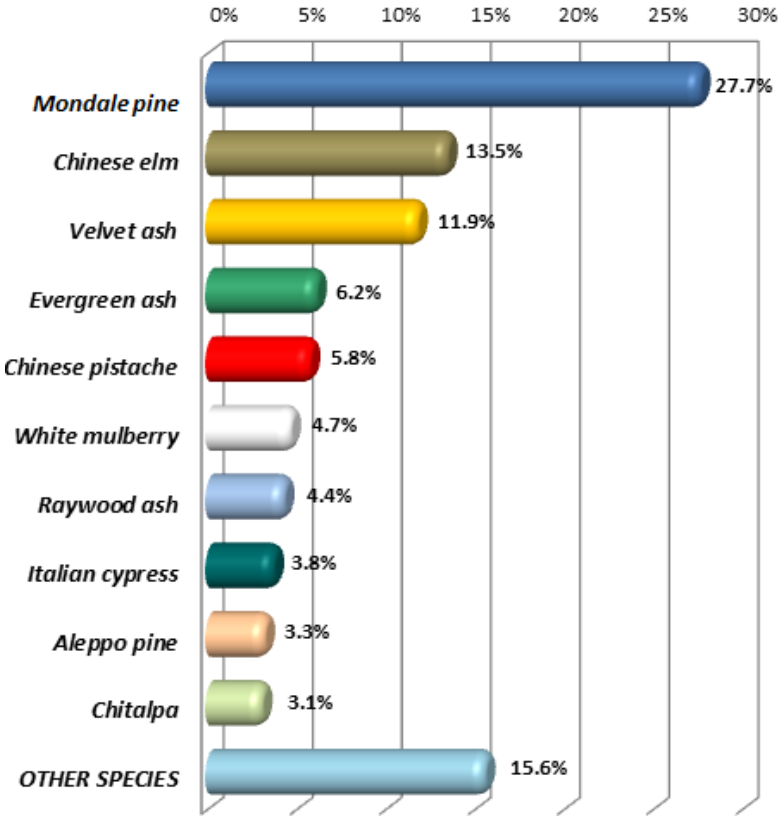
Boulder City

Tree Inventory Results

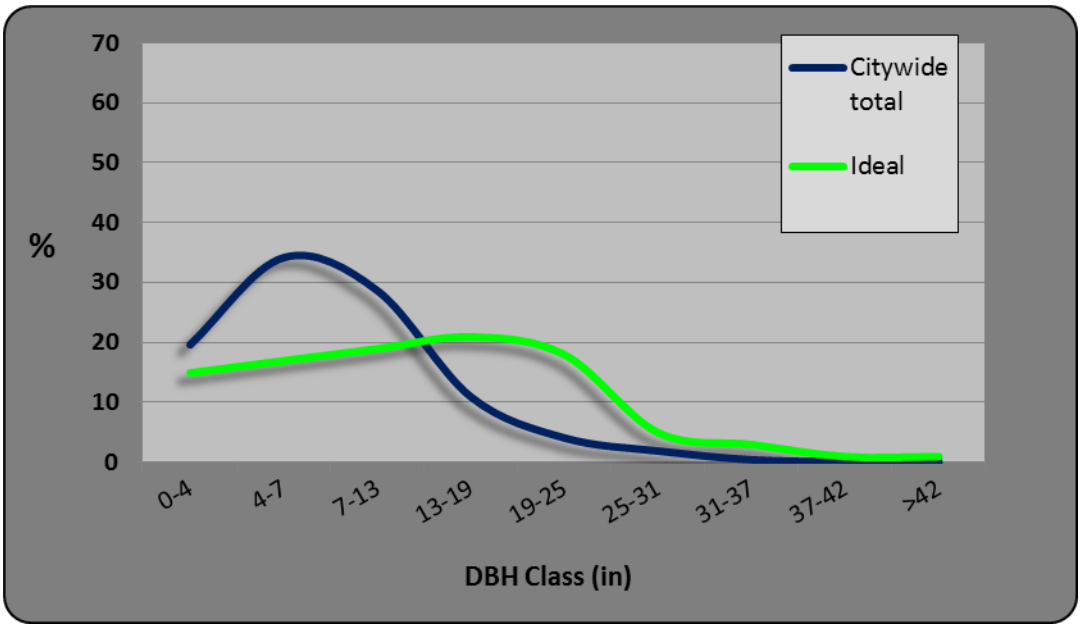
Tree Population – There were 1,375 trees inventoried in Boulder City as part of the Clark County Tree Inventory Project.

Tree Species - There were 41 unique tree species identified in the inventory The predominant tree species are Mondale pine (*Pinus eldarica*, 27.7%), and Chinese elm (*Ulmus parvifolia*, 13.5%). The chart below represents the population distribution of the top 10 species in Boulder City's urban forest.

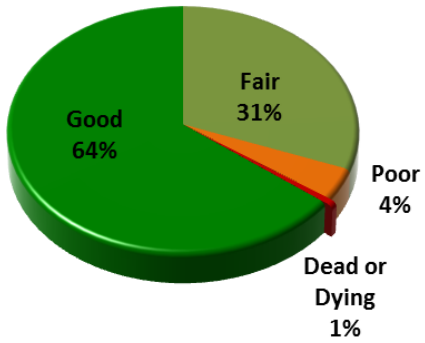


Tree Size and Age Class – The age of the urban forest can by approximated by considering the DBH* range of the overall tree population. In Boulder City, 54% of trees measure between 0 to 7 inches DBH and 83% of the trees are less than 13 inches DBH. In comparison to what is considered an ideal population distribution, Boulder City's urban forest is young overall, with few large trees. It is important to recognize that this younger, smaller, population can be somewhat reflective of the climate and smaller stature of the trees that make up the Boulder City urban forest. The chart below compares the Boulder City population distribution to an ideal distribution.

**DBH is diameter of the tree trunk at breast height, measured at 4'6" above the ground*



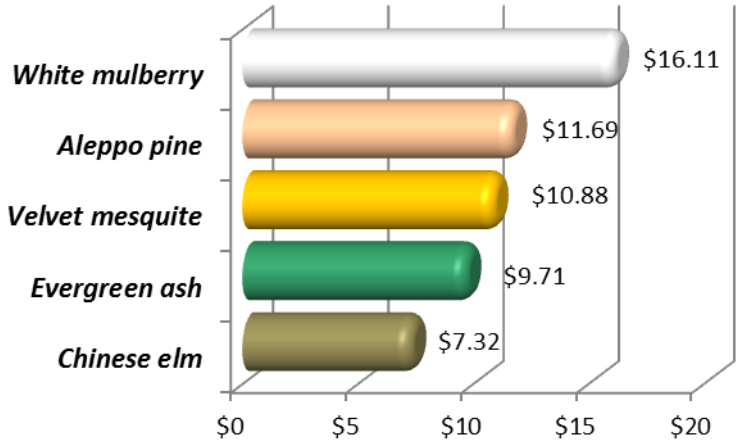
Tree condition - Each inventoried tree was rated for overall condition, including consideration for structure, foliage, and the root collar. When trees are performing at their peak, the benefits they provide are maximized. The inventory found 64% of Boulder City's trees in good condition and 31% in fair condition. Nearly 5% of the population was determined to be in poor condition or dead or dying.



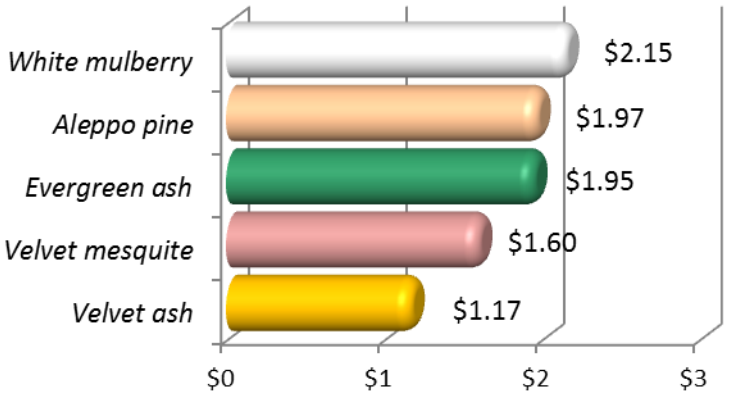
Replacement Value – The community forest is a public asset that, when properly cared for, has the potential to appreciate in value as the trees mature over time. Replacement value reflects the current population numbers, stature, placement and condition. To replace Boulder City's current inventoried tree population of 1,375 trees with trees of similar size, species, and condition would cost nearly **$5.1 million.** The average replacement value per tree is nearly $3,688.

Urban Forest Benefits

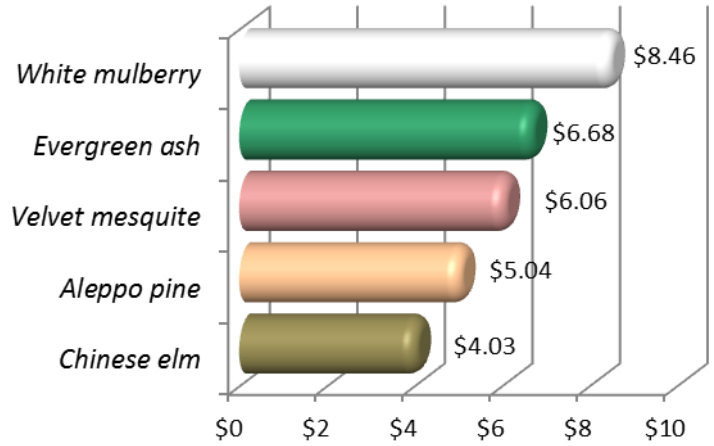
Electricity and Natural Gas Reduction - Electricity and natural gas saved annually in Boulder City from both the shading and climate effects of inventoried trees is equal to 107 MWh (valued at $7,966) and 720 therms ($472.36), for a total retail savings of approximately **$8,439** and an **average of $6.14 per tree.** The chart below shows the top five performing tree species in terms of energy savings on a per tree basis.



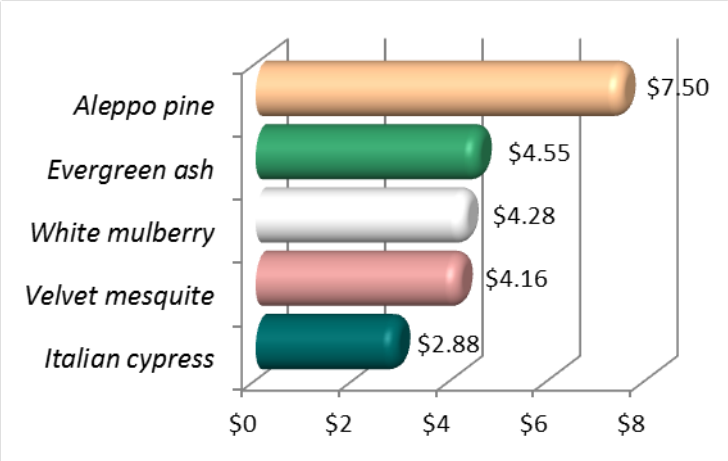
Sequestered Carbon Dioxide To date, Boulder City's inventoried urban forest has sequestered a total of 467 tons of carbon dioxide (CO2), valued at $6,998. Annually, this tree resource directly sequesters 39.1 tons of CO_2, valued at $587.09, into woody and foliar biomass. When CO_2 emissions from tree decomposition and tree related maintenance activity along with the positive benefits of avoided CO_2 through a reduction in energy needs are considered, Boulder City's trees provide an annual net reduction in atmospheric CO_2 **88.5 tons, valued at $1,328**, with an average of **$0.97** per tree. The chart below shows the top five performing tree species in terms of CO_2 reduction on a per tree basis.



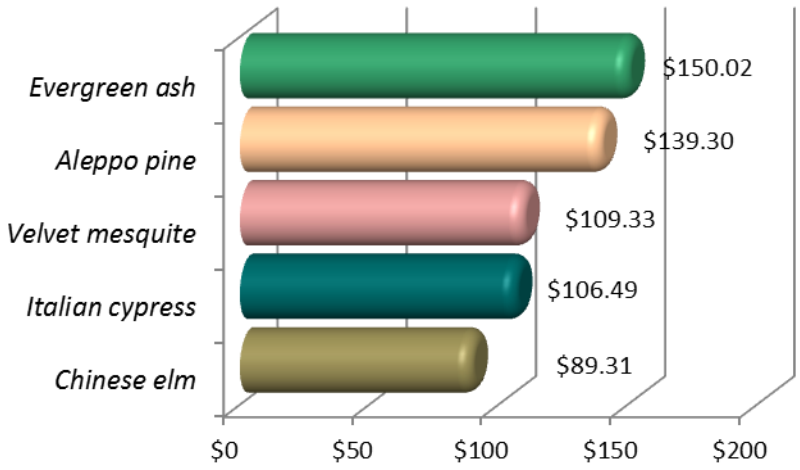
Net Air Quality Improvement - The net value of air pollutants removed, avoided, and released by Boulder City's inventoried public tree population is $4,475.66 annually. The average net benefit per tree is $3.26. The chart below shows the top five performing tree species in terms of net air quality improvements on a per tree basis.



Storm Water Runoff Reductions - Boulder City's inventoried trees 673,573 gallons of stormwater annually for an average of 490 gallons per tree (Table 10). The total value of this benefit to the City is $3,233, an average of $2.35 per tree. The chart below shows the top five performing tree species in terms of net air quality improvements on a per tree basis.



Aesthetic, Property Value, and Socioeconomic Benefits - The total annual benefit associated with property value increases and socioeconomic benefits is $91,193, an average of $66.32 per tree. The chart below shows the top five performing tree species in terms of aesthetic and property value and socioeconomic benefits on a per tree basis.



Benefit Summary – The total estimated benefits provided by Boulder City's inventoried tree resource is $108,669, a value of $79.03 per tree and $7.23 per capita. These benefits are realized on an annual basis as follows:

- Electricity and Natural Gas Reduction - $6.14 per tree
- Sequestered Carbon Dioxide - $0.97 per tree
- Net Air Quality Improvements - $3.26 per tree
- Storm Water Runoff Reduction - $2.35 per tree
- Aesthetic, Property Value, and Socioeconomic Benefits - $66.32 per tree
- Total Benefits - $79.03 per tree

When the per tree values are calculated across the urban forest, Boulder City receives the following in total annual benefits.