



Tree Canopy Cover

City of Madison
Urban Forestry Task Force

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Urbanization and canopy trends

Urbanization

- 0.5% urban growth across Wisconsin 2000-2010
- Urban land expected to grow from 3.5% of land in 2010 to 9.2% in 2060
- Nationwide urban land is expected to go from 3.6% of land to 8.5% (an increase larger than the size of Montana)

Canopy

- Between 2009-2014, U.S. urban tree cover decreased 1%
- In that period, Wisconsin urban tree canopy decreased 0.6%

What has the DNR done?

Statewide Assessment

- Land cover analysis for every municipality and U.S. Census-defined urban area in the state
- Five cover classes: woody vegetation, herbaceous vegetation, impervious surface/bare, wetland and water

Rollout / Resources

What's my tree canopy?



- [Land cover look-up table](#)
- [Interactive map](#)
- [Download GIS data](#)

What to do with this data?



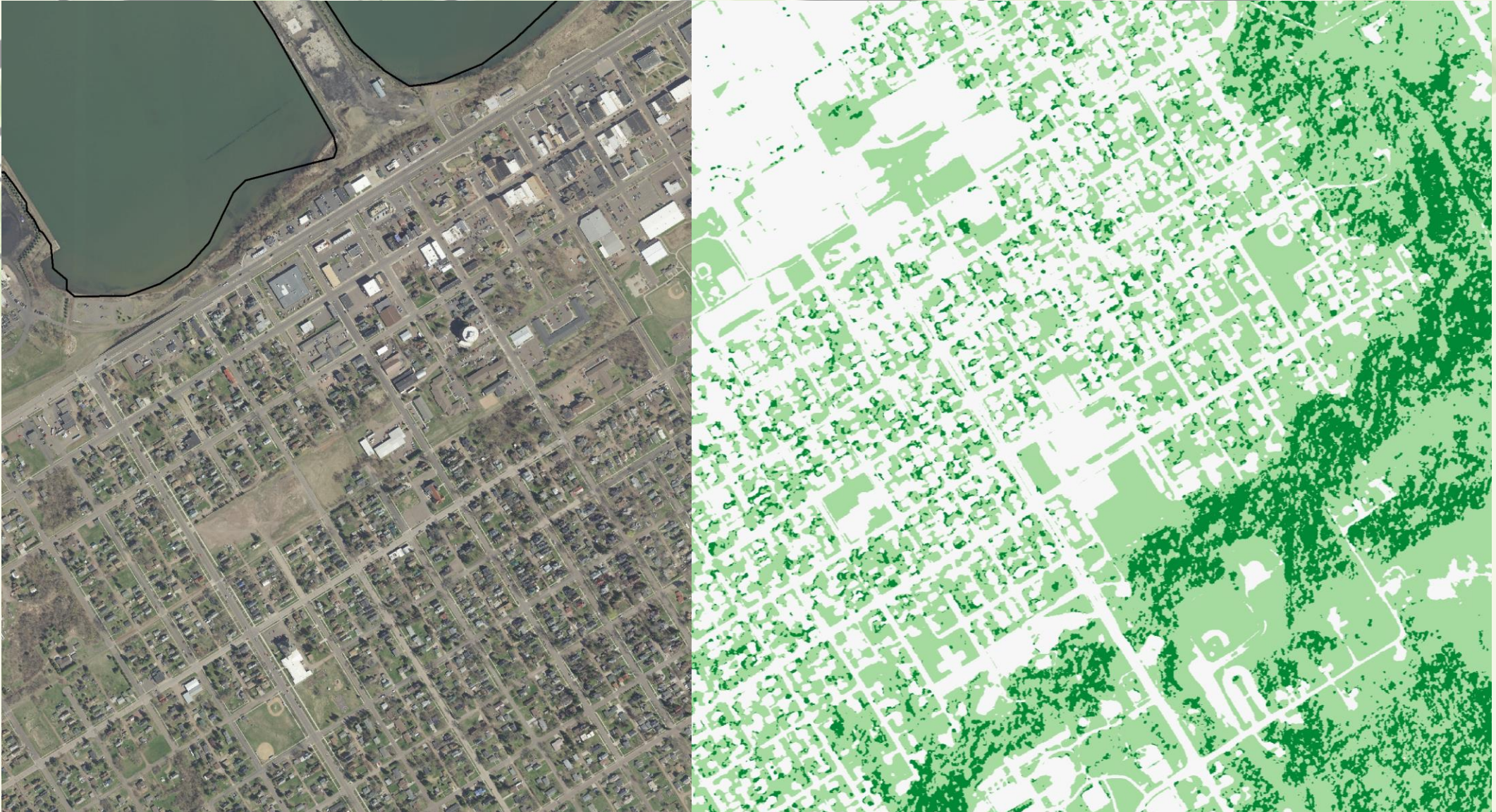
- [Tree canopy goals](#)
- [Prioritize planting areas](#)

Figures and fun facts



- [Findings and trends](#)

How was the statewide canopy determined?



State and County Trends and Numbers

Municipalities

- Statewide: 28.75% canopy cover, with 37.3% herbaceous
- Dane County: 22.5% canopy, 37.1% herbaceous
- Madison: 23.1% canopy, 27.7% herbaceous
 - With water taken out, however, canopy cover is 27.6% and herbaceous is 33.2%

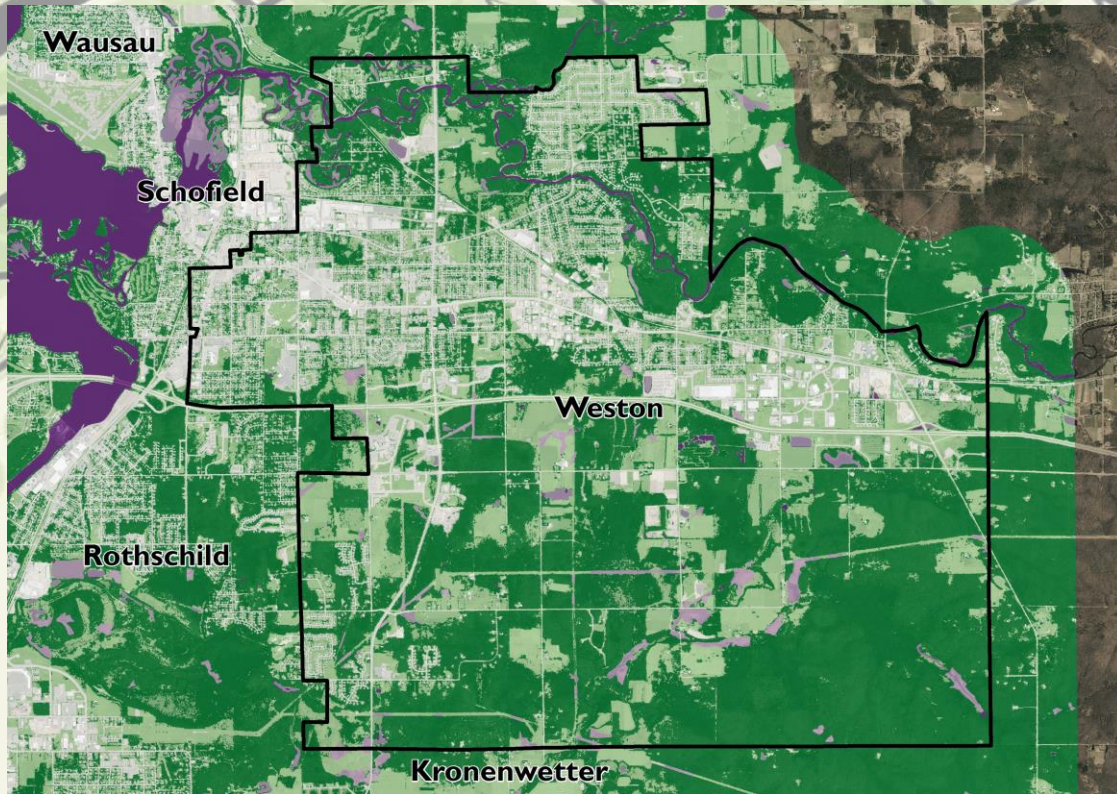
Urban Areas (= developed areas)

- Statewide: 28.75% canopy cover, with 33% herbaceous
- Dane County: 26.1% canopy, 34.9% herbaceous
- Madison urban area: 26.4% canopy, 33.9% herbaceous

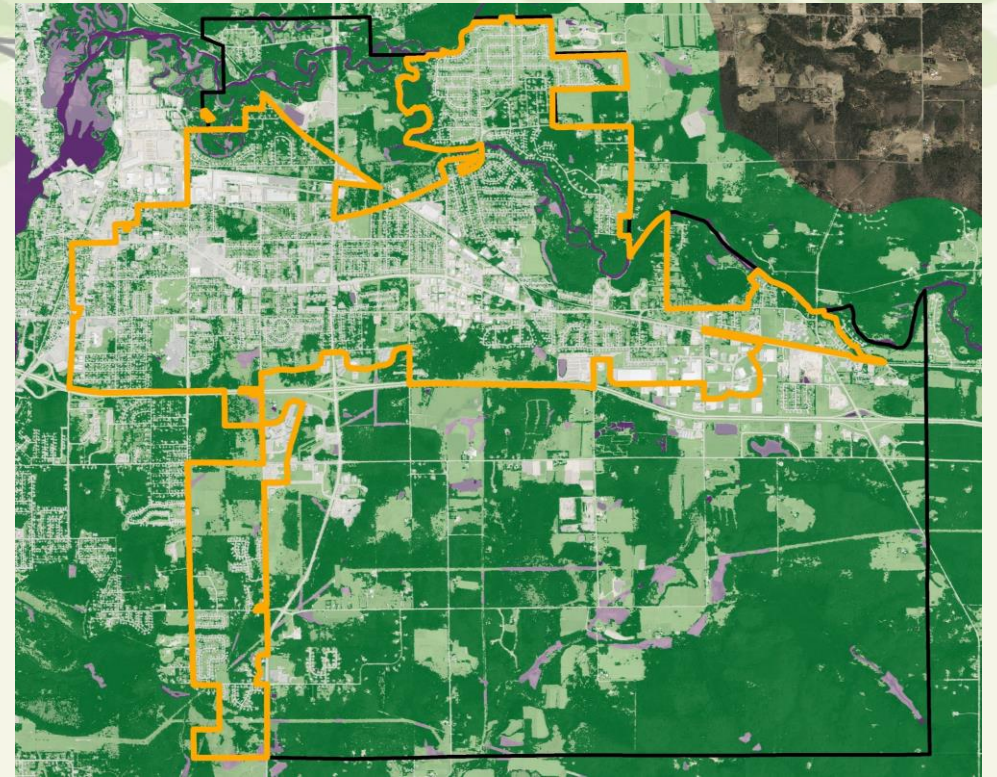
What is canopy data good for?

- 1. Baseline of an area. How much urban forest is there?**
- 2. Determine distribution of trees. Is this good? Is this fair? Can we improve?**
- 3. Prioritize planting areas.**
- 4. Set goals.**
- 5. Assess tree benefits.**
- 6. Use with other datasets (GIS).**

Use of canopy cover I: baseline

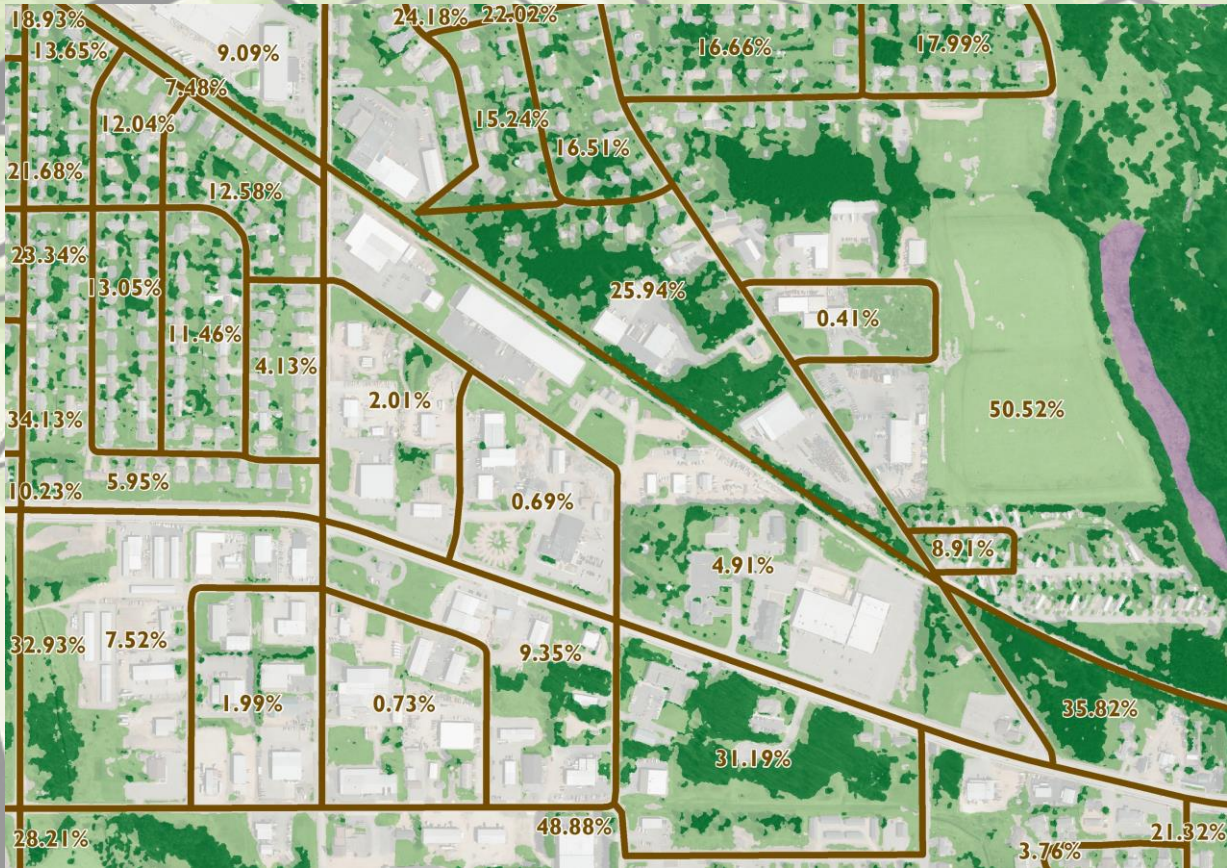


Village of Weston
49.2% Tree Cover

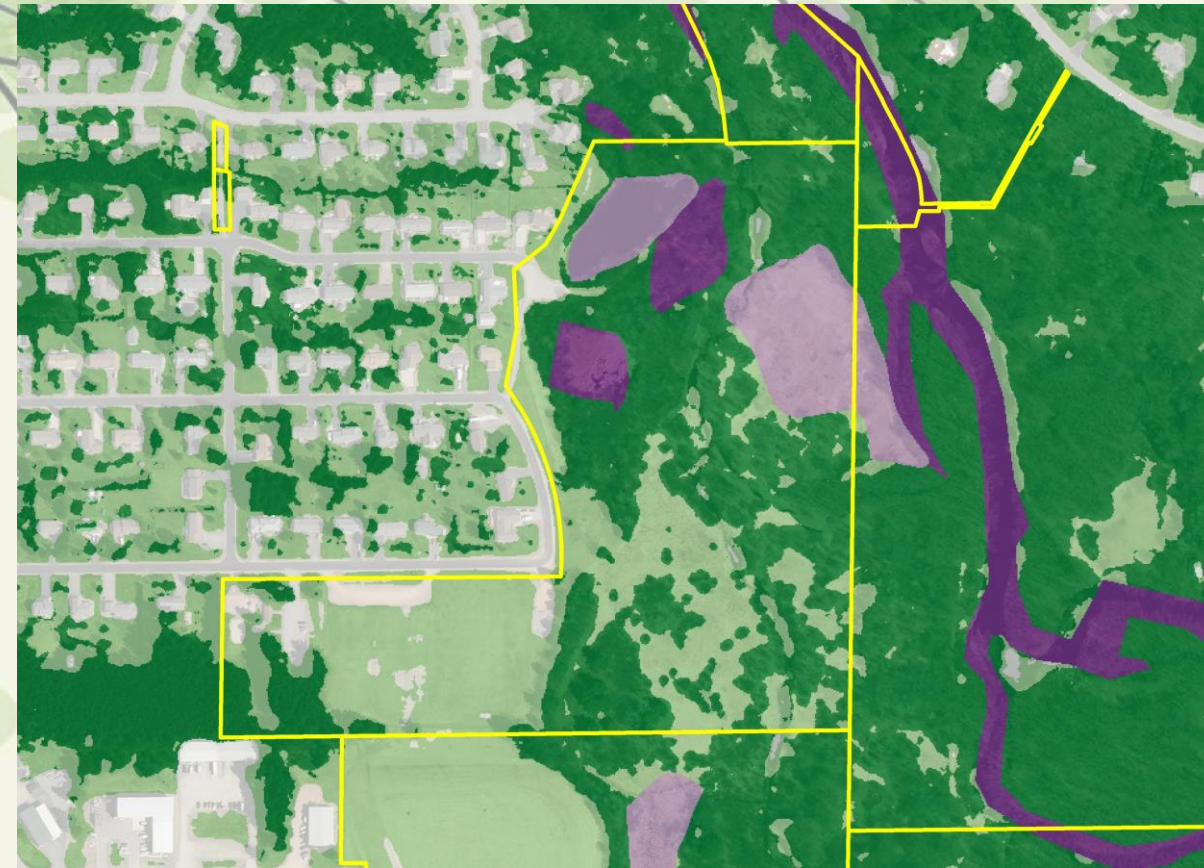


Village of Weston "Urban" Land
29.5% Tree Cover

Use of canopy cover I: baseline

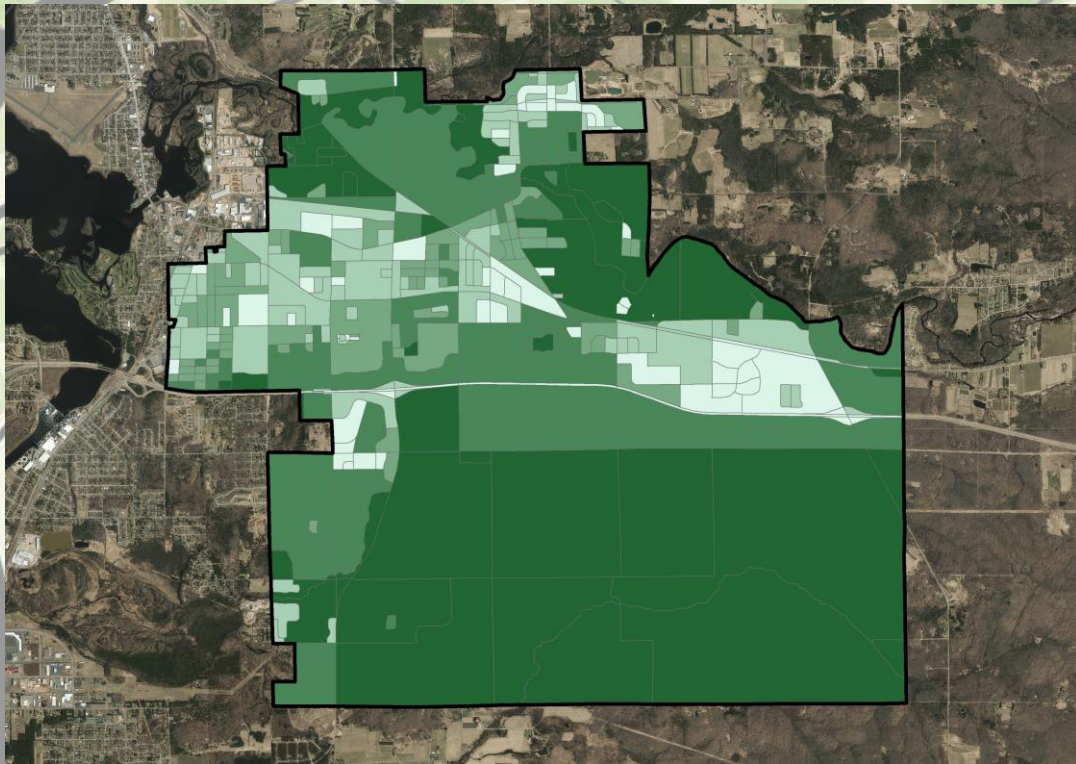


Village of Weston Blocks

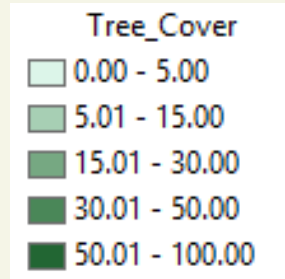


Kellyland Park
46% Tree Cover

Use of canopy cover 2: determine distribution

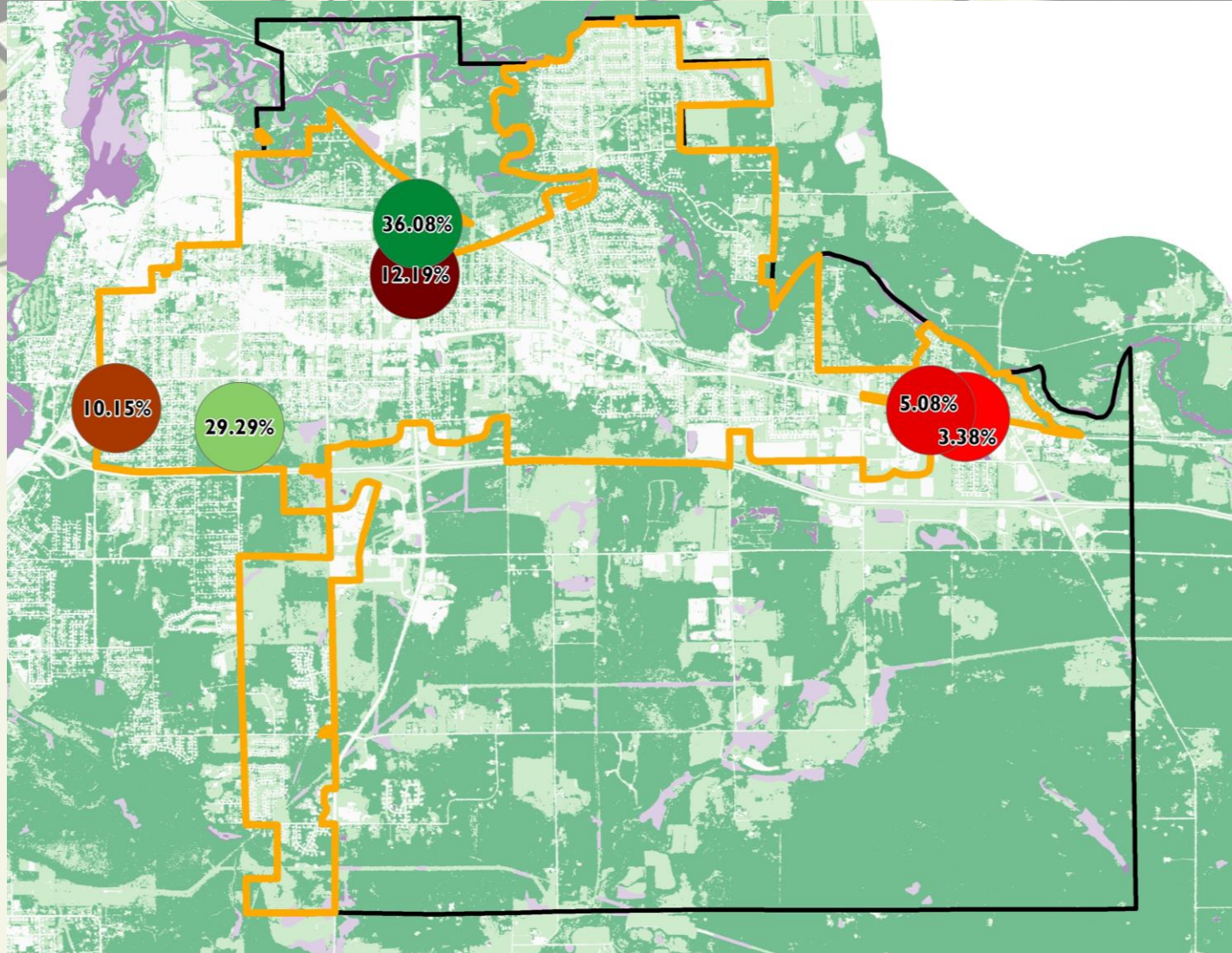


Village Tree Cover by Block



Individual Parcels' Tree Cover

Use of canopy cover 3: prioritize



Tree cover within 0.25 mile of schools

Use of canopy cover 4: goals

Other communities' goals

To help frame your own community's tree canopy goals, below is a table showing goals established by other communities across the country.

Community	Year Assessed	Current Canopy	Goal	Target Date	City size (ac.)	Population (2010)
Asbury Park, NJ	2013	22.7	35	none	976	16,116
Easton, MD	2014	27	35-40	2054	7287	15,945
Leesburg, VA	2007	27	40	2031	7980	42,616
Hartford, CT	2013	25	35	2033	11,584	124,775
New Haven, CT	2009	38	Add 10k trees	2014	12,864	129,779
Pittsburgh, PA	2011	40	60	2031	37,344	305,704
Las Vegas, NV	2012	8.6	20	2035	86,912	583,756
Portland, OR	2014	30	33	Ongoing	92,800	583,776
San Francisco, CA	2012	13.7	20	2034	148,410	805,235

Use of canopy cover 5: benefits

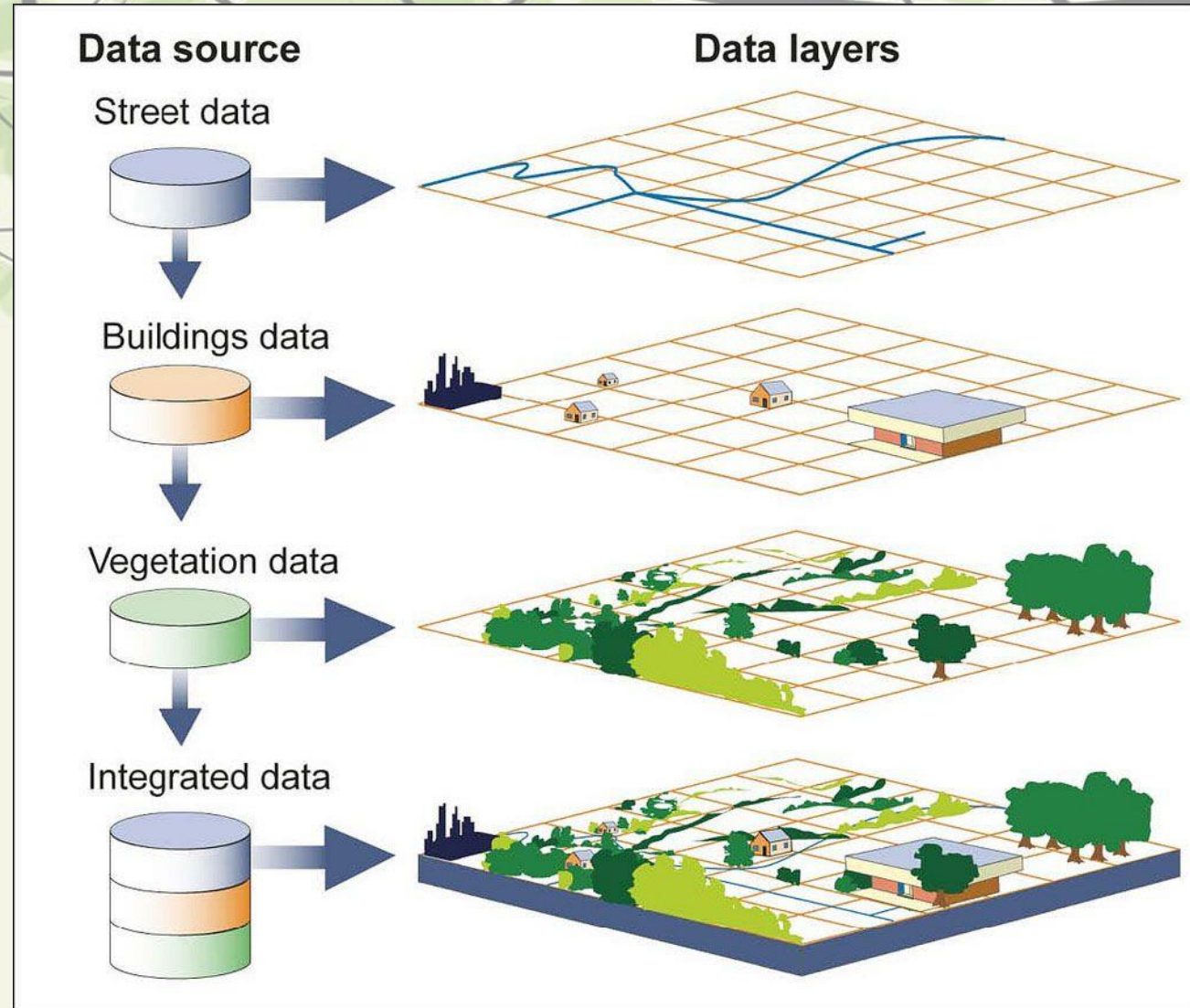
Remove	Type	ID	Swap	Highlight	Carbon Storage		Carbon Sequestration		CO ₂ Equivalent Storage		CO ₂ Equivalent Sequestration	
					\$	Short Ton	\$/yr	t/yr	\$	Short Ton	\$/yr	t/yr
<input type="checkbox"/>					8,676,650	66,883.7	178,239	1,373.9	8,677,462	245,074.7	178,256	5,034.5
<input type="checkbox"/>	Selection Total:			<input type="checkbox"/>								

<input type="checkbox"/> CO <input type="checkbox"/> NO ₂ <input type="checkbox"/> O ₃ <input type="checkbox"/> PM _{2.5} <input type="checkbox"/> SO ₂ <input type="checkbox"/> PM _{10*} <input type="checkbox"/> Total																	
Remove	Type	ID	Swap	Highlight	\$/yr	lb/yr	Health Incidence	Emergency Room Visits	Hospital Admissions	Acute Respiratory Symptoms	Asthma Exacerbation	Mortality	School Loss Days	Hospital Admissions, Respiratory	Hospital Admissions, Cardiovascular	Acute Myocardial Infarction	Chronic Bronchi
<input type="checkbox"/>					188,484	96,177.4	36	0	0	15	16	0	5	0	0	0	0
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Remove	Type	ID	Swap	Highlight	Transpiration (MG/yr)	Rainfall Interception (MG/yr)	Avoided Runoff (MG/yr)	Avoided Runoff (\$/yr)
<input type="checkbox"/>					174.5	42.4	6.9	61,950
<input type="checkbox"/>	Selection Total:			<input type="checkbox"/>				

Canopy benefits, via i-Tree Landscape

Use of canopy cover 6: with other data (GIS)



Source: GAO.

Tree Canopy Goals: What are Canopy Goals?

- Typically a percent to which a given area aspires for tree canopy coverage
- Mostly done at the municipal level, but you can also choose different geographies, measure ecosystem services rather than cover, identify a tree planting number (rather than % cover itself), or scorn the goal framework altogether
 - Geographies: instead of selecting a percent for the municipality, maybe select goals for certain zones or land types (e.g. industrial areas, parks, ROWs, residential properties, public land, etc.)
 - Ecosystem services: instead of saying “we want 25% canopy”, instead say “we want to reach 4 million tons of carbon sequestration”.

Tree Canopy Goals: Pros/Cons

Pros

- Easy to understand and communicate
- Is a rallying call and could create momentum
- More focus and potentially more resources for growing canopy

Cons

- Simplistic, quantitative perspective on urban forest
- Could lead to staff, volunteer and public disappointment or burnout
- Tends to put more emphasis on planting, but preservation is more important

Tree Canopy Goals: Step 1

I. Determine Boundaries and Baselines

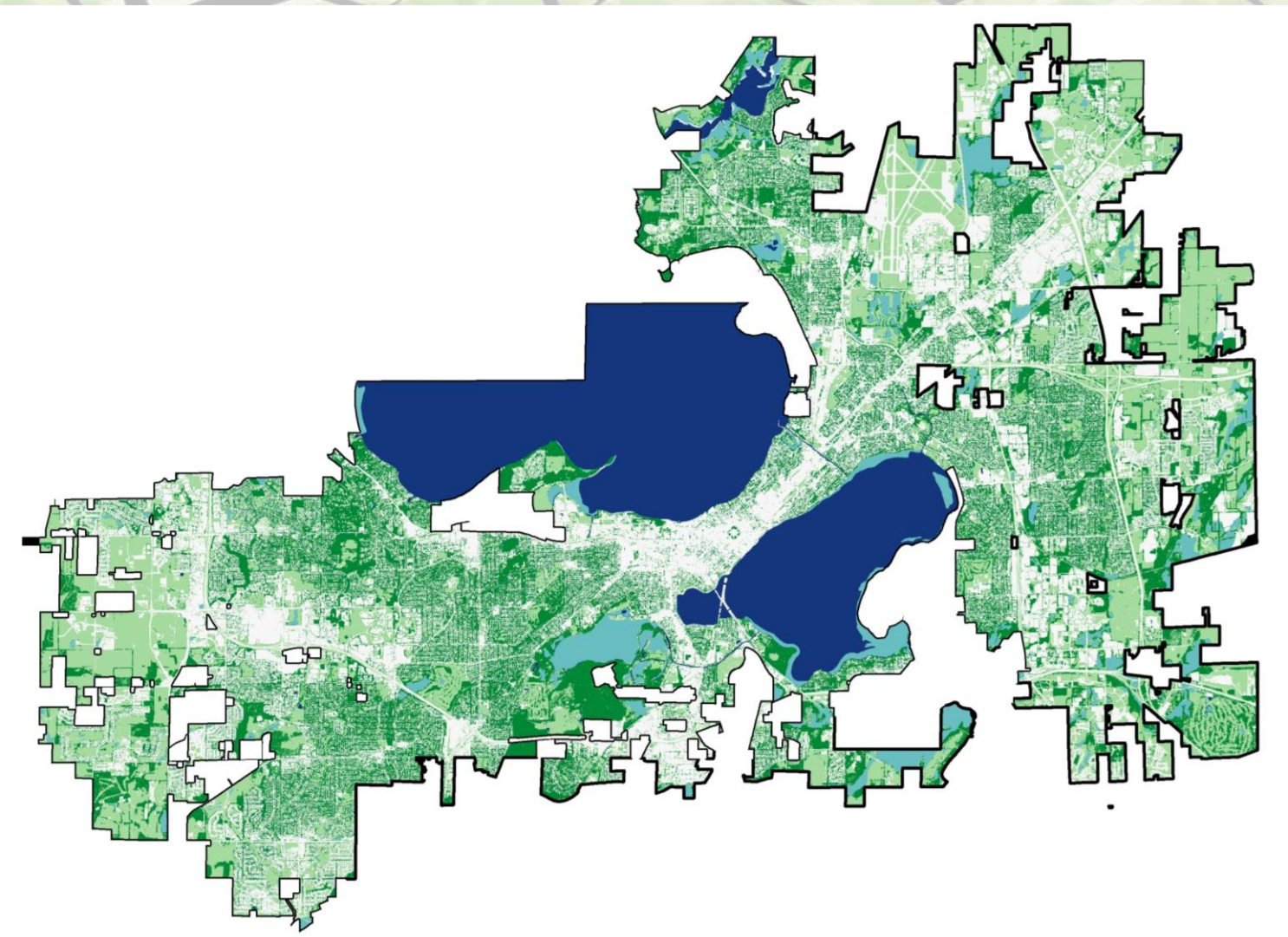
- What is your area of interest? Only looking at municipal boundaries, or want to drill down into finer detail?
- Establish the current canopy cover of that/those geographic areas

Tree Canopy Goals: Step 2

II. Determine Distribution and Budget

- Ask and answer questions such as:
 - Is there public land over which to expand the canopy?
 - How much plantable space is available?
 - What are your city's development plans?
 - Can your budget afford:
 - Maintaining your urban forest as-is?
 - Expanding a planting program (while maintaining current canopy)?
 - Subsidizing tree planting or preservation?
 - A marketing campaign?
 - Wishful thinking?

Tree Canopy Goals: Step 2



Tree Canopy Goals: Step 3

III. Setting Realistic Goals

- Identify areas that can support more trees
- Consider budget
- Compare your area's canopy with those: nearby, you admire, you rival, with similar population size, with similar density, with similar industry
- See what canopy goals other areas have
 - No one-size-fits-all approach!
- Consider your timeframe: are you measuring in years, decades, centuries, millennia?

Tree Canopy Goals: Step 3

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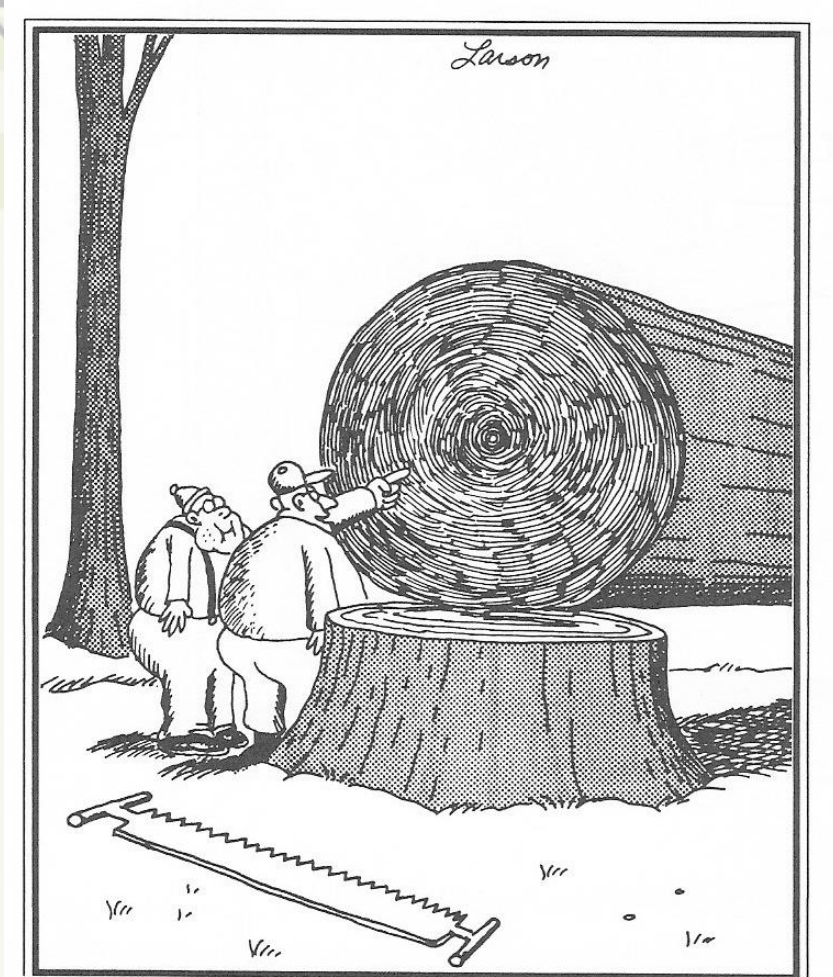
Tree Canopy Goals: Step 4

IV. Planning and Implementation

- Cultivate public support
 - Private landowners have bigger impact than public
- Engage public officials
- Maintain current canopy!
 - i-Tree Eco can help predict some canopy growth
- Find new investments
- Identify where, what and when to plant new trees
- Identify how many trees you would need to plant
 - Canopy calculator

Farewell!

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"And see this ring right here, Jimmy? ... That's another time when the old fellow miraculously survived some big forest fire."