1. Approval of Agenda

2. Communications - Written and Oral

   Note: The time allowed shall not exceed 30 minutes, and speakers will be called in order from the sign-up sheet. If the number of speakers signed up to speak will exceed the 30-minute period, the Chair is authorized to give preference to (1) persons speaking to items on that meeting's Agenda or anticipated to come on the Agenda within one month and/or (2) to persons who have not spoken to Council in the last quarter. A maximum of three persons are permitted to speak to each side of any one topic.

3. Executive Session

   a) Property Disposition - RCW 42.30.110(1)(c)
      To consider the minimum price at which real estate will be offered for sale or lease when public knowledge regarding such consideration would cause a likelihood of decreased price.
      (Approximately 20 minutes)

4. Study Session Items

   a) Council Business and New Initiatives

   b) Briefing on the King County Housing Authority
      (Information only. The Executive Director of the King County Housing Authority will provide an overview of housing programs provided in Bellevue and King County.)

   c) Washington State Road Usage Charge Pilot Project
      (For information. Staff from the Washington State Transportation Commission will provide an overview of the project for Council feedback.)

   d) Regional Issues Overview
      (For information. Written update.)

   e) State Legislative Update
      (For information. Written update.)
f) Federal Legislative Update
   *(For information. Written update.)*

h) Monthly Regional Committees Update
   *(For information. Written update.)*

h) Tree Canopy Assessment Results
   *(Information only. Staff will review findings from the 2017 assessment and will return at a future meeting to discuss proposed updates to the Environmental Stewardship Initiative strategic plan.)*

5. Council Discussion of Upcoming Items

6. Continued Oral Communications

City Council meetings are wheelchair accessible. Captioning, American Sign Language (ASL), or language interpreters are available upon request. Please phone at least 48 hours in advance 425-452-6168 (Voice). If you are deaf or hard of hearing, dial 711 (TR). Assisted listening devices are available upon request. Council Conference Room (1E-113) is equipped with a hearing loop system.
CITY COUNCIL STUDY SESSION

Briefing on the King County Housing Authority

Joyce Nichols, Director of Intergovernmental Relations, 452-4225
City Manager’s Office

DIRECTION NEEDED FROM COUNCIL

Stephen Norman, Executive Director of the King County Housing Authority (KCHA), will provide an overview of the KCHA organization and housing programs it provides in Bellevue and King County. No action is required by Council. Bellevue’s work with the KCHA is a key component in the implementation of Bellevue’s Affordable Housing Strategy, adopted by Council in 2017.

RECOMMENDATION

N/A

BACKGROUND & ANALYSIS

The King County Housing Authority (KCHA) is an independent municipal corporation, separate from King County or cities. It was authorized by state law and subsequently created by King County in 1939 to provide affordable housing and related services. The KCHA receives no ongoing operating funds from the state, King County or cities. Operating costs are primarily covered by rents charged to tenants and federal funding. Its annual budget is approximately $300 million, and it has 400 full-time employees throughout King County. The KCHA is governed by a five-member volunteer Board of Commissioners, who are appointed by the King County Executive and approved by the King County Council.

The KCHA provides rental housing and rental assistance to more than 20,000 households, serving low-income people in 33 cities, not including Seattle and Renton, and in unincorporated parts of King County. The KCHA owns and manages over 4,000 units of federally funded housing for families, the elderly and people with disabilities. An additional 6,000 units of low-and moderate-income housing are financed through tax credits or tax-exempt bonds. Federally funded Section 8 Vouchers help more than 10,000 households rent affordable housing on the private market.

The KCHA actively acquires properties and builds new housing. Projects are primarily funded through combining federal, state and local money with tax-exempt bonds, Low Income Housing Tax Credits, or both. Since 1990, the KCHA has issued more than $350 million in housing bonds. The program also helps nonprofit and for-profit developers buy or build multi-family rental housing in King County with below-market rate financing.

In addition to housing development, the KCHA provides $5 million each year for low-income home repair and weatherization services. Funding for this program comes from federal sources, the state,
King County and cities like Bellevue. About 525 privately owned single-family, multi-family and mobile homes are upgraded each year. The KCHA also spends more than $5 million each year on resident education and self-sufficiency programs such as after-school programs, adult job counseling, and other educational services.

In Bellevue, the KCHA operates 15 apartment complexes and eight rental homes, totaling 1,789 affordable housing units in the City. The KCHA also provides over $19 million annually in housing voucher subsidies in Bellevue alone. Finally, the KCHA partners with the Bellevue Boys and Girls Club to provide after school programs in three housing developments in the City. Stephen Norman, Executive Director of the KCHA, will provide additional information during the Council presentation.

**POLICY & FISCAL IMPACTS**

Council adopted Bellevue’s Affordable Housing Strategy (AHS) in 2017 in order to improve affordable housing opportunities across the City. The AHS is consistent with Council priorities and housing policies in the City’s Comprehensive Plan. Specifically, policies in the Comprehensive Plan provide support for actions that:

- Address the entire spectrum of housing needs, including the need for affordable housing for very low, low and moderate-income households;
- Promote regional cooperation to create affordable housing;
- Provide funding to support housing needs, especially for low and very low-income households; and
- Partner with not-for-profit agencies to provide permanent low-and moderate-income housing.

The AHS consists of five interrelated strategies and a set of actions for each that are designed to address key aspects of housing affordability:

- Help people stay in existing affordable housing
- Create a variety of housing choices
- Create more affordable housing
- Unlock housing supply by making it easier to build
- Prioritize state, county and local funding for affordable housing

**OPTIONS**

N/A

**ATTACHMENTS & AVAILABLE DOCUMENTS**

N/A

**AVAILABLE IN COUNCIL LIBRARY**

N/A
Reema Griffith, Executive Director of the Washington State Transportation Commission (WSTC), will provide an overview of the Road Usage Charge (RUC) Pilot Project that launched in early 2018 and will end in January 2019. The pilot study is testing a road usage charge of 2.4-cents per mile as a potential replacement for the 49.4-cent per gallon statewide gas tax that funds highway projects and transportation infrastructure. As vehicles become more fuel efficient and more drivers opt for electric vehicles, revenue from the gas tax continues to decline each year. Tonight’s briefing is an opportunity to learn about the pilot project, ask questions and provide feedback. No Council action is required.

**RECOMMENDATION**

N/A

**BACKGROUND & ANALYSIS**

The current statewide gas tax of 49.4 cents per gallon is used to fund the state’s roads and other infrastructure. As cars become increasingly more fuel efficient and the number of electric vehicles continues to increase, the revenue from the gas tax to support transportation projects will continue to decrease each year. The Road Usage Charge (RUC) Pilot Project is testing a 2.4-cent per mile charge for light-weight, non-commercial vehicles including gasoline-fueled, hybrid, and electric vehicles. Under this system, drivers would pay a tax based on miles driven, rather than gallons of fuel consumed.

In 2012, the Washington State Legislature directed the WSTC to work with the Washington State Department of Transportation (WSDOT) and a multi-stakeholder steering committee, to determine whether a RUC is a feasible replacement of the statewide gas tax. The steering committee included representatives from the WSTC, the WSDOT, the State Senate and House of Representatives, the Alliance of Automobile Manufacturers, Cascadia Law Group, Clark County Public Works, the University of Washington, Everett Transit, Clark County Public Works, and the Sammamish City Council, among others.

The WSTC and the steering committee evaluated key policy issues, possible operational concepts, possible implementation issues, potential risks and whether there was a business case to be made for a RUC compared to the gas tax. The WSTC concluded that a RUC system is feasible and that it would
out-produce the gas tax in generating funds for transportation projects. Between 2014 and 2016 the WSTC conducted additional analysis reported its findings to the Governor and the Legislature regarding the business case for the RUC, options for operating a RUC and ways to collect mileage data.

The 2016 Washington State Legislature directed the WSTC to develop a RUC Pilot Project Implementation Plan and to seek federal funding for a statewide pilot project. The WSTC and the RUC Steering Committee worked on the Implementation Plan between July and December 2016. In mid-2016 the United States Department of Transportation announced the award of $3.8 million in federal funds to Washington State for a 2,000-vehicle statewide, live pilot test of a RUC system in Washington.

The pilot project launched in February 2018 and will continue until January 2019 to see if a road usage charge makes sense as a potential replacement for the current gas tax. Participants in the pilot selected one of four mileage reporting options to record and report their mileage for roadway usage. High-tech, low-tech, and no-tech options to report miles driven are being tested during the pilot, including manual reporting of a vehicle’s odometer reading to using smartphones or in-vehicle technology to collect mileage data. Following completion of the pilot, the WSTC will analyze the data, weigh policy implications, and provide a report to the U.S. Department of Transportation, the Governor, and the Legislature in 2020. In the following legislative session, policymakers may choose to take legislative action based on the results of the RUC Pilot Project.

POLICY & FISCAL IMPACTS
The concept of replacing the state’s gas tax with a RUC presents several policy issues and challenges, such as:

- **Security and privacy issues** – Concerns about data security and privacy are linked to monitoring miles driven.
  - **GPS Tracking.** Using a geographic positioning system (GPS) to track vehicle miles traveled would allow differential pricing of the RUC, such as charging more for miles driven during the peak period or for using certain types of roads. That benefit must be weighed against data security risks.
  - **Tracking using odometer readings.** This low-tech option would not collect information on vehicle location and would not be able to be used to differentiate between miles traveled in-state versus out-of-state.
  - **Data Privacy Issues with Third-Party Vendors.** The pilot is using several third-party vendors to collect and report vehicle miles traveled. Safeguarding the privacy of this information is a significant concern that has not been fully addressed, but is being studied in the pilot.
  - **Out-of-state travel issues.** Washington drivers could pay gas tax on fuel purchased in a state that does not have a RUC and when returning to Washington State would be charged a RUC, which would create a double taxation situation.
  - **Charging out-of-state drivers.** If Washington State imposes a RUC in place of the
statewide gas tax, it would be challenging to charge out-of-state drivers for operating vehicles on Washington roads. The RUC pilot is testing various ways of meeting this challenge.

- **Equity** – The existing statewide gas tax disproportionately impacts drivers of vehicles with lower fuel economy. The average Washington driver pays 2.4-cents-per-mile in-state gas tax. When driving 1,000 miles, a 2007 Ford F-150 will incur approximately $23 more in gas tax than the driver of a 2016 Toyota Prius. A RUC would potentially balance the taxes incurred by these two vehicle types.

- **Fiscal Impacts.** Replacing the statewide gas tax with a RUC could impact city revenue for transportation projects. Of the 49.4-cent-per-gallon fuel tax, approximately 11-cents is allocated on a per capita basis to cities and counties to fund local roads. In 2019, Bellevue is estimated to receive about $3 million in gas tax revenue. Depending on how the RUC is implemented, the ultimate impact to Bellevue and other cities is unknown at this time.

### OPTIONS

N/A

### ATTACHMENTS & AVAILABLE DOCUMENTS

N/A

### AVAILABLE IN COUNCIL LIBRARY

N/A
DATE: September 24, 2018

TO: Mayor Chelminiak and City Councilmembers

FROM: Joyce Nichols, Director of Intergovernmental Relations, 452-4225
City Manager’s Office

SUBJECT: Regional Issues Items September 24, 2018

**DISCUSSION/ACTION ITEMS**

**Briefing on the King County Housing Authority:** Stephen Norman, Executive Director of the King County Housing Authority (KCHA), will provide an overview of the KCHA organization and housing programs it provides in King County and Bellevue. Bellevue’s work with the KCHA is a key component in the implementation of Bellevue’s Affordable Housing Strategy adopted by Council in 2017. No action is required by Council.

**Briefing on the Washington State Road Usage Charge Pilot Project:** Reema Griffith, Executive Director of the Washington State Transportation Commission, will provide an overview of the Road Usage Charge Pilot that launched in early 2018 and will end in January 2019. The pilot study is testing a road usage charge as a potential replacement for the statewide gas tax. Revenue from the gas tax funds highway projects and other infrastructure. As vehicles become more fuel efficient and more drivers opt for electric vehicles, revenue from the gas tax continues to decline. The pilot has enrolled 2,000 drivers who volunteered to report their mileage using a variety of manual and high-tech methods. No action is required as tonight’s briefing is an opportunity for Council to learn more about the pilot, ask questions and provide feedback.

**LEGISLATIVE STATUS REPORTS**

**State Legislative Session Update:** Staff has provided a written update on recent activities during the interim at the state level regarding Bellevue’s interests and priorities.

**Federal Legislative Update:** Staff has provided a written update on recent activities at the federal level covering Congress and the Administration.

**STAFF REPORTS / INFORMATION ITEMS**

**Monthly Council Summary Background Briefings:** Included are updated summary background briefings on the King County Regional Committees (RPC and RWQC), the Flood Control District, and the Puget Sound Regional Council (PSRC).
CITY COUNCIL STUDY SESSION
State Legislative Update.

Joyce Nichols, Director of Intergovernmental Relations, 452-4225
City Manager’s Office

DIRECTION NEEDED FROM COUNCIL

INFORMATION ONLY
No action is required; this is an informational briefing. The State Legislature addresses a range of policy issues of interest to the City. Council may wish to provide direction to staff regarding particular legislative proposals.

RECOMMENDATION
N/A

BACKGROUND & ANALYSIS
Work continues during the interim between the 2018 state legislative session and the 2019 session which begins January 14. Legislators are developing policy language and writing draft legislation that they will introduce in January.

The November 6 General Election results will determine the makeup of the 2019 Legislature as all members of the State House of Representatives and half the members of the State Senate must stand for election. The stakes are high as the upcoming election will determine which party will control each chamber and by what margin.

Once the results of the General Election are known, legislators will meet in Olympia for Committee Assembly Days where they will establish leadership roles, make committee assignments within each caucus and hold work sessions on emerging legislative issues.

State Revenue Forecast
The Washington State Economic and Revenue Forecast Council released its latest state revenue forecast last week. The forecast indicates that state revenue collections will be higher than anticipated, coming in at an estimated 4.8% higher than the June forecast predicted. Cumulatively, collections are now estimated to be about $147 million higher for the remainder of the 2017-2019 biennium.

Governor’s Budget Proposals Under Development
Governor Jay Inslee will release his proposed 2019-2021 operating, capital and transportation budgets in mid-December prior to the beginning of the 2019 legislative session. State agencies are submitting budget requests to the Office of Financial Management and the Governor’s Office. The Governor’s Office is reviewing the agency requests and will determine priorities to balance the competing demands for state funding.
Trueblood Case Settlement Approved by Court
The Trueblood lawsuit is now being referred as “the McCleary of 2019.” The recent Trueblood settlement agreement calls on the state to invest a significant operating and capital funding into the state’s mental health system. The specific funding amount needed to meet the obligations outlined in the settlement remains unknown.

In 2015, the U.S. District Court ruled in Trueblood versus Washington State Department of Social and Health Services (DSHS) that the DSHS was not providing competency evaluation and restoration services in a timely manner to individuals with a mental disability. If a court believes a mental disability prevents someone from assisting in his/her own defense, the court puts the criminal case on hold while an evaluation is completed to determine the person’s competency and whether they need treatment to restore competency.

The DSHS is required to provide these evaluation and restoration services in a timely manner with 14 days as the standard. The Court found that the DSHS was not providing these services in a timely manner, held the DSHS in contempt and imposed monetary sanctions. Rather than continue to pursue ongoing litigation, the Plaintiffs in the case agreed to negotiate and develop a comprehensive settlement agreement to reform the state’s forensic mental health care system. A draft settlement agreement has been released and calls for significant state investments through both the state operating and capital budget.

Affordable Housing Funding Tools
Representative Nicole Macri (D-Seattle) has indicated a strong desire to reintroduce legislation similar to House Bill 2437, which was considered in the 2018 legislative session but failed to pass. In the latest version of House Bill 2437, counties are authorized to impose a credit against the state share of the sales tax of up to .03 percent to fund affordable and supportive housing. The sales tax credit would not increase the sales tax for consumers and would not change the overall retail sales or use tax rate. Instead, the amount of sales tax retained by the state would be reduced and redirected to the county. Once imposed, the sales and use tax credit would be in place for 20 years. In King County, if the council does not impose the sales tax credit by July 1, 2020, cities within King County would have the opportunity to use the credit against the sales tax. The bill would require any jurisdiction imposing the tax to provide a local match. If the full .03 sales tax credit were imposed, the local match would be 35% of the total sales and use tax credit revenue collected within a calendar year within that jurisdiction.

The revenue could be used for three purposes (1) acquiring, rehabilitating, or constructing affordable housing, including new units within an existing structure; (2) operating and maintenance costs of new units of affordable or supportive housing; or (3) rental assistance to tenants. Jurisdictions would be authorized to enter into interlocal agreements in expending the funds.

City representatives met recently with Representative Macri discuss provisions in the bill and to provide feedback on the bill for the 2019 legislative session. Joined by other cities in the Puget Sound, Bellevue staff requested that cities be given the authority to impose and collect the sales and use tax credit. If a city chose not to impose and collect the sales and use tax, then a county would have the opportunity to
do so. **Representative Nicole Macri** is holding subsequent stakeholder meetings to continue to refine the bill.

**Minimum Density Proposal**

Senator Guy Palumbo (D-Snohomish County), recently circulated draft legislation that would impose new minimum density requirements for some cities. As currently drafted, the proposal would require cities with more than 20% cost-burdened households (defined as households paying more than 30% of their gross monthly income on housing) and residential areas within at least one mile of a transit center to meet new minimum density requirements.

The new requirements include the following:

- reviewing and revising impact fees
- increasing minimum density from 14 to 150 units per acre based on the land parcel’s proximity to a transit center
- eliminating conditional use requirements for accessory dwelling units, courtyard apartments, duplexes, single-room occupancy, triplexes, and fourplexes
- reducing off-street parking requirements
- reducing height and square footage requirements on accessory dwelling units
- requiring only one sewer main for duplexes.

The proposed legislation would establish a grant program to help jurisdictions implement the requirements in the bill and would require impacted cities to update their comprehensive plan by the end of 2020. Many cities have already expressed strong concerns about the loss of local control, impacts on single family neighborhoods and other consequences of the proposal. The Association of Washington Cities (AWC) is gathering feedback from cities on the draft to share with Senator Palumbo.

**Condominium Liability Act Reform**

Several legislators have acknowledged that condominiums are essential for providing middle income, starter, senior, and high-density housing and that the current regulatory and legal environment for condominium construction makes new condominium development cost prohibitive. The AWC, the Washington Realtors, Master Builders Association, and other stakeholders are joining forces to support amendments to the Washington Condominium Act to encourage more condominium development. Specific legislative language has yet to be developed.

**Basic Law Enforcement Academy Funding**

The Criminal Justice Training Commission plans to request $2.4 million from the state’s operating budget to add nine additional training classes per year at the Basic Law Enforcement Academy (BLEA), for a total 19 training classes per year. The additional classes are needed because the Commission is not able to meet the growing demand for training from local police agencies to train officers in a timely manner. If approved by the Legislature the addition of new classes and funding will help meet the growing demand to train new officers more quickly. This is an issue for jurisdictions like Bellevue that
are hiring new police officers and need to have their training at the BLEA accomplished in a timely manner, so the officers can be deployed in the communities they serve.

**Legislation Responding to the South Dakota versus Wayfair Court Decision**

The state Department of Revenue (DOR) is planning to bring forward agency-request legislation that aligns the Washington State Marketplace Fairness Act with the recent U.S. Supreme Court decision in the *Wayfair* case. The decision affirmed that states can collect sales tax from out-of-state retailers selling goods to consumers located in the state. However, in the decision, the Court stated that state laws and regulations governing the collection of the sales tax cannot place excessive burdens on retailers.

The DOR has said that in light of the *Wayfair* decision, out-of-state retailers will need to remit sales tax to Washington State if they generate at least $100,000 in sales tax receipts in the state or conduct more than 200 transactions in the state. This is an increase from $10,000 with no minimum number of transactions. While the increase in the dollar threshold will likely result in a decrease in sales tax collections at the state and local level, the establishment of a 200-transaction threshold should result in an increase.

**Task Force on Local Business and Occupation (B&O) Tax Apportionment**

During the 2017 session, the Washington State Legislature passed House Bill 2005, sponsored by Representative Kristine Lytton (D-Anacortes), directing the DOR to convene a Local Business and Occupation Tax Apportionment Task Force (Task Force) to recommend changes to the simplify the two-factor municipal B&O tax apportionment formula. The Task Force includes three representatives selected by the Association of Washington Cities and three representatives selected by the Association of Washington Business.

The Task Force has been meeting throughout 2017 and 2018 and must present its recommendations to the Legislature by October 31. The Task Force is likely to finalize its recommendation at its September 25 meeting. The draft recommendations include changing how a service business apportions B&O tax revenue to a city based on customer location. Rather than sourcing to a jurisdiction based on the location from which the service contract is managed, the sourcing would be based on the location from which the customer orders the service. This change would have minimal fiscal implications for cities with a local B&O tax, like Bellevue, and is intended to simplify the local apportionment formula.

**Business License Threshold Requirement**

By January 1, 2019, all cities that require a business license are required to update their local ordinances to comply with a new definition of “engaging in business.” Under the new definition, “engaging in business” is defined as a business either located within the city or located outside the city but generating at least $2,000 in revenue in the city per year. A business will not be required to get a business license unless it meets this new definition. The business community has expressed concern that the $2,000/year threshold is too low and supports a much higher amount. It is possible that legislation will be introduced in 2019 that would raise the threshold.
Transportation – Tolling Legislation and Discussions of a “Mini Transportation Package”
Transportation continues to be a priority issue for legislators as they prepare for the 2019 legislative session. The Legislature will continue to make decisions around the implementation of the 16-year Connecting Washington statewide transportation package enacted in 2015. The 2019-2021 budget is expected to have an estimated $200 million shortfall in transportation revenue. The estimated shortfall, along with the demand to fund projects not included in the Connecting Washington package, has prompted a conversation among some transportation leaders around proposing a “mini package” of projects in 2019. There are no specific details around the contents of a “mini package” and there are questions about whether such a package is politically viable.

The Legislature is also expected to consider proposals that would authorize tolling on a number of key corridors, including the express toll lanes on I-405 from Bellevue to Renton, the SR 167 HOT lanes, and the portions of SR 509/167 that serve as the Puget Sound Gateway.

Rural Broadband/Small Cell Network Facility Deployment
The Governor has indicated that he intends to propose legislation that would make investments in the expansion of rural broadband. Cities have traditionally supported increased investments in rural broadband. However, recent proposals around rural broadband also included provisions that would preempt city authority to site, regulate, and charge market-based lease rates on small cell network facilities. This preemption is of concern to many cities. The Governor’s Office has indicated a desire to provide incentives, but not mandates, as cities permit small cell network facilities. The AWC and other stakeholders have provided feedback to the Governor on their concerns. A bill draft is expected to be released soon for continued stakeholder input.

Value Capture Financing Proposal
The AWC is developing legislation that would provide cities with a new economic development tool like the Local Revitalization Financing program which was last funded by the state in the early 2000’s. The AWC proposal is likely to be modeled after Senate Bill 6499, introduced in 2018 by Senator Sharon Brown (R-Tri-Cities). That proposal would authorize cities to establish a “business ecosystem area” and public improvements within that area would be paid for with a credit against the state sales tax equal to the local property and sales tax increases that occur within the area.

Funding for Replacing Culverts
A 17-year long legal battle regarding Washington State’s obligation to repair fish culverts recently culminated in a rare 4-4 tie decision by the U.S. Supreme Court. In 2007, the U.S. District Court ruled in Washington versus United States that the tribal treaty right to harvest salmon includes the right to have salmon habitat protected.
In 2013, a U.S. District Court judge issued an injunction establishing a schedule to repair state-owned road culverts that are too small, pitched too high above the stream bed, or are in other ways unsuitable for fish passage and, ordering removal of fish passage barriers. The schedule requires the state to repair 450 out of 800 culverts.
The state appealed the case to the U.S. Court of Appeals for the Ninth Circuit and lost. The U.S. Supreme Court reviewed the case and issued a 4-4 decision, essentially upholding the Court of Appeals decision and requiring the state to continue replacing state-owned culverts under an aggressive timeline, requiring significant state investment. The Legislature is expected to provide funding in both the state capital budget and the transportation budget to remove and replace the culverts.

### POLICY & FISCAL IMPACTS

The State Legislature addresses a range of policy issues of interest to the City.

### OPTIONS

N/A

### ATTACHMENTS & AVAILABLE DOCUMENTS

N/A

### AVAILABLE IN COUNCIL LIBRARY

N/A
CITY COUNCIL STUDY SESSION

Federal Legislative Update

Joyce Nichols, Director of Intergovernmental Relations, 452-4225
City Manager’s Office

DIRECTION NEEDED FROM COUNCIL

No formal action is required; this is an informational briefing. Congress, the Administration, and Federal agencies each year approve actions that impact the City in a broad range of areas. Staff may recommend, and/or Council may wish to direct, communication to the City’s congressional delegation on a range of issues throughout the year.

RECOMMENDATION

N/A

BACKGROUND & ANALYSIS

BIG PICTURE UPDATE

For the first time in decades the U.S. Senate significantly shortened its August recess in order to reach agreement on several appropriations and legislative proposals and consider the nomination of Judge Brett Kavanaugh to the US Supreme Court. For the most part, their work has paid off.

With the House only scheduled to be session for 11 days during September, Congress began a full-fledged sprint immediately after Labor Day to complete appropriations measures before the end of the fiscal year. Leaders from both sides of the aisle and in both chambers successfully moved to strip out controversial proposals to reach agreements to pass key measures and keep the government funded beyond September 30. Congress has moved the first of the three appropriations mini-buses containing Energy and Water, Legislative Branch and Military Construction Appropriations. Lawmakers also unveiled and are poised to approve an agreement to move forward the conference report for minibus #3, the Labor-Health and Human Services, Defense and Education appropriations package and a continuing resolution to fund the rest of the government through December 7. The Water Resources Development Act (WRDA) and a Senate package to address the opioid epidemic have also passed.

The first half of September has been productive, and it even felt like Congress had reached a new level of cooperation. The Supreme Court nomination process had taken on a less political tone with many observers assuming the nomination of Judge Kavanaugh was a foregone conclusion with a vote scheduled for this Thursday --- and then the sexual misconduct allegation surfaced. With agreements largely in place to fund the government after the end of the year, the remainder of September could be dominated by more politically-charged proceedings, including extended proceedings over Kavanaugh’s nomination, debate on a second tax package, immigration, trade and tariffs, etc.
BUDGET AND APPROPRIATIONS
Congress has reached agreement on two of the three appropriations mini-buses and an agreement to fund the rest of the government through December 7. The appropriations agreements reached by the House and Senate by and large increase funding over 2018 levels or hold funding levels constant. The President had hoped that Congress would consider funding for a border wall but consideration of this proposal will likely not take place until after the November elections. For now, the President appears to have stepped away from his initial threat to shut down the government until Congress approved this proposal. Funding for the border wall is largely contained in the Homeland Security Appropriations measure. This is one of the bills included in the continuing resolution that would extend FY 2018 funding levels through December 7.

A conference report to HR 5895, containing Energy and Water, Legislative Branch and Military Construction Appropriations bills passed both the House and Senate on September 13. This is the first of the three appropriations mini-buses Congress has sent to the President. Key provisions of the Energy and Water sections (Energy Department and U.S. Army Corps of Engineers and related agencies) of the conference report include:

The minibus includes a total of $44.64 billion for the Energy and Water section. This is an increase of $1.44 billion over FY 2018 levels and $8.1 billion above the President’s budget. Funding is targeted toward national security efforts and energy and water infrastructure investments.

- The U.S. Army Corps of Engineers is funded at a record level of $7 billion, an increase of $172 million over FY 2018 for water resources infrastructure. This includes $2 billion to support public health and safety by funding storm and flood damage reduction activities.
- Investments in water infrastructure include $307 million for new and existing construction projects and $602 million to revitalize existing port and riverine facilities and waterways. There is also a nearly $1.2 billion increase for basic scientific research, including $300 million for new or upgraded facilities and equipment.
- Environmental Cleanup activities will receive $7.2 billion, a $53 billion increase above FY 2018 levels and $578 million above the President’s request. $6 billion of this funding will go towards Defense Environmental clean-up activities, such as the nuclear cleanup effort at Hanford.
- The Bureau of Reclamation and Department of Interior receive $1.57 billion, an increase of $85 million over FY 2018, to “manage, develop and protect water resources in the Western states”. This includes $196 million to fund Western drought programs authorized under the Water Infrastructure for the Nations (WIIN) Act and long-term drought strategies like water storage, water recycling, reuse and desalination.
- The House bill contained 11 provisions considered to be ‘poison pill riders’ by the minority party. None of these provisions were accepted by conferees, including language to repeal the Waters of the U.S. rule and language to support development of a nuclear waste storage site at Yucca Mountain in Nevada.

The Labor, Health and Human Services (HHS), Defense and Education package covers nearly 70% of the annual discretionary government budget. The defense spending bill is a top priority for
many Republicans and the Labor-HHS bill is a top priority for Democrats. The Senate could vote on the bill package soon with the House following that.

The Labor-HHS, Education, and Related Agencies section of the bill provides $178.1 billion in discretionary funding for the Departments of Labor, HHS, and Education and Related Agencies. It includes investments in medical research, opioid abuse prevention and treatment, and education. The bill includes $39.1 billion for the National Institutes of Health (NIH), an increase of $2 billion, and $3.8 billion to combat the opioid crisis, an increase of $206 million. The bill also prioritizes education formula grants providing a combined $299 million increase for: Title I Grants to school districts; Individuals with Disabilities Education Act (IDEA)/Special Education State grants; Student Support and Academic Enrichment Grants; and Impact Aid. Pell grant awards receive a 1.6 percent increase and Year-Round Pell grants are continued.

The Department of Defense section of the bill includes $674.4 billion, an increase of $19.8 billion above the FY2018 allocation.

**WATER RESOURCES DEVELOPMENT ACT (WRDA) – AMERICA’S WATER INFRASTRUCTURE ACT OF 2018**

The House has passed, and the Senate will consider a water resources reauthorization bill. Commonly known as WRDA, the bill incorporates provisions from several bills. Main provisions include:

- Authorization of the U.S. Army Corps of Engineers’ activities and projects for ports, water ways, flood protection and other water infrastructure improvements. The Port of Seattle’s Seattle Harbor Navigation Improvement Project is authorized under the agreement and funding authorization for the rehabilitation of Corps-constructed dams is increased from $10 million to $40 million.
- Greater investments and improvements to the nation’s drinking water delivery system. This includes authorization of $4.4 billion over three years for the state drinking water revolving loan fund program, aid to states and utilities for compliance and asset management, updates to the antiterrorism and resilience measures at public water systems, and improved transparency for consumers about the quality of drinking water.
- The agreement addresses stormwater and wastewater infrastructure improvements and reauthorizes and strengthens the Water Infrastructure Finance and Innovation Act (WIFIA) program.

**OPIOID LEGISLATION AND FUNDING**

The Senate passed an opioid package by a vote of 99-1 on September 17. The package, known as the Opioid Crisis Response Act of 2018 (OCRA), combines over 70 different proposals. Senator Patty Murray (D-WA), the ranking member of the Senate Health, Education, Labor and Pensions (HELP) Committee, helped champion the issue. The House passed its bill in June. According to news reports, Senate aides feel confident the House and Senate will be able to reconcile the bills and they hope to pass something by the end of the year. A few key features of the Senate package include:
- Reduce Use and Supply. The legislation includes the STOP Act which will help stop illegal drugs at the border, as well as provisions that provide flexible grants for states to better share Prescription Drug Monitoring Programs data, clarify Food and Drug Administration (FDA) authority to require set packaging for prescription opioids, such as a 3 or 7-day supply in a blister pack, and to fight opioid diversion.
- Encourage Recovery. The legislation includes provisions to support states and Indian tribes in addressing substance use disorders, establish comprehensive opioid recovery centers, expand access to medication-assisted treatment, and improve community support, access to health professionals, tele-health services and long-distance care, and recovery housing services.
- Support Caregivers and Families. The legislation includes provisions to improve plans for safe care and support for substance-exposed babies and their mothers, promote family-focused treatment and recovery, help youth recover from substance use disorders, and strengthen trauma-informed care and support in schools and early childhood education programs.
- Drive Innovation and Long-Term Solutions. The legislation includes provisions to advance cutting-edge research to spur discovery and development of new non-addictive painkillers, address economic and workforce impacts of the opioid crisis, ensure parity in mental health and substance use disorder benefits, and improve pain management techniques.

Click here for text of Opioid Crisis Response Act of 2018 bill.

Funding to combat the opioid crisis has increased the last couple years. The conference report for Labor-HHS appropriations for FY 2019 continues this trend. The conference agreement provides $3.78 billion in the Health and Human Services budget for programs addressing opioids and mental health, an increase of $2.7 billion over 2017. This includes:

- $1.9 billion in enhanced state grants to address the opioid epidemic and mental health;
- $350 million for opioid overdose surveillance and prevention at the Centers for Disease Control and Prevention, as well as enhancement of State Prescription Drug Monitoring Programs;
- $495 million to improve access to opioid and substance use disorder treatment in rural and underserved areas; and
- $100 million to address the needs of children who are affected by parental substance use.

**TAX CUTS – REPUBLICANS RELEASE SECOND TAX CUT PACKAGE**

House Ways and Means Committee Chairman Kevin Brady (R, TX-8) released three bills that constitute the House Republicans’ package for a second tax cut package. The package of bills would make the individual and pass-through tax cuts permanent, expand some retirement savings offerings and grant additional tax benefits to startups. Bloomberg Government reports that the Senate is unlikely to vote on making the tax cuts permanent but could consider some of the more narrow retirement or startup tax issues. The House is targeting a vote on the package before the midterm elections. The Joint Committee on Tax estimates that making the tax cuts permanent would cost about $631 billion over a decade. The retirement provisions would cost about $21 billion over 10 years and startup tax breaks would reduce government revenue by about $5.4 billion over 10 years.
NATIONAL FLOOD INSURANCE PROGRAM
The National Flood Insurance Program, run by the Federal Emergency Management Administration (FEMA), was extended by Congress through November 30. House and Senate committees continue to grapple with numerous proposals to reauthorize and overhaul the program. FEMA is funded in the Homeland Security Appropriations bill which is very controversial because of the President’s border wall funding request.

POLICY & FISCAL IMPACTS
Congress, the Administration, and Federal agencies each year approve actions that impact the City in a broad range of areas. Staff may recommend, and/or Council may wish to direct, communication to the City’s Congressional delegation on a range of issues throughout the year.

OPTIONS
N/A

ATTACHMENTS & AVAILABLE DOCUMENTS
N/A

AVAILABLE IN COUNCIL LIBRARY
N/A
COUNCIL SUMMARY BACKGROUND BRIEFING:
KING COUNTY REGIONAL COMMITTEES AND OTHER ISSUES

September 2018

This briefing summarizes recent actions taken by the three regional committees formed as a result of the merger of King County and Metro. The three regional committees are the Regional Policy Committee, the Regional Water Quality Committee, and the Regional Transit Committee. We will also include updates on other regional issues (e.g., King County Flood Control District, King Conservation District) as appropriate. In addition, the Growth Management Planning Council (GMPC), was formed in the early 1990s to comply with the Growth Management Act requirements for collaboration of counties and their cities on countywide planning policies. The GMPC meets three to four times per year to consider amendments to the countywide planning policies and to monitor progress on implementation. This is intended as a summary briefing; staff can provide more details on any of the items below.

REGIONAL POLICY COMMITTEE (RPC)

August 22 meeting summary:

- Economic and Cultural Impact of Sports on the Region. At the request of RPC Chair Pete von Reichbauer, this item included a panel discussion on the cultural and socioeconomic impact of sports in the region. The panel included representatives from the Seahawks, the Mariners and the Seattle Sports Commission. The panelists focused on the sports organizations’ community outreach efforts, charitable donations and services as well as the broader impact of sports in bringing the community together.

- Proposed Ordinances establishing the King County Veterans, Seniors and Human Services Levy Advisory Board and the Veterans Advisory Board. The RPC unanimously approved two ordinances establishing the King County Veterans, Seniors and Human Services Levy (VSHSL) Advisory Board and the Veterans Advisory Board. Both boards are required by the VSHSL Governance Plan, which outlines the oversight structure of the levy. In addition to being required by the Governance Plan, the Veterans Advisory Board is required by state law to oversee the county’s state-mandated veterans assistance program. Members of the Veterans Advisory Board also serve as member of the VSHSL Advisory Board.

  Background on the VSHSL
  King County voters approved the VSHSL in November 2017 to replace the expiring Veterans and Human Services Levy. The new VSHSL will expand investment in services for veterans and human services and will also fund new services for seniors and their caregivers. The VSHSL is levied at $0.10 per $1,000 in assessed value and is anticipated to collect a total of $53.3 million in 2018, with approximately $5.6 million from Bellevue property owners.

- Introduction to the 2019 Comprehensive Solid Waste Management Plan. The RPC received a brief introduction to the 2019 Comprehensive Solid Waste Management Plan (Plan). Pat McLaughlin, King County Solid Waste Division Director, presented an overview of the key policy choices and recommendations contained in the Plan as well as the estimated Plan
adoption timeline. The RPC is scheduled to receive additional briefings regarding the Plan from the King County Council staff in September and October.

The King County Executive transmitted the Plan to the King County Council on July 26. The last King County Comprehensive Solid Waste Management Plan was adopted in 2001. State law directs King County to review and update the Plan, as needed, every five years. Since 2001 there have been a series of planning efforts and reports that have informed the current version of the draft Plan.

The 2019 proposed Plan was drafted over the past two years, and representatives from the Metropolitan Solid Waste Management Advisory Committee (MSWMAC), including representatives from Bellevue, provided feedback to the King County staff as the Plan was being developed.

The Plan provides an assessment of the existing King County solid waste system, current solid waste demand, and forecasts for future solid waste demand. The Plan sets the context for key policy choices related to solid waste disposal, transfer and recycling.

The major recommendations in the Plan are consistent with previous Bellevue City Council direction regarding siting future solid waste transfer capacity in northeast King County and the development of future solid waste disposal capacity that would not expand or negatively impact the Factoria Transfer Station.

The Plan recommends: 1) the siting and construction of a new Northeast Recycling and Transfer Station to address transfer capacity needs that is in addition to the existing Factoria Transfer Station; and 2) maximizing the capacity at the Cedar Hills Regional Landfill for future disposal needs from 2028 to 2040. The Plan also contains language regarding recycling programs and notes that King County, cities and haulers have formed a Responsible Recycling Task Force to identify common ground for advancing recycling given China’s restriction on accepting recyclables. Ongoing restrictions from China could impact the life of the Cedar Hills Landfill and the cost of city hauling contracts. The Task Force is still meeting to evaluate regional strategies and options.

The King County Council is expected to complete its review of the Plan this fall and will take public feedback as part of that process. In early 2019, after King County Council adoption, cities within the King County solid waste system, including Bellevue, will be asked to consider adoption of the Plan during a 120-day comment period.

In order to be an approved Plan that can be forwarded to the Washington State Department of Ecology (DOE) for final action, the Plan must be adopted by cities representing 75% of the total population of the cities that act on the Plan during the 120-day comment period. King County expects to submit an approved Plan to the DOE for final approval in mid-2019.
September 12 meeting summary:

- **Proposed Ordinance Regarding the 2019 Comprehensive Solid Waste Management Plan.** The RPC received a briefing from the King County Council staff that highlighted key issues in the draft 2019 Comprehensive Solid Waste Management Plan (Plan), consistency with adopted plans and policies, fiscal implications and other issues for consideration by the RPC. The RPC did not act on the proposed ordinance and will consider the Plan again at its October meeting. SCA representatives on the RPC raised questions and asked for additional information to help inform the next presentation. Issues raised included the implications of not codifying the new policies in King County Code given that the policies in the prior comprehensive plan were codified; annual reporting to the RPC; independent third-party review of long-term disposal costs; and whether there are any roadblocks to full development of the Cedar Hills Landfill.

- **PSERN Quarterly Briefing.** The RPC received a briefing on the status of the Puget Sound Emergency Radio Network (PSERN) project to replace and upgrade the County’s emergency radio network. In 2015 voters in King County approved a nine-year, $273 million property tax levy to fund PSERN at a rate of 6 cents per $1,000 in assessed value. The levy expected to raise about $32 million a year, and Bellevue property owners are expected to contribute approximately $3.3 million of the total amount raised in 2018.

The emergency radio communications system hardware is used to dispatch responders to incidents and allow responders to communicate with each other at incidents. The current system consists of more than two dozen transmitter sites and multiple microwave and fiber systems, supporting over 100 agencies and 17,000 radios. The current system is owned by King County, the City of Seattle, Valley Communications Center, and the Eastside Public Safety Communications Agency (EPSCA). Bellevue is a member of EPSCA. Once completed, the PSERN project should increase system reliability, increase coverage, provide better security and double the number of radio transmitter sites.

King County is the lead agency for the project, and Motorola is under contract for $117 million to provide design, development, implementation, testing, ongoing support and maintenance. Final design is now complete, and as reported in previous updates to the RPC this year, PSERN project staff reevaluated the original baseline schedule due to some key changes in project assumptions. Specifically, Motorola indicated that it needed more time for system testing, that additional radio tower sites are required, that other tower sites were no longer viable and longer than anticipated lease negotiation processes. Due to these factors, the current expected date for substantial completion of the project is February 2022, which is nine months later than previously reported at the last briefing in May. The current final closeout date for the project is May 2023, which is five months later than previously reported.

The update also included information regarding the results of an in-building task force that examined the ability of first responders to communicate with each other inside and outside of buildings during an emergency. The task force identified areas of concern for radio coverage and concluded that urban areas with taller buildings and higher density had a greater risk of a failure of in-building coverage during an incident. Downtown Bellevue and downtown Seattle...
were highlighted as the highest risk areas. To address these concerns, the task force is recommending a three-part approach to add: (1) new radio tower sites in high and medium density areas, (2) distributed antenna systems (DAS) to bring the exterior PSERN system inside buildings, and (3) vehicular repeaters for sustained incidents. At least one of the additional radio tower sites would be in Bellevue, although no specific location has been identified.

The estimated cost of the additional infrastructure is approximately $24 million in one-time capital costs and $1.2 million in annual operating costs. In August, the PSERN Joint Board (consisting of members from King County, Seattle, Eastside Public Safety Communications Agency, and Valley Communications Center) voted to add in-building coverage to the project scope and to include three additional radio towers. The work to identify the specific impacts to the budget and schedule is underway but has not been completed.

- **Proposed Ordinances establishing the King County Veterans, Seniors and Human Services Levy (VSHSL) Advisory Board and the Veterans Advisory Board.** As noted above, the RPC voted unanimously to support the proposed VSHSL ordinances at the August 22 RPC meeting. On September 10, the King County Council took final action to support the ordinance establishing the Veterans Advisory Board (VAB) so the ordinance adopting the VAB did not need to be re-referred to the RPC.

Also, on September 10, the King County Council re-referred the ordinance establishing the VSHSL Board to the RPC. This was due to the fact that the King County Health, Housing and Human Services Committee amended the ordinance after the RPC’s August 22 action. The amendment specified how the King County Council-nominated board committee positions are to be assigned. The change only impacts positions nominated by the King County Council. The RPC voted unanimously to support the amended ordinance. The amended ordinance will now return to the King County Council for final action.

The next meeting of the RPC is scheduled for October 24.

**REGIONAL TRANSIT COMMITTEE (RTC)**

The RTC did not meet in August. The RTC met on September 19, and a summary will be included in the October Regional Issues Packet. Agenda items scheduled for September included the 2019-2020 King County Budget, an update on Metro’s base capacity expansion plan, and the King County Metro Transit 2017 Strategic Plan Progress Report.

The next meeting of the RTC is scheduled for October 17.

**REGIONAL WATER QUALITY COMMITTEE (RWQC)**

*September 5 meeting summary:*

- **Contaminants of Emerging Concern and Toxics in Wastewater.** The Committee received a briefing from RWQC staff and National Oceanographic and Atmospheric Administration (NOAA)
researcher, James Meador regarding recent studies of contaminants of emerging concern in Puget Sound waters, wastewater effluent, and fish tissue. Contaminants of emerging concern (CECs), including pharmaceuticals and personal care products, are increasingly being detected at low levels in surface water, and the federal Environmental Protection Agency (EPA) notes there is concern that these substances may negatively impact aquatic life.

The Committee’s 2018 Work Plan calls for briefings on pharmaceuticals and personal care products and other toxics in marine waters impacted by the discharge of wastewater treatment plants. Committee staff provided an overview of some recent King County studies on toxics and CECs, and James Meador presented information from his recent research and articles pertaining to this topic.

The recent public attention on the survival challenges of the Southern Resident Killer Whales has brought increased interest in understanding the presence and possible impacts of CECs and toxics in Puget Sound. Governor Jay Inslee issued an Executive Order in March that identified immediate actions to benefit the Southern Resident Killer Whales and established a Southern Resident Killer Whale Task Force. This Executive Order notes that both contaminants and pollutants in Washington’s waters and the reduced Chinook salmon populations are linked to the decline of the Southern Resident Killer Whales. As the Governor’s Southern Resident Killer Whale Task Force develops additional actions to protect the whales, new regulatory proposals may help drive removal and reduction of CECs and toxics in marine waters.

The Meador and King County studies collectively assert that local marine waters are receiving loadings of toxics, pharmaceuticals, and personal care products from many pathways including wastewater effluent. The Meador research begins to make the case that the cumulative impact of these substances in local marine waters may be a significant burden on marine life, and Chinook salmon in particular.

Bellevue does not monitor local streams and lakes in the Bellevue area for pharmaceuticals, personal care products or CECs, which are not currently regulated under state or federal water quality standards and are not regularly monitored by any agency or organization at this time. The City contributes funds to the regional Stormwater Action Monitoring Program and its Regional Monitoring Fund. The Regional Monitoring Fund is administered by the Washington State Department of Ecology with oversight by contributing cities and stakeholders. Collectively this group pays for water quality and sediment quality monitoring in the region. The Regional Monitoring Fund does not typically monitor pharmaceuticals, personal care products or CECs.

- Green Stormwater Infrastructure (GSI): Utilization in Combined Sewer Overflow projects and GSI Strategies in Other Municipalities. The Committee received a briefing regarding GSI as an element of wastewater management programs. The RWQC Chair King County Councilmember Kathy Lambert requested the briefing to gain a better understanding of what other jurisdictions are doing and the GSI work of King County’s Wastewater Treatment Division.

In recent years, interest has grown nationally in strategies that employ GSI as a means of managing stormwater. While the definitions can vary, generally GSI is intended to refer to
stormwater management techniques that capture, hold, cleanse, and either release, infiltrate or store, stormwater at a location at or near its initial contact with the land surface. GSI, while considered innovative, consists predominantly of low-technology techniques applied in strategic ways to mitigate stormwater volumes. These simple techniques include: plantings, soil amendments, depressions, street trees, rain barrels, gardens, and channeled runoff.

GSI can benefit combined wastewater systems that receive both wastewater and stormwater. Retaining stormwater on-site or in a GSI feature can reduce the volume of stormwater entering the combined wastewater system and preserve capacity within the system for wastewater. This reduces the likelihood of overflows from the combined systems.

In addition to reviewing common techniques and purposes for GSI, the RWQC staff also provided an overview of examples of King County Wastewater’s use of GSI and GSI programs in Philadelphia, Portland, and Seattle.

The next meeting of the RWQC is scheduled for Wednesday October 3.

**KING COUNTY FLOOD CONTROL DISTRICT AND WILLOWMOOR PROJECT UPDATE**

- **Flood District Advisory Committee Update.** The Flood Control District (FCD) Advisory Committee, which is comprised of elected officials from throughout King County, is charged with making annual recommendations to the King County Council which also serves as the FCD Board of Supervisors. The Committee reviews and makes recommendations related to the annual work program and budget for the FCD, including capital improvement program projects and funding levels. The FCD Board of Supervisors reviews and approves the FCD budget.

**2018 FCD Advisory Committee Work**

The Advisory Committee met five times between May 9 and August 22 to review the proposed Flood Control District 2019 Operating Budget and 2019-2024 Six-Year Capital Improvement Program (CIP). The Advisory Committee prepared and submitted a letter to the FCD Board of Supervisors dated August 21 recommending approval of the annual budgets. Councilmember Janice Zahn represented Bellevue on the Committee.

The 2019 proposed FCD operating budget is $11,297,650, down from $11,333,238 in 2018. The proposed 2019 FCD capital budget is $68,198,179, a significant increase in spending from the 2018 FCD capital budget of $53,496,926 due to the timing of specific capital projects. To support these budgets the FCD estimates the 2019 levy rate would be 9.8 cents per $1,000 of assessed value, down from the 2018 rate of 10.7 cents. This rate is estimated to generate $58,750,870 in 2019 FCD revenue. Bellevue property owners contribute approximately 8%, or almost $5 million annually, to the FCD.

The 2019-2024 CIP includes funds for Bellevue to complete the Lower Coal Creek/Newport Shores project which will reduce flooding and improve stream conveyance in the Newport Shores neighborhood in the areas adjacent to Coal Creek as it approaches Lake Washington. The 2019-2024 CIP also includes funding for King County to continue work on the Willowmoor project, which
aims to control lake levels in Lake Sammamish and improve conditions in the Sammamish River immediately downstream of the lake and within Marymoor Park. Additional information on the Willowmoor project is included below.

Bellevue also receives approximately $500,000 - $600,000 annually in FCD funds for local flood control projects from the Subregional Opportunity Fund. Bellevue has used Subregional Opportunity funds to support design and construction of capital projects including flood reduction and conveyance improvements in the Meydenbauer Basin, Sunset Creek at SE 30th, and Factoria Boulevard. FCD also provides flood reduction grants to individual jurisdictions as well as grant funding to the Watershed Resource Inventory Areas (WRIAs) for salmon recovery projects.

As part of its budget approval letter, the Advisory Committee made a number of recommendations to the FCD Board of Supervisors, including:

- Maintain regular quarterly meetings for the interjurisdictional Joint Basin Technical Committee (a staff committee that helps support the work of the FCD Advisory Committee).
- Provide opportunities for communication between the Advisory Committee and the anticipated committee that will likely be established to update to Countywide Flood Hazard Management Plan.
- Recommend that the FCD develop a definition for Multi-Benefit Projects – projects that achieve additional benefits beyond flood risk management.
- Keep the Advisory Committee informed on FCD home elevation studies and related impacts.
- Consider funding studies on emerging scientific issues related to flood management.
- Provide technical support and FCD Executive Director participation in King County’s Snoqualmie Fish, Farm, & Flood Advisory Committee.
- Consider new and emerging information for capital projects.
- Move implementation of the South Fork Snoqualmie River Levee Setback Project forward to 2019.

The FCD Board of Supervisors will act on the 2019 FCD budget proposal later this fall.

- **Willowmoor Floodplain Restoration Project Update.** For close to a decade, Bellevue has been monitoring King County’s management of the Transition Zone (TZ) between Lake Sammamish and the Sammamish River due to seasonal high-water levels that have impacted Bellevue property owners living along Lake Sammamish.

  **Background**

Lake Sammamish drains north to the Sammamish River through an engineered outlet channel located at King County’s Marymoor Park. The engineered channel, referred to as the TZ, is where the lake “transitions” to the Sammamish River. Designed and built by the U.S. Army Corp of Engineers (Corps) in the 1960s, the TZ is a wide, relatively steep, straightened stream channel equipped with a shallow fixed concrete spillway that functions as a weir. The weir, submerged during periods when the lake is full, becomes exposed in the summer when the lake level is low, and maintains minimum lake levels for recreational purposes. The original intent of the design of
the constructed channel and weir was to provide downstream flood protection while maintaining minimum lake levels.

The degree to which vegetation grows in the outlet channel is one of several factors that affect how quickly the lake drains. In recognition of this fact, King County and the Corps agreed on vegetation maintenance plans in the 1960s that maintain the design intent of the project.

In anticipation of the 1999 listing of Chinook salmon as “threatened” under the federal Endangered Species Act, the Corps modified the Lake Sammamish outlet weir in 1998 to improve fish passage into Lake Sammamish. The vegetation maintenance plan was also modified by King County, in agreement with the Corps, to balance competing needs for high flow conveyance, maintaining minimum lake levels and providing critical shade habitat to keep the water cool for returning salmon. Annual vegetation clearing was reduced to every other year, and instead of trimming vegetation on both sides of the river each year, King County transitioned to cutting and trimming only one side each year. After the construction of the weir and implementation of the modified maintenance practices, Lake Sammamish property owners began to experience increased lake levels during winter storms and spring runoff. Landowners have indicated that higher lake levels have submerged and damaged docks and led to increased shoreline erosion from wave action.

In 2010 Lake Sammamish residents began meeting with King County to discuss the impacts of the changes, and in 2011 a new maintenance plan was approved that would increase mowing, remove cuttings and remove sediment from the TZ.

The Willowmoor project was conceived to explore landscape improvements that:

- Provide lake level controls, flow conveyance, and downstream flood control to standards that protect property and minimize shoreline erosion,
- Improve aquatic and riparian habitat within and adjacent to the TZ for migrating salmon,
- Reduce summer water temperatures in the river to improve habitat conditions for migrating salmon,
- Reduce costs, complexity, and ecological impact of operations and maintenance activities, and
- Protect and enhance recreational opportunities.

In 2013, to help scope the project, King County convened the Willowmoor Stakeholder Advisory Committee (Committee), a group comprised of lakeshore property owners, agency staff, citizens, and other advocates of Lake Sammamish. Bellevue staff participated in the Committee as the group considered project alternatives and provided feedback to the County. The Committee did not come to a consensus on a recommended option, but the majority favored the “Split Flow Channel” alternative and many Committee members provided comments on the alternatives considered by King County.

In 2016, the Bellevue City Council received a briefing by King County’s Water and Land Resources Division Director on the Willowmoor Project, including an overview of the design alternatives the County was considering at the time. Following the briefing, the City sent a letter to the King County Flood Control District supporting the “Split Flow Channel” design alternative.
The King County Flood Control District selected the “Split Channel Alternative” and approved funding to proceed to 30% design. The King County Water and Land Resources Division (WLRD) is managing the project design and construction as a service provider to the King County Flood Control District and has hired a consultant team to design the Willowmoor Floodplain Restoration Project. According to the County’s request for consultant proposals, the “Willowmoor Project seeks to improve habitat conditions within and adjacent to the TZ and to reduce the risks of high lake levels in Lake Sammamish while maintaining downstream Sammamish River flood control performance, the function of downstream storm water facilities and protection of Redmond’s shallow drinking water aquifer.”

2018 Update
The contract work for the Willowmoor project will take place in two phases. The first phase of work will develop 30% design by early 2019. Phase two will include the remaining design tasks through construction of the project. At the completion of 30% design, the King County Flood District will decide whether to proceed to the next phase of design work and construction.

In addition to the flood control project elements, the project team will be evaluating options for providing cold water supplementation to the Sammamish River system. Warm water temperatures create difficult conditions for salmon and other aquatic species. Salmon recovery scientists believe that these warm river temperatures may be a significant factor in the decline of salmon within the Sammamish watershed. Salmon need cool water temperatures for optimum survival. King County has been awarded a Washington State Salmon Recovery Funding Board grant to explore cold water supplementation as a part of the Willowmoor project.

King County and its consultant team plan to reconvene the Stakeholder Advisory Committee for two meetings over the next several months. The first meeting on October 4 will focus on the possible use of a dynamic weir (a weir whose height can be seasonally adjusted) and updated hydrologic and hydraulic modeling information. The Committee will be asked to provide comment on the dynamic weir analysis and updated modeling. A second Committee meeting is expected to focus on early design elements as the design team approaches 30% design. The Committee will be asked to provide input on these early designs so that feedback can be considered as the team develops the final 30% design. Bellevue staff will participate in the Committee meetings.

Willowmoor Project Recreation Workshop
In conjunction with the first Committee meeting, King County will also host a special public Willowmoor Project Recreation Workshop. The purpose of this workshop is to gather broad input from Marymoor Park users on possible upgrades to park amenities within the project footprint. The workshop is scheduled for:

Thursday, October 4
Open House: 5:30-6:00 pm
Workshop: 6:00-8:00 pm
Clise Mansion, Marymoor Park
6046 W. Lake Sammamish Parkway NE
Redmond, WA 98052
COUNCIL SUMMARY BACKGROUND BRIEF:
PUGET SOUND REGIONAL COUNCIL (PSRC)
September 2018

GROWTH MANAGEMENT POLICY BOARD (GMPB)

At its September 6 meeting, the GMPB:

- **Held an extended work session to discuss what changes should be made to the Regional Growth Strategy for the VISION 2050 update.** The Regional Growth Strategy provides numeric guidance for planning for population, housing, and employment growth in countywide targets and local comprehensive plans. It establishes growth guidance for different regional geographies such as metropolitan cities, rural and resource lands, and other categories.

It is important to plan where the population and employment growth will go in the next 30 years, and there are many parts to building a regional strategy. The board discussed some of those in this meeting, including: desired objectives and outcomes of a good growth strategy (e.g., better mobility, gains in economic prosperity, etc.); potential changes to regional geographies (different areas with different growth characteristics such as small cities, large cities, etc.) and different growth scenarios (e.g., a transit centered growth scenario).

Board members discussed proposed changes to regional geographies in VISION 2050. The current VISION 2040 identifies a hierarchy of regional geographies that provides a guide for distributing growth throughout the region by area. For example, Bellevue is designated as a Metropolitan City, the top of the hierarchy. In this extended session, board members discussed the idea of differentiating current Small and Large cities (two other regional geographies in the hierarchy) by existing and planned high-capacity transit, as well as identifying unincorporated urban areas with high-quality transit service. Another potential change would recognize major military installations as a regional geography.

The board reviewed preliminary growth scenarios and got an early look at the kinds of screening factors that would be used to evaluate the growth alternatives. In breakout groups, board members discussed jobs-housing balance and growth goals for transit stations.

These discussions are important to Bellevue because the Regional Growth Strategy that is chosen will help determine how much population and employment growth Bellevue can expect in the future, which has many implications to the local economy and future transportation funding.

This fall staff will continue to develop the growth scenario concepts based on input from the board, conduct additional modeling, and produce a background paper on the Regional Growth Strategy. On November 1, the GMPB is expected to decide on two or three growth scenarios that will be used as alternatives for environmental analysis. The final selection of a Regional Growth Strategy is expected in the spring of 2019.
The next meeting of the GMPB is scheduled for October 4.

TRANSPORTATION POLICY BOARD (TPB)

At its September 13 meeting, the TPB:

- **Approved release of the Draft 2019-2022 Regional Transportation Improvement Program (TIP) for public comment.** The draft Regional TIP includes the projects approved by the PSRC Executive Board in July to receive the PSRC’s 2021-2022 Federal Highway Administration and Federal Transit Administration funds, as well as projects with local, state and other federal funds expected to be utilized between 2019 and 2022. The draft TIP includes the following funding awards for Bellevue:

  - **$2,725,030 for the Mountains to Sound Greenway Trail, 132nd Avenue SE to 136th Place SE.** This project would construct 2,200 feet of separated at-grade multiuse trail that will connect the Eastgate and Factoria local centers. The design includes a 12-foot wide, hard surface path with access to the local street network.

  - **$1,400,000 for 148th Avenue SE Pavement Preservation.** This project would replace pavement from SE 8th Street to Eastgate Way and would avoid the cost of major maintenance or road reconstruction.

Several other projects in the Draft TIP will have direct benefits to Bellevue, including:

  - **$1,951,000 for the Eastside Rail Corridor Trail – NE 8th Street Crossing.** This King County Parks project would connect the Eastside Rail Corridor Trail and serve the Wilburton Light Rail Station.

  - **$2,250,000 for the Metro RapidRide Line Passenger Amenities and Access Improvements – Totem Lake/Kirkland to Downtown Bellevue Transit Center to Eastgate Transit Facility.** This King County Metro project would construct stations and stops for a new RapidRide line along the Totem Lake-Bellevue-Eastgate corridor. The improvements may include amenities such as new bus shelters, next-bus arrival and wayfinding signs, off-board fare payment and bike storage facilities.

  - **$1,091,400 for the Metro RapidRide Line Passenger Amenities and Access Improvements – Renton to Eastgate to Redmond Overlake.** This King County Metro project would construct stations and stops for a new RapidRide line along the Renton-Eastgate-Overlake corridor. The improvements may include amenities such as new bus shelters, next-bus arrival and wayfinding signs, off-board fare payment and bike storage facilities.

The public comment period for the draft TIP is scheduled through October 25. A summary of comments received to date will be provided at the October 11 TPB meeting, when the final 2019-2022 Regional TIP is scheduled to be recommended for Executive Board approval.
• **Discussed federal transportation performance targets.** Pursuant to the federal performance-based planning provisions of the Fixing America’s Surface Transportation (FAST) Act, states and metropolitan planning organizations (MPOs) such as the PSRC are required to adopt performance targets. States were required to adopt targets by May 2018, and MPOs are required to adopt by November 2018. In June 2017, the PSRC Executive Board adopted the transit asset management targets, and in January 2018, the targets for safety.

The TPB received a briefing on the remaining federal targets, which will be presented for adoption in October. The PSRC staff recommended endorsing the performance targets adopted by the Washington State Department of Transportation (WSDOT) earlier this year. These targets are achievable when compared to the present conditions of the transportation system. In the future, the TPB may choose to set more aspirational performance targets. If adopted in October, the TPB may choose to use the performance targets to shape future transportation planning efforts.

• **Discussed the I-5 System Partnership.** The Washington State Department of Transportation (WSDOT), in partnership with the PSRC, has convened a group of stakeholders to focus on transportation system issues associated with the I-5 corridor. This is part of WSDOT’s implementation of its State Facilities Action Plan, which describes the needs and proposed actions for the most critical issues facing state transportation facilities. The I-5 stakeholder group includes representatives from local and state agencies; community transit; bicycle and pedestrian interest groups; technology; environmental; major employers; and the Washington State Patrol. The cities of Bellevue, Mill Creek and Newcastle are participating in the group. Since the Partnership’s inception in March, participants have drafted goals for the I-5 system and are developing strategies to support those goals. The Partnership is scheduled to meet for one year and develop a vision report and action plan.

• **Received information on Snohomish County’s preservation and maintenance program.** Preservation and maintenance of the transportation system is a foundational policy in the PSRC’s Regional Transportation Plan. The plan recognizes the importance of maintaining the existing system, and these investments represent over 50% of the plan’s total costs through 2040. This priority is also represented in the PSRC’s project selection process, with a portion of both the Federal Highway Administration and Federal Transit Administration funds set aside for preservation purposes. To highlight partnerships and other work happening in the region, representatives from Snohomish County briefed the TPB on the county’s pavement preservation program and coordination efforts with local jurisdictions throughout the county.

The next meeting of the TPB is scheduled for October 11.

**I-5 SYSTEM PARTNERSHIP**

The I-5 System Partnership (discussed above) met on September 18. A summary of the meeting will be included in the October Regional Issues Packet. Agenda items scheduled for September included a discussion of freight in a multimodal system and strategies to implement goals for the I-5 System.

The next meeting of the I-5 System Partnership is scheduled for October 16.
CITY COUNCIL STUDY SESSION

Tree Canopy Assessment Results

Jennifer Ewing, Environmental Stewardship Program Manager, 452-6129
Mac Cummings, Community Development Director, 452-6191
Community Development Department

DIRECTION NEEDED FROM COUNCIL

INFORMATION ONLY

This presentation is for information only, to present the results of the 2017 Tree Canopy Assessment and discuss the findings from the report. Staff will return at a future meeting to discuss proposed updates to the Environmental Stewardship Initiative strategic plan.

RECOMMENDATION

N/A

BACKGROUND & ANALYSIS

Staff will provide an update on the results of the recently completed 2017 Tree Canopy Assessment. This updated study found that as of 2017, the Citywide tree canopy in Bellevue is 37 percent. The presentation will review the methodology and key findings from the tree canopy assessment (Attachment A: 2017 Tree Canopy Assessment Fact Sheet and Attachment B: 2017 Tree Canopy Assessment Report), including the tree canopy for different land use types, neighborhoods, schools, stream corridors, and drainage basins.

Background

The City of Bellevue last completed a tree canopy assessment in 2007, and recently completed this updated assessment through a regional effort coordinated by the King Conservation District to develop tree canopy assessments for 13 cities in South King County. The assessment was performed by Plan-It Geo, a leading tree canopy assessment and urban forestry software firm, using the latest methods and data sets.

The City has a longstanding history of assessing the tree canopy, and completed tree canopy assessments in 1986, 1996, and 2007. As South Bellevue grew in the 1980’s and 1990’s, according to the 2007 American Forests report, the tree canopy declined from 45 percent in 1986, to 40 percent in 1996, to 36 percent in 2007. In the 2007 Tree Canopy Assessment, American Forests also recommended a goal of 40 percent tree canopy Citywide, which the City adopted as a goal in the Comprehensive Plan in 2015.

Key Findings

The following key findings from the tree canopy assessment establish a new baseline for measuring progress for Bellevue’s tree canopy and identify areas for potential growth of tree canopy. The 2017 assessment uses the most current data sets and methods, which will allow for greater comparability
with future tree canopy assessments. It should be noted that differences in methodology between the 2007 and 2017 study make a comparison between the two years difficult, which is addressed further in the methodology section. The key findings include:

- 37 percent Citywide tree canopy.
- 40 percent impervious surfaces Citywide.
- Bellevue parks have a significant canopy cover of 65 percent overall.
- The majority of the City’s tree canopy is in suburban residential areas, with 65 percent of all canopy. Suburban residential also accounts for the greatest potential for growth of canopy.
- Schools are another land use type with potential for canopy growth, as the average canopy on Bellevue schools is only 24 percent.
- Achieving the 40 percent canopy goal will take time – approximately 670 acres of additional tree canopy is needed to achieve this goal.

**Summary of Results**

A summary of the key results is provided below, and further information can be found in Attachments A and B. The study analyzed tree canopy by land use type and the distribution of the tree canopy across various land use types, which is summarized in Table 1. The study found that the majority of the tree canopy in Bellevue is in suburban residential neighborhoods, which include 65 percent of the tree canopy or 14,131 acres. Tree canopy in parks was analyzed separately, and while heavily forested at 64 percent tree canopy coverage, this represents only 12 percent of the total Citywide tree canopy. The assessment also included a high level analysis of possible planting areas, to identify areas which could potentially benefit from more tree planting. The report also references the recommended canopy cover by land use from the 2007 American Forests assessment, which is included in Table 1. These best practice recommendations for canopy by land use in the table below, can be useful in helping identify possible areas for additional tree canopy.

**Table 1: Tree Canopy by Land Use**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Total Area</th>
<th>Urban Tree Canopy</th>
<th>Possible Planting Area</th>
<th>Recommended Canopy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Dist. 1</td>
<td>Acres</td>
<td>%</td>
</tr>
<tr>
<td>Central Business District</td>
<td>387</td>
<td>2%</td>
<td>39</td>
<td>10%</td>
</tr>
<tr>
<td>Commercial &amp; Mixed Use</td>
<td>2,747</td>
<td>13%</td>
<td>566</td>
<td>21%</td>
</tr>
<tr>
<td>Industrial</td>
<td>220</td>
<td>1%</td>
<td>58</td>
<td>26%</td>
</tr>
<tr>
<td>Parks</td>
<td>2,544</td>
<td>12%</td>
<td>1,626</td>
<td>64%</td>
</tr>
<tr>
<td>Suburban Residential</td>
<td>14,131</td>
<td>65%</td>
<td>5,151</td>
<td>36%</td>
</tr>
<tr>
<td>Urban Residential</td>
<td>1,550</td>
<td>7%</td>
<td>520</td>
<td>34%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>21,580</strong></td>
<td>100%</td>
<td><strong>7,961</strong></td>
<td>37%</td>
</tr>
</tbody>
</table>

1 “Dist.” is the distribution of canopy between the various land use types.
The 2017 Tree Canopy Assessment looked at the tree canopy using several new approaches, including assessing the tree canopy by neighborhood, right-of-way, schools, streams, and drainage basins. The tree canopy assessment by neighborhood, shown below in Table 2, provides a useful view of the current tree canopy in each neighborhood and the potential for additional tree canopy growth by neighborhood.

### Table 2: Tree Canopy by Neighborhood

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Total Area</th>
<th>Urban Tree Canopy</th>
<th>Possible Planting Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Dist.</td>
<td>Acres</td>
</tr>
<tr>
<td>Bel-Red</td>
<td>963</td>
<td>4%</td>
<td>148</td>
</tr>
<tr>
<td>Bridle Trails</td>
<td>2,022</td>
<td>9%</td>
<td>977</td>
</tr>
<tr>
<td>Cougar Mountain / Lakemont</td>
<td>2,349</td>
<td>11%</td>
<td>1,155</td>
</tr>
<tr>
<td>Crossroads</td>
<td>812</td>
<td>4%</td>
<td>225</td>
</tr>
<tr>
<td>Downtown</td>
<td>432</td>
<td>2%</td>
<td>45</td>
</tr>
<tr>
<td>Eastgate</td>
<td>1,759</td>
<td>8%</td>
<td>586</td>
</tr>
<tr>
<td>Factoria</td>
<td>387</td>
<td>2%</td>
<td>83</td>
</tr>
<tr>
<td>Lake Hills</td>
<td>2,260</td>
<td>11%</td>
<td>689</td>
</tr>
<tr>
<td>Newport</td>
<td>1,706</td>
<td>8%</td>
<td>720</td>
</tr>
<tr>
<td>Northeast Bellevue</td>
<td>1,413</td>
<td>7%</td>
<td>427</td>
</tr>
<tr>
<td>Northwest Bellevue</td>
<td>1,321</td>
<td>6%</td>
<td>438</td>
</tr>
<tr>
<td>Somerset</td>
<td>1,307</td>
<td>6%</td>
<td>584</td>
</tr>
<tr>
<td>West Bellevue</td>
<td>1,683</td>
<td>8%</td>
<td>621</td>
</tr>
<tr>
<td>West Lake Sammamish</td>
<td>1,174</td>
<td>5%</td>
<td>472</td>
</tr>
<tr>
<td>Wilburton</td>
<td>1,109</td>
<td>5%</td>
<td>416</td>
</tr>
<tr>
<td>Woodridge</td>
<td>728</td>
<td>3%</td>
<td>289</td>
</tr>
<tr>
<td>Totals</td>
<td>21,425</td>
<td>100%</td>
<td>7,875</td>
</tr>
</tbody>
</table>

The 2017 Tree Canopy Assessment provides an updated baseline for Bellevue, which can be used for developing strategies to achieve the 40 percent tree canopy goal. To achieve the 40 percent tree canopy goal, approximately² 670 acres of additional tree canopy is needed, which can be achieved through a combination of growth of existing canopy, new tree plantings, and a reduction in existing canopy removal. This assessment provided a high-level analysis of possible planting areas and identified nearly 6,000 acres of land which could potentially support additional tree canopy, although some of these areas may not be suitable for canopy establishment. This possible planting area study will need to be further refined, to identify the most opportune areas for additional tree planting and canopy growth. Increasing tree canopy will take time, possibly decades, to achieve the 40 percent tree canopy goal. Further study of the growth potential of the existing canopy, along with an analysis of the number of trees to plant, and timeframe for achieving the 40 percent goal, is needed.

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² This estimate for additional canopy is based on the citywide tree canopy as of August 2017, which does take into account the tree canopy after the clearing and grading for Eastlink, but does not account for any possible losses since August 2017 or for any upcoming major projects.
Methodology
The 2017 tree canopy assessment used 2017 one-meter aerial imagery and light detection and ranging (LIDAR) data from King County. The methods used by Plan-It Geo were also used for the 13 other cities in South King County and for several others in the County, such as Kirkland and Mercer Island, thereby ensuring consistency in methodology and data sets. The assessment also includes a high-level analysis of potential planting areas (PPA), which are primarily impervious areas or other areas with the potential to increase tree canopy.

The assessment uses best practice guidelines for remote sensing and urban tree canopy assessments and includes an accuracy assessment of the 2007 and 2017 analyses. The 2007 tree canopy was updated to be 37.4 percent, as the boundary for the study was expanded to include the full City study area included in the Comprehensive Plan, which includes the portion of Coal Creek Park outside of Bellevue City limits that is owned and maintained by the City of Bellevue, along with the Urban Growth Area outside of the City boundary in Cougar Mountain. Both areas are heavily forested and contributed to an increase in the adjusted 2007 canopy, as compared to the previous 2007 report.

The project sought to compare the change in tree canopy from 2007 to 2017, but found that due to differences in methodology, data sources, and accuracy levels, it was not feasible to provide an accurate assessment of the change in tree canopy between the two years. The canopy change analysis is included in the report, however further analysis is needed to understand what change can be attributed to different methodologies, versus the changes from actual growth or loss of tree canopy.

One of the more significant changes in methodologies between the 2007 and 2017 reports is for the analysis of the tree canopy in the forested areas of Bellevue’s parks, which in 2007 were analyzed to have 100 percent tree canopy coverage. In the 2017 study, Plan-It Geo assessed these areas to have approximately 95 percent canopy and reclassified the remaining canopy as shrubs or non-canopy vegetation, due to differences in remote sensing image processing. The canopy in these areas has not changed significantly, but this change in methodology appears to show a loss of tree canopy in parks. This apparent canopy loss due to new data collection methodology, however, does not represent a loss in the cumulative environmental benefits provided by the surrounding canopy and vegetative coverage.

Recommendations and Next Steps
The study found that the majority of the tree canopy is on private property, and that private property has the most area for potential additional canopy growth. Bellevue right-of-way, schools, and streams also could benefit from increases in canopy. Staff will work to disseminate the results of this study to Bellevue residents and community partners, and this baseline assessment will be particularly useful for Neighborhood Area Planning. In addition, staff are also preparing an education and outreach program about the value and benefits of trees.

Staff will return to Council later in the fall with an overview of the plans to update the Environmental Stewardship Initiative Strategic Plan. Tree canopy will be one of the focus areas of the plan, and the planning process is expected to include an analysis of strategies to achieve the 40 percent tree canopy goal.
As a result of changes in tree canopy over several decades, the City developed several policies in the Comprehensive Plan to encourage the preservation and growth of Bellevue’s urban forest to ensure Bellevue’s character as a “City in a Park” (EN-12, PA-30, and PA-31). This presentation addresses several Comprehensive Planning policies related to trees, including the following:

- EN-12. Work toward a Citywide tree canopy target of at least 40 percent canopy coverage that reflects our “City in a Park” character and maintain an action plan for meeting the target across multiple land use types including right-of-way, public lands, and residential and commercial uses.
- EN-46. Make low impact development the preferred and commonly-used approach to site development to minimize impervious surfaces, native vegetation loss, and stormwater runoff.
- PA-29. Design, construct, operate, and maintain parklands and facilities to preserve the ecology of natural systems on parklands.
- PA-30. Protect and retain, in a natural state, significant trees and vegetation in publicly and privately-dedicated greenbelt areas.
- PA-31. Manage Bellevue’s forest resources, including street trees, formal plantings, and self-sustaining natural stands, to ensure their long-term vitality.

The tree canopy assessment helps to further Council’s policies around managing the City’s tree canopy and tracking progress toward a 40 percent tree canopy goal. This presentation also responds to Council’s 2018-2020 priority #11 related to the Environmental Stewardship Initiative, to review progress of the Environmental Stewardship Initiative and analyze additional steps that the City may take to achieve environmental goals (e.g., tree canopy).

OPTIONS

N/A

ATTACHMENTS & AVAILABLE DOCUMENTS

A. Bellevue 2017 Tree Canopy Assessment Fact Sheet
B. Bellevue 2017 Tree Canopy Assessment Report

AVAILABLE IN COUNCIL LIBRARY

Environmental Stewardship Initiative Strategic Plan 2013-2018
Bellevue's urban forest is a valuable asset that provides residents and visitors with many ecological, environmental, and community benefits. This assessment analyzed the City’s urban tree canopy (UTC), possible planting area (PPA), and change in UTC over a 10-year period (aerial imagery from 2007-2017). The results provide baseline data to develop strategies to protect and expand Bellevue’s trees and natural areas during planning and development. The maps and project report help to concentrate efforts in areas where needs are greatest, tree planting space is available, and benefits can be realized.

**LAND COVER**

- **37%** TREE CANOPY
- **19%** NON-CANOPY VEGETATION
- **40%** IMPERVIOUS
- **4%** SOIL & DRY VEGETATION
- **1%** WATER

Note: Land cover percentages AND urban tree canopy percentages are based on total area as opposed to land area.
Tree canopy data were analyzed for Bellevue’s land use categories to determine the distribution of existing and potential urban tree canopy throughout the city. Parks had the highest canopy coverage at 64%, but 65% of all canopy was found within Suburban Residential areas as well as 61% of all plantable space. The central business district had the lowest existing UTC but the highest PPA impervious.

<table>
<thead>
<tr>
<th>Designated Land Use</th>
<th>Urban Tree Canopy</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>%</td>
<td>Dist.</td>
</tr>
<tr>
<td>Central Business District</td>
<td>39</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>Commercial &amp; Mixed Use</td>
<td>566</td>
<td>21%</td>
<td>7%</td>
</tr>
<tr>
<td>Industrial</td>
<td>58</td>
<td>26%</td>
<td>1%</td>
</tr>
<tr>
<td>Parks</td>
<td>1,626</td>
<td>64%</td>
<td>20%</td>
</tr>
<tr>
<td>Suburban Residential</td>
<td>5,151</td>
<td>36%</td>
<td>65%</td>
</tr>
<tr>
<td>Urban Residential</td>
<td>520</td>
<td>34%</td>
<td>7%</td>
</tr>
<tr>
<td>Totals</td>
<td>7,961</td>
<td>37%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**URBAN TREE CANOPY POTENTIAL**

- 35% Unsuitable Area
- 28% Possible Planting Area
- 37% Existing Urban Tree Canopy

**COMPARING URBAN TREE CANOPY IN KING COUNTY COMMUNITIES**

- Black Diamond: 57%
- Issaquah: 51%
- Sammamish: 48%
- Mercer Island: 48%
- Newcastle: 47%
- Normandy Park: 46%
- Kirkland: 41%
- Redmond: 38%
- Bellevue: 37%
- Auburn: 32%
- Maple Valley: 31%
- Renton: 29%
- Kent: 28%
- Seattlet: 28%
- Tukwila: 24%

**QUANTIFYING ECOSYSTEM BENEFITS**

- **Air Quality**: $39 million in pollution removed
- **Stored Carbon**: $51 million in carbon sequestered
- **Storm Water**: $2.8 million in infrastructure avoided

*Possible Planting Areas (PPA) were defined as vegetated areas without tree canopy and impervious surfaces such as parking lots and sidewalks. These areas may not be suitable for planting to increase canopy due to slope, views, soils, or other limitations. Field surveys to identify suitable planting areas are advised.*
URBAN TREE CANOPY ASSESSMENT

BELLEVUE, WASHINGTON
SEPTEMBER | 2018
We do not inherit the Earth from our ancestors—we borrow it from our children.

-Chief Seattle
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PURPOSE OF THIS ANALYSIS
The City of Bellevue is located within King County, Washington, in the Seattle metropolitan area (Figure 1). It is approximately 33.5 square miles or 21,435 acres. Across the city, trees along streets, in parks, yards, and natural areas constitute a valuable urban and community forest. This resource is a critical element of the region’s green infrastructure, contributing to environmental quality, public health, water supply, local economies and aesthetics. The primary goal of this assessment was to provide an updated baseline and benchmark of the City’s tree canopy, assess how it has changed, and interpret the results across a range of geographic boundaries.

URBAN TREE CANOPY IN BELLEVUE
Results of this study indicated that in 2017, the city of Bellevue contained 37 percent tree canopy (or 7,877 of the city’s 21,435 total acres); 2 percent shrub (343 acres); 17 percent other non-canopy vegetation (3,664 acres); 4 percent soil/dry vegetation (951 acres); 40 percent impervious (8,481 acres); and 1 percent water (120 acres). In further subdividing the impervious areas, 9 percent (1,940 acres) were roads, 12 percent (2,679 acres) were buildings, 9 percent (1,904) were parking lots, 1 percent (219 acres) were sidewalks, and 8 percent (1,740 acres) were “other impervious” areas such as driveways and trails. Of the city’s 63 percent of land area not presently occupied by tree canopy, 28 percent (5,978 acres) was suitable for future tree plantings, and 35 percent (7,459) was unsuitable due to its current land use or other restraint. In further dividing the city’s urban tree canopy, 39 percent was deciduous, 61 percent was evergreen, and 12 percent was overhanging impervious surfaces. Citywide, Bellevue’s urban tree canopy has declined by less than 1 percent since it was last assessed in 2007.

ASSESSMENT BOUNDARIES AND ANALYSIS RESULTS
This study assessed urban tree canopy (UTC) and possible planting areas (PPA) at multiple geographic scales in order to provide actionable information to a diverse range of audiences. By identifying what resources and opportunities exist at these scales, the City can be more proactive in their approach to protect and expand their urban tree canopy. Metrics were generated at the following geographies: the citywide boundary (1); HUC-12 watersheds (3); King County land use classes (12); City of Bellevue designated future land use classes (6); neighborhoods (16); drainage basins (28); schools (81); U.S. census block groups, and right-of-way areas within census block groups (89 each). Changes in canopy since 2007 were assessed within the same boundaries. Additionally, the city’s current urban tree canopy was subdivided into deciduous and evergreen classes and delineated as overhanging impervious surfaces or not.
RECOMMENDATIONS

The results of this analysis can be used to develop a continued strategy to protect and expand Bellevue’s urban forest. Although previous studies indicated that Bellevue has lost a substantial amount of its canopy already, this study has indicated that Bellevue’s trend of large canopy losses has been slowed with a loss of less than 1 percent over the last ten years, as development of undeveloped areas has slowed. However, the City has not been able to fully recover and begin restoring its canopy to its previous amounts just yet. Through management actions, strategic plantings, and protections for existing canopy informed by the UTC, PPA, and change metrics included in this report, Bellevue has an opportunity to expand its current urban tree canopy to its fullest potential.

Figure 1. Bellevue occupies approximately 33.5 square miles in King County, Washington.

Figure 2. Based on an analysis of 2017 high-resolution imagery, Bellevue contains 37% tree canopy, 28% areas that could support canopy in the future, and 40% total impervious areas.
This section describes the methods through which land cover, urban tree canopy, and possible planting areas were mapped. These datasets provide the foundation for the metrics reported at the selected target geographies, as well as the change in canopy over time.

DATA SOURCES

This assessment utilized high-resolution (1-meter) multispectral imagery from the U.S. Department of Agriculture’s National Agriculture Imagery Program (NAIP) collected on 08/15/2017 and 2016 LiDAR data (8 points/m² density) from King County, Washington to derive the land cover data set. The NAIP imagery is used to classify all types of land cover, whereas the LiDAR is most useful for distinguishing tree canopy from other types of vegetation. Additional GIS layers provided by the City of Bellevue were also incorporated into the analysis.

MAPPING LAND COVER

An initial land cover dataset was to be created prior to mapping tree canopy and assessing change. The land cover data set is the most fundamental component of an urban tree canopy assessment. An object-based image analysis (OBIA) software program called Feature Analyst was used to classify features through an iterative approach. In this process, objects’ spectral signatures across four bands (blue, green, red, and near-infrared), textures, pattern relationships, and object height were considered. This remote sensing process used the NAIP imagery and LiDAR to derive six initial land cover classes. These classes are shown in Figure 3 and described in the Glossary on page 40.

After manual classification improvement and quality control were performed on the remote sensing products, additional data layers from the city (such as buildings, roads, and other impervious surfaces from 2013) were utilized to capture finer feature detail and further categorize the land cover dataset.

![Figure 3. Six (6) distinct land cover classes were identified in the 2017 tree canopy assessment: urban tree canopy, shrub, other non-canopy vegetation (such as grass), bare soil and dry vegetation, impervious (paved) surfaces, and water.](image)

CLASSIFYING URBAN TREE CANOPY

Following the remote sensing classification and final QA/QC of the tree canopy data layer, this output was used as a mask to extract generalized tree species composition using a Normalized Difference Vegetation Index (NDVI), LiDAR height information, supervised training, and an iterative machine learning approach. Leaf-off aerial photography from Google Earth was used to obtain training and verification samples of deciduous and evergreen trees. Generalized tree species composition mapping was performed at a scale to classify larger groves of trees but not individual trees. There were no accuracy standards required or assessed for this classification. Using impervious surface data provided by the city (buildings, roads, parking lots, etc.), the amount of deciduous and evergreen tree canopy with an impervious understory was also quantified to assist with hydrologic modeling.
IDENTIFYING POSSIBLE PLANTING AREAS AND UNSUITABLE AREAS FOR PLANTING

In addition to quantifying Bellevue’s existing tree canopy cover, another metric of interest in this assessment was the area where tree canopy could be expanded. To assess this, all land area in Bellevue that was not existing tree canopy coverage was classified as either possible planting area (PPA) or unsuitable for planting. Possible planting areas were derived from the Non-Canopy Vegetation, Shrub, and Impervious classes. Wetlands were not classified in this study, however, these areas were predominately PPA outside of areas of existing UTC. Unsuitable areas, or areas where it was not feasible to plant trees due to biophysical or land use restraints (e.g. airport runways, golf course playing areas, recreation fields, etc.), were manually delineated and overlaid with the existing land cover data set (Figure 4). The final results were reported as PPA Vegetation, PPA Impervious, Total PPA and Unsuitable Vegetation, Unsuitable Impervious, Unsuitable Soil, and Total Unsuitable.

DEFINING ASSESSMENT LEVELS

In order to best inform the City Council and all of Bellevue’s various stakeholders, urban tree canopy and other associated metrics were tabulated across a variety of geographic boundaries (Figure 5). These boundaries include the city boundary, watersheds, designated land use classes, neighborhoods, drainage basins, schools, census block groups, and right-of-way by census block groups.

- The City of Bellevue’s citywide boundary is the one (1) main area of interest over which all metrics are summarized.
- Two (2) HUC-12 watersheds intersect the city of Bellevue. Delineated by the U.S. Geological Survey, each unique 12-digit identification code represents a different subwatershed. They were analyzed to explore differences in tree canopy across a naturally-occurring geographic boundary.
- Six (6) designated land use classes were also assessed to provide detail on the current human land use configuration of the city.
- Sixteen (16) neighborhoods were assessed to quantify urban tree canopy at an easily-conceptualized scale.
- Stream corridors play an important role in urban environments. Tree canopy within 100 feet of streams was assessed.
- Since trees play an important role in storm water management, twenty-eight (28) city drainage basins were also assessed in addition to the watersheds described above.
- UTC was assessed for all of the schools in Bellevue, totaling eighty-one (81).
- Eighty-nine (89) census block groups were assessed to provide information at a small geographic scale. Census block groups (CBGs) are used by the U.S. Census Bureau to assure statistical consistency when tracking populations across the United States and can be valuable indicators of environmental justice as they are directly linked with demographic and socioeconomic data.
- In addition to the UTC throughout the census block groups’ entire areas, UTC was also assessed within the Right-of-Way found within each census block group. This measure if useful for quantifying Bellevue’s street trees.
Figure 5. Nine distinct geographic boundaries were explored in this analysis: the full city boundary, watersheds, designated land use classes, neighborhoods, stream corridors, drainage basins, schools, census block groups, and right-of-way by census block groups.
STATE OF THE CANOPY AND KEY FINDINGS

This section presents the key findings of this study including the land cover base map, canopy analysis, and change analysis results which were analyzed across various geographic assessment boundaries. These results, or metrics, help inform a strategic approach to identifying existing canopy to preserve and future planting areas. Land cover, urban tree canopy, possible planting area, and unsuitable percentages are based on the total area of interest as opposed to land area to be consistent with the reporting of Bellevue’s previous urban tree canopy assessment results.

CITYWIDE LAND COVER

In 2017, tree canopy constituted 37 percent of Bellevue’s land cover; shrub was 2 percent; other non-canopy vegetation was 17 percent; soil/dry vegetation was 4 percent; impervious was 40 percent; and water was 1 percent. These generalized land cover results are presented below in Table 1.

The impervious land cover class was then subdivided into more specific classifications. Approximately 12 percent of Bellevue was buildings, 9 percent was roads, 9 percent was parking lots, 1 percent was sidewalks, and 8 percent was “other impervious.” The detailed land cover results, including impervious classifications, are presented in Figure 6.

<table>
<thead>
<tr>
<th>City Boundary</th>
<th>Tree Canopy</th>
<th>Shrub</th>
<th>Non-Canopy Vegetation</th>
<th>Impervious Surfaces</th>
<th>Soil &amp; Dry Vegetation</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>7,877</td>
<td>343</td>
<td>3,664</td>
<td>8,481</td>
<td>951</td>
<td>120</td>
</tr>
<tr>
<td>% of Total</td>
<td>37%</td>
<td>2%</td>
<td>17%</td>
<td>40%</td>
<td>4%</td>
<td>1%</td>
</tr>
</tbody>
</table>
Figure 6. | Detailed land cover classes for Bellevue, Washington based on 2017 NAIP imagery and 2016 PSLC LiDAR data. (Percentages based on total acres.)
CITYWIDE URBAN TREE CANOPY
This urban tree canopy assessment utilized the land cover map as a foundation to determine Possible Planting Areas throughout the City. Additional layers and information regarding land considered unsuitable for planting were also incorporated into the analysis. Note that the results of this study are based on total area to match the previous American Forests study from 2007.

Table 2. | Urban tree canopy assessment results, by acres and percent. (Percentages based on total acres.)

<table>
<thead>
<tr>
<th>City of Bellevue</th>
<th>Acres</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Area</td>
<td>21,435</td>
<td>100%</td>
</tr>
<tr>
<td>Land Area</td>
<td>21,315</td>
<td>99%</td>
</tr>
<tr>
<td>UTC</td>
<td>7,877</td>
<td>37%</td>
</tr>
<tr>
<td>PPA Vegetation</td>
<td>3,853</td>
<td>18%</td>
</tr>
<tr>
<td>PPA Impervious</td>
<td>2,125</td>
<td>10%</td>
</tr>
<tr>
<td>Total PPA</td>
<td>5,978</td>
<td>28%</td>
</tr>
<tr>
<td>Unsuitable Vegetation</td>
<td>129</td>
<td>1%</td>
</tr>
<tr>
<td>Unsuitable Impervious</td>
<td>6,408</td>
<td>30%</td>
</tr>
<tr>
<td>Unsuitable Soil</td>
<td>922</td>
<td>4%</td>
</tr>
<tr>
<td>Total Unsuitable UTC</td>
<td>7,459</td>
<td>35%</td>
</tr>
</tbody>
</table>

Results of this study indicate that within the city of Bellevue, 7,877 acres are covered with urban tree canopy, making up 37 percent of the city's 21,315 land acres; 5,978 acres are covered with other vegetation or impervious surfaces such as parking lots where it would be possible to plant trees (PPA), making up 28 percent of the city; and the other 7,459 acres were considered unsuitable for tree planting, making up 35 percent of the city. The unsuitable areas include recreational sports fields, golf course playing areas, buildings, roads, and areas of bare soil and dry vegetation.

Figure 7. | Urban tree canopy, potential planting area, and area unsuitable for UTC in the city of Bellevue.
The city’s 7,884 acres of urban tree canopy were further divided into several subcategories based on whether the trees were deciduous (broad-leafed) or evergreen and whether their canopy had an impervious or pervious understory. Tree canopy overhanging an impervious surface can provide many benefits through ecosystem services such as localized cooling provided by shading of impervious surfaces and increased stormwater absorption. Results indicated that Bellevue’s UTC was predominantly evergreen, with 61 percent evergreen canopy and 39 percent deciduous canopy. In Bellevue, 12 percent of all tree canopy had an impervious understory.

Table 3. | Detailed urban tree canopy classifications.

<table>
<thead>
<tr>
<th>City of Bellevue</th>
<th>Acres</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deciduous UTC</td>
<td>3,098</td>
<td>39%</td>
</tr>
<tr>
<td>Evergreen UTC</td>
<td>4,786</td>
<td>61%</td>
</tr>
<tr>
<td>UTC with Impervious Understory</td>
<td>941</td>
<td>12%</td>
</tr>
</tbody>
</table>
URBAN TREE CANOPY BY WATERSHEDS

Urban tree canopy metrics and possible planting areas were assessed for the 3 HUC-12 watersheds found within Bellevue (Table 4). These are the Lake Sammamish-Sammamish River watershed, which occupies a large portion of the city on the eastern side of the Sammamish River; the Lake Washington-Sammamish River watershed, which occupies the majority of the city on the western side of the Sammamish River; and the Bear Creek-Sammamish River watershed, which intersects a small portion of the northern part of the city along Bear Creek. Both of the larger watersheds’ UTC closely reflected the citywide average of 37 percent. The largest watershed, Lake Washington-Sammamish River, contributed the most to both the city’s overall UTC (72 percent) and PPA (74 percent).

Table 4. Urban tree canopy assessment results by HUC-12 watershed. Columns describe the total acreage in each watershed and the distribution of the city’s total area that each watershed makes up, as well as the total acres, percent of the watershed’s area, and percent of the citywide total area for both UTC and PPA found within each watershed.

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Total Area</th>
<th>Urban Tree Canopy</th>
<th>Possible Planting Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Dist.</td>
<td>Acres</td>
</tr>
<tr>
<td>Bear Creek-Sammamish River</td>
<td>64</td>
<td>0%</td>
<td>20</td>
</tr>
<tr>
<td>Lake Sammamish-Sammamish River</td>
<td>6,072</td>
<td>28%</td>
<td>2,208</td>
</tr>
<tr>
<td>Lake Washington-Sammamish River</td>
<td>15,299</td>
<td>71%</td>
<td>5,649</td>
</tr>
<tr>
<td>Totals</td>
<td>21,435</td>
<td>100%</td>
<td>7,877</td>
</tr>
</tbody>
</table>

Urban Tree Canopy (Acres) Compared to Total Area and Land Area by Watershed

Figure 9. Urban tree canopy in Bellevue by HUC-12 watershed.
URBAN TREE CANOPY BY DESIGNATED LAND USE

Urban tree canopy was also assessed for the City of Bellevue’s designated land use classes. Parks had the highest canopy cover, with 65 percent UTC, whereas the Central Business District had the lowest at 10 percent. In terms of possible planting areas, the commercial mixed-use class had the greatest proportion, with 37 percent PPA. However, suburban residential areas contributed the greatest amounts of both UTC and PPA towards the citywide totals, making up 65 percent of all UTC and 61 percent of all PPA in Bellevue.

Table 5. | Urban tree canopy assessment results by designated land use class.*

<table>
<thead>
<tr>
<th>Designated Land Use</th>
<th>Total Area</th>
<th>Urban Tree Canopy</th>
<th>Possible Planting Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Dist.</td>
<td>Acres</td>
</tr>
<tr>
<td>Central Business District</td>
<td>387</td>
<td>2%</td>
<td>39</td>
</tr>
<tr>
<td>Commercial &amp; Mixed Use</td>
<td>2,747</td>
<td>13%</td>
<td>566</td>
</tr>
<tr>
<td>Industrial</td>
<td>220</td>
<td>1%</td>
<td>58</td>
</tr>
<tr>
<td>Parks</td>
<td>2,544</td>
<td>12%</td>
<td>1,626</td>
</tr>
<tr>
<td>Suburban Residential</td>
<td>14,131</td>
<td>65%</td>
<td>5,151</td>
</tr>
<tr>
<td>Urban Residential</td>
<td>1,550</td>
<td>7%</td>
<td>520</td>
</tr>
<tr>
<td>Totals</td>
<td>21,580</td>
<td>100%</td>
<td>7,961</td>
</tr>
</tbody>
</table>

* Designated Land Use acreage includes the Urban Growth Area in Cougar Mountain, which is outside of city limits, but included in the Comprehensive Plan, along with a portion of Newcastle Park, which the city owns and maintains.
Figure 11. Urban tree canopy in Bellevue by designated land use.

Land Use
- Central Business District
- Commercial & Mixed Use
- Industrial
- Parks
- Suburban Residential
- Urban Residential
URBAN TREE CANOPY BY NEIGHBORHOODS

Urban tree canopy metrics were also assessed at the neighborhood level. This analysis revealed that Bellevue has a great deal of variation in UTC throughout the city. While some neighborhoods such as Bridle Trails and Cougar Mountain/Lakemont had nearly 50 percent canopy cover, others such as BelRed and Factoria had less than half that. Downtown had the lowest canopy cover at just 10 percent. Tree canopy in neighborhood parks, greenbelts, and open spaces is included. Some neighborhoods may be more influenced by tree canopy within these areas than others. PPA varied considerably less throughout neighborhoods with the majority remaining relatively close to the citywide average of 28 percent. The neighborhood that contributed the most to the city's overall PPA was Lake Hills, with 27 percent PPA contributing 10 percent of the city's total.

Table 6. | Urban tree canopy by neighborhood.

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Total Area</th>
<th>Urban Tree Canopy</th>
<th>Possible Planting Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Dist.</td>
<td>Acres</td>
</tr>
<tr>
<td>BelRed</td>
<td>963</td>
<td>4%</td>
<td>148</td>
</tr>
<tr>
<td>Bridle Trails</td>
<td>2,022</td>
<td>9%</td>
<td>977</td>
</tr>
<tr>
<td>Cougar Mountain/Lakemont</td>
<td>2,349</td>
<td>11%</td>
<td>1,155</td>
</tr>
<tr>
<td>Crossroads</td>
<td>812</td>
<td>4%</td>
<td>225</td>
</tr>
<tr>
<td>Downtown</td>
<td>432</td>
<td>2%</td>
<td>45</td>
</tr>
<tr>
<td>Eastgate</td>
<td>1,759</td>
<td>8%</td>
<td>586</td>
</tr>
<tr>
<td>Factoria</td>
<td>387</td>
<td>2%</td>
<td>83</td>
</tr>
<tr>
<td>Lake Hills</td>
<td>2,260</td>
<td>11%</td>
<td>689</td>
</tr>
<tr>
<td>Newport</td>
<td>1,706</td>
<td>8%</td>
<td>720</td>
</tr>
<tr>
<td>Northeast Bellevue</td>
<td>1,413</td>
<td>7%</td>
<td>427</td>
</tr>
<tr>
<td>Northwest Bellevue</td>
<td>1,321</td>
<td>6%</td>
<td>438</td>
</tr>
<tr>
<td>Somerset</td>
<td>1,307</td>
<td>6%</td>
<td>584</td>
</tr>
<tr>
<td>West Bellevue</td>
<td>1,683</td>
<td>8%</td>
<td>621</td>
</tr>
<tr>
<td>West Lake Sammamish</td>
<td>1,174</td>
<td>5%</td>
<td>472</td>
</tr>
<tr>
<td>Wilburton</td>
<td>1,109</td>
<td>5%</td>
<td>416</td>
</tr>
<tr>
<td>Woodridge</td>
<td>728</td>
<td>3%</td>
<td>289</td>
</tr>
<tr>
<td>Totals</td>
<td>21,425</td>
<td>100%</td>
<td>7,875</td>
</tr>
</tbody>
</table>
Figure 12. Urban tree canopy in Bellevue by neighborhood.
URBAN TREE CANOPY BY STREAM CORRIDORS

Tree canopy was assessed within stream corridors. These corridors represent the area within 100 feet of a stream on both sides of the stream. Tree canopy coverage in these areas can provide enhanced wildlife habitat as well as improved water quality. Bellevue’s stream corridors had an average of 58 percent tree canopy coverage. This is over 20 percent higher than the city-wide average. Possible planting area represented 25 percent of this area. Most of this PPA was on vegetated land, but there were 92 acres of impervious PPA (parking lots and sidewalks) where trees could be planted to intercept and help absorb stormwater runoff that may carry unhealthy pollutants into the streams.

Figure 13. | Urban tree canopy and possible planting area in Bellevue’s stream corridors.
**URBAN TREE CANOPY BY DRAINAGE BASINS**

Because of their benefits for regulating runoff, reducing flooding, and maintaining a healthy water cycle, urban tree canopy metrics were also assessed by drainage basin. This assessment boundary extended beyond the city boundary to include additional areas that drain into the Bellevue’s city limits (see Figure 14). A slightly higher canopy coverage was measured when including these areas outside of Bellevue. Tree canopy coverage was 40 percent as opposed to 37 percent within the city limits. PPA remained close to the citywide an average of 28 percent while areas unsuitable for UTC dropped from the citywide average of 35 percent to 32 percent for the drainage basins.

Within the various drainage basins, there was significant variation in both UTC and PPA. UTC ranged from only 16 percent in Sturtevant Creek to 61 percent in Goff Creek, while PPA ranged from 18 percent in Coal Creek to 39 percent in the unnamed basin area. Coal Creek contributed the most of the city’s overall UTC with 60 percent canopy cover contributing 21 percent of the citywide total UTC, while Kelsey Creek offered the greatest opportunities for expanding the city’s canopy with 31 percent PPA contributing 12 percent of the city’s total PPA.

![Urban Tree Canopy %](image)

*Figure 14. Urban tree canopy in Bellevue and surrounding areas by drainage basin.*
URBAN TREE CANOPY BY SCHOOLS

UTC was assessed for all 81 public and private school properties in Bellevue to determine how well the numerous benefits of the City’s urban forest are reaching its next generation of residents. Overall, tree canopy on school property was substantially lower than the citywide average, at 24 percent canopy compared to the City’s 37 percent. Canopy cover ranged from 0 percent at the GIX (Global Innovation Exchange) school, all the way to 78 percent at the Hillside Student Community. The average UTC for public schools was 22.5 percent, compared to 29.5 percent for private schools. These results indicate that if maintaining a healthy urban forest presence on school properties is a priority for the City, there is a lot of work to be done. The average PPA on school property slightly exceeded the citywide average at 32 percent compared to the City’s 28 percent, revealing that an increase in UTC in these areas is realistically attainable.

Table 7. Urban tree canopy by school.

<table>
<thead>
<tr>
<th>Schools</th>
<th>UTC Acres</th>
<th>UTC %</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMERICAS CHILD</td>
<td>0.1</td>
<td>21%</td>
</tr>
<tr>
<td>ARDMORE</td>
<td>2.7</td>
<td>27%</td>
</tr>
<tr>
<td>ASIA PACIFIC</td>
<td>1.6</td>
<td>50%</td>
</tr>
<tr>
<td>BELLEVUE COLLEGE</td>
<td>29.7</td>
<td>31%</td>
</tr>
<tr>
<td>BELLEVUE</td>
<td>11.9</td>
<td>30%</td>
</tr>
<tr>
<td>BELLEVUE BIG PICTURE</td>
<td>1.6</td>
<td>12%</td>
</tr>
<tr>
<td>BELLEVUE CHRISTIAN</td>
<td>2.3</td>
<td>28%</td>
</tr>
<tr>
<td>BELLEVUE MANAGEMENT SUPPORT CTR</td>
<td>1.0</td>
<td>17%</td>
</tr>
<tr>
<td>BELLEVUE MONTESSORI</td>
<td>0.7</td>
<td>49%</td>
</tr>
<tr>
<td>BELRED BILINGUAL</td>
<td>0.2</td>
<td>38%</td>
</tr>
<tr>
<td>BENNETT</td>
<td>1.5</td>
<td>16%</td>
</tr>
<tr>
<td>CEDAR CREST</td>
<td>0.4</td>
<td>29%</td>
</tr>
<tr>
<td>CEDAR PARK CHRISTIAN</td>
<td>0.4</td>
<td>13%</td>
</tr>
<tr>
<td>CHERRY CREST</td>
<td>6.1</td>
<td>60%</td>
</tr>
<tr>
<td>CHESTNUT HILL</td>
<td>0.9</td>
<td>30%</td>
</tr>
<tr>
<td>CHINOOK</td>
<td>2.6</td>
<td>15%</td>
</tr>
<tr>
<td>CLYDE HILL</td>
<td>2.1</td>
<td>29%</td>
</tr>
<tr>
<td>COUGAR RIDGE</td>
<td>2.8</td>
<td>27%</td>
</tr>
<tr>
<td>EASTGATE</td>
<td>2.1</td>
<td>26%</td>
</tr>
<tr>
<td>EASTSIDE ACADEMY</td>
<td>3.5</td>
<td>35%</td>
</tr>
<tr>
<td>EASTSIDE CHRISTIAN</td>
<td>1.6</td>
<td>26%</td>
</tr>
<tr>
<td>EASTSIDE MONTESSORI</td>
<td>0.9</td>
<td>29%</td>
</tr>
<tr>
<td>EDUCATIONAL SERVICE CTR</td>
<td>1.1</td>
<td>39%</td>
</tr>
<tr>
<td>EMERALD HEIGHTS</td>
<td>2.8</td>
<td>53%</td>
</tr>
<tr>
<td>ENATAI</td>
<td>2.1</td>
<td>24%</td>
</tr>
<tr>
<td>ETON</td>
<td>0.5</td>
<td>37%</td>
</tr>
<tr>
<td>FOREST RIDGE</td>
<td>5.7</td>
<td>35%</td>
</tr>
<tr>
<td>FRENCH IMMERSION</td>
<td>0.5</td>
<td>32%</td>
</tr>
<tr>
<td>GEMINI</td>
<td>0.0</td>
<td>2%</td>
</tr>
<tr>
<td>GIX</td>
<td>0.0</td>
<td>0%</td>
</tr>
<tr>
<td>HAZELWOOD</td>
<td>4.4</td>
<td>32%</td>
</tr>
<tr>
<td>HIGHLAND</td>
<td>4.1</td>
<td>20%</td>
</tr>
<tr>
<td>HILLSIDE</td>
<td>2.8</td>
<td>78%</td>
</tr>
<tr>
<td>INTERLAKE</td>
<td>7.5</td>
<td>19%</td>
</tr>
<tr>
<td>INTERNATIONAL</td>
<td>5.6</td>
<td>28%</td>
</tr>
<tr>
<td>INTERNATIONAL MONTESSORI</td>
<td>0.3</td>
<td>35%</td>
</tr>
<tr>
<td>JEWISH DAY</td>
<td>1.0</td>
<td>16%</td>
</tr>
<tr>
<td>JING MEI</td>
<td>3.0</td>
<td>30%</td>
</tr>
<tr>
<td>JUBILEE REACH</td>
<td>0.8</td>
<td>42%</td>
</tr>
<tr>
<td>LAKE HILLS</td>
<td>0.9</td>
<td>10%</td>
</tr>
<tr>
<td>LITTLE SCHOOL</td>
<td>6.8</td>
<td>71%</td>
</tr>
<tr>
<td>LIVING MONTESSORI</td>
<td>3.5</td>
<td>39%</td>
</tr>
<tr>
<td>MEDINA</td>
<td>0.9</td>
<td>16%</td>
</tr>
<tr>
<td>MEDINA ACADEMY</td>
<td>0.3</td>
<td>16%</td>
</tr>
<tr>
<td>NEWPORT</td>
<td>4.9</td>
<td>12%</td>
</tr>
<tr>
<td>NEWPORT CHILDRENS</td>
<td>0.0</td>
<td>4%</td>
</tr>
<tr>
<td>NEWPORT HEIGHTS</td>
<td>2.2</td>
<td>24%</td>
</tr>
<tr>
<td>ODEL</td>
<td>2.3</td>
<td>12%</td>
</tr>
<tr>
<td>OPEN WINDOW</td>
<td>1.7</td>
<td>23%</td>
</tr>
<tr>
<td>PHANTOM LAKE</td>
<td>1.3</td>
<td>14%</td>
</tr>
<tr>
<td>PUESTA DEL SOL</td>
<td>3.9</td>
<td>29%</td>
</tr>
<tr>
<td>RINGDALE</td>
<td>4.4</td>
<td>24%</td>
</tr>
<tr>
<td>SACRED HEART</td>
<td>2.5</td>
<td>26%</td>
</tr>
<tr>
<td>SAMMAMISH</td>
<td>3.1</td>
<td>8%</td>
</tr>
<tr>
<td>SHERWOOD FOREST</td>
<td>0.9</td>
<td>10%</td>
</tr>
<tr>
<td>SOMERSET</td>
<td>3.7</td>
<td>37%</td>
</tr>
<tr>
<td>SPECIALTY</td>
<td>0.3</td>
<td>33%</td>
</tr>
<tr>
<td>SPIRITRIDGE</td>
<td>2.5</td>
<td>27%</td>
</tr>
<tr>
<td>ST LOUISE</td>
<td>1.3</td>
<td>14%</td>
</tr>
<tr>
<td>ST MADELEINE</td>
<td>2.8</td>
<td>27%</td>
</tr>
<tr>
<td>ST THOMAS</td>
<td>0.8</td>
<td>14%</td>
</tr>
<tr>
<td>STEVENSON</td>
<td>0.8</td>
<td>9%</td>
</tr>
<tr>
<td>SUNSET</td>
<td>3.4</td>
<td>25%</td>
</tr>
<tr>
<td>TARTEEL</td>
<td>0.1</td>
<td>9%</td>
</tr>
<tr>
<td>THREE CEDARS</td>
<td>2.1</td>
<td>43%</td>
</tr>
<tr>
<td>TILLCUM</td>
<td>1.9</td>
<td>11%</td>
</tr>
<tr>
<td>TYEE</td>
<td>4.1</td>
<td>18%</td>
</tr>
<tr>
<td>VERA RISDON</td>
<td>5.3</td>
<td>30%</td>
</tr>
<tr>
<td>WILBURTON</td>
<td>2.1</td>
<td>22%</td>
</tr>
<tr>
<td>WILBURTON INSTRITIONAL SERVICE CTR</td>
<td>0.8</td>
<td>15%</td>
</tr>
<tr>
<td>WOODRIDGE</td>
<td>1.2</td>
<td>12%</td>
</tr>
</tbody>
</table>

URBAN TREE CANOPY BY CENSUS BLOCK GROUPS

Urban tree canopy and possible planting areas were assessed at the census block group level. This was the smallest geographic area unit analyzed that covered the entire City area and is particularly valuable for assessing the equitable distribution of tree canopy throughout the city as the block groups are linked to all demographic and socioeconomic U.S. census data. Results indicated that urban tree canopy varies substantially throughout the city, with one census block group containing only 9 percent cover and another containing as much as 90 percent. PPA also varied somewhat across the various block groups, with one containing only 7 percent PPA and another as much as 44 percent PPA. For the complete results by census block group, refer to the UTC Results Spreadsheet.
Figure 15. Number of census block groups within percent canopy cover ranges.

Figure 16. Urban tree canopy in Bellevue by census block groups.
URBAN TREE CANOPY BY RIGHT-OF-WAY BY CENSUS BLOCK GROUPS

In addition to being assessed throughout each census block group’s entire area, UTC was also assessed for the right-of-way areas within each census block group. Right-of-way areas include the City’s sidewalks, roadways, and medians that are publicly owned and maintained. This metric is helpful for quantifying the City’s street tree resources, as trees in this area provide an especially valuable service in terms of air pollution control and shading, while still tying it to a small and significant unit of measure (the census block groups). On average, Bellevue’s rights-of-way had a UTC of 24 percent. This figure fell somewhat below the citywide average of 37 percent, but did not vary to as extreme of a degree as some other assessment levels, ranging from 8 percent to 46 percent.

For the complete results by census block group, refer to the UTC Results Spreadsheet.

Figure 17. Number of census block groups with right-of-way within percent canopy cover ranges.

Figure 18. Number of census block groups with right-of-way areas within percent possible planting area ranges.
QUANTIFYING ECOSYSTEM BENEFITS

Using the best available science from i-Tree tools, values were calculated for some of the benefits and functions provided by trees and forests in Bellevue. The urban forest holds millions of dollars of savings in avoided infrastructure costs, pollution reduction, and stored carbon.

AIR QUALITY
Trees produce oxygen, capture air pollutants such as particulate matter directly on their leaves, improve public health, and reduce pollution indirectly by lowering air temperatures, reducing the formation of ozone.

- The existing tree canopy in Bellevue removes 1,023,583 tons of air pollution annually, valued at $39,183,439.

STORMWATER AND WATER QUALITY
Trees and forests mitigate stormwater runoff which minimizes flood risk, stabilizes soil, reduces sedimentation in streams and marshland, and absorbs pollutants, thus improving water quality and habitats.

- On average, each acre of tree canopy in Bellevue absorbs 40,000 gallons of water. This benefit of avoided runoff is valued at roughly $360 per acre/per year. Extrapolated citywide, this means that Bellevue’s existing tree canopy provides $2,843,283 in stormwater runoff benefits.

CARBON STORAGE AND SEQUESTRATION
Trees accumulate carbon in their biomass; with most species in a temperate forest, the rate and amount increase with age.

- Bellevue’s trees store approximately 1,452,475 tons of carbon, valued at $51,388,889, and each year the tree canopy absorbs and sequesters approximately 28,786 tons of carbon dioxide, valued at $1,018,439.

Figure 19. | Quantification of some of the monetary benefits of Bellevue’s urban forest ecosystem services (based on 37% citywide tree canopy cover).
In addition to assessing Bellevue’s urban tree canopy using current 2017 imagery, this study also quantified changes in urban tree canopy since it was last assessed using 2007 imagery. Previous studies conducted in 1998 and 2008 by American Forests determined that the city was losing its valuable tree canopy and the associated ecosystem benefits that trees provide at alarming rates, with a 12 percent loss in canopy from 1986-1996 and another 9 percent loss in canopy from 1996-2006.

Although the exact methods used to map land cover varied between the 2017 and 2007 studies, the resulting land cover data are comparable. Both studies used high-resolution aerial imagery as their primary source. The spatial resolution of the imagery in 2007 was 2 feet while this study used 1 meter NAIP imagery. In those ten years, several of the geographic assessment scales had changed due to annexation, population changes, and other land use reconfigurations. To ensure an even comparison, the 2007 land cover data were reanalyzed using the current boundaries of the city, land use, census block groups, etc. While American Forests originally reported that Bellevue had 36% tree canopy cover in 2007, using the current city boundary, Bellevue had 37.6 percent cover in 2007. This increase may be due to the fact that the current city boundary now includes heavily forested areas on the southern edge of the city. Changes since that time were assessed at all of the geographic assessment scales (citywide, watersheds, land use, neighborhoods, drainage basins, and census block groups).

**CITYWIDE URBAN TREE CANOPY CHANGE**

Overall, this change analysis revealed that the rapid loss of canopy that occurred in previous decades has nearly ended as close to the same canopy cover over the timespan of 2007-2017 was observed. This study estimates Bellevue’s urban tree canopy at an average of 36.7 percent citywide, meaning that only 0.7 percent of the city’s canopy, totaling 148 acres, was lost since it was last assessed. Though still a loss, this number is a dramatic improvement from the upwards of 20 percent that was lost between 1986 and 2006. Increased efforts should be made to preserve the city’s existing urban forest through revised management actions.

This study achieved 92% overall accuracy (see Appendix). With a 95% confidence interval, there was a 2.1% margin of error equating to 36.7% canopy cover +/- 2.1% or a range of 34.6% to 38.8%. Compared to 2007 coverage, there was a change of -2.8% or 1.4% taking into account the 2017 margin of error.

*Table 8. Urban tree canopy change for the City of Bellevue.*

<table>
<thead>
<tr>
<th>City of Bellevue</th>
<th>Total Area</th>
<th>UTC 2007</th>
<th>UTC 2017</th>
<th>UTC Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Acres</td>
<td>%</td>
<td>Acres</td>
</tr>
<tr>
<td>Urban Tree Canopy</td>
<td>21,435</td>
<td>8,024</td>
<td>37.4%</td>
<td>7,877</td>
</tr>
</tbody>
</table>
URBAN TREE CANOPY CHANGE ANALYSIS

When the change analysis results were subdivided by HUC-12 watershed, the losses were not quite evenly distributed. The largest watershed, Lake Washington-Sammamish River, experienced only a 0.2 percent loss in canopy, whereas its counterpart, the Lake Sammamish-Sammamish River, lost 2 percent. The small Bear Creek-Sammamish River region, which had the lowest UTC in 2007 at 27 percent, actually saw an increase in canopy over the ten-year period, gaining 5 percent to reach 32 percent canopy cover.

Table 9. Urban tree canopy change by watersheds.

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Land Area</th>
<th>UTC 2007</th>
<th>UTC 2017</th>
<th>UTC Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Dist.</td>
<td>Acres</td>
<td>%</td>
</tr>
<tr>
<td>Bear Creek-Sammamish River</td>
<td>64</td>
<td>0%</td>
<td>17</td>
<td>27%</td>
</tr>
<tr>
<td>Lake Sammamish-Sammamish River</td>
<td>6,072</td>
<td>28%</td>
<td>2,324</td>
<td>38%</td>
</tr>
<tr>
<td>Lake Washington-Sammamish River</td>
<td>15,299</td>
<td>71%</td>
<td>5,683</td>
<td>37%</td>
</tr>
<tr>
<td>Totals</td>
<td>21,435</td>
<td>100%</td>
<td>8,024</td>
<td>37%</td>
</tr>
</tbody>
</table>
URBAN TREE CANOPY CHANGE BY DESIGNATED LAND USE

Dividing the urban tree canopy change results by the City’s designated future land use categories offered some additional insights as to how Bellevue’s canopy has changed over the ten-year period. As above, the Parks category had the greatest individual reduction in canopy but maintained the highest overall UTC, with an 8 percent loss from 72 to 65 percent for the 2,544 acres designated for Parks by the City of Bellevue. Differences in source datasets and mapping methodology likely impacted this canopy change statistic. In many heavily forested parks, the 2007 data showed nearly full canopy coverage. This 2017 study incorporated LiDAR data which was not available in 2007. This allowed for mapping of small gaps in the canopy scattered throughout the parks which were classified as non-canopy vegetation.

Industrial areas also had an 8 percent loss, from 34 percent to 27 percent UTC, though these areas make up only 1 percent of Bellevue’s total area. Bellevue’s central business district and commercial/mixed use areas had slight increases in canopy, and the suburban residential class (which makes up the majority of the city, occupying 65 percent of its total area) had no change.

Table 10. | Urban tree canopy change by City of Bellevue designated land uses.

<table>
<thead>
<tr>
<th>Designated Land Use</th>
<th>Land Area</th>
<th>UTC 2007</th>
<th>UTC 2017</th>
<th>UTC Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Dist.</td>
<td>Acres</td>
<td>%</td>
</tr>
<tr>
<td>Central Business District</td>
<td>387</td>
<td>2%</td>
<td>32</td>
<td>8%</td>
</tr>
<tr>
<td>Commercial &amp; Mixed Use</td>
<td>2,747</td>
<td>13%</td>
<td>540</td>
<td>20%</td>
</tr>
<tr>
<td>Industrial</td>
<td>220</td>
<td>1%</td>
<td>75</td>
<td>34%</td>
</tr>
<tr>
<td>Parks</td>
<td>2,544</td>
<td>12%</td>
<td>1,823</td>
<td>72%</td>
</tr>
<tr>
<td>Suburban Residential</td>
<td>14,131</td>
<td>65%</td>
<td>5,163</td>
<td>37%</td>
</tr>
<tr>
<td>Urban Residential</td>
<td>1,550</td>
<td>7%</td>
<td>482</td>
<td>31%</td>
</tr>
<tr>
<td>Totals</td>
<td>21,580</td>
<td>100%</td>
<td>8,116</td>
<td>38%</td>
</tr>
</tbody>
</table>
Table 11. | Comparing urban tree canopy percentages by land use to American Forests’ 2007 recommendations.

<table>
<thead>
<tr>
<th>Designated Land Use</th>
<th>Citywide</th>
<th>Urban Residential</th>
<th>Suburban Residential</th>
<th>Central Business District</th>
<th>Commercial &amp; Mixed Use</th>
<th>Industrial</th>
<th>Parks</th>
<th>ROW</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 Canopy %</td>
<td>37%</td>
<td>34%</td>
<td>36%</td>
<td>10%</td>
<td>21%</td>
<td>26%</td>
<td>64%</td>
<td>24%</td>
</tr>
<tr>
<td>AF Recommended Canopy %</td>
<td>40%</td>
<td>35%</td>
<td>50%</td>
<td>15%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Difference in Canopy %</td>
<td>-3%</td>
<td>-1%</td>
<td>-14%</td>
<td>-5%</td>
<td>-4%</td>
<td>1%</td>
<td>39%</td>
<td>-1%</td>
</tr>
</tbody>
</table>
URBAN TREE CANOPY CHANGE ANALYSIS

Subdividing the results by neighborhoods was also very informative, revealing that almost all of the canopy loss had occurred in a small handful of neighborhoods while the rest experienced slight increases. West Bellevue had the most severe loss, with 108 acres removed equating to a 7 percent reduction in canopy. However, some of this loss can be attributed to changes in methodology related to the classification of heavily forested tree canopy in parks. Eastgate, West Lake Sammamish, and Wilburton each lost over 60 acres of canopy, or approximately 4-6 percent of their total canopy. Conversely, Somerset had an increase of 71 acres or 5 percent canopy cover.

Table 12. | Urban tree canopy change by neighborhoods.

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Land Area</th>
<th>UTC 2007</th>
<th>UTC 2017</th>
<th>UTC Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Dist.</td>
<td>Acres</td>
<td>%</td>
</tr>
<tr>
<td>BelRed</td>
<td>963</td>
<td>4%</td>
<td>147</td>
<td>15%</td>
</tr>
<tr>
<td>Bridle Trails</td>
<td>2,022</td>
<td>9%</td>
<td>954</td>
<td>47%</td>
</tr>
<tr>
<td>Cougar Mountain / Lakemont</td>
<td>2,349</td>
<td>11%</td>
<td>1,117</td>
<td>48%</td>
</tr>
<tr>
<td>Crossroads</td>
<td>812</td>
<td>4%</td>
<td>212</td>
<td>26%</td>
</tr>
<tr>
<td>Downtown</td>
<td>432</td>
<td>2%</td>
<td>39</td>
<td>9%</td>
</tr>
<tr>
<td>Eastgate</td>
<td>1,759</td>
<td>8%</td>
<td>654</td>
<td>37%</td>
</tr>
<tr>
<td>Factoria</td>
<td>387</td>
<td>2%</td>
<td>81</td>
<td>21%</td>
</tr>
<tr>
<td>Lake Hills</td>
<td>2,260</td>
<td>11%</td>
<td>713</td>
<td>32%</td>
</tr>
<tr>
<td>Newport</td>
<td>1,706</td>
<td>8%</td>
<td>678</td>
<td>40%</td>
</tr>
<tr>
<td>Northeast Bellevue</td>
<td>1,413</td>
<td>7%</td>
<td>417</td>
<td>29%</td>
</tr>
<tr>
<td>Northwest Bellevue</td>
<td>1,321</td>
<td>6%</td>
<td>433</td>
<td>33%</td>
</tr>
<tr>
<td>Somerset</td>
<td>1,307</td>
<td>6%</td>
<td>513</td>
<td>39%</td>
</tr>
<tr>
<td>West Bellevue</td>
<td>1,683</td>
<td>8%</td>
<td>729</td>
<td>42%</td>
</tr>
<tr>
<td>West Lake Sammamish</td>
<td>1,174</td>
<td>5%</td>
<td>539</td>
<td>46%</td>
</tr>
<tr>
<td>Wilburton</td>
<td>1,109</td>
<td>5%</td>
<td>477</td>
<td>43%</td>
</tr>
<tr>
<td>Woodridge</td>
<td>728</td>
<td>3%</td>
<td>320</td>
<td>44%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>21,425</strong></td>
<td><strong>100%</strong></td>
<td><strong>8,022</strong></td>
<td><strong>37%</strong></td>
</tr>
</tbody>
</table>
Neighborhood Areas without Bellevue Parks

The City of Bellevue does not guarantee that the information on this map is accurate or complete. This data is provided on an "as is" basis and disclaims all warranties.

Source: City of Bellevue
Coordinate System: State Plane, Washington North Zone, NAD83 NSRS2007 (Bellevue)

Figure 21. | Bellevue's neighborhoods minus parks.

Table 13. | Urban tree canopy change by neighborhoods minus park lands. Bellevue’s parks consist of heavily forested areas. Because of differences in methodology between 2007 and 2017 studies, tree canopy in parks showed significant change. This table removes parks from neighborhoods to show that tree canopy coverage has been steady over the last ten years in Bellevue’s neighborhoods.
URBAN TREE CANOPY CHANGE BY CHANGE BY STREAM CORRIDORS
Within Bellevue’s stream corridors, there was a 7 percent decrease in tree canopy cover. This is 6 percent greater than the citywide average. These corridors provide a variety of important ecosystem services including, but not limited to, wildlife habitat, water quality, and stormwater runoff, so it is important to maintain the existing tree canopy in these areas.

URBAN TREE CANOPY CHANGE BY CHANGE BY DRAINAGE BASINS
Of the city’s 28 drainage basins, 13 experienced losses in canopy, 10 experienced gains, and 5 experienced little to no change. The most significant loss in canopy occurred in the Mercer Slough, which lost 8 percent of its canopy over the ten-year period, while the Newport basin had a 6 percent gain. Refer to the UTC Results spreadsheet for the full change assessment results by drainage basin.

URBAN TREE CANOPY CHANGE BY SCHOOLS
Urban tree canopy on Bellevue’s 81 school properties closely reflected the citywide average, with a 1 percent decrease overall. Wilburton had the greatest reduction in canopy, losing 6 of its 8 acres from 2007-2017 (equating to a 60 percent loss). At the other end of the spectrum, Bellevue Children’s School more than tripled its canopy over the same time period, increasing their UTC from .07 to .33 acres or by 19 percent. For the full change results by schools, refer to the UTC Results spreadsheet.

URBAN TREE CANOPY CHANGE BY CENSUS BLOCK GROUPS
Perhaps the most informative unit of analysis for the change analysis was the census block groups. As the smallest geographic unit, this assessment revealed changes in canopy at the finest scale. Some block groups lost as much as 11 percent of their canopy while others gained exactly that much. Losses in canopy tended to be concentrated near the center of the city, while the northern and southern edges experienced more increases. Refer to the UTC Results spreadsheet for the full change assessment results by census block groups.

Figure 22. | Number of census block groups within percent canopy cover change ranges.
Figure 23. | Urban tree canopy change by census block groups from 2007-2017.
URBAN TREE CANOPY CHANGE BY RIGHT-OF-WAY CENSUS BLOCK GROUPS

Again, changes in UTC were assessed for only the right-of-way areas within each census group, in addition to within the full census block group areas. Interestingly, these areas had an overall 5 percent increase in canopy, in contrast to the citywide average of -1 percent. UTC change for the right-of-way areas within each census block group varied, with the greatest decrease at -15 percent and the greatest increase at 18 percent. Refer to the UTC Results spreadsheet for the full change results by right-of-way by census block group.

![Urban Tree Canopy Change (%) by Right-of-Way by Census Block Groups](image)

**Figure 24.** Number of census block groups by right-of-way within percent canopy cover change ranges.
The urban forest is an integral part of the character of Bellevue for all those that live, work, and visit the city. Benefits of trees are referred to as “ecosystem services” and describe the ways that urban forests impact our lives and the environment. To further guide and assist city planning efforts, the correlations between tree canopy cover and several socioeconomic and demographic factors were analyzed. Using data from the U.S. Census Bureau at the census block group level, racial and ethnic diversity, income levels, and home values were compared with the percentage of canopy cover. Correlations were identified for each factor analyzed indicating areas in greatest need of ecosystem services provided by the urban forest.

One trend showed that census block groups where a large percentage of the population are part of racial and ethnic minority groups had less than the average city-wide tree canopy cover. In areas where minorities made up more than half of the population, canopy coverage was 7% less than the city-wide average. The least diverse census block groups (>75% white) had slightly above average canopy cover (38%).

The rate of poverty showed a negative correlation with tree canopy coverage. In areas where 10% or more of the population was below the poverty line or “underserved”, the average canopy coverage was 26%, 10% lower than the city-wide average. Census block groups where 10% or less of the population was below the poverty line, the average canopy coverage was equivalent to the city-wide average.

There was a positive correlation in Bellevue between tree canopy cover and median home values. For areas with median home values less than the city-wide average (~$550,000), tree canopy coverage was 5% less than the city-wide tree canopy cover average. Census block groups with home values greater than the city’s average had canopy coverage rates over 2% higher than the city-wide average.

**Table 14 - Tree canopy rates by various demographic and socioeconomic factors.**

<table>
<thead>
<tr>
<th></th>
<th>Bellevue Citywide</th>
<th>More Than 50% Minority Population</th>
<th>Less Than 25% Minority Population</th>
<th>&gt; 10% Underserved Population</th>
<th>&lt; 10% Underserved Population</th>
<th>Greater Than Average Home Values</th>
<th>Less Than Average Home Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Canopy %</td>
<td>37%</td>
<td>30%</td>
<td>38%</td>
<td>26%</td>
<td>37%</td>
<td>39%</td>
<td>32%</td>
</tr>
<tr>
<td>Difference from City average</td>
<td>-</td>
<td>-.7%</td>
<td>1%</td>
<td>-11%</td>
<td>0%</td>
<td>2%</td>
<td>-.5%</td>
</tr>
</tbody>
</table>
Figure 25. Census block groups showing the percentage of the population that are part of racial and ethnic minority groups. The darker brown colors represent higher minority population percentages, while the lighter shades of tan represent lower. Tree canopy percentages are illustrated by the green circles. Larger green circles represent higher tree canopy percentages.

Comparing Tree Canopy Cover in King County, WA Communities

Figure 26. A comparison of tree canopy in 15 cities in the surrounding area.
To preserve, protect, and maintain Bellevue’s tree canopy, the City should continue having a tree canopy assessment performed on a regular interval. As the City changes, they will be able to use these recommendations to ensure that their urban forest policies and management practices prioritize its maintenance, health, and growth. Bellevue’s urban forest provides the City with a wealth of environmental, social, and even economic benefits which relate back to greater community interest in citywide initiatives and priorities. These updated results can be used to interpret where these gains have been felt most significantly and where there is still work to be done in accordance with the city’s broader goals and vision for its future.

The results of this assessment can and should be used to encourage investment in forest monitoring, maintenance, and management; to prepare supportive information for local budget requests/grant applications; and to develop targeted presentations for city leaders, planners, engineers, resource managers, and the public on the functional benefits of trees in addressing environmental issues. The land cover data should be disseminated to diverse partners for urban forestry and other applications while the data is current and most useful for decision-making and implementation planning.

Bellevue’s 37% tree canopy falls short of the City’s comprehensive plan goal of a 40% tree canopy, which is also a best practice recommendation from American Forests. In the 2007 study, American Forests provided the following recommendations for tree canopy in different land use types:

- Urban Residential: 35%
- Suburban Residential: 50%
- Central Business District: 15%
- Commercial and Mixed Use: 25%
- Industrial: 25%
- Parks: 25%
- Right-of-Way: 25%

Additionally, the City and its various stakeholders can utilize the results of the UTC, PPA, and change analyses to identify the best locations to focus future tree planting and canopy expansion efforts. While reductions in canopy coverage occurred city-wide in previous decades, breaking up the results by several different geographic boundaries demonstrated that the recent gains have not been evenly distributed. These results can be used as a guide to determine which areas would receive the greatest benefits from the investment of valuable time and resources into Bellevue’s urban forest.
SUBURBAN RESIDENTIAL NEIGHBORHOODS ARE PRIME AREAS FOR INCREASING TREE CANOPY

Urban residential designated land use areas saw an increase in tree canopy coverage of about 2.5%. These areas have a higher population density than their suburban residential counterparts. Therefore, an increased tree canopy coverage in these areas will provide benefit to a larger number of residents. In 2007, American Forests recommended that Bellevue’s urban residential areas should have a canopy goal of 35%. Tree canopy coverage in 2017 was estimated at just under 34%. The city should continue to focus on these areas by making use of the available PPA (433 acres or 28%) on both vegetated surfaces (13%) as well as impervious surfaces (15%) such as parking lots for apartment complexes.

Suburban residential areas experienced very little net change in tree canopy coverage between 2007 and 2017, however, some neighborhoods experienced a greater loss of trees than others. American Forests recommended that tree canopy coverage expand to 50% in these areas, however, that figure stands at about 36%. The city should focus on community outreach and education programs to better inform citizens and private land holders of the environmental, social, and financial benefits that trees provide and consider other strategies to help preserve and grow the tree canopy. Tree giveaways and tree planting programs can be developed to further promote new tree plantings. Since a majority of Bellevue is considered suburban residential land, these areas provide the greatest opportunity to increase tree canopy cover throughout the city. There is ample room for growth, with 26% of these areas being considered possible planting areas.

Schools within the Bellevue school district are prime areas for increasing tree canopy. In 2017, there was 24% tree canopy coverage. Since 2007, tree canopy coverage on all school properties was stable showing just a small loss of 7 acres. There was also 29% PPA in open vegetated areas as well as parking lots and sidewalks. Sports fields and play areas were excluded from PPA. School tree planting programs are a great way to teach students why trees matter while also empowering them to take action and improve conditions in their neighborhood.
APPENDIX

ACCURACY ASSESSMENT
Classification accuracy serves two main purposes. Firstly, accuracy assessments provide information to technicians producing the classification about where processes need to be improved and where they are effective. Secondly, measures of accuracy provide information about how to use the classification and how well land cover classes are expected to estimate actual land cover on the ground. Even with high resolution imagery, very small differences in classification methodology and image quality can have a large impact on overall map area estimations. An accuracy assessment was performed on both land cover datasets – one derived from the previous AMEC study in 2007 and another from this study – to evaluate both their individual accuracy and how they compare to each other.

The classification accuracy error matrices illustrated in Figures 24 and 25 contain confidence intervals that report the high and low values that could be expected for any comparison between the classification data and what actual, on the ground land cover was in both 2007 and 2017. This accuracy assessment was completed using high resolution aerial imagery, with computer and manual verification. No field verification was completed.

THE INTERNAL ACCURACY ASSESSMENT WAS COMPLETED IN THESE STEPS
1. Six hundred and thirty two (632) sample points, or approximately 18 points per square mile area in Bellevue (33.5 sq. miles), were randomly distributed across the study area and assigned a random numeric value.
2. Each sample point was then referenced using the NAIP aerial photo and assigned one of five generalized land cover classes (“Ref_ID”) mentioned above by a technician.
3. In the event that the reference value could not be discerned from the imagery, the point was dropped from the accuracy analysis. In this case, no points were dropped.
4. An automated script was then used to assign values from the classification raster to each point (“Eval_ID”). The classification supervisor provides unbiased feedback to quality control technicians regarding the types of corrections required. Misclassified points (where reference ID does not equal evaluation ID) and corresponding land cover are inspected for necessary corrections to the land cover (1).

Accuracy is re-evaluated (repeat steps 3 & 4) until an acceptable classification accuracy is achieved.

SAMPLE ERROR MATRIX INTERPRETATION
Statistical relationships between the reference pixels (representing the true conditions on the ground) and the intersecting classified pixels are used to understand how closely the entire classified map represents Bellevue’s landscape. The error matrices shown in Figure 24 and 25 represent the intersection of reference pixels manually identified by a human observer (columns) and classification category of pixels in the classified image (rows). The gray boxes along the diagonals of the matrix represent agreement between the two-pixel maps.

(1) Note that by correcting locations associated with accuracy points, bias is introduced to the error matrix results. This means that matrix results based on a new set of randomly collected accuracy points may result in significantly different accuracy values.
Off-diagonal values represent the number of pixels manually referenced to the column class that were classified as another category in the classification image. Overall accuracy is computed by dividing the total number of correct pixels by the total number of pixels reported in the matrix (using the 2017 matrix in Figure 21 as an example, 214 + 103 + 205 + 22 + 38 = 582 / 632 = 92 percent). At the 95% confidence interval, there is a 2.1% margin of error.

The matrix can be used to calculate per class accuracy percent’s. For example, 227 points were manually identified in the reference map as Tree Canopy, and 214 of those pixels were classified as Tree Canopy in the classification map. This relationship is called the “Producer’s Accuracy” and is calculated by dividing the agreement pixel total (diagonal) by the reference pixel total (column total). Therefore, the Producer’s Accuracy for Tree Canopy is calculated as: (214/227 = .94), meaning that we can expect that ~94 percent of all 2017 tree canopy in the Bellevue, WA study area was classified as Tree Canopy in the 2017 classification map.

Conversely, the “User’s Accuracy” is calculated by dividing the total number of agreement pixels by the total number of classified pixels in the row category. For example, 233 classification pixels intersecting reference pixels were classified as Tree Canopy, but 16 pixels were identified as Vegetation, 2 were identified as soil/dry vegetation, and 1 pixel was identified as Impervious in the reference map. Therefore, the User’s Accuracy for Tree Canopy is calculated as: (214/233 = 0.92), meaning that ~92 percent of the pixels classified as Tree Canopy in the classification were actual tree canopy.

It is important to recognize the Producer’s and User’s accuracy percent values are based on a sample of the true ground cover, represented by the reference pixels at each sample point. Interpretation of the sample error matrix results indicates this land cover, and more importantly, tree canopy, were accurately mapped in Bellevue in 2017. The largest sources of classification confusion exist between tree canopy and vegetation.

Figure 27. | Error matrix for land cover classifications in Bellevue, WA (2007).
ACCURACY ASSESSMENT RESULTS
Interpretation of the sample error matrix offers some important insights when evaluating Bellevue’s urban tree canopy coverage and how land cover reported by the derived rasters and the human eye. The high accuracy of the 2017 data indicates that Bellevue’s current tree canopy can be safely assumed to match the figures stated in this report (approximately 37 percent). However, the slightly lower accuracy of the 2007 data indicates that the previously stated canopy amount of 38 percent may have been slightly under- or over-reported. Specifically, the results indicate that in 2007, only 85 percent of tree canopy on the ground may have been captured in the classification map (producer’s accuracy), while only 88 percent of points identified as tree canopy may have truly been tree canopy.

I-TREE HYDRO STORMWATER ANALYSIS
i-Tree Hydro is a tool designed to simulate the impacts that tree canopy cover, impervious surfaces, and other land cover types have on the hydrological cycle. Users of the tool can make use of existing input datasets provided by i-Tree or they can incorporate their own data for hourly weather, streamflow, and elevation (either a Digital Elevation Model [DEM] or one of Hydro’s pre-formatted topographic index files). One or many different land cover scenarios can be defined in order to estimate the impact on stormwater runoff. Reports detailing these impacts can be exported. Additional parameters can be configured such as soil texture and conductivity. However, these variables are recommended for more advanced users. The default regional values that are provided should be sufficient for the average user.
For the purposes of this study, a simplified version of the model was used utilizing only pre-existing data already available in i-Tree Hydro. A topographic index was chosen to represent the area of interest (see Appendix 2, page 47 of the i-Tree Hydro User’s Manual for more information on topographic indexes). Baseline land cover conditions created by this tree canopy assessment were incorporated. To create an alternate land cover scenario, all existing tree canopy was removed and converted to herbaceous or impervious land cover to show a drastic case where all canopy cover in Bellevue was removed. The results, provided in total stormwater runoff over a specified period of time, can help natural resource managers and urban planners engage in meaningful discussions to better describe the impacts of land cover changes in their cities. The results in Figure 1, below, are presented as raw numbers (cubic feet) and a percent change (%) from the base case scenario. At the time of publication, Plan-It Geo is engaged in a comprehensive analysis of the i-Tree Hydro tool’s applications in western Washington. This project will provide much more detailed modeling scenarios and offer guidance on best practices. This project is anticipated to be completed in 2019.

<table>
<thead>
<tr>
<th>Land Cover</th>
<th>Base (%)</th>
<th>Alternate (%)</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Canopy</td>
<td>36.8%</td>
<td>0.0%</td>
<td>-36.8%</td>
</tr>
<tr>
<td>Pervious Under Tree Canopy</td>
<td>32.5%</td>
<td>0.0%</td>
<td>-32.5%</td>
</tr>
<tr>
<td>Impervious Under Tree Canopy</td>
<td>4.4%</td>
<td>0.0%</td>
<td>-4.4%</td>
</tr>
<tr>
<td>Shrub</td>
<td>1.6%</td>
<td>1.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Herbaceous</td>
<td>17.1%</td>
<td>49.5%</td>
<td>32.4%</td>
</tr>
<tr>
<td>Water</td>
<td>0.6%</td>
<td>0.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Impervious</td>
<td>39.6%</td>
<td>43.9%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Soil</td>
<td>4.4%</td>
<td>4.4%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Streamflow Predictions</th>
<th>Base (m³)</th>
<th>Alternate (m³)</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Flow</td>
<td>12,348.8</td>
<td>12,635.0</td>
<td>2.0%</td>
</tr>
<tr>
<td>Base Flow</td>
<td>1,258.0</td>
<td>1,277.3</td>
<td>2.0%</td>
</tr>
<tr>
<td>Pervious Runoff</td>
<td>5,978.0</td>
<td>6,187.5</td>
<td>4.0%</td>
</tr>
<tr>
<td>Impervious Runoff</td>
<td>5,112.8</td>
<td>5,170.1</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

Table 15. | Stormwater runoff values using existing land cover and an alternate scenario where all tree canopy was removed.
GLOSSARY/KEY TERMS

**Land Acres**: Total land area, in acres, of the assessment boundary (excludes water).

**Non-Canopy Vegetation**: Areas of grass and open space where tree canopy does not exist.

**Possible Planting Area - Vegetation**: Areas of grass and open space where tree canopy does not exist, and it is biophysically possible to plant trees.

**Possible Planting Area - Impervious**: Paved areas void of tree canopy, excluding buildings and roads, where it is biophysically possible to establish tree canopy. Examples include parking lots and sidewalks.

**Possible Planting Area - Total**: The combination of PPA Vegetation area and PPA Impervious area.

**Shrub**: Low-lying vegetation that was classified based on interpretation of shadows and texture in vegetation. Shrubs produce little to no shadow and appeared smooth in texture compared to tree canopy. They are generally between 5 and 10 feet tall.

**Soil/Dry Vegetation**: Areas of bare soil and/or dried, dead vegetation.

**Total Acres**: Total area, in acres, of the assessment boundary.

**Unsuitable Impervious**: Areas of impervious surfaces that are not suitable for tree planting. These include buildings and roads.

**Unsuitable Planting Area**: Areas where it is not feasible to plant trees. Airports, ball fields, golf courses, etc. were manually defined as unsuitable planting areas.

**Unsuitable Soil**: Areas of soil/dry vegetation considered unsuitable for tree planting. Irrigation and other modifiers may be required to keep a tree alive in these areas.

**Unsuitable Vegetation**: Areas of non-canopy vegetation that are not suitable for tree planting due to their land use.

**Urban Tree Canopy (UTC)**: The "layer of leaves, branches and stems that cover the ground" (Raciti et al., 2006) when viewed from above; the metric used to quantify the extent, function, and value of Bellevue’s urban forest. Tree canopy is generally taller than 10-15 feet tall.

**Water**: Areas of open, surface water not including swimming pools.