

2016 Arizona Shade Tree Planting Prioritization Analysis- DRAFT

Urban and Community Forestry Program, Arizona Department of Forestry and Fire Management, 9/20/2016

Shade Tree Planting Prioritization Methodology - DRAFT

All indexes have been calculated for a polygon intersection between 2010 Census Block Groups and the analysis area of incorporated communities in Arizona. The analysis polygons were derived from ASLD Incorporated Cities and Census Urbanized Areas polygons. Each index was normalized to a range of values between 0 and 1 for better cross comparison: $\text{normalized index value} = (\text{score value} - \text{score min}) / (\text{score max} - \text{score min})$. The final Shade Tree Planting Prioritization Index was normalized within groups of communities with similar population sizes for a more equitable comparison.

Index	Description	Data Source	Calculation
A. Population Density	2010 Census population density per Census Block Group (pop / square mile)	EPA EJScreen ; Census Bureau	<i>Index</i> = normalized <i>population density</i>
B. Lack of Canopy Cover	2015/2016 i-Tree Canopy urban canopy cover estimate per incorporated community (%)	UCF, DFFM	<i>Index</i> = normalized % <i>urban tree cover</i>
C. Low Income	2010 Census population at below two times the poverty level per Census Block Group (%)	EPA EJScreen ; Census Bureau	<i>Index</i> = normalized % <i>low income</i>
D. Traffic Proximity	EPA traffic proximity index per Census Block Group	EPA EJScreen	<i>Index</i> = normalized <i>traffic proximity index</i>
E. Sustainability	2016 Tree City USA status per incorporated community (1, 0)	Tree City USA	<i>Index</i> = normalized <i>Tree City USA status</i>
F. Air Quality	Combination of EPA Ozone and PM 2.5 concentration scores	EPA EJScreen	<i>Score</i> = normalized <i>Ozone concentration</i> + normalized <i>PM 2.5 concentration</i> <i>Index</i> = normalized <i>Score</i>
G. Heat / Imperviousness	Product of Nightly MODIS Land Surface Temperature (LST) averages (June 2013, 2014, 2015; in Fahrenheit) and NLCD 2011 Percent Developed Imperviousness (%)	MODIS ; NLCD	<i>Score</i> = normalized <i>average MODIS LST</i> x normalized <i>NLCD Imperviousness</i> <i>Index</i> = normalized <i>Score</i>
Shade Tree Planting Prioritization Index	The Master Score is the average of all sub-indexes per Census Block Group. The Master Index is based on normalizing the Master Score per census block group among towns with similar population sizes (2015 ASLD): <ul style="list-style-type: none"> • 1 to 1,000 6 communities • 1,001 to 5,000 27 communities • 5,001 to 10,000 16 communities • 10,001 to 50,000 27 communities • 50,001 to 100,000 7 communities • 100,001 and larger 10 communities 	ASLD (2015 city population)	$\text{Score} = \frac{(A + B + C + D + E + F + G)}{7}$ <i>Index</i> = normalized <i>Scores</i> grouped by Population Class

2016 Arizona Shade Tree Planting Prioritization Ranking - DRAFT

Shade Tree Planting Prioritization ranking of incorporated communities in Arizona. Cities and towns are grouped by population size classes (2015 ASLD) and ranked from high (#1) to low (#27) priority according to their average Shade Tree Planting Prioritization Index. The Index is calculated on a Census Block Group level. This symbol  annotates Arizona cities with 2016 [Tree City USA](#) certification by the Arbor Day Foundation. The town of Pima will be included in the final release.

Population 1 to 1,000	1,001 to 5,000	5,001 to 10,000	10,001 to 50,000	50,001 to 100,000	100,001 and higher
<ol style="list-style-type: none"> 1. Patagonia  2. Duncan 3. Hayden 4. Winkelman 5. Jerome 6. Tusayan 	<ol style="list-style-type: none"> 1. Quartzsite  2. Eagar  3. Miami 4. Superior 5. San Carlos 6. Willcox 7. Parker 8. Chinle 9. Colorado City 10. Carefree 11. Mammoth 12. Tombstone 13. Benson 14. St. Johns 15. Clifton 16. Fredonia 17. Springerville 18. Gila Bend 19. Kearny 20. Pinetop - Lakeside  21. Huachuca City 22. Williams 23. Clarkdale 24. Star Valley 25. Taylor 26. Dewey Humboldt 27. Wellton 	<ol style="list-style-type: none"> 1. Guadalupe 2. Tolleson 3. Litchfield Park  4. South Tucson 5. Snowflake  6. Youngtown 7. Winslow 8. Globe 9. Holbrook 10. Thatcher 11. Kayenta 12. Safford 13. Cave Creek 14. Page 15. Wickenburg 16. Bisbee 	<ol style="list-style-type: none"> 1. Coolidge  2. Paradise Valley  3. Florence  4. Kingman  5. Prescott Valley  6. Marana  7. El Mirage 8. Camp Verde  9. San Luis 10. Apache Junction 11. Bullhead City 12. Somerton 13. Show Low  14. Fountain Hills 15. Maricopa 16. Eloy 17. Douglas 18. Queen Creek 19. Sierra Vista 20. Cottonwood 21. Nogales 22. Chino Valley 23. Payson 24. Oro Valley 25. Prescott 26. Sahuarita 27. Sedona 	<ol style="list-style-type: none"> 1. Avondale  2. Yuma  3. Lake Havasu City  4. Casa Grande  5. Buckeye  6. Flagstaff  7. Goodyear 	<ol style="list-style-type: none"> 1. Tempe  2. Phoenix  3. Glendale  4. Mesa  5. Peoria  6. Scottsdale  7. Chandler  8. Gilbert  9. Tucson  10. Surprise