

# How Much Does Infrastructure Cost in the Capitol Region?

Leah Brooks and  
Genevieve Denoeux



GW Institute  
of Public Policy

THE GEORGE WASHINGTON UNIVERSITY

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In the Capitol Region—and across the country—local governments spend money for ongoing needs, such as teacher salaries or trash pick-up. Governments also make investments in the future by spending money on projects that continue to live long after the spending is complete. Such capital projects include road construction, public transit facilities, school buildings, or water and sewer installation. The US as a whole, at all levels of government (federal, state and local), spent about \$530 per person on capital infrastructure in 2016—about the same as in 1956 (both figures in 2016 dollars; Brooks and Liscow, 2019a).

Per capita expenditure on capital improvements is substantially higher in the Capitol Region. Table 1 below shows capital spending per person for the jurisdictions that make up the core (District of Columbia, Alexandria and Arlington) and the largest suburban areas (Montgomery and Prince George’s counties in Maryland; Fairfax County in Virginia) of the region. With the exception of Montgomery County, all these jurisdictions are spending upwards of \$1,000 per person in recent years.<sup>1</sup>

To put these numbers in context, they are about double the national expenditure—without even accounting for the federal contribution included above. Alternatively, you can think about them relative to what the median family earns in the Capitol Region: \$118,000 per year. This means that each year, Capitol Region taxpayers are spending slightly under 1 percent of their income on local capital improvements.

We care tremendously about how much infrastructure we get and how much it costs, because it is a key input into economic growth—growth that raises wages and improves lives. The national picture on infrastructure costs suggests that the US as a whole has gotten less per dollar spent over time. Brooks and Liscow (2019b) find that the real cost of constructing a new Interstate highway mile tripled from 1956 to 1993. Mehrotra et al (2019) find a very similar continuing increase from 1990s to the present.

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1 | If we included Montgomery’s separately budgeted contributions to the Washington Suburban Sanitary Commission, Montgomery County would look similar to the other jurisdictions.

**Table 1: Capital Improvement Spending in the Capitol Region**

Jurisdiction	Capital spending per capita	Notes
Washington, DC	\$2,025	<ul style="list-style-type: none"> <li>This figure includes expenditures that are generally state responsibilities in other jurisdictions</li> <li>This budget is about twice as high as other years in the capital improvement plan</li> </ul>
Alexandria, VA	\$1,330	<ul style="list-style-type: none"> <li>Largest expenditures for transportation, schools and sewers</li> </ul>
Arlington County, VA	\$1,571	<ul style="list-style-type: none"> <li>Transportation, including metro, is largest single item</li> <li>Second largest item is water and sewer</li> </ul>
Fairfax County, VA	\$1,449	<ul style="list-style-type: none"> <li>Includes very large public safety construction project</li> <li>Includes payments to Metro</li> </ul>
Montgomery County, MD	\$700	<ul style="list-style-type: none"> <li>Includes transportation, which is the largest category</li> <li>Does not include water and sewer investments through WSSC</li> </ul>
Prince George's County, MD	\$1,055	<ul style="list-style-type: none"> <li>Schools are the largest single category</li> <li>Budget also includes transportation</li> </ul>

Note: All jurisdictions, budgets include school capital improvements. All figures drawn from most recent year of capital budget.  
Sources: See list of capital improvement budgets at end of brief.

In the rest of this policy brief, we profile three large Capitol Region projects to understand where local funds are going and what the impediments are to controlling costs. Nationally, the three largest categories of infrastructure capital spending are, in order of expense, highways, water and sewer, and mass transit and rail (CBO, 2018). We touch on all three below.

## Example 1: Clean Rivers in Washington, DC

Currently, roughly a third of the District is served by “combined sewers,” which means that sewage and stormwater both go into the same pipe. Most of the time these combined sewers get all of the sewage and rainfall to the proper treatment facilities. However, when it rains a lot, the pipes reach capacity, and the sewage and stormwater do not all make it to the treatment facility. Instead, the pipes overflow into all three large District waterways—the Potomac, the Anacostia, and the Rock Creek rivers—and sometimes into District streets and basements.

In 2005, a federal District Court determined that this system constituted a public health hazard in violation of the Clean Water Act and required comprehensive change to DC’s water systems. The DC Clean Rivers Project emerged as the solution—a massive infrastructure program that aims to reduce sewage overflows 96 percent.

This is no small or cheap undertaking. DC Water is constructing over 18 miles of tunnels over 100 feet below ground—so-called gray infrastructure—and cultivating 498 acres of green-infrastructure-managed land. The gray infrastructure is intended to capture CSOs during heavy rains and transport them to the Blue Plains Advanced Wastewater Treatment Plant, while the green infrastructure will help keep storm runoff from entering the sewage system in the first place. The Clean Rivers Project is estimated to cost \$2.7 billion by the time of its completion, or about \$4,000 for every District resident.

Program funding has generated substantial consternation not just about the total amount, but about how to share costs equitably across all residents. DC Water initially assessed residents and firms in large part by the amount of impermeable surface on a property in order to try to align user costs and benefits. However, this hit certain users—those with very large properties, such as churches—with large bills they struggled to pay.

### DC Clean Rivers Boring Machine



Where is some of the funding going? This tunnel-boring machine, which will dig a five-mile underground tunnel to hold stormwater runoff and raw sewage, cost \$30 million.

## Example 2: Clean Water Partnership in Prince George's County, MD

In 2010, as part of its responsibilities under the Clean Water Act, the US Environmental Protection Agency established a "total maximum daily load" –or a total amount of pollutants–that could go into the Chesapeake Bay. When the EPA set these limits, Prince George's County was out of compliance, largely due to groundwater run-off. "Groundwater run-off" is rainwater that falls, picks up pollutants on the ground, and heads into the sewer system on the way to the Chesapeake Bay. The County could either divert this water from storms into the ground or clean it before getting to the bay, or both.

The county decided to tackle the financing and construction for improvements to groundwater issues via a community-based public-private partnership. The resulting agreement, which began in 2014, is a thirty-year, \$100 million deal in which private firm Corvias helps the county design, build, operate, and maintain new infrastructure that diverts storm run-off. In return, Corvias receives a share of the tax revenue dedicated toward this infrastructure.

This new tax revenue is not trivial. Each property in Prince George's County pays \$20.58 annually, plus an "impervious area fee" based on the area of the property that it covered. "Impervious areas" are those covered by concrete or asphalt; pervious areas are those through which water can pass, such as gardens or special paving types.

As of writing, Prince George's County is now in compliance with the Clean Water Act, and the project has hired many local workers and workers at local small minority-owned businesses. The County believes that it has saved money relative to traditional funding and construction models.

### Groundwater Can Pollute Waterways



Even clean rainwater can create polluted rivers.

### Example 3: Potomac Yard Infill Metro Stop in Alexandria, VA

In concert with a new mixed-use development at the former rail yard, Alexandria is building an infill metro stop on the Blue and Yellow lines between the Braddock Road and Reagan National Airport stations. The goal is for this new stop to provide metro access for Amazon's new HQ2 and the Virginia Tech Innovation Campus, while also creating value for the residential parts of the development via metro proximity.

Washington Metropolitan Area Transit Authority is overseeing the construction effort, and Alexandria is providing the primary financing. Funds come from a variety of state and federal grants, as well as revenue from a special tax district.

Funding the project commensurate with its costs has been a challenge since the inception. When initial 2017 construction bids exceeded the project's then-\$320-million budget, project managers decided to nix one of the station's two entrances. This caused an uproar among local residents and businesses alike---with some even citing the planned entrance as a driver of their decision to move where they did in the first place.

There was optimism about resurrecting the second entrance when Alexandria secured a \$50 million state grant. But all cost estimates for the second entrance came in above this funding and the city is struggling to balance costs with citizen demands. The metro station is currently set for a spring 2022 opening.

#### The future site of the Potomac Yard metro station



The site of the Potomac Yard metro station in the 1980s.

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