

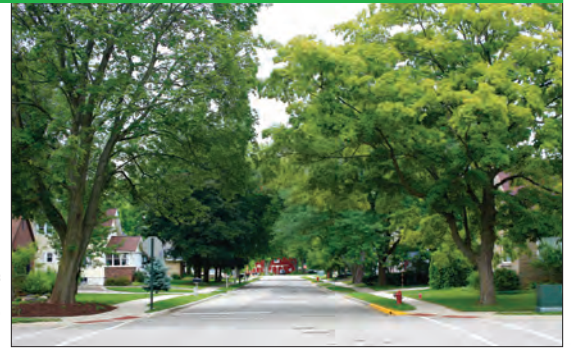
City of Zeeland

Urban Tree Canopy (UTC) Assessment

What is the Urban Forest and Urban Tree Canopy?

The **Urban Forest** consists of all public and private trees and shrubs in our community. This includes trees in yards, parks, open spaces, along streets and other land where trees are present. One way to understand the value of urban forests is by envisioning the layer of leaves, branches and tree stems when viewed from above. This layer is called **Urban Tree Canopy (UTC)**.

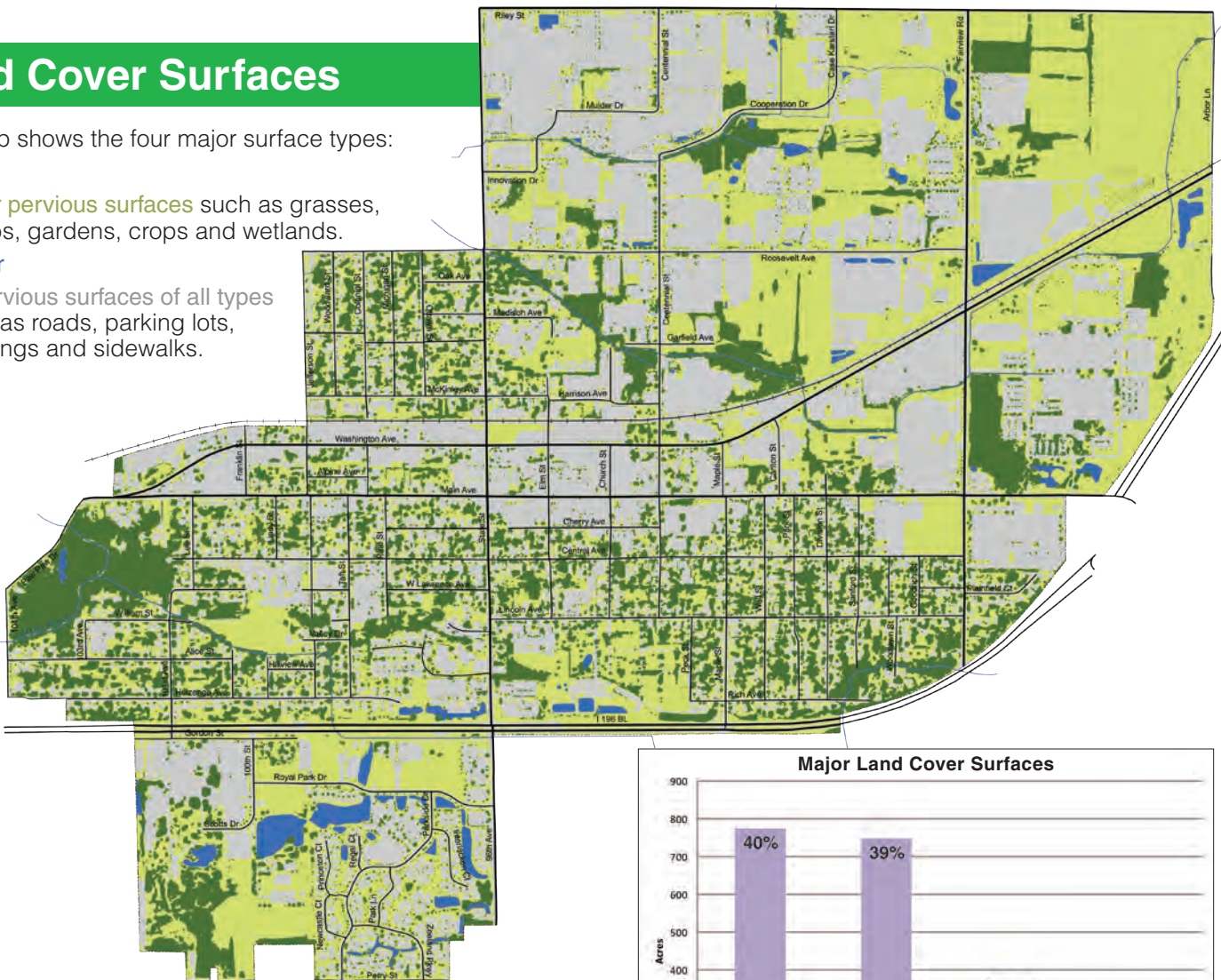
Sanford Street has the third highest percentage of UTC in the City of Zeeland.



Land Cover Surfaces

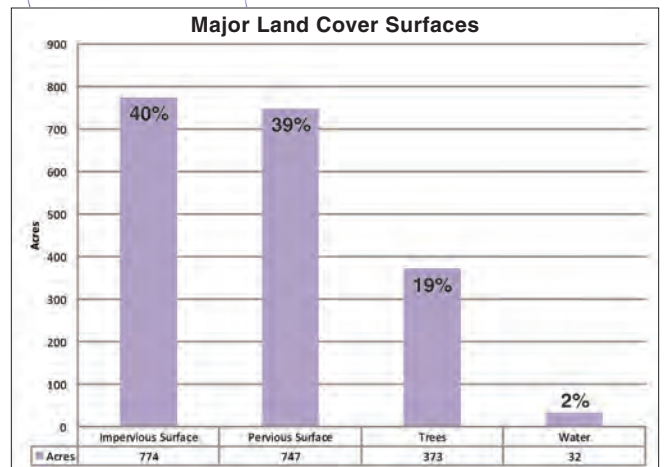
This map shows the four major surface types:

1. Trees
2. Other pervious surfaces such as grasses, shrubs, gardens, crops and wetlands.
3. Water
4. Impervious surfaces of all types such as roads, parking lots, buildings and sidewalks.



Surface Types

- Tree Canopy
- Pervious Surfaces
- Water
- Impervious Surfaces

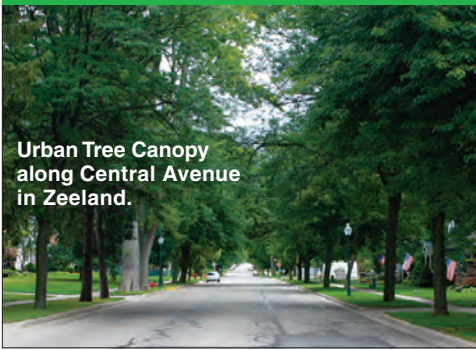


Project Funded By:

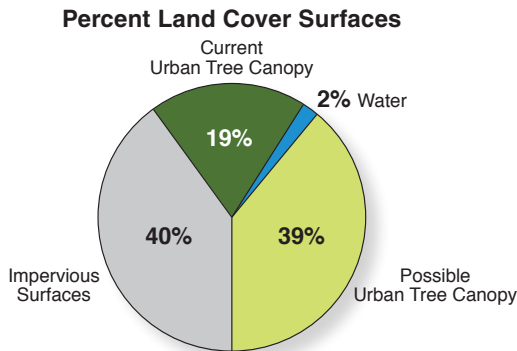


City of Zeeland

Urban Tree Canopy (UTC) Assessment



Urban Tree Canopy along Central Avenue in Zeeland.



Street Tree Canopy in the City of Zeeland

| STREET NAME | % TREE CANOPY |
|--------------------|---------------|
| Peck Street | 30.3% |
| Michigan Street | 25.9% |
| Sanford Street | 24.3% |
| Woodlawn Street | 22.5% |
| Lindy Street | 21.8% |
| Park Street | 21.7% |
| Pine Street | 21.4% |
| 100th Avenue | 20.8% |
| Central Avenue | 19.6% |
| William Street | 19.5% |
| Ottawa Street | 18.8% |
| Taft Street | 17.8% |
| Westenbroek Street | 17.7% |
| Goodrich Street | 17.5% |
| Wall Street | 16.9% |
| Alpine Avenue | 16.8% |
| 101st Avenue | 16.7% |
| Division Street | 16.4% |
| Alice Street | 15.4% |
| Plainfield Court | 14.9% |
| Lawrence Avenue | 14.9% |
| Rich Avenue | 14.2% |
| Valley Drive | 14.1% |
| Lee Street | 13.1% |
| Church Street | 11.9% |
| Maple Street | 11.6% |
| McKinley Avenue | 11.4% |
| Huizenga Avenue | 11.4% |
| Cherry Avenue | 11.1% |
| Garfield Avenue | 10.4% |
| Centennial Street | 10.0% |

UTC Benefits to City of Zeeland



Trees Reduce Atmospheric Carbon Dioxide in Two Ways:

- By directly storing CO₂ in their stems and leaves as they grow
- By reducing demand for heating and cooling, thereby reducing emission associated with power production

The UTC in Zeeland captures 6,658,000 lbs. of CO₂ each year.

Total Value of these services are valued at \$35,523 annually!

The UTC in Zeeland currently stores approximately 111,000,000 lbs. of CO₂.

Total Value of these services are valued at \$1,077,526!



Trees Improve Air Quality

- They absorb gaseous pollutants (such as ozone and nitrogen oxides)
- They intercept particulate matter (such as dust, ash, pollen and smoke)
- They freshen the air we breath by releasing oxygen in the air as a byproduct of photosynthesis (two healthy trees produce enough oxygen for one person for one year)

The UTC in Zeeland removed the following pollutants annually!

| Pollution Removal Services | Annual Pounds | Dollar Value of Services |
|---|---------------|--------------------------|
| Carbon Monoxide (CO) | 232 | \$168 |
| Nitrogen Dioxide (NO ₂) | 3,580 | \$18,277 |
| Ozone (O ₃) | 9,365 | \$47,821 |
| Sulfur Dioxide (SO ₂) | 1,559 | \$1,949 |
| Particulate Matter < 10 microns | 7,072 | \$24,109 |
| Total Value of Pollution Removal | | \$92,324 |



Trees Reduce Stormwater Runoff and Improve Water Quality

- Leaves and bark surfaces intercept and store rainfall, reducing runoff volumes
 - A mature deciduous tree can intercept 500 to 760 gallons of water per year
 - A mature coniferous tree can intercept more than 4,000 gallons of water per year
- Roots increase the rate at which rainfall infiltrates into the soil, and increases the soil's capacity to store water, reducing overland runoff and potential erosion
- Tree canopies reduce soil erosion by diminishing the impact of raindrops on barren surfaces
- Transpiration, or the expelling of moisture from a tree through the leaves, reduces soil moisture, thereby increasing the soil's capacity to store rainfall
 - A mature deciduous tree can transpire 100 gallons of water a day under hot, dry conditions



Trees Save Energy in Several Ways

- Shading provided by trees reduces the amount of heat absorbed and stored in built surfaces
 - Greenspace provided by trees can lower air temperatures by 5 degrees F
 - Trees that shade east and especially west walls help keep buildings coolest
- Evapotranspiration converts liquid water to water vapor and cools the air
- Windspeed reduction reduces the infiltration of outside air into interior spaces, reducing heating and cooling costs



Atmosphere carbon and gaseous pollutant removal information provided by: i-Tree Vue model using the UTC data developed for this project. i-Tree is a cooperative initiative of the USDA Forest Service, Davey Tree Expert Company, the Arbor Day Foundation, Society of Municipal Arborists, the International Society of Arboriculture, and Casey Trees.