

## Smart Surfaces for Baltimore Report – Updated Methods

In July of 2021, the Smart Surfaces Coalition released a [report](#) for and with the City of Baltimore analyzing how Smart Surfaces could help the city cost-effectively meet its key objectives around health, climate, equity, and economic competitiveness. Since the report was released, the Coalition has continued to refine its cost and benefit quantification methods in consultation with its partners and expert advisors. This process of continuous learning, evaluation, and improvement has resulted in a few material changes to the Coalition’s quantification methods, which are summarized below.

### *Updates that would increase the projected benefit-cost ratio of Smart Surfaces in Baltimore*

- ↑ The 2021 report used the EPA’s 2014 value of a statistical life of \$7.4 million. Estimates used by several agencies in the Biden administration are now north of \$10 million (DOT [uses](#) \$11.8 million as of 2021, and the EPA [uses](#) \$10 million). Updating the value of a statistical life to a somewhat conservative \$9 million would add about ~\$30 million in benefits to the Baltimore scenario.
- ↑ The Smart Surfaces Coalition with its partner the American Society of Landscape Architects is documenting a cost-benefit rationale for scaling urban meadows in Baltimore, MD. While the Coalition’s modeling is ongoing, initial analysis suggests that urban meadows have a high benefit-cost ratio and would further enhance the cost-effectiveness of Smart Surfaces in Baltimore.
- ↑ Recent academic studies (such as [Nori-Sarma et. al 2022](#) and [Vaidyanathan et. al 2019](#)) examining the relationship between extreme heat and hospitalizations have laid the groundwork to estimate how Smart Surfaces can reduce hospitalizations via summer cooling. Although in-depth modeling and consultation is ongoing, initial analysis suggests that adopting Smart Surfaces over 30 years would significantly reduce heat-attributable hospitalizations, representing a few million dollars of savings over 30 years.

### *Updates that would decrease the projected benefit-cost ratio of Smart Surfaces in Baltimore*

- ↓ To calculate the value of avoided particulate matter pollution per kwh of electricity, the Coalition previously derived its estimates from a 2014 [study](#), assuming a steady a reduction of the grid’s projected particulate matter intensity each year. The Coalition has updated to use a late 2021-updated [study](#) from the EPA, which estimates the value of particulate matter per kwh of electricity to be much lower. In addition to methodological differences, the more recent study reflects an unexpectedly rapid decrease in coal-derived electricity generation in Maryland from the period 2011–2020—a decline of greater than 75%. This more recent study accordingly estimates the per kwh health value of electricity to be much lower than the Coalition’s estimates for Baltimore (from a 30-year average annual impact of 9.1 cents/kwh to 1.5 cents/kwh). This update would significantly reduce the net projected benefits.

In summary, the updates to the methodology would directionally result in both increases and decreases to the projected cost-effectiveness of city-wide Smart Surfaces adoption for Baltimore, with the net impact being a slight reduction in the strategy’s modeled benefit-cost ratio (from about 15:1 to 12–14:1). This updated benefit-cost ratio remains above the 10:1 benefit-cost ratio cited in the report.