COMMUNITY SCHOOLYARDS METHODOLOGY OUTLINE

City prioritization methodology

To illustrate where new Community Schoolyards could make multiple positive impacts, cities with school districts of more than 10,000 students are scored based on a suite of metrics including city-level health, access to parks, stormwater infrastructure, and communities disproportionately burdened by disparities.

Most scoring categories, described below, consist of two scores that are equally weighted to calculate the ***total score***. The first score, the *school score*, represents how impactful greening schoolyards can be as a solution to the problem, e.g. the percent of schools in the city that are located in urban heat islands. The second score, the *need score*, represents how severe the problem is in that city as compared to the rest of the cities, e.g. how high the city's average rate of mental distress is as compared to the rest of the cities. The *school score* and *need score* are combined to form the ***total score*** in each category.

The ***total scores*** in each of the six categories – health, vulnerable populations, park need, stormwater, urban heat, and education – were weighted equally to calculate the **overall score.**

Health scoring methodology

School score – cities received scores based on the percentage of public schools within a census tract with a high rate of mental distress and lack of physical activity, as compared to the city's mean rate.

Need score – cities received scores based on their average rate of mental distress and lack of physical activity

Total score – the *school score* and *need score* were weighted equally to give a total score from 0-5

Data sources: CDC PLACES dataset

Vulnerable populations scoring methodology

Social Vulnerability variables provided through EJ Screen:

- % people of color
- % low income
- % of population with less than a HS education
- % of population in linguistic isolation

*Each SV variable listed above was given a *school score* and a *need score*. The 4 *school scores* were averaged to create an overall *school score* for the city. The 4 *need scores* were averaged to create an overall *need score* for the city.

School score – cities received a score of 1-5 based on the percentage of public schools within a census block group with a high proportion of each social vulnerability variable, as compared to the city's mean

proportion of that SV variable (see list of SV variables above). The scores for each SV variable were then averaged to calculate an overall *school score*.

Need score – cities received a score of 1-5 based on their average proportion of each SV variable, as compared to the national proportion of each SV variable. The score for each SV variables were then averaged to calculate an overall *need score*.

Total score – the *school score* and *need score* were weighted equally to give a total score from 0-5

Data sources: EPA's 2020 EJ Screen

Park need scoring methodology

School score – cities received a score of 1-5 based on the percentage of public schools within an area of high or very high park need

Need score – cities received a score of 1-5 based on their percentage of residents living within a 10-minute walk of a park

Total score – the *school score* and *need score* were weighted equally to give a total score from 0-5

Data sources: TPL's ParkServe®

Stormwater scoring methodology

Need score – cities received a score of 1-5 based on:

1. Percent impervious cover – NLCD 2016 – cities received a score of 1-5 based on the percentage of impervious cover
2. Consent Decree – EPA – score of 1 if there is no consent decree, score of 5 for consent decree
3. CSO cities – AGOL – score of 1 for cities without a combined sewer, score of 5 for cities with a combined sewer
4. Impaired streams – EPA 303(d) streams list last updated 2015. Since the best available data are a little old, and most cities have an impaired stream, we weight this factor less than the others – score of 1 for no impaired stream, score of 3 for cities with an impaired stream.

Total score – the sum of scores for each of the four factors above, divided by four, gives a total score for each city from 0-5

Urban heat scoring methodology

Total score – cities received a score of 1-5 based on the percentage of public schools within a severe urban heat island, as compared to the city mean surface temperature

Data sources: TPL's national urban heat island dataset, created through a partnership with Descartes Labs using 2020 Landsat 8 imagery

Education scoring methodology

Total score – The percent of students scoring proficiently in math and reading assessments. Some cities have multiple school districts, in which case the values were combined using a weighted overlay across

districts that overlap the city boundary. Six cities did not have data at the district level, so the proficiency rates by school were summed across all the schools in the city limits.

Data sources: Data were acquired from the Urban Institute Education Data Explorer. Assessment data come from US Dept of Education EDFacts.

Overall scoring methodology

Total score – the "final score" from each category above was weighted equally at 20% to calculate an overall score from 0-5

School prioritization methodology

All schools in the cities of the analysis above were prioritized based on health, vulnerable populations, park need, education, and urban heat. Schools closer than 100 ft to one another were combined to form one campus.

Health – rate of sedentary behavior and poor mental health of the census tract the school is in

Vulnerable populations – proportion of people of color, people living in low income households, adults without a high school education, and people living in linguistically isolated households of the block group the school is in.

Park need – whether the school falls in an area of park need

Urban heat – the degrees Fahrenheit above the city average land surface temperature of the school surface (100 ft buffer around the school point).

Education – percent of students with at least one out-of-school suspension, and percent of chronically absent students (data from the Civil Rights Data Collection, and obtained via the Urban Institute Education Data Explorer).

Each of the metrics above were normalized to a 0 to 1 scale, then combined equally to get the score of the school. School scores were then re-scaled to be relative to other schools within each city's boundary.

School data source

School locations - National Center for Education Statistics, Public School Locations 2019-2020 school year