

## IMPORTANCE OF URBAN LANDSCAPE

### Problems with Current Public Debate

Efforts have been undertaken recently in legislative and policy forums to force reductions in municipal outdoor water use, particularly use for lawn grass. These efforts have largely ignored efficiency or lack of efficiency in outdoor water use, but have been aimed simplistically at lowering the volume of water being used outdoors by the Colorado residents who happen to live in cities and towns.

One articulation of these efforts is to mandate a particular ratio of indoor to outdoor water use within municipalities. As is often the case in Colorado, however, one size does not fit all, and imposition of a uniform ratio would be inappropriate and probably detrimental. For each Colorado municipality, the ratio of indoor to outdoor water use will differ based on many factors, including among others the types of water users within the municipality and the average length of its growing season. In general, the greater the proportion of single family or small multifamily residential customers, the greater the proportion of outdoor water use. Growing seasons in Colorado vary widely; a longer growing season would likely require greater outdoor water use for adequate irrigation of landscapes. As examples, the average number of frost-free days for Denver is 155, for Durango – 110 days; for Grand Junction – 183 days; for Gunnison – 62 days; and for Dillon – 25 days.<sup>1</sup> Since Denver's growing season is 40% longer than Durango's, Denver's outdoor water use should reasonably be expected to represent a higher percentage of overall water use than would Durango's outdoor use.

These efforts to mandate reductions in outdoor water use are short-sighted because they ignore the vital importance of urban landscape, including lawn grass, to the quality of life for millions of Coloradans who live in urban areas. Indeed, turfgrasses have been used by humans to enhance their environments for centuries. Benefits from urban landscape range from better air, surface water and groundwater quality – to low-cost and injury-preventing surfaces for leisure activities – to enhanced aesthetics and improved mental health.<sup>2</sup> Some of these benefits can be and have been quantified as valuable contributions to our local and state economy.

Any efforts directed at outdoor water use should be cognizant of the important and partially irreplaceable benefits of urban landscaping. In contrast to the target of these current efforts, efficient use of water outdoors represents a consensus goal and value, and is a more appropriate focus of policy and legislative activity in Colorado.

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<sup>1</sup> Colorado State University Extension. *Colorado Gardening: Challenge to Newcomers*. March 2013.

<sup>2</sup> James B. Beard and Robert L. Green, *The Role of Turfgrasses in Environmental Protection and Their Benefits to Humans*, J. of Environ. Qual. 23:3 (May-June 1994).

## Benefits of Urban Landscape

### Economic value provided by landscaping

The presence of lawns and other landscaping adds significant value to homes and neighborhoods. A well-landscaped house has a substantial price advantage over a house without landscaping – the difference generally ranges from 5.5% to 12.7% of the price.<sup>3</sup> This increase in property values represents a real and quantifiable contribution to Colorado's economy.

- A recent study by the U.S. Forest Service and UC Davis quantified the contribution to property values from the tree canopy in the City and County of Denver alone at \$95.7 million annually.<sup>4</sup>
- The property value increase contributed by the tree canopy for the Denver metro area as a whole was \$436.6 million.<sup>5</sup>

### Reduction in heat island effect.

The “heat island effect” is the warming of built-up urban areas compared to nearby rural areas by an average of 1.8 - 5.4°F, but sometimes as high as 22°F.<sup>6</sup> Trees and other vegetation provide shade and evapotranspiration, both of which lower surface and air temperatures, reducing the heat island effect.<sup>7</sup> The presence of urban vegetation can reduce air temperatures during peak summer heat by 2 - 9°F<sup>8</sup> and decrease air conditioning costs.<sup>9</sup> It is estimated that planting lawns and other landscape vegetation in urban areas can reduce by as much as 25% the energy consumed annually in the United States for cooling.<sup>10</sup>

- In addition to providing simple comfort by reducing the heat island effect, the economic benefit of energy savings from the tree canopy in the City of Denver is \$6.8 million annually, and \$21.8 million annually for the Denver metro area.<sup>11</sup>
- On a block of 8 houses, front lawns have the cooling effect of 70 tons of air conditioning.<sup>12</sup>

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<sup>3</sup> Alex X. Niemiera, *The Effect of Landscape Plants on Perceived Home Value*, Virginia Cooperative Extension. 2009. <http://pubs.ext.vt.edu/426/426-087/426-087.html>.

<sup>4</sup> USDA Forest Service and UC Davis, *Urban Forest Assessment for the City of Denver*. April 2013.

<sup>5</sup> *Id.*

<sup>6</sup> EPA, *Heat Island Effect*. <http://www.epa.gov/heatisland/>.

<sup>7</sup> EPA, *Heat Island Mitigation, Trees and Vegetation*. <http://www.epa.gov/heatisland/mitigation/trees.htm>.

<sup>8</sup> *Id.*

<sup>9</sup> University of Minnesota Extension, *Environmental Benefits of a Healthy, Sustainable Lawn*, Sustainable Urban Landscape Information Series. [http://www.sustland.umn.edu/maint/benefits\\_3.html](http://www.sustland.umn.edu/maint/benefits_3.html).

<sup>10</sup> Hull, R.G., Alm, S.R., Jackson, N., *Toward Sustainable Lawn Turf*, Plant Sciences Dept., Univ. of Rhode Island. In *Handbook of Integrated Pest Management for Turf and Ornamentals*, Anne R. Leslie. 1994.

<sup>11</sup> USDA, *Urban Forest Assessment*, n. 4.

<sup>12</sup> Thomas L. Watschke, Penn State University, *The Environmental Benefits of Turfgrass and Their Impact on the Greenhouse Effect*, prepared for American Sod Producers Association, described in Penn State newsletter - [http://www.psicee.psu.edu/publications/newsletters/archives/1989\\_v20no2.pdf](http://www.psicee.psu.edu/publications/newsletters/archives/1989_v20no2.pdf), 1989.

### Improvements in air quality

Lawns and other landscaping also improve air quality by removing harmful air pollutants.<sup>13</sup> They act as traps for dust and particulate matter, which can be particularly important in urban areas.<sup>14</sup> Through photosynthesis, plants reduce the amount of carbon dioxide, a major greenhouse gas, in the atmosphere.<sup>15</sup>

- 25 square feet of actively growing grass produces enough oxygen per day to support one person.<sup>16</sup>
- Air quality benefits quantified by the Forest Service and UC Davis from the local tree canopy are \$537,000 annually to Denver and \$1.7 million to the metro area.<sup>17</sup>

### Water pollution benefits

As an increasing proportion of the population resides in urban areas, the resulting increase in impervious surfaces produces greater sedimentation and pollution running directly into lakes and streams.<sup>18</sup> Vegetation serves an important function in urban areas by catching and filtering stormwater runoff.<sup>19</sup> This “green infrastructure” prevents contaminated water from entering rivers and minimizes erosion and sediment loading to streams.<sup>20</sup> Stormwater runoff rarely occurs on a well-maintained lawn, thanks to the dense network of roots in a lawn which trap and remove nutrients and other pollutants from water moving through the soil.<sup>21</sup> EPA prefers as the first choice on-site management of stormwater using landscaping, with neighborhood or regional solutions being the next preferable solutions.<sup>22</sup>

- Compared to a garden or a field planted in row crops, grassy areas can reduce soil erosion and resulting sedimentation in runoff by 84 to 668 times.<sup>23</sup>
- Tree canopy alone provides \$19 million annually to the City of Denver in reduced stormwater runoff management costs, and \$91 million annually to the metro area.<sup>24</sup>

Public policy in Colorado should be focused on preserving the vital benefits of urban landscaping while achieving maximum efficiency and minimum waste in the use of water outdoors.

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<sup>13</sup> EPA, *Trees and Vegetation*, n. 7.

<sup>14</sup> Univ. of Minn., *Environmental Benefits of a Healthy, Sustainable Lawn*, n. 9.

<sup>15</sup> EPA, *Trees and Vegetation*, n. 7.

<sup>16</sup> David Whiting, Jeffrey de Jong. *Water Wise Landscape Design: Selecting Turf Options*. Colorado State University Cooperative Extension. November 2013.

<sup>17</sup> USDA, *Urban Forest Assessment*, n. 4.

<sup>18</sup> Univ. of Minn., *Environmental Benefits of a Healthy, Sustainable Lawn*, n. 9.

<sup>19</sup> EPA, *Green Infrastructure: Low Impact Development and Green Infrastructure in the Semi-Arid West*. <http://www2.epa.gov/region8/green-infrastructure#3>.

<sup>20</sup> *Id.*

<sup>21</sup> Beard, *The Role of Turfgrasses in Environmental Protection*, n. 2.

<sup>22</sup> EPA, *Green Infrastructure*, n. 19.

<sup>23</sup> CSU Extension, *Water Wise Landscape Design*, n. 16.

<sup>24</sup> USDA, *Urban Forest Assessment*, n. 4.