Valparaiso Urban Forest Canopy Summary

The Chicago Region Trees Initiative (CRTI) goal is that, by 2050, the Chicago Region will support and host a healthier urban forest, comprised of a diversity of tree species and ages, appropriately distributed across land use types in the region. The forest will provide the region improved environmental, economic, and social benefits. In order to achieve that goal CRTI works with a wide variety of people who work with and manage trees. This document is intended to help municipalities understand their urban forest, and identify strategies that they can use to make it better.

The *urban forest* is comprised of all of the trees in an urban setting, regardless of who owns or manages them. It is made up of street trees, forested natural areas and even the trees in resident's back yards. These trees are all included in the urban forest, because they all provide benefits that municipalities depend on. They improve air and water quality, reduce flooding and the urban heat island effect, and reduce energy use by shading buildings. Trees provide habitat for wildlife and improve residents' quality of life by reducing crime rates, increasing property value and boosting social cohesion in neigborhoods.

The magnitude of benefits that trees provide correlates with the size, structure and location of their canopy. Understanding the extent of tree canopy is critical for urban planning. Canopy maps can be used to quantify the benefits that their trees provide, identify where new plantings would have the greatest impact and to develop priorities and strategies for expanding the canopy.

The Chicago Region Trees Initiative, USDA Forest Service, American Forests, and the University of Vermont mapped land cover across the seven-county Chicago Region. This project not only identifies tree canopy, but also other green infrastructure including vegetation under 10 feet tall, bare soil and water; and gray infrastructure including buildings, roads and rail and other paved surfaces like sidewalks and parking lots (Fig. 1). Here after, these seven layers will be referred to as *land cover types*.

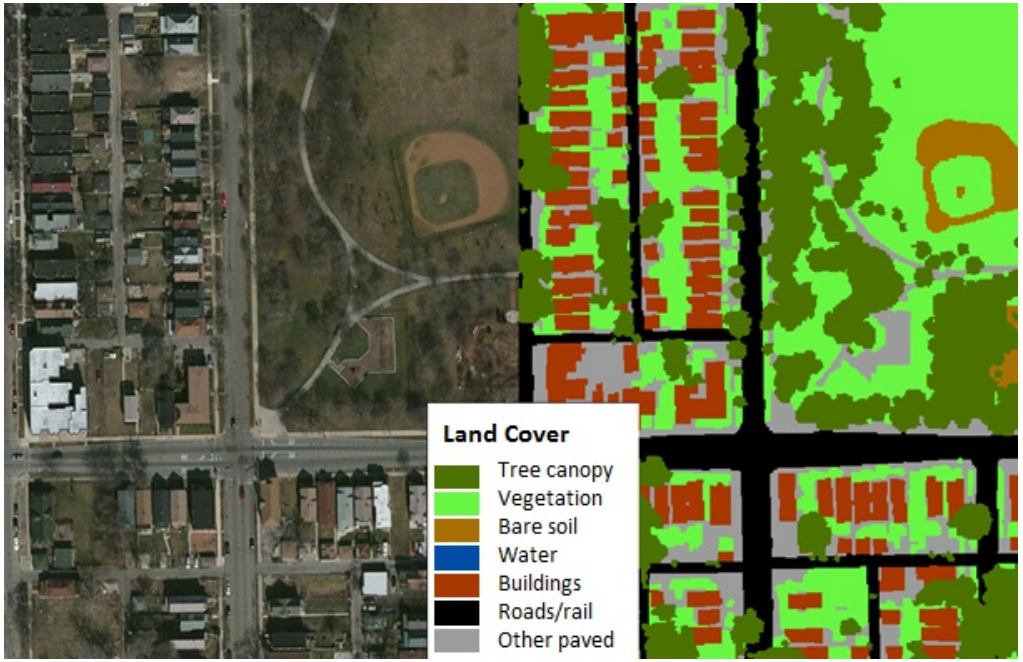

Fig. 1: Comparison of satellite image and land cover map. Seven types of gray and green infrastructure are in the land cover map.

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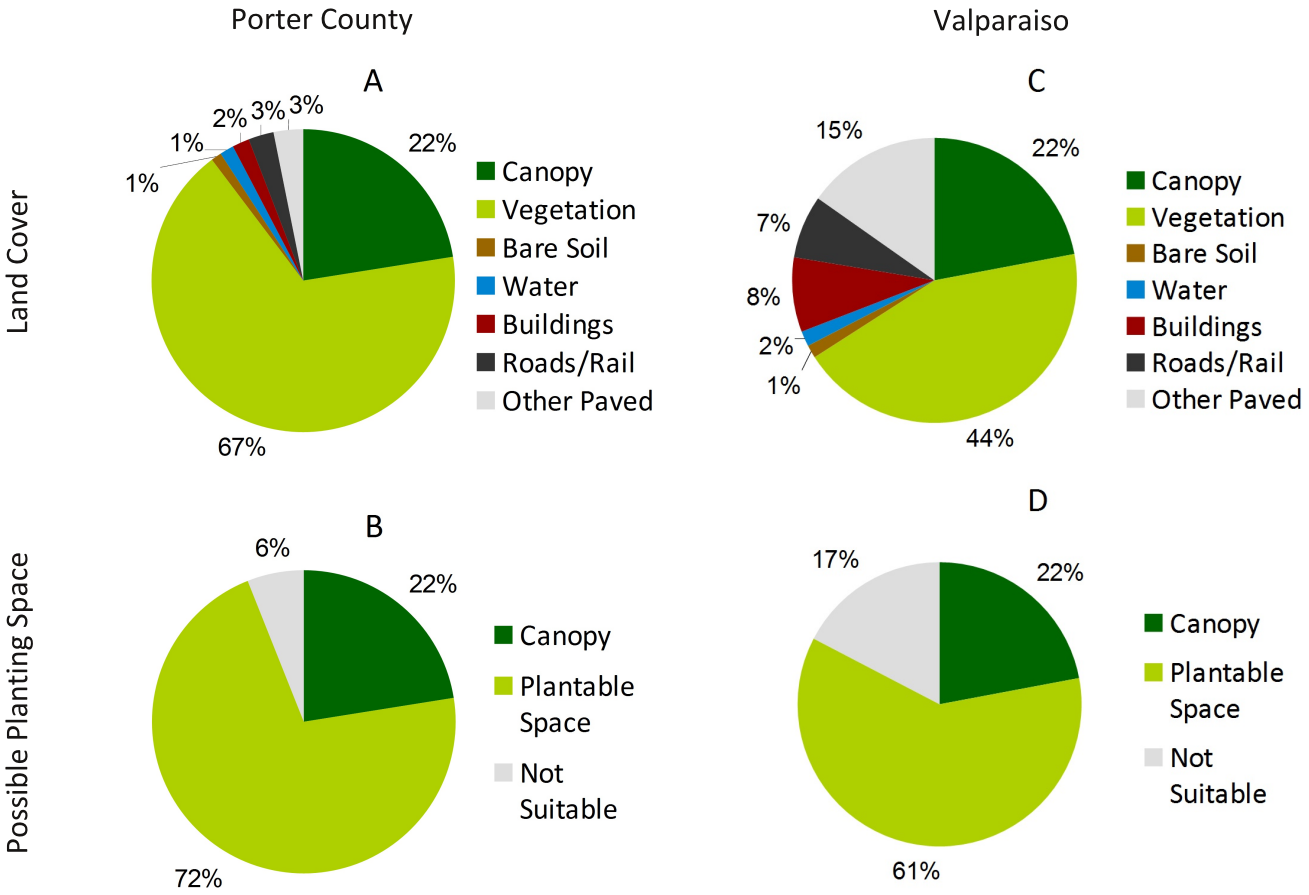

Fig 2: Porter County's current land cover (A), including 22% canopy cover. An additional 72% of the county is suitable for planting (B). Valparaiso currently has 22% canopy cover (C), and 61% of the land cover could potentially be converted to canopy (D).

Overall, 22% of Porter County is covered by tree canopy (Fig. 2). There is a lot of room for growth across the county. We can identify spaces where trees could potentially be planted by adding together the vegetation, bare soil and other paved surface land cover types, as these land cover types could be converted to canopy with minimal effort. In all, these land cover types make up 72% of the county's area, meaning that canopy cover could potentially be raised to 94% if all of these surface were converted to trees. It is important to note, that while these surfaces could theoretically be covered with canopy, it is not necessarily preferable. Agricultural fields and baseball diamonds are included as "plantable space," but few would agree that these are ideal sites to expand the forest canopy.

These land cover data can also describe canopy at the municipal scale. Valparaiso currently has 22% canopy cover, and could potentially increase their canopy to 83% (Fig. 2).

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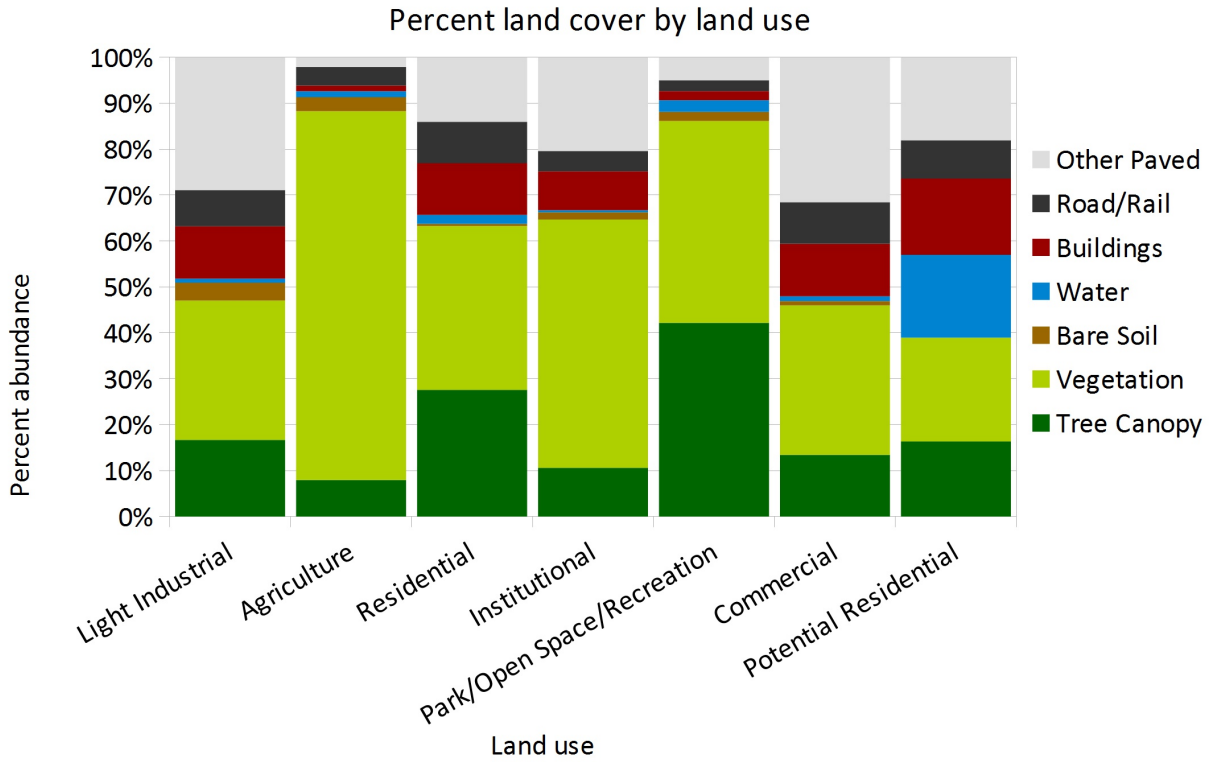

Fig 3: Variations in land cover across land use types.

Canopy cover is not distributed evenly across the region, nor within municipalities. To better understand how land cover patterns vary, we can compare them across land use types, like residential, commercial or industrial properties. In Valparaiso, the highest percentage of canopy is found in recreational and residential properties. Agricultural and institutional land use types have the lowest canopy cover. As one might expect, residential and commercial land use types have an abundance of buildings and agriculture has more vegetation. See Table 1 at the end of this report for more details.

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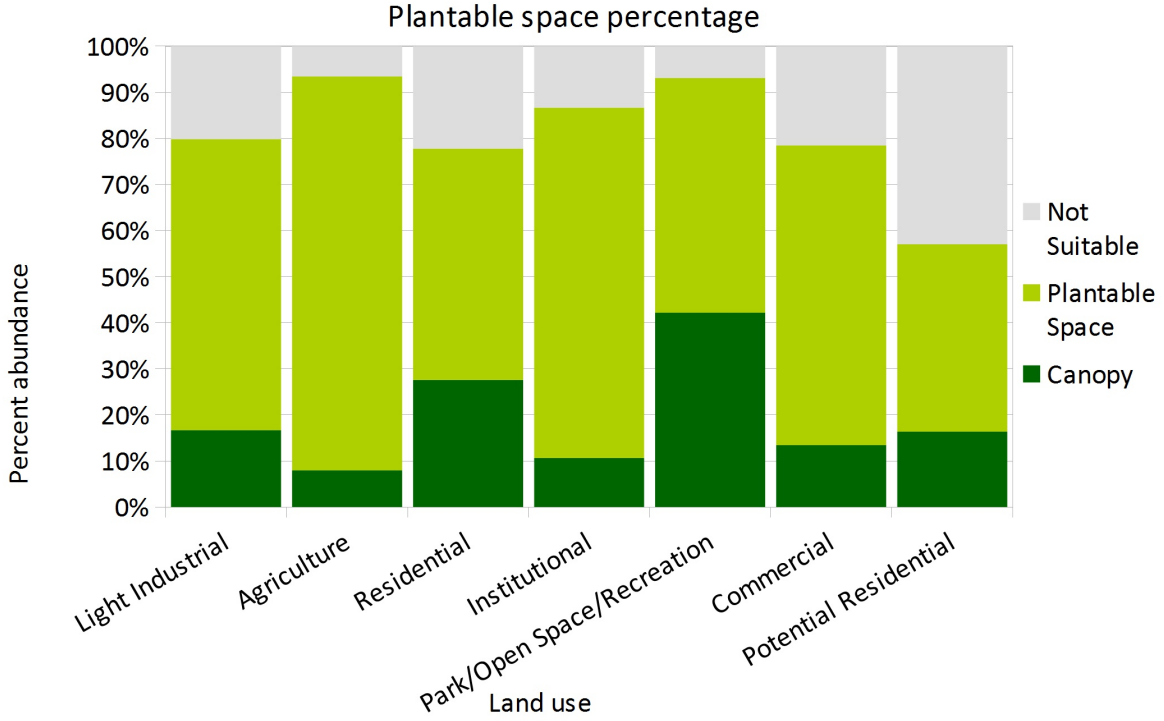

Fig 4: Current canopy and possible planting space across land use types.

By combining vegetation, bare soil and other paved surface categories we can identify which land use types have the most room for growth. In Valparaiso, the highest proportions of plantable space are found in agricultural and institutional sites (Fig. 4).

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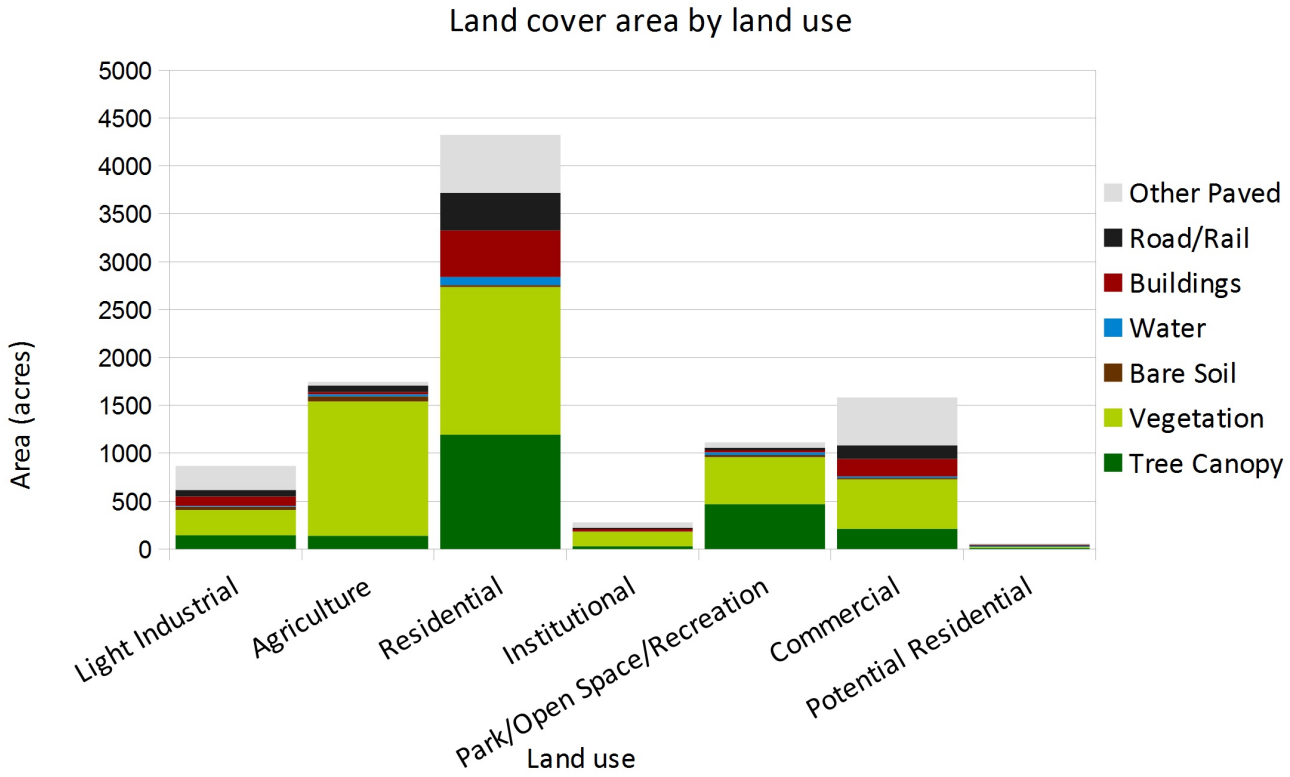

Fig 5: The majority of land is residential land use, followed by agriculture.

While institutional sites have a high percentage of plantable space, they make up a relatively small area in Valparaiso. The majority of land is comprised of residential and agricultural properties (Fig. 5).

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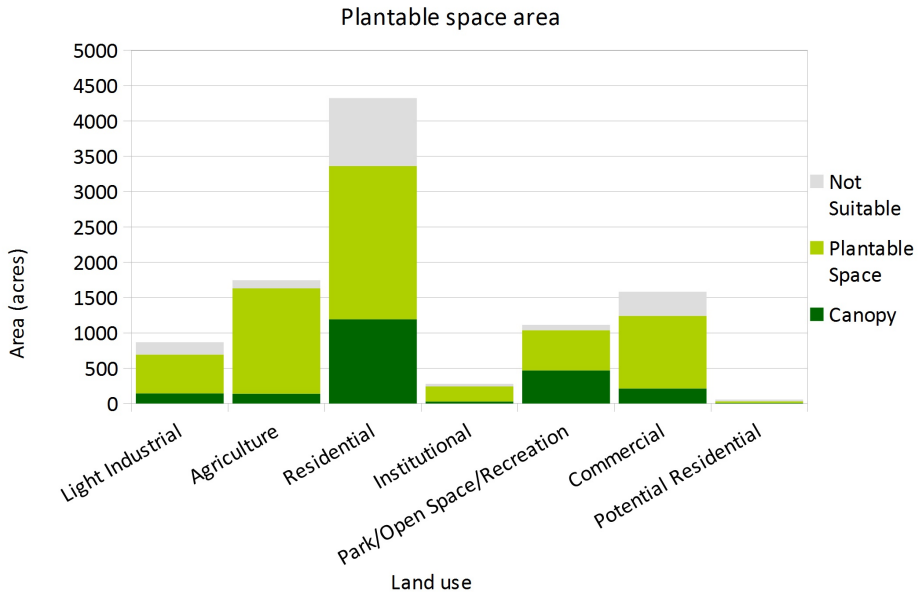

Fig 6: Residential has the greatest potential for increasing the canopy, followed by agricultural properties.

Residential, agricultural and commercial have the most area that could possibly be converted to canopy (Fig. 6). Targeting these areas could have the greatest impact in expanding the canopy. However, each of these land use types will require different strategies to increase canopy. Residential property owners could be encouraged to plant more trees through tree giveaways, ordinances that encourage tree preservation, or stormwater tax breaks for properties that have more tree canopy. Commercial property owners could be encouraged to plant more trees through tree cost shares, tree adoptions, ordinances that encourage tree preservation, or stormwater fee rebates for properties that have more tree canopy. While we do not recommend converting agricultural fields into forests, there is frequently room along field edges, roads, or farm buildings for increases in canopy. These trees are especially important, as they help fix soil and prevent agricultural runoff.

Table 1: Summary of land cover across land use types.

	Tree canopy		Vegetation		Bare soil		Water		Buildings		Roads and rail		Other paved	
	Acres	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*
Light Industrial	144.8	16.7%	263.4	30.3%	33.7	3.9%	7.9	0.9%	98.8	11.4%	68.3	7.9%	251.3	29.0%
Agriculture	138.7	7.9%	1402.0	80.3%	53.0	3.0%	22.4	1.3%	22.2	1.3%	69.8	4.0%	37.5	2.1%
Residential	1192.9	27.6%	1542.3	35.7%	20.9	0.5%	84.1	1.9%	485.9	11.2%	391.0	9.0%	607.5	14.0%
Institutional	29.6	10.6%	150.7	54.0%	4.4	1.6%	1.2	0.4%	23.6	8.5%	12.3	4.4%	57.0	20.4%
Park/Open Space/Recr	469.6	42.2%	489.5	44.0%	21.9	2.0%	28.5	2.6%	21.8	2.0%	26.4	2.4%	55.7	5.0%
Commercial	212.5	13.4%	515.5	32.6%	14.6	0.9%	16.7	1.1%	180.8	11.4%	143.2	9.0%	499.8	31.6%
Potential Residential	9.4	16.3%	13.0	22.6%	0.0	0.0%	10.4	18.0%	9.6	16.6%	4.8	8.3%	10.4	18.1%
Total abundance	2188.1	22.0%	4363.3	43.9%	148.4	1.5%	161.0	1.7%	833.1	8.5%	711.0	7.2%	1508.9	15.2%