

The Large Tree Argument: The Case for Large Trees vs. Small Trees

Jim Geiger

Why did we like elm trees so much?

Large stately elm trees once graced many communities throughout the US. But now they are gone. Why were entire communities so disappointed when they lost their elm trees to Dutch elm disease several decades ago?

People had a sense that these large trees were important to them, their family, and their community. And this was long before we quantified the benefits of trees. Now we have scientific evidence for what these people knew decades ago.

Large trees pay us back

We now know that, dollar for dollar, large-stature trees deliver big savings and other benefits we can't ignore. Small-stature trees like crape myrtle deliver far fewer benefits. In fact, our research shows that their benefits are up to eight times less.

Compared to a small-stature tree, a strategically located large-stature tree has a bigger impact on conserving energy, mitigating an urban heat island, and cooling a parking lot. They do more to reduce stormwater runoff; extend the life of streets; improve local air, soil and water quality; reduce atmospheric carbon dioxide; provide wildlife habitat; increase property values; enhance the attractiveness of a community; and promote human health and well being. And when we

use large-stature trees, the bottom-line benefits are multiplied. When it comes to trees, size really does matter.

Don't forget the established "old guard"

We can't forget the already-established trees. These older trees provide immediate benefits. The investment that community leaders made 30, 40, 50 years ago is producing dividends today. Dr. McPherson, Director of the Center for Urban Forest Research, points out that "since up-front costs to establish these trees have already been made, keeping these trees healthy and functional is one of the best investments communities can make."

is: can we afford not to invest in our trees? Are we willing to forego all of these benefits? Or, would we rather make a commitment to provide the best possible care and management of our tree resources and sustain these benefits for future generations.

Costs vs. benefits

In most areas of the country, communities can care for their largest trees for as little as \$13 per year, per tree. And, each tree returns an average of \$65 in energy savings, cleaner air, better managed stormwater, extended life of streets, and higher property values. Smaller trees do not come close to providing the same magnitude of benefits.

"When it comes to trees, size really does matter."

What do you lose if you don't plant large trees?

Municipal tree programs are dependent on taxpayer supported funding. Therefore, communities must ask themselves, are large trees worth the price to plant and care for? Our research has shown that benefits of large trees far outweigh the costs of caring for them, sometimes as much as eight to one. The big question communities need to ask

A hypothetical example

A few years ago, the community of Greentree was faced with a budget crisis and decided to save money by downsizing its community forest—planting a majority of small trees in favor of larger ones and even replacing large trees with smaller ones (see below). It made choice X. Unfortunately; this is not an uncommon story in communities today. But the real question is, what did they give up in return, and was downsizing a wise choice?

In this case, the city decided that planting 1,693 small trees and only 259 large trees would be a good budget-cutting strategy. Over the short term this may save the city a little money. But over the long term they will have decidedly fewer benefits and a decreased quality of life. City elected

WHAT LARGE TREES MEAN

- ▲ More shade = more energy savings
- ▲ Cleaner air = better health and fewer hospital visits
- ▲ More stormwater management = lower costs for stormwater controls
- ▲ More shaded streets = longer time between resurfacing

Large Trees vs. Small Trees

The city of Greentree chose planting scenario X. By year 20 it was already a \$60,000 annual mistake.

	Choice X		Choice Y		
Avg. Ann. Benefit/ Avg. Ann. Cost	# Trees	Total Benefit/ Total Cost	# Trees	Total Benefit/ Total Cost	
Large Trees	\$65.18 \$13.72	259	\$16,882 \$3,553	1,693	\$110,350 \$23,228
Medium Trees	\$36.04 \$6.87	753	\$27,138 \$5,173	753	\$27,138 \$5,173
Small Trees	\$17.96 \$6.23	1,693	\$30,406 \$10,547	259	\$4,652 \$1,614
Total Trees		2,705		2,705	
Total Benefits		\$74,426		\$142,140	
Total Costs		\$19,273		\$30,015	
Annual Net Value to Community		\$55,153		\$112,125	

Adapted from McPherson, E.G.; et. al. 2002. Western Washington and Oregon Community Tree Guide: Benefits, Costs, and Strategic Planting. International Society of Arboriculture, Pacific Northwest Chapter: Silverton, OR. 76p.

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Author's Note

We recognize that on some restricted sites small-stature trees may be the best choice. However, let's not succumb to the limited space argument so easily. We need to continue to fight for more space for trees in every new project and every retrofit. It's clear that larger trees produce greater benefits, improving quality of life. —JRC

This article is based on our Tree Guide research in the western U.S.

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officials failed to consider what the city would be giving up over the life of those trees.

Will people want to live, work, recreate, do business, and shop in this community? And will the new trees provide all of the benefits that the residents seek—energy conservation, clean air, clean water, attractive surroundings, and enhanced real estate values. The answer is a resounding NO! We modeled the growth of these trees over 40 years. By year 20, the decision-makers had already made nearly a \$60,000 dollar annual mistake.

Choice Y is clearly the way to go to maximize their return on budget dollars. The model shows that once the trees are mature the community will receive an annual return on investment of nearly \$60,000 over choice X. Plus; the community will look quite different in the future and be a healthier and safer place to live.

Is it possible?

We may never have the arching canopies we once had with the stately elms of a few decades ago. We can still achieve large, functional canopies and reap all the benefits. It will take planting large-stature trees in as many ap-

propriate places as possible while creating the best possible site that maximizes space and allows for adequate exchange of gases and water. And yes, it is possible!

Cities that are using small-stature trees to reduce costs may achieve some short-term savings, but over the long term, they have destined themselves to a future with fewer and fewer benefits as large trees are replaced with smaller ones.

