Center for Public Service

2021 Infrastructure Survey Report

League of Oregon Cities

Portland State UNIVERSITY

2021 Infrastructure Survey Report

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INTRODUCTION

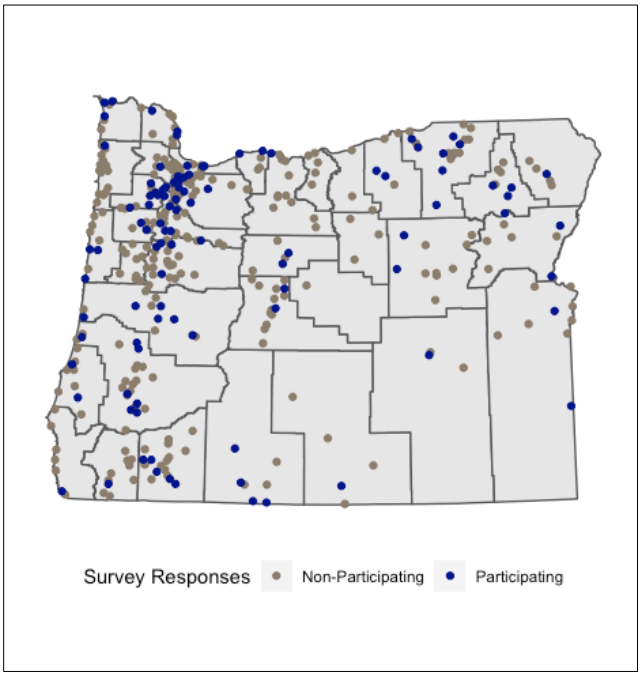
The League of Oregon Cities in early 2016 surveyed Oregon cities to gain a better understanding of cities' needs and challenges in water and wastewater system infrastructure. For the 120 cities that responded, the survey found a need for $7.6 billion in total water and wastewater infrastructure funding over the next twenty years.

In 2020, the League contracted with the Center for Public Service to update the 2016 survey, and to include an analysis of needs in wastewater and stormwater systems in addition to drinking water systems. The survey was conducted in late 2020.

One hundred Oregon cities responded to the survey. The sample is fairly representative of Oregon cities, both in terms of size and geographically. Although fewer than half of all Oregon cities responded, many of the cities that did not respond are very small. The sample represents over half (56%) of the population that lives in Oregon's cities.

POPULATION RANGE	NUMBER, STATEWIDE	NUMBER, SAMPLE	PERCENTAGE, STATEWIDE	PERCENTAGE, SAMPLE
Under 10,000	191	76	79%	76%
Over 10,000	50	24	21%	24%
Total	241	100	100%	100%

This map shows the geographic distribution of the sample cities.



Responding cities are listed in Appendix A.

WATER SYSTEMS (Drinking Water/Water Supply)

Almost all (91%) of the responding cities indicated they operate a municipal water utility, serving a total of 478,088 customers. Most customers are residential:

	Residential	Commercial	Industrial
Number of Customers	415,492	55,492	5,500
Percentage	87%	12%	1%

On average, the ratio of residents to residential water accounts is 3.7. This is higher than the average household size, probably due to multifamily buildings that have a single account. Depending on the city, apartments may be included in either residential, commercial, or industrial account classes.

Medium and Long-Range Costs

Cities were asked to estimate future water system infrastructure costs using, where possible, existing planning and budgeting data sources. The majority of the responding cities (61%) have some form of medium range capital improvement plan (CIP), spanning a planning period of between five and ten years. Respondents were asked to enter the projected water system improvement cost for the remaining years of their CIP. Those that did not have a current CIP were asked to estimate the cost for the next five years. The total estimated medium-range cost for the responding cities is $2.1 billion.

The majority of the cities (67%) reported they also had a long range water master plan or facilities plan (another 10% reported they had such a plan, but it was too out-of-date to be of much use). We used data provided by the respondents to calculate the average cost per year for the remaining years covered by the master plan, and then multiplied that result by 20 to arrive at a consistent 20-year total. Those cities that did not have a master plan provided a rough estimate of their anticipated costs over the next twenty years. This resulted in a total anticipated 20-year cost for water infrastructure of $7.6 billion. The medium and long range costs are summarized in this table:

Water Costs	Medium-Range	Per Capita	Long Range	Per Capita	Per Customer
<10,000 pop.	$206 million	$1,986	$0.4 billion	$3,495	$8,885
>10,000 pop.	$1,914 million	$1,438	$1.6 billion	$2,410	$7,801
>10,000 exc. Ptld	$879 million	$1,311	N/A	N/A	
Total, Sample	$2,120 million	$1,478	$2 billion	$2,584	$8,014
Extrapolated Statewide	$4,365 million		$7.6 billion		

Economies of Scale

For labor-intensive services such as police and fire, cities typically experience a diseconomy of scale because pay rates often increase with organization size (this is why cities try to choose similar-size organizations for comparisons in labor negotiations). On the other hand, capital-intensive services such as water and wastewater see an economy of scale (e.g., trenching and pipe costs do not double when the pipe capacity doubles).

This seems to be confirmed through the survey data. On average, cities under 10,000 population account for a higher per-capita water infrastructure cost ($3,495 for long range costs) than cities over 10,000 population ($2,410). Because Portland is so much larger than any other city in Oregon, the per capita amounts for medium-range costs are also shown with Portland excluded. Portland did not submit 20-year costs, noting they are in the process of updating their long range plan.

Costs for All Oregon Cities, Extrapolated

Using the per-capita survey results, an estimate was extrapolated for total costs faced by all Oregon cities. This amounts to over $7.6 billion over a twenty-year period. This figure should be taken with a grain of salt: many of the cities' long range cost projections are rough estimates only (e.g., "at least $30 million"), and extrapolation assumes that the non-responding cities face similar costs to the responding cities. Nevertheless, it is probably a good order-of-magnitude approximation.

Specific Water Project Costs

Some infrastructure costs, such as pipe replacement and pump station upgrades, can be fairly consistent over time. Construction of water treatment plants and large reservoirs are relatively rare as well as expensive, and can account for much of the difference in future costs from city to city. The survey included questions on projected needs and costs for treatment plants, storage, and seismic upgrades.

Thirty-two, or roughly a third of the responding cities, anticipate building or upgrading a water treatment plant in the next twenty years at a median cost of $4.3 million. A slightly larger number (36%) anticipate a need to build or expand water storage capacity at a median cost of $2.1 million.

Seismic Upgrades

Costs relating to seismic resilience are a relatively recent addition to water infrastructure plans due to increased awareness of the risk of a major Cascadia Subduction Zone earthquake. Cities were given a link to the State of Oregon's map of high hazard zones; cities within those zones are required to include a seismic risk assessment and mitigation plan as a component of their next water master plan update. 37 of the responding cities indicated they fell under this requirement, and of them 13 (35%) stated they had completed the assessment; 15 were not sure if they were in a high hazard zone.

Four cities noted some of the challenges of completing the seismic assessment and mitigation plan:

- *Trying to navigate Health Department rule in what to include in the plan.*
- *Developing an assessment methodology, developing GIS hazard layers from existing maps and bore hole logs, and hydraulic analysis of expected impacts from an earthquake and benefits of proposed mitigation.*
- *Identifying critical facilities, and having state or regional agencies help identify the risk.*

- *Identifying a realistic approach to recovering the water system after a catastrophic event. We identified $176 million in pipe replacement costs to upgrade our distribution system to withstand a large seismic event. That doesn't count costs to make our large diameter transmission pipe resilient. That would be on the order of $300 million.*

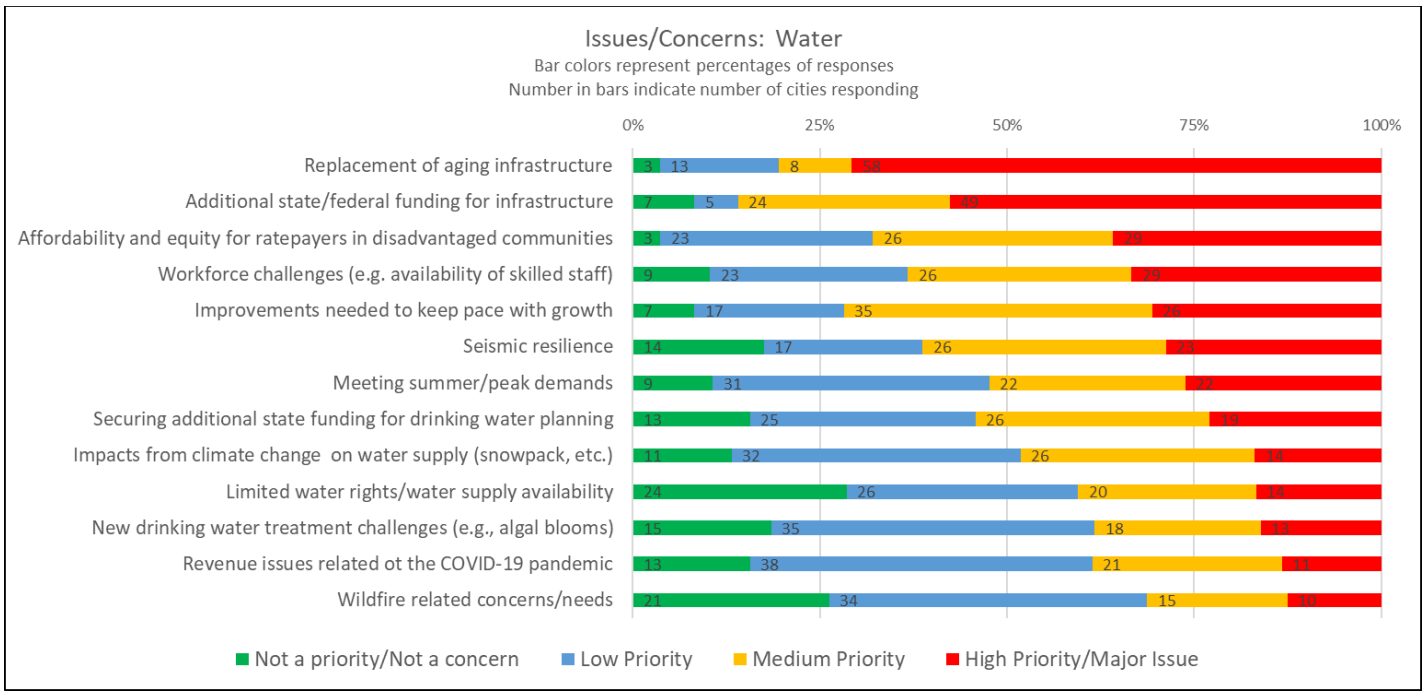
Cities that had *not* already completed a seismic assessment and mitigation plan were asked if they had an estimate for doing so. Only four cities responded to this question, with an average estimated cost for preparing the plan of over $100,000, and an average per-capita cost of $6.00.

Ten of the cities that had completed the seismic plan reported the estimated cost to address seismic issues. Note that those estimates are not necessarily reflected in overall long range facility plans: the cost of seismic hardening is so high that cities may include seismic resilience as systems are replaced or upgraded, but may not plan to fund seismic upgrades for facilities that do not otherwise need to be replaced.

	Water Treatment	Water Storage	Seismic Upgrades
Total, responding cities	$937 million	$239 million	$1.6 billion
Median cost	$4.3 million	$2.1 million	$11 million
Minimum cost	$150,000	$300,000	$360,000
Maximum cost	$820 million	$83 million	$979 million
Per-capita cost	$1,124	$408	$1,989

Issues and Priorities for Water Systems

The survey asked respondents to rate a variety of water system issues or concerns, choosing between "Not a priority/Not a concern," "Low priority," "Medium priority," or "High priority/major issue." The chart below indicates the rankings for each of the thirteen issues.



Replacement of aging infrastructure, and the need for additional state and federal funding for water infrastructure were rated as a "high priority/major issue" by a majority of the survey respondents. Ratepayer affordability and equity was also rated as a high priority. Almost three-quarters of the respondents rated "Improvements needed to keep pace with growth" as either a medium or high priority.

WASTEWATER (Sewer) SYSTEMS

A majority of responding cities (71%) reported that they operate a wastewater utility (17% did not respond to the question). This is a smaller percentage than for a water utility, and it is more common for sewer collection and/or treatment to be provided by another city or a special district; 15% of those responding to the question indicated their city contracts with another agency for some or all of the wastewater service to their residents. The responding cities have a total of 480,000 wastewater customer accounts.

	Residential	Commercial	Industrial
Number of Customers	432,001	43,214	5,178
Percentage	90%	9%	1%

Medium range and long range wastewater infrastructure costs were reported and analyzed using the same process as for water improvements.

Wastewater Costs	Medium-Range	Per Capita	Long Range	Per Capita	Per Customer
<10,000 pop.	$254,833,000	$2,253	$728,805,000	$6,920	$16,472
>10,000 pop.	$2,774,752,000	$1,971	$6,912,902	$5,263	$11,204
>10,000 exc. Ptld	$774,752,000	$1,036	$1,912,902,000	$2,928	$4,427
Total, Sample	$3,029,585,000	$1,478	$7,641,707,000	$5,327	$6,936
Extrapolated Statewide	$5,879,910,000		$15,786,980,000		

Numbers for cities over 10,000 population are shown with and without data from Portland. In this case, not only is Portland much larger than all other Oregon cities, it notes that it combines wastewater infrastructure costs with stormwater infrastructure costs.

As with water system costs, there appears to be economies of scale for wastewater systems: while the larger cities report larger overall costs, the per capita cost is less than that of smaller cities.

Wastewater Projects

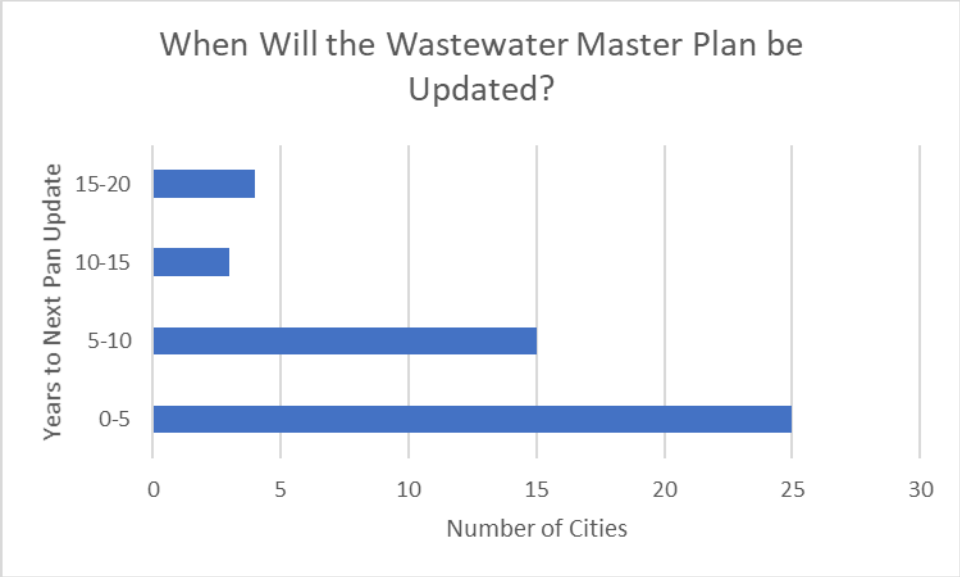
The main difference in wastewater infrastructure costs between cities is whether the city will need to build a new, or substantially upgrade an existing, wastewater treatment plant. Twenty-three of the responding cities reported that they anticipate needing to build or upgrade a treatment plant in the next twenty years, at a median cost of $5.7 million with a range between $891,000 and $2.5 billion.

Combined Water and Sewer Infrastructure Costs

Overall, cities reported a total long term (twenty years) combined cost for water and sewer infrastructure of $9.7 billion. This equates to a per-capita cost of $7,900 and a per-customer cost of just over $15,000. Extrapolated to the population of all Oregon cities, the total anticipated cost for water and sewer infrastructure for all cities is over $23 billion.

Anticipated Date for Updating the Wastewater Master Plan

Cities were asked to estimate the date for the next update of the wastewater master plan. Two cities reported they were in the process of doing so. Of the other 47 that responded to this question, the majority anticipate completing the update in the next five years. The following chart shows the distribution of responses.



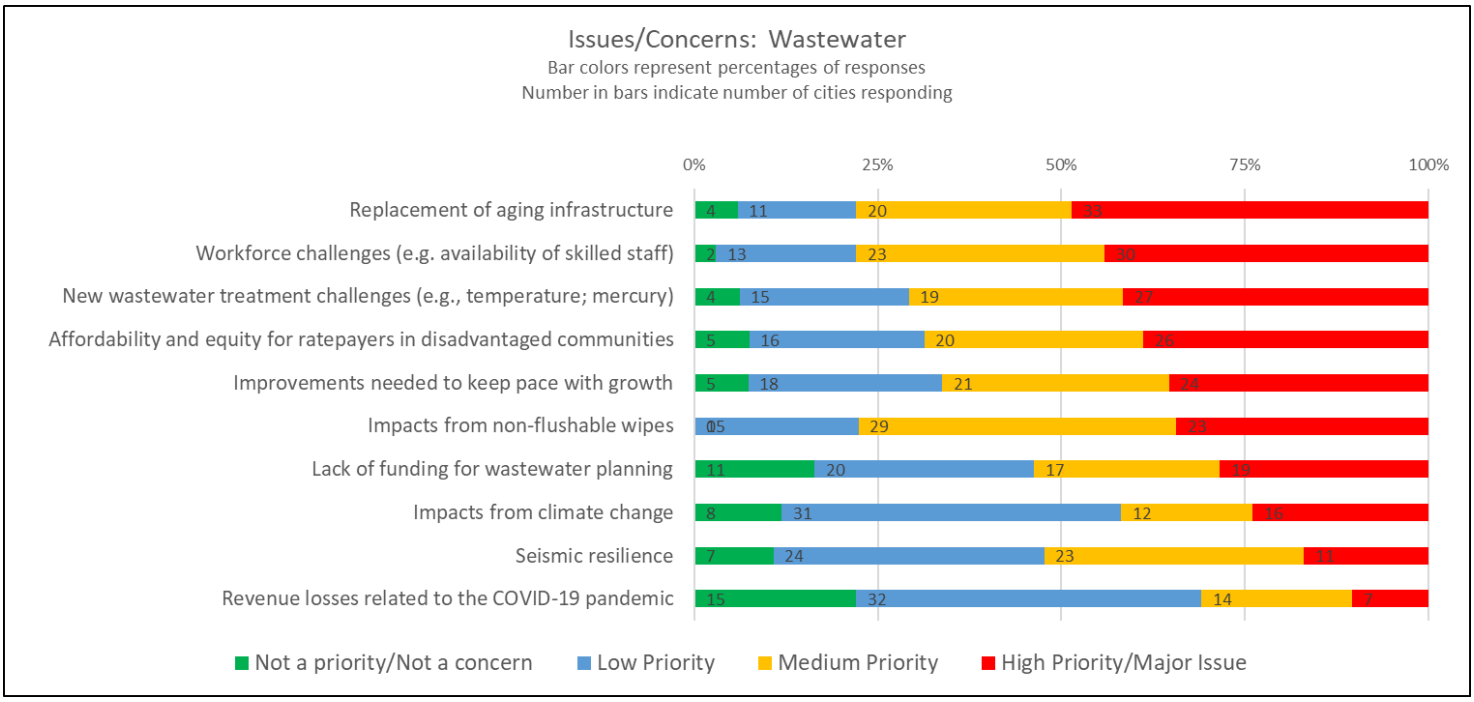
Some cities noted that the timing for the update depends on the availability of funds.

Septic Systems

Most (88) of the cities responded to a question asking them to estimate the number of septic systems within the city limits. In general, there are few homes that are *not* on the municipal sewer system; only 6 cities (7% of those answering the question) reported more than 100 septic systems. Bend estimated 2,700 and Portland did not provide an estimate. Some small cities, however (for example, Merrill and Veneta) reported relatively high numbers.

Issues and Priorities for Wastewater Systems

As with water issues, the survey asked respondents to rank the importance of issues and concerns affecting wastewater systems. The chart below summarizes the results.



As with water systems, replacement of aging infrastructure is the highest concern. The ability to hire skilled staff is also rated as a high priority. Over three-quarters of the cities identified the impacts of non-flushable wipes on both infrastructure and operations as either a medium or high priority.

STORMWATER SYSTEMS

Overall, only 42% of the responding cities account for stormwater service as a separate utility; 49% stated stormwater costs are included in the street fund and 9% stated that stormwater collection and treatment is provided by another agency.

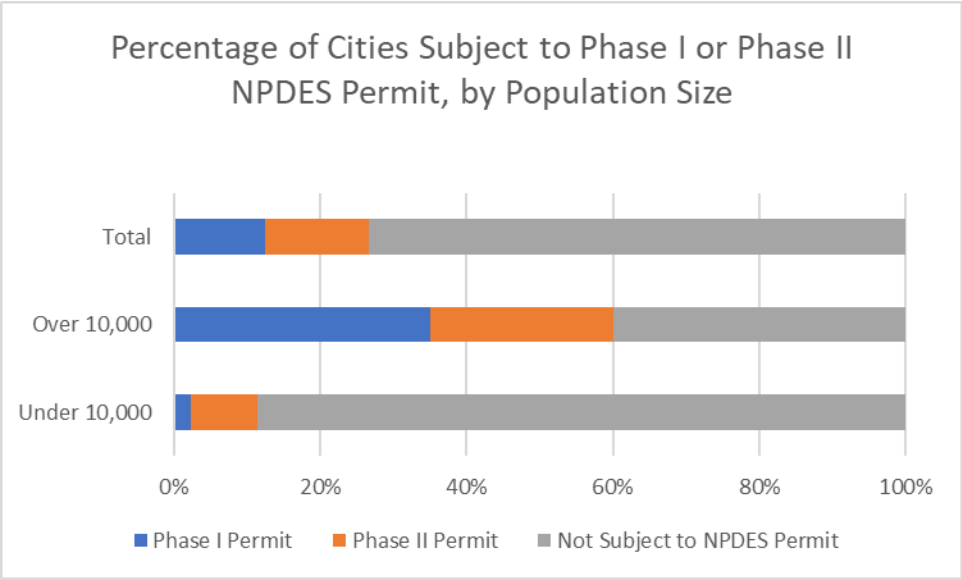
One of the reasons for a city to prepare a water or wastewater facilities plan is to provide a source of cost data for calculating systems development charges (SDCs). These charges are less common for stormwater, and far fewer cities prepare long range master plans for stormwater. For that reason, the survey asked for information on medium range (five to ten years) stormwater costs only. Those costs for the 31 cities that provided stormwater cost information total $207 million and are broken down according to the following table:

Stormwater Costs	Medium Range Cost	Per Capita
<10,000 pop.	$81 million	$926
>10,000 pop.	$127 million	$238
All 31 reporting cities	$207 million	$334

NPDES Permits

Cities that operate a separate storm sewer system may be required to obtain from the Oregon Department of Environmental Quality an NPDES permit. Cities within an urban area of at least 100,000 population are subject to a "Phase I" permit and those in an urbanized area with an overall population less than 100,000 population are required to obtain a "Phase II" permit.

A majority (64) of the cities responded to a question on whether they were subject to a Phase I or Phase II NPDES permit. 17 of the cities, or 27% of those that answered the question, are subject to an NPDES permit. On the assumption that sampled cities that did not respond to the question are not subject to the permit requirement, 17% of all the cities responding to the survey are subject to an NPDES permit. The chart below shows the breakdown of permit requirements by population groups. Smaller rural cities are not subject to the requirement.



Twelve cities responded to a question asking about any challenges associated with the NPDES permit requirement. Most of these noted the expense incurred by the requirements. "Additional maintenance and inspection requirements per [the] permit require additional equipment and staffing to meet and puts additional burdens on smaller community ratepayers." "Pendleton has over 70 outfalls to the Umatilla River and its tributaries. If treatment is regulatory requirement, this will be an expense that does not currently have any rates in place." Portland: "We spend nearly $220 million per year on compliance." Bend: "Long term the challenge will continue to be funding for the development of a capital improvement fund dedicated to stormwater improvements."

Organizational resources are also a challenge, even for a city of 53,000 population: "Maintaining staffing and training levels to ensure that we meet the provisions of the permit."

Other challenges relate to a "one size fits all" regulatory environment. "The MS4 Phase 2 permit is a general permit applied to communities across a very broad geographic area, with little differentiation for local conditions, size of community, resources available for implementing the program, or new vs. existing registrants. It provides a very short timeline for new communities to develop, and find a way to fund, a brand new program." "Our permit is held by Clean Water Services. It is not specific to our City

and sometimes contains requirements that we might not be held to if we had our own permit." "…we are now all in settlement negotiations and will be stuck with the miserable permits DEQ has written for decades into the future." "…overreach by State in implementing stormwater requirements at the local level."

TIDEGATES

Most Oregon cities face challenges in upgrading and maintaining water, wastewater, and storm water systems. Only a few cities have the added challenge of maintaining and operating tide gates. Of the responding cities, only six cities stated they owned tide gates. Three of them--North Bend, Toledo, and Warrenton—anticipated funding needs over the next ten years to repair or replace the tide gates, with costs ranging from $30,000 to as much as $960,000.

COVID-19 IMPACTS AND RATEPAYER ASSISTANCE

Lost revenue related to COVID-19 is a pressing concern for cities in Oregon. 17 cities reported that they are experiencing drinking water revenue impacts, with 30 experiencing minimal impacts at the moment. 9 cities reported loss of revenue related to wastewater revenue, with 36 reporting that the current impact is present but minimal.

Has your city experienced drinking water revenue impacts associated with COVID-19 due to reduced use of water consumption from commercial/industrial businesses that have closed or limited operations?	
No	38
Yes	17
Yes, but minimal	30
N=	**75**

Has your city experienced wastewater revenue impacts associated with COVID-19 due to reduced use of service by commercial/industrial businesses that have closed or limited operations?	
No	27

Yes	9
Yes, but minimal	36
N=	**72**

6 of the cities provided information related to utility revenue changes between 2019 and 2020. Of these, 5 cities reported revenue losses of 2%, 7%, 10% (2), and 11% from 2019. In other sections of the survey, cities indicated that lost revenue due to COVID-19 is a challenge.

Regarding wastewater, 4 cities provided revenue information. Aside from 1 city that did not experience a revenue change, cities reported a revenue loss of 9% (2) and 20% from 2019.

COVID-19 Assistance

Of the 86 respondents who answered a question related to low-income rate payer assistance for utilities, 51 indicated no program exists, whereas 35 had assistance in place. Regarding wastewater assistance, 30 respondents indicated that their utility assistance program also applied to wastewater payment assistance.

Did your city have a low-income ratepayer assistance program for drinking water prior to COVID-19?	
No	51
Yes	35
N=	**86**

Has your city instituted any wastewater ratepayer assistance programs in response to COVID-19?	
Not applicable; no new assistance program	42

Yes, see answers to Water Utility ratepayer assistance	30
Yes; our city has a wastewater ratepayer assistance program separate from or different than a water assistance program	1
N=	**73**

These assistance programs existed prior to the COVID-19 pandemic. When asked if the existing programs are meeting needs related to the pandemic, 16 cities believe this program has been adequate to meet the need. 5 shared that this program is not adequate to meet the needs that have happened as a result of the COVID-19 pandemic. 9 respondents do not know, and 5 indicated that the need is greater than what the program provides.

Is the low-income ratepayer assistance adequate to meet the need?	
No	5
We don't know	9
Yes	16
Yes, during normal times, but not now	5
N=	**35**

As cities continue to cope with the COVID-19 pandemic, there have been many techniques employed to help the community. The table below provides a snapshot of what cities have done related to utility assistance. Suspended shut-offs or assessment of late fees have been the most widely used methods. One respondent noted that shut-offs were reinstated after six months. Cities have also established new assistance funds or increased funds in already existing funds.

What actions, if any, has your city taken to assist customers who have difficulty paying their utility bill due to COVID-19?

Suspended shut-offs	32
Suspended assessment of late fees	27
Established a new assistance fund	11
Added money to an existing fund	11
Provided across-the-board credits or rate reductions	2
Written-off (excused) past-due amounts	2

Respondents shared methods they use that were not listed on the survey. Some have engaged in direct outreach to customers to develop payment plans. Others have engaged in facilitating donations from the community. Cities have provided funding to local social service agencies in an effort to assist residents with utility payment. Business assistance has also been prevalent. In one city, hotels are given discounts on their utilities. In another, a small business program was established to provide utility relief to over 500 businesses in the form of a one-time credit to their utility bill. Others have developed business assistance grants.

Delayed Projects due to COVID-19

The COVID-19 pandemic has influenced cities' ability to move forward with projects related to infrastructure. In one instance, a city was delayed in obtaining materials. In other cases, state funding commitment was withdrawn as a result of a sale not occurring due to COVID-19.

MESSAGES TO THE LEAGUE OF OREGON CITIES/LEGISLATIVE CONCERNS

Cities were given the opportunity in open-ended questions to suggest the messages they'd like to send to the League of Oregon Cities related to water and wastewater issues. The following are summaries of the themes that arose during an analysis of these responses.

Funding for Mandates

Cities reported that mandates provide an economic burden. Respondents have suggested that mandates should be funded to ensure compliance.

A Distinction Between City Size

Respondents stated that there is a distinction between larger and smaller cities that must be considered. Smaller cities, respondents stated, lack the same capacity as larger cities to comply with

regulations. Further, smaller cities lack economic leverage and/or population size to be eligible for current grants and loans.

Regional Efforts

Respondents expressed the desire to have water issues approached from a regional standpoint. Approaching it this way, they shared, would help in the sustainable use of water and would assist cities with lower population density share costs of developing infrastructure.

Financial Incentives, Grants, and Loans
Many cities reported the need for funding to fulfill the need in their community, especially as capital expenses outpace inflation rates. Cities requested financial assistance in the form of grants and low-interest loans for much needed infrastructure updates. In particular, funding needs to be allocated to structures (e.g. dams, pipes) that are at risk of falling into disrepair or are not able to withstand seismic events.

Additionally, there is a great need for grant funding to recoup lost revenue related to COVID-19. Cities vary in economic need at the moment due to COVID-19, with residents, small businesses, and tourist-related businesses (e.g. hotels) being especially impacted. Therefore, flexibility in allowing the city to allocate funds is requested. Respondents who have received funding expressed that LOC provided support in helping them obtain grants or determine resources to help them meet the need.

Water Rights
Respondents expressed that the city should be prioritized for water rights. Respondents expressed worry over how the tension between fish persistence and water rights for cities will be balanced.

Technical Assistance re: Conducting Studies
Respondents shared that they would benefit from having guidance on how to complete seismic and water studies. Clear guidelines on what is required in the study was requested.

Wastewater Regulatory Compliance
When asked about concerns related to wastewater, regulatory compliance and permitting fees were primary themes. Respondents expressed that directives from the Department of Environmental Quality (DEQ) has resulted in system upgrades that are time and cost intensive—even when a new system had recently been implemented.

Appendix A – Responding Cities

Adams
Amity
Ashland
Astoria
Aumsville
Bend
Brookings
Brownsville
Canby
Canyonville
Cascade Locks
Cave Junction
Chiloquin
Clatskanie
Columbia City
Cornelius
Cove
Creswell
Culver
Dallas
Dayton
Dayville
Drain
Dundee
Dunes City
Echo
Enterprise
Estacada
Gates
Gearhart
Gervais
Gold Hill
Halfway
Helix
Hermiston
Hines
Hood River
Hubbard
Huntington
Ione
Jacksonville
Jefferson
Jordan Valley
Klamath Falls
La Grande
Lafayette
Lake Oswego
Lakeview
Lexington
Lowell
Madras
Malin
McMinnville
Merrill
Millersburg
Milwaukie
Molalla
Monmouth
Monument
Mosier
Mt. Angel
Myrtle Creek
Myrtle Point
Nehalem
Newberg
Newport
North Bend
North Powder
Pendleton
Pilot Rock
Portland
Redmond
Reedsport
Riddle
Rogue River
Saint Paul
Salem
Scio
Sherwood
Springfield
St. Helens
Talent
Tigard
Toledo
Troutdale
Tualatin
Turner
Ukiah
Union
Vale
Veneta
Warrenton
Westfir
Willamina
Wilsonville
Winston
Wood Village
Yachats
Yamhill
Yoncalla

APPENDIX B - Cities indicating an issue is a "high priority/major concern"

WATER

Securing additional state funding for drinking water planning (e.g. updating rate studies; master plans; etc.)

Amity
Jacksonville
Echo
Yoncalla
Yachats
Tigard
Lexington
St. Paul
Toledo
Union
Lowell
Ukiah
Veneta
Sheridan
Rogue River
Adams
St. Helens
Brookings

Securing additional state/federal funding for drinking water/water supply infrastructure improvements

Amity
Jacksonville
Dunes City
Echo
Yoncalla
Willamina
Gold Hill
Warrenton
Yachats
Hermiston
Tualatin
Talent
Turner
Madras
Ashland
Lexington
St. Paul
Hubbard
Monmouth
Toledo
Astoria
Hood River
La Grande
Redmond
Sherwood
Lowell
Malin
Portland Water
Westfir
Veneta
La Grande
Dayville
Rogue River
Dundee
Vale
Cornelius
Adams
Lafayette
Mosier
Newport
Molalla
Canyonville
Bend
Brownsville
Estacada
St. Helens
Brookings

Revenue losses related to the COVID-19 pandemic

Warrenton
Talent
Scio
Tigard
St. Paul
Toledo
Portland Water
Milwaukie
Rogue River
Canyonville
St. Helens

Seismic resilience for drinking water system

Trillium
Amity
Jacksonville
City
Echo
McMinnville
Myrtle Creek
Willamina
Daniel
Gold Hill
Warrenton
Yachats
Hermiston
Tualatin
Talent
Madras
Pendleton
Ashland
Scio
Tigard
Tigard
Lexington
Hubbard
Monmouth
Toledo

Astoria
Newberg
Hood River
La Grande
Yamhill
Redmond
Union
Lake Oswego
Salem
Lowell
Portland Water
La Grande
Milwaukie
Dayville
Rogue River
Hines
Gearhart
Vale
Cornelius
Adams
Newport
Reedsport
Molalla
Canyonville
Klamath Falls
Bend
Wood Village
Brownsville
Estacada
St. Helens
Brookings
Gresham

Replacement of aging infrastructure

Echo
Warrenton
Yachats
Hermiston
Tigard
St. Paul
Hubbard
Monmouth
Millersburg
Wilsonville
Yamhill
Redmond
Lowell
Veneta
Dundee
Gearhart
Cornelius
Adams
Lafayette
Newport
Reedsport
Canyonville
Brownsville
Estacada
Brookings

Improvements needed to keep pace with growth (increased capacity)

Echo
Warrenton
Yachats
Hermiston
Tigard
St. Paul
Hubbard
Monmouth
Millersburg
Wilsonville
Yamhill
Redmond
Lowell
Veneta
Dundee
Gearhart
Cornelius
Adams
Lafayette
Newport
Reedsport
Canyonville
Brownsville
Estacada
Brookings

Limited water rights/water supply availability

Echo
Warrenton
Yachats
Tigard
St. Paul
Hubbard
Monmouth
Yamhill
Westfir
Rogue River
Gearhart
Newport
Reedsport
Brownsville

Meeting summer/peak demands for water supply

Dunes City
Echo
Yachats
Tualatin
Pendleton
Ashland
St. Paul
Hubbard
Monmouth
La Grande
Yamhill
Redmond
La Grande
Rogue River
Gearhart
Newport
Reedsport
Bend

Brownsville
Estacada

New drinking water treatment challenges (harmful algal blooms; turbidity; wildfire related impacts to source water; other)

Dunes City
Willamina
Warrenton
Turner
Ashland
Tigard
Monmouth
Wilsonville
Salem
Portland Water
Rogue River
Newport
Reedsport

Wildfire related concerns/needs (post wildfire impacts to your water system, wildfire mitigation efforts, impacts to source water from wildfire)

Jacksonville
Gold Hill
Tualatin
Ashland
Lowell
Westfir
Rogue River
Newport
Reedsport
Bend

Impacts from climate change on drinking water supply (snowpack/water supply/etc.)

Echo
Yachats
Tualatin
Pendleton
Ashland
Redmond
Portland Water
Westfir
Sheridan
Rogue River
Mosier
Newport
Reedsport
Bend

Workforce challenges (e.g. availability of wastewater operators, other skilled professionals)

Drain
Halfway
Daniel
Dayton
Yachats
Hermiston
Tualatin
Pendleton
Scio
Tigard
Clatskanie
La Grande
Millersburg
Wilsonville
Yamhill
Redmond
Union
La Grande
Milwaukie
Sheridan
Dayville
Rogue River
Mosier
Canyonville
Wood Village
St. Helens

Concerns over ratepayer affordability and equity for ratepayers in disadvantaged communities

Amity
Drain
Echo
Talent
Madras
Ashland
Scio
Tigard
Tigard
Clatskanie
Newberg
Hood River
Yamhill
Redmond
Union
Malin
Portland Water
Westfir
Milwaukie
Sheridan
Rogue River
Mosier
Canyonville
Bend
Cove
Wood Village
St. Helens
Gresham

WASTEWATER

Lack of funding for wastewater planning (e.g. updating rate studies, master plans, etc.)

Amity
Ashland
Bend
Brookings
Echo
Estacada
Lowell
Portland
Reedsport
Rogue River
Sherwood
St. Helens
Toledo
Tualatin
Veneta
Warrenton
Willamina
Yachats

Impacts to wastewater infrastructure and operations from wipes (non-flushable wipes being flushed)

Astoria
Culver
Dundee
Echo
Halfway
La Grande
Lafayette
Madras
Millersburg
Monmouth
Mt. Angel
Newberg
Pendleton
Portland
Reedsport
Rogue River
St. Helens
Toledo
Ukiah
Warrenton
Wilsonville
Winston
Yachats

Revenue losses related to the COVID-19 pandemic

Amity
Klamath Falls
Portland
Scio
St. Helens
Tigard
Warrenton

Seismic resilience for wastewater system

Ashland
Brookings
Hood River
Monmouth
Newport
Portland
Reedsport
Toledo
Winston
Wood Village
Yachats

Replacement of aging infrastructure

Amity
Ashland
Bend
Brookings
Brownsville
Cascade Locks
Culver
Echo
Estacada
Gold Hill
Hermiston
Hood River
Klamath Falls
Lafayette
Lowell
Madras
Molalla
Monmouth
Myrtle Creek
Newberg
Newport
North Bend
Portland
Reedsport
Salem
Scio
St. Helens
Tigard
Toledo
Warrenton
Winston
Wood Village

Improvements needed to keep pace with growth (increased capacity)

Brookings
Culver
Echo
Estacada
Hermiston
Hood River
Lowell
Madras
Millersburg
Molalla

Mt. Angel
Newport
Pendleton
Redmond
Reedsport
Salem
Scio
Sherwood
St. Helens
Tigard
Tualatin
Veneta
Warrenton
Winston

New wastewater treatment challenges (temperature; mercury; other)

Amity
Ashland
Brownsville
Clatskanie
Culver
Drain
Estacada
Gold Hill
Klamath Falls
La Grande
Lafayette
Lake Oswego
Lowell
Molalla
Monmouth
Mosier
Myrtle Creek
Newport
Pendleton
Portland
Reedsport
Rogue River
St. Helens
Union
Warrenton
Wilsonville
Winston

Impacts from climate change (ability to meet capacity and regulatory requirements)

Ashland
Clatskanie
Estacada
Gold Hill
Lafayette
Lake Oswego
Newport
Pendleton
Portland
Reedsport
Rogue River
Sherwood
St. Helens
Ukiah
Westfir
Winston

Workforce challenges (e.g. availability of wastewater operators, other skilled professionals

Brookings
Clatskanie
Creswell
Culver
Dayville
Drain
Dundee
Halfway
Hermiston
Huntington
La Grande
Mosier
Mt. Angel
Myrtle Creek
Newport
Pendleton
Portland
Redmond
Reedsport
Rogue River
St. Helens
Tigard
Toledo
Ukiah
Vale
Wilsonville
Winston
Wood Village
Yachats
Yamhill

Concerns over ratepayer affordability and equity for ratepayers in disadvantaged communities

Amity
Ashland
Bend
Brookings
Clatskanie
Echo
Hood River
Klamath Falls
Madras
Malin
Molalla
Mosier
Mt. Angel
Newberg
Portland
Redmond
Reedsport
Rogue River
Scio
St. Helens
Tigard
Ukiah

Westfir
Wood Village
Yachats

Appendix C – Survey Instrument