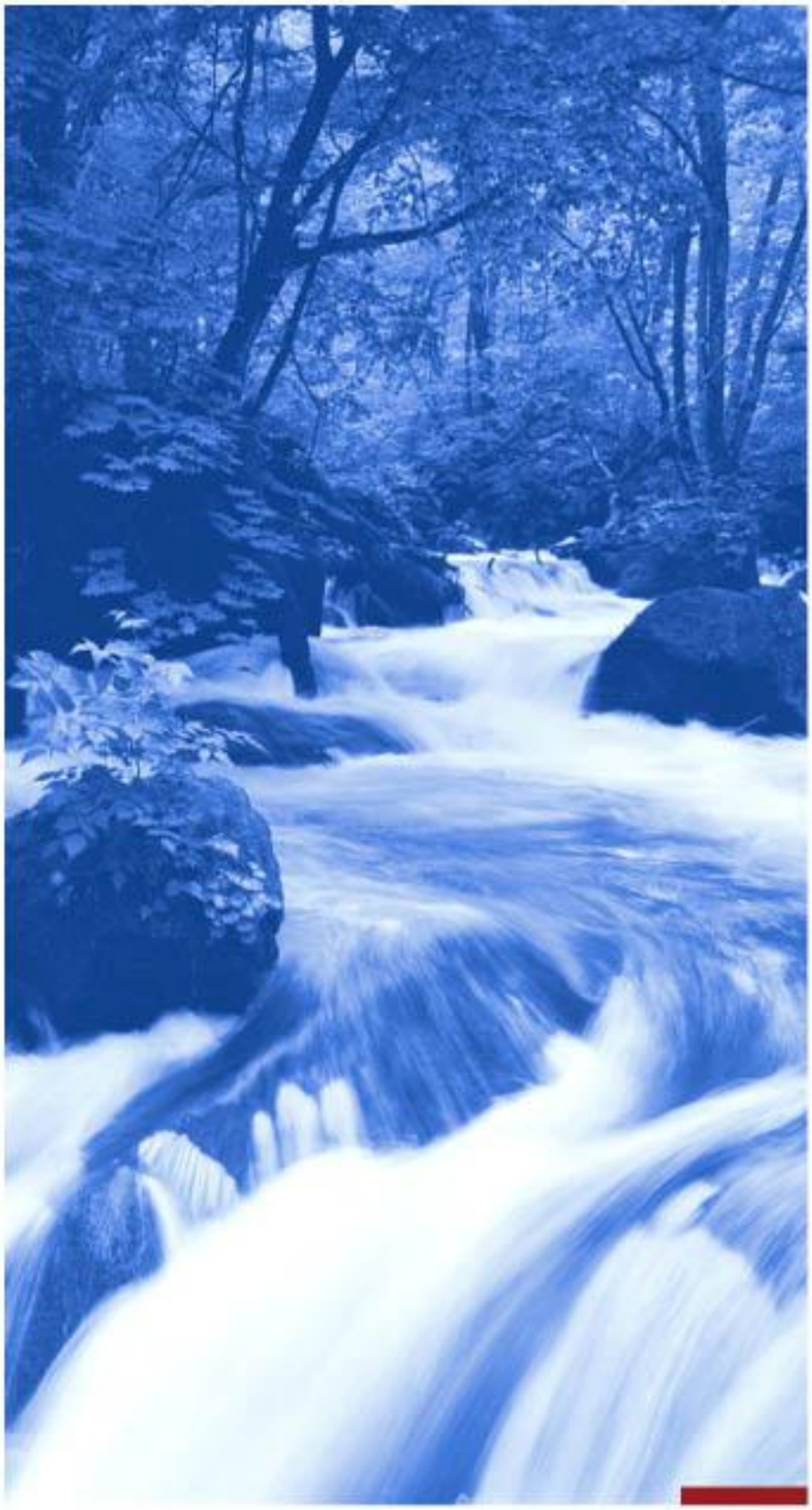
The Water Center
University of Pennsylvania

AMERICAN RIVERS



Report

# Equity Analysis of Clean Water and Drinking Water State Revolving Fund Financing in the Delaware River Basin

**Lead Author: Richard Barad,** Graduate Research Fellow
**Contributing Authors: Ellen Kohler**, Director of Applied Research and Programs**; Erica Depalma,** former Program Manager**;** and **Alex Cartwright,** former Graduate Student Research Fellow
6/6/25

## Table of Contents



## Acknowledgments

This project was the result of a partnership between American Rivers and the Water Center at Penn. We would like to thank Lia Mastropolo and Sarah Bach for their invaluable feedback and thoughtfulness throughout the process. We would also like to thank the William Penn Foundation for its funding support.

## Introduction

This report analyzes the equity of Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) project financing in the Delaware River Basin. Specifically, it aims to answer the question of whether water infrastructure financing and subsidies are reaching areas that have been identified as low income and/or environmentally burdened communities.

The report consolidates two separately conducted analyses:

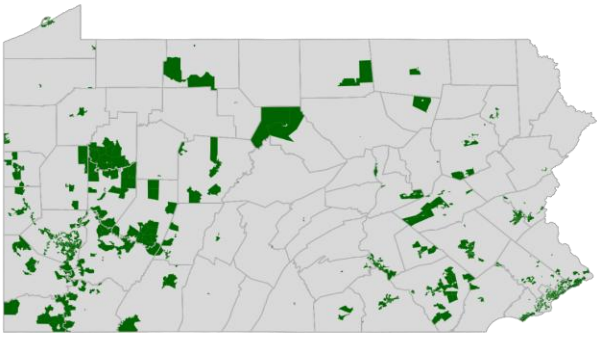
- The first is focused on the DWSRF and uses a dataset compiled by the Environmental Protection Agency (EPA), shared by the Environmentally Policy Innovation Center (EPIC) and includes all DWSRF projects funded in Delaware, Pennsylvania, and New Jersey between 2009 and 2021. This analysis was completed in 2022.

- The second is focused on the CWSRF and uses a dataset provided by the EPA in 2023 that includes all CWSRF projects funded in Delaware, New Jersey, and Pennsylvania from July 2017 to June 2023. The database was obtained through a Freedom of Information Act Request (FOIA) submitted by the Water Center at Penn. This analysis was carried out in 2024.

## Background

For the purposes of this report, we use the term "equity" in the context of allocating limited available federal financial resources based on income and environmental justice designation as opposed to equality. In recent years, there has been an increasing focus across the state and federal government agencies on ensuring that limited federal and state financial resources are reaching communities that experience economic and/or environmental hardships.

**Figure 1:** Areas classified as Environmental Justice Areas by PennEnviroScreen



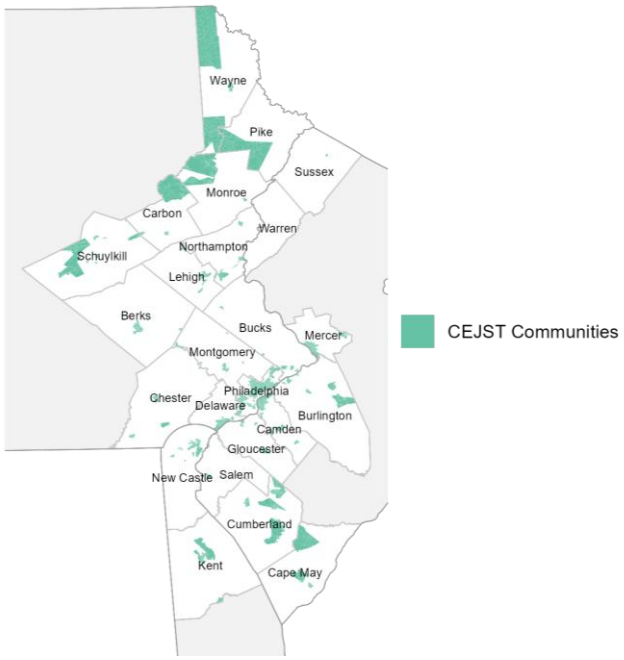
**Source:** PennEnviroScreen, The Pennsylvania Department of Environmental Protection (DEP)

This growing focus has resulted in the creation of a variety of environmental justice and overburdened mapping tools which aim to identify areas that experience environmental and socioeconomic hardships. As of 2021, 18 states had developed environmental justice mapping

tools including all three states located in the Delaware River Basin[1]. Pennsylvania released a new environmental justice mapping tool called **PennEnviroScreen** in late 2023. **PennEnviroScreen** was created by the Pennsylvania Department of Environmental Protection (DEP) and involves developing an environmental justice score based on state and federal environmental, socio-economic, and public health data across 32 different indicators that are split across four different categories[2]. The PA DEP considers an area environmentally burdened if the environmental justice score falls above the statewide 80th percentile. The areas which are classified as environmental justice areas in Pennsylvania are shown in Figure 1. New Jersey has also developed a similar tool for identifying vulnerable communities called the Environmental Justice Mapping, Assessment and Protection Tool (EJMAP)[3]. The Delaware Department of Transportation (DelDOT) has developed a map of Equity Focus areas using data from the American Community Survey[4]. The Delaware Department of Environmental Protection has also created a tool called The Delaware Environmental Justice Area Viewer, which provides a state level view of federal environmental justice datasets and the equity focus areas identified by DelDOT.

The federal government has developed multiple environmental justice screening tools including the Social Vulnerability Index developed by the Center for Disease Control (CDC), the EJScreen product designed by the EPA, and the Climate and Environmental Justice Screening Tool

**Figure 2:** Areas classified as overburdened communities in Counties in the Delaware River Basin according to the CJEST tool.




**Source:** Climate and Economic Justice Screening Tool, Council for Environmental Quality (CEQ).

[1] David Konisky, Daniel Gonzalez, and Kelly Leatherman. Mapping for Environmental Justice: An Analysis of State Level Tools. O'Neill School of Public and Environmental Affairs, Indiana University. July 2021. https://scholarworks.iu.edu/iuswrrest/api/core/bitstreams/7b00234a-3079-4874-aa6f-28cdaf9ab386/content

[2] Pennsylvania Environmental Justice Mapping and Screening Tool, Methodology Documentation 2023, https://greenport.pa.gov/elibrary//PublicAccessProvider.ashx?action=ViewDocument&overlay=Off&overrideFormat=Native

[3] New Jersey Department of Environmental Protection. Environmental Justice, Mapping, Assessment, and Protection Tool (EJMAP). https://experience.arcgis.com/experience/548632a2351b41b8a0443cfc3a9f4ef6

[4] Nick Coughlin, Developed by Pennoni and DelDOT TR&S. DelDOT Equity Focus Areas. https://hub.arcgis.com/datasets/2eadd3a974b5479fbb68e9ed6dca9236_0/explore

(CEJST) created by the Council for Environmental Quality (CEQ). The growing focus on equity at the federal level is in part a result of the Justice40 Initiative which sets a goal of allocating 40 percent of federal climate, clean energy, and affordable housing funding to disadvantaged communities[5]. The Biden administration created the Climate and Environmental Justice Screening Tool (CEJST) as part of the Justice40 initiative and federal agencies use CEJST to help identify communities which are eligible to receive funding through the Justice40 Initiative. The CEJST mapping is done at the census tract level and includes more than thirty different indicators. A census tract is considered environmentally disadvantaged if it is at or above the 90$^{th}$ percentile for any indicators AND is at or above the 65$^{th}$ percentile for low-income population. **Figure 2** shows the areas identified as overburdened communities in the Delaware River Basin based on the CEJST tool.

There can be differences between the areas flagged by CEJST and state level environmental justice mapping tools. For example, CEJST identifies several rural census tracts in Wayne, Pike, and Monroe counties in Northeast Pennsylvania as overburdened. These tracts are not identified as environmental justice in the PennEnviroScreen tool. Similarly, the New Jersey Environmental Justice tool identifies some suburban and rural areas of the state as overburdened such as suburban areas of Camden County that are not flagged by CEJST. Such differences are a result of different methodologies and differences in input data. CEJST relies on federal datasets, while tools like PennEnviroScreen leverage state level data in addition to federal data.

## Equity in State Revolving Fund Program

The EPA State Revolving Fund (SRF) program is subject to the federal Justice40 Intiative. However, the discretion about how to consider environmental justice and equity remains with each state revolving fund program. State agencies are not required to use CEJST or any other standard tool for determining where to allocate financing, what communities are eligible for principal forgiveness, or how to deploy other financial subsidies. As a result, states are integrating equity into decisions about what communities can receive financing in different ways and to different extents.

The National Resource Defense Council (NRDC) published a report card in June 2024 aiming to assess the degree to which equity is considered in the CWSRF and DWSRF financing policy decisions[6]. The report scores all states on a one to seventeen scale for both CWSRF and DWSRF policies, with points awarded according to the scoring table shown below.

[5] The White House, Justice40, A whole of Government initiative, https://www.whitehouse.gov/environmentaljustice/justice40
[6] Rebecca Hammer & Erik D. Olson, WILL FUNDS FLOW FAIRLY? STATE WATER INFRASTRUCTURE EQUITY REPORT CARDS. https://www.nrdc.org/sites/default/files/2024-04/state-water-infrastructure-equity-report.pdf. 2024

| POLICIES | |
|---|---|
| **CWSRF and DWSRF Substantive Policies** | **Points** |
| Distribute more than the minimum legally required amount of additional subsidization. | 2 |
| Don't apply a per-recipient subsidy cap that would preclude a disadvantaged community from receiving its full award as additional subsidization. | 2 |
| Use a sliding scale or tiers that provide more additional subsidy to disadvantaged communities with greater financial need. | 2 |
| Allow projects serving disadvantaged areas within non-disadvantaged communities to qualify for additional subsidization. | 2 |
| Don't strictly cap the population of communities that are eligible for additional subsidization. | 2 |
| Use measures of financial need or disadvantaged-community status when ranking project applications. | 2 |
| Offer more favorable loan terms to disadvantaged communities, such as lower interest rates or extended repayment periods. | 2 |
| **CWSRF and DWSRF Procedural Policies** | |
| Provide at least four weeks for public comment on draft Intended Use Plans (IUPs). | 1 |
| Publish responses to comments on the draft IUP, either in the final IUP or on the SRF website. | 1 |
| Post IUPs, Project Priority Lists (PPL), and important policies, including project-ranking systems and disadvantaged-community definitions, on the SRF website. | 1 |
| **Total Possible Points** | **17** |

The score is then converted to a letter grade. Two states in the nation, Pennsylvania and Kentucky, received A scores for both CWSRF and DWSRF policies. New Jersey received a B grade for their drinking water policies and C grade for their clean water policies. Delaware received a B grade for both CWSRF and DWSRF policies. The findings of the NRDC report indicate that the states in the Delaware River Basin do a better job integrating equity into financing decisions. However, the report allocates points for providing additional subsidizations to disadvantaged communities but does not consider the actual policies used to determine if a community is disadvantaged. Pennsylvania, which received an A grade, has received criticism for the outcomes of its policies because Philadelphia, a community with high-income inequality but low water rates, does not qualify for subsidies for most projects.

The goal of this report is to use federal socioeconomic data and environmental justice data to assess the effectiveness of these policies and the degree to which SRF financing has been equitably distributed within Delaware River Basin. Ideally, this analysis will help policymakers assess whether state level policies for identifying disadvantaged communities are resulting in proportionate commensurate levels of CWSRF and DWSRF resources reaching socioeconomically and environmentally vulnerable communities. Ensuring funds reach environmentally vulnerable and socioeconomically disadvantaged communities will help ensure that SRF financing is benefiting communities with the highest needs and will also contribute to meeting the Justice40 initiative targets set by the Biden Administration.

## Drinking Water State Revolving Fund Analysis

### *Demographic Profiles*

As a first step to the drinking water analysis, the team developed demographic profiles for all drinking water service areas located within the Delaware River Basin in Pennsylvania, New Jersey, and Delaware. The demographic profiles were developed using data from the U.S. Census Bureau 2019 5-year American Community Survey (ACS) dataset. The demographic profiles considered eight metrics/indicators which the US Water Alliance considers relevant to the definition of vulnerable communities[7]:

1. Communities of color
2. Immigrant communities
3. Indigenous communities
4. Limited English proficiency
5. Poverty
6. Low Median Household Income
7. Elderly population
8. Youth population

The census data was aggregated to the drinking water system boundaries through a spatial analysis method that calculated area and population weighted averages using the census tracts, or the portions of census tracts, that comprise each drinking water system. Drinking Water system boundary dataset were compiled by Duke University as part of the Water Affordability Dashboard intiative[8]. Several small, private utility systems in Delaware were excluded from the analysis due to inconsistencies in their spatial data compared to the service boundaries throughout the rest of the study area.

Based on these eight metrics, the team calculated a Social Vulnerability Index (SVI) based on the methods used by the Center of Disease Control/Agency for Toxic Substances and Disease Registry (CDC/ASTDR). In the SVI, each drinking water service area is given one point if the average indicator value for the service area falls above the 90$^{th}$ percentile for the metric. These points are then totaled to arrive at the SVI. Because eight demographic indicators are used in this study, the maximum SVI value is 8.

[7] Kevin Shafer and Kevin Shafer, AN EQUITABLE WATER FUTURE A National Briefing Paper. US Water Alliance. https://uswateralliance.org/wp-content/uploads/2023/09/uswa_waterequity_FINAL.pdf 2017

[8] Duke, Nicholas Institute for Energy, Environment, and Sustainability, Water Affordability Dashboard. https://nicholasinstitute.duke.edu/water-affordability/water-affordability-dashboard/

The maps below show the calculated Social Vulnerability Index (SVI) for Drinking Water utility systems in Delaware, New Jersey, and Pennsylvania.

**Figure 3:** Delaware Social Vulnerability Index (SVI)

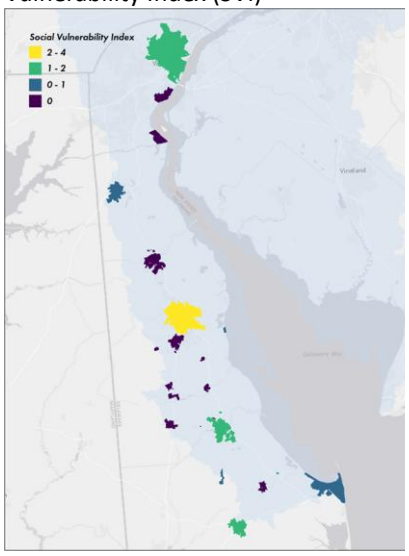



**Figure 4:** Pennsylvania Social Vulnerability Index (SVI)

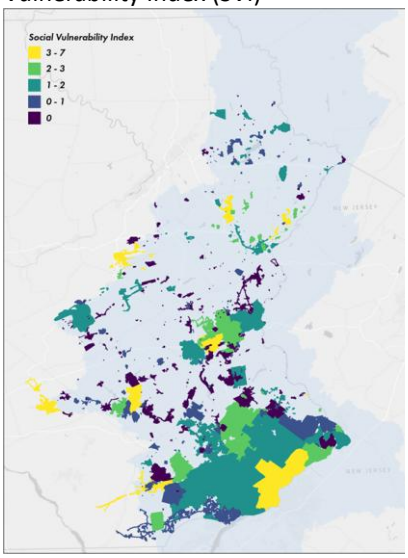
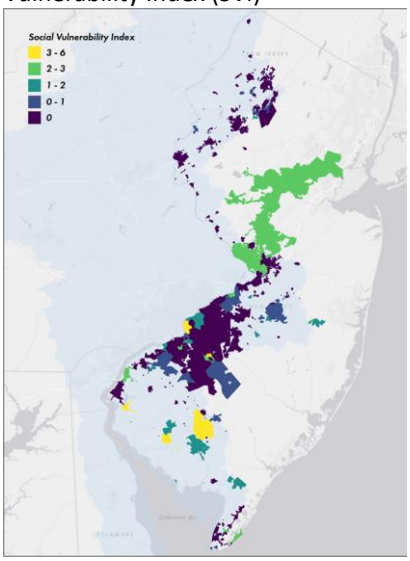



**Figure 5:** New Jersey Social Vulnerability Index (SVI)




**Source:** Research Team using data from the 2019 5 Year American Community Survey (ACS).

### *Drinking Water State Revolving Fund Financing*

The Drinking Water State Revolving Fund (DWSRF) data includes all projects in Delaware, Pennsylvania, and New Jersey between 2009 and 2021 and was compiled by the Environmental Protection Agency (EPA) and shared with the research team by the Environmental Policy Innovation Center (EPIC). The location of each project was mapped, and each project was assigned to a drinking water service area.

The pairs of state maps below show drinking water service areas by state that did and did not receive Drinking Water State Revolving Fund financing between 2009 and 2021. The map on the left shows service areas that did not receive SRF financing, while the map on the right shows service areas that received SRF financing. Table 1 provides a summary of the findings at a state level.

**Table 1** – Summary of DWSRF Equity Analysis at state level

| State | | Total | Drinking Water Systems that did not access DWSRF Financing | Number of Drinking Water Systems that did access DWSRF Financing |
|---|---|---|---|---|
| **Pennsylvania** | Total Number of Systems | 557 | 541 (97.2%) | 16 (2.8%) |
| | Systems with SVI Above 0 | 320 | 306 | 14 |
| | Systems with SVI in Upper Quantile | 20 | 16 | 4 |
| **New Jersey** | Total Number of Systems | 230 | 185 (80.5%) | 45 (19.5%) |
| | Systems with SVI Above 0 | 98 | 75 | 23 |
| | Systems with SVI in Upper Quantile | 8 | 4 | 4 |
| **Delaware** | Total Number of Systems | 19 | 10 (52.6%) | 9 (47.4%) |
| | Systems with SVI Above 0 | 9 | 3 | 6 |
| | Systems with SVI in Upper Quantile | 1 | 0 | 1 |

*Pennsylvania*

As shown in Table 1, the vast majority (541 of the 557, or 97.2%) of Pennsylvania's Drinking Water Systems within the Delaware River Basin did not access DWSRF financing during the 12-year period analyzed. Of the 541 systems that did not access financing, 306 have an SVI greater than zero. Sixteen of the systems (3%) of the 541 systems that did not access DWSRF financing are in the upper quintile of social vulnerability.

Of the sixteen systems (2.8% of total) shown in Figure 7 that did access SRF financing 14 are socially vulnerable (87.5%). Of these, four are in the upper quintile of social vulnerability in Pennsylvania.

**Figure 6:** Pennsylvania Drinking Water Systems in the Delaware Basin that did not receive DWSRF financing between 2009 and 2021.

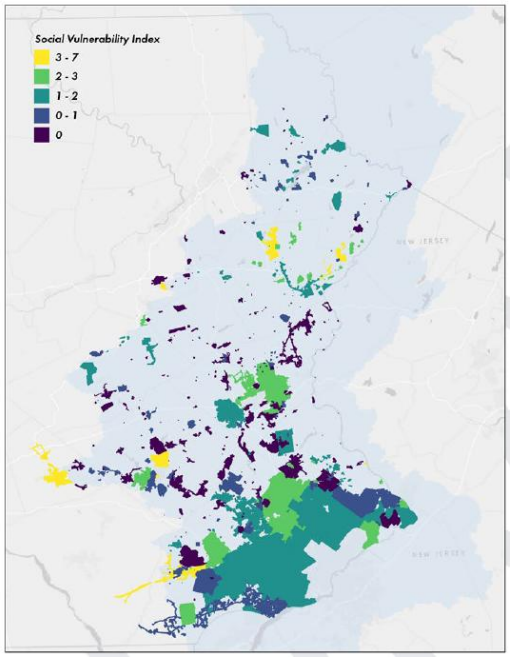
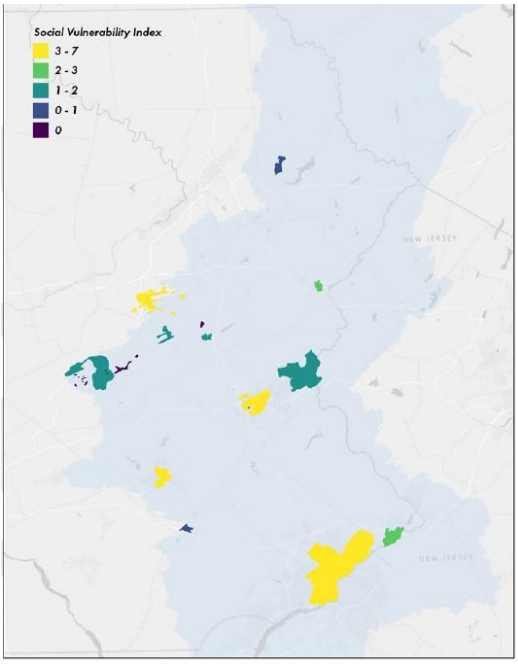



**Figure 7:** Pennsylvania Drinking Water Systems in the Delaware Basin that received DWSRF financing between 2009 and 2021.




**Source:** Research Team using data from the 2019 5 Year American Community Survey (ACS).

*New Jersey*

As shown in Figure 8, a large majority (185 of the 230, or 80.5%) of New Jersey's Drinking Water Systems within the Delaware River Basin did not access DWSRF financing. Yet, 75 of the 185 systems (40.5%) that did not access financing are socially vulnerable, of which four are in the upper quantile of social vulnerability for New Jersey.

Of the 45 systems (19.5% of total) that did access DWSRF financing 23 are socially vulnerable, with four in the upper quantile of social vulnerability in New Jersey.

**Figure 8:** New Jersey Drinking Systems in the Delaware Basin that did not receive DWSRF financing between 2009 and 2021.

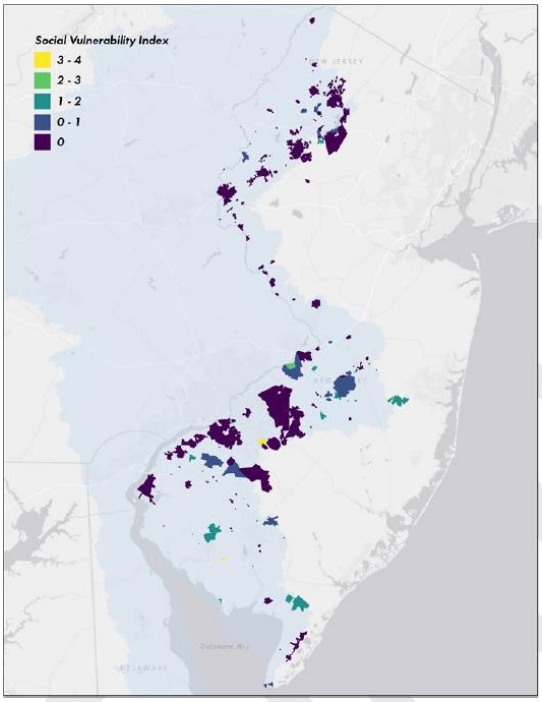
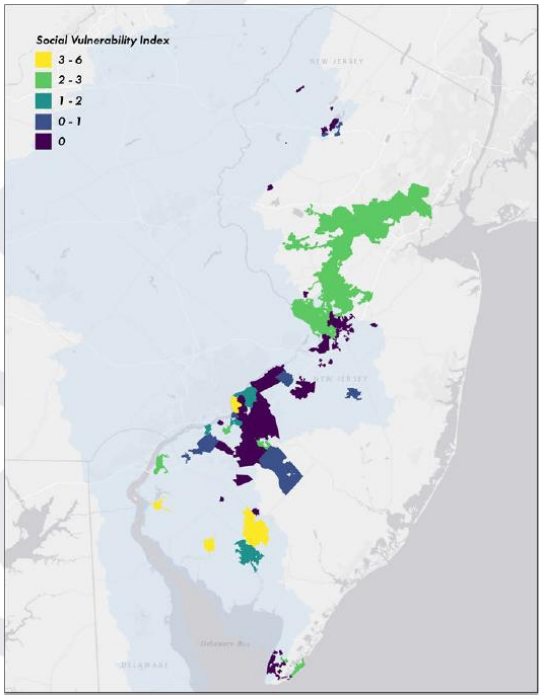



**Figure 9:** New Jersey Drinking Systems in the Delaware Basin that received DWSRF financing between 2009 and 2021.




**Source:** Research Team using data from the 2019 5 Year American Community Survey (ACS).

*Delaware*

As shown in Figure 10, the majority (10 out of 19, or 52.6%) of drinking water systems in Delaware located within the Delaware River Basin did not access DWSRF financing. Of these 10 systems three are socially vulnerable (30%), and no systems were within the upper quantile of social vulnerability for drinking water systems in the state. Nine out of 19 drinking water systems (47.4%) did not access SRF financing. Of these nine systems, six are socially vulnerable and one system is in the upper quintile of social vulnerability for drinking water systems in the state.

**Figure 8:** Delaware Drinking Systems in the Delaware Basin that did not receive DWSRF financing between 2009 and 2021.

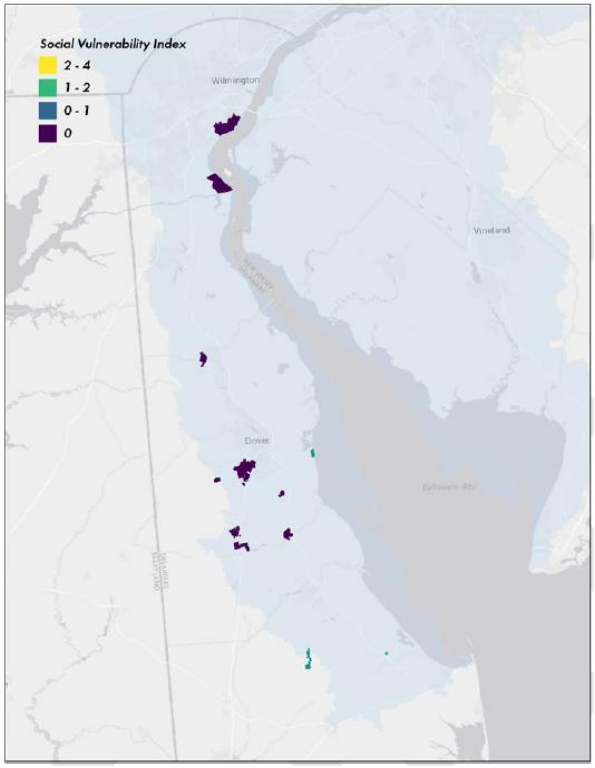
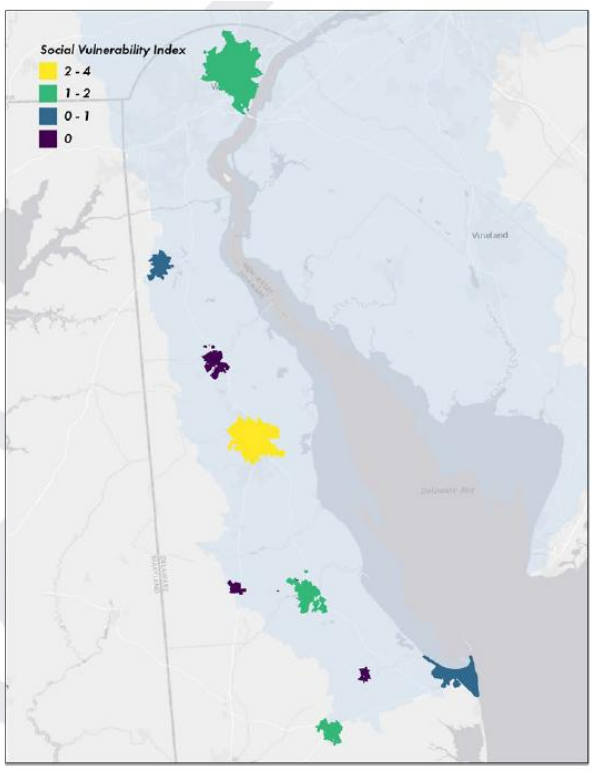



**Figure 9:** Delaware Drinking Systems in the Delaware Basin that received DWSRF financing between 2009 and 2021.




**Source:** Research Team using data from the 2019 5 Year American Community Survey (ACS).

### *Limitations and Conclusions*

In all three of the analyzed states, the majority of drinking water systems in the Delaware River Basin did not receive DWSRF financing. The SVI value of the water systems does appear to have an impact on the likelihood that a water system will receive financing through the DWSRF program. For example, in both Delaware and Pennsylvania the drinking water systems that received DWSRF financing tend to have a higher average SVI value. In New Jersey, the SVI appears to have less of an impact on the likelihood that a drinking water system will receive financing through the DWSRF program.

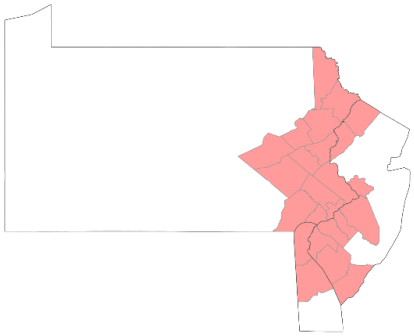
It should be noted that a drinking water system not receiving financing is not necessarily an indication of inequity. A drinking water system could not have received financing through SRF because they got financing through another program such as state-level direct grant programs.

Alternatively, the system might not have had any upgrades to finance during the 12-year period analyzed and thus did not apply for any financing.

## Clean Water State Revolving Fund Analysis

This part of the analysis examines financing equity for Clean Water State Revolving Fund (CWSRF) projects within the Delaware River Basin. The analysis includes all counties that have a greater than 40% overlap with the Delaware River Basin boundaries – a total of 23 counties across three states. The study area is shown in Figure 10 on the right.

**Figure 10:** Counties in the Study Area

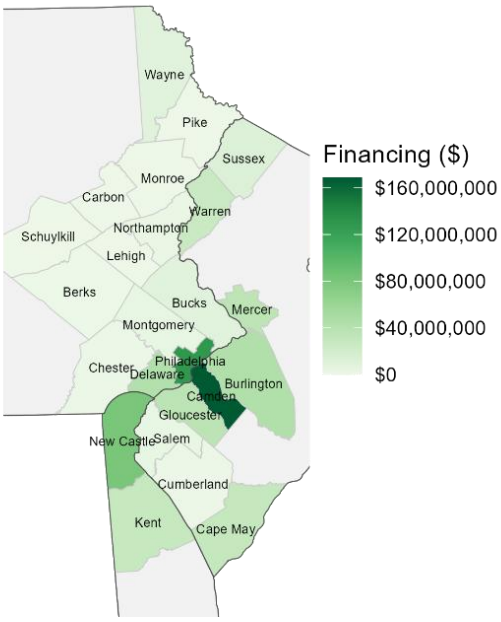


The dataset used for the analysis was provided by the EPA through a Freedom of Information Act request and includes all CWSRF projects that occurred between June 2017and July 2023.

### *Methodology*

For the CWSRF analysis, we did not have access to municipal wastewater service area maps, so we developed a methodology using urbanized area information. The methodology starts by using the county as the initial geographic unit for comparison. The total amount of financing and the total financial subsidy by county is calculated for all counties located within the study area. **Figure 11** shows the total amount of financing per county between June 2017 and July 2024. As shown in Figure 11 the total amount of financing is largest in and around the Philadelphia metro area – Camden County received the largest amount of financing of all counties.

**Figure 11:** Financing for Stormwater, Wastewater, Energy Efficiency, and Water Efficiency Projects in Study Area




**Source:** Environmental Protection Agency (EPA) CWSRF Database

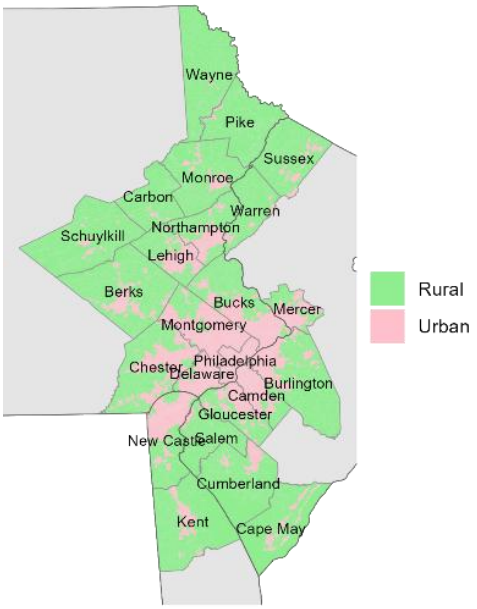
The total amount of financing and subsidy are then divided by the total urban population, calculated based on the Urban Area identified during the 2020 U.S Census. The denominator of urban population is used because the vast majority of CWSRF financing will typically be allocated to urban areas due to the

presence of wastewater sewer systems and Municipal Separate Storm Sewer Systems (MS4) permits.

For this analysis, we only included stormwater, wastewater, energy conservation and water conservation projects. Non-point projects are excluded from the analysis because non-point source projects have a higher likelihood of occurring in rural areas and generally are not related to wastewater and stormwater systems.

To determine if financing is equitably distributed across counties within the basin, the financing per urban capita is compared with the percent of the urban population in an area classified as overburdened based on the Climate and Economic Justice Screening tool (CEJST). The CEJST tool was used to facilitate comparisons across state boundaries.

**Figure 12:** Urban and Rural Areas in the Study Area



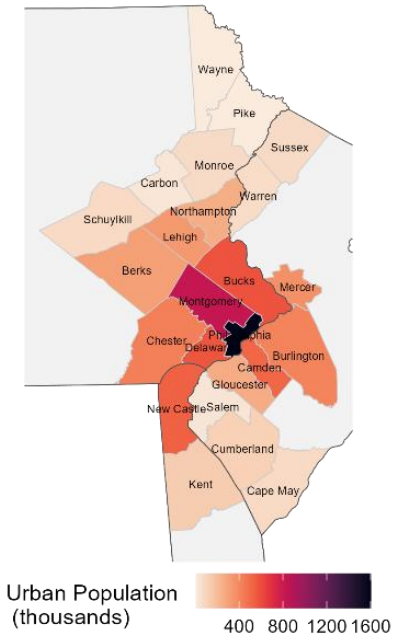

**Source:** U.S Census Bureau, 2020 Census Urban Area

### *Urban Area Analysis*

The total urban population by county was calculated by downloading 2020 census population data at the block level for all counties within the study area. The urban blocks were identified by joining the block level data to urban area boundaries. Urban area boundaries were also obtained from the U.S Census Bureau. For an area to be considered urban, it must have a densely settled core of census blocks that meet housing unit and population density requirements. According to 2020 urban area criteria, urban census blocks must have 425 housing units or more in the census block. Adjacent urban blocks are grouped together, and a group of census tracts qualifies as urban if it contains 2,000 housing units or has a population greater than 5,000 people. The definition also includes areas that are colloquially considered suburban areas, as densely populated suburban areas typically meet the U.S Census Bureau urban area requirements. **Figure 12** shows the urban and rural areas located within the study area.

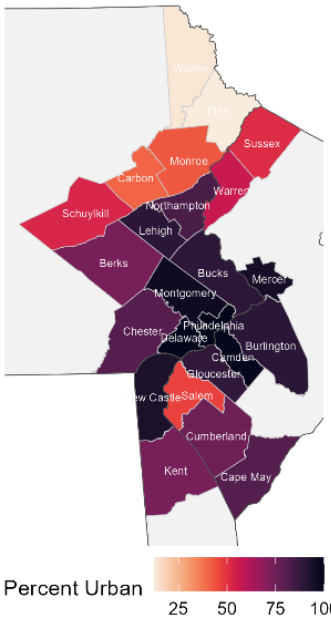
The total urban population by county was calculated by summing together the population for blocks located in urban areas. **Figure 13** shows the total urban population by county, while **Figure 14** shows the percentage of each county's population that is urban. Not surprisingly, the counties in and around Philadelphia have large urban populations. These larger urban populations indicate a higher need for wastewater and stormwater infrastructure in counties located within the Philadelphia metro area.

**Figure 13:** Urban Population for Counties in the Study Area



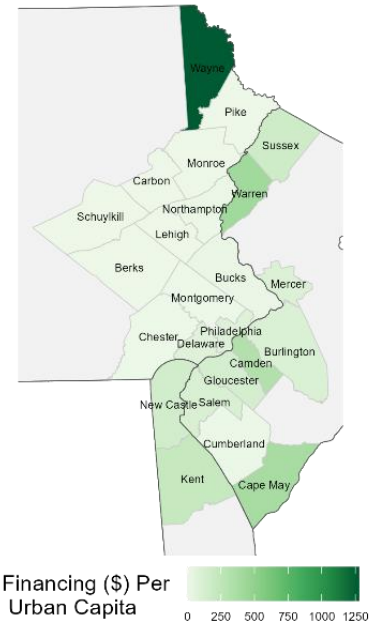

**Source:** U.S Census Bureau, 2020 Census Urban Area

**Figure 14:** Percent Urban Population for Counties in the Study Area




**Source:** U.S Census Bureau, 2020 Census Urban Area

**Figure 15:** CWSRF Financing Per Urban Capita for Counties in the Study Area

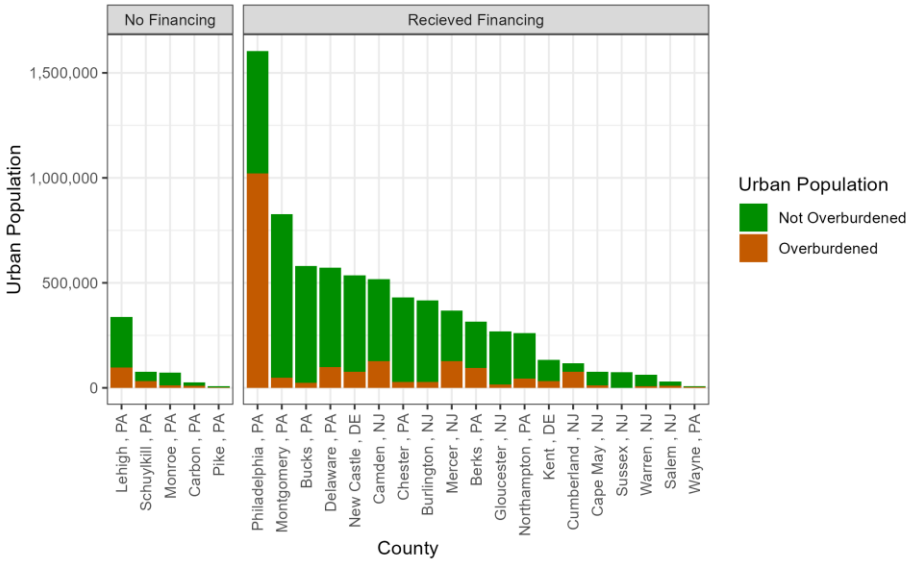



**Source :** Authors caluclations based on data from the EPA and U.S Census Bureau.

**Figure 15** shows the financing per urban capita (i.e: total financing divided by the total urban population). The amount of financing per urban capita is highest in Wayne County Pennsylvania which has received more than double the amount of financing per urban capita when compared with the other counties in the study area. Other counties which have a large amount of financing per urban capita include Warren, Cape May, and Camden counties in New Jersey and Kent County in Delaware.

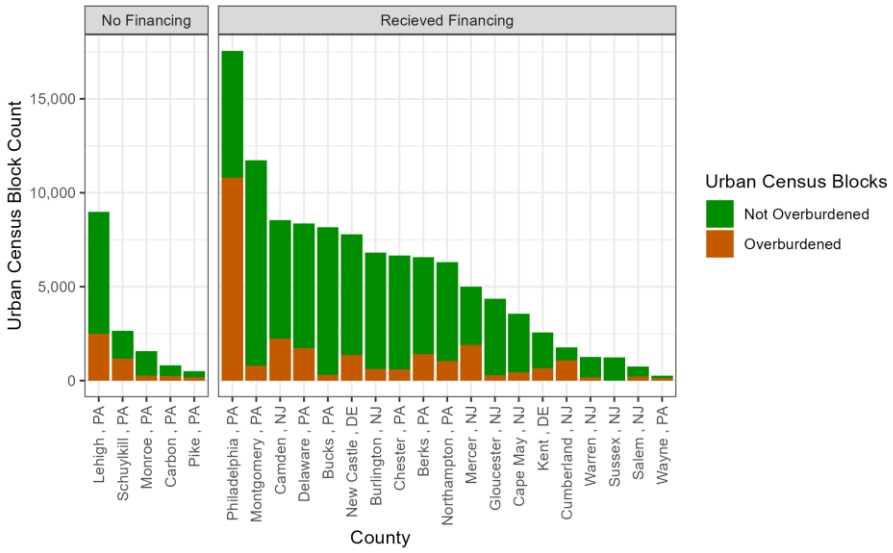
**Figure 16** shows the total urban population by county disaggregated by if the population is classified as an overburdened community by CJEST. As shown, Philadelphia County has the largest overburdened population. Other counties with a large, overburdened population include Camden County, Mercer, and Cumberland counties in New Jersey and Delaware and Berks County in Pennsylvania and New Castle County in Delaware. The county with the largest overburdened population that did not receive any CWSRF financing is Lehigh County.

**Figure 16**: Total Urban Population in Counties in Study Area disaggregated by overburdened status and if county received CWSRF Financing during study period.




**Source:** Authors illustration based on U.S Census Bureau, 2020 Census Population and Urban Area data and E.P.A CWSRF Financing Database.

**Figure 17**: Number of Urban Census Blocks in Counties in Study Area



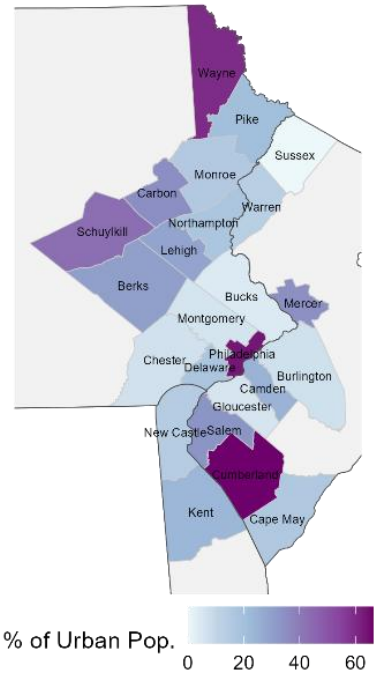

**Source:** Authors illustration based on U.S Census Bureau, 2020 Census Population and Urban Area data and E.P.A CWSRF Financing Database.

**Figure 17** shows the total number of urban census blocks by county disaggregated by if the census block is classified as overburdened. Counties that did not receive financing are shown separately. The county with the largest number of census blocks located in an overburdened community is Philadelphia County. Other counties with a large number of census blocks located in overburdened communities include Camden, Delaware, New Castle, Berks, Mercer, Lehigh, and Cumberland counties.

### *Equity Analysis*

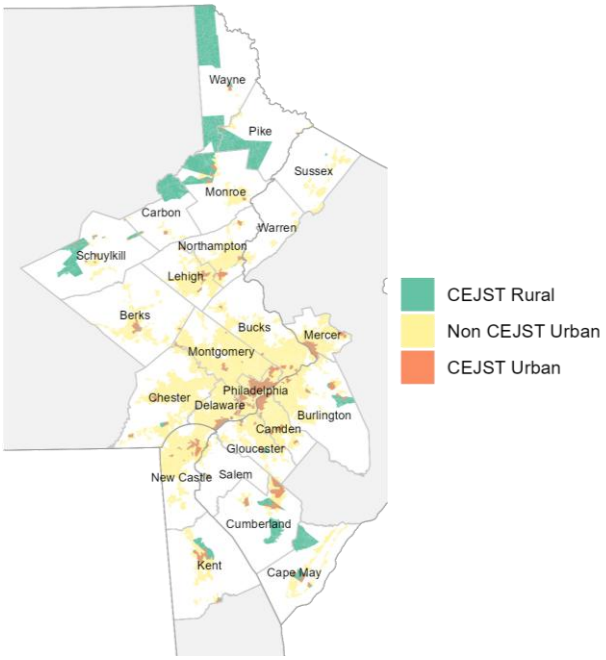
To determine if the financing per urban capita is equitably distributed, we compared the financing per urban capita with the percent of the urban population in areas classified as overburdened based on the Climate and Economic Justice Screening tool (CEJST)[9]. **Figure 18** shows the percentage of the urban population that is also in an area classified as overburdened by CEJST. As shown, the counties which have the largest percent of urban population residing in an overburdened area are Wayne County, Philadelphia County, and Cumberland County. **Figure 19** shows CEJST overburdened areas and urban areas with areas that are both overburdened and urban in orange.

**Figure 18:** % of Urban Population residing in CEJST overburdened area




**Source:** U.S Census Bureau, 2020 Census Urban Area and Council for Environmental Quality.

**Figure 19:** Rural CEJST, Non CEJST Urban, and CEJST Urban Areas




**Source:** U.S Census Bureau, 2020 Census Urban Area and Council for Environmental Quality.

[9] Climate and Economic Justice Screening Tool (CEJST), Council on Environmental Quality (CEQ). Version 1.0 https://screeningtool.geoplatform.gov/

### *Results Tables*

The table below presents results for all counties in the Delaware River Basin ordered by the Financing per Urban Capita.

| *County* | State | CWSRF Financing, July 2018 to June 2023 | CWSRF Subsidy, July 2018 to June 2023 | Urban Population | Financing per Urban Capita ($) | Subsidy per Urban Capita ($) | Percent Urban Population | Percent Urban Area | Percent of Urban Population that is also overburdened |
|---|---|---|---|---|---|---|---|---|---|
| *Wayne* | Pennsylvania | $8,962,296.68 | $1,835,424.00 | 7,018 | $1,277.04 | $261.53 | 13.72% | 0.76% | 59.87% |
| *Warren* | New Jersey | $26,230,114.00 | $0.00 | 62,271 | $421.23 | $0.00 | 56.80% | 6.69% | 12.96% |
| *Cape May* | New Jersey | $29,893,961.00 | $0.00 | 77,106 | $387.70 | $0.00 | 80.94% | 9.87% | 16.26% |
| *Camden* | New Jersey | $168,732,364.00 | $25,674,445.00 | 516,639 | $326.60 | $49.70 | 98.69% | 70.63% | 24.57% |
| *Kent* | Delaware | $28,479,181.00 | $0.00 | 133,471 | $213.37 | $0.00 | 73.40% | 10.25% | 23.59% |
| *Sussex* | New Jersey | $12,482,869.00 | $1,471,778.00 | 74,119 | $168.42 | $19.86 | 51.39% | 9.41% | 0.00% |
| *New Castle* | Delaware | $80,700,713.00 | $997,000.00 | 535,938 | $150.58 | $1.86 | 93.91% | 46.08% | 14.26% |
| *Gloucester* | New Jersey | $36,708,903.00 | $2,093,975.00 | 267,919 | $137.01 | $7.82 | 88.63% | 41.88% | 5.58% |
| *Salem* | New Jersey | $3,428,796.00 | $0.00 | 30,371 | $112.90 | $0.00 | 46.84% | 5.37% | 33.24% |
| *Burlington* | New Jersey | $43,923,508.00 | $1,783,138.00 | 416,722 | $105.40 | $4.28 | 90.23% | 25.09% | 6.97% |
| *Mercer* | New Jersey | $35,389,161.00 | $2,100,000.00 | 367,671 | $96.25 | $5.71 | 94.92% | 55.56% | 34.70% |
| *Philadelphia* | Pennsylvania | $128,491,720.00 | $0.00 | 1,603,797 | $80.12 | $0.00 | 100.00% | 99.57% | 63.71% |
| *Delaware* | Pennsylvania | $42,819,075.79 | $7,006,039.00 | 572,034 | $74.85 | $12.25 | 99.17% | 86.08% | 17.21% |
| *Bucks* | Pennsylvania | $8,576,617.52 | $556,730.00 | 580,301 | $14.78 | $0.96 | 89.76% | 43.88% | 4.21% |
| *Northampton* | Pennsylvania | $2,490,000.00 | $0.00 | 259,980 | $9.58 | $0.00 | 83.07% | 31.51% | 17.04% |
| *Cumberland* | New Jersey | $990,099.00 | $495,050.00 | 116,374 | $8.51 | $4.25 | 75.49% | 9.54% | 66.28% |
| *Montgomery* | Pennsylvania | $3,389,726.43 | $0.00 | 827,867 | $4.09 | $0.00 | 96.65% | 75.93% | 5.73% |
| *Chester* | Pennsylvania | $1,349,794.92 | $4,163,298.87 | 431,257 | $3.13 | $9.65 | 80.70% | 37.96% | 6.62% |
| *Berks* | Pennsylvania | $832,739.00 | $0.00 | 314,967 | $2.64 | $0.00 | 73.44% | 13.88% | 30.12% |
| *Schuylkill* | Pennsylvania | $0.00 | $0.00 | 75,653 | $0.00 | $0.00 | 52.89% | 3.91% | 43.17% |
| *Monroe* | Pennsylvania | $0.00 | $0.00 | 72,434 | $0.00 | $0.00 | 43.03% | 9.63% | 15.58% |
| *Carbon* | Pennsylvania | $0.00 | $0.00 | 26,601 | $0.00 | $0.00 | 41.08% | 3.14% | 34.84% |
| *Lehigh* | Pennsylvania | $0.00 | $0.00 | 337,572 | $0.00 | $0.00 | 90.13% | 39.71% | 28.90% |
| *Pike* | Pennsylvania | $0.00 | $0.00 | 7,366 | $0.00 | $0.00 | 12.58% | 2.67% | 20.83% |

The table below presents results for all counties in the Delaware River Basin ordered by the percent of the urban population this is also overburdened.

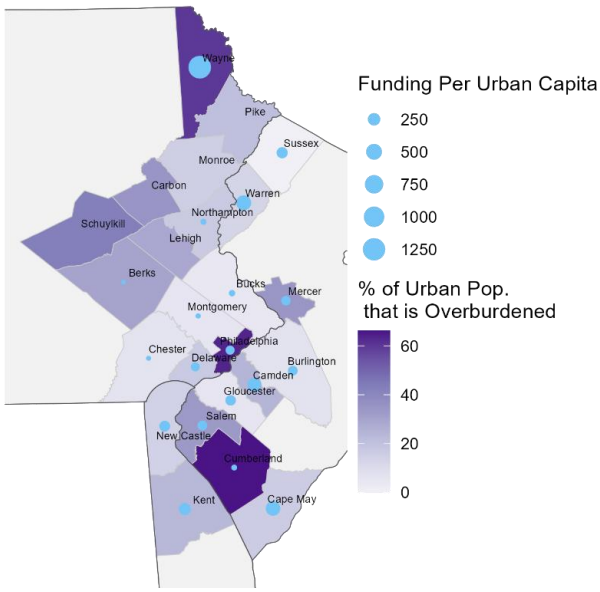
| *County* | State | CWSRF Financing, July 2018 to June 2023 | CWSRF Subsidy, July 2018 to June 2023 | Urban Population | Financing per Urban Capita ($) | Subsidy per Urban Capita ($) | Percent Urban Population | Percent Urban Area | Percent of Urban Population that is also overburdened |
|---|---|---|---|---|---|---|---|---|---|
| *Cumberland* | New Jersey | $990,099.00 | $495,050.00 | 116,374 | $8.51 | $4.25 | 75.49% | 9.54% | 66.28% |
| *Philadelphia* | Pennsylvania | $128,491,720.00 | $0.00 | 1,603,797 | $80.12 | $0.00 | 100.00% | 99.57% | 63.71% |
| *Wayne* | Pennsylvania | $8,962,296.68 | $1,835,424.00 | 7,018 | $1,277.04 | $261.53 | 13.72% | 0.76% | 59.87% |
| *Schuylkill* | Pennsylvania | $0.00 | $0.00 | 75,653 | $0.00 | $0.00 | 52.89% | 3.91% | 43.17% |
| *Carbon* | Pennsylvania | $0.00 | $0.00 | 26,601 | $0.00 | $0.00 | 41.08% | 3.14% | 34.84% |
| *Mercer* | New Jersey | $35,389,161.00 | $2,100,000.00 | 367,671 | $96.25 | $5.71 | 94.92% | 55.56% | 34.70% |
| *Salem* | New Jersey | $3,428,796.00 | $0.00 | 30,371 | $112.90 | $0.00 | 46.84% | 5.37% | 33.24% |
| *Berks* | Pennsylvania | $832,739.00 | $0.00 | 314,967 | $2.64 | $0.00 | 73.44% | 13.88% | 30.12% |
| *Lehigh* | Pennsylvania | $0.00 | $0.00 | 337,572 | $0.00 | $0.00 | 90.13% | 39.71% | 28.90% |
| *Camden* | New Jersey | $168,732,364.00 | $25,674,445.00 | 516,639 | $326.60 | $49.70 | 98.69% | 70.63% | 24.57% |
| *Kent* | Delaware | $28,479,181.00 | $0.00 | 133,471 | $213.37 | $0.00 | 73.40% | 10.25% | 23.59% |
| *Pike* | Pennsylvania | $0.00 | $0.00 | 7,366 | $0.00 | $0.00 | 12.58% | 2.67% | 20.83% |
| *Delaware* | Pennsylvania | $42,819,075.79 | $7,006,039.00 | 572,034 | $74.85 | $12.25 | 99.17% | 86.08% | 17.21% |
| *Northampton* | Pennsylvania | $2,490,000.00 | $0.00 | 259,980 | $9.58 | $0.00 | 83.07% | 31.51% | 17.04% |
| *Cape May* | New Jersey | $29,893,961.00 | $0.00 | 77,106 | $387.70 | $0.00 | 80.94% | 9.87% | 16.26% |
| *Monroe* | Pennsylvania | $0.00 | $0.00 | 72,434 | $0.00 | $0.00 | 43.03% | 9.63% | 15.58% |
| *New Castle* | Delaware | $80,700,713.00 | $997,000.00 | 535,938 | $150.58 | $1.86 | 93.91% | 46.08% | 14.26% |
| *Warren* | New Jersey | $26,230,114.00 | $0.00 | 62,271 | $421.23 | $0.00 | 56.80% | 6.69% | 12.96% |
| *Burlington* | New Jersey | $43,923,508.00 | $1,783,138.00 | 416,722 | $105.40 | $4.28 | 90.23% | 25.09% | 6.97% |
| *Chester* | Pennsylvania | $1,349,794.92 | $4,163,298.87 | 431,257 | $3.13 | $9.65 | 80.70% | 37.96% | 6.62% |
| *Montgomery* | Pennsylvania | $3,389,726.43 | $0.00 | 827,867 | $4.09 | $0.00 | 96.65% | 75.93% | 5.73% |
| *Gloucester* | New Jersey | $36,708,903.00 | $2,093,975.00 | 267,919 | $137.01 | $7.82 | 88.63% | 41.88% | 5.58% |
| *Bucks* | Pennsylvania | $8,576,617.52 | $556,730.00 | 580,301 | $14.78 | $0.96 | 89.76% | 43.88% | 4.21% |
| *Sussex* | New Jersey | $12,482,869.00 | $1,471,778.00 | 74,119 | $168.42 | $19.86 | 51.39% | 9.41% | 0.00% |

### *Conclusions*

The counties with the highest total financing per urban capita are Wayne County, Warren, Cape May, and Camden County. Wayne County has a small urban population but has received a very large amount of financing relative to other counties with a similarly size urban population. Wayne county also has the highest subsidy per urban capita of the counties included in the study area. Of the counties in the study area which are predominantly urban, Camden County received the largest amount of financing per urban capita.

Based on the analysis, additional progress needs to be made to ensure CWSRF subsidies are reaching communities in the Delaware River Basin that are designated as overburdened communities and should be eligible under the Justice40 initiative. There are some positives to note, as Wayne County which has a large percent overburdened urban population is receiving significant CWSRF financing and has also received additional financial subsidy to offset costs. Philadelphia did receive large amounts of financing through the CWSRF but has not received subsidies to reduce costs. The CEJST mapping highlights a large, overburdened population in Philadelphia and points to a need for additional financing and subsidies to ensure financing is equitably distributed across the Basin and reaches overburdened communities in Philadelphia County.[10] Additionally, equitable distribution of financing should also result in counties like Schuylkill and Carbon counties receiving more financing – both counties contain overburdened urban areas but have not benefited from CWSRF financing over the past five years.

**Figure 20:** Financing Per Urban Capita by County and Percent of Urban Population that is overburdened




**Source:** Clean Water State Revolving Fund Financing Database, EPA, and the U.S. Census Bureau.

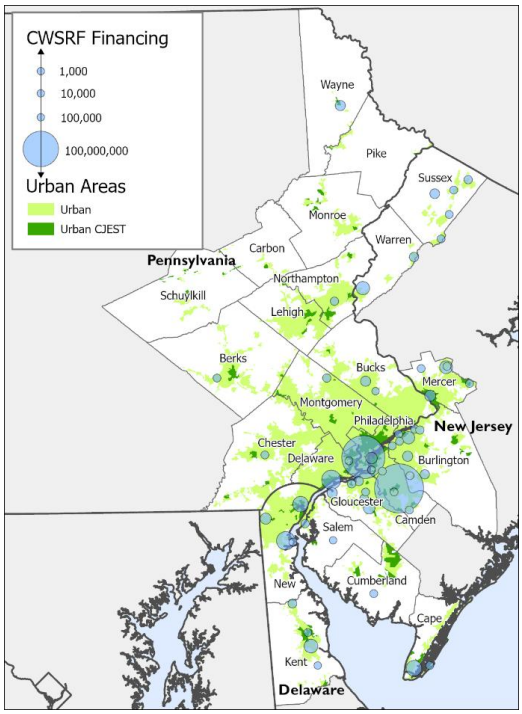
## Limitations

There are some key limitations in both methodologies. The SVI metric used in the DWSRF analysis is based on a 90-percentile threshold, and each drinking water system is given one point if the indicator values exceed the 90$^{th}$ percentile. This approach might result in some drinking water systems that experience socioeconomic vulnerabilities not getting flagged in this analysis. For example, a water system that has multiple indicator values in the 80-89% percentile range, but none above the 90$^{th}$ percentile would have an SVI of zero even though the residents served by the water system likely experience socioeconomic hardships.

[10] The authors acknowledge that the Philadelphia Water Department's wastewater treatment plants also serve 10 surrounding counties that have different financial capacity than Philadelphia County. Even considering this, Philadelphia County should be receiving some financing subsidies given its demographics and overburdened status.

On the CWSRF side, the usage of the county as the unit of analysis has some limitations. Counties represent a large geographic area, and using the county can mask differences within the county if the county contains urban populations with different socioeconomic statuses. An additional limitation is the usage of urban areas for determining the population that could receive CWSRF wastewater financing. It is likely that some rural populations are served by wastewater systems and the current methodology results in exclusion of some overburdened rural populations that should be eligible to receive additional CWSRF financing subsidies. This limitation could be addressed by having access to wastewater service area mapping[11].

**Figure 21:** CWSRF Financing by Location and Urban Areas




**Source:** Clean Water State Revolving Fund Financing Database, EPA, CJEST, and the U.S. Census Bureau.

## Overall Conclusions

Overall, the DWSRF and CWSRF analysis both show that environmental and socioeconomic vulnerabilities do impact SRF financing decisions for both drinking water and clean water financing. However, in both cases there are areas that have not received significant SRF financing despite experiencing economic and/or environmental hardships. A direct comparison between the two analyses is challenging due to the differences in methodology, the lack of wastewater service area mapping, and varying unit of analysis.

[11] A state level wastewater service area boundary dataset is available for New Jersey but was not available in Delaware or Pennsylvania.