

WATER EFFICIENCY PLAN

Town of Erie

Prepared for:

Draft for Public Review – March 2021

TOWN OF ERIE
1874

Prepared by:

INTERA
GEOSCIENCE & ENGINEERING SOLUTIONS

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Executive Summary

E.1 Background

Efficiency and responsible stewardship are important components of Erie's water management strategy. As competition and costs for water supplies increase coupled with the uncertainty of climate change and influx of new Erie residents; water efficiency is a critical component to maintaining a resilient, sustainable, and a thriving community. Erie has a long history of water efficiency and conservation practices. This Water Efficiency Plan (Plan) is an update to Erie's 2014 Water Conservation Plan and is Erie's third State-approved Water Efficiency Plan. This Plan capitalizes on new ideas provided by Erie staff and the community while also incorporating water and land use planning.

This Plan provides the following:

- Leadership from Town decision-makers and staff is fundamental to integrating water efficiency and land use planning. This will require interdepartmental dialogue, collaboration, and education on the importance of this linkage among Erie staff and Town leadership to ensure success.
- Evaluation and documentation of historical water demands, and lessons learned from previous water efficiency activities.
- Monetary, environmental, and community benefits associated with water efficiency.
- Water saving targets and efficiency goals to strive for through 2030.
- A list of water efficiency activities focusing on both existing and new development.
- An implementation plan for these activities through 2028 when the Plan will be updated.
- A monitoring plan for evaluating the effectiveness of the water efficiency program on an annual basis.



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E.2 Why Be Efficient?

Water efficiency provides many benefits to the Erie community and local environment. The benefits are described below.

Leadership and sustainability – Erie's leadership and community have a longstanding commitment to water efficiency. Support and feedback from the citizen advisory boards and the community at-large, coupled with leadership by the Board of Trustees and Erie staff promoting efficient water use establishes Erie as a current leader in water efficiency. The interactive community engagement and governance structures both educate the community and help Town leadership meet expectations concerning responsible water use and maintain a sustainable long-term water supply.

Coordinated water stewardship – Erie's guiding principles in its Comprehensive Plan calls for stewardship of the natural environment. Water is an essential natural resource that is critical to the economic, environmental, and social health of Erie's community. Water efficiency requires a one-water coordinated approach where multiple Town departments and the community must work together in achieving efficient water use in a sustainable and environmentally responsible manner.

Management of costs for new supplies and capital improvements – As new water supply options become more competitive and costly in the South Platte Basin, Erie's demonstration of efficient water use is critical to meeting political and regulatory requirements necessary to capitalize on beneficial cost-saving partnerships and grant opportunities. Furthermore, water savings achieved through efficient use can reduce the Town's water footprint delaying the need for capital improvements and providing further cost savings for its residents and businesses.

Operational and billing expenditure reductions – Water efficiency reduces the chemicals and energy needed for water treatment and pumping, consequently reducing operational costs. Water savings may also be achieved at the customer level, where customers using less water will be billed less on a volumetric basis.

Contribution to proactive planning – Erie strives to maintain sustainable water supplies that are affordable to the existing community and inviting to new development that is consistent with the guiding principles of its Comprehensive Plan. Water efficiency and stewardship are important to operating within these principles, providing a foundation under which land use planning and development decisions enable community access to a balanced diversity of resources.



OUR VISION: Erie is a thriving community that is focused on regenerative, resilient, and resourceful solutions to protect and restore our once pristine natural environment for generations to come.

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E.3 What to Accomplish

The goals listed below provide quantitative water saving targets and qualitative parameters to help provide the benefits discussed above. Further information on these goals is provided in Section 4.2.

1. Achieve a 10% water savings in 10 years "10 in 10" – This water savings goal applies to first-use water and is equivalent to 115 gallons per capita per day (gpcd) based on population and demand projections presented in this Plan. Erie's ability to meet the target will be evaluated by comparing annual per capita water demands on an annual basis relative to the 115 gpcd target.

2. Maximize opportunity to use reuse water – Erie plans to further extend its water supplies and use them more efficiently by fully developing its reusable Windy Gap units and is in the process of evaluating which methods are most optimal. All reuse water applied (e.g., direct, augmentation, etc.) will be monitored on an individual parcel (property) level.

3. Establish essential elements to build on – Elevate Erie's water efficiency programs to a new level by focusing on the following essential elements to build on: 1) innovate with new direct installation technologies where water saving estimates are relatively straight-forward and rely on accelerating technological change rather than behavior change 2) minimize water waste throughout the community, and 3) measure how well Erie is doing through monitoring of water demand, tracking water saving actions, and recording community feedback/lessons learned along the way.

4. Approach water and land use planning holistically – Foster a Town culture where Town leadership and staff understand the value of water, the beneficial nexus of water efficiency and sustainable land use planning and how their collective roles contribute to this nexus, and consequently advocates for water efficiency through decision-making and operational activities.



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E.4 Implementation of Water Efficiency Activities and Monitoring

Erie plans to meet the goals discussed above by implementing the activities listed in Table E-1 below. Sections 5 and 6 provide additional information on each of these activities and the specific actions to be accomplished. Water efficiency planning is most effective when it is managed as an adaptive, continuous process where routine monitoring and adjustments can be made to the implementation. Erie staff will analyze the monitoring data listed in Section 7 on an annual basis to assess the effectiveness of the water efficiency program. Results and any recommended improvements will be presented to the Board of Trustees (Town Board).

Table E-1: Summary of Water Efficiency Activities

Water Efficiency Activities	Timing of When Activity Will Be Initiated		
	Currently Doing and Ongoing	First Portion of 7-Year Period (2021 - 2023)	Second Portion of 7-Year Period (2023 - 2027)
Foundation			
Improve Metering, Demand Collection, Billing Systems, and Rates			
Metering of source water	X		
Meter service connections and replacement meters	X	X	
Water accounting	X		
Water rates and billing	X		X - consider tiered rates for commercial
System Water Loss Management and Control			
Analysis of non-revenue water based on AWWA M36 Manual	X		
Leakage detection repair and line replacement	X		
Reuse Program			
Reuse water	X	X	
Recycling backwash water at the water treatment facility	X		
Reuse water for flushing/cleaning of wastewater treatment facility	X		
Integrate Water Efficiency and Land Use Planning Activities			
Land use planning and water coordination meetings		X	
Water efficiency and land use planning training		X	
Information and data transfer between planning and water resources		X	
Align water billing categories with zoning categories			X
Include water efficiency in Comprehensive Plan update		X	
Water dedication requirement and tap fees	X		
Dedicated water professional review of new development applications		X	
Post construction and post occupancy	X	X	
Targeted Technical Assistance and Incentives			
Irrigation Efficiency and Landscaping on Town Parks and Facilities			
Billing of Parks and Recreation Department	X		
Smart irrigation controllers on parks	X	X	
Moisture sensors and ET controllers at all Town parks	X		

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Water Efficiency Activities	Timing of When Activity Will Be Initiated		
	Currently Doing and Ongoing	First Portion of 7-Year Period (2021 - 2023)	Second Portion of 7-Year Period (2023 - 2027)
Efficient irrigation practices on parks	X		
Routine irrigation system checks and maintenance on parks	X		
Low water use landscaping	X		
Turf replacement on Town parks	X		
Menu of Fixture and Rebate Options			
Clothes washer	X		
Toilets	X		
Showerheads	X		
Rain barrel rebates	X		
High efficiency sprinkler nozzles	X		
Drip irrigation equipment	X		
Garden in A Box	X		
Slow the Flow sprinkler consultations	X		
Smart irrigation control clock direct installations	X		
Automated rain sensors direct installations	X		
Large property irrigation audits	X		
Evaluate turf replacement rebate program		X	X
Customer Feedback on Water Use			
Informative and understandable water bill	X		
EyeOnWater App	X		
Coordination with Home Owner Associations (HOAs), Commercial Sector, and Land Use Planning			
Green Business & HOA Certification Program		X	
Encourage Northern Water HOA turf replacement grant opportunities		X	
Northern Water landscaper certification program		X	
Explore partnership opportunities with commercial sector			X
Address obstacles and provide guidance on landscape conversions		X	
Incentives and tools inquiry for the development community			X
Regulations and Ordinances			
Water Wasting Ordinance and Watering Schedule			
Water wasting ordinance	X	X - to update	
Time of day watering	X	X - to update	
Frequency of watering	X	X - to update	
Water Efficiency Policy, Regulations, and Land Use Planning			
Review of policies		X	
Planning and landscaping in the UDC	X		
Update to the UDC		X	
Require documentation of outdoor water demands on residential parcel basis		X	

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Water Efficiency Activities	Timing of When Activity Will Be Initiated		
	Currently Doing and Ongoing	First Portion of 7-Year Period (2021 - 2023)	Second Portion of 7-Year Period (2023 - 2027)
Standards and Specifications for Parks and Recreation Construction	X	X	
Building code influencing indoor and outdoor water use			X
Establishment of vegetation on open space lands		X	
Explore options for regulating high water commercial users on an as-needed basis			X
Education Program			
Town leadership and staff		X	
Development community and new residents		X	
Businesses and HOAs		X	
Schools and students			X
General public	X		

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1.0 Introduction

Erie has a long history of water efficiency practices.[1] Efficiency and responsible stewardship is an important component of Erie's water management strategy. This Plan is an update to the Erie's 2014 Water Conservation Plan and is the Town's third State-approved water efficiency plan.[2] Since 2014, Erie has experienced significant growth and changes to Town staff including hiring a Sustainability & Water Conservation Specialist focused on Town sustainability and water efficiency as well as a full-time Water Conservation Technician. This plan capitalizes on new ideas provided by Erie staff and the community while also incorporating water and land use planning.[3]

This State-approved Plan was developed in accordance with Colorado statutes and Colorado Water Conservation Board (CWCB) guidelines. The Plan was also developed in close coordination with the Erie's 2021 Drought and Water Supply Shortage Plan update, which was developed in parallel with this Plan. Updating each plan in tandem provided an opportunity for Erie to streamline the planning processes where appropriate, while also ensuring that the plans were integrated in a manner that optimized both Erie's Water Efficiency Program and Erie's approach to drought mitigation and response. A series of workshops and topic-specific phone calls where held among Erie staff throughout the development of both documents. Outreach was also conducted among the community to receive feedback.

Five workshops were held both in-person and remotely (due to the COVID-19 pandemic) and with a diverse group of Erie staff among many departments. In addition, two conference calls, focusing on the integration of land use planning and water efficiency, were also held among water resources and planning staff. A draft of the Plan was then distributed to community stakeholders and posted online for 30 days providing opportunity for the public to review and comment. Board members then had the opportunity to review the Plan and provide input prior to final approval.

The Plan will be implemented in coordination with other local and regional existing and future planning efforts. These plans in include the following which are updated on a routine basis:

- 2013 Source Water Protection Plan
- 2015 Weld County Hazard Mitigation Plan

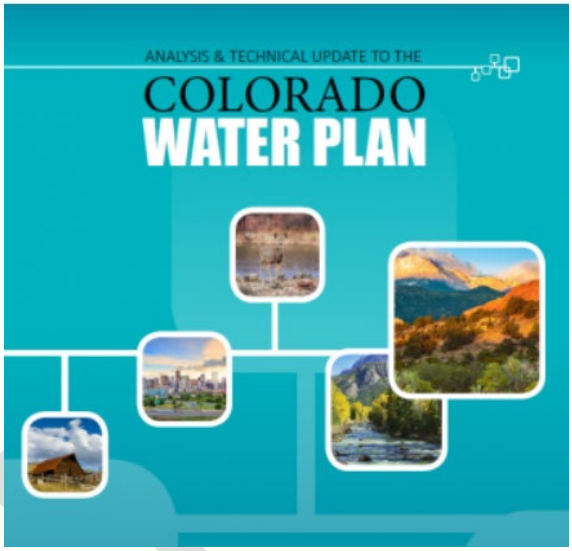
This Plan is aligned with the Colorado Water Plan which calls for the following goals:
1) Achieve 400,000 acre-feet of municipal and industrial water conservation by 2050.
2) By 2025, 75% of Coloradans will live in communities that have incorporated water-saving actions into land-use planning.

[1] The terms "water efficiency" and "water conservation" are often used interchangeably. For purposes of this plan, water efficiency was selected by Erie staff as being the most reflective of the Town's all-encompassing, One Water, systems'-focused strategy to improving efficiency.

[2] Erie's first State-approved Water Conservation Plan was finalized in 2008. Both the 2014 and 2008 plans use the term "water conservation" while this updated plan has adopted "water efficiency".

[3] State legislation was passed in 2015 requiring all State approved water efficiency plans to incorporate water efficiency and land use planning.

- 2015 Comprehensive Plan
- 2016 Parks and Recreation Open Space Master Plan
- 2016 Boulder County Natural Hazard Mitigation Plan
- 2019 Water Master Plan Update
- 2019 Sustainability Master Plan
- 2020 Wastewater Utility Plan Update
- 2020 Non-Potable Water Master Plan
- 2021 Drought and Water Supply Shortage Plan



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2.0 Water Supplies and Service Area

2.1 Overview of the Town's Service Area

Erie was incorporated in 1874 as a coal mining town north of Denver in Weld and Boulder counties. The community remained a relatively small rural town until the 1990s when the first modern subdivisions were constructed. The Town continues to develop with a population that has grown by over 50% within the past ten years with 28,300 people in 2019.

The Town provides water and wastewater services for residential, commercial, and other municipal needs. The service area consists of approximately 50 square miles bordered generally to the east by Interstate 25, to the west by Highway 287, to the north by Niwot Road, and to the south by Highway 7. As reflected in Figure 1, Erie projects that it will serve approximately 50,020 people by 2035 assuming a 4% growth rate.[4] Approximately two thirds of Erie's planning area could ultimately be developed for residential and commercial uses with the remainder of the planning area consisting of open space and other regional facilities.



Briggs Street in 1910

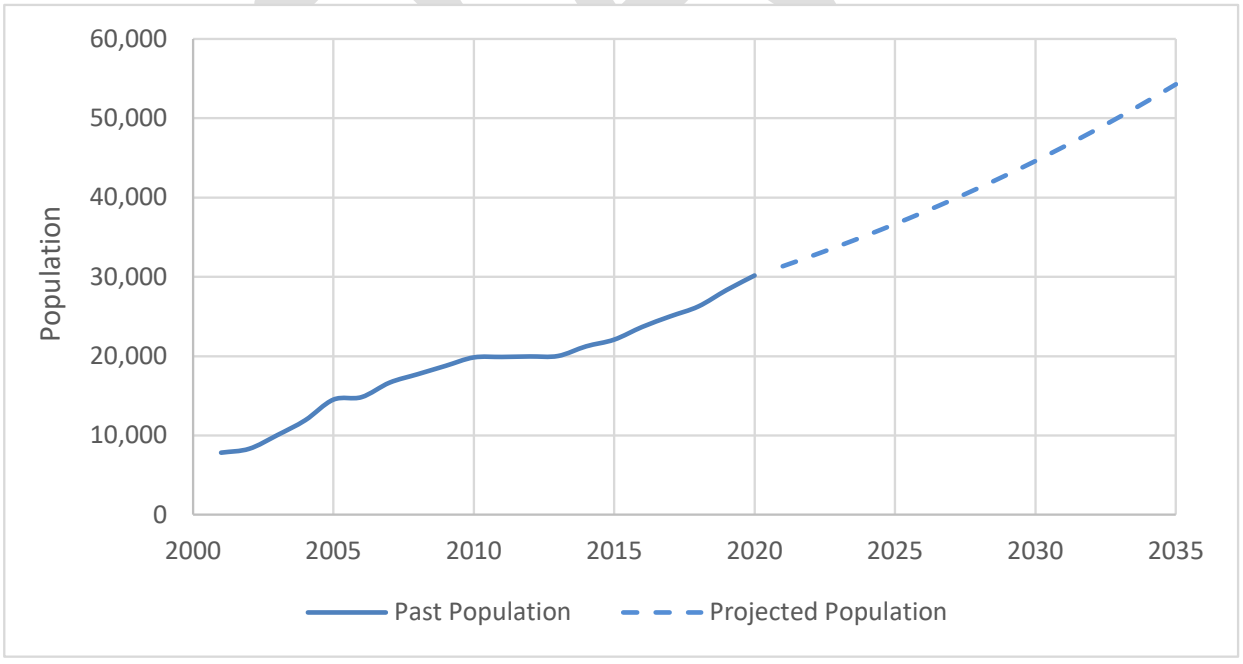

Figure 1: Historical and Projected Population

[4] This is consistent with the 2019 Water Master Plan Update.

2.2 Overview of Water Supplies

Erie's water supply is comprised of a variety of surface water sources. Erie receives most of its supply from the Colorado Big Thompson (CBT) and Windy Gap projects, which divert from the Colorado River Basin and is operated by the Northern Colorado Water Conservancy District (Northern Water). Erie's locally derived water supplies consist of direct flow and storage rights diverted from South Boulder Creek and Coal Creek. Storage rights are diverted into Erie and Thomas reservoirs for potable and non-potable use.



Colorado-Big Thompson Project

The CBT and Windy Gap projects are operated by Northern Water, providing water supplies for municipal and agricultural use in northeast Colorado.

The CBT project consists of 11 reservoirs on the west and east slopes with a total reservoir storage capacity of approximately 1,000,000 AF, 35 miles of tunnels, 95 miles of canals, 7 hydroelectric power plants and 700 miles of transmission facilities. Each April Northern Water's Board sets a CBT project quota which quantifies the amount of CBT water available to allottees each year.

The Windy Gap Project includes a diversion dam on the Colorado River, a 445-acre-foot reservoir, a pumping plant, and a six-mile pipeline to Lake Granby. Windy Gap water supplies are pumped and stored in Lake Granby before delivery to municipal water users through CBT's East Slope distribution system.

Transbasin and local water supplies are treated at the Lee Morgan Water Treatment Facility (WTF) for potable use. Return flows derived from Erie's first-use of its Windy Gap water are legally reusable and Erie reuses its Windy Gap return flows for outdoor irrigation purposes. Wastewater is currently treated at the North Water Reclamation Facility (NWRF) and is either stored at a 1,000-acre-foot reservoir adjacent to the NWRF for non-potable reuse or discharged into Coal Creek. Reuse and untreated ditch water may also be stored in a raw water pond adjacent to the Erie Commons development. Erie also has emergency treated water interconnections with the Left-Hand Water District and the City of Lafayette. Figure 2 below shows Erie's the general location of Erie's water supplies and service area.

The combination of sources provides a variety of water "types". For purposes of this Plan, the following types of water are defined as follows:

- Treated water: Water that has been treated at the WTF and used for potable and non-potable purposes.
- Ditch water: Erie's ditch water supplies that are untreated and used for irrigation of parks and other non-potable purposes.
- Reuse water: Reclaimed water that has been treated at Erie's water reclamation facility and used for non-potable purposes. This water may be reused to extinction and is currently limited to reclaimed water derived from Erie's Windy Gap shares discussed in further detail below.
- Raw water: Erie's potable water supplies prior to treatment at the WTF.

- First-use water: Erie's treated water and untreated ditch and reservoir water that are used for potable and non-potable purposes for the first time. This includes all of Erie's water supply sources with exception to reuse water.

2.3 Water Supply Reliability and Future Needs

Erie is in the northern area of the South Platte Basin, which is projected to experience a municipal and industrial (M&I) water supply gap ranging from 184,500 acre-feet to 540,700 acre-feet by 2050 according to the Colorado Water Plan 2019 Technical Update Report.[5] Erie's water supply reliability depends on a variety of factors including the priority of its water rights, available storage capacity, rate of customer growth, water efficiency, and ability to respond to emergencies. Erie is actively engaged in meeting the following challenges to ensure a resilient and reliable water supply.

Population and water demand growth - While the Town currently has sufficient water supplies to meet existing water demands, additional supplies will be needed to meet future demands. Erie regularly monitors its projected future water needs and acquires additional supplies as necessary to meet its growing demand. The following bullet points below highlight Erie's efforts in acquiring additional water supplies:

- Has a policy requiring new development within the Town's service area to provide either new water supplies or equivalent cash in-lieu payments for open space and cash in-lieu payments for all remaining development.
- Is a participant in the Northern Integrated Water Supply Plan (NISP) requesting an annual 6,500 acre-feet of firm yield from the project.
- Is a participant in the Windy Gap Firming Project (20 Units), which would increase the reliability of Windy Gap supplies such that Erie would be able to receive a substantial portion of its Windy Gap allotment during dry years.
- Plans to acquire more CBT units and purchase additional local ditch water rights.
- In the process of developing a horizontal wellfield on Boulder Creek upstream of the NWRF. The wellfield will provide additional South Boulder Creek water supplies. When these junior water rights are out-of-priority, Erie may use its Windy Gap reuse credits, stored at the 1,000 acre-feet NWRF storage facility, to augment pumping. This will expand Erie's ability to optimize use of its Windy Gap return flows.
- Plans to construct a new water treatment plant near the NWRF. The water treatment plant will treat pumped well water and Windy Gap return flows in the NWRF storage facility for distribution.

While Erie has sufficient water to meet projected water demands in the near term, as the Town continues to develop water efficiency is essential to meeting long-term water demands in a fiscal and environmentally responsible manner.

[5] Source: CWCB. 2019.

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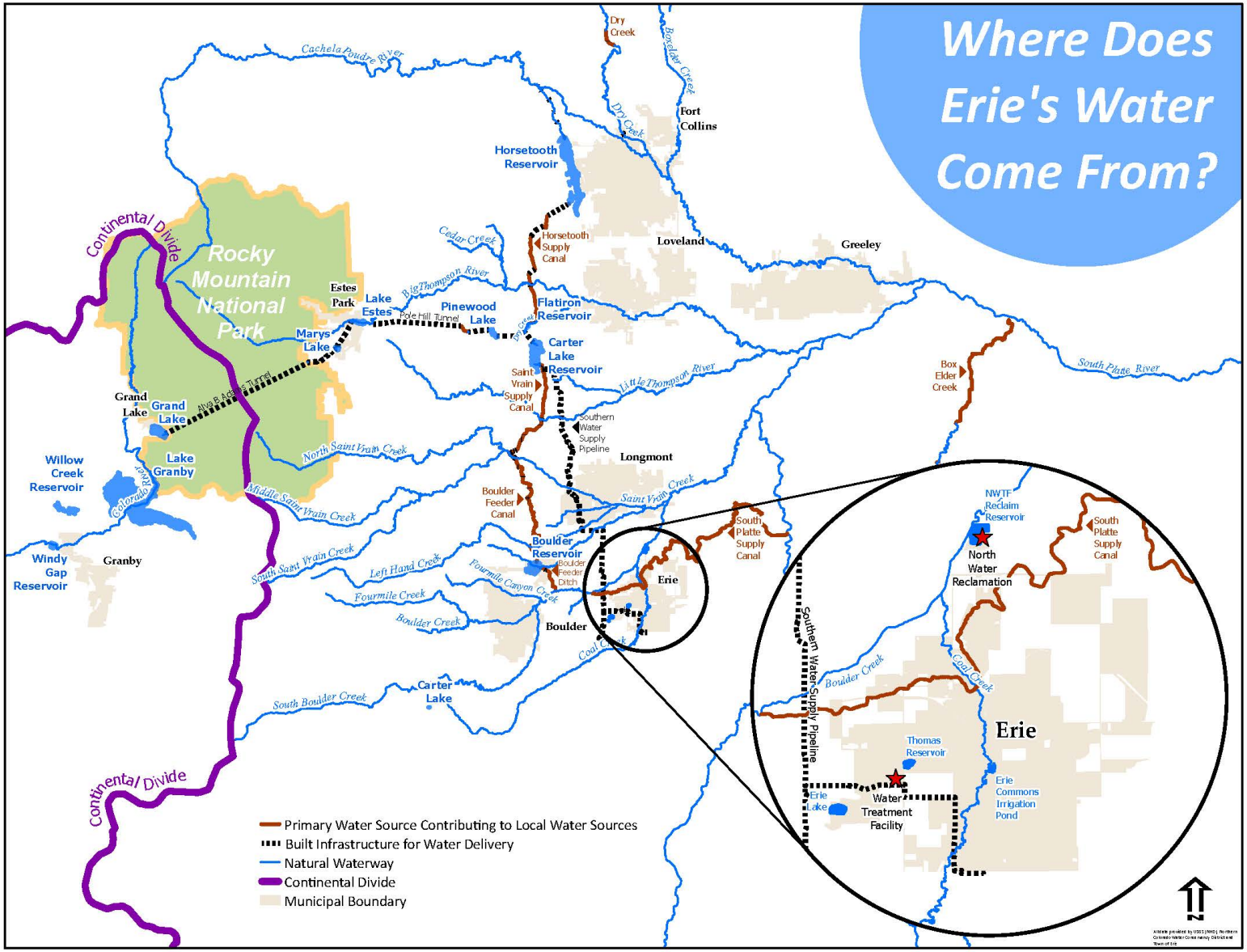

Figure 2: Erie's Water Supplies and Service Area

Drought – Erie's Drought and Water Supply Shortage Plan calls for a series of actions during drought and water shortages to reduce water use, ensuring supplies for critical health, safety, and commercial needs.[6]

Uncertainty of Colorado River compact call – CWCB and other entities throughout the Colorado River Basin are engaged in efforts to reduce the uncertainty of what may happen if a Colorado River call occurs. Erie is actively tracking the State and regional-led efforts. The 2021 Drought and Water Supply Shortage Plan provides additional information on the Colorado River compact call.

Uncertainty of climate change – Climate science indicates that statewide annual average temperatures has increased by 2.0°F over the past 30 years and 2.5°F over the past 50 years. Additionally, Colorado is expected to warm even more by the mid-21st century, pushing temperatures outside of the range of the past century.[7] This could increase outdoor irrigation demand; cause runoff to occur earlier; cause an increase in duration, frequency, and intensity of droughts; and an overall decline in water availability.

Increased salinity levels in South Platte River – Recent studies have indicated that salinity levels are increasing in the South Platte Basin. This could result in changes to regulations for permitted wastewater treatment plant discharges.



[6] Erie's 2021 Drought and Water Supply Shortage Plan focuses on mitigation measures to take prior to a water shortage to reduce impacts during a shortage and on response measures to temporarily implement during the shortage to save water. In contrast, this Water Efficiency Plan aims to achieve lasting, long-term improvements in water efficiency reducing long-term water demands in wet, normal, and dry years.

[7] Source: Western Water Assessment, 2014.

3.0 Water Demands and Historical Demand Management

This section provides an overview on Erie's water demands and information on recent water efficiency activities and lessons learned. Additional details on historical water demand trends relate to Erie's past water goals in its 2008 and 2011 Water Conservation Plans are provided in Appendix A. Further details on Erie's existing and past water efficiency activities, including water saving estimates, are provided in Appendix B.

3.1 Historical Water Demands

Erie's total annual water use has increased with its demand due to increased population shown below in Figure 3. The total annual water demands are divided into treated water, ditch water, and total reuse (defined in Section 2.2). Treated water tends to generally increase with population whereas ditch water and reuse water fluctuate on an annual basis. This is attributed to a combination of factors including weather, management of supplies, and availability of ditch supplies.

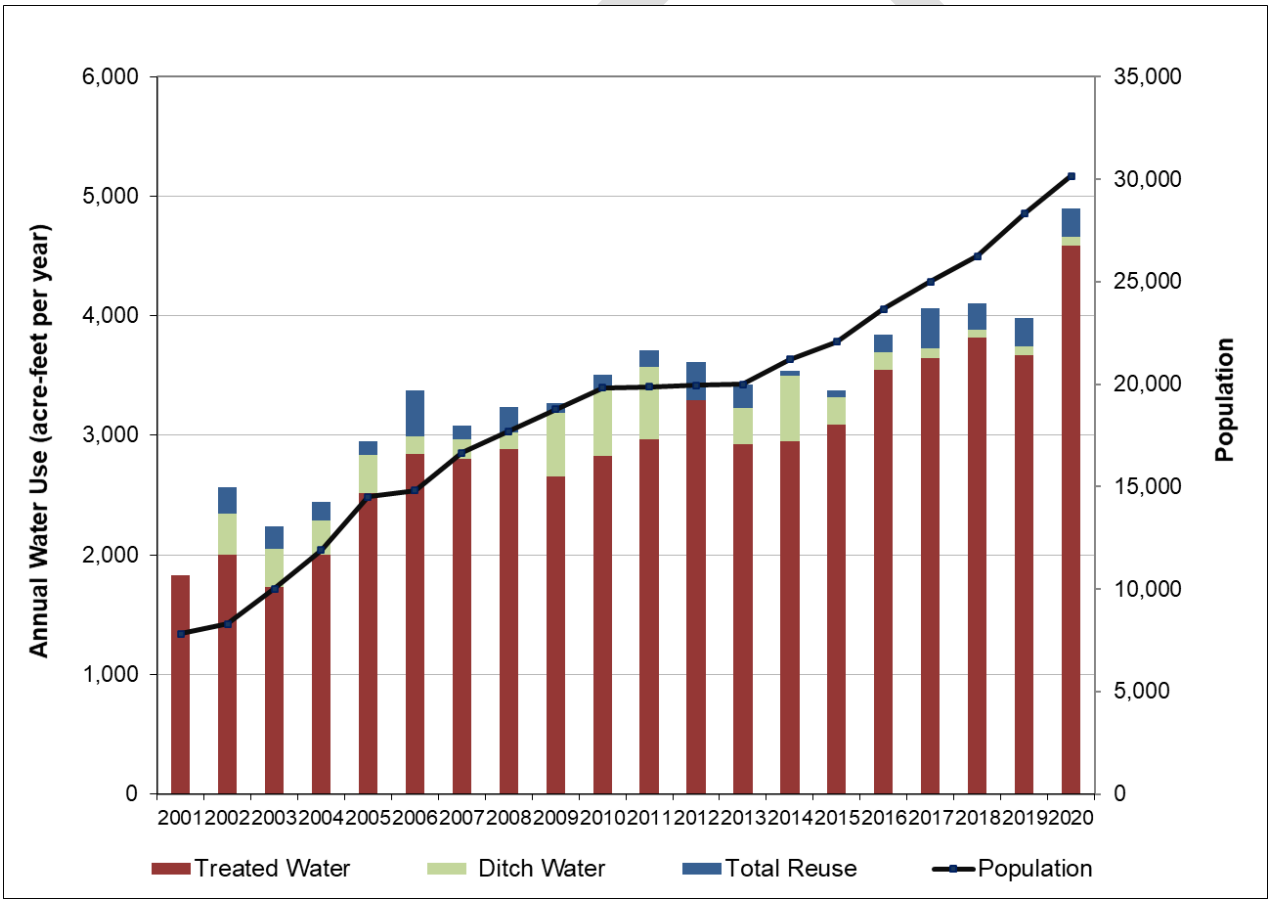

Figure 3: Historical Water Demands and Population[8]

[8] Data on ditch water deliveries in 2001 is not available.

Figure 4 below illustrates how system-wide per capita and residential per capita water use have decreased over time.[9] System-wide per capita water use spiked in 2002. This spike took place in part because of the drought that year, irrigation usage utilizing reclaimed water, and leased raw ditch water on Vista Ridge Golf Course throughout 2002. Since 2002, system-wide per capita water use has steadily decreased. Residential per capita use has also trended downward with higher levels observed in drier, hotter years. The downward residential trend can be attributed to a combination of factors and has been regularly recorded throughout the Front Range, normalized for weather. The contributing factors include water savings achieved through improved technologies and efficiencies with water fixture and appliances, behavioral changes through education and outreach of the value of water, and residents are used less water than prior to the 2002 drought, and additional development.

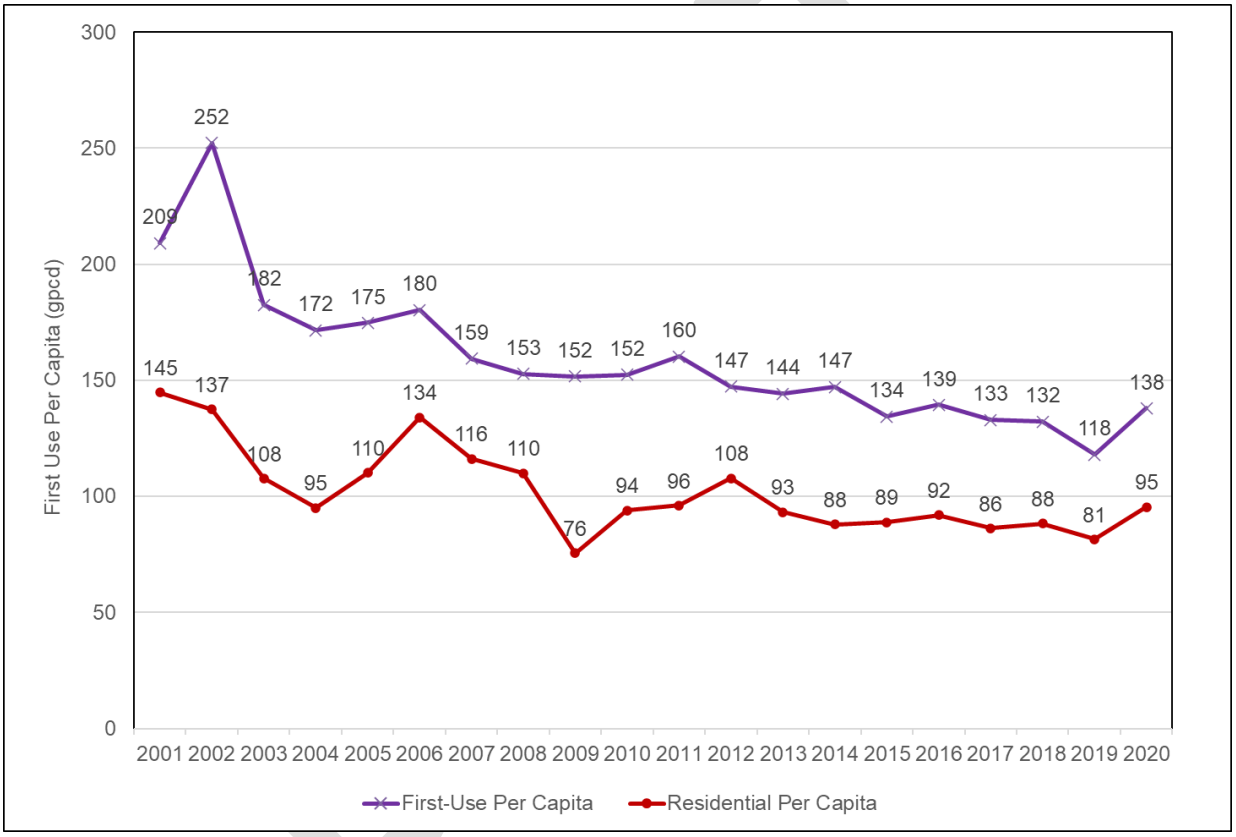

Figure 4: Total and Residential Per Capita Water Use

The differentiation of Erie's indoor and outdoor water use patterns provides additional insight into Erie's per capita water use trends. Figure 4 shows Erie's annual first-use indoor and outdoor water use relative to evapotranspiration from 2003 to 2019.[10] Total indoor water use has steadily increased as the Town continues to develop. Outdoor annual demands rise and fall as evaportrasportation levels flucuate as a result of weather

[9] Total per capita use was estimated by dividing total system water use (sum of treated water, ditch water, and reuse water) by the residential population. Residential per capita water use was estimated by dividing residential water use (single multi-family, multi-family, and townhouse) by residential population.

[10] Indoor water use was estimated assuming that all water use during November through February was indoor, and that indoor use during March through October was equal to the average of the previous November through February use. Outdoor water use was calculated by subtracting estimated indoor use from total use.

patterns. The variablility is labeled "ET grass" in Figure 4 and is calculated as the percentage of normal evapotranspiration for grass.

Additionally, Figure 5 below shows Erie's percentage of outdoor water use relative to total annual use has steadily declined from 61% in 2013 to 55% in 2019.[11] This decline is largely attributed to development trends within Erie's service area. Nearly two decades ago in 2003, Erie provided irrigation to Vista Ridge Golf Course and other parks with fewer residents. While the number of parks and open space has increased over time, the increase in demands associated with this increase is not occurring at the same rate as the water demand increase associated with indoor water use (largely attributed to new residential homes with smaller yards). Consequently, Erie's outdoor per capita water use has steadily declined, as shown in Figure 6 below. Improvements to outdoor water irrigation efficiency may also contribute to this trend.

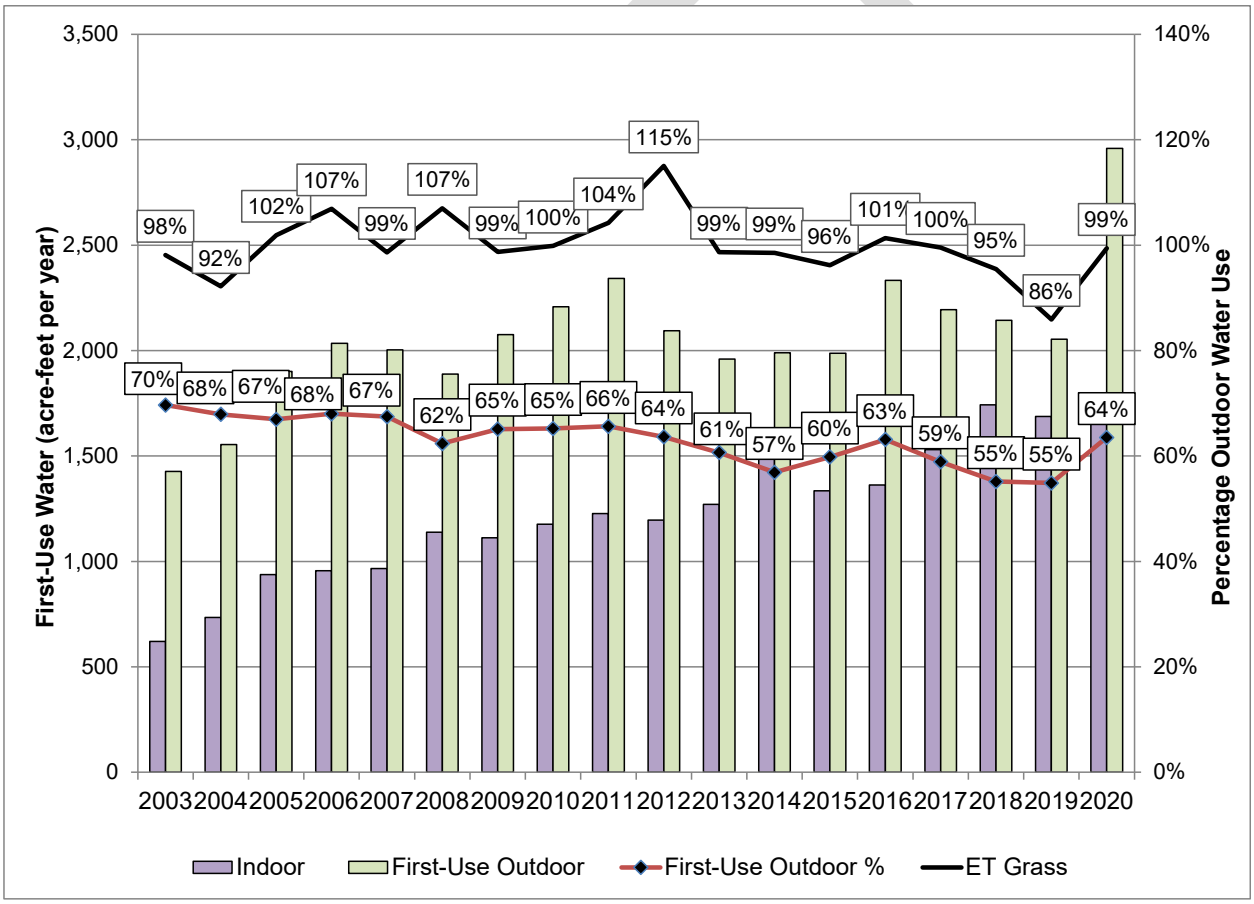

Figure 5: Indoor and Outdoor First-Use Water

[11] Figure 5 shows that outdoor water uses significantly increased in 2020. This increase is consistent with observations throughout the Front Range during the pandemic where residential irrigation increased in response to drier conditions and more residents staying home maintaining their yards through the summer. That said, the outdoor water use estimate shown in this figure may be overestimated while the indoor water use may be underestimated for 2020. For purposes of this graph, outdoor water use was estimated as the difference between total annual use minus indoor use which is assumed to be the average water use observed in December, January, and February. At the onset of the pandemic in March, indoor water may have increased with more residents working from home. However, for purposes of this figure, the same methodology for estimating outdoor use is consistently applied for all years, which does not account for an increase in indoor water use when the pandemic started.

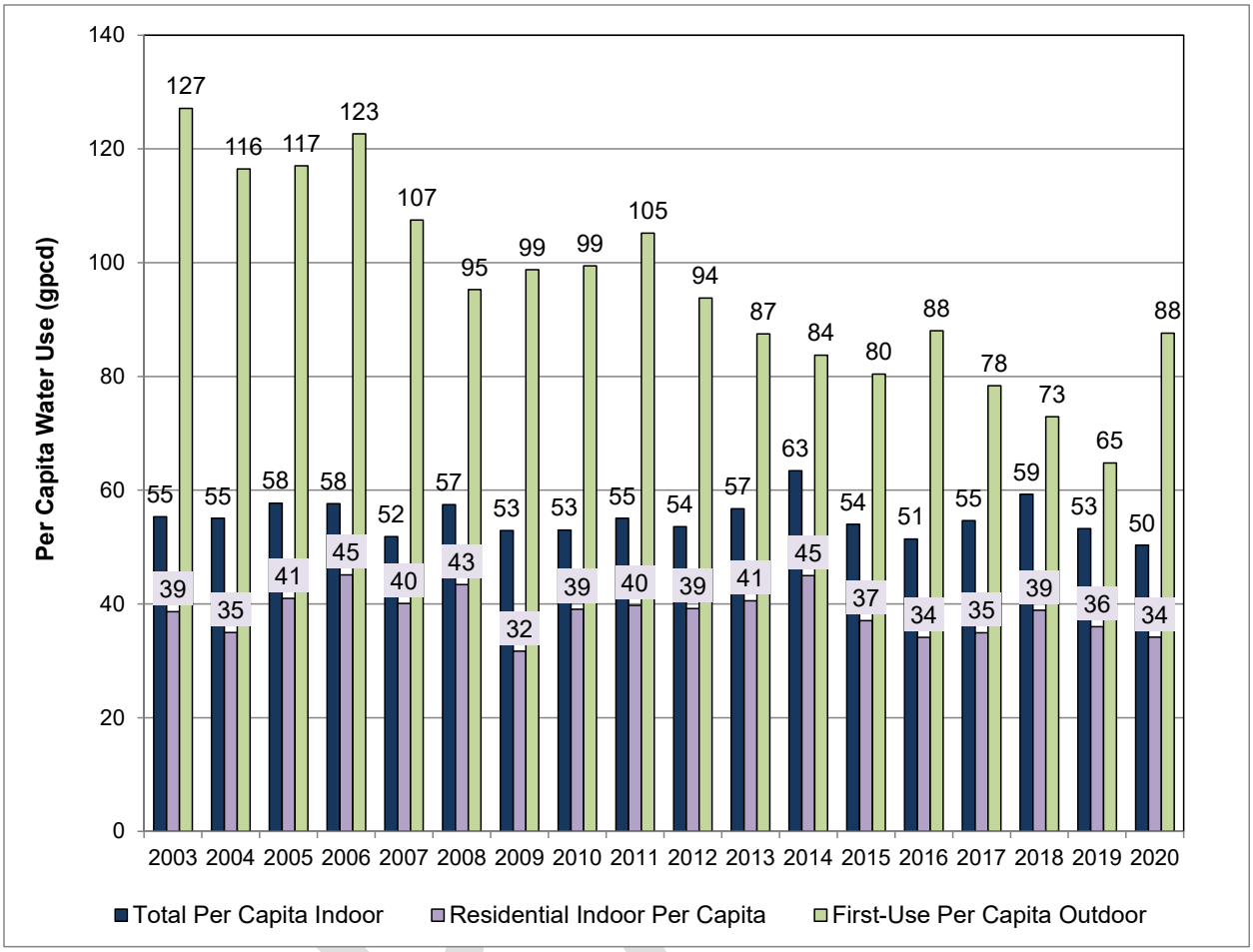

Figure 6: Indoor and Outdoor Per Capita Water Use[12]

Figure 5 above shows that indoor per capita water use has remained relatively stable both on a total (system-wide) and residential basis which can be expected. While there continues to be water efficiency improvements with indoor water fixtures and appliances, most of the development in Erie's service area is relatively new and therefore includes the available WaterSense efficient fixtures and appliances. Erie also has a long-standing water rebate program which incentivizes residents to purchase efficient appliances and fixtures and just recently hired new staff to manage its water efficiency program.

3.2 Treated Water Use

Figure 7 below shows the average annual treated water use by customer sector from 2015 to 2019. As discussed in Section 2.2, this water is used for both potable and non-potable purposes. Residential single-family homes comprise nearly three quarters of demand followed by irrigation meters and water for construction.

[12] See footnote 11 for an explanation on the calculation of outdoor water demands.

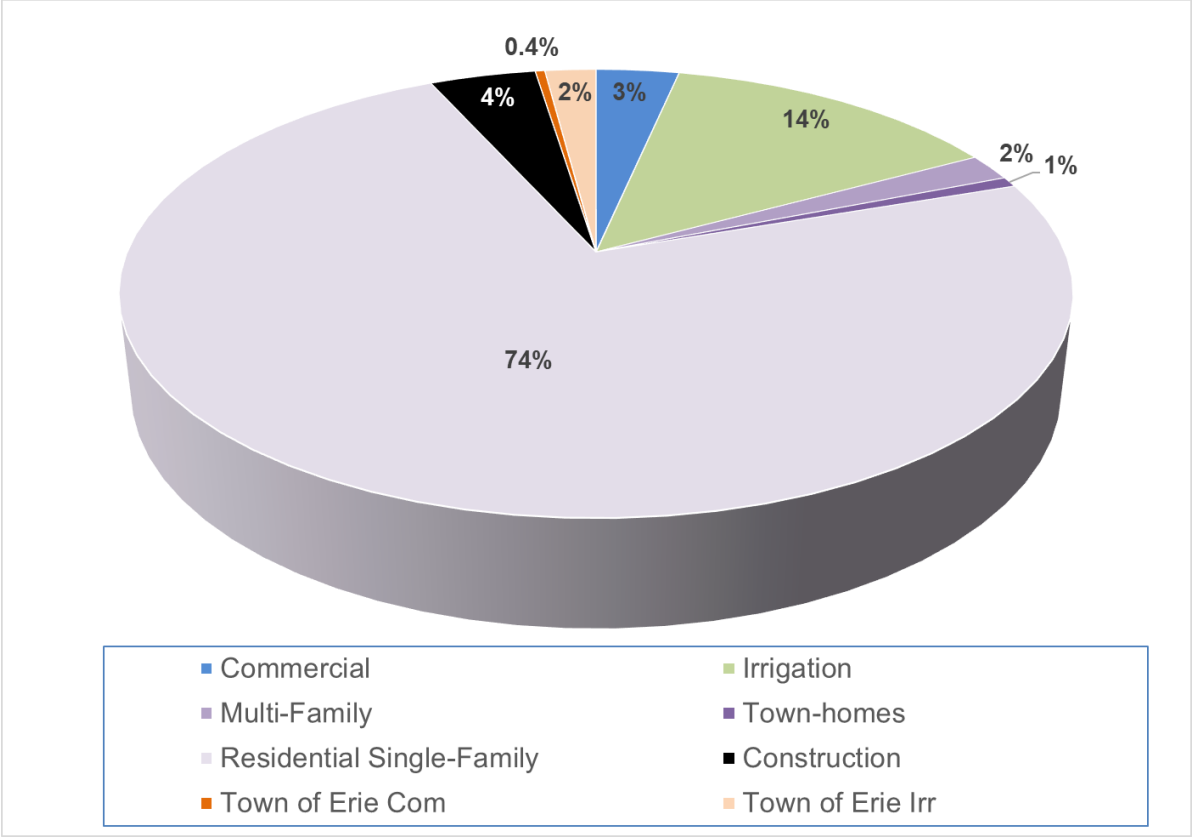

Figure 7: Average Customer Water Use by Sectors (2015-2020)

Table 1 below shows the annual water use by customer category. Changes were made to the billing system in 2009 and 2015, adding new customer categories.[13] The irrigation category was added in 2009 and the Multi-family, Townhomes, Town of Erie Com, and Town of Erie Irr categories were added in 2015. Table 2 below reflects these changes, providing descriptions for each of the customer categories over time.

Table 1: Water Use by Customer Category (acre-feet per year)[14]

Year	Residential Single-Family	Multi-Family	Town-homes	Commercial	Irrigation	Construction	Town of Erie Com	Town of Erie Irr
2002	1,278	n/a	n/a	99	n/a	302	n/a	n/a
2003	1,209	n/a	n/a	229	n/a	56	n/a	n/a
2004	1,269	n/a	n/a	269	n/a	448	n/a	n/a
2005	1,788	n/a	n/a	401	n/a	76	n/a	n/a
2006	2,224	n/a	n/a	489	n/a	30	n/a	n/a
2007	2,167	n/a	n/a	458	n/a	80	n/a	n/a

[13] The Town also changed their billing cycles during this time where different portions of Erie's customer base are billed at different times of the month. This helps to manage the volume of billing that needs to be completed at one time by spacing the billing out over the course of the month.

[14]The Commercial water use in 2011 appears to be rather high when compared to other years of available data, and the irrigation water use appears low. It is possible that after the separation of these two sectors into separate billing types in 2009, data inconsistencies ensued for a couple of years. For example, some irrigation accounts may be included in commercial in 2011, thus causing the water use for these two categories to appear inconsistent as compared with other years.

Year	Residential Single-Family	Multi-Family	Town-homes	Commercial	Irrigation	Construction	Town of Erie Com	Town of Erie Irr
2008	2,181	n/a	n/a	461	n/a	50	n/a	n/a
2009	1,589	n/a	n/a	113	372	139	n/a	n/a
2010	2,087	n/a	n/a	111	432	67	n/a	n/a
2011	2,139	n/a	n/a	342	293	109	n/a	n/a
2012	2,408	n/a	n/a	113	539	36	n/a	n/a
2013	2,089	n/a	n/a	102	364	114	n/a	n/a
2014	2,091	n/a	n/a	124	410	180	n/a	n/a
2015	2,124	49	25	66	372	76	5	38
2016	2,353	63	24	73	465	161	7	69
2017	2,334	60	22	114	416	222	11	65
2018	2,507	68	24	129	463	163	17	71
2019	2,485	73	26	145	451	108	17	77
2020	3,117	79	29	155	623	143	21	100

Table 2: Description of Customer Categories (acre-feet per year)

Customer Category	2002-2008	2009-2014	2015-2020
Residential/Single-family	Single-family, multi-family and townhomes	Single-family, multi-family and townhomes	Single-family housing
Multi-family	n/a	n/a	Multi-family housing including condos, patio homes and some townhomes. Some newer multi-family units have separate irrigation meters for common areas.
Townhomes	n/a	n/a	Condos and townhomes
Commercial	Schools, municipal buildings, commercial, irrigation	Schools, municipal buildings, commercial	Schools, indoor and outdoor use for older businesses and primarily indoor for new businesses.
Irrigation	n/a	Outdoor irrigation on parks, open spaces, and commercial parcels	Outdoor irrigation for businesses, schools, landscaped medians, and HOAs. This includes outdoor pools and irrigated common spaces among single family homes and multi-family communities.
Construction	Construction purposes	Construction purposes	Construction purposes
Town of Erie Com	n/a	n/a	Indoor and some outdoor irrigation on Town facilities.
Town of Erie Irr	n/a	n/a	Irrigation on Town-owned properties. This includes parks, open spaces, and medians irrigated with treated water.

Note: Commercial and HOA customers began to switch their outdoor irrigation to irrigation-only accounts in 2015/2015. This is in response to the volumetric sewer rate structure where customers are charged on an estimated volume of sewage based on water serviced. Customers can deem cost savings by lowering their charged volume of sewage using a separate outdoor irrigation account.

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3.3 Reuse Water

Erie has a long history of using raw ditch water and Windy Gap reuse water for non-potable irrigation. The Town began reusing water to irrigate portions of Vista Ridge Golf Course in 2002 and expanded its reuse program to Erie Commons HOA in 2008. The reuse is facilitated via an exchange where irrigation supplies are diverted from Coal Creek and augmented with Windy Gap reuse credits downstream. Figure 8 below shows the Town's annual extent of this creative reuse and augmentation usage. The direct application of reuse water began in 2017 upon completion of the 1,000 acre-feet NWRF storage facility. This storage facility stores reclaimed water from the NWRF. Reuse water is directly pumped from the NWRF storage facility into a non-potable distribution system serving multiple developments in the area. The development of the Well Project in conjunction with a new water treatment facility would expand Erie's ability to optimize its use of Windy Gap reuse credits. Upon completion, Erie will have the option of using its reuse water by 1) expanding its direct non-potable use system, 2) exchanges (e.g., Vista Ridge Golf Course exchange), 3) augmentation of out-priority well depletions, and 4) pump-back of reuse water stored in the NWRF storage facility for treatment at the new water treatment facility.

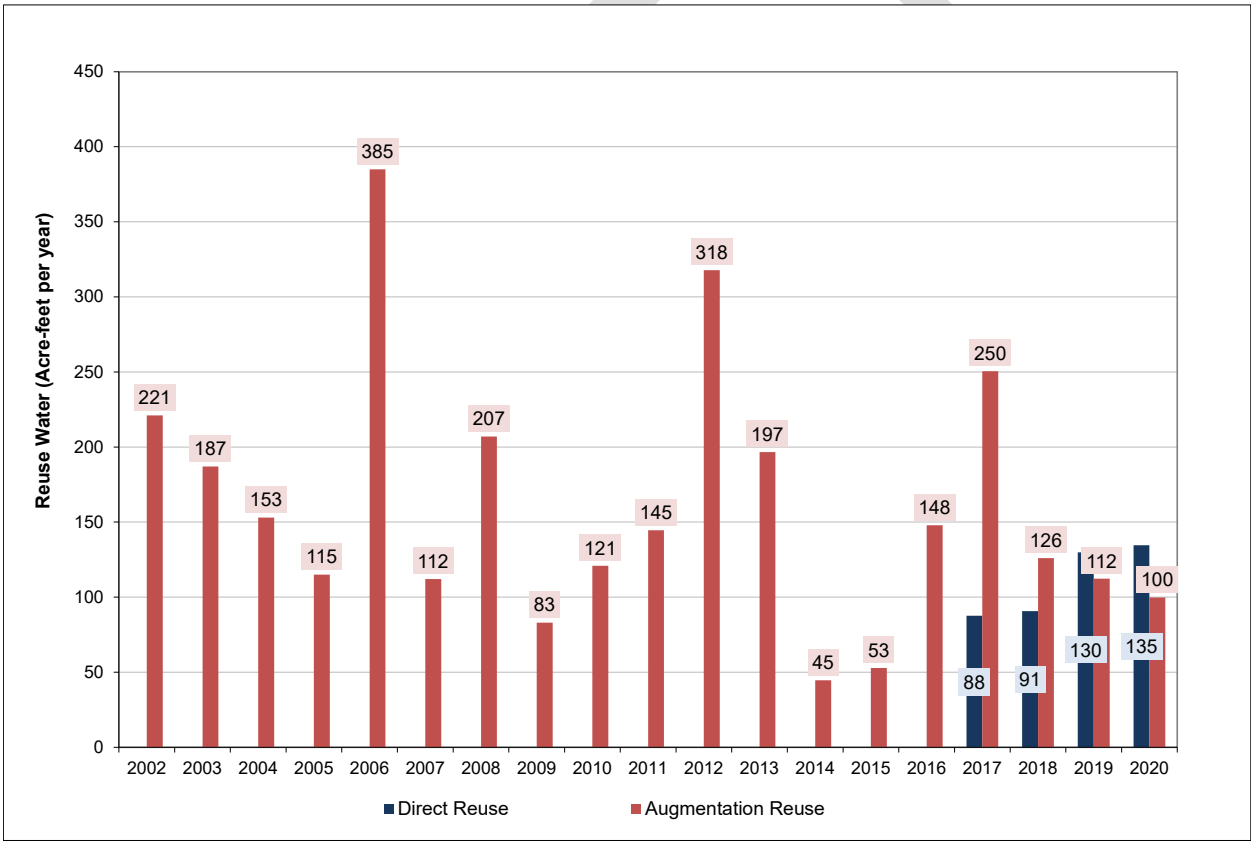

Figure 8: Reuse Water for Direct Irrigation and Augmentation

3.4 Non-Revenue Water

Non-revenue water consists of leaks in the distribution system, metering inaccuracies and un-metered demand. Table 3 below shows the percentage annual non-revenue losses for the Erie using annual WTF

production and billing data.[15] The annual average percentage loss is 9%, however, there is a significant change of losses recorded on an annual basis with no trend. These fluctuations may be attributed to a variety of factors including fixed leaks as well as meter and measurement error over the years.

Table 3: Percentage Losses of Non-Revenue Water

Year	Non-Revenue Water
2001	21.6%
2002	16.3%
2003	13.7%
2004	0.6%
2005	10.1%
2006	3.5%
2007	3.4%
2008	6.7%
2009	16.6%
2010	4.7%
2011	2.8%
2012	5.9%
2013	8.7%
2014	4.9%
2015	10.9%
2016	9.3%
2017	11.1%
2018	9.9%
2019	7.9%
2020	

Erie has made metering improvements to account for and reduce non-revenue water. In 2010, the Town began to meter the water used for the pipeline flushing maintenance and since 2013, Erie has improved the accuracy of its metering at the discharge from the WTF. Erie also has a leak detection program inspecting valves and using sonic radar technology that focuses on the older components the Town's water distribution system. Erie participated in the Colorado Water Loss Initiative program in 2019 and 2020 which is a comprehensive series of trainings on using the AWWA M36 water audit procedures. The Town plans to use this methodology moving forward to better measure and account for non-revenue losses. This methodology should improve Erie's ability to track non-revenue losses. Additional information on Erie's metering, auditing, and leak detection program is provided in Section 5.0.

3.5 Current and Past Water Efficiency Activities and Lessons Learned

Water Efficiency Activities

Erie is actively engaged in the water efficiency activities provided in Figure 9 below. Many of these activities were initiated following the development of the Town's 2008 and 2014 Water Conservation Plans, while others

[15] Losses were calculated on an annual basis as:

$$Non-revenue\ losses = \frac{WTP\ Production - Billed\ metered\ water}{WTP\ Production}$$

have a longer history of implementation. Additional information on these activities, including period of implementation and estimated water savings, is provided in Appendix A.

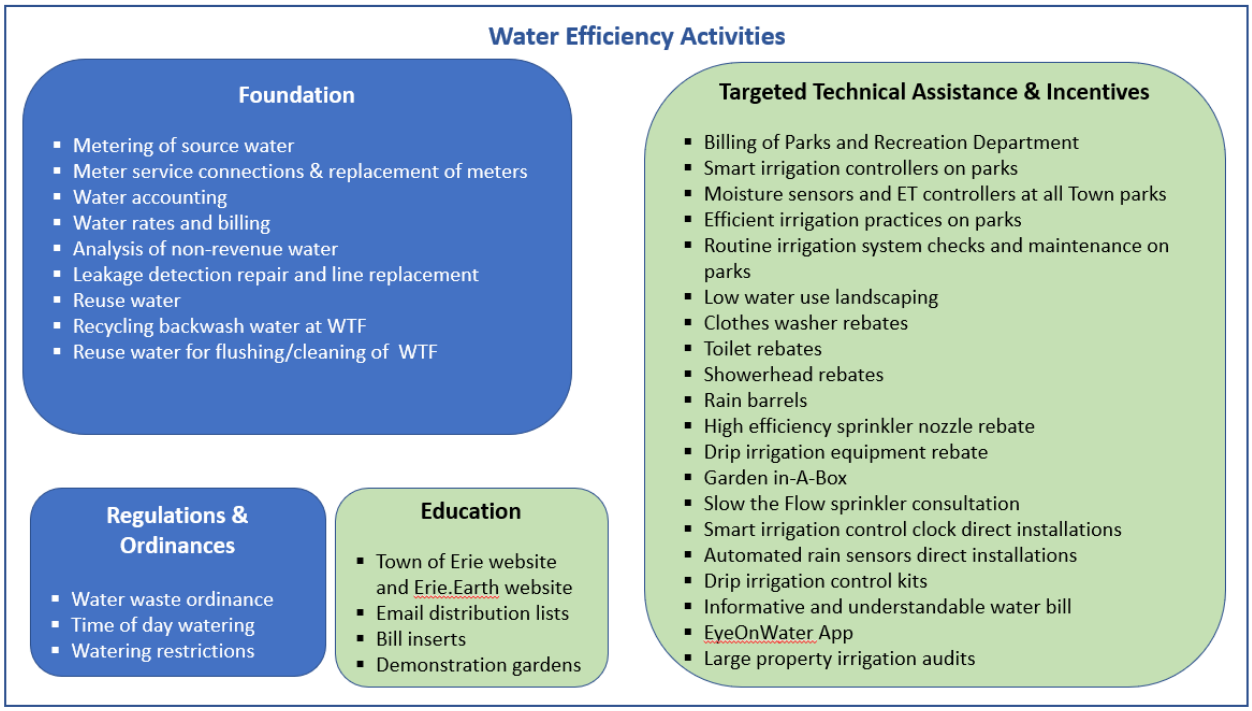

Figure 9: Past and Current Water Efficiency Activities

Current Activities Integrating Water Supply and Land Use Planning

In addition to the water efficiency activities listed in Figure 9 above, Erie has a variety of mechanisms in place that help to coordinate water supply planning with land use planning. These mechanisms include the following:

- Erie has a well-established Town urban growth boundary defined in the Comprehensive Plan.
- Erie has a water dedication requirement where developers are required to pay a water dedication fee representative of the anticipated water demand for the proposed development. Water rights, as opposed to a fee, is also an option for the development of open space.
- Erie currently relies on the landscape architect of new developments to conduct post construction inspections to ensure that the design specifications and regulations are met.
- Erie's UDC includes mechanisms that encourage water efficiency. A certain amount of higher density development is required for each proposed development site and the UDC requires landscape improvements to be designed with water efficiency as a major goal.
- Erie's Standards and Specifications for Parks and Recreation construction require water efficient irrigation technologies, design, and practice.

These mechanisms provide a connection between water supplies and land use planning as well as ensure water supplies are considered when development and land use decisions are being made. Additional activities that

Erie plans on doing in the future to better incorporate water efficiency into the land use planning process are discussed in sections 4 and 5 on this Plan.

Lessons Learned

The following lessons and opportunities were identified through the update of this Plan:

- There are multiple ways in which reuse water may be used throughout the Town for potable and non-potable purposes. Erie will move forward in developing its reuse system in a manner that best meets the needs of its customers considering water system efficiencies and costs.

- The majority of Erie's water distribution system is relatively new (less than 20-years old) and therefore few leaks have been detected. However, two notable observed leaks at a Vista Ridge Golf Course treated water storage tank in 2014 and at a clear well at the WTF in 2019 highlights the need for metering and routine audits.

- Erie's indoor water use is relatively efficient. Most of the Town's development is new, incorporating the newest water efficient indoor fixtures and appliances. However, many new residents continue to irrigate at high levels even after their new Kentucky Bluegrass and other landscape features have been established. The overwatering has resulted in localized seepage on to walkways and into low-level retention ponds in some areas. Additional education and code updates for water wastage is needed to mitigate this water loss.

- Erie is projected to continue growing with a combination of new residential and commercial development. This provides a tremendous opportunity to achieve further water savings by integrating water efficiency into land use planning and developmental requirements.

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4.0 Water Efficiency Benefits and Goals

4.1 Water Efficiency Benefits – Why Reduce Water Use

Water efficiency provides the following benefits to Erie and the community:

Leadership and sustainability – Erie's leadership and community have a longstanding commitment to water efficiency. Support and feedback from the citizen advisory boards and the community at-large, coupled with leadership by the Board of Trustees and Erie staff promoting efficient water use establishes Erie as a current leader in water efficiency. The interactive community engagement and governance structures both educate the community and help Town leadership meet expectations concerning responsible water use and maintain a sustainable long-term water supply.

Coordinated water stewardship – Erie's guiding principles in its Comprehensive Plan calls for stewardship of the natural environment. Water is an essential natural resource that is critical to the economic, environmental, and social health of Erie's community. Water efficiency requires a one-water coordinated approach where multiple Town departments and the community must work together in achieving efficient water use in a sustainable and environmentally responsible manner.

Management of costs for new supplies and capital improvements – As new water supply options become more competitive and costly in the South Platte Basin, Erie's demonstration of efficient water use is critical to meeting political and regulatory requirements necessary to capitalize on beneficial cost-saving partnerships and grant opportunities. Furthermore, water savings achieved through efficient use can reduce the Town's water footprint delaying the need for capital improvements and providing further cost savings for its residents and businesses.

Operational and billing expenditure reductions – Water efficiency reduces the chemicals and energy needed for water treatment and pumping, consequently reducing operational costs. Water savings may also be achieved at the customer level, where customers using less water will be billed less on a volumetric basis.

Contribution to proactive planning – Erie strives to maintain sustainable water supplies that are affordable to the existing community and inviting to new development that is consistent with the guiding principles of its Comprehensive Plan. Water efficiency and stewardship are important to operating within these principles, providing a foundation under which land use planning and development decisions enable community access to a balanced diversity of resources.

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4.2 Water Efficiency Goals and Projected Demands

Attainable water efficiency goals provide standards that can be used to gauge the effectiveness of a program as well as clearly define the programs' intentions. The goals listed below were developed by Erie staff. They provide quantitative water saving targets and qualitative parameters to help achieve the benefits listed in Section 4.1.

1. Achieve a 10% water savings in 10 years "10 in 10" – This water savings goal applies to first-use water and is essentially equivalent to 115 gpcd based on population and demand projections presented in this Plan. Erie's ability to meet the target will be evaluated by comparing annual per capita water demands on an annual basis relative to the 115 gpcd target.

2. Maximize opportunity to use reuse water – Erie plans to further extend its water supplies and use them more efficiently by fully developing its reusable Windy Gap units and is in the process of evaluating which methods are most optimal. All reuse water applied (e.g., direct, augmentation, etc.) will be monitored on an individual parcel level.

3. Establish essential elements to build on – Elevate Erie's water efficiency programs to a new level by focusing on the following essential elements to build on: 1) innovate with new direct installation technologies where water saving estimates are relatively straight-forward[16] and rely on accelerating technological change rather than behavior change, 2) minimize water waste throughout the community, and 3) measure how well Erie is doing through monitoring of water demand, tracking water saving actions, and recording community feedback/lessons learned along the way.

4. Approach water and land use planning holistically – Foster a Town culture where Town leadership and staff understand the value of water, the beneficial nexus of water efficiency and sustainable land use planning and how their collective roles contribute to this nexus, and consequently advocates for water efficiency through decision-making and operational activities.

[16] Methodologies used to estimate water savings for newer technologies are relatively straight-forward relying on generally accepted assumptions. This is contrast to other water efficiency activities where many variables are involved, and the estimate of savings tend to be more subjective in nature. For example, it is difficult to quantify the water savings that may be achieved through public education given weather variability and customer behavior.



These goals aim to achieve a first-use water savings of 10% by 2030 which is equivalent to an annual water savings of 619 acre-feet by 2030 based on the projected demands depicted in Figure 10 below. The baseline (green line) is the "business as usual" scenario, assuming Erie's efficiency efforts continue, and Erie tends to operate at the average per capita unit demand level observed in 2015 through 2019 (127 gpcd). The water efficiency scenario (blue line) includes an additional 10% savings achieved through water efficiency efforts, assuming Erie can achieve a three-year running average per capita water demand of 115 gpcd by 2030. This target may be updated with the Water Efficiency Plan update in seven years if annual demand monitoring data warrants an adjustment.

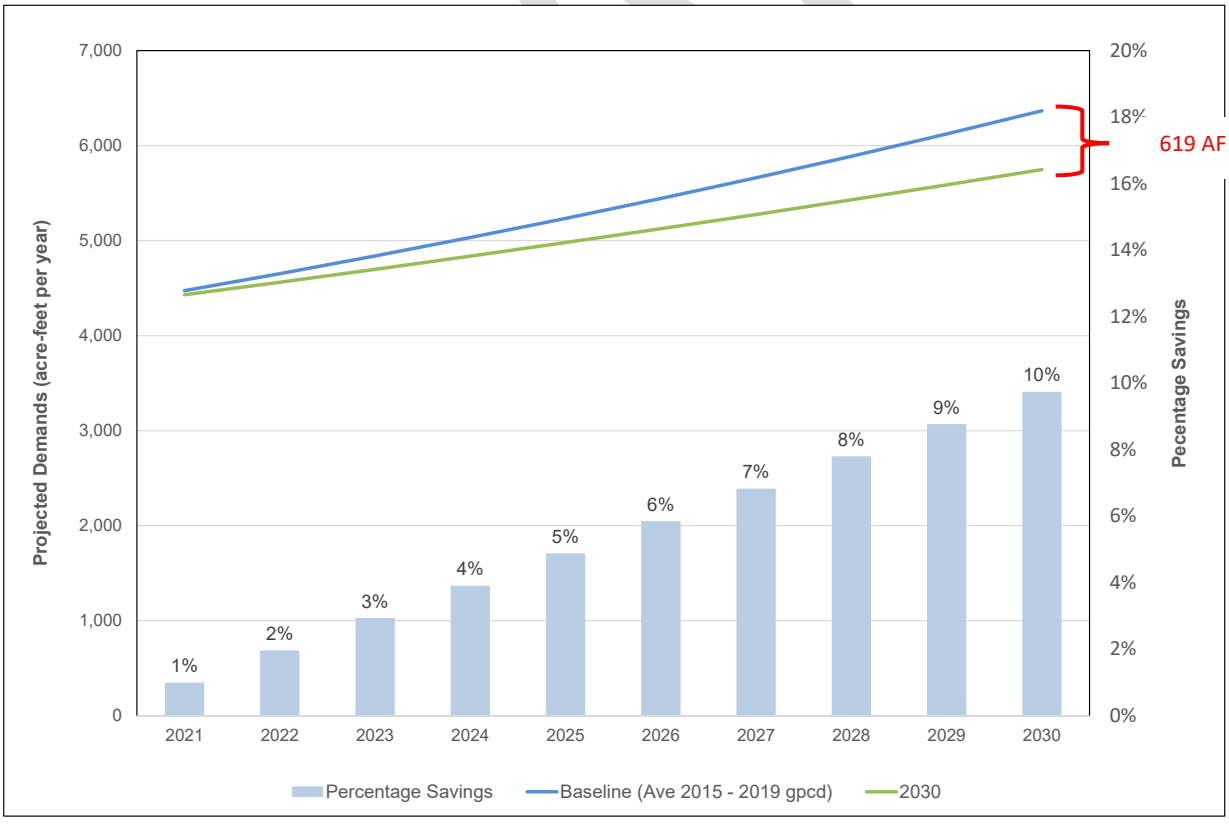

Figure 10: Projected Demands and 10% First-Use Water Savings Target

Figure 11 below portrays the per capita water demand target of 115 gpcd in relation to Erie's historical first-use per capita water demands from 2015 to 2019.[17]. The per capita water demand for 2020 is also provided, however, was not considered during the development of the target given that the goal was developed by Erie staff in 2019 and that demand data in 2020 is influenced by the pandemic which may prove to not be a long-term trend. Historical per capita demands exceed the 115 gpcd target in all years with exception to 2019. This year experienced high precipitations with an exceptionally wet spring, requiring very little outdoor watering in the early summer. The 115 gpcd goal is a reasonable three-year average target considering the Town's resources available to water efficiency efforts and projected development.

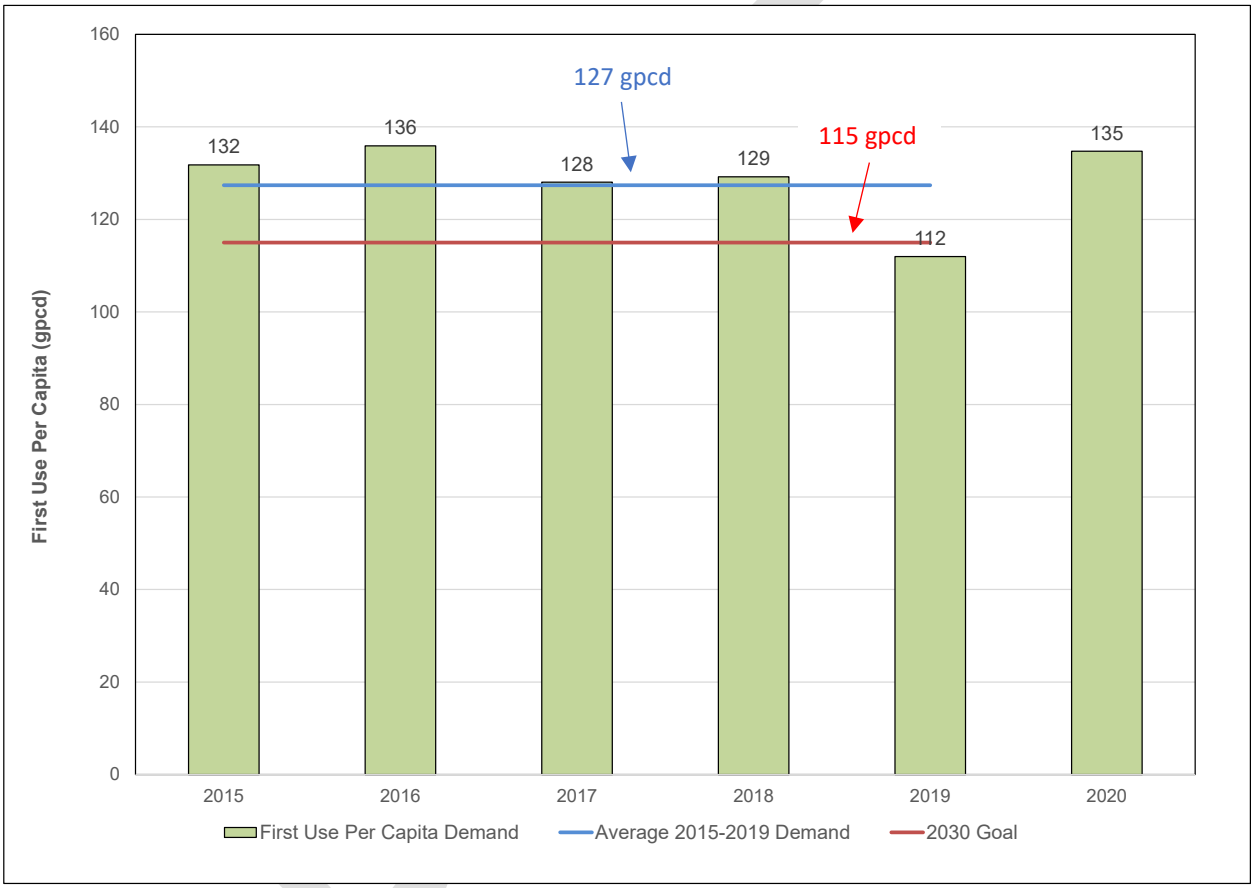

Figure 11: Targeted Per Capita Water Demand Relative to Historical Water Demands

4.3 Water Efficiency, Land Use Planning, and Water Supply Planning

An important component to water efficiency is obtaining long-term water savings that reduce water demands. Erie is a growing community and will need to acquire additional water supplies to meet its growing demands. Erie closely monitors its current population and water use along with projected population and water use trends to determine when additional water supplies should be acquired. Long-term reductions in annual demands can defer the timing of which new supplies are needed. Water Supply Master Plan updates in the

[17] The historical per capita demands presented in Figure 10, reflect metering adjustments made at the WTF starting in 2015. These adjustments provide an improved depiction of effluent leaving the WTF for distribution; and will be applied in the future when reporting WTF production. To maintain consistency, all remaining historical demand time-series figures in this document rely on pre-2015 metering methodology.

future could incorporate projected water savings achieved through water efficiency efforts (beyond observed existing historical levels), however, additional tracking of water efficiency efforts and historical demand data is needed to generate a level of confidence that such an approach would be beneficial and provide sufficiently reliable results.

New efforts to integrate water efficiency with land use planning will significantly contribute to the goal of 10% water savings in 10 years and will also help set the stage for achieving additional savings beyond 2030. The following principles, developed by Erie staff, serve as a tool to guide the development of the new efficiency and land use strategies identified in Section 5. These principles will be revisited in the future as additional efforts are made to further integrate water and land use planning.

Principles for Integration of Water Efficiency and Land Use Planning

- Leadership from the Town's Board of Trustees and staff is fundamental to integrating water efficiency and land use planning. This integration will require interdepartmental dialogue, collaboration, and education on the importance of this linkage among Erie staff and Town leadership to ensure success.

- The proactive approach of incorporating water efficiency into land use planning and the development review process provides an opportunity for cost savings and efficiencies by reducing the need for retroactive efforts (e.g., conversion of turf to low water use landscapes, indoor water use retrofits, etc.) to achieve water savings.

- An appropriate balance of regulations, incentives, and education need to be developed to help integrate water and land use planning. From a regulatory standpoint, the Town will focus on areas that are within its jurisdiction (e.g., public spaces the Town owns and the commercial sector) to enforce while also respecting individual community resident preferences within reason. Low water use landscapes coupled with water efficient practices in the commercial sector and public spaces can serve as a gateway to further increase awareness and promote water efficiency throughout the community.

- Town leadership and staff will need to diligently assure that water efficiency policies, developed through the Comprehensive Plan update and other policy efforts, are appropriately incorporated into the UDC,



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Parks and Open Space Specifications, and other regulatory efforts to ensure that the desired such policy is directly assisting the adopted goals.

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5.0 Water Efficiency Activities

Erie plans to implement a diverse menu of services for water efficiency activities to achieve the water efficiency goals and benefits discussed in Section 3. These activities are summarized in Table E-1 in the Executive Summary and are discussed in further depth below. The activities were selected by Erie staff based on the following qualifications: technically feasible, environmentally, and economically impactful, practical to implement from a staff resource perspective, politically and publicly acceptable, and those that provide a high probability of success and complementary to each other.[18] Estimated water savings and preliminary cost estimates to implement the activities are provided in the Implementation Plan in Section 5.

One of the main goals of Erie's Water Efficiency program is to:
Achieve a 10% water savings in 10 years "10 in 10."

5.1 Foundational Activities

The foundational activities focus on system operations and water efficiencies that are under Erie's direct control.

Improve Metering, Demand Collection, Billing Systems and Rates

Metering of source water – Erie meters WTF production, diversions of its ditch water, reuse water, and deliveries of CBT and Windy Gap water. Since 2008, Erie has worked to improve monitoring of its reservoirs and conveyance of source water. All water lines that service the WTF are currently metered. Additional meters have been added recently as part of the WTF expansion, along with testing and meter calibration. This improves the accuracy of metered water production at the WTF. Erie plans to incorporate meter testing and calibration at the WTF as a standard practice and will continue to make improvements to source metering as technology improves and financial resources are available.



Meter service connections and replacement of meters – Erie began to replace meters that were older than 10 to 12 years in 2005 and fully outfitted the service area with remote-read meters (AMR) in 2007/2008. In 2016, the Town started to replace AMR meters with smart meters or advanced metering infrastructure (AMI) meters. These meters enable two-way communication between the customer and the Town. Through a smartphone

[18] Erie staff conducted a screening process to address the effectiveness of the current water efficiency activities and identify new activities for implementation. This process consisted of an initial screening with the Sustainability & Water Conservation Specialist to identify activities for further refinement, two workshops with Erie staff to further refine the list of identified activities and two phone calls among Erie planning, engineering, and water resources staff to discuss the integration of water efficiency and land use planning. Participating staff also had the opportunity to review the draft Plan and provide additional input on each selected activity.

App, EyeOnWater, customers can download their water use daily and the Town is able to notify the customer of leaks if water use increases at an unusual rate over a short period of time. As of spring 2021, over 60% of the service area has been equipped with smart meters. All service connections are anticipated to be outfitted with smart meters within the next 3 to 4 years. All new-build residential homes automatically have a new smart meter installed at the build phase.

Water accounting – As discussed in Section 3.2, Erie currently tracks water use by the following customer types: Single-family, Multi-family, Townhomes, Commercial, Irrigation, Construction, Town of Erie Commercial, and Town of Erie Irrigation. The Town increased the number of customer types in their billing system in 2009 and 2015. This enables the Town to monitor customers water use at a much higher resolution, improving Erie's ability to better understand historical water use trends over time which ultimately can improve the Town's ability to monitor water efficiency programs and forecast future water demands once sufficient historical data has been obtained.

Water rates and billing – Erie has metered and billed customers based on the amount of water they have used since 1972. This has proven to be effective in making customers financially sensitive to the amount of water they use and consequently increased customers' awareness of water consumption. Volume billing coupled with Erie's tiered block rate structure discourages using wasteful water used while also providing a financial incentive to use water efficiently. Erie plans to continue billing customers monthly based on the volume of water used.

Erie uses a four-tiered block rate structure single family and townhomes and routinely conducts water rate analyses to identify modifications that could be made to further encourage efficient water use while also ensuring sufficient revenue for the Town. Table 4 below shows Erie's current residential volumetric water rates by tier for 2021. Commercial and irrigation meters are charged $6.57 and $7.70 per 1,000 gallons, respectively. The commercial sector is continuing to develop and diversify which may eventually necessitate the evaluation of whether this sector should be divided into different categories with different volumetric billing rates. A tiered rate structure supporting water efficiency for commercial properties may be considered in the future.

Table 4: 2021 Residential Water Rates

Tier	Volume of Use	Single Family and Townhomes	Multi-Family
Tier 1	First 5,000 gallons	$5.53	$5.53
Tier 2	Next 10,000 gallons	$6.92	$5.53
Tier 3	Next 10,000 gallons	$10.35	$5.53
Tier 4	Over 25,000 gallons	$15.49	$5.53

Water rate increases allow the Town to acquire new water and maintain essential infrastructure as the cost of this valuable resource continues to increase. The Town strives to manage water rate increases in a manner that provides as little economic burden to customers as possible. Increases to water rates are gradual, avoiding unforeseen rapid increases. Erie also strives to find an equitable balance across the economic spectrum of its customer base, where low-income households are not carrying an unjust financial burden.

System Water Loss Management and Control

Analysis of non-revenue water – Erie annually accounts for non-revenue water. The Town recently participated in the Colorado Water Loss Initiative (CWLI) workshops and has incorporated the workshop recommendations to improve its non-revenue water accounting using the AWWA M36 audit procedures. Erie plans on monitoring

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a series of AWWA M36 metrics, including the Infrastructure Leakage Index (ILI)[19] and non-revenue water as a percent of volume supplies, on an annual basis.

Leakage detection, repair, and line replacement – Erie's valve inspection and sonic leak detection program has been useful in detecting leaks. Valves are exercised at least every two years and 30% of the system is inspected through sonic leak detection technology on an annual basis. Most of Erie's distribution system is relatively new, requiring minimal repair. Residents may report water leaks by calling: 303-926-2872.

Reuse Program

Reuse Water – Erie has been using Windy Gap reuse water both directly for non-potable irrigation and for augmentation purposes; See Section 2.2. The development of the horizontal Well Project, in conjunction with a new water treatment facility, will expand Erie's ability to use Windy Gap reuse credits. Reuse options will include: 1) expansion of direct non-potable systems, 2) exchanges (e.g., Vista Ridge Golf Course exchange), 3) augmentation of out-priority well depletions, and 4) pumping reuse water stored in the 1,000 acre-feet NWRF storage facility for treatment at the new water treatment plant. Erie is in the process of evaluating these options and intends to optimize use of its Windy Gap return flows coinciding with Goal No. 3 of this Water Efficiency Plan (Section 4).

Recycling backwash water at the WTF – Erie recycles its backwash water from the WTF with exception to when taste and odor issues are of concern. The recycled water is used for irrigation purposes at the WTF and at Erie Commons neighborhood.

Reuse water for flushing/cleaning of wastewater treatment facilities – Erie began to use treated wastewater for flushing and cleaning of its Southern Reclamation Facility in 2007; This facility was taken offline in 2011. Erie's current NWRF uses reuse water for flushing and cleaning of the plant, saving about 350 acre-feet of first-use water per year.



Erie's Wastewater Reclamation Facility

[19] The ILI is a performance indicator of real (physical) water loss from the supply network of water distribution systems.

Integrate Water Efficiency and Land Use Planning Activities

Water efficiency coordination meetings – Erie staff plan to hold two meetings per year among water resources and engineering departments, Parks and Recreation, Public Works, and the Planning Departments to enhance understanding of roles, improve coordination, and review latest developments related to water. This will include water efficiency efforts including education, annual and seasonal water demands, updates to regulations, policy, efforts related to water and land use planning, population estimates, and other relevant data sharing, operations, parks, etc. The Sustainability and Water Conservation Specialist will take the lead in facilitation of these meetings.

Water efficiency and land use planning training – The nexus of sustainable water planning, water efficiency planning, and land use planning is a budding field within Colorado. There are a variety of technical resources now currently available to support local government in this endeavor. Erie's Sustainability & Water Conservation Specialist will take the lead in coordinating training opportunities for Erie leadership and staff.[20]



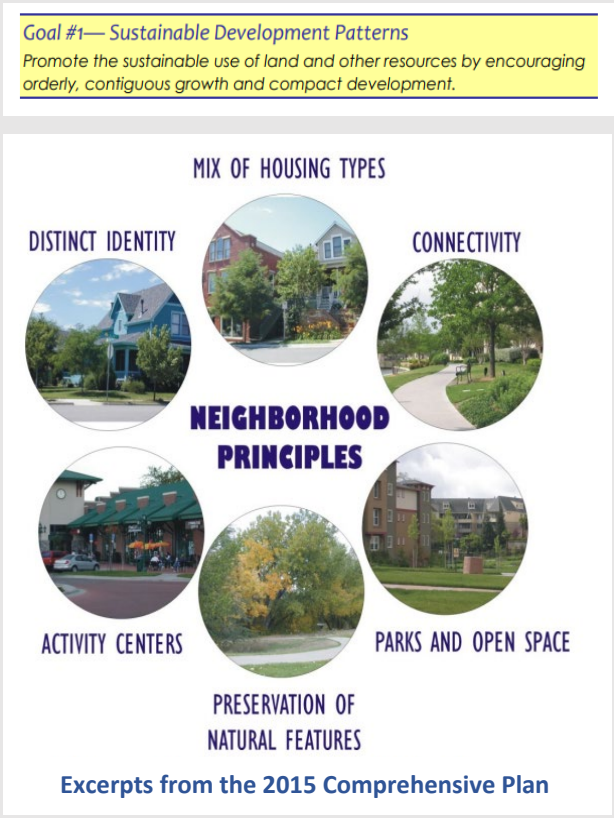
Information and data sharing between planning and water resources – Coordination and information sharing is critical among Erie's multiple departments to capitalize on efficiencies and ensuring a harmonious strategy. Areas for better data and information transfer among departments will be identified during the water and land use planning meetings. Population and projected growth is an example of data used by multiple departments for operational and planning efforts. The Economic Development Department currently monitors current population, business development, and estimates of future population growth on an annual basis using statistical methods. New growth projections will be developed for the 2021 Comprehensive Plan Update. Efforts will be made to assure that these growth projections will be incorporated into future planning efforts (e.g., Water Master Plan, Water Efficiency Plan, etc.) at an appropriate level. Information and data sharing among Town departments will be addressed during the biannual water efficiency coordination meetings.

[20] For example, the Babbitt Center for Land and Water Policy and the Sonoran Institute, funded by the CWCB, facilitates a multiday Growing Water Smart workshop that educates, trains, and assists communities to effectively integrate land and water planning and management. Also the American Public Works Association offers a sustainability training to help infrastructure stakeholder implement more sustainable projects.

Align water billing categories with zoning categories – Erie plans to consider how historical billing demand data and land use zoning categories could be modified to best facilitate the collection of water demand data by land use type cover/zoning. This will require an assessment of available data and how it is categorized by customer billing type and land use/zoning type.[21] These data could possibly be used in future demand forecasts based on land use type.

Include water efficiency in Comprehensive Plan update – Erie's current 2015 Comprehensive Master Plan includes a designated growth management service area which defines the Town's boundaries under which the Town plans to grow and provide public services. The Comprehensive Plan also includes a variety of mechanisms that provide water efficiency benefits. Guiding principles within the Plan call for stewardship of the natural environment, preserving native plant habitat on protected lands, a balanced land use mix, providing infrastructure, and public services (including water) efficiently, and equitably. The Plan also encourages cohesive neighborhoods offering a variety of housing types throughout Erie. However, the Comprehensive Plan does not directly address water efficiency or provide a direct linkage between water planning and land use development.

Erie is updating their Comprehensive Plan in 2021 and anticipates incorporating water efficiency. This may entail the inclusion of water in the Comprehensive Plan's goals and strategies that promote water efficiency and compact development in certain areas.[22] Efforts will also be made to educate the Town Board, staff, and the community on the benefits of water efficiency and land use planning during the community and stakeholder engagement process. This education and buy-in is essential to ensuring that water efficiency is not only incorporated into the Comprehensive Plan in a meaningful way, but thoughtfully executed. The educational effort will be spear-headed by the Sustainability and Water Conservation Specialist. Following the Comprehensive Plan update, efforts will be needed by Town staff to ensure that the water efficiency policy developed in the Comprehensive Plan is incorporated into regulatory and operational practices.



Excerpts from the 2015 Comprehensive Plan

[21] One approach is a Geographic Information System (GIS) exercise where the zoning type is added to individual billing accounts in tabular format. The water use per zoning category could then be summed and evaluated to identify any patterns. Such data could possibly inform future planning.

[22] Research has indicated that compact development can reduce water use by as much as 30 percent primarily because such development generally results in less outdoor watering (Northwest Colorado Council of Government, 2020). Strategies that may be considered which promote compact development include designated priority growth areas, designated infill areas, designated areas for cluster or conservation development, and designated areas for mixed-use and diverse housing types.

Water dedication requirement and tap fees – Erie has a water dedication requirement where developers are required to pay a water dedication fee representative of the anticipated water demand for the proposed development.[23] The Engineering Division reviews the water demand estimates for each new development as a part of the Town's formal development process to ensure that the fee is representative of the anticipated water use. Erie's taps fees are based on meter size.

In 2020, Erie began working with a developer that is proposing a high-density development with relatively little outdoor irrigable area. Alternative water dedication and tap fee structures distinguishing outdoor from indoor use coupled with factors including the number of bedrooms (as opposed to just Single-family and Multi-family categories) are being considered. It is anticipated that this study will result in a new categorical option(s) for both tap and water dedication fees; the tap and water dedication fee will be less where and when it can be adequately demonstrated that the proposed development will use less water.

Dedicated water professional review of new development applications – Erie's development review process requires the review of development applications by multiple departments, however, traditionally has not included sustainability and water conservation staff. The Sustainability & Water Conservation Specialist will be included in this group of reviewers providing opportunity to include recommendations on how water efficiency can best be addressed under new development applications. The UDC will be updated to accommodate this.

Post construction and post occupancy – Erie currently relies on the landscape architect of new developments to conduct post construction and occupancy inspections. Additional investment and Town staff would be needed to conduct, document, and enforce compliance. During the UDC update, the Sustainability and Water Conservation Specialist will lead discussions on how post construction and post occupancy inspections can be improved and whether there are additional Town resources available to enable such improvement. The targeted outcome from these discussions are a series of recommendations that can feasibly be implemented. Such recommendations may be incorporated into future updates of appropriate specifications and regulations.



5.2 Targeted Technical Assistance and Incentives

These activities rely on indoor and outdoor technology advancements as well as behavioral change practices to reduce water use.

Irrigation Efficiency and Landscaping on Town Parks and Facilities

Erie's Parks and Recreation Department has an excellent track record in efficient irrigation. Town- owned parks and open space are given appropriate amounts of water needed to meet daily and seasonal requirements. This

[23] This applies to all land use types, with exception to parks and open space, where a fee or water rights may be accepted for water dedication purposes.

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precise watering practice is accomplished through a variety of water efficient technologies and irrigation practices discussed below.

Billing of Parks and Recreation Department – Erie's parks are metered and charged by the Town for all water use. This provides a financial incentive for the Parks and Recreation Department to be water efficient.

Smart irrigation controllers – Erie is in the process of installing smart irrigation controllers at all Town parks. This will enable irrigation to be controlled remotely from one centralized location and helps to avoid over irrigation. The amount of water applied to each irrigation zone will be based on site-specific parameters (e.g., slope, soil, etc.). As of summer 2020, approximately 1/3 of the smart irrigation controllers have been installed (8 are online). The Parks and Recreation Department is targeting the spring of 2022 for the installation of the remainder of the controllers (16 more controllers).



Moisture sensors and ET controllers at all Town parks – Moisture sensors are installed at all Town parks. These sensors detect precipitation and shut off the irrigation system if it is raining.

Efficient irrigation practices – Irrigation is scheduled from 10 p.m. to 7 a.m. to avoid high evaporation rates during the day and the cycle soak method is used to irrigate turf. The irrigation systems are checked every 7 to 10 days to ensure that there are no wasteful leaks, and the systems are functioning as intended. The landscape is also maintained to optimize productivity and reduce water use. This optimization includes aeration, soil conditioners, mowing at a responsible height, and other water efficient best management practices.

Low water use landscaping and turf replacement on Town parks and facilities – Erie has established low water use landscapes and drought resistant vegetation on many of the parks and Town facilities. Some of the more notable Town Facility landscapes include Community Park, NWRF, and Town Hall.[24] The Town plans to continue to renovate select landscape beds in parks with lower maintenance and drought tolerant plants. Some of these

[24] The Parks Division rehabilitated ten landscape beds throughout the parks system in 2020 to lower maintenance and water usage plants. Two were installed utilizing Plant Select plants.

renovations will also serve as demonstration gardens, informing the public of low water use vegetation. This includes the phase 3 construction of Erie Community Park in the fall of 2022.

Menu of Fixture and Rebate Options



Town of Erie Water Efficiency Rebates

Erie has a long history of providing rebates for more water efficient fixture and appliances. This "menu of rebate options" provides customers an incentive to purchase more water efficient fixtures and appliances. Water savings can many times be embedded in the simple retrofits to new devices without requiring customers to alter their behavior. The Town administers all of these rebates through their Sustainability Division and also partners with the non-profit based in Boulder Colorado, Resource Central (RC) to offer direct savings and cost-share models for others such as smart control clocks and rain sensors. These are summarized below.

Rebate and fixture program administered by Erie – The bullets below list the rebates the Town is currently offering and plans to continue. All fixtures and appliances must be EPA WaterSense labeled and must be a qualifying model on the Energy Star certified list.

- Clothes Washers – Rebates of $50 are offered and limited to one per household.
- Toilets – Rebates of $50 per toilet are offered. There is a limit of 2 toilets per household and be 1.1 gallons per flush (gpf) or less. If dual flush, both flushes must be 1.1 gpf or less.
- Showerheads – Rebates of $10 per showerhead are offered. There is a limit of 2 showerheads per household at 1.5 gallons per minute or less.
- Rain barrels – Rebates of $50 per each barrel with a limit of two rain barrels per household.
- High efficiency sprinkler nozzles – Rebates per nozzle are $2 with a limit of 24 nozzles. An irrigation assessment by RC is required prior to retrofits.
- Drip irrigation equipment – This may include drip conversion kits, drip emitters, pressure reducer and y-screen, ¼ distribution line, connection fittings, spigot timer, drip valve 15-40 psi. Rebates of 50% with a $50 limit are offered.

Partner with Resource Central on fixtures, discounts, and services – The bullets below list the programs and direct rebates the Town is offering in partnering with RC:

- Garden In A Box – Selection of professionally designed affordable do-it-yourself garden kits containing low water use perennial plants. The kits come with starter plants, a professionally developed Plant and Care Guide, and plant-by-number maps. Residents receive a $25 cost-share discount on each water-saving garden they choose. Turf replacement is highly encouraged through this program and water-savings are deemed under this assumption.
- Slow the Flow sprinkler consultations – Residents may sign up for a free consultation with a trained conservation technician who does a visual inspection, measures how much water is coming out of the

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sprinkler system, tests how uniform water covers the intended area and soil type, checks soil type, root depth and sprinkler lines and heads, adjusts head types and spacing, and determines suitable pressures for the irrigation system. Customers also receive a customized watering schedule, learn do-it-yourself sprinkler maintenance, and tips on make the sprinkler system more efficient.

- Smart irrigation control clock direct installations – Residents may receive a $80 to $90 cost-share discount on smart controllers which gathers weather data via the resident's wifi signal and adjusts the watering schedule accordingly. To qualify, residents must have recently received a Slow the Flow sprinkler consultation within the last three years.

- Automated rain sensor direct installations – Residents may receive a $60 cost-share discount on automated rain sensors which shut the irrigation system off if rain is detected. To qualify residents must have recently received a Slow the Flow sprinkler consultation within the last three years.

- Large property irrigation audits – The Town offers free outdoor audits to large properties, partnering with RC and Northern Water in conducting the audits. This program was revamped in 2020 and awarded in the Green Business & HOA Certification Program managed and recognized by the town's Sustainability Division.

Possible new options – Additional options that the Town has implemented in the past and may be revisited include the following:

- Pre-rinse spray valves – Erie provided pre-rinse spray valves to restaurants and commercial businesses in the past, but did not receive sufficient participation to continue. As the commercial sector develops, the Town may revisit this water-savings program and implement it through the Green Business Certification Program. Boulder County businesses can currently receive these retrofits through the Partners in Clean Energy (PACE) program for free.

- Indoor audits – Erie partnered with RC to provide indoor water inspections that evaluated fixtures, appliances, and indoor water use. The program also offered the installation of two aerators and one low-flow showerhead during the in-home visit. From 2012 to 2013, an average of 63 audits were provided per year. This program is something the Town may revisit once additional resources are identified.



Evaluate turf replacement rebate program – A turf replacement program would provide incentives to residents and commercial property owners to replace their existing turf with lower water using landscaping. This could provide water savings and assist with providing Erie with a consistent low water use landscaping look. However, there are implementation and financial challenges to ensuring a successful program. Erie plans to identify how a turf replacement program can be successfully implemented addressing the following: 1) educational outreach and Town activities (e.g., review of designs and inspection) necessary to administer such a program, 2) necessary staff and financial resources, 3) essential items to ensure success, 4) level of financial compensation needed to make the rebate attractive to the home owner, 5) level of follow up needed to ensure that the essential elements to achieve such savings (e.g., soil preparation, proper irrigation design, low water

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use vegetation and proper weed control) are incorporated into the design and installed, 6) lessons learned from other turf replacement programs and 7) possible stakeholder engagement with the landscaping community, residents, Northern Water and Town staff to better understand challenges and opportunities.

Customer Feedback on Water Use

Informative and simple water bill – Erie bills its customers based on the volume of water used. The water bill shows customers the amount of water used per month relative to the amount of water previously used. This enables customers to compare their water use monthly. The water bill also provides a phone number for customers to call for questions concerning their bill. Many times, the mailed water bill is also accompanied with educational resources regarding water efficiency and other environmentally sustainability programs.

EyeOnWater App – As of 2015, Erie customers have the option to download an EyeOnWater App onto their phone. This application enables customers to monitor their water use activities and gain a better understanding of the water they consume throughout the month. Customers can also have alerts sent via email or text if water use spikes indicating a potential leak. This empowers the customer to address the leak quickly avoiding a high-water bill and water losses. In the first five years, approximately 20% of Erie's customers have downloaded this App. The Town plans to increase usage of the App by including relevant information and cross-promoting rebates and programs through this platform.



EyeOnWater Account

Coordination with HOAs, Commercial Sector and Land Use Planning

Green Business and HOA Certification Program – In 2020, Erie initiated the Green HOA Certification Program. This certification program promotes a set of "green criteria" that is awarded through a point system. The program also includes a scoring system for other sustainability sectors awarding HOAs that adopt more sustainable, environmentally friendly practices. The HOAs are recognized and celebrated on the town and Erie.Earth websites[25] as well as through a framed certificate and window sticker that HOAs can feature in their common spaces. The Town, in partnership with the Chamber of Commerce, also celebrates these HOAs during an annual recognition ceremony attended by the mayor and town staff. The green criteria address water and energy efficiency, finance, governance, mobility and connectivity, and waste management Water "green criteria" considers the use of smart irrigation controllers on irrigated HOA open spaces, use of the cycle and soak irrigation techniques, and the promotion of water efficiency rebate and program participation among its residents. The Town also has a Green Business Certification Program which recognizes Town businesses that implement environmentally friendly green practices. Information provided to HOAs and businesses on water efficient landscapes include: information from the Colorado Native Landscape Coalition, sharing Northern Water's sign templates that communicate sustainable management methods and aesthetics, providing contact information for the Colorado State University Extension as a resource, providing list of third-party certifications for landscape management, and promoting/offering tours to Northern Water's Conservation Gardens.

[25] Addresses for website: Town of Erie website: https://www.erieco.gov/ and Earth.Earth website: https://erie.earth/

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Encourage Northern Water HOA turf and replacement grant opportunities – Northern offers landscape consultations for public facilities and open spaces, schools, businesses, HOAs, etc. The 90-minute landscape consultations include plant selection, turf maintenance, soil management and more. Grant opportunities are also available to these entities that want to develop new or redeveloped water-efficient landscapes that are designed to use substantially less water than traditional landscapes and include at least 50 percent plant coverage when mature. Erie currently promotes these programs through its HOA Green certification program.

Northern Water landscaper certification program – Northern Water provides a landscaper certification program where landscape professionals have the opportunity in taking an efficient irrigation training class. A certification exam is provided at the end of the class. Upon passing the exam, the landscape professionals are put on the certification list. HOAs are given additional points in the Green HOA Certification Program for using a certified landscaper. Erie irrigation staff also plan to participate in the training, becoming certified and promoting the program among HOAs and other landscape managers.

Explore partnership opportunities with commercial sector – Erie plans to work with the commercial sector to identify areas in how the Town can most effectively promote/support efficient water use.[26]

Address obstacles and provide guidance on landscape conversions – The Town currently does not have a process nor provide guidance to residents interested in converting turf to low water-use landscaping. While there is a permitting process for the replacement of trees and shrubs, the UDC and Standards and Specification for Parks and Recreation Construction does not address landscape conversions to low water use landscape. Additionally, HOA bylaws can inaccurately communicate that it may be illegal to change landscapes away from the traditional Kentucky Bluegrass non-native turfs. Erie plans to work with HOAs to better understand how these obstacles can be avoided and in identifying a process that would help guide residents through the landscaping process. Where applicable, such processes will be incorporated into the UDC update. Technical resources that assist the resident in designing and installing water efficient landscapes will also be explored. A report or flier may also be developed to guide Town staff identifying the process,

[26] A large portion of Erie's commercial business are very small with nearly 70% of Erie's commercial businesses use a residential ¾ meter tap. As the commercial sector continues to grow, larger businesses may move in, therefore increase the amount of larger taps. Water efficiency outreach and methods for achieving savings may be different for the small business owners compared to the larger commercial businesses.

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Town departments/staff roles involved, costs, timeline, and content necessary to complete an approved landscape transition.

Incentives and tools inquiry for the development community – A variety of methods may be used to encourage water efficiency at the development and construction phase of new communities. Erie plans to conduct an outreach effort and survey among the development community to explore an array of tools and resources that would be most useful in encouraging water efficiency during the application, design, and construction phase. Examples of such tools and resources to be considered include the development of subdivision water efficiency plans, low water use demonstration homes that are advertised as such, installation of dual outdoor and indoor water meters, low water use landscaping of the strip of land between the sidewalk and street common among many Erie subdivisions, etc. The development community will also be asked to participate as a third-party reviewer of the UDC update.

5.3 Policy, Regulations, and Ordinances

The following regulations enforce and help promote water efficiency throughout the community.

Water Wasting Ordinance and Watering Schedule

Water wasting ordinance – In 2002, Erie adopted Town Ordinance 8-1-11 prohibiting the wasting of water, which is defined as "any use of water that is not applied to a beneficial use". This includes allowing water intended for irrigation or other purposes to pool in an area and/ or run onto streets and sidewalks or into a drainage facility. The ordinance further specifies that all leaks should be repaired within 10 days of discovery. All water that is lost through the leak (on the user side) will be charged to the user. Written notice of noncompliance shall be delivered to the water user. If the water user does not appropriately address the water wasting, the user may be subject to a fine of up to $300 in any given month or their water services may be terminated. Considering that nearly two decades have passed since the adoption of this ordinance, the water wasting ordinance will be updated in the second quarter of 2021 to better address current and future concerns and conditions. The current ordinance's approach to beneficial use, timing of leak repairs, and enforcement will be visited and updated accordingly.

Time of day watering – Erie asks residents to voluntarily limit outdoor water irrigation to between 8 p.m. and 8 a.m. to avoid losses incurred during the day from evaporation. Community outreach on this voluntary restriction will be increased to ensure that residents are aware of this request and why it is essential to stewardship. This voluntary restriction may become mandatory under water shortage and dry conditions, as outlined in Erie's 2021 Drought and Water Supply Shortage Plan.

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Frequency of watering – Erie casks residents to voluntarily limit outdoor watering to three times a week. This aligns with the water-efficient cycle-and-soak watering schedules. Community outreach will increase to ensure that residents are aware of this limit and why it is an essential component to stewardship. During water shortages and drought, this voluntary limit may become mandatory and lessen in frequency per Erie's 2021 Drought and Water Supply Shortage Plan.

Water Efficiency Policy, Regulations, and Land Use Planning

Review of policies – Erie has a long history of policy that incorporates water efficiency and water savings measures into a variety of planning documents and landscape code.[27] Examples of such code include low water use landscaping designs on parks, large HOA landscapes, and medians;[28] irrigation system design;[29] median landscaping,[30] and landscaping that encourages pollinators.[31] Erie plans to conduct a thorough review of the Town's policy and planning documents during the Water & Land Use training to better understand Erie's existing body of policy specific to water, water efficiency, and land use planning. Barriers to water efficiency and policy gaps will also be identified. This will be informative to the 2021 Comprehensive Plan update which can be used to further integrate policy promoting water efficiency and land use.

Planning and landscaping in the UDC – Erie's UDC includes a variety of mechanisms that encourage water efficiency. For instance, when community subdivisions are being planned, a certain amount of higher density development (e.g., smaller lots and multi-family housing) is required per development area. This required higher density housing is directly proportionate to the amount of acreage proposed for development. The UDC also addresses water efficiency in landscape design requiring that all "landscape improvements shall be designed with water efficiency as a major goal".[32] The UDC further addresses appropriate turf selection, mulch, plant material, soils, efficient irrigation systems, etc.

[27] Some of these efforts are documented in Erie's previous water conservation plans
[28] Source: Town of Erie Water Conservation Plan. 2014.
[29] Source: Town of Erie Water Conservation Plan. 2014.
[30] Source: Median Policy adopted in November 2020.
[31] Source: Resolution 19-299 "Promoting the use of native landscaping and low-irrigation practices"
[32] Source: Title 10 – UDC. Erie, 2019

Update to the UDC – Erie has completed the first phase of the UDC update in 2020. This first phase focused on streamlining the development review processes to minimize planned unit development (PUD) modifications and integrate community builder needs into the code. Phase 2 will be initiated in 2021 and will include mechanisms to improve water efficiency. This update will be occurring alongside the update of the Comprehensive Plan, providing the opportunity to integrate water efficiency policy (developed through the Comprehensive Plan update) at the regulatory level. The UDC update also provides the opportunity to examine and address any barriers to water efficiency and further enhance mechanisms to improve water efficiency. Areas identified in this Water Efficiency Plan that may be beneficial to visit at a regulatory and/or at a policy level are highlighted below. Many of these are addressed in more detail throughout this document.

- Development statement(s) of purpose and intent that commits to water efficiency in the UDC.
- Improve landscaping code in UDC to be more water efficient.
- Develop water efficiency requirements customized to different land use types.
- Address obstacles and provide guidance on landscape conversions.
- Documentation of outdoor water demands on residential parcel basis.



- Regulatory measures designed to improve irrigation efficiency on public spaces and in the commercial sector to set an example, promoting water efficiency within the residential sector.
- Improve establishment of vegetation on newly developed open space.
- Require water efficient practices to be incorporated during the design and construction phases of development.

Standards and Specifications for Parks and Recreation Construction – Erie requires, in the Standards and Specifications for Parks and Recreation Construction Manual, that all installed irrigation systems be designed to provide head-to-head coverage and the spray radius of the head should be limited to areas only intended to be watered. Irrigation heads should not overspray walkways, pavements, or other hard surfaces. Design plans and specifications for all new irrigation systems on parks/recreational facilities must be submitted to Erie for review and approval. The Standards and Specifications for Parks and Recreation Construction are scheduled to be updated in 2022. During this update any barriers to water efficiency will be addressed and modifications to improve water efficiency will be considered for incorporation into the regulations.

Building code influencing indoor and outdoor water use – Erie's building code is routinely updated. During the next update, Erie will consider including water efficiency standards for indoor and outdoor water use. These standards will either correspond to existing federal and state standards and/or require a higher level of efficiency where appropriate based on available technologies. These standards could be independent of Water Sense recommendations, giving Erie the local ability to enforce water efficiency standards in case the Water Sense standards are lessened.

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Establishment of vegetation on open space lands – Many of Erie's newly developed open space lands require temporary irrigation to initially establish vegetation. However, these open space lands are often not properly designed and sufficiently maintained for the establishment of healthy vegetation, resulting in dissatisfaction among HOAs, residents and developers. In some cases, residents have expressed the desire to continue to irrigate open space to maintain a "green healthy appearance" after the designated temporary irrigation window for initial vegetation establishment has passed. This results in the unintended irrigation of open space on lands that had not received a dedication requirement or tap fee during the planning development phase. This is expensive to the landowner due to increased peak-use (Tier 4 billing rate) during the summer when long-term irrigation was never intended. Erie is in the process of addressing this issue through considering the variety of mechanisms below.

- Address issuances of water dedication fees where permanent irrigation may be allowed in some cases.
- Develop agreements where Parks and Recreation takes over management of open space from the developer at an earlier time and plays a role in properly establishing healthy vegetation.
- Update Erie's UDC code and Standards and Specifications for Parks and Recreation Construction requiring the design of open space to consist of native vegetation that requires very little or no water for establishment.
- Consider changing water dedication requirements for open space if the developer can sufficiently demonstrate that they will be installing lower water use landscaping using current best management practices.

Education and compliance for high water commercial users on an as needed basis – As the commercial sector in Erie continues to develop, certain industries require more water than others to perform essential functions and there is very little room for improving efficiencies. Established businesses such as grocery stores, breweries and cideries will always require a certain amount of water to create and sell their products. New businesses such as car washes, nurseries, and hemp growers and processors use a proportionally high amount of water as well. Erie will consider a spectrum of technical assistance/incentives and regulatory measures to ensure best

management water efficient practices are developed and maintained on a case-by-case basis. For example, like neighboring communities, a regulation may be considered requiring all new car washes to have a water recycling system.

5.4 Education Program

Erie initiated a program to educate customers on water supply, water rates, and the importance of water conservation in 2002. This program has been dynamic using a variety of media/venues to distribute information to customers. In the future, the community engagement and communications will be designed by the Sustainability & Water Conservation staff and Communications staff. The following guiding principles will be considered in further developing communication strategies and activities.[33]



- Foster a Town culture of water efficiency at the leadership and staff levels – Leadership understands that water efficiency is integral to a sustainable water future (e.g., population is only one factor to consider when discussing growth) and Erie staff will incorporate this principle at an operational level. Internal intradepartmental efforts are needed to educate staff and leadership on current water efficiency activities being implemented and why. These types of activities have begun with high-efficiency toilet upgrades throughout Town facilities and a long-standing water conservation campaign managed by the Parks and Recreation Department at the Erie Community Center.

- Create community buy-in – Water efficiency is successfully realized when customers understand why their water is a valuable natural resource and how they can actively participate in the Town's adopted goals. Many times, a customer needs to feel a personal connection to the resource and desired outcomes. In consideration of well-established community based social marketing techniques, efforts will be made to make an emotional connection with the community and foster inclusivity by highlighting the value of water and its connection to a sustainable community and the many benefits water efficiency provides.

- Demonstrate Town accountability and leadership – Erie has always led by example with water efficiency and continues to take a strong leadership role in planning for future development wisely and using water efficiently as it grows; Erie government leads by example. Erie will routinely inform the public of the Town's water efficiency efforts and emphasize its leadership in promoting water efficiency. These robust communication efforts will continue to build and maintain a sustainable community. Town communications will also emphasize messaging about the personal and collective responsibility needed to realize a more sustainable and resilient future. This desired future will require both the Town's expert ability to acquire and manage water and the customers' ability to use water in a responsible manner; each plays a very important role.

- Complement regulations and activities – The education program will place strong emphasis on promoting the Town's water efficiency activities detailed in Section 5. The Implementation Plan (Table 6) provides public outreach actions for each activity.

- Leverage existing resources – Beneficial partnerships, effective communication channels, and existing events that offer opportunities for interacting with the public will be leveraged to optimize public

[33] The guiding principles and educational activities were developed from input provided by Erie staff. Staff were asked to identify the type of efficiency messages/information that should be conveyed to the public, who the education program should target and how the messaging should be done.

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education opportunities. Partnerships could include RC, Colorado WaterWise (Live Like You Love It Campaign), E Movement[34], and Northern Water conservation programs.

As discussed above, the education outreach needed to support the water efficiency activities are summarized in the Implementation Plan (Table 6). Outreach efforts will be customized to different groups with the highest priority groups being Erie staff and Town leadership, development community, HOAs, new residents, schools, and students of all ages. Diversity, equity, and inclusion considering audiences of a variety of social, economic, ethnic, age, and sexual orientations will be carefully considered for each campaign. All of these groups often serve as valuable ambassadors of Town initiatives and help promote to the general public. The public will also be a targeted group when it comes to general messaging and advertising the menu of rebate options.

Erie leadership and staff – Strong leadership can be shown through actionable and consistent messaging of adopted values and strategies to use water most efficiently. As described above, Erie staff and leadership will be educated on water efficiency and included in the implementation planning process of the Plan. Focus will also be placed on demonstrating Town leadership in water efficiency through conveying the investment and activities Erie staff are engaged in to save water through the outreach platforms listed in Table 5.

Development community and new residents – As Erie continues to integrate water efficiency into land use planning, it will be critical to integrate the development community into the process. Efforts will be made by the Town to educate developers on the value of water and collaborate on how this can be integrated into the application, design, construction, and post inspection processes. Several activities in Section 5.2, reference specific stakeholder engagement with the development community so to better understand their needs and how the Town can best work with them. Additionally, educating new residents about the value of water and the variety of ways they can use it wisely is critical to establishing community support and buy-in. This is currently done through new resident mailers in coordination with the Town's Billing Division. Erie plans to work with the development community in providing additional materials that inform residents of efficient irrigation practices after new landscape has been established to reduce the amount of waste that is commonly occurring when residents do not reset their irrigation schedule after new sod is established.

Businesses and HOAs – Erie plans to directly engage with businesses and HOAs through various activities described in Section 5.1 that both educate and promote efficient irrigation and low water use landscaping. These activities are critical in both helping HOAs and businesses use less water and to promote water stewardship values throughout their communities.

[34] This is a Boulder County program that works with local schools to develop supplemental K-12 outdoor education on environmental sustainability.

Schools and students – Education to and within schools can accomplish the following at the same time: 1) educate students which then educate their parents at home and 2) schools maintain large amount of irrigated open space which can serve as an excellent demonstration to the community on efficient irrigation and low water use landscapes. Erie has facilitated educational programs to students in the past. The Town plans to develop partnerships with the schools to discuss water saving options and how the Town can best support the provision of educational resources on water efficiency. The Town's Sustainability Advisory Board is actively participating in school events and in influencing curriculum where appropriate. The Town also plans to partner with E Movement on incorporating a kindergarten to high school continuum of environmental curriculum offered to students.



General public – There are a variety of outreach platforms that Erie uses to convey information about the "menu of rebates" offerings each year along with the Town's efforts and accomplishments in water efficiency as well as and other water saving resources; These are listed in Table 5. This activity list will likely be expanded as the Water Efficiency Program continues to be implemented.

Table 5: Existing Public Outreach Resources

Outreach Platforms	Details
Town and Erie.Earth* websites	Provides information on Town activities and water efficiency
Sustainability Newsletter	Newsletter is distributed quarterly, providing information on water efficiency and sustainability
Social media	Facebook, Twitter, Instagram, Nextdoor
Bill inserts	Two to three bill inserts with information on water efficiency are included in water bill during the irrigation season
Distribution lists	Residents have the option of signing up for emails focusing on specific Town topics. A Sustainability list was created to communicate all water efficiency information throughout the year.
Educational videos and supporting information	Erie is in the process of developing a video on best practices for outdoor watering that will be available via Erie.Earth and the Town's website. Additional educational videos on xeriscaping, Green Business & HOA Certification programs, and other water saving practices are being developed. Partnerships with Colorado WaterWise and other nonprofits to demonstrate the value of water are also being utilized. Other information such as manuals (e.g. WaterWise Landscaping Best Practices Manual) are also posted to Erie.Earh.
Demonstration gardens	Erie has demonstration gardens at Town Hall, the Community Center, and the Pollinator Garden at Thomas Reservoir. Signage will be added to these sites to educate residents about low water use landscaping. Additional demonstration gardens may be developed in coordination with the Parks and Recreation Department and in strategic high-traffic areas in the future.

*The Erie.Earth website will be used as a main information hub for water efficiency and sustainability efforts. The following material, in addition to other relevant material will be incorporated into the website over time: education on Erie's water supplies, recognition of the Town's efforts to save water, Town's water efficiency programs, leverage available CWW LYLLI resources that promote water efficiency, indoor water saving tips, outdoor watering best practices to reduce water, video on xeriscaping and efficient outdoor watering, and an acknowledgement page that recognizes community members/entities saving water and links to relevant Town plans.

Figure 12 below highlights the types of messaging Erie is to convey to the community about water. During times when there is not a drought or shortage, messaging focuses on the value of water and promotion of using water efficiency. During a drought and water shortage, messaging is expanded to encourage additional

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savings. Further information on the Community Water Resiliency Campaign enacted during times of drought and water shortages is provided in Erie's 2021 Drought and Water Shortage Plan.

Messaging to Consistently Convey

- Source of Erie's water and status of water supply conditions
- Relationship of water efficiency to community sustainability (emotional connection)
- Value of water and benefits of water efficiency described in this Water Efficiency Plan
- Public access to Erie's Water Efficiency and Drought and Water Shortage Plans
- Erie's water efficiency goals
- Actions of Town to ensure a resilient and sustainable long-term water supply
- Relationship of water rates and sustainable long-term water supplies
- Action of Town to be water efficient (lead by example)
- Promotion of water efficiency actions
- Tips on being water efficient for the resident and business owner

Figure 12: Public Messaging to Consistently Convey

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Implementation and Monitoring Plan

6.1 Implementation Plan

In 2019, Erie hired a Sustainability & Water Conservation Specialist to further develop the Town's water efficiency programs and hired a Water Conservation Technician in 2021. Additional a full time Water Conservation Technician was hired in February 2021. While Erie has a long history in conserving water, these additional staff provide an opportunity to elevate Erie's programs. The next three to four years (2021-2024) will focus on the following essential elements called out in Water Efficiency Goal No. 3 in Section 4.2. These elements will be further built on over time.

- Innovate by working smarter, not harder, using resources wisely – This may be accomplished by maximizing efficiencies among Erie staff through education and coordination, generating support through external partnership, hiring additional staff and providing training and focusing on retrofits that provide long-term benefits. This is depicted in Figure 13 below.

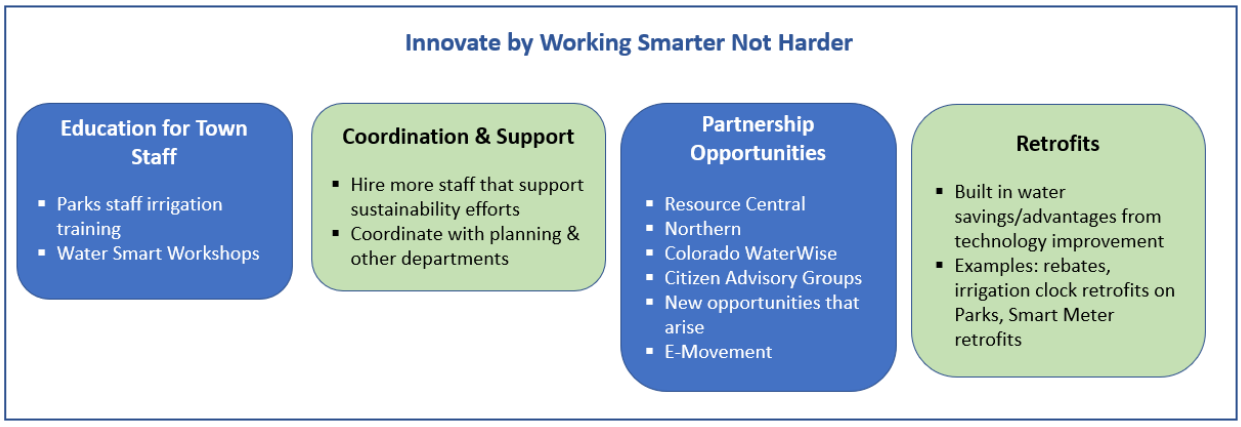

Figure 13: Depiction of Innovate by Working Harder

- Minimize water waste throughout the community – This is a high priority over the next three to four years. Water efficiency improvements can be made during the construction phase (lowering use of construction water) and post construction. For example, some residents do not reduce their outdoor water use after their landscaping has been established. This results in overwatering and waste. Focusing more on education and compliance to not wasting water is critical to reducing waste as well conveying the value of water and importance of stewardship to new Town residents.

- Tracking success – Monitoring impacts of programs, rebates, and education and outreach is critical to understanding how well Erie is doing in improving water efficiency. Tracking successes requires the monitoring of water demands, tracking water saving actions, and recording community feedback/lessons learned along the way. Section 6.2 provides the monitoring plan.

The implementation of this Plan will be led by the Water Conservation and Sustainability Specialist who will facilitate a Water Efficiency Program Team consisting of Town water resources staff. As discussed in Section 5.1, this team will meet twice a year for water efficiency coordination meetings. This diverse professional team will consist of water resources staff and staff within the Engineering, Parks and Recreation, Public Works, Planning, and Billing divisions and departments. The meetings will address water efficiency efforts, annual and

seasonal water demands, updates to regulations, policy, efforts related to water and land use planning, water efficiency education, population estimates and other relevant data sharing, operations, parks, etc.

The Implementation Plan, Table 6 below, provides the approximate timing for implementation of the water efficiency activities described in detail in Section 5. It also provides education components for each activity. Table 7 provides projected water saving estimates where water savings can reasonably be developed, and Table 8 provides cost estimates for actions that are differentiated as separate line items for budgetary purposes. Efforts will be made to initially implement the activities scoped for the first half of the seven-year implementation period, however, the implementation of some of these activities (particularly the land use planning) may require Town Board approval on an individual activity-by-activity basis. The Water Efficiency Program Team will review the status of implementation halfway through the seven-year implementation period in 2024 and reprioritize the timing of water efficiency activities based on input from the Board.







Water Conservation and Potential Revenue Effects

Like most water providers, Erie's revenues are largely driven by the amount of water used by its customers. Like all water providers, Erie has significant fixed costs that need to be established and maintained regardless of water use. While water efficiency has the potential to affect water utility revenues, it is not expected that the accomplishments of Erie's 2021 water efficiency goals will significantly affect Erie's costs or revenues.

Erie plans to monitor cost expenditures for water efficiency activities. Erie will also continue to introduce cost-sharing programs with all customers to exemplify the true cost and value of water. However, if an activity does not appear to be cost-effective in the long-term and could potentially contribute to a need to increase water rates, this activity may be considered for elimination. Erie annually reviews capital and operation expenditures as well as projected revenues. Water rates will only be raised if it is necessary to meet future expense.

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Table 6: Implementation Plan

Water Efficiency Activities	Timing of When Activity Will Be Initiated			Education Activities that Accompany Each Activity
	Currently Doing and Ongoing	First Portion of 7-Year Period (2021 - 2023)	Second Portion of 7-Year Period (2023 - 2027)	
Foundation				
Improve Metering, Demand Collection, Billing Systems and Rates				
Metering of source water	Meter WTF production, diversions of its ditch water, reuse water, and deliveries of CBT and Windy Gap water.			Inform public of activities emphasizing the Town's commitment to saving water.
Meter service connections and replacement meters	Replace AMR meters with AMI meters (smart meters).	All meters are anticipated to be replaced with AMI .		Provide routine updates on status of meter replacement emphasizing benefits of replacement.
Water accounting	Track water use by customer type.			Inform public of water use by sector.
Water rates and billing	Bill on volume basis using a four-tiered rate structure for the residential sector.		Consider tiered rate structure for commercial if warranted.	Educate customers on reasons for volumetric billing and tiered rate structure. Convey value of water when explaining rate increases and how/why Erie increases rates.
System Water Loss Management and Control				
Analysis of non-revenue water	Use the AWWA M36 audit methodology, focusing on the ILI and non-revenue water as a percent of volume supplies as key monitoring metrics on an annual basis.			Inform public of activities and results, emphasizing the Town's commitment to saving water.
Leakage detection repair and line replacement	Implement valve inspection and sonic leak detection program.			Inform public of activities and results, emphasizing the Town's commitment to saving water.
Reuse Program				
Reuse water	Use reuse water for non-potable irrigation via exchange/augmentation and direct reuse.	Optimize use of reuse water as additional options for reuse are available through the well project.		Inform public of reuse applications, emphasizing the Town's commitment to saving water.
Recycling backwash water at the WTF	Recycle backwash water at the WTF with exception to when taste and odor issues are of concern.			Inform public of activities emphasizing the Town's commitment to saving water.
Reuse water for flushing/cleaning of NWRF	Use reuse water for flushing and cleaning of the NWRF.			Inform public of activities emphasizing the Town's commitment to saving water.
Integrate Water Efficiency and Land Use Planning Activities				
Land use planning and water coordination meetings		Hold inter-departmental meetings addressing water efficiency twice per year.		Inform public of Town staff and leadership collaboration where beneficial.
Water efficiency and land use planning training		Take advantage of available training opportunities.		Following training, discuss Erie staff roles in communicating water efficiency to the public.
Information and data transfer between planning and water resources		Improve information and data transfer among departments and divisions.		Inform public of Town staff and leadership collaboration where beneficial.
Align water billing categories with zoning categories			Evaluate potential of aligning billing categories with zoning categories.	Educate public on any changes made to billing and zoning categories including the benefits of such changes and how customers may or may not be impacted.
Include water efficiency in Comprehensive Plan update		Include water efficiency in Comprehensive Plan update in 2021.		Develop coordinated effort to educate the Town Board, staff, and the community on the benefits of water efficiency and land use planning in parallel with the Comprehensive Plan update.
Water dedication requirement and tap fees		Modify tap fee/water dedication fee structure per study recommendations.		Convey to the development community and public the benefits of the change, emphasizing water and sustainable planning.
Dedicated water professional review of new development applications		Include Water Conservation and Sustainability Specialist in review of development applications.		Inform development community of change and promoting water efficiency with wise planning.

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Water Efficiency Activities	Timing of When Activity Will Be Initiated			Education Activities that Accompany Each Activity
	Currently Doing and Ongoing	First Portion of 7-Year Period (2021 - 2023)	Second Portion of 7-Year Period (2023 - 2027)	
Post construction and post occupancy	Use of landscape architect to conduct post construction inspections.	During the UDC update, develop recommendations on how post occupancy inspections can be improved and available Town resources. Such recommendations will be incorporated into the UDC update.		To be determined following development of recommendations.
Targeted Technical Assistance and Incentives				
Irrigation Efficiency and Landscaping on Town Parks and Facilities				
Billing of Parks and Recreation Department	Meter and charge Parks to water use.			Inform public of billing, demonstrating Town's own accountability to water use.
Smart irrigation controllers on parks	Installing smart irrigation controllers at all parks.	All parks should have smart irrigation controllers.		Inform public of activities emphasizing the Town's commitment to saving water.
Moisture sensors at all Town parks	Continue use of moisture sensors (where applicable).			Inform public of billing, demonstrating Town's own accountability to water use.
Efficient irrigation practices on parks	Schedule irrigation to avoid high evapotranspiration rates during the day and use cycle soak method.			Inform public of billing, demonstrating Town's own accountability to water use.
Routine irrigation system checks and maintenance on parks	Check irrigation systems on a routine basis to ensure no wasteful leaks.			Inform public of billing, demonstrating Town's own accountability to water use.
Low water use landscaping	Establish low water use landscapes and drought resistance vegetation on parks.			Advertise parks' low water use landscaping. Use as demonstrations of what residents can to their own landscapes.
Turf replacement on Town parks	Parks is renovating designated park areas with lower maintenance and drought tolerant plants.			Advertise Parks' landscaping conversions and benefits of such conversions. Use such conversions as demonstrations on what residents can do to own landscapes.
Menu of Fixture and Rebate Options				
Clothes washer	Town administer clothes washer rebates.			Enhance advertisement of Erie's rebate program among community.
Toilets	Town administer toilet rebates.			Enhance advertisement of Erie's rebate program among community.
Showerhead	Town administer showerhead rebates.			Enhance advertisement of Erie's rebate program among community.
Rain barrel rebates	Town administer rain barrels.			Enhance advertisement of Erie's rebate program among community and education on rain barrel installation and benefits to public.
High efficiency sprinkler nozzles	Town administer high efficiency nozzles.			Enhance advertisement of Erie's rebate program among community.
Drip irrigation equipment	Town administer drip irrigation equipment.			Enhance advertisement of Erie's rebate program among community.
Garden in A Box	Partner with RC on Garden In A Box program.			Coordinate with RC to enhance advertisement of Garden In A Box program.
Slow the Flow sprinkler consultation	Partner with RC on Slow the Flow program.			Coordinate with RC to enhance advertisement of Slow the Flow program.
Smart irrigation control clock direct installations	Partner with RC on distribution and installation of smart irrigation control clocks.			Coordinate with RC to enhance advertisement of smart irrigation control clocks.
Automated rain sensors direct installations	Partner with RC on distribution and installation of automated rain sensors.			Coordinate with RC to enhance advertisement of automated rain sensors.
Large property irrigation audits	Administer free outdoor audits to large properties partnering with RC and Northern Water.			Advertise program among large property owners.

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Water Efficiency Activities	Timing of When Activity Will Be Initiated			Education Activities that Accompany Each Activity
	Currently Doing and Ongoing	First Portion of 7-Year Period (2021 - 2023)	Second Portion of 7-Year Period (2023 - 2027)	
Evaluate turf replacement rebate program		Evaluate opportunities, challenges, costs and benefits of a turf replacement program for residential and commercial.	Consider implementing recommendations that come from the study.	Conduct stakeholder outreach to inform the study. Continue level of public outreach necessary if recommendations from the study are implemented.
Customer Feedback on Water Use				
Informative and understandable water bill	Provide informative water bill.			More clearly articulate what the graphs and numbers mean on the water bill.
EyeOnWater App	Town administer EyeOnWater App.			Increase advertisement of this app to increase participation.
Coordination with HOAs, Commercial Sector, and Land Use Planning				
Green Business & HOA Certification Program	Added water efficiency to the HOA Green Certification Program. The Business Certification Program includes water.			Promote HOA rankings among residents commenting specifically on their level of water efficiency.
Encourage Northern Water HOA turf replacement grant opportunities	Currently doing.			Erie currently promotes these programs through its HOA Green certification program.
Northern Water landscaper certification program	Currently doing.			HOAs are given additional points in the Green HOA Certification Program for using a certified landscaper. Erie irrigation staff also plan to participate in the training, becoming certified and promoting the program among HOAs and other landscape managers.
Explore partnership opportunities with commercial sector			Work with commercial sector to identify areas in how Erie can promote/support efficient water use.	Partner with commercial businesses on water efficiency educational efforts.
Address obstacles and provide guidance on landscape conversions		Work with HOAs to address obstacles to landscape conversions and develop a process to support conversions.		Conduct stakeholder outreach to inform the study. Continue level of public outreach necessary if recommendations from the study are implemented.
Incentives and tools inquiry for the development community			Conduct stakeholder engagement with development community to explore an array of tools and incentives that would be most useful in encouraging water efficiency during the application, design and construction phase.	Conduct an outreach effort and survey among the development community.
Regulations and Ordinances				
Water Wasting Ordinance and Watering Schedule				
Water wasting ordinance	Have existing ordinance.	Update water wasting ordinance.		Educate community on changes to water wasting ordinance.
Time of day watering	Have existing voluntary restrictions.	Update time of day watering.		Educate community on changes of time-of-day watering coupled with Erie's drought response protocol.
Frequency of watering	Have existing voluntary restrictions.	Update frequency of watering limit.		Educate community on changes of time-of-day watering coupled with Erie's drought response protocol.
Water Efficiency Policy, Regulations and Land Use Planning				
Review of policies		Conduct review of the Town's policy and planning documents to better understand Erie's existing body of policy specific to water, water efficiency and land use planning. Barriers to water efficiency and policy gaps will also be identified.		Educate development community and public on Erie's policy specific to water efficiency.

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Water Efficiency Activities	Timing of When Activity Will Be Initiated			Education Activities that Accompany Each Activity
	Currently Doing and Ongoing	First Portion of 7-Year Period (2021 - 2023)	Second Portion of 7-Year Period (2023 - 2027)	
Planning and landscaping in the UDC	UDC has a variety of mechanisms that encourage water efficiency.			N/A
Update to the UDC		During UDC update examine and address any barriers to water efficiency and further enhance mechanisms to improve water efficiency.		Convey changes to UDC to the public and development community promoting water efficiency.
Require documentation of outdoor water demands on residential parcel basis		Update UDC to require documentation of outdoor water demands.		Convey changes to the UDC to the development community.
Standards and Specifications for Parks and Recreation Construction	Standards and Specifications for Parks and Recreation Construction has a variety of mechanisms that encourage water efficiency.	During update examine and address any barriers to water efficiency and further enhance mechanisms to improve water efficiency.		Inform public of activities emphasizing the Town's commitment to saving water.
Building code influencing indoor and outdoor water use			Consider including water efficiency standards for indoor water use in future update .	Inform development community of changes if applicable.
Establishment of vegetation on open space lands		Implement mechanism(s) that will address issues associated with establishment of vegetation on open space lands.		Inform development community and other stakeholders of changes made to address the issue.
Explore options for regulating high water commercial users on an as needed basis			Explore options for regulating high water commercial users and implement based on results.	Conduct stakeholder process with commercial sector to better understand how regulations would or would not be effective.
Education Program				
Town leadership and staff		Use the biannual water efficiency coordination meetings as a platform for education and coordination. Seek training opportunities for Town staff. Educate leadership on benefits of water efficiency and Town's activities.		
Development community and new residents		Partner with development community on informing new residents about irrigation best management practices following landscape establishment. Reach out to development community accordingly as Comp Plan and UDC are being updated. (See activities above for additional information).		
Businesses and HOAs		Target HOAs through various activities discussed above.		
Schools and students			Work with schools in developing educational resources for students. Promote efficient irrigation and wise water landscaping on school grounds.	
General public	Engage with general public through the various platforms and activities discussed in this Plan.			

Table 7: Projected Water Savings (acre-feet per year)[35]

Year	Reuse Water			Menu of Rebates and Retrofits							Total Savings
	Reuse water	Recycling backwash water at WTP	Flushing/ cleaning of NWRF	Clothes Washer (Town)	Toilet Residential (Town)	Shower-head Rebates (Town)	RC Indoor Water Inspec-tions	RC Garden In A Box	RC Slow the Flow Irrigation Audits	RC Smart Irrigation Control Clocks Direct Installation	
2021	308.4	178.9	409.5	15.3	1.4	0.6	3.4	1.2	3.5	6.7	212.5
2022	440.8	186.0	426.2	14.3	2.2	1.1	2.7	1.4	3.3	8.4	360.5
2023	573.2	193.5	442.9	13.5	3.0	1.7	1.1	1.6	3.1	10.1	507.8
2024	705.6	201.2	459.6	12.7	3.8	2.3	0.0	1.8	3.0	11.8	655.7
2025	838.0	209.3	476.3	12.1	4.7	2.9	0.0	1.9	2.8	13.4	804.7
2026	970.4	217.6	493.0	10.8	5.5	3.4	0.0	2.1	2.8	13.5	951.8
2027	1102.8	226.3	509.7	9.2	6.3	4.0	0.0	2.3	2.8	13.8	1098.6
2028	1235.2	235.4	526.4	8.1	7.1	4.6	0.0	2.5	2.8	13.4	1245.4
2029	1367.6	244.8	543.1	7.6	7.9	5.2	0.0	2.7	2.8	13.4	1393.0
2030	1500	254.6	559.8	7.3	8.7	5.7	0.0	2.9	2.8	13.4	1541.0

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[35] Annual water savings are cumulative over time. The number of rebates assumed to be distributed annually from 2020 to 2030 are clothes washers – 30, toilets – 70, showerheads – 50, RC indoor water inspections – 0, RC Garden In A Box – 110 and RC smart irrigation control clocks – 42. Please note that these estimates are limited to measures where estimates can reasonably be provided. As noted above, per capita water use has declined over time where other programs not included here have provided additional water savings.

Table 8: Estimated Costs of Water Efficiency Activities

Water Efficiency Activities	Estimated Costs
Education Program (including utility billing and Live Like You Love It materials)	$7,500
Slow the Flow sprinkler consultation	$19,360
Smart irrigation control clocks	$8,250
Automated rain sensors	$1,600
Garden In A Box	$5,120
Large property irrigation audits	Northern Water pays for on first-come first-serve basis
Clothes washer rebates	$1,500
High efficiency sprinkler nozzles	$400
Drip Irrigation Equipment	$2,500
Toilet rebates	$3,500
Showerhead rebates	$500
Rain barrel rebates	$2,500

Note: Estimated costs are based on 2020 budget

6.2 Monitoring Plan

Water efficiency planning is most effective when it is managed as an adaptive continuous process where routine monitoring and adjustments can be made to the implementation. Monitoring provides the necessary information decision-makers need to make adjustments that improve the water efficiency program under continuously evolving conditions. The collection and organization of data is instrumental in the success of this monitoring plan. The following data will be collected on an annual basis:

- Daily, monthly, and annual totals of measured flows at Erie's two CBT/Windy Gap raw water intakes and raw water reservoirs.
- Daily, monthly, and annual totals of WTF production.
- Monthly and annual total treated metered water uses for the new customer billing categories.
- Monthly and annual deliveries used for raw water irrigation.
- Monthly and annual reuse water applied for irrigation. The amount of annual water applied to each location (e.g., park facility) will be tracked.
- Monthly calculation of non-revenue water.
- Annual costs, avoided costs, and if applicable, lessons learned for each water efficiency activity.
- Annual estimates of water savings for water efficiency activities where savings can reasonably be measures and/or estimated.
- Water efficiency activity tracking data (e.g., number of annual rebates)

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- Weather data from local weather stations that can be used to compare outdoor water use relative to ET on an annual basis.

- Development within the service area. This may include the annual change in service area residential population, number of new homes built, commercial properties developed, and acres of new irrigated lands in Town parks and other open spaces.

- Efforts by Parks and Recreation Department to save water. This may include changes to the irrigation practices, acreage of new low water use landscaping, acreage of new irrigated landscaping, etc.

- Feedback from the public. These may include comments at open houses concerning water efficiency, e-mail/mail correspondence, etc. that provide valuable information on the public's perception of the water efficiency measures/programs.

Erie staff will analyze these data on an annual basis to assess the effectiveness of the water efficiency program. Results and any recommended improvements will be presented to the Town Board.

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7.0 Adoption of New Policy, Public Review, and Formal Approval

7.1 Public Review Process

Erie held a 30–day public review period from Mar. 15 to April 15, 2021 to obtain feedback from the public on this Plan and the Drought and Water Supply Shortage Plan. The plans were posted online where members of the public were able to review the plans and post comments. Additionally, Erie used a variety of methods to educate the community about the plans and receive public input. The outreach was conducted during the 2020/2021 COVID pandemic and therefore, outreach and education was developed to accommodate safe distancing. These methods are highlighted in the bullets below.

- Announcements on the plan review process and the opportunity to provide comments were made through the following avenues during the public review period:
    - Customer water bills;
    - Social media outreach;
    - Letters and personal correspondence with commercial businesses and public and private schools; and
    - Personal correspondence with partners encouraging them to review the plans (e.g. Northern Water, Resource Central, registrants of the Green Business and HOA Program, Ping ONE group, and the sustainability listserv).
- A questionnaire asking for specific feedback on water efficiency and drought and water shortage response was distributed to members on the Town's community advisory boards during the public review period.
- A special study session was held during the public review period with stakeholders providing background on the plans, a panel session and an opportunity for participants to ask questions.
- A community member from the Erie Open Space and Trails Advisory Board was included on the Planning Committee during the Plan development.
- A video session was held with Northern Water to discuss the resiliency of the CBT and Windy Gap water supply systems, the recent wildfires, Northern Water's response to drought and its efforts in promoting water efficiency.

7.2 Local Adoption and State Approval Processes

Erie's Water Efficiency Plan was adopted by the Erie Town Board on X. Appendix D provides the formal documentation approving the Plan.

7.3 Periodic Review and Update

Colorado statute requires that State-approved water efficiency plans are updated every seven years. Erie intends to update this Plan by 2028. The updated Plan will evaluate historical water use trends and how well Erie has met the water efficiency goals specified in Section 4. Monitoring results discussed in Section 6 will also be incorporated into the updated Plan. New water efficiency goals will be considered considering updated findings and, subsequently any updates will meet the current State requirements while also meeting the needs of Erie's community. If monitoring results and/or changes in the water supply system warrant a revised Water Efficiency Plan prior to the seven-year period, Erie will modify the Plan accordingly.

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Appendix A – Meeting Past Water Efficiency Goals

This appendix addresses how well Erie has met the water conservation goals specified in their 2014 and 2008 Water Conservation Plans.

A.1 Review of Goals in the 2014 Water Conservation Plan

Erie's former 2014 Water Conservation Plan included the six goals listed below. The first three goals target specific quantitative water savings while goals 4 through 6 address Erie's reuse, conservation activities, and rate structure.

1) Achieve a total first-use per capita water use of 146 gpcd by 2020.
2) Achieve a residential indoor per capita water use of 42 gpcd by 2020.
3) Achieve a 1% reduction in the percentage of non-revenue water by 2020 and consistently maintain an annual percentage of non-revenue water below 6%.
4) Continue to expand Erie's reuse system to utilize Erie's reusable Windy Gap return flows.
5) Implement conservation activities that are compatible with the community and are sustainable from an economic, social, and environmental perspective.
6) Maintain a fair and equitable water rate structure that promotes efficient use while maintaining sufficient revenue.

Table A.1 below summarizes how effectively Erie has met these goals. The following text focuses on how well Erie met the first three quantitative goals.

Table A.1: Former 2014 Water Conservation Goals

Goal No.	Summary	Goal Accomplished	Comments
1	Achieve a per capita water use of 146 gpcd by 2020 for first-use water.	Yes	The average per capita water use from 2014 to 2019 was 134 gpcd, which was significantly less than the 146 gpcd goal.
2	Achieve an indoor residential per capita water use of 42 gpcd by 2020.	Yes	The average 2014 to 2019 first-use per capita water use was 41 gpcd which is below the goal of 42 gpcd.
3	Achieve a 1% reduction in the percentage of non-revenue water by 2020 and consistently maintain an annual percentage of non-revenue water below 6%.	No	Percentages of non-revenue water from 2014 to 2019 were above 6% with exception to 2014 and did not show a declining trend.
4	Continue to expand Erie's reuse system to fully develop Erie's reusable Windy Gap units.	Yes	Erie continues to expand its reuse system adding direct non-potable irrigation in 2017.
5	Implement conservation activities that are compatible with the community and are sustainable from an economic, social, and environmental perspective.	Yes	Conduct a public survey plan when the Water Conservation Plan is being updated in 2021 to assess community compatibility and sustainability.

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Goal No.	Summary	Goal Accomplished	Comments
6	Maintain a fair and equitable water rate structure that promotes efficient use while maintaining sufficient revenue.	Yes	Per capita water use has decreased while Town revenue has remained sufficient. Erie conducts water rate studies on a routine basis that provide assurances that the rates are compatible with community and are fair and equitable.

Goal 1 - Reduction in Erie's Historical Per Capita Water Use

Goal No. 1 of the 2014 Water Conservation Plan targeted an average per capita water use of 146 gpcd by 2020. Erie has successfully met this goal based on data through 2020. Figure A.1 below shows that the average 2014 to 2020 first-use per capita water use following implementation of the 2014 Water Conservation Plan is 135 gpcd, which is significantly below the 146 gpcd target.



Figure A.1: Historical Per Capita Water Use and Goal No. 1

Goal 2 – Indoor Residential Per Capita Water Use

Goal No. 2 of the 2014 Water Conservation Plan targeted an indoor residential per water use of 42 gpd for first-use water by 2020. Figure A.2 below shows that the average 2014 to 2019 first-use per capita water use is 41

gpcd which is below the goal of 42 gpcd. Indoor use was either at or below the 42 gpcd goal 4 out of the 6 years shown in Figure A.2. The 2020 demand data was not included in this evaluation given that the indoor water use may be elevated in 2020 as a result of the pandemic and prove to not be a long-term trend.

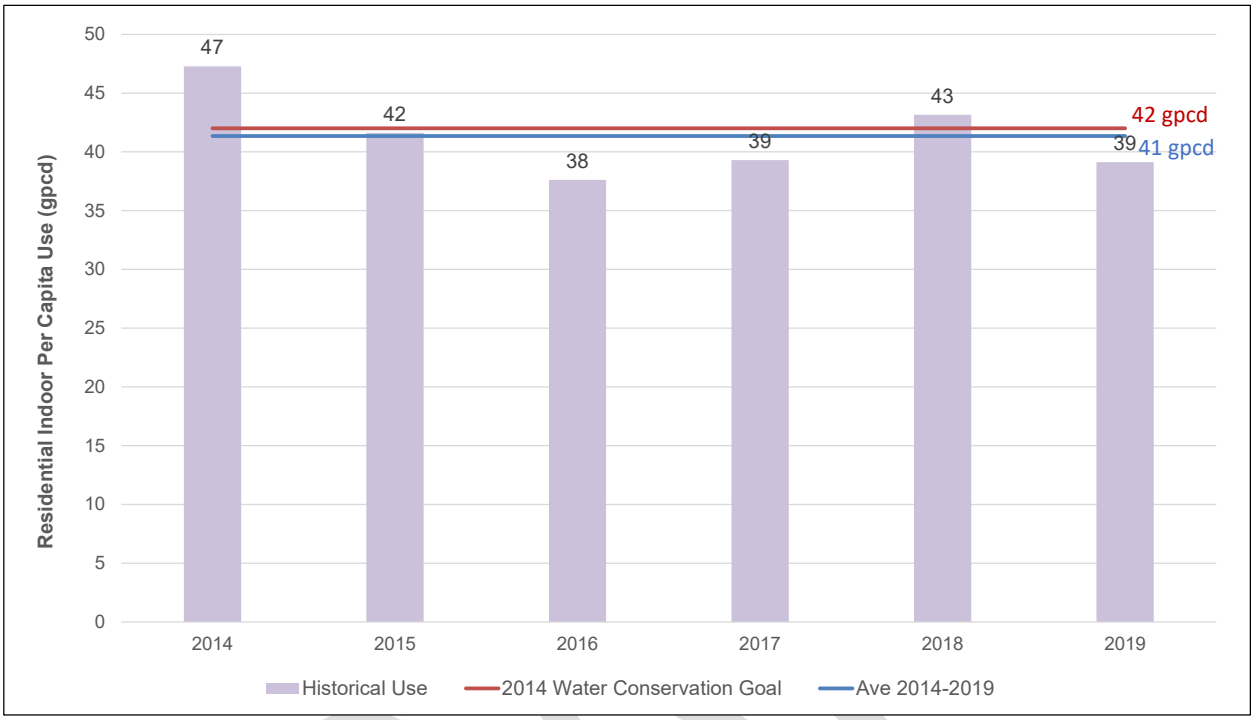

Figure A.2: Historical Per Capita Water Residential Indoor Use and Goal No. 2

Goal 3 – Reduction in Non-Revenue Water Use

Non-revenue water consists of leaks in the distribution system, metering inaccuracies and un-metered demand. Goal No. 3 of the 2014 Water Conservation Plan targeted a 1% reduction in the percentage of non-revenue water by 2020 and consistently maintaining an annual non-revenue percentage below 6%. As shown in Figure A.3 below, Erie did not obtain this goal. While the percentage non-revenue water is less what was observed in the early 2000s, the percentages have significantly changed on an annual basis without any specific trend. This could be due to a multitude of factors including measuring error, changes in accounting, etc. Erie adopted the AWWA M36 auditing procedure in 2018 which is an improved method of accounting for non-revenue water and should provide more useful data in the future.

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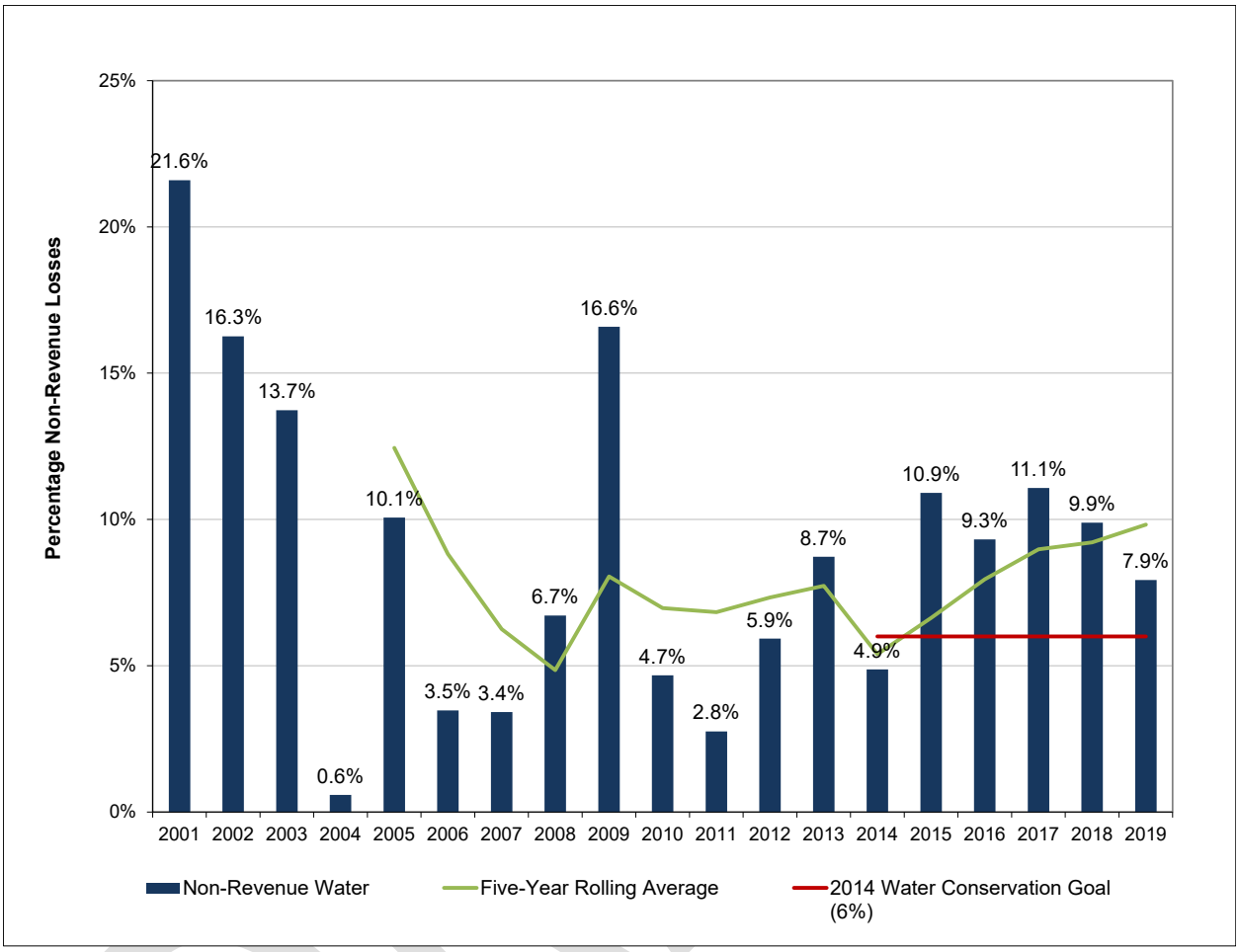

Figure A.3 – Non-Revenue Water and 2014 Water Conservation Goal

A.2 Review of Goals in the 2008 Water Conservation Plan

Erie's former 2008 Water Conservation Plan included the five goals listed below. The first three goals targeted specific quantitative water savings while goals 4 and 5 addressed the implementation and monitoring of Erie's water conservation program.

1. Average annual per capita water usage of 190 gpcd by 2014. This goal also implied a first-use water savings of 960 acre-feet per year by 2014, a reduction of 17% relative to the projected first-use demands absent conservation and use of reclaimed water.[36, 37]

[36] The per capita water use of 190 gpcd applied to first-use water. The 960 acre-feet per year savings target included 690 acre-feet use of reuse and 270 acre-feet of demand reductions.

[37] The former total targeted savings of 960 acre-feet was developed as the difference between the projected 2014 demand incorporating a per capita water use of 230 gpcd (which included treated water, reuse water, and ditch water) relative to the 2014 projected demand incorporating the targeted 190 gpcd first-use goal. Figure 5-1 in the 2008 Water Conservation Plan illustrates this concept.

2. 690 acre-feet per year of reclaimed (reused treated effluent) water use by 2014 (assuming approximately 350 acre-feet per year of reclaimed water use at Vista Ridge Golf Course to the extent that development occurs as anticipated and the reclaimed water system is constructed).

3. Reduce water use by 15 percent on all existing Town irrigated parks and landscaping by 2014 and optimize irrigation efficiency on all new Town irrigated parks and landscaping.

4. Implement conservation measures and program that are compatible with the community.

5. Establish a monitoring system that collects a sufficient amount of data to effectively measure the success of conservation programs and measures on an annual basis.

Table A.2 below summarizes how effectively Erie met these goals. The following text focuses on how well Erie met the first three quantitative goals.

Table A.2: Former 2008 Water Conservation Goals

Goal No.	Summary	Goal Accomplished	Comments
1	Achieve an average annual per capita water use of 190 gpcd by 2014.	Yes	The average per capita water use from 2008 to 2013 was 150 gpcd, which was significantly less than the 190 gpcd goal.
2	Achieve 690 acre-feet of reuse water by 2014.	No	This goal assumed that 350 acre-feet of reuse water would be developed at Vista Ridge Golf Course. The rate of new development significantly declined from 2008 to 2013 and reuse was not developed at the rate anticipated in 2008.
3	Reduce water use by 15 percent on Town parks.	Yes	Erie has significantly reduced water use on Town parks and continues to implement best management practices to maintain efficient irrigation.
4	Implement activities that are compatible with the community.	Yes	Erie has received positive community feedback regarding its conservation activities and continues to experience reduction in annual water use.
5	Establish an effective monitoring system.	Yes	Erie closely monitored its conservation activities and monitored water use on a more frequent basis than prior to the 2008 Water Conservation Plan.

Goal 1 - Reduction in Erie's Historical Per Capita Water Use

Goal No. 1 of the 2008 Water Conservation Plan targeted an average per capita water use of 190 gpcd by 2014; Erie successfully met this goal. Figure A.4 below shows that the average 2008 to 2013 first-use per capita water use following implementation of the 2008 Water Conservation Plan was 150 gpcd, which is significantly below the 190 gpcd target. Additionally, the average first-use per capita water use declined by 24 gpcd compared to the average per capita water use of 174 gpcd from 2003 to 2008.

Figure A.4 also indicates that while there were annual variations in irrigation demand on a year-to-year basis, such variations did not explain the reduction in per capita water use. This is reflected in the annual variations in grass ET (annual ET as a percentage of average annual ET). The average ET percentage from 2003 to 2007 of 99% is lower than the average from 2008 to 2013 of 103%. Erie's per capita water use declined despite an average increase in outdoor irrigation demand.

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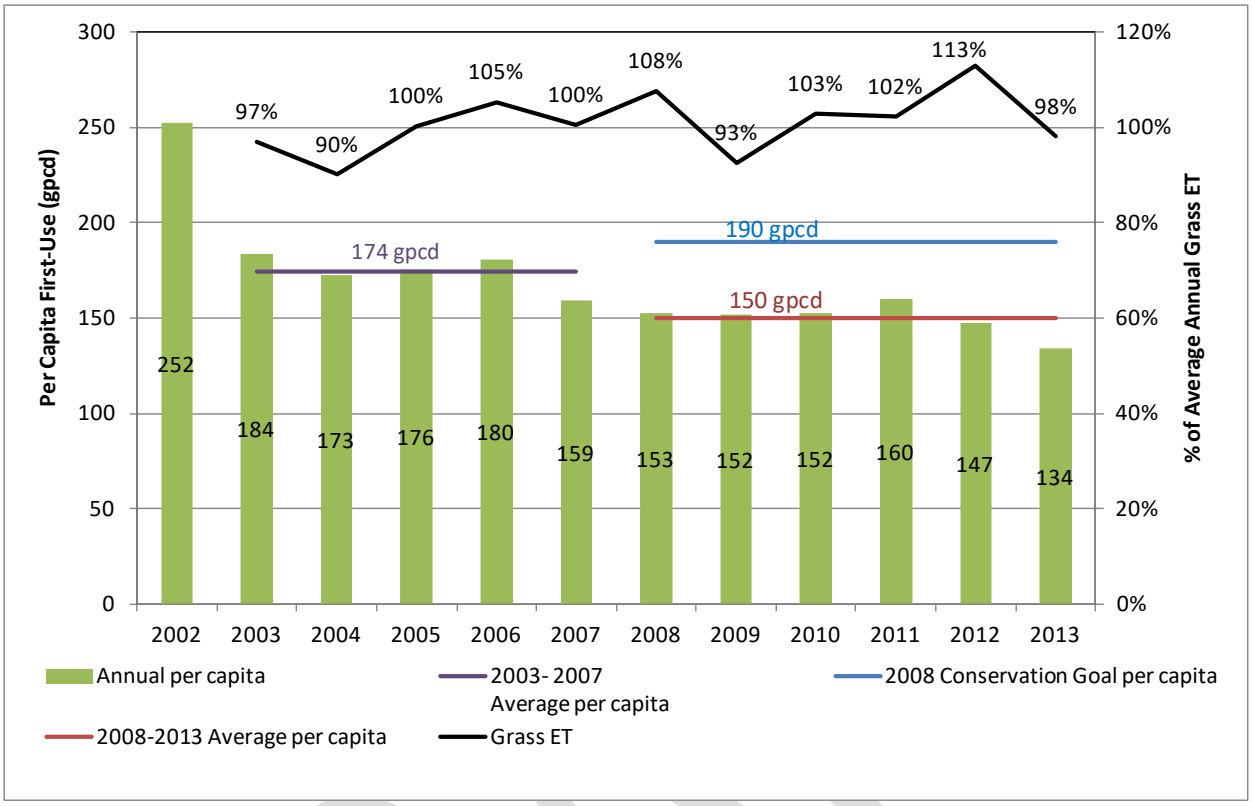

Figure A.4 – Historical Per Capita Water Use and Water Conservation Goals

The reduction in per capita water use is likely attributed to the following factors:

- Develop alternative means to develop open space where more low water use native vegetation can be established immediately.
- Sustained community response to regional drought awareness campaigns and Erie's mandatory water restrictions during the 2002 drought.
- Larger proportion of new homes being constructed within the service area which tend to be more water efficient indoors than older homes (e.g., homes within the Historic Downtown portion of Erie).
- Increased water efficiency among customers in response to Erie's water conservation outreach effort.

Goal No. 1 of the 2008 Water Conservation Plan also called for a first-use water use reduction of 270 acre-feet by 2014.[38] Figure A.5 below shows a series of projected first-use demands from 2008 to 2013 relative to the actual historical first-use water use. The projected demands were calculated by multiplying Erie's population by the following per capita water demands listed below.

[38] The 270 acre-feet demand reduction may be calculated by subtracting the reuse target of 690 acre-feet from the total targeted savings of 960 acre-feet.

- Former 2008 water conservation goal of 190 gpcd (blue line) – Represents what the first-use water demand would have been if the historical per capita water demand was the former water conservation goal of 190 gpcd. This is significantly higher than the actual annual first-use shown by the green bars.

- 2003 to 2007 average per capita use of 174 gpcd (purple line) – Represents what Erie's first-use water demand would have been if the Town continued to use water at the average 2003 - 2007 per capita water use level prior to adoption of the 2008 water conservation plan. This projection results in a water demand of 4,198 in 2013.

- 2008 to 2013 average per capita use of 150 gpcd (green line) – Represents the average of Erie's actual first-use, which was 3,030 acre-feet in 2008, grew to 3,740 acre-feet in 2011, and declined to 3,231 acre-feet in 2013. Erie's first-use averaged 3,282 acre-feet per year over 2008-2013, equivalent to 150 gpcd.

Comparison of the 2003 to 2007 per capita demand of 174 gpcd (purple line) with actual use indicates significant water savings were achieved because of reductions in per capita water use. In 2013, the difference between the projected demands based upon 174 gpcd and the actual use is 967 acre-feet (4,198 – 3,231) showing that a savings of 967 acre-feet has been achieved.

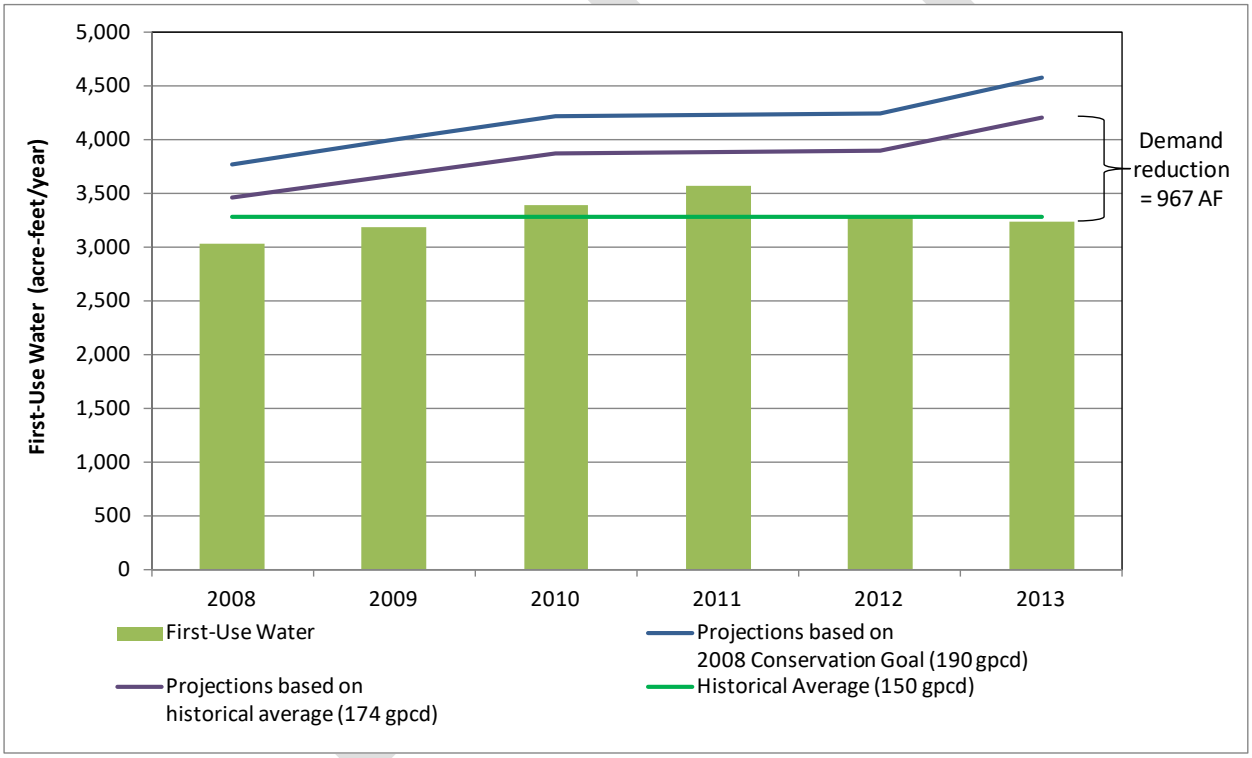

Figure A.5 – Demand Reductions

Goal 2 – Reuse Goal

Figure A.6 below shows how well Erie met its 2008 demand reduction and reuse goals. Erie achieved a demand reduction of 967 acre-feet, which far exceeded the demand reduction goal (Goal No. 1) for 270 acre-feet. The reuse goal of 690 acre-feet (Goal No. 2) was not achieved; however, this goal was largely dependent on the rate of new development in Erie where new subdivisions adopt reuse for outdoor irrigation. The economic slowdown from 2010 to 2013 resulted in slower development where there was not a new demand for reuse.

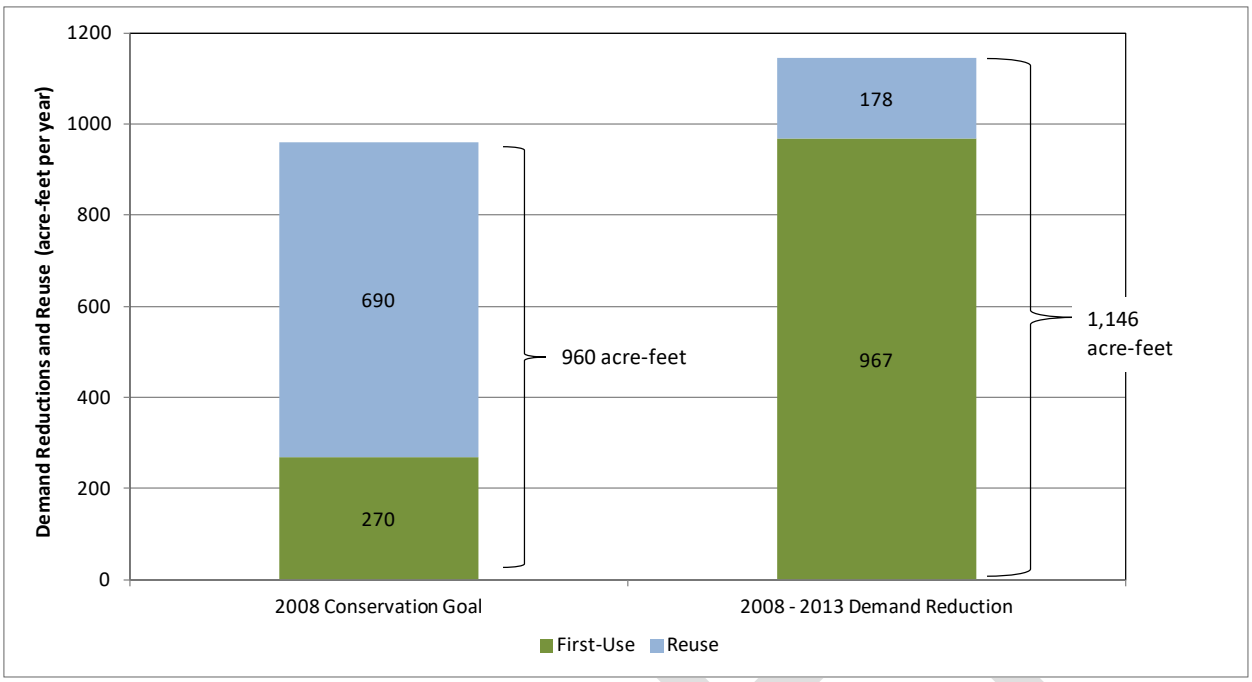

Figure A.6 – Demand Reductions and Reuse Relative to 2008 Conservation Goals

Goal 3 – Reduction in Irrigation on Erie Parks

Goal No. 3 of the 2008 Water Conservation Plan targeted a 15% reduction in park irrigation. Table A.3 below shows the annual irrigation water use on Erie's parks, including amount of the irrigation supply, the acreage irrigated, the annual irrigation application rate, and the relative change in annual application rate compared to 2008 as a baseline. The table also shows the change in annual bluegrass ET relative to 2008 to provide a weather-based context to help assess whether Erie achieved Goal No. 2. Over 2009-2013, Erie reduced its irrigation application rate by an average of 22% compared to 2008. Over that same period, the average bluegrass ET was only 5% lower than 2008. Normalizing for ET, Erie reduced its irrigation application rate on its Parks by 17% compared to 2008, which indicates that Erie achieved its goals.

Table A.3: Annual Irrigation on Erie Town Parks

Year	Acre-feet of Irrigation	Acres Irrigated	Application Rate (acre-feet per acre)	Percent Change in Application Rate Relative to 2008	Bluegrass ET, % of Average	Percent Change in Bluegrass ET Relative to 2008
2008	108	34.2	3.2		107.6%	
2009	84	34.2	2.5	-22%	92.5%	-14%
2010	131	48.4	2.7	-14%	102.9%	-4%
2011	135	60.4	2.2	-29%	102.3%	-5%
2012	181	60.4	3	-5%	112.9%	5%
2013	119	60.4	2	-38%	98.1%	-9%
09-13 Avg	130	52.8	2.5	-18%	102.7%	-5%

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Appendix B – Existing and Past Water Efficiency Activities

Table B.1 below provides a list of the Town's existing and past water efficiency measures. Some of these were implemented prior to the Town's 2014 Water Conservation Plan while others were initiated following the Plan. Table B.2 provides an estimate of water savings achieved through existing water efficiency activities and measures implemented in the past. Estimates were only provided for activities for water savings could reasonably be estimated.

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Table B.1: Existing and Past Water Efficiency Activities

Water Efficiency Activities	Customer Sector					Description of Activities	Timeline			
	Town facilities	Parks	Residential	HOA	Commercial		2008 Plan	2014 Plan	Started Post 2014	2021 Plan
Foundation										
Metering of source water	x					Erie meters water treatment production, diversions of its ditch water, reuse water and deliveries of CBT and Windy Gap water.	x	x		x
Meter service connections and replacement meters	x					Older meters began to be replaced by AMR in 2005. IN 2016, AMR meters started to be replaced with AMI meters (smart meters). All meters are anticipated to be replaced with AMI within next 3 to 4 years.	x	x	x	x
Water accounting	x	X	X	x	x	Erie tracks water use by customer type. See Section X for additional information.	x	x		x
Water rates and billing	x	X	X	x	x	Water has been billed on a volumetric basis since 1972. Erie currently uses a four-tiered rate structure for the residential sector.	x	x		x
Analysis of non-revenue water	x					Erie annually accounts for non-revenue water. Erie has completed the CWLI workshops and since 2019 is using the AWWA M36 accounting procedures, focusing on the ILI and non-revenue water as a percent of volume supplies as key monitoring metrics on an annual basis.	x	x		x
Leakage detection repair and line replacement	x					Erie has a valve inspection and sonic leak detection program that has been useful in detecting leaks.	x	x		x
Reuse water	x	X				Erie has been reusing water to irrigate portions of Vista Ridge Golf Course (since 2002) and Erie Commons (since 2008). Since 2015, non-potable irrigation using reuse water has been expanded to additional parks.	x	x	x	x
Recycling backwash water at WTF	x					Erie recycles its backwash water at the WTF with exception to when taste and odor issues are of concern.	x	x		x
Reuse water for flushing/cleaning of NWRF	x					The NWRF currently uses reuse water for flushing and cleaning of the plant. This practice has been implemented since 2007.	x	x		x
Targeted Technical Assistance and Incentives										
Billing of Parks and Recreation Department	x	X				Parks are metered and charged by the Town for all water use.	?	x		x
Smart irrigation controllers on parks		X				Parks is in the process of installing smart irrigation controllers at all parks.			x	x
Moisture sensors and ET controllers at all Town parks		X				Moisture sensors are installed at all parks.	x	x		x
Efficient irrigation practices on parks		X				Irrigation is scheduled to avoid high evapotranspiration rates during the day and cycle soak method is used to improve irrigation efficiency.	x	x		x
Routine irrigation system checks and maintenance on parks		X				Irrigation systems are checked on a routine basis to ensure no wasteful leaks.	x	x		x
Low water use landscaping		X				Erie has established low water use landscapes and drought resistance vegetation on many parks.	x	x		x
Turf replacement on Town parks		X				Parks is renovating designated park areas with lower maintenance and drought tolerant plants.			x	x
High-efficiency toilet upgrades throughout Town facilities						Erie has retrofitted toilet at their Town facilities with high efficiency toilets.			x	
Clothes washer			X			Clothes water rebates of $50 are offered and limited to one per household. Administered via Town.	x	x		x
Toilets			X		x	Toilet rebate program began in 2018. Rebates of $50 per toilet are offered. Administered via Town.			x	x
Showerhead			X			Program administered by CRC from 2014 to 2016 as indoor water audit program. Discontinued after 2016. Program restarted in 2020 and is currently administered by the Town.				x
Do-it-yourself irrigation audit kits			X			Erie offered free do-it-yourself irrigation audit kits that were available through the Public Works Department. The kit included catch cups to measure sprinkler system's output and coverage, flags, a soil probe, a pressure gauge to measure water pressure, and instructions. The program started in 2009. This program has been discontinued.	x			
Water consumption tracker			X			Erie offered in-home water consumption meters that allow residents to closely track indoor and outdoor water use for a cost of $105 per meter. This program element has been discontinued because it was no longer supported by the meter manufacturer.	x			
Indoor water inspections			X		x	Indoor water inspections that evaluate indoor water use and fixtures including the provision of one low-flow showerhead and two aerators per household. Program was administered by CRC and discontinued after 2016.		?		
Pre-rinse spray valves					x	A small number of pre-rinse spray valves were distributed to restaurants and businesses. Program was discontinued due to small size of commercial sector in 2015/2016.	x	x		
Rain barrels			X			Rebates of $50 per each barrel with a limit of two rain barrels per household. Administered via the Town.			x	x

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Water Efficiency Activities	Customer Sector					Description of Activities	Timeline			
	Town facilities	Parks	Residential	HOA	Commercial		2008 Plan	2014 Plan	Started Post 2014	2021 Plan
High efficiency sprinkler nozzles			X	x		Erie offers rebates per nozzle at $2 with a limit of 24 nozzles. An irrigation assessment by CRC is required prior to retrofits. Program was previously administered by CRC from 2014 to 2016. Program was discontinued and brought back by Town in 2020.			x	x
Drip irrigation equipment			X	x		Erie offers 50% off drip irrigation equipment with a $50 fee. This includes drip conversion kits, drip emitters, pressure reducer and y-screen, ¼ distribution line, connection fittings, spigot timer, drip valve 15-40 psi. Administered by Town.				x
Garden in A Box			X			Selection of professionally designed affordable do-it-yourself garden kits containing low water use perennial plants. Administered via CRC.	x	x		x
Slow the Flow sprinkler consultation			X			Residents may sign up for a free consultation with a conservation technician. Administered via RC since 2004.	x	x		x
Smart irrigation control clock direct installations			X			Residents may receive a $80 to $90 rebate on smart controllers which gathers weather data via the resident's wifi signal and adjusts the watering schedule accordingly. To qualify residents must have recently received a Slow the Flow sprinkler consultation. Administered via RC. This was established as a cost-share program.				x
Automated rain sensors direct installations			X			Residents may receive a $60 rebate on automated rain sensors which shut the irrigation system off if rain is detected. To qualify residents must have recently received a Slow the Flow sprinkler consultation. Administered via RC. This was established as a cost-share program.				x
Drip irrigation control kits			X			Started in 2020. Administered by Town.				
Evaluate turf replacement rebate program			X	x	x	Evaluate opportunities, challenges, costs and benefits of a turf replacement program for residential and commercial.				x
Informative and understandable water bill	x	X	X	x	x	Water bill informs customers of water previously used enabling customers to compare their monthly water use with previous usage.	?	x		x
EyeOnWater App			X			Customers can download the EyeOnWater^{R} App on their phone. This application allows viewers to monitor their water use on a daily basis. It also enables the early detection of leaks.			x	x
Green Business & HOA Certification Program						Started in 2020. This certification program promotes a set of "green criteria" that is awarded through a point system. The program also includes a scoring system for other sustainability sectors awarding businesses and HOAs that adopt more sustainable, environmentally friendly practices. The awardees are recognized and celebrated through various avenues. The green criteria address water and energy efficiency, finance, governance, mobility and connectivity, and waste management. Water "green criteria" addressing water considers the use of smart irrigation controllers on irrigated open spaces, use of the cycle and soak irrigation techniques, and the promotion of water efficiency among its residents.				x
Large property irrigation audits						Started in 2020. Town offers free outdoor audits to large properties. Town partners with RC and Northern Water on conducting audits.				x
Partnership with Northern Water on advertising landscape consultations and grants				x		Northern offers landscape consultations for public facilities and open spaces, schools, businesses, HOAs, etc. The 90-minute landscape consultations include plant selection, turf maintenance, soil management and more. Grant opportunities are also available to these entities that want to develop new or redeveloped water-efficient landscapes that are designed to use substantially less water than traditional landscapes and include at least 50 percent plant coverage when mature. Erie currently promotes these programs through its HOA Green certification program.				x
Regulations and Ordinances										
Water waste ordinance	x	X	X	x	x	In 2002, Erie adopted an ordinance prohibiting the wasting of water, which is defined as "any use of water that is not applied to a beneficial use." This will updated in 2021.	x	x		x
Time of day watering	x	X	X	x	x	This limits watering to early morning, evening, and night when the potential for evaporation is at its lowest. The timing has been updated in the 2021 Plan to 5 p.m. to 7 a.m..	x	x		x
Watering restrictions	x	X	X	x	x	Erie has implemented a three -tiered water restrictions program since 2002. Erie's 2021 Drought and Water Supply Shortage Plan calls for mandatory restrictions that correspond with the intensity of a drought.	x	x		x
Education										
Work with the Sustainability Advisory Board and other citizen advisory boards	x					Promote water efficiency through activities of the Sustainability Advisory Board and other citizen advisory boards.				x
Town of Erie website and Erie.Earth website	x	X	X	x	x	Erie's websites provide information on the Town's current water efficiency activities and guide customers towards additional informative resources on water, efficiency, and sustainability. These websites will routinely updated as Erie's water efficiency program continues to evolve and will be better coordinated to provide consistent information and/or provide the appropriate level of linkage between the two sites.	x	x	x	x
Email distribution lists			X	x	x	The Town uses "Notify Me" allowing customers the ability to sign up for email distribution lists on various topics. Information concerning water efficiency and water restrictions has been conveyed to the public through this system. Erie.Earth also has a mailing list. Customers within Boulder County can also sign up for information from Boulder County's EnergySmart Program which provides information on indoor water efficiency at times as well.		x		x

Water Efficiency Activities	Customer Sector					Description of Activities	Timeline			
	Town facilities	Parks	Residential	HOA	Commercial		2008 Plan	2014 Plan	Started Post 2014	2021 Plan
Bill inserts			X	x	x	Erie routinely provides information on water efficiency in bill inserts during the irrigation season. This reaches about 70% of Erie's customer base.	x	x		x
Postcard for new residents						New residents receive a postcard from the Town introducing Erie's water efficiency programs.				
Xeriscape video			X	x	x	Erie plans to develop a video that can be accessed via their website(s) any time, focusing on the seven main principles of xeriscaping and how to replace high water use grass with enjoyable xeriscape.				x
Demonstration gardens	x	X		x		There are a variety of low-water use landscapes in Erie's parks and Town facilities that can serve as a public education tool on wise water use and low water use landscaping. Such locations with high community visibility include Town Hall, Community Park and the pollinator garden at Thomas Reservoir. Erie plans to develop signage for these areas and potentially other area with high community traffic.		x		x
School programs			X			Erie has provided education programs to fourth and fifth graders since 2003. There have not been any recent programs but more are being planned.	x	x		x

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Table B.2: Estimate of Historical Water Savings (acre-feet per year)

Year	Reuse Water			Menu of Rebates and Retrofits							Total Savings
	Reuse water	Recycling backwash water at WTP	Flushing/ cleaning of NWRF	Clothes Washer (Town)	Toilet Residential (CRC)	Shower-head Rebates (Town)	RC Indoor Water Inspec-tions	RC Garden in A Box	RC Slow the Flow Irrigation Audits	RC Smart Irrigation Control Clocks Direct Installations	
2008	207.0	145.5	250.0	0.6	0.0	0.0	0.0	-	1.1	0.0	208.7
2009	83.0	209.0	250.0	1.9	0.0	0.0	0.0	-	1.7	0.0	86.6
2010	120.9	178.3	250.0	4.1	0.0	0.0	0.0	-	1.3	0.0	126.3
2011	144.6	186.8	250.0	5.8	0.0	0.0	0.0	-	2.2	0.0	152.6
2012	317.8	207.3	251.0	7.2	0.0	0.0	0.7	-	2.6	0.0	328.3
2013	196.6	184.1	236.0	8.6	0.0	0.0	1.5	-	2.3	0.0	209.0
2014	44.6	185.7	356.0	9.9	0.0	0.0	2.4	-	2.0	0.0	58.9
2015	52.8	194.9	302.6	11.7	0.0	0.0	3.1	0.1	2.4	0.0	70.1
2016	147.8	223.4	297.6	14.0	0.0	0.0	3.4	0.3	2.6	0.0	168.1
2017	338.0	229.9	318.6	15.7	0.0	0.0	3.4	0.5	2.8	0.0	360.5
2018	216.7	236.9	351.7	16.9	0.2	0.0	3.4	0.7	3.2	1.6	242.7
2019	242.1	234.8	400.8	17.2	0.5	0.0	3.4	0.9	3.3	3.0	270.4
2020	234.4	171.2	411.0	17.0	0.6	0.0	3.4	1.0	3.7	5.0	265.1

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Appendix C – Summary of Public Comments

This section will be completed once the public review period is over. Additional public comments will be added.

Existing Programs and Potential Opportunities for Collaboration from Erie's Draft Water Efficiency Plan

A call was held between Erie and Northern Water on November 15, 2020 to discuss potential opportunities for collaboration to further drought mitigation and response and water efficiency efforts. The following provides Northern Water's input on specific water efficiency measures outlined in Erie's Plan.

WEP Suggestion: To further consider conservation ideas and models, please also consider meeting with Ft. Collins, Greeley, Loveland, and Longmont on their programs – turf replacement, certification programs, rebate programs. Outside the region, consider Castle Rock, Westminster, Fountain, Aurora, Thornton, and Parker.

Partnership with Northern on advertising landscape consultations and grants - Northern offers landscape consultations for public facilities and open spaces, schools, businesses, HOAs, etc. The 90-minute landscape consultations include plant selection, turf maintenance, soil management and more. Grant opportunities are also available to these entities that want to develop new or redevelop landscapes that are designed to use substantially less water than traditional landscapes. Designs must include at least 50 percent plant coverage when mature and use efficient irrigation systems, if included. Renovations that enhance ecosystem services are preferred. Erie currently promotes these programs through its HOA Green certification program. (described below)

WEP Response: Northern Water welcomes the collaboration with allottees, and the promotion of active water management among commercial water users. Northern Water services are first come, first served, with resource limitations. We reserve the right to limit service allocations to ensure capacity remains for our entire service territory. While there is no guarantee of availability given changing demands and priorities, Northern Water will work with Erie on program priorities. Northern Water prefers the municipality provide its available services first, followed by Northern Water's services to supplement municipal services to meet additional demand, if available. With that, please share Northern Water's Water Efficiency Program:

- *in your utility billing, etc., as desired.*
- *through your social media*
- *through your account managers or strategic accounts*
- *through targeted outreach as a result of any high bill analysis*

Green Business & HOA certification program – In 2020, Erie initiated the Green HOA Certification Program. This certification program promotes a set of "green criteria" that is awarded through a point system. The program also includes a scoring system for other sustainability sectors awarding HOAs that adopt more sustainable, environmentally friendly practices. The HOAs are recognized and celebrated on the town and Erie.Earth websites as well as through a window sticker that HOAs can feature in their common spaces. The Town, in partnership with the Chamber of Commerce, also celebrates these HOAs during an annual recognition ceremony. The green criteria address water and energy efficiency, finance, governance, mobility and connectivity, and waste management. Water "green criteria" considers the use of smart irrigation controllers on irrigated HOA open spaces, use of the cycle and soak irrigation techniques, and the promotion of water efficiency among its residents.

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WEP response: We applaud the holistic approach to landscape management and the targeting of HOAs whom manage large landscapes. There is ample opportunity to improve landscape management in this sector. As they modify their landscape management, we would suggest the following:

- Sharing the concept of Colorado Native Landscape Coalition (CNLC) program benefits, see attached.
    - Transitioning landscapes to include support for flora and fauna, including pollinator health.
- Sharing our available sign templates that communicate sustainable management methods and aesthetics:
    - Communicates intent to homeowners, contractors and visitors.
    - Demonstrates the shifts are intentional and may be different than before.
- Contact CSU-Extension agents for consultations on landscape management
- Promoting available 3rd party certifications for landscape management, as in CNLC:
    - Audubon of the Rockies' Habitat Hero for supporting bird habitat
    - National Wildlife Federation's Certified Wildlife Habitat for wildlife
    - Xerces Society methods and signage for pollinator and insect support
    - Plant Select offers an HOA program to incorporate xeric climate appropriate plants.
    - Meet with the Colorado Native Landscaping Coalition to determine options.
- Offering HOA boards, property managers, and their contractors to tour Northern Water's Conservation Gardens.

Large property audits – The Town offers free outdoor audits to large properties, partnering with RC and Northern Water in conducting the audits. This program was revamped in 2020 and awarded in the Green Business & HOA Certification Program managed and recognized by the Town's Sustainability Division.

WEP Response: Norther Water's *basic* and *advanced* irrigation auditing services may be available to supplement municipally funded services. Basic audits are available to HOAs and commercial private sector properties. Advanced audits are targeted to municipally owned, professionally managed properties such as parks, schools, city buildings, and large landscapes, available on a case-by-case basis, and with agreement by audit recipient to meet and review results and commit to implement some recommend changes, where appropriate.

Northern Water covered audits are:

- Given out under NW discretion.
- A requirement for and should be used to support applications for Northern Water's grant program
- To supplement our partner's existing contracts when they are used up

Possible statement to support our reason for providing audits -

"Northern Water contracts with irrigation audit providers. Northern Water partners with Resource Central to provide STF to those communities that don't yet contract with RC and may supplement existing contracts when exhausted. RC's STF program is a tool Northern Water utilizes for its Consultation and Grant participants. The results of the audit are used to guide water saving renovations."

Suggest Erie undertake audits at all municipally managed sites and establish water use benchmarks to identify paths to maximize water efficiency.

Northern Water's landscape trainings – Northern Water provides a variety of landscaper certification training programs where landscape contractors, commercial property managers, municipal employees, private sector landscape professionals, and other affiliated personnel can pursue training in implementing efficient irrigation

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and landscape management. Trainings may include courses where a certification exam is provided at the end of the class. Upon passing the exam, the landscape professionals are put on a national certification list, hosted by EPA's WaterSense program. HOAs are given additional points in the Green HOA Certification Program for using a certified landscaper. Northern Water supports this step.

Northern Water offers professional training and certifications in landscape design, installation, management and irrigation auditing to build capacity for drought-resilient, water-efficient landscape management in the region. Training is provided for entry level, intermediate, and seasoned professionals with different skillsets and roles.

- Northern water hosts and reduces costs for this training to make it available and accessible to all audiences.
- Sectors targeted for this training include green industry, municipal employees, private sector practitioners, non-profit partners and other interested parties.
- Example WaterSense approved certifications that have or may be held:
  - Professional Certifications – those available from the Irrigation Association, Watershed Wise Landscape Professional, Sustainable Landscape Management and Qualified Water Efficient Landscaper

Suggest Erie staff participate in the trainings, become certified and promote them among HOAs and other landscape managers.

Evaluate turf replacement rebate program – A turf replacement program would provide incentives to residents and commercial property owners to replace their existing turf with lower water using landscaping. This could provide water savings and assist with providing Erie with a consistent low water use landscaping look. However, there are implementation and financial challenges to ensuring a successful program. Erie plans to identify how a turf replacement program can be successfully implemented addressing the following: 1) educational outreach and Town activities (e.g. review of designs and inspection) necessary to administer such a program, 2) necessary staff and financial resources, 3) essential items to ensure success, 4) level of financial compensation needed to make the rebate attractive to the home owner, 5) level of follow up needed to ensure that the essential elements to achieve such savings (e.g. soil preparation, proper irrigation design, low water use vegetation and proper weed control) are incorporated into the design and installed, and 6) lessons learned from other turf replacement programs.

Yes.

· WRA is applying to CWCB for a grant to help maximize the opportuitie to facilitate these types of transitions.

- Suggest Erie participate in Resource Central's Grass to Garden Program, or equivalent.
  - Suggest contacting Resource Central, Greeley, FC XIP all have these types of programs

Address obstacles and provide guidance on landscape conversions – The Town currently does not have a process nor provide guidance to residents interested in converting turf to low water-use landscaping. While there is a permitting process for the replacement of trees and shrubs, the UDC and Standards and Specification for Parks and Recreation Construction does not address landscape conversions to low water use landscape. Additionally, HOA bylaws can inaccurately communicate that it may be illegal to change landscapes away from the traditional Kentucky Bluegrass non-native turfs. Erie plans to work with HOAs to better understand how these obstacles can be avoided and in identifying a process that would help guide residents through the landscaping process. Where applicable, such processes will be incorporated into the UDC update. Technical resources that assist the resident in designing and installing water efficient landscapes will also be explored.

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- Yes, we have details we can share on this topic. Northern Water suggests Erie produce a flier identifying the process, departments, cost, timeline, and content necessary to complete an approved landscape transition. It may be called a Minor Amendment Report, or similar. Many cities have not evaluated their process to approve landscape transitions and may not provide a clear path to participants.
    - This document sets clear expectations, ensures the city understands its own process, and informs city employees what to expect in their role facilitating the landscape project review.
    - See City of Loveland's example
    - If Erie creates this document, Northern Water will share it during consultations

Dialogue with development community on methods to promote water efficiency - A variety of methods may be used to encourage water efficiency at the development and construction phase of new communities. Erie plans to conduct an outreach effort and survey among the development community to explore an array of tools and resources that would be most useful in encouraging water efficiency during the application, design, and construction phase. Examples of such tools and resources to be considered include the development of subdivision water efficiency plans, low water use demonstration homes that are advertised as such, installation of dual outdoor and indoor water meters, low water use landscaping of the strip of land between the sidewalk and street common among many Erie subdivisions, etc.

WEP Response: Northern Water suggests Erie participate available third-party reviews of UDC and other development impacts. Recommend Erie apply for a Growing Water Smart workshop and pursue follow up activities to include a supported review of UDC and other to determine optimal ways to include efficiency into new and redevelopment. Support for these efforts may include WaterNOW's Project Accelerator or other pro-bono resources.

Existing water efficient new home certification plans include WaterSense Homes and RESNET's HERS H20. Both provide high performance and water savings.

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Appendix D – Ordinance Adopting Water Efficiency Plan

This will be added in the final draft once the Plan is adopted by the Town.

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