

Subject: Some Philadelphia Data (June 6th 2013)

The stormwater reduction numbers would refer to reduced flooding risk. The CSO reduction is of course the amount of combined sewer overflow no longer discharging into the rivers. In Philadelphia to date we have done the following.

Impervious Cover that we have greened to date.

- Private Sector: 351 acres (142 hectares)
- Public Sector: 115 acres (47 hectares)
- City Total: 466 acres (189 hectares)

Estimated Reduction in Stormwater (runoff captured annually)

- Private Sector: 246 Million Gallons per year (929,975 cubic meters per year)
- Public Sector: 81 Million Gallons per year (304,693 cubic meters per year)
- City Total: 327 Million Gallons per year (1,234,667 cubic meters per year)

Estimated Reduction in Combined Sewer Overflows (annually)

- Private Sector: 158 Million Gallons per year (597,841 cubic meters per year)
- Public Sector: 52 Million Gallons per year (195,874 cubic meters per year)
- City Total: 210 Million Gallons per year (793,715 cubic meters per year)

The program is accelerating, and we are facing and solving the problems of maintenance, inspection, monitoring as we go. Our projection is that we will meet our 5-year target for greening.

Hope this helps.

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More data below (source uncertain)

Cumulative city-wide natural unit benefits of key CSO options for Philadelphia to 2049

(Negative numbers indicate a net sink of these gases)

Benefit category	50% LID option	30 foot sewer tunnel option
Additional waterside recreational user days	247,524,281	Nil
Additional non-waterside recreational user days	101,738,547	Nil
Reduction in number of heat-related fatalities	196	Nil
Annual willingness to pay per household for water quality and habitat improvements (\$)	9.70–15.54	5.63–8.59
Wetlands created or restored (acres)	193	Nil
Green collar jobs created (job years)	15,266	Nil
Change in particulate matter (PM _{2.5}) due to increased trees (µg/m ³)	0.01569	Nil
Change in seasonal ozone due to increased trees (ppb)	0.04248	Nil
Electricity savings due to cooling effect of trees (kWh)	369,739,725	Nil
Natural gas savings due to cooling effect of trees (kBtu)	599,199,846	Nil
Fuel used (vehicles for construction and operation and maintenance) (gallons)	493,387	1,132,409
Sulfur dioxide (SO ₂) emissions (metric tons)	-1,530	1,452
Nitrogen oxides (NO _x) emissions (metric tons)	-38	6,356,083
Carbon dioxide (CO ₂) emissions (metric tons)	-1,091,433	347,970
Vehicle delays from construction and maintenance (hours)	346,883	796,597

Benefit category	50% LID option \$million	30 foot sewer tunnel option \$million
Increased recreational opportunities	524.5	
Improved aesthetics/property value (50%)	574.7	
Reduction in heat stress mortality	1,057.6	
Water quality/aquatic habitat enhancement	336.4	189.0
Wetland services	1.6	
Social costs avoided by green collar jobs	124.9	
Air quality improvements from trees	131.0	
Energy savings/usage	33.7	(2.5)
Reduced (increased) damage from SO ₂ and NO _x emissions	46.3	(45.2)
Reduced (increased) damage from CO ₂ emissions	21.2	(5.9)
Disruption costs from construction and maintenance	(5.6)	(13.4)
Total	2,846.4	122.0