Longview, Washington, is the reference city for the i-Tree Streets program’s Pacific Northwest climate region. Base data were collected there during the summer of 2001. To learn how to use this information to calculate costs and benefits for any community in the Pacific Northwest (shown in brown on the map), refer to the Western Washington and Oregon Community Tree Guide at http://www.fs.fed.us/psw/programs/uesd/uep/tree_guides.php. To learn more about i-Tree Streets, visit http://www.itreetools.org.

**Methods:**
- Benefits and costs were quantified for typical large, medium, and small deciduous trees and a conifer.
- The analysis assumed that trees were planted in a residential yard, public park, or street side with a 77-percent survival rate over 40 years.
- Tree care costs were based on results from a survey of municipal and commercial arborists.
- Benefits were calculated by using tree growth curves and numerical models that consider regional climate, building characteristics, air-pollutant concentrations, and prices.

**Benefits analyzed:**
- Energy savings (electricity and natural gas)
- Air pollution reduction (carbon dioxide, nitrogen dioxide, sulfur dioxide, ozone, airborne particles, and volatile organic compounds)
- Runoff reduction (rainfall interception)
- Property values

**Costs analyzed:**
- Tree purchase and planting
- Pruning
- Irrigation
- Pest and disease prevention and control
- Removal and disposal
- Sidewalk repair
- Leaf litter cleanup
- Liability, legal aspects, and administration

Project partners included the Longview Parks Department; Oregon State University Cooperative Extension; Western Forestry Leadership Coalition; Oregon State Department of Forestry, Urban and Community Forestry Program; Portland General Electric; Pacific Power; Puget Sound Energy; and the International Society of Arboriculture, Pacific Northwest Chapter.

**Resources:**

May 2011
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A large tree in the Pacific Northwest will provide $2,820 in environmental and other benefits over its lifetime. That’s over a 300-percent return on investment!

Properly cared for, trees are valuable and growing assets worth over three times the investment.

Healthy trees mean:

Healthy people
Each year, 100 large, mature street trees
- Remove 13 tons of carbon dioxide (CO₂)
- Remove 123 pounds of other air pollutants
- Catch about 54,900 gallons of rainwater

Homeowner savings
One well-placed large tree
- Provides average savings of $7 on home air conditioning costs each year

Better business
In tree-lined commercial districts, shoppers report
- More frequent shopping
- Longer shopping trips
- Willingness to pay more for parking
- Willingness to spend 12 percent more for goods

Healthy communities
Tree-filled neighborhoods
- Report lower levels of domestic violence
- Are safer and more sociable
- Reduce stress of body and mind
- Decrease need for medication, and speed recovery times

Higher property values
Trees increase the resale value of houses
- Each large front yard tree adds 1 percent to the sales price of a house
- Large specimen trees can add 10 percent to property value

It pays to care for trees

Landscape trees provide benefits that far exceed the costs of planting and care over their lifetime.

Environmental and aesthetic benefits, such as energy savings, stormwater runoff reduction, cleaner air, and higher property values, are consistently many times greater than tree care costs.

The greatest benefits are stormwater treatment cost savings and higher property values.

One large public tree, 40 years after planting, averaged:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Annual benefits</td>
<td>$71</td>
</tr>
<tr>
<td>Annual costs</td>
<td>$23</td>
</tr>
<tr>
<td>Annual net benefit</td>
<td>$48</td>
</tr>
</tbody>
</table>

Over 40 years, 100 large public trees total:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits</td>
<td>$282,400</td>
</tr>
<tr>
<td>Costs</td>
<td>$92,080</td>
</tr>
<tr>
<td>40-year net benefit</td>
<td>$190,320</td>
</tr>
</tbody>
</table>

Trees produce benefits for us when we plant and nurture them in our urban environments. The Urban Ecosystems and Social Dynamics Program at the USDA Forest Service Pacific Southwest Research Station is assessing the ways that trees pay us back and their value to us.

Properly cared for, trees are valuable and growing assets worth over three times the investment.