WATER WISE LANDSCAPES

A Cost-Effective HOA Investment in Resilience

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Authors: Caroline Koch, Water Policy Director, WaterNow Alliance
Cynthia Koehler, Executive Director, WaterNow Alliance
Victoria Arling, Colorado Basin Program Manager, WaterNow Alliance
Becky Anderson, Program Manager, WaterNow Alliance
George Oamek, PhD., Economic Consultant, Honey Creek Resources, Inc.

Laura Belanger, Senior Policy Manager, Western Resource Advocates
Lindsay Rogers, Policy Manager for Municipal Conservation, Healthy Rivers, Western Resource Advocates
Chelsea Benjamin, Healthy Rivers Fellow, Western Resource Advocates

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Introduction

In recent years, Colorado has seen unprecedented momentum behind the replacement of non-functional, cool season turfgrass – such as Kentucky bluegrass – with water wise plants and grasses that significantly reduce outdoor water demand while providing important environmental, economic, and community benefits. Since Homeowners Association (HOA) communities are widespread in Colorado, replacing irrigated but unused turf on HOA-managed properties, like community entryways or large common areas, presents an important water savings opportunity for HOAs, water providers, and the state as a whole. This report aims to help HOAs successfully leverage funding and financing opportunities to pay for turf conversion projects, to maximize their return on investment, and to make informed financial decisions about their project. Case studies are included to demonstrate how other Colorado HOAs have successfully funded, implemented, and benefitted from turf conversion projects. Since HOAs are managed, governed, and funded differently from, for example, a city that wants to replace turfgrass at city hall, the report addresses how the funding and financing opportunities available to HOAs will also be different. Identifying funding is one of several important phases involved in carrying out a successful turf conversion project from start to finish. Additional information on planning, implementing, and maintaining a turf conversion project is available in Appendix B.

Background: How HOAs Can Benefit From Turf Conversions

Turfgrass lawns are the number one irrigated "crop" in the United States; around 40 million acres of the U.S. has some form of lawn on it.[i] Non-native turfgrass requires intensive irrigation to maintain its health in the Colorado summer. As a result, water applied to outdoor landscapes and irrigated turf accounts for 40-50% of all municipal water use in Colorado. A large proportion of turfgrass in Colorado is "non-functional", which means irrigated, non-native turf that receives little, if any, physical use according to Colorado House Bill 22-1151.[ii] The removal of non-functional turf in Colorado has the potential to generate significant water savings and has become increasingly popular in recent years. In fact, replacing turf with water wise, climate-appropriate landscaping has been shown to save between 30-70% of water applied to outdoor landscapes.[i] Our water supplies are becoming increasingly variable as Colorado becomes hotter and drier. Water savings from turf conversion can serve as a sustainable source of water for Coloradans in the face of this increasing climate uncertainty.

In Colorado, 40% of all residents and 60% of homeowners live in HOA communities. With 10,300 HOAs statewide, Colorado is second only to Florida in the number of residents residing in HOA communities.[iii] These HOAs help maintain property values and play a critical role in ensuring neighborhoods are well managed, maintained, and enjoyed by all residents. Towards this end, many HOAs maintain significant landscaped areas at entrances to and throughout communities to add visual interest and provide recreational amenities for residents. The majority of HOA landscaping has historically been irrigated, non-native turfgrass – only a small portion of which is typically utilized by residents for recreation or other community activities. Often, large areas of turf found in HOA medians, common areas, stormwater detention basins, and entryways serve no functional, physical, or recreational purpose or benefit. Replacing this non-functional turf with water wise landscaping presents a tremendous water and cost saving opportunity for HOAs, especially as the price of water in Colorado continues to rise to reflect increasing scarcity. Further, given how widespread HOAs are across the state, scaling-up landscape transformation on HOA properties presents an important water demand reduction tool across Colorado.

HOAs may elect to invest in turf replacement projects for a variety of reasons. Some may be motivated to significantly reduce their summer watering bills while others may be concerned about the environmental impact of their water use. Beyond saving water and reducing water bills, replacing turf areas in HOA communities with water wise landscaping will also generate a host of other benefits, including:

- **Improved aesthetics:** Well-designed, installed, and maintained water wise landscapes have been shown to increase property values up to 15%.[iv]
- **Lower water and maintenance costs:** Established water wise landscapes typically require less labor time, fertilizer, and water to maintain compared to turfgrass.
- **Reduced emissions from mowing:** The EPA estimates that one gas powered lawn mower emits 89 pounds of CO_2 and 34 pounds of other types of pollutants per year.[v]
- **Increased pollinator habitat:** Native and climate-appropriate plants create habitat for pollinators like bees and butterflies.
- **Improved stormwater infiltration:** Water wise plants and grasses typically have deeper roots than cool season turf which allow for greater stormwater infiltration and reduced stormwater runoff and erosion.[vi]
- **Increased drought tolerance:** Water wise landscapes use significantly less water than turfgrass, making them far more resilient to outdoor watering restrictions.

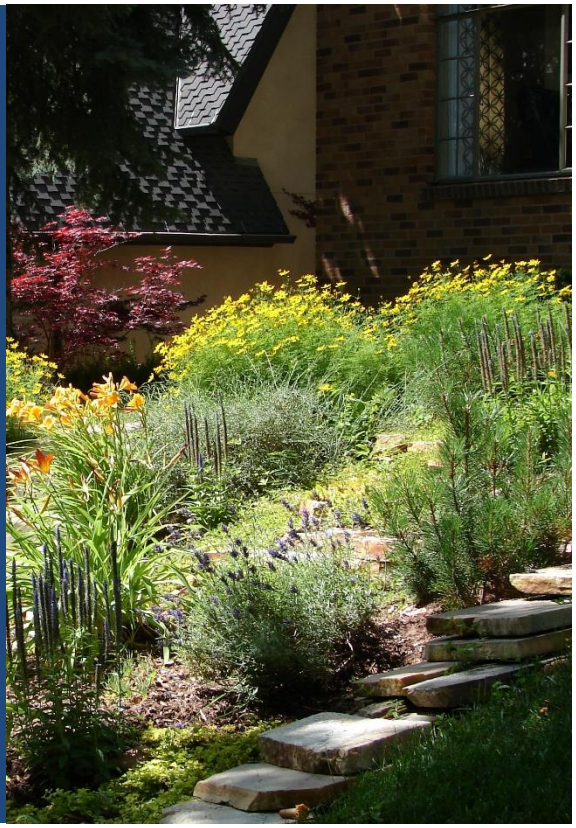
Whatever the motivation, turf replacement projects on HOA properties are a cost-effective investment opportunity and as the case studies in this report demonstrate, HOAs in Colorado are electing to install water wise landscaping in place of non-functional turf.

Did you know?

Legislation on Landscaping in HOA Communities

Colorado HB19-1050 establishes the right of unit owners in HOAs to use water efficient landscaping and specifies that HOAs cannot require a homeowner to install cool-season turfgrass. Colorado HB23-178 added specificity by requiring HOAs to allow up to 80% drought tolerant plants in a homeowner's landscape and to select at least three pre-approved water wise landscape design templates for unit owners to choose from. It's recommended that HOAs double check to ensure their bylaws are updated to comply with these new allowances for water wise landscaping.

In addition to unit owners' properties, there are no legal barriers or covenants preventing HOAs from implementing turf replacement projects in common areas owned and maintained by the HOA, as long as the project complies with their municipal development code.



How To Pay for an HOA Turf Conversion Project

1. Navigating HOA Options for Paying for Turf Conversions

Turf conversions are an infrastructure investment that HOAs can and should make. Unlike other traditional infrastructure investments like roof repairs, painting, or road resurfacing, a turf conversion can pay for itself over time and even become revenue positive due to water cost savings. For this reason, turf replacement programs should be included as an important component of a longer-term facilities master plan for the HOA. This approach ensures HOA boards approve turf replacements together with all other infrastructure investments.

From an infrastructure financing perspective, HOAs have several options to pay for turf conversions: (a) city and water provider financial incentives; (b) accumulated financial reserves; (c) special assessments; and (d) debt financing. These options are detailed below. To invest in large-scale conversions, HOAs can combine two or more of these mechanisms to create a financing portfolio that helps realize the full water and cost savings benefits of switching thirsty turfgrass to water wise landscaping.

a. Cost-Share Opportunities: City and Water Provider Rebate Programs

While very cost efficient in the long-term, the upfront investment in turf conversion at the HOA scale can be costly. However, financial incentives like rebates and grants from local water providers, cities, and other sources can help lower HOA out-of-pocket investments in turf replacement. Many water providers across the state have realized the water savings potential of HOA turf conversion and are now offering grant and rebate opportunities to help encourage conversions in their communities. In several of the case studies included in this paper, including Cherry Creek 3, Fairway Ridge, and Quebec Run, water provider and other rebates were used to cover a portion of the overall turf conversion project costs. At the time of publication, 15 Colorado cities and water providers offer rebates for HOA projects that can cover up to 50% of a project's costs, significantly reducing the financial burden of turf conversion on an HOA (See Appendix A for a full list of incentive programs). Several of the financial incentive programs are explained in more detail below. These programs are included both as a reference for HOAs who may be eligible for these and others in Appendix A, and for water providers who may be considering implementing similar programs.

HOAs in communities that don't currently provide financial assistance may want to approach their local water provider to discuss this as an increasing number of communities are implementing new and expanded turf replacement programs.

Northern Water's Water Efficient Landscape Grant Program

Northern Colorado Water Conservancy District (Northern Water) is a large water district providing supplemental water to communities and agricultural irrigators in portions of eight Northern Front Range Colorado counties. Northern Water's Water Efficient Landscape (WEL) Grant Program provides funding for eligible HOA landscape conversions within Northern's coverage area. The program "promote[s] water-efficient, Colorado climate friendly landscapes that serve as regional demonstration and outreach efforts."[vii] The grant program is in its sixth year and, through 2023, has funded 62 projects for a total of approximately $826,000. To date, these projects are estimated to have saved a cumulative 62 million gallons of water (approximately 190 acre-feet). Half of these grants have gone to HOA projects, with the remaining funds granted to municipalities, churches, and special districts. The HOA projects all involved irrigation system upgrades, with many also including turf replacement with water wise plants and native grasses. To date, turf replacement project areas have ranged between 1,200 square feet to approximately 5.5 acres (239,580 square feet) with smaller projects typically replacing turf with low water perennial plants in garden beds and larger projects replacing turf with low water native grasses. On average, WEL turf conversions to low water planting beds saved 12.8 gallons per square foot and cost $7.99 per square foot. WEL turf conversion to native grasses saved less water at 10.1 gallons per square foot but only cost $0.59 per square foot.

The WEL grants provide a 50% cost share for landscape water conservation projects, and up to $20,000 per project. Of the HOA projects, 74% qualified for the full 50% cost share, with the average cost share at 47%. In-kind labor is accepted as a portion of the local cost share. HOAs have paid their portion of the overall project costs through financial reserves and contributed labor. WEL grant payments are made once a project is completed. In addition to funding, Northern Water staff provide hands-on landscape consultation services to support participants in designing and implementing a successful project.

Thornton Water's Commercial Water-Wise Landscape Grant Program

Thornton Water offers rebates for up to 50% of the cost of design, renovation, and installation of water wise landscapes in turf conversion projects up to $10,000 per acre. The rebates are designed for projects between 0.5 to 5 acres, and HOAs are eligible to apply. The program was created in 2020 to meet Thornton Water Efficiency Plan goals to reduce water demand on large properties. The initial budget was $200,000 per year, but has since been reduced to $100,000 per year. A maximum of $50,000 is available for each application and project.

So far, the program has converted five acres of turfgrass to low water landscapes in Thornton. The program is seeing an annual water savings of 11.2 gallons per square foot, equal to 1.5 acre-feet for each acre of land converted. The cost to convert landscapes from turf to native grass has averaged $4,000 per acre, or approximately $0.09 per square foot, excluding design costs. Turf conversion has yielded an annual water bill savings of $2,830 per acre per year, allowing participants to see a full return on their investment just over one year later.

The program has seen interest from seven additional HOAs since 2020, but none have sent in an application. Program directors have realized this is due to difficulties within HOAs to receive approval to fund landscape changes. To increase overall program participation, Thornton is considering offering to cover 50% to 100% of landscape design cost in the future, so that applicants can estimate and receive approval for the total cost of their project.

Castle Rock Water ColoradoScape Program

Castle Rock Water offers a Non-residential ColoradoScape Renovation rebate program, for which HOAs are eligible to apply. The utility reports that these rebate programs have been very successful and are generating their greatest water savings compared with other conservation initiatives offered (e.g., rebates for smart irrigation controllers, rotary nozzles, toilet retrofits). Castle Rock's ColoradoScape Renovation rebate program encourages "non-residential" water customers (e.g., commercial users and HOAs) to replace high-water turfgrass and other plants with water wise landscaping. The rebate amount is $1.10 per square foot, the minimum conversion area is 1,500 square feet. The maximum total rebate is $15,000 per account. Appropriate changes or reductions in the associated irrigation system must also be completed. The Non-residential ColoradoScape Renovation launched in 2018 and has completed three to nine projects per year.

Castle Rock's program has been successful in reducing outdoor water usage. The non-residential program has led to the removal of approximately 180,000 square feet, or 4.1 acres, of turfgrass resulting in a 29% reduction in outdoor water use for these properties. These results indicate that, as in other areas, engaging large property owners can generate substantial benefits.

Castle Rock Water has worked closely with many property managers and HOAs to educate them on the benefits of replacing turfgrass with ColoradoScape designs, with the intent of increasing participation from more HOAs in the future. Since larger HOA landscaping projects typically require the services of landscape professionals, these projects still require significant financial investments from the HOA even with the $1.10 per square foot rebate.[viii]

Water providers across Colorado are offering incentive programs and hands-on resources to make it more cost-effective and feasible for HOAs to convert their non-functional turf areas (Appendix A). While project costs and water savings will vary from project to project, financial incentives can help communities justify larger projects, ultimately saving them more money and water in the long term.

b. Accumulated Financial Reserves

Many HOAs have accumulated financial reserves which can enable them to finance the costs of turf conversion even in the absence of incentive programs. These reserves are in effect an HOA's savings account. Reserve studies, described in more detail in Section 3b, can help HOAs assess their ability to self-fund from their current budget or determine when they may be able to in a future budget, as demonstrated in the Black Bird Knolls HOA case study. It may also be feasible for HOAs to fund a portion of their turf conversion project with available annual revenues rather than dipping into reserves. Like any other major expenditure, in most cases a simple majority Board approval would be required to use reserve funds or annual cash to proceed with a turf replacement program.

c. Special Assessment

Monthly or annual dues, also referred to as assessments, are paid to the HOA by homeowners and are generally relied upon to finance operating expenditures and some portion of major capital projects, such as repairs, replacements, and new construction. Special assessments can be used when the combination of accumulated reserves and regular dues fall short of needed financing. Special assessments are an additional assessment an HOA can enact on a temporary basis to finance major projects, including turf replacements.

HOA special assessments are unregulated beyond the HOA level. Each HOA's originating covenants or bylaws will contain requirements regarding the amount financed, required homeowner approval, and

the length of time the special assessment remains in effect. However, typical HOA restrictions on special assessments include a simple majority or two-thirds majority approval by homeowners, a maximum period in which the special assessment can remain in place, and a maximum amount to be financed, often expressed as a percentage of property values. Enforcement of payment for a special assessment is the same as for regular HOA dues.

In terms of turf replacement, special assessment revenues can be directly applied to a project or applied to debt associated with a project, as long as HOA bylaws are followed. Consider, for instance, a turf replacement project with an estimated installation cost of $100,000. One financing scenario could have the project staged over five years, with a special assessment to raise $20,000 per year, ending in year five. Another scenario might have the entire $100,000 project installed in year one using debt financing, with the special assessments being used to repay the debt over the next five years. Depending on HOA bylaws, either scenario would likely require a majority or two-thirds of homeowners to vote in favor of the project. The HOA's regular dues could then be used to cover maintenance costs for the new landscaping.

d. HOA Debt Financing

In addition to generating fee revenue, HOAs may borrow funds to address larger-scale financing needs, including for turf replacement projects. Since securing debt for an HOA loan is more complicated and comes with higher associated risks than some types of loans, such as a home improvement loan where the bank puts a lien on the house, many traditional lenders will refer prospective customers to banks or institutions who specialize in HOA lending and management services.

Historically, HOAs have employed debt financing for projects focused on structural improvements to buildings and roadways. Turf replacement is not the traditional type of infrastructure or improvement project typically financed. For example, Alliance Bank, specializing in HOAs, has indicated that HOA financing is currently in high demand nationwide for more traditional infrastructure projects. As a result, they do not currently loan for non-traditional projects such as landscaping, but indicated that they would have an open mind for turf replacement projects in the future. If they were to loan to an HOA for turf replacement, the loan amount would have to exceed $250,000 and be repaid in 5 to 7 years. In the Quebec Run case study, the HOA was able to identify a bank lender and secure a 15-year loan of $750,000. To secure the loan and pay for the project, HOA dues were raised by approximately $20 per month.

With anticipated success of turf replacement projects in conserving water and reducing landscaping costs, it is reasonable to assume that debt financing beyond these traditional terms and lenders will evolve. Risks inhibiting traditional lenders, such as loan security, could possibly be shared or guaranteed through public agencies such as the Colorado Water and Power Authority or the Colorado Water Conservation Board, making debt financing a more viable option for HOA turf replacement financing in the future.

2. Understanding the Benefits and Costs of Different Funding Options

How HOAs finance turf replacements affects the rate of increases in dues members of the HOAs pay to cover the cost. An HOA's approach to financing also influences the rate of return and benefit-cost ratios. Table 1 below illustrates these scenarios based on a theoretical turf replacement project of one acre for an HOA with 50 homes. Three financing scenarios are considered, 1) with a special assessment; 2)

through a loan from a specialized HOA lender; and 3) through an HOA's accumulated reserves that are sufficient to fund the project over a single season, i.e., an all-cash approach.

Table 1 shows the benefit-cost ratio and the net present value of turf replacement activities over a 30-year horizon and demonstrates that they are a good investment under each of the scenarios; however, a significant difference lies in the time it takes the HOA homeowner to see positive results. Benefits are based on reduced water usage and long-term maintenance costs at levels typical for the Colorado Front Range. Since the period of analysis is 30 years, a life-cycle approach is used – expenditures are based on initial installation costs and revised operations and maintenance costs for each of the 30 years, with periodic replacements of irrigation hardware and plantings as needed due to age or unplanned damage. Over a 30-year period, all project financing options would result in savings between $1,500 and $1,725 per homeowner given reduced water usage and reductions in long-term maintenance costs. This analysis demonstrates that in the long run HOA turf replacement projects financed through any of the below options would be a cost-effective investment for both the HOA and the individual homeowners.

For scenario 3, the use of accumulated reserves, the benefits outweigh the costs to the homeowner nearly immediately, here estimated to be two years. In addition, since these reserves are already in-hand for the HOA, there would be no need to increase homeowner dues. After year two, the HOA Board could consider reducing homeowner dues by $11 to account for water bill reductions from the turf replacement project.

For HOA debt under the special assessment and debt financing scenarios (scenarios 1 and 2), the benefits outweigh the costs to the homeowner and payback is estimated to occur at year six. Under these scenarios, homeowners would need to pay increased dues during the project's five-year repayment period to pay back the debt while maintaining the HOA's short-term cash flows. Increased dues are estimated to be $7-10 per month for scenario 1 and $10-13 for scenario 2. While this temporary increase in dues has the potential to limit homeowner support for the project, after year five the HOA Board could reduce dues by approximately $11 per month given the expected water bill reductions associated with the turf replacement project. This would make the new monthly dues after year five similar to, or even less than, monthly dues charged before the project.

Scenario 3 is a good option if the reserves are already available and additional time to accumulate needed reserves is not needed. If reserves are not sufficient, scenarios 1 and 2 are good options to access upfront funds that can be repaid overtime.

Type of financing	Benefit cost ratio of turf replacement	Retrofit benefit per homeowner over 30 years (net present value of savings)	Potential impact to homeowners' HOA dues	Years to positive cash flow
Scenario 1: Special assessment over 5 years	1.78	$1,725	Potential to increase dues by $7-$10 per month for 5 years; potential to reduce dues by $11 per month after year 5	6
Scenario 2: HOA debt financing over 5 years	1.67	$1,580	Potential to increase dues by $10-$13 per month for 5 years; potential to reduce dues by $11 per month after year 5	6
Scenario 3: Use of HOA reserve funds	1.74	$1,668	Since these are financial reserves, no near-term increase in dues; potential to decrease dues by $11 per month after year 2	2

Table 1. Impacts of alternative debt financing tools to HOA homeowners for replacing one acre of Kentucky bluegrass with irrigated native mix, assuming 50 HOA units.

3. Optimizing the Timing of an HOA Turf Conversion Project

When it comes to any HOA landscape improvement project, timing is essential. Planning a turf conversion project to coincide with the growing season, irrigation upgrades, or other planned or needed community improvements can often lead to cost savings and help achieve several objectives simultaneously. HOAs can also optimize their investment by planning out their landscape improvement projects based on the community's financial reserves.

a. Increasing Cost-Effectiveness by Pairing Turf Conversions and Irrigation Upgrades

Irrigation systems must be properly designed, installed, and managed to provide the correct amount of irrigation water needed for specific plant and grass types. Some HOAs elect to invest in turf replacement programs when their existing landscaping or irrigation system has reached the end of its useful life or needs an upgrade and financial investment to improve the system is already necessary. In the Quebec Run case study, the HOA completed a turf replacement project in an area that was underirrigated

because the wrong water pipe size was installed during the initial landscaping of a large Kentucky bluegrass lined park, in addition to other irrigation system installation issues. The area was never watered sufficiently due to the improper water pipe size and poor sprinkler spacing, and the landscape aesthetics suffered in the summer. As a result, the turf area was rarely used by community members, and wasted a lot of water. The turf conversion project helped the community save on water costs, beautify their park area, and resolve the undersized tap issue by requiring less water for irrigation.

b. Completing an HOA Reserve Study to Make a Data-Informed Decision

HOA reserve studies can advise HOAs on the appropriate timing for landscape improvements given their current reserve funds and long-term asset management priorities. HOA reserve studies examine the HOA's operational and capital needs and annual revenues, and develop a sequence of projects that are financially viable under current HOA dues and bylaws. These projects can include landscape conversion projects, as well as traditional projects involving roadways and structures. Specifically, a reserve study can advise HOAs on the appropriate timing for landscape improvements and the phasing of project components. The Black Bird Knolls turf conversion case study was entirely self-funded by the HOA. They determined the best timing for the expense associated with their native grass installation project via a reserve study. The reserve study consulting firm conducted an inventory of the state of their physical assets (e.g., swimming pools, community centers, and common area landscapes) and their HOA reserve funds, and helped them determine when they would have sufficient funds to complete the project.

Reserve studies in anticipation of a turf replacement project, or any other major project, are not required from HOAs but represent good long-term asset management and financial planning. Although there are industry standards of what a reserve study might include, such as an asset inventory, asset valuation, and financial parameters, there is not yet a uniform template for the analysis or a corresponding standardizing of its possible cost. To date, costs may range from approximately one to several thousand dollars, depending on the characteristics and size of the HOA. Recent legislation to make reserve studies mandatory for HOAs, HB22-1387, passed the Colorado Legislature but was vetoed by the governor. Regardless, it is recommended that HOAs conduct some form of capital planning or work with a consultant to complete a reserve study before investing in turf replacement.

Case Studies: Colorado HOA Neighborhoods Benefiting From Turf Conversions

In recent years, more Colorado HOAs have been motivated to invest in turf replacement projects in their communities. In Cherry Creek 3 HOA in the Denver metropolitan area, turf replacement was an important component of the HOA's longer-term water conservation goals and programming. For the Fairway Ridge HOA in Loveland, replacing non-functional areas of turf made sense for the community from a sustainability, financial, and aesthetic standpoint. Black Bird Knolls HOA in Loveland was motivated to replace a large area of non-functional turf to become more resilient to future water restrictions. Quebec Run HOA in Thornton wanted to replace turf in an area that was poorly watered due to an installation error, and to save money for future financial resilience. Details on these projects – including funding and financing sources, water savings, and lessons learned – can be found below.

1. Cherry Creek 3 Homeowner's Association (Third Cherry Creek HOA, Denver, CO)

A side yard in the Cherry Creek 3 community before the landscape transformation project.[ix]

The Cherry Creek 3 HOA is composed of 251 units or "frontages" in Southeast Denver, primarily consisting of townhomes and condominium units built in the late 1960s. Older indoor plumbing fixtures and outdoor landscaping did not reflect more recent water conservation requirements. Beginning in 2008, resident, and later HOA President, Don Ireland initiated what eventually evolved into a highly successful and well-documented conservation program for the HOA.[x]

In the fiscal year 2008-2009, the HOA's water and sewer costs were 42% of its annual budget.[xi] The HOA initiated a conservation program to reduce water use and associated expenses. The program initially focused on indoor conservation and the HOA participated in a Denver Water conservation pilot study, replacing 3.5 gallons per flush toilets with 1.28 gallons per flush toilets in approximately 50% of the residential units. Denver Water offered $125 for each toilet replaced. Overall, 425 toilets were replaced at a net cost of $7,200 to the HOA, paid from their capital budget, and $15 per toilet from each owner benefitting from the program. These costs were more than offset by a $17,070 refund from Denver's

Wastewater Department for flow reduction. The flow reduction savings is a permanent annual benefit because it reduced the baseline levels of wastewater usage used to compute the HOA's bill.

The monetized water savings resulting from the toilet replacement program, along with contributions from the HOA's capital budget, were then used to help finance their outdoor water conservation projects, along with a one-time Denver Water pilot rebate program. The HOA and Denver Water developed a five-year program (eventually extended over six years) for landscape retrofits, with Cherry Creek 3 placing $25,000 per year in a special landscape account created to separately track landscape expenditures for the rebate program. This represented about 15% of the HOA's annual budget for water and sewer service at the time, and about 7% of the HOA's total annual budget. The expenditures were approved by a majority of the HOA's board of directors. Denver Water agreed to offer a cash incentive annually for each acre-foot of water conserved and also provided rebates for water efficient sprinkler heads and five new irrigation controllers.

Over the five-year period, approximately 250 front yard planting areas, ranging from mostly dead juniper bushes, Kentucky bluegrass, and lava rock, owned and maintained by the HOA, were replaced with a mix of low-water plant species, consistent with plans developed by a landscape architect and some input from participating homeowners. In addition, new irrigation controllers with rain shut-off sensors were installed and more than 1,500 sprinkler heads were replaced with MP-Rotator varieties. Turfgrass in several small common spaces were converted to xeric demonstration gardens and water conserving groundcovers were used in hard-to-irrigate areas. Overall, approximately 347,000 square feet, or about eight acres, of landscaped area were improved through this program.

In total, Denver Water contributed $37,700 over five years, before their pilot program was discontinued. Regardless, Cherry Creek 3 moved forward with self-financed conservation measures, completing the project in 2015. Overall, the water efficiency upgrades indoors and outdoors yielded significant water use savings, reducing the HOA's yearly water use from 36 million gallons of water per year to 20-22 million gallons of water per year, or by nearly 40%. The HOA's water conservation program, particularly the landscape and turf replacement components, accomplished their main objective – water use reductions and financial savings, but also improved the aesthetic appeal of the area with nearly certain associated increases in property values.

Cherry Creek 3 HOA benefitted from a project "champion" in the form of Don Ireland, who actively sought input from homeowners, initiated contact with Denver Water regarding financial assistance, managed the projects, and guided these efforts to a successful conclusion. This case study highlights the importance of having a champion within the HOA and demonstrates the financial value of treating landscapes just like any other HOA infrastructure investment.

Don Ireland reviews a yard after the turf conversion project.[xi] *Photo courtesy of HaveyPro Cinema.*

2. Fairway Ridge HOA

Fairway Ridge site number one before conversion.

The Fairway Ridge HOA at Mariana Butte is located in Loveland, Colorado. The community of 75 townhomes was built starting in the late 1990s through 2003.[xii] In 2018, a group of owners in the HOA began to explore converting turf in street easements to water wise landscapes, because they hypothesized that the street easements were the least water efficient of all HOA managed irrigated landscape areas. In the summer of 2018, at the HOA's request, Northern Water conducted an audit on the HOA's irrigation system as part of Northern's "Slow the Flow" program. The audit identified multiple issues with the irrigation system. In 2019, the HOA pursued a Northern Water grant to replace 5,600 square feet of turf on four different HOA parcels. The HOA's board of directors were motivated to pursue the project because of irrigation system concerns, poor turf quality, and a desire to lower water bills as the City of Loveland raised irrigation water costs. They also used the project to gauge whether their residents would be open to more turf conversion projects in the future.

The sites were converted from turf areas irrigated with spray or rotor irrigation heads to drought tolerant plants, boulders, and natural mulch areas, irrigated by drip irrigation. Homeowners approved $8,000 for the project in the HOA's 2019 operating budget. Northern Water's grant program contributed $9,465 upon project completion at the end of 2019. The initial budget for the project was $18,960, and actual expenses came to $12,951. The HOA was able to lower their project costs significantly by relying on over 600 hours of volunteer labor for planning, turf removal, irrigation changes, fabric installation, planting, and mulching. The conversion project took place over nine months, with five months of planning, and four months of active turf conversion.

The initial cost estimate of the conversion was $2.30 per square foot. Northern Water's cost share reduced the cost to the HOA to $1.15 per square foot. With volunteer labor, the HOA paid only $0.62

per square foot for the turf conversion. Project savings were estimated to be $0.12 per square foot per year, which includes water use cost reductions and long-term operation and maintenance savings. The direct cost to the HOA for the project was $3,486, a significant decrease from the $8,000 initially budgeted for the project. Each year since, the conversion has reduced water use on the conversion sites by 50%, which equates to approximately $200 saved on water bills annually, as well as an additional approximately $600 saved on turf maintenance annually. The HOA estimated that lower maintenance costs and water savings would allow them to recoup the cost of their investment five years after installation, in 2024. However, the HOA had to spend an additional $1,710 on plant replacement and mulch, which pushed this timeline back to 2028 (Table 2).

Project Type	SQ.FT.	Component	Conversion Year 2019	Year 1 2020	Year 2 2021	Year 3 2022	Total Over 3 Years
Four parcel conversions to low water gardens	5,600	Total Est. Gallons Saved	0	38,000	36,000	44,000	118,000
		Water Cost Savings	0	$200	$200	$260	$660
		Maintenance Cost Savings	0	$530	$640	$610	$1,780
		Total Initial Conversion Cost	$3,486	—	—	—	—
		Replacement Plants & Mulch Cost	—	—	—	$1,710	—
		Remaining Balance	—	—	—	—	$2,756
		Conversion Cost/Sq. Ft	$0.62				
		Year likely to break even	2028				

Table 2. Fairway Ridge HOA low water conversion parcels return on investment timeline.

Resident response to the turf conversion project has been primarily positive; however, the HOA did receive feedback about plant selection and density and several residents have questioned the value of turf conversion and water conservation. The HOA plans to issue a full report on their project in late 2024 or early 2025.

Fairway Ridge site number one after conversion to low water plant beds.

3. Black Bird Knolls HOA

The Black Bird Knolls HOA is located in Southwest Loveland, Colorado, and is comprised of 244 single family homes built beginning in the year 2000.[xiii] Typical of the region and construction era, the community has large common areas, many of which are landscaped with cool-season turf. In 2022, the HOA converted 18,720 square feet of Kentucky bluegrass to a Colorado native grass mix. A variety of factors motivated the community to make this change. These include: 1) growing water needs due to hotter, drier, and longer summers; 2) the increasing cost of water; 3) the need to manage maintenance costs; 4) the need to prepare for future watering restrictions; and 5) the desire to improve community aesthetics and increase pollinator habitat. The conversion project area serves as a storm water channel and landscape buffer yard. The original turf and irrigation system had been damaged and removed during reconstruction of a fence and retaining wall. New native grass was installed in 2022.

This multi-year project was led by an HOA board member. The HOA board chose to fund the project using cash reserves. They based this decision on the HOA dues and available reserves identified through a reserve study. With funds allocated in the 2022 budget, the HOA board had the site analyzed by regional landscape specialists from Colorado State University Extension and Northern Water's efficiency program. The specialists presented the community with project steps that were approved by the residents and adopted by the board. The HOA then developed a work plan and timeline.

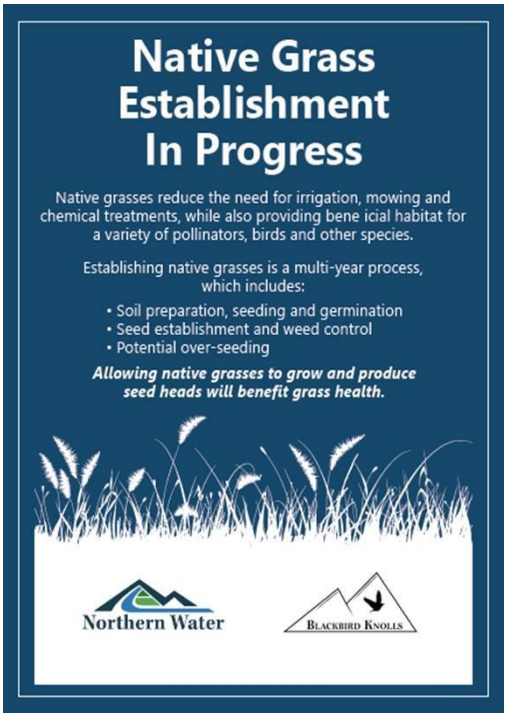
Landscape changes at commercial properties next to public areas usually require city approval, so the board met with the City of Loveland for a review. The city granted conditional approval of a revegetation plan. Next, the team met with contractors for a review and bid process for the native grass installation. They then met with the landscape company to coordinate installation, irrigation, maintenance, and continuing responsibilities. The HOA gained final approval for the project from the City of Loveland, engaged the selected landscape contractor to begin the work, and began the project in April 2022. The project team provided updates to HOA community members throughout the process.

The total project cost was $28,757, including the cost of the irrigation system replacement ($13,757) and cost of the native turf grass installation ($15,000), which includes planting, temporary fencing, educational signage, and the estimated value of volunteer time ($7,500). The total cost does not include the removal of the Kentucky bluegrass turf because this was removed during an earlier construction project.

Native grass establishes over multiple years, but the HOA estimates that the native grass transition will save 200,322 gallons of water per year, which is a 55% reduction from the water required for the previous Kentucky bluegrass. Once established, the native grass will be mowed only a few times a year, and irrigated only if it declines in health. It will no longer need the typical turf chemical treatments nor weekly maintenance. Given water and maintenance savings, the return on investment for the project is estimated to be 11.8 years (Table 3). HOA residents have responded positively to the turf conversion project.

Project Type	SQ.FT.	Component	Conversion Year	Years 1-2 (Annual)	Years 3-4 (Annual)	Year 5 (Annual)	Total Over 5 Years	Average Over 5 Years
Stormwater Channel Native Grass Revegetation	18,720	% Reduction in Water Use	14%	41%	55%	55%	55%	44%
		Total Est. Gallons Saved	50,116	150,348	200,464	200,464	952,204	158,701
		Total Est. Gallons Saved/Sq Ft	2.7	8.0	10.7	10.7	50.9	8.48
		Water Cost Savings	$473.53	$947.06	$1,420.59	$1,420.59	$6,629.44	$1,104.91
		Water Cost Savings/Sq Ft	$0.02	$0.04	$0.06	$0.06	$0.30	$0.05
		Years to Break Even	11.8					
		ROI Over 10 Years	-$4,487.65					
		Conversion Cost/Sq. Ft	$1.54					

Table 3. Black Bird Knolls native grass conversion return on investment timeline.



Educational signage that was printed and posted next to the native grass establishment area.

The trickle channel lined with Kentucky bluegrass before the Black Bird Knolls conversion. (Photo credit: Black Bird Knolls HOA).

The trickle channel after the conversion, with newly planted and still growing native grasses (Photo credit: Black Bird Knolls HOA).

The converted area fully established and mowed. (Photo credit: Black Bird Knolls HOA).

4. Quebec Run HOA

Quebec Run park area before the conversion. (Photo: Craig Karn, Consilium Design).

Quebec Run is an HOA located in Thornton that includes 292 single family homes built in 2004 and 2005. In 2019, the HOA embarked on a project to convert a large area of non-functional cool season turf.[xiv] The HOA was paying approximately $90,000 per year in water bills to irrigate landscaping yet charging residents low monthly HOA dues. As a result, the HOA was struggling to keep up with irrigation and maintenance costs for its landscaped areas, which also include 46 acres of open space. One 3.2-acre area was a particular challenge to maintain because the irrigation system was incorrectly installed, as an undersized water tap was installed to irrigate the large park area. As a result, the turf in this area struggled to meet HOA aesthetic requirements with brown sections of turf present because the turf never received sufficient irrigation from the undersized tap. The turf conversion project was conceived of to address the HOA's two concerns: save money on community wide water bills and improve the aesthetics in the common park area.

The HOA wanted to convert the 3.2 acres of poorly watered turf – as well as several other turf areas outside of the park – to a more aesthetic, functional common space area. The HOA board president at the time, Kevin Kerber, led the project, supported by the rest of the board. Initially, the HOA applied for a grant from Adams County for the entire cost of the conversion project, but the application was denied because the county determined that the HOA was not eligible for the funds. After that setback, the HOA secured a 15-year bank loan for $750,000 for the conversion project. To secure the loan and pay for the project, HOA dues were raised from $74.50 to $95.00 per month indefinitely. The HOA held several meetings with residents when deciding how to fund the project, and at one point suggested a one-time $1,500 to $2,500 special assessment per home to raise the funds, but the idea was unpopular and struck down by residents and the monthly dues increase was settled on instead.

The total project cost for the park area conversion was $577,211. In addition to the loan, the HOA secured $32,000 in grant funding from the City of Thornton for the project.[xv] Consilium Design designed three new park landscape layouts for the community to choose from, and the community's landscape contractor performed the conversion and installation work. The project converted 140,000 square feet, or 3.2 acres, of non-functional turf to low water grasses and plants and included hardscaping and irrigation system upgrades.

Quebec Run park area after conversion to low-water native grasses (Photo: Craig Karn, Consilium Design).

Before the conversion, the HOA applied 1.6 million gallons of water annually for outdoor landscape irrigation in common areas communitywide. In 2022, after the conversion was complete, the HOA used 914,000 gallons; a total water savings of 43% per year. The community will complete the loan payback process after 15 years and will use the money saved on water bills to strengthen its community reserves.

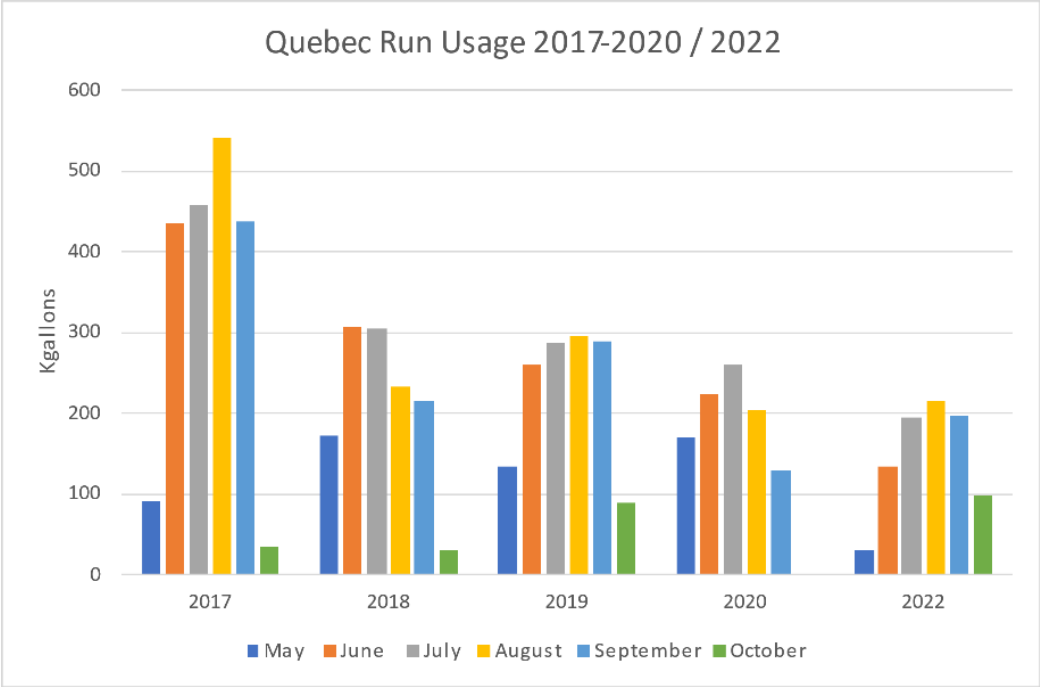


Chart 1. Quebec Run landscape water use pre- and post- conversion. Data provided by City of Thorton.

Conclusion

HOAs can benefit from replacing unused, non-functional turf with native grasses and other water wise plants. In a hotter and drier climate, turf replacement projects save water, permanently reduce water bills, drought-proof landscaping investments, and help communities save on turf maintenance costs. Additionally, the aesthetic and environmental benefits of more Colorado-appropriate plants and grasses are significant.

HOAs have a variety of strategies available to fund or finance turf replacement projects. Landscape conversion incentives and rebates from cities and water providers can greatly reduce out-of-pocket costs for an HOA. Loans are also a feasible funding option, particularly when paired with a monthly dues increase. Accumulated financial reserves can be allocated to a project or one-time special assessment payments may be used if financial reserves are insufficient to cover project costs. HOAs can optimize the timing of their landscape conversion projects by conducting a reserve study to help them plan and budget for their project. Projects can also be timed to coincide with other capital improvement projects such as irrigation system replacements, or construction projects to maximize overall benefits.

Since water wise landscaping projects are still new to many homeowners, involving them in planning, soliciting their input, and keeping them informed about projects and expectations is crucial. Early, frequent, and ongoing communication between HOA board members and residents is critical – and having at least one person on the board to champion the project is essential. As demonstrated by the case studies, community members can help support the project and reduce costs by contributing volunteer time for planting, weeding, and maintenance.

Non-functional turfgrass in HOA common areas and rights-of-way presents a critical, and largely untapped, water conservation opportunity for Colorado communities. As with many large-scale turf replacement projects, certain challenges may exist in implementing these projects from identifying sufficient funding and financing to gaining community buy-in to handling the unique management needs of a water wise landscape. However, as demonstrated by the case studies in this report, an HOA turf conversion project can be a feasible, cost-effective, beautiful, and multi-beneficial asset to any community.

Appendix A: HOA-Eligible Turf Replacement Programs in Colorado

At the time of publication, the following entities offered HOA-eligible turf replacement programs. Program details are likely to change over time and more programs may be developed in Colorado in the future. Please reach out to your water provider to learn more about their HOA-eligible conservation incentives.

City/Utility Name	Program Details
Aurora Water	Grass Replacement Incentive Program: Contact utility for more information on funding availability.
Castle Rock Water	ColoradoScape Turf Renovation (Non-Residential): $1.50 per sq ft rebate for non-residential turf that is removed. Minimum area of 1,500 sq ft of turf removal and a maximum rebate amount of $18,000.
Centennial Water & Sanitation District	$2.00 per sq ft rebate for ColoradoScape, $1.00 per sq ft rebate for low-water use turf.
City of Brighton Utilities	Lawn Removal Rebate: Offers a $1 per sq ft lawn replacement rebate. HOA eligibility is on a case-by-case basis; contact the utility to discuss.
City of Thornton	Commercial Water-Wise Landscape Grant: Projects may qualify for a grant that assists with 50% of the cost of design, renovation, and installation, up to $10,000 per acre with a maximum amount of $50,000 per property. Grants are required to cover 0.5 acres minimum and up to 5 acres maximum.
City of Westminster	HOA projects qualify for up to $10,000 per project and require a 50% cost-share agreement. More information coming soon.
Colorado Springs Utilities	Business Turf to Native Grass Conversion Rebate: $0.09 to 0.18 per sq ft for turf to native grass conversions; up to $20,000 per customer. Available for conversion of large areas (over 5,000 sq. ft) to a native or lower water use grass.
Fort Collins Utilities	Commercial Xeriscape Incentive Program (XIP): Eligible properties can receive up to $1.50 per sq ft of area converted up to $15,000 per project if the proposed project demonstrates long-term water reduction through landscape transformation. Funds are limited.

City/Utility Name	Program Details
Glenwood Springs	Turf Buyback Rebate: HOAs are eligible to receive a rebate of $2 per sq ft to convert irrigated, established, non-native lawn to water wise landscaping, up to 1,000 sq ft, or $2000 total rebate.
Greeley Water	Life After Lawn Program: HOAs can receive $1.00 per sq ft to convert a minimum of 5,000 sq ft of healthy, well-watered turf with native and/or water wise plantings. A maximum of $30,000 per property per year is eligible.
Montrose County	Turf Replacement Program: This program reimburses landowners at $2 per sq ft, up to $2,000 in project costs for turf replacement with water wise landscaping.
Northern Water	Water-Efficient Landscape (WEL) Grant: The program is open to HOAs within Northern Water's boundaries. The maximum amount that will be awarded per project is $20,000 (a matching amount is required) with a 1,000 sq ft minimum for projects (smaller projects may be considered if they offer unique education opportunities).
Town of Erie	Turf Replacement Rebate Program: Up to $2 per sq ft for low water use garden plantings and $1 per sq ft for low water grass rebates, with a maximum of $2,000. Projects must replace a minimum of 200 sq ft with a maximum of 1,000 sq ft.
Eagle River Water & Sanitation	$2.00 per sq ft.
Eagle County Conservation District & Eagle River Watershed Council	Beyond Lawn Program: Program in development, more information will be available soon.

Appendix B: Additional Resources to Consider

- "Colorado Native and Water Wise Grass Guide for Installation & Maintenance." *Colorado Native Grass Guide*, Colorado Springs Utilities, June 2023, coloradonativegrass.org/

    - Summary: A guide to native and water wise grasses in Colorado that includes case studies and examples. From Colorado Springs Utilities – still in finalization process, to be completed soon.

- *Roadmap for a Water Wise HOA*, Resource Central, www.dropbox.com/s/dcluchuevwr8699/Resource%20Central%20HOA%20Road%20Map.pdf?dl=0

    - Summary: A guide from Resource Central that includes steps for an HOA to consider during a turf conversion project.

Citations

[i] Koch, C., Koehler, C., Arling, V., Belanger, L., Berggren, J., & Rogers, L. (2022). *Financing the Future: How to Pay for Turf Replacement in Colorado*. Western Resource Advocates. https://westernresourceadvocates.org/publications/financing-the-future-how-to-pay-for-turf-replacement-in-colorado/

[ii] HB22-1151: Turf Replacement Program, Colorado General Assembly, 10 May 2022, leg.colorado.gov/bills/hb22-1151.

[iii] Chris Marion, 3.0 Management, Colorado WaterWise Webinar Presentation, "Water Conservation Opportunities for HOAs. August 24. 2022"

[iv] "Water wise Landscapes." *City of Greeley*, https://greeleygov.com/services/ws/conservation/xeriscaping

[v] "Residential and Non-Functional CII Grass Replacement Program." *Residential and Non-Functional CII Grass Replacement Program*, West Basin Municipal Water District, https://usbr.gov/watersmart/weeg/docs/2022/West_Basin_MWD_FY22WEEG_508.pdf

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[vii] "Collaborative Water-Efficient Landscape Grants", *Northern Water*, https://www.northernwater.org/grants

[viii] Koch, C., Koehler, C., Arling, V., Belanger, L., Berggren, J., & Rogers, L. (2022). *Financing the Future: How to Pay for Turf Replacement in Colorado*. Western Resource Advocates. https://westernresourceadvocates.org/publications/financing-the-future-how-to-pay-for-turf-replacement-in-colorado/

[ix] Duncombe, Claire. *Forty Years Ago, Xeriscaping Started Changing the Landscape of Denver*, 7 Sept. 2021, www.westword.com/news/denver-water-xeriscape-drought-resistant-landscaping-12234330.

[x] Details confirmed via personal communication with Don Ireland.

[xi] Duncombe, Claire. *Forty Years Ago, Xeriscaping Started Changing the Landscape of Denver*, 7 Sept. 2021, www.westword.com/news/denver-water-xeriscape-drought-resistant-landscaping-12234330.

[xii] All details in the case study come from personal communications with Darren Nowles and Mike Kocsis.

[xiii] All details confirmed via personal communication with Black Bird Knolls HOA

[xiv] All details in the case study come from personal communications with Kevin Kerber, Laura Wing, Craig Karn, and Jason May.

[xv] A portion of the $750,000 loan was also used to cover turf conversion in several other community common areas.