Future Residential Water Demand: Key Insights for Partners in Puget Sound Recovery

Project Fact Sheets

Human Use of Water in Puget Sound: Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate

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About This Document

This document includes a series of fact sheets sharing key findings from the Puget Sound Partnership project "*Human Use of Water in Puget Sound: Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*.' Each fact sheet distills key project findings into information and resources relevant to entities engaged in Puget Sound Recovery efforts, including water utilities, wastewater agencies, policymakers, planners and land developers, resource managers focused on salmon recovery, and Puget Sound residents. Other project documents and data sets produced in this analysis are available via the project webpage on the University of Washington, Climate Impacts Group's website.

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POLICY BRIEF

Future Residential Water Demand in the Puget Sound Region

Background

The Puget Sound Region's population is expected to grow to 10.5 million people by 2080, an 84 percent increase. Without proactive planning and policy support, residential water demand in the Puget Sound Region could nearly double by 2080. This fact sheet summarizes findings from the Puget Sound Partnership (Partnership) and UW Climate Impacts Group (CIG) project *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*, which modeled future residential demand across a range of growth, water use efficiency, and climate scenarios and evaluated the potential role of water reuse. The results offer high-level, regional insights to inform land use planning, infrastructure investment, climate adaptation, and equitable access to water resources.

Key Findings for Policymakers

- Without intervention, residential water demand could nearly double by 2080—placing significant strain on water systems.
- Modest efficiency measures could nearly offset the residential water demand impacts of significant population growth.
- How and where we grow matters for water demand and infrastructure planning.
- Hotter, drier summers are expected to drive higher peak-season water demand.
- Reclaimed water offers a scalable solution and could help reduce strain on supplies.
- Coordinated policies across land use, water, and climate planning are essential to managing future demand and building resilience.

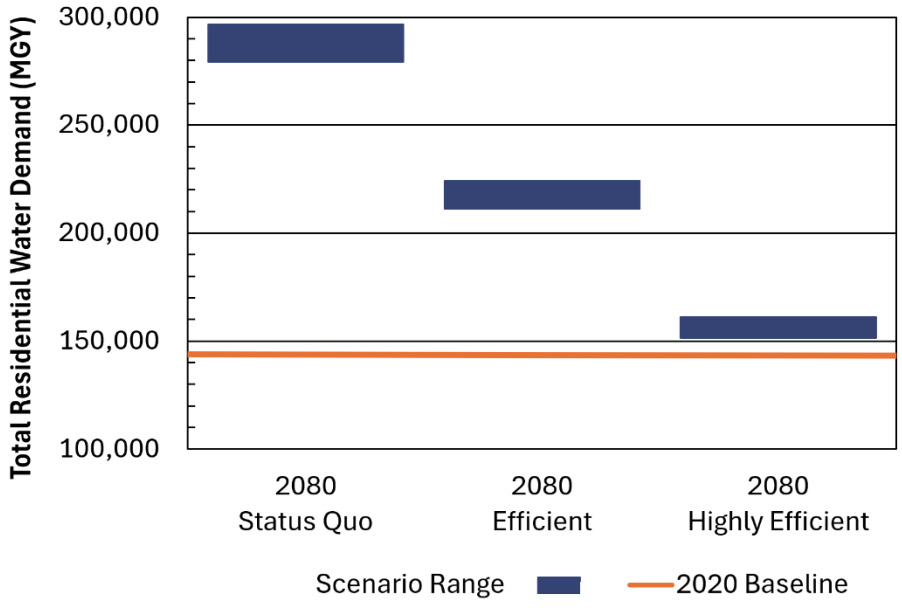
2080 Puget Sound Residential Water Demand and Potential Savings

+ 4.8 Million
Population Growth

~11,000 MGY
Climate-Driven Demand

~82,000 MGY
Indoor Efficiency Savings

~45,000-52,000 MGY
Outdoor Efficiency Savings



Key Findings and Actions for Policymakers

Without intervention, residential water demand could nearly double by 2080—placing significant strain on water systems.
In the absence of additional increases in water use efficiency, residential demand in the Puget Sound Region could rise from approximately 144,000 MGY to 279–297,000 MGY by 2080. This increase, driven largely by population growth, would intensify pressure on water rights, reservoir storage, and aging infrastructure.

Action: Policymakers can support the adoption and scaling of water demand management strategies—such as water efficiency programs, compact land use planning, and reclaimed water investments—to protect long-term supply reliability, manage infrastructure costs, and enhance climate resilience across the region.

Modest efficiency measures could nearly offset the residential water demand impacts of significant population growth.
Actions such as replacing aging indoor fixtures, low water use landscapes, and outdoor irrigation efficiency improvements can reduce per capita use by up to 40%, keeping total residential demand near current levels—even as the region adds nearly 5 million people. These strategies are widely available, cost-effective, and scalable.

Action: Prioritizing and funding efficiency programs, such as appliance rebates, turf replacement, and smart irrigation incentives, can help delay costly infrastructure expansion, protect streamflow, and enhance climate resilience. Similarly, updating building codes and appliance standards to require higher-efficiency technologies and practices can drive long-term reductions in water use across new and existing developments. Policies and funding should ensure equitable support for household investments in water use efficiency. Efficiency investments should be embedded in long-range water system planning, climate strategies, and growth management frameworks.

How and where we grow matters for water demand and infrastructure planning.
If we continue to grow as we have historically, dispersed development patterns are projected to increase residential water demand—and wastewater generation—in rural areas that often rely on private wells and small systems. In contrast, intentionally concentrating growth in urban centers, leads to more demand within existing public water system boundaries, where infrastructure, oversight, and conservation programs are already in place.

Action: It will be important to integrate water demand projections into local comprehensive management plans, urban growth area (UGA) designations, and state Growth Management Act (GMA) processes to increase community resilience and reduce the risk of overdevelopment in areas with limited water availability or ecological constraints.

Hotter, drier summers are expected to drive higher peak-season water demand.
Modeling shows that under a high-emissions climate scenario (RCP 8.5), residential outdoor water use could increase by more than 11,000 MG each year relative to a moderate emissions scenario (RCP 4.5). This additional demand coincides with the periods of lowest streamflow and highest stress on water supplies, especially in systems that already face summer capacity constraints.

Action: These projections highlight the value of incorporating climate-adjusted demand forecasts into utility planning, and supporting policies that expand climate-resilient landscaping, smart irrigation, and peak-season conservation incentives. Adapting now can reduce future strain on both infrastructure and ecosystems during Washington's increasingly dry summers.

Reclaimed water offers a scalable solution and could help reduce strain on supplies.
While only a small percentage of wastewater in the Puget Sound Region is currently reused, many treatment facilities are located near land uses such as parks, agriculture, and industry that are compatible with reclaimed water applications. Additionally, areas of concentrated growth may create new opportunities for decentralized reuse systems, especially where conventional infrastructure is constrained or where local demand aligns.

Action: Consider the legal, regulatory, and infrastructural enabling conditions you can act on to realize the potential of reclaimed water in the Puget Sound Region. With the right policy support, funding, and coordination, reclaimed water can reduce potable demand, lower discharge volumes, and support climate adaptation, growth management, and ecosystem resilience goals across the region.

Coordinated policies across land use, water, and climate planning are essential to managing future demand and building resilience.
The study shows that where and how growth occurs and whether water efficiency and reuse strategies are implemented has substantial impacts on long-term water demand. Without alignment between state and local policies, utilities may face conflicting pressures: expanding infrastructure while trying to conserve water or serving growth in areas without sustainable supplies.

Action: By integrating water demand projections into Growth Management Act (GMA) planning, Water System Plans, drought strategies, and climate resilience initiatives, policymakers can ensure that conservation, infrastructure investment, and land use decisions reinforce one another.

2080 Puget Sound Residential Water Demand – At a Glance

Metric	Value/Range	Notes
Population Growth (2020-2080)	+4.8 million	Forecasted regional population increase
2020 Residential Demand	144,000 MGY	MGY = million gallons per year
2080 Residential Demand Projections (MGY)		
Status Quo (no action)	279,000-297,000	+94-106% above 2020; *highest-impact scenario*
Efficient (modest savings)	211,000-224,000	+47-56% above 2020; *achievable with available technologies*
Highly Efficient (best practices)	151,000-161,000	+5-12% above 2020; *nearly offsets all potential growth*
Potential Water Savings from Efficiency (MGY) *(Relative to 'Status Quo' scenario)*		
Indoor Efficiency	~82,000	From efficient fixtures and appliances
Outdoor Efficiency	~45,000-52,000	From improved irrigation and landscape practices
Climate-Driven Outdoor Demand	~11,000	Additional demand under RCP 8.5 vs RCP 4.5

Conclusion

This study shows that residential water demand in the Puget Sound Region is highly influenced by policy choices. Without intervention, demand could nearly double by 2080, straining supplies, infrastructure, and ecosystems. However, modest efficiency improvements, compact growth, and expanded reuse can help hold residential demand near today's levels. Aligning water, land use, and climate policies is essential to managing growth sustainably and building long-term resilience for both communities and natural systems.

Additional Project Resources

Project Webpage: *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*

Project White Papers:

- Planning for Demand: How Growth Management, Water Efficiency, and Climate Shape Residential Water Use in the Puget Sound Region
- Potential for Reclaimed Water Use Within the Puget Sound Region
- Integrating Residential Water Demand and Reuse Opportunities Into Puget Sound Resilience Planning

KEY INSIGHTS FOR WATER UTILITIES

Future Residential Water Demand in the Puget Sound Region

Background

In the absence of demand-side strategies, residential water use in the Puget Sound Region could nearly double by 2080, placing added pressure on water supplies and infrastructure. This fact sheet summarizes key findings from the Puget Sound Partnership (Partnership) and UW Climate Impacts Group (CIG) project *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*, with a focus on insights most relevant to water utilities. This project modeled future residential demand across a range of development, water use efficiency, and climate scenarios and evaluated the potential role of water reuse. While not a substitute for local demand forecasting or reuse planning, this regional analysis offers high-level insights into how population growth, climate change, and water use efficiency may shape future demand, providing regional insights that may help inform Water System Plans, AWIA Risk and Resilience Assessments, and other utility planning efforts.

Key Findings for Water Utilities

- Without efficiency improvements, residential demand could nearly double by 2080.
- Modest efficiency improvements could nearly offset demand increases from population growth.
- Reuse is underutilized but offers systemwide benefits.
- Growth form determines where demand arises.

2080 Puget Sound Residential Water Demand Projections–At a Glance

Metric	Value/Range	Notes
Population Growth (2020-2080)	+4.8 million	Forecasted regional population increase
2020 Residential Water Demand	144,000 MGY	*MGY = million gallons per year*
2080 Residential Water Demand Projections (MGY)		
Status Quo	279,000-297,000	+94-106% above 2020
Efficient	211,000- 224,000	+47-56% above 2020
Highly Efficient	151,000-161,000	+5-12% above 2020
Potential Water Savings from Efficiency (MGY) *(Relative to Status Quo scenario)*		
Indoor Efficiency	~82,000	From fixture/appliance upgrades
Outdoor Efficiency	~45,000-52,000	From landscape/irrigation improvements
Climate-Driven Demand Increase	~11,000	Additional demand under RCP 8.5 vs RCP 4.5

Key Findings for Water Utilities

Without efficiency improvements, residential demand could nearly double by 2080.
In the absence of expanded water efficiency measures, total residential demand in the Puget Sound Region is projected to rise to 279,000–297,000 MGY (764–813 MGD) by 2080, driven largely by population growth. Under the status quo scenario, demand scales with regional development patterns creating potential for substantial strain on current supplies. The sustainability of this level of demand will depend on local conditions, including hydrology, water rights, climate impacts, and infrastructure capacity. Utilities will need to evaluate whether their systems can meet this projected demand or whether efficiency, reuse, and integrated planning are needed to maintain long-term reliability.

Modest efficiency improvements could nearly offset demand increases from population growth.
Despite substantial projected increases in residential demand, our analysis shows that modest improvements in indoor and outdoor efficiency, such as upgrading fixtures, appliances, and irrigation systems, can keep total residential water demand near current levels through 2080. These strategies are widely available, cost-effective, and scalable across service areas. By reducing per capita demand, efficiency offers a practical alternative to major infrastructure expansion and supports long-term system reliability, affordability, and climate resilience.

Reuse is underutilized but offers systemwide benefits.
While only a small percentage of wastewater in the Puget Sound Region is currently reused, many treatment facilities are located near land uses such as parks, agriculture, and industry that are common users of reclaimed water. Reclaimed water has the potential to offset potable demand, reduce wastewater discharges, and provide operational flexibility in supply-constrained or rapidly growing areas. As population growth and climate pressures intensify, expanding reclaimed water use through both centralized systems or decentralized projects can support long-term reliability, reduce infrastructure strain, and create co-benefits for drought resilience, ratepayer affordability, and environmental stewardship.

Growth form determines where demand arises.
The spatial pattern of future development, whether dispersed or compact, directly influences where residential water demand occurs. In Business-as-Usual scenarios, growth expands into rural and exurban areas, increasing demand in locations that may lack centralized infrastructure or have limited access to supplies. In contrast, Hybrid growth scenarios concentrate development within existing urban areas, aligning demand with existing infrastructure and conservation programs. This distinction has major implications for infrastructure planning, operational efficiency, and long-term supply management.

Actions to Consider

- **Evaluate** the sustainability of regional demand pressure on available and projected supplies
- **Continue investing** in water efficiency, focusing on older housing stock and high water use households
- **Plan** for peak summer demand under hotter climate futures
- **Assess** reclaimed water opportunities near compatible users and in areas where redevelopment/densification are likely to occur
- **Coordinate** with planners to support compact, water-efficient growth

Conclusion

Future residential water demand in the Puget Sound Region will be shaped by population growth, climate change, development patterns, and utility decisions. Without intervention, demand could nearly double by 2080, placing significant pressure on supplies, infrastructure, and operations. However, modest, achievable improvements in water efficiency, paired with strategic expansion of reclaimed water and coordinated land use planning, offer cost-effective, scalable solutions. By acting now, utilities can manage demand growth, defer infrastructure investments, and strengthen long-term system resilience.

Additional Project Resources

Project Webpage: *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*

Project White Papers:

- Planning for Demand: How Growth Management, Water Efficiency, and Climate Shape Residential Water Use in the Puget Sound Region
- Potential for Reclaimed Water Use Within the Puget Sound Region
- Integrating Residential Water Demand and Reuse Opportunities Into Puget Sound Resilience Planning

KEY INSIGHTS FOR WASTEWATER AGENCIES

Future Residential Water Demand in the Puget Sound Region

Background

Residential water use patterns are projected to shift due to changes in population, water use efficiency, and climate. These changes have important implications for wastewater utilities' infrastructure, operations, and long-range planning. This fact sheet shares findings from the Puget Sound Partnership (Partnership) and UW Climate Impacts Group (CIG) project *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*, with a focus on insights most relevant to wastewater agencies. This project modeled future residential demand across a range of growth, water use efficiency, and climate scenarios and evaluated the potential role of water reuse. While not a substitute for local planning, this regional analysis offers high-level insights that may be helpful for planning around future wastewater flows, capacity, and reuse potential, supporting coordination with regional water and land use planning.

Key Findings for Wastewater Agencies

- Influent from indoor residential use may stabilize, despite population growth.
- Growth scenarios shape not just how much water is used, but where it is used—and where wastewater is generated.
- Without increased demand management, residential water demand could strain supplies that are already fully allocated under existing water rights.
- Changes in outdoor demand associated with climate change and overall residential growth may create opportunities for expanding reclaimed water use.

2080 Residential Water Demand Projections—At a Glance

Population Growth	+4.8 M	
2020 Residential Demand (Total/Indoor)	144,000/96,000 MGY	
2080 Residential Demand Scenarios	**Water Demand**	**Percent Change***
TOTAL Residential Demand**	*151-297,000 MGY*	*5-98%*
Indoor Demand - Status Quo	177,000 MGY	85%
Indoor Demand - Efficient	135,000 MGY	41%
Indoor Demand - Highly Efficient	95,000 MGY	-1%
Urban Growth Impacts	Business-as-Usual scenario, water demand grows more in rural areas. Hybrid scenario, growth is concentrated in cities, so demand stays lower in less populated regions.	
Climate Change Impacts	Increased outdoor use, limited impacts on indoor residential use	
Reclaimed Water Potential	High where demand exists, potential new urban/decentralized opportunities with redevelopment	

* Relative to 2020 baseline; ** Across all scenarios evaluated

Key Findings for Wastewater Agencies

Influent from indoor residential use may stabilize, despite population growth.
Indoor efficiency improvements such as replacing toilets, washers, and dishwashers with today's most efficient models could reduce indoor per capita use by ~40% (38.5 to 22.8 gpcd), conserving roughly 82,000 MGY across the region. As a result, indoor residential demand in 2080 could remain close to current levels, despite significant population growth.

Growth scenarios shape not just how much water is used, but where it is used—and where wastewater is generated.
In the Business-as-Usual growth scenario, more development occurs in rural areas, increasing water demand and wastewater generation in less-served regions. In contrast, the Hybrid growth scenario concentrates new growth in existing urban centers, resulting in more water use and wastewater production within established utility service areas.

Without increased demand management, residential water demand could strain supplies that are already fully allocated under existing water rights.
Without efficiency improvements, total residential water use may nearly double by 2080, increasing wastewater generation and placing significant pressure on existing treatment and conveyance infrastructure. In systems with aging assets or limited capacity, this growth could accelerate the need for costly expansions and upgrades. However, adopting indoor efficiency measures can help stabilize influent volumes, reduce peak loading, and extend infrastructure life. At the same time, expanding reclaimed water use in parks, industrial sites, or agricultural areas can help offset non-potable demand, reduce discharge volumes, and create system flexibility that supports both growth and resilience.

Changes in outdoor demand associated with climate change and overall residential growth may create opportunities for expanding reclaimed water use.
While only a small percentage of wastewater in the Puget Sound Region is currently reused, many treatment facilities are located near land uses such as parks, agriculture, and industry that are compatible with reclaimed water applications. Likewise, areas of concentrated growth may create new opportunities for both traditional and decentralized reuse projects. This suggests that, despite regulatory and infrastructure challenges, there are underutilized opportunities for utilities to expand reuse by aligning future planning with local demand, land use, and long-term climate and development projections.

Actions to Consider

- **Incorporate** efficiency scenarios into long-range forecasting and planning
- **Right-size** infrastructure upgrades based on per capita flow trends
- **Consider** impacts of climate change on future demand for reclaimed water
- **Engage** with land use planners to identify potential opportunities for expanding existing reclaimed water programs and/or new decentralized/satellite systems

Conclusion

Projected residential growth across the Puget Sound Region could increase wastewater volumes and place added pressure on existing systems, particularly in communities with aging infrastructure or limited capacity. However, this analysis shows that indoor residential efficiency measures can help stabilize influent volumes, even as the population grows, helping utilities defer costly upgrades and extend the life of existing systems. At the same time, wastewater flows present a valuable opportunity to expand reclaimed water use for irrigation, industry, and other applications. By integrating demand management and reuse into long-range planning, wastewater agencies can build more resilient, efficient, and adaptive systems for the future.

Additional Project Resources

Project Webpage: *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*

Project White Papers:

- Planning for Demand: How Growth Management, Water Efficiency, and Climate Shape Residential Water Use in the Puget Sound Region
- Potential for Reclaimed Water Use Within the Puget Sound Region
- Integrating Residential Water Demand and Reuse Opportunities Into Puget Sound Resilience Planning

KEY INSIGHTS FOR URBAN PLANNERS

Future Residential Water Demand in the Puget Sound Region

Background

Without action, residential water demand in the Puget Sound Region could increase substantially by 2080—driven by population growth, land use decisions, and a changing climate. However, strategies such as water efficiency and compact development can help limit water demand while still supporting regional population growth. This fact sheet summarizes key findings from the project *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*, led by Puget Sound Partnership (Partnership) and UW Climate Impacts Group (CIG), with a focus on insights most relevant to urban planners. This project modeled future residential demand across a range of growth, water use efficiency, and climate scenarios and assessed the potential contribution of water reuse. The results offer high-level guidance for planners working to align land use, zoning, and development decisions with long-term water and climate resilience.

Key Findings for Urban Planners

- Without efficiency improvements, residential demand could nearly double by 2080.
- Land use patterns influence where—and how much—residential water is used.
- Incorporating water efficiency into new development can offset the impacts of population growth.
- Hotter, drier summers drive higher peak-season water demand—especially for outdoor use.
- Urban growth and redevelopment can create opportunities for expanding reclaimed water use.

2080 Puget Sound Residential Water Demand – At a Glance

Metric	Value/Range	Notes
Population Growth (2020-2080)	+4.8 million	Forecasted regional population increase
2020 Residential Demand	144,000 MGY	*MGY = million gallons per year*
2080 Residential Demand Projections (MGY)		
Status Quo	279,000-297,000	+94-106% above 2020
Efficient	211,000-224,000	+47-56% above 2020
Highly Efficient	151,000-161,000	+5-12% above 2020
Potential Water Savings (MGY) *(Relative to Status Quo scenario)*		
Indoor Efficiency	~82,000	From efficient fixtures and appliances
Outdoor Efficiency	~45,000-52,000	From improved irrigation and landscape practices
Climate-Driven Demand Increase	~11,000	Additional demand under RCP 8.5 vs RCP 4.5

Key Findings for Urban Planners

Without efficiency improvements, residential demand could nearly double by 2080.
In the absence of expanded water efficiency measures, total residential demand could rise to approximately 279-297,000 MGY (764-813 MGD) by 2080, driven primarily by anticipated population growth. In the status quo scenario, residential demand closely tracks population expansion across the region. Whether this level of demand is sustainable depends on local water supply conditions, including hydrology, water rights, climate change impacts, and system-specific constraints.

Land use patterns influence where—and how much—residential water is used.
Dispersed, low-density development in rural areas can lead to higher outdoor water use, reliance on private wells, and added stress on local ecosystems and infrastructure. In contrast, compact growth concentrated in existing urban centers typically reduces per capita demand, aligns water use with existing public systems, and minimizes impacts on sensitive ecosystems. This underscores the importance of integrating water demand considerations into land use and zoning decisions.

Incorporating water efficiency into new development can help offset the impacts of population growth.
Efficient indoor fixtures and designing outdoor spaces for low water use can reduce per capita demand by up to 40%. When applied at scale, these strategies can hold regional residential demand near 2020 levels, even as the population grows by nearly 5 million. Water-efficient development (and re-development) can help avoid costly infrastructure expansions, support long-term planning goals, and enhance regional resilience to drought and climate change.

Hotter, drier summers drive higher peak-season water demand—especially for outdoor use.
Modeling shows that under a high-emissions climate scenario (RCP 8.5), outdoor residential demand could increase by more than 11,000 MG each year relative to a moderate emissions scenario (RCP 4.5). This additional demand coincides with the driest months, when infrastructure, streamflow, and water rights are already under pressure. Planning for climate-adapted landscaping, irrigation efficiency, and seasonal conservation are important strategies in mitigating these impacts.

Urban growth and redevelopment can create opportunities for expanding reclaimed water use.
As infill and higher-density development occur within existing urban areas, there may be growing opportunities to expand traditional reclaimed water systems and/or integrate decentralized systems. These systems can supply non-potable water for irrigation, cooling, or industrial uses—reducing demand on potable supplies and lowering discharge volumes. Aligning land use planning with reclaimed water infrastructure helps maximize resource efficiency and supports urban growth aligned with regional climate resilience goals.

Actions to Consider

- **Prioritize** compact, water-smart growth within Urban Growth Areas to reduce per capita demand and protect sensitive ecosystems.
- **Incorporate** water demand data and efficiency targets into comprehensive plans, zoning updates, and development regulations.
- **Promote** water efficient site design, including WaterSense fixtures, climate-adapted landscaping, and smart irrigation systems.
- **Plan** for reclaimed water use in redevelopment areas by identifying opportunities to connect to existing systems or develop decentralized systems.
- **Coordinate** early with water and wastewater utilities to align land use decisions with infrastructure capacity and reuse planning.
- **Support** drought and climate resilient development standards, especially those that reduce peak-season outdoor water use.

Conclusion

Urban growth patterns and development choices will play an important role in shaping future residential water demand across the Puget Sound Region. This analysis shows that compact, water-efficient development can help stabilize demand, reduce infrastructure strain, and enhance resilience to climate change. By integrating water-smart strategies into land use planning, zoning, and project design, planners and developers can help ensure that growth is both sustainable and aligned with long-term resource availability.

Additional Project Resources

Project Webpage: *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*

Project White Papers:

- Planning for Demand: How Growth Management, Water Efficiency, and Climate Shape Residential Water Use in the Puget Sound Region
- Potential for Reclaimed Water Use Within the Puget Sound Region
- Integrating Residential Water Demand and Reuse Opportunities Into Puget Sound Resilience Planning

KEY INSIGHTS FOR SALMON RECOVERY AND ECOSYSTEM HEALTH

Future Residential Water Demand in the Puget Sound Region

Background

Residential water use has direct and indirect impacts on salmon recovery and watershed health. As the Puget Sound Region grows and the climate changes, understanding how development and water demand intersect with streamflow, aquifer recharge, and habitat protection is critical. This fact sheet highlights findings from the Puget Sound Partnership (Partnership) and UW Climate Impacts Group (CIG) project *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*, with a focus on implications for salmon recovery partners, watershed groups, and ecological planning. This study modeled residential demand through 2080 under various growth, efficiency, and climate scenarios to assess how future patterns may impact freshwater ecosystems and instream flows.

Key Findings for Salmon Recovery and Ecosystem Health

- Rising residential demand—particularly during summer—could strain the cold, connected flows that salmon need to survive.
- Outdoor water use during summer months overlaps with the most ecologically sensitive period for salmon.
- Directing growth to urban areas helps protect the headwater streams that salmon depend on.
- Strategic use of reclaimed water can reduce pressure on the streams and aquifers salmon depend on.
- Water efficiency reduces demand at the source, helping to preserve streamflows critical for salmon.

2080 Puget Sound Residential Water Demand – At a Glance

Metric	Value/Range	Notes
Population Growth (2020-2080)	+4.8 million	Forecasted regional population increase
2020 Baseline Demand	144,000 MGY	2020 residential water demand
2080 Residential Demand Projections (MGY)		*MGY = million gallons per year*
Status Quo	279,000-297,000	+94-106% above 2020
Efficient	211,000- 224,000	+47-56% above 2020
Highly Efficient	151,000-161,000	+5-12% above 2020
Potential Water Savings (MGY)		*Relative to Status Quo scenario*
Indoor Efficiency	~82,000	From efficient fixtures and appliances
Outdoor Efficiency	~45,000-52,000	From improved irrigation and landscape practices
Climate-Driven Demand Increase	~11,000	Additional demand under RCP 8.5 vs RCP 4.5

Key Findings for Salmon Recovery and Ecosystem Health

Rising residential demand—particularly during summer—could strain the cold, connected flows that salmon need to survive.
Without efficiency improvements, regional water use could nearly double by 2080. Impacts are location specific, but increasing demand could intensify pressure on rivers, streams, and aquifers already stressed by seasonal low flows. In smaller or unregulated watersheds, this added pressure could further reduce instream flows during the most ecologically critical times of year, disrupting salmon migration, spawning, and juvenile development. The extent of ecological impact is closely tied to whether demand is met from vulnerable surface waters, shallow aquifers, or more resilient supply sources. Managing residential water use is essential to protecting and restoring flows that support healthy, functioning aquatic ecosystems.

Outdoor water use during summer months overlaps with the most ecologically sensitive period for salmon.
Residential irrigation, especially in low-density areas with large irrigated landscapes, can account for the majority of household water use in summer when streamflow is naturally at its lowest and temperatures are highest. This increased demand can reduce the cold water salmon rely on for migration, spawning, and juvenile rearing. Concentrated outdoor use can also lower groundwater levels, diminish baseflows, and intensify thermal stress in small streams. Reducing peak-season irrigation through water efficient landscaping, smart irrigation technologies, and land use planning is a critical step toward protecting watershed health and supporting salmon recovery.

Directing growth to urban areas helps protect the headwater streams that salmon depend on.
Dispersed, low-density development often increases water demand in rural and upland areas, where headwater streams provide critical cold-water habitat and flow to downstream ecosystems. In contrast, compact growth patterns concentrate new development within existing urban service areas, reducing reliance on exempt wells and limiting new withdrawals from sensitive basins. This approach supports natural hydrologic function, preserves ecological connectivity, and helps maintain instream flows essential to salmon migration, spawning, and juvenile rearing.

Strategic use of reclaimed water can reduce pressure on the streams and aquifers salmon depend on.
In many watersheds, especially those already over-appropriated or flow-limited, reclaimed water offers a viable alternative to new freshwater withdrawals. Treatment plants near parks, agriculture, and industrial areas are well-positioned to deliver non-potable water for irrigation or cooling, helping to preserve instream flows during critical summer months. In growth areas, integrating reclaimed water into redevelopment or infill projects can further reduce demand on ecologically sensitive sources, supporting both salmon recovery and long-term watershed resilience.

Water efficiency reduces demand at the source, helping to preserve streamflows critical for salmon.
Modest improvements in indoor and outdoor efficiency such as upgrading fixtures and reducing irrigation can significantly lower residential water use across the region. These demand reductions translate directly into less pressure on rivers, streams, and aquifers during dry months when salmon are most vulnerable. By avoiding up to 130,000 MGY in future residential demand, efficiency offers a low-cost, scalable strategy that complements instream flow restoration, improves habitat conditions, and supports long-term ecological resilience.

Actions to Consider

- **Consider** water demand scenarios in basin and salmon recovery planning
- **Advocate** for compact, water efficient development in land use decisions
- **Support** outdoor efficiency and landscape transformation programs
- **Identify and promote** high-benefit reclaimed water projects in sensitive watersheds
- **Strengthen** coordination between utilities, land use authorities, and watershed groups

Conclusion

Residential water demand is a critical driver of instream flow and habitat conditions across the Puget Sound Region. This analysis shows that how and where we grow matters: compact, efficient communities use less water and place less stress on ecosystems. By integrating water demand reduction into salmon recovery strategies, reclaimed water planning, and watershed coordination, we can better protect streamflow, support species recovery, and build ecological resilience in a changing climate.

Additional Project Resources

Project Webpage: *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*

Project White Papers:

- Planning for Demand: How Growth Management, Water Efficiency, and Climate Shape Residential Water Use in the Puget Sound Region
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KEY INSIGHTS FOR PUGET SOUND RESIDENTS

Residential Water Demand in the Puget Sound Region

Background

As the Puget Sound Region grows, so does the need to use water wisely. By 2080, residential water demand could nearly double if current trends continue. This means higher utility costs, greater strain on local water supplies, and added pressure on the region's rivers, streams, and salmon habitats. But there's good news: modest changes in how we use water—especially indoors and outdoors at home—can make a big difference. This fact sheet shares key findings from the Puget Sound Partnership (Partnership) and UW Climate Impacts Group (CIG) project *Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate*, with a focus on what Puget Sound residents can do today to reduce water use, lower bills, and protect local ecosystems now and into the future.

What We Learned

Water-efficient homes and landscapes matter

Simple indoor upgrades (like *WaterSense-labeled toilets and washers*) and **smart outdoor landscaping** can significantly reduce water use. These actions are **affordable**, **available now**, and **save money over time**. Local rebate programs can often help offset initial costs of **efficiency improvements**.

Outdoor water use peaks when ecosystems are most vulnerable

Most outdoor watering happens in **summer**—the **driest season** for rivers and salmon. *Reducing lawn watering* or *switching to native or drought-tolerant plants* can help **preserve streamflows** and **reduce your bill**.

Small choices at home support regional resilience

The **cumulative effect** of **individual choices**—like *efficient appliances*, *shorter showers*, and *smart irrigation timers*—adds up across millions of homes. **Efficiency helps avoid costly new infrastructure** and **protects the environment**.

Reuse and efficiency help protect long-term supply

In many areas, **treated water could be reused** for *irrigation* and *other uses*. **Doing more with what we have** helps **reduce strain** on drinking water systems and **keeps more water in rivers**.

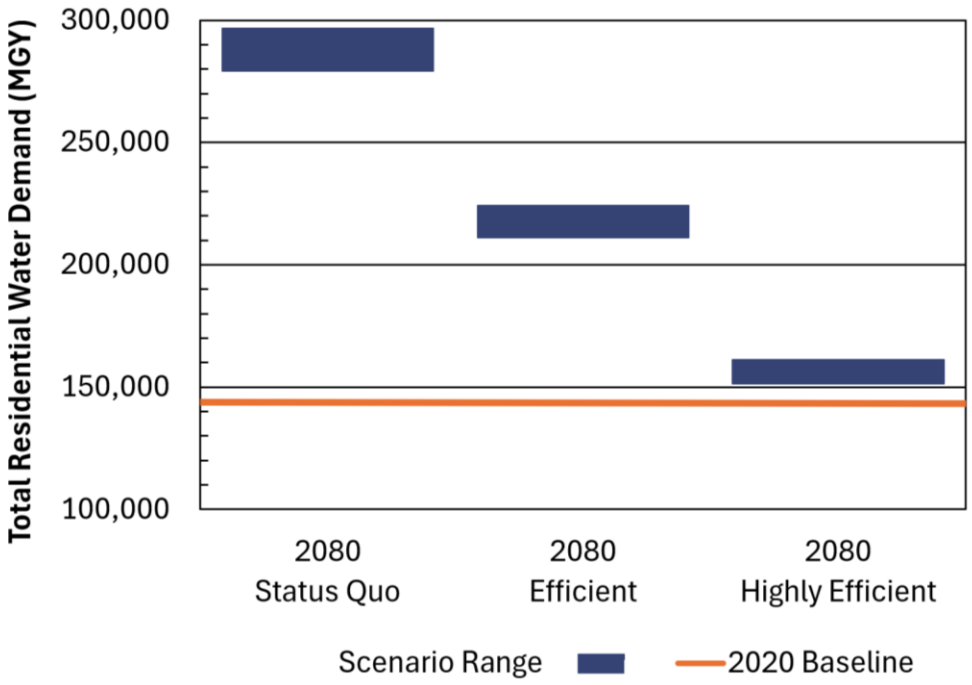
2080 Puget Sound Residential Water Demand – At a Glance

+ 4.8 Million
Population Growth

~11,000 MGY
Climate-Driven Demand

~82,000 MGY
Indoor Efficiency Savings

~47,000 MGY
Outdoor Efficiency Savings



What You Can Do Now

- ✓ **Upgrade fixtures**:
  - **Indoors:** Install high-efficiency toilets, showerheads, and washers
  - **Outdoors:** Upgrade to efficient technologies, such as drip irrigation and smart controllers
- ✓ **Water smart outside**:
  - Use native or drought-tolerant plants
  - Adjust irrigation to match the weather
- ✓ **Fix leaks fast**: A dripping faucet can waste thousands of gallons per year
- ✓ **Use water when it counts**: Water early morning or late evening to reduce evaporation
- ✓ **Talk to your landlord or HOA**: Encourage shared upgrades in common areas or buildings

Why It Matters

Managing residential water use isn't just about saving money—it's about ensuring there's enough clean water for everyone, including fish and wildlife. As our communities grow and summers get hotter, efficient water use will be critical for keeping streams flowing, utilities running smoothly, and neighborhoods resilient.

More Resources

Managing Residential Water Demand for Resilient Communities and Healthy Ecosystems in a Changing Climate *(Project Website)*
Buildings, Cities & Infrastructure | Water 100 Project
EPA WaterSense Program
Saving Water Partnership
Cascade Water Alliance
City of Bellingham
King County Recycled Water Program
Lott Clean Water Alliance