

#8: OPEN SPACE, PARKS, TREES

CORE METRIC FOR CATEGORY A & B & C COMMUNITIES

Bold, green font indicates metrics that must improve to be recognized at Step 5

METRICS

- **Open Space**
8.1 Percent of total city or reservation acres in open space (%)
- **Parkland Quantity & Access:**
8.2 Acres of parkland (# of acres)
8.3 Percent of housing within ½ mile/a 10-minute walk of parkland (%)
- **Tree Canopy**
8.4 Percent canopy coverage (%)
8.5 Three most prevalent tree species (by percent genus) (Genus names; %)
8.6 Net number of new trees planted (# of trees)
8.6a Percent of 8.6 trees that are “likely to thrive” (%)

METRIC DEFINITION

- **Open space** for purposes of this measure is pervious land, public or private, that is not built upon. It includes public parklands, street boulevards, green space owned by homeowners associations, private golf courses, surface waters (ponds, lakes, streams, wetlands), empty lots, and working lands (forests and farmland). (Metric 8.1)
- **Parkland** is a common metric nationwide but has no standard definition. GreenStep defines it as protected public lands owned by the city and other governmental jurisdictions, and private land with conservation easements (including lands owned by conservation organizations), and private golf courses open to the public. Public lands include passive parkland, trails, greenways, golf courses, playgrounds, school land, recreation fields, fishing and boating lakes and streams, wetlands with walking access, picnic areas, public pools, and beach and lake access. Land should be legally protected from development through conservation easements, forest preserves, land trusts, and similar conservation mechanisms. (Metrics 8.2 and 8.3)
- **Percent of housing:** people in residential housing who are within 1/2 mile of parkland, which is a 10-minute walk for most people. (Metric 8.3)
- **Percent canopy coverage** is the percent of all acres within city limits that are shaded by trees. (Metric 8.4)
- **Prevalent trees** is an estimation of what percent of a city's canopy is occupied by the top three most prevalent genus. For example, in 2014 the City of Burnsville reported that their city parks (not their total city canopy) comprised 23% Maples, 14% Spruce, and 13% Ash. (Metric 8.5)
- **Net number of new trees** counts the number of trees – not including trees that replace dead, diseased or damaged trees – planted by the city and trees planted by others for which the city supplies money, labor or trees. (Metric 8.6)
- **Trees “likely to thrive”** means that they are considered for our changing climate and other impacts. For example, an ash tree is not likely to thrive due to spread of emerald ash borer. (Metric 8.6a)
- **Alternative metrics:** if you have been gathering or want to gather different metrics, report those and explain why they are a better fit for your city. For example, you may
 - Exclude private golf courses open to the public or stream/lake acreage in calculating acres of parkland
 - Calculate your ParkScore (Trust for Public Land: <https://www.tpl.org/parkscore>), which rates park systems equally on three factors: park access, park size, and services and investment

Minnesota GreenStep Cities & Tribal Nations
Performance Metrics for Recognition at Steps 4 and 5

- Track tree canopy coverage for only a subset of city acres. For example, a city whose land area encompasses mostly ag land may choose to measure percent canopy of only city parks, boulevards, a defined downtown, residential areas, and commercial areas

DATA SOURCES

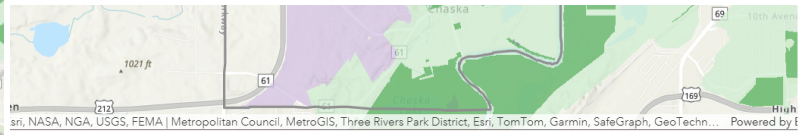
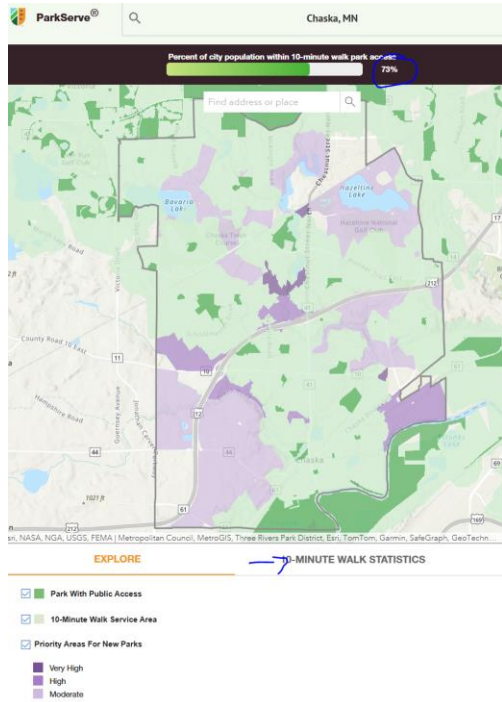
- City maps, GIS maps and data, records, city tree inventories, and common knowledge of city staff (Metrics 8.1-8.6)
- The University of Minnesota provides satellite imagery for land cover and impervious surface datasets for several time periods for the state of Minnesota (latest is 2013), and for more time periods for the metropolitan areas (Twin Cities, Duluth, and Rochester in 2015) . (Metric 8.1)
- The size and location of parkland is usually tracked by local parks & recreation departments (Metric 8.2)
- Met Council’s Community Profile at <http://stats.metc.state.mn.us/profile/> (Metric 8.2)

- Select your city
- Navigate to the ‘LAND USE AND DEVELOPMENT’ tab
- Scroll down to the “General Land Use in CITY”
- Report the total for “Park, Recreational or Preserve” using the “Acres” for the most recently available year.

Land Use	2016		2020	
	Acres	Change	Acres	Change
Residential Total	425,947	N/A	440,661	3.45%
Single Family Detached	381,219	N/A	394,141	3.36%
MultiFamily	44,725	N/A	46,521	4.02%
Commercial Total	37,379	N/A	37,682	0.81%
Retail and Other Commercial	29,094	N/A	29,031	-0.21%
Office	8,290	N/A	8,652	4.37%
Industrial Total	50,823	N/A	53,174	4.63%
Industrial and Utility	40,789	N/A	42,759	4.83%
Extractive	6,936	N/A	6,857	-1.15%
Railway	3,099	N/A	3,557	15.01%
Institutional Total	36,841	N/A	37,120	0.76%
Park and Recreational	205,705	N/A	216,054	5.03%
Park, Recreational or Preserve	194,787	N/A	202,077	3.11%
Golf Course	20,914	N/A	19,975	-4.49%
Mixed Use Total	5,580	N/A	7,143	28.01%
Mixed Use Residential	1,199	N/A	1,303	9.45%
Mixed Use Industrial	3,435	N/A	4,483	30.52%
Mixed Use Commercial and Other	958	N/A	1,356	42.62%
Major Roadways	30,099	N/A	30,430	1.10%
Airport	6,371	N/A	6,258	-1.77%
Agricultural and Undeveloped Total	981,157	N/A	951,334	-3.04%
Agriculture	566,111	N/A	543,700	-3.92%
Undeveloped Land	421,051	N/A	407,627	-3.19%
Open Water	124,402	N/A	124,440	0.03%
Total	1,904,304	N/A	1,904,356	0.00%

- The Trust for Public Land’s ParkServe search tool calculates percentage of residents who live within a 10-minute walk of a park, and number of parks (and their total acreage), for all Minnesota cities. Note that you may need to add in some parklands not included by TPL, such as private golf courses open to the public. See <https://parkserve.tpl.org/> (Metrics 8.2 & 8.3)
 - Enter your city name in the search bar.
 - Find the Percent of city population within 10-minute walk (Metric 8.3) at the top of the screen or click on the “10-minute walk statistics” tab at the bottom.
 - Find the Total park acres (Metric 8.2) in the next row. NOTE – this may not include certain greenspace that is private.

Minnesota GreenStep Cities & Tribal Nations Performance Metrics for Recognition at Steps 4 and 5



EXPLORE 10-MINUTE WALK STATISTICS

CITY URBAN AREA

Chaska, MN

73%
of residents live
within a 10-minute
walk of a park

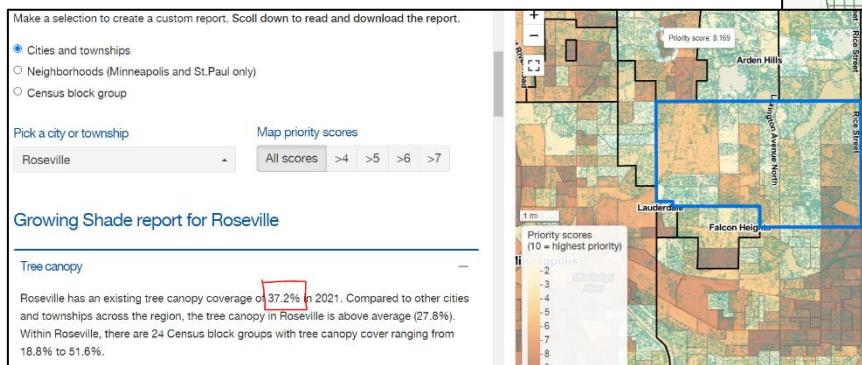
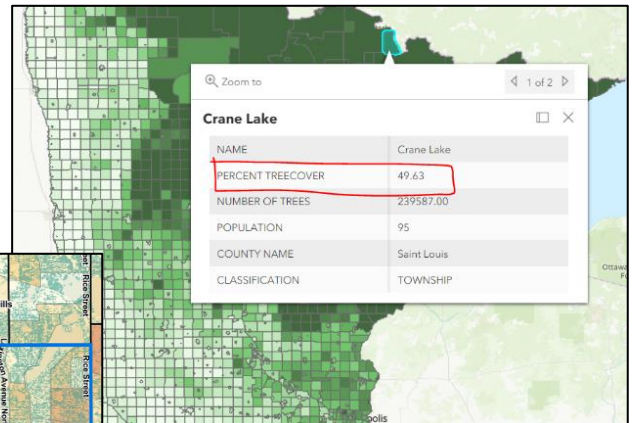
Population Served
20,773

City Statistics
Total Number of Parks
29

Total Population of City
28,650

Total Park Acres
511

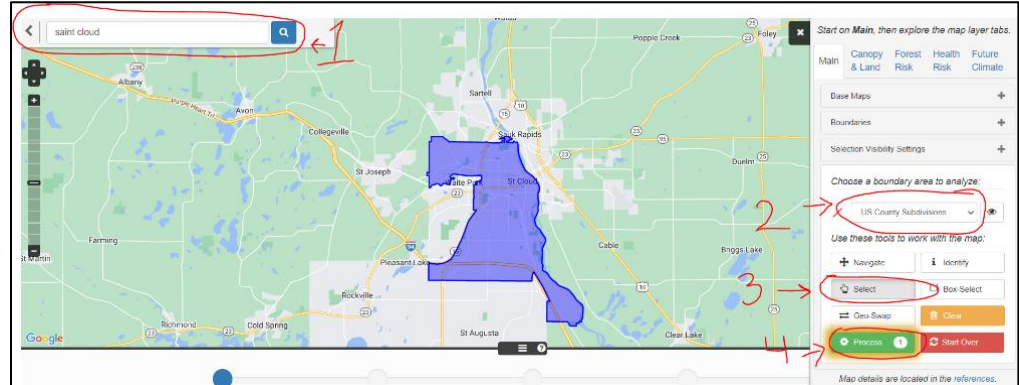
- University of St. Thomas [Minnesota Forest Canopy Within City Boundaries](#) GIS map (2022 project). Click on your city to report Percent TreeCover. You may need to combine and average geographic boundaries. (Metric 8.4)
- For cities in the 7-county Twin Cities area, the Metropolitan Council's [Growing Shade](#) interactive tool creates a custom report and map providing the city's tree canopy information.



- Free i-Tree canopy calculation using Google Maps at: <https://landscape.itreetools.org/> (Metric 8.4)
 - Use the search bar to enter your community.
 - Switch the boundary area on the right menu to 'US Census Places'

Minnesota GreenStep Cities & Tribal Nations Performance Metrics for Recognition at Steps 4 and 5

- Select the 'Select' button and use the hand icon to click on the community. Alternatively, you can box select or select by census tracts by going back to step 2.
- Once your area is selected, click the green 'process' button.
- Scroll down the page to the table. For metric 8.4, you are looking for the Canopy % column.



Land Cover		Unit		Display							
HIRes	2011	2001	Metric	English	Table	Chart					
Data Tools: Area, Land Cover HIRes, Land Cover 2011, Census Data, Forest Risk, Health Risk, Future Climate											
Canopy & Impervious, Forest Details, Sea Level, Wildlife											
Remove	Dataset	Type	Name	ID	Swap	Highlight	Area	Canopy	Impervious		
							acre	%	acre	%	acre
×	NLCD 2011	Place	St. Cloud	2756896			26,289.8	97.29	1,908.6	7.45	7.22

- Statewide annual canopy cover from 1973-2018 and is available from the MN Geospatial Information Office (MnGeo) at <https://gisdata.mn.gov/dataset/env-annual-canopy-cover> (Metric 8.4)
- The Global Land Cover Facility of the University of Maryland at <https://glad.umd.edu/> develops and distributes remotely sensed satellite data that includes forest inventories. (Metric 8.5)
- DNR provides a list of “[Trees for Future Minnesota Cities: Those Likely to Thrive in a Changing Climate](#)” and a “[Best native yard trees for our changing climate](#)” list by region. Additional recommended tree lists can be located through the [University of Minnesota Extension](#) and the [Northern Institute of Applied Climate Science](#). The DNR “[Tree Troubles](#)” site lists potential threats to Minnesota trees. (Metric 8.6a)

METRIC CALCULATION AND PUBLIC REPORTING

- **Open space, parkland quantity and access, and canopy coverage and diversity** are annual measures as of December 31st before the reporting year. Since it typically takes a few years to see any change in these numbers, they need not be measured each year. In years when no new measurement is done, simply report the last measurement and note the calendar year during which the measurement was done. (Metrics 8.1-8.5)
- **Percent open space** is acres of open land divided by total acres in the city. GIS mapping make such a calculation somewhat easy but estimates based on community maps and Google maps are also fine. (Metric 8.1)
- **Acres of parkland will be normalized** and reported on the GreenStep web site as acres per 1000 population. For cities in the seven-county Twin Cities metro area, use the Met Council web site to find your city. Then click on the tab titled Land Use and Development. Under Generalized Land use, click on Table for the number of acres under Park and Recreational. Outside the metro area cities may use their own data, and/or ParkServe data. (Metric 8.2)
- **For the percent of residents metric, use ParkServe or, using a mapping (GIS) system,** map a boundary (zones if multiple areas) within which street walking (or, ‘as the crow flies’) is within 1/2 mile of parkland. Then calculate the number of people in residential dwelling units within the boundary/zones. Finally compare the number of people to total people in the city and express the ratio as a percent. (Metric 8.3)
- **As the crow flies** is a simpler calculation, but for communities with greater GIS capabilities, street network distances more directly capture whether in reality a parkland is within ½ mile or a 10-minute walk of a resident’s dwelling. (Metric 8.3)

Minnesota GreenStep Cities & Tribal Nations Performance Metrics for Recognition at Steps 4 and 5

- **For smaller communities**, dwelling units in census tracts ½ mile or closer to parkland can provide rough estimations. Or estimation from a plat map may work fine. ([Metric 8.3](#))
- **Percent canopy coverage** can be calculated by [iTree](#) as acres within the city shaded by trees divided by the total acres within the jurisdictional boundary. ([Metric 8.4](#))
- **Top 3 trees** is the percentage of each genus in the canopy being assessed, ideally the overall canopy using a physical or remote sensing inventory, or if that is not possible, an inventory of your maintained trees. ([Metric 8.5](#))
- **Number of net new trees planted** is the only number for which there will be exact new 12-month data each calendar year before the reporting year. GreenStep will report number per 1000 population. ([Metric 8.6](#))
- **New trees “likely to thrive”** can be calculated from reviewing the total number of new trees planted and identifying the amount that you consider are “likely to thrive.” This should be recorded as a percentage. ([Metric 8.6a](#))

METRIC RATIONALE

Open space – green and blue - provides a variety of ecological, economic and social goods and services. Ecosystem services include necessities such as air and water purification, storm-water infiltration and management, carbon sequestration, pollination, food and fiber production, nutrient cycling, and urban cooling. Tracking the percent of city acres in open space allows conscious choices about city policies and actions that either increase or decrease the proportion of open space.

Parkland is a subset of open space, which focuses on the extent to which residents can easily and equitably access green/blue spaces that promote activity and support physical and mental health. Spaces designed for congregating and active recreation contribute to healthy and active populations and have a particular impact on children, teenagers and older adults. Parkland also makes neighborhoods more attractive and provides meeting areas and activity hubs that can help build community. One-half mile to a green space is walkable for most people in 10 minutes and is a national standard.

Tree canopy is the major part of a community’s green infrastructure, delivering many financial, energy, quality of life and carbon sequestration benefits that can be calculated by iTree and are well documented on the GreenStep web site. Investments in a community’s green infrastructure are analogous to investments in a city’s grey infrastructure of roads and utilities (sewer, gas, electric and telecommunication lines). People love and gravitate toward tree-lined streets. Thus tracking coverage, and tree diversity as a hedge against tree health threats exacerbated by climate change, and yearly planting efforts to increase the canopy, are important to a local or tribal government.

STEP 5 METRICS

There are no state-wide goals for these metrics. Individual communities are best equipped to set realistic goals for metric improvement, and any improvement in the metrics is desirable. Nationally there are some rough guidelines, listed below.

Thinking of open space as green infrastructure, a city begins to see climate adaptation benefits when 35% of a city’s land area can be characterized as green infrastructure. A 2022 University of St. Thomas [project](#) found that Minnesota cities range from 0% to 66.92% park/open space.

Acres of parkland can vary widely due to a community’s history, culture, demographics, density, development patterns, and distance to parks and open land adjacent to the city. 7 acres per 1000 residents is a minimum cited nationwide, but more like 20 acres is viewed as a reasonable target for most cities. 70% of a city’s housing within ½ mile of a park is considered low, with 90%+ a reasonable target for most cities. 10% of city land committed to park/recreation space was recommended by Clarence Perry, the leading figure on neighborhoods in the 20th Century.

An overall city tree canopy of at least 40% is good, with sub-goals for canopy over parking lots of 50%, canopy over residential zones of 60% - 75%, and canopy over commercial/industrial zones of at least 15%. A 2022 [project](#) from the

Minnesota GreenStep Cities & Tribal Nations
Performance Metrics for Recognition at Steps 4 and 5

University of St. Thomas calculated the mean percentage of tree cover within all Minnesota cities at 46.5%, the maximum is 63% and the minimum is 0%. A 5-10-15 tree-diversity guideline for reducing the risk of catastrophic tree loss due to pests is to have in the city tree canopy no more than 5% of one species, 10% of one genus, and 15% of one family.

LEED FOR CITIES & COMMUNITIES

<https://www.usgbc.org/leed/rating-systems/leed-for-cities-communities>

NS Prerequisite: Ecosystem Assessment

- 3. Terrestrial vegetation and Habitat
- 4. Hydrology and Aquatic Ecosystems

NS Credit: Green Spaces

- Option 1: Access to Green Spaces
 - Provide publicly accessible green space area at 15% or more of total city area. AND
 - Provide accessible green spaces within 1/2-mile (800 meters) walking distance to city residents.
- Option 2: Urban Forest Cover
 - Demonstrate an improvement in the urban forest cover or reduction in the urban heatmap of the city over a period of ten years. Reporting year must be within five years of the certification year.

QL Prerequisite: Demographic & Social Equity Assessment

Conduct a demographic and social equity assessment for the city that addresses: Distribution of social infrastructure, assets, and services: Parks, libraries, recreation centers, schools, fire stations, police stations, hospitals/health services, internet (broadband) connectivity, and supermarket/grocery stores with a produce section.

RELATED BEST PRACTICE ACTIONS

- [16.3](#) Budget for and achieve resilient urban canopy/tree planting goals.
- [16.7](#) Conduct a tree inventory or canopy study for public and private trees.
- [18.3](#) Achieve minimum levels of city green space and maximize the percent within a ten-minute walk of community members.

NEED HELP? CONTACT

Anna Callahan, GreenStep best practice advisor for [Parks and Trails](#), Trust for Public Land
651-447-8545 or anna.callahan@tpl.org

Rachel Morice, GreenStep best practice advisor for [Urban Forestry](#), MN DNR
651-296-6157 or rachel.morice@state.mn.us

Nov. 2024