NASEO/NGO RESILIENCY WORKSHOP A MUNICIPAL UTILITY PERSPECTIVE

Seattle City Light

8/3/2021

Values are the Foundation We Build On

Mission

Seattle City Light provides our customers with affordable, reliable and environmentally responsible energy services.

Vision

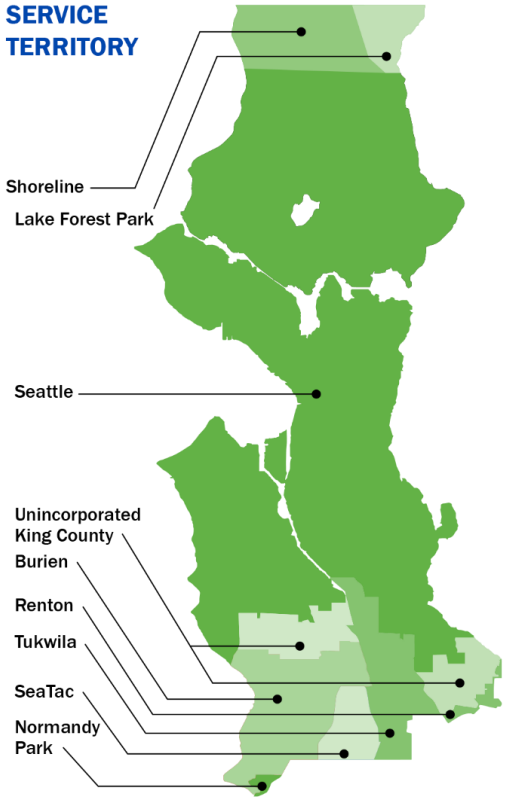
Create a shared energy future by partnering with our customers to meet their energy needs in whatever way they choose.

Values

- **Customers First**
- **Environmental Stewardship**
- **Equitable Community Connections**
- **Operational and Financial Excellence**
- **Safe and Engaged Employees**

About Seattle City Light

- Public power provider, est. 1910
- Net zero greenhouse gas emissions since 2005
- Serve population of 955,116
  - 429,690 residential customers
  - 51,398 non-residential customers



Service area ~131 square miles: Seattle, Shoreline, Lake Forest Park, Burien, Tukwila, SeaTac, Normandy Park

City Light Energy Resources/Loads

POWER SUPPLY OWNED BY CITY LIGHT

City Light Plants	Locations	Date in Service	Capability (Megawatts)	% of Total
Boundary	Pend Oreille River	8/23/67	1,117.4	55.70
Ross	Skagit River	12/30/52	450.0	22.40
Gorge	Skagit River	9/27/24	207.5	10.40
Diablo	Skagit River	10/20/36	182.4	9.09
Cedar Falls	Cedar River	10/14/04	30.0	1.50
S. Fork Tolt	S. Fork Tolt River	11/20/95	16.8	0.81
Newhalem	Newhalem Creek	1921	2.3	0.10
Total System Generation Capability			2,006.4	100.00

Daily Average Load ~ 1200MW
Winter Avg ~ 1850MW (peak)
Summer Avg ~ 1300MW
Peak 2021 1500MW)

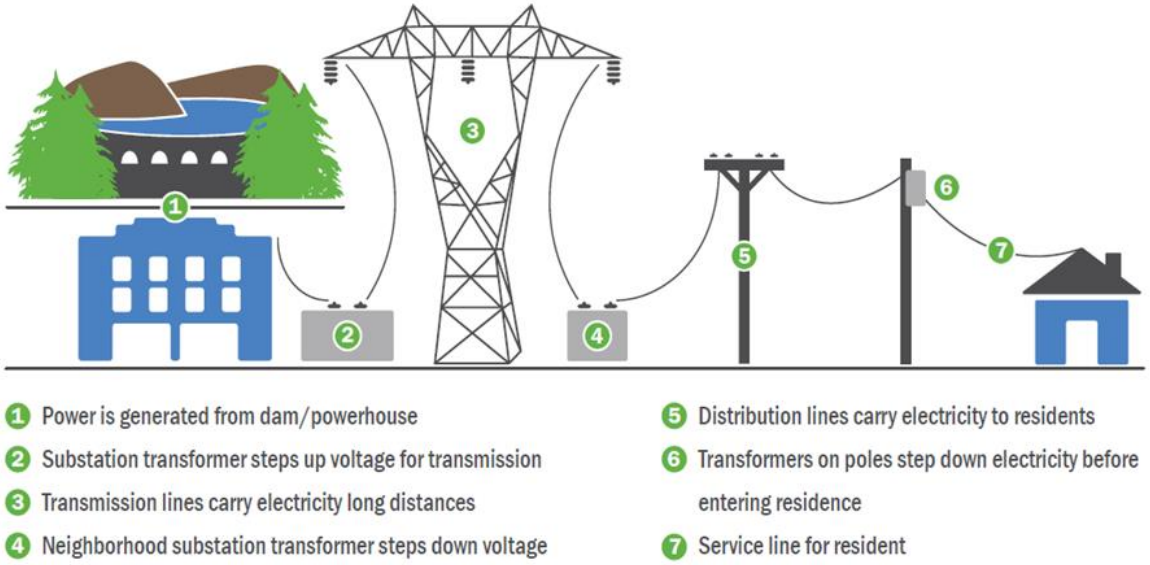
ENERGY RESOURCES

2019 POWER MIX

HYDRO	84%
UNSPECIFIED*	6%
NUCLEAR**	5%
WIND	4%
BIOGAS	1%
TOTAL	100%

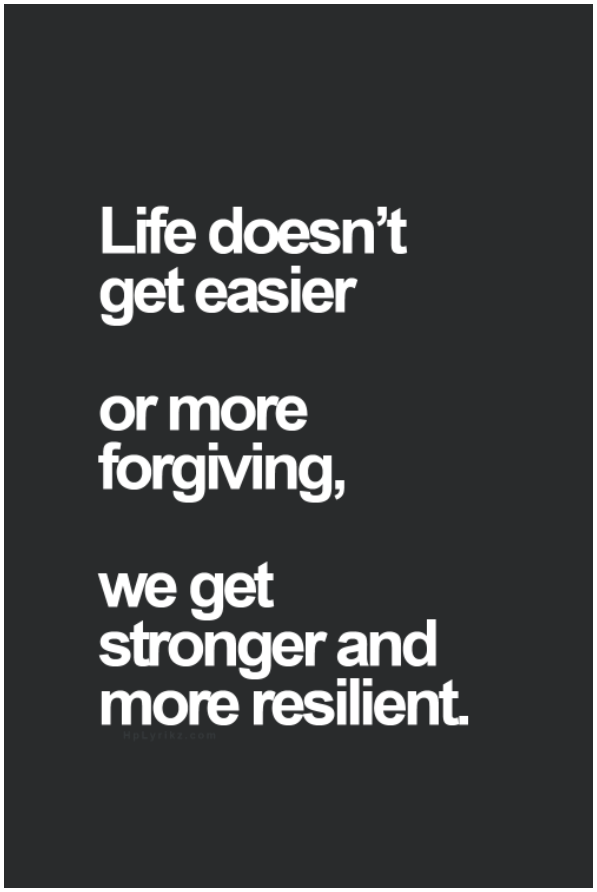
Reliability

How we generate and delivery power



Reliability is a key performance metric in our industry, and it has never been more important in this Pandemic, work from home environment

Resiliency



Resiliency is different from reliability. Resiliency Planning is preparing for and (hopefully) recovery after disruptive and extreme events.

Emergency Management Framework

- Emergency Management Responsibilities:

•Incident Management Team

•Disaster Declarations

•ICS Training

•Alert Seattle

- Emergency Management supports operations by being the point of contact and the liaison between City Light and outside agencies.

Emergency Management Plans for Seattle City Light

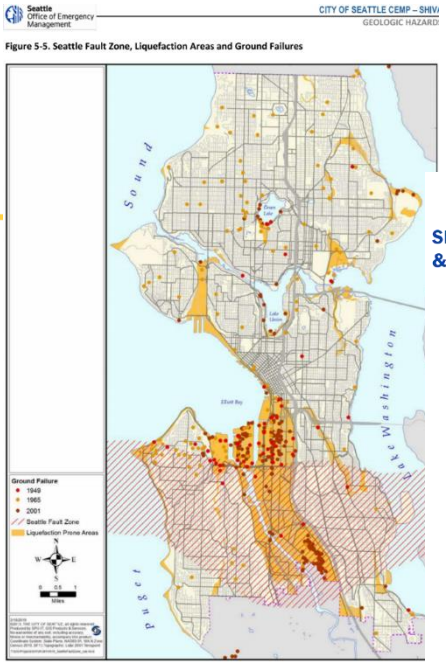
- Continuity of Operations Plan
- All Hazard Response and Restoration Plan
- Recovery Plan
- Mitigation Plan
- Public Influenza Annex
- Safety Annex
- Essential Technology Annex

What do we worry about most?

- Earthquakes
- Climate Change
  - Extreme Weather
  - Increased Storm Intensity
  - Wildfires
- Cyber Attacks
- Pandemic

Earthquake Preparedness

- 1993 seismic study determined substation risks based on seismicity/geology/conditions:



	Bothell	Broad	Canal	Creston	Delridge	Denny	Duwamish	East Pine	Mass	North	Shoreline	South	Union	University	Viewland Hoff
Risk to Bldg(s)	M	M	H	MH	M	L	MH	L	MH	MH	M	M	MH	MH	M
Overall Vulnerability	M	M	H	MH	L M	L	H	M	MH	MH	LM	M	LM	LM	L
Est Time to Restoration	M	M	H	M	L	L	H	M	M	H	L	M	M	L	L

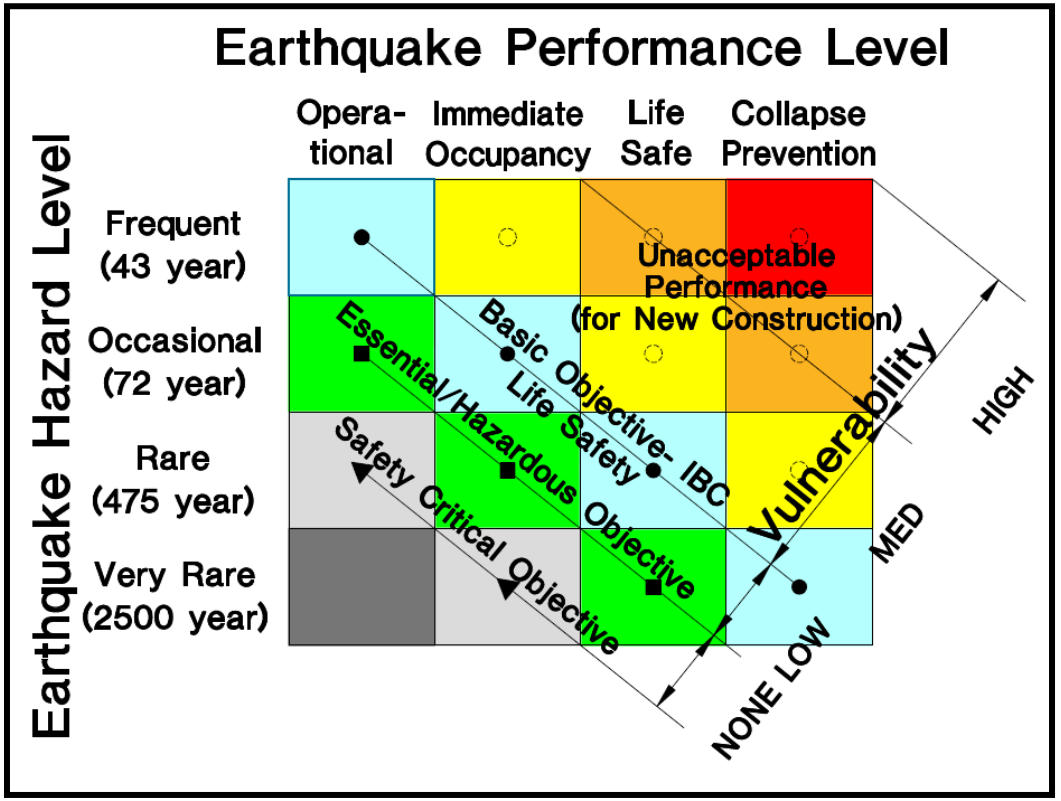
*orange indicates work that has been completed since the study to improve seismic risk to the substation

Earthquake Preparedness

- 150 Civil Engineering Students in 25 years
  - Gorge, Diablo, Ross, Cedar Falls Powerhouse Seismic evaluations
  - North and South Service Center Seismic Evaluations
  - Canal, Bothell, South Control Building Seismic Evaluation
  - Post Earthquake Evaluation Manuals

Earthquake Preparedness: Seismic Program

- SCL Seismic Policy
  - Long Term Plan for Building Resiliency
  - Standardizes building/structure design, equipment, construction
  - Objective: Essential/Hazardous (Green)

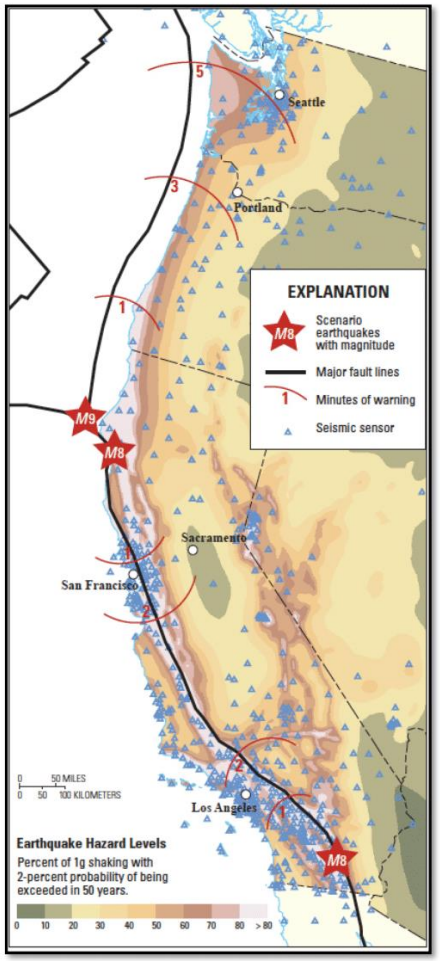


Earthquake Preparedness: Funding Opportunity

ShakeAlert™

Earthquake Early Warning System

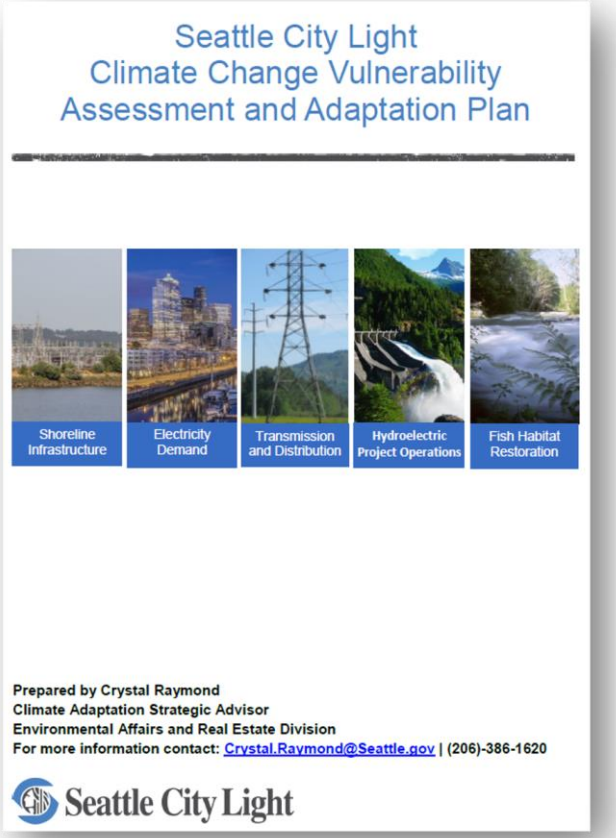
- Public safety project for west coast of North America
- A well-coordinated coalition of federal, state, and university partners in Oregon, Washington, and California
- 2014 & 2018 technical implementation plans define system



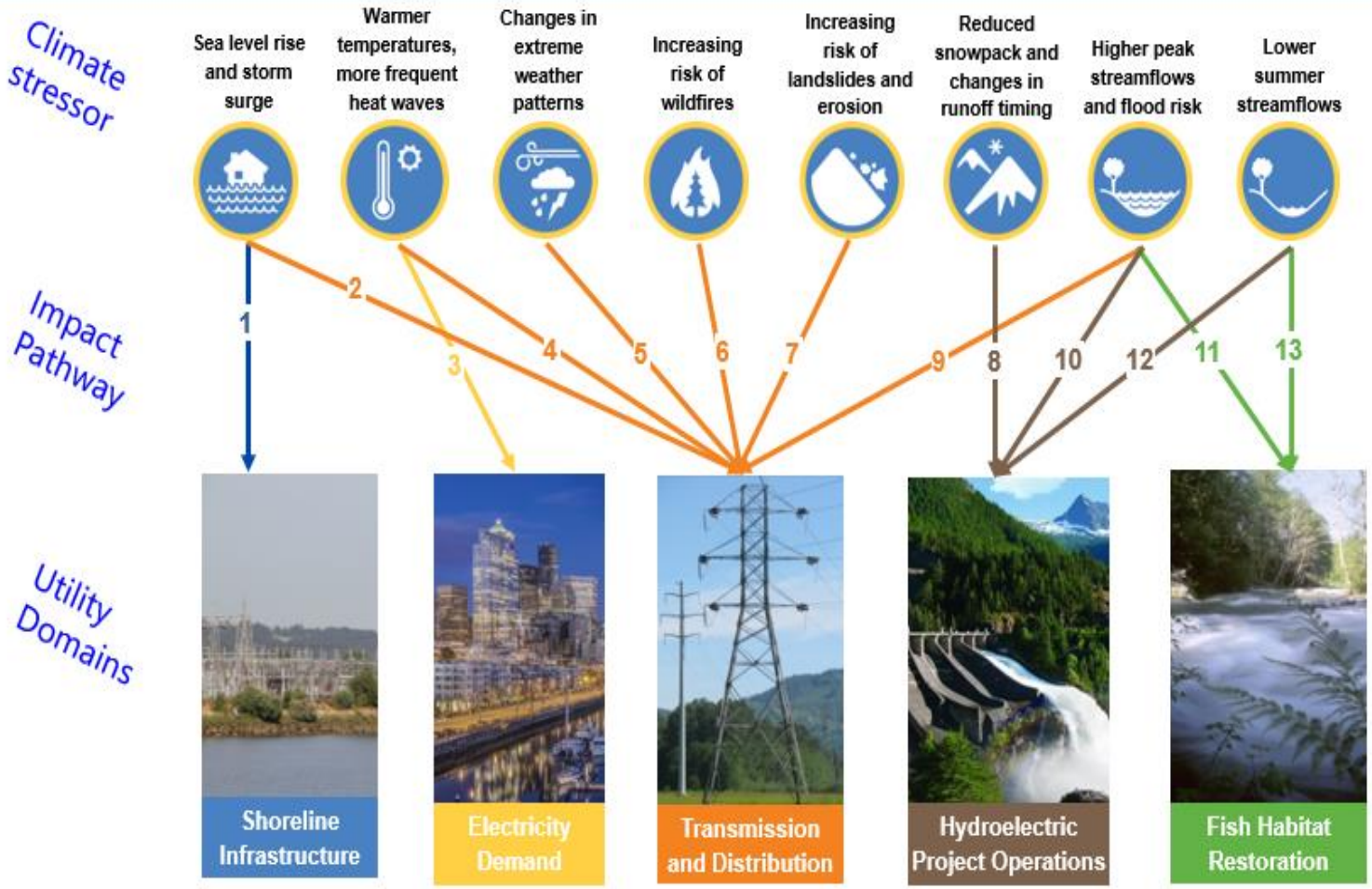
USGS science for a changing world · Cal OES · Berkeley University of California · Caltech · Oregon · University of Washington · Gordon and Betty Moore Foundation

City Light's 1st Climate Adaptation Plan

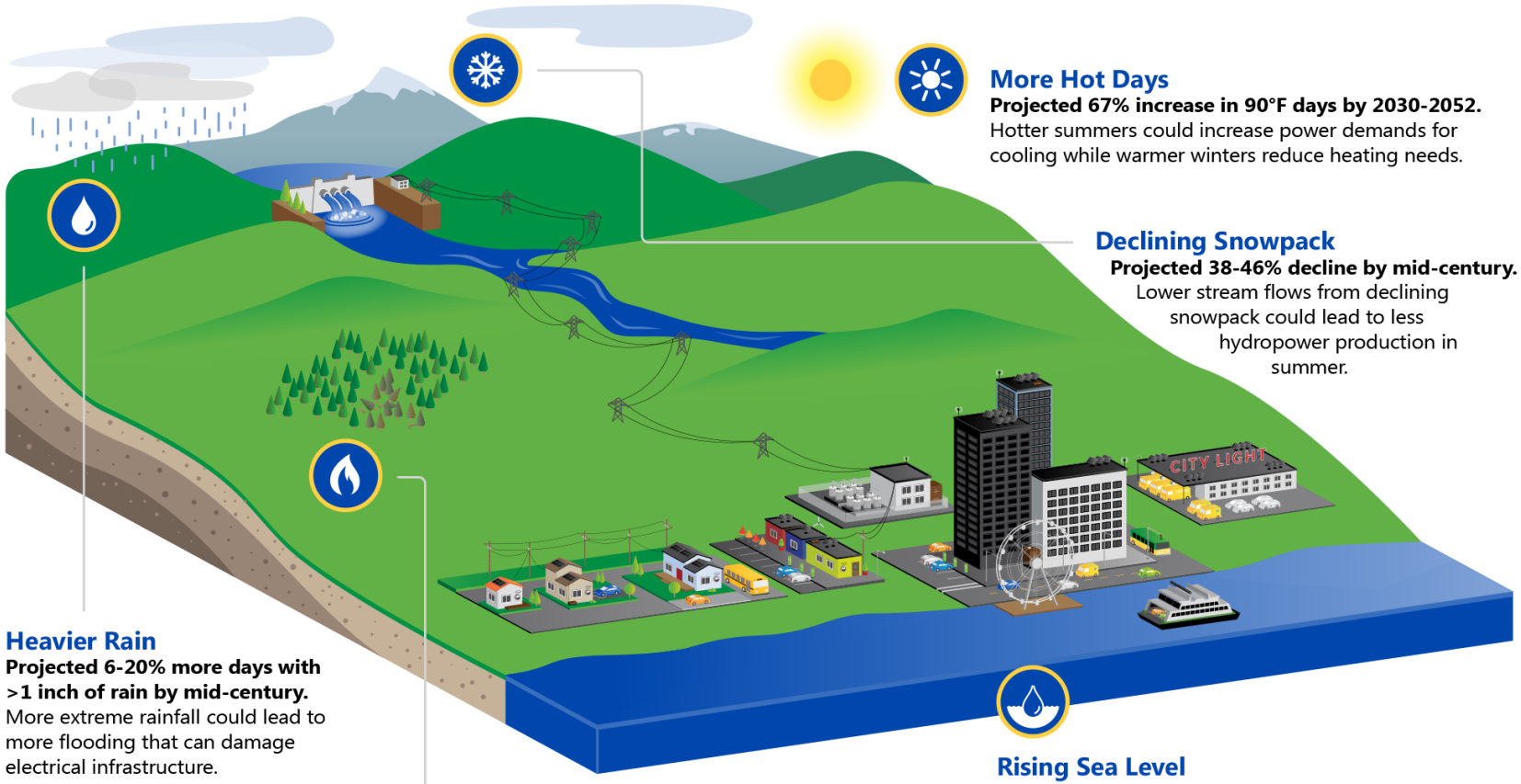
- Described observed and potential changes in climate
- Evaluated impacts and assessed vulnerability
- Developed adaptation strategies



2015 Vulnerability Assessment



Graphics have changed, what else?



More Hot Days
Projected 67% increase in 90°F days by 2030-2052.
Hotter summers could increase power demands for cooling while warmer winters reduce heating needs.

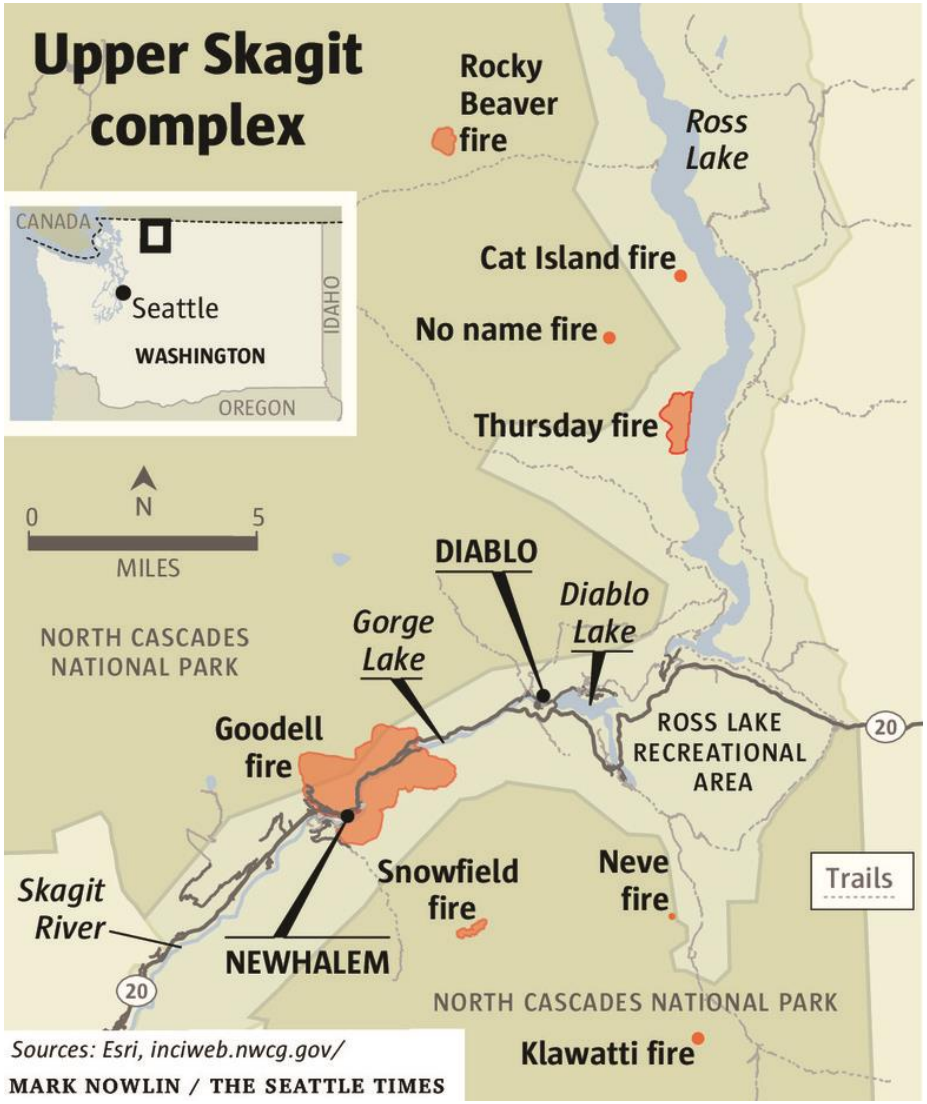
Declining Snowpack
Projected 38-46% decline by mid-century.
Lower stream flows from declining snowpack could lead to less hydropower production in summer.

Heavier Rain
Projected 6-20% more days with >1 inch of rain by mid-century.
More extreme rainfall could lead to more flooding that can damage electrical infrastructure.

More Wildfires
Projected area burned to more than double by 2099.
Increased wildfire activity could damage transmission and generation infrastructure and smoke could impact health.

Rising Sea Level
Almost 10 inches since 1899.
Projected 1.6-2 ft. more in Seattle by 2099.
Sea level rise coupled with increased winter rain could lead to more flooding of power equipment and underground power lines

2015 – A Close Call



[Escape From Diablo | Official Seattle City Light Video 2018 - Bing video]

Wildfire Mitigation – A Funding Opportunity

ALERTWildfire: A unique wildfire detection and monitoring system

- Only camera system accessible by both **firefighters** and **public**
- **Firefighters:** Direct access to pan-tilt-zoom features, geolocation of fires, real-time information critical to response
- **Public:** Does not control cameras, but has real-time view of their risk
- **Distributed:** control via iPhone, laptop
- **Hardened:** for emergency and public access

UC San Diego

UNIVERSITY OF OREGON


POWER SEATTLE
Seattle City Light