

# Climate Change and Urban Forests

GREEN CITY  
PARTNERSHIPS



## Project Summary

Washington State faces climate change impacts that include sea level rise, temperature increases and changes in precipitation. The conservation and restoration of urban forests becomes increasingly important in addressing these changes by mitigating storm water impacts from increased precipitation, reducing temperatures, and sequestering carbon.

Limited information is available to guide decisions on species selection for urban forest restoration, seed source selection and other management practices. The Green City Partnerships, with support from the US Forest Service, partnered with the University of Washington's College of the Environment to create models to inform reforestation and restoration management strategies. Download the full report at:

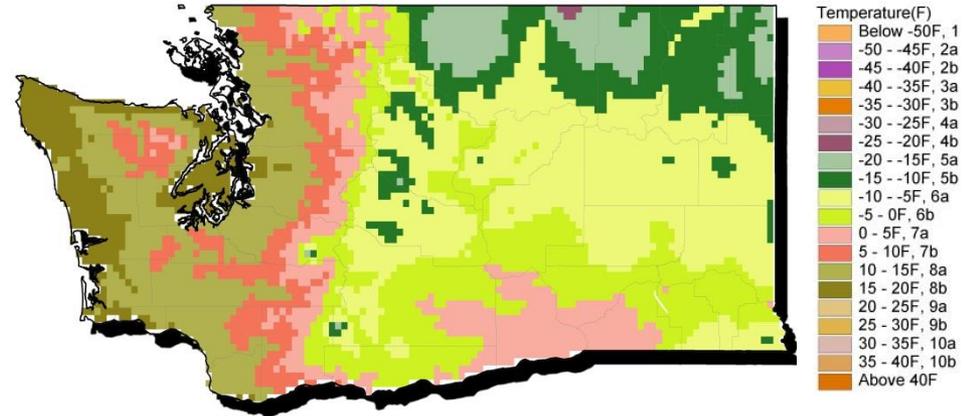
[http://www.forterra.org/what\\_we\\_do/build\\_community/green\\_cities/green\\_cities\\_research](http://www.forterra.org/what_we_do/build_community/green_cities/green_cities_research)

### Reference:

Kim, S., Uran C., Lawler J., and Anderson R. September 2012. *Assessing the Impacts of Climate Change on Urban Forests in the Puget Sound Region: Climate Suitability Analysis for Tree Species.*

### Additional Resources:

- Plant Hardiness Zones – [www.planthardiness.ars.usda.gov](http://www.planthardiness.ars.usda.gov)



## Plant Hardiness Zone Maps

The USDA Plant Hardiness Zone Map is the standard by which horticultural professionals and foresters can determine which plants will thrive in a given area.

Hardiness Zone Maps zones are divided into 10 degree Fahrenheit zones which are based on the average annual minimum winter temperature averaged over a 30 year period. Zone maps characterize the relationship between plant survival and temperature.

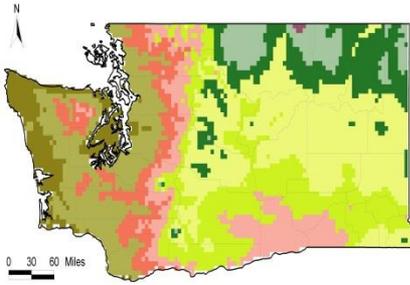


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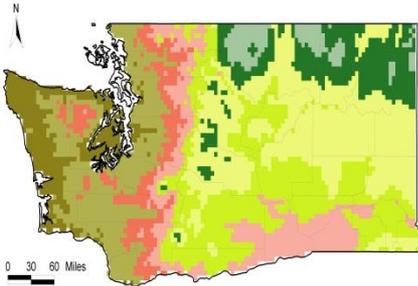
This project was made possible with support from the USDA Forest Service, Urban and Community Forestry Program.

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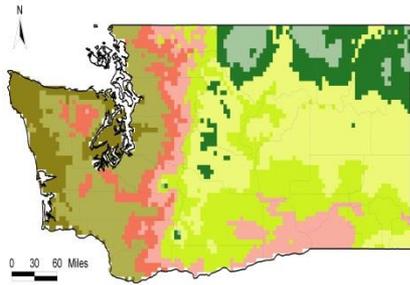
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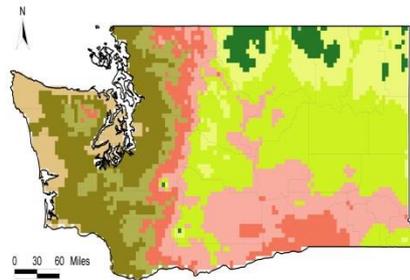
2020



2040



2080



## Research Findings

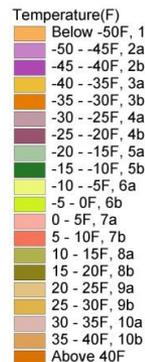
Researchers from the University of Washington College of the Environment developed current and future hardiness zone maps for Washington State and the Puget Sound region based on the USDA Plant Hardiness Zone Map. Climate data was obtained from the Washington Climate Impacts Group. These future hardiness zone maps can be used to inform plant selection for urban forest restoration under future climate conditions.

Future hardiness zone maps suggest that the Puget Sound region will likely see:

- An increase of roughly half a hardiness zone (e.g., from zone 8a to zone 8b or zone 8b to zone 9) by the year 2080.
- An increase of 5 to 6 degrees Fahrenheit in annual minimum temperatures.

## Implications

- Less hardy plant species may successfully grow in the Puget Sound region.
- There may be an increased risk of non-native plant invasion.
- The plant selection palette for urban forest restoration may be affected.
- Ecological conditions in our urban forests may be altered.



## Plant Hardiness Zone Maps

The maps to the left represent future hardiness zones for Washington State. The zones are based on the annual minimum winter temperature averaged over a 30 year period and are divided into 10 degree Fahrenheit groups.

