SEATTLE CITY COUNCIL

Transportation and Utilities Committee

Agenda

Wednesday, February 5, 2020

9:30 AM

Council Chamber, City Hall
600 4th Avenue
Seattle, WA 98104

Alex Pedersen, Chair
Dan Strauss, Vice-Chair
M. Lorena González, Member
Lisa Herbold, Member
Tammy J. Morales, Member
Debora Juarez, Alternate

Chair Info: 206-684-8804; Alex.Pedersen@seattle.gov

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Transportation and Utilities Committee

Agenda

February 5, 2020 - 9:30 AM

Meeting Location:
Council Chamber, City Hall, 600 4th Avenue, Seattle, WA 98104

Committee Website:
http://www.seattle.gov/council/committees/transportation-and-utilities

This meeting also constitutes a meeting of the City Council, provided that the meeting shall be conducted as a committee meeting under the Council Rules and Procedures, and Council action shall be limited to committee business.

Please Note: Times listed are estimated

A. Call To Order

B. Approval of the Agenda

C. Public Comment

(up to 20 minutes)

D. Items of Business

1. Seattle Information Technology Department (Seattle IT) - Overview and discussion of items of business anticipated to be heard in the Transportation and Utilities Committee in 2020

Supporting Documents: Presentation

Briefing and Discussion (20 minutes)

Presenter: Saad Bashir, Chief Technology Officer, Seattle IT

2. Appt 01527 **Appointment of Kevin Werner as member, Levy to Move Seattle Oversight Committee, for a term to December 31, 2021.**

Attachments: Appointment Packet

Briefing, Discussion, and Possible Vote (10 minutes)

Presenter: Lorelei Williams, Seattle Department of Transportation (SDOT)

3. **Move Seattle Presentation**

Supporting Documents: Presentation

Briefing and Discussion (30 minutes)

Presenters: Lorelei Williams and Rachel McCaffrey, SDOT; Rachel Ben-Shmuel, Co-Chair, Levy Oversight Committee

4. **Seattle City Light Climate Adaptation Plan**

Supporting Documents: Presentation - Climate Adaptation Executive Summary
Vulnerability Assessment Overview (Graphic)
Presentation - Preparing Seattle City Light for Climate Change

Briefing and Discussion (30 minutes)

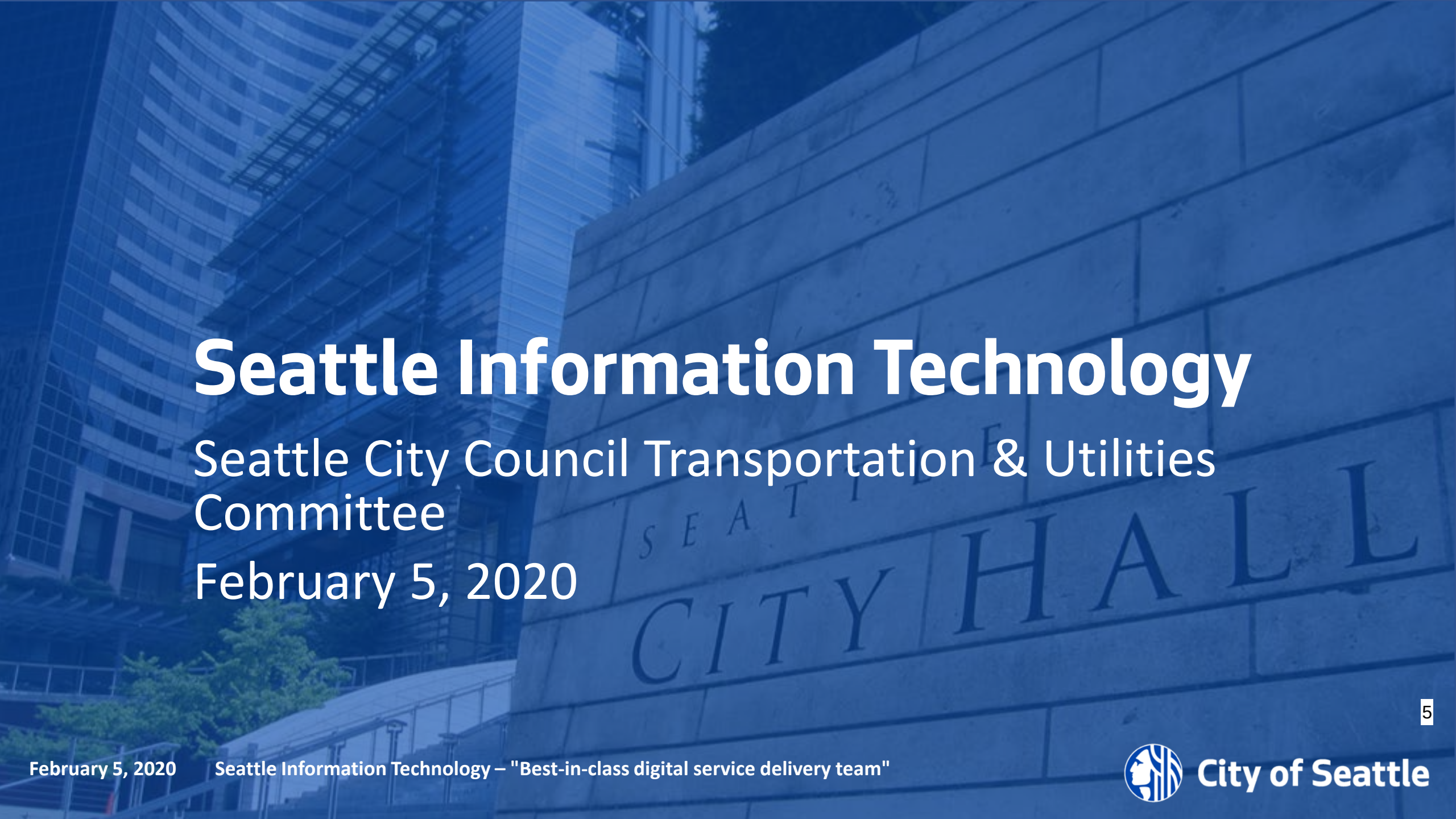
Presenter: Debra Smith, General Manager and CEO, Seattle City Light

E. Adjournment

Legislation Text

File #: Inf 1595, **Version:** 1

Seattle Information Technology Department (Seattle IT) - Overview and discussion of items of business anticipated to be heard in the Transportation and Utilities Committee in 2020



Seattle Information Technology

Seattle City Council Transportation & Utilities Committee

February 5, 2020

Vision & Mission

VISION

Seattle IT aims to be a best-in-class digital service delivery team for the City of Seattle departments and the residents we serve.

MISSION

Equip City of Seattle departments with innovative and equitable technology solutions to better serve City residents.

Structure

Frontline Digital Services

Accountable for day-to-day client support and services

Digital Workplace

Deliver digital tools to transform everyday work

Business Applications

Responsible for client specific software solutions

Platform Applications

Manage enterprise-wide software solutions

Client Solutions

Lead engagement for a dynamic client base

Executive Advisor

Variety of business critical areas

Service Modernization

Drive a modern technology footprint

Chief Privacy Officer

Manage the legislated privacy mandate

Digital Security & Risk

Champion technology security for the organization

Technology Infrastructure

Responsible for back-end infrastructure

Chief of Staff

Enable IT for success

Frontline Digital Services

Seattle.gov, Public Engagement Services, Seattle Channel, Solution Desk, Desktop Support, Asset Management, Technology Lifecycle, IT Service Management,...

Digital Workplace

Office 365, Desktop Engineering, Email, SharePoint, Windows, Mobility, Digital Workflows, Collaboration Tools,…

Client Solutions

Business Analysis, Client Relationship Management, User Groups, New Project In-Take,…

Business Applications

Financial Systems, Utility Systems, HR Systems, Fire Systems, Police Systems,…

Platform Applications

GIS, Permitting Systems, Asset Management, CRM, Middleware,…

Internal ---------- Client Facing

Service Modernization

Data Engineering, Quality Assurance, Vendor Management, Enterprise Architecture, Automation, DevOps, Cloud Adoption,…

Digital Security & Risk

Security Operations, Risk Management, Compliance, Emergency Management,…

Executive Advisor

Digital Equity, DEI/RSJI, Process Improvements, Policies Rationalization, Technology Access Grants, Mayor's Office and Council Reporting, Special Projects, Governance Management, Inter-Governmental Relations,…

Technology Infrastructure

Network Engineering, Cloud Infrastructure, Network Monitoring, Data Centre, Identity Management, Unified Communication, Database Systems,…

Chief of Staff

Talent, Communications, Finance, Service Performance, Work Planning, Change Management,…

Chief Privacy Officer

All privacy related mandate

Internal ---------- Client Facing

Seattle IT by the Numbers (internal)

What is Seattle IT?

- **4.7 avg. ytd.** customer satisfaction (out of 5)
- **92%** rated resolution as acceptable or faster than expected
- **3,000** IT requests fulfilled per month (**79%** on time)
- **5,500** IT incidents resolved per month (**89%** on time)
- **48%** of incidents resolved on first contact
- **2-day** average for retail software delivery
- **11-day** average for IT setup of new employees
- **5,600** IT purchase requests received
- **13,000** phone lines
- **11,600** desktops | **6,500** laptops & tablets
- **3,270** servers
- **4.8 petabytes** of storage on premise | **1.8 petabytes** of storage on cloud

1 Petabyte = 20 million four-drawer filing cabinets filled with text

RELIABILITY & AVAILABILITY

Network uptime this month

Telephone Network	99.9%
Internet	100%
Public Safety Radio	100%
Data Network	99.6%

100% VPN uptime M

2115 staff used VPN in December M

99.3% backup success in December

- **105** active project portfolio projects
- **638** privacy reviews completed
- **4,106** staff hours dedicated to IT training via Pluralsight training platform
- **1,530** in-depth technical research articles consumed by staff
- **1,605** active applications
- **10 million** emails sent and received in December
- **2.3** million files on SharePoint
- **14.2** terabytes of OneDrive storage used
- **1,700** digital signatures (Adobe Sign) in December
- **2,200** computers upgraded for PC replacement

Seattle IT by the Numbers (resident-facing)

- **$320,000** invested in community-led projects to increase digital literacy through our **Technology Matching Fund Program** in 2019 ($5 million invested since 1997)
- **$461,555** additional community program investments
- **40,614** Computer kiosk sessions throughout the city at more than two dozen community centers
- **105** in-person training hours on web platforms enabling departments to communicate with the public

- **638** privacy reviews conducted for the City
- **1,917** community service requests
- **185,185** subscribers to GovDelivery
- **95%** of seattle.gov websites utilize the more efficient and accessible new seattle.gov design

Enabling our Vision: objectives and key results (OKRs)

- Planning methodology utilized by several global brands

- OKRs created for all of Seattle IT using a top-down/bottom-up approach

- OKRs are reviewed regularly to promote data-driven decision-making to meet team, division, and department objectives

- Promote continuous process improvements and data-driven decision-making throughout Seattle IT

Enabling our Vision: objectives and key results (OKRs)

Mature the day-to-day service delivery of Seattle IT to achieve operational excellence

Deliver new equipment on-time to customers.

Achieve client satisfaction score of > 4.0 as measured by follow-up surveys

Deliver 90% of in-stock/standard equipment within 10 business days

Deliver 90% of out-of-stock equipment within 30 business days

Sample Priorities

- Privacy
- RSJI/DEI
- Talent Development
- Privacy
- 5G Deployment
- Digital Workplace
- Cloud Adoption
- Application Modernization
- Digital Equity Initiatives
- Digital Security and Risk

*Additional detail provided

- Technology infrastructure modernization
- Service Analytics
- Continuous Process Improvement
- Organizational Change Management
- Project and Portfolio Management
- Automation
- IT Service Management
- Data Analytics
- Enterprise Architecture
- Self-Serve Tools

Potential legislation for the Transportation & Utilities Committee

- CTAB Appointments/Administrative Actions
- PSERN interlocal agreements
- Surveillance Ordinance technologies
- TMF Update Resolution Report

Seattle IT

Best-in-class digital service delivery team

Additional Detail on Specific Sample Priorities

Race and Social Justice Initiative (RSJI)

Seattle Information Technology (IT) strives to reflect the community of our employees and innovative culture while being transparent with its actions to engender trust for maintaining highly reliable and secure IT systems.

- *20-person RSJI Change Team leads multiple outreach events including Open House (Dec. 14) for staff to learn about IT Change Team's work, RSJI/Diversity, Equity, and Inclusion*
- Staffed a full-time RSJI Lead and created a new position for a Diversity, Equity and Inclusion / Race & Social Justice Initiative (RSJI) Strategic Advisor to implement Seattle IT's department wide DEI/RSJI strategy.
- *Partner with Office of Civil Rights and Mayors Office to meet citywide RSJI objectives*

Seattle IT Talent and Development Program

- Established from a 75-staff-participant CTO Talent sounding board.
- Encouraged training though the online learning platform Pluralsight:
  - Staff utilized all 600 viewing licenses; over 3000 hours of total learning time, with avg time of 6 hours and 58 minutes per staff view.
- Expanded the Talent and Development marketplace where staff can find IT areas where teams are looking for staff with specific skillsets increasing capacity and providing opportunities for staff development.
- Held City's first Learning Conference with industry-leading speakers for over 500 staff

Privacy Program

Since the start of the City's privacy program in 2015, we have:

- Reviewed more than 4300 new acquisitions
- Reviewed 300 IT projects and;
- Provided annual Privacy & Security training for over 12,000 City employees.

Surveillance Ordinance

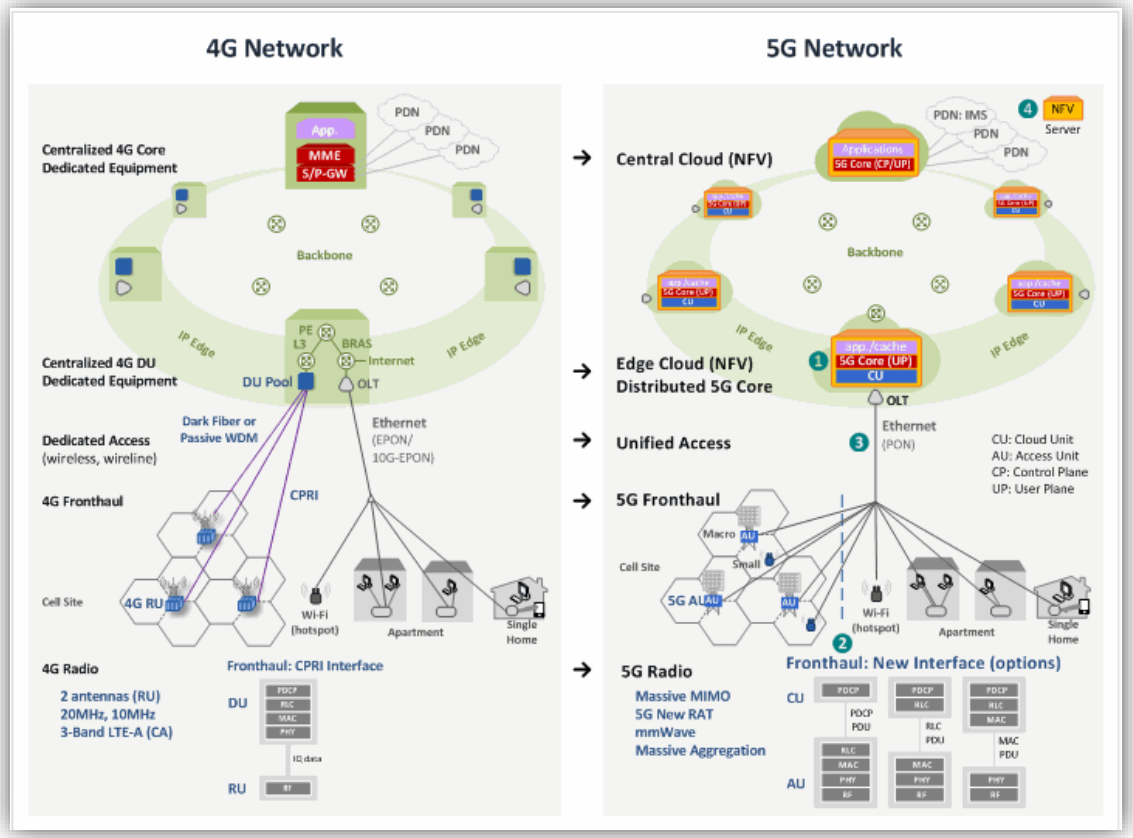
- There are 26 City current surveillance technologies requiring approval.
- Seattle IT has produced SIRs, including public comment, for 14 of the 26 identified surveillance technologies.
- 2 surveillance technologies have been reviewed and approved by the Council in 2019

1) Draft & Review SIRs	2) Public Comment Period	3) Public Comment Analysis	4) Working Group Review	5) CTO Response	6) Condensed SIR	7) Council Review
Staff from the department requesting the technology completes SIR content	The initial draft released for public review and comment. One or more public meetings will take place to solicit feedback.	City staff compiles public comments and finalizes the SIR content.	The Surveillance Advisory Working Group reviews each SIR, complete an Assessment included in SIR submission	The CTO responds to the Privacy and Civil Liberties Assessment.	City Staff creates condensed version of the SIR for submission to Council	City Council will decide on the use of the surveillance technology, by full Council vote.

8-9 months

Next Generation 5G Wireless Deployment

- Seattle IT is participating in interdepartmental efforts (IDT) to consider proposals from telecom carriers to access public infrastructure
- Seattle IT to play a neutral, central role to serve as the City's primary liaison between firms working to deploy small cell infrastructure and the various City departments that are responsible for managing necessary regulatory processes.

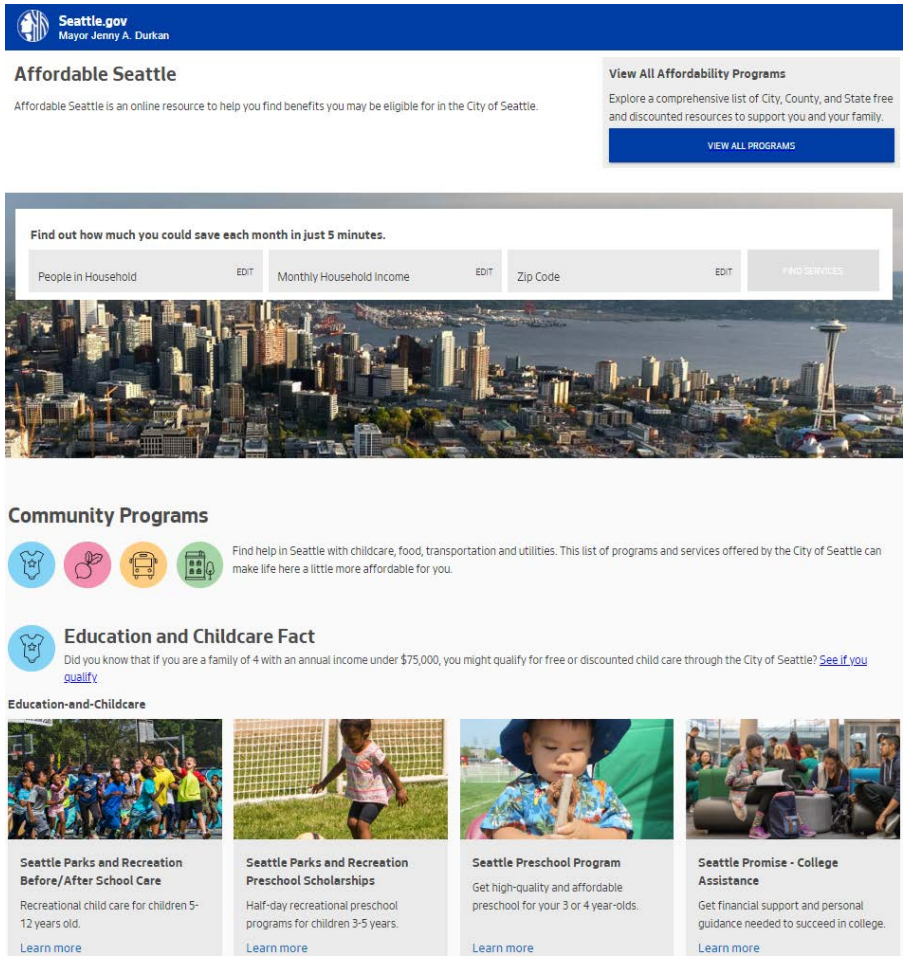


Technology Matching Fund

- $320,000 invested in community-led projects to increase digital literacy through our Technology Matching Fund Program in 2019.
- 340 community organizations having received over $5.4 million in funding, generating an additional $9 million in community-matched funds since 1997.
- Critical support in meeting City Digital Equity and RSJI goals

Innovation Advisory Council

- Seattle IT supports applications created during the first round of the Mayor's Innovation Advisory Council.
- The applications include a youth-opportunity portal and an application to support the City's Navigation Team which connects unsheltered people to housing and resources.
- https://www.affordableseattle.org/



Digital Security and Risk Management

SecOps

- Threat hunting
- Incident response
- Vulnerability mgmt.
- Phishing campaigns

Emergency Mgmt.

- Table-tops
- Business continuity
- Disaster recovery
- Safety

Cybersecurity Risk

- Internal auditing
- Change review
- New solution review
- Education & outreach

Policy & Compliance

- PCI Compliance
- NERC Compliance
- Policy & Standards
- Controlled Documents

Legislation Text

File #: Appt 01527, **Version:** 1

Appointment of Kevin Werner as member, Levy to Move Seattle Oversight Committee, for a term to December 31, 2021.

The Appointment Packet is provided as an attachment.

City of Seattle Boards & Commissions Notice of Appointment

Appointee Name: *Kevin Werner*		
Board/Commission Name: *Move Seattle Levy Oversight Committee*		**Position Title:** *Member*
X Appointment ***OR*** ☐ **Reappointment**	**Council Confirmation required?** **X** Yes ☐ No	
Appointing Authority: **X** Council ☐ Mayor ☐ Other: *Fill in appointing authority*	**Date Appointed:** *mm/dd/yy.* 11/26/19	**Term of Position: *** 1/1/2018 **to** 12/31/2021 ☒ *Serving remaining term of a vacant position*
Residential Neighborhood: *Leschi*	**Zip Code:** *98144*	**Contact Phone No.:** [redacted]
Background: *Kevin Werner holds a doctorate in Political Science, Master of Public Administration, and a Master of Science in Atmospheric Sciences and current serves as the Science and Research Director of Northwest Fisheries Science Center. Kevin is interested in increasing our city's mobility and resiliency, increasing racial and social equity, as well as continuing to build strong communities and economic enablers in our city.*		
Authorizing Signature (original signature):	**Appointing Signatory:** ~~*Jenny A. Durkan*~~ Councilmember O'Brien ~~*Mayor of Seattle*~~ Chair of Sustainability & Transportation Committee	

**Term begin and end date is fixed and tied to the position and not the appointment date.*

KEVIN WERNER
[redacted]
Seattle WA 98144
[redacted]

EXECUTIVE SUMMARY

Proven executive leadership in federal agencies with extensive experience in public administration, science, and science application. Expertise in applying scientific output to meet real world challenges in water resources, climate, and natural resources. Exceptional communication, relationship building, and facilitation skills for supporting well informed, science based decision making by stakeholders.

EDUCATION

Doctorate in Political Science **2015**
Dissertation: States, Water, and Climate: Who's Planning for Change?
University of Utah

Master of Public Administration **2009**
University of Utah

Master of Science in Atmospheric Sciences **1999**
University of Washington

Bachelor of Science in Atmospheric Sciences & Mathematics **1996**
University of Washington
Included more than 24 semester hours in physical science required for this position. Please see included University of Washington transcript for detailed course information.

EXPERIENCE

Science and Research Director, Northwest Fisheries Science Center **5/15/2017 to present**
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
Seattle, WA
Grade: Senior Executive Service
40 hours per week

Leads a large and complex federal research organization that delivers high quality science output to support management of the nation's fisheries and marine protected resources. The Northwest Fisheries Science Center (NWFSC) includes approximately 500 scientists, technicians, and support staff with an annual budget of approximately $70m. The NWFSC includes scientists with diverse expertise in the life science, social science, and physical sciences as well as a full range of

support staff with expertise in budgeting, facilities, communication, information technology, boats and ships, data, and more. The science output of the organization provides important and foundational information for managing west coast fisheries, protected resources including threatened or endangered salmon and marine mammals.

Provides executive level leadership including setting priorities, working with and supporting stakeholders in resource management. Stakeholders include Congress, fisheries management councils, resource managers in NOAA, action agencies at all levels of government, and other research organizations such as Universities.

Director, Office of Organizational Excellence **1/1/2016 to 5/15/2017**
National Weather Service
National Oceanic and Atmospheric Administration
Silver Spring, MD
Grade: Senior Executive Service
40 hours per week

The Office of Organizational Excellence leads and manages activities enabling NWS to become the agile and effective organization needed to build a Weather-Ready Nation. The Office plans and oversees organizational changes based on recommendations of two independent studies of the National Weather Service: "Weather Services for the Nation: Becoming Second to None," National Academy of Sciences (NAS), 2012, and "Forecast for the Future: Assuring the Capacity of the National Weather Service," National Academy of Public Administration (NAPA), May 2013. The Office also administers a framework for change which enables and facilitates continuous evolution of the National Weather Service. The Office focuses on large-scale, significant changes to the organizational structure, infrastructure, or operations of the National Weather Service. The Office coordinates and oversees transition activities, and evaluates if changes implemented are effective and meet the intent of study recommendations. The Office manages the framework for change process, as well as communication of change activities to both internal and external stakeholders by working closely with the Office of Planning and Programming for Service Delivery (OPPSD), Portfolio Offices, and the Communications and Legislative Affairs in the Office of the Chief of Staff.

Regional Climate Service Director, Western Region **3/1/2014 to 1/1/2016**
National Oceanic and Atmospheric Administration
Seattle, WA
Grade: ZP5 (GS15 equivalent)
40 hours per week

Coordinated and advised on National Oceanic and Atmospheric Administration (NOAA) climate services investments in an eight state region in the Western United States including activities and programs from the National Weather Service (NWS), NOAA Research, the National Climatic Data Center (NCDC), and NOAA Fisheries.

Led a NOAA wide services assessment focused on understanding the impacts of the 2012-2014 California drought and the opportunities to improve or enhance services, forecasts, and data

offered by NOAA supporting impacted decision makers. My role included developing the team's charter, identifying team members, leading team calls, coordinating team fieldwork, and overseeing and vetting the team's report.

Developed a NOAA drought and water resources pilot activity focused on incorporating climate science, data, and forecasts into existing habitat and flood protection collaborations in the Puget Sound basin.

Collaborated with key stakeholders in the region including Western Governors Association, the Western States Water Council, private sector stakeholders, and federal partners to identify needs related to climate, drought, and NOAA services in the region and to develop avenues to meet those needs.

Prepared and proposed budgets for science and technical projects including drought early warning system prototypes in the Pacific Northwest and California.

Briefed news media on various western USA climate particularly focusing on water resources, water supply, and drought as one-on-one interviews, routine or special briefings to multiple outlets, and working with public affairs staff on media roll out plans.

Service Coordination Hydrologist **3/1/2008 to 3/1/2014**
Colorado Basin River Forecast Center (CBRFC)
National Weather Service; Salt Lake City, UT
Grade: GS14
40 hours per week

Utilized physical sciences knowledge to outreach and engage partners, customers and stakeholders in applications of climate information produced by the CBRFC, including the interpretation of data products. Collaborated with NOAA Regional Integrated Sciences and Assessments to develop a toolkit for stakeholder engagement, which included survey techniques, scenario exercises, and hands-on activities.

Identified emerging issues and needs for water, weather, and climate forecast information, and worked in partnership with regional providers and users, such as Weather Forecast Offices, regional water managers, and the general public, to develop, test and operationally transition new climate information products and services.

Collaborated and led interdisciplinary teams, working groups and committees to plan, coordinate and implement numerous workshops and meetings with regional stakeholders, partners and scientists. This included other Federal agency partners, state, local and tribal government stakeholders, and academic and private sector partners.

Presented weather and climate information, and documented regional needs for water, weather, and climate information for the purposes of new product development. Engaged the research

community to define research questions to address the evolving needs of water managers and other consumers in the Colorado Basin. Developed new forecast products, scientific studies, and datasets to better support regional decision-makers.

Managed and led water and weather forecasting operations and service programs including during flooding events, peak flow forecasts, and water supply forecasts. This included scheduling the forecast staff, coordinating with other NWS offices and with stakeholders, and responding to requests and problems as they came up. This also included extensive experience with all aspects of generating both water and weather forecasts.

Advised on office budgeting, human resource development, and managed project budgets for research grants. This included advising on personnel selections, budget allocations, and spending plans to achieve the office mission.

Extensively evaluated and advised on organizational and technical procedures including forecast enhancements through forecast verification and evaluation and project planning. Authored several forecast evaluation and verification studies designed to identify and correct forecast deficiencies.

Developed, analyzed, and evaluated program policies, regulations, goals, and objectives through diverse avenues and activities but typically linked to stakeholder input and needs.

Evaluated cooperative agreements to ensure they were current and relevant for both parties especially the long standing NWS – NRCS water supply forecasting arrangement.

NOAA Leadership Competencies Development Program (LCDP) Fellow
3/2012-1/2014

Competitively selected into the NOAA Leadership Competencies VIII Program, and successfully completed three detail assignments. *Awarded the Dr. Linda Winner Peer Award for demonstrated class leadership.*

LCDP Detail 1: Climate Adaptation Advisor, EcoAdapt and The Nature Conservancy, Seattle, WA

Developed climate adaptation initiatives in partnership with EcoAdapt to assist the Nez Pierce – Clearwater National Forest in integrating climate adaptation and climate change information in their forest management plan. This National Forest is one of five nationwide to prototype the inclusion of climate change considerations in forest management plans.

Worked with The Nature Conservancy on the Floodplains by Design initiative in Puget Sound. Utilized science expertise in hydrology and outreached to flood managers, fisheries and habitat managers, and the agricultural sector to advance the goal of this initiative to build an interdisciplinary coalition of stakeholders to develop a shared vision and strategies to improve the resiliency of the Puget Sound tributaries to changing climate.

LCDP Detail 2: Science Advisor, Hurricane Sandy Rebuilding Task Force, Washington, DC

Served as Science Advisor to the Hurricane Sandy Rebuilding Task Force established by Executive Order to provide coordination support for rebuilding efforts. Advised on Hurricane Sandy Task Force activities including providing and organizing technical science review of Task Force work, including the Task Force Strategy Report.

Successfully developed relationships between Task Force political and career staff and the federal science and technology community, and collaborated with the Office of Science and Technology Policy, Council on Environmental Quality, and other designated federal agencies to organize, convene and staff an interagency Science Coordination Group for the purposes of providing well-coordinated and timely science based information and advice.

Presented information and represented NOAA at meetings related to the Task Force, including the National Academies of Science, Army Corps of Engineers Comprehensive Study meetings, and NOAA communicating climate workshop.

LCDP Detail 3: Special Assistant to Regional Administrator, National Marine Fisheries Service, Seattle, WA

Utilized physical science expertise to advise on the Puget Sound tributary hydrology for supporting salmon habitat. Assessed science and policy environments surrounding river flow to support salmon habitat in the Puget Sound basin, and worked with other federal agencies, such as the Bureau of Indian Affairs and U.S. Geological Survey to identify intersecting interests and collaborative opportunities, and advised NMFS leadership on findings.

Regional Hydrologic Science Program Manager **6/2004 to 3/2008**
Western Region Headquarters
National Weather Service; Salt Lake City, UT
Grade: GS13
40 hours per week

Managed efforts to infuse new science and development into National Weather Service (NWS) hydrologic forecasting operations, including coordination of NOAA climate observation and data experiments, such as the Hydrometeorology Testbed. Led USGS/NOAA efforts to improve debris flow warnings in Southern California; developed a water resources forecast web based tool kit, and successfully convened a regional team of experts to verify hydrologic forecasts and generate case studies, the results of which were used to inform a national program.

Evaluated local office hydrology programs as part of program reviews for the Western Region Headquarters to ensure compliance with agency directives as well as to identify opportunities to advance the state of hydrologic forecasting.

Officer, Lieutenant **6/1999 to 6/2004**
NOAA Corps

Hydrologist **3/2002 to 6/2004**

Colorado Basin River Forecast Center (CBRFC)
National Weather Service; Salt Lake City, UT

Conducted operations for forecasting river flows, developed new methodologies for forecasting river flows, and collaborated with research scientists inside and outside of NOAA to improve products and services and customer access. Routinely utilized River Forecast Center modeling systems to analyze diverse data including weather, streamflow, and reservoir data to produce forecasts.

Developed new techniques for improving hydrologic forecasts through my effort to develop techniques for integrating ensemble weather and climate forecasts into hydrologic ensemble forecasts. In particular developed and validated techniques that I published in the literature that formed the foundation for the Hydrologic Ensemble Forecast System that was subsequently implemented at NWS River Forecast Centers.

Officer-In-Charge **2002**
NOAA Ship OSCAR SETTE; NOAA Ship VINDICATOR

Responsible for outfitting efforts for NOAA ships in preparation for their entry into the NOAA fleet. Managed personnel and budgetary resources, and completed preparations for "going to sea" including Panama Canal transit.

Field Operations Officer **10/1999 to 2/2002**
NOAA Ship KA'IMIMOANA

Responsible for organizing day-to-day activities in support of the ship's research mission, coordinated with ship's crew and visiting scientists, and conducted bridge watch.

Research Assistant **6/1996 to 6/1999**
Department of Atmospheric Sciences
University of Washington

Conducted research on climate variability in the tropical Atlantic climate system using numerical global climate models and analyzed climate data records. Successfully demonstrated that the entire climate system (ocean, atmosphere, lithosphere) is integral to defining climate variability in the region. Taught undergraduate Atmospheric Sciences courses.

HONORS & AWARDS

Employee of the Year, National Center for Environmental Information	**2015**
NOAA LCDP Linda Winner Award	**2013**
NOAA LCDP Fellow	**2012**
National Weather Service (NWS) quality step increase	**2005, 2007, 2010, 2013**
Pi Alpha Alpha Member	**2009**
G. Homer Durham MPA Scholarship	**2008**
NWS Special Service Act Cash Award	**2004, 2005, 2006, 2007, 2008**

NOAA Administrator's Award **2007**
Regional and local Isaac Cline Award **2007**

PROFESSIONAL TEACHING EXPERIENCE

Introduction to Meteorology **2004 to 2008**
Non-majors undergraduate Meteorology course.
Adjunct instructor at the University of Utah

SELECTED PUBLICATIONS

Werner, K., Averyt, K., Owens, G. River Forecast Application for Water Management: Oil and Water? *Weather, Climate, and Society,* 5(3), (2013).

Werner, K., Yeager, K. Challenges in Forecasting the 2011 Runoff Season in the Colorado Basin. *Journal of Hydrometeorology*, 14(4), (2013).

Hobbins, M., Wood, A., Streubel, D., & **Werner, K.** What Drives the Variability of Evaporative Demand across the Conterminous United States?. *Journal of Hydrometeorology*, *13*(4), 1195-1214 (2012).

Demargne, J., Mullusky, M., **Werner, K.**, Adams, T., Lindsey, S., Schwein, N., Marosi, W., Welles, E. Application of Forecast Verification Science to Operational River Forecasting in the U.S. National Weather Service. *Bulletin of the American Meteorological Society* 90: 779-784 (2009).

Restrepo, P., Jorgensen, D. Cannon, S., Costa, J., Laber, J., Major, J., Martner, B., Purpura, J., and **Werner, K.** Joint NOAA/NWS/USGS Prototype Debris Flow Warning System for Recently Burned Areas in Southern California. *Bulletin of the American Meteorological Society* 89: 1845-1851 (2008).

Werner, K., Brandon, D., Clark, M., and Gangopadhyay, S. Incorporating medium-range numerical weather model output into the ensemble streamflow prediction system of the National Weather Service. *Journal of Hydrometeorology* 6: 101-114 (2005).

Werner, K., Brandon, D., Clark, M., Gangopadhyay, S. Climate index weighting schemes for NWS ESP-based seasonal volume forecasts. *Journal of Hydrometeorology* 5: 1076-1090 (2004).

Gangopadhyay, S., Clark, M., **Werner, K.**, Brandon, D., and Rajagopalan, B. Effects of spatial and temporal aggregation on the accuracy of statistically downscaled precipitation estimates in the upper Colorado river basin. *Journal of Hydrometeorology* 5: 1192-1206 (2004).

PROFESSIONAL DEVELOPMENT & CIVIC SERVICE

Innovative culture summit **2016**

Vice Chair, Western Area Federal Support Team (westFAST)	**2015 to present**
American Meteorological Society Water Resources Committee	**2013 - 2014**
American Meteorological Society Board on Global Strategies	**2013 to present**
NOAA Leadership Development Competencies Program	**2012 - 2013**
Co-convened short course on water supply forecasting American Meteorological Society Annual Meeting	**January 2011**
President, Board of Directors Salt Lake City Library	**2010 to 2014**
Selected participant in Policy Colloquium American Meteorological Society	**June 2008**
Charter member "1st" N State Toastmasters Club	**2006 - 2008**
Passed Actuaries Exam P1 - Probability	**February 2006**

MISCELLANEOUS INFORMATION FOR FEDERAL POSITIONS
Citizenship: USA
Selective Service Registration: Yes
Federal Employment Listed Here: All full time (40 hours per week)
Career Senior Executive Service since January 2016
Security Clearance: TSSI Security Clearance

Levy to Move Seattle Oversight Committee

16 Members: Pursuant to *Ordinance 124796*, *10* members subject to City Council confirmation, *4*-year terms:

- *5* City Council-appointed
- *5* Mayor-appointed
- *#* Other Appointing Authority-appointed (specify): 4 modal advisory board representatives appointed by respective modal advisory boards; City Council Transportation Committee Chair; City Budget Director

Roster:

*D	**G	RD	Position No.	Position Title	Name	Term Begin Date	Term End Date	Term #	Appointed By
	F	3	1.	Member	Rachel Ben-Shmuel	1/1/20	12/31/23	2	Mayor
6	F	7	2.	Member	Hester Serebrin	1/1/16	12/31/22	2	Mayor
	M	6	3.	Co-Chair	Ron Posthuma	1/1/18	12/31/21	1	Mayor
6	M	4	4.	Member	Samuel Ferrara	1/1/19	12/31/22	1	Mayor
6	F	3	5.	Member	Lisa Bogardus	1/1/20	12/31/23	1	Mayor
1	M	5	6.	Member	Nick Paranjpye	1/1/20	12/31/23	2	Council
	F	5	7.	Member	Vicky Clarke	1/1/19	12/31/22	1	Council
6	F	4	8.	Member	Inga Manskopf	1/1/20	12/31/23	1	Council
	M	1	9.	Member	Joe Laubach	1/1/19	12/31/22	2	Council
	M	2	10.	Member	Kevin Werner	1/1/18	12/31/21	1	Council
	M	2	11.	Bike Advisory Board Member	Patrick Taylor	9/1/18	8/31/20	1	SBAB
	M	3	12.	Pedestrian Advisory Board Member	David Seater	4/1/19	3/31/21	2	SPAB
	M		13.	Freight Advisory Board Member	Todd Biesold	6/1/18	5/31/19	1	SFAB
	F	2	14.	Transit Advisory Board Member	Alex Wakeman Rouse	8/3/19	8/2/21	1	STAB
	M	6	15.	Councilmember	Mike O'Brien	n/a	n/a		
	M		16.	Budget Director	Ben Noble	n/a	n/a		

SELF-IDENTIFIED DIVERSITY CHART

	(1) Male	(2) Female	(3) Transgender	(4) NB/ O/ U	(5) Asian	(6) Black/ African American	(7) Hispanic/ Latino	(8) American Indian/ Alaska Native	(9) Other	Caucasian/ Non-Hispanic	Pacific Islander	Middle Eastern	Multiracial
Mayor	2	3											
Council	3	2											
Other	5	1											
Total	10	6											

Key:

***D** List the corresponding *Diversity Chart* number (1 through 9)
****G** List *gender*, **M**= Male, **F**= Female, **T**= Transgender, **NB=** Non-Binary **O=** Other **U**= Unknown
RD Residential Council District number 1 through 7 or N/A

Diversity information is self-identified and is voluntary.

Legislation Text

File #: Inf 1596, **Version:** 1

Move Seattle Presentation

Levy to Move Seattle

Seattle's $930M Transportation Levy

Council Transportation Committee
Lorelei Williams, Rachel McCaffrey
2/5/2020 Department of Transportation

City of Seattle

Our vision, mission, and core values

Vision: Seattle is a thriving equitable community powered by dependable transportation

Mission: to deliver a transportation system that provides safe and affordable access to places and opportunities

Committed to 6 core values:

- Equity
- Safety
- Mobility
- Sustainability
- Livability
- Excellence

Presentation overview

- Levy overview
- Levy delivery highlights
- Progress reporting
- Levy Oversight Committee
- Looking ahead

Levy to Move Seattle overview: $930M

Passed by voters in 2015, the 9-year, $930M Levy to Move Seattle represents approximately 30% of Seattle's transportation budget.

SAFE ROUTES

- Vision Zero
- Safe Routes to School
- Bike Safety
- Curb Ramps
- **$207M**

MAINTENANCE AND REPAIR

- Paving
- Bridge Repair
- Stairways
- Urban Forestry
- **$420M**

CONGESTION RELIEF

- Multimodal Imp.
- New Sidewalks
- Freight Spot Imp.
- Northgate Bridge
- **$303M**

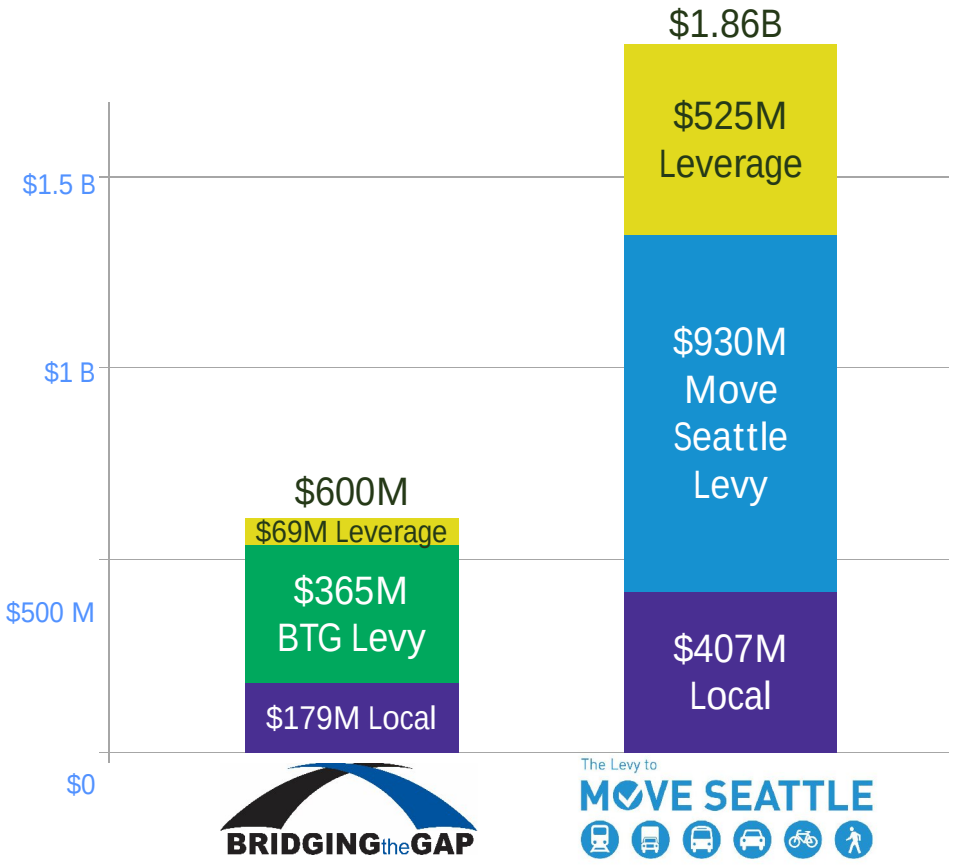
Above noted programs are select highlights and not comprehensive of all levy programs

Levy to Move Seattle overview: replaced Bridging the Gap levy

Bridging the Gap (2007-2015)

vs.

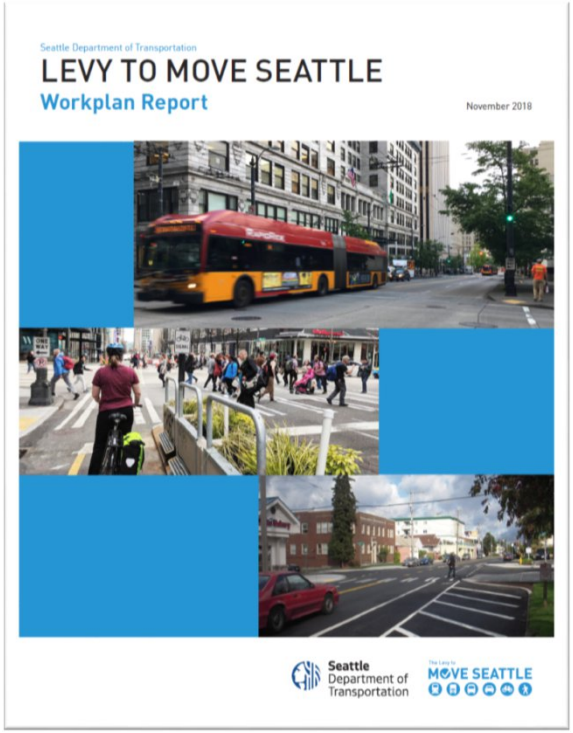
Move Seattle (2016-2024)



Move Seattle funding amounts indicate 9-year budget from 2018 Updated Workplan Report

Levy to Move Seattle overview: 2018 Updated Workplan

- With Mayor Durkan's direction, thorough assessment in response to delayed project delivery and federal funding uncertainty
- Confirmed assumptions and levy commitments; assessed scope, schedule, cost and funding assumptions; and third-party review of program management
- Updated Levy Workplan Report (November 2018) includes dedicated workplans for 2019-2024 for all 30 levy-funded programs



Levy delivery highlights: major levy bridges

Lander Bridge $96.2M

- New overpass in SODO connecting people traveling east-west over active railroad tracks
- Construction started May 2018
- Expected completion/opening late 2020

Fairview Bridge $59.3M

- Replace Seattle's last timber vehicle bridge at Fairview Ave N
- Construction started September 2019
- Expected completion in 2021

Northgate Ped/Bike Bridge $56.2M

- Build walking/biking connection over I5, between future Northgate Link Light Rail and North Seattle College
- Construction started January 2020
- Expected completion fall 2021

Lander Overpass construction

Northgate Bridge rendering

Levy delivery highlights: maintenance

Street repaving

- 34.2 lane miles paved by SDOT crews
- 84.5 lane miles paved through contractor-delivered projects

Accessible curb ramps

544 customer service requested curb ramps

Crosswalks

5,660 crosswalks restriped

Urban forestry

1,506 trees planted

Amounts listed are life to date through Q3 2019 (Source: 2018 Annual Report and 2019 Q3 report)
Cumulative levy totals through end of 2019 will be published in 2019 Annual Report on March 30, 2020

Levy delivery highlights: Vision Zero

13 Vision Zero projects, levy life to date

Large projects
- Multi-million dollar investments
- Significant changes to street design
- Examples: NE 65th St, Rainier Ave S

Traditional projects
- May include channelization changes, new signals or signal adjustments, crossing modifications, curb ramps, speed limit changes, turn restrictions
- Examples: Greenwood-Phinney, 5th Ave NE, North Beacon

NE 65th St Vision Zero Corridor

Life to date totals are through Q3 2019 (Source: 2018 Annual Report and 2019 Q3 report)
Cumulative levy totals through end of 2019 will be published in 2019 Annual Report on March 30, 2020

Levy delivery highlights: New Sidewalks and Bike Safety

New Sidewalks and Safe Routes to School
- 117 blocks of new sidewalk
- 58 crossing improvements
- 115 Safe Routes to School projects

Bike routes (32.21 combined mileage)
- 14.8 miles of neighborhood greenway
- 13.66 miles of protected bike lanes
- 3.75 miles of bike lanes




Amounts listed are life to date through Q3 2019 (Source: 2018 Annual Report and 2019 Q3 report)
Cumulative levy totals through end of 2019 will be published in 2019 Annual Report on March 30, 2020

Levy delivery highlights: Transit-Plus Multimodal Corridors

Project	Status as of Q3 2019
RapidRide G Line (Madison)	Began working towards 100% design
RapidRide H Line (Delridge)	Began working towards 90% design
RapidRide J line (Roosevelt)	Submitted draft NEPA Environmental Assessment to Federal Transit Administration
Route 7 Transit-Plus Multimodal (Rainier)	Continued working towards 30% design
Route 44 Transit-Plus Multimodal (Market)	Hosted Concept Development Workshop
Route 40 Transit-Plus Multimodal (Fremont)	Design kickoff
Route 48 Transit-Plus Multimodal (23rd)	Project transferred to King County Metro

Madison/Rapid Ride G Line

Levy delivery highlights: spending progress through Q3 2019 (all funds)

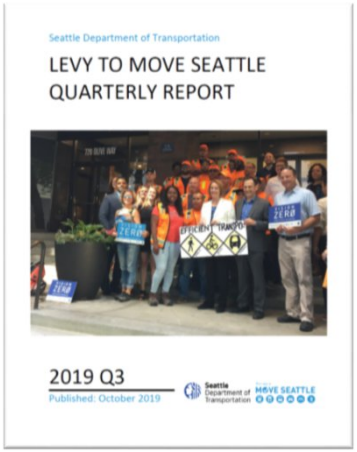
Year	Annual spending (all funds)
2016	$112M
2017	$141M
2018	$166M
2019 through Q3	$137.1M
Total spending through Q3 2019	$556.1M

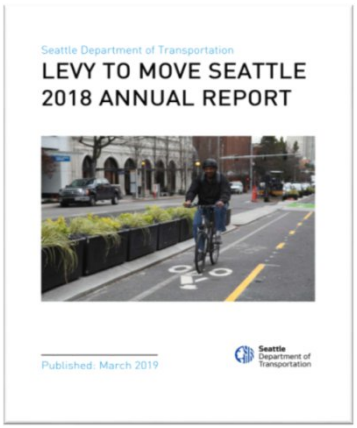
2019 spend plan ($218M) vs actual spending through Q3 (all funds)

Actuals are through Q3 2019 (Source: 2018 Annual Report and 2019 Q3 report)
Cumulative levy totals through end of 2019 will be published in 2019 Annual Report on March 30, 2020

Levy progress reporting

- Quarterly reports demonstrate progress against annual planned accomplishments (deliverables) and annual spend plan. Quarterly reports are published:
  - Q1: April 30
  - Q2: July 30
  - Q3: October 30
- Annual reports demonstrate levy deliverable and spending progress against 9-year targets, leverage progress (grants/partnership), contracting and other updates.
  - Published March 30 (of following year)
- 2018 Updated Workplan Report is forecast document. We are preparing for a comprehensive portfolio status update (forecast document) later in 2020.





Levy Oversight Committee

The Levy Oversight Committee (LOC) consists of 16 members:

- Five Seattle residents appointed by the City Council
- Five Seattle residents appointed by the Mayor and confirmed by the City Council
- One representative from and appointed by the modal boards
  - Freight
  - Transit
  - Bike
  - Pedestrian
- The Chair of the City Council Transportation Committee
- The City Budget Director

SDOT is committed to transparency and accountability and works closely with the Oversight Committee.

- 10 regular committee meetings per year
- 8+ sub-committee meetings per year
- 5 regular reports transmitted to LOC by SDOT per year
- Additional briefing papers and response to information requests

Questions?

Rachel.McCaffrey@seattle.gov
www.seattle.gov/LevytoMoveSeattle

www.seattle.gov/transportation

Legislation Text

File #: Inf 1597, **Version:** 1

Seattle City Light Climate Adaptation Plan

Seattle City Light

700 5th Avenue, Suite 2822 | P.O. Box 34023 | Seattle, WA 98124-4023 | (206) 684-3000

CLIMATE ADAPTATION

EXECUTIVE SUMMARY

GOALS & OBJECTIVES

In 2013, Seattle City Light's Strategic Plan established a Climate Initiative with two primary objectives: (1) research the impacts of climate change on the utility and (2) develop an adaptation plan with strategic actions to minimize these impacts. In 2015, Seattle City Light completed a Climate Change Vulnerability Assessment and Adaptation Plan.

One goal of adapting or preparing for a changing climate is to ensure that Seattle City Light (City Light) can continue to meet its mission to produce and deliver environmentally responsible, safe, low cost, and reliable power as the climate changes. A changing climate is one consideration in designing the utility of the future. A second goal of adaptation planning is to increase knowledge within the utility of the risks of climate change and potential actions to reduce these risks so that City Light and its employees can make informed decisions.

WHAT IS ADAPTATION PLANNING & WHY PLAN FOR CLIMATE CHANGE NOW?

Climate change adaptation is also referred to as preparedness, readiness, and resilience. Regardless of the name, adaptation planning is the process of identifying and implementing actions that reduce vulnerability to the impacts of climate change. To some people, climate change may seem like a far-off risk that will not affect the utility in the near-term. It can be tempting to label climate change as only a "challenge for future generations," but this is not the case for several reasons:

1. Climate change is happening now. Temperatures have warmed and the effects of these warmer temperatures on snowpack, heat waves, and extreme weather have been detected globally, nationally, and locally in the Pacific Northwest.
2. These impacts are expected to intensify and new impacts will emerge over the 21st century, regardless of reductions in the emissions of greenhouse gases that cause global warming.
3. Decisions are being made today that will shape the resources and infrastructure of the utility for decades into the future.
4. It will be easier and more cost-effective to plan for the impacts of climate change in the design of new infrastructure and selection of power resources now than it will be to retrofit infrastructure or replace power resources once impacts intensify.

Goodell fire near Newhalem, WA, August 2015

HOW DOES ADAPTATION PLANNING DIFFER FROM CLIMATE CHANGE MITIGATION?

In contrast to adaptation, climate change mitigation is the reduction of greenhouse gas emissions that contribute to global warming. Mitigation actions focus on slowing and reducing the magnitude of changes in the climate. Mitigation has the potential to reduce changes in the climate in the latter half of the 21st century. However, for the next few decades, adaptation is necessary to prepare for the now inevitable impacts of climate change.

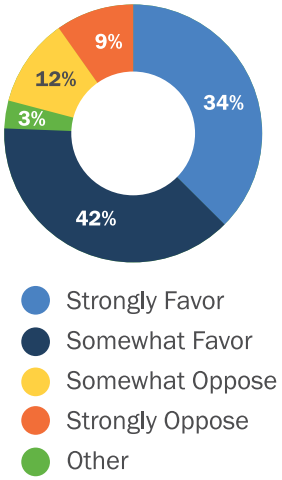
CLIMATE CHANGE IMPACTS & ADAPTATION ACTIONS

Seattle City Light's Climate Change Vulnerability Assessment and Adaptation Plan (Plan) describes changes in the climate, and resulting changes in natural hazards and streamflow that could affect five aspects of City Light's operations and infrastructure: **shoreline properties, hydroelectric project operations, electricity demand, transmission and distribution, fish habitat protection and restoration**.

In our plan, we have identified potential adaptation actions to reduce the impacts of climate change on the utility. Adaptation actions are intentional changes in policies and operations, or upgrades to infrastructure designed specifically to reduce vulnerability and increase resilience. Most actions identified in this plan will be refined in more detail for specific projects, plans, or decisions. To view the whole Plan, visit seattle.gov/light/enviro/climatechg.htm.

SHORELINE INFRASTRUCTURE

WHAT DO SEATTLE CITY LIGHT'S CUSTOMERS THINK ABOUT THE CITY PREPARING FOR CLIMATE CHANGE?



Based on a survey of 603 registered voters, conducted by Harstad Strategic Research, Inc. for the city of Seattle in June 2013.

ARE OTHER ELECTRIC UTILITIES PREPARING FOR CLIMATE CHANGE?

Seattle City Light is one of 18 electric utilities in the nation participating in the U.S. Department of Energy (DOE) *Partnership for Energy Sector Climate Resilience*. The Partnership Agreement signed by the participating utilities expresses a commitment to increasing resilience to climate change. The utilities in this partnership collectively represent about 20 percent of the nation's generating capacity and 25 percent of customers.

As of February 2016, Seattle City Light's Climate Change Vulnerability Assessment and Adaptation Plan is the most comprehensive effort by an electric utility to assess and prepare for the impacts of climate change and represents a decade of progressive action by the utility on this issue. City Light's plan was submitted to the DOE as part of our involvement in the partnership.

The city of Seattle is located along Puget Sound, which has experienced tidal flooding in the past associated with high tides and is exposed to sea level rise. City Light owns several properties near Puget Sound and is a "potentially responsible party" in the Duwamish Superfund Site located on the Duwamish Waterway in an area exposed to sea level rise.

CLIMATE CHANGE IMPACTS

- More frequent tidal flooding of coastal properties could damage facilities, interrupt operations and have financial consequences for the utility.

POTENTIAL ADAPTATION ACTIONS

- Make spatial information on projected sea level rise and storm surge readily available throughout the utility. This information can be used to identify and plan for current facilities and equipment that are located in areas that will be exposed to sea level rise and more frequent tidal flooding.

- Consider establishing a utility-wide policy to identify future tidal flooding impacts in the design and positioning of proposed capital improvement projects located in areas that are projected to be affected by sea level rise.

HYDROELECTRIC PROJECT OPERATIONS

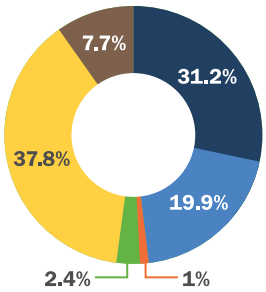
Seattle City Light's power resources are composed of 90 percent hydropower. In addition to power generation, City Light operates hydroelectric projects for flood control, instream flows for fish, reservoir recreation, and coordinates operations of two projects with Seattle Public Utilities for municipal water supply. All these objectives are dependent on snowpack and the seasonal timing of streamflow. The Boundary and Skagit Projects and the Bonneville Power Administration (BPA) generation resources are located in high-elevation, snow-dominated watersheds on which impacts will be slower to emerge but significant by mid-century. The Cedar Falls and South Fork Tolt Projects are located in mid-elevation, mixed-rain-and-snow watersheds that will be more exposed to changes in snowpack and streamflow.

2014 SOURCES OF POWER FOR SEATTLE CITY LIGHT

Generated
- Boundary
- Skagit
- Cedar Falls & South Fork Tolt

Treaty
- BC Hydro

Purchased
- BPA
- Other



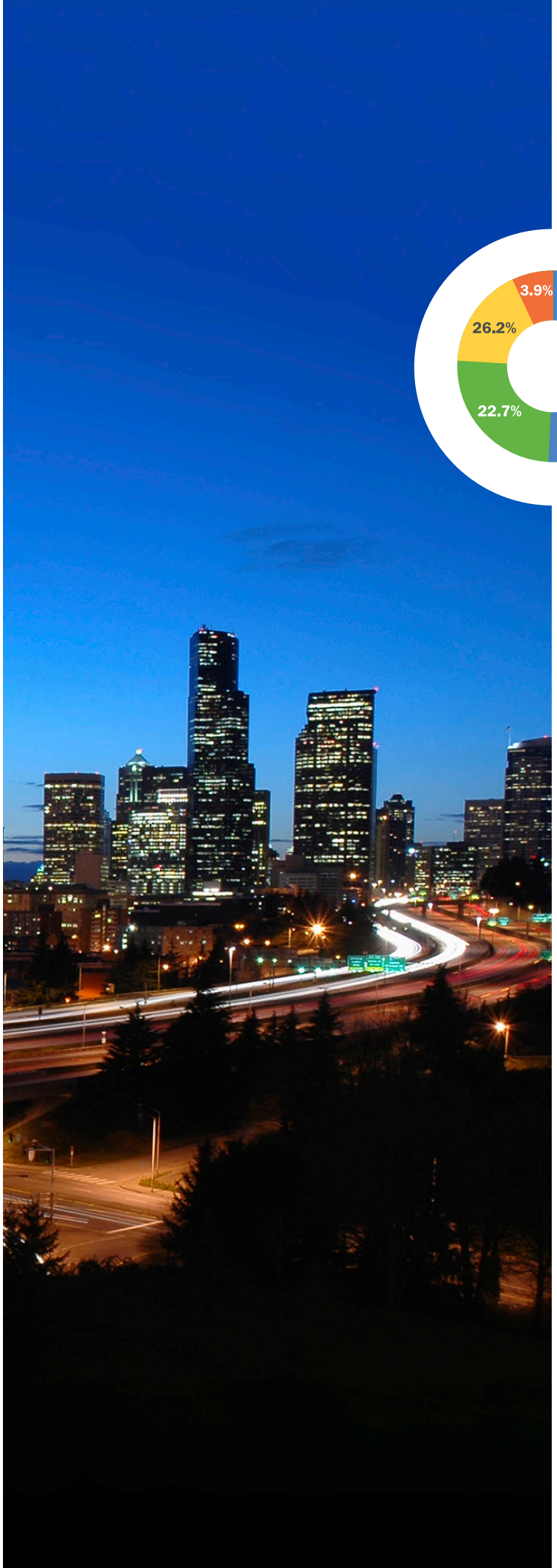
Diablo Dam, Skagit Hydroelectric Project

CLIMATE CHANGE IMPACTS

- Less snowpack and earlier snowmelt could challenge seasonal operations of hydroelectric projects that are based on historical conditions of water storage in snowpack and snowmelt timing in spring.
- Higher peak flows could increase the frequency of spilling at hydroelectric projects in fall and winter for flood control, which could have financial consequences associated with lost revenue.
- Higher peak flows could challenge operations to protect fish, because more frequent spilling directly causes fish mortality and higher flows damage fish habitat downstream of the projects.
- Lower streamflow in summer will decrease water availability for reservoir recreation, instream flows for fish protection, and hydropower generation, which could lead to financial consequences for the utility associated with lost revenue from surplus sales and wholesale purchases to meet summer demand.

POTENTIAL ADAPTATION ACTIONS

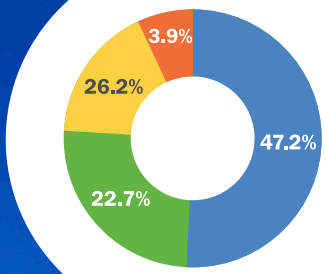
- Update and expand the utility's analyses of how operations of the Skagit and Boundary projects could be adapted to reduce impacts associated with less snowpack, changes in streamflow timing, lower streamflow in summer, and higher peak flows in fall and winter.
- Collaborate with Seattle Public Utilities to evaluate the effects of changes in snowpack and streamflow timing on operations of the South Fork Tolt and Cedar Falls Projects.
- Consider further diversification of power resources by increasing renewable energy sources that have a seasonal pattern of generation complementary to expected changes in seasonal hydropower generation.



ELECTRICITY DEMAND

2014 USES OF POWER

(in percentage of megawatt hours)



Services

- Non-residential
- Residential

Other

- Wholesale & Other
- Seattle City Light Operations & Losses

Seattle City Light provides power to more than 360,000 residential customers and 40,000 non-residential customers. We are a winter-peaking utility; more power is used by customers in winter than in summer and the highest hourly peaks in electricity use occur in winter. The non-residential sector has a relatively high load in summer, because of heating, cooling, and ventilation systems; air conditioning use is currently low in the residential sector.

CLIMATE CHANGE IMPACTS

- An increase in electricity demand for cooling in summer, which could cause summer peaks to approach winter peaks in localized areas of the distribution system.
- A decrease in electricity demand for heating in winter, which could lower retail sales and have financial consequences for the utility.

POTENTIAL ADAPTATION ACTIONS

- Expand Seattle City Light's analysis of the relationship between warming temperatures, seasonal base and peak loads, and related financial impacts.
- Identify and evaluate potential co-benefits of existing energy efficiency programs to reduce electricity demand for cooling in summer.
- Assess the potential of demand response for reducing peak commercial load on the hottest days in summer for localized areas of the distribution system that currently have less capacity.

TRANSMISSION & DISTRIBUTION

Seattle City Light owns and operates a transmission system consisting of more than 650 miles of transmission lines and towers connected to the utility's five hydroelectric generation facilities. We also own and operate a distribution system in the Seattle area consisting of 2,337 distribution circuit miles (1,763 overhead and 574 underground circuit miles), a downtown network of 220 underground circuit miles, and 14 distribution substations. Many miles of transmission lines pass through rural, forested areas in Western Washington with steep, rugged topography.

The 2014 Oso landslide threatened City Light transmission towers.

CLIMATE CHANGE IMPACTS

- More frequent tidal flooding and salt water corrosion of distribution equipment could reduce the life expectancy of equipment, increasing costs for maintenance, repair, and replacement.
- Warmer temperatures and less nighttime cooling could reduce the life expectancy of insulated equipment, increasing costs for maintenance, repair, and replacement.
- Warmer temperatures and drier soils could increase damage and failure of underground cables.
- More intense precipitation could slow outage restoration times following storms where inadequate drainage creates areas of standing water that prevent safe access for repairs.
- More frequent wildfires could increase damage to transmission lines and interruptions of transmission and generation at hydroelectric facilities.
- More frequent landslides and erosion could increase damage to transmission lines and access roads, increasing maintenance and repair costs, and impeding access.
- More frequent river flooding could increase damage to transmission towers and erosion near towers and access roads, increasing maintenance and repair costs, and impeding access.

POTENTIAL ADAPTATION ACTIONS

- Monitor and consider replacing transmission and distribution equipment that is more sensitive to corrosion by salt water in areas that are projected to experience more frequent tidal flooding or inundation by sea water.
- Monitor failures of and damage to underground cables to determine if alternative fill materials are needed to reduce heat-related failures.
- Increase the capacity of employees to prepare for and respond to wildfire risk through additional training, upgrading infrastructure with fire-resistant materials, and maintaining defensible space around critical infrastructure.
- Collaborate with state resource management agencies and academic institutions to map landslide hazards along Seattle City Light's transmission line rights of way, including where heavier precipitation due to climate change could increase future landslide risk.
- Upgrade current transmission infrastructure to be more resilient to higher peak flows and flood hazard in locations that currently experience flood-related damage. Consider projected increases in flooding in the design and positioning of new transmission projects located in floodplains.

FISH HABITAT RESTORATION

As part of Seattle City Light's environmentally responsible operations, we restore and protect fish habitat to mitigate any adverse effects of our hydroelectric projects on fish populations. City Light acquires and restores habitat mitigation lands that are primarily located in mid-elevation, mixed-rain-and-snow watersheds. These watersheds are projected to experience the largest changes in the timing of streamflow, lower low flows, and higher peak flows.

CLIMATE CHANGE IMPACTS

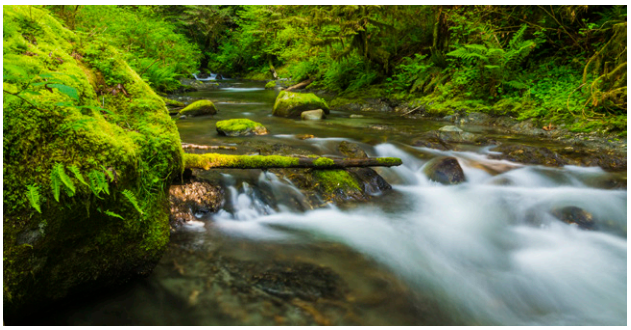
- Higher peak flows and more frequent flooding in fall and winter could adversely affect fish populations and challenge City Light's objectives for restoring and protecting fish habitat.

- Lower low flows in summer and warmer stream temperatures could adversely affect fish populations and challenge City Light's ability to meet objectives for restoring and protecting fish habitat.

POTENTIAL ADAPTATION ACTIONS

- Consider increases in peak flows and lower low flows directly in prioritizing acquisitions of habitat mitigation lands by selecting habitats that provide refuge for fish or increase resilience to more extreme low and high flows.

- Focus objectives and design of restoration projects on ameliorating the impacts of lower low flows and warmer stream temperatures on fish populations and habitat.



Jones Creek, Seattle City Light, ESA Salmon Habitat Land

IMPLEMENTATION & NEXT STEPS

Seattle City Light's Climate Change Vulnerability Assessment and Adaptation Plan will be used to guide the implementation of adaptation actions throughout the utility. Some impacts require action now, whereas others can be monitored and addressed as they emerge. However, effectively preparing for the impacts of a changing climate requires a long-term planning timeline, because it may be too late to implement some actions if we wait until the impacts intensify. Next steps in implementation include the following:

- Establish an interdisciplinary team with representatives from relevant sections of the utility. Solicit further feedback on the feasibility and priorities of adaptation actions.

- The interdisciplinary team will identify specific capital projects, long-term plans, or decisions for which climate change impacts could affect project design or decisions.

- Develop methods and a process for conducting cost-benefit analysis of adaptation actions.

- Develop metrics to measure the success of adaptation actions for reducing vulnerability, increasing resilience, and enhancing the utility's capacity to prepare for a changing climate.

- Update the Plan in 2018 to include new research findings on climate change impacts, results of internal assessments on specific impacts, and benefits gained from adaptation actions.

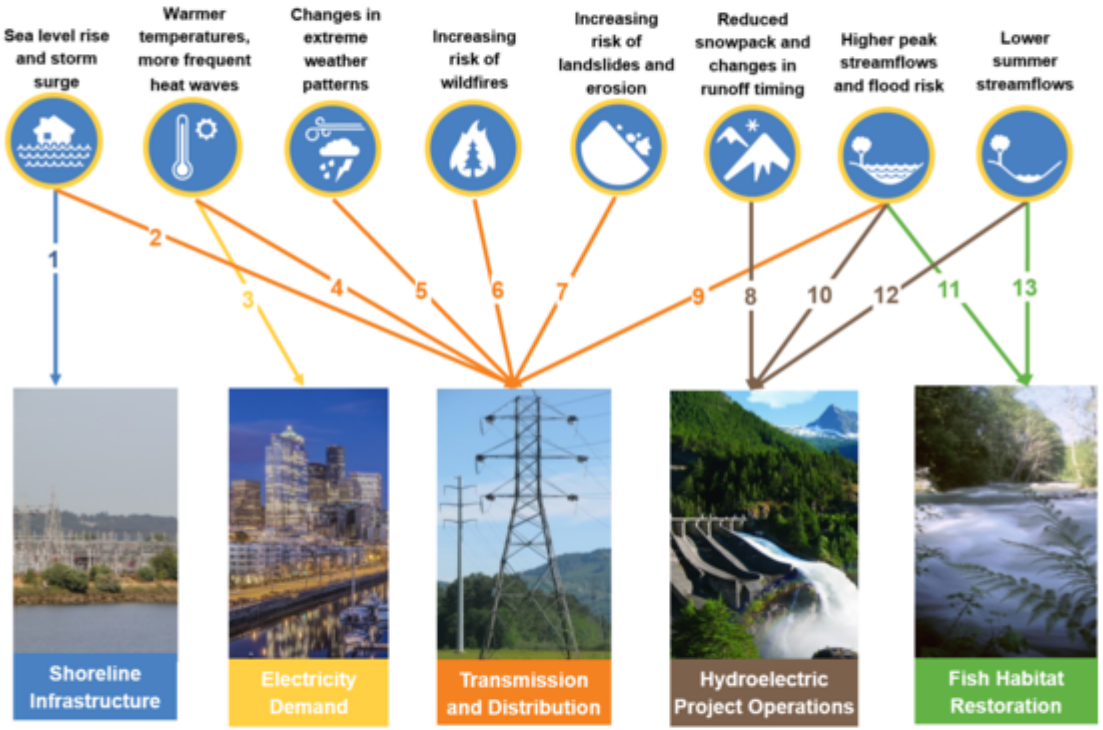
Seattle City Light

seattle.gov/light | YouTube

WE POWER SEATTLE

Seattle City Light is the 10th largest public electric utility in the United States. It has some of the lowest cost customer rates of any urban utility, providing reliable, renewable and environmentally responsible power to nearly 1 million Seattle area residents. City Light has been greenhouse gas neutral since 2005, the first electric utility in the nation to achieve that distinction.

For more information contact Crystal Raymond, PhD, Climate Change Strategic Advisor, Seattle City Light
Crystal.Raymond@Seattle.gov | (206) 386-1620 | seattle.gov/light/enviro/climatechg.htm


Sea level rise and storm surge
Warmer temperatures, more frequent heat waves
Changes in extreme weather patterns
Increasing risk of wildfires
Increasing risk of landslides and erosion
Reduced snowpack and changes in runoff timing
Higher peak streamflows and flood risk
Lower summer streamflows
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Shoreline Infrastructure
Electricity Demand
Transmission and Distribution
Hydroelectric Project Operations
Fish Habitat Restoration

PREPARING SEATTLE CITY LIGHT FOR CLIMATE CHANGE

Ronda Strauch, Ph.D.
Climate Adaptation Strategic Advisor
Environment, Land and Licensing

T & U Committee | February 5, 2020

Strategic Plan: Climate Initiative (2013-2018)

1. Create a climate change adaptation strategic advisor position
2. Research climate change impacts on the utility
3. Develop a utility-wide adaptation plan

CITY LIGHT CLIMATE ADAPTATION PLAN

- Identified observed and potential changes in climate
- Evaluated impacts and assessed vulnerability
- Developed adaptation strategies

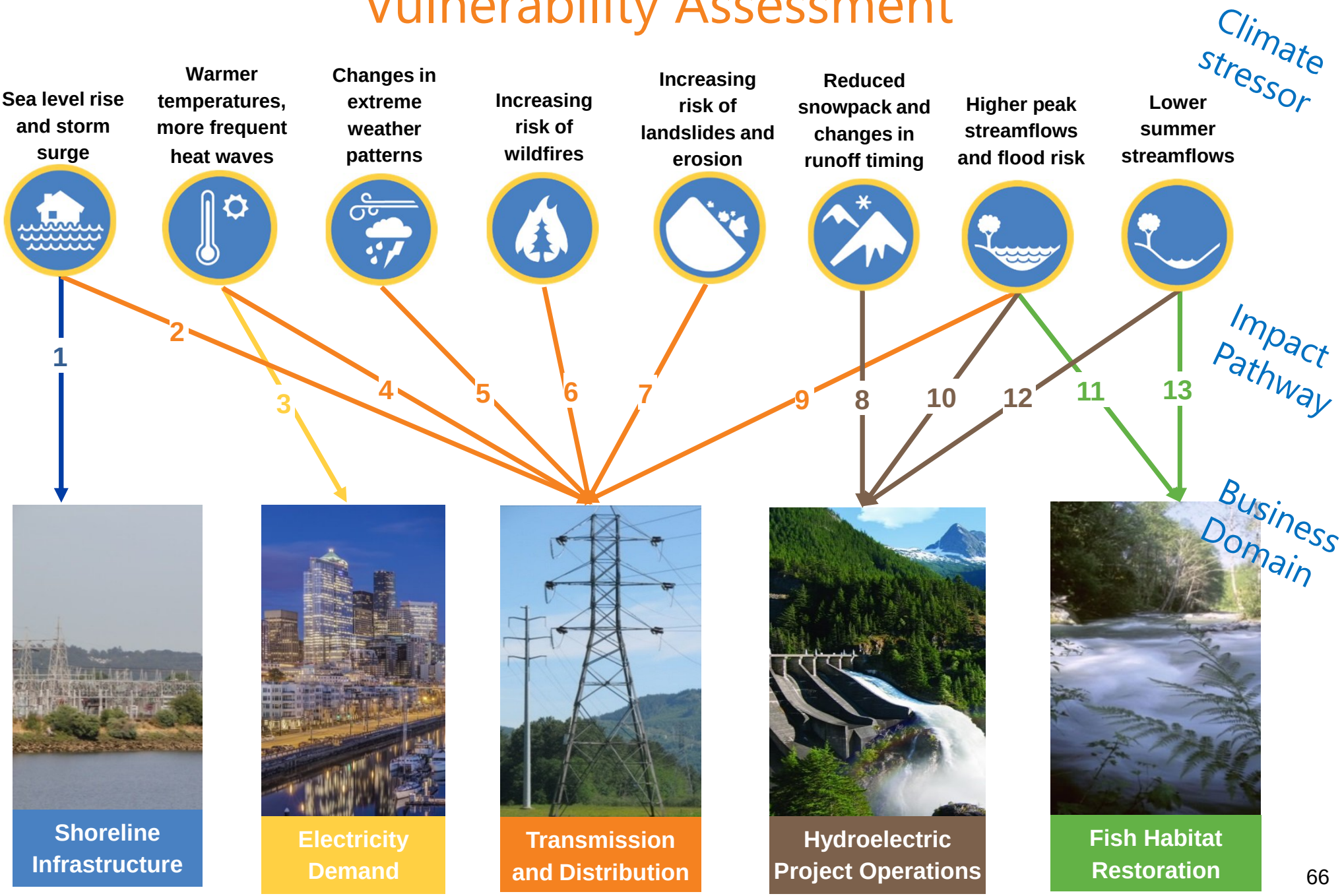
Seattle City Light
Climate Change Vulnerability
Assessment and Adaptation Plan

Prepared by Crystal Raymond
Climate Adaptation Strategic Advisor
Environmental Affairs and Real Estate Division
For more information contact: Crystal.Raymond@Seattle.gov | (206)-386-1620

Seattle City Light

2015

Vulnerability Assessment

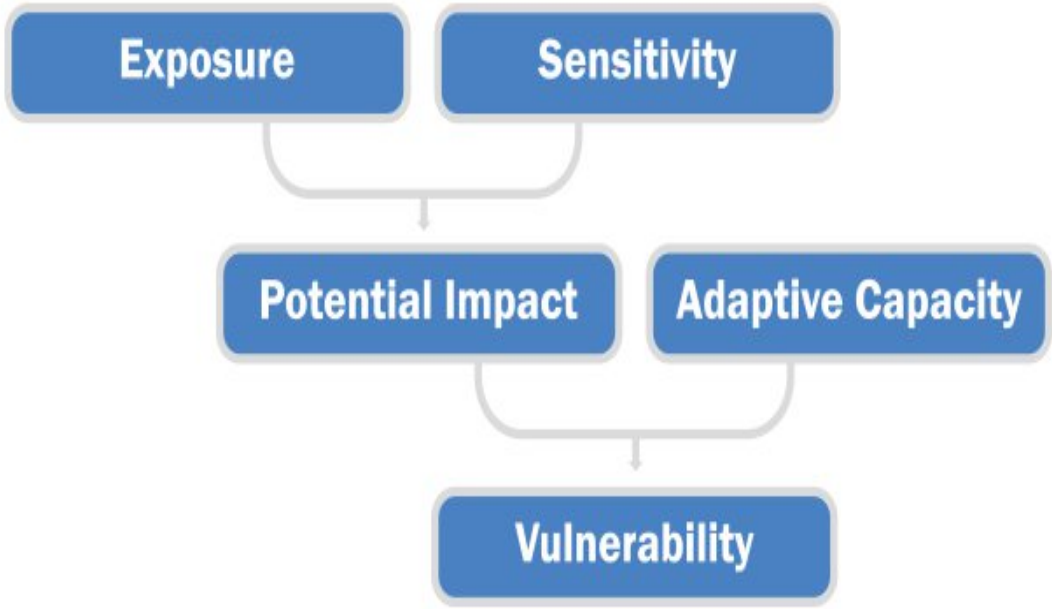


Vulnerability Assessment: How is the Utility at Risk?

Mission

Seattle City Light is dedicated to delivering customers affordable, reliable, and environmentally responsible electricity services.

Our Approach



Excerpt of Vulnerability Assessment

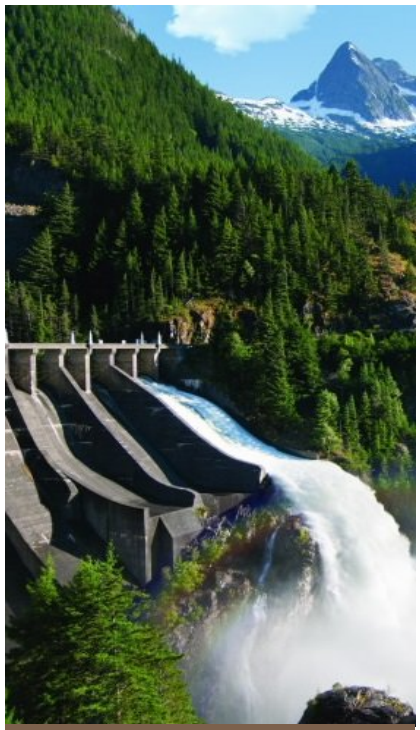
Table 1. Summary of vulnerability and potential magnitude of climate change impacts to Seattle City Light

Utility Function	Impacts Caused by Climate Change*	Time	Vulnerability: Exposure	Vulnerability: Sensitivity	Vulnerability: Capacity to Adapt	Potential Magnitude** of Impact to: Financial Cost	Safety	Reliability	Environmental Responsibility	Ref. Pages
Coastal properties	Tidal flooding due to higher storm surge and sea level rise	2030	○	●	●	Low	–	–	Low	18-24
		2050	●			Mod	–	–	Low	
Transmission and distribution	Tidal flooding and salt water corrosion due to higher storm surge and sea level rise	2030	○	○	●	Low	–	Low	–	18-24
		2050	●			Low	–	Low	–	
	Reduced transmission capacity due to warmer temperatures	2030	●	○	○	Low	–	Low	–	34-39
		2050	●			Low	–	Low	–	
	More frequent outages and damage to transmission and distribution equipment due to changes in extreme weather	2030	○	●	●	Low	Low	Low	–	40-46
		2050	○			Low	Low	Low	–	
	More damage and interruptions of transmission and generation due to wildfire risk	2030	●	●	●	High	High	Med	–	47-53
		2050	●			High	High	Med	–	
	More damage to transmission lines and access roads due to landslide risk	2030	●	●	●	Med	Low	Med	–	54-58
		2050	●			Med	Low	Med	–	
	More damage and reduced access to transmission lines due to more frequent river flooding and erosion	2030	●	●	●	Med	–	Low	–	71-74
		2050	●			High	–	Low	–	
Energy Demand	Reduced electricity demand for heating in winter due to warmer temperatures	2030	●	●	●	Med	–	Low	–	25-33
		2050	●			High	–	Low	–	
	Increased electricity demand for cooling in summer due to warmer temperatures	2030	○	○	●	Low	–	Low	–	25-33
		2050	●			Med	–	Med	–	

*The impacts are those caused by climate change in addition to historical conditions; most existing hazards (such as windstorms) will continue.
**Magnitude refers to the average event or normal condition for the timeframe, not the worst possible year or event that could occur.

Hydroelectric Project Operations: Key Impacts

- Less snowpack and earlier snowmelt will affect seasonal operations
- Higher peak streamflow may increase spilling at hydroelectric projects – lost generation and impacts on fish
- Lower streamflow in summer may make it more difficult to meet instream flows for fish and reservoir elevations for recreation



Hydroelectric Project Operations

Electricity Demand: Key Impacts

- Higher electricity demand for cooling could cause summer peaks to approach winter peaks in areas with high commercial loads
- Lower electricity demand for heating in winter will reduce retail revenue and have financial impacts on the utility

Electricity Demand

Transmission and Distribution: Key Impacts

- Slower outage restoration times due to heavy precipitation and urban flooding
- Increased risk of wildfires causing damage to and interruptions of transmission lines and generation facilities
- Increased risk of landslides damaging transmission towers and access roads
- Increased risk of river flood damage to transmission towers and access roads located in floodplains

Transmission and Distribution

CLIMATE ADAPTATION LEADERSHIP AWARD

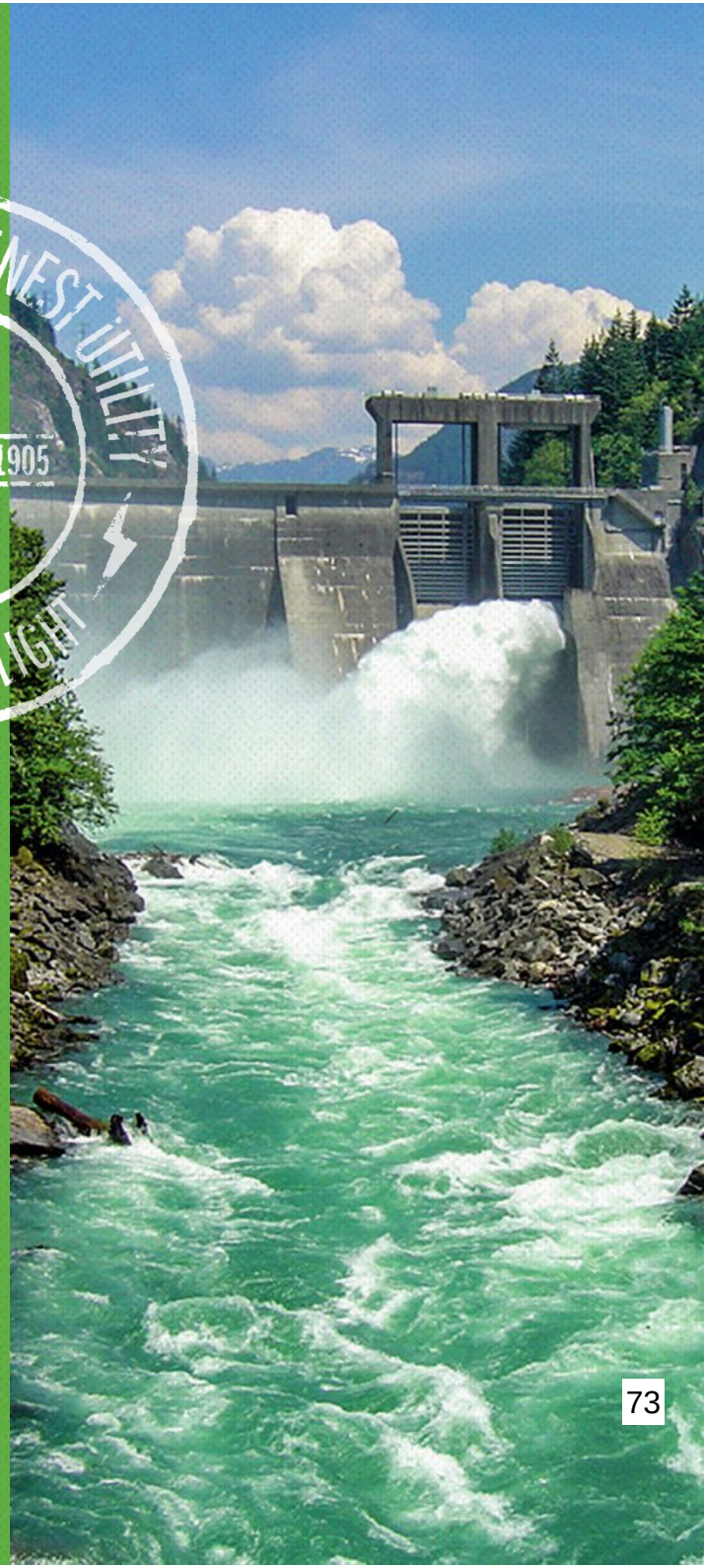
"outstanding leadership to advance the resilience of the nation's living natural resources in a changing climate"

~U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration
(+ 12 other federal agencies)

Seattle City Light

IMPLEMENTATION PLAN

- Collaboration
- Research
- Projects
- Education

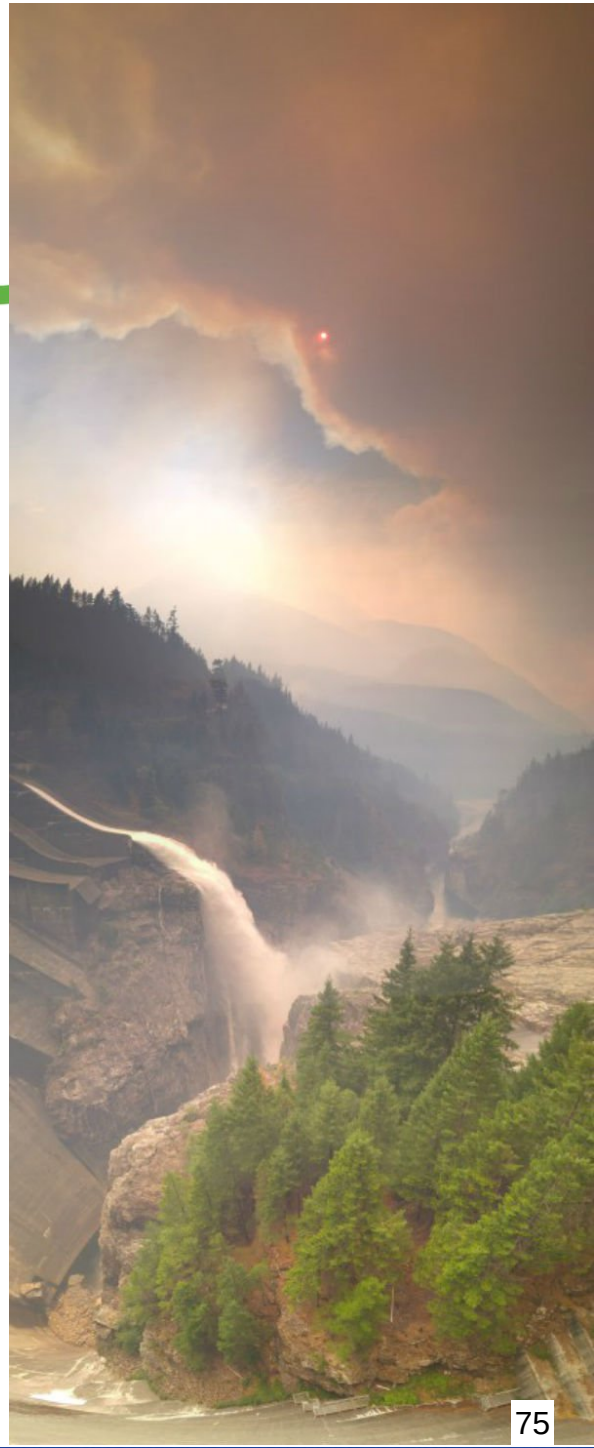


Collaborations

- Dept. of Energy – Partnership for Energy Sector Climate Resilience
  - Attributes of a resilient utility
  - Resilience self-assessment
- CEATI – Hydropower Operations & Planning Interest Group
  - CCORA Working Group
- Partners – Swinomish Indian Tribal Community, Sauk-Suiattle Indian Tribe, National Park Service, USGS, Forest Service, Universities, Mountains to Sound Greenway Trust

Research

- Streamflow modeling to help with:
  - Skagit Hydroelectric Project FERC Relicensing
  - Integrated Resource Plan (IRP)
- Water temperature modeling
- Landslide modeling
- Glacier monitoring and modeling
- Smoke and energy use
- Changes in weather extremes



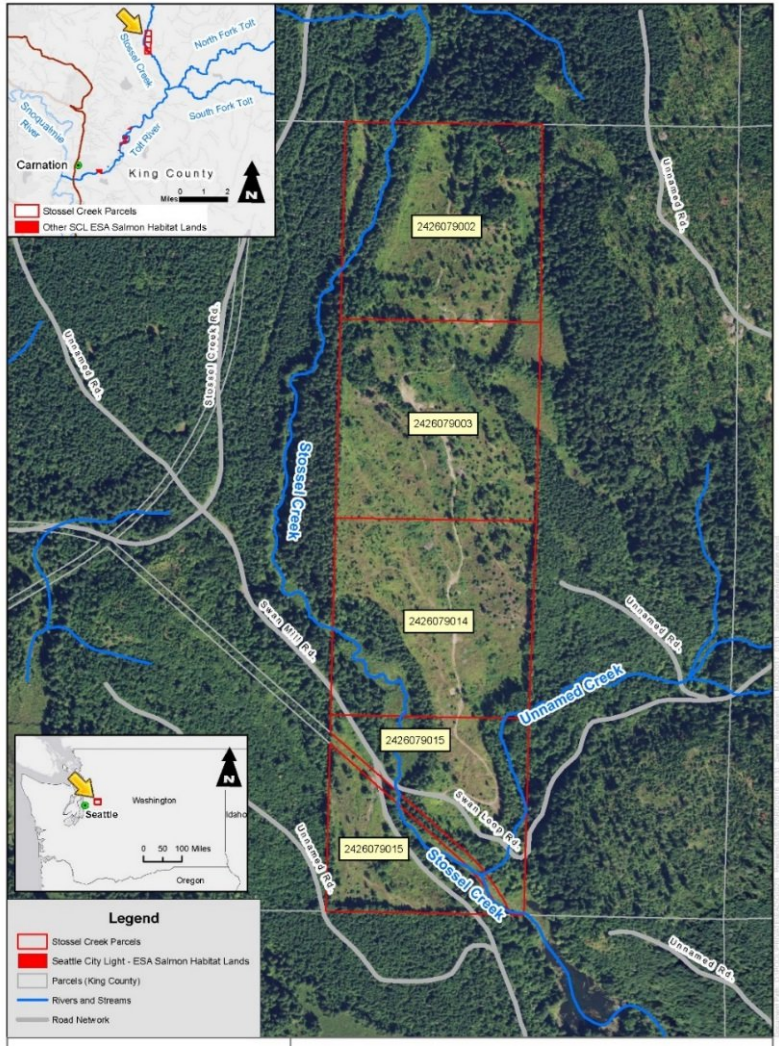
Projects - Increase Wildfire Resilience

- Upgrade infrastructure for wildfire resilience
- Collaborate with landowners to reduce vegetation and wildfire risk near hydroelectric projects
- Increase wildfire response and preparedness capability: mutual aid agreements, staff training, evacuation plans, and “defensible space” programs

FIREWISE COMMUNITIES

Projects - Habitat Restoration

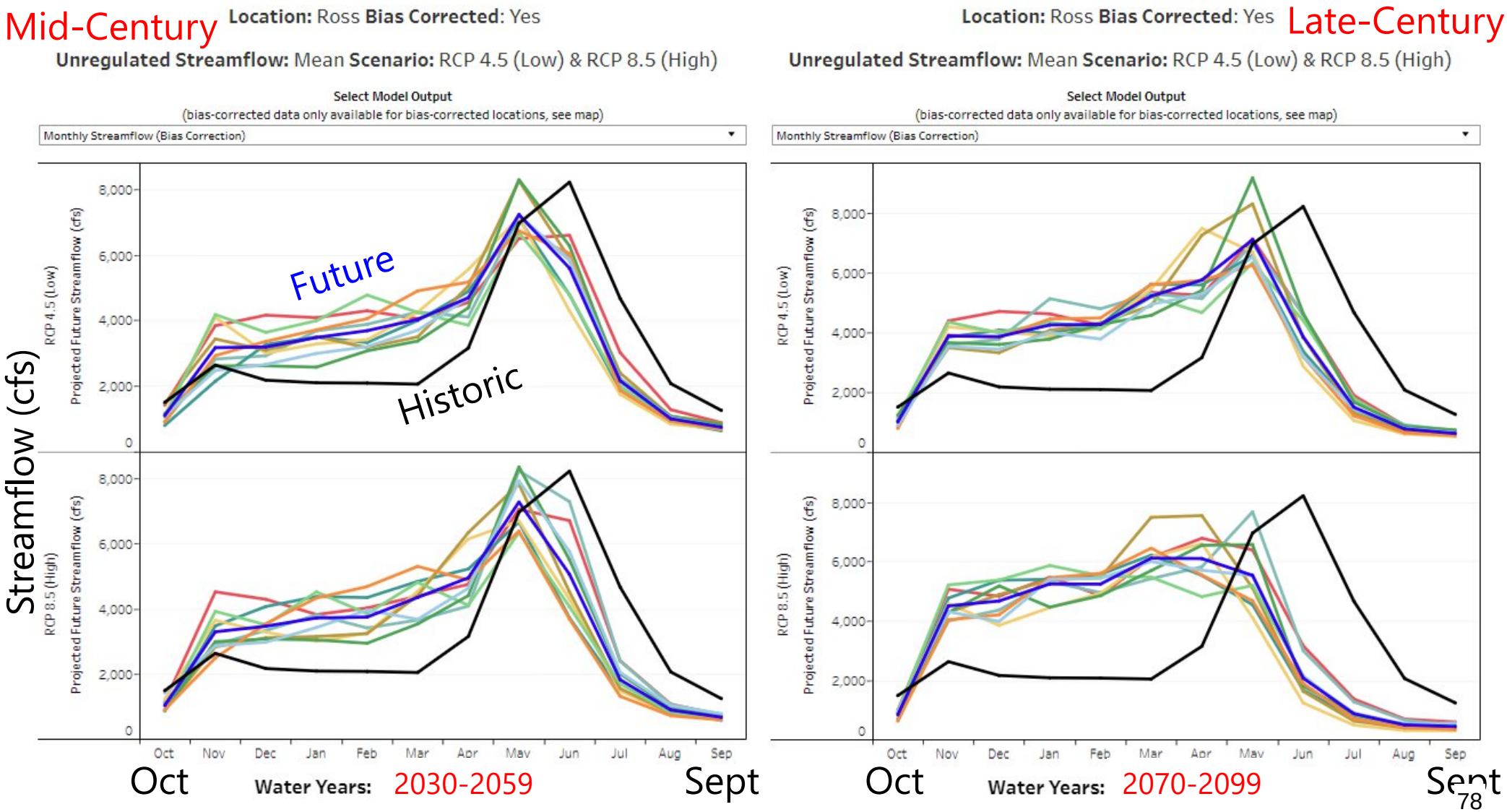
- Stossel Creek adaptive reforestation project
- Reforest with species adapted to warmer, drier climates
- Planting 51 acres along critical salmon and steelhead habitat in the Tolt Watershed



Now Online!

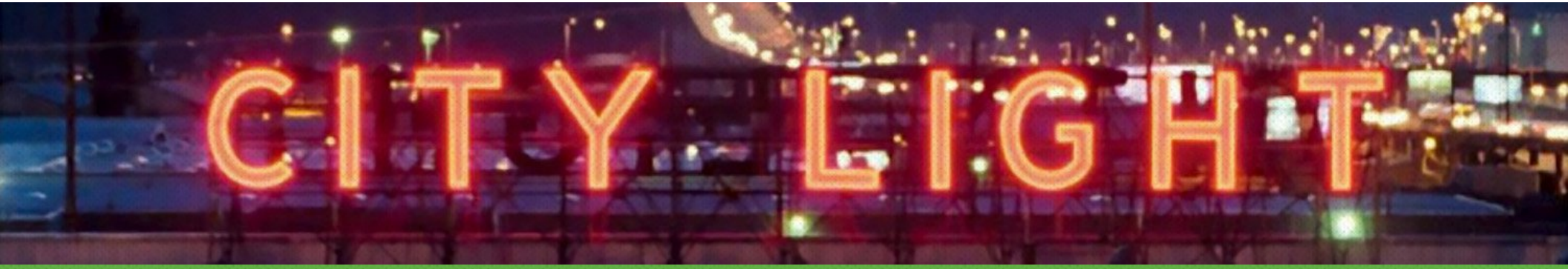
http://www.skagitclimatescience.org/projected-changes-in-streamflow/

Projects - Streamflow Visualization Tool



UPDATE ASSESSMENT AND IMPLEMENTATION PLAN DURING 2020

- Advancements in climate data and impacts
- New adaptation strategies and priorities
- Implementation plan
- Metrics baseline and reporting



OUR MISSION

Seattle City Light is dedicated to delivering customers affordable, reliable and environmentally responsible electricity services.

OUR VISION

We resolve to provide a positive, fulfilling and engaging experience for our employees. We will expect and reinforce leadership behaviors that contribute to that culture. Our workforce is the foundation upon which we achieve our public service goals and will reflect the diversity of the community we serve.

We strive to improve quality of life by understanding and answering the needs of our customers. We aim to provide more opportunities to those with fewer resources and will protect the well-being and safety of the public.

We aspire to be the nation's greenest utility by fulfilling our mission in an environmentally and socially responsible manner.

OUR VALUES

Safety, Environmental Stewardship, Innovation, Excellence, Customer Care

THE NATION'S GREENEST UTILITY
SINCE 1905
SEATTLE CITY LIGHT

Seattle City Light