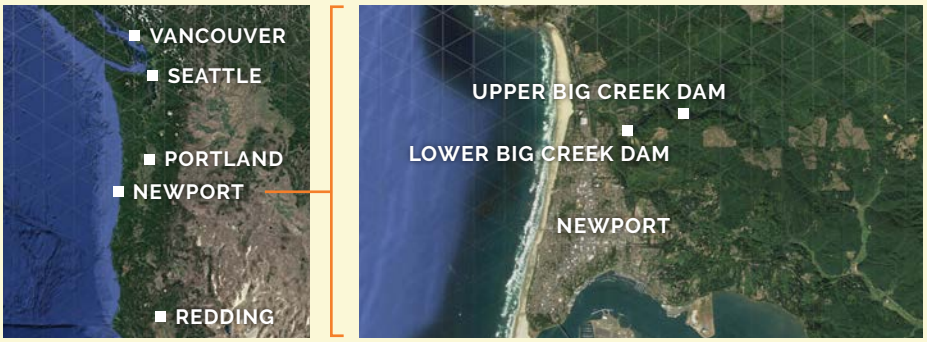
CITY of NEWPORT

Big Creek Dams Improvement Project May 2018



The Big Creek Dams are located in the City of Newport, on Oregon's Central Coast.

Background Information

Construction

- Earthen dams
- 1951: Big Creek Dam #1 (Lower Dam)
- 1969: Big Creek Dam #2 (Upper Dam)

Reservoir (Water Storage) Capacity

1200 acre-feet of water
(390 million liquid gallons)

Water Usage

- Winter (year-round residents): 2.5 million gallons/day
- Summer (peak tourist season): 5 million gallons/day

Water Supply At Capacity

- The Big Creek Reservoirs are Newport's sole water supply
- Reservoirs support today's residential and tourist needs, but are functioning at maximum capacity; restricting Newport's future growth and negatively impacting its economy
- Current water supply is not sized to accommodate future demand or growth
- Reservoirs are unable to store sufficient water to avoid critically-low water levels during peak demand times

Current Situation

Seismically Unstable Water Infrastructure

The soils below either dam could liquefy during a seismic event (3.0 or greater on the Richter Scale), causing significant damage to and/or failure of the dams. As of 2013, two of the top three most-critical, high-hazard dam projects in the State of Oregon according to Oregon's Dam Safety Engineer are the Upper Big Creek Dam and the Lower Big Creek Dam.

Seismic Threats

1. Cascadia Subduction Zone (CSZ)
2. Crustal Faults within 62 miles (100km) of the Big Creek Dams
3. A significant tsunami is likely to follow any seismic activity of 7.0 magnitude or above

IN THE NEXT 50 YEARS

1 IN 3 CHANCE OF A
BIG CASCADIA EARTHQUAKE

1 IN 10 CHANCE OF A
M9+ CASCADIA EARTHQUAKE

Oregon State University professor Chris Goldfinger, *The New Yorker*, July 20, 2015

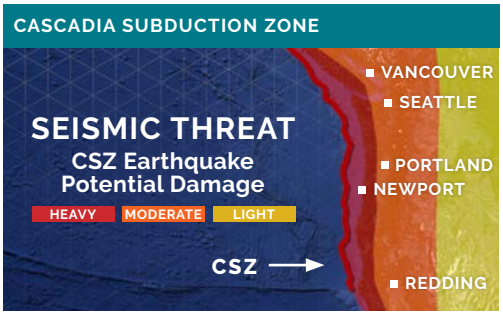
STATEMENT OF NEED

If the dams fail due to seismic vulnerability:

- Newport's sole water supply will be impaired for years
- Bridge failures and landslides will block access roads
- The City will be isolated for long periods of time adversely affecting the population, regional economy and environment

SOLUTION

To obtain the funding to design and construct a Big Creek replacement dam.



CRUSTAL FAULT	MAXIMUM MAGNITUDE	DISTANCE AWAY
Yaquina Faults	6.1	1.9 mi
Waldport Fault	6.4	13.0 mi
Stonewall Anticline	6.8	21.7 mi
Daisy Bank Fault	7.3	28.0 mi
Alvin Canyon Fault	7.2	32.3 mi
Wecoma Fault	7.3	32.3 mi
Turner and Mill Creek Faults	6.6	48.5 mi
Happy Camp Fault	6.6	51.6 mi

Parameters for Faults within 62 miles (100 km) of the Big Creek Dams, USGS 2014

SAVE OUR SUPPLY

Potential Impacts of not replacing the Big Creek Dams

Community & Human

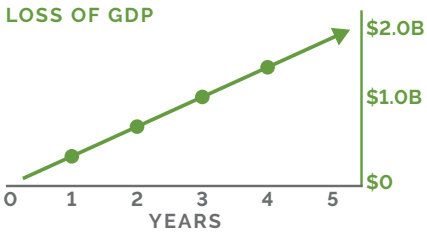
- More than 10,000 year-round residents (in Newport's 6000 households) and 2.5 million tourists could be without a public water supply for at least one year
- Almost 7,500 jobs would be significantly impacted or lost, reducing income for citizens in the region
- There is potential for loss of life
- The City's health care facilities and many businesses may be unable to operate without water
- Seniors and families may not be able to remain in their homes long-term

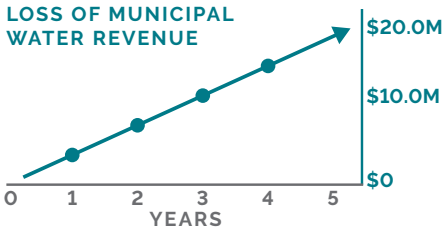
Environmental

Crucial infrastructure, property and land would be at risk of being heavily disturbed or destroyed.

Economic

The economic impact of a water supply loss will only continue to grow over time.





- Partial or complete disruption to the City's water supply will negatively affect the operation of local industries such as tourism, fish processing, brewing & distilling, and oceanographic research & education
- Businesses and citizens will relocate to other communities

Project Projections

Estimated Costs

The City has an opportunity to combine local, state and federal resources to complete the dam project, while minimizing the tax burden on Newport citizens.

EXPENSE	COST RANGE
Dam solution implementation (construction of new dam and decommissioning existing dams)	$32–39M
New access roads, ecological restoration, other necessary amenities and infrastructure	$7–8.5M
Watershed restoration at Big Creek	$1–1.5M
Design and construction contingencies	$21–26M
Total Costs	**$61–75M**

Estimated Timeline

PHASE	DESCRIPTION	DURATION	TARGET TIMELINE
1	Design Concepts for New Dam	1 Year	2018
2	Design, Permitting, Bid Period	2 Years	2019 & 2020
3	Construction	3 Years	2021–2023
	Total Project Duration	**4–6 Years**	**Present–2023**

NEXT STEPS

Significant research, environmental permitting and design work is needed before construction of the project can begin. Without state and federal support, the City cannot complete the work.

A. Continue replacement option research

B. Pursue funding

C. Replace the dams