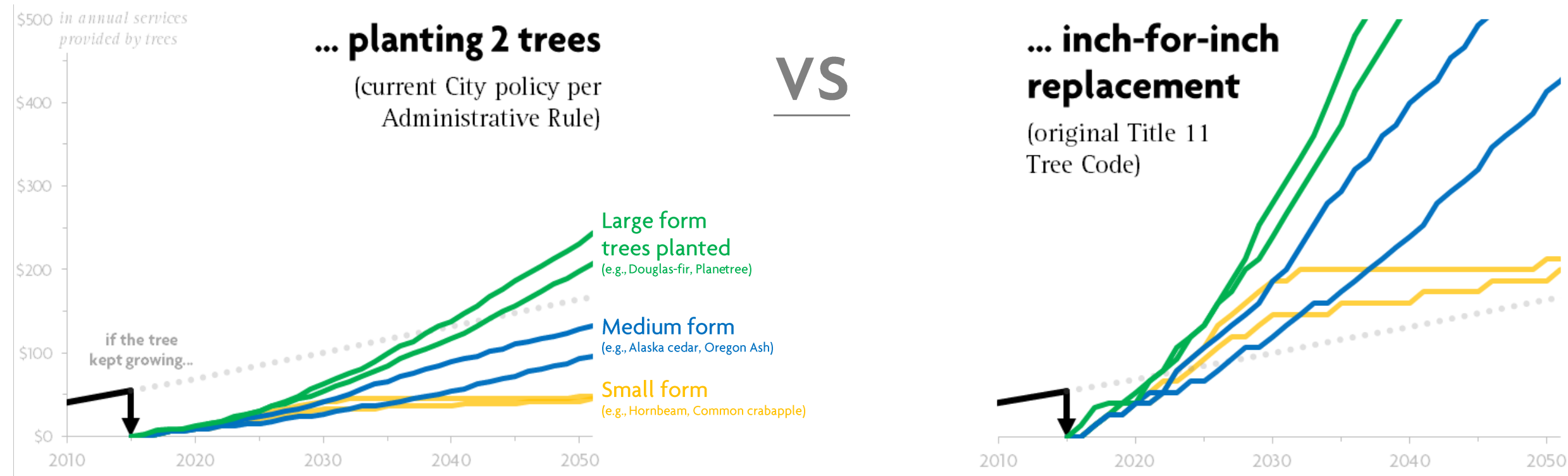


Choosing to mitigate for the removal of a 20” diameter Douglas-fir by..



With two trees planted for each tree removed:

- ▶ Two newly-planted *large form* trees take nearly 30 years to resume providing services at the rate the removed tree was already providing (and could have continued to). Medium form trees take 50-60 years to match the rate, and *small form trees never do*.
- ▶ There is a time lag in the provision of new tree benefits. If the value of the services from these trees over the next 100 years is discounted (5% per year), there are unmitigated losses in all planting scenarios. Each 20” Douglas-fir removed and replaced by two saplings results in a *loss* of present value of \$1,750-1,800, \$1,160-1,350, or \$270-290 when small, medium, or large form trees are planted, respectively.

From January-June 2015, more than 1,219 trees were cut down in Portland*. Only 1,073 were planted in mitigation (<1 planted for each tree removed). More than 630 trees removed were 20” diameter or larger. Just 210 of the trees planted for mitigation were large form.

With inch-for-inch replacement:

- ▶ If the ~13 newly-planted 1.5” diameter saplings are of a large form tree species, it still takes at least 5 years before they resume providing services at the rate of the removed tree; medium and small form trees will take 8-10 years to match it.
- ▶ All planting strategies eventually mitigate for the lost present value of services from the removed tree. If all saplings planted are large form tree species, it takes 15 years to make up the present value of services lost by the original tree removal, medium form trees take 20-40 years, and small-form trees may require as much as 25-60 years.

Note: Storm water, air quality, and carbon sequestration benefits are factored into the value of the environmental services provided by trees (calculated using iTree). This does not capture the additional aesthetic value, reduction of urban heat islands, energy savings, or property value enhancements that trees provide.

* 1,219 permitted tree removals on private property in non-development situations alone. From Q1-Q3 2015, 654 more trees were removed in development situations. They averaged 17.6” in diameter. 685-1,005 additional properties receiving development permits during this timeframe were exempt from tree planting and preservation requirements under the Title 11 Tree Code due to zoning or lot size <5,000 sq. ft.

A Million Dollar Mistake

Based on the data provided by Urban Forestry covering Q1-2 2015, assume all of the ~620 trees >20" dbh removed during this timeframe are exactly 20" (i.e., none are bigger than 20", a **very** conservative assumption) and all are Douglas-fir (a liberal assumption used for ease of calculation based on iTree simulations). Further, assume all of the 1,130 mitigation trees planted during this timeframe were applied to compensate for the removal of these 620 trees. This includes:

- ~210 large-form seedlings planted to mitigate 105 large trees removed (at a net loss of \$270 each = \$28K),
- ~390 medium form seedlings planted to mitigate 195 large trees removed (at a net loss of \$1,160 each = \$226K),
- ~530 small form seedlings planted to mitigate 265 large trees removed (at a net loss of \$1,750 each = \$464K), and
- ~110 additional seedlings which were not planted, to mitigate the remaining 55 large trees removed if 2:1 mitigation had been universally enforced without exemptions (a net loss of \$2,361 for each tree removed = \$130K).

This unmitigated loss totals ~\$850K over the first six months of 2015 in non-development situations alone. For context, consider that more trees were permitted for removal in development situations in Q3 than from Q1+2 combined. This is also all without factoring in any losses from the removal of medium and small form trees in non-development situations, the hundreds of trees removed under permits in development situations, or the somewhere between 680-1,000 sites that received development permits and were exempt from the Tree Code due to zoning or lot size <5,000 sq.ft. We have not yet seen data for Q3 in non-development situations.