priorities and perspectives,

particularly when addressing challenges related to street trees. Finally, Seattle's program is managed through a collaborative approach involving staff from various city agencies. These staff members come together to collectively determine the program's initiatives.

As we mentioned in the case of Vancouver, there can be challenges in aligning interests among city departments. However, one significant advantage of involving multiple departments is that the program becomes a citywide effort that benefits from diverse perspectives and has the potential for a greater impact when all participating departments contribute their resources to the plan.

Vancouver and Seattle have volunteer advisory boards or commissions that oversee the implementation and management of their UFPs. As explained in each section, the establishment of boards or committees dedicated to the UFP ensures that it remains a priority in the city, particularly for departments that have specific responsibilities within the program. These boards help maintain focus, coordination, and accountability for the successful implementation of the UFP, even when different departments are responsible for specific tasks. Seattle's approach to the UFP differs from that of Vancouver and Issaquah, where the program responsibility is centralized within a single department. This centralized approach allows for focused management and coordination within a single department, ensuring that the UFP receives dedicated attention and resources.

### *Staffing*

The cases studied show variations in staff size, ranging from 1 full-time employee in Issaquah to 9 employees in Seattle. The size of the staff is closely linked to the financial resources allocated to the program. The program strategy plays a crucial role in determining the necessary number of employees to initiate and sustain the program over time. The specific needs, goals, and scale of the program will influence the staffing requirements, whether it's centralized or distributed across the city.

### *Budget*

The budgets of the three case study cities differ significantly. Issaquah, being the newest UFP, has the lowest budget with approximately $360,000 in total expenditures for 2023. Vancouver, with its four dedicated staff members, has the highest total annual expenditure, amounting to nearly $2 million in 2023. For a detailed comparison of the budgets of the three case study cities, please refer to Appendix B.

The City of Issaquah's similar governmental structure and size to Lakewood made it a valuable case study in developing the UFP for Lakewood. Vancouver's Urban Forestry Management Plan, established in 2007, provided insights into the early stages of UFMP development and showcased a comprehensive forestry plan. Seattle, with its ample financial resources, highest tree equity score, and larger governmental structure, served as an example of a more ambitious forestry plan. The combination of these case studies contributed to a well-rounded understanding of UFP implementation in different contexts.

*Table 7: Case Study Criteria and Summary Findings*

| Objectives | Criteria | Issaquah | Vancouver | Seattle |
|---|---|---|---|---|
| **Resource Assessment** | Tree Population Assessment | Use the Forest Landscape Assessment Tool (FLAT) to produce baseline plans; Utilize GIS and the Tree-iage Matrix to classify acres as Management Units (MU). | Use high-resolution multispectral imagery from NAIP and data from the EarthDefine US Tree Map to classify all types of land covers and acquire canopy changes; identify areas where the tree canopy can be expanded; hire PlanIT Geo to perform a full tree canopy assessment and a partial park tree inventory. | Comprehensive canopy cover assessment in 2016 using light detection and ranging (LiDAR) data; defined 9 management units covering entire city for easy coordination of GIS mapping layers and related planning initiatives; SDOT will complete a 100% inventory of street trees by EOY 2023. |
| **Community Engagement** | Strategies | Use community surveys to gather the public's priorities; Construct a centralized volunteer system with Forest Stewards as leaders. | Use existing citizen-based planning efforts, stakeholder interviews, public opinion surveys, and two community meetings to engage with the public; promote urban forest stewardship by working with nonprofits to foster civic involvement; Offer monthly Tree Talk workshops on various tree-related topics. | RSJI outlined key commitments, including intentional engagement with historically underrepresented communities before plan update drafting, reviewing, and valuing all feedback from those communities, transparency, and engaging the public in developing the plan. |
| | Equity Considerations | List developing new and creative strategies to equitably engage the city's diverse population as one of the Guide's goals. | Plan to incorporate demographics on race, language, and income from the 2020 Census and American Community Survey in future canopy mapping projects to analyze and address tree canopy distribution and environmental justice. | RSJI aims to end institutional racism in city government and achieves racial equity across the community; With the help of RSJI and the Equity and Environment Initiative, the city stated the determination to provide clean, healthy, resilient, and safe environments for all communities. |
| **Administrative Capacity** | Plan Updates | Every 3 years. | Every 5 years. | Every 5 years. |
| | City Departments | Parks and Recreation. | Public Works. | Numerous. |
| | Staff | 1 FTE and 1.5 FTE. | 5 FTE and AmeriCorps members. | Core Team composed of 9 FTE across departments. |
| | Budget | 2023 Adopted: $363,000 | 2023 Adopted: $1,900,000 | 2023 Adopted: $1,500,000 |

# Chapter 5: Analyzing the Roots of Effective Urban Forestry Programs and Opportunities for Lakewood

Return to Agenda

The three main objectives that emerged in our case studies comprise the pillars or "roots" of effective urban forestry programs (UFP). This chapter analyzes how these roots apply to the City of Lakewood and provides implementation considerations based on the results from our literature review and case studies.

The discussion in this chapter informs our recommendations and the proposed implementation guide in Chapter 6, in the following structure:

1. We analyze Lakewood's currently available resources to start the program and the additional needs to fulfill the city's urban forestry objectives.
2. We discuss community engagement strategies from other cases and how they relate to Lakewood's context.
3. We evaluate implementation logistics for the program, especially around partnership opportunities and staffing, analyzing them with Lakewood's aspirations and available financial resources.

## 5.1 Resource Assessment

Throughout our case studies, interviews, and research we observed an important constant throughout all urban forestry examples and resources, which is that the first step for a successful UFP should always be a resource assessment of current tree canopy coverage and forest health. Issaquah, Vancouver, and Seattle all started their plans with a virtual Geographic Information System (GIS) canopy assessment that classified the land coverage types (i.e., grassland, forest, open water, etc.) and identified different management units of land. Each city used a different visualization data set, but every case utilized similar methods of identification and classification of land-use types (City of Issaquah & Forterra, 2020; City of Vancouver, 2007). As mentioned in Chapter 1 of this report, the City of Lakewood conducted a similar canopy analysis to update its Tree Code. This section summarizes the findings of this canopy analysis along with our own GIS analysis to inform our recommendations.

Our research also provided a clear next step after a GIS tree canopy analysis is performed, which is implementing an on-the-ground assessment of the land management units identified in the previous step. Due to the different city sizes in our case study, the ground assessments of each urban forestry plan were quite different. In this chapter, we analyzed these options to decide which path would be most beneficial for the City of Lakewood's program and examined different urban forestry tools to help with the assessment.

### Assessment of Lakewood's Current Tree Canopy

For the City of Lakewood to develop a UFP that fulfills its goals, any plan needs to be grounded in the most effective scientific management tools. Below we will outline the current assessment of Lakewood's tree canopy, which is the basis of our recommended actions outlined in Chapter 6.

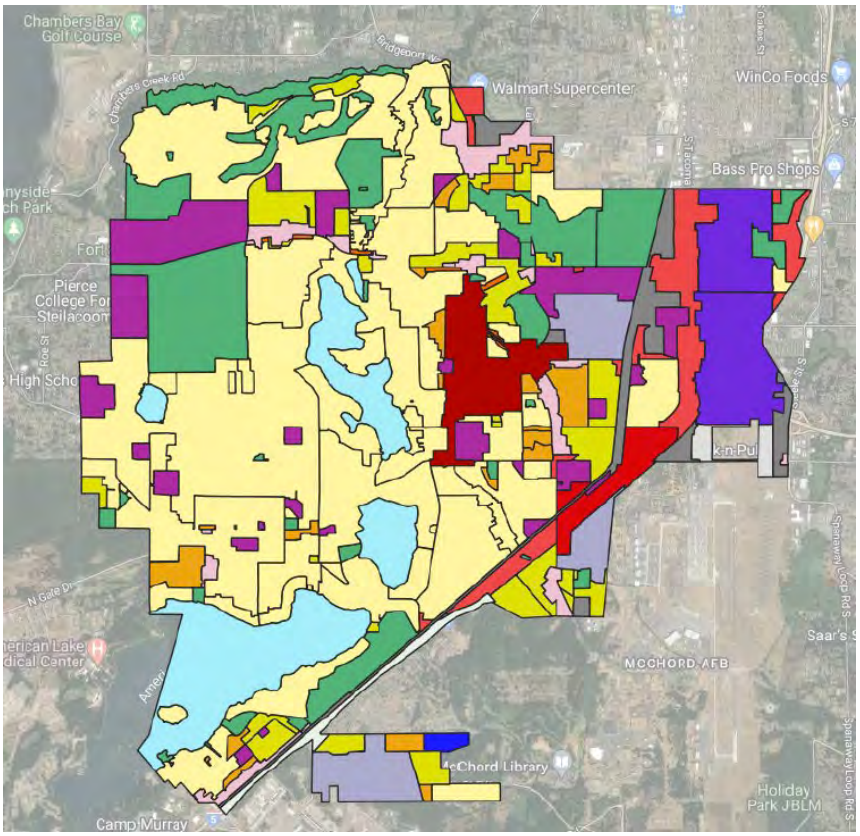
#### *Canopy Assessment*

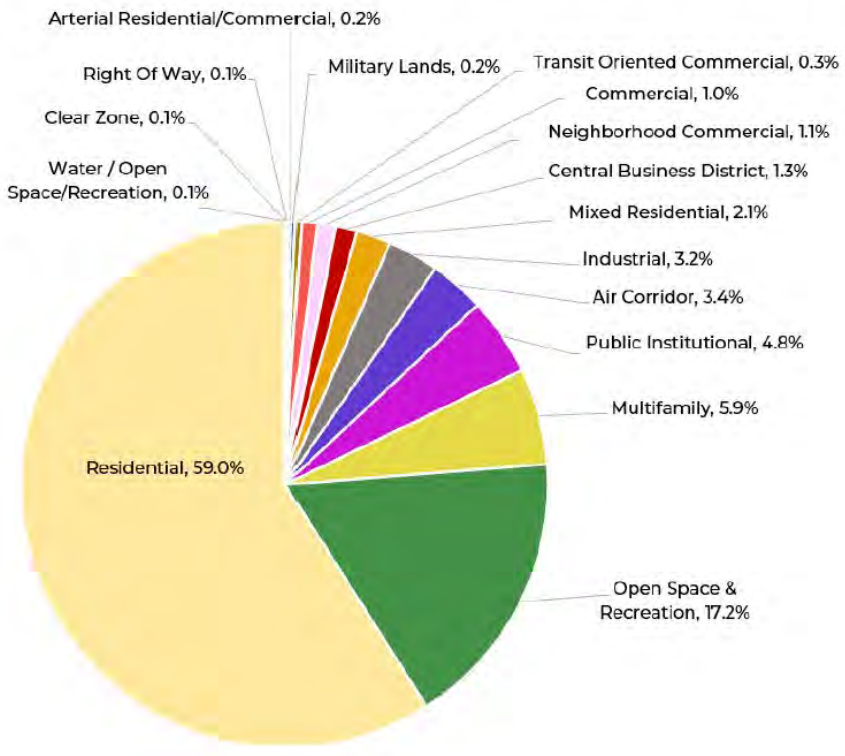
Lakewood contracted PlanIT Geo to assess the city's current tree canopy during the city's tree code update in 2022. The assessment utilized GIS to review Lakewood's land and determined potential planting sites where the city could prioritize planting trees. The assessment involved analyzing the current urban tree canopy (UTC),

types of land cover, zoning categories, equity considerations, and local plant species. Tree Equity Score, unemployment, demographic, zoning, and surface temperature data was used to help inform the equity considerations of each census block (PlanIT Geo, 2022). We contacted the foresters that performed the canopy analysis for Lakewood for more details about their analysis. They said they used Earth Define AI-driven data to perform the analysis which has a 60cm resolution. The data classifies the land into seven classes: tree canopy over impervious, shrub, other vegetation, impervious, bare soil, and water. No one variable was weighted more than the others during the assessment to determine which areas to prioritize planting. To see the details of each variable PlanIT Geo considered, the maps of this data are shown in Appendix C.

PlanIT Geo determined that the City of Lakewood's current citywide UTC is 26.3%. Of this total, 72% is on private land, and 28% is on public land. Approximately 28% of all private land has UTC cover, and approximately 22% of all public land has UTC cover. Figure 6 shows the specific breakdown of UTC by Zoning Category. PlanIT Geo's analysis outlines that there is a lot of work to be done on both public and private lands to develop a larger and healthier urban forest. This data serves as the foundation for conducting land health assessments, identifying areas in need of improvement or restoration, and developing cost-effective strategies. By understanding the existing canopy distribution, the UFP can prioritize resources and interventions to maximize the impact on the community's overall tree cover and associated benefits.

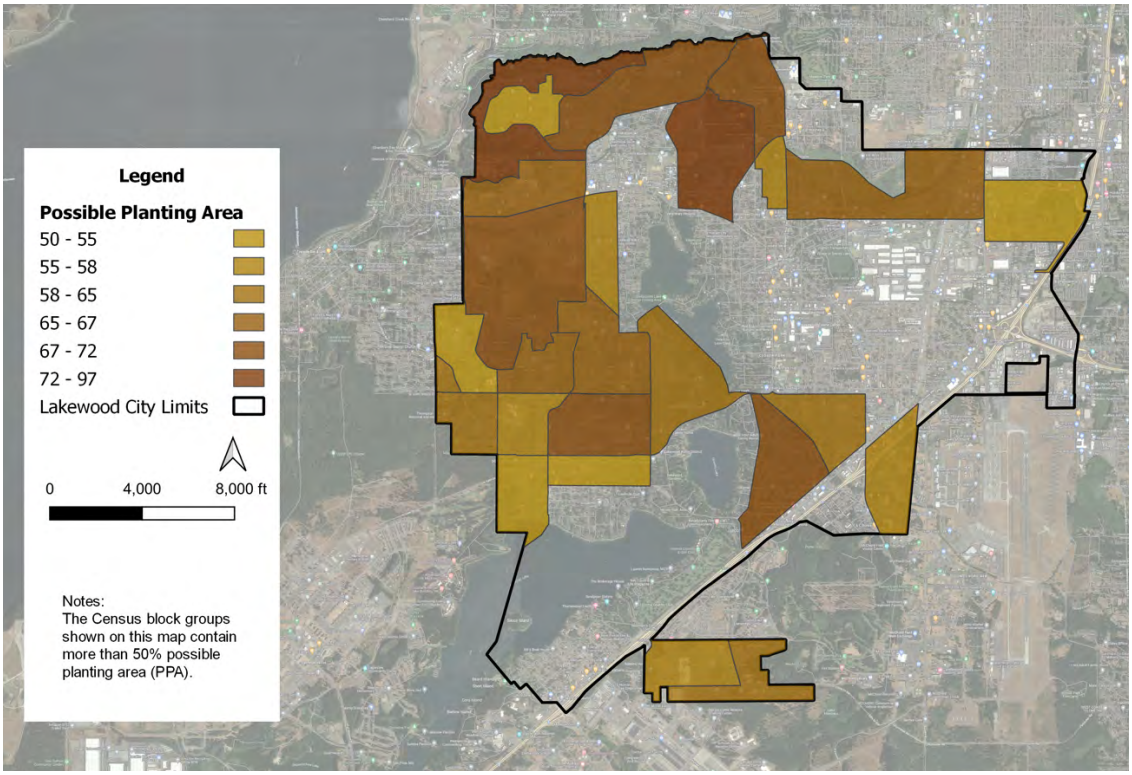
*Figure 6: Visual Breakdown of Lakewood Urban Tree Canopy by Zoning Category (Peiffer et al., 2022)*



PlanIT Geo also produced the map shown in Figure 7 which highlights census block groups with more than 50% possible planting area. This map identifies areas where trees can be feasibly planted, taking into consideration factors such as available space, location in parks, and other feasibility considerations. The darker shaded census blocks indicate areas with higher potential for increasing the tree canopy.

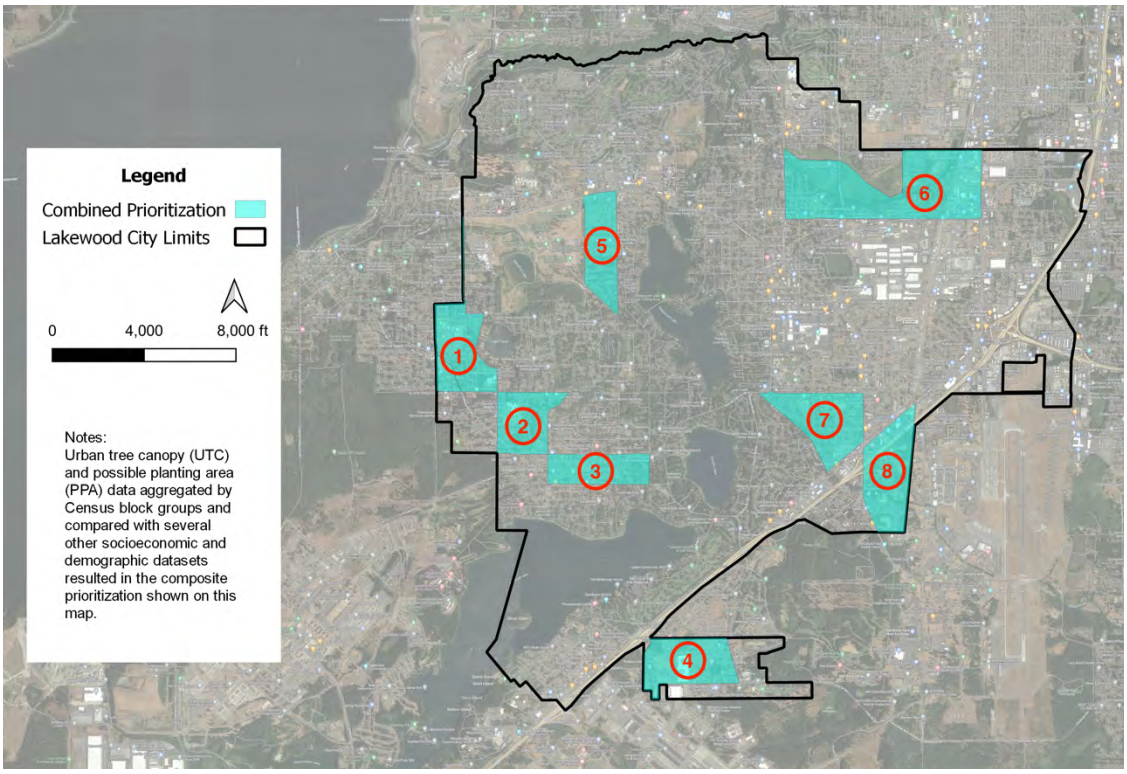
*Figure 7: Possible Planting Areas of Census Block Groups (PlanIT Geo, 2022)*




Using the available information on possible planting locations and the equity variables, PlanIT Geo created a map that identifies and prioritizes census block groups that would derive the most benefit from tree planting initiatives. Figure 8 presents the identified priority areas for tree planting and management in Lakewood. These areas, referred to as Management Units (MUs), are categorized into eight distinct zones for ease of identification and implementation.

To provide the City of Lakewood with a more specific recommendation on where to start a forest health assessment and thus urban forestry activities, we analyzed the eight MUs displayed in Figure 8 more closely. We wanted to consider the zoning of each MU to understand what areas were publicly owned land that the city would be able to manage directly. The zoning of each MU is shown in the maps in Appendix C. The MUs have various land uses, and most are mainly residential areas. We wanted to identify the MU that has the most open space, publicly owned land, and had the lowest Tree Equity Score according to National Explorer. Identifying where there is a lot of open space and publicly owned land will allow the city to start planting more quickly. While the city has a lot of potential areas to expand its tree canopy, we wanted to provide guidance on where the easiest, most cost-effective, and most equitable place might be to start the field assessment.

*Figure 8: Planting Prioritization of Census Block Groups (PlanIT Geo, 2022)*




## *Tools and Strategies*

The Green Issaquah Partnership guide benefited from utilizing the forestry management procedures outlined in the Forest Landscape Assessment Tool (FLAT). Not only is this tool publicly available, but it is also relatively simple to implement with easy-to-understand results. The guide was developed by the City of Seattle and is implemented by all "Green Cities" in Forterra's Green City program. Seattle and Vancouver, on the other hand, are both doing more expensive assessments on top of or in place of FLAT. These assessments are conducted either by professionals like PlanIT Geo or by each city's hired staff. Because of FLAT's low cost and ease of use, Lakewood would easily be able to use this assessment tool without the added expenses associated with performing a full tree audit like the larger cities of our case studies. However, full tree audits could provide Lakewood with the most data on forest health, the number of trees, and possible planting areas. A thorough tree audit is also very time-consuming which goes against the city's goal of increasing the canopy quickly.

Table 8 shows the three phases of utilizing FLAT to obtain data on the city's forested land. Obtaining this data informs future management strategies (i.e., invasive species control, planting, and maintenance) by assessing the health of the forest and other ecological conditions (Ciecko et. al., 2016). Following the FLAT phases will allow for more informed ecological management decisions and lead to a stronger and longer-lasting UFP overall. Planting trees before assessing the health of an area could lead to trees not surviving due to invasive species overcrowding, poor soil health, or any number of other ecological issues. The FLAT tool guide provides simple yet thorough guidelines to follow when assessing the health of an urban forest that will be imperative to Lakewood's UFMP.

*Table 8: Description of FLAT Phases (Ciecko et al., 2016)*

| **Phase 1:** Forest Cover Type Mapping | **Phase 2:** Field Assessment | **Phase 3:** Management Prioritization |
|---|---|---|
| Aerial imagery and boundary data are used in a lab or office to divide a project area into management units (MUs), the unit of observation and measurement for the assessment. Data attributes are also developed during Phase 1 based on local conditions and assessment purposes (e.g., species composition, size and age classes, invasive species, tree-canopy vigor, etc.). | A trained field team visits the project area to collect estimates of each attribute for each MU. Such teams may include professionals, technicians, and volunteers. | The data, which provide a snapshot of ecological conditions in the project area (within and across all MUs), can be used to classify or rank each MU. The assigned values can be viewed spatially to provide a mapped, visual representation of landscape conditions. These results can then be used to prioritize where on-the-ground management actions would most improve ecological function and health, contributing to long-term sustainability of a forest area. |

## 5.2 Community Engagement

The following section presents a comprehensive analysis of the community outreach strategies from the case studies in Chapter 4. Aiming to provide Lakewood with the framework of community engagement strategies tailored to its unique context, the proposed strategies encompass a diverse array of approaches, including hosting community meetings, launching public surveys, constructing a volunteer system, building a forest stewardship program, hosting workshops for private property owners, and collaborating with other organizations. Detailed implementation strategies are elaborated in Chapter 6.

### Community Meetings

From the case studies we learned that hosting community meetings is one of the most common ways for cities to conduct outreach and engage with the community during the initial phases of their UFPs. The suggestions gathered during these meetings help cities adjust their UFP to better serve constituents. Issaquah, Vancouver, and Seattle all used similar strategies to raise awareness, gather public opinions, and garner political support when formulating their UFPs. The City of Vancouver used this strategy during the initial phases of developing its UFP in 2006 and 2007, while Issaquah marked this strategy as the main strategy to acquire goals and objectives for its Green Issaquah Partnership. Seattle, with its larger capacity, hosted community meetings in collaboration with the Department of Neighborhoods through the Community Liaisons program to engage with diverse communities. Therefore, it could be beneficial for the City of Lakewood to host community meetings as one of the first steps toward building a UFP that aims for achievable goals and public support.

### Launch Public Surveys

Using public surveys is another strategy that cities commonly use to acquire comments and suggestions from the public for their UFPs, as cities sometimes are constrained by budgets to host in-person community meetings regularly. Public surveys are commonly conducted in the form of online surveys, which offer several advantages in terms of cost-effectiveness and convenience. By using online surveys, the city can provide an accessible platform for the public to submit their comments and feedback conveniently from their own devices. This

eliminates the need for physical paper surveys and allows for a larger reach and participation from a wider range of individuals. Additionally, online surveys streamline the data collection process, making it easier for the city to compile and analyze the public's comments efficiently. However, online surveys do have the disadvantage of potentially reaching a limited audience. Typically, online surveys attract individuals who are already interested or engaged in the related topics or issues. This self-selection bias may result in a sample that is not fully representative of the entire population or community. Therefore, public surveys have the potential to exclude the viewpoints of individuals who are not actively engaged or interested in UFPs, despite their potential to provide valuable insights and contributions. For the City of Lakewood, public surveys can serve as valuable complementary tools to community meetings, allowing for a broader reach and gathering input from a diverse range of community members. Since the City Council has already recognized regular community-wide surveys as one of the 2021-2024 goals during its July 2022 study session, the city has the potential to incorporate questions regarding the UFP activities and priorities into existing regular surveys to save resources (City of Lakewood City Council, 2022). By combining these two strategies, the city can enhance the outreach process and gather more detailed and useful responses from a wider range of stakeholders.

### Construct a Volunteer System

Experiences from other cities show that volunteers are essential for successful UFPs, as they provide an additional workforce apart from government staff, and can help plant trees, remove invasive species, and perform other activities to help meet UFP goals. In interviews with representatives from Issaquah, Vancouver, and Forterra, we learned that each city has devoted resources to constructing a central system to manage the volunteers. The implemented system enables the city to effectively track past volunteer efforts and strategically plan future work, providing a comprehensive overview of progress for each MU. This streamlined approach facilitates efficient UFP operation, allowing for improved coordination and monitoring of volunteer activities. Implementing a volunteer tracking system that captures individual volunteer contributions enables the city to recognize and reward exceptional volunteers. By acknowledging their efforts, providing rewards, and expressing appreciation, the program can inspire and motivate volunteers, fostering a culture of value and appreciation for their voluntary work. This approach encourages continued engagement and dedication among volunteers, contributing to the long-term success of the program. Given the benefits and advantages mentioned, it would be valuable for the City of Lakewood to allocate resources towards the development and implementation of a volunteering system that effectively manages and tracks the progress of volunteers' work

### Build a Forest Stewardship Program

Issaquah established its Forest Stewardship Programs with the purpose of engaging individuals who are passionate about urban forests and interested in expanding their knowledge. These programs aim to identify and empower individuals who are willing to take on leadership roles, guiding and inspiring other volunteers to make positive changes and enhance the environment within their community. In addition to recruiting volunteers, Issaquah's Forest Stewardship Program also aimed to engage individuals who wanted to expand their knowledge of urban forests and develop their leadership abilities. Through a structured training process, these individuals became "Forest Stewards" who worked either independently or in small teams to organize and implement restoration projects in specific parks. They played a crucial role in leading volunteer events and closely collaborated with city staff (City of Issaquah & Forterra, 2020). Implementing a similar stewardship system in the City of Lakewood could be highly beneficial. It would not only provide more opportunities for community members to actively participate in tree planting and care initiatives but also allow the city to achieve the goals of its UFP in a cost-effective manner. By having Forest Stewards capable of leading volunteers and organizing events aligned with the UFP's objectives, the volunteer efforts would become valuable contributions to the city's UFP.

### Host Workshops for Private Owners

Both Issaquah and Vancouver host activities like Tree Talk Workshops as one of their private landowner engagement strategies. These talks serve to involve private owners and educate them on how to better maintain private trees. The City of Lakewood could consider hosting similar activities, if feasible, to enhance its engagement with private landowners. Since the government does not have direct control over privately-owned trees, educating tree owners about the importance of specific tree species that contribute to the overall environmental well-being is key. By promoting the maintenance of trees that align with the city's goals outlined in the UFP, private landowners can play an integral role in supporting the city's broader goals and objectives.

### Collaborate with Other Organizations

All of our case study cities have established partnerships with various organizations to help fulfill their UFP goals. Issaquah and Seattle partnered closely with Forterra, a nonprofit organization that works with cities to help evaluate the health and condition of their forests and develop a program to protect, enhance, and sustain those resources. Vancouver also partnered with various neighborhood organizations, both private and nonprofit, to help achieve its UFP goals. Partnerships with relevant organizations offer funding opportunities and access to field experts, which can enhance the implementation of Lakewood's UFP. Partnerships with potential organizations are a valuable option for the City of Lakewood to consider as a way of increasing its capacity to implement its UFP, especially since the initial resources for developing and implementing its UFP are limited. Appendix A presents a partnership guide that could support the exploration of potential partnerships to support the City of Lakewood’s urban forest.

### Equity Considerations

The cities highlighted in Chapter 4 emphasized that equity considerations are key focal points for developing their future UFP goals. Specifically, all three cities committed to finding creative ways to incorporate demographics on race, language, and other neighborhood characteristics in order to equitably engage the city’s diverse populations and address environmental justice issues. The City of Seattle introduced the Race and Social Justice Initiative (RSJI) and the Equity and Environment Initiative to address and rectify environmental disparities and promote social justice within the city. All three cities also highlighted the importance of considering minorities during planning phases and community meetings to make sure low-income earners, people of color, immigrant communities, and senior citizens all have fair treatment and meaningful involvement in the development, implementation, and enforcement of environmental laws, regulations, and policies (City of Issaquah & Forterra, 2020; City of Seattle, 2020; City of Vancouver, 2021).

The City of Lakewood (2022) has already demonstrated a strong commitment to equity and inclusion by recently hiring a professional Diversity, Equity, and Inclusion (DEI) manager. This consultant will launch a training initiative for city personnel, aiming to enhance the related values across the departments. This training initiative will be a multi-year process that includes examining city processes and implementing DEI lenses consistently throughout projects, which provides opportunities to incorporate important values into the new UFP in a meaningful and impactful manner and result in a more harmonious and socially responsible urban forestry program that benefits the entire Lakewood community.

## 5.3 Administrative Capacity

### City Departments

As outlined in Chapter 4, there are various organizational and administrative structures supporting each city's UFP, including differences in the city departments that are involved in administering the UFP. Vancouver and Seattle have advisory boards with members from the community to ensure oversight and prioritization of the city's urban forestry goals. Seattle's Urban Forestry Commission supports the city departments that carry out specific forest management tasks. The City of Seattle does not have a single agency identified as the sole authority for urban forestry throughout the city. Instead, there is an Urban Forestry Core Team, which is composed of City of Seattle employees across multiple departments. Establishing a commission or advisory board provides accountability and assists city departments with multiple responsibilities to allocate sufficient time for UFP implementation.

The Vancouver houses their urban forestry management within a single department, which is located within Public Works. Even so, the City of Vancouver prioritizes cross-department collaboration on the health and maintenance of trees throughout the city. Vancouver also has an Urban Forestry Commission that supports coordination in the city and ensures UFP prioritization. The city manages collaboration through frequent communication among departments, along with well-documented guidelines and requirements for tree maintenance. The Urban Forester is an ISA Certified Arborist and is able to provide guidance on trees throughout the city to all departments. In addition to the voluntary commission, Vancouver has a small team dedicated to the UFP that coordinates with city departments continuously, supporting logistics and holding volunteering events.

Finally, the City of Issaquah, whose UFP is a relatively new initiative, has a more insular management structure, with the majority of the UFP work taking place within its Parks Community Services Department.

During our interviews, many experts suggested that a single department should house the UFP, in contrast to the City of Seattle's cross-departmental Core Team. Housing the program under a single agency with a dedicated staff member, either a current city employee or a new hire, can ensure that the initiative takes priority in the city. Based on the current organizational structure of Lakewood, the city could consider housing a UFP under Parks, Recreation, and Community Services (PRCS) or Public Works Engineering because of the maintenance work that will be central to the UFP. The advantages of this approach are that those departments already do similar work to the one the UFP will require, so they will have the expertise and knowledgeable staff to implement the program at a lesser cost. The downside of this first option is that the PRCS and PWE departments have many other responsibilities within the city and have limited capacity to manage the UFP. The city could also consider a Core Team comprised of representatives from Community and Economic Development, PRCS, and Public Works. The advantage of that approach is that having more stakeholders within the city facilitates work distribution, ensuring neither department is overburdened by the program and the UFP is more sustainable. The downside of the approach is that with very diffuse responsibilities, the program would not be a priority for the departments that already have many priorities. This downside could be addressed by having a standalone advisory board and/or creating a position whose sole responsibility would be to coordinate program activities throughout the city and whose main priority will be ensuring each party is meeting its goals, as approved in the program plan. That position must be given authority to follow up with other departments to ensure the work is sustainable and no department is burdened with the coordination and logistics between departments. In light of the above, creating a new urban forestry advisory board to oversee the program at the city level, following Vancouver's and Seattle's examples, might be the best option for Lakewood, considering the city structure and capacity to take on a new UFP.

## Staffing

Each of the three case study cities has a different staffing structure. The City of Seattle, which has the oldest and most established program, does not have UFP-specific staff. Instead, representatives from related departments comprise a Core Team that leads urban forestry initiatives in the city. In an interview with Vancouver's Urban Forester, we learned that the city has four full-time urban forestry staff members, including the urban forester. Vancouver also hosts AmeriCorps members who provide additional assistance on UFP activities. Issaquah's Parks and Community Services Director informed in an interview that over the last four years, an existing Parks and Community Services employee has coordinated UFP activities in Issaquah. Additionally, Issaquah will hire two dedicated staff members in 2023 – a full-time Urban Forest Supervisor and a part-time Volunteer Coordinator.

Lakewood could also consider hiring a full-time administrator in the first year who manages UFP activities and volunteer efforts, particularly if there is no capacity for a current staff member to take on this responsibility. Alternatively, Lakewood could consider a similar model to Issaquah's where existing employees, within the relevant city departments, administer the urban forestry program in the initial implementation period. The city could apply to become a host for AmeriCorps members, which could also support the program at a lower cost to the city. However, there is a rigorous application process, and this strategy would require a dedicated supervisor for any AmeriCorps members.

## Budget

The projected 2023 expenditures for UFP activities in each city vary greatly across each city. In the initial years of a UFP, the largest expenditures to consider are staffing, resource assessments, and volunteer supplies. There are many funding sources that the case study cities used to fund UFP activities. We have outlined the four main sources below:

### *Reallocate Storm and Surface Water Utility Fee Revenue*

Through our interviews, we learned that cities could allocate a portion of storm and surface water fees to urban forestry activities. There are equity implications associated with using city fees, which are regressive in nature, to fund urban forestry. Allocating a portion of fee revenue to urban forestry activities also means that the revenue will not be available for other stormwater management purposes. Nonetheless, it is crucial to recognize the long-term benefits that trees provide by reducing stormwater and surface water management costs. According to the U.S. Department of Agriculture Forest Service (2020), trees benefit city stormwater systems through rainfall "intensity reduction, stormwater infiltration and uptake, and nutrient load reduction" (p. 1). Therefore, urban forest activities can be a useful tool for managing storm and surface water systems and reducing management costs in the long term. Lakewood's updated tree ordinance currently references the benefits urban trees provide to storm and surface water management systems.

The City of Vancouver utilizes this fee to fund urban forestry staffing and activities. In 2023, 95% of the departmental budget, including four staff members, is estimated to be funded through this fee (City of Vancouver, 2022b). The City of Issaquah is using a portion of this fee to fund a full-time Urban Forest Supervisor starting in 2023 (City of Issaquah, 2022).

Surface and stormwater utility fees can be a consistent and stable revenue source for UFPs. The city would need to document how revenues were used and how those activities promote better storm and surface water systems.

### City Tree Fund

Many cities, including Lakewood, have established Tree Funds that are funded through penalties and fees related to tree maintenance throughout the city. These funds can also be funded through donations. The City of Lakewood's tree ordinance outlines that the Tree Fund can be used for the following activities:

- acquiring, maintaining, and preserving wooded areas
- planting and maintaining trees
- establishment of a public nursery
- urban forestry education
- implementation of tree canopy monitoring program

Each of the activities outlined below are within the scope of a UFP and can be used to fund the implementation of a UFP.

### General Fund Revenue

All three of our case study cities utilize a portion of General Fund Revenue for UFP activities. Lakewood could consider allocating a percentage of General Fund revenues to UFP activities, similar to the 1% that the city currently allocates to Human Services.

### Government and Nonprofit Partnerships

There are many government and nonprofit grants and partnerships available to financially support urban forestry work within the City of Lakewood. We have provided a full list of public and nonprofit agencies for potential partnerships the city can consider in Appendix A.

The analysis discussed in this chapter is the foundation for the Urban Forestry Implementation Guide prepared for Lakewood. Chapter 6 comprises the set of recommendations for the first five years of plan design and implementation.

# Chapter 6: Urban Forestry Implementation Guide

As discussed throughout this report, Lakewood aims to grow its tree canopy from 26% in 2022 to 40% in 2050, an increase of 14 percentage points. This goal is motivated by the city's conviction that trees bring relevant benefits to the community, such as filtration of air pollution, stormwater management, wildlife habitat, carbon sequestration and storage, and other benefits that would likely enhance the quality of life for residents. This chapter provides a detailed Urban Forestry Implementation Guide to support the city's efforts to increase its canopy coverage and maintain its existing urban trees. The following pages cover vision and mission, goals and outcomes, equity commitments, an analysis of the City of Lakewood's current canopy coverage, fieldwork steps and best practices, community engagement approach, monitoring and evaluation, and a resources section that explores initial investment and potential partnerships to get the program started and make it a sustainable local policy.

This implementation guide provides strategic steps to start a UFP and best practices and priorities for the first five years. The following sections in this chapter are recommendations based on the analysis of available information on Lakewood's urban trees and open public areas.

Our four main recommendations are as follows:

- Recommendation 1: Develop a mission, vision, and goals for urban forestry in the City of Lakewood.
- Recommendation 2: Complete a comprehensive resource assessment and begin restoration practices in the city.
- Recommendation 3: Develop a comprehensive community engagement strategy.
- Recommendation 4: Create administrative capacity within the existing city organizational structure.

These recommendations provide guidance for the beginning phases of program development but require discussing them with the Lakewood community in detail. An ISA Certified Arborist should evaluate our technical assistance and canopy recommendations.

## RECOMMENDATION 1:

Develop a mission, vision, and goals for urban forestry in the City of Lakewood.

### Mission and Vision Statements

Mission and vision statements guide action and are key tools for an effective management strategy. We have drafted mission and vision statements to support the City Council and all relevant departments in moving forward with the program. However, we recommend that these draft statements be revised and agreed on by the parties that will implement the program after consultation with the community.

Mission Statement:

> The UFP should be a multi-agency effort in which volunteers, residents, businesses, local organizations, and the City of Lakewood design and work together to transform, protect, and grow natural resources in the city.

Vision Statement:

> The City of Lakewood has a sustainable and healthy urban forest with adequate tree species for its local ecosystem that is protected by the city and its community enjoys the benefits of urban trees and recognizes their environmental and economic value.

## Plan Goals and Outcomes

Alongside the mission and vision statements, specific goals and outcomes will support success in following this guide while providing clear guidance for action, especially in the earlier stages of implementation. Based on the analysis of Lakewood's context, current resources, and best practices identified in other cities in Washington state, we developed the following 5 goals, each with associated outcomes. Recommendation 4 offers a more detailed description of the monitoring and evaluation actions recommended to track the plan's success, according to these goals and outcomes. Additionally, we developed specific indicators to measure outcomes under each goal.

- **Forest health:** Improved urban forest health, appropriate tree planting, and invasive species control throughout the City of Lakewood's parks and urban areas:
    - Implement restoration practices in the prioritized Management Units (MU) in Lakewood through the end of year 5.
    - Identify and remove invasive plants from Lakewood's parks and forested urban areas.
    - Establish clear responsibilities in tree maintenance within the city structure and standardize maintenance practices, to ensure regular maintenance operations and canopy health.
- **Tree population expansion:** Increased canopy coverage within the city limits, including the City of Lakewood's parks and forested urban areas:
    - Grow the tree canopy in the City of Lakewood by 40% by 2050.
    - Plant native trees and plants that are appropriate for the City of Lakewood's ecosystem.
    - Define priority management areas based on land, environmental, and equity considerations including, but not limited to land cover, zoning categories, local plant species, the Tree Equity Score, unemployment, demographics, and surface temperature data.
- **Community engagement:** Lakewood residents are regularly consulted to design and update the plan, and the community is actively engaged in the management and restoration of the city's urban forested areas:
    - Create a voluntary Urban Forestry Advisory Board as a space for community stewardship of the program. This outcome only applies if the city follows Options A or B in Recommendation 4.
    - Strengthen relationships with businesses, nonprofit organizations, schools, and other local allies to collaborate in efforts related to the urban forest.
    - Recruit volunteers and build community capacity for long-term engagement.
    - Survey the community regularly to maintain an updated understanding of their interests and needs, as well as the community's understanding of the city's plan and how to support it.
    - Engage community members in restoration and monitoring projects; and
    - Create comprehensive guidelines and communications to engage the community in the protection, restoration, and maintenance of trees on the right-of-way and private property.
- **Equitable access to urban forest benefits:** Community members across the city enjoy the benefits of a healthy and growing urban forest, independently of their area of residence, race, or socioeconomic conditions:

  - Prioritize tree planting in canopy-deficient areas to ensure equitable distribution of benefits to all residents.
  - Allocate financial and human resources recognizing economic and social equity.
  - Communicate and promote the benefits associated with urban forests on quality of life, including psychological, social, and economic benefits.
  - Develop communication strategies and tools to ensure accessibility for all, such as including subtitles for recorded meetings and translating relevant documents to languages other than English.
- **Sustainability:** Sustainable financial resources and operational capacity support the evolution of urban forestry in the City of Lakewood; tree canopy growth; forest health and an engaged community that enjoys the benefits of forested urban areas:
  - Dedicate financial resources to support the mission of urban forestry in the city.
  - Strengthen partnerships with nonprofits and business leaders in urban forestry development to collaborate in further developing this Urban Forestry Program and support plan revisions in the future.
  - Position the City of Lakewood as a model for urban forestry programs in Washington State.

## RECOMMENDATION 2:

### Complete a comprehensive resource assessment and begin restoration practices in the city.

This section outlines steps for how the city can begin implementing and prioritizing urban forestry activities throughout the city. A few steps need to be taken before the city can move into planting trees. Conducting a tree assessment and using the results to control for invasive species and establish maintenance priorities need to come first, ensuring health for the current tree population is going to be more important than planting new trees, at least during the first years of the program.

#### Field Step 1: Select Management Units and data attributes for a comprehensive Tree Assessment

Before the city can begin planting trees and controlling invasives, it needs to complete phase 1 of the FLAT assessment outlined in Chapter 5. While the ultimate goal of the urban forestry plan is to implement on-the-ground field health assessments of the city's current canopy, we recommend that the city prioritize the eight MUs outlined in Figure 8 in Chapter 5. To help narrow down options for where to start the tree assessment we wanted to identify the MU that has the most open space, publicly owned land, and had the lowest Tree Equity Score according to National Explorer. Prioritizing a MU with more publicly owned land will help the city keep costs low by utilizing resources that are already available to it like parks maintenance staff. Selecting a MU with a lot of open space also hopefully reduces the costs associated with invasive species control due to the existing maintenance done on that land. Including the Tree Equity Scores in our analysis was directly due to our recommended plan outcome of having equitable access to the program's benefits.

The MU that has the most public land is MU six and the MU with the lowest Tree Equity Score is MU four (American Forests, 2023). MU four has a Tree Equity Score of 45 out of 100, while MU six has a score of 78 (American Forests, 2021b). While MU six has comparatively a much higher Tree Equity Score than MU four, the census block just south of it has the same score at 45 (American Forests, 2023). Due to its proximity to a low equity score census block and its abundance of public land, MU number six would give the city the most

opportunity of canopy growth while also addressing equity issues. MU six is also the largest census block, giving Lakewood options on where to start the tree health assessment.

Relevant data attributes need to be selected to start field assessments of the MUs. These data attributes are the different ecological and local assessment qualities that the city can prioritize. These can be species composition, size and age of species, invasive species, etc. Table 9 shows examples of data attributes that are relevant to the city's goals. We recommend that the city work in tandem with a professional urban forester to develop a comprehensive list of data attributes. For a full list of potential data attributes, please see the FLAT guide.

*Table 9: Examples of Data Attributes for FLAT Assessment*

| Data Attribute | Detail |
|---|---|
| Site Identification | Name or management number, some way to identify the site and its data |
| Date | When progress assessments are made it will be important to have a baseline |
| Land Cover Type | Identification based on the classifications determined from the tree code review: Grass/Open Space, Bare Soil, Impervious, Tree Canopy, Shrubs |
| Tree Species Composition | Document what trees are where to know what natives are common and how to promote biodiversity |
| Age Class | Lakewood is having issues with Gary Oaks aging so documenting the relative age of trees would be relevant for each MU's assessment |
| Stocking | Crown closure estimate as viewed directly above |
| Shrub Species Composition | Grassland and shrubland are a large percentage of Lakewood's open spaces |
| Invasive Density/Composition | Understanding the breadth and depth of invasive invasion of MUs will be very relevant for management strategies |
| Soil Health | This could include root rot, bare soil, dryness, or other relevant details |

The data attributes outlined in Table 9 are some of the most used attributes in a comprehensive resource assessment of this kind. The city should make sure to develop a site identification system that makes sense for its current software and systems of organization. Tracking invasive species identification and density will be a major part of the long-term environmental stewardship that we recommend starting and using throughout the lifetime of the UFP.

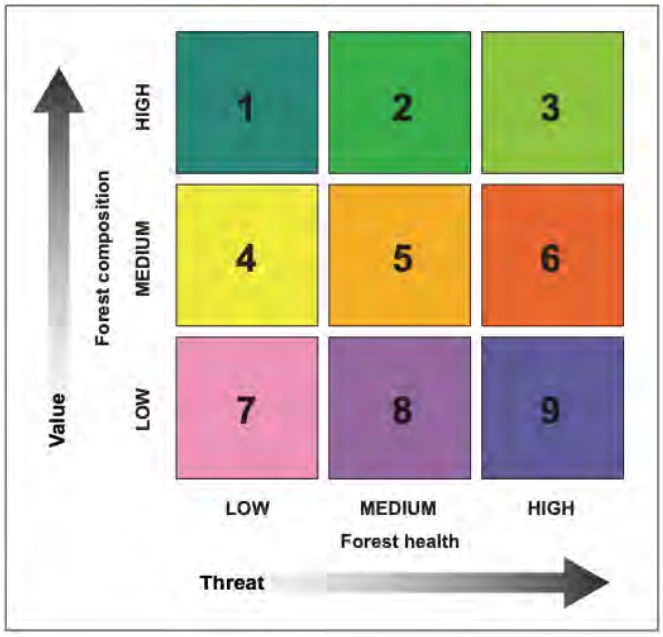
### Field Step 2: Tree-iage Assessment.

Both Seattle and Issaquah used the Tree-age Assessment model in developing their implementation plans and eventual urban forestry management plans. While Seattle has also been implementing a full tree audit strategy, the FLAT assessment was developed in partnership with the City of Seattle. The tool was designed in the Pacific Northwest and provides a lot of resources for communities with similar ecosystems making it a good for the City of Lakewood. After the relevant data attributes are selected in Field Step 1, the next step for the city is to continue the tree assessment by implementing FLAT phase 2. This involves a field assessment of MUs by trained

staff or volunteers to get an overview of the ecological health of the MU. The field assessment will involve assessing each MU based on each data attribute.

The ecological health rating will then be assessed on the Tree-iage Matrix and each MU will be assigned a tree-iage category or a priority rating from the matrix. The Tree-iage Matrix can be seen on the next page in Figure 9.

*Figure 9: Tree-iage Matrix (Ciecko et. al., 2016)*




As shown in Figure 9, tree-iage categories range from 1 to 9. The Green Issaquah Partnership implementation guide describes the rating system as follows,

> A rating of 1 represents high-quality habitat and low invasive-species threat, and 9 represents low-quality habitat and high invasive-species threat. An MU that appears in tree-iage category 3 scored high for habitat value and high for invasive cover threat. MUs scoring low for habitat value and medium for invasive cover threat were assigned to category 8 based on the tree-iage model. (City of Issaquah and Forterra, 2020, p. 32).

Since there are limited values to represent forest health and composition, the ratings can be subjective based on who is performing the assessment. Because of this subjectivity and because of how vital forest health is to this program, we recommend the City of Lakewood hire an urban forester to perform this audit. The professional will most likely be familiar with this tool and have the experience to judge the forest's health and composition.

After this broad overview assessment of each MU is recorded, then the city will determine which MUs need what kind of attention. Some areas will have higher invasive threats, and some will have low threats and can be early planting areas. To easily understand where Lakewood's MUs fall within each health category, the assessment should be organized by acreage. This way the overall management needed can be estimated by how much work is needed per acre of land. The goal is for all of Lakewood's land to eventually be categorized in MUs and then assessed with the tree-iage matrix.

To start, we recommend that the City of Lakewood start with MU six from Figure 8 in Chapter 5. Since this management unit is primarily publicly owned land, there will be less of a barrier for the city to start its assessment and implement FLAT. This MU is also near a census block with a low Tree Equity score, so starting

the assessment there will help reduce the negative effects of a small tree canopy. MU six is also the largest MU at about 465 acres, which we recommend be broken up into smaller sub-management units.

The Tree-iage method is explained in greater detail in the FLAT guide (Ciecko et. al., 2016).

### Field Step 3: Continue maintenance in parks and natural areas.

The City of Lakewood currently invests significant time and resources in the maintenance of local parks and natural areas. This ongoing maintenance will continue as the city determines other areas of prioritization. The city should prioritize specific areas within parks and natural areas to focus additional maintenance based on the comprehensive assessment recommended in Field Objective Two, areas of importance as defined by the Lakewood community members, and available resources.

### Field Step 4: Develop a private land strategy to increase community involvement and support.

As previously mentioned, 72% of Lakewood's UTC is on privately held land, meaning that the majority of the city's tree canopy is outside the jurisdiction of the city. As such, large portions of the priority MUs outlined in Section 5.3 are privately held. Based on this, the city should develop a private land strategy to increase and restore UTC on private land. The community engagement process outlined later in the chapter will provide a necessary foundation for engaging the community. However, we have also detailed below initiatives that the city can implement to actively engage the public in restoration and planting efforts on their own land.

#### *Yard Tree Giveaways*

Many surrounding cities, including the City of Tacoma and the City of Seattle, hold tree giveaways one or two times each year. Some cities also provide a bag of mulch and comprehensive care instructions for each tree. Lakewood community organizations, such as the Lakewood Chamber of Commerce, have hosted tree giveaways in the past. Lakewood should hold regular tree giveaways for residents. The city should either hold a separate giveaway or partner with the Chamber of Commerce to increase participation and impact. This initiative removes the barrier of choosing and purchasing a tree for residents, which can be particularly important for low-income residents. Lakewood should consider providing transport and planting trees for residents with limited mobility. The City of Lakewood Tree Fund, which is funded through tree preservation efforts, would be an important revenue source for this service.

#### *Create a City Fund to Reduce Tree Purchasing Costs*

Similar to tree giveaways, offering a tree rebate to citizens who purchase trees for private property encourages residents to plant trees. The City of Vancouver, WA offers residents a 50% rebate, up to $50, for up to five trees through their "Treefund" program. Offering reimbursements of this nature can significantly decrease the cost of planting a tree for residents, encouraging residents to plant more trees.

#### *Provide Tree Maintenance for New Private Trees*

The city should focus on private land in low-income neighborhoods, which are often disproportionately impacted by high surface temperatures. One way to increase privately planted trees in these communities is for the city to offer to plant trees in these neighborhoods and to provide ongoing maintenance every five years. This initiative would be a considerable undertaking for the city and should only be implemented once an urban forestry team is established and publicly held trees are being regularly maintained.

### *Develop and Communicate Comprehensive Right-of-Way or "Street Tree" Guidelines*

Currently, communication to the Lakewood public surrounding Right-of Way (ROW) planting, maintenance, and removal is imprecise and difficult for the public to find. The city provides guidelines around protected trees, but there is no clear general guidance on street trees. This lack of communication around street trees poses many issues for the city and its residents. For example, if a street tree is planted too close to a street or a stop sign, it may ultimately need to be removed due to visibility issues. If a tree that is too tall at maturity is planted in the ROW, it may impact electricity lines or their maintenance, which could ultimately lead to the tree's removal. To mitigate these issues, the city should develop a webpage that includes comprehensive education and guidance on street trees. This should include recommendations on the types and sizes of trees that can be planted, tree care, planting and spacing, and maintenance. The city should also provide visual guides to residents on ROW planting. An example guide, created and used by the City of Tacoma, can be found in Appendix D.

As part of developing and communicating these guidelines, the city should consider implementing a permit system for the planting of ROW trees to ensure that all requirements are met. Many cities in the surrounding area, including the City of Tacoma, require permits for planting ROW trees to help mitigate issues related to improper planting.

To see examples of comprehensive ROW and Street Tree webpages, including permitting information, Lakewood can refer to the City of Tacoma, WA urban forestry and planting in the rights-of-way websites (City of Tacoma, n.d.). The City of Vancouver, WA also provides excellent examples of resources on its tree permitting website that Lakewood should consider providing its residents (City of Vancouver, n.d.).

### *Community Education*

The city should provide or source educational opportunities where residents can learn about the benefits of increasing city tree canopy on private land. While the city may not have the capacity to house these sessions in the initial phases of this program, there are many government and nonprofit resources available. For a list of potential partnerships, please see Appendix A.

## Field Step 5: Identify and prioritize work in MUs.

Once the city has completed the field assessment of the MUs, the next step in the FLAT tool is phase 3: management prioritization. The city should identify areas of priority based on the tree-iage method outlined in Field Step 2. Based on the identified MUs, the city should design annual and multi-year restoration plans for the high priority MUs. Comprehensive restoration and maintenance schedules ensure that sites do not revert to pre-work condition, which can cost additional resources and cause the public to lose faith in the project.

As new sites are identified for restoration, the tree-iage model can help establish the level of priority and work necessary. For example, MUs falling into tree-iage category 1, which signifies a "high-quality" habitat with little to no invasive plants, will immediately be eligible for restoration and routine monitoring and maintenance. Other high-value habitats, falling into tree-iage categories 2 and 3, will be considered high-priorities for protection and restoration. As the city prioritizes work, it should consider additional factors (i.e., public access and safety or proximity to wetlands, streams, and shorelines). If there are existing agreements with other entities to manage specific areas, such as utility corridors, the entities will still maintain responsibility for providing maintenance as previously agreed upon.

### Field Step 6: Identify areas appropriate for professional crew intervention.

While the Green Lakewood plan relies heavily on volunteers, not all projects are suitable for volunteers. The city should determine which sites are not suitable for volunteers and should utilize city staff and contract services to carry out maintenance and restoration in those sites.

### Field Step 7: Implement restoration best practices on all project sites.

The *Four-Phase Approach* to restoration field work is an important best management practice (BMP) that was developed by Seattle Parks and first outlined in the Green Seattle Partnership (City of Seattle, 2007). As outlined in our literature review and Chapter 5, restoration and adaptive management are essential to the long-term health of existing and newly planted trees. Figure 10, on the following page, illustrates the potential progression of forested parklands and urban forests over 100 years with and without regular restoration and maintenance.

Restoration activities fall into four main phases:

Phase 1: Invasive Plant Removal

Phase 2: Secondary Invasive Removal and Planting

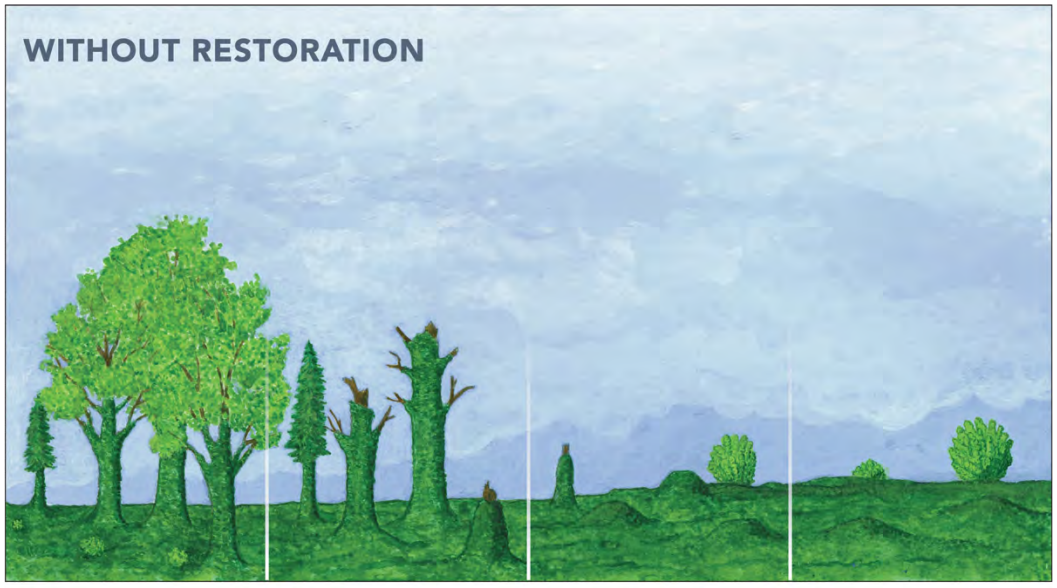
Phase 3: Plant Establishment and Follow-Up Maintenance

Phase 4: Long-Term Stewardship and Monitoring

The Four-Phase Approach to fieldwork has been adapted from the Green Seattle Partnership and the Green Issaquah Partnership for the City of Lakewood. Moving through each of these phases may take several years. These restoration phases should be used on MUs that have been identified through a comprehensive tree resource assessment. All work should be thoroughly documented to track, measure, and report progress.

MUs that have been determined to fall under tree-iage category 9, which indicates high invasive cover and low-value canopy, may spend long periods in the first three phases outlined below before moving into Phase 4. Comparatively, MUs that fall into tree-iage category 1, indicating high-value canopy and low invasive cover, may require very little time in the first three phases and may move rapidly into Phase 4. The city should complete an assessment of each site before work begins in the appropriate phase.

*Figure 10: Illustration of Urban Forest Progression with and without Restoration Practices (Provided by Green City Partnerships, Forterra (2023))*

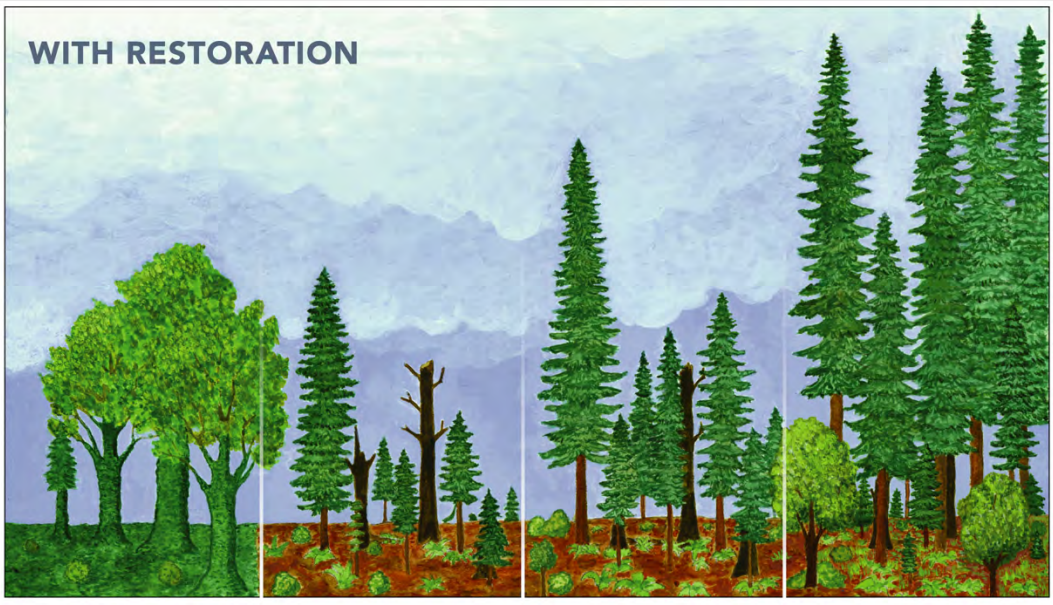



**PRESENT**
Forested parklands are dominated by deciduous trees, mainly big-leaf maples and alders, nearing the end of their life. After decades of neglect, non-native invasive plants, such as English ivy and wild clematis, cover the ground and grow up into the tree canopy.

**IN 20 YEARS**
Invasive plants outcompete and grow over existing native vegetation, blocking the sunlight plants and trees need to thrive. English ivy now dominates the tree canopy, making the trees weak, top heavy and susceptible to windfall. Eventually, trees die or fall over.

**IN 50 YEARS**
The trees are gone. Only a few native shrubs struggle to survive the stress of competition with invasive plants.

**IN 100 YEARS**
The forest is destroyed. Native trees can no longer establish on their own. We are left with a dense "ivy desert." Very few plant species can live, and forest biodiversity is gone. Such conditions provide homes for rats and scarce habitat for more desirable urban wildlife.




**PRESENT**
Forested natural areas are dominated by deciduous trees, such as big-leaf maples and alders, nearing the end of their life. After decades of neglect, non-native invasive plants such as English ivy are smothering native vegetation and weakening native trees.

**IN 20 YEARS**
Through restoration efforts and long-term maintenance, the non-native plants are removed. Native groundcovers, shrubs and evergreen trees such as Douglas firs and Western red cedars and hemlocks are planted.

**IN 50 YEARS**
As the evergreen trees grow, they shade out sun-loving invasive plants such as blackberry. Native understory plants thrive.

**IN 100 YEARS**
With continued stewardship, the maturing forest requires less care and provides greater benefits to the city.

### *Restoration Phase 1: Invasive Plant Removal*

The goal of the first aim is to clear the site of invasive plants. According to the Pacific Northwest Invasive Plant Council (n.d.), invasive plants negatively impact native plants, wildlife, and entire ecosystems. The impacts of invasive plants are widespread and far-reaching. When invasive plants are present, they degrade soil, which can lead to erosion and can ultimately negatively impact water quality. Invasive plants can also put endangered plant species at further risk, which leads to lower biodiversity (Pacific Northwest Invasive Plant Council, n.d.).

The city should focus on specific tree-iage areas within each MU. This helps ensure that invasive plants are thoroughly cleared, which can minimize potential regrowth. Removal techniques vary based on habitat and species. Please see Appendix E for a list of invasives common in the areas, including removal techniques, and see Appendix G for a list of native plants as a reference when identifying native vs. invasive. Initial removal may take more than one year to complete.

MUs with 50% or greater invasive cover are classified as “high threat from invasive species” and fall into tree-iage categories 3, 6, and 9. These sites will require major invasive-plant reduction, which will likely require skilled crews and special equipment. They may also require a significant investment of both funding and volunteers. Due to the high investment necessary to clear sites of invasive plants, the city should prioritize ongoing monitoring and maintenance to ensure significant removal is not necessary again in the future.

MUs with invasive cover between 5% and 50% are classified as “medium threat from invasive species” and fall into tree-iage categories 2, 5, and 8. These sites will also require invasive removal. However, growth in these areas is likely to be sporadic and less severe, which makes it more appropriate for volunteers.

MUs with 5% invasive cover or less are classified as “low threat from invasive species” and fall into tree-iage categories 1, 4, and 7. These sites need little to no invasive plant removal. Phase 1 work in these sites could involve walking around the site to visually check that invasives are caught before the problem can escalate.

### *Restoration Phase 2: Secondary Invasive Removal and Planting*

After Phase 1 has been completed and a planting site has been identified, an additional round of invasive plant removal should take place. This additional round of removal targets any potential invasive plant regrowth, and it prepares the site for young native plants.

Planting should primarily take place in the fall, although certain planting could continue through March (Llewellyn, 2022). The city should work with a certified arborist to develop appropriate plant palettes and work plans for each planting site. Please see Appendix F for a list of trees that can be used as a guide in plan development, including ideal habitat, soil, and shade conditions.

### *Restoration Phase 3: Plant Establishment and Follow-Up Maintenance*

This phase repeats invasive plant removal and requires continued maintenance and care for newly planted plants. While native plants have adapted to the Puget Sound’s drier summer climate, newly installed plants may experience transplant shock. This can impact root and shoot health. As a result, many plants require up to 5 years of care centered around establishment to ensure survival. Depending on site conditions, MUs may stay in Phase 3 for many years.

### *Restoration Phase 4: Long-Term Stewardship and Monitoring*

The final phase in this approach is long-term site stewardship, which includes monitoring sites to provide information for ongoing maintenance. Many monitoring activities, such as walking parks trails and other MUs to find invasive species, can be completed by volunteers. Properly trained volunteers may also complete regular documentation of sites by measuring growth and noting site characteristics and plant survival rates.

Maintenance activities will vary based on site location and habitat. However, it will typically involve spot removal of invasive plant regrowth and periodic planting where needed. Many maintenance activities can be completed by individual volunteers or volunteer groups. It is essential that maintenance is properly planned and executed to ensure that any problems do not escalate, which could cause the site to return to Phase 1, costing significant financial and time investments.

The goal of this four-phased approach is that, in time, all MUs will be enrolled in the restoration process and graduate to Phase 4. To support the whole-health of the city's urban forest, it is important that a comprehensive assessment and thorough preliminary field work take place before extensive planting begins.

## RECOMMENDATION 3:

### Develop a comprehensive community engagement strategy.

It is essential to develop a UFP that aligns with the interests and needs of the Lakewood community, as a successful UFP depends heavily on robust support and active participation from the people of Lakewood. It is also necessary to consider various aspects of accessibility and representation for the diverse community in the City of Lakewood when designing and implementing these activities to ensure equity and inclusivity. Therefore, in this section, we have outlined three major recommendations together with several considerations regarding effectively obtaining and utilizing community perspectives to inform program priorities and activities from the beginning. We used previous studies on Lakewood's community engagement from Chapter 3 as well as existing engagement and outreach strategies from Chapter 4 to inform our design for the City of Lakewood.

The community engagement strategies included in this recommendation are independent of the city's administrative approach to managing the UFP. Having a standalone advisory board, as discussed in Recommendation 4, does not take away the need or relevance of the community engagement strategies included in this section.

#### Host Community Outreach Meetings

First, we recommend that the City of Lakewood hold several community meetings. Meeting with the public is a direct and helpful approach when elaborating on the purpose and benefits of the UFP, as well as acquiring feedback to make necessary edits to the UFP (City of Issaquah & Forterra, 2020; City of Vancouver, 2007). Based on the strategies that Issaquah and Vancouver used, we recommend a specific sequence for the city to conduct its outreach meetings to make these meetings effective.

The city should first identify and meet with community leaders, including those who represent minority and historically underrepresented groups like BIPOC (Black, Indigenous, and People of Color) communities that are often disproportionately affected by environmental and urban planning decisions. Communicating with these community leaders can help to ensure that BIPOC voices are represented and heard in the formulation of the UFP. The outline of the meeting should at least include the following themes:

- convey the danger of climate change and how it might affect residents in Lakewood individually
- the importance of urban forestry
- plans to incorporate residents in the urban forestry program
- design strategies with the community leaders on spreading these pieces of information to the public

This meeting is critical to start the outreach and engagement process, letting the people of Lakewood know about the details of the UFP. Therefore, we recommend the city conduct this meeting as soon as possible to prepare for the following steps. The Diversity, Equity, and Inclusion (DEI) manager mentioned in Chapter 5 can

host this meeting as a way to continue publicly acknowledging the importance of considering minority communities throughout the UFP planning and implementing phases and intentionally maintaining communication with leaders of these communities so that they are involved in the policy-making process.

Next, we recommend that the city host several town hall community meetings with the people of Lakewood, conveying the importance of urban forests, sharing the goals and progress of the UFP as well as volunteering opportunities for the public to participate. The City of Vancouver conducted two similar community meetings to gather suggestions on October 2006 and February 2007, prior to the release of its 2007 UFP, which were effective and useful in explaining the program to the public and answering any questions that the public may have. We believe Lakewood should follow suit and host these meetings after the initial one with the community leaders.

In addition to in-person town hall meetings, we recommend that the city also offer a virtual attendance option (as it does now for City Council and Commissions and Advisory Board meetings), allowing individuals with limited mobility or those who face transportation challenges to actively participate in the decision-making process and contribute to a more equitable UFP. Offering an online option can also allow the city to record these meetings, making them available for later viewing to guarantee that the information is accessible to those who can't attend in real time. Furthermore, we recommend the city equip the recording with subtitles in order to address the needs of English as a Second Language (ESL) speakers, eliminate language barriers, promote an inclusive environment, and foster a sense of belongings among diverse community members.

To ensure that ESL and BIPOC communities have adequate opportunities to provide suggestions on the UFP, the city could host some of its outreach meetings in the corresponding districts (e.g., the International District, Springbrook, etc.), as well as in community centers for BIPOC populations. The city could also explore collaboration opportunities with local cultural Community-Based Organizations (CBOs) and Faith-based organizations to host these meetings, further demonstrating the city's commitment to making an equitable UFP and listening to these communities.

Utilizing local media and official urban forestry websites to promote community meetings can also increase the diverse participation from the community. The City of Vancouver has utilized its websites and local news media to spread the word about the urban forestry project and to encourage communities' participation (City of Vancouver & PlanIT Geo, 2023). Ideally, together with the help of community leaders who already spread the relevant content after the initial meeting, the public should possess preliminary knowledge of the danger of climate change, as well as how an urban forestry program can help with the mitigation of climate change, making these community meetings more efficient and providing essential opportunities for the city to answer the public's questions. Feedback gathered from these meetings can be incorporated into the formation and the adjustments of the UFP.

Holding these community meetings biannually would help make this strategy affordable, give the city enough time to study the suggestions it acquired from the public and make amendments, and still keep the community informed about UFP's progress. The City of Vancouver hosted two public meetings with an interval of approximately 6 months during its UFP's initial development phase (City of Vancouver, 2007). We expect the first meeting to be more time-consuming, as it is the first meeting to address the related topic and many explanations will be required. With the public's familiarity with the topic improved, we anticipate that future meetings will only include briefing the progress for the past six months, goals for the next six months, and answering any potential questions. Also, the time of hosting these meetings should be accessible, such as evenings or weekends, to enable working individuals or those with daytime commitments to engage in these initiatives.

In combination, these approaches will not only support transparency but also ensure that no interested parties are excluded from the conversation, maximizing the possibility of acquiring constructive feedback.

## Launch Public Surveys

At the same time, just like the three cities presented in Chapter 4, we recommend the city launch an online public survey on the responsibility of the right-of-way trees. Currently, many right-of-way trees are unclaimed and therefore not under maintenance, as neither the city nor the current property owner planted these trees. The city can use this survey to acquire property owners' opinions on the right-of-way trees. If the public believes that it's the city's responsibility to take care of these trees, then the city would need to educate the public that it's necessary to remove and replant some of these right-of-way trees as part of the urban forestry plan to combat climate change, as many of these right-of-way trees are unsuitable for the Lakewood's current situation.

## Construct a Volunteer System

As mentioned in Chapter 5, volunteers are crucial in helping Lakewood accomplish its goals in UFP. They also need to be carefully guided to conduct different activities that contribute to the health of Lakewood's urban forests. Therefore, we recommend the City of Lakewood establish a volunteering system to effectively recruit and manage volunteers as well as coordinate them to various activities. This system includes a stewardship system, volunteers, and a volunteer coordinator, together with workshops and outreach to other organizations.

### *Build a Forest Stewardship System*

As mentioned in Chapter 5, we recommend that the City of Lakewood construct a detailed forest stewardship program similar to what the City of Issaquah has built, to help guide volunteer activities.

We recommend several steps for the city to construct its Forest Stewardship system. First, during the town hall meeting mentioned before, when recruiting volunteers, the city should also call for people who are interested in learning more about tree protection, tree health, invasive species, etc., and want to become leaders in this field. After interviewing, qualified individuals will receive training from city staff, learn the necessary knowledge on tree maintenance and invasive removal, and become Forest Stewards.

Similar to the City of Issaquah, we recommend Lakewood first recruit 10 stewards at the beginning to see if this system is useful or not. Once these stewards demonstrate adequate proficiency in managing volunteers, the city should allocate 1 to 2 acres of trees to each of the stewards as their responsibility. The area of acres should not exceed more than 3, as it might be too burdensome for stewards to manage at the beginning. After a year of maintenance work conducted by the initial 10 stewards and their corresponding volunteers, we recommend the city recruit 5 additional stewards annually starting Year 3 to expand on its acre coverage if the Forest Stewardship system generates positive outcomes.

### *Recruit Passionate Volunteers*

Having a decent number of volunteers that are passionate about preserving Lakewood's environment and believe in the numerous benefits of urban forests is essential for the success of the city's UFP. Our ideal estimation is to recruit 10 volunteers per steward each year starting Year 2. However, this criterion can be modified depending on the stewards' capacity and the total number of volunteer registrations. Volunteers can restore and enhance the city's urban forest, leveraging the program's financial resources, and allowing more areas in Lakewood to be actively cared for (City of Issaquah & Forterra, 2020). This step could be conducted during the outreach meetings with the community. At the end of the meeting when the benefits of the urban forestry program are explained, the city can then express the importance of volunteering work and recruit those who are interested on-site. If resources permit, the city could also use its urban forestry website and social media to advocate volunteering works.

In addition to the community gatherings, the city can also explore collaboration with local organizations to maximize its efforts in recruiting volunteers. In Lakewood, esteemed community associations such as the Rotary Club and Kiwanis Club are already actively engaged in facilitating community events like community gardens. We recommend the city investigate potential collaborative endeavors with these organizations to identify and recruit prospective volunteers. Individuals participating in these events often demonstrate a strong commitment to dedicating their personal time toward bettering their community. Therefore, promoting the advantages of volunteer initiatives among these dedicated community members presents a valuable opportunity for the city to capitalize on. By strategically utilizing these events, the city can effectively enlist volunteers who are passionate about enhancing the environmental quality within their neighborhoods.

These volunteers, based on their preferences in working locations, will be assigned to the Forest Stewards. The stewards, together with their corresponding volunteers, can first start with removing invasive species in their related areas. This maintenance work will keep the existing tree canopy healthy and ensure Lakewood's tree canopy coverage will not decline. To motivate stewards and volunteers, the relevant city staff should meet with them from time to time, praising their work and informing them that their work is making a true difference to create a healthier environment for the people of Lakewood to live in.

### *Appoint a Volunteer Coordinator*

We recommend the city appoint a volunteer coordinator to manage the communication between city staff and volunteers once the Forest Stewards and volunteers have generated significant progress and have reached a certain scale that requires the city to coordinate their work. The duties of this volunteer coordinator include organizing diverse volunteering events other than tree maintenance, tracking volunteers' progress, and providing awards and recognitions for dedicated stewards and volunteers, and making necessary changes to the targets of the stewards in corresponding with the modifications of the UFP. This coordinator should also be responsible for implementing the software that is best suited for volunteer management. The duty of this volunteer coordinator, based on the budget selection, can either be satisfied by one of the city staff that is identified as Neighborhood Coordinator in Budget 1, or by the Full-Time Program Administrator identified in Budget 2.

### *Host workshops to educate property owners on tree-related topics.*

We recommend the city host workshops open to all property owners on the topic of maintaining and preserving their private trees once the city has enough capacity to perform other activities. Since UFP's goals on private trees can only be satisfied by the property owners, educating the residents with adequate knowledge of tree preservations can motivate them to take better care of their trees and thus improve the overall urban forests for the City of Lakewood. Furthermore, these workshops present valuable opportunities to enlighten community members on the most recent arboricultural regulations published in the most recent tree ordinance. Through detailed examinations of the updated tree code in collaboration with residents in these workshops, people can attain a comprehensive grasp of the latest stipulations pertaining to tree cultivation and preservation, the appropriate procedures for acquiring tree removal permits, and potential activities that may incur governmental penalties, among other aspects. The frequency of these activities depends on the city's capacity as well as the private owners' availability, which can be solicited from community meetings and online surveys mentioned before.

### *Conduct outreach to existing and promising organizations.*

Building and maintaining varied partnerships can support the urban forest and facilitate the implementation and success of the UFP (City of Vancouver, 2007). Therefore, we recommend the City of Lakewood conduct outreach to organizations that help implement its urban forestry program. The city can start with its existing partnership

with nonprofit organizations, private businesses, and schools, then use snowball strategies to expand its connection. Ideally, a good partnership represents a collaborative effort across all three sectors: public, nonprofit, and private. The public sector includes the city's administrative staff, volunteers, and schools, while the private sector can include contractors, consultants, local business partners, and property owners.

## RECOMMENDATION 4:

Create administrative capacity within the existing city organizational structure.

### Organizational Structure

As has been discussed in Chapters 4 and 5, the administrative structure of the UFP is important for its success. We have identified three alternate options Lakewood could implement to manage the UFP.

#### *Option A*

*Establish a standalone advisory board to oversee the UFP:* To have this board, the city could create a new urban forestry board that would follow the city's current bylaws regarding volunteer boards. For this option, we recommend that the city distributes specific UFP priorities among the Parks, Recreation and Community Services Department, the Community and Economic Development Department, and the Public Works Engineering Department. Existing staff within those departments would dedicate time to the UFP, supported by the advisory board.

#### *Option B*

*Expand the responsibilities of the Parks and Recreation Advisory Board:* Lakewood could update the mandate for the existing advisory board to include the UF goals and support coordination with city departments responsible for the implementation.

For this option, Lakewood would hire a position to coordinate UFP implementation across city departments. With many departments sharing responsibility, accountability and administrative support become key to ensuring program efficiency and progress, as existing departments already have many priorities. If the city decides to update the Parks and Recreation Advisory Board's mandate, a program coordinator would still be necessary to support the UFP, as the board already has several priorities and a line of work.

#### *Option C*

*Hire a full-time program coordinator:* The third approach is having a full-time program coordinator manage the program without the support of an advisory board. The Parks, Recreation and Community Services Department; the Community and Economic Development Department; and the Public Works Engineering Department will share responsibilities to implement the UFP, per the departments' agreement during the design process for this implementation guide. Additionally, a full-time coordinator would coordinate UFP tasks with those departments. The program coordinator can be part of the City Manager's office based on current city positions and organizational structure.

Collaboration between different departments is important despite the option the city chooses to follow, as the city will manage this program with an integrated approach to trees considering different activities that concern more than one agency, such as:

- storm and surface water management
- transportation
- electric utility

## Budget

Based on our prior recommendations and the three organizational structure options above, we have developed priorities for years one through five. Table 11 shows program priorities for the first five years. Each priority is designated to specific city departments based on the activity. These priorities and designations were developed in partnership with our client.

*Table 10: Urban Forestry Priorities Years 1 through 5*

| Ownership | Priorities | Y1 | Y2 | Y3 | Y4 | Y5 |
|---|---|---|---|---|---|---|
| CED and Parks | Standardize Citywide Tree Maintenance Practices | ✓ | | | | |
| PWE | Evaluate and Update Surface Water Fee Usage | ✓ | ✓ | | | |
| CED | Coordinate Contract Arborist Work | ✓ | ✓ | ✓ | ✓ | ✓ |
| CED and Parks | Community Outreach and Engagement | ✓ | ✓ | ✓ | ✓ | ✓ |
| CED and Parks | Volunteer Recruitment and Appreciation | ✓ | ✓ | ✓ | ✓ | ✓ |
| CED and Parks | Explore External Partnerships and Funding | ✓ | ✓ | ✓ | ✓ | ✓ |
| CED, Parks, and PWE | Coordinate UFP priorities planting and maintenance | ✓ | ✓ | ✓ | ✓ | ✓ |

Based on these priorities, we have developed two preliminary budgets for the five-year implementation period. The priorities remain the same across organizational structures and budgets.

### Budget 1

Provides cost estimates assuming the city chooses organizational structure Option A and develops a standalone advisory board. This option utilizes city staff to carry out day-to-day UFP activities and does not include cost estimates for a new hire. Based on conversation with our client, this budget does not show the costs associated with developing an advisory board. The expenditure costs are relatively low but require additional staff time and city resources to develop the board.

### Budget 2

Provides cost estimates assuming the city chooses either organizational structure Option B or C. This option provides estimates for a new hire to oversee day-to-day UFP activities and to coordinate cross-departmental coordination throughout the city.

Table 12 shows budget highlights for the first two years of implementation. Staffing expenditures, including salaries and benefits, are the only expenditures that vary across budgets. Budget 1 includes cost estimates with four current city staff spending a small percentage of their time on UFP activities. Combined, their UFP work is equivalent to one FTE. Budget 2 staffing costs include one new hire that would potentially be in the City Manager's office.

Professional services and supplies expenditures remain the same for the two budget options. These estimates are based on current city estimates as outlined in the city's 2023-2024 Biennial Budget, estimates provided during our interviews, and industry norms.

*Table 11: Year 1 Budget Highlights*

| **Expenditure Category** | **Budget 1**: Standalone Board | **Budget 2:** No Standalone Board |
|---|---|---|
| Salaries and Benefits | $ 112,108 | $ 122,162 |
| Professional Services | 135,000 | 135,000 |
| Supplies and Indirect Costs | 1,035 | 1,035 |
| **Total** | $ 248,143 | **$ 258,197** |
| *Annual Increase* | *10% decrease from Y1 to Y2*<br>*23% average increase Y2-Y5* | *9% decrease from Y1 to Y2*<br>*22% average increase Y2-Y5* |

To see the full implementation budgets for years one through five, please see Appendix H. For more detail on the underlying budget assumptions, please see Appendix I.

### *Funding Sources*

In Chapter 5, we outline funding sources utilized by the case study cities. We recommend the City of Lakewood consider the following funding sources:

- establish a connection between urban forestry activities and stormwater management and utilize a portion of the city's Storm and Surface Water Utility Fee to fund activities;
- utilize current funds available through the City of Lakewood's Tree Fund;
- consider reallocating or increasing the percentage of General Fund Revenue that is dedicated to urban forestry activities;
- pursue federal, state, and local government grants, along with nonprofit partnerships, as outlined in Appendix A; and
- public, market-based funding sources, such as carbon credits, as outlined in Appendix A.

### *Estimating Future Program Costs*

This section outlines financial, staff, volunteer, and external resources the city should consider as it moves past the initial 5-year period and into a long-term urban forestry program.

Once the city has completed a FLAT assessment and identified priority MUs, the determined tree-iage categories can provide insight on restoration costs across all MUs. The City of Issaquah and Forterra, estimated a cost estimate per acre per tree-iage category. This estimate is shown in Figure 11. The City of Lakewood should consider a similar model to estimate restoration costs once an assessment is complete.

*Figure 11: City of Issaquah - 20-Year Cost Estimate Per Acre by Tree-iage Category*

| Tree-iage Category | Acreage | Average Restoration Cost/Acre | Total Cost per Tree-iage Category |
|---|---|---|---|
| 1 | 521 | $5,000 | $2,605,000 |
| 2 | 59 | $13,900 | $820,100 |
| 3 | 1 | $20,600 | $20,600 |
| 4 | 659 | $10,800 | $7,117,200 |
| 5 | 143 | $16,100 | $2,302,300 |
| 6 | 70 | $26,900 | $1,883,000 |
| 7 | 2 | $14,500 | $29,000 |
| 8 | 13 | $24,200 | $314,600 |
| 9 | 72 | $35,400 | $2,548,800 |
| **TOTAL** | **1,540** | | **$17,640,600** |

### *Budget Categories*

Once the city has developed and implemented an urban forestry program, the expenses below are the areas of the budget that should be prioritized:

- **Field Expenses:** this includes materials and crew hours necessary to complete restoration projects, including the removal of invasive species, regular planting, and ongoing maintenance;
- **Staff Time:** this includes city staff, UFP partners, and contracted workers that are necessary for program coordination, planning, monitoring, as well as volunteer outreach, marketing, and management;
- **Supplies and Materials:** this includes any items needed for volunteer recruiting, training, and regular appreciation; and
- **Overhead:** this includes any overhead costs for field and office work.

## Monitoring and Evaluation

This section describes how the city can monitor progress, inform updates, and report on the program's milestones. In addition to allowing the identification of program milestones, monitoring and evaluation (M&E) can inform the plan's systematic evolution and improvement and can identify needs to reshape goals.

The conclusions from M&E efforts should clearly state how well the plan is achieving its outcomes and inform any necessary adaptations. Adaptations and updates are often important and critical to continue moving in the right direction and getting closer to the vision that guides the plan, which ultimately is the overall goal. Table 12 shown on the following page outlines the key actions for the first five years, associated with the five goals described under Recommendation 1 in this chapter.

## Program Evaluation

Every two years, the Urban Forestry Advisory Board or the program coordinator should present a report including a summary of actions undertaken, as well as clear connections between those actions and their impact on outcomes. The semiannual evaluation report should be a tool to understand how the plan is doing and how close the city is getting to each outcome. The report should also include recommendations on required updates and highlight any urgent matters that require attention from the city departments involved. The Board should present this report to Lakewood's City Council, as well as to all city departments sharing operational,

managerial, or financial responsibilities within the plan. As the City of Lakewood and the Advisory Board establish new partnerships, those partners should also receive the evaluation reports.

The advisory board or the program coordinator should consider a deeper evaluation that culminates in a plan update every five years, from the start of the plan.

*Table 12: Key Actions*

| YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 |
|---|---|---|---|---|
| **Forest Health** | | | | |
| - Complete FLAT phases 2 and 3, which includes comprehensive tree assessment<br>- Standardize tree maintenance practices | - Begin four-phase restoration on priority MUs. | - Continue four-phase restoration on priority MUs, incorporating new MUs as possible. | - Begin four-phase restoration on remaining MUs.<br>- Hire an urban forester to lead restoration and maintenance efforts. | - Continue four-phase restoration on all MUs, including monitoring and ongoing invasives control. |
| **Tree Population Expansion** | | | | |
| - Maintain 28% public UTC. | - Maintain 28% public UTC.<br>- Begin planting new trees on publicly owned land guided by four-phase restoration. | - Maintain 28% public UTC.<br>- Continue planting trees on publicly owned land guided by four-phase restoration. | - Maintain 28% public UTC.<br>- Continue planting trees on publicly owned land guided by four-phase restoration. | - Maintain 28% public UTC.<br>- Continue planting trees on publicly owned land guided by four-phase restoration.<br>- Begin outreach to increase trees planted on privately owned land. |
| **Community Engagement** | | | | |
| - Open nomination process for UFAB (only applies to Options A and B in Rec. 4).<br>- Survey community to gather input on urban forestry in city.<br>- Communicate city's efforts on UFP openly and on various platforms.<br>- Recruit and train 10 Forest Stewards (FS). | - UFAB is a working body with authority given by the City Council (only applies to Options A and B in Rec. 4).<br>- Recruit 10 volunteers per FS.<br>- Establish relationships with local nonprofits and businesses. | - Recruit and train 5 additional FS.<br>- Recruit 10 volunteers per FS. | - Recruit and train 5 additional FS.<br>- Recruit 10 volunteers per Forest Steward. | - Recruit and train 5 additional FS.<br>- Recruit 10 volunteers per FS.<br>- Survey community to gather input on urban forestry in city.<br>- Communicate the results of the five-year program evaluation. |

| Equitable Access | | | | |
|---|---|---|---|---|
| - Implement community engagement strategies to ensure participation from all population groups within Lakewood in volunteer and information activities.<br>- Include specific questions in community surveys to identify opinions and challenges per racial group, associated with the UFP.<br>- Translate public-facing UFP documents to languages other than English, as relevant for Lakewood's community to ensure access for ESL speakers. | - Implement community engagement strategies to ensure participation from all population groups within Lakewood in volunteer and information activities.<br>- Include specific questions in community surveys to identify opinions and challenges per racial group, associated with the UFP.<br>- Translate public-facing UFP documents to languages other than English, as relevant for Lakewood's community to ensure access for ESL speakers.<br>- Monitor progress on Tree Equity Score. | - Implement community engagement strategies to ensure participation from all population groups within Lakewood in volunteer and information activities.<br>- Translate public-facing UFP documents to languages other than English, as relevant for Lakewood's community to ensure access for ESL speakers.<br>- Monitor progress on Tree Equity Score. | - Implement community engagement strategies to ensure participation from all population groups within Lakewood in volunteer and information activities.<br>- Translate public-facing UFP documents to languages other than English, as relevant for Lakewood's community to ensure access for ESL speakers.<br>- Include specific questions in community surveys to identify opinions and challenges per racial group, associated with the UFP.<br>- Monitor progress on Tree Equity Score. | - Implement community engagement strategies to ensure participation from all population groups within Lakewood in volunteer and information activities.<br>- Translate public-facing UFP documents to languages other than English, as relevant for Lakewood's community to ensure access for ESL speakers.<br>- Monitor progress on Tree Equity Score. |
| **Sustainability** | | | | |
| - Approve funding to formally start the UFP Explore external partnerships and funding sources | - Explore external partnerships and funding sources. | - Expand capacity for increased community events. | - Expand capacity for increased community events. | - Expand capacity to provide more financial resources for private trees. |

# Conclusion

Urban forests offer a range of benefits, including addressing climate change, improving the environment, and enhancing public health. The City of Lakewood is committed to taking proactive measures to maximize these benefits and ensure they are accessible to all community members. By implementing an urban forestry program (UFP), Lakewood can systematically plan and execute initiatives to achieve its goal of attaining a 40% canopy cover by 2050. This report outlines the initial steps that Lakewood should undertake in establishing a UFP, considering existing city frameworks, the implications of climate change, and financial constraints.

This report provides a practical implementation guide based on four recommendations focusing on strategic planning, resource assessment and management, community engagement, and organizational development. These recommendations aim to support Lakewood in making informed decisions related to program administration, implementation costs, potential partnerships, and management of trees, among other critical components. The City Council should, in collaboration with city departments and the community, carefully evaluate the alternatives presented in this guide and determine the most suitable course of action for Lakewood before proceeding with implementation.

It is important to acknowledge that each city is unique, and this report is limited by the information from the case studies, interviews, and research. Due to time restrictions, our interviews with professionals in urban forestry were limited and the City of Lakewood would benefit from continuing partnerships with the individuals we contacted. Similarly, there were limitations in our recommendations for which MUs to begin the forest health assessment because our analysis was dependent on already existing analysis done by PlanIT Geo. The suggested planting areas primarily focused on privately owned land, and due to our limited capacity, we could not extensively identify publicly owned land, such as rights-of-way or other street tree areas, for potential plantings. Furthermore, the proposed budgets outlined in this report are subject to change based on external factors, such as economic fluctuations or unforeseen environmental events that may necessitate increased funding for forest maintenance.

We recommend the City of Lakewood fully integrate this guide into its existing structures and efforts to enhance the environmental well-being of the community. By incorporating the recommendations outlined in this implementation guide, Lakewood can develop a UFP that is environmentally sustainable, socially equitable, and economically viable. Urban forestry in the City of Lakewood will contribute to a greener, healthier, and more vibrant community, providing an environment for all to enjoy.

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# Appendices Guide

- Appendix A: Partnership Guide
- Appendix B: Comparison of Case Study UFP Expenditures
- Appendix C: Management Units with Zoning Classifications
- Appendix D: City of Tacoma Tree Planting Guide
- Appendix E: Invasive Species Guide
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- Appendix H: Budget Tables
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# Appendix A: Partnership Guide

Partnerships are categorized by the types of assistance or partnership offered by each organization.

## Partnership and Assistance Key

- Community engagement or volunteer resources
- Financial assistance or grant funding
- Educational resources for city employees or volunteer training
- Technical assistance for program development or urban forest management

## Government Partnerships

| Organization | Assistance | Details |
|---|---|---|
| Washington Department of Natural Resources (WA DNR) |  | WA DNR offers Community Forestry Assistance Grants ranging from $5,000 to $40,000. Grants require a 100% match. WA DNR also offers extensive education and technical assistance for urban forestry programs. |
| Washington State Recreation and Conservation District (WA RCD) |  | WA RCD offers various grants for conservation and restoration of urban forests. Two potential grants the city could consider:<br>- Community Forests Program – Award limit is $3 million and requires a 15% match<br>- Habitat Conservation Projects – Award varies from $25,000 with no upward limit. Requires a 50% match. |
| Pierce Conservation District (PCD) |  | A few partnership opportunities with PCD:<br>- PCD has historically offered a Green Partnership Grant to support projects in the PCD project area. Grants were suspended for 2023 but could be awarded in future years.<br>- PCD also sponsors a native plant sale that Lakewood can promote to residents.<br>- PCD is extremely knowledgeable about the area's unique environmental settings and can utilized for both technical and educational assistance. |
| South Sound Military and Communities Partnership (SSMCP) |  | Lakewood should consider partnering with SSMCP be as the city begins community engagement efforts related to UFP activities. |
| Nisqually Indian Tribe |  | Lakewood should consider partnering with the Nisqually Indian Tribe as the city begins community engagement efforts related to UFP activities. |

| | | |
|---|---|---|
| Washington State Department of Commerce (WA DOC) |  | WA DOC has a Defense Community Compatibility Account to support infrastructure projects related to land use and infrastructure near military installations. Lakewood's unique position near Joint Base Lewis-McChord makes them eligible for these grants, as evidenced by its winning this award in recent years. The city could consider pursing this grant again, specifically for UFP purposes. |
| Washington Department of Fish and Wildlife (WDFW) |  | WDFW offers technical and educational assistance, as well as opportunities to increase community engagement in UFP activities. WDFW also offers a Watchable Wildlife Grant Program that the city could apply for. The purpose of grant awards is to support wildlife viewing and to foster appreciation of wildlife. |

## Nonprofit Partnerships

| Organization | Assistance | Details |
|---|---|---|
| Forterra |  | While Forterra is currently restructuring their Green City Partnership program, the organization is still a valuable potential partnership for the city. Forterra could be a source of educational and technical assistance, as well as future financial assistance. Forterra also created the Forest Steward program and offers a comprehensive Field Guide for volunteers. |
| Lakewood Multicultural Coalition |  | Lakewood should consider partnering with the Lakewood Multicultural Coalition as the city begins community engagement efforts related to UFP activities. |
| The Garry Oak Coalition (GOC) |  | The Garry Oak Coalition is a nonprofit located in Lakewood and dedicated to the preservation of area Garry Oaks. Lakewood should consider partnering with the GOC as the city begins community engagement efforts related to UFP activities. |
| Tacoma Tree Foundation |  | The Tacoma Tree Foundation is a community-based nonprofit that is committed to growing the urban forest in Tacoma. Due to the close proximity, the city should consider partnering with the foundation for community engagement and educational opportunities. |
| Washington State University Extension Forestry |  | The Puget Sound Region Extension Forestry offers online courses and public resources for people who own wooded property. The available resources could be extremely useful as Lakewood develops its volunteer based. This includes a course on Forest Stewardship that is intended for private landowners but is also applicable to public land. |
| City Forest Credits |  | City Forest Credits is a nonprofit carbon registry that partners with private organizations, allowing them to purchase carbon credits for urban forest projects. Those carbon credits can be used for urban forestry planting activities. The city can apply to partner with this organization to fund tree planting and restoration activities. |

# Appendix B: Comparison of Case Study UFP Expenditures

**City of Issaquah, WA** – Implementation began in 2019

| Department | Expenditure Detail | 2023 Adopted |
|---|---|---|
| Parks and Community Services | New Position - Full-Time Urban Forest Supervisor | 185,686 |
| Parks and Community Services | New Position - Part-Time Volunteer Coordinator | 77,547 |
| Parks and Community Services | Development of Urban Forestry Management Plan | 100,000 |
| | **Total** | **363,233** |

**City of Vancouver, WA** – Implementation began in 2007

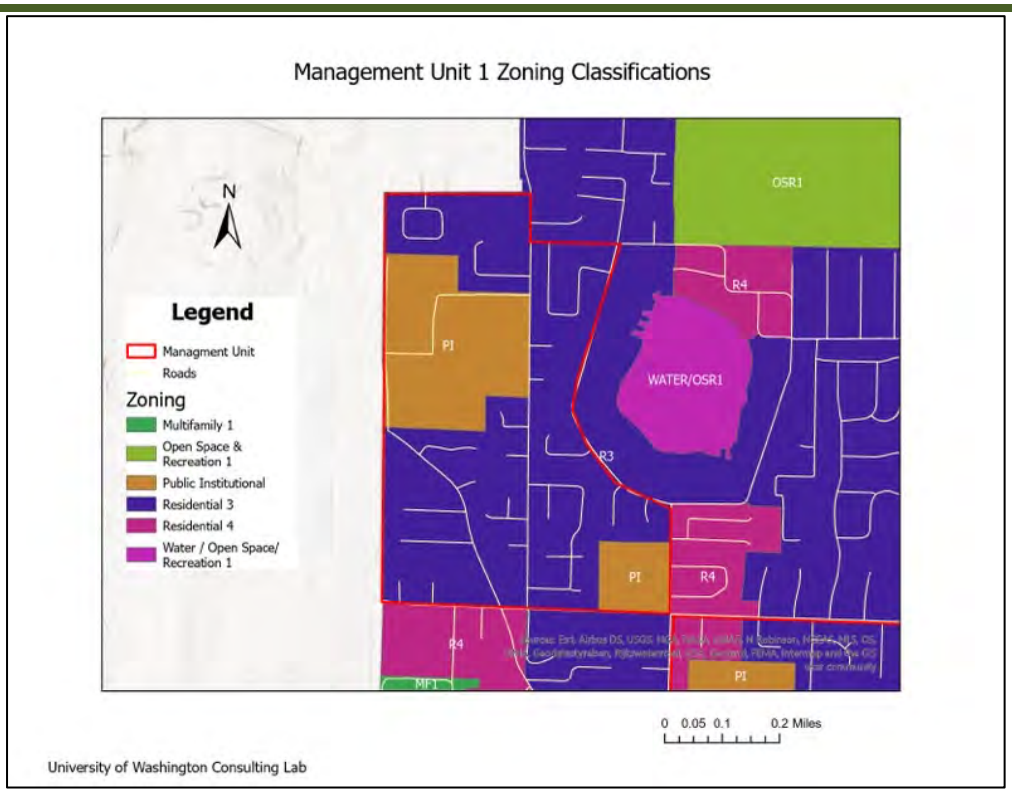
| Revenue Source | Expenditure Detail | 2023 Adopted |
|---|---|---|
| SWM Fund | Salaries and Benefits | 693,250 |
| SWM Fund | Supplies and Services | 770,620 |
| SWM Fund | Interfund | 353,052 |
| | **Total** | **1,816,922** |

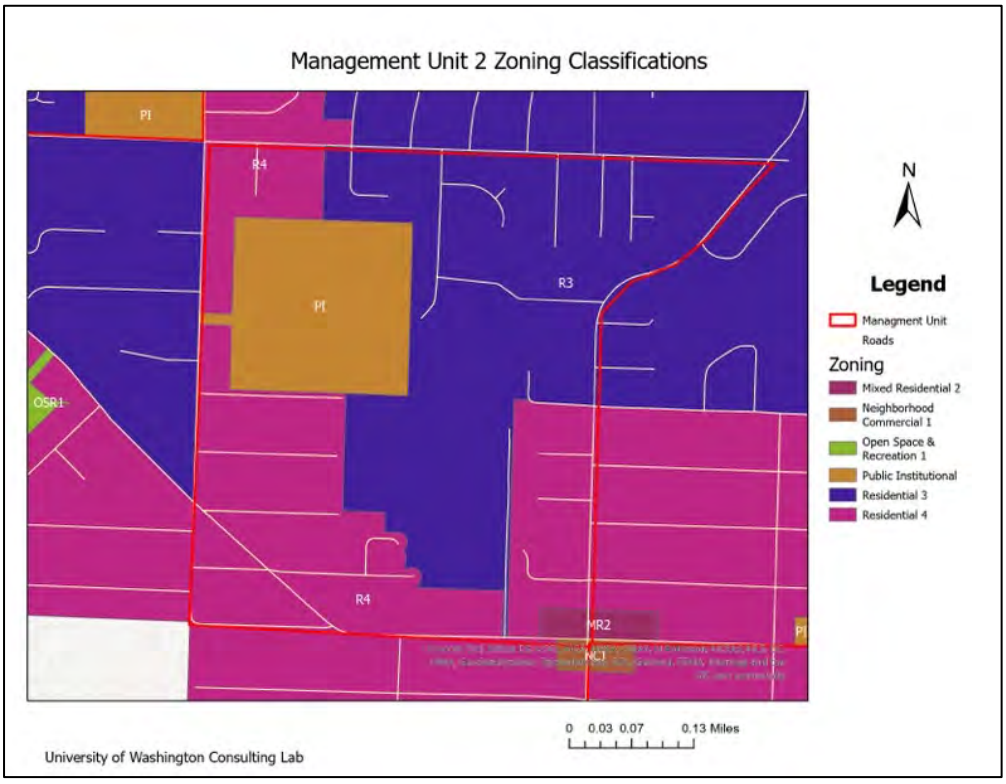
| Revenue Source | Expenditure Detail | 2023 Adopted |
|---|---|---|
| City Tree Reserve Fund | Supplies and Services | 80,155 |
| City Tree Reserve Fund | Other Intergovernmental | 3,000 |
| City Tree Reserve Fund | Interfund | 3,264 |
| | **Total** | **86,419** |

**City of Seattle, WA** – Implementation began in 2007

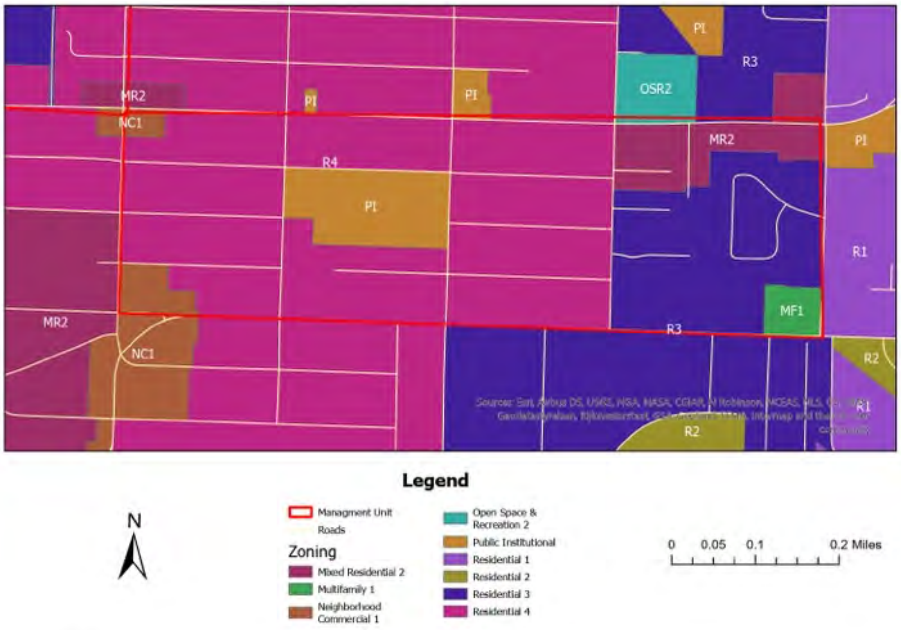
| Department | Expenditure Detail | 2023 Adopted |
|---|---|---|
| Office of Sustainability and Environment | New Position - Full-Time City Urban Forester | 147,000 |
| Office of Sustainability and Environment | Development of Tree Canopy Equity and Resilience Plan | 150,000 |
| Department of Transportation | Tree Planting in Right-of-Way Initiative | 250,000 |
| Department of Construction and Inspections | Additional Capacity for Tree Protection | 54,961 |
| Office of Sustainability and Environment | Greening of Industrial Properties in Equity Focus Areas | 300,000 |
| Parks and Recreation | Increased Tree Planting and Maintenance in Parks | 637,000 |
| | **Total** | **1,538,961** |

# Appendix C: Management Units with Zoning Classifications



## Management Unit 3 Zoning Classifications

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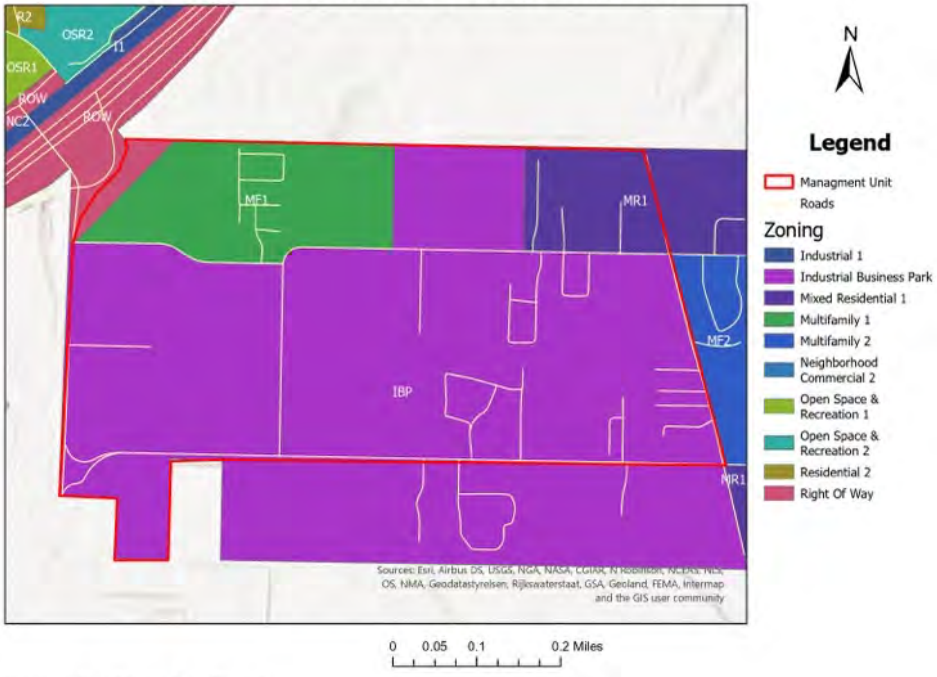
## Management Unit 4 Zoning Classifications

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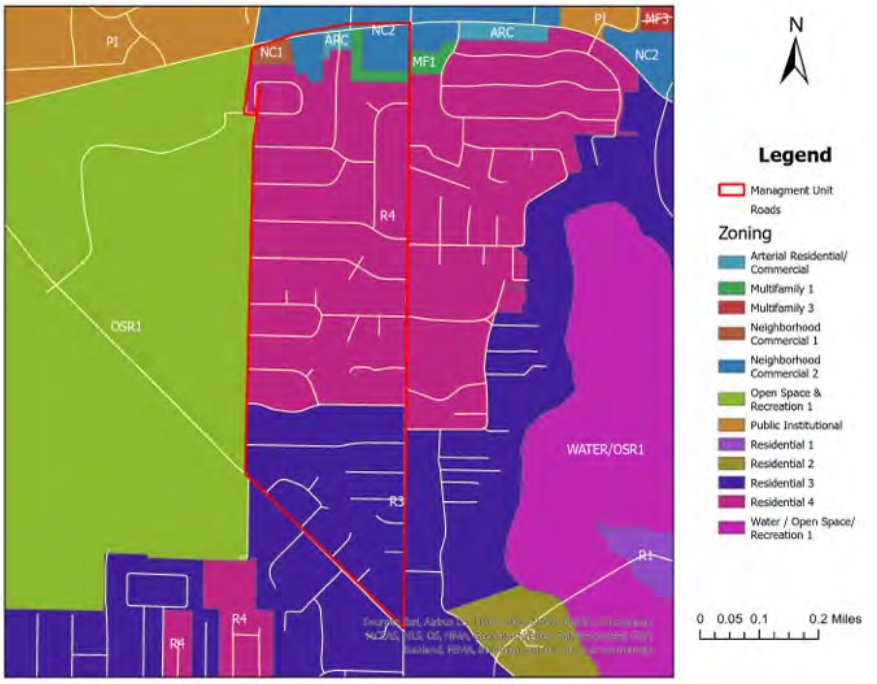
## Management Unit 5 Zoning Classifications

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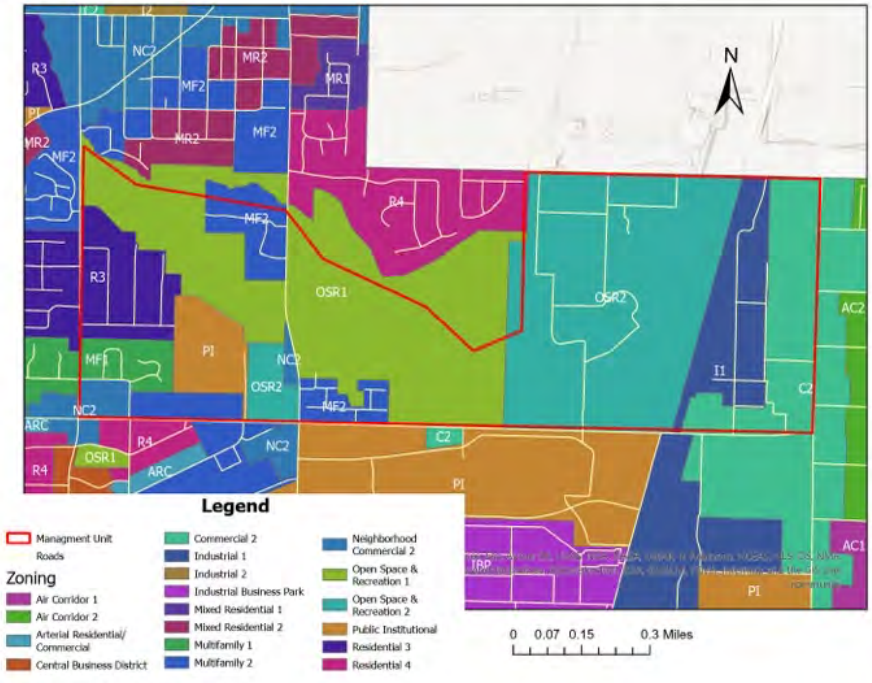
## Management Unit 6 Zoning Classifications

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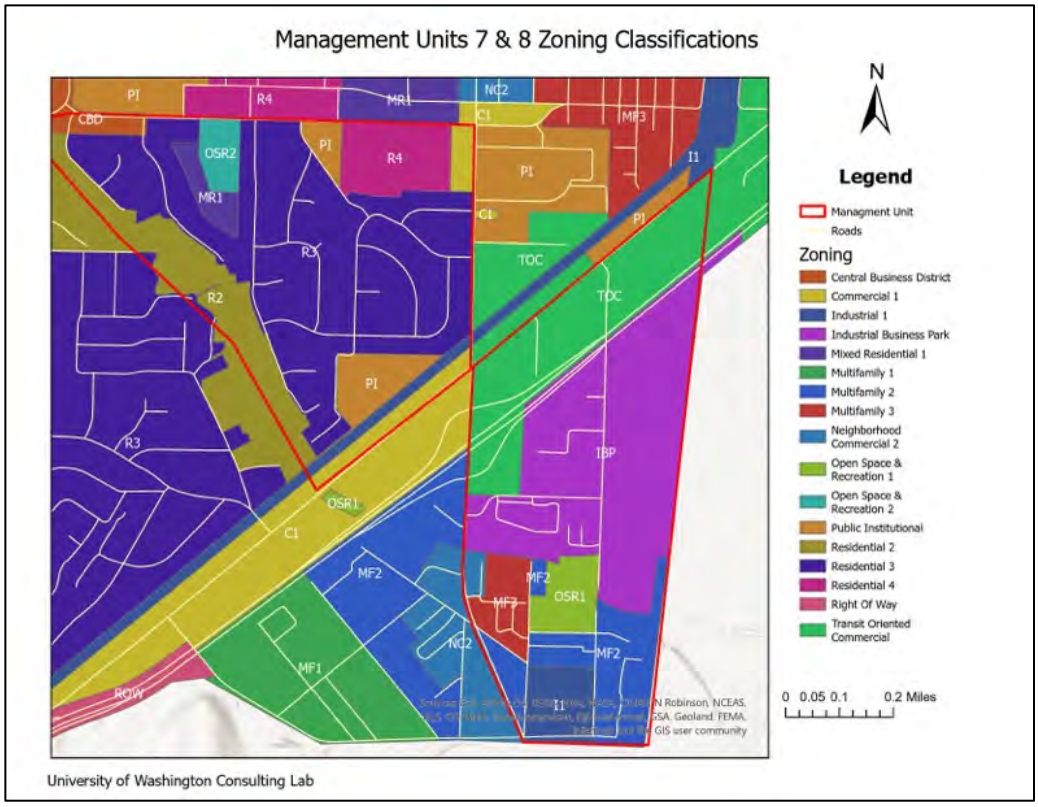


*Table 13: Area of Management Units in Acres*

| Management Unit Identification Number | Total Acreage |
|---|---|
| 1 | 181.22 |
| 2 | 143.82 |
| 3 | 132.25 |
| 4 | 181.98 |
| 5 | 149.16 |
| 6 | 465.99 |
| 7 | 210.76 |
| 8 | 206.09 |

# Appendix D: City of Tacoma Tree Planting Guide

# Appendix E: Invasive Species

| Tree / Plant | Name | Plant Type | Size at maturity | Habitat | Flower Description | Leaf Description | Stem Description | Fruit Seed Description |
|---|---|---|---|---|---|---|---|---|
| Clematis vitalba | Clematis | vine | up to 65.6 feet | forest lands, forest edges and openings, riparian areas, waste areas, roadsides and coastal and lowland areas. | Flower clusters grow from leaf axils (area where leaf connects to stem) and also at stem tips. 3 to 22 flowers per cluster. Flowers do not have petals. Sepals, petal-like, white to cream, 4 to 6, about 2 times as long as wide with hairs on both sides. | Leaves are arranged opposite each other on the stems and are pinnately compound, divided into 5 leaflets. Leaflet margins are smooth to somewhat toothed. Leaflets have some small hairs on the leaf veins below and no hairs above. | Stems are climbing, become woody and may have curling to winding leaf stems (petioles). | Seeds with feathery hairs, each having a stem-like projection, 1.4 inches (3.5 cm) long. Clusters of seeds can be seen on plants all winter. |
| Convolvulus arvensis | Field bindweed | vine | | ravines, greenbelts, forested parks and farmlands as well as residential settings such as driveways, flower gardens and ornamental borders. | Flowers are bell or funnel-shaped, white to pinkish and approximately 1 inch in diameter. They have 2 small bracts located 1 inch below the flower. | Leaves are alternate, more or less arrowhead-shaped and have pointed or blunt lobes at the base. | Stems are perennial and deciduous, growing along the ground and twining around and through other plants, to around 6.5 feet in length. | Seed in a small capsule, about 0.25 inch in size. |
| Cytisus scoparius | Scotch broom | evergreen shrub | 3 to 10 feet | roadsides, pastures, grasslands, open areas and areas of recent soil disturbance. | Flowers are typical of those in the pea family. They are bright yellow, about 3/4 inches long and have 5 petals. | There are few leaves. The upper are simple and the lower are 3 parted. They are deciduous and pointed at both ends. Leaves may fall early in the year, leaving bare green stems. | Stems are woody and dark green. Young branches have 5 green ridges with hairs. When mature, stems become glabrous and ridges disappear. Young stems remain green throughout the year. | Seed pods are brown-black, legume-like, flattened and have hairy margins with several seeds per pod. |

| Tree / Plant | Name | Plant Type | Size at maturity | Habitat | Flower Description | Leaf Description | Stem Description | Fruit Seed Description |
|---|---|---|---|---|---|---|---|---|
| Hedera helix | English ivy | evergreen vine | up to 99 feet | woodlands, forest edges, riparian areas, fields, hedgerows, coastal areas, and disturbed habitats. | English ivy matures to produce adult stems and flowers when it begins to grow vertically. The small (0.2 to 0.3 inch), bisexual, greenish-white flowers occur in umbrella-like clusters in the fall. The juvenile stage, time before it flowers, may be for 10 years or longer. | Leaves are alternate each other on the stems and leathery, with long petioles and have two forms: adult and juvenile leaves. Juvenile leaves are deeply 3 to 5 lobed and 1.6 to 4 inches long and wide. Adult leaves occur on flowering stems and are primarily un-lobed leaves and egg-shaped to diamond shaped. Only young leaves are hairy. | Stems are climbing vines, shrub-like or groundcovers. Young stems have hairs while older stems are hairless. Stems growing along the ground can develop (adventitious) roots and climbing stems produce root-like structures that can secure it to buildings, trees or anything it is climbing up. | The dark colored fruits (dark blue to black, berry-like drupes) mature in the spring. Each fruit is around 0.16 to 0.31 inch (4 to 8 mm) wide and contains 4 to 5 seeds. |
| Heracleum mantegazzianum | Giant hogweed | Class A noxious weed | 15 to 20 feet | roadsides, other rights-of-way, vacant lots, streams and rivers. | Giant hogweed has broad, flat-topped flower clusters (umbels) of many small white flowers. Each flower cluster may grow to a diameter of 2.5 feet. | The compound leaves of giant hogweed may grow as large as five feet wide. Each leaflet is deeply cut/lobed with leaf edges being sharply toothed (incised). | The stem and stalks are hollow and vary 2 to 4 inches in diameter. Stems have distinctive purplish-red, bumpy blotches with stiff hairs. | The flowers produce large elliptic dry seeds marked with brown swollen resin canals. |

| Tree / Plant | Name | Plant Type | Size at maturity | Habitat | Flower Description | Leaf Description | Stem Description | Fruit Seed Description |
|---|---|---|---|---|---|---|---|---|
| Ilex aquifolium | English holly | evergreen shrub | as tall as 30 feet | anywhere that is shady, in a variety of soil types. | Female plants have small, white to light green flowers that have 4 round petals. Male plants non-descript light green to white round shapes with 4 anthers coming from the center. All the flowers grow individually and directly from the branches, on very short stems. | Holly's leaves are lobed, ending in sharp points. They are deep green and covered in a waxy coating. | Thick, woody stems that start off olive green and can age to brown green. | Bright, red berries, which are popular with birds. |
| Polygnoum cispidatum | Japanese knotweed | perennial invasive plant | 4 to 8 feet | waste places, gardens, roadsides and stream and riverbanks. | The whitish to whitish-green flowers are in drooping panicles (clusters) from leaf axils. Male and female flowers are on separate plants. | Alternately arranged with petioles (stalks) and are 4 to 6 inches long, ovate and have a truncated base and an abrupt tip. | Stems are upright, branching and deciduous. | The fruits are approximately 1/8 inch long, shiny brown and triangular. |
| Prunus laurocerasus | English laurel | evergreen plant | 2 to 5 inches | landscape plantings | Flowers in upright racemes, 2-5 inches long. Flowers white, with 5 petals and about 0.4 inches (1 cm) wide. | Alternately arranged, leathery with serrated to almost smooth margins and two glands at the base of the blade near point of attachment with petiole. Blades ~2-8 inches long, oval to elliptic-oblong in shape, and dark to medium green above, paler green below. | Stems have smooth reddish brown to dark brown bark. New stems are green. | Fruit is a black to purple-black drupe, 0.5" long. |

| Tree / Plant | Name | Plant Type | Size at maturity | Habitat | Flower Description | Leaf Description | Stem Description | Fruit Seed Description |
|---|---|---|---|---|---|---|---|---|
| Rubus armeniacus | Himalayan blackberry | non-native plant | up to 13.1 feet | mixed and deciduous forests and a variety of disturbed sites such as roadsides, railroad tracks, logged lands, field margins and riparian areas. | Flower clusters (panicles) are flat-topped and have 5 to 20 flowers. Each flower has 5 petals that are white to rose colored and about 1 inch in diameter. | Leaves are alternately arranged on stems. Each leaf is palmately compound and made up of 3 to 5 (typically 5) leaflets with toothed margins. | Stems can reach up to 20 to 40 feet and can root at their tips when they touch the ground. Canes have hooked, sharp prickles, also called thorns, with thick bases. Stems green to reddish to purplish-red, strongly angled, and woody. They made dense thickets that are impassable and sprawl over the surrounding vegetation. | Flowers form blackberries—a grouping of small, shiny, black druplets that each contain one seed. Blackberries are about 1/2 inch to 7/8 inch in size. |
| Senecio jacobaea | Tansy ragwort | perennial herbaceous plant | | roadsides, in pastures, fields and cleared forested areas. It is not particular to soil type. | Flowerheads are in somewhat flat-topped clusters. Flowerheads yellow with many disk flowers and 13 ray flowers (which look like petals), overall having a daisy-like appearance. Flowerheads have around 13 bracts at their base with dark tips. | Leaves are twice divided, with petioles (leaf stems) on leaves near the base and without petioles toward stem tips. First year leaves in a basal clump (rosette). Second year leaves are alternate along the stem, 1.6 to 7.9 inches long by 0.8 to 2.4 inches wide. | Stems reach up to 4 feet tall, numbering one to many from roots. They branch near their tips. | Seeds are sparsely hairy to glabrous (hairless and smooth). |

# Appendix F: Tree Guide

| Tree | Name | Plant type | Size at maturity | Width | Land/ Restoration Use | Habitat | Sun/Shade tolerance | Soil Preferences | Cultivation Preferences |
|---|---|---|---|---|---|---|---|---|---|
| Abies grandis | grand fir | Evergreen perennial | 50 ft | 30-40 ft | erosion control screen windbreak | Riparian, Rocky/Gravelly, Forest | Sun, part shade, shade | Well drained soils | Well-drained |
| Acer macrophyllum | bigleaf maple, oregon maple | Deciduous perennial | 49-50 ft | 45-80 ft | erosion control windbreak | Forest | sun, part shade, shade | Gravelly soils, Deep soils | tolerates wet season well-drained |
| Alnus rubra | red alder | Deciduous perennial | 39-50 ft | 30-50 ft | Fire resistant erosion control hedgerow windbreak | Wetland, Riparian, Rocky/Gravelly, Forest, Meadows/Fields, Disturbed | Sun, part shade, shade | clay soils, nutrient poor soils | tolerates constant flooding |
| Arbutus menziesii | arbutus, madrone, madrona | Evergreen perennial | 19-50 ft | 20-40 ft | erosion control hedgerow windbreak | Rocky/Gravelly, Forest, Disturbed | sun, part shade | Gravelly soils, Shallow soils | tolerates seasonal wet well-drained |
| Cornus nuttallii | Pacific dogwood | Deciduous perennial | 29-50 ft | 20-25 ft | erosion control hedgerow windbreak | riparian, forest | part shade, shade | well drained soils | Well-drained |
| jCrataegus douglasii | Black Hawthorn, Douglas's Hawthorn | Deciduous perennial | 13-27 ft | 12-20 ft | erosion control hedgerow thicket-forming windbreak | Wetland, Riparian, Saline/Estuarine, Rocky/Gravelly, Forest, Meadows/Fields, Steppe, Disturbed | Sun, part shade, shade | Well drained soils | Well-drained |
| Fraxinus latifolia | Oregon ash | Deciduous perennial | 32-50 ft | 15-40 ft | erosion control hedgerow windbreak | riparian | Sun, part shade, shade | organic soils | tolerates wet season |

| Tree | Name | Plant type | Size at maturity | Width | Land/ Restoration Use | Habitat | Sun/Shade tolerance | Soil Preferences | Cultivation Preferences |
|---|---|---|---|---|---|---|---|---|---|
| Malus fusca | Pacific crabapple | Deciduous perennial | 13-40 ft | 15-25 ft | erosion control hedgerow windbreak | Wetland, Riparian | Sun, part shade, shade | Well drained soils | tolerates seasonal wet |
| Picea sitchensis | Sitka spruce | Evergreen perennial | 39-50 ft | 20-40 ft | erosion windbreak | riparian, saline/estuarine, rocky/gravelly, forest | sun, part shade | well drained soils | Well-drained |
| Pinus contorta | shore pine, lodgepole pine | Evergreen perennial | 9-50 ft high | 20-45 ft | erosion control hedgerow screen windbreak | Wetland, Riparian, Saline/Estuarine, Forest, Disturbed | sun | gravelly soils, peaty soils, nutrient poor soils | tolerates wet season |
| Populus Trichocarpa | Black Cottonwood | Deciduous perennial | 50 ft | 20-30 ft | erosion control windbreak | Wetland, Riparian, Forest, Disturbed | sun | Well drained soils | tolerates wet season |
| Pseudotsuga menziesii ssp. menziesii | Douglas fir | Evergreen perennial | 50 ft | 20-30 ft | Fire resistant erosion control windbreak | rocky/gravelly, forest, disturbed | sun, part shade | Gravelly soils, well drained soils | well-drained |
| Quercus garryana | Garry oak, Oregon white oak | Deciduous perennial | 40-90 ft | 30-70 ft | Erosion control hedgerow windbreak | rocky/gravelly, forest, meadows/fields | sun | Sandy soils, Gravelly soils, Well drained soils, Deep soils | well-drained |
| Rhamnus purshiana | cascara | Deciduous perennial | 14-40 ft | 15-20 ft | erosion control hedgerow windbreak | Wetland, Riparian, Forest, Disturbed | Sun, part shade, shade | muddy soils, well drained soils | drought tolerant well-drained |
| Salix hookeriana | Hooker's willow | Deciduous perennial | 6-27 ft | 15-20 ft | erosion control hedgerow thicket-forming | Wetland, Riparian, Saline/Estuarine, Rocky/Gravelly | sun, part shade | Sandy soils | tolerates constant flooding |

| Tree | Name | Plant type | Size at maturity | Width | Land/ Restoration Use | Habitat | Sun/Shade tolerance | Soil Preferences | Cultivation Preferences |
|---|---|---|---|---|---|---|---|---|---|
| Salix scouleriana | Scouler's willow | Deciduous perennial | 3-50 ft | 30-40 ft | erosion control hedgerow | Riparian | Sun, part shade, shade | Gravelly soils, well drained soils | drought tolerant tolerates constant flooding |
| Taxus brevifolia | Western yew, pacific yew | Evergreen perennial | 39-50 ft | 10-30 ft | erosion control hedgerow windbreak | forest | sun, part shade, shade | Gravelly soils, Deep soils | Well-drained |
| Thuja plicata | Western redcedar | Evergreen perennial | 49-50 ft | 25-50 ft | erosion control hedgerow screen windbreak | aquatic, wetland, riparian, forest | part shade, shade | clay soils, muddy soils, nutrient rich soils | tolerates wet season |
| Tsuga heterophylla | Western Hemlock | Evergreen perennial | 50 ft | 25-40 ft | erosion control hedgerow screen | forest | part shade, shade | Well drained soils, mineral soils | well-drained |

# Appendix G: Native Plant Guide

| Species Code | Botanic Name | Common Name | Growth Form | Life History | Flowering Period | Average Soil Moisture Regime | Shade Tolerance |
|---|---|---|---|---|---|---|---|
| ACCI | Acer circinatum | vine maple | shrub | perennial | Mar–Jun | dry–moist | part shade-shade |
| ACMI | Achillea millefolium var. occidentalis | yarrow | forb | perennial | July–Sep | dry–moist | sun–part shade |
| ACTI | Achlys triphylla | vanillaleaf | forb | perennial | Apr–July | dry–moist | part shade–shade |
| ADAL | Adiantum aleuticum | Western maidenhair fern | fern | perennial | moist–wet | part shade–shade | |
| ADBI | Adenocaulon bicolor | pathfinder | forb | perennial | Jun–Oct | moist | moist shaded |
| ALCE | Allium cernuum var. obtusum | nodding onion | forb | perennial | July–Aug | dry–moist | sun |
| AMAL | Amelanchier alnifolia | serviceberry, saskatoon | shrub | perennial | Apr–Jun | dry–moist | shade-tolerant/intolerant |
| ARDI | Aruncus dioicus var. acuminatus | goatsbeard | forb | perennial | May–July | moist | sun–part shade |
| ASCA | Asarum caudatum | wild ginger | forb | perennial | Apr-July | moist | part shade–shade |
| ASSU | Aster subspicatus | Douglas aster | forb | perennial | July-Oct | dry | Wet-moist |
| ATFI | Athyrium filix-femina | lady-fern | fern | perennial | moist–wet | sun–shade | |
| BEAQ | Berberis aquifolium | tall Oregongrape | shrub | perennial | Mar–Jun | dry–moist | shade-tolerant/intolerant |
| BENE | Berberis nervosa | dull/Cascade Oregon-grape | shrub | perennial | Apr–Jun | dry–moist | shade-tolerant/intolerant |
| BLSP | Blechnum spicant | deerfern | fern | perennial | dry–wet | part shade–shade | |
| CADE | Carex densa | dense sedge | grass | perennial | moist–wet | | |
| CADE | Carex deweyana var. deweyana | Dewey's sedge | grass | perennial | dry–wet | sun–shade | |
| CAME | Carex mertensii | Merten's sedge | grass | perennial | moist–wet | | |
| CAOB | Carex obnupta | slough sedge | grass | perennial | moist–wet | sun–part shade | |
| CAPA | Carex pachystachys | thick-headed sedge | grass | perennial | moist–wet | | |
| CAQU | Camassia quamash | common camas | forb | perennial | Apr–Jun | dry–moist | shade-intolerant |
| CASC | Campanula scouleri | Scouler's bellflower | forb | perennial | dry–moist | sun–part shade | |
| CIAL | Circaea alpina ssp pacifica | enchanter's nightshade | forb | perennial | May–Jun | dry–moist | sun–part shade |
| COCO | Corylus cornuta var. californica | beaked hazelnut | shrub | perennial | Feb–Mar | dry–moist | sun–shade |
| COSE | Cornus sericea | Red-osier dogwood | shrub | perennial | Jun–Aug | moist–wet | sun–shade |
| COUN | Cornus unalaschkensis | western bunchberry | forb | perennial | May–Jun | moist–wet | part shade–shade |
| DECE | Deschampsia cespitosa | tufted hairgrass | grass | perennial | Jun | dry–wet | sun–part shade |
| DIFO | Dicentra formosa ssp. formosa | Pacific bleedingheart | forb | perennial | Apr–May | dry–moist | part shade–shade |

| Species Code | Botanic Name | Common Name | Growth Form | Life History | Flowering Period | Average Soil Moisture Regime | Shade Tolerance |
|---|---|---|---|---|---|---|---|
| DREX | Dryopteris expansa | spreading woodfern | fern | perennial | NA | moist | sun–shade |
| EROR | Erythronium oreganum var. oreganum | Oregon fawnlily | forb | perennial | Apr–May | dry | shade–part shade |
| ERSP | Erigeron speciosus | showy fleabane | forb | perennial | dry–moist | sun–part shade | |
| FEOC | Festuca occidentalis | western fescue | grass | perennial | Jun | dry–moist | part shade |
| FERO | Festuca roemeri | Roemer's fescue | grass | perennial | May–July | dry–moist | shade-tolerant/intolerant |
| FRVE | Fragaria vesca spp. bracteata | wood's strawberry | forb | perennial | Apr–Jun | dry–moist | shade-tolerant/intolerant |
| GASH | Gaultheria shallon | salal | shrub | perennial | Apr–May | dry–moist | part shade–shade |
| GEMA | Geum macrophyllum | large-leaved avens | forb | perennial | May–Jun | moist–wet | sun–part shade |
| GLEL | Glyeria elata | tall managrass | grass | perennial | May–July | moist–wet | sun–full sun |
| GRIN | Grindelia integrifolia | entire-leaved gumweed | forb | perennial | Jun | moist | sun–full sun |
| HODI | Holodiscus discolor | oceanspray | shrub | perennial | May–Jun | dry–moist | sun–shade |
| HYTE | Hydrophyllum tenuipes | slender-stem waterleaf | forb | perennial | Apr-May | moist–wet | part shade–shade |
| IRTE | Iris tenax | Oregon iris | forb | perennial | May–Jun | moist–wet | sun–part shade |
| LOCI | Lonicera ciliosa | orange honeysuckle | vine | perennial | May–Jun | moist | part shade–shade |
| LOHI | Lonicera hispidula | hairy honeysuckle | vine | perennial | May–July | dry–moist | sun–part shade |
| LOIN | Lonicera involucrata var. involucrata | black twinberry | shrub | perennial | Apr–July | moist–wet | sun–shade |
| LYAM | Lysichiton americanus | skunkcabbage | forb | perennial | Mar–May | wet | part shade–shade |
| MADI | Maianthemum dilatatum | false lily-of-the-valley | forb | perennial | Apr–Jun | moist | sun–shade |
| MARA | Maianthemum racemosum ssp. amplexicaule | large false Solomon's seal | forb | perennial | May-Jun | moist | Part sun–Shade |
| MYCA | Myrica californica | Pacific wax myrtle | shrub | perennial | May–Jun | dry–moist | sun–part shade |
| MYGA | Myrica gale | Sweet gale | shrub | perennial | NA | moist–wet | sun–part shade |
| OECE | Oemleria cerasiformis | Indian plum | shrub | perennial | Feb–Apr | dry–moist | part shade–shade |
| OXOR | Oxalis oregona | redwood sorrel | forb | perennial | Apr–Sep | dry–moist | part shade–shade |
| PEFR | Petasites frigdus | coltsfoot | Forb | perennial | Feb–Mar | moist–wet | sun–shade |
| PEOV | Penstemon ovatus | broad-leaved penstemon | forb | perennial | Jun–Aug | dry–moist | sun–part shade |
| PHCA | Physocarpus capitatus | Pacific ninebark | shrub | perennial | May–Jun | moist–wet | sun–shade |
| PHLE | Philadelphus lewisii | mockorange | shrub | perennial | May–July | dry–moist | sun–part shade |
| POGL | Polypodium glycyrrhiza | licorice fern | fern | perennial | moist–wet | | |

| Species Code | Botanic Name | Common Name | Growth Form | Life History | Flowering Period | Average Soil Moisture Regime | Shade Tolerance |
|---|---|---|---|---|---|---|---|
| POMU | Polystichum munitum | western sword fern | fern | perennial | NA | dry–moist | part shade–shade |
| PTAQ | Pteridium aquilinum var pubescens | bracken fern | fern | perennial | dry–moist | | |
| RHMA | Rhododendron macrophyllum | Pacific rhododendron | shrub | perennial | May–July | dry–moist | part shade–shade |
| RILA | Ribes lacustre | swamp currant | shrub | perennial | Apr–May | moist–wet | sun–shade |
| RISA | Ribes sanguineum var. sanguineum | red-flowering currant | shrub | perennial | Feb–Apr | dry–moist | sun–part shade |
| ROGY | Rosa gymnocarpa | baldhip rose | shrub | perennial | May–Jun | dry–wet | sun–shade |
| RONU | Rosa nutkana | nootka rose | shrub | perennial | May–Jun | moist–wet | sun–part shade |
| ROPI | Rosa pisocarpa | clustered wild rose | shrub | perennial | May–July | moist–wet | sun–shade |
| RUPA | Rubus parviflorus | thimbleberry | shrub | perennial | May–July | dry–moist | sun–shade |
| RUSP | Rubus spectabilis | salmonberry | shrub | perennial | Mar–Jun | moist–wet | sun–shade |
| RUUR | Rubus ursinus | trailing blackberry | shrub | perennial | Apr–Aug | dry–moist | sun–shade |
| SALU | Salix lucida | Pacific willow | shrub | perennial | Apr–May | moist–wet | sun–part shade |
| SARA | Sambucus racemosa var racemosa | red elderberry | shrub | perennial | May–July | dry–moist | sun–shade |
| SCAC | Scripus acutus | hardstem bulrush | grass | perennial | Apr–May | wet | sun |
| SCMI | Scripus microcarpus | panicled bulrush | grass | perennial | May–Jun | wet | sun–part shade |
| SIKE | Sidalcea kendrsonii | checker mallow | forb | perennial | Jun–Aug | moist–wet | sun |
| SOCA | Solidago canadensis | Canada goldenrod | forb | perennial | Jun–Sep | dry–moist | sun–part shade |
| SPDO | Spirea douglasii | hardhack | shrub | perennial | May–July | moist–wet | sun–part shade |
| SYAL | Symphoricarpos albus var. laevigatus | common snowberry | shrub | perennial | May–Aug | dry–moist | sun–shade |
| TEGR | Tellima grandiflora | fringecup | forb | perennial | Apr–July | moist | part shade–shade |
| TITR | Tiarella trifoliata var trifoliata | threeleaf foamflower | forb | perennial | May–Aug | moist | part shade–shade |
| TOME | Tolmiea menziesii | youth-on-age | forb | perennial | May–Aug | dry–moist | part shade–shade |
| TROV | Trillium ovatum ssp. ovatum | western trillium | forb | perennial | Mar–May | dry–moist | part shade–shade |
| VAOV | Vaccinium ovatum | evergreen huckleberry | shrub | perennial | Apr–July | dry–moist | part shade–shade |
| VAPA | Vaccinium parvifolium | red huckleberry | shrub | perennial | Mar–May | dry–moist | part shade–shade |

Source: Own creation with information from Forterra (n.d.-d); Forterra (n.d.-a); King County (n.d.); Washington Native Plant Society (n.d.).

# Appendix H: Budget Options

## Budget 1: The city establishes a standalone urban forestry advisory board.

| Department | Expenditures | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| CED | 0.50 FTE - Associate Planner | 57,500 | 59,442 | 61,450 | 63,526 | 65,672 |
| CED | 0.15 FTE - Neighborhood Coordinator | 16,800 | 17,367 | 17,954 | 18,561 | 19,188 |
| Parks | 0.25 FTE - Recreation Coordinator | 26,014 | 26,892 | 27,801 | 28,740 | 29,711 |
| PWE | 0.10 FTE - Administrative Assistant | 11,794 | 12,192 | 12,604 | 13,030 | 13,470 |
| | **Subtotal Salaries and Benefits** | **112,108** | **115,894** | **119,809** | **123,856** | **128,040** |
| CED | Comprehensive Tree Assessment | 100,000 | 0 | 0 | 0 | 0 |
| CED | Contract Arborist | 35,000 | 35,000 | 40,000 | 50,000 | 50,000 |
| Parks and PWE | Contract Tree Maintenance and Planting | 0 | 40,000 | 80,000 | 120,000 | 160,000 |
| | **Subtotal Professional Services** | **135,000** | **75,000** | **120,000** | **170,000** | **210,000** |
| Parks and PWE | Purchase Trees | 0 | 25,000 | 50,000 | 75,000 | 100,000 |
| All | Volunteer Maintenance and Planting Supplies | 0 | 5,258 | 5,258 | 2,629 | 876 |
| All | General Office and Operating Supplies | 1,035 | 1,035 | 1,035 | 1,035 | 1,035 |
| | **Subtotal Supplies and Indirect Costs** | **1,035** | **31,293** | **56,293** | **78,664** | **101,911** |
| | **Total Expenditures** | **248,143** | **222,187** | **296,102** | **372,520** | **439,951** |
| | *Difference from Budget B* | *(10,055)* | *(12,290)* | *(10,746)* | *(11,109)* | *(11,484)* |

| Ownership | Priorities | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| CED and Parks | Standardize Citywide Tree Maintenance Practices | x | | | | |
| PWE | Evaluate and Update Surface Water Fee Usage | x | x | | | |
| CED | Coordinate Contract Arborist Work | x | x | x | x | x |
| CED and Parks | Community Outreach and Engagement | x | x | x | x | x |
| CED and Parks | Volunteer Recruitment and Appreciation | x | x | x | x | x |
| CED and Parks | Explore External Partnerships and Funding | x | x | x | x | x |
| CED, Parks, and PWE | Coordinate UFP priorities | x | x | x | x | x |
| CED, Parks, and PWE | Trees planted @ $250 per tree | 0 | 100 | 200 | 300 | 400 |
| | *Change in trees planted annually* | *0%* | *100%* | *100%* | *50%* | *33%* |
| | *Percentage volunteer-led tree planting* | *0%* | *50%* | *50%* | *50%* | *50%* |

## Budget 2: The city does not establish a standalone urban forestry advisory board. This includes the Parks and Recreation Advisory Board establishing urban forestry as one of their priorities.

| Department | Expenditures | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| CM Office | Full-Time Program Administrator | 122,162 | 128,185 | 130,555 | 134,965 | 139,524 |
| | **Subtotal Salaries and Benefits** | **122,162** | **128,185** | **130,555** | **134,965** | **139,524** |
| CM - Program Admin | Comprehensive Tree Assessment | 100,000 | 0 | 0 | 0 | 0 |
| CM - Program Admin | Contract Arborist | 35,000 | 35,000 | 40,000 | 50,000 | 50,000 |
| CM - Program Admin | Contract Tree Maintenance and Planting | 0 | 40,000 | 80,000 | 120,000 | 160,000 |
| | **Subtotal Professional Services** | **135,000** | **75,000** | **120,000** | **170,000** | **210,000** |
| CM - Program Admin | Purchase Trees | 0 | 25,000 | 50,000 | 75,000 | 100,000 |
| CM - Program Admin | Volunteer Maintenance and Planting Supplies | 0 | 5,258 | 5,258 | 2,629 | 876 |
| CM - Program Admin | General Office and Operating Supplies | 1,035 | 1,035 | 1,035 | 1,035 | 1,035 |
| | **Subtotal Supplies and Indirect Costs** | **1,035** | **31,293** | **56,293** | **78,664** | **101,911** |
| | **Total Expenditures** | **258,197** | **234,478** | **306,848** | **383,629** | **451,435** |
| | *Difference from Budget A* | *10,055* | *12,290* | *10,746* | *11,109* | *11,484* |

| Coordinated with | Priorities | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| CED and Parks | Standardize Citywide Tree Maintenance Practices | x | | | | |
| PWE | Evaluate and Update Surface Water Fee Usage | x | x | | | |
| CED | Coordinate Contract Arborist Work | x | x | x | x | x |
| CED and Parks | Community Outreach and Engagement | x | x | x | x | x |
| CED and Parks | Volunteer Recruitment and Appreciation | x | x | x | x | x |
| CED and Parks | Explore External Partnerships and Funding | x | x | x | x | x |
| CED, Parks, and PWE | Coordinate UFP priorities | x | x | x | x | x |
| CED, Parks, and PWE | Trees planted @ $250 per tree | 0 | 100 | 200 | 300 | 400 |
| | *Change in trees planted annually* | *0%* | *100%* | *100%* | *50%* | *33%* |
| | *Percentage volunteer-led tree planting* | *0%* | *50%* | *50%* | *50%* | *50%* |

# Appendix I: Budget Assumptions

The underlying assumptions for each budget are detailed below. The assumptions are delineated based on budget:

- Budget A: Expenditures that only apply to Budget A
- Budget B: Expenditures that only apply to Budget B
- Budgets A & B: Expenditures that apply to both Budget A and Budget B

## BUDGET A: Standalone Urban Forestry Advisory Board

### *Staffing*

#### Program Administrator – 1 FTE – City Manager's Office

This position is equivalent to the current Assistant to the City Manager / Policy Analyst position. This equivalent is based on conversations with our client indicating that the City Manager's office could be suitable for this position for the initial years of the UFP and that this position equivalent would be appropriate.

To account for potential differences in qualifications and benefit selections, we used three different sources of reported salary and benefits for this position. We began by pulling the city's budgeted salary and benefits for this position in 2023. The second source we used is the salary range listed on the original job posting, which ranges from $81,096 to $102,876.

The projected benefit costs in 2023 and 2024 are 38.97% and 38.89% of salaries for the respective year. To calculate unknown benefit costs for the low and high salary ranges, we used an average percentage of 38.93%.

To calculate annual compensation increases over the five-year period, we examined the average increase from 2023 to 2024 for all departments relevant to UFP activities, specifically the City Manager's Office, Community and Economic Development (CED), Parks, Recreation, and Community Services (PCSD), and Public Works Engineering (PWE). To provide the most conservative estimate, we used the CED average increase of 3.38% annually, as it is the highest across departments. Table 14 below shows the five-year compensation projections.

*Table 14: Program Coordinator - Compensation Estimates*

| Source | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| 2023-2024 Proposed Budget | 110,898 | 114,644 | 118,517 | 122,520 | 126,659 |
| Online Job Description - Low Range | 112,665 | 116,471 | 120,405 | 124,473 | 128,677 |
| Online Job Description - High Range | 142,924 | 147,752 | 152,743 | 157,902 | 163,236 |
| **Average Salary and Benefits** | **122,162** | **128,185** | **130,555** | **134,965** | **139,524** |

## Budget B: No Standalone Urban Forestry Board

*Staffing*

### Associate Planner – 0.5 FTE – Community Economic Development

This estimate is based on guidance provided by the city using expenditures that were approved in the 2023-2024 Biennial Budget. The city has approved funding for one limited-term Associate Planner in CED for 2023 and 2024. We project the expenditure to be extended for an additional three years. We estimate that this position would spend 50% of their time on urban forestry activities. We used the 2023 to 2024 compensation increase for CED of 3.38% to estimate salary and benefits over five years. This expenditure is intended to be offset by Tree Preservation Revenue.

### Neighborhood Coordinator – .15 FTE – Community Economic Development

This estimate is based on guidance provided by the city using expenditures that were approved in the 2023-2024 Biennial Budget. The city has approved funding for one limited-term Neighborhood Coordinator in CED for 2023 and 2024. We projected the expenditure to be extended for an additional three years. We estimate this position will spend 15% of the time on urban forestry activities. We used the 2023 to 2024 compensation increase for CED of 3.38% to estimate salary and benefits over five years.

### Recreation Coordinator – 0.25 FTE – Parks, Recreation, and Community Services

This estimate is based on the 2023 salary and benefits for a Recreation Coordinator in PRCS. We choose a coordinator-level position to align with the Neighborhood Coordinator in CED. We estimate that this position will spend 25% of the time on urban forestry activities. We used the 2023 to 2024 compensation increase for CED of 3.38% to estimate salary and benefits over five years.

### Administrative Assistant – 0.1 FTE – Public Works Engineering

This estimate is based on the 2023 salary and benefits for the PWE Administrative Assistant (City of Lakewood Career Pages, n.d.). This position currently splits time across three PWE divisions, so this position would not ultimately carry out urban forestry activities. Therefore, this position is used solely for compensation estimation purposes. We estimate that this position will spend 10% of the time on urban forestry activities. We used the 2023 to 2024 compensation increase for CED of 3.38% to estimate salary and benefits over five years.

Table 15 summarizes the annual compensation estimates for each position.

*Table 15: Existing FTE Compensation Estimates*

| FTE % and Position | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| 1 FTE - Associate Planner | 115,000 | 118,885 | 122,900 | 127,052 | 131,344 |
| **0.5 FTE - Associate Planner** | **57,500** | **59,442** | **61,450** | **63,526** | **65,672** |
| 1 FTE - Neighborhood Coordinator | 112,000 | 115,783 | 119,694 | 123,738 | 127,917 |
| **0.15 FTE - Neighborhood Coordinator** | **16,800** | **17,367** | **17,954** | **18,561** | **19,188** |
| 1 FTE - Recreation Coordinator | 104,054 | 107,569 | 111,202 | 114,959 | 118,842 |
| **0.25 FTE - Recreation Coordinator** | **26,014** | **26,892** | **27,801** | **28,740** | **29,711** |
| 1 FTE - Neighborhood Coordinator | 112,000 | 115,783 | 119,694 | 123,738 | 127,917 |
| **0.1 FTE - Neighborhood Coordinator** | **11,200** | **11,578** | **11,969** | **12,374** | **12,792** |

# Budgets A and B: Applicable to both budgets

## *Professional Services*

### Comprehensive Tree Assessment

This estimate is based on our interview with Issaquah's and Vancouver's UFP program directors. The final expenditure would change depending on the total size of the land assessed and other conditions such as the timeline and extent or details of the assessment.

### Contract Arborist

This estimate is based on guidance provided by the city using expenditures that were approved in the 2023-2024 Biennial Budget. The contract arborist labor is estimated at $35,000 in 2023 and 2024 and coordinated by CED. Tree Preservation Revenue is expected to offset this expenditure for 2023 and 2024.

We have projected the expenditure to be extended for an additional three years and to increase in Years 4 and 5 to align with the city's increased urban forestry activities.

### Contract Operations and Maintenance

We used existing city contract tree labor estimates in this assumption. On page 258 of the city's 2023-2024 biennial budget, the city approved $32,000 in contract tree planting and maintenance for 40 trees. We used a simple calculation to estimate the cost of contract labor at $800 per tree planted.

The total expenditure each year is based on the projected number of trees planted and the amount of volunteer engagement each year. The assumption for the number of trees planted each year is outlined under "Purchase Trees" below. We estimate that volunteers will plant 50% of all trees planted each year for the first five years. As the program grows and as volunteer-led planting increases, the percentage of trees planted by contract labor will decrease.

## *Supplies and Indirect Costs*

### Purchase Trees

This estimate is based on current inventory and prices provided by Puget Sound Plants. Based on interviews with case study UFPs, the city should consider planting more mature trees to promote successful planting. Based on current availability at their Olympia nursery, the average price for a larger tree (i.e., trees sold in at least a #7 container) is $244. Based on this average, we used a cost of $250 per tree in our estimate. However, this cost could vary greatly depending on the sizes of trees purchased and the vendor.

The number of trees planted each year is based on the city beginning with a low number of plantings in Year 2 and increasing the number of trees planted by 100 each year as program capacity and volunteer efforts grow.

### Volunteer Maintenance and Planting Supplies

This estimate is based on maintenance costs and small tools and minor equipment costs in other city departments. We used departments with activities and supply costs comparable to volunteer planting and maintenance activities, such as gloves, parks maintenance, herbicides, and others. The estimate included in both budgets is the average for the comparable costs in Lakewood's biennial budget.

### General Office and Operating Supplies

This estimate is also based on comparable approved costs for other departments in Lakewood's biennial budget. Some examples include City Manager/Communications, Administrative Services, CED, PRCS, and Legal departments. The number included in the budget options is the average of all comparable identified costs in the approved biennial budget.

### Indirect Costs

If the city uses user-charges, such as stormwater fees, to fund the UFP, it should include indirect costs in the program's budget to account for overhead costs. The U.S. Government has different best practices to estimate indirect costs, which are usually expressed as a percentage of total direct costs (TDC) or the modified total direct costs (MTDC) and can go from 10% to 40% depending on the project (University of Idaho, n.d.; USAID, 2017). If user-charges are used in the future, Lakewood can add the base 10% for indirect costs, given that the new program will not represent significant overhead costs of no more than 3 FTE in the first five years. Ten percent of total direct costs represent at least $25,000 in both budget options presented in this report, the minimum monetary value recommended (University of Idaho, n.d.; USAID, 2017).

# PARKS AND RECREATION ADVISORY BOARD
# WORK PLAN AND SIGNIFICANT ACCOMPLISHMENTS

Return to Agenda

**Members:**

Jason Gerwen, Chair
Vito Iacobazzi, Vice-Chair
Sylvia Allen
Alan Billingsley
Michael Lacadie
Anessa McClendon
Janet Spingath

**Youth Council Liaisons:**

Brandon Elliot
Kera Buckmaster
Kaitlyn Miller
Kloe Salazar

**Council Liaison:**

Councilmember Don Anderson

**City Staff Support:**

Mary Dodsworth, Director Parks, Recreation & Community Services
Nikki York, Office Assistant

**Meeting Schedule:**

Fourth Tuesday of Each Month, 5:30 P.M., American Lake Room

**Accomplishments:**

| Date | Topic(s) |
|---|---|
| 6.27.22 | Joint Meeting with Council, Parks CIP Update |
| 9.27.22 | Presentation on NW Pollinators – Stacey Reding<br>South Sound Wildlife Area Update – Alan Billingsley |
| 10.25.22 | Non-Motorized Transportation Plan Survey – Weston Ott<br>Primley Park Neighborhood Planning- Stacey Redding and neighborhood |
| 11.22.22 | Senior Program Update – Elizabeth Shied,<br>2023 Work Plan Review, 2023/24 Budget Update |
| 1.24.23 | Elect Chair /Vice-Chair, Review Council approved 2023 Work Plan,<br>Street End Report Update – Stacey Reding |
| 2.28.23 | Climate Change and City Tree policy updates Jessica Olson,<br>FSP Entry – PW Engineering, Eagle Project--Orienteering Course updates |
| 3.28.23 | Prepare for Parks Appreciation Day – Nikki York, Diversity, Equity and Inclusion in P&R – Cameron Fairfield, PC Specialized Recreation – Jen Spane, Eagle Projects Springbrook Garden Compost Bins and Springbrook Garden Benches |
| 4.25.23 | Invasive Plan and Noxious Weeds – Anne Schuster and prepare for joint meeting |
| 5.3.23 | Joint Meeting with Planning Commission on Urban Forestry Program |

**2023 Work Plan:**

| | |
|---|---|
| 1. | Nisqually Partnership Project Update |
| 2. | Parks Capital Improvement Plan (CIP) Update |
| 3. | Diversity, Equity & Inclusion in Parks and Recreation |
| 4. | Senior Center Update |
| 5. | Special Event Update |
| 6. | Street End Update |
| 7. | Park Sign Project Update to include wayfinding signs and reader boards |
| 8. | Climate Change initiatives and Tree Preservation Ordinance |
| 9. | Park Code or Site or Facility Naming Process Review (as requested) |
| 10. | Future expansion opportunities - Camp Murray Historic Fort Steilacoom |

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To: Mayor and City Councilmembers

From: Paul A. Bucich, P.E., Public Works Engineering Director

Through: John J. Caulfield, City Manager

Date: May 22, 2023

Subject: Clover Creek Engineering Alternatives Evaluation Final Report

On March 20, 2023, PWE presented the final Clover Creek Engineering Alternatives Evaluation study report, copies of which are attached along with the presentation. The full report can be accessed on the project website, https://cityoflakewood.us/wp-content/uploads/2023/03/Clover-Creek-Flood-Study_Engineering-Report_Final.pdf.

To refresh Council on the alternatives evaluated, the list of potential alternatives was winnowed down from an initial "anything is possible" twenty down to a realistic four:

1) Do nothing
2) Enhance the stream corridor to better pass the flows.
3) Construct a Levee/Floodwall along I-5
4) Construct a Levee/Floodwall along the stream corridor between Bridgeport Way and the Railroad boundaries upstream

The results of these evaluations were presented to City Council along with planning level cost estimates for implementation as well as potential flooding impacts for each alternative on October 20, 2022 and again on March 20, 2023. The final report outlines those assessments and includes the long term strategies necessary to attain the final outcome of the recommended solution.

Evaluating the four alternatives, the greatest benefit would be for the City to implement option 4, a levee/floodwall along the stream corridor. The overall planning level costs for the three options where action is taken are essentially the same at this level of investigation. The benefits, however, are significantly different between option 4 and the other two options, 2 and 3. Option 4 removes most of the lands currently predicted to flood in a 1% probability flood commonly referred to as a 100-yr flood. The other two options remove flooding from I-5 and lands north and west but leave significant lands underwater between Clover Creek and I-5.

Tonight PWE is here to continue the discussion with City Council and to answer any questions on the options presented or other concerns.

If the Council direction is “do nothing further,” the City will submit a Letter of Map Revision to the Federal Emergency Management Agency (FEMA) requesting the official floodplain be modified to reflect the outcome of the work completed in 2020. Homes and businesses within the modified floodplain may be required by their lending agencies to obtain flood insurance under the National Flood Insurance Program (NFIP). Other undeveloped lands and lands seeking to build new or remodel existing will be required to meet the City’s floodplain regulations. Many of these lands were previously viewed as being within the 500 year floodplain, which is not regulated for construction activities.

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# Clover Creek Flood Study
# Engineering Report

Prepared for
City of Lakewood
Lakewood, WA
February 2023

# Acknowledgements

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Brown and Caldwell acknowledge the valuable contributions made by the City of Lakewood in conducting the Clover Creek Flood Study. Specifically, the project team recognizes the following City personnel for their efforts:

- Paul Bucich
- Weston Ott

The project team members are listed below:

- Dan Shapiro (Brown and Caldwell)
- Christopher Jones (Brown and Caldwell)
- Erin Cox (Brown and Caldwell)
- Ryan Retzlaff (Brown and Caldwell)
- Chris Frei (Watershed Science & Engineering)
- Nick Brouillard (Watershed Science & Engineering)
- Radhika Nair (BERK Consulting, Inc.)
- Rebecca Fornaby (BERK Consulting, Inc.)
- Michelle Ellsworth (BERK Consulting, Inc.)

Stakeholders:

- Mark Davila, Pierce Transit
- Rod Chandler, Pierce Transit
- Donovan Gray, Washington State Department of Ecology
- Andrew Larson, Washington State Department of Transportation
- Jacob Tennant, Washington State Department of Transportation
- Luke Assink, Washington State Department of Transportation
- Anne-Marie Marshall-Dody, Pierce County Surface Water Management and Flood District
- Tom Kantz, Pierce County Surface Water Management and Flood District
- Helmut Schmidt, Pierce County
- Rebecca McAndrew, Sound Transit
- Russ Ladley, Puyallup Tribe
- Char Naylor, Puyallup Tribe
- George Walter, Nisqually Tribe
- Meseret Ghebresllassie, Joint Base Lewis-McChord
- Darrin Masters, Washington Department of Fish and Wildlife

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# List of Abbreviations

| | |
|---|---|
| 1D | one-dimensional |
| 2D | two-dimensional |
| BC | Brown and Caldwell |
| BCE | business case evaluation |
| BNSF | Burlington Northern Santa Fe |
| BRIC | Building Resilient Infrastructure and Communities |
| CIP | capital improvement program |
| City | City of Lakewood |
| CPOD | Comprehensive Plan of Development |
| DEI | diversity, equity, and inclusion |
| Ecology | Washington State Department of Ecology |
| FCAAP | Flood Control Assistance Account Program |
| FCZD | Flood Control Zone District |
| FEMA | Federal Emergency Management Agency |
| FMA | Flood Mitigation Assistance |
| HEC-RAS | Hydrologic Engineering Center River Analysis System |
| I-5 | Interstate 5 |
| JBLM | Joint Base Lewis-McChord |
| LOMR | Letter of Map Revision |
| MCDA | Multi-Criteria Decision Analysis |
| NOI | Notice of Intent |
| TMDL | total maximum daily load |
| USACE | United States Army Corps of Engineers |
| USEPA | Unites States Environmental Protection Agency |
| WIFIA | Water Investment in Federal Infrastructure Act |
| WSE | Watershed Science & Engineering |
| WSDOT | Washington State Department of Transportation |

# Executive Summary

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The City of Lakewood (City) initiated this study and developed this Engineering Report to generate and evaluate project alternatives to mitigate 100-year flood risk along Clover Creek within the City limits. Federal Emergency Management Agency (FEMA) mapping reveals that the predicted 100-year flooding event would inundate portions of the City east of Interstate 5 (I-5) and north of Clover Creek. The intent of this engineering report is to evaluate potential alternative mitigation measures and determine the preferred alternative based on criteria developed as part of the study, engage stakeholders and the community, and utilize the existing hydrologic and hydraulic model to inform potential alternative flood reduction.

The hydrologic and hydraulic flood model was updated in 2019 for Clover Creek, which revealed a significant increase to the area impacted by floodwater when compared to the previous FEMA effective map of inundation for the 100-year event. The updated model suggests a significant portion of the City of Lakewood could be impacted by the floodwaters, including I-5. The flooding to I-5 could potentially result in significant new regulatory constraints placed on I-5. The City paused further coordination with FEMA to explore flood mitigation alternatives to reduce these potential impacts to the City and I-5. Refer to Section 3 for an in-depth discussion of the modeling results.

This report documents the potential flood mitigation alternatives that were developed and evaluated as part of this study and the resulting preferred alternative. This study and report provide the City and stakeholders with the information necessary to move forward with next steps to secure the funding and generate political support to proceed with the planning, design, and construction of the preferred alternative. See Section 2 for a full discussion of the alternative development, screening, and prioritization process and results.

This study considered many potential alternatives to mitigate flooding from Clover Creek. Four were evaluated in greater depth following an initial screening and prioritization of potential options:

- Do Nothing
- Stream and Channel Enhancements
- I-5 Levee
- Levee

The Do Nothing alternative would maintain the current floodplain and I-5 inundation risk as documented by FEMA and include the new areas shown to be inundated with the latest model updates.

The Stream and Channel Enhancement alternative would explore locations and areas where the Clover Creek riparian area and floodplain could be expanded to enhance the capacity of the creek and reduce flooding. This alternative would also put an emphasis on restoration activities that would benefit water quality in addition to salmon and other native species.

The I-5 Levee alternative would provide flood blockage such that I-5 and areas of the city west of I-5 would not be inundated. Much of the land east of I-5 would remain within the floodplain.

The Levee alternative would place a flood blocking structure along or setback from Clover Creek that would block nearly all flood water from the city. This alternative provides the most comprehensive flood mitigation benefit.

The preferred alternative is the Levee. However, significant elements of stream restoration and habitat enhancement should be considered as part of the preferred alternative to provide the greatest benefit to the creek and the community. Section 4 provides a full discussion of the alternative evaluation.

Local, state, and federal funding options including grants, loans, and partnering opportunities have been reviewed and evaluated as part of this study. Each funding option has been documented with steps for applying for and advancing each opportunity. Funding options and recommendations, including an approach and basic timeline, are detailed in Section 5.

Public engagement included developing a stakeholder committee and engaging with the community of Lakewood. The project team engaged key stakeholders to secure their involvement, meeting with the committee four times to share the study progress and receive feedback and input. The community of Lakewood participated in two meetings where the project status was shared and allowed time for questions. Section 6 highlights the outreach completed as part of this study.

Section 1

# Project Background

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This engineering report outlines the development and evaluation of potential flood mitigation alternatives and recommends a preferred alternative. This work was initiated based on updated floodplain modeling. The impetus for updating the flood modeling and initiating this study began with the City reviewing the effective Federal Emergency Management Agency (FEMA) flood maps and suspecting the maps may be over-predicting the flood inundation. The City contracted Watershed Science & Engineering (WSE) to update the hydrology and hydraulic model to better predict the 100-year flood extent. The updated model results revealed an increase to the 100-year flood extent.

The updated 100-year floodplain was presented to regulators for consideration. The updated floodplain would significantly increase risk to the City, its infrastructure, and private property and impose significant cost to property owners in the form of flood insurance. Additionally, the FEMA designated floodway would increase within the Clover Creek riparian area but also be designated in areas outside of the creek and across Interstate 5 (I-5). A floodway designation by FEMA limits development and structural changes to the floodway and has significant flood insurance implications.

Based on this information, City leaders requested to pause any further update to the 100-year floodplain with FEMA so that a study could be performed to evaluate potential mitigation alternatives that could reduce the impact of an updated floodplain designation and the likelihood of flood impacts.

The study area along Clover Creek begins at the Burlington Northern Santa Fe (BNSF) railroad to the east, which runs north—south and extends to Steilacoom Lake where Clover Creek terminates (Figure 1.)

## 1.1 Flooding History

Clover Creek has a history of flooding, most recently in 1996 when the Gen-Villa Apartments were flooded. Flooding has also occurred over the years downstream of the Gen-Villa Apartments along 58th Avenue SW and the surrounding properties. Flooding can be characterized as ‘nuisance flooding’ and localized flooding may occur a few times per year or not at all, depending on the winter. There is no record or observation of a larger flood that has inundated the area in the way a 100-year event would impact Lakewood.

Lakewood and the surrounding region are characterized by unusual geology and hydrogeology due to past continental and alpine glaciation. The subsurface geology can absorb and move water from upstream to downstream locations. The groundwater/surface water interface is most prominent in the Graham, Frederickson, and Spanaway communities where groundwater reaches the surface and can flood areas for weeks, as it did in the winter of 2017. Similarly, 123rd Street SW in Lakewood experiences similar groundwater flooding that can occur weeks after rain events and last for weeks. This unusual geology creates unique challenges to managing flooding in the region.

## 1.2 Previous Studies

Clover Creek has been studied over the years to characterize the potential hazard of flooding and to mitigate the threat of flooding. These studies are highlighted below.

### 1.2.1 Effective FEMA Flood Insurance Study

Effective FEMA flood hazard mapping for Clover Creek is based on a 2006 Flood Insurance Study that applied one-dimensional (1D) Hydrologic Engineering Center River Analysis System (HEC-RAS) hydraulic modeling and Hydrological Simulation Program—Fortran hydrologic modeling Northwest Hydraulic Consultants (NHC, 2006). Flood hazards determined within the City at that time included 100-year breakout flooding along 58th Avenue downstream from Pacific Highway and overbank flooding between Joint Base Lewis-McChord (JBLM) and Bridgeport Way that would overtop I-5 and inundate downstream areas.

### 1.2.2 2003 Brown and Caldwell Study

This study was initiated following the flooding of Gen-Villa Apartments in 1996 to explore mitigation options to alleviate flooding in the area. The study included the evaluation of four alternatives: storage in new off-channel ponds at two sites upstream of the flooding, diversion piping, increased bank elevations, and off-channel conveyance improvements. The final report outlines a preferred alternative, which focuses on off-channel conveyance improvements and the most likely alternative to mitigate flooding while considering costs, permitting, and overall performance. The recommended improvements have not been implemented to date.

### 1.2.3 2019 Flood Hazard Analysis

In 2019, WSE completed a study to refine FEMA flood hazard mapping for Clover Creek within the City (WSE, 2020). The resulting FEMA HEC-RAS 1D hydraulic model was updated by adding a two-dimensional (2D) flow area to route overbank flow. The resulting 1D/2D model was run in the unsteady mode to simulate the 100-year flood event to support updated floodplain mapping.

During the study, a berm along Clover Creek was identified as a non-accredited levee. The berm is located on the right bank of the creek just downstream of the BNSF-McChord railroad crossing. WSE followed FEMA guidelines to complete a levee failure analysis by running an additional 100-year model simulation with the levee removed from the model geometry.

Mapped flood hazard areas and base flood elevations from the 2019 study reflect a combination of worst-case scenarios, both with and without levee simulations. Flood inundation extents are similar to effective mapping boundaries, and results confirm the risk of a 100-year flood overtopping I-5. Failure of the unaccredited levee results in significant flow in the overbank, and the FEMA floodway would no longer be contained to the channel without creating a 1-foot surcharge. A revised floodway was not developed as part of the 2019 study but would need to extend through the overbank and over I-5 to meet surcharge requirements. The WSE 2020 memorandum is provided as Appendix A with additional detail.

## 1.3 2022 Flood Mitigation Evaluation

Based on the 2019 100-year floodplain evaluation completed by WSE, the City chose to evaluate mitigation alternatives prior to updating the base flood elevations for the 100-year floodplain and include I-5 as part of the floodway. The resulting alternative development, evaluation, and suggested preferred alternative are included in this engineering report.

Section 2

# Flood Mitigation Alternatives

The development of flood mitigation alternatives included a comprehensive, holistic review of the watershed and how it functions to determine how the 100-year flood could be mitigated in Lakewood. A broad suite of alternatives was initially proposed, which were processed through various screening and modeling evaluations to narrow the list down to four viable alternatives, including the Do Nothing alternative. These four alternatives were further evaluated in finer detail to determine the preferred alternative. The evaluation process and steps are described in more detail below and in Section 4.

Goals for flood mitigation include removing as much land from the 100-year floodplain as possible and removing floodwaters from overtopping I-5. If an alternative accomplished this goal, while creating higher flows in the creek, mitigation measures for these downstream impacts were also included in the alternative, through floodplain creation or the construction of flood walls, to keep Clover Creek within its banks.

## 2.1 Flood Mitigation Alternative Development

To develop a comprehensive list of potential alternatives, the consultant team reviewed modeling results for the existing conditions to identify potential mitigation measures. The team developed the following five categories of solutions to help guide the creation of the potential alternatives list:

- Do nothing
- Levee or block the flooding
- Create flood storage
- Enhance the watershed and/or riparian-zone restoration
- Improve capacity

The consultant team developed a comprehensive list of potential alternatives and then conducted a broad review and analysis of the watershed. This historical review included reviewing historical aerials, discussing development patterns with the City, evaluating historical flooding events, and reviewing the surficial and groundwater hydrology patterns in the watershed. Due to site conditions, including limited space, and concerns of high groundwater, some alternatives were quickly dismissed but have still been included here for documentation purposes.

Based on the five categories above, the team developed 12 potential alternatives, which are presented below in Table 2-1. Each of these potential alternatives was evaluated to estimate the potential for flood mitigation and ranked as high, medium, or low. The engineering and implementation considerations for each of these alternatives have also been considered. The estimated mitigation ranking, engineering, and implementation considerations are included in the full table included in Appendix B.

**Table 2-1. Potential Flood Mitigation Alternatives**

| Alternative | Name | Type | Description |
|---|---|---|---|
| A1 | Do nothing | – | Continue business as usual with inherent risk of FEMA mapped floodplains containing I-5 and other local businesses and residential buildings. |
| A2 | Regional storage | Storage | Create regional storage facilities throughout the watershed. Storage could be inline/offline or floodplain benching. |
| A3 | Bypass pipe | Capacity improvements | Construct a pipe/channel capable of rerouting/bypassing high flows downstream. |
| A4 | Set back levee or flood wall | Storage/capacity/ blockage | Set back levee along the north bank to limit flooding. Location of levee to be determined. |
| A5 | Levee or flood wall along creek | Flood blockage | Levee along the creek to block floodwaters from exiting the channel. |
| A6 | Creek restoration/capacity enhancements | System improvements/capacity | Upstream and downstream restoration of Clover Creek to include habitat improvements, flood mitigation and storage, bank stabilization, and the implementation of low impact development to improve water quality. |
| A7 | WSDOT ditch blockage or flood wall along I-5 | Flood blockage | Flood propagation begins at the creek and moves north mostly west of 47th Ave. The drainage ditch along I-5 would be blocked and would not allow drainage or floodwater to move north or south along the east side of I-5. |
| A8 | Watershed wide management study | Upstream improvements | Implement a feasibility study to measure and monitor flows from the upstream watershed and determine watershed-wide actions to help mitigate peak flows. |
| A9 | Raise profile I-5 | Flood blockage | Elevating the northbound lanes of I-5 would effectively remove the roadway from the floodplain and block floodwater from the western side of I-5. |
| A10 | TMDL integration | Integrated approach | Integrate TMDL operations to also consider flood mitigation throughout the watershed. |
| A11 | Fill Low areas along Clover Creek | Flood blockage | Fill areas along the creek to effectively raise the bank elevation while still enabling development to occur. |
| A12 | Creation of floodplain | Capacity improvements | Purchase property and establish easements for the creation of intentional floodplain storage areas with flooded area as well as upstream and downstream. |

*TMDL = total maximum daily load*

*WSDOT = Washington State Department of Transportation*

These twelve alternatives were discussed in detail during a regular project meeting with the City to reduce the number of alternatives based on the information available, including feasibility, effectiveness, stakeholder input, and ability for alternative to meet flood mitigation goals. This early alternative reduction resulted in eight alternatives considered as likely candidates for implementation. Alternatives A1, A3 through A7, A9 and A11 were included in the next stage of screening.

Table 2-2, below, provides additional information about each of the eight alternatives and some of the rationale or challenges associated with implementation.

**Table 2-2. Alternatives and Engineering Considerations**

| Alternative | Name | Engineering and Implementation Considerations |
|---|---|---|
| A1 | Do Nothing | The economic impacts associated with flood risks include damage and closures to local businesses, damage to residential buildings, and the potential closure of I-5. |
| A3 | Bypass pipe | Involves the design and construction of miles of new infrastructure. Project will be expensive and finding an acceptable alignment to minimize utility conflicts will be challenging. Estimate of roughly 2 miles of pipe to Steilacoom Lake. |
| A4 | Set back levee or flood wall | The displacement of floodwaters may trigger a no-rise analysis or other permitting requirements. Downstream capacity and flooding would also require consideration or attention. |
| A5 | Levee or flood wall along creek | Private property and structures along the north bank may add complexity along with permitting challenges such as a no-rise analysis. |
| A6 | Creek restoration/capacity enhancements | Project will require an extensive study of the Clover Creek watershed, which will likely include stream flow and quality monitoring. |
| A7 | WSDOT ditch blockage or flood wall along I-5 | Construction and/or hydraulic modifications within the floodway may trigger a no-rise analysis or other FEMA permitting requirements. |
| A9 | Raise profile of I-5 | Changing the profile of a federal highway will likely have significant unforeseen challenges. Changing the vertical profile of I-5 will have practical challenges; however, construction to elevate the roadway may be more feasible. |
| A11 | Fill low areas along clover creek | The feasibility of relocating current occupants, both businesses and residents, poses challenges. Purchase of easements/property may be costly. |

Once these eight alternatives were identified and evaluated in a qualitative way, they entered the initial screening process described in Section 2.2 below.

## 2.2 Flood Mitigation Initial Screening Criteria Development

Screening criteria for the eight alternatives were developed for further evaluation and consideration of the suitability and ability of each alternative to address multiple criteria while mitigating flooding to various degrees. The criteria were developed based on the following four overarching elements:

- Environmental
- Community
- Implementation
- Cost

Seventeen specific criteria were developed within these four key elements. The environmental element of the screening criteria includes three specific criteria: community includes five specific criteria; implementation includes three specific criteria; and cost includes six specific criteria. Each of the 17 criteria have been scored with a zero, five, or ten. Table 2-3 details the scoring criteria definitions for each of the seventeen specific criteria.

**Table 2-3. Screening Criteria Definition for Scoring**

| Element | Criteria | Scoring Definition | | |
|---|---|---|---|---|
| | | 0 | 5 | 10 |
| Environmental | Stream water quality impact | Alternative provides no significant water quality benefits | NA | Alternative provides some water quality treatment or passive improvement in stream water quality |
| | Stream health/fisheries benefits | Alternative provides no added benefit | Alternative provides moderate improvement at only the project site | Significant improvement at project site and along the stream corridor |
| | Natural wetland and species impacts | Alternative decreases effective wetland area | Alternative maintains current wetland area | Alternative creates a measurable area of new significant wetland area |
| Community | Diversity, equity, and inclusion (DEI) | Alternative negatively impacts DEI in some way | Alternative is neutral with respect to DEI, neither positive nor negative | Alternative acknowledges marginalized or underserved groups in the community and addresses past inequities |
| | Community impact (non-specific general disruption) | Alternative has high community impact | Alternative has moderate impact on the community | Alternative has little impact on the community |
| | Emergency response | Alternative has no significant impact on emergency response | Alternative improves emergency response in the area by reducing flooding and increasing flood risk awareness in the area | Alternative improves emergency response in the area by significantly reducing/eliminating flooding and increasing flood risk awareness in the area |
| | Transportation impact | Alternative provides no significant improvements to transportation impacts due to flooding | Alternative provides access to all major corridors with some interruption during flooding events | Alternative largely mitigates flooding impacts to transportation infrastructure |
| | Safety from flooding (structure flooding) | Alternative has no influence on the number of structures impacted | Alternative provides more than a 30% reduction in the number of structures impacted | Alternative provides more than a 70% reduction in the number of structures impacted |
| Implementation | Feasibility | Alternative requires significant regulatory hurdles due to major mitigation or compensatory impacts | Alternative requires significant mitigation of implementation impacts | Alternative requires a reasonable level of mitigation of implementation impacts |
| | Community enhancement | Alternatives provides minimal flood impact improvements for the community | Alternative provides community enhancement through flood reduction and safety improvements | Alternative enhances the community through the creation of open/green space, low-impact development, or transportation improvements |
| | Timeline for full implementation | Effective in more than 20 years | Effective in 10 to 20 years | Effective in less than 10 years |
| | Maintainability | Alternative is anticipated to require monthly (or more frequent) inspection and maintenance | Alternative is anticipated to require quarterly inspections and some maintenance | Alternative requires inspection after large rainfall events and minimal maintenance and upkeep |

| Table 2-3. Screening Criteria Definition for Scoring | | | | |
|---|---|---|---|---|
| Element | Criteria | Scoring Definition | | |
| | | 0 | 5 | 10 |
| Cost | Land acquisition or easement need | Alternative is likely to have significant land needs—more than 10 acres | Alternative is likely to have some land needs—between 5 and 10 acres. | Alternative is likely to have little land needs—less than 5 acres. |
| | Relative implementation cost | Anticipated alternative implementation cost is relatively high—greater than 25 million | Anticipated alternative implementation cost is moderate—between 10—25 million. | Anticipated alternative implementation cost is relatively low, less than 10 million |
| | Undeveloped land within floodplain | Alternative has no impact on floodplain extents | Alternative removes up to 20 acres from the floodplain for potential development | Alternative removes 20 or more acres from the floodplain for potential development |
| | Transportation interruptions | Alternative reduces transportation cost impacts by less than 10 percent | Alternative reduces transportation cost impacts by up to 50 percent | Alternative reduces transportation cost impacts by more than 50 percent |
| | Local business impacts | Alternative provides no significant reduction in flood-related business costs | Alternative provides moderate reduction in flood-related business costs | Alternative provides significant reduction in flood-related business costs |
| | Residential building impacts | Alternative provides no significant reduction in flood related recovery costs | Alternative provides moderate reduction in flood related recovery costs | Alternative provides the most reduction in flood related recovery costs |

## 2.3 Flood Mitigation Alternative Initial Screening

Each alternative received the following scores using the criteria described above:

- 0.72: Set Back Levee
- 0.53: Creek Side Levee
- 0.47: Washington State Department of Transportation (WSDOT) Ditch Blockage or Flood Wall along I-5
- 0.39: Raise Profile I-5
- 0.36: Creek Restoration/Capacity Enhancements
- 0.23: Fill Low Areas Along Clover Creek
- 0.12: Bypass Pipe

Figure 2-1 provides a graphical representation of the scoring along with the relative score for each of the criteria listed in Table 2-3. This figure shows the relative score of one element compared to others for each of the seven alternatives.

For example, the Set Back Levee scored well for the environmental criteria (shown in green) compared to the Creek Side Levee. This difference is the primary reason the Set Back Levee scored higher than the Creek Side Levee.

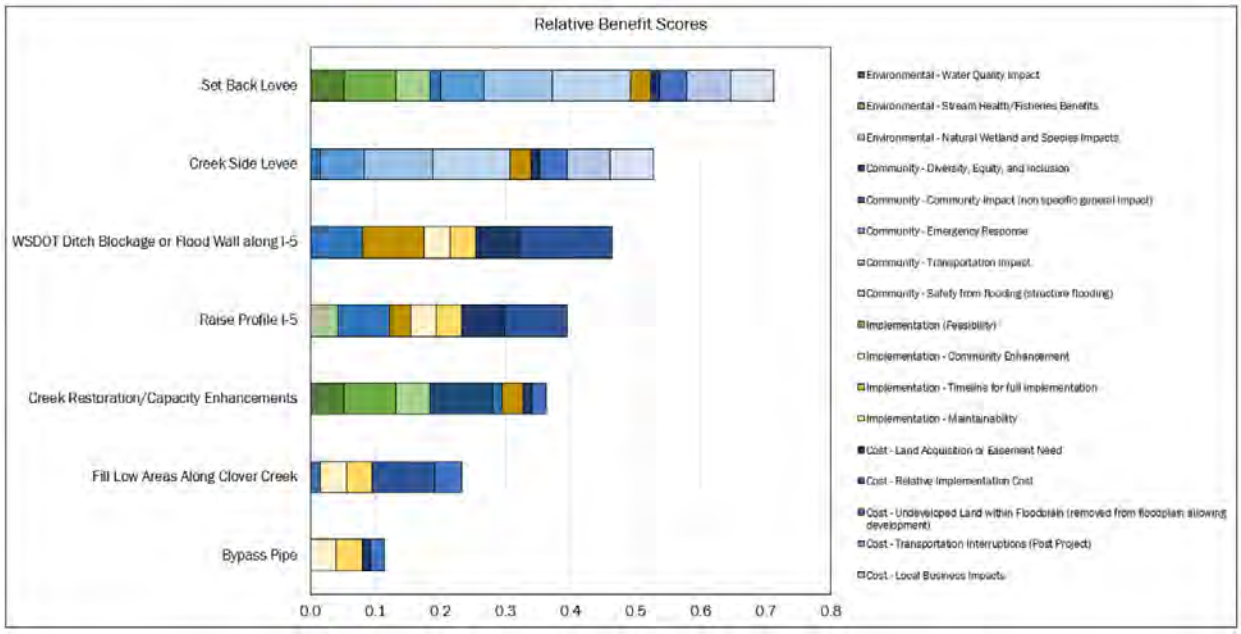


**Figure 2-1. Mitigation alternative relative benefit scores**

These seven alternatives were evaluated and screened based on the scoring shown in Figure 2-1 to further narrow down the number of potential alternatives. Several alternatives were either removed or combined over the span of several meetings to review and discuss the alternatives as a team.

The bypass pipe (Alternative A3) was determined to not be a reasonable alternative due to its low relative benefit score and was removed for any further study.

The first two alternatives, Set Back Levee and Creek Side Levee were combined to form a Levee alternative that could include either alternative to remain flexible in how the levee alternative is applied.

Alternatives three and four, WSDOT Ditch Blockage/Flood Wall along I-5 and Raise Profile I-5, both addressed the specific goal of removing floodwaters on I-5 and were thus combined to provide a second final alternative.

The third final alternative combined the Creek Restoration/Capacity Enhancements and Filling Low Areas Along Clover Creek. These two alternatives mitigate flooding through modifications to the local topography around the creek, while providing riparian enhancements, and were therefore combined.

This approach of combining the top six scoring alternatives into three alternatives allowed for each alternative to remain broad and flexible, with the City and other stakeholders given the freedom to later determine project extent and the degree of implementation. Based on this approach the final four alternatives are listed below:

- Do Nothing
- Channel and Capacity Enhancement
- I-5 Levee
- Levee

For more detail on the analysis of these four alternatives see Section 3.

## 2.4 Final Flood Mitigation Alternatives

The following section describes the final four flood mitigation alternatives that were chosen for in-depth analysis, including hydraulic modeling, cost estimation, and multi-criteria decision analysis (MCDA). Elements common to each of the three mitigation alternatives include the certification of an existing (uncertified) levee west of the BNSF railroad tracks and improvements downstream of I-5 that might include creek-side embankments or levee improvements. These two elements and the four mitigation alternatives are discussed in greater detail in the following sections.

### 2.4.1 Do Nothing Alternative

The Do Nothing alternative includes continuing business as usual, acknowledging the existing flood hazard, and proceeding to update FEMA flood mapping based on the results of the 2019 flood hazard analysis. This alternative would include submitting a Letter of Map Revision (LOMR) to adjust the regulatory floodplain boundary to include the levee failure scenario, likely resulting in floodwaters overtopping I-5 and subjecting I-5 to regulations associated with FEMA floodway regulations. Submitting a LOMR will also result in more properties inside the 100-year floodplain that would then be required to secure floodplain insurance. The 100-year flood extents for this alternative are shown in attached Figure 2.

### 2.4.2 Channel and Capacity Enhancement Alternative

The channel and capacity enhancement alternative would add or expand floodplain benches along the existing channel to increase flood storage and conveyance capacity to reduce the extent and duration of overbank flooding. To simulate this alternative, the model was updated to cut floodplain benches at the 2-year flood elevation where it appeared feasible to do so. The actual implementation of this alternative is uncertain. Much of the land adjacent to the creek is private property. Channel capacity improvements would occur within the reach of Clover Creek extending approximately 1 mile from the BNSF railroad tracks west of JBLM to the end of Clover Park Drive SW, where the banks of the creek are elevated. Areas of floodplain benching would also be considered for stream bank enhancement and habitat creation for instream and riparian benefit. Habitat improvements have not been quantified but would be a major element of this alternative. The 100-year flood extents for this alternative are shown in Attached Figure 3.

Results assume that the existing non-accredited levee at the upstream model extent would be certified as providing 100-year flood protection. Inundation results in attached Figure 3 also assume that high ground along the channel reach downstream from I-5 would be elevated using fill, short levee segments, flood walls, or some alternative mechanism to prevent breakout flow.

### 2.4.3 I-5 Levee Alternative

The I-5 Levee alternative would construct a levee to limit flood extents and prevent flooding of I-5. The levee would begin at 47th Ave SW and extend west along 120th St SW to the I-5 on-ramp where it would extend southwest until it reaches high ground, at approximately 121st St SW. The levee would be approximately 950 feet long with an average height of approximately 4 feet and a maximum height of approximately 6 feet in order to provide adequate freeboard (3 ft) and tie-ins to meet FEMA requirements for a certified levee.

Habitat improvements would be identified along the entire stretch of Clover Creek to improve instream, riparian, and upland conditions. No specific locations have been identified at this time. The hydraulic model was updated to simulate the levee alignment described above. The 100-year flood extents and approximate location of the proposed levee for this alternative are shown in attached Figure 4.

Results assume that the existing non-accredited levee at the upstream model extent would be certified as providing 100-year flood protection. Inundation results shown in Figure 4 also assume that high ground along the channel reach downstream from I-5 would be elevated using fill, short levee segments, flood walls, or some alternative mechanism to prevent breakout flow.

### 2.4.4 Levee Alternative

This alternative would construct a levee to contain Clover Creek flood extents between JBLM and I-5. The exact alignment of the levee has not been defined; however, preliminary modeling placed the levee beginning at high ground near the BNSF railroad and extending west along the south side of the Tacoma Power electrical station and Carlyle Court Apartments. The levee then continues west along the southern boundary of the James Apartments where it ends at high ground along Bridgeport Way SW. The levee will need to terminate at natural high ground and provide at least 3 feet of freeboard to meet FEMA requirements for a certified levee.

Areas of potential habitat restoration would be identified along the entire stretch of Clover Creek to improve instream, riparian, and upland conditions. No specific locations have been identified at this time; however, if the levee is set back from the creek, there may be significant area available for habitat restoration. Simulated 100-year flood extents and approximate location of the proposed levee for this alternative are shown in attached Figure 5.

Inundation results in attached Figure 5 assume that high ground along the channel reach downstream from I-5 would be elevated using fill or short levee segments to prevent breakout flow downstream, along 58th Avenue.

Section 3

# Hydraulic Modeling and Analysis

The modeling performed for this study is an extension of the work previously completed by WSE, documented in the report *Clover Creek LOMR Hydraulic Modeling and Mapping* (2020). The modeling completed and discussed below was done in support of alternative evaluation for flood mitigation. The existing model was used with slight modifications to test or evaluate the flood mitigating capacity of each alternative.

## 3.1 Existing Model/Do Nothing Alternative

The current flood mapping shows inundation along the north bank of Clover Creek and east of I-5 for the 100-year event. The current 500-year flood extents include portions of the city west of I-5 including Pacific Highway and Sound Transit rail.

### 3.1.1 Effective FEMA model

The current effective FEMA flood map shows most of the flooding occurring on the east side of I-5 with some flooding downstream along the creek west of I-5.

The current effective FEMA hydraulic model is a 1D steady state HEC-RAS model. Hydrology is based on Hydrological Simulation Program—Fortran modeling of the basin (Northwest Hydraulic Consultants, 2006). The effective FEMA model flood inundation maps and flood insurance study are available from the FEMA website at https://msc.fema.gov/portal/home.

### 3.1.2 City of Lakewood Clover Creek 1D/2D Study Update 2019

One-hundred-year inundation results were refined as part of the City mapping update in 2019 and documented in the WSE report (2020). WSE updated the effective FEMA HEC-RAS 1D hydraulic model by adding a 2D flow area to route overbank flow escaping the main channel. The resulting 1D/2D model was run in unsteady mode to simulate the 100-year flood event to support updated floodplain mapping. A levee failure simulation was also included to capture the potential for the uncertified levee to fail near the upstream portion of the study reach near BNSF railroad, as described in Section 2.4. The resulting flood map is a composite of the worst case for model runs with and without levee failure 100-year flooding (Appendix A). For a more detailed report of the modeling and results please refer to the report *Clover Creek LOMR Hydraulic Modeling and Mapping (*2020).

## 3.2 Preferred Alternative Model Development and Analysis

Utilizing the updated flood model, the project team evaluated the potential alternatives. The hydraulic model was modified for each alternative with general assumptions for the location and extent of each alternative. This process provided model output showing flood extent and depth for each alternative.

### 3.2.1 Do Nothing Alternative

The 2019 1D/2D model of Clover Creek represents the Do Nothing alternative and would be represented by the composite flooding as discussed above in Section 3.1.2.

### 3.2.2 Channel and Capacity Enhancement Alternative

Channel and capacity enhancements were simulated within the 1D/2D model by adding or expanding floodplain benches. Modifications were made within the 1D channel cross sections at approximately the 2-year water surface elevation. The 1D cross sections were modified to extend or add a bench away from the creek for up to 30 feet at the 2-year water surface elevation. These modifications were made to undeveloped land adjacent to the channel.

Modeling for this scenario assumed that the existing non-accredited levee at the upstream model boundary would be certified; therefore, no levee failure simulations were completed. Existing lateral structures that represent the connection between the 1D channel and 2D overbank areas of the model were raised downstream of I-5 to prevent flow from leaving the channel and flooding areas along the right overbank. Refer to attached Figure 6 for the area of potential enhancement.

### 3.2.3 I-5 Levee Alternative

A levee was simulated to block flow from entering the I-5 roadside ditch, allowing floodwaters to travel north and overtop I-5. A levee was added within the 2D portion of the model by adding an embankment along the levee alignment to prevent flows from overtopping I-5. It is assumed the levee would be accredited with the United States Army Corps of Engineers (USACE) to provide 100-year flood protection; therefore, no levee failure simulations were completed. Existing lateral structures, along the creek, that represent the connection between the 1D channel and 2D overbank areas of the model were elevated downstream of I-5 to prevent flow from exiting the channel and flooding areas along the right overbank, simulating a small levee or flood walls. Refer to attached Figure 4 for the levee location.

Modeling for this scenario also assumed the existing non-accredited levee at the upstream model boundary would be certified with the USACE; therefore, no levee failure simulations were completed.

### 3.2.4 Levee Alternative

A levee was simulated to reduce right overbank flooding between the BNSF railroad, at the east end of the project area, and I-5, which splits the project area roughly in half. The levee was added within the 2D portion of the model by adding an embankment along the levee alignment to prevent flooding. The embankment was elevated to a height that eliminated any flooding to the north or into the right bank. It is assumed that the levee would be accredited by the USACE to provide 100-year flood protection; therefore, no levee failure simulations were completed. Existing lateral structures, along the creek, that represent the connection between the 1D channel and 2D overbank areas of the model were elevated downstream of I-5 to prevent flow from exiting the channel and flooding areas along the right overbank, simulating a small levee or flood walls. Refer to attached Figure 5 for the levee location.

Modeling for this scenario also assumed the existing non-accredited levee at the upstream model boundary would be certified with the USACE; therefore, no levee failure simulations were completed.

Section 4

# Alternatives Analysis

Return to Agenda

The three preferred alternatives and the Do Nothing alternative were evaluated through an abbreviated business case evaluation (BCE). The abbreviated BCE of the four alternatives included criteria that had the potential to demonstrate meaningful differences between the four options. The criteria included qualitative and quantitative elements and financial impacts.

## 4.1 Development of Planning Level Evaluation Criteria and Scoring

To provide a recommendation for a preferred flood mitigation alternative, Brown and Caldwell (BC) leveraged a decision-support framework that includes engagement with stakeholders and the community in the decision-making process. The steps of the decision-support process and groups engaged in each step are outlined in Figure 4-1. This process is often referred as a multiple criteria decision analysis (MCDA).

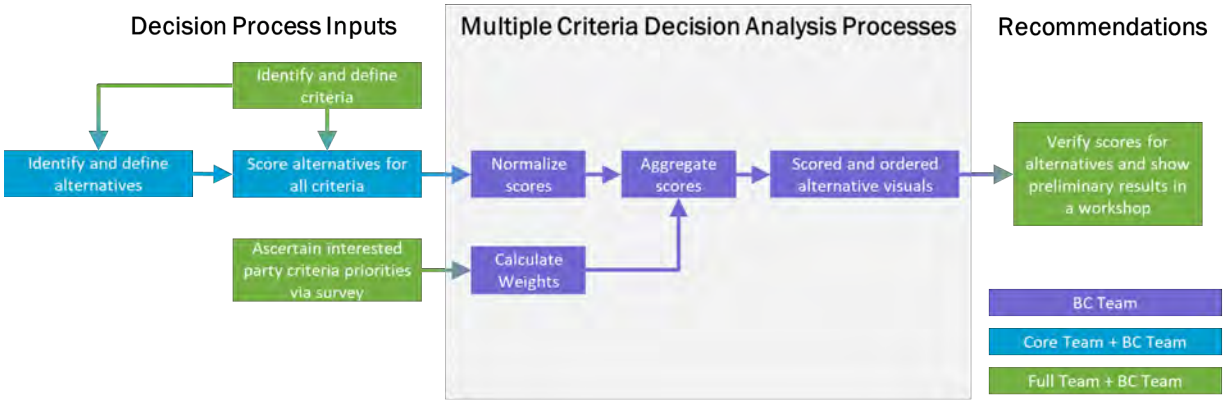


**Figure 4-1. Decision-support process flow diagram**

### 4.1.1 Criteria Selection

Decision criteria were identified to differentiate and prioritize the four alternatives presented. Non-monetary criteria are critical to project success and require a defensible, repeatable approach that makes use of project information available at the time.

BC formulated an initial set of 31 criteria during scoping and in a project team screening criteria identification working session. Criteria were grouped based on overlapping mechanisms (e.g., environmental factors versus environmental water quality impact). This exercise was conducted by BC and vetted by the City project team. The final list of eight decision criteria was formulated to highlight the benefits associated with project alternatives compared to one another and together represent non-monetary benefits. The descriptions associated with decision criteria are shown in Table 4-1. Due to the importance of capital and flood impact costs, those variables were considered against non-monetary benefits, where monetary cost and non-monetary benefits were plotted against one another to highlight project alternatives with high benefit and low cost.

| Table 4-1. Decision Criteria and Associated Descriptions | |
|---|---|
| **Criterion** | **Description** |
| Water quality and habitat | Habitat and water quality conditions that are either supportive or detrimental to aquatic species. |
| Community flood reduction benefits | Spatial extent of flooding to approximate impacts of flooding that are not captured in flood cost analysis (e.g., business development in region, business downtime, community perception, traffic impacts to immediate and surrounding area). |
| Community safety | Magnitude of population that could be adversely affected by flooding and/or associated emergency response capability, including hospital access. |
| Community improvement—greater community | Community benefits not related to flooding, including nature-based solutions and/or educational opportunities, green spaces, parks, and setbacks. |
| Community improvement—DEI | Investments in and impacts to traditionally underserved neighborhoods. |
| Shovel readiness | Time to fully implement an alternative. This effectively encompasses funding time, political buy-in, land acquisition, permitting, construction, etc. |
| Ease of operation | Maintenance/operational upkeep requirements. |
| Leverages City land | An alternative leverages City-owned land versus requiring coordination with private landowners. |

### 4.1.2 Criteria Weightings

The City provided an initial set of category weightings in association with the updated criteria list (Figure 4-2). The weights reflected the importance of benefiting the community and environment, with a minimized focus on technical logistics.

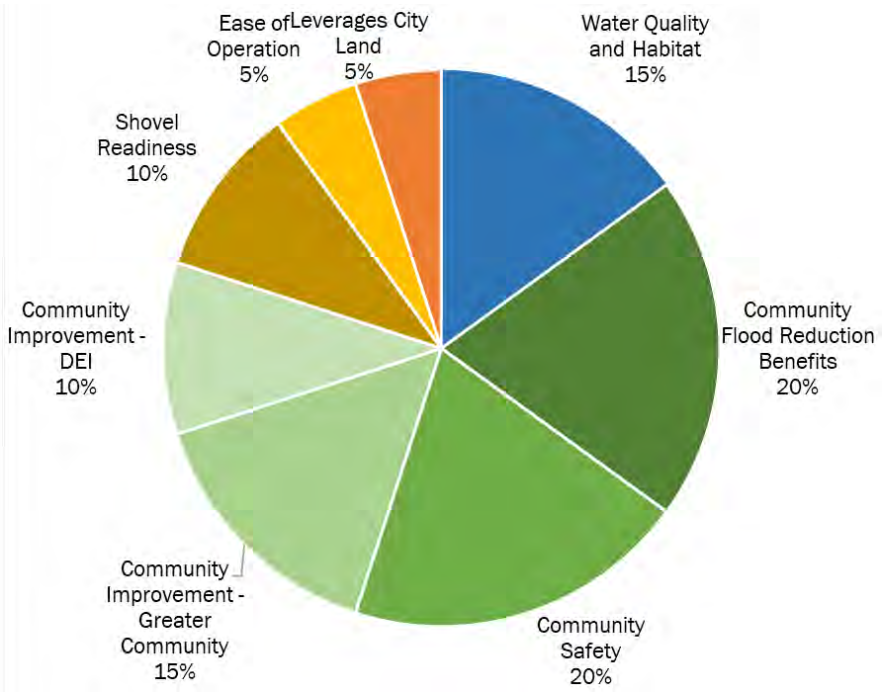


**Figure 4-2. Category weights as specified by the City on September 15, 2022**

### 4.1.3 MCDA Scoring Methodology

The eight criteria identified and defined in Section 4.1.1 were used to score each of the four alternatives under consideration. Details on scoring methods and alternatives scores are discussed

and shown in subsequent sub-sections. Quantitative criteria, e.g., flood inundation data, were characterized using data gathered during alternative development.

Quantitative scores were normalized using Equation 1 below per MCDA literature (Marler and Arora, 2004; Cinelli et al., 2020). The equation is used to normalize scores across criteria bounding them between 0, the least relative benefit, and 1, the most relative benefit. This process orients the analysis so maximum normalized scores are associated with maximum benefit. Qualitative scores were normalized by determining the percentile of a selected project's benefits compared to other projects for each qualitative criterion, thus avoiding pitfalls associated with qualitative criteria. This approach allowed for differentiation of relative project performance, which highlights benefits across each of the project alternatives. In cases where lower numbers represent higher benefit, the normalized scores were deducted from 1 to re-orient the normalized score so a larger number resulted in a lower normalized relative score (Equation 1).

Normalized scores were multiplied by their component weights and summed to represent their aggregate benefit. Alternatives were ranked and then ordered from highest benefit to lowest benefit.

$$N_{score,i} = \frac{r_i - r_{min,benefit}}{r_{max,benefit} - r_{min,benefit}} \quad or \quad N_{score,i} = 1 - \frac{r_i - r_{min,detriment}}{r_{max,detriment} - r_{min,detriment}} \qquad \text{Equation 1}$$

Where:

$N_{score,i}$ = Normalized criterion score for ith criterion
$r_i$ = Raw criterion score for ith criterion
$r_{max,benefit}$ = Maximum benefit raw criterion score
$r_{max,detriment}$ = Maximum detriment raw criterion score
$r_{min,benefit}$ = Minimum benefit raw criterion score
$r_{min,detriment}$ = Minimum detriment raw criterion score

### Water Quality and Habitat

Water quality and habitat benefits was scored by considering the likelihood of new areas to be created or made available by the proposed alternatives and the proximity of those areas to the creek and existing habitat. Water quality would be provided by new areas being made available for wetlands and riparian zones. The total new area potentially made available for habitat and water quality was estimated and used for scoring. The Do Nothing alternative provides no new area and does not change the current opportunities and therefore scores a 0. The Channel and Floodplain Enhancement alternative provides the greatest opportunity, which results in a normalized score of 1. The two levee alternatives scores fall between the others and have the same normalized score. The criteria and scores are presented below in Tables 4-2 and 4-3.

**Table 4-2. Water Quality and Habitat Scoring Bins**

| Score | Differentiating Details |
|---|---|
| 1 | Does not improve and may decrease habitat and water quality benefits compared to existing condition |
| 2 | Maintains status quo habitat and water quality benefit |
| 3 | Provides habitat and water quality benefits via channel widening/vegetation/wetland creation, etc. compared to existing condition |
| 4 | Significantly improves habitat and water quality benefits via channel widening/vegetation/wetland creation, etc. compared to existing condition |

| Table 4-3. Alternative Scores for Water Quality and Habitat | | |
|---|---|---|
| Alternative | Score | Normalized Score |
| Do Nothing | 2 | 0.00 |
| Levee | 3 | 0.33 |
| I-5 Levee | 3 | 0.33 |
| Channel and Floodplain Enhancements | 4 | 1.00 |

### Community Flood Reduction Benefits

Community flood reduction benefits was scored by considering the total flood reduction area associated with a flood reduction alternative during an anticipated flood event (Table 4-4). This scoring mechanism was assumed a proxy for parameters that are challenging to monetize such as business development within region, business downtime, and community perception. While numerically the I-5 Levee alternative reduces flooding to a similar degree as the Levee alternative, spatially and visually there is a significant difference in modeled flooding to the south of I-5 between those two alternatives. For this reason, this criterion used the I-5 Levee raw score as the $r_{min,benefit}$ value in Equation 1. As a reference point to understand the benefit of each alternative, $r_{min,benefit}$ was set to 0 acres representing the Do Nothing alternative, which was also considered for completeness and shown in Figure 3.

The area, considered a proxy, for the community flood reduction was calculated by computing the overlap between modeled flood extents and City provided parcels information in Esri's ArcGIS Pro. The total area of flooding for the Do Nothing condition was used as a baseline, and the total flooding areas were calculated for each alternative and subtracted from the baseline to calculate total flood reduction area (Table 4-4).

| Table 4-4. Alternative Scores for Community Flood Reduction Benefits | | |
|---|---|---|
| Alternative | Flood Area Mitigated (Acres) | Normalized Score |
| Do Nothing | 0 | 0.00 |
| Levee | 164 | 1.00 |
| I-5 Levee | 120 | 0.00 |
| Channel and Floodplain Enhancements | 129 | 0.19 |

### Community Safety

Community safety was scored by considering how many road miles would be inundated in an anticipated flood event (Table 4-5). Roadway inundation was assumed a proxy for emergency response and emergency service access and, therefore, community safety. Because a higher inundation number is worse for this criterion, the equation oriented around detriment was used for normalization (Equation 1). The Do Nothing alternative was associated with the most roadway flooding while flood reduction alternatives all minimized safety impacts due to roadway flooding to a high degree. Figure 4-3provides the flood reduction calculations associated with each alternative.

The length of road flooded for each alternative was calculated using a similar process as for community flood reduction benefits, but instead of looking at flooded parcels, only public rights-of-way were considered, which represented flooded roadways. The total area was calculated for each alternative and then divided by 11 feet to represent a typical lane-width, which provides an estimate of lane-miles flooded.

| Table 4-5. Alternative Scores for Community Safety | | |
|---|---|---|
| Alternative | Remaining Flooded Roadways (Road Miles) | Normalized Score |
| Do Nothing | 34.4 | 0.00 |
| Levee | 1.5 | 1.00 |
| I-5 Levee | 7.6 | 0.81 |
| Channel and Floodplain Enhancements | 6.9 | 0.84 |

### Community Improvement—Greater Community

Community improvement—greater community was scored using the expected area that would be improved for community use (e.g., parks, greenspace) (Table 4-6). Areas were identified by visually identifying open areas where parks exist and can be expanded, or where vacant lots were pulled out of the floodplain, presenting an opportunity for community enhancement. The following table provides the total areas estimated to be available for public space when flood reduction benefits of each alternative are realized. The Levee alternative demonstrated the most potential for added community spaces, while the other alternatives provide a variety of potential with the Do Nothing alternative providing none.

| Table 4-6. Alternative Scores for Community Improvement – Greater Community | | |
|---|---|---|
| Alternative | Community Improvement Area (Acres) | Normalized Score |
| Do Nothing | 0 | 0.00 |
| Levee | 13.6 | 1.00 |
| I-5 Levee | 7.6 | 0.56 |
| Channel and Floodplain Enhancements | 7.6 | 0.56 |

### Community Improvement—DEI

Community improvement is specifically related to diversity, equity, and inclusion (DEI) and is a multifaceted subject, and flood mitigation projects have the potential to impact this criterion in several ways. Flood reduction intrinsically provides benefits to those who are traditionally disadvantaged (and live in the existing floodplain) by reducing risk to their property and increasing the value of their land. These benefits are complex in that they both benefit a traditionally underserved population and present potential unintended consequences, such as gentrification. Other implications may include updated zoning or use of private land to implement an alternative, both of which have the potential for displacement. Due to the complexities in benefits and unintended consequences of flood mitigation alternatives, each alternative was scored equally for this criterion. A case where the Do Nothing scored a 1 and the Levee alternative scored a 3 was also considered to emphasize benefits of flood mitigation to underserved communities for completeness. The results of the scoring are provided in Tables 4-7 and 4-8.

| Table 4-7. Community Improvement—DEI Scoring Bins | |
|---|---|
| Score | Differentiating Details |
| 1 | No improvement or investment |
| 2 | Some negative and positive improvements (net benefit positive or neg) |
| 3 | Improvement or investment |

| Table 4-8. Alternative Scores for Community Improvement—DEI | | |
|---|---|---|
| Alternative | Score | Normalized Score |
| Do Nothing | 2 | 0.00 |
| Levee | 2 | 0.00 |
| I-5 Levee | 2 | 0.00 |
| Channel and Floodplain Enhancements | 2 | 0.00 |

### Shovel Readiness

The shovel-readiness criterion was established to provide a high-level comparison between how long it would take to plan, design, and construct each of the alternatives. Time to implementation was estimated from multiple projects of similar purpose, scope, and scale. Because a higher inundation number is worse for this criterion, the equation oriented around detriment was used for normalization (Equation 1). The Levee alternatives are expected to take the most time to implement whereas the Channel and Floodplain Enhancements would take less time, and the Do Nothing alternative would not require any implementation time.

| Table 4-9. Alternative Scores for Shovel Readiness | | |
|---|---|---|
| Alternative | Time to Implementation (Years) | Normalized Score |
| Do Nothing | 0 | 1.00 |
| Levee | 10 | – |
| I-5 Levee | 10 | – |
| Channel and Floodplain Enhancements | 5.5 | 0.45 |

### Ease of Operation

Ease of operation was scored qualitatively using two layers of operational requirements. The first layer is related to inspecting the channel to ensure that any modifications to the channel or nearby locations result in channel stability (U.S. Fish and Wildlife Service, 2006). The second layer of operational requirements occur with added inspection and maintenance tasks (e.g., vegetation management) related to maintaining channel adjacent flood mitigation infrastructure on a regular basis (Pierce County, 2016 and King County, 2015). The Levee alternatives were expected to require both layers of operational requirements, the Channel and Floodplain Enhancements alternative is expected to only require the first layer, and the Do Nothing does not require any added operational tasks. Tables 4-10 and 4-11 provide the scoring criteria and scores.

| Table 4-10. Ease of Operation Scoring Bins | |
|---|---|
| Score | Differentiating Details |
| 1 | Annual inspection + regular action plan tasks (asset management program, maintenance, vegetation management) |
| 2 | Annual inspection (inspection of erosion and associated channel stability metrics) |
| 3 | No added operational requirements |

| Table 4-11. Alternative Scores for Ease of Operation | | |
|---|---|---|
| Alternative | Score | Normalized Score |
| Do Nothing | 3 | 1.00 |
| Levee | 1 | 0.00 |
| I-5 Levee | 1 | 0.00 |
| Channel and Floodplain Enhancements | 2 | 0.67 |

### Leverages City Land

Leverages city land was scored qualitatively based on the project team's estimation of higher participation needs from private landowners to enact an alternative. Each alternative to decrease the flood extent will require participation of private land. The extent is unknown; therefore, each of these alternatives score the same, as shown in Tables 4-12 and 4-13.

| Table 4-12. Leverages City Land Scoring Bins | |
|---|---|
| Score | Differentiating Details |
| 1 | Requires significant participation from private property owners |
| 2 | Does not require significant participation from private property owners |

| Table 4-13. Alternative Scores for Leverages City Land | | |
|---|---|---|
| Alternative | Score | Normalized Score |
| Do Nothing | 2 | 0.33 |
| Levee | 2 | 0.33 |
| I-5 Levee | 2 | 0.33 |
| Channel and Floodplain Enhancements | 1 | 0.00 |

## 4.1.4 Alternative Development Cost Estimates

Class 5 cost estimates were developed for each alternative. Unit costs were developed from previous planning projects completed in the region, in consultation with RS Means, and from reviews of similar projects previously funded by the USACE. Because the exact configuration and implementation of the alternatives is currently unknown, quantities were estimated using best engineering judgement. The major items accounted for in the cost estimates include earthwork and excavation, clearing and grubbing, dewatering, channel restoration, levees, and floodwalls. The cost estimates also include contingencies to attempt to capture the uncertainties around contractor mobilization, erosion and sediment control, traffic control and utility relocation, and a general contingency of 40 percent. See the following table for cost estimates, including ranges of uncertainty, and Appendix C for the detailed estimates.

| Table 4-14. Alternative Costs | | | |
|---|---|---|---|
| Alternative | Cost (-50%) | Cost | Cost (+100%) |
| Levee | $10,308,000 | $20,615,000 | $41,230,000 |
| I-5 Levee | $9,110,000 | $18,220,000 | $36,440,000 |
| Channel and Floodplain Enhancements | $10,812,000 | $21,624,000 | $43,248,000 |

## 4.2 MCDA Results

As discussed in Section 4.1, scores and weights were aggregated using a weighted sum approach to identify alternatives that demonstrated the most benefit across all criteria. Alternatives that effectively address decision criteria that were deemed important (i.e., highly weighted), represent the most potential for benefits. The Levee was associated with the most non-monetary benefits for community flood reduction benefits, community safety, and community improvement—greater community and no benefits to shovel readiness and ease of operation. Channel and Floodplain Enhancements had the most benefits for water quality and habitat, high benefits for community safety, and the least benefit for leverages City land. Both the I-5 Levee and Do Nothing alternatives represented minimal benefits to multiple criteria because the I-5 Levee is not expected to reduce flood-related impacts as significantly as other flood reduction alternatives, and the Do Nothing only demonstrates benefits to criteria relating to project implementation.

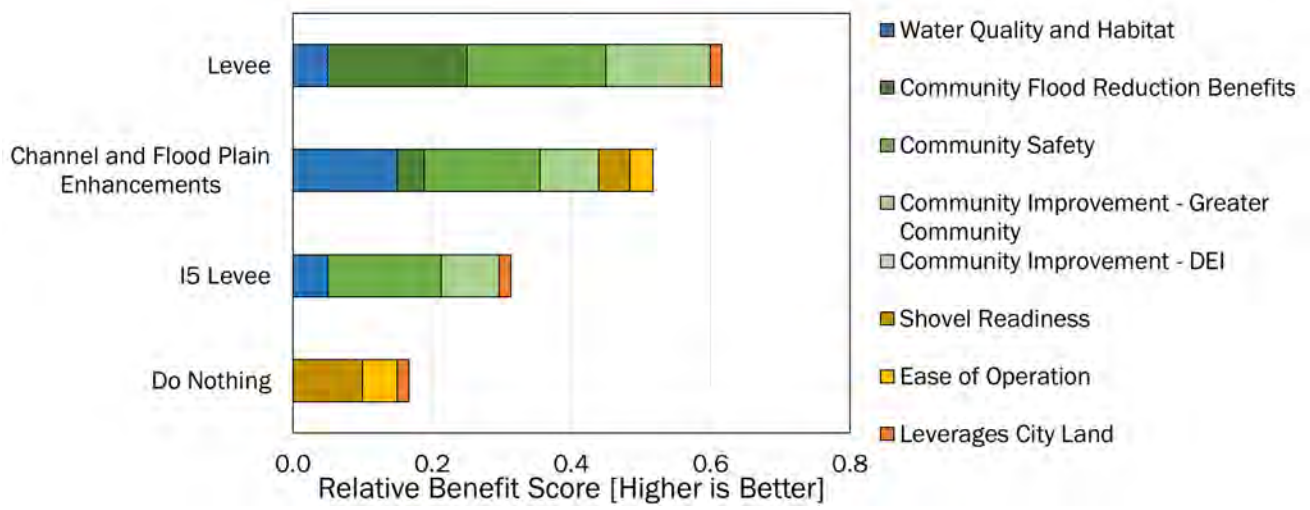


**Figure 4-3. Aggregated relative benefit scores that represent non-monetary benefits of alternative**

*Note: Benefits associated with Do Nothing alternative result from not having to do or pay for project*

### 4.2.1 Benefit Score versus Development Cost Estimates

While non-monetary benefits are important for characterizing which alternatives may be associated with the highest relative benefits, they must be considered against cost factors to identify which alternatives present significant value. When relative benefit scores were plotted against project costs, the three flood reduction alternatives demonstrate similar costs, and the Levee and Channel and Floodplain Enhancement alternatives were associated with higher benefit than the other two alternatives (Figure 4-4). While the Do Nothing alternative may look attractive from a project cost perspective, it is expected to be the costliest alternative related to anticipated flood costs, where the Levee alternative is associated with the least anticipated flood costs (Figure 4-5).

When relative benefit was plotted against project cost plus anticipated flood cost, the Levee alternative demonstrates the most benefit per cost, namely because its total costs are anticipated to be roughly half of the next least costly alternative (Figure 4-6). Channel and Floodplain Enhancements demonstrated similar non-monetary benefits as the Levee alternative (Figure 4-3) but at higher anticipated cost. The I-5 Levee alternative had similar anticipated costs to the Channel and Floodplain Enhancements with less non-monetary benefit, and the Do Nothing alternative was associated with the highest costs and lowest relative benefits (Figure 4-6).

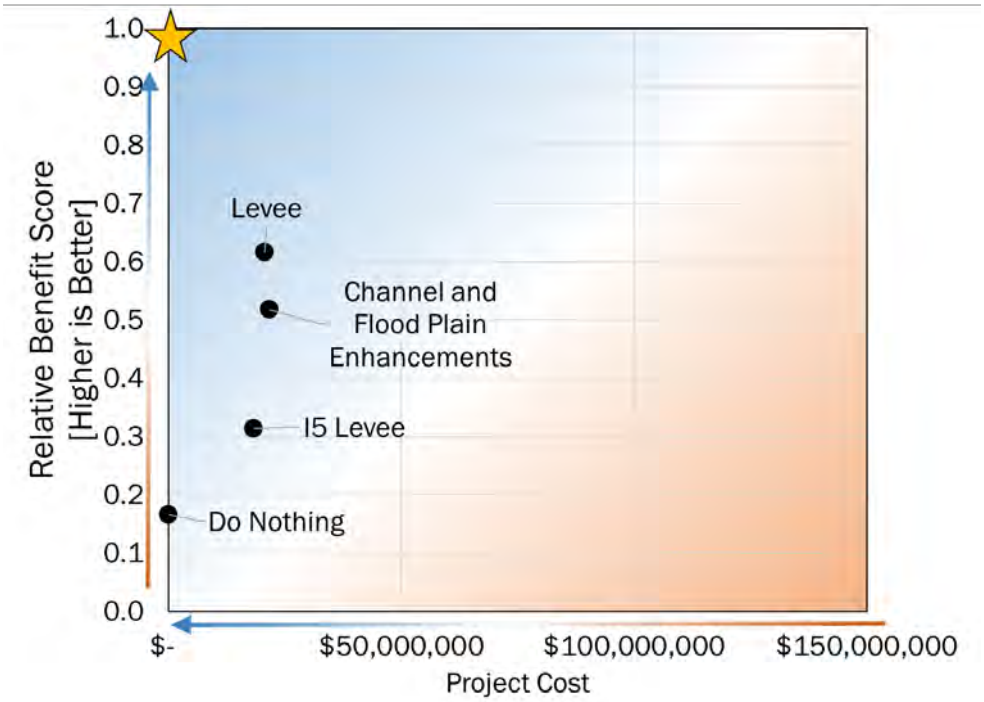


**Figure 4-4. Aggregate relative benefit scores from Figure 4-3 versus project cost**

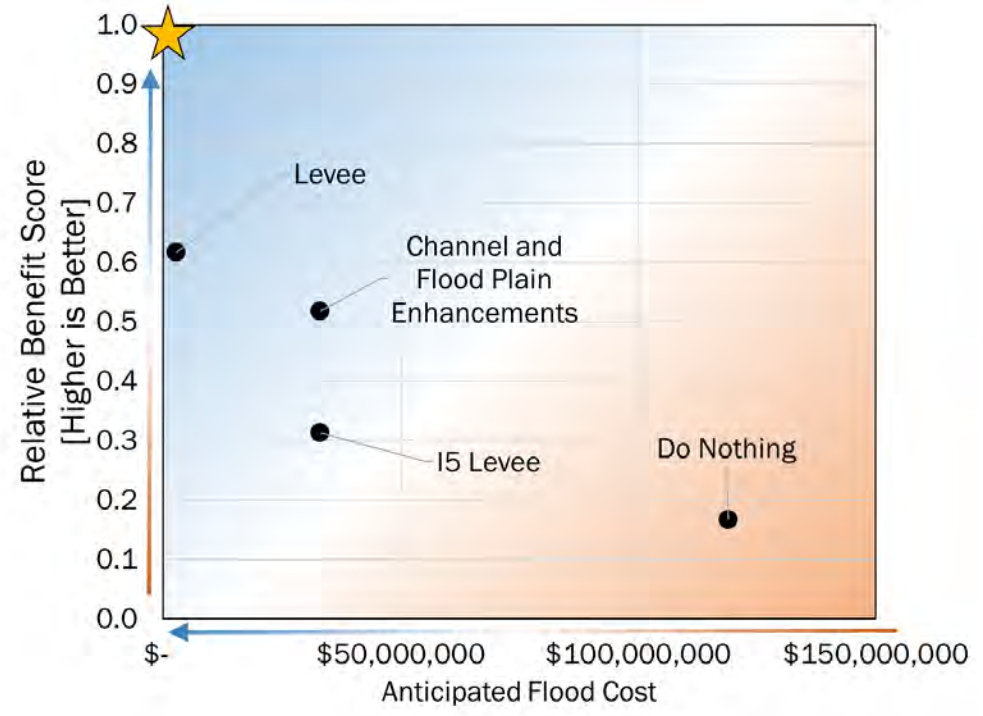


**Figure 4-5. Aggregate relative benefit scores from Figure 4-3 versus anticipated flood cost**

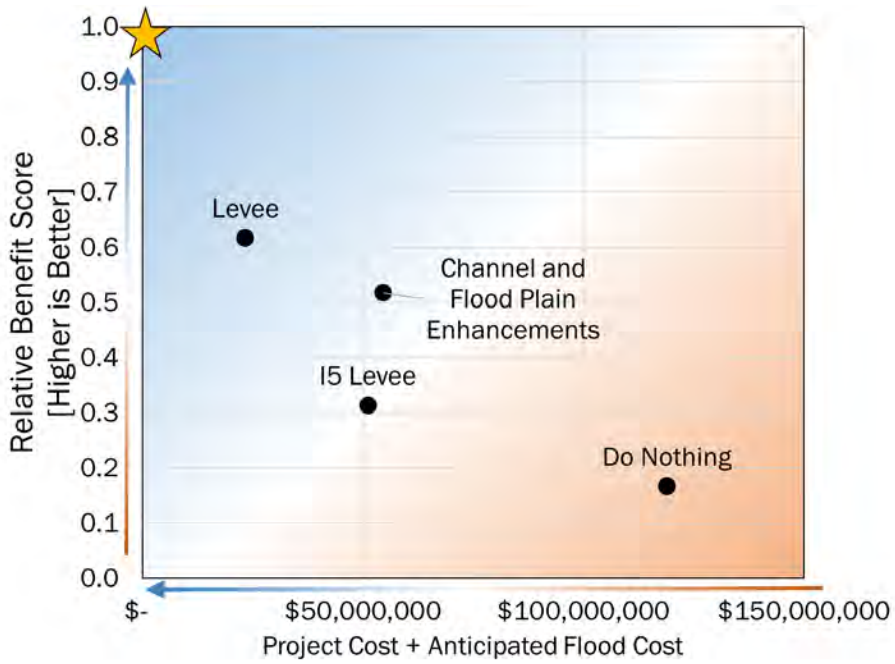


**Figure 4-6. Aggregate relative benefit scores from Figure 4-3 versus project cost plus anticipated flood cost**

## 4.3 Discussion

Similar benefit scores between the Levee (0.62) and Channel and Floodplain Enhancements (0.52) alternatives suggest a hybrid approach where both would be pursued to achieve greater benefit than if only one alternative were completed on its own. For example, the Levee may provide the most significant community benefits due to its significant flood reduction, whereas the Channel and Floodplain Enhancements could provide added benefits to water quality and habitat, shovel readiness, and ease of operation while still working towards flood reduction. Therefore, pursuing the Levee alternative to meet community benefit goals could be well served by including Channel and Floodplain Enhancements to some degree to provide a project that provides multiple benefits to the greatest extent possible.

Section 5

# Funding Strategy

Funding support will be essential for the City to design and implement the selected alternative or combination of alternatives for flood mitigation. This section describes potential funding opportunities in addition to application details and timelines. A funding strategy has been developed to support the City in selecting the best funding options and how to best leverage application materials and timelines.

## 5.1 Funding Alternatives

The following funding alternatives include local, state, and federal funding programs that provide grants and loan opportunities. Each of the funding alternatives are described in detail below. A comprehensive funding strategy has been developed in Section 5.2.

### 5.1.1 Local Funding Sources

The City of Lakewood Surface Water Management Funds and the Pierce County Flood Control Zone District (FCZD) are two local funding opportunities that could potentially contribute to funding flood mitigation projects for the City. Local funding programs tend to have a smaller applicant pool than state or federal programs and potential economic implications to the regional economy.

#### 5.1.1.1 City of Lakewood Surface Water Management Funds

The City of Lakewood established a Surface Water Management Fund. The Surface Water Management Fund was created to administer and account for receipts and disbursements related to the City's surface and stormwater management system. All service charges are deposited into the fund to maintain and operate surface and stormwater management facilities.

#### 5.1.1.2 Pierce County FCZD

The Pierce County Council authorized Ordinance 2011-95s to create the FCZD to address flood prevention and management needs in the county. The FCZD is governed by a Board of Supervisors and Executive Committee and receives input from an Advisory Committee. The Department of Planning and Public Works reviews and approves projects and programs. The FCZD's budget covers funding for capital projects in addition to maintenance of levees and other flood control infrastructure. The budget also provides funding opportunities for local projects.

**Capital Improvement Program**

The Pierce County FCZD Advisory Committee reviews and recommends an annual capital budget, including capital improvement projects and funding levels. The capital improvement program (CIP) covers a 6-year cycle and is revised annually. The funding range for the capital improvement projects is variable. Projects adopted in the capital improvement plan must be included within the District's Approved Comprehensive Plan of Development (CPOD) and have received an initial project ranking number. Project sponsors wanting to construct a project ranked within the CPOD may formally request to place the project in the CIP. Requests to be included in the CIP are due to the District Administrator no later than March 1 each year. New projects must include the following information in their request: project description, location, funding plan, information on stakeholder support, and

explanation of readiness for construction. The District Administrator then determines eligibility and ranks each of the projects. The District Administrator relies on the CPOD ranking and applies the following four additional criteria:

- Ability to leverage other funds
- Readiness for construction
- Avoidance of ongoing maintenance costs or repairs
- Stakeholder support

The Advisory Committee considers the capital budget scenarios over the following months and provides a recommendation to the Executive Committee of the Board. The Executive Committee of the Board recommends a capital budget in October and holds a public hearing.

### Opportunity Fund

Funding for the FCZD Opportunity Fund comes from a county-wide property levy. As of 2022, the levy is approximately $0.10 per $1,000 of assessed value with a total of $15,900,000. Ten percent of the Pierce County Flood Control District's levy proceeds are set aside in an Opportunity Fund that is accessible for local jurisdictions. This fund is made available to jurisdictions on a proportional basis, based on assessed valuation. The Opportunity Funds can be used for the following purposes:

- Flood control or stormwater control improvements (whether extended, enlarged, acquired, or constructed).
- Maintenance and operation of flood control and stormwater system improvements that were constructed or acquired by the jurisdiction.
- Studies and plans for flood control or stormwater control improvements that will be constructed or acquired by the jurisdiction.
- Watershed management projects, studies, plans, and activities that are developed for water supplies, water quality improvement, and water resource and habitat management.
- Major equipment used for stormwater control or water quality protection.

The FCZD announces the availability of the Opportunity Fund each April for the subsequent fiscal year. To request funds, jurisdictions need to submit a Notice of Intent (NOI) to indicate if they will expend or store and bank their allocation. If a jurisdiction chooses to expend its allocation, it must submit details of the specific project that will be funded by attaching a Project Scope of Work form. The NOI to Request Funds should be submitted along with a fully executed Interlocal Agreement. During October, the FCZD reviews the NOI to Request Funds for completement and compliance. Eligible projects are presented and adopted by the Board of Supervisors in November. If the jurisdiction needs to receive advanced funding for any reason, it is required to submit a Request for Advanced Funds form that explicitly states the amount of funds being requested. If funding is granted, then jurisdictions are required to provide the FCZD with regular updates to project status and the final report within 90 days of project completion. Annual progress reports are due by December 31 each year.

### Economic Stimulus Grant Program

The FCZD also has an Economic Stimulus Grant Program. During the last application cycle, $3.5 million was available for projects that reduced flood risk. Up to $1 million per construction project and $125,000 for a study or plan can be allocated through this program. Eligible projects include the following types:

- Flood control or stormwater control improvements
- Community flood resiliency projects

- Habitat projection and management projects
- Culvert improvements
- Watershed management projects
- Structure demolition that supports a larger flood risk project
- Purchase of equipment for flood risk reduction

To apply for the program, a pre-application is due to determine eligibility. During the last application cycle, pre-applications were due by March 31, 2022. Successful applicants were then asked to submit a full application by July 31, 2022. For construction projects, the full application requires preliminary engineering studies, State Environmental Policy Act determinations and plans, cost estimates, and a full description of project benefits. For studies and plans, the full application requires a draft scope, budget, and project timeline.

### 5.1.2 State Funding Opportunities

The Water Quality Combined Funding Program, Washington Department of Transportation (WSDOT), Floodplains by Design, and the Flood Control Assistance Account Program are four potential funding opportunities through the State of Washington for potential Clover Creek flood mitigation projects.

#### 5.1.2.1 Water Quality Combined Funding Program

The State of Washington has created the Water Quality Funding Program, which is an annual single-application process to apply for funding from multiple sources at once. These sources of funding are intended for eligible projects that improve and protect water quality. Funding is available from the following funds and programs:

- Clean Water State Revolving Fund
- Stormwater Financial Assistance Program
- The Centennial Clean Water Program
- The Clean Water Act Section 319 Nonpoint Source Grant Program

For stormwater and flood facility projects, applications may receive funding for projects that provide flood flow control or water quality benefits for stormwater generated from impervious surfaces associated with urban development. Grants from these funds may be provided for various steps of the project, including planning and prioritization, design, construction, and small project design/construction. Stormwater projects that provide water quality benefits through behavior change and management actions may also receive grants or funding.

The application period for the Water Quality Combined Funding Program is approximately two months extending from August to October each year. The Washington State Department of Ecology (Ecology) also conducts workshops during the beginning of the application period to assist the applicant. Applications must include the following items:

- Detailed budget spreadsheet
- Project schedule
- Photos
- Maps
- Letters of support from stakeholders or partners
- Other small support documents

Large support documents such as total maximum daily loads and watershed plans should not be uploaded to the application, but links may be provided.

Once the application materials are prepared, only an authorized official may submit the application. Ecology reviews and ranks the projects and assigns funding based on project rank and available funding. The application period usually closes in mid-October. Future opportunities can be found on Ecology's website.

#### 5.1.2.2 Floodplains by Design

Floodplains by Design grant program was created by Ecology to help communities better manage and live within their floodplains. Floodplains by Design is a competitive grant program that is a component of a public-private partnership led by Ecology, the Nature Conservancy, the Bonneville Environmental Foundation, and the Puget Sound Partnership. Floodplains by Design projects are focused on re-establishing floodplain functions in Washington's major river corridors and reducing flood risk, including those that accomplish the following goals:

- Improve flood protection for communities that live and work in the floodplain
- Conserve and restore habitat for salmon and other important aquatic species
- Improve water quality
- Enhance outdoor recreation

The application process for the Floodplains by Design grant includes a pre-application in which a Request for Proposals is released. Pre-applications are then submitted, and if the project is deemed a good fit, the applicant will be asked to give a presentation. Once the project presentation is complete, the full application must be filled out and submitted. The application must include the following items:

- Table of project outcomes and measurements
- Description of community support and stakeholder involvement
- Description of how funds will be spent
- Indication that the project is ready to proceed (could include project scope, completion of environmental reviews, permits, or Landowner Acknowledgement form)

Projects are then evaluated and scored by a panel of technical experts. The applicants are notified when the proposed funding list is reviewed. The 2025–2027 funding cycle will start in November 2023.

#### 5.1.2.3 Flood Control Assistance Account Program

The Flood Control Assistance Account Program (FCAAP) was established by the Washington Legislature to assist local jurisdictions with comprehensive floodplain management planning and to implement projects that mitigate flood hazards. In the previous biennium (2021–2023), approximately $1.5 million was available for floodplain planning projects and $150,000 was available for emergency projects. Projects that are eligible for this funding resources are listed below:

- Comprehensive flood hazard management plans
- Feasibility studies
- Match for federal projects that lead to Comprehensive Flood Hazard Management Plans (i.e., federal general investigations)
- Flood control maintenance projects

Applications are submitted to Ecology and must include the following information:

- Scope of work, schedule, and budget
- Documentation of stakeholder engagement process including DEI

- Description of benefits of the projects
- Identifications of flooding issues

Planning projects are competitively evaluated and awarded. Conversely, emergency projects are funded on a first come, first served basis. The 2023–2035 funding cycle for FCAAP is expected to start in April 2023.

### 5.1.3 Federal Flood Management Funding Opportunities

Flood risk management is considered a shared responsibility between several agencies, including the USACE, FEMA, and other federal agencies. There are several programs to assist communities with reducing flood damage and promoting flood risk reduction. There are multiple federal grant programs available, including the Building Resilient Infrastructure and Communities (BRIC) Grant Program, Flood Mitigation Assistance, Pre-Disaster Mitigation Grant Program, Water Investment in Federal Infrastructure Act (WIFIA), and Water Resources Development Act. Federal funding programs tend to offer larger grants than state or local funding programs, but federal grants are also generally more competitive.

#### 5.1.3.1 FEMA BRIC Grant Program

BRIC is a grant program that supports states, communities, and tribes with hazard mitigation projects that reduce the risk of natural disasters and hazards. BRIC funds may be used for a variety of projects in the following categories:

- Capability and capacity building activities
- Flood and climate-related mitigation projects
- Project management costs

Projects must also be cost-effective; reduce or eliminate risk and damage from future natural hazards; meet either of the two latest published editions of relevant consensus-based codes, specification, and standards; align with the applicable hazard mitigation plan; and meet all the Environmental and Historic Preservation requirements.

During fiscal year 2022, FEMA distributed $2.3 billion through the BRIC program. State and territories were allocated $112 million with up to $2 million per application, $50 million was set aside for tribal communities, and the remaining $2.1 billion was included in the national competition for mitigation projects. Each agency applying for the funding may only submit one BRIC application to FEMA, but an application can be made up of an unlimited number of sub-applications.

To apply, agencies should include the following information in their applications:

- Description of how the project would be cost-effective and technically feasible
- Description of the strength of the proposed project
- Compliance with all applicable Environmental and Historic Preservation laws, executive orders, and regulations
- Benefit-cost analysis

Applicants may work with their FEMA region, and sub-applicants may work with their respective applicant (state, tribe, or territory) to submit their application. Once applications are submitted, FEMA will conduct a review and provide each applicant/sub-applicant with a status update. If an application is selected for further review, then applicants must work with a FEMA Regional Office to complete the pre-award activities and Environmental and Historic Preservation compliance review. Awards will be given to the applicants and subject to the availability of funds. If applicants accept an award, the recipients agree to participate in monitoring and evaluation of the grant.

Pre-applications for BRIC are due in September with applications due in November each year. In past years, applicants selected for further review have been announced between May and July.

#### 5.1.3.2 FEMA Flood Mitigation Assistance

The Flood Mitigation Assistance (FMA) Program is a competitive grant program that provides funding to states, local communities, and federally recognized tribes and territories to reduce or eliminate the risk of repetitive flood damage to buildings and structures. Projects that receive funding must reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program. In fiscal year 2022, FMA obligated $800 million with $60 million allocated for capability and capacity building activities, $340 million allocated for flood risk reduction projects, and $400 million allocated to individual flood mitigation projects.

Applicants submit their application to FEMA with the following information:

- Lobbying forms, certification regarding lobbying
- Budget information
- Standard assurances
- Disclosure of lobbying activities
- Indirect cost agreement or proposal
- Benefit-cost analysis

FEMA ranks each applicant using scoring criteria and selects recipients based on a cumulative score. Recipients are required to submit various financial and programmatic reports as a condition of award acceptance. The application period for FEMA's FMA grant closes on January 27, 2023. In past years, applicants selected for further review have been announced between May and July. FMA funds for fiscal year 2024 are expected to be announced in September 2023.

#### 5.1.3.3 Pre-Disaster Mitigation Grant Program

The Pre-Disaster Mitigation Grant Program was created by FEMA to provide annual funding to state, local, and territorial governments for projects that develop hazard mitigation plans that reduce safety risk and mitigate flooding prior to a disaster. The goal is to protect human health and safety while reducing funding requirements for future flood events.

The total amount of funds that were allocated to 68 congressionally directed projects was $153,922,408 for fiscal year 2022. A non-federal cost share is required for all projects funded through the Pre-Disaster Mitigation Grant Program. The non-federal cost share may consist of any combination of cash, donated or third-party in-kind services, or materials. The cost share is generally 75 percent federal and 25 percent non-federal cost share.

Each state, territory, or federally recognized tribal national with a project identified in the Pre-Disaster Mitigation funding opportunity shall designate one agency as the grant applicant. Local and tribal governments may apply as a sub-applicant. The following programmatic requirements must be met to receive funding:

- Develop a Hazard Mitigation Plan
- Demonstrate cost effectiveness (benefit-cost analysis or other documentation)
- Demonstrate technical feasibility and effectiveness (accepted engineering practices, established codes, standards, modeling techniques, or best practices)
- Comply with all applicable Environmental Planning and Historic Preservation laws

Last application cycle, applications opened on May 25, 2022, and closed on June 24, 2022. After the cycle closed, FEMA reviewed the applications to ensure each met eligibility requirements and announced awards.

#### 5.1.3.4 USACE Flood Risk Mitigation Program and Planning Assistance to States

The USACE's Flood Risk Mitigation Program partners with state, tribal, territorial, and local governments with flood risk reduction, including traditional structures such as levees and floodwalls in addition to alternatives such as land acquisition and flood proofing. The main goals of this program are to reduce the safety risk, reduce economic damage to the public and private sectors, and provide benefit to the natural environment.

The USACE is a partner in flood risk management but does not have a specific grant funding through the Flood Risk Mitigation Program. The USACE can support projects with technical assistance and cooperate with non-federal public sponsors to provide 50 percent of the project cost (up to $2 million) for planning efforts but cannot be used for design or construction.

Planning Assistance to States funding from the USACE can be used for studies and planning purposes. This funding could be a source to perform the studies required and generate the preliminary materials needed to pursue funding.

#### 5.1.3.5 U.S. Environmental Protection Agency (USEPA) Water Investment in Federal Infrastructure Act (WIFIA)

The WIFIA loan program was established in 2014 by the Water Infrastructure Finance and Innovation Act. WIFIA is administered by the USEPA and provides federal credit for water, wastewater, and stormwater infrastructure projects. Eligible projects are listed below:

- Projects that are eligible for Clean Water State Revolving Fund
- Projects that are eligible for the Drinking Water State Revolving Fund
- Enhanced energy efficient projects at drinking water and wastewater facilities
- Brackish or seawater desalination, aquifer recharge, alternative water supply, and water recycling projects
- Drought prevention, reduction, or mitigation projects
- Acquisition of property if it is integral to the project or will mitigate the environmental impact of a project
- A combination of projects secured by a common security pledge or submitted under one application by a State Revolving Fund program

The funding range for projects is as follows:

- $20 million: minimum project size for large communities
- $5 million: minimum project size for small communities (population of 25,000 or less)

WIFIA funding will be provided as a loan with an interest rate equal to or greater than the U.S. Treasury rate of a similar maturity. WIFIA can fund up to 49 percent of eligible project costs, with total federal assistance not exceeding 80 percent of project costs.

The USEPA announced WIFIA funding as a Notice of Funding Availability published in the Federal Register and on the WIFIA program website. WIFIA funding is announced, and applicants must submit a letter of interest to the USEPA on a rolling basis. The USEPA will then review projects based on the budgetary scoring rules and select projects for funding. Applicants that are selected must then apply for the WIFIA loan. The WIFIA program then conducts a detailed financial and engineering review and negotiates the terms and conductions of the loan with the applicant.

WIFIA funding is currently available, and Letters of Interest can be submitted as of October 2022. As of fiscal year 2022, the USEPA accepts Letters of Interest on a rolling basis from the date listed for the Notice of Funding Opportunity.

## 5.2 Funding Strategy

The funding alternatives detailed in Section 5.1 include a combination of grant and loan programs to provide funding for project implementation and planning activities. Grant funding may be sourced from local, state, or federal agencies to provide one-time funding for projects. Grant programs require no repayment, which is a great advantage, and the amount of funding can be significant. The disadvantages of grant programs are the competitive nature of the application process, large pool of applicants, and matching fund requirements. Another source of funding for flood mitigation and prevention projects is federal and state loans. Loan programs such as WIFIA and the State of Washington State Revolving Fund are often targeted toward drinking water or wastewater projects but can be leveraged for flood projects. Loans can fund flood control activities as a lower cost debt financing option. Federal and state loan programs require full repayment from the recipient but may be offered at low or no interest rates, depending on the program.

Grants and loans can be sourced from various local, state, and federal agencies. The type of funding agency is another item to consider when applying for funding opportunities. Federal funding programs often offer larger grant amounts but are open to a larger applicant pool, making them more competitive than local or state funding programs. In addition, due to the large number of applicants, federal funds are often slow to become available, involve significant upfront transaction effort, and require ongoing reporting and documentation. Local and state funding programs do not offer as much grant funding as federal programs but are less competitive.

The recommended funding strategy includes applying to a combination of grants and loans from local, state, and federal programs to diversify the funding opportunities. Successful project funding will be facilitated with a cohesive team leveraging articulate and compelling materials for multiple funding opportunities.

The recommended funding strategy is a stepwise approach as follows:

1. Charter a team of internal Clover Creek flood mitigation champions.
2. Clearly articulate and define the problem statement and No Action alternative.
3. Develop compelling project descriptions and details of decision-making process.
4. Ensure stakeholders and public participate in the journey and have opportunities to provide feedback.
5. Use background materials and alternatives analysis (MCDA) results to build a network of regional project partners.
6. Charter the Clover Creek Mitigation Partnership Team and generate commitment and enthusiasm.
7. Create internal and external communication plans.
8. Prepare preliminary concept/design materials for the preferred alternative.
9. Develop compelling materials required for Letters of Interest for most grant applications.
   - Project description and Location maps
   - Project purpose
   - Project cost estimate
   - Population demographics and socio-economic details

- Preliminary Engineering Report
- Planning documents
- Environmental information
- Resource-Specific technical reports (i.e., biological or cultural)
- Lakewood financial information (credit rating)
- Economic impacts
- Social impacts
- Environmental impacts

10. Evaluate funding opportunities with partners and select the best opportunities.
11. Use the timeline below to submit Letters of Interest and application materials.

### 5.2.1 Recommended Approach and Timeline

The most likely programs and pathways for funding this project are detailed in this section. In the next phase of this project, a decision will be necessary around which programs to focus on within this set of opportunities. A timeline of application activities for available funding programs is detailed in Figure 5-1. The application due dates, along with any milestones in the application process, are noted in the chart, based on available information and past applications cycles.

The FEMA BRIC Grant Program and the FEMA FMA Grant Program have application periods typically September 30 through January 27 of each year. The first round of applicants selected are announced between May and June. To be considered for this funding source, this project must submit applications in the fall/winter of 2023 with a potential notification of award in May or June of 2024.

To be included in the Pierce County Flood Zone District CIP for the upcoming year, requests are due by March 1. For the Pierce County Flood Zone District Opportunity Fund, applicants must adopt the Interlocal Agreement before April 1. Program funding will be announced on April 1 each year. NOIs are expected to be due by August 1 each year. NOIs are then reviewed by the district and eligible projects are announced in November. To submit for this funding, the project must submit an NOI in August of 2023 and subsequently submit the request by March 1 of 2024.

In October of 2022, WIFIA announced a rolling application basis for funding. Applicants can submit applications for WIFIA funding at any time throughout the year.

The FCAAP and Floodplains by Design Program are expected to open during 2023. FCAAP funding will be announced in April 2023 and Floodplains by Design funding will be announced in November 2023.

Funding by direct allocation of the State budget is a less formal process without specific milestones apart from securing an intent to fund towards the end of 2024. As such, it is not shown in Figure 5-1. That funding opportunity will not be available until the 2025 legislative session, which will take place between January and April of 2025.

| | 2023 (or 2024 for steps initiating in Q1 2024 to the right) | | | | | | | | | 2024 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | April | May | June | July | August | September | October | November | December | January | February | March |
| **Pierce County Flood Control Zone District CIP** | | | | | | | | | | | | |
| Complete Request for CIP | | | | | | | | | | | | * 3/1 |
| CIP Requests Due | | | | | | | | | | | | |
| **Pierce County Flood Control Zone District Opportunity Grant** | | | | | | | | | | | | |
| Complete ILA | | | | | | | | | | | | |
| ILA Due | *4/1 | | | | | | | | | | | |
| Announcement of Funds | | | | | | | | | | | | |
| Complete Notice of Intent | | | | | | | | | | | | |
| Submit Notice of Intent | | | | | *8/1 | | | | | | | |
| District Review of Notice of Intents | | | | | | | | | | | | |
| Eligible Projects Adopted by Board of Supervisors | | | | | | | | | | | | |
| **Floodplains by Design** | | | | | | | | | | | | |
| Announcement of Funds | | | | | | | | | | | | |
| **Flood Control Assistance Account Program** | | | | | | | | | | | | |
| Announcement of Funds | | | | | | | | | | | | |
| **Building Resilient Infrastructure and Communities Funds** | | | | | | | | | | | | |
| Complete Application | | | | | | | | | | | | |
| Application Due | | | | | | | | | | | *1/27 | |
| FEMA Review | | | | | | | | | | | | |
| First Round of Subapplicants Selected | | | | | | | | | | | | |
| **Flood Mitigation Assistance Grant** | | | | | | | | | | | | |
| Complete Application | | | | | | | | | | | | |
| Application Due | | | | | | | | | | | *1/27 | |
| FEMA Review | | | | | | | | | | | | |
| First Round of Subapplicants Selected | | | | | | | | | | | | |
| **WIFIA - Rolling Application** | | | | | | | | | | | | |
| Application Due - Rolling Application | | | | | | | | | | | | |

Figure 5-1. Funding application strategy submittal timeline

## 5.3 Funding Framework

The table below provides a summary of funding options and is populated with detailed information on each of the opportunities described above. This table summarizes the funding options and provides contact names for each program in addition to funding details, application requirements, and deadlines. This summary table can be used to guide decision making.

**Table 5-1. Funding Options Summary**

| | Lead Agency | Description | Point(s) of Contact | Funding Type | Funding Range | Applicant Requirements | Deadlines |
|---|---|---|---|---|---|---|---|
| **Local** | | | | | | | |
| City of Lakewood Surface Water Management Fund | City of Lakewood | All service charges are deposited into this fund for the purpose of paying the expense of maintaining and operating surface and stormwater management facilities. | • City of Lakewood | N/A | N/A | • N/A | N/A |
| Pierce County FCZD | Pierce County | The FCZD was created by the Pierce County council to address flood management needs. The flood district's budget covers funding for capital projects, maintenance of levees and other existing flood related infrastructures, as well as the district's administrative costs. | • Brynne Walker rynne.walker@piercecountywa.gov | CIP | Funding range is variable. In 2020, the budget was $6,492,586. | • Project proposed in District's Comprehensive Plan<br>• Comprehensive Plan<br>• Project description<br>• Project location<br>• Funding plan<br>• Stakeholder support<br>• Explain readiness for construction | To be included in the CIP process, submit request by March 1. |
| | | | | Opportunity Fund | • Under $50,000 total allocation = up to 80% of advance amount.<br>• Between $50,000 to $100,000 total allocation = up to 50% of advance amount.<br>• Over $100,000 Total allocation = up to 30% of advance amount. | • Adopt Interlocal Agreement<br>• Submit Notice of Intent<br>• Submit proposed scope of work<br>• Submit progress reports and reimbursement requests<br>• Submit final payment and project completion report | Adopt Interlocal Agreement before April to be considered for the Opportunity Fund. |
| | | | | Economic Stimulus Grant Program | Up to $1M for construction projects and max of $125,000 for study/plan. | For construction projects:<br>• Preliminary engineering study<br>• State Environmental Policy Act determinations and plans<br>• Cost estimate<br>• Description of project benefits<br>For Studies and Plans:<br>• Draft scope<br>• Draft budget<br>• Project timeline | Application cycle is closed. Check the back in 2023 for future opportunities. |
| **State** | | | | | | | |
| Water Quality Combined Funding Program | Washington State Department of Ecology | The Water Quality Combined Funding program is an annual single-application process to apply for funding from multiple sources all at once for eligible projects that benefit water quality. | • Financial Management Section<br>P.O. Box 47600 Olympia, WA 98504-7600<br>360-407-6510<br>• Eliza Keeley-Arnold<br>Water Quality Combined Funding Planner<br>eliza.keeley-arnold@ecy.wa.gov<br>360-628-1976 | Grants and loans | Funding range is variable based on funding program. | • Develop a detailed budget spreadsheet<br>• Develop a project schedule<br>• Add compressed photos<br>• Include a map<br>• Include letters of support<br>• Upload supporting documents | The application cycle closed on October 12, 2022. Check the back in 2023 for future opportunities. |

**Table 5-1. Funding Options Summary**

| | Lead Agency | Description | Point(s) of Contact | Funding Type | Funding Range | Applicant Requirements | Deadlines |
|---|---|---|---|---|---|---|---|
| Floodplains by Design | Washington State Department of Ecology | Floodplains By Design is a competitive grant program and a component of a public-private partnership led by Ecology, the Nature Conservancy, Bonneville Environmental Foundation, and the Puget Sound Partnership. It is focused on re-establishing floodplain functions in Washington's major river corridors, as well as reducing flood risk. | • Scott McKinney<br>Floodplains by Design Grant Program Lead<br>scott.mckinney@ecy.wa.gov<br>360-918-3428<br>• Amelia Petersen<br>Floodplains by Design Planner<br>amelia.petersen@ecy.wa.gov<br>360-480-3298<br>• Lisa Nelson<br>Northwest Washington Grant Manager<br>lisa.nelson@ecy.wa.gov<br>425-213-4843 | Grant | Funding range is variable and determined by the state legislature. The grant lasts 3–4 years. fiscal years 21–23, the range of funding was $341,000 to $10 M. The total funding for this fiscal year was $50 M. | • Prepare a table of project outcome measurements<br>• Describe community support and stakeholder involvement<br>• Show how funds will be spent<br>• Illustrate that the project is ready to proceed (scope, environmental reviews are complete, permits are obtained, and Landowner Acknowledgement form is complete) | Funding is closed at this time. The 2025–2027 funding cycle will start in November 2023. |
| FCAAP | Washington State Department of Ecology | The Washington Legislature established the FCAAP to assist local jurisdictions with comprehensive floodplain management planning and implementing actions to mitigate flood hazards. | • Dawn Drake<br>Agency Grant and Loan Coordinator<br>dawn.drake@ecy.wa.gov | Grant | About $1.5 M for planning projects and $100,000 for emergency flood response projects. Amount of matching funds required: 25% for planning projects and 20% for emergency flood response. | • Prepare scope, schedule, and budget<br>• Document stakeholder engagement process include DEI<br>• Describe benefits for the project<br>• Identify flood issues | Funding is closed at this time. The 2023–2025 funding cycle will start in April 2023. |
| **Federal** | | | | | | | |
| FEMA BRIC | FEMA | BRIC will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. | • State Hazard Mitigation Officer<br>Tim Cook<br>(253) 512-7072<br>tim.cook@mil.wa.gov | Grant | Fiscal year 22, FEMA will distribute up to $2.3 B: $112 (up to $2 M per applicant) is allocated to states, $50 M is allocated to tribes, and the remaining $2.133 B will be included in the national competition. | • Show how the project is cost-effective and technically feasible<br>• Describe strengths of the proposed project<br>• Show compliance with all applicable Environmental Planning and Historic Preservation laws, executive orders, and regulations<br>• Provide benefit-cost analysis | Application period closes on January 27, 2023. |
| FMA | FEMA | The FMA Program is a competitive grant program that provides funding to states, local communities, federally recognized tribes, and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program. | • State Hazard Mitigation Officer<br>Tim Cook<br>(253) 512-7072<br>tim.cook@mil.wa.gov | Grant | $800 M for fiscal year 22. $60 M is allocated for capability and capacity building activities, $340 M is allocated to localized flood risk reduction projects, and $400 M is allocated to individual flood mitigation projects | • Lobbying forms, certification regarding lobbying<br>• Budget information (construction/non-construction/both)<br>• Standard assurances (construction/non-construction/both)<br>• Disclosure of lobbying activities<br>• Indirect cost agreement or proposal<br>• Benefit-cost analysis | Application period closes on January 27, 2023 |
| USACE Flood Risk and Mitigation Planning Assistance to States | USACE | The USACE can provide states, local governments, other non-federal entities, and eligible Native American Indian tribes assistance in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. | • Planning Assistance to States Program Manager<br>Barbara Blumeris<br>978-318-8737<br>barbara.r.blumeris@usace.army.mil | Assistance program | The USACE can support projects with technical assistance and cooperate with non-federal public sponsors to provide 50% of the project cost (up to $2 M) for planning efforts but cannot be used for design or construction. | • Officially request USACE assistance under the program<br>• Work with USACE to develop a scope of work<br>• Prepare and sign cost sharing letter agreement<br>• Begin study, subject to the availability of both federal and local funding. | N/A |
| USEPA WIFIA | USEPA | The WIFIA of 2014 established the WIFIA program, a federal credit program administered by the USEPA for eligible water and wastewater infrastructure projects. | • wifia@epa.gov | Loan | • $20 M: minimum project size for large communities.<br>• $5 M: minimum project size for small communities (population of 25,000 or less).<br>• 49%: maximum portion of eligible project costs that WIFIA can fund.<br>• Total federal assistance may not exceed 80% of a project's eligible costs. | • Fill out WIFIA Letter of Interest<br>• Fill out WIFIA application | Funding is still available and Letters of Interest can be submitted starting September 6, 2022. Rolling basis deadline. |

Section 6

# Public Involvement

Return to Agenda

This document outlines community and stakeholder involvement efforts throughout the project to promote meaningful engagement and raise awareness of this study within Lakewood. Community support will push agencies to secure appropriate funding and permitting for engineering projects that address flooding. The full Public Engagement Plan can be found in Appendix D.

## 6.1 Community Engagement Overview

Outreach and engagement activities were designed to reach the following audiences that have interest in the Clover Creek Flood Mitigation Study:

- Public
- Local businesses and business associations
- Community and nonprofit organizations
- Appointed and elected officials
- Regional stakeholders

Activities included four stakeholder committee meetings, a series of individual stakeholder interviews, and two community meetings.

## 6.2 Engagement Schedule

Figure 6-1 includes the engagement schedule used to reach the community and stakeholders involved throughout the project.

| Activity | Timeline |
|---|---|
| Stakeholder Committee Meeting #1 | March 10, 2022 |
| Individual Stakeholder Interviews | March 14–April 6, 2022 |
| Community Meeting #1 | April 12, 2022 |
| Stakeholder Committee Meeting #2 | April 21, 2022 |
| Stakeholder Committee Meeting #3 | July 14, 2022 |
| Stakeholder Committee Meeting #4 | October 6, 2022 |
| Community Meeting #2 | November 10, 2022 |

**Figure 6-1. Project engagement schedule**

## 6.3 Community Input

Following the first community meeting and with feedback received via the website, email, and social media, the public's comments reflected the following themes:

- **Concern and desire for more information:** For those with properties that fall within the 100-year floodplain, members of the public expressed a need to track the project closely and a desire to understand more. They expressed interest in how the City is currently managing flows and groundwater with respect to the City's long-term goals.

- **Information apprehension:** Many community members expressed criticism and a lack of confidence in the maps used, citing that it had not flooded during their lifetime. This feedback reflects the need for increased education regarding the meaning of a 100-year flood and its potential impact
- **Unease about new and future developments and impact on impervious covers:** Some members of the public expressed concern about new development in the City, specifically those in Springbrook and along South Tacoma Way and along sensitive areas. They shared that the new development contributes to an increase in impervious surfaces
- **Request to utilize natural systems in mitigation efforts:** The Clover Creek Watershed Group shared a letter requesting that natural systems be the top priority in mitigation efforts and to incorporate green infrastructure in planning efforts. Examples listed included policies and design standards to minimize the development of impervious surfaces, increasing open spaces, retaining riparian areas, constructing rain gardens, and coordinating with other entities on long-term sustainability.

## 6.4 Stakeholder Input

Following the stakeholder meetings, the stakeholders' comments reflected the following themes:

- **Desire to integrate alternatives**: Stakeholders showed strong support to integrate the preferred alternatives as the final alternative is refined and adapted. They shared that the alternatives are not mutually exclusive, and integration would lead to the best possible outcome.
- **Strong interest in refinement process**: Stakeholders expressed strong interest in further refinement in the process and design of the final alternative as it combines ideas from all three preferred alternatives. As the final alternative is refined and identified, stakeholders expressed concern about changes to the cost estimates given the unknowns that still exist at this point in the process.
- **Desire to apply a contextual understanding**: Throughout the process, stakeholders shared information of other systems affected by this study and other related studies occurring. Stakeholders asked questions about where the water volume in the shrinking floodplain would go. They expressed concerns about water potentially propagating upstream. They also shared a desire to consider related studies, such as the TMDL Water Quality Improvement Plan being developed with Pierce County, the City, and JBLM,

## 6.5 Outreach and Engagement Activities

The project team actively engaged the stakeholders and community to ensure a transparent process and provided a mechanism for questions and feedback.

### 6.5.1 Stakeholder Committee Members

The stakeholder committee members were selected based on their understanding of the system, regulatory guidance, being directly impacted by the flooding, and potential financial partners.

- Luke Assink, WSDOT
- Rod Chandler, Pierce Transit
- David J. Fulmer, JBLM,
- Matthew Gerlach, Ecology
- Meseret Ghebresllassie, JBLM
- Donovan Gray, Ecology
- Russ Ladley, Puyallup Tribe
- Andrew Larson, WSDOT
- Anne-Marie Marshall-Dody, Pierce County Surface Water Management and Flood District
- Tom Kantz, Pierce County Surface Water Management and Flood District (Sub for Anne-Marie Marshall-Dody)
- Darrin Masters, Washington Department of Fish and Wildlife
- Rebecca McAndrew, Sound Transit,
- Char Naylor, Puyallup Tribe (sub for Russ Ladley)
- Helmut Schmidt, Pierce County
- Jacob Tennant, WSDOT
- David Troutt, Nisqually Tribe
- George Walter, Nisqually Tribe

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### 6.5.2 Stakeholder Meetings

The project team led four interactive virtual interactive meetings with the Stakeholder Committee members throughout this project. These meetings included presentations and opportunities to introduce stakeholders to the project; provide feedback on the potential alternatives, prioritization process, and preliminary model results; share final preferred alternatives; and seek partnering commitments both politically and financially. The meeting summaries can be found in Appendix E.

#### 6.5.2.1 Meeting One Summary

Held on March 10, 2022, the first meeting had the following purpose:

- Introduce the project and purpose of the Stakeholder Committee
- Share the project's scope, objectives, timeline, and milestones
- Present the problem the study will address
- Increase awareness of issues with respect to flooding occurrences, FEMA mapping, and impacts of flooding

The Stakeholder Committee members introduced themselves and asked questions to clarify the project overview, discuss potential study opportunities within the flood mitigation alternatives, share information on related projects, and understand next steps and the overall project schedule. The PowerPoint presentation slides are available in Appendix F.

#### 6.5.2.2 Meeting Two Summary

Held on April 21, 2022, the second meeting had the following purpose:

- Present a list of five alternative categories to mitigate flooding

- Gather feedback on additional potential alternatives previously not considered
- Gather input on any fatal flaws of any alternatives presented

The Stakeholder Committee members provided information on related projects and key contacts, additional alternative approaches, and potential mitigation risks for consideration. The PowerPoint presentation slides are available in Appendix G.

#### 6.5.2.3 Meeting Three Summary

Held on July 14, 2022, the third meeting had the following purpose:

- Share finalized flood mitigation alternatives, prioritization process and results, and preliminary model results for the three preferred alternatives
- Hear feedback on the alternatives to inform the next phase of work
- Outline next steps to support BCE process

The Stakeholder Committee members compared the final flood mitigation alternatives' opportunities and challenges and discussed the prioritization process. The committee and project team expressed a desire to find a solution that blends the preferred alternatives. The PowerPoint presentation slides are available in Appendix H.

#### 6.5.2.4 Meeting Four Summary

Held on October 6, 2022, the fourth meeting had the following purpose:

- Share MCDA criteria and scoring, summary of results, result graph, and alternative scoring versus costs
- Hear feedback on the MCDA process and results
- Identify potential areas where refinement may be possible
- Outline next steps including an opportunity to seek partnering commitments both politically and financially

The Stakeholder Committee members discussed considerations in the prioritization process, the final alternatives, shared feedback on the MCDA scoring process, and final thoughts. The project team shared next steps as the initial project wraps up. The City is seeking stakeholders interested in partnering in the next stage of the project to provide funding and construction support. The PowerPoint presentation slides are available in Appendix I.

### 6.5.3 Community Meetings

The City hosted two in-person informational community meetings, promoted through mailers, project website updates, and social media. These meetings introduced the public to the project, gathered early input on alternatives from the public, and informed the public on project progress.

- **Meeting One:** The first public meeting presented the problem and brought awareness with respect to the historical flooding events, existing FEMA mapping, potential impacts of flooding, and the scope for this study. The overall project tasks and events were outlined for public knowledge.
- **Meeting Two:** The second public meeting provided information on the development of the flood mitigation alternatives, the process for reducing the alternatives to the preferred concepts, the results of the BCE process, and the final preferred alternatives.

#### 6.5.3.1 Promotion

To reach the public, the City sent a fact sheet mailer 2 weeks prior to each community meeting, shared updates on the project website, and promoted the event on social media. The City distributed 596 mailers to zip code 98499. The mailer is provided in Appendix J and includes an overview of information about the project, status, key issues, and ways to participate.

The City also promoted the meetings on the website (https://cityoflakewood.us/clover-creek-floodplain/) and with the quarterly City magazine, Connections (https://cityoflakewood.us/?s=connections).

#### 6.5.3.2 Community Meeting One Summary

**Meeting details**: April 12, 2022 |7:00–8:30 pm | City Hall Council Chambers

**Attendance:** 13 members of the public attended the meeting.

The meeting initiated with a discussion of what the problem was and how the City determined that the existing FEMA mapping does not accurately reflect the degree of flooding anticipated during a 1 percent probability flood event, commonly called the 100-year flood. The PowerPoint presentation slides for the first community meeting are available in Appendix L.

*Public Works Engineering Director, Paul Bucich, addresses the meeting attendees.*

*Lakewood residents ask questions during the meeting*

*Brown and Caldwell Project Manager, Ryan Retzlaff, addresses questions from the community*


*Lakewood residents review floodplain poster*

The City stepped through the previous analysis at a high level then discussed with the public the current process to evaluate potential engineering options that will alleviate or eliminate the flood risk potential.

The City reiterated that a flood like this is a low probability event, 1 percent for any year, but the consequences are high for the residents, businesses, and travelling public.

The City shared the members of the stakeholder committee, the purpose of the committee, and when the public can expect to receive an update.

**Questions asked by members of the community:**

- I-5 has never flooded here in my lifetime, and I know there are culverts and such. What makes you so confident in this map?
  - This study used cutting-edge technology that gives us a better understanding of the land than we've ever had. Water follows the land, and this data shows us where that will be. These 1 percent flood events are rare but more probable than impossible. It will happen at some point. It would be wrong to turn a blind eye.
- How do you know that this flood would happen once every 100 years?
  - I don't love the term "100-year flood." It's more about odds than timing. Floods happen under a mix of conditions. Rainfall is the most important factor, but there are others. Ground saturation, stream water levels, and other factors matter. Local floods in the 1990s involved rainfall on snow, for example. Models show a 1 percent chance in any year that environmental factors will conspire to produce flooding at this level.
- There are new developments in Springbrook and along South Tacoma Way. Do these impervious surfaces add to the risk?
  - The water that would flood this area is surface water that originates upstream elsewhere in Pierce County. Development regulations upstream may be a solution. Some unused areas of Springbrook might become undevelopable for compensatory storage. Our soil takes in water very well, so recent local developments don't have much to do with Clover Creek flows.
- There's a lot of talk about JBLM and I-5, are they more important than the property owners and residents?
  - No, of course not. A major flood would be a threat to military readiness and to statewide transportation. WSDOT and JBLM will be important partners in any solution. They also have the financial might to help us engineer the best solution for Lakewood residents (and their interests).
- What is being done to track creek flows and groundwater?
  - The City does track creek flows, but that only establishes a baseline for the stream. Groundwater is a factor, but it wouldn't be the catalyst for a major flood. We've seen small groundwater floods in Springbrook from time to time, surface water would be the catalyst in a major flood.

**Next Steps**

No additional follow-up was needed beyond keeping the public informed and updating the web page with project progress.

#### 6.5.3.3 Community Meeting Two Summary

**Meeting details**: November 10, 2022 |7:00–8:30 pm | City Hall Council Chambers

**Attendance:** 12 members of the public attended the meeting.

*Brown and Caldwell Project Manager, Ryan Retzlaff, shares the latest work with the community*

*Public Works Engineering Director, Paul Bucich, speaks to questions asked by the public*

*Clover Creek alternative posters*

The City provided a summary of the previous community meeting and an update on the flood mitigation alternatives process. This update included sharing the four alternatives that were evaluated with the hydraulic model and evaluated based on multiple criteria to determine the most appropriate. Posters were provided showing the model results and flood extent for all four alternatives. The PowerPoint presentation slides for the second community meeting are available in Appendix M.

**Questions asked by members of the community:**

- What is the area that would be restored as part of a stream restoration?
  - From the railroad east approximately 1 mile downstream to the end of Cloverdale Ct SW. Also, some of the fish barriers downstream would be evaluated for improvement.
- How will Pierce County assist with funding?
  - Pierce County has two groups that could assist with funding, including the surface water group and flood protection group. Both of these groups have been represented at our stakeholder meetings.
- Will private property be needed to implement proposed flood mitigation alternatives?
  - That is unknown at this time as the details of any alternative have yet to be formalized. There are likely to be some improvements along the creek downstream of Pacific Hwy and I-5 to limit break out flow from the creek onto private property and flood roadways.
- What is the timeline moving forward?
  - The discussion and questions asked here (community meeting on November 10, 2022) will be integrated into our alternatives. The finalization of the preferred alternative will be completed, and the entire process will be documented in an engineering report and a PowerPoint. Final outcome and path forward will be presented to council in late January or February.
- Does Steilacoom Lake impact Clover Creek flows.
  - No.
- Can the land around JBLM be used for storage or flood management?
  - This land is already very wet during the winter and most of it is wetland. Identifying areas within this space that would be suitable for storage is unlikely. Additionally, federal land and

federal agencies are very challenging to work with and are likely not interested in addressing non-federal concerns on federal land.

**Next Steps**

No additional follow-up was needed beyond keeping the public informed and updating the web page with project progress.

### 6.5.4 Website, Social Media, and Email Engagement

At the start of the project, the City created a project webpage at https://cityoflakewood.us/clover-creek-floodplain/. Designed to align with the consistent project identity to support public awareness and increase visibility for the project, the website had information about public involvement activities and a comment box. The City's social media aligned with the project identity and updates.

### 6.5.5 Public Feedback

Members of the public submitted comments through the website. The posts and social media stories regarding the project yielded low engagement in comparison to other City topics. The comments received through engagement reflect a gap in understanding between the public and the stakeholders involved. General feedback received on the website and via social media include the following comments:

- "Why is the City allowing development in this area?"
- "Why is the City making people buy flood insurance?"
- "This isn't a big deal like you're pretending it is—there's never been any flooding here."
- "It must be the City's development strategy and new impervious surfaces causing this risk."
- "The City gentrified other neighborhoods and made people of color move where the flooding will be."

Section 7

# Summary and Recommendations

A floodplain model update to the hydrologic and hydraulic flood model for Clover Creek, completed in 2019, revealed a significant increase to the area impacted by floodwater than the current FEMA effective map of inundation for the 100-year event. The updated model suggested a significant new portion of the City would be impacted by the floodwaters, including I-5. The flooding could potentially result in significant new regulatory constraints placed on area. The City paused further coordination with FEMA to explore flood mitigation alternatives to reduce new impacts to the City and I-5.

The potential flood mitigation alternatives and preferred alternative developed as part of this study and outlined in this report provide the City and stakeholders with the information necessary to move forward with the next steps to secure the funding, advance the design, and build the political will to construct the preferred alternative. The preferred alternative is a levee that extends from Bridgeport Way to JBLM along the north side of Clover Creek. This levee should not only protect I-5 from flooding, but will also protect existing homes and businesses. USACE certification of this levee would allow protected and undeveloped land behind the levee to be developed. This alternative is preferred as it provides the most comprehensive flood protection, requires the least amount of private property acquisition while leveraging City owned land, and is feasible to construct relative to the other alternatives. The flood protection benefit to the City relative to just protecting I-5 more than justifies the 13% cost increase of the preferred alternative over the I-5 levee alternative.

This report recommends three focus areas be advanced to move this project forward from concept to a fully funded project with broad support. Those focus areas and their strategy are listed below.

1. Funding Strategy: Due to the nature of the problem this project is aiming to solve and the magnitude of the preliminary cost, this report recommends three primary funding pathways. The majority of funding, especially for construction costs, could come from an allocation in the State of Washington's biennium budget. This could be achieved by creating local momentum and thoughtfully engaging political leaders. That funding could be supplemented with grants to cover design costs and specific applicable project elements in construction. Finally, the formation of public-private partnerships could provide additional funding in addition to signalling to the State that there is local support in the form of financial backing.
2. Outreach and Engagement: Engaging residents, the business community, local and state agency stakeholders, as well as legislators and committees in Olympia will be critical to gain insight into how to advance the technical design as well as building consensus and support for the project. A strategic engagement framework would create consistency in messaging and a centralized approach to synthesizing external feedback.
3. Technical Refinement: The technical refinement should be a two-step process. First, technical refinement should focus on ground truthing the concept with survey and geotechnical exploration to ensure the concept is reasonably constructable. That advanced concept will serve as the centerpiece of the outreach so that stakeholders have something to provide feedback on. The advanced concept should be advanced to a 30% Design level of definition so that a funding request from the State has reasonable accuracy.

An example of the potential timeline for the next 3 years as it relates to these three major elements is outlined below.

- 2023: develop funding business case, advance engineering concept, submit grant funding applications, identify stakeholders and build strategic engagement framework and begin outreach.
- 2024: conduct stakeholder outreach, continue conversations with political leaders to gain support, advance engineering design to 30%, secure letters of recommendation and build public-private partnerships
- 2025: secure funding to fully fund remaining design and construction, continue to engage public and political leaders to maintain and gain support, complete design and acquire necessary permits.

## Section 8

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# Figures

# Appendix A: WSE 2020 Memorandum

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# Appendix B: Estimated Mitigation Ranking, Engineering, and Implementation Considerations Table

# Appendix C: Alternative Cost Estimates

# Appendix D: Public Engagement Plan

# Appendix E: Stakeholder Meeting Summaries

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# Appendix F: Stakeholder Meeting 1 Presentation

# Appendix G: Stakeholder Meeting 2 Presentation

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# Appendix H: Stakeholder Meeting 3 Presentation

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# Appendix I: Stakeholder Meeting 4 Presentation

# Appendix J: Community Meeting Mailer

# Appendix K: Community Meeting 1 Presentation

# Appendix L: Community Meeting 2 Presentation

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# Clover Creek Flood Study

## Lakewood City Council Briefing

March 20, 2023

# Agenda

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1. Project History
2. Alternative Considerations
3. Public Outreach
4. Alternative Analysis
5. Next Steps in Funding, Engineering, and Outreach

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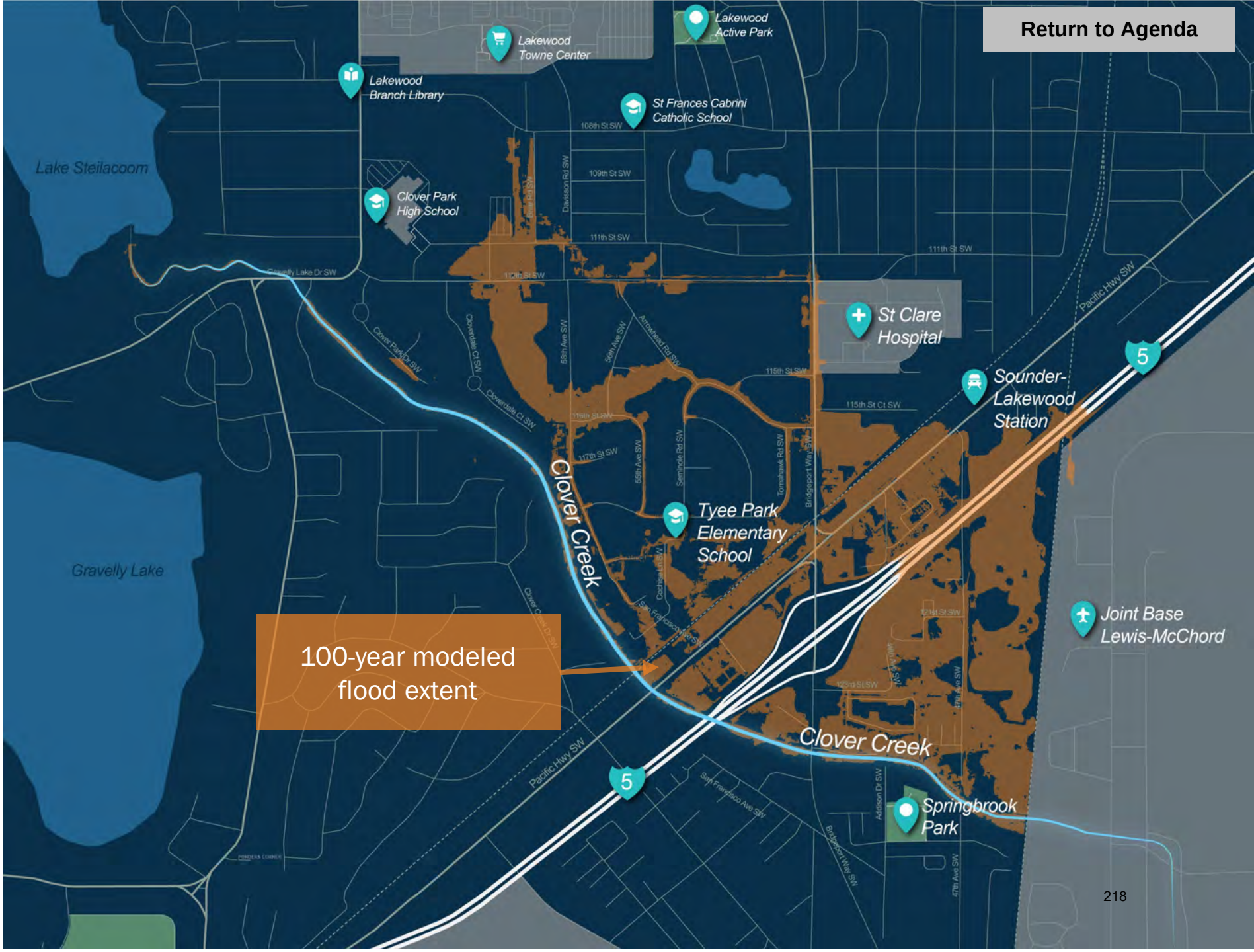
# Project History

- Updated FEMA insurance mapping increased the 100-year floodplain
- Lakewood decided to investigate mitigation alternatives
- Alternatives analysis is complete
- Next steps to advance design and secure funding

# 100-year Floodplain Impacts



# Alternative Screening Criteria

- Community Benefits
- Affordability Considerations
- Implementation Ease
- Environmental Benefits

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# Top Four Alternatives Evaluated

- **Do Nothing Alternative**
- **Channel and Capacity Enhancement Alternative**
  - Enhancements to the stream channel and adjacent wetlands.
- **I-5 Levee**
  - Levee south of I-5 to protect I5 from flooding
- **Levee**
  - Levee north of Clover Creek from Bridgeport Way to JBLM to minimize flooding everywhere

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# Public Engagement


**17** stakeholders

**4** stakeholder meetings

**2** community meetings

**4** pre-meeting fact sheets sent out

Promoted via **city website** and **quarterly magazine**

**Project webpage** created

**Press release** appeared in **local news**

Featured on the **City's social media**

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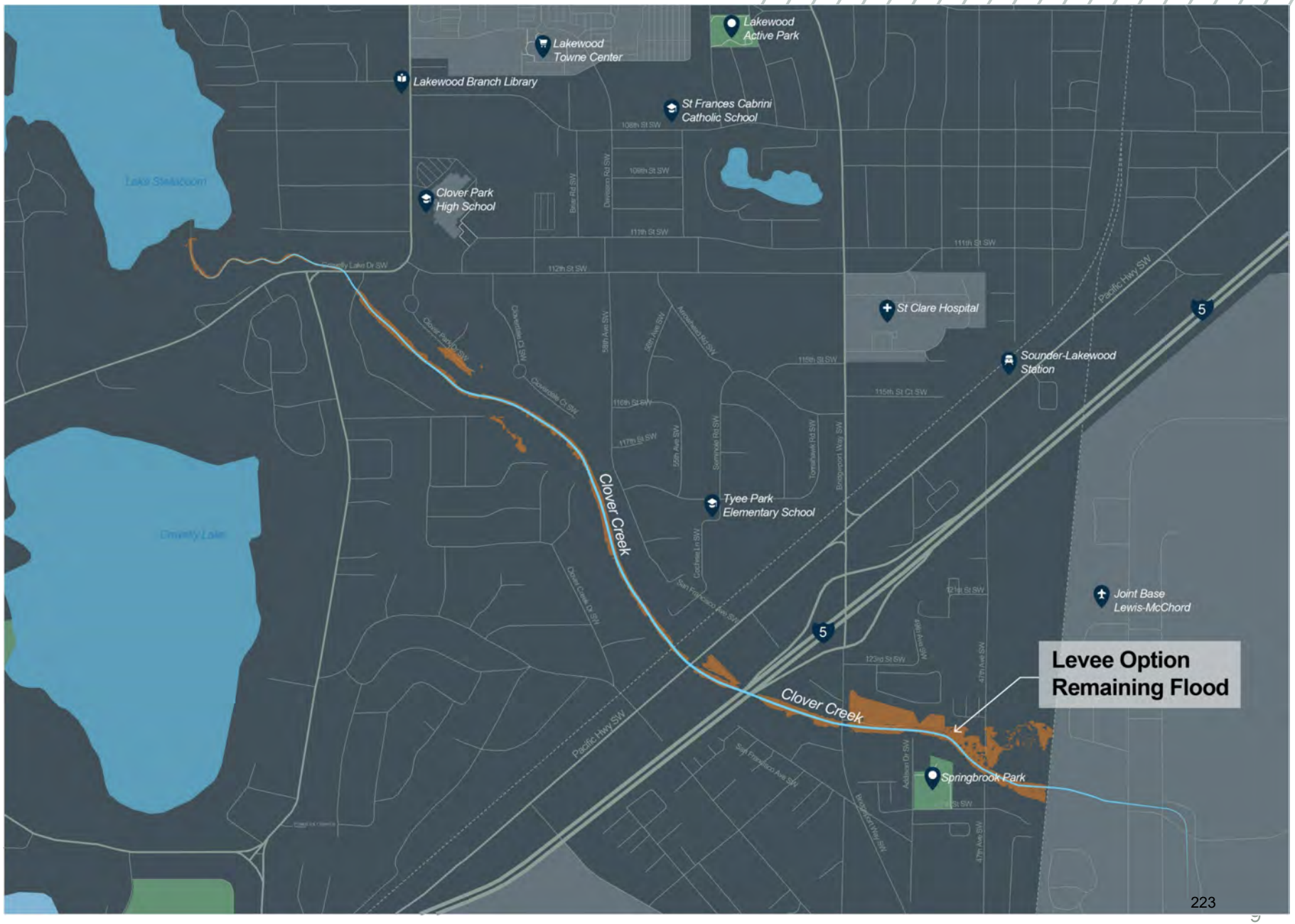
# Alternative Analysis

| ALTERNATIVE | ENVIRONMENTAL | COMMUNITY | IMPLEMENTATION | COST |
|---|---|---|---|---|
| Do Nothing |  |  |  | $0 |
| Channel & Capacity Enhancement |  |  |  | $17M - $32M |
| I-5 Levee |  |  |  | $15M - $27M |
| Levee |  |  |  | $17M - $31M |

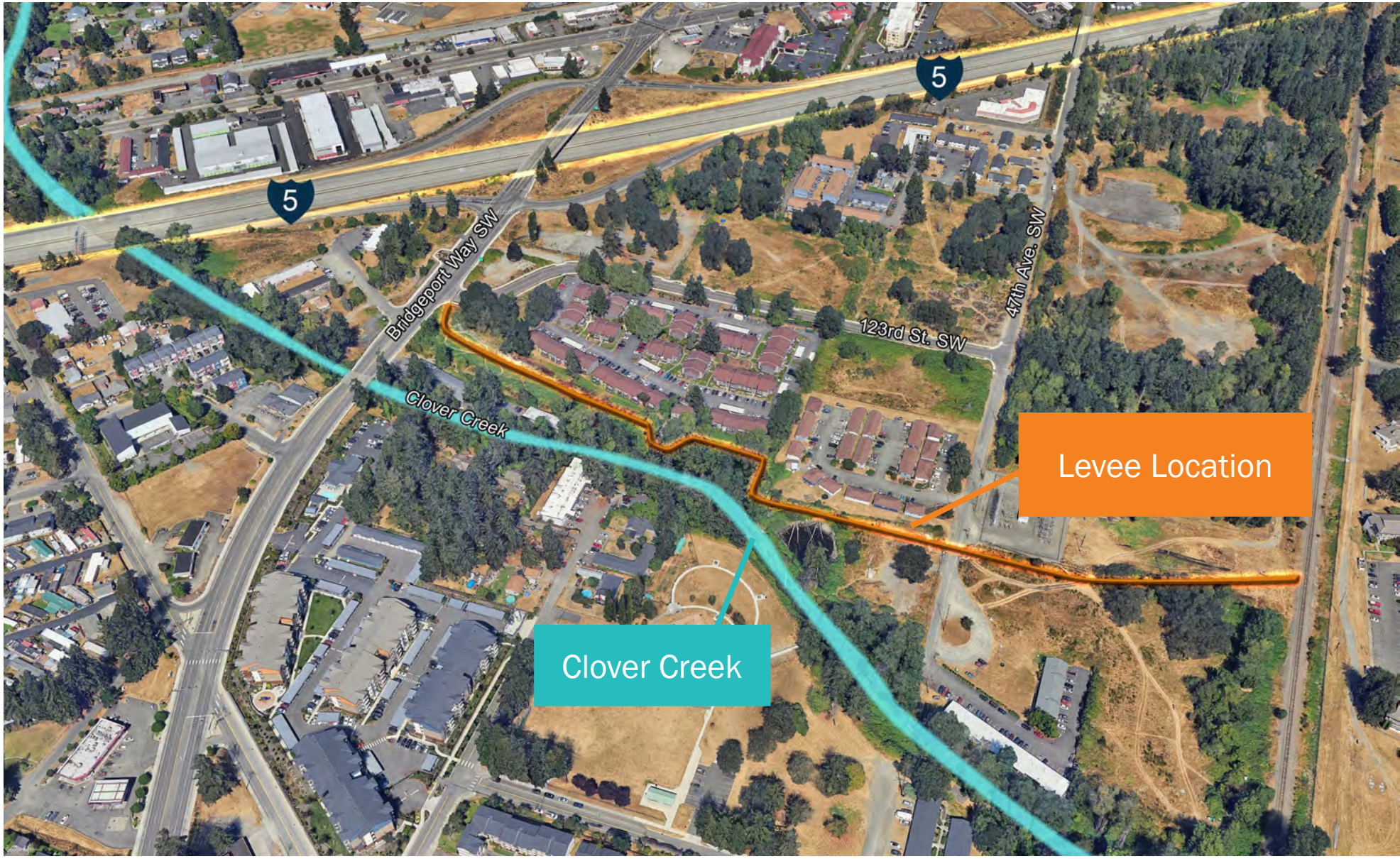
# Levee Alternative

- Significant area removed from 100yr. Flood plain
- Area north of Clover Creek and east of I5 could be developed

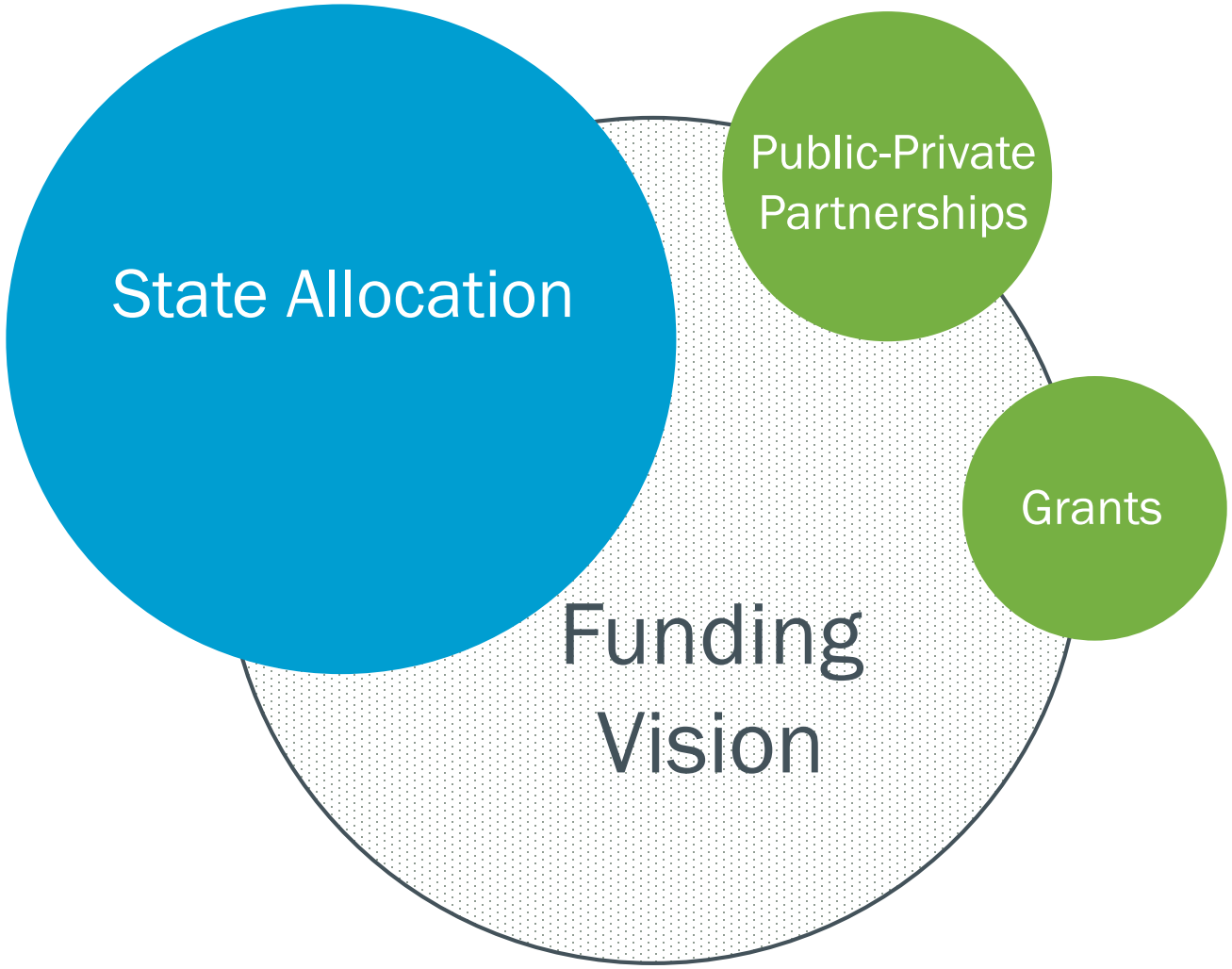


# Levee Alternative

- Prevents I-5 flooding
- Protects most existing homes and businesses
- Opens land for future development
- Provides opportunities for riparian improvements within the creek



# External Funding is Necessary to Move Forward



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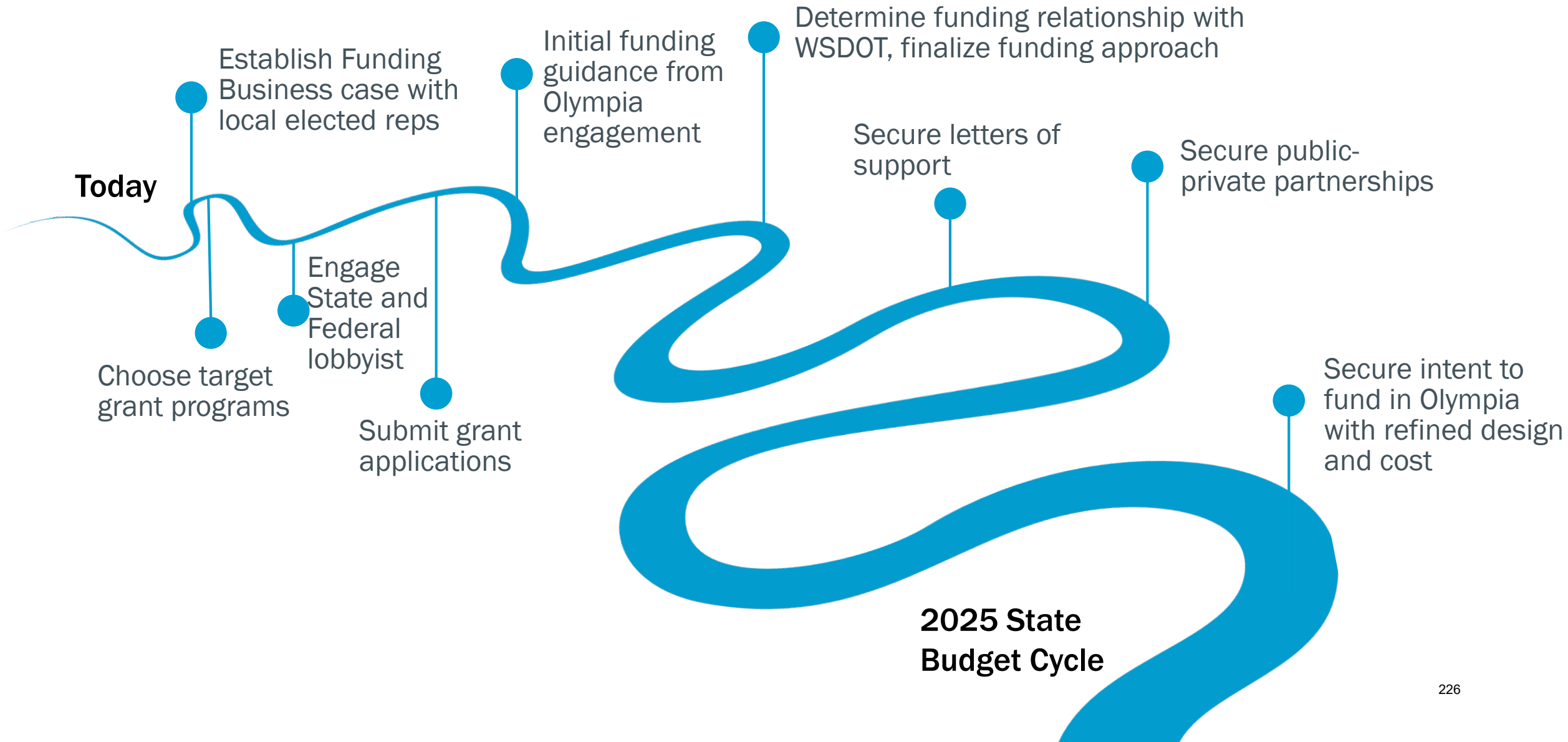
# Funding Strategy



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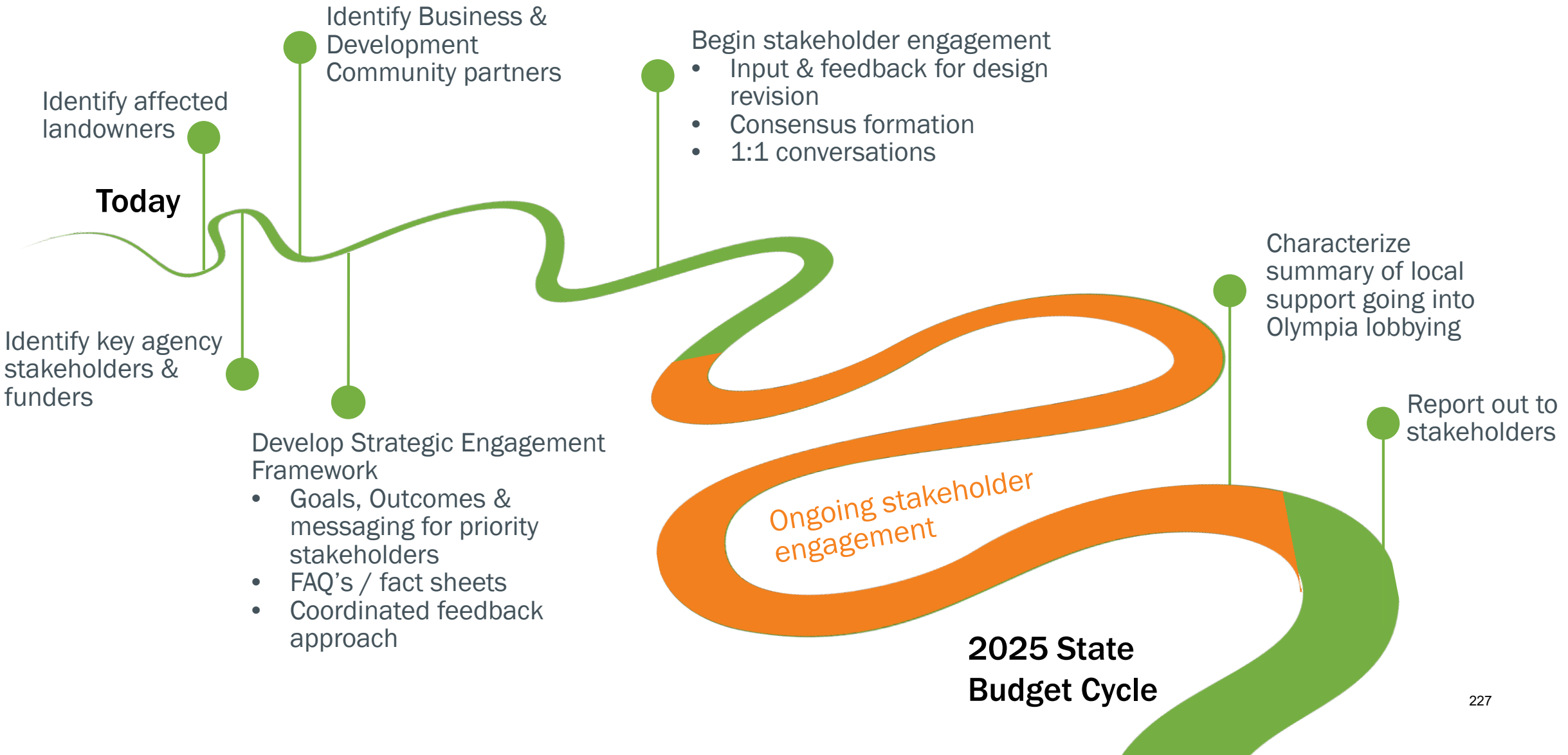
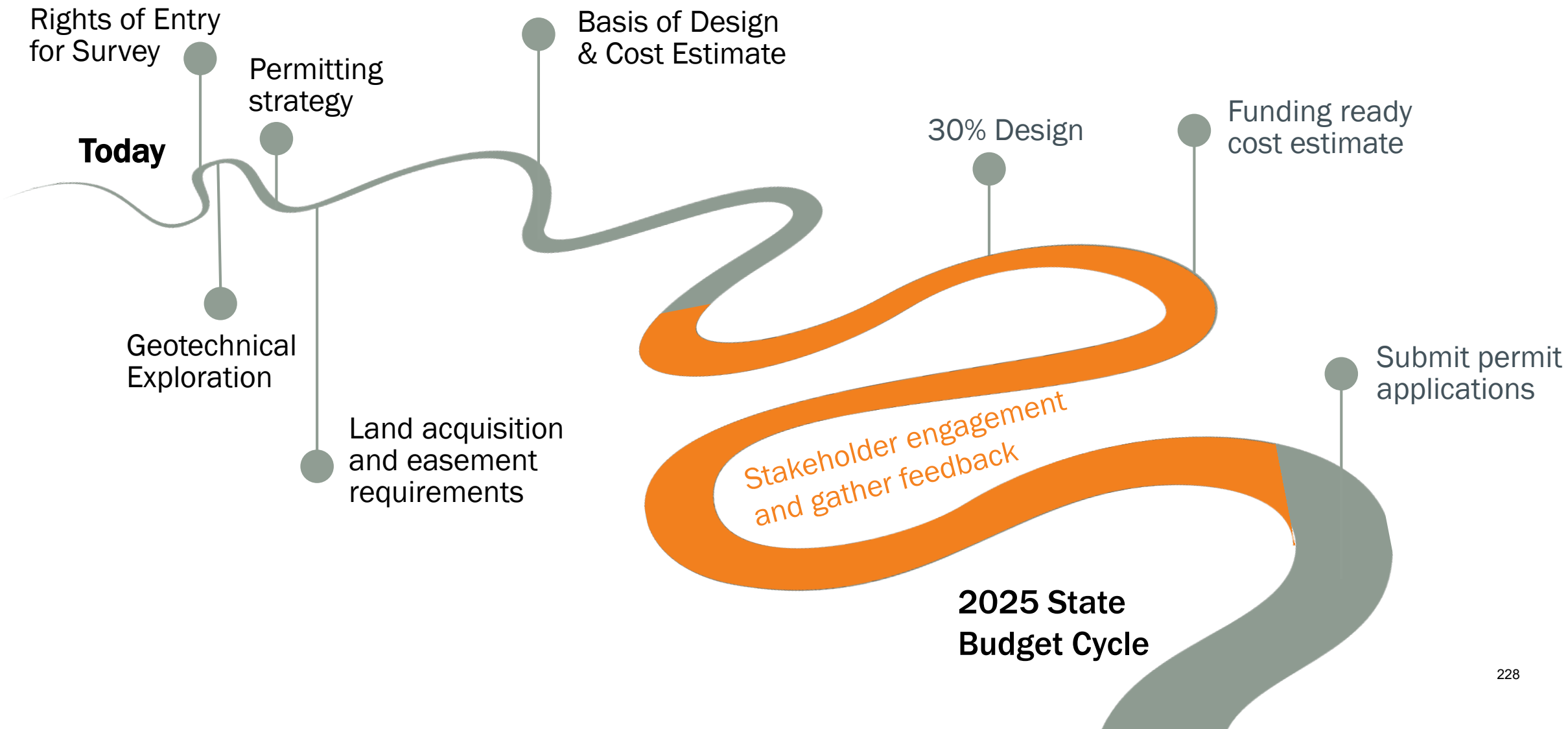
# Outreach and Engagement Approach



# Technical Refinement Steps



# Immediate Next Steps

- Council feedback on next steps approach (funding, outreach, and engineering)
- Council consensus to advance project through next steps
- Develop scope of work and budget
  - Funding
  - Engineering
  - Outreach
  - Advisory technical work group
- Execute

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# Questions?