

# Broomfield, Colorado

## Colorado Large-Scale Nonresidential Turf Replacements

### Case Study at a Glance

#### Overview

**Utility/Community Name:**  
City and County of Broomfield

**Location:**  
Broomfield, Colorado

**Population served:**  
76,976

**Service area:**  
34 square miles

#### Challenges



Drought



Climate Change



Population Growth



Water Affordability

#### Community-wide Estimate of Turf Conversion Potential

- Total irrigated turf area: **3,010 acres**
  - Commercial, Industrial, Institutional (CII), including some HOA commons and public properties: **1,370 acres**
- Estimated turf replacement acreage in CII and Public Areas: up to **780 acres or 57%**
- Potential water savings in CII and Public Areas: up to **1,090 acre-feet per year (AFY)**
- Potential cost savings from CII turf conversion: **\$7,900 - \$8,500** annual benefit<sup>1</sup> from turf conversions

1. Potential benefits do not include potential foregone revenue impacts.  
Image Source: [Sunrise Over Broomfield, CO](#). Gary J. Wood. [CC BY-SA 2.0](#).

## BACKGROUND

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The consolidated City and County of Broomfield, Colorado (“Broomfield”), is located about 18 miles north of Denver. Broomfield has a population of approximately 76,976 as of 2023. The community is experiencing rapid population growth and anticipates a buildout population of 95,500 residents in 2040. Significant growth is expected in the multifamily and commercial sectors in northeastern Broomfield along the Interstate 25 corridor.

Broomfield is located in the South Platte Basin. Broomfield’s drinking water supply is sourced from surface water such as rivers, lakes, and reservoirs sustained by winter snowpack. Water from the Colorado-Big Thompson (CBT) and Windy Gap projects is treated at the City and County’s water treatment facility. Treated water purchased from Denver Water also provides about 40% of Broomfield’s potable water supply. Broomfield also has a water reuse system that treats water for non-potable uses, providing approximately 2,500 acre-feet per year (AFY) to irrigate Broomfield’s parks, HOA common areas, corporate campuses, schools, and other large private landscapes. Approximately 975 AFY is used for Broomfield parks and the remaining 1,525 AFY is used for private properties. An additional 1,500 acres outside of the city limits receive water from the reuse system.

At the time the 2020 Broomfield Water Efficiency Plan<sup>2</sup> was written, single-family customers comprised 88% of the total 18,949 metered customers. Commercial users were the second highest water user category. From 2019 to 2023, single-family customers represented 56% of total potable water use and commercial customers represented 15%. Since 2007, the total number of customer accounts has nearly doubled, increasing by 92% while overall water usage by customers increased by 66%. As of 2023, 60-70% of Broomfield’s annual water supply is dedicated to landscape irrigation, and much of this water is being used to irrigate high water use turfgrass.

## CHALLENGES

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By 2050, water demand in Broomfield is projected to rise to approximately 18,100 AFY, representing an increase of about 5,000 AFY from 2024 levels. To meet these anticipated demands at buildout, additional water storage capacity will be essential. Fortunately, Broomfield’s raw water supply is considered reliable and capable of handling this expected increase in demand. However, due to the ever-present challenges posed by drought conditions, Broomfield remains committed to water conservation and efficiency as a core component of its environmental stewardship strategy, as highlighted in its 2016 Comprehensive Plan.<sup>3</sup>

One of the current challenges facing Broomfield is that the demand for the reuse system is constrained by existing supplies. Although the current reuse system could potentially be expanded to provide an additional 1,000 AFY, there is a need to secure additional water supplies and system storage that are not currently included in Broomfield’s long-term capital program to meet higher future demand projections.

Broomfield identified two water efficiency goals in its 2020 Water Efficiency Plan: optimizing storage and deliveries within the existing reuse system; and reducing total system demand by 10% by 2040, using a 2020 benchmark. Since outdoor water use is significant in Broomfield, the Water Efficiency Plan identifies waterwise landscaping and irrigation rebates as a targeted technical assistance and incentives approach to reduce water demand. Additionally, Broomfield recently updated [its landscape ordinance](#) to encourage water efficiency and drought-tolerant plants in new and redevelopment. Efforts to remove non-essential turfgrass (referred to as “turf” herein) in Broomfield align well with the community’s priorities to reduce water demand and increase water supply resiliency.

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2. Broomfield Water Efficiency Plan (2020) [https://drive.google.com/file/d/12HWeNIF1ob4ob\\_mRG40UvNONWVpQK2Bt/view](https://drive.google.com/file/d/12HWeNIF1ob4ob_mRG40UvNONWVpQK2Bt/view)

3. Broomfield Comprehensive Plan 2016 Update <https://broomfield.org/DocumentCenter/View/21455/Comprehensive-Plan-2016?bidId=>

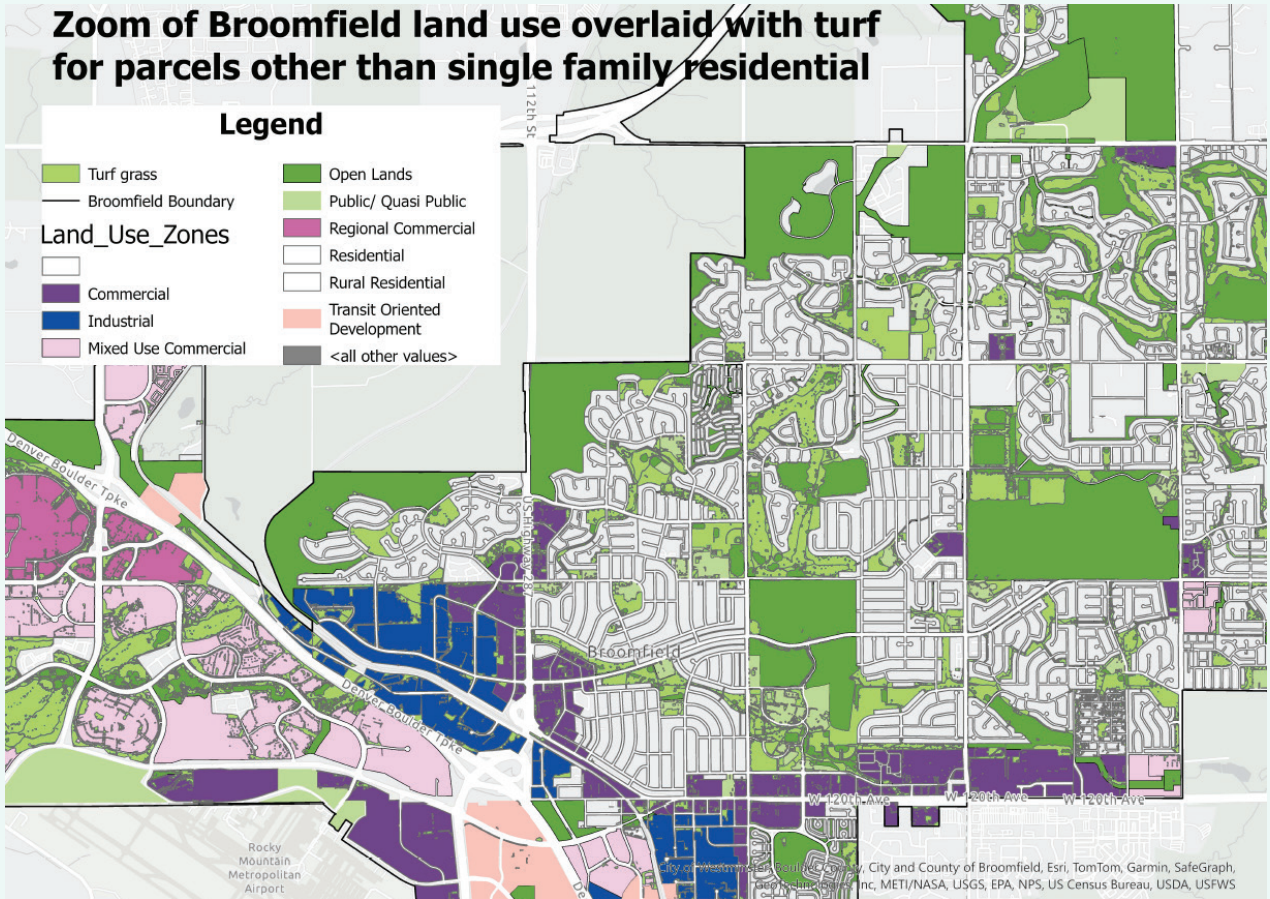
Broomfield recently adopted a new **Water Efficiency Landscape Ordinance**. The goal of the new landscape ordinance is to reduce outdoor water demand by requiring water efficient landscape and irrigation best practices in new and redevelopment. The code achieves this by limiting cool-season turf and requiring low water plant alternatives and efficient irrigation systems.

Western Resources Advocates (WRA) and WaterNow Alliance (WaterNow) worked with Broomfield to conduct a community-wide water savings and economic assessment for large-scale, non-residential, non-essential turf conversion, in addition to supporting it's pilot turf conversion project. The results of the multiyear project are outlined below.

**POTENTIAL FOR NON-ESSENTIAL TURF REPLACEMENTS ON CII PROPERTIES**

A community-wide turf assessment for Broomfield was conducted by the project team that included mapping by the University of Colorado Denver. The assessment was based on a spatial analysis using the 2020 Denver Regional Council of Governments (DRCOG)<sup>4</sup> imagery and land use cover data combined with Broomfield land use data. See Figure 1: Sample Area of Broomfield CII Land Use and Turf Layers in GIS for a sample of the spatial data showcasing Broomfield land use overlaid with turf for parcels other than single-family residential. Using the spatial analysis results, WRA, WaterNow, and Honey Creek Resources developed two Microsoft Excel-based planning tools to develop high level potential water savings estimates and to prepare economic analyses for turf replacement scenarios.

**Figure 1:** Sample Area of Broomfield CII Land Use and Turf Layers in GIS



4. Denver Regional Council of Governments regional land cover data <https://data.drcog.org/>

## Community-wide Turf Replacement Potential on CII Properties

The total CII and public property turf area annual supplemental irrigation water use for existing turf is estimated to be **2,840 AFY**, which is equivalent to approximately 19% of Broomfield's total potable (12,559 AF) and non-potable (2,412 AF) water use as of 2020. Under a high replacement scenario (see more details below), the total CII and public turf area water savings could be as high as 39%, or approximately **1,090 AF** of water savings per year, equating to approximately 7% of Broomfield's total water use. A low replacement scenario could see CII and public area supplemental irrigation water savings of 12%, or **350 AFY**, equating to approximately 2% of Broomfield's total water use. Table 4 below includes a breakdown of the estimated water savings per land use category.

Through the spatial analysis, the project team found approximately 3,010 acres of irrigated turf in Broomfield. Of this total, approximately 1,640 acres are single-family residential property, and the remaining — approximately 1,370 acres — are CII and public property, as illustrated in Table 1: Irrigated CII and Public Turf Area by Subcategory.

**Table 1:** Irrigated CII and Public Turf Area by Subcategory

Subcategory of CII Area	Irrigated Turf Acres
Public parks and open space	530
Golf courses	450
Private parks and open space	110
Commercial, industrial, other	280
<b>TOTAL</b>	<b>1,370</b>

These estimates of turf coverage are low. The DRCOG land use cover data included approximately 1,340 acres of tree cover in Broomfield, some of which is above irrigated turf. The team chose to exclude the tree cover because it would have taken significant additional analysis to identify turf below the tree canopy. Additionally, irrigation of trees needs to continue after turf conversion to maintain tree health.

The low and high CII turf replacement scenarios were developed with Broomfield staff. Table 2: CII Turf Replacement Scenarios provides percentage and acreage of assumed turf removal by land use category for the scenarios. Percentages of turf replaced in the scenarios were determined by considering the land use category. For example, commercial and industrial landscape areas likely require little turf for functional purposes as compared to golf courses or public parks that are designed for recreational use. For the turf replacement scenarios, Table 3: CII Scenario Replacement Scenario Landscaping Assumptions shows the assumed breakdown in replacement landscaping type as a percentage of the total area of turf being replaced. The same percentages were used for both scenarios. Land use categories were also considered when developing replacement landscaping assumptions. For example, native grass was assumed to replace turf in open space areas and unused areas of golf courses. In commercial, industrial, and medium and high-density residential areas, replacement landscaping was assumed to include low water planting beds and non-irrigated areas such as plants requiring no supplemental irrigation, mulched areas, walking paths, and sitting areas.

**Table 2:** CII Turf Replacement Scenarios

Irrigated Turf		Turf Replacement Scenarios			
Land Use Category	Existing Turf (acre)	Low Replacement Scenario		High Replacement Scenario	
		% Re-placed	Acres	% Re-placed	Acres
Public parks and open space	530	25%	132	75%	397
Golf courses	450	5%	22	20%	90
Private parks and open space	110	25%	26	75%	79
Commercial, industrial, other	280	25%	70	75%	211
<b>Total Irrigated Turf</b>	<b>1,370</b>	<b>18%</b>	<b>251</b>	<b>57%</b>	<b>776</b>

**Table 3:** CII Scenario Replacement Scenario Landscaping Assumptions

Irrigated Turf	Assumed Replacement Landscaping by Type		
Land Use Category	Native Grass	Low Water Use Plants	No Irrigation
Public parks and open space	90%	5%	5%
Golf courses	85%	5%	10%
Private parks and open space	90%	5%	5%
Commercial, industrial, other <sup>1</sup>	70%	15%	15%

**Table 4:** CII Turf Replacement Water Savings

Land Use Category	Current Water Use (AFY)	Estimated Water Savings (AFY)	
		Low Scenario	High Scenario
Public parks and open space	1,102	182	547
Golf courses	936	32	127
Private parks and open space	220	36	109
Commercial, industrial, other <sup>1</sup>	585	103	310
<b>Total</b>	<b>2,840</b>	<b>350</b>	<b>1,090</b>

It is important to note that replacing single-family residential turf in Broomfield would also result in significant water savings, up to **1,910 AFY**. To maximize water savings, turf conversions on both single-family and CII properties provide a significant opportunity and should be considered in Broomfield’s outdoor water conservation planning. For this analysis of large-scale turf replacement potential, Broomfield and the project team focused on CII properties. This focus allows for easier scalability of retrofits on larger properties.

For more information on the community-wide turf assessment methods and analysis for Broomfield and the other partner communities, see the [Full Project Case Study](#).

## Benefits-Costs Analysis Shows a Strong Business Case for Turf Replacements

An analysis was conducted by Honey Creek Resources, Inc. and WaterNow to quantify the benefits and costs of the low and high turf replacement scenarios. The results show that these can be cost-effective investments for Broomfield.

For the scenarios analyzed,<sup>5</sup> and assuming Broomfield's Water Resources Division (Water Division) provided a \$1.10-\$1.35 rebate per square foot, but not accounting for lost revenues,<sup>6</sup> a CII turf replacement program would be cost-effective — i.e., the benefits would outweigh the costs.

- For the low replacement scenario, assuming replacement of 251.45 acres of turf over the course of five years and a rebate of \$1.35 per square foot, the Water Division's benefit-cost ratio<sup>7</sup> is \$1.02, representing a **net annual benefit of \$8,500**. The annual equivalent cost<sup>8</sup> would be **\$49 per acre-foot** with a cumulative volume of **10,079 AF of water saved** over 30 years.<sup>9</sup> Based on an estimated average single-family household water use in Broomfield of 0.32 AFY, annual water savings of 350 AF represent enough water for approximately 1,094 single-family households. This number is higher when multifamily housing, which has much lower outdoor water use per household, is included.
- For the high scenario, assuming 777 acres were replaced over the course of five years and a rebate of \$1.10 per square foot, the Water Division's benefit-cost ratio is \$1.01, representing a **net annual benefit of \$7,900**. The annual equivalent cost would be **\$49 per acre-foot** with **31,142 AF of water saved** over 30 years. This high replacement scenario annual water savings of 1,090 AF could supply approximately 3,410 households in Broomfield, and more when multifamily units are considered.

5. This project did not analyze the benefits-costs of replacing single-family residential turf. A separate analysis would be needed to know whether single-family residential turf replacements are cost-effective.

6. The Water Division currently offers rebates of \$1.20 per square foot. By assuming a \$1.10 per square foot rebate, this analysis is not meant to suggest that Broomfield should reduce its current rebate. As detailed below, the tool used to estimate the benefits and costs of replacing nonfunctional turf in Broomfield does not quantify the co-benefits of these investments. Taking a triple bottom line approach to valuing the full range of multiple benefits, e.g., increased recreation opportunities, local green jobs, improved air quality, wildfire mitigation, improved water quality, and ecosystems improvements, for turf replacements would likely justify higher rebates, i.e., \$1.20 per square foot or more.

7. The benefit-cost ratio compares the monetary benefits of a project to the costs of the project. A ratio greater than 1 means the project is anticipated to provide an economic benefit.

8. This is the annualized cost per acre foot based on a 30-year period.

9. Annual equivalent cost includes annual operations and maintenance costs plus a share of the installation cost amortized over the planning period. It is a common metric used in evaluation water-related feasibility projects.

### Economic Analysis Assumptions

#### Value of Conserved Water

Avoided cost:  
**\$40,000/AF**

"Real" inflation, increase of raw water costs: **2.0%**

Treatment and distribution:  
**\$3.50/1,000 gallons**

Retail cost of landscape water:  
**\$6.28/1,000 gallons**

#### Annual Maintenance (\$/acre)

Mowing:  
**\$4,000**

Grounds:  
**\$750**

Fertilizer and Pesticide:  
**\$500**

Irrigation System:  
**\$120**

Total:  
**\$5,370/acre, \$0.12/sq. ft.**

#### Replacement Expenditures (\$/sq. ft.)

Native grass, irrigated:  
**\$3.32**

Planting and Trees:  
**\$7.80**

Native grass, non-irrigated:  
**\$2.53**

Hardscape, non-irrigated:  
**\$1.47**

Alternatively, if revenue losses from conserved water were included in the benefit-cost analysis (with losses being counted as a “cost”), the low replacement scenario benefit-cost ratio would be \$0.41, representing a net annual cost of \$708,100 and an annual equivalent cost of \$120 per AF. Under the high replacement scenario, counting revenue losses as a cost, the benefit-cost ratio would be the same, representing an annual net cost of \$2.2 million and an annual equivalent cost of \$121 per AF due to the higher overall water savings.

As to property owners, if the Water Division implemented rebates between \$1.10 and \$1.35 per square foot, costs would slightly outweigh benefits for property owners under both the low and high replacement scenarios:

- For the low replacement scenario, assuming replacement of 251.45 acres over the course of five years and a rebate of \$1.35 per square foot, the property owners’ benefit-cost ratio is \$0.94, representing a **net annual cost \$150,200, spread across all property owners participating in the program.**
- For the high replacement scenario, assuming replacement of 777 acres over the course of five years and a rebate of \$1.10 per square foot, the property owners’ benefit-cost ratio is \$0.89, representing a **net annual cost of about \$849,600, spread across all property owners participating in the program.**

Even with these potential revenue losses, these water savings are significant enough to make the case that turf replacements are a good investment for Broomfield. Over a 30-year period, the reduced revenues represent a relatively modest percentage of Broomfield’s overall revenue requirements, ranging from 0.95% to 3%. At this level, these revenues could be made up in future rate increases without significant rate impact. At an individual customer level, such rate increases may not necessarily result in higher bills. Customers participating in the turf replacement program, or Broomfield’s other conservation programs, would use water more efficiently, helping keep their water bills lower. In addition, Broomfield expects continued population growth and increased conservation can help meet at least some of this new demand.

Further, lost revenue is not the only consideration given Broomfield’s need to secure reliable water supplies and goal to reduce demand, particularly with a growing population,<sup>10</sup> extended drought,<sup>11</sup> and the impacts of climate change on the broader Colorado River basin and future availability of water.<sup>12</sup> At \$49-\$120 per AF, and considering current prices to purchase water, conserving

**1,090 acre-feet** of water could be saved under a high replacement scenario, which is enough water to supply **3,410** single-family households in Broomfield.



10. Broomfield anticipates “significant amount of growth ... in the multifamily and commercial sectors” contributing to a need to secure an additional 5,000 AFY a year above 2024 levels by 2050. Broomfield Water Efficiency Plan (2020), [https://drive.google.com/file/d/12HWeNI-F1ob4ob\\_mRG40UvNONWVpQK2Bt/view](https://drive.google.com/file/d/12HWeNI-F1ob4ob_mRG40UvNONWVpQK2Bt/view).

11. “Since 2000, the Colorado River Basin has experienced the driest 16-year period in over 100 years of historical natural flows.” U.S. Geological Survey and the Bureau of Reclamation, available at: <https://labs.waterdata.usgs.gov/visualizations/OWDI-drought/en/index.html#ExtendedDrought>.

12. See, e.g., Colorado River basins could face tipping point, drought study warns, <https://news.cornell.edu/stories/2024/11/colorado-river-basins-could-face-tipping-point-drought-study-warns>.

water via turf replacements is an inexpensive way to add to Broomfield's water portfolio and hedge against future droughts. Some years of revenue loss due to increased outdoor conservation during non-drought conditions can still be a good investment for future drought years when alternative supplies can be more expensive or unavailable; in this way, conservation serves the same purpose as new storage. But conservation measures can be implemented on a much faster timeline.

It is important to note that this economics analysis also underestimates the benefits to Broomfield, property owners, and the broader community. It does not capture the full scope of co-benefits that would be gained from investing in waterwise landscaping measures. Depending on project specifics, transforming nonfunctional turf to waterwise landscapes may achieve a wide range of broader benefits that enhance water supply and community resilience.<sup>13</sup> For example, Broomfield defines "sustainability," as "long-term social, economic and environmental health of our society."<sup>14</sup> So, to support this long-term social, economic, and environmental health Broomfield has an interest in investing in community level benefits beyond water savings, such as improved public health and pollinator habitats. A California Water Efficiency Partnership literature review found that landscape transformations: "improve human health by performing such services as filtering particulates from the air and reducing carbon dioxide, filtering pollutants from stormwater runoff and in turn improving surface water quality."<sup>15</sup> By increasing biodiversity waterwise landscapes provide enhanced habitats for pollinators.

Most relevant to private property owners, these co-benefits also include reduced maintenance costs, neighborhood beautification, and increased property values. In nearby Greeley, Colorado, well-designed, installed, and maintained waterwise landscapes [can increase property values up to 15%](#). According to [UCLA Luskin Center for Innovation](#), "[a]ttitudes have been changing about lawn desirability. Generally, the more aesthetically pleasing the landscaping, which potentially requires costlier investment, the more likely it is to have a positive impact on the property value." Quantifying these co-benefits based on the Broomfield turf replacement scenarios was beyond the scope of this project, but valuing these additional benefits are an important part of making the business case for nonfunctional turf replacements.

Considering the broad range of costs and benefits and the risk of not investing in increased outdoor efficiency, **rebates of \$1.10-\$1.35 per square foot** are a good investment decision for Broomfield.<sup>16</sup>

The next consideration is the Water Division's share of the overall program cost to achieve the return on investment described above. For the low scenario, the Water Division would pay \$9.8 million and property owners would pay \$44.8 million to cover the total program cost of \$54.6 million. In other words, in the low scenario, the Water Division's cost-share is 17%. The remaining 83% of the cost would be paid by CII and other property owners. For the high scenario, the Water Division would pay \$30.4 million, i.e., 18% of the \$168.8 million program total. CII and other property owners would pay the remaining \$138.4 million of the total program cost.

With the Water Division's cost-share for CII turf replacements between \$9.8 and \$30.4 million,<sup>17</sup> the estimated costs for either the low or high scenarios are likely more than what the Water Division could cover from annual operating dollars. To pay for these program costs, the Water Division has both short- and

13. For additional information about the multiple benefits of replacing nonfunctional turf with waterwise landscapes, see: <https://tapin.waternow.org/wp-content/uploads/sites/2/2024/08/NFT-Multiple-Benefits.pdf>.

14. Broomfield Comprehensive Plan 2016 Update, <https://broomfield.org/DocumentCenter/View/21455/Comprehensive-Plan-2016?bidId=>

15. Multiple Benefits of Landscape Transformation, [https://calwep.org/wp-content/uploads/2020/03/CalWEP\\_Multi-Benefits\\_Health-Wellbeing.pdf](https://calwep.org/wp-content/uploads/2020/03/CalWEP_Multi-Benefits_Health-Wellbeing.pdf).

16. Again, higher rebate amounts may likely be economical, too, when the full range of benefits associated with waterwise landscapes are taken into account.

17. The current turf replacement budget is \$65,000. Thus, these investments would represent a significant increase for the city.

long-term options. Near-term funding options include state and federal grants, such as Colorado Water Conservation Board's (CWCB) Colorado Water Plan Grants and U.S. Bureau of Reclamation WaterSMART grants. For example, the benefits-cost analysis described above assumes the Water Division received a \$4 million grant to help cover the Water Division's share of the program costs. This level of grant funding is possible through WaterSMART grants and has been awarded for turf transformation programs in the past.<sup>18</sup>

Long-term options include municipal bonds and State Revolving Fund loans.<sup>19</sup> These options can be combined into a funding portfolio that takes advantage of near-term grant opportunities as well as longer-term financing mechanisms that can bring waterwise landscaping projects to scale throughout the community. By combining a mix of potential funding options, the Water Division can also lessen impacts on rates while accelerating the pace of turf conversions.

## KEY TAKEAWAYS

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Replacing high water use turf with waterwise landscaping on CII and public areas has the potential to save a significant amount of water in Broomfield. Under a high-turf replacement scenario, water savings of up to 1,090 AFY could be realized, with additional water savings of up to 1,910 AFY if single-family residential property is considered. This analysis also indicates that even with the city providing financial incentives, both low and high CII turf replacement scenarios in Broomfield yield positive cost-benefit ratios for the city, with potential net annual benefits of \$8,500 and \$7,900, respectively. This suggests that investing in turf conversions can reduce water costs and provide significant returns.

Leveraging federal and state funding opportunities in combination with treating turf replacement projects as capital projects could significantly bolster the financial feasibility of larger-scale projects. Additionally, fostering collaboration across city departments (Public Works, Parks, Planning and Community Development) and the City Manager's office is crucial for streamlining project implementation and maximizing synergies. Moreover, designing multi-benefit projects not only achieves water savings and cost-effectiveness but also enhances community well-being by creating new recreational spaces. By integrating these strategies into future planning and implementation efforts, Broomfield can further advance its water conservation goals while fostering community engagement and broader environmental benefits.



18. See WaterSMART prior grants summaries, available at: <https://www.usbr.gov/watersmart/weeg/>.

19. As part of this project, WaterNow and WRA provided Broomfield with a roadmap of near- and long-term funding and financing pathways for turf conversions. The roadmap details available grant opportunities as well as how the city can leverage bonds and loans to finance investments in waterwise landscapes. It also offers a funding and financing matrix to support development of a portfolio approach.

# Brandywine North and West Parks

## Colorado Large-Scale Nonresidential Turf Replacements Pilot Project

### Pilot Project at a Glance

#### Project Overview

**Name:** Brandywine North and West parks

**Description:** Replace non-essential turf (while protecting existing trees) with a waterwise landscape containing native grasses and low water use plantings with signage.

**Area:** 172,523 sq. ft. (~4 acres)

#### Project Goals



Provide community leadership and education on waterwise landscapes



Reduce water demand and park maintenance costs



Develop a replicable turf replacement approach for parks

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#### Project Benefits

- Estimated Annual Water Savings: **1,663,370 gallons (5 AF)**
- Estimated Annual Water and Maintenance Cost Savings: **\$35,930**
- Other Expected Savings: Reduced operations and maintenance staff time, chemical herbicide use, and other maintenance costs.

#### Pilot Project Costs & Funding Sources

- Estimated Total Cost: **\$781,449**
- Funding Source(s): Broomfield is in the process of determining the best funding options for it's pilot project, including dedicated 2025 Parks Department funds for the project. Two grant options that align well are a Colorado Water Plan grant and U.S. Bureau of Reclamation's WaterSMART SWEP grant. The City plans to apply for funding in 2025.

## BROOMFIELD'S TURF REPLACEMENT PILOT PROJECT

An important component of this project was the project team working with Broomfield to identify and pursue a pilot turf conversion project. Broomfield identified 52 stormwater retention areas on public parks property as prime candidates. These areas are steeply sloped and aren't functional for recreational use so are considered "low hanging fruit" as turf conversion areas. Due to their number, they are also considered as being scalable and replicable. As a pilot project, Brandywine North and Brandywine West parks, located across the street from one another in Southeast Broomfield, were selected. These parks are highly visible and have cool-season turf in stormwater retention basins and other areas.

The pilot parcel area in Brandywine West encompasses 1.7 acres, while the pilot area in Brandywine North spans 1.6 acres. Existing turf in the pilot parcel is estimated to require approximately 8 acre-feet (AF) of irrigation water each year. Once established, the new landscaping — primarily native grass with some low water use plantings and a waterwise demonstration garden adjacent to the Mountain View Elementary School — is expected to use 3 AFY. This landscape transformation and irrigation system modification will save approximately **5 AF (1.6 million gallons)** of water per year, reducing water use by more than **65%**, increasing water efficiency, decreasing maintenance, and improving water supply security and drought resilience. For details on how the water savings for the pilot parcel were calculated, see the [Full Project Case Study](#).

Broomfield aimed to select a pilot area that met certain criteria including high visibility and predominately irrigated cool-season turf that receives little community recreational use. The Brandywine North and West parks are adjacent to tennis courts, walking paths and the Mountain View Elementary School. They are also close to Broomfield's maintenance facility, which will be helpful for City staff as they care for the new lower water use landscaping during and post-establishment. The park areas of both parcels are underutilized, and this project provides the opportunity to decrease water use and show Broomfield residents options for and benefits of turf conversion and water wise plantings.

The project team kicked off the pilot design effort with a brainstorming discussion to explore potential ideas for the site including but not limited to:

- Native grasses
- Irrigation system modifications for trees
- Drought-tolerant plantings
- Interpretive signs
- Demonstration garden
- Low maintenance

**Figure 2:** Brandywine West Pilot Parcel Existing Turf



Broomfield hired Norris Design to produce technical design plans that include native grasses, regionally appropriate perennial plants and shrubs, a demonstration garden, and pathways. Educational signage will be provided.

**Table 5:** Brandywine North and West New Landscape Plan

Landscape Type	Area (acres)
<i>Existing Landscape</i>	
Cool-season turf	3.22
Low water use plantings, crusher fines	0.12
<i>New Landscape</i>	
Native cool season grass mix (low irrigation)	1.27
Native warm season grass mixes (moderate irrigation)	1.40
Low water use plantings	0.23
Pavement, crusher fines	0.44

**Figure 3:** Norris Design's Brandywine West Pilot Parcel Design



BROOMFIELD TURF REPLACEMENT PILOT | BRANDYWINE WEST PARCEL PROPOSED CONDITIONS

05/03/2024



0 15 30 60  
SCALE: 1" = 30'



**NORRIS DESIGN**  
PEOPLE • PLACES • PROGRESS

**Figure 4:** Norris Design's Brandywine North Parcel Design



BROOMFIELD TURF REPLACEMENT PILOT | BRANDYWINE NORTH PARCEL PROPOSED CONDITIONS  
01/15/2025



## Pilot Project Costs and Funding

The renovations of the pilot project are based on cost estimates from Norris Design (landscaping) and Aqua Engineering (irrigation). The total estimated project cost for both pilot parcels is \$781,449. Based on estimates by Norris Design, the annual water and maintenance cost savings are expected to be approximately \$35,240 per year.

**Table 6:** Brandywine Pilot Parcel Project Costs

Item	Cost Estimate
Irrigation demolition	\$17,500
Irrigation renovation	\$244,000
Irrigation escalation and contingencies (40%)	\$104,600
Landscape demolition	\$9,272
Landscape revegetation	\$287,406
Landscape escalation and contingencies (40%)	\$118,671
<b>Total Estimated Construction Costs</b>	<b>\$781,449</b>

Broomfield is in the process of determining how they will pay for the pilot project, but a request is being made to dedicate Parks Department 2025 funds for the project. Broomfield will likely apply for a Colorado Water Plan Grant and may apply for a WaterSmart grant as well.