A New Jersey Affordability Methodology and Assessment for Drinking Water and Sewer Utility Costs

A Project of New Jersey Future for Jersey Water Works

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I. Project Purpose and Background

This report presents a detailed methodology for assessing the extent to which current drinking water and sewer utility costs pose a major financial burden for New Jersey households. The report also provides the results from applying the methodology using utility rate schedules from the year 2020, and the most recent information on household incomes and expenditures. The report is intended to address a primary question that New Jersey, and indeed the nation, faces:

> **What is the geographic distribution and approximate number of households potentially facing affordability issues from water and sewer costs, if they receive no financial assistance?**

The resulting affordability assessment for New Jersey is one metric in the "Jersey WaterCheck" data dashboard from Jersey Water Works that will track progress in reaching the collaborative's goals. It will be available also as guidance for municipal, utility authority, utility and State efforts to understand and track household affordability issues and to improve affordability assistance at any appropriate level (e.g., utility, municipal or State). Finally, the methodology and assessment may be useful in ongoing decision-making at the state and national levels regarding household affordability issues and the potential development of affordability programs. The assessment methodology is not intended for direct use in design of an affordability program at the utility or state level, but it is intended to provide a solid sense of the magnitude and geographic distribution of affordability stresses. It also provides a method for assessing how rate decisions, affordability programs and financial support to utilities from the state or federal government may change the level of household affordability stresses.

The criteria for this New Jersey affordability assessment are:

1. Focus on households with legitimate affordability issues
2. Useable at the utility and larger (e.g., statewide) levels
3. Sufficient data are available for deriving the affordability assessments at relatively low cost
4. Affordability benchmarks can be developed
5. Affordability can be tracked over time
6. Realistic results

This report builds upon three prior reports for Jersey Water Works regarding the affordability of drinking water and sewer services for residential households in New Jersey. All reports were supported by grants to New Jersey Future, the Jersey Water Works backbone staff organization.

- **Van Abs and Evans, 2018, Assessing the Affordability of Water and Sewer Utility Costs in New Jersey: Phase 1 Report: Methodology Review and Preliminary Assessment.** This report was developed on behalf of Jersey Water Works by Rutgers University and New Jersey Future researchers. It summarized and tested a variety of affordability assessment methods which have been used or proposed in the United States.
- **Van Abs, 2020, Assessing the Affordability of Water and Sewer Utility Costs in New Jersey: Phase 2 Report: Conceptual Issues for a New Jersey Affordability Assessment Methodology.** This report uses the assessment methodologies reviewed in the Phase 1 report to suggest criteria for effective assessments of the affordability of

water utility services for households, and recommendations for affordability assessment in New Jersey. It was initial completed in June and then revised in November 2020 to reflect a reevaluation of essential household costs and net disposable income at the county level prepared by Kimberley Irby of New Jersey Future.

- **Van Abs, 2020, A New Jersey Assessment Methodology for Water and Sewer Utility Costs**. This white paper was provided in June 2020 to an expert panel and the Jersey Water Works Asset Management & Finance Committee for consideration. The white paper has been superseded by this report, where the final assessment methodology has been merged with the results of its implementation.

These prior products and this report support efforts of Jersey Water Works (JWW) for development of a consensus assessment method and threshold(s) for household affordability. This effort does not directly address affordability assessments relative to the ability of a utility to finance capital expenditures, operations, maintenance and major repairs. Utility-level assessments are used by the N.J. Department of Environmental Protection (NJDEP) and the U.S. Environmental Protection Agency (USEPA) to determine compliance schedules for system upgrades and can be used to target utility finance subsidies such as grants, loan forgiveness and low-interest loans. However, the findings from this report can be useful in augmenting such utility-level financial analyses.

II. Summary of Results and Recommendations

The major result of this investigation is that a detailed analysis of relative household affordability stresses in New Jersey is feasible given the wealth of available data on: utility rate schedules (compiled for this project, with 328 sewer systems and 266 water systems);[1] land use/land cover (from the NJ Department of Environmental Protection); population and household income distributions (U.S. Census Bureau); and essential expenditures (U.S Bureau of Labor Statistics).[2] Household affordability stresses can be determined for any year using current utility rate schedules, household incomes and household essential expenses. The methodology provides the number and percentage of households in each geographic area where the combined water and sewer costs exceed thresholds for affordability. The geographic areas are small; a unique combination of Census tract, and the drinking water and sewer utilities serving each tract. The results can be aggregated to any larger area, such as utility, municipality, county or state. This report provides results based on the combined costs of drinking water and sewer utilities, but the underlying spreadsheet model can be used to assess the relative impact of each utility cost. In addition, the underlying utility cost spreadsheets can be used to determine how costs for households could vary based on changes to water demands and the utility rate schedules.

While the methodology can be strengthened through additional research, the results are sufficiently robust to support planning and policy development. However, the methodology should not be used to assess affordability stresses for specific households, which is a different issue that requires confidential information not available for this project. In addition, it should be noted that the analysis is focused on potential household affordability stress; it was beyond the scope of the study to determine the extent to which these stresses may already be mitigated through existing laws and programs.

It must be emphasized that all affordability assessment thresholds are inherently somewhat subjective. Affordability is a continuum that changes with circumstances and time, and therefore no perfect metric or threshold exists. In the end, all thresholds involve value judgements and approximations. The point is to choose, assess, determine what lessons can be learned.

The affordability assessment methodology is an adaptation for New Jersey of the Affordability Ratio method proposed by Teodoro (2018). The methodology establishes thresholds above which household water bills cause affordability stress at three levels (baseline, high and severe) using percentages of household disposable income for households at the Lowest Quintile Income (LQI, which is the 20th percentile income level) for each county. Household disposable income is calculated as the LQI minus the essential (or non-discretionary) expenses for a household at that income level. The Phase 2 report, Appendix A, provides details on the derivation of essential expenses by county.

The percentages used for this assessment are as follows:

- **Baseline Affordability Stress**: 10 percent of Household Disposable Income
- **High Affordability Stress**: 20 percent of Household Disposable Income

[1] In New Jersey, roughly 90 percent of residents are served by drinking water and/or sewer utilities, representing slightly more than 2.8 million households. The utilities included in this analysis collectively serve more than 2.6 million households, or 91 percent of the total served statewide.

[2] Essential household expenses are discussed in detail in the Phase 2 report, and the process for deriving them is summarized in Section III.F on Disposable Household Income.

- **Severe Affordability Stress**: 30 percent of Household Disposable Income

The methodology is applied to each geographic area that represents a unique combination of drinking water utility, sewer utility and Census tract. The metric used here is the number of households (HH), rather than total population, as affordability is a household finance issue. Using these thresholds, the household income distribution for each Census tract, and 2020 water and sewer rate schedules, and the estimated number of households of each unique geographic area, the methodology then calculates the number and percentage of households in each geographic area where the combined water and sewer rates exceed the dollar thresholds for baseline, high and severe affordability stress.

The statewide results are shown in **Table ES-1** and **Figure ES-1**.[3] The analysis is based on the most recent household incomes and essential expenditures available as of early 2000, all of which pre-date the economic impacts of the SARS-CoV-2 (COVID-19) pandemic. As can be seen, the Baseline affordability threshold is potentially exceeded by roughly one-quarter of all households for which cost data were available. As expected, fewer households exceed the thresholds for High and Severe affordability stresses. Actual results will differ based on a variety of factors, including but not limited to household size, water use efficiency, who pays the utility costs (e.g., renters, landlord, homeowners), and subsidies. Therefore, these results should be seen as an "upper bound" result. Actual results are likely to be lower, and as affordability programs improve the difference between potential stresses and actual stresses would increase, reflecting a positive outcome for low-income households.

Table ES-1. Statewide Estimates of Potential Household (HH) Affordability Stress in Response to Combined Drinking Water and Sewer Costs

HHs in polygons with sufficient water and sewer cost data	Estimated # of HHs potentially exceeding Baseline threshold	Estimated # of HHs potentially exceeding High threshold	Estimated # of HHs potentially exceeding Severe threshold
2,658,052	546,270	480,157	457,705
	20.6%	18.1%	17.2%

For the largest water and sewer systems, the ranges of aggregate Baseline affordability stress range widely, from 5% of households to more than 50%. The same is true of aggregate results for the largest municipalities, ranging from less than 5% to more than 55%. A review of the statewide map confirms general expectations that areas with higher concentrations of low-income households will have greater affordability stresses. However, complicating this picture are the major differences in water and sewer costs[4] and the major differences in county values for essential household expenditures and therefore household disposable income.

Figure ES-2 is a closer look at one area of **Figure ES-1**, showing the area around Newark, NJ. One notable point is that there is significant geographic variation in results even within systems (the same is true for municipalities). Therefore, it would be incorrect to assume that household affordability issues for a single system can be fully understood at the system level. It is the

[3] See Chapter IV, Results, for a more detailed explanation of the mapping process.

[4] While the median and maximum costs are similar for the largest water utilities, the maximum costs for medium utilities are more than double the median costs. A similar pattern exists for sewer utilities, where the maximum costs are roughly double the median costs.

granular, polygon-based analysis of this methodology that provides a wealth of information not available with generalized methods.

Inevitably, the project team identified ways in which this methodology could be strengthened, as discussed in the section on **Research and Development**. In summary, these research and development efforts would include a more detailed analysis of selected areas with high affordability stresses to determine the extent to which the stresses may be alleviated (e.g., housing subsidies, rent regulation, rate subsidies for military veterans and senior citizens) or hidden from the direct consumer (e.g., utilities paid by landlords rather than by tenants).[5] Further work on county-level essential household expenses would be useful, along with an evaluation of whether those expenses vary significantly for household incomes below and above the LQI. Regarding water demands, the methodology uses a "nominal household demand" of 45,000 gallons per year based on prior research. Research on the relationship between household size and demands would provide a more nuanced view of actual water costs. Finally, a sensitivity analysis could be conducted to show the effects on affordability stress of utility cost trends and rate schedules (e.g., the ratio between fixed and volumetric charges for households using different amounts of water).

The affordability assessment methodology and findings provided in this report represent a major step forward for New Jersey decision makers. Affordability stresses can be assessed statewide and down to a granular level. The methodology also provides a way of understanding the implications of cost increases on affordability at any geographic level. We recommend use of this report to develop approaches at all levels, from utility to national, for mitigating household affordability stresses related to drinking water and sewer utility costs.

The remainder of this report provide the detailed methodology and results.

[5] Additional information on these issues is presented in a report to Jersey Water Works by the Natural Resources Defense Council (2019), Promoting Affordability of Public Water and Sewer Service for Low-Income Households in New Jersey: Policy Options.

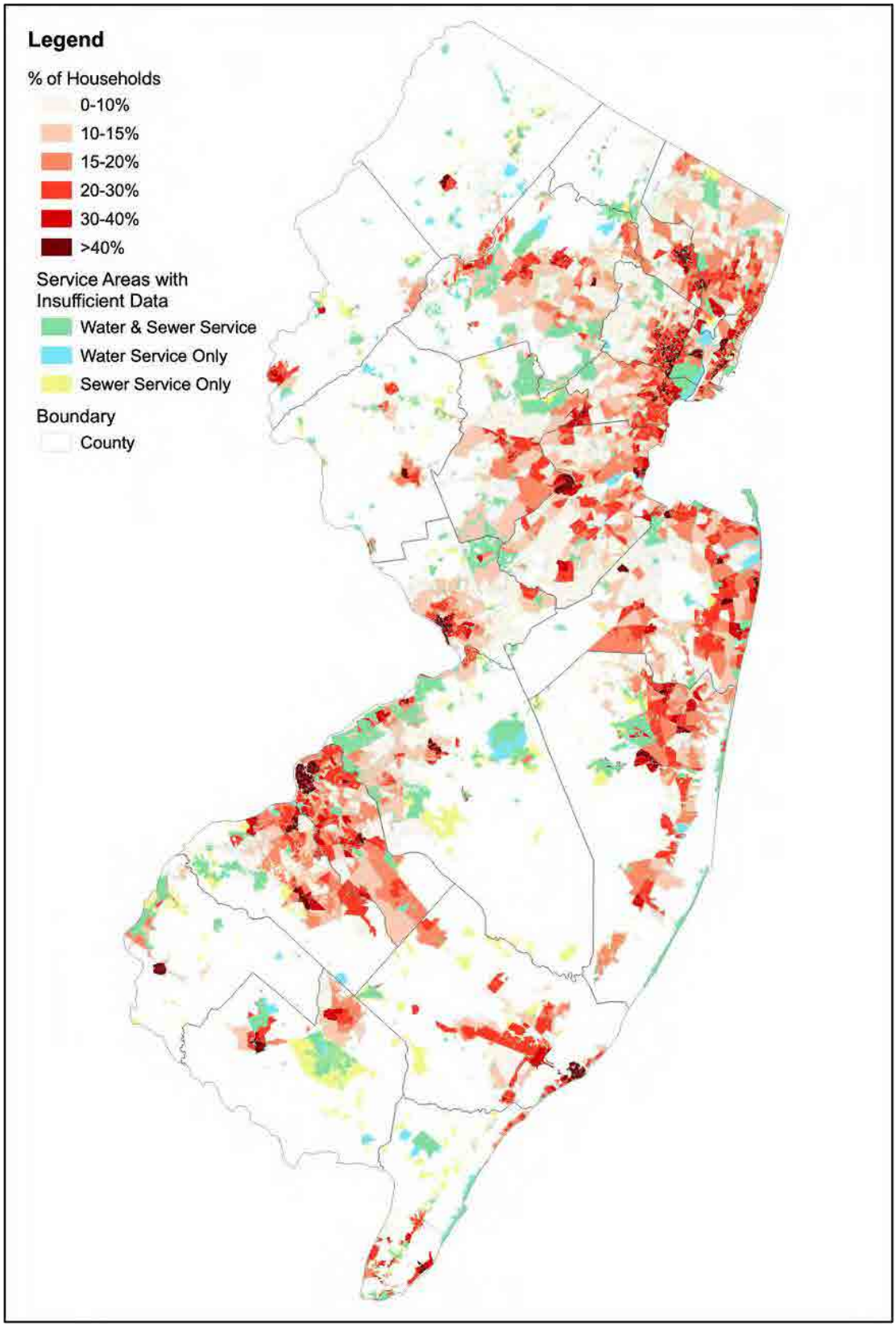

Figure ES-1. Estimated Percentage of Households Exceeding Baseline Affordability Threshold

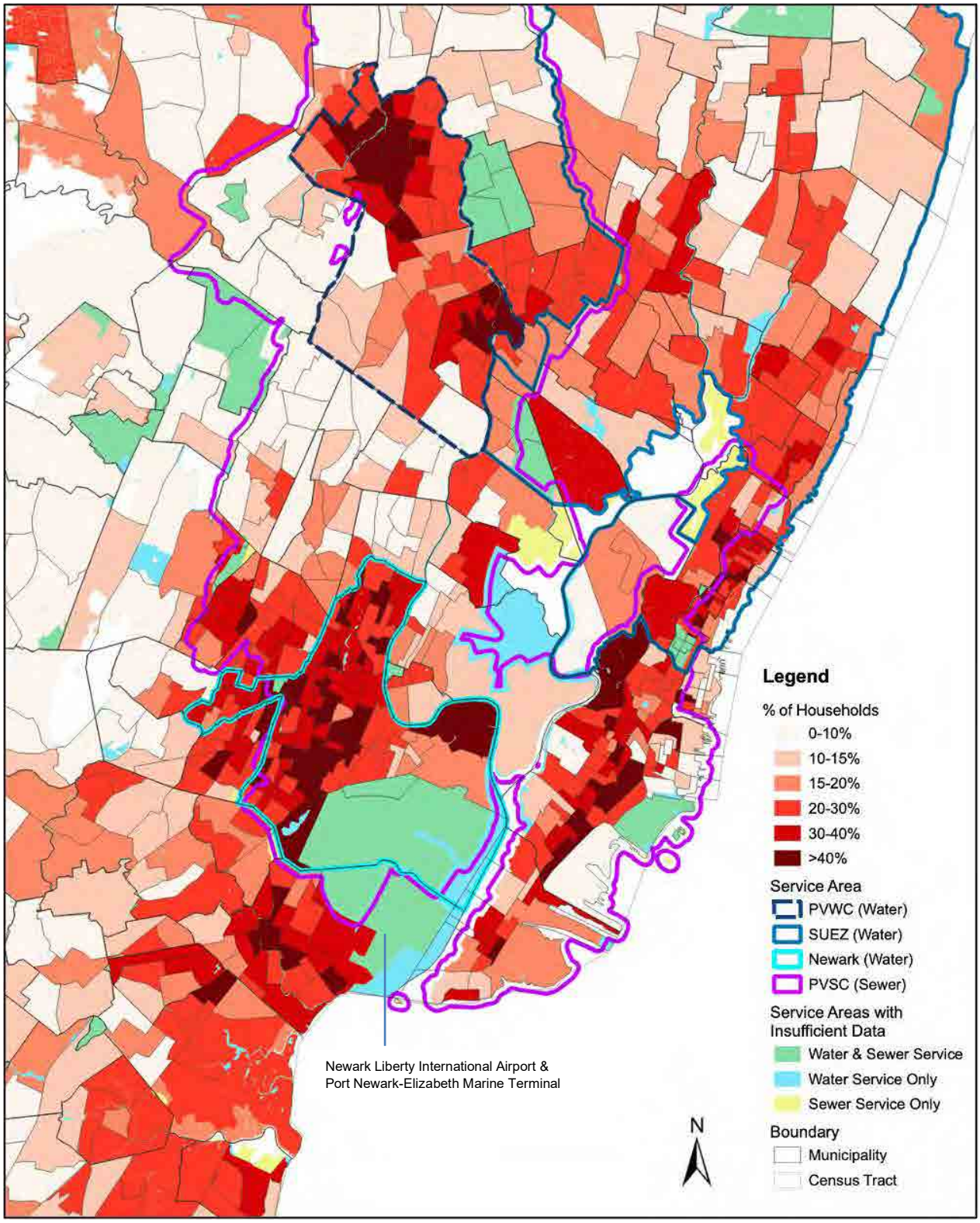

Figure ES-2. Estimated Percentage of Households Exceeding Baseline Affordability Threshold: Newark Area

III. Methodology

This section provides an overview and details of the affordability assessment methodology as applied to New Jersey utility information and household demographics.

A. Overview

The methodology will allow for an estimation of the number and percent of households in a geographic area for whom combined drinking water and sewer rates impose a Severe, High or Baseline affordability stress based on a comparison of rates to threshold percentages of their disposable income. The methodology requires several steps of data gathering, followed by analysis of the data against affordability thresholds. No information is required from individual households for this approach. The general steps are as follows:

1. **Water Utility Rates**: The drinking water and sewer utility (i.e., water utility) rate schedules for the target geographic area (state, county, utility) must be compiled and assessed to understand if and how rates per volume change with increasing demands.
2. **Baseline Service Level**: A level of per capita demand must be established that constitutes a volume of water deemed essential for normal household uses, not including outdoor uses or any luxury demands. A nominal household size must be selected, multiplied by the per capita demand to yield a nominal household demand at the baseline service level.
3. **Water Utility Costs for Baseline Water Demands**: For each utility, the costs are the annual charges for the baseline service level for the nominal household size. The total utility costs are the combined costs of drinking water and sewer service for the nominal household.
4. **Income Metrics**: Household income must be assessed at the Census tract level, so that analytical results are not skewed at the larger geographic aggregations such as utility, county or state. The number of households at each income range are collected for each Census tract.
5. **Disposable Household Income**: Then, a household income statistic must be selected to serve as a representative household income. The county 20th percentile income (Lowest Quintile Income) is used here. Given cost of living differences within New Jersey, household income must be adjusted to reflect necessary or essential expenses, to provide an estimate of available income against which water utility costs are compared. The adjustments should be as fine scale as data allow.
6. **Comparison of Utility Costs to Available Household Income**: The comparison here is utility costs as a percentage of disposable household income.
7. **Comparison Against Thresholds**: The methodology uses a range of thresholds to identify the number of households for which current water utility rates exceed each threshold, indicating affordability stresses for the representative households. The Baseline, High and Severe thresholds are represented by specific percentages (10, 20 and 30 percent, respectively) of Household Disposable Income for a household at the Lowest Quintile Income.

8. **Aggregation of Results**: The results of this analysis at the Census tract level are then aggregated to the utility, county or statewide level.

B. Water Utility Rate Schedules

Roughly 90 percent of New Jersey households are served by drinking water and sewer utilities. Unlike household income and expenditure information, there is no centralized database that routinely collects rate schedules for all drinking water and sewer utilities in New Jersey. Nor is there a standard format for rate schedules that simplifies the comparison of rates and costs. Rate schedules may or may not be available to the public using online resources. For this reason, compiling and interpreting rate schedules was the most complicated and time-consuming portion of the project. One recommendation resulting from this project is that state guidance be developed on methods to improve the clarity of rate schedules, and that a statewide information site be developed where utilities would upload their rate schedules.

Drinking water and sewer utility rates are generally based on one or more methods of assigning costs to ratepayers:

- **Fixed charges** – a cost, often quarterly but sometimes annual, that is paid by a household regardless of how much water they use or sewage they generate.
- **Volumetric charges** – a cost per thousand gallons or hundred cubic feet (equivalent to 748 gallons) of water used or sewage generated.

In some cases, utilities (especially sewer utilities that do not have access to water demand data) rely entirely on a fixed charge (all households pay the same amount regardless of demand). Drinking water utilities are more likely to combine a fixed charge plus a volumetric charge, as are many sewer utilities. A few utilities use only a pure volumetric (no fixed charge), while roughly 80 sewer utilities do not charge residential customers at all, as utility costs are covered through property taxes.

In this report, rate schedules from early to mid-2020 are used. Rates were collected by Rutgers team members. The rate schedules were available from a variety of sources: online utility web sites; municipal ordinance codes (primarily accessed through https://eCode360.com), the Board of Public Utilities, and direct inquiries by email and telephone. Rate schedules were compiled, to the extent possible, for all drinking water systems with more than 3,300 residents and some smaller systems, a total of 266 systems representing nearly 90 percent of all households with drinking water service.[6] All these systems are regulated under state permits. Through Jersey Water Works, and as part of a Jersey WaterCheck project, all utilities whose rates were gathered were requested to examine and recommend corrections to the resulting costs, an opportunity that some utilities did take. However, despite the efforts made, the project team cannot guarantee total success in interpreting rate schedules.

For the sewer utilities, rates were collected for all utilities contributing sewage flows to the largest treatment plants comprising a total of 95% of all sewage flow in New Jersey, a total of 328 systems representing nearly 90 percent of all households with sewer service. The situation

[6] A drinking water system is a contiguous distribution system under single ownership, which may deliver water from its own supplies and treatment system, from another system that provides treated or untreated water through bulk sales, or a combination thereof. Likewise, a sewer system is a contiguous collection system under single ownership, which may include a treatment plant or may send the wastewater to a regional treatment facility. A utility is an ownership entity, which may include multiple independent systems.

for sewer systems is more complicated than for drinking water systems, as in many cases a regional treatment plant that is directly regulated by NJDEP will accept sewage from many municipalities and municipal utility authorities that are not similarly regulated by NJDEP (through NJPDES permits) because they do not own a treatment plant. In most cases, the regional utility charges the contributing systems based on total volume, and the contributing systems then bill residential customers directly (potentially including both the regional utility charge and a local charge). The Camden County Municipal Utilities Authority (CCMUA) is a major exception to this approach, as it bills residential customers directly. Where a regional treatment plant receives sewage from contributing systems with their own customer base and rates, the rates for those municipal system or municipal utility authorities were collected. In the case of CCMUA, the rates for CCMUA were added to the local collection system charge, if any.

As discussed in the Phase 1 report, one analytical complexity is that rental households in multi-family apartment complexes pay water utility costs through their rents, rather than directly. For this report, the assumption is that all households pay their utility costs directly, as a first-level assessment. Also, this methodology does *not* address how affordability stresses could be modified through rate schedule changes (e.g., shifting from heavy dependence on fixed charges to more use of volumetric charges). The focus here is on “what is”, not “what could be.”

C. Baseline Service Level

Baseline service levels require determination of a per capita demand and a household size that are used as the basis for comparison to rates, as a “nominal household”. In reality, a wide range of per capita demands and household sizes exist in all areas. Higher levels of precision will result in more complicated calculations. For a large-scale methodology, the assumptions are focused on simplicity of analysis.

This methodology uses **40 gpcd** (14,600 gallons per year per person) as most appropriate for New Jersey use. This demand level is based on national practice and recommendations documented in the Phase 2 report, which range from 35 to 50 gallons per person per day (gpcd), and New Jersey demand evaluations which indicate typical water demands of 40 to 60 gpcd for high-density development.

The justification is that the 50 gpcd levels recommended nationally are intended to address typical baseline needs across a wide variety of climates, including some for which higher indoor demands are a necessity for a basic quality of life. On the other hand, 35 gpcd is considered a constrained demand that requires either high-efficiency appliances for all water demands (which is likely unaffordable to low-income households) or major constraints on normal water demands. In Van Abs et al. (2018),[7] the average demand for high-density development, non-summer use in the Highlands/Ridge and Valley areas was 42 gpcd, and the Coastal Plain was 48 gpcd. These values reflect water demands for a variety of household incomes and sizes. Therefore, a level of 40 gpcd is more reasonable for New Jersey, selected to reflect a water lifestyle that is water conserving but not highly constrained.

The second part of this step is to multiply the 40 gpcd by a household size. New Jersey’s average household size is 2.71, with 2.81 for owner-occupied and 2.52 for renter-occupied. These values are slightly different, but the municipal distributions for these figures are even

[7] Van Abs, Daniel, Jiayi Ding and Eric Pierson. 2018. Water Needs through 2040 for New Jersey Public Community Water Supply Systems. Rutgers University, New Brunswick, NJ. https://www.danvanabs.com/recent-projects.html

more different, with the averages of all municipalities at 2.78 for owner-occupied and 2.33 for renter-occupied.

However, recognizing that the municipal averages are not population-weighted, this methodology uses the statewide average, rounded up to **3 persons per household**.[8] As a result, the household water use is 120 gpcd, or 43,800 gallons per year per household. Again, for ease of calculation, a rounded figure of **45,000 gallons per year per household** will be used.

D. Water Utility Costs for Baseline Water Demands

Combined water utility costs are determined by applying the rate schedule to demands (in this case the baseline service level) using both fixed and volumetric charges as applicable. Only where the municipality covers all utility costs through property taxes will there be no utility charge. Combined water utility costs are then determined for each unique relationship of drinking water and sewer utilities within a Census tract. In other words, if two sewer utilities and one drinking water utility serve areas within the Census tract, there would be two unique relationships (Sewer 1 and Drinking Water; Sewer 2 and Drinking Water) to be summed.

E. Income Metrics

For this methodology, the **Lowest Quintile Income, or LQI** (i.e., 20th Percentile Household Income) is used to develop thresholds of affordability; it is the highest income of the lowest quintile of household incomes. The latest American Community Survey (ACS) from the Census Bureau will generally be the best available source of income information, recognizing that there is inherent uncertainty in these estimates due to sample size. (Census data should be used when relatively recent.) It is recognized that households with even lower incomes will be more stressed than those actually at the LQI. However, use of the LQI represents a major improvement over the use of USEPA's median household income, and does not involve so many income metrics that the methodology becomes cumbersome. LQI estimates are developed at the county level. Where a utility service area includes more than one county, the relevant LQI for each county is used to derive affordability thresholds in the relevant Census tracts.

[8] The use of this value represents a shift from the Phase 1 report, which used 4 persons per household to reflect national practice.

Household incomes at the Census Tract level are used for comparison to water utility costs for baseline demands for each drinking water and sewer system associated with each Census Tract. For this methodology, information at the Census tract is used to provide a high level of resolution within larger geographic areas such as utility, county and state.[9] The methodology recognizes that households above the LQI could exceed the affordability thresholds in some areas, which households below the LQI could be within the affordability thresholds in other areas (e.g., areas with relatively high incomes and low utility costs).

F. Disposable Household Income

There is no compiled government analysis of what part of the LQI should be considered available to address utility and other costs. Therefore, this report relies on a modification of the Teodoro (2018) approach of estimating disposable income by subtracting "essential household expenses" (other than water and sewer costs) using the Consumer Expenditure Survey (CEX) from the U.S. Bureau of Labor Statistics. The term "essential" goes beyond survival to encompass normal, necessary uses associated with household functions, and not including luxury items.

While the Teodoro methodology is generally used at the metropolitan area level or larger, Teodoro (a member of the expert advisory panel for this project) suggested that many New Jersey counties have sufficient population to justify use at that that level, recognizing that there may be a need to aggregate the very smallest counties in the Delaware Bay Area-Cape May, Cumberland, Salem. The CEX survey samples are of actual households across a wide range of incomes to determine actual expenditures. To avoid the use of aggregate expenditures across a full range of household incomes, Teodoro (2020) estimated "essential non-water expenditures …with a regression model, which used Bureau of Labor Statistics Consumer Expenditure Survey data to estimate expenditures on taxes, housing, health care, food, and home energy. Coefficients from that model were combined with ACS data on demographics and income for each utility to estimate essential expenditures at the 20th percentile income for a family of four."[10] It is recognized that the boundaries of the Disposable Household Income analysis will often not coincide with the boundaries of water or sewer utilities compiled by the NJDEP. For this reason, GIS relationships must be established to allow comparisons for each unique geographic area.

The methodology relies on county-level assessments of essential expenditures and LQI, as discussed in detail in Appendix A of the revised Phase 2 report. Essential expenditures are defined for this project as they were in Teodoro (2018) except for the addition of transportation costs, which are often considered an adjunct cost to housing. Utility-level LQI information would have provided a greater level of resolution. However, the affordability thresholds are applied to a combination of water and sewer utility rates, and many water and sewer utilities do not have contiguous boundaries. The resulting complexity of analysis made the use of utility-level LQI

[9] In addition, at the utility level, the Environmental Finance Center at the University of North Carolina has developed a valuable tool that allows evaluation of rates across a wide spectrum of household incomes. This tool can help utilities and municipalities understand the specific income distributions and stresses of households in their jurisdiction. It can be used at any geographic level down to Census tract, but not in a manner that is easy to aggregate. Water & Wastewater Residential Rates Affordability Assessment Tool, https://efc.sog.unc.edu/resource/water-and-wastewater-residential-rates-affordability-assessment-tool

[10] Teodoro, Manuel P., and Robin Rose Saywitz. 2020. Water and sewer affordability in the United States: a 2019 Update. AWWA Water Science 2020; e1176. DOI: 10.1002/aws2.1176. For this methodology, a household size of four persons was used.

results untenable for disposable household income.[11] Sufficient CEX data were available to derive estimates of essential expenditures for each county without aggregation. The result of the analysis is a county-level estimate of essential expenditures and Household Disposable Income at the LQI.

Table 1 shows the results for New Jersey's 21 counties, along with a statewide population-weighted average for comparison. The range of LQI and annual disposable incomes are from a high of $50,000 and over $17,000 in Hunterdon County (which has a median home value of $433,000), to less than $19,000 and $1,500 in Cumberland County (which has a median home value of $172,000),[12] differences of 2.66 and 11.5 times. On the other hand, the range of annual essential expenditures is from nearly $33,000 to just over $17,000, a difference of 1.9 times, driven considerably by housing costs. The range of disposable income as a percentage of LQI is also wide, from a low of 8% in Cumberland County to a high of 34.5% in Hunterdon County, a four-fold increase.

Table 1. Annual Disposable Household Income at Lowest Quintile Income by County

County	20th Percentile Income (LQI)	Monthly Essential Expenditures	Annual Essential Expenditures	Annual Disposable Income	Disposable Income as % of LQI
Atlantic	$23,104	$1,735	$20,820	$2,284	9.9%
Bergen	$37,211	$2,278	$27,336	$9,875	26.5%
Burlington	$39,344	$2,255	$27,060	$12,284	31.2%
Camden	$24,911	$1,807	$21,684	$3,227	13.0%
Cape May	$28,461	$1,999	$23,988	$4,473	15.7%
Cumberland	$18,782	$1,440	$17,280	$1,502	8.0%
Essex	$20,389	$1,527	$18,324	$2,065	10.1%
Gloucester	$35,788	$2,172	$26,064	$9,724	27.2%
Hudson	$25,091	$1,800	$21,600	$3,491	13.9%
Hunterdon	$50,005	$2,728	$32,736	$17,269	34.5%
Mercer	$29,115	$1,924	$23,088	$6,027	20.7%
Middlesex	$35,925	$2,212	$26,544	$9,381	26.1%
Monmouth	$37,853	$2,294	$27,528	$10,325	27.3%
Morris	$48,912	$2,668	$32,016	$16,896	34.5%
Ocean	$28,577	$1,969	$23,628	$4,949	17.3%
Passaic	$24,817	$1,744	$20,928	$3,889	15.7%
Salem	$22,490	$1,655	$19,860	$2,630	11.7%
Somerset	$47,381	$2,632	$31,584	$15,797	33.3%
Sussex	$41,940	$2,385	$28,620	$13,320	31.8%
Union	$31,951	$1,998	$23,976	$7,975	25.0%
Warren	$32,699	$2,074	$24,888	$7,811	23.9%
Weighted Avg	**$32,900**	**$2,072**	**$24,865**	**$8,035**	24.4%
Maximum	$50,005	$2,728	$32,736	$17,269	34.5%
Minimum	$18,782	$1,440	$17,280	$1,502	8.0%

[11] It should be noted that household income data for each combination of water and sewer service area are used to determine the number of households that may face affordability stresses, as discussed in later sections.
[12] Both median home values are from the National Association of Realtors, at https://www.nar.realtor/research-and-statistics/housing-statistics/county-median-home-prices-and-monthly-mortgage-payment.

These ranges show the usefulness and also the difficulty of using such metrics. It is clear that the counties vary enormously regarding their household income metrics, essential expenditures and disposable incomes, so it makes sense that a household at the LQI in each county will be more or less stressed by equal water utility costs. However, a household income of $20,000 in any county would mean that the household faces severe constraints regardless of cost of living. Further research into this question would be useful. In addition, the project team did analyze the extent to which essential expenditures increase with income, by estimating essential expenditures at the 40th percentile level using the same methodology as for the LQI. The purpose was to determine whether the essential expenditures differed markedly at the two income levels, and whether those differences required incorporation of graduated essential expenditures across incomes. The result of a preliminary analysis indicates that using graduated essential expenditures would provide limited additional precision to the methodology, but at a major cost of complexity in the spreadsheet model. The use of the 20th percentile essential expenditures across all incomes may underestimate affordability stresses. However, some households may already receive financial assistance, resulting in an overestimate of affordability stresses. Therefore, the project team decided to not use graduated essential expenditures due to modeling complexity, but rather use the 20th percentile essential expenditures throughout.

G. Comparison Against Thresholds

This methodology uses a **three-threshold approach**, where an initial (baseline) threshold would be used to identify the number of households that are potentially stressed by combined water utility costs. The other two thresholds would indicate high and severe stress. A three-tier approach has also been recommended by Raucher, et al., and the California Water Resources Control Board, and implemented by Philadelphia. All of these methods recommend using combined utility costs, as used in this methodology. However, the methodology below differs from these other approaches regarding purpose (assessment versus customer assistance), structure (single metric or multi-metric) or details. Raucher, et al., is focused on assessment using two metrics: a comparison of Household Burden Index (a household indicator similar to the approach recommended herein) and Poverty Prevalence Indicator (a community indicator). California WRCB is focused on customer assistance, using thresholds for utility costs relative to a percentage of the federal poverty level; this is similar to the Philadelphia customer assistance program implemented in 2017.

Again, it must be emphasized that all affordability assessment thresholds are inherently somewhat subjective. Affordability is a continuum that changes with circumstances and time, and therefore no perfect metric or threshold exists. In the end, all thresholds involve value judgements and approximations. The point is to choose, assess, determine what lessons can be learned. With experience, we can modify the choices if necessary and reassess over time.

1. Multi-tier Affordability Thresholds

The affordability assessment uses the following three thresholds, based on total water utility costs for basic demands as a percentage of Household Disposable Income for a three-person household at LQI:

1. **Severe Affordability Stress: 30 percent of Household Disposable Income**
2. **High Affordability Stress: 20 percent of Household Disposable Income**
3. **Baseline Affordability Stress: 10 percent of Household Disposable Income**

2. Justification for Thresholds

Raucher et al. uses a "Very High Burden" threshold of 10% of LQI for their Household Burden Index. This threshold is equivalent, at the national level, to a burden of 4% MHI (USEPA's threshold), as discussed in the Phase 2 report. That is, a combined water utility bill that represents 4% MHI would be 10% of LQI using national figures. However, they acknowledge the benefit of incorporating cost of living in the index; at LQI, households are *highly* stressed financially. As noted in the prior reports for this project, the Household Survival Budget from the United For ALICE project show that even under a *higher* income than the LQI, many families are not financially viable and yet are typically ineligible for government assistance such as LI-HEAP. According to the United For ALICE project, costs for a New Jersey family of four (two adults, one infant and one preschooler) was $74,748 (2018 report), while the New Jersey LQI used here is $32,900.

The calculated New Jersey statewide Household Disposable Income ($8,035) as reported in the revised Phase 2 report amounts to 24.4% of the statewide LQI of $32,900. Ten percent of total LQI ($3,290) would be 40.9% of Household Disposable Income at LQI. This value would be an extremely large portion of a household budget at LQI. More appropriately, as Household Disposable Income declines, the income reasonably available for combined water and sewer utility costs would also decline. This approach recognizes that as disposable income falls, more choices must be made regarding fundamental costs of living, and non-essential purchases become impossible to maintain. Therefore, an expenditure of 10% of Household Disposable Income at LQI on water utilities is proposed as the threshold level of a baseline stressed budget for the nominal household of three with a nominal annual water demand of 45,000 gallons.

Based on this threshold for Baseline Affordability Stress, the thresholds for High Affordability Stress and Severe Affordability Stress are stepped up in 10% increments. This increment recognizes that lower thresholds will reduce stress, but the increments are not specifically based on a level of stress, as no studies are available assess this relationship.

Essentially, this methodology uses the Teodoro Affordability Ratio method but with some different values for annual water demand. **Table 2** shows the maximum combined water utility costs (i.e., drinking water and sewer) that would not exceed each of the three thresholds, relative to various incomes at or below the statewide LQI. As income drops, the dollar results from the thresholds also drop, to a point where for the lowest income tiers, there is no affordable combined utility cost. Given New Jersey's high cost of living, this result is reasonable.

Table 2. Combined Water Utility Costs at Affordability Thresholds

Total Household Income (HHI)	Essential Expenses: Statewide at LQI	Household Disposable Income	Maximum Combined Water and Sewer Utility Costs at Thresholds		
			Baseline	***High***	***Severe***
			10%	***20%***	***30%***
$32,900 (LQI)	$24,865	$8,035	$804	$1,607	$2,411
$30,000	$24,865	$5,135	$514	$1,027	$1,541
$25,000	$24,865	$135	$14	$27	$41
$20,000	$24,865	($4,865)	($487)	($973)	($1,460)
$15,000	$24,865	($9,865)	($987)	($1,973)	($2,960)

These results are compared in **Table 3** to the 2020 water and sewer utility cost statistics in New Jersey. The amounts shown in the last three columns are the extent to which the various cost statistics, from maximum to minimum, exceed the cost thresholds in Table 1 at LQI. As shown, combined water utility costs at the maximum level are far higher than all the thresholds, while combined water utility costs at the minimum and population-weighted average level are routinely below all the thresholds.

Table 3. Comparison of NJ Combined Residential Water Utility Costs (45,000 gallons per year per household) to Threshold Maximums at LQI

Statistic	Amount	Amount in Excess of 10% Threshold	Amount in Excess of 20% Threshold	Amount in Excess of 30% Threshold
MAXIMUM	$1,612	$809	$5	($799)
MINIMUM	$66	($738)	($1,541)	($2,345)
WEIGHTED AVG	$673	($131)	($934)	($1,738)

Table 4 then compares the weighted average combined utility costs from Table 3 to the household disposable incomes from Table 2. The results at the LQI are the same as in Table 3. At lower levels of household disposable income, the thresholds are all exceeded and to increasing levels.

Table 4. NJ Combined Residential Weighted Average Water and Sewer Utility Costs (45,000 gallons per year per household) Compared to Household Disposable Income

Household Disposable Income	Weighted Average Utility Costs	Amount in Excess of 10% Threshold	Amount in Excess of 20% Threshold	Amount in Excess of 30% Threshold
$8,035 (at LQI)	$673	($131)	($934)	($1,738)
$5,135	$673	$160	($354)	($868)
$135	$673	$660	$646	$633
($4,865)	$673	$1,160	$1,646	$2,133
($9,865)	$673	$1,660	$2,646	$3,633

The utility cost statistics are as shown in **Table 5a** and **Figure 1** for sewer systems and **Table 5b** and **Figure 2** for drinking water systems.

In **Table 5a**, the sewer utilities are grouped by treatment plant size. Note that regional systems receive sewage from multiple municipalities, each of which may have its own rates that incorporate the regional utility costs (usually charged to the municipal utility or municipal utility authority as a lump sum) plus local utility costs. In addition, 81 municipalities that run sewage collection systems do not charge residential users (primarily in the Bergen County Utilities Authority district); instead, all residential costs are paid through the municipal general budgets using the ad valorem property tax; these municipalities are not included in the statistics. As can be seen, there are large differences between minimum and maximum costs. The highest maximums are shown in the Medium category, while the lowest minimum costs are in municipalities within the High category. The Medium category also has the highest difference between median and maximum costs.

Table 5a. Sewer Utility Residential Costs (45,000 gallons per year per household)					
System Priority (Based on Treatment Plant Flows)	**Minimum**	**Median**	**Maximum**	**# of Utilities**	**# Prop Tax**
High (STP>19 MGD average flow)	$30.08	$370.00	$840.00	245	77
Medium (STP>2 MGD average flow)	$100.00	$460.00	$1,200.00	43	3
Low (STP>0.5 MGD average flow)	$247.18	$461.25	$827.40	33	1
Very Low (STP<0.5 MGD average flow)	$504.30	$909.50	$909.50	7	0
All Systems	$30.08	$399.50	$1,200.00	328	81

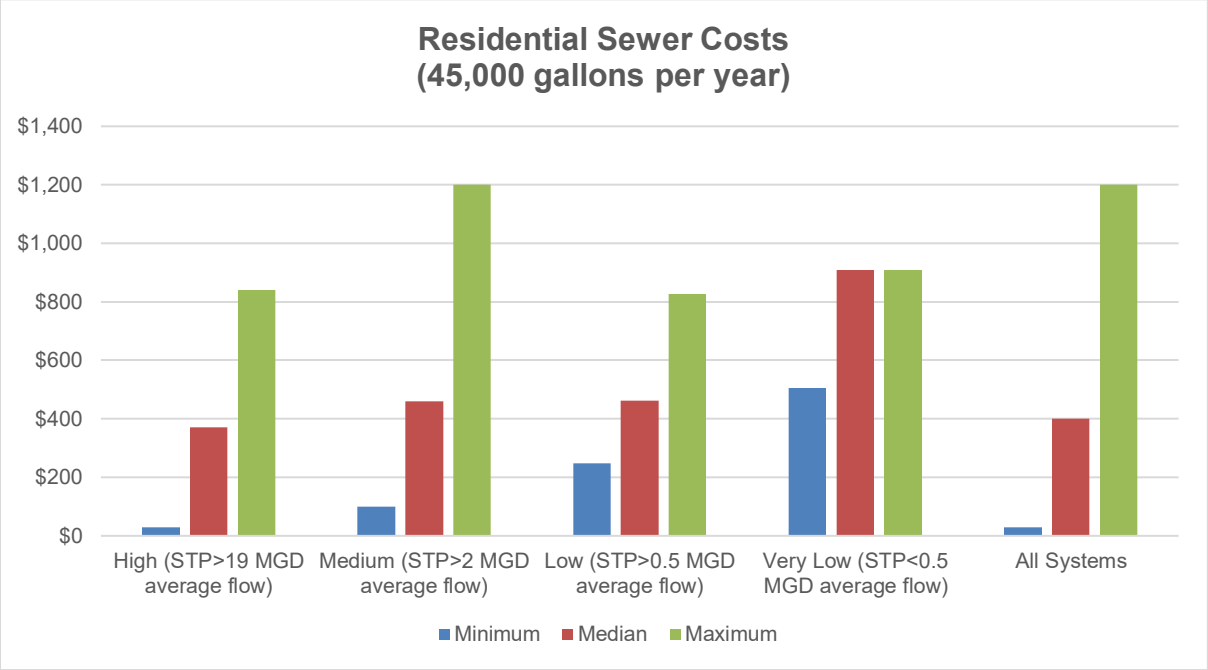

Figure 1. Residential Sewer Costs (45,000 gallons per year per household)

For drinking water utilities, **Table 5b** is reported by utility size. In this case, of the systems for which rates were compiled, no systems reported use of the property tax to cover residential costs. As with the sewer systems, there are major differences between minimum and maximum costs by utility size. In this case, the lowest minimums and highest maximums are for Medium (3,300 to <10,000) systems.

Table 5b. Drinking Water Utility Residential Costs (45,000 gallons per year per household)				
System Size (Estimated Population Served)	**Minimum**	**Median**	**Maximum**	**# Utilities**
Very Large (>100,000)	$111.73	$480.43	$562.94	14
Large (50,000 to <100,000)	$106.65	$274.59	$366.82	11
Medium (10,000 to <50,000)	$88.80	$262.98	$726.49	138
Medium (3,300 to <10,000)	$66.28	$351.50	$920.00	78
Small (500 to <3,300)	$215.16	$490.39	$695.55	23
Very Small (<500)	$251.04	$470.48	$539.93	21
All Systems	$66.28	$324.45	$920.00	266

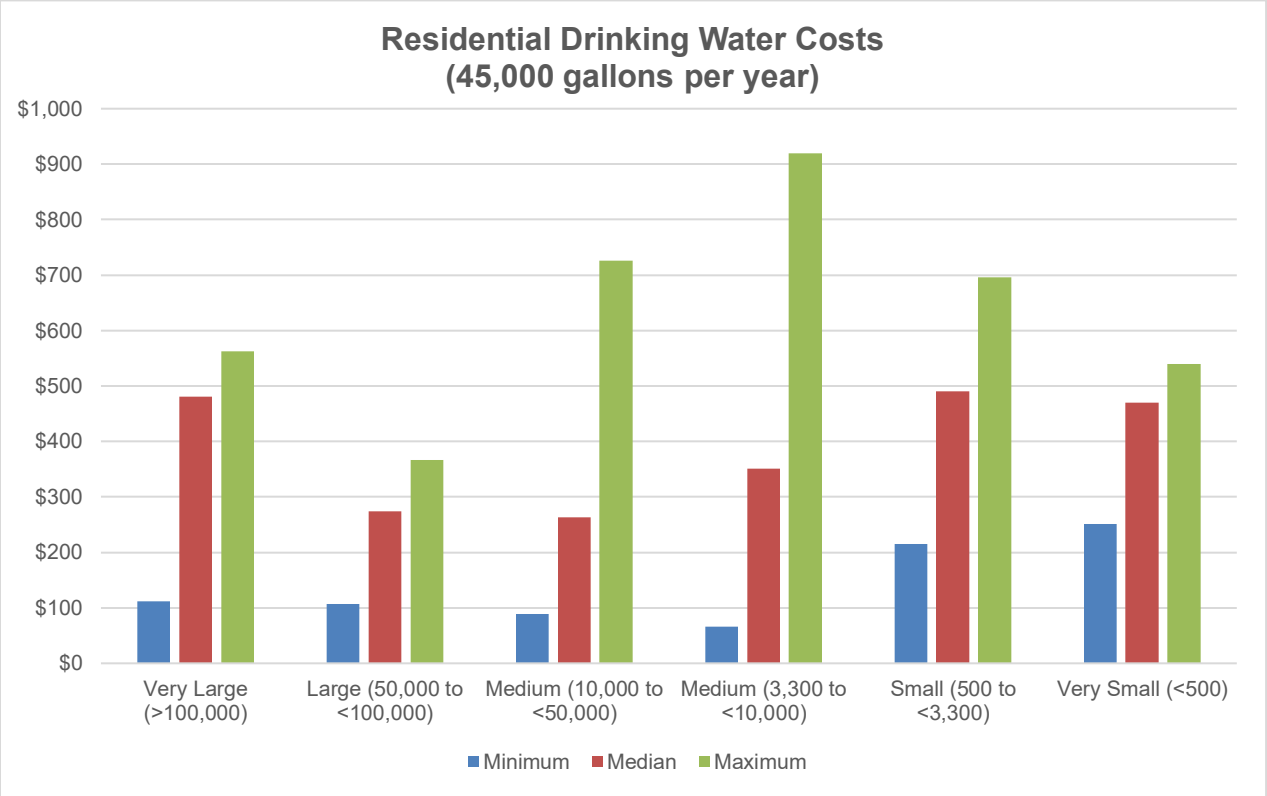

Figure 2. Residential Drinking Water Costs (45,000 gallons per year per household)

Finally, the methodology requires calculation of the amounts associated with each threshold for each county, which is shown in **Table 6**. As shown, the threshold amounts vary considerably across the counties, reflecting differences in both essential expenditures and the LQI. At the Baseline threshold of 10% of Household Disposable Income at LQI, six counties exceed $1000 per year, while eight counties are less than $500 per year. The methodology recognizes that households above the LQI will be capable of paying greater utility cost (both actual and as a percentage of income), but still can exceed affordability thresholds if utility costs are high enough.

Table 6. Affordability Stress Threshold Values by County at Lowest Quintile Income

County Baseline Income Statistics			Maximum Combined Water and Sewer Utility Costs at Thresholds		
County	**20th Percentile Income**	**Annual Disposable Income**	**Baseline (10%)**	**High (20%)**	**Severe (30%)**
Atlantic	$23,104	$2,284	$228	$457	$685
Bergen	$37,211	$9,875	$988	$1,975	$2,963
Burlington	$39,344	$12,284	$1,228	$2,457	$3,685
Camden	$24,911	$3,227	$323	$645	$968
Cape May	$28,461	$4,473	$447	$895	$1,342
Cumberland	$18,782	$1,502	$150	$300	$451

Table 6. Affordability Stress Threshold Values by County at Lowest Quintile Income					
County Baseline Income Statistics			Maximum Combined Water and Sewer Utility Costs at Thresholds		
County	20th Percentile Income	Annual Disposable Income	Baseline (10%)	High (20%)	Severe (30%)
Essex	$20,389	$2,065	$207	$413	$620
Gloucester	$35,788	$9,724	$972	$1,945	$2,917
Hudson	$25,091	$3,491	$349	$698	$1,047
Hunterdon	$50,005	$17,269	$1,727	$3,454	$5,181
Mercer	$29,115	$6,027	$603	$1,205	$1,808
Middlesex	$35,925	$9,381	$938	$1,876	$2,814
Monmouth	$37,853	$10,325	$1,033	$2,065	$3,098
Morris	$48,912	$16,896	$1,690	$3,379	$5,069
Ocean	$28,577	$4,949	$495	$990	$1,485
Passaic	$24,817	$3,889	$389	$778	$1,167
Salem	$22,490	$2,630	$263	$526	$789
Somerset	$47,381	$15,797	$1,580	$3,159	$4,739
Sussex	$41,940	$13,320	$1,332	$2,664	$3,996
Union	$31,951	$7,975	$798	$1,595	$2,393
Warren	$32,699	$7,811	$781	$1,562	$2,343

3. Application of Thresholds to Households

The critical step is to determine the number of households for which actual household income is not sufficient to pay the utility costs without exceeding each of the three thresholds. Put differently, the intent is to quantify the number of households per unique geographic area for which Household Disposable Incomes are below the level at which the combine utility costs for a 3-person household would constitute 10, 20 and 30 percent of Household Disposable Income. However, given that the only information available for household income distribution is for total household income, the methodology determines the minimum total household income for which the utility costs would not exceed the affordability thresholds based on **Table 6**. While the Teodoro (2018) method provides an affordability stress level for households at the LQI, the methodology for this project wanted to determine the number of households at all income ranges where the combined water utility costs exceed the relevant percentage from **Table 6**. For example, if the combined water utility costs were exactly equal to the Baseline Affordability Thresholds as % of LQI, then all households with incomes at or below the LQI would be counted as having baseline affordability stresses, while no households of higher income would be included. The higher the combined water utility costs, the more households above the LQI will be assessed as having baseline affordability stresses. It is important to note that these higher-income households will be less stressed that those of lower income, but they still will be considered stressed.

This analysis is based on the relevant combined water utility rates and the distribution of household incomes within each Census tract for each unique combination of Census tract, drinking water utility and sewer utility. The household incomes from the Census Bureau are grouped in ranges (e.g., 25,000 to 34,999), and so the top and bottom income associated with each range is compared to the combined utility costs for the nominal household. If the costs exceed the threshold at the bottom of the range, then all households in that income range are assumed to have unaffordable rates. If the costs exceed the threshold at the bottom of an income range but not at the top, then a proportional number of households within that range are assumed to have unaffordable rates. For example, if 100 homes are within an income range of $10,000 and the threshold is exactly at the halfway point, then 50 homes would be counted as above and below the threshold.

In actuality, households in each range will have higher or lower utility bills (based on actual household size and water demand patterns) and higher or lower incomes. There will not be a direct relationship between the income variation and the utility bills. However, for the purposes of this analysis, the expectation is that the use of even income distributions for each income range, the three thresholds, and utility costs based on 45,000 gallons per year demands will provide a robust estimate of affordability stress, enabling a comparison across and within utility service areas and government jurisdictions.

4. Methodology Example

In this section, the methodology is applied to two hypothetical polygons (i.e., combination of Census tract, drinking water utility and sewer service utility) of relatively low and relatively high median income levels. These hypothetical examples use the Atlantic County LQI of $23,104, of which the essential expenditures are $20,820 and the annual disposable income is $2,284 (see Table 1). The combined utility costs in this example are the New Jersey weighted average of $673; using the baseline threshold of 10 percent, that equates to a need of $6,730 of disposable income to be affordable at the baseline affordability threshold (10%), $3,365 for the high affordability threshold (20%) and $2,243 for the severe affordability threshold (30%). As a result, the threshold incomes in the third through fourth columns are the total of essential expenditures ($20,820) and the income needed to manage the utility costs at each threshold. **Table 7a** (low-income example) and **Table 7b** (high income example) show the number of households in each income range that exhibit affordability stress at the three levels. As shown in these hypothetical examples, the lower-income polygon exhibits far higher affordability stress levels than the higher-income polygon. The spreadsheet model calculates results for each of more than 5,000 polygons and then aggregates the results by drinking water utility, sewer utility and municipality.

Table 7a. Hypothetical Low-Income Area Evaluation
(Using Atlantic County Disposable Income, $673 Annual Combined Utility Costs)

Highest Income of Cohort	# of HH	Threshold Income for Baseline Affordability Stress	Threshold Income for High Affordability Stress	Threshold Income for Severe Affordability Stress	# of HH Exceeding Baseline Threshold	# of HH Exceeding High Threshold	# of HH Exceeding Severe Threshold
$10,000	117	$27,550	$24,185	$23,063	117	117	117
$14,999	181	$27,550	$24,185	$23,063	181	181	181
$24,999	397	$27,550	$24,185	$23,063	397	365	320

Table 7a. Hypothetical Low-Income Area Evaluation
(Using Atlantic County Disposable Income, $673 Annual Combined Utility Costs)

Highest Income of Cohort	# of HH	Threshold Income for Baseline Affordability Stress	Threshold Income for High Affordability Stress	Threshold Income for Severe Affordability Stress	# of HH Exceeding Baseline Threshold	# of HH Exceeding High Threshold	# of HH Exceeding Severe Threshold
$34,999	286	$27,550	$24,185	$23,063	73		
$49,999	167	$27,550	$24,185	$23,063			
$74,999	213	$27,550	$24,185	$23,063			
$99,999	85	$27,550	$24,185	$23,063			
$149,999	100	$27,550	$24,185	$23,063			
$199,999	53	$27,550	$24,185	$23,063			
Above $200,000	66	$27,550	$24,185	$23,063			
Census Tract Totals	1665				768	663	618
% of Households					46.12%	39.80%	37.13%

Table 7b. Hypothetical High-Income Area Evaluation
(Using Atlantic County Disposable Income, $673 Annual Combined Utility Costs)

Highest Income of Cohort	# of HH	Threshold Income for Baseline Affordability Stress	Threshold Income for High Affordability Stress	Threshold Income for Severe Affordability Stress	# of HH Exceeding Baseline Threshold	# of HH Exceeding High Threshold	# of HH Exceeding Severe Threshold
$10,000	72	$27,550	$24,185	$23,063	72	72	72
$14,999	88	$27,550	$24,185	$23,063	88	88	88
$24,999	232	$27,550	$24,185	$23,063	232	213	187
$34,999	351	$27,550	$24,185	$23,063	90		
$49,999	406	$27,550	$24,185	$23,063			
$74,999	703	$27,550	$24,185	$23,063			
$99,999	448	$27,550	$24,185	$23,063			
$149,999	720	$27,550	$24,185	$23,063			
$199,999	368	$27,550	$24,185	$23,063			
Above $200,000	352	$27,550	$24,185	$23,063			
Census Tract Totals	3740				482	373	347
% of Households					12.88%	9.98%	9.28%

H. Aggregation of Results

When all results have been calculated by unique geographic area, the final step is to compile the results for any larger geographic area, such as utility service area, municipality, county or the state.

I. Implementation Approach

This methodology required research and development regarding critical information:

- Updated water supply and sewer service areas. These were provided by NJDEP through the GIS portal.
- Updated drinking water and sewer utility rate schedules and calculated costs at the baseline service level. These were compiled by student interns in 2020.
- Evaluation of household income distributions by unique geographic areas (water and sewer service area as intersected by Census tract)
- Evaluation of LQI and essential household costs at LQI at the smallest possible geographic area (county)

All other components of the methodology are based on this information, and the calculations can be performed through a combination of GIS and spreadsheets.

Through this process, the following information was compiled or developed:

- Creation of a GIS coverage that determines each area served by a unique combination of Census tract, drinking water system and sewer system, and derived estimated populations and numbers of households for each of these polygons. In total, more than 5,200 polygons were evaluated.
- Analysis of essential household expenditures and Disposable Household Income by county.
- Compilation and analysis of 266 rate schedules for Public Community Water Systems, with an emphasis on those with populations greater than 3,300 people. These systems represent more than 95 percent of the total population served by PCWS.
- Compilation and analysis of 328 rate schedules for sewer systems, with an emphasis on those flowing to treatment plants with flows greater than 2 MGD. These systems represent more than 95 percent of the total population served by public sewer systems.
- Development and implementation of a spreadsheet-based affordability model that incorporates the information from the prior steps to assess the relative severity of household affordability stresses due to the combination of drinking water and sewer rates.

IV. Results

This section focuses on the household affordability results from the methodology described in the prior section. It addresses statewide, regional, system and municipal results, all of which were derived from an aggregation of the granular results at the Census tract level.

A. Statewide Results

Based on the methodology and data described in this report, the statewide results are shown in **Table 8** and **Figures 3 and 4**. The results are provided as the number of households (HH) in each cohort, as that is the metric used rather than total population. As can be seen, the Baseline affordability threshold is potentially exceeded by roughly one-quarter of all households for which cost data were available. As expected, fewer households exceed the thresholds for High and Severe affordability stresses.

Actual results will differ based on a variety of factors, including but not limited to household size, water use efficiency, who pays the utility costs (e.g., renters, landlord, homeowners), and subsidies. Therefore, these results should be seen as an "upper bound" result. Actual results are likely to be lower. Future affordability programs would increase the difference between the potential stresses estimated in this study and "real world" stresses, reflecting a positive outcome for low-income households.

Table 8. Statewide Estimates of Household (HH) Affordability Stress to Combined Drinking Water and Sewer Costs

HHs in polygons with either or both water and sewer data	Estimated # of HHs potentially exceeding Baseline threshold	Estimated # of HHs potentially exceeding High threshold	Estimated # of HHs potentially exceeding Severe threshold
2,658,052	546,270	480,157	457,705
	20.6%	18.1%	17.2%

An explanation about the mapping is important here. In most cases, areas have sufficient utility cost information for analysis under three possible conditions (for both water and sewer service; for water where there is no sewer service; for sewer where there is no water service). In other cases, no cost data are available for any utility but NJDEP mapping indicates that the area is within one or both types of service areas. In these cases, the map provides a correct depiction of the results or lack of results. However, in a few situations, areas have water cost information but not sewer costs. Where the two areas overlap, the map depicts the results properly (i.e., insufficient data). However, NJDEP's sewer service area maps are far more detailed than its water service areas (to the parcel level or less), and so there are areas depicted as outside the sewer service areas that are within the water service areas. In these cases (e.g., western Burlington County along the Delaware River), small, irregular polygons will show affordability results within a larger area of insufficient data. These areas have relatively limited population and do not skew the statewide results, but the mapping issue may have minor effects on affordability calculations at smaller scales. The project budget was not sufficient to modify the GIS layers used, to correct for this issue, but any affordability analysis for the purpose of implementing a program should do so.

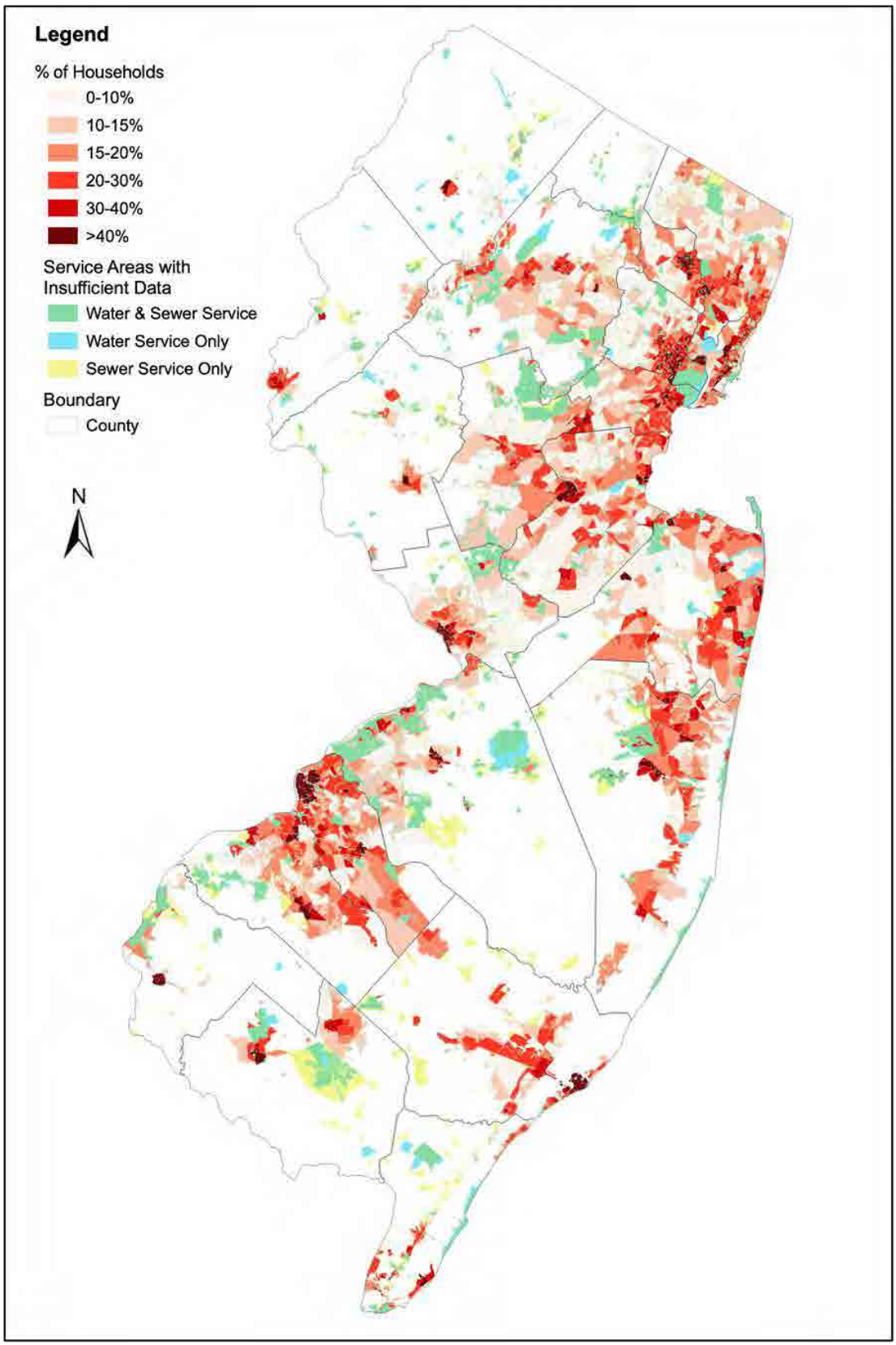

Figure 3. Estimated Percentage of Households Exceeding Baseline Affordability Threshold

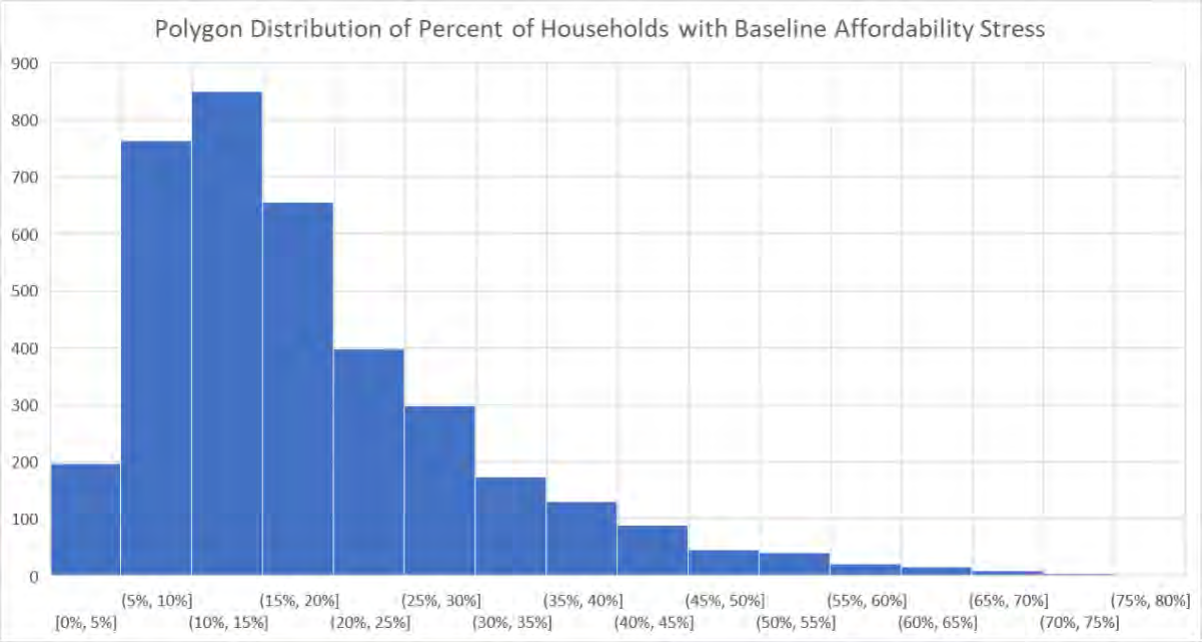

Figure 4. Polygon Distribution of Baseline Affordability Stress
(Vertical axis is the number of unique polygons (i.e., a geographic area with a unique combination of Census tract and drinking water and sewer service area); horizontal axis is the percentage of households, expressed as ranges, assessed as showing baseline affordability stress using the assessment methodology)

As previously discussed, these results are best seen as an **indicator** of stress levels, for several reasons. The methodology uses a standardized approach to household water demands, based on estimated essential water usage for three-person household. It uses Census information on household income ranges, which doesn't allow for precise comparison of household incomes to actual utility costs. In addition, some of the lowest-income households may already be receiving public support for their housing and/or utility costs; although those households would be considered stressed in this analysis, that stress has already been mitigated (to some extent) by non-household income streams or subsidies. Similarly, many households, especially renters in multi-family buildings, are not directly responsible for paying water and sewer bills; in any cases where the account-holder (e.g., a landlord) does not pass on water and sewer costs in full, those households may be considered more stressed under this methodology than they actually are.

However, two factors in addition to household size, household income, and factors that mitigate a household's cost of water and sewer service play critical roles in these results. First, utility costs vary widely. The source and treatment requirements of water supplies (e.g., ground water versus surface water, polluted versus clean), the age of the system, the quality of the asset management system, and utility decisions regarding rate schedules (e.g., the mix of fixed and volumetric charges, including whether to charge directly or use property taxes) all play a role. A greater number of households would exhibit affordability stress if sewer costs weren't hidden in property taxes for 81 municipalities, for example.

Second, the calculation of household essential expenses and Disposable Household Income resulted in major differences between even adjacent counties, which then has a major effect on

the utility costs that will trigger affordability concerns. While the methodology is sound, it is based on available data from the Consumer Expenditure Surveys. A major question in implementing an affordability method for regulatory or funding use would be whether and how to modify the approach to Disposable Household Income.

B. Regional Results

Figures 5 and 6 show Baseline affordability stresses for the Northeast NJ region and the Camden region. These maps provide a more focused view than the statewide map and include municipal boundaries to show that within individual municipalities there may be significant variations in affordability stresses. Differences within a single municipality are primarily related to household income, especially where all residents are served by the same water and sewer systems. See section IV.A, on Statewide Results, regarding mapping issues in certain areas.

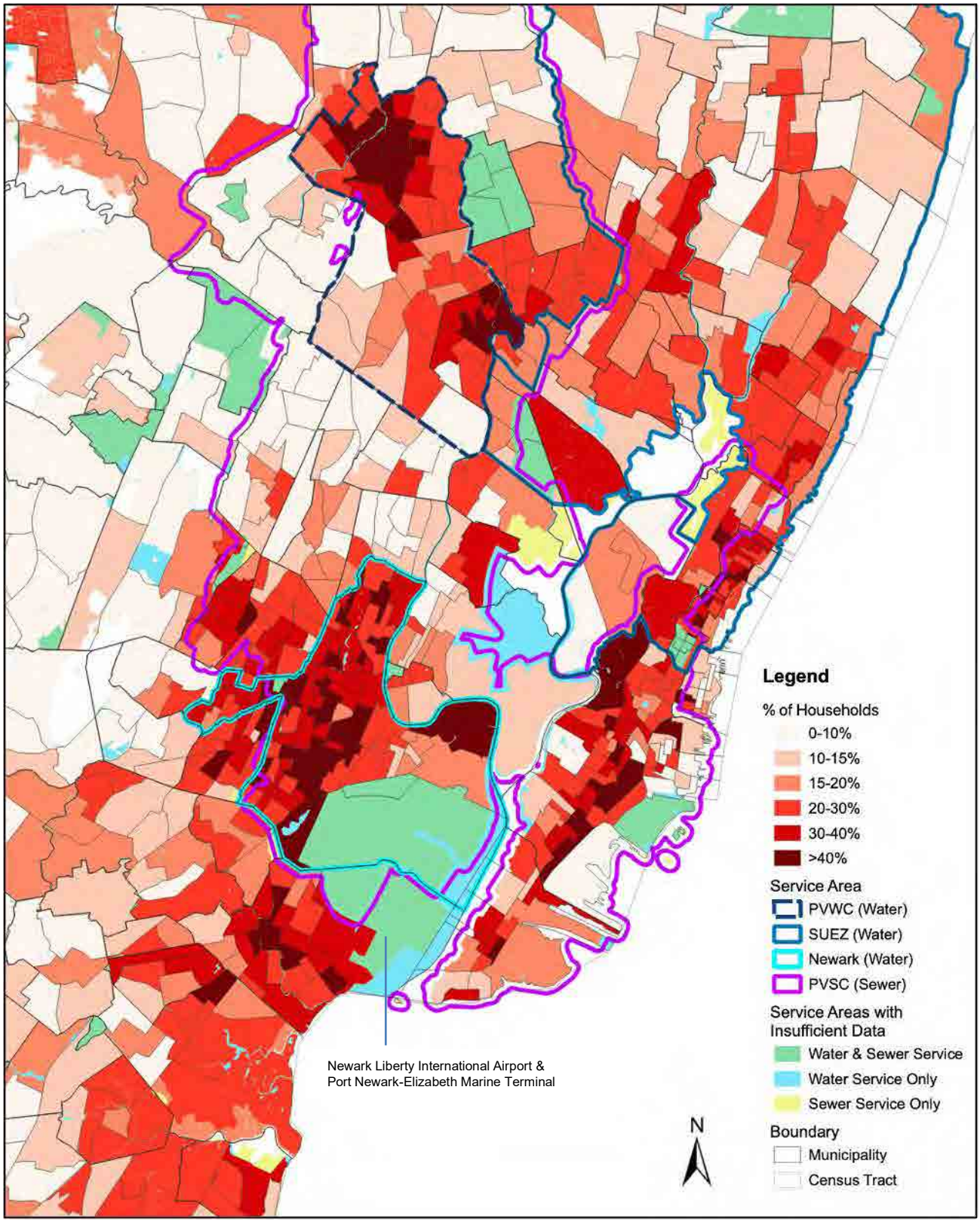

Figure 5. Estimated Percentage of Households Exceeding Baseline Affordability Threshold: Northeast New Jersey

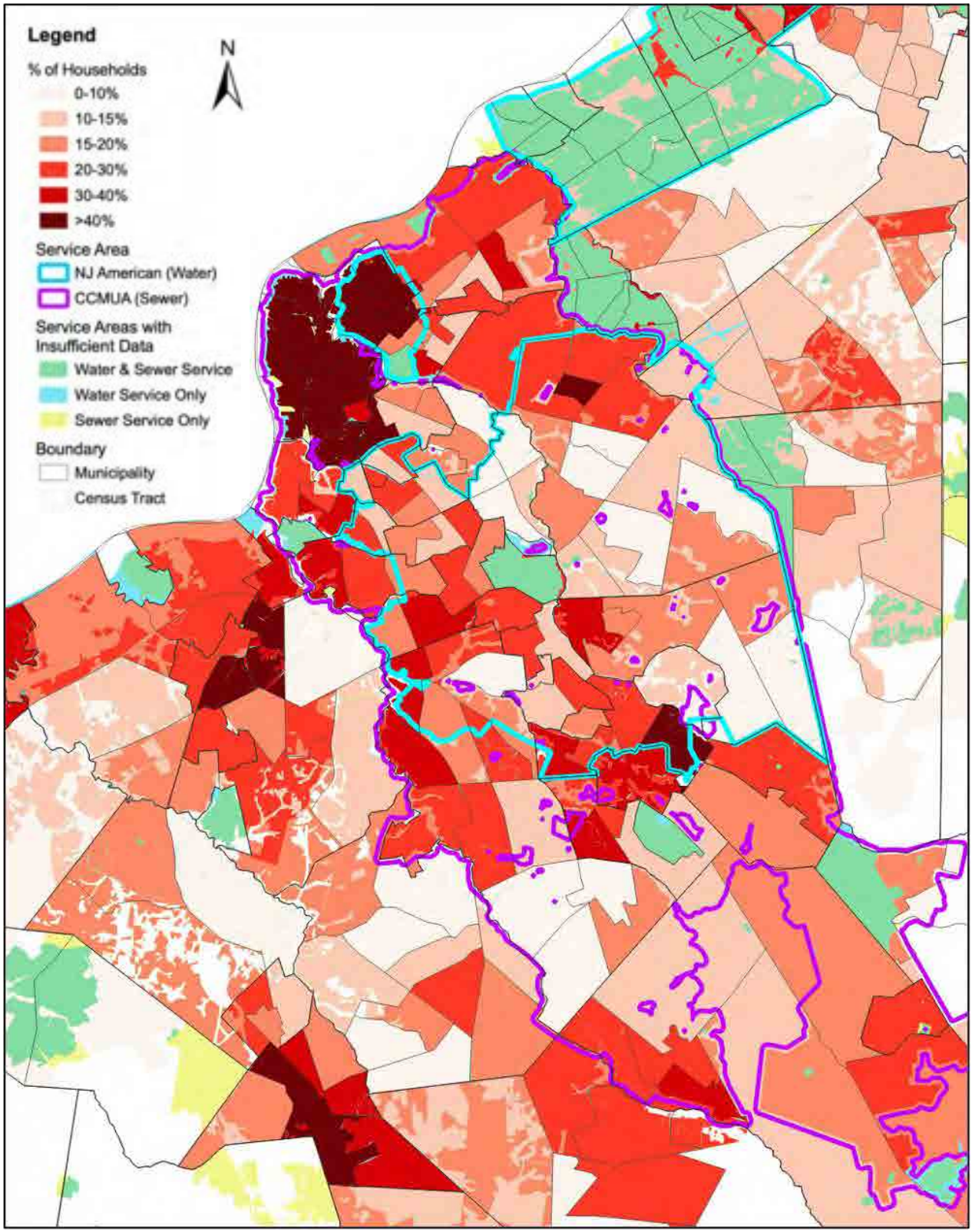

Figure 6. Estimated Percentage of Households Exceeding Baseline Affordability Threshold: Camden Region

C. System and Municipal Results

Results for individual systems and municipalities follow general expectations. The results for the largest water systems are shown in **Table 9**, and for the largest sewer systems in **Table 10**. (In both cases, the cutoff is 20,000 households (HH)). The differences among the various systems are striking, with Baseline affordability stresses ranging from 4.6% to 67.2% for water systems, and 4.7% to 65.9% for sewer systems. For the largest water and sewer systems, the ranges of aggregate Baseline affordability stress range widely, from 5% of households to more than 50%. The same is true of aggregate results for the largest municipalities, ranging from less than 5% to more than 55%. The highest values are generally in the geographic areas expected, where there are high concentrations of low-income households. The larger the system, the more likely it is that the percentages will be mid-range, given a greater mix of household incomes. The lowest percentages are in relatively wealthy, smaller systems, such as Ridgewood (water) and Parsippany-Troy Hills (sewer). In some cases, systems run by the same entity have different service areas and therefore different results. A good example is Trenton, where the drinking water utility serves multiple municipalities totaling over 70,000 household (22% of which show at least Baseline affordability stress), but the sewer system only serves 27,000 households (33.3% of which show at least Baseline affordability stress). The broader geographic scope of the drinking water utility results in lower percentages of affordability stress.

Table 9. Percentage of Households Exceeding Affordability Thresholds Based on Combined Water Utility Costs, Within Service Areas of Large Public Community Water Systems

PWSID	Public Community Water System	Estimated # of HHs assessed in water service area	Estimated % of HHs exceeding Baseline threshold	Estimated % of HHs exceeding High threshold	Estimated % of HHs exceeding Severe threshold
NJ0238001	Suez Water NJ Hackensack	282,645	20.3%	18.3%	17.6%
NJ2004002	NJ American - Raritan	235,790	16.2%	13.8%	13.0%
NJ1345001	NJ American - Coastal North	125,207	22.7%	19.3%	18.1%
NJ0906001	Jersey City MUA	100,968	24.7%	22.2%	21.4%
NJ0714001	Newark WD	98,018	34.8%	31.4%	30.3%
NJ1605002	Passaic Valley Water Commission	95,163	31.0%	27.8%	26.5%
NJ0327001	NJ American - Western Division	92,621	22.6%	18.8%	17.4%
NJ0712001	NJ American - Passaic	71,823	16.2%	13.7%	12.9%
NJ1111001	Trenton Water Works	70,193	26.0%	23.9%	23.1%
NJ1225001	Middlesex WC	69,975	16.1%	14.2%	13.5%
NJ1507005	Suez Water NJ Toms River	46,063	25.1%	20.8%	19.4%
NJ2004001	Liberty WC/ NJ American	40,326	31.4%	27.3%	26.0%
NJ0119002	NJ American - Atlantic	37,538	21.5%	16.9%	15.5%
NJ1506001	Brick Township MUA	29,672	18.2%	15.9%	15.1%
NJ0905001	Hoboken Water Services	25,069	12.9%	11.9%	11.5%
NJ0901001	Bayonne MUA	24,982	24.4%	20.5%	19.3%
NJ0705001	East Orange WC	23,607	27.7%	24.8%	23.8%
NJ1808001	Franklin Township DPW	23,191	18.7%	17.2%	16.8%
NJ1209002	Old Bridge MUA	22,398	15.6%	13.0%	12.1%
NJ1424001	South East Morris County MUA	21,894	13.9%	12.3%	11.9%
NJ0251001	Ridgewood Water	20,089	8.9%	8.0%	7.7%

Table 10. Percentage of Households Exceeding Affordability Thresholds Based on Combined Water Utility Costs, Within Service Areas of Large Public Sewer Systems

NJPDES #	NJPDES Permittee Name	Estimated # of HHs assessed in sewer service area	Estimated % of HHs exceeding Baseline threshold	Estimated % of HHs exceeding High threshold	Estimated % of HHs exceeding Severe threshold
NJ0021016	Passaic Valley Sewer Comm*	514,761	24.6%	22.1%	21.3%
NJ0020141	Middlesex County UA*	300,529	19.5%	17.2%	16.4%
NJ0020028	Bergen County UA*	207,843	17.7%	16.3%	15.8%
NJ0026182	Camden County MUA*	178,553	25.5%	21.7%	20.3%
NJ0024741	Joint Meeting Essex and Union	157,691	22.8%	19.6%	18.6%
NJ0028142	Ocean County UA North STP	100,958	19.9%	16.9%	15.9%
NJ0029408	Ocean County UA Central	79,534	21.7%	18.4%	17.3%
NJ0024686	Gloucester County UA STP	75,487	19.9%	17.4%	16.5%
NJ0024643	Rahway Valley SA*	71,713	13.8%	12.0%	11.4%
NJ0024473	Atlantic City UA	71,200	27.1%	22.8%	21.3%
NJ0024864	Somerset Raritan Valley SA*	43,606	14.9%	12.8%	12.1%
NJ0026085	North Hudson SA	42,134	19.3%	17.3%	16.5%
NJ0026301	Hamilton Township	35,239	15.0%	13.0%	12.3%
NJ0024813	Northwest Bergen County UA*	35,177	10.3%	9.2%	8.8%
NJ0022349	Rockaway Valley Regional SA	33,910	18.3%	16.5%	15.9%
NJ0024970	Parsippany Troy Hills	31,743	13.1%	12.0%	11.6%
NJ0026735	Two Rivers WRA	28,985	20.2%	17.3%	16.3%
NJ0020923	City of Trenton	27,162	41.5%	39.1%	38.1%
NJ0025356	Township of Middletown SA (TOMSA)	26,285	17.9%	15.6%	14.8%
NJ0025321	North Hudson SA (West NY STP)	25,944	29.8%	26.2%	24.8%
NJ0024759	Ewing Lawrence SA	23,845	14.2%	12.4%	11.8%
NJ0024708	Bayshore Regional SA	22,488	20.9%	17.8%	16.8%
NJ0024953	Linden Roselle SA	21,666	22.3%	19.3%	18.2%
NJ0023728	Two Bridges WRA*	21,504	13.0%	11.3%	10.6%
NJ0031119	SBRSA (River Road STP)	21,211	11.7%	9.9%	9.4%

Note: Utilities marked with an asterisk (*) have municipalities that cover all residential sewer costs through the property tax. PVSC has 21; MCUA has 3; BCUA has 42; CCMUA has 1; RVSA has 5; SRVSA has 1; NWBCUA has 4; Two Bridges WRA has 1. Some smaller facilities also have a total of 3.

Table 11 shows the results for the largest municipalities for which good utility cost information is available, representing one-third of all households with cost data statewide. As with the utility results, the municipal results range widely, with Baseline affordability stresses ranging from 4.6% for suburban Parsippany-Troy Hills Township to 86.8% for the City of Camden.

Table 11. Percentage of Households Exceeding Affordability Thresholds, Large Municipalities

County	Municipality Name	HHs with known data for both water & sewer	Estimated % of HHs exceeding Baseline threshold	Estimated % of HHs exceeding High threshold	Estimated % of HHs exceeding Severe threshold
Hudson	Jersey City City	100,986	24.7%	22.2%	21.4%
Essex	Newark City	96,870	35.0%	31.6%	30.4%
Passaic	Paterson City	44,746	37.4%	33.6%	32.1%
Union	Elizabeth City	40,315	31.5%	27.4%	26.0%
Middlesex	Edison Township	34,878	12.9%	11.7%	11.3%
Ocean	Toms River Township	34,461	20.1%	16.6%	15.4%
Middlesex	Woodbridge Township	33,864	15.7%	13.9%	13.3%
Mercer	Hamilton Township	31,677	15.8%	13.6%	12.9%
Ocean	Brick Township	29,689	18.2%	15.9%	15.1%
Passaic	Clifton City	29,167	17.8%	15.5%	14.7%
Mercer	Trenton City	27,373	41.5%	39.1%	38.1%
Camden	Cherry Hill Township	26,284	17.3%	14.0%	12.8%
Hudson	Hoboken City	25,069	12.9%	11.9%	11.5%
Hudson	Bayonne City	24,964	24.4%	20.5%	19.3%
Camden	Camden City	24,725	55.8%	49.7%	47.6%
Somerset	Franklin Township	24,393	18.4%	16.8%	16.4%
Middlesex	Old Bridge Township	24,105	15.4%	12.7%	11.8%
Ocean	Lakewood Township	23,869	30.2%	24.8%	23.0%
Monmouth	Middletown Township	23,681	16.4%	14.2%	13.5%
Essex	East Orange City	23,587	27.7%	24.8%	23.8%
Camden	Gloucester Township	23,350	17.8%	14.8%	13.9%
Hudson	North Bergen Township	21,791	25.4%	21.4%	20.2%
Essex	Irvington Township	20,392	29.8%	25.6%	24.3%
Union	Union Township	20,382	17.3%	14.7%	13.9%

V. Results Summary and Recommendations

This report provides a detailed methodology for assessing relative household affordability stresses in New Jersey due to the combined costs of drinking water and sewer utility charges. The methodology is an adaptation of a national approach developed in Teodoro (2018), with this approach using the Lowest Quintile Income (20th percentile household income) and the essential household expenditures for each county to estimate Household Disposable Income. Utility costs are based on a "nominal household demand" of 45,000 gallons per year, based on New Jersey data regarding indoor per capita demands and typical household size. Affordability stresses are estimated using three thresholds: Baseline, High and Severe, at 10%, 20% and 30% of Household Disposable Income, respectively.

A spreadsheet model was developed to apply this methodology to households in areas that have either or both public drinking water and public sewer services, using utility rates from 2020; rate information was compiled for roughly 90 percent of all New Jersey households served by at least one public water utility. The analysis is performed at the polygon level, where each polygon is a unique combination of Census tract, drinking water system and sewer system. In total, more than 5,200 polygons were evaluated. The methodology estimates polygon-based household affordability stresses that can be aggregated to the utility, municipality, county and statewide geographic areas.

Using this approach, the model estimates statewide that 20.6% of households could experience affordability stress at the Baseline threshold, 18.1% at the High threshold, and 17.3% at the Severe threshold. Results vary widely among polygons, systems, municipalities and counties, and are sensitive to multiple factors: county Disposable Household Income calculations; utility costs (individually and combined); and the distribution of household incomes within each Census tract.

When viewed across the state, the results make intuitive sense, where areas that have higher concentrations of low-income households show higher levels of affordability stress. However, the differences in county-level Household Disposable Income have a clear impact on the distribution of stressed households that are harder to see visually.

In conclusion, the affordability assessment methodology is feasible and provides valuable insights into the relative intensity and geographic distribution of affordability stresses from a very granular level (the polygons) to the statewide level. It should be recognized that some of these affordability stresses may not be directly felt by households, due to housing subsidies or incorporation of utility costs within rental housing costs, where the household never sees the bills. On the other hand, 81 municipalities (primarily within the service area of the Bergen County Utilities Authority) cover sewer costs through their general budget rather than household charges; the affordability stresses in those municipalities are artificially lower than would be shown if the sewer costs were charged directly to households. Households and other taxpayers are paying those costs through their property tax bills, but there is no way to include those costs within this methodology.

The affordability assessment methodology provided in this report represents a major step forward for New Jersey decision makers. Affordability stresses can be assessed statewide and down to a granular level. The methodology also provides a way of understanding the implications of cost increases on affordability at any geographic level.

Based on the estimate that roughly one fifth of all New Jersey households may experience affordability stresses, we recommend the following uses of, and potential improvements to, the methodology.

A. Potential Policy and Program Uses of the Affordability Results

These policy approaches emphasize the potential roles of the state and federal government and of the drinking water and sewer utilities (including municipal governments where they are the direct owners of utility systems) in mitigating the household affordability stresses identified through this analysis.

1. State government could provide express statutory authorization (or clarify that existing law provides authorization) for utilities to reduce rates for stressed households, similar to current authorizations for households headed by senior citizens and veterans.
2. State or federal government could provide subsidies to utilities, specifically for the purpose of providing household affordability assistance.
3. State or federal government could provide subsidies to stressed households, similar to the Low Income Household Energy Assistance Program (LIHEAP) or the Universal Service Fund (USF). These subsidies could be funded by general funds or a surcharge to water and sewer rates in a manner similar to the Social Benefits Charge on energy utilities. It is recognized that households with affordability stresses would also pay the surcharge, which would need to be offset by the household subsidies that are provided.
4. Utilities could target areas with high levels of existing affordability stress to determine methods of reducing the stresses on households. Methods can include:
    a. Modified rate schedules that reduce reliance on fixed charges (e.g., quarterly charges that do not change with use) for residential customers. Fixed charges tend to be regressive, costing households with low water demands more per gallon than those with high demands.
    b. Cross-subsidization of stressed households by non-stressed households within the same utility service area (which may require statutory authorization, as noted above).

B. Research and Development

This report relies on existing data sources and provides a solid assessment of potential household affordability stresses. However, the methodology can be strengthened through a more detailed evaluation of several key issues. This section provides recommendations for further research and development of the methodology.

1. Target a small number of highly stressed areas to determine the extent to which the assessed stresses are directly experienced by households, are indirectly experienced through utility charges that are embodied in rents or are already addressed by government subsidies such as Section 8 housing vouchers. Use the results to modify the methodology for better targeting. Regarding housing subsidies, some low-income households receive housing vouchers that include funds for energy, drinking water and sewer utility costs. In addition, New Jersey has authorized government-owned drinking water and sewer utilities to subsidize costs for certain low-income customers who are

elderly or disabled, and to certain military service members. A 2019 report from NRDC to Jersey Water Works, “Promoting Affordability of Public Water and Sewer Service for Low-Income Households in New Jersey: Policy Options”, provides an excellent overview and preliminary analysis of these issues.

2. Conduct a more extensive evaluation of county-level essential household expenses, to determine whether the Disposable Household Income estimates can be refined using available data or a modest expenditure in new data collection.
3. Conduct a more detailed analysis of the extent to which essential household expenses change with household income (e.g., for each quintile) to determine whether any differences would significantly alter the computed extent or severity of affordability stresses. The methodology assumes that the essential household expenses remain relatively stable below the Lowest Quintile Income and rise far slower than income as household income increases. Analysis of essential expenditures at the 40^{th} percentile income verified that income rises much faster than essential expenditures. The model was not altered to incorporate the analysis, as the results would not be very different and the model complexity would increase greatly. Further analysis of this issue may result in changes to the methodology, though it is unlikely to result in major changes to Baseline affordability stresses.
4. Evaluate the relationship of actual water demands by Census tract to the range of household sizes and incomes within the Census tract, using utility billing records and Census information. A project of this nature would likely require a confidentiality agreement so that no individual information is released; only statistical results would be released.
5. Evaluate the historic record of utility rate increases to assess how affordability stresses have been compounded in the last decade due to rate increases or rate schedule modifications (e.g., shifting costs from volumetric to fixed charges). This work is currently in progress at Rutgers.
6. Use the model to evaluate how future rate increases could change the severity and pattern of affordability stresses.
7. Collect additional utility rate schedules for the year 2020 to fill gaps in the model, addressing all systems that serve at least 1000 households, at a minimum.
8. Periodically collect rate schedules and other information necessary to update the model, perhaps every 3 years and especially after more comprehensive household income is available from each decennial Census.
9. Using municipal budgets, estimate the costs for sewer collection systems that are managed using property taxes rather than residential user fees. Identify sewer revenue from non-residential users, where relevant, and the relative burden of residential and non-residential lands. Using this information, estimate the per household costs that are implicit in residential property tax costs, and use the results to update this study. The assumption here is that an increase in property taxes has a similar impact on household affordability as an increase in direct utility costs.

Appendix A: Map Series

The complete map series for this report is provided below. The maps are:

- Estimated Percentage of Households Exceeding Baseline, High and Severe Affordability Threshold – Statewide (Figure A-1 through A-3)
- Estimated Percentage of Households Exceeding Baseline, High and Severe Affordability Threshold – Camden Region (Figure A-4 through A-6)
- Estimated Percentage of Households Exceeding Baseline, High and Severe Affordability Threshold – Newark Region (Figure A-7 through A-9)
- Estimated Percentage of Households Exceeding Baseline Affordability Threshold – Drinking Water Service Areas (Figure A-10 through A-12)
- Estimated Percentage of Households Exceeding Baseline Affordability Threshold – Sewer Service Areas (Figure A-13 through A-15)

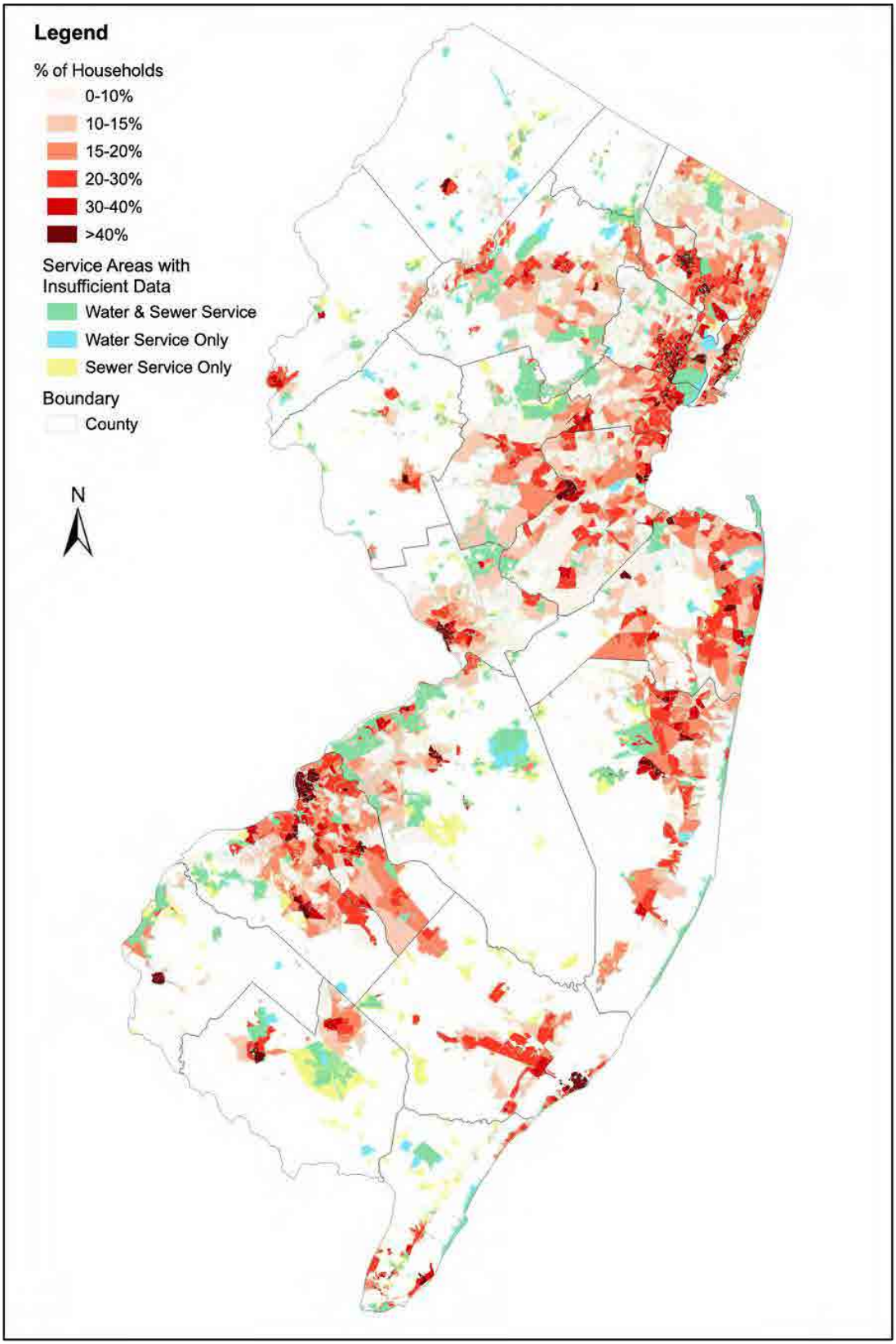

Figure A-1. Estimated Percentage of Households Exceeding Baseline Affordability Threshold

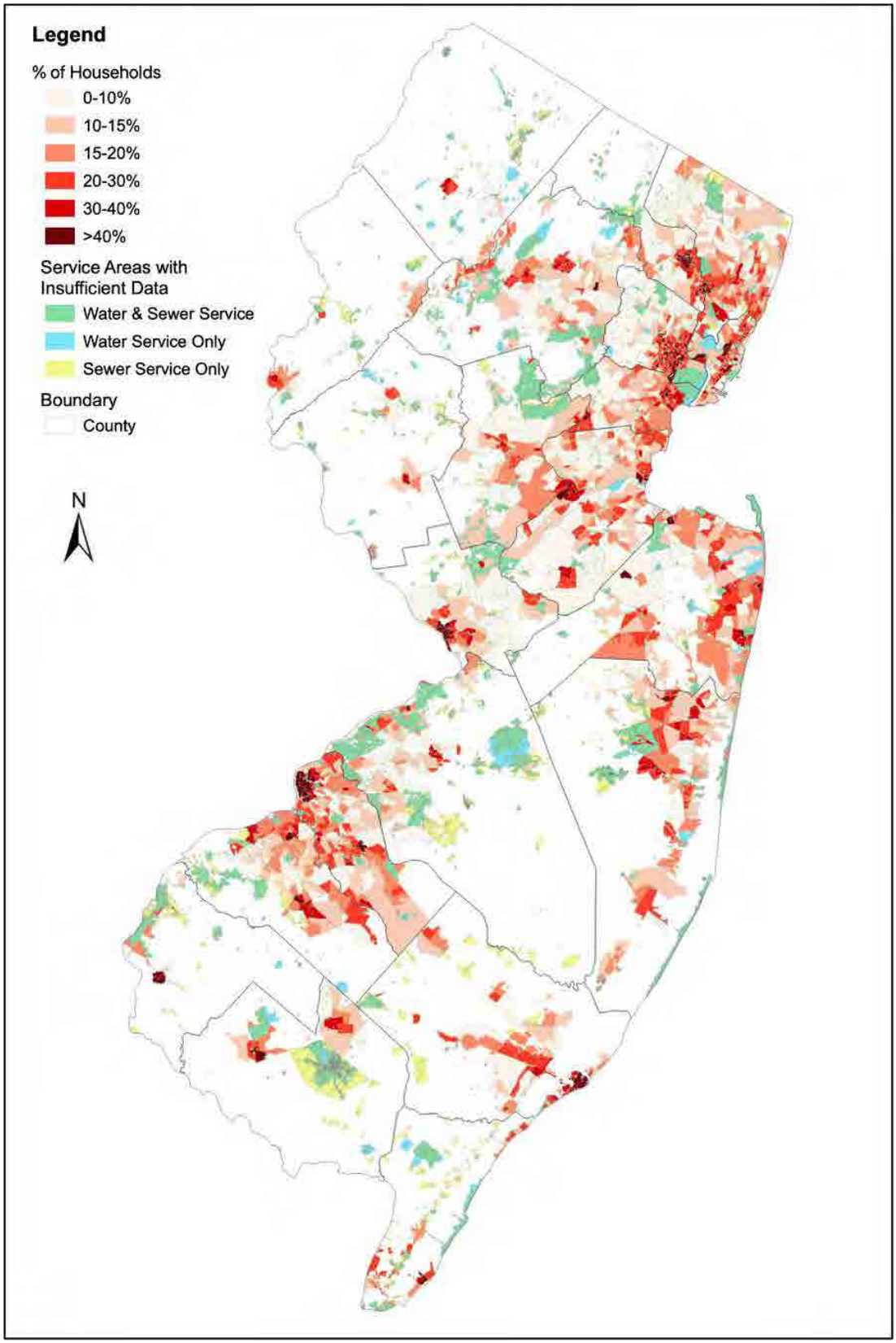

Figure A-2. Estimated Percentage of Households Exceeding High Affordability Threshold

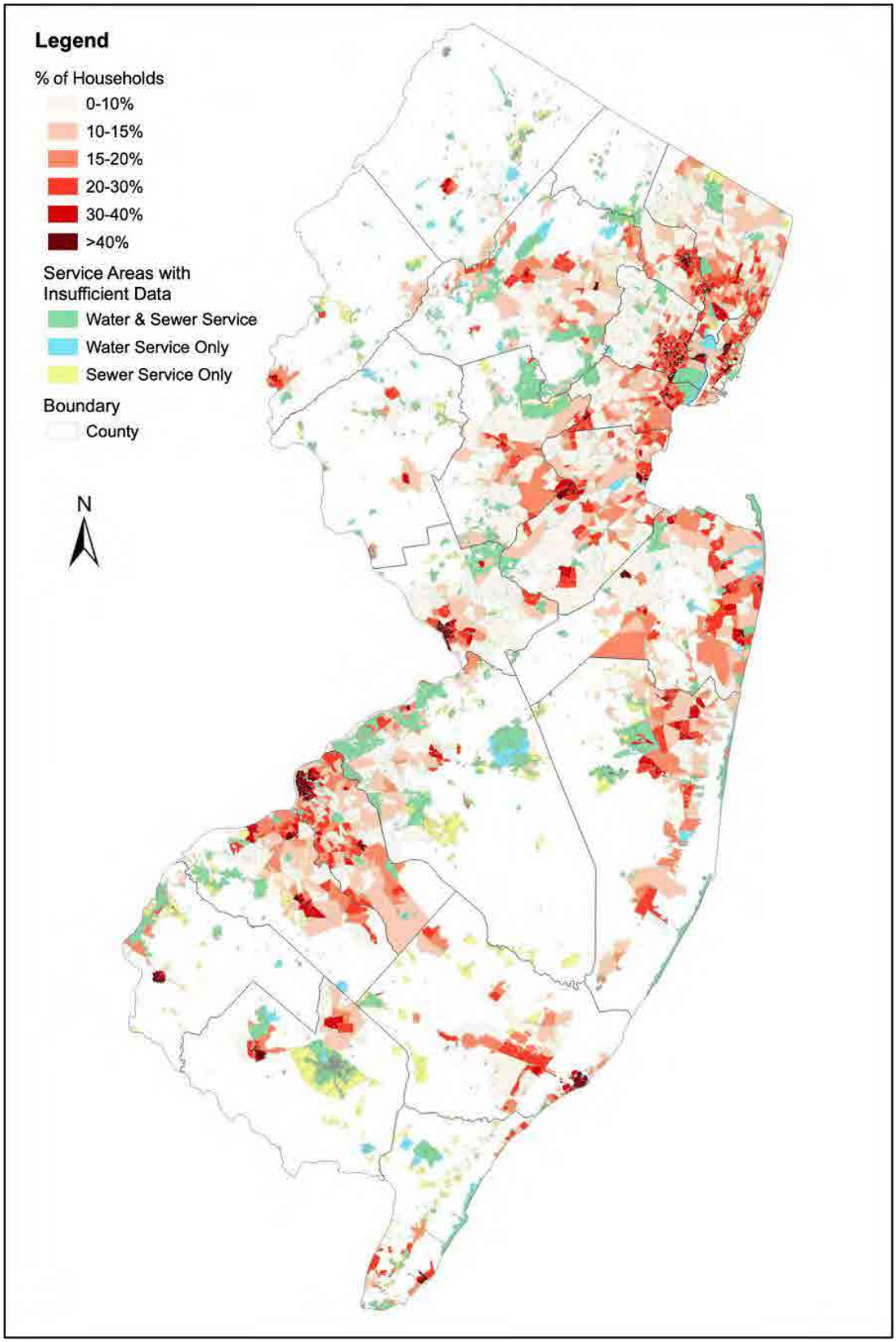

Figure A-3. Estimated Percentage of Households Exceeding Severe Affordability Threshold

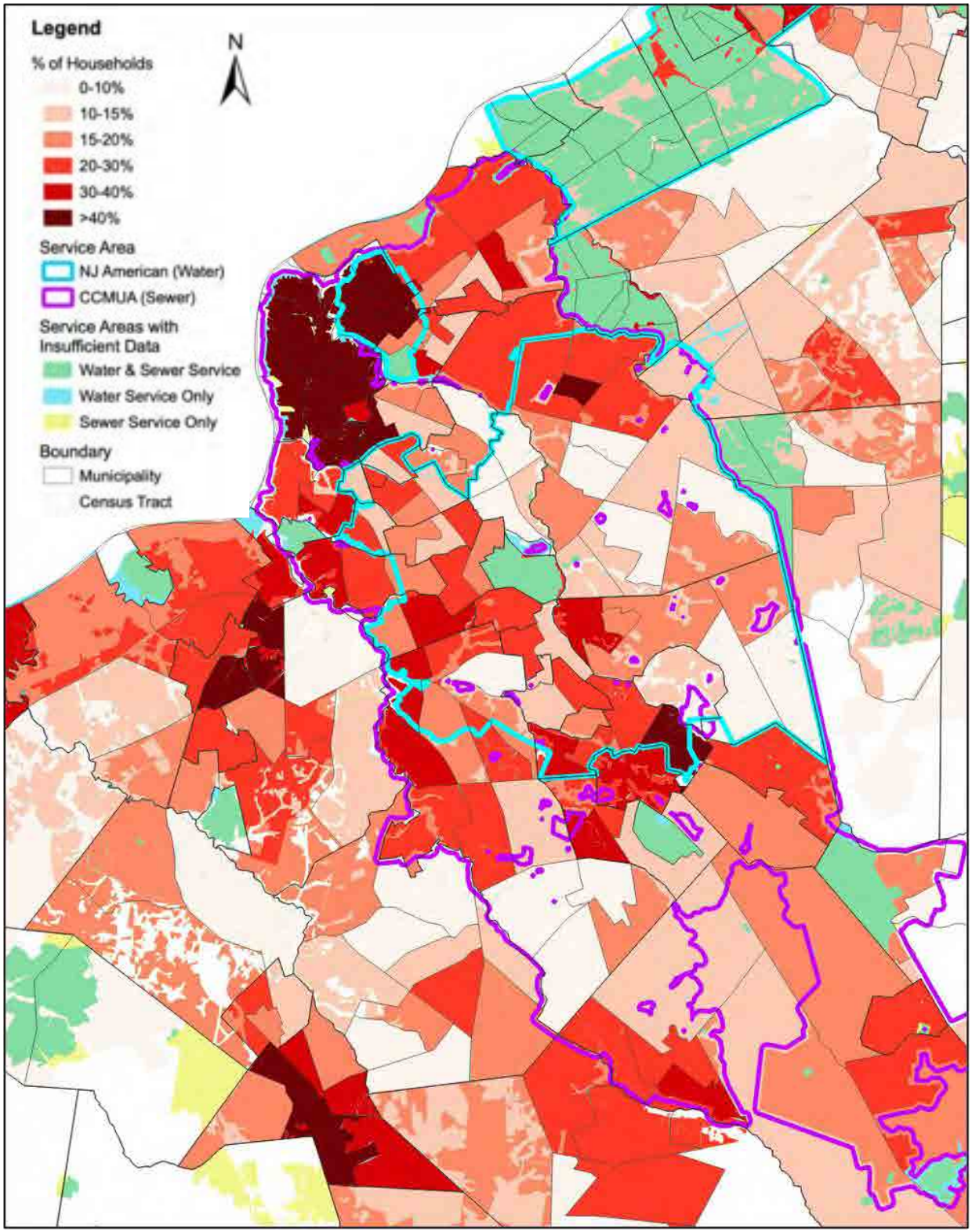

Figure A-4. Estimated Percentage of Households Exceeding Baseline Affordability Threshold: Camden Region

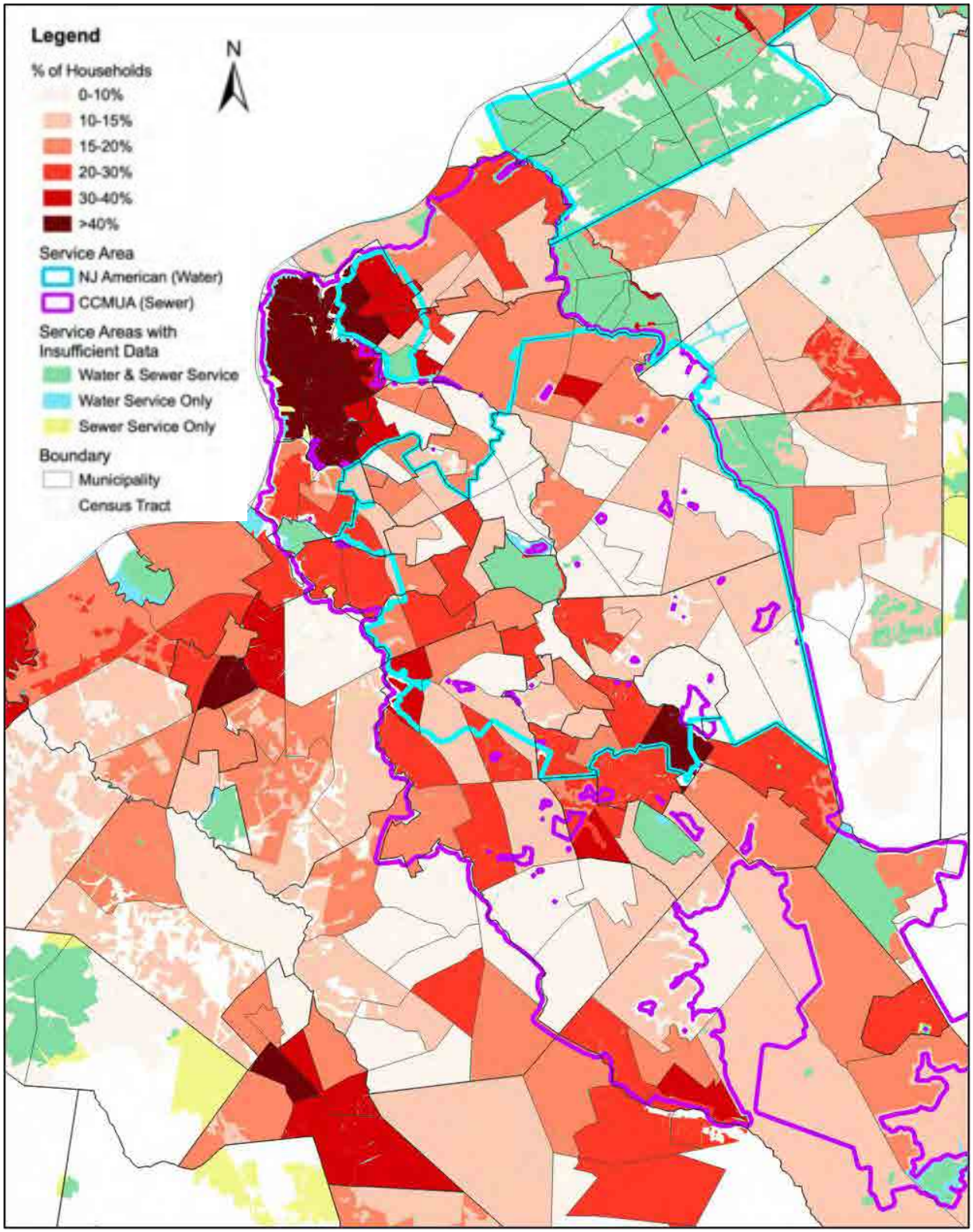

Figure A-5. Estimated Percentage of Households Exceeding High Affordability Threshold Camden Region

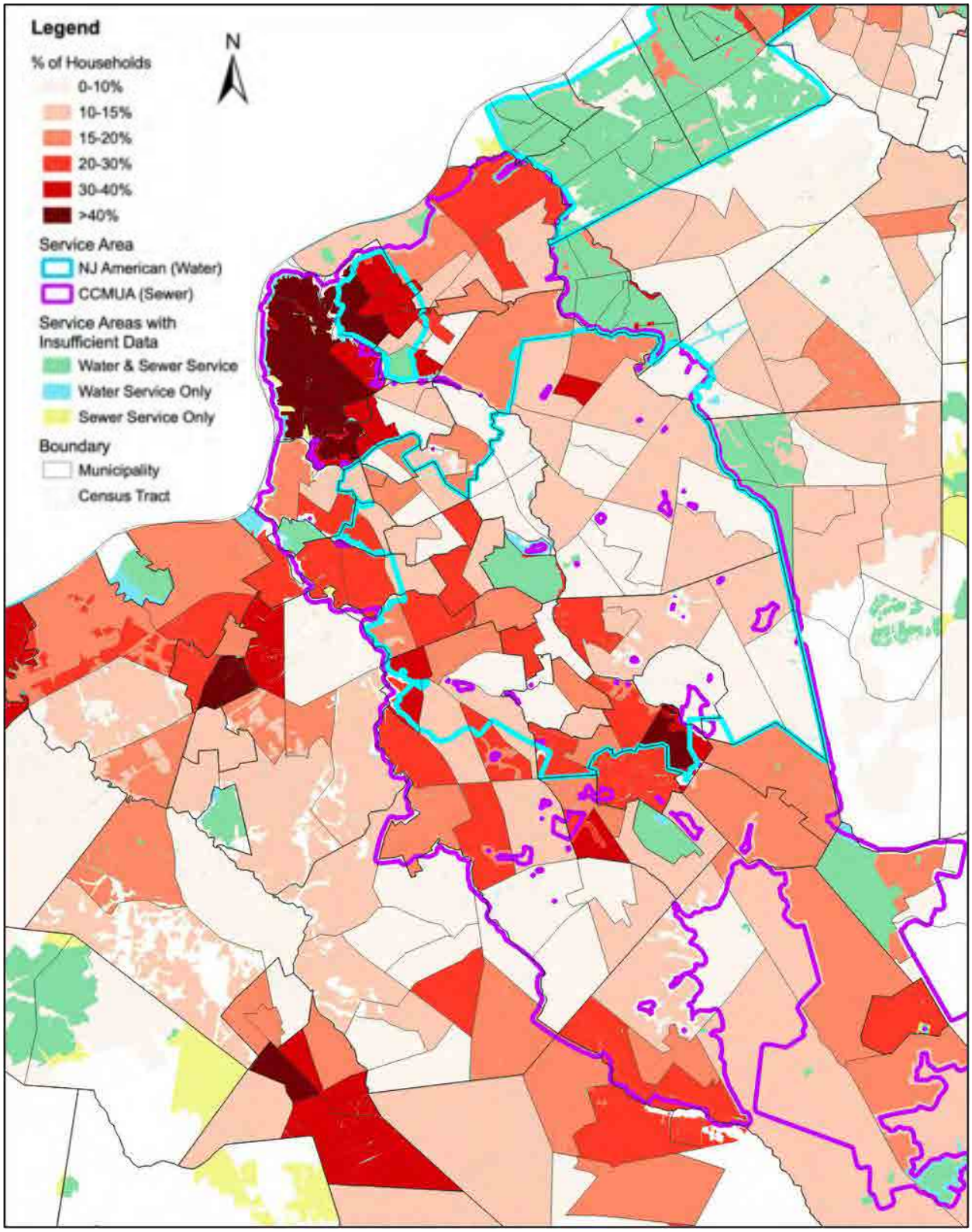

Figure A-6. Estimated Percentage of Households Exceeding Severe Affordability Threshold Camden Region

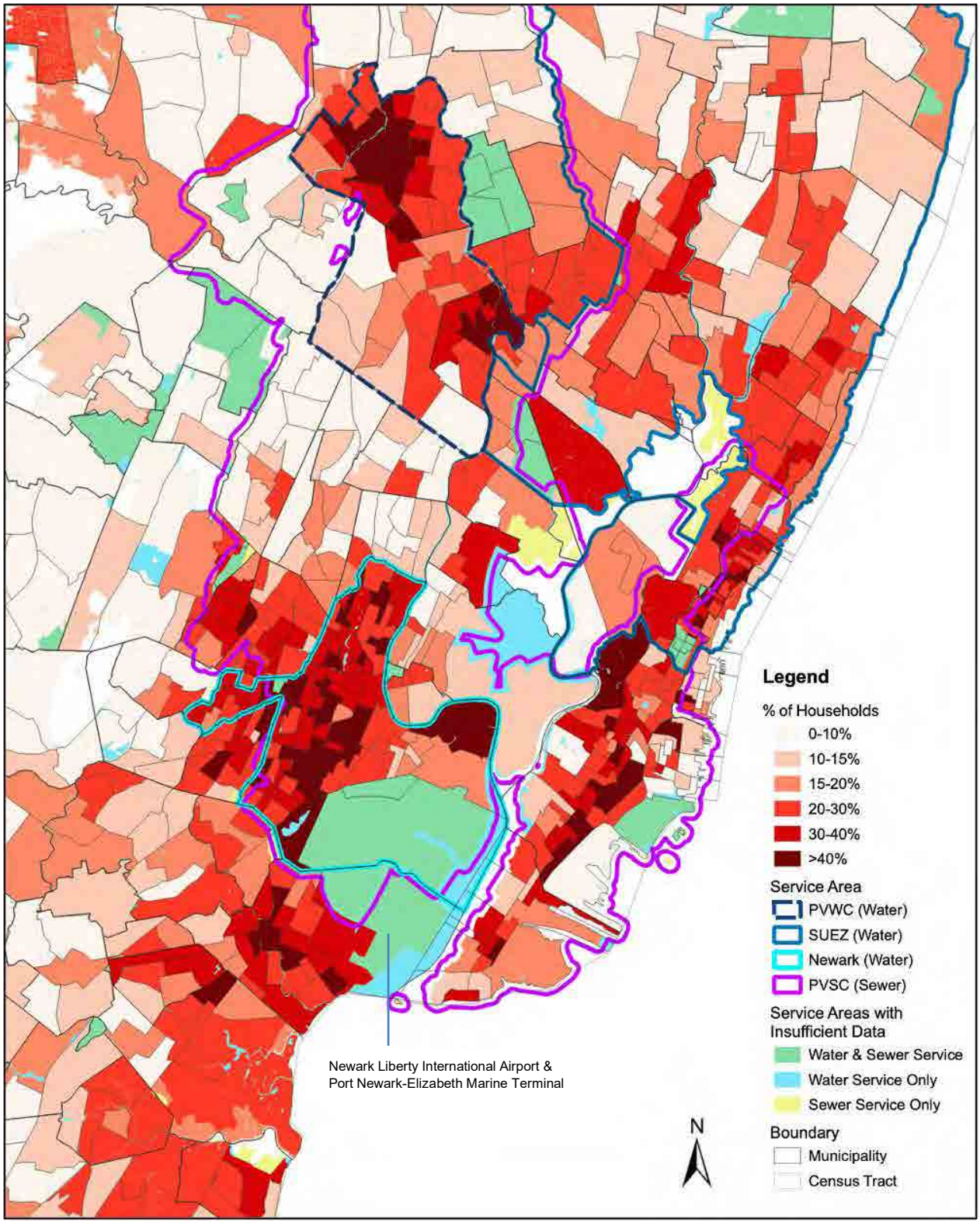

Figure A-7. Estimated Percentage of Households Exceeding Baseline Affordability Threshold: Newark Area

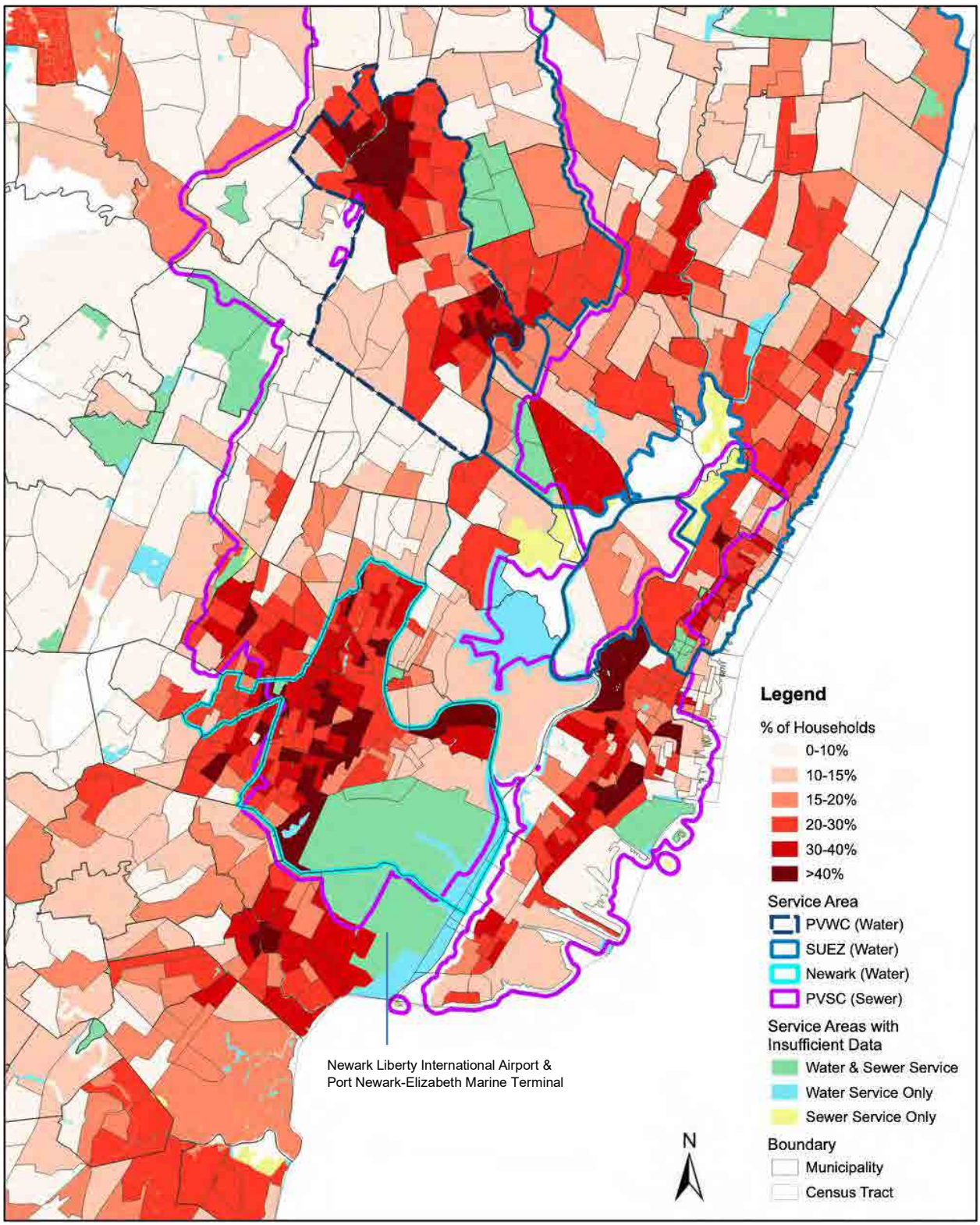

Figure A-8. Estimated Percentage of Households Exceeding High Affordability Threshold: Newark Area

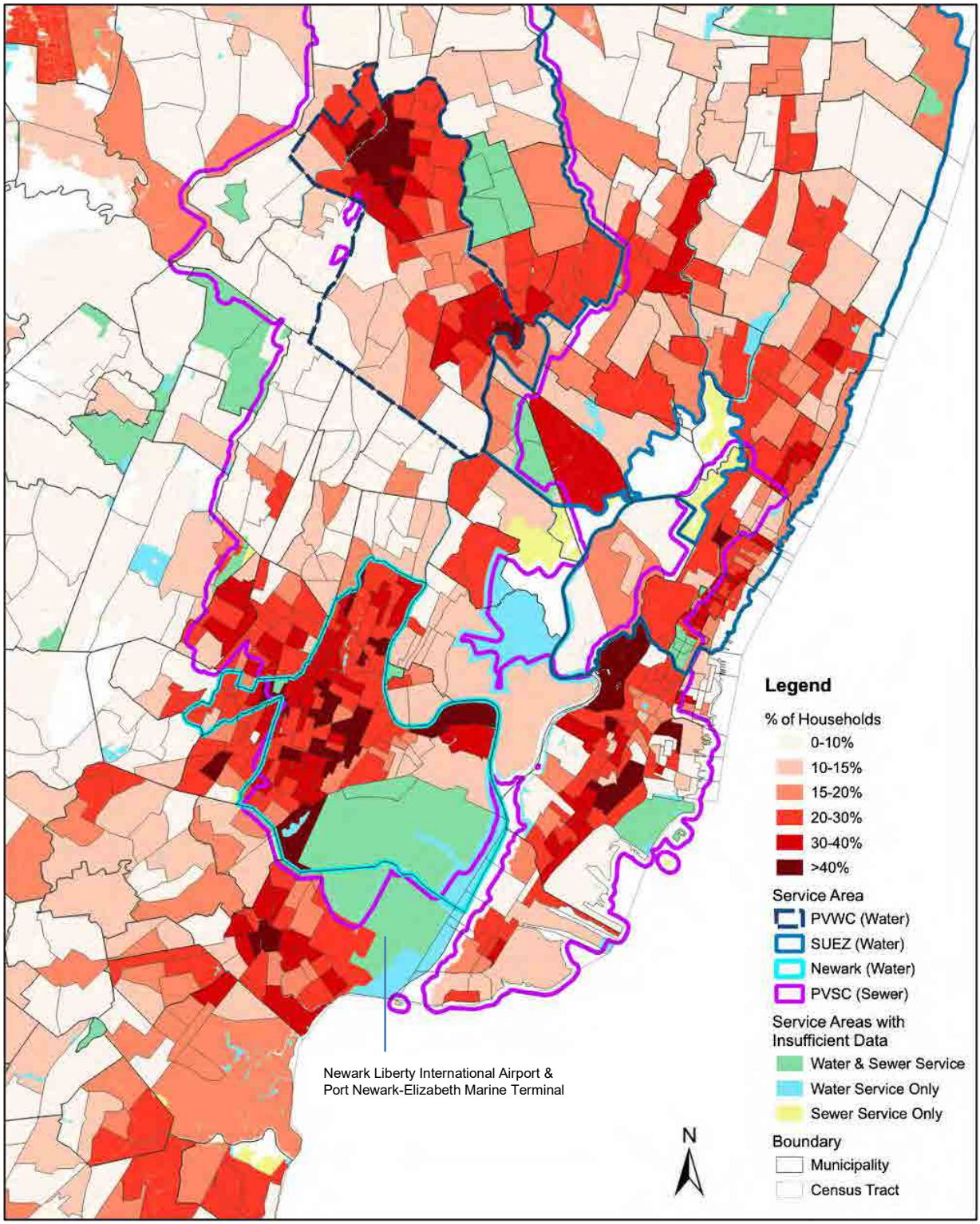

Figure A-9. Estimated Percentage of Households Exceeding Severe Affordability Threshold: Newark Area

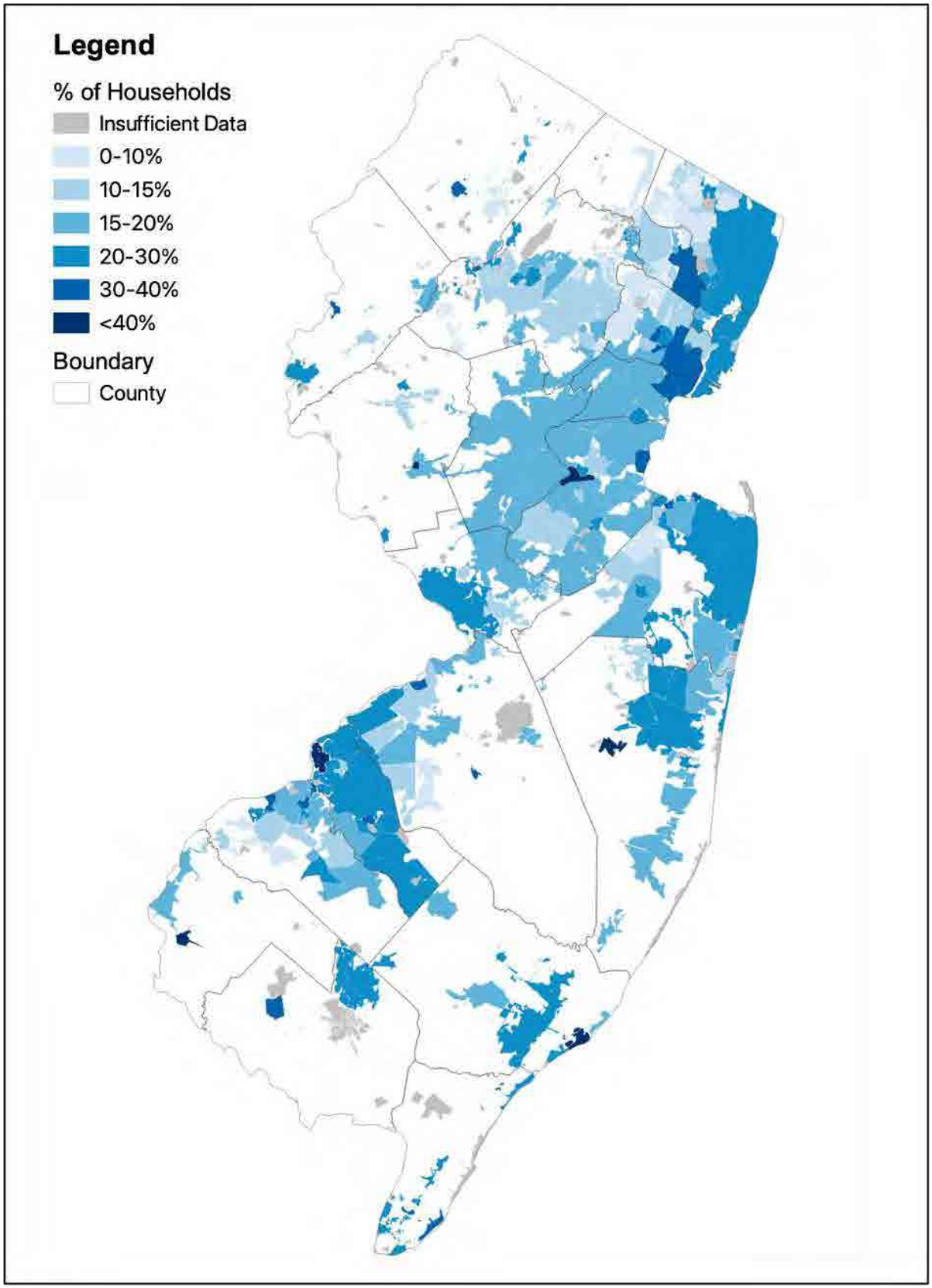

Figure A-10. Estimated Percentage of Households Exceeding Baseline Affordability Threshold – Combined Water Utility Costs within Drinking Water Service Areas

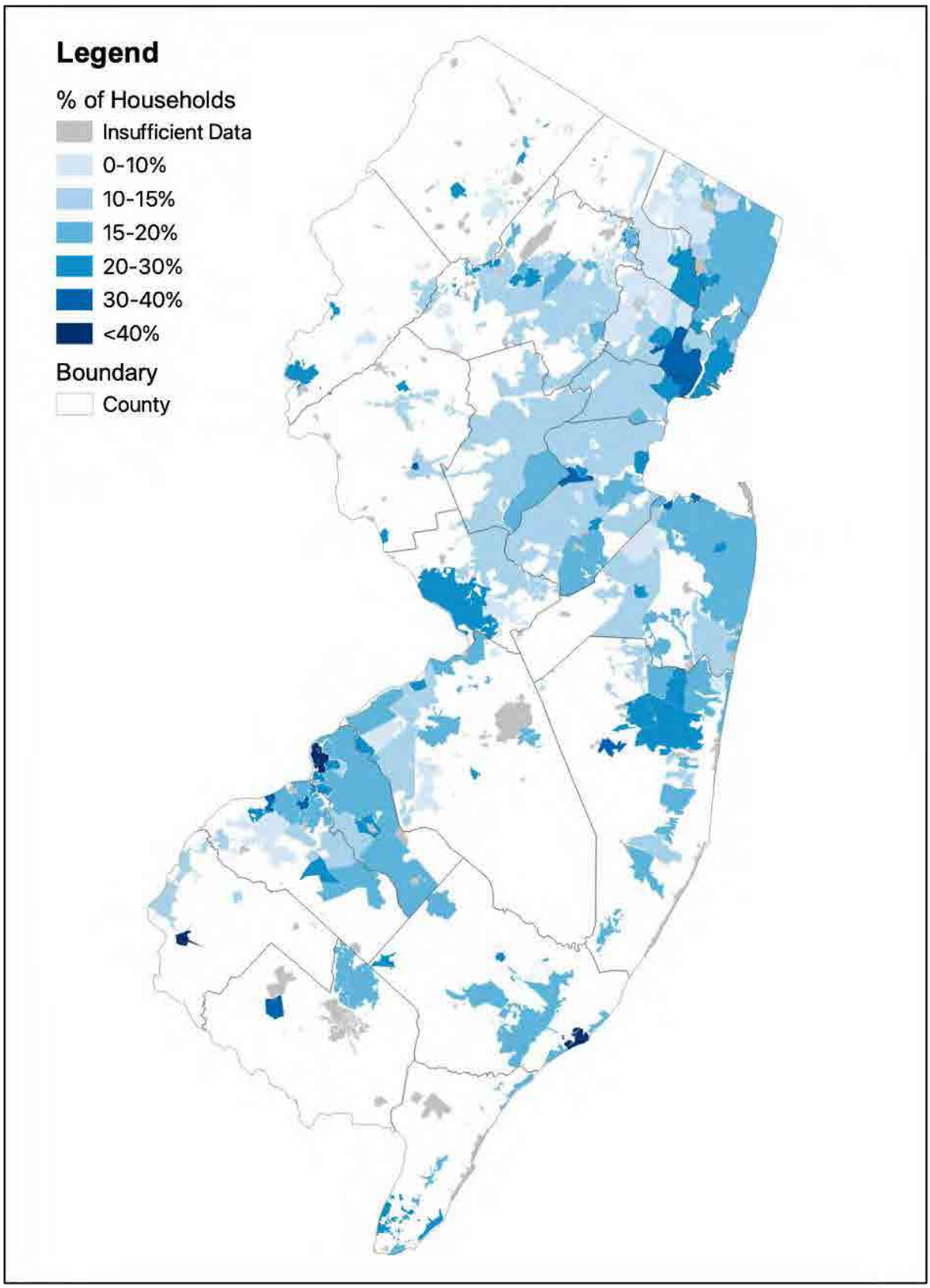

Figure A-11. Estimated Percentage of Households Exceeding High Affordability Threshold – Combined Water Utility Costs within Drinking Water Service Areas

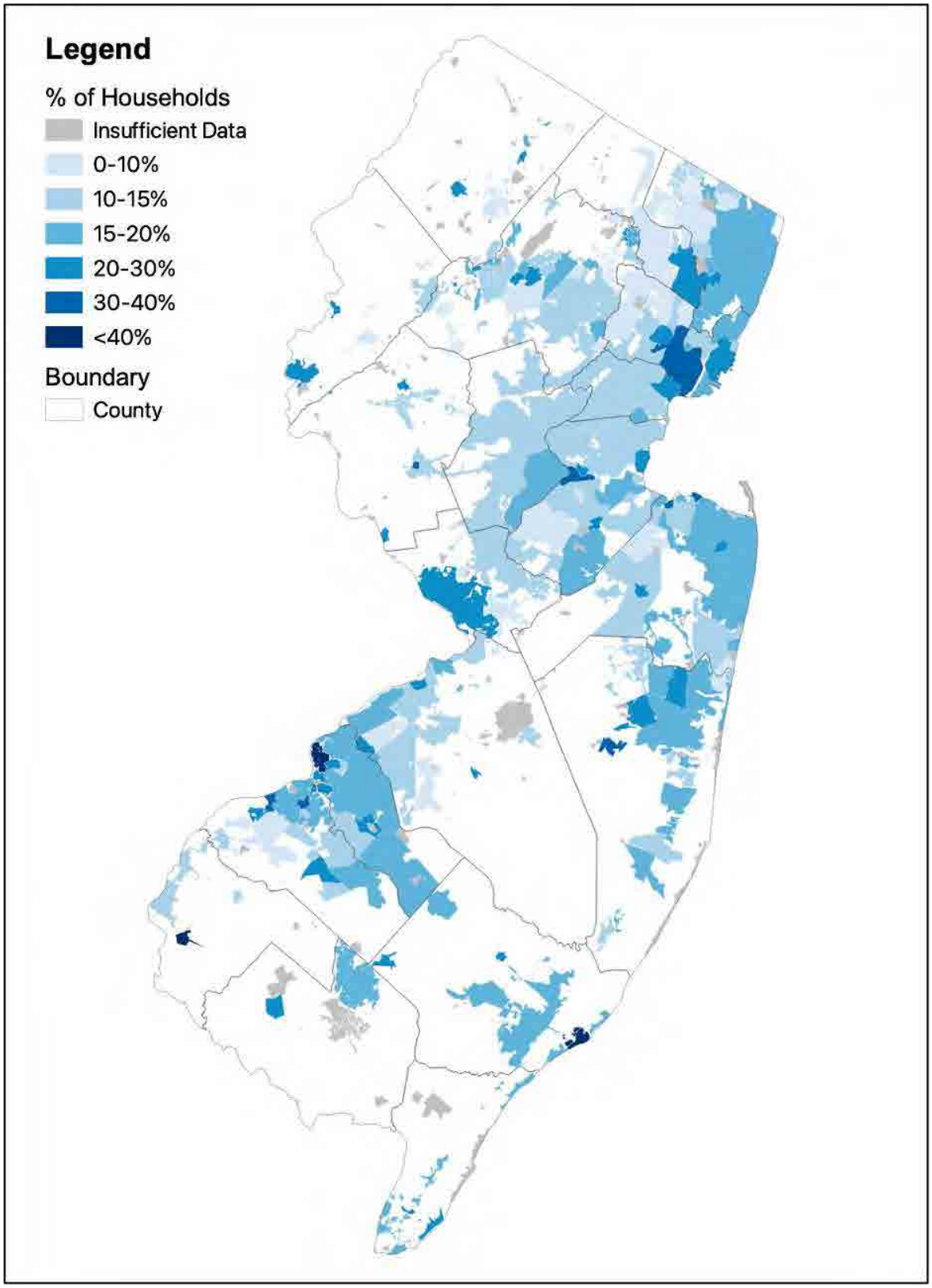

Figure A-12. Estimated Percentage of Households Exceeding Severe Affordability Threshold – Combined Water Utility Costs within Drinking Water Service Areas

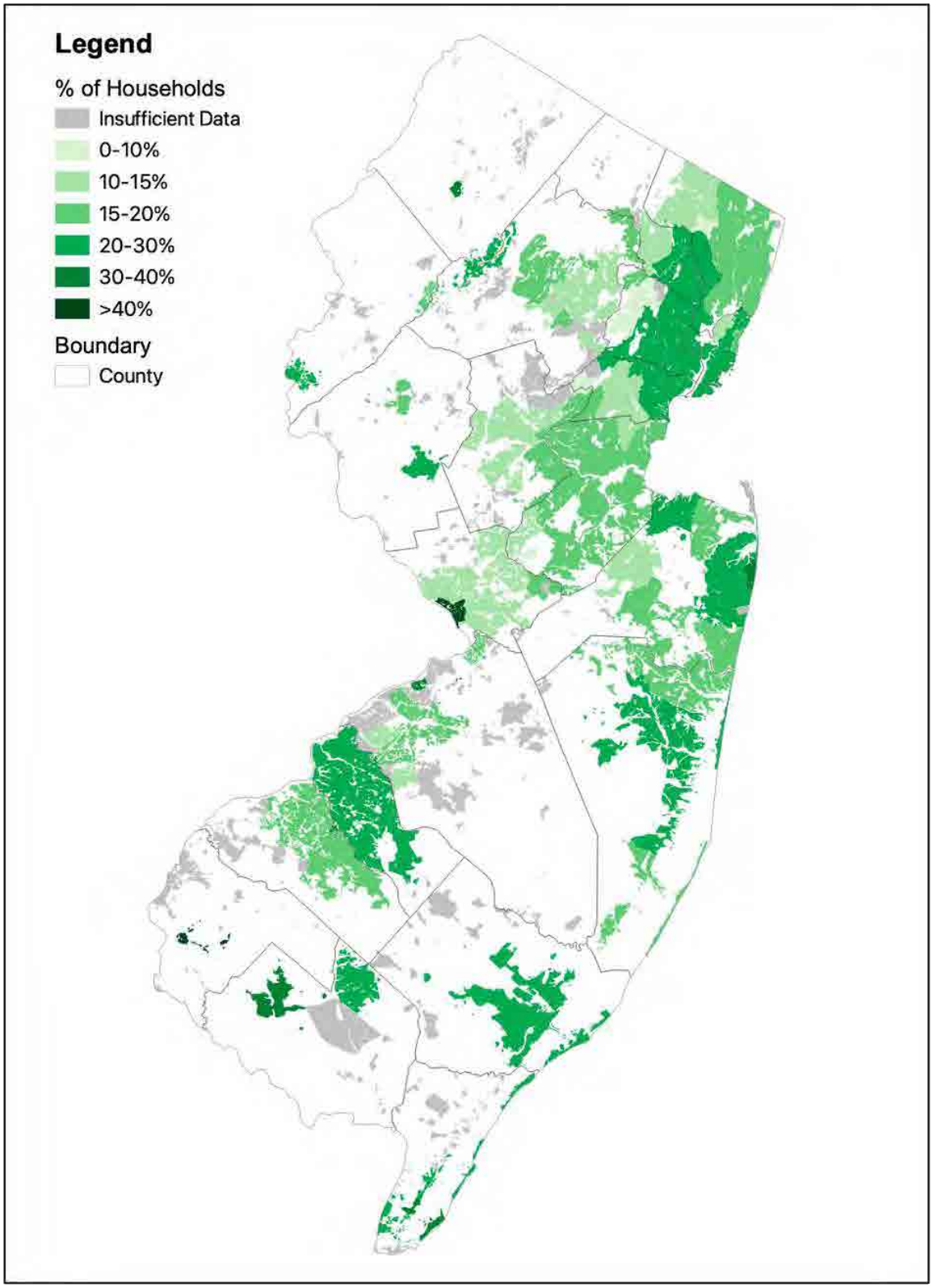

Figure A-13. Estimated Percentage of Households Exceeding Baseline Affordability Threshold – Combined Water Utility Costs within Sewer Service Areas

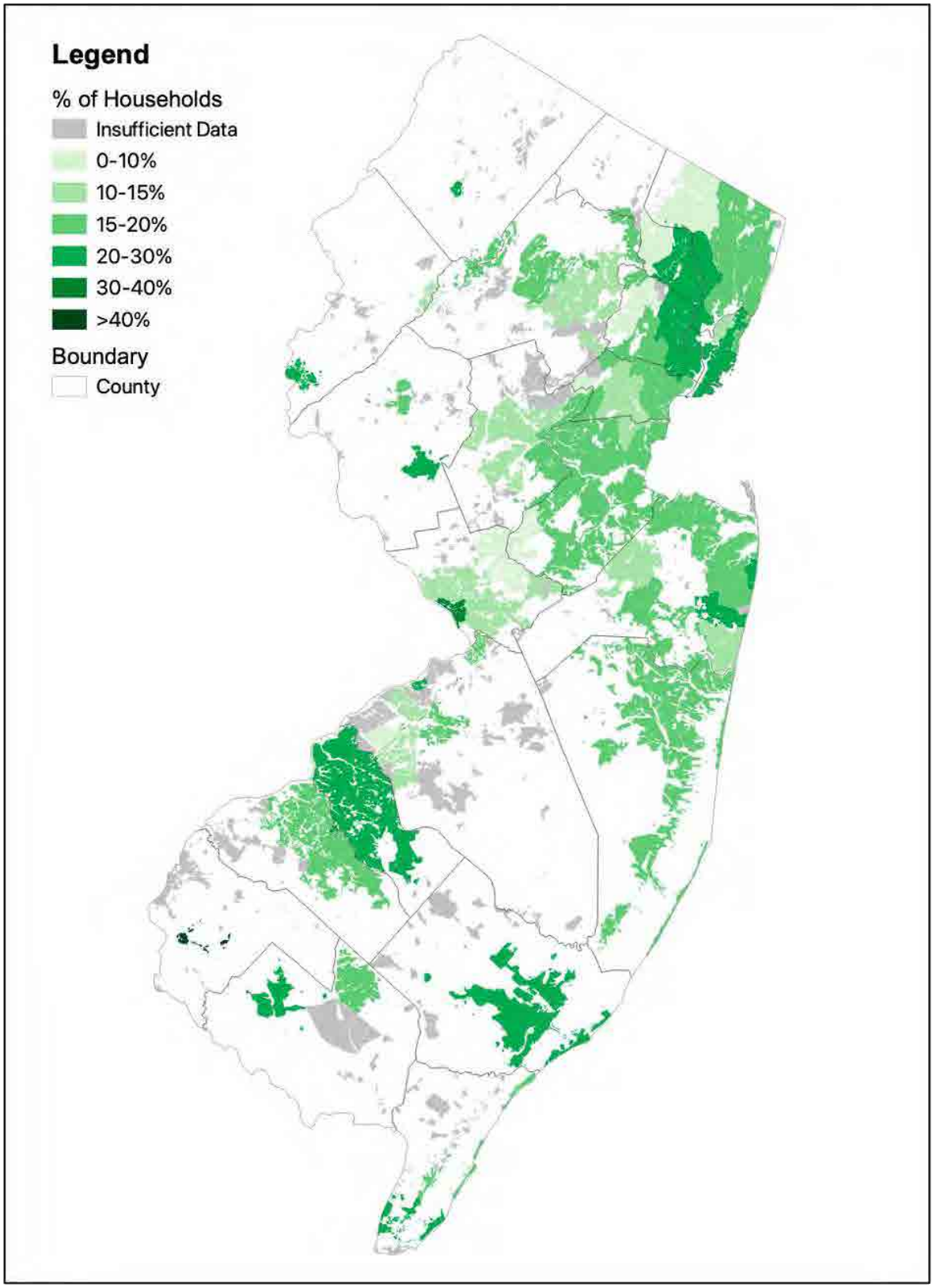

Figure A-14. Estimated Percentage of Households Exceeding High Affordability Threshold – Combined Water Utility Costs within Sewer Service Areas

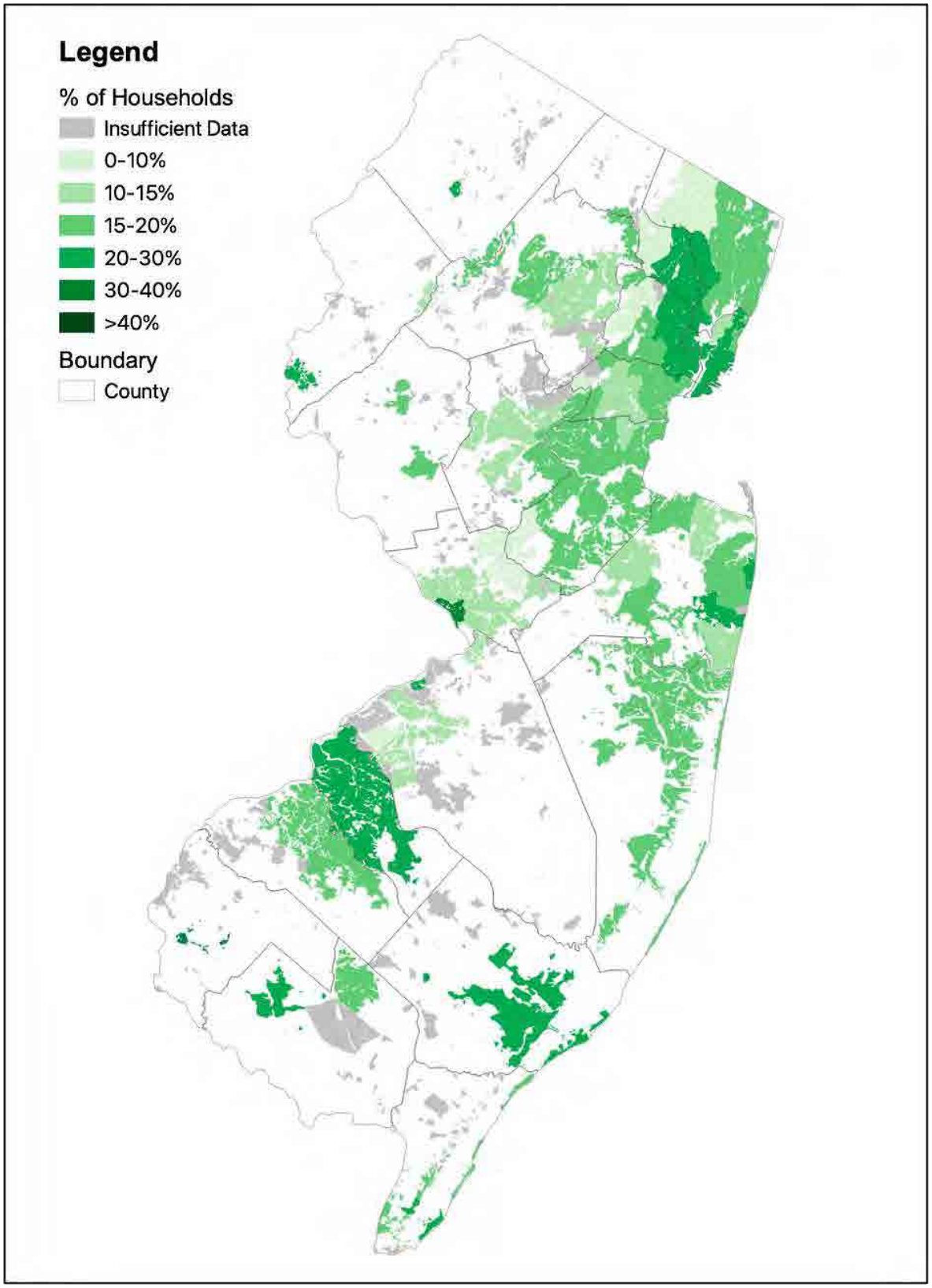

Figure A-15. Estimated Percentage of Households Exceeding Severe Affordability Threshold – Combined Water Utility Costs within Sewer Service Areas

Appendix B: PCWS Cost Tables

The following costs were derived from 2020 rate schedules, or the most recent rate schedules where 2020 was not available. The resulting costs are derived from the team's understanding of the rate schedules. Corrections and questions are welcome. These facilities are listed by their residential populations served, as assessed using GIS analysis.

PWSID	Water System Name	County	System Size (ranked by population served)	Base Charge (quarterly)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
0238001	SUEZ WATER NEW JERSEY HACKENSACK SA1	Bergen	Very Large >100K	$53.79	$63.83	$470.48
2004002	NJ AMERICAN WATER - RARITAN A2	Somerset	Very Large >100K	$60.60	$74.38	$539.93
1345001	NJ AMERICAN WATER - COASTAL NORTH A1	Monmouth	Very Large >100K	$60.60	$74.38	$539.93
1605002	PASSAIC VALLEY WATER COMMISSION	Passaic	Very Large >100K	$75.12	$33.69	$435.23
0714001	NEWARK WATER DEPARTMENT	Passaic	Very Large >100K	$0.00	$27.93	$111.73
0327001	NJ AMERICAN WATER - WESTERN DIVISION A1	Burlington	Very Large >100K	$60.60	$74.38	$539.93
0906001	JERSEY CITY MUA	Hudson	Very Large >100K	$9.11	$63.16	$289.08
1225001	MIDDLESEX WATER COMPANY	Middlesex	Very Large >100K	$47.25	$69.07	$465.28
0712001	NJ AMERICAN WATER - PASSAIC BASIN A1	Essex	Very Large >100K	$60.60	$74.38	$539.93
1111001	TRENTON WATER WORKS	Mercer	Very Large >100K	$39.62	$15.91	$222.13
0102001	ATLANTIC CITY MUA	Atlantic	Very Large >100K	$61.00	$56.58	$470.31
2004001	LIBERTY WATER CO C/O NJ AMERICAN WATER	Union	Very Large >100K	$57.63	$68.63	$505.04
1507005	SUEZ WATER TOMS RIVER INC SA2	Ocean	Very Large >100K	$53.79	$68.81	$490.39
0119002	NJ AMERICAN WATER - ATLANTIC COUNTY A1	Atlantic	Very Large >100K	$60.60	$74.38	$539.93
1506001	BRICK TOWNSHIP MUA	Ocean	Large 50-100K	$24.33	$45.21	$278.17
0705001	EAST ORANGE WATER COMMISSION	Essex	Large 50-100K	$38.35	$20.36	$234.84
1209002	OLD BRIDGE MUA	Middlesex	Large 50-100K	$72.46	$17.38	$359.35
0901001	CITY OF BAYONNE	Hudson	Large 50-100K	$0.00	$117.73	$470.92
1424001	SOUTHEAST MORRIS COUNTY MUA	Morris	Large 50-100K	$21.53	$47.12	$274.59
0251001	RIDGEWOOD WATER	Bergen	Large 50-100K	$32.98	$58.73	$366.82
1808001	FRANKLIN TOWNSHIP DEPT OF PUBLIC WORKS	Somerset	Large 50-100K	$56.60	$7.08	$254.70
1214001	NEW BRUNSWICK WATER DEPARTMENT	Middlesex	Large 50-100K	$57.31	$29.46	$347.08
1614001	TOWNSHIP OF WAYNE - DIV OF WATER AND SEWER	Passaic	Large 50-100K	$26.00	$17.75	$174.98
1216001	PERTH AMBOY WATER DEPARTMENT	Middlesex	Large 50-100K	$24.13	$48.39	$290.07
0905001	SUEZ HOBOKEN WATER UTILITY (PPP)	Hudson	Large 50-100K	$44.62	$22.68	$269.18

PWSID	Water System Name	County	System Size (ranked by population served)	Base Charge (quarterly)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
1429001	PARSIPPANY-TROY HILLS WATER DEPARTMENT	Morris	Large 50-100K	$23.25	$3.41	$106.65
1204001	EAST BRUNSWICK TWP WATER & SEWER UTILITY	Middlesex	Medium 10-50K	$36.00	$58.50	$378.00
0818004	WASHINGTON TOWNSHIP MUA	Gloucester	Medium 10-50K	$27.00	$2.31	$117.25
0323001	NJ AMERICAN WATER - MOUNT HOLLY A3	Burlington	Medium 10-50K	$60.60	$74.38	$539.93
0702001	BLOOMFIELD WATER DEPARTMENT	Essex	Medium 10-50K	$29.36	$44.22	$294.30
0424001	MERCHANTVILLE PENNSAUKEN	Camden	Medium 10-50K	$24.75	$26.49	$204.97
0408001	CITY OF CAMDEN	Camden	Medium 10-50K	$156.00	$0.00	$624.00
1326001	GORDONS CORNER WATER CO	Monmouth	Medium 10-50K	$48.75	$64.13	$451.50
0313001	EVESHAM MUA	Burlington	Medium 10-50K	$32.00	$20.81	$211.25
1221004	SOUTH BRUNSWICK TOWNSHIP WATER DIVISION	Middlesex	Medium 10-50K	$15.03	$33.86	$195.57
0415002	AQUA NJ - BLACKWOOD	Camden	Medium 10-50K	$49.50	$72.59	$488.34
1219001	SAYREVILLE W DEPT	Middlesex	Medium 10-50K	$26.40	$21.57	$191.87
0324001	MT LAUREL TWP MUA	Burlington	Medium 10-50K	$27.45	$34.76	$248.85
0907001	KEARNY WATER DEPARTMENT	Hudson	Medium 10-50K	$0.00	$38.35	$153.40
1215001	NORTH BRUNSWICK WATER DEPARTMENT	Somerset	Medium 10-50K	$8.70	$46.20	$219.59
0436007	WINSLOW TWP DMU	Camden	Medium 10-50K	$106.00	$0.00	$424.00
1103001	AQUA NJ - HAMILTON SQUARE	Mercer	Medium 10-50K	$49.50	$72.59	$488.34
0713001	MONTCLAIR WATER BUREAU	Essex	Medium 10-50K	$34.00	$17.13	$204.53
0614003	VINELAND WATER & SEWER UTILITY	Cumberland	Medium 10-50K	$37.48	$6.72	$176.80
1339001	NJ AMERICAN WATER - SHORELANDS A1C	Monmouth	Medium 10-50K	$60.60	$65.38	$503.91
1511001	JACKSON TWP MUA	Ocean	Medium 10-50K	$37.00	$28.50	$262.00
0701001	BELLEVILLE WATER DEPT	Essex	Medium 10-50K	$24.50	$39.35	$255.41
0338001	WILLINGBORO MUA	Burlington	Medium 10-50K	$75.33	$3.16	$313.97
0502001	CAPE MAY WATER & SEWER UTILITY	Cape May	Medium 10-50K	$39.00	$56.25	$381.00
1205001	EDISON WATER DEPT	Middlesex	Medium 10-50K	$18.66	$32.62	$205.10
1213002	MONROE TOWNSHIP UTILITY DEPARTMENT	Middlesex	Medium 10-50K	$13.28	$17.59	$123.47
0217001	FAIR LAWN WATER DEPT	Bergen	Medium 10-50K	$4.50	$63.00	$270.00
0802001	DEPTFORD TWP MUA	Gloucester	Medium 10-50K	$49.65	$0.00	$198.60
0221001	GARFIELD WATER DEPARTMENT	Bergen	Medium 10-50K	$19.62	$13.18	$131.21
0717001	ORANGE WATER DEPT	Essex	Medium 10-50K	$52.03	$26.22	$312.99
1316001	FREEHOLD TWP WATER DEPT	Monmouth	Medium 10-50K	$27.70	$0.00	$110.80
0716001	NUTLEY WATER DEPT	Essex	Medium 10-50K	$29.24	$40.64	$279.51

PWSID	Water System Name	County	System Size (ranked by population served)	Base Charge (quarterly)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
1328002	MARLBORO TOWNSHIP WATER UTILITY DIVISION	Monmouth	Medium 10-50K	$39.00	$43.76	$331.05
1512001	LACEY TWP MUA	Ocean	Medium 10-50K	$24.76	$60.53	$341.14
1530004	STAFFORD TWP WATER - BEACH HAVEN WEST	Ocean	Medium 10-50K	$61.00	$11.25	$289.00
1409001	DOVER WATER COMMISSION	Morris	Medium 10-50K	$17.69	$37.49	$220.72
0610001	MILLVILLE WATER DEPARTMENT	Cumberland	Medium 10-50K	$30.00	$4.38	$137.50
0710001	LIVINGSTON TWP DIV OF WATER	Essex	Medium 10-50K	$15.75	$37.35	$212.38
2013001	RAHWAY CITY WATER DEPT	Union	Medium 10-50K	$61.95	$84.64	$338.56
1326004	SUEZ WATER MATCHAPONIX SA3	Monmouth	Medium 10-50K	$53.79	$68.81	$490.39
0233001	MAHWAH WATER DEPARTMENT	Bergen	Medium 10-50K	$26.90	$17.08	$179.61
2119001	AQUA NJ INC - PHILLIPSBURG	Warren	Medium 10-50K	$49.50	$72.59	$488.34
0811002	MONROE TWP MUA	Gloucester	Medium 10-50K	$59.10	$4.65	$255.00
1352003	WALL TWP WATER DEPT	Monmouth	Medium 10-50K	$45.43	$29.24	$298.69
1101002	EAST WINDSOR MUA	Mercer	Medium 10-50K	$20.06	$24.64	$178.80
0412001	COLLINGSWOOD WATER DEPAR	Camden	Medium 10-50K	$32.25	$54.89	$348.57
0806001	GLASSBORO WATER DEPARTMENT	Gloucester	Medium 10-50K	$48.50	$15.60	$256.40
1516001	LITTLE EGG HARBOR TWP MU	Ocean	Medium 10-50K	$56.00	$0.00	$224.00
0231001	PASSAIC VALLEY WC LODI WD	Bergen	Medium 10-50K	$56.44	$8.54	$259.93
0601001	BRIDGETON CITY WATER DEPT	Cumberland	Medium 10-50K	$50.00	$0.00	$200.00
0306001	BURLINGTON TWP W DEPT	Burlington	Medium 10-50K	$22.47	$10.13	$130.38
0820001	WEST DEPTFORD TWP WATER DEPT	Gloucester	Medium 10-50K	$21.45	$18.95	$161.58
1421003	MONTVILLE TWP MUA	Morris	Medium 10-50K	$0.00	$52.31	$209.25
2108001	HACKETTSTOWN MUA	Warren	Medium 10-50K	$23.56	$21.23	$94.24
1514002	LAKEWOOD TWP MUA	Ocean	Medium 10-50K	$49.49	$3.07	$210.23
0112001	HAMILTON TOWNSHIP MUA	Atlantic	Medium 10-50K	$30.75	$19.69	$201.75
1518005	MANCHESTER TWP WATER UTILITY - EASTERN	Ocean	Medium 10-50K	$11.60	$23.63	$140.90
0322001	MOORESTOWN WATER DEPT	Burlington	Medium 10-50K	$0.00	$45.63	$182.50
0232001	LYNDHURST WATER DEPARTMENT	Bergen	Medium 10-50K	$22.00	$60.16	$328.62
0211001	ELMWOOD PARK WATER DEPT	Bergen	Medium 10-50K	$49.10	$33.88	$331.90
1533001	BARNEGAT TWP WATER & SEWER UTILITIES	Ocean	Medium 10-50K	$45.00	$0.00	$180.00
1524001	POINT PLEASANT WATER DEPARTMENT	Ocean	Medium 10-50K	$24.00	$44.16	$272.63
0319001	MAPLE SHADE WATER DEPARTMENT	Burlington	Medium 10-50K	$24.50	$34.38	$235.50
1604001	HAWTHORNE WATER DEPARTMENT	Passaic	Medium 10-50K	$41.16	$23.08	$256.95

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1918004	SPARTA TWP WATER UTILITY - LAKE MOHAWK	Sussex	Medium 10-50K	$33.38	$50.63	$336.02
0320001	MEDFORD TWP DEPT OF MUNI	Burlington	Medium 10-50K	$25.00	$21.88	$187.50
0719001	SOUTH ORANGE WATER DEPARTMENT	Essex	Medium 10-50K	$0.00	$98.05	$392.22
0508001	NJ AMERICAN WATER - OCEAN CITY A1	Cape May	Medium 10-50K	$60.60	$74.38	$539.93
0514001	WILDWOOD CITY WATER DEPARTMENT	Cape May	Medium 10-50K	$24.85	$28.24	$212.35
0247001	PARK RIDGE WATER DEPT	Bergen	Medium 10-50K	$16.83	$52.20	$276.12
1408001	DENVILLE TWP WATER DEPT	Morris	Medium 10-50K	$30.00	$31.24	$244.95
0303001	BORDENTOWN WATER DEPARTMENT	Burlington	Medium 10-50K	$33.70	$38.03	$286.90
1417001	MADISON WATER DEPT	Morris	Medium 10-50K	$20.29	$25.27	$182.23
1518004	MANCHESTER TWP WATER - WESTERN	Ocean	Medium 10-50K	$25.57	$30.83	$225.58
1520001	OCEAN TWP DEPT OF UTILITIES	Ocean	Medium 10-50K	$35.61	$21.26	$227.49
0239001	PVWC-NORTH ARLINGTON	Bergen	Medium 10-50K	$88.56	$44.21	$531.10
0248001	RAMSEY WATER DEPT	Bergen	Medium 10-50K	$35.46	$31.03	$265.95
1432003	RANDOLPH TWP PUBLIC WORKS DEPT	Morris	Medium 10-50K	$23.35	$49.28	$290.50
0904001	HARRISON WATER DEPARTMENT	Hudson	Medium 10-50K	$0.00	$48.88	$195.51
1707001	NJ AMERICAN WATER - PENNS GROVE A1B	Salem	Medium 10-50K	$60.60	$65.38	$503.91
1431001	PEQUANNOCK TWP WATER DEPARTMENT	Morris	Medium 10-50K	$24.00	$51.30	$301.20
1207001	HIGHLAND PARK W DEPT	Middlesex	Medium 10-50K	$40.88	$140.74	$726.49
1223001	SOUTH RIVER W DEPT	Middlesex	Medium 10-50K	$73.07	$98.15	$392.60
1435002	ROCKAWAY TWP WATER DEPT	Morris	Medium 10-50K	$30.00	$29.38	$237.50
0720001	VERONA WATER DEPARTMENT	Essex	Medium 10-50K	$15.00	$49.39	$257.55
1708001	PENNSVILLE TWSP. WATER DEPARTMENT	Salem	Medium 10-50K	$91.48	$19.01	$441.97
0257001	SADDLE BROOK WATER DEPT	Bergen	Medium 10-50K	$0.00	$64.22	$256.87
0405001	BERLIN WATER DEPARTMENT	Camden	Medium 10-50K	$25.00	$40.63	$262.50
0704001	CEDAR GROVE WATER DEPT	Essex	Medium 10-50K	$25.00	$31.25	$225.00
0242001	OAKLAND WATER DEPT	Bergen	Medium 10-50K	$49.04	$20.68	$278.86
0810004	MANTUA TOWNSHIP MUA	Gloucester	Medium 10-50K	$45.00	$13.98	$235.90
1340001	RED BANK WATER DEPT	Monmouth	Medium 10-50K	$44.00	$79.99	$495.95
1005001	CLINTON W DEPT	Hunterdon	Medium 10-50K	$37.79	$60.86	$394.61
0414001	GLOUCESTER CITY WATER DEPARTMENT	Camden	Medium 10-50K	$71.00	$8.13	$316.50
0329004	PEMBERTON TWP DEPT MAIN	Burlington	Medium 10-50K	$57.00	$4.38	$245.50
0113001	HAMMONTON WATER DEPT	Atlantic	Medium 10-50K	$46.50	$0.13	$186.50

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1505002	AQUA NJ - EASTERN DIVISION	Ocean	Medium 10-50K	$49.50	$72.59	$488.34
1603001	MANCHESTER UTILITIES AUTHORITY	Passaic	Medium 10-50K	$48.50	$70.83	$477.34
0416001	HADDON TWP WATER DEPARTM	Camden	Medium 10-50K	$26.25	$32.81	$236.25
1436002	NJ AMERICAN WATER - ROXBURY	Morris	Medium 10-50K	$22.50	$37.01	$238.05
0265001	WALLINGTON WATER DEPT	Bergen	Medium 10-50K	$45.70	$33.09	$315.14
0822001	WOODBURY CITY W DEPT	Gloucester	Medium 10-50K	$33.75	$28.06	$247.25
1609001	POMPTON LAKES MUA	Passaic	Medium 10-50K	$17.00	$5.20	$88.80
1410001	EAST HANOVER TWP WATER DEPT	Morris	Medium 10-50K	$25.00	$22.50	$190.00
1605001	NJ AMERICAN WATER - LITTLE FALLS A1A	Passaic	Medium 10-50K	$60.60	$74.38	$539.93
1505004	BERKELEY TWP MUA	Ocean	Medium 10-50K	$55.00	$41.06	$384.25
0315001	FLORENCE TWP W DEPT	Burlington	Medium 10-50K	$52.27	$0.00	$209.08
1315001	FREEHOLD BOROUGH WATER DEPARTMENT	Monmouth	Medium 10-50K	$28.70	$16.80	$182.00
1416001	BOROUGH OF LINCOLN PARK WATER DEPT	Morris	Medium 10-50K	$37.73	$60.94	$394.67
1612001	TOTOWA WATER DEPT	Passaic	Medium 10-50K	$0.00	$60.30	$241.20
1504001	BEACHWOOD WATER DEPT	Ocean	Medium 10-50K	$49.95	$29.33	$317.10
0721001	WEST CALDWELL WATER DEPARTMENT	Essex	Medium 10-50K	$19.00	$90.56	$438.25
2121001	NJ AMERICAN WATER - WASHINGTON/OXFORD A1	Warren	Medium 10-50K	$60.60	$74.38	$539.93
0122001	VENTNOR CITY WATER & SEWER UTILITY	Atlantic	Medium 10-50K	$49.50	$12.74	$248.96
0505002	LOWER TWP MUA	Cape May	Medium 10-50K	$62.48	$4.51	$267.97
1613002	WANAQUE WATER DEPARTMENT	Passaic	Medium 10-50K	$49.00	$22.31	$285.25
0428002	PINE HILL BOROUGH MUA	Camden	Medium 10-50K	$17.50	$34.88	$209.50
0264001	WALDWICK WATER DEPT	Bergen	Medium 10-50K	$29.00	$52.16	$324.65
1321001	KEANSBURG WATER & SEWER DEPT.	Monmouth	Medium 10-50K	$0.00	$30.49	$121.95
0803001	EAST GREENWICH TWP WATER DEPT	Gloucester	Medium 3.3-10K	$36.20	$4.00	$160.80
0305001	BURLINGTON CITY WATER DEPT	Burlington	Medium 3.3-10K	$140.25	$0.00	$561.00
0815001	PITMAN WATER DEPARTMENT	Gloucester	Medium 3.3-10K	$66.00	$22.75	$355.00
1401001	BOONTON WATER DEPT	Morris	Medium 3.3-10K	$47.00	$24.86	$287.44
0404001	BELLMAWR WATER DEPT	Camden	Medium 3.3-10K	$15.52	$1.05	$66.28
0103001	BRIGANTINE WATER DEPARTMENT	Atlantic	Medium 3.3-10K	$70.00	$0.00	$280.00
1611002	RINGWOOD WATER DEPARTMENT	Passaic	Medium 3.3-10K	$72.32	$9.04	$325.43
0808001	NJ AMERICAN WATER - HARRISON A1A	Gloucester	Medium 3.3-10K	$60.60	$74.38	$539.93
1329001	MATAWAN BOROUGH WATER DE	Monmouth	Medium 3.3-10K	$30.00	$78.20	$312.81

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1404001	CHATHAM WATER DEPT	Morris	Medium 3.3-10K	$18.00	$66.32	$337.29
1411001	FLORHAM PARK WATER DEPT	Morris	Medium 3.3-10K	$33.60	$13.10	$186.81
1107002	AQUA NJ - LAWRENCE	Mercer	Medium 3.3-10K	$49.50	$72.59	$488.34
1414011	JEFFERSON TWP WATER UTILITY LAKE HOPATCONG	Morris	Medium 3.3-10K	$100.33	$9.65	$439.92
1224001	SPOTSWOOD W DEPT	Middlesex	Medium 3.3-10K	$48.40	$75.38	$301.50
1915001	NEWTON WATER & SEWER UTILITY	Sussex	Medium 3.3-10K	$30.00	$105.13	$540.50
0801001	CLAYTON WATER DEPARTMENT	Gloucester	Medium 3.3-10K	$38.50	$14.62	$212.48
1427005	MOUNT OLIVE TWP - FLANDERS	Morris	Medium 3.3-10K	$51.00	$10.35	$245.40
0703001	CALDWELL WATER DEPT	Essex	Medium 3.3-10K	$25.00	$101.25	$505.00
1601001	BLOOMINGDALE WATER DEPT	Passaic	Medium 3.3-10K	$54.00	$38.14	$368.55
0708001	GLEN RIDGE WATER DEPT	Essex	Medium 3.3-10K	$39.00	$58.65	$390.61
1403001	BUTLER WATER DEPT	Morris	Medium 3.3-10K	$41.75	$51.08	$371.30
1322001	KEYPORT WATER DEPT	Monmouth	Medium 3.3-10K	$45.75	$29.77	$302.09
0707001	FAIRFIELD WATER DEPARTMENT	Essex	Medium 3.3-10K	$60.00	$0.00	$240.00
1912001	HOPATCONG WATER DEPT	Sussex	Medium 3.3-10K	$85.00	$4.43	$357.70
1434001	ROCKAWAY BORO WATER DEPT	Morris	Medium 3.3-10K	$62.00	$10.43	$289.72
1212001	MILLTOWN W DEPT	Middlesex	Medium 3.3-10K	$42.83	$28.76	$286.37
1330002	ABERDEEN - CLIFFWOOD/CLIFFWOOD BEACH	Monmouth	Medium 3.3-10K	$94.00	$31.03	$500.10
0201001	ALLENDALE WATER DEPT	Bergen	Medium 3.3-10K	$52.64	$13.19	$263.30
1306001	BELMAR WATER DEPT	Monmouth	Medium 3.3-10K	$88.95	$47.50	$545.80
0809002	NJ AMERICAN WATER - LOGAN A1 and 1B	Gloucester	Medium 3.3-10K	$60.60	$74.38	$539.93
1326002	SUEZ WATER MANALAPAN KNOB HILL SA2	Monmouth	Medium 3.3-10K	$53.79	$68.81	$490.39
0116001	MARGATE CITY WATER DEPARTMENT	Atlantic	Medium 3.3-10K	$230.00	$0.00	$920.00
1427017	NJ AMERICAN WATER - ITC A1D	Morris	Medium 3.3-10K	$60.60	$74.38	$539.93
1439001	WHARTON WATER DEPT	Morris	Medium 3.3-10K	$2.50	$59.10	$246.41
1532002	BOROUGH OF TUCKERTON	Ocean	Medium 3.3-10K	$90.34	$0.00	$361.35
0824001	AQUA NJ - WOOLWICH	Gloucester	Medium 3.3-10K	$49.50	$72.59	$488.34
1327001	MANASQUAN WATER DEPARTMENT	Monmouth	Medium 3.3-10K	$149.72	$48.83	$794.18
1712001	SALEM WATER DEPARTMENT	Salem	Medium 3.3-10K	$71.93	$0.00	$287.70
0814001	PAULSBORO WATER DEPARTMENT	Gloucester	Medium 3.3-10K	$75.00	$0.00	$300.00
0715001	NORTH CALDWELL WATER DEP	Essex	Medium 3.3-10K	$30.00	$73.13	$412.50
0821001	WESTVILLE WATER DEPARTMENT	Gloucester	Medium 3.3-10K	$125.00	$6.43	$525.70

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1350001	NJ AMERICAN WATER - UNION BEACH A1	Monmouth	Medium 3.3-10K	$60.60	$74.38	$539.93
1616001	WOODLAND PARK WATER DEPARTMENT	Passaic	Medium 3.3-10K	$59.00	$47.97	$427.90
0506010	NJ AMERICAN WATER - CAPE MAY COURT HOUSE A1	Cape May	Medium 3.3-10K	$60.60	$74.38	$539.93
1525001	POINT PLEASANT BEACH WATER DEPARTMENT	Ocean	Medium 3.3-10K	$51.11	$22.80	$295.62
1906002	FRANKLIN BOARD OF PUBLIC WORKS	Sussex	Medium 3.3-10K	$50.00	$29.69	$318.75
1104001	HIGHTSTOWN WATER DEPARTMENT	Mercer	Medium 3.3-10K	$44.44	$29.77	$296.85
0718001	ROSELAND WATER DEPT	Essex	Medium 3.3-10K	$100.00	$39.38	$278.75
1436003	ROXBURY TWP W DEPT-SHORE	Morris	Medium 3.3-10K	$34.38	$44.51	$315.57
0220001	SUEZ WATER NEW JERSEY FRANKLIN LAKES SA1	Bergen	Medium 3.3-10K	$53.79	$63.83	$470.48
0411001	CLEMENTON WATER DEPARTMENT	Camden	Medium 3.3-10K	$56.50	$30.00	$346.00
1349001	BOROUGH OF SPRINGLAKE HEIGHTS	Monmouth	Medium 3.3-10K	$70.00	$1.13	$284.50
1427001	MT OLIVE VILLAGES WATER	Morris	Medium 3.3-10K	$51.00	$10.35	$245.40
0333001	PINELANDS WATER CO	Burlington	Medium 3.3-10K	$39.39	$36.64	$304.13
0807001	GREENWICH TWP W DEPT	Gloucester	Medium 3.3-10K	$0.00	$90.56	$362.25
0107001	EGG HARBOR CITY WATER DEPT	Atlantic	Medium 3.3-10K	$70.00	$81.56	$606.25
0104003	BUENA BOROUGH MUA	Atlantic	Medium 3.3-10K	$63.50	$0.00	$254.00
1308001	BRIELLE WATER DEPT	Monmouth	Medium 3.3-10K	$180.00	$8.13	$752.50
1438004	WASHINGTON TWP MUA-SCHOOLEYS MOUNTAIN	Morris	Medium 3.3-10K	$106.17	$13.99	$480.63
1009001	FLEMINGTON WATER DEPARTMENT	Hunterdon	Medium 3.3-10K	$54.50	$43.75	$393.00
2101001	ALLAMUCHY TWP WATER & SEWER	Warren	Medium 3.3-10K	$26.08	$35.44	$246.07
1414003	JEFFERSON TWP W U MILTON SYSTEM	Morris	Medium 3.3-10K	$95.55	$9.19	$418.95
1436004	ROXBURY TWP W DEPT-SKY V	Morris	Medium 3.3-10K	$34.38	$44.51	$315.57
1715001	WOODSTOWN WATER DEPARTMENT	Salem	Medium 3.3-10K	$75.00	$6.06	$324.25
1304001	ATLANTIC HIGHLANDS WATER	Monmouth	Medium 3.3-10K	$77.55	$14.28	$367.32
1922026	SUEZ WATER NEW JERSEY VERNON VALLEY SA1	Sussex	Medium 3.3-10K	$53.79	$63.83	$470.48
1420001	MINE HILL TWP WATER DEPT	Morris	Medium 3.3-10K	$37.42	$44.78	$328.78
1017001	SUEZ WATER NEW JERSEY LAMBERTVILLE SA1	Hunterdon	Medium 3.3-10K	$53.79	$63.83	$470.48
0228001	HO HO KUS WATER DEPT	Bergen	Medium 3.3-10K	$50.00	$20.31	$281.25
1425001	MOUNTAIN LAKES WATER DEP	Morris	Medium 3.3-10K	$47.86	$0.00	$191.44
1919001	STANHOPE W DEPT	Sussex	Medium 3.3-10K	$93.00	$16.88	$439.50
1427007	MOUNT OLIVE TWP - VILLAGE	Morris	Medium 3.3-10K	$51.00	$10.35	$245.40

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0329003	PEMBERTON TOWNSHIP WATER - LAKE VALLEY	Burlington	Medium 3.3-10K	$42.00	$15.93	$231.70
1348001	SPRING LAKE WATER DEPARTMENT	Monmouth	Medium 3.3-10K	$50.33	$67.58	$471.60
1438003	WASHINGTON TWP MUA-HAGER	Morris	Medium 3.3-10K	$106.17	$13.99	$480.63
1909001	HAMBURG BOARD OF PUBLIC WORKS	Sussex	Medium 3.3-10K	$34.65	$19.94	$218.35
1428001	NETCONG WATER DEPT	Morris	Medium 3.3-10K	$87.00	$0.00	$348.00
1014001	HIGH BRIDGE W DEPT	Hunterdon	Medium 3.3-10K	$50.00	$70.31	$481.25
0823001	WOODBURY HEIGHTS W UTILITY	Gloucester	Small 0.5-3.3K	$52.00	$75.38	$509.50
2103001	NJ AMERICAN WATER - BELVIDERE A1	Warren	Small 0.5-3.3K	$60.60	$74.38	$539.93
0318002	NJ AMERICAN WATER - HOMESTEAD A3	Burlington	Small 0.5-3.3K	$60.60	$74.38	$539.93
1326005	SUEZ WATER MANALAPAN MILLHURST SA2	Monmouth	Small 0.5-3.3K	$53.79	$68.81	$490.39
1105001	HOPEWELL BORO W DEPT	Mercer	Small 0.5-3.3K	$25.50	$148.39	$695.55
1426004	SUEZ WATER NEW JERSEY ARLINGTON HILLS SA3	Morris	Small 0.5-3.3K	$53.79	$0.00	$215.16
1615016	SUEZ WATER NEW JERSEY - OLDE MILFORD ESTATES SA1	Passaic	Small 0.5-3.3K	$53.79	$63.83	$470.48
1011001	NJ AMERICAN WATER - FRENCHTOWN A1	Hunterdon	Small 0.5-3.3K	$60.60	$74.38	$539.93
1615020	SUEZ WATER NEW JERSEY WEST MILFORD SA5	Passaic	Small 0.5-3.3K	$116.01		$464.04
1523003	NJ AMERICAN WATER - NEW EGYPT	Ocean	Small 0.5-3.3K	$60.60	$74.38	$539.93
1615018	SUEZ WATER NEW JERSEY - BALD EAGLE VILLAGE SA1	Passaic	Small 0.5-3.3K	$53.79	$63.83	$470.48
0329006	NJ AMERICAN WATER - SUNBURY	Burlington	Small 0.5-3.3K	$60.60	$74.38	$539.93
0809001	NJ AMERICAN WATER - BRIDGEPORT	Gloucester	Small 0.5-3.3K	$60.60	$74.38	$539.93
1427009	NJ AMERICAN WATER - MOUNT OLIVE - WEST JERSEY	Morris	Small 0.5-3.3K	$60.60	$74.38	$539.93
1910003	SUEZ WATER NEW JERSEY HAMPTON SA1	Sussex	Small 0.5-3.3K	$53.79	$63.83	$470.48
1326007	SUEZ WATER MANALAPAN TRACEY STATION SA2	Monmouth	Small 0.5-3.3K	$53.79	$68.81	$490.39
1615014	SUEZ WATER NEW JERSEY - CRESCENT PARK SA1	Passaic	Small 0.5-3.3K	$53.79	$63.83	$470.48
0236001	SUEZ WATER NEW JERSEY MONTVALE PD95 SA1	Bergen	Small 0.5-3.3K	$53.79	$63.83	$470.48
1309002	SUEZ WATER TOMS RIVER - COLTS NECK SA2	Monmouth	Small 0.5-3.3K	$53.79	$68.81	$490.39
1615012	SUEZ WATER NEW JERSEY - AWOSTING SA1	Passaic	Small 0.5-3.3K	$53.79	$63.83	$470.48
1904002	SUEZ WATER NEW JERSEY EAST BROOKWOOD SA1	Sussex	Small 0.5-3.3K	$129.00	$0.00	$516.00
1615002	SUEZ WATER NEW JERSEY - GREENBROOK ESTATES SA1	Passaic	Small 0.5-3.3K	$53.79	$63.83	$470.48
0333004	NJ AMERICAN WATER -VINCENTOWN	Burlington	Small 0.5-3.3K	$60.60	$74.38	$539.93
2112002	SUEZ WATER NJ INDEPENDENCE HIGHLAND SA1	Warren	Very Small <0.5K	$53.79	$63.83	$470.48
1803002	NJ AMERICAN WATER - TWIN LAKES	Somerset	Very Small <0.5K	$60.60	$74.38	$539.93
1024001	NJ AMERICAN WATER - OLDWICK	Hunterdon	Very Small <0.5K	$60.60	$74.38	$539.93

PWSID	Water System Name	County	System Size (ranked by population served)	Base Charge (quarterly)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
1922011	SUEZ WATER NEW JERSEY SUNSET RIDGE SA1	Sussex	Very Small <0.5K		$63.83	$255.32
1615001	SUEZ WATER NEW JERSEY - BIRCH HILL SA1	Passaic	Very Small <0.5K	$53.79	$63.83	$470.48
0511001	NJ AMERICAN WATER - STRATHMERE	Cape May	Very Small <0.5K	$60.60	$74.38	$539.93
1922001	SUEZ WATER NEW JERSEY BARRY LAKES SA1	Sussex	Very Small <0.5K	$53.79	$63.83	$470.48
1922006	SUEZ WATER NEW JERSEY SUSSEX HILLS SA1	Sussex	Very Small <0.5K	$53.79	$63.83	$470.48
1922010	SUEZ WATER NEW JERSEY LAKE GLENWOOD SA1	Sussex	Very Small <0.5K	$62.76	$0.00	$251.04
1902004	SUEZ WATER NJ ANDOVER SA1	Sussex	Very Small <0.5K	$53.79	$63.83	$470.48
2112001	SUEZ WATER NJ INDEPENDENCE VALLEY VIEW SA1	Warren	Very Small <0.5K	$79.50	$9.18	$354.72
1615006	SUEZ WATER NEW JERSEY - PARKWAY SA1	Passaic	Tiny	$53.79	$63.83	$470.48
1922017	SUEZ WATER NEW JERSEY HIGHLAND LAKES A1	Sussex	Tiny	$53.79	$63.83	$470.48
1922012	SUEZ WATER NEW JERSEY LAKE CONWAY SA1	Sussex	Tiny	$53.79	$63.83	$470.48
1924004	SUEZ WATER-WOODRIDGE ESTATES SA1	Sussex	Tiny	$53.79	$63.83	$470.48
1922004	SUEZ WATER NEW JERSEY CLIFFWOODS LAKES SA1	Sussex	Tiny	$53.79	$63.83	$470.48
1922005	SUEZ WATER NEW JERSEY GRANDVIEW ESTATES SA1	Sussex	Tiny	$53.79	$63.83	$470.48
1922013	SUEZ WATER NEW JERSEY DAVID CURTIS SA1	Sussex	Tiny	$53.79	$63.83	$470.48
1922015	SUEZ WATER NEW JERSEY WALNUT HILLS SA1	Sussex	Tiny	$53.79	$63.83	$470.48
1922022	SUEZ WATER NEW JERSEY SAMMIS ROAD SA1	Sussex	Tiny	$53.79	$63.83	$470.48
1922021	SUEZ WATER NEW JERSEY PREDMORE ESTATES SA1	Sussex	Tiny	$53.79	$63.83	$470.48

Appendix C: Sewer Utility Cost Tables

The following costs were derived from 2020 rate schedules, or the most recent rate schedules where 2020 was not available. The resulting costs are derived from the author's understanding of the rate schedules. Corrections and questions are welcome. Priorities are listed based on recent annual average flows in MGD, where H=>10, M=>3, L=>1. The first portion of the table addresses regional facilities in alphabetical order, while the second portion assesses non-regional facilities in order of their reported flows during a multi-year period.

NJPDES Permit Number	Facility Name	Priority (H=>10, M=>3, L=>1)	County	Municipality	Base Charge (quarterly, SF Res)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
	Regional Facilities						
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Absecon City	$99.00	$0.00	$396.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Atlantic City	$61.00	$0.00	$244.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Brigantine City	$92.50	$0.00	$370.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Egg Harbor City	$0.00	$64.69	$258.75
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Egg Harbor Township	$85.00	$0.00	$340.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Galloway Township	$96.25	$0.00	$385.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Hamilton Township	$78.00	$0.00	$312.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Linwood City	$90.00	$0.00	$360.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Longport Borough	$93.75	$0.00	$375.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Margate City	$112.50	$0.00	$450.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Northfield	$90.00	$0.00	$360.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Pleasantville	$125.00	$0.00	$500.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Somers Point	$92.50	$0.00	$370.00
NJ0024473	ATLANTIC COUNTY UTILITIES AUTH WWTF	H	Atlantic	Ventnor City	$54.25	$50.74	$431.54
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Bergenfield Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Bogota Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Carlstadt Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Cliffside Park Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Closter Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Cresskill Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Demarest			Prop Tax

NJPDES Permit Number	Facility Name	Priority (H=>10, M=>3, L=>1)	County	Municipality	Base Charge (quarterly, SF Res)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Dumont Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	East Rutherford Borough	$8.75	$0.00	$35.00
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Emerson Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Englewood			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Englewood Cliffs Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Fairview Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Fort Lee Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Hackensack			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Harrington Park			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Hasbrouck Heights Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Hillsdale Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Leonia			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Little Ferry Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Lyndhurst Township			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Maywood Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Montvale Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Moonachie	$75.00	$0.00	$300.00
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	New Milford Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Northvale Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Norwood			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Old Tappan Borough	$166.88	$0.00	$667.50
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Oradell Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Palisades Park			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Paramus Borough	$0.00	$29.77	$119.07
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Park Ridge Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Ridgefield			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Ridgefield Park Village			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	River Edge			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	River Vale			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Rochelle Park			Prop Tax

NJPDES Permit Number	Facility Name	Priority (H=>10, M=>3, L=>1)	County	Municipality	Base Charge (quarterly, SF Res)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Teaneck Borough			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Tenafly			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Teterboro			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Washington Township			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Westwood			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Woodcliff Lake			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Wood-Ridge Borough-	$44.00	$0.00	$176.00
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Wood-Ridge Borough-Edgewater			Prop Tax
NJ0020028	BERGEN CNTY UTILITIES AUTHORITY (BCUA)	H	Bergen	Edgewater Boro			Prop Tax
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Audubon Borough	$118.00	$0.00	$472.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Audubon Park Borough			Prop Tax
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Barrington Borough	$146.00	$0.00	$584.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Bellmawr Borough	$103.50	$0.00	$414.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Berlin Borough	$150.00	$0.00	$600.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Berlin Township	$183.00	$0.00	$732.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Brooklawn Borough	$145.00	$0.00	$580.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Camden City	$70.60	$33.09	$414.74
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Cherry Hill Township	$183.00	$0.00	$732.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Chesilhurst Borough	$163.00	$0.00	$652.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Clementon Borough	$143.00	$0.00	$572.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Collingswood Borough	$154.75	$0.00	$619.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Gibbsboro Borough	$135.50	$0.00	$542.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Gloucester City	$181.00	$0.00	$724.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Gloucester Township	$88.00	$0.00	$352.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Haddon Heights Borough	$95.50	$0.00	$382.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Haddon Township	$132.00	$0.00	$528.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Haddonfield Borough	$88.00	$32.54	$482.15
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Hi-Nella Borough	$88.00	$0.00	$352.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Laurel Springs Borough	$88.00	$0.00	$352.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Lindenwold Borough	$121.75	$0.00	$487.00

NJPDES Permit Number	Facility Name	Priority (H=>10, M=>3, L=>1)	County	Municipality	Base Charge (quarterly, SF Res)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Magnolia Borough	$113.00	$0.00	$452.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Merchantville Borough	$152.00	$0.00	$608.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Mount Ephraim Borough	$113.00	$0.00	$452.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Oaklyn Borough	$129.00	$0.00	$516.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Pennsauken Township	$139.50	$0.00	$558.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Pine Hill Borough	$138.00	$0.00	$552.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Runnemede Borough	$134.00	$0.00	$536.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Somerdale Borough	$130.25	$0.00	$521.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Stratford Borough	$150.50	$0.00	$602.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Tavistock Borough	$88.00	$32.40	$481.60
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Voorhees Township	$124.25	$0.00	$497.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Waterford Township	$88.00	$0.00	$352.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Winslow Township	$190.00	$0.00	$760.00
NJ0026182	CAMDEN COUNTY MUA-DELAWARE #1 WPCF	H	Camden	Woodlynne Borough	$88.00	$0.00	$352.00
NJ0024759	EWING-LAWRENCE SA WTP		Mercer	Ewing Township	$37.50	$60.91	$393.63
NJ0024759	EWING-LAWRENCE SA WTP	H	Mercer	Hopewell Township	$0.00	$128.43	$513.73
NJ0024759	EWING-LAWRENCE SA WTP		Mercer	Lawrence Township	$10.75	$72.19	$331.75
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Clayton Borough	$116.00	$0.00	$464.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Deptford Township	$142.80	$0.00	$571.20
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	East Greenwich Township	$75.00	$34.88	$439.50
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Franklin Township	$78.00	$0.00	$312.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Glassboro Borough	$115.00	$0.00	$460.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Harrison Township	$0.00	$143.75	$575.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Mantua Township	$92.00	$0.00	$368.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Monroe Township	$119.91	$0.00	$479.64
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	National Park Borough	$100.00	$0.00	$400.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Paulsboro Borough	$87.00	$0.00	$348.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Pitman Borough	$0.00	$73.91	$295.65
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Washington Township	$72.00	$20.25	$369.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Wenonah Borough	$130.00	$0.00	$520.00

NJPDES Permit Number	Facility Name	Priority (H=>10, M=>3, L=>1)	County	Municipality	Base Charge (quarterly, SF Res)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	West Deptford Township	$159.50	$0.00	$638.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Westville Borough	$120.00	$0.00	$480.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Woodbury	$139.50	$0.00	$558.00
NJ0024686	GLOUCESTER CNTY UTIL AUTH	H	Gloucester	Woodbury Heights Borough	$160.00	$0.00	$640.00
NJ0026301	HAMILTON TWP WPCF	H	Mercer	Hamilton Township	$78.00	$0.00	$312.00
NJ0026301	HAMILTON TWP WPCF	H	Mercer	Robbinsville Township	$85.00	$0.00	$340.00
NJ0026301	HAMILTON TWP WPCF	H	Burlington	Chesterfield Township	$70.00	$6.56	$306.25
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	City of Orange Township	$51.20	$25.80	$308.00
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	East Orange	$38.40	$53.74	$368.57
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Union	Elizabeth City	$3.82	$52.08	$223.60
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Union	Hillside Township	$0.00	$45.12	$180.47
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	Irvington Township	$45.00	$0.00	$180.00
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	Maplewood Township	$65.25	$0.00	$261.00
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	Millburn Township	$44.00	$0.00	$176.00
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	Newark City	$88.02	$0.00	$352.08
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	Roseland Borough	$100.00	$39.38	$278.75
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Union	Roselle Park Borough	$0.00	$45.12	$180.47
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	South Orange Village Township	$72.50	$0.00	$290.00
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Union	Summit City	$72.25	$0.00	$289.00
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Union	Union Township	$12.50	$47.59	$190.35
NJ0024741	JOINT MEETING OF ESSEX & UNION COUNTIES	H	Essex	West Orange Township	$87.50	$0.00	$350.00
NJ0024953	LINDEN ROSELLE SA	H	Union	Linden City	$0.00	$53.54	$214.16
NJ0024953	LINDEN ROSELLE SA	H	Union	Roselle Borough	$0.00	$53.54	$214.16
NJ0020141	MIDDLESEX CNTY UA	H	Monmouth	Aberdeen Township	$168.00	$0.00	$672.00
NJ0020141	MIDDLESEX CNTY UA	H	Somerset	Bound Brook Borough	$15.00	$70.88	$343.50
NJ0020141	MIDDLESEX CNTY UA	H	Somerset	Bridgewater Township	$99.75	$0.00	$399.00
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Carteret Borough	$84.50	$0.00	$340.76
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Cranbury Township	$77.17	$83.59	$643.03
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Dunellen Borough	$87.50	$0.00	$350.00
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	East Brunswick Township	$80.00	$0.00	$320.00

NJPDES Permit Number	Facility Name	Priority (H=>10, M=>3, L=>1)	County	Municipality	Base Charge (quarterly, SF Res)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Edison Township	$0.00	$47.49	$189.95
NJ0020141	MIDDLESEX CNTY UA	H	Union	Fanwood Borough	$21.00	$0.00	$84.00
NJ0020141	MIDDLESEX CNTY UA	H	Somerset	Franklin Township	$78.00	$0.00	$312.00
NJ0020141	MIDDLESEX CNTY UA	H	Somerset	Green Brook Township	$75.00	$0.00	$300.00
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Helmetta Borough	$114.00	$0.00	$456.00
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Highland Park Borough	$41.83	$25.50	$269.33
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Jamesburg Borough	$97.00	$0.00	$388.00
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Metuchen Borough			Prop Tax
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Middlesex Borough			Prop Tax
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Milltown Borough	$104.67	$15.41	$480.33
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Monroe Township	$119.91	$0.00	$479.64
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	New Brunswick City	$0.00	$100.16	$400.64
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	North Brunswick Township	$0.00	$69.44	$277.74
NJ0020141	MIDDLESEX CNTY UA	H	Somerset	North Plainfield Borough	$97.69	$44.52	$178.06
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Old Bridge Township	$142.77	$0.00	$571.08
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Perth Amboy City	$24.85	$49.80	$298.58
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Piscataway Township	$72.50	$0.00	$290.00
NJ0020141	MIDDLESEX CNTY UA	H	Union	Plainfield Township	$54.60	$0.00	$218.40
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Sayreville Borough	$0.00	$49.18	$196.71
NJ0020141	MIDDLESEX CNTY UA	H	Union	Scotch Plains Township	$67.50	$0.00	$270.00
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	South Amboy City	$6.25	$41.94	$192.78
NJ0020141	MIDDLESEX CNTY UA	H	Somerset	South Bound Brook Borough	$0.00	$65.93	$263.70
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	South Brunswick Township	$132.83	$0.00	$531.32
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	South Plainfield Township	$87.50	$0.00	$350.00
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	South River Township			Prop Tax
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Spotswood Borough	$83.90	$46.13	$520.10
NJ0020141	MIDDLESEX CNTY UA	H	Somerset	Watchung Township	$116.25	$0.00	$465.00
NJ0020141	MIDDLESEX CNTY UA	H	Middlesex	Woodbridge Township	$29.51	$27.56	$228.29
NJ0025356	MIDDLETOWN SA (TOMSA)	H	Monmouth	Atlantic Highlands Borough	$155.10	$0.00	$620.40
NJ0025356	MIDDLETOWN SA (TOMSA)	H	Monmouth	Highlands Borough	$140.00	$0.00	$560.00

NJPDES Permit Number	Facility Name	Priority (H=>10, M=>3, L=>1)	County	Municipality	Base Charge (quarterly, SF Res)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
NJ0025356	MIDDLETOWN SA (TOMSA)	H	Monmouth	Middletown Twp	$80.00	$0.00	$320.00
NJ0024937	MOLITOR WPCF	L	Morris	Chatham Boro	$0.00	$64.67	$258.67
NJ0024937	MOLITOR WPCF	L	Morris	Madison Boro	$0.00	$78.20	$312.81
NJ0027821	MUSCONETCONG SEWERAGE AUTHORITY	L	Morris	Byram	$274.00	$0.00	$1,096.00
NJ0027821	MUSCONETCONG SEWERAGE AUTHORITY	L	Sussex	Hopatcong	$300.00	$0.00	$1,200.00
NJ0027821	MUSCONETCONG SEWERAGE AUTHORITY	L	Morris	Jefferson	$247.50	$0.00	$990.00
NJ0027821	MUSCONETCONG SEWERAGE AUTHORITY	L	Morris	Mt. Arlington	$240.00	$0.00	$960.00
NJ0027821	MUSCONETCONG SEWERAGE AUTHORITY	L	Morris	Mt. Olive	$180.50	$0.00	$722.00
NJ0027821	MUSCONETCONG SEWERAGE AUTHORITY	L	Morris	Netcong	$125.00	$0.00	$500.00
NJ0027821	MUSCONETCONG SEWERAGE AUTHORITY	L	Morris	Roxbury	$140.00	$0.00	$560.00
NJ0027821	MUSCONETCONG SEWERAGE AUTHORITY	L	Sussex	Stanhope	$112.00	$21.94	$535.75
NJ0026085	NORTH HUDSON SA-ADAMS STREET WTP	H	Hudson	Hoboken City	$18.00	$58.50	$306.00
NJ0026085	NORTH HUDSON SA-ADAMS STREET WTP	H	Hudson	Union City	$18.00	$58.50	$306.00
NJ0026085	NORTH HUDSON SA-ADAMS STREET WTP	H	Hudson	Weehawken Township	$18.00	$58.50	$306.00
NJ0025321	NORTH HUDSON SEWERAGE AUTHORITY	H	Hudson	West New York Township	$18.00	$58.50	$306.00
NJ0024813	NORTHWEST BERGEN CNTY UA	H	Bergen	Allendale Borough			Prop Tax
NJ0024813	NORTHWEST BERGEN CNTY UA	H	Bergen	Franklin Lakes Borough	$167.00	$0.00	$668.00
NJ0024813	NORTHWEST BERGEN CNTY UA	H	Bergen	Ho-Ho-Kus Borough			Prop Tax
NJ0024813	NORTHWEST BERGEN CNTY UA	H	Bergen	Mahwah Township	$88.00	$23.83	$447.34
NJ0024813	NORTHWEST BERGEN CNTY UA	H	Bergen	Midland Park Borough			Prop Tax
NJ0024813	NORTHWEST BERGEN CNTY UA	H	Bergen	Ramsey Borough	$117.75	$0.00	$471.00
NJ0024813	NORTHWEST BERGEN CNTY UA	H	Bergen	Waldwick Borough			Prop Tax
NJ0024813	NORTHWEST BERGEN CNTY UA	H	Bergen	Wyckoff Township	$118.00	$0.00	$472.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Berkeley Twp	$86.00	$0.00	$344.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Barnegat Township	$107.00	$0.00	$428.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Beachwood Borough	$106.00	$0.00	$424.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Berkeley Township	$86.00	$0.00	$344.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Island Heights Borough	$105.00	$14.88	$479.50
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Lacey Township	$76.50	$13.05	$358.20
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Lakehurst Borough	$106.94	$0.00	$427.76

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NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Lavallette Borough	$69.00	$26.56	$382.25
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Manchester Township-East	$82.00	$0.00	$328.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Manchester Township-West	$51.08	$0.00	$204.32
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Mantoloking Borough	$56.40	$0.00	$225.60
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Ocean Gate Borough	$100.00	$0.00	$400.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Ocean Township	$44.51	$46.80	$365.24
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Pine Beach Borough	$100.00	$0.00	$400.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Seaside Heights Borough	$63.00	$90.00	$612.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Seaside Park Borough	$114.00	$0.00	$456.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	South Toms River Borough	$105.00	$0.00	$420.00
NJ0029408	OCEAN COUNTY UA-Central WPCF	H	Ocean	Toms River Township	$77.19	$0.00	$308.75
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Ocean	Bay Head Borough	$110.00	$0.00	$440.00
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Ocean	Brick Township	$65.04	$50.96	$464.01
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Ocean	Freehold Borough	$44.69	$40.15	$339.37
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Ocean	Freehold Township	$125.12	$2.60	$510.88
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Monmouth	Howell Township	$144.00	$0.00	$576.00
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Ocean	Jackson Township	$30.00	$59.63	$358.50
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Ocean	Lakewood Township	$89.21	$0.00	$356.84
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Ocean	Point Pleasant Beach Borough	$62.46	$28.97	$365.72
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Ocean	Point Pleasant Borough	$55.00	$61.54	$466.15
NJ0028142	OCEAN COUNTY UA- Northern WPCF	H	Monmouth	Wall Township	$110.48	$0.00	$441.92
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Barnegat Light Borough	$88.75	$0.00	$355.00
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Beach Haven Borough	$112.00	$0.00	$448.00
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Eagleswood Township	$180.00	$0.00	$720.00
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Harvey Cedars Borough	$70.00	$0.00	$280.00
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Little Egg Harbor Township	$101.00	$0.00	$404.00
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Long Beach Township	$132.75	$0.00	$531.00
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Ship Bottom Borough	$100.00	$0.00	$400.00
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Stafford Township	$139.00	$11.25	$601.00
NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Surf City Borough	$157.50	$0.00	$630.00

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NJ0026018	OCEAN COUNTY UA-Southern WPCF	H	Ocean	Tuckerton Borough	$0.00	$100.58	$652.62
NJ0024970	PARSIPPANY TROY HILLS	H	Morris	Denville Township	$106.00	$0.00	$424.00
NJ0024970	PARSIPPANY TROY HILLS	H	Morris	East Hanover Township	$116.64	$0.00	$466.56
NJ0024970	PARSIPPANY TROY HILLS	H	Morris	Montville Township	$90.25	$39.04	$517.15
NJ0024970	PARSIPPANY TROY HILLS	H	Morris	Mountain Lakes Borough	$86.68	$86.68	$693.44
NJ0024970	PARSIPPANY TROY HILLS	H	Morris	Parsippany-Troy Hills	$51.00	$32.85	$335.40
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Hudson	Bayonne	$0.00	$82.56	$330.26
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Essex	Belleville Township	$0.00	$7.52	$30.08
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Essex	Bloomfield Township	$0.00	$0.00	Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Essex	City of Orange Township	$51.20	$25.80	$308.00
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Clifton City	$35.50	$0.00	$142.00
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Union	Cranford Township	$35.00	$7.50	$170.00
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Hudson	East Newark Borough	$31.00	$46.62	$186.48
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Essex	East Orange City	$38.40	$22.81	$244.84
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	East Rutherford Borough	$8.75	$0.00	$35.00
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Union	Elizabeth City	$3.82	$66.17	$279.97
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Fair Lawn Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Garfield City	$12.50	$0.00	$50.00
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Essex	Glen Ridge Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Glen Rock Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Hudson	Guttenberg Town	$0.00	$89.89	$359.55
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Haledon Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Hudson	Harrison Town	$143.75	$0.00	$575.00
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Hawthorne Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Hudson	Jersey City		$86.93	$347.70
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Hudson	Kearny Town			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Little Falls Township			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Lodi Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Lyndhurst Township			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Essex	Montclair Township	$59.18	$0.00	$236.73

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NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Essex	Newark City	$88.02	$0.00	$352.08
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	North Arlington Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Hudson	North Bergen Twp	$0.00	$109.58	$438.30
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	North Haledon Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Essex	Nutley Township			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Passaic City			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Paterson City	$56.00	$0.00	$224.00
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Prospect Park Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Rutherford Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Saddle Brook Township			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	South Hackensack Township			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Totowa Borough	$100.00	$0.00	$400.00
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Wallington Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Passaic	Woodland Park Borough			Prop Tax
NJ0021016	PASSAIC VALLEY SEWERAGE COMM	H	Bergen	Wood-Ridge Borough			Prop Tax
NJ0024643	RAHWAY VALLEY SA	H	Union	Clark Township	$70.00	$0.00	$280.00
NJ0024643	RAHWAY VALLEY SA	H	Union	Cranford Township	$35.00	$16.88	$207.50
NJ0024643	RAHWAY VALLEY SA	H	Union	Fanwood Borough (portion)	$50.00	$0.00	$200.00
NJ0024643	RAHWAY VALLEY SA	H	Union	Garwood Borough			Prop Tax
NJ0024643	RAHWAY VALLEY SA	H	Union	Kenilworth Borough			Prop Tax
NJ0024643	RAHWAY VALLEY SA	H	Union	Linden City	$0.00	$53.54	$214.16
NJ0024643	RAHWAY VALLEY SA	H	Union	Mountainside Borough			Prop Tax
NJ0024643	RAHWAY VALLEY SA	H	Union	Rahway City	$72.50	$0.00	$290.00
NJ0024643	RAHWAY VALLEY SA	H	Union	Roselle Park Borough		$45.12	$180.47
NJ0024643	RAHWAY VALLEY SA	H	Union	Scotch Plains Township	$67.50	$0.00	$270.00
NJ0024643	RAHWAY VALLEY SA	H	Union	Springfield Township			Prop Tax
NJ0024643	RAHWAY VALLEY SA	H	Union	Westfield Town	$48.75	$0.00	$195.00
NJ0024643	RAHWAY VALLEY SA	H	Union	Winfield Park			Prop Tax
NJ0024643	RAHWAY VALLEY SA	H	Middlesex	Woodbridge Township	$29.51	$29.51	$236.08
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Boonton Town	$78.30	$0.00	$313.20

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NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Boonton Township	$107.00	$0.00	$428.00
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Denville Township	$106.00	$0.00	$424.00
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Dover Town	$0.00	$48.28	$193.10
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Mine Hill Township	$210.00	$0.00	$840.00
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Randolph Township	$164.69	$0.00	$658.76
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Rockaway Borough	$50.00	$10.98	$243.91
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Rockaway Township	$72.25	$0.00	$289.00
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Victory Gardens Borough	$47.50	$0.00	$190.00
NJ0022349	ROCKAWAY VALLEY REG SA	H	Morris	Wharton Borough	$81.00	$0.00	$324.00
NJ0024864	SOMERSET RARITAN VALLEY SA	H	Somerset	Branchburg Township	$63.50	$57.71	$484.85
NJ0024864	SOMERSET RARITAN VALLEY SA	H	Somerset	Bridgewater Township	$99.75	$0.00	$399.00
NJ0024864	SOMERSET RARITAN VALLEY SA	H	Somerset	Green Brook Township	$133.75	$0.00	$535.00
NJ0024864	SOMERSET RARITAN VALLEY SA	H	Somerset	Hillsborough Township	$105.00	$0.00	$420.00
NJ0024864	SOMERSET RARITAN VALLEY SA	H	Somerset	Manville Borough	$50.00	$39.49	$357.95
NJ0024864	SOMERSET RARITAN VALLEY SA	H	Somerset	Raritan Borough			Prop Tax
NJ0024864	SOMERSET RARITAN VALLEY SA	H	Somerset	Somerville Borough	$0.00	$97.75	$391.02
NJ0024864	SOMERSET RARITAN VALLEY SA	H	Somerset	Warren Township	$88.50	$37.58	$504.30
NJ0031119	STONY BROOK RSA- RIVER ROAD STP	H	Mercer	Princeton	$0.00	$97.00	$388.01
NJ0031119	STONY BROOK RSA- RIVER ROAD STP	H	Middlesex	South Brunswick Township	$132.83	$0.00	$531.32
NJ0031119	STONY BROOK RSA- RIVER ROAD STP	H	Mercer	West Windsor Township	$63.60	$0.00	$254.40
NJ0029386	TWO BRIDGES WW TREATMENT PLANT	M	Essex	Fairfield Township	$153.00	$0.00	$612.00
NJ0029386	TWO BRIDGES WW TREATMENT PLANT	M	Morris	Lincoln Park Boro	$150.00	$0.00	$600.00
NJ0029386	TWO BRIDGES WW TREATMENT PLANT	M	Morris	Pequannock Township	$247.00	$0.00	$988.00
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Eatontown Borough	$95.00	$0.00	$380.00
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Fair Haven Borough	$90.00	$0.00	$360.00
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Little Silver Borough	$90.00	$0.00	$360.00
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Monmouth Beach Borough	$90.00	$0.00	$360.00
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Oceanport Borough	$90.00	$0.00	$360.00
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Red Bank Borough	$55.00	$99.98	$619.94
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Rumson Borough	$100.00	$0.00	$400.00

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NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Sea Bright Borough	$107.50	$13.44	$483.75
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Shrewsbury Borough	$90.00	$0.00	$360.00
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Shrewsbury Township		$0.00	Prop Tax
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	Tinton Falls Borough	$94.75	$0.00	$379.00
NJ0026735	TWO RIVERS WATER RECLAMATION AUTH	H	Monmouth	West Long Branch Borough	$90.00	$0.00	$360.00
NJ0053008	WILDWOOD/LOWER REGION WTF	H	Cape May	Middle Township	$160.00	$0.00	$640.00
NJ0053007	WILDWOOD/LOWER REGION WTF	H	Cape May	North Wildwood City	$0.00	$142.03	$568.13
NJ0053007	WILDWOOD/LOWER REGION WTF	H	Cape May	West Wildwood Borough	$187.50	$0.00	$750.00
NJ0053007	WILDWOOD/LOWER REGION WTF	H	Cape May	Wildwood City		$45.00	$180.00
NJ0053007	WILDWOOD/LOWER REGION WTF	H	Cape May	Wildwood Crest Borough	$0.00	$138.52	$554.06
	Non-regional facilities						
NJ0020923	TRENTON SEWER UTILITY	H	Mercer	Trenton City	$39.62	$15.91	$222.13
NJ0028002	WAYNE TWP-MOUNTAIN VIEW STP	H	Passaic	Wayne Township	$118.00	$0.00	$472.00
NJ0027961	BERKELEY HEIGHTS WPCF	M	Union	Berkeley Heights Twp			Prop Tax
NJ0024678	BORDENTOWN SA BLACK'S CREEK STP	M	Burlington	Bordentown Twp	$94.06	$36.34	$521.59
NJ0020427	CALDWELL WASTEWATER TREATMENT PLANT	M	Essex	Caldwell	$25.00	$21.09	$100.00
NJ0052990	CAPE MAY COUNTY MUA	M	Cape May	Middle Twp	$160.00	$0.00	$640.00
NJ0024651	CUMBERLAND COUNTY UTILITIES AUTHORITY	M	Cumberland	Bridgeton	$130.00	$0.00	$520.00
NJ0023787	EAST WINDSOR WPCP	M	Mercer	East Windsor Twp	$81.70	$45.00	$326.80
NJ0024902	HANOVER SEWERAGE AUTHORITY WTP	M	Morris	Hanover Twp	$0.00	$109.48	$437.94
NJ0024511	LIVINGSTON WATER POLL CONTROL FACILITY	M	Essex	Livingston Twp	$5.16	$21.68	$107.38
NJ0025364	LANDIS SEWERAGE AUTHORITY	M	Cumberland	Vineland	$97.50	$0.00	$390.00
NJ0024783	LONG BRANCH SEWERAGE AUTHORITY	M	Monmouth	Long Branch City	$84.00	$0.00	$336.00
NJ0023809	LOWER TOWNSHIP MUA	M	Cape May	Lower Twp	$80.00	$0.00	$320.00
NJ0024911	MORRIS TOWNSHIP-BUTTERWORTH WPCF	M	Morris	Morris Twp	$141.25	$0.00	$565.00
NJ0025496	MORRISTOWN SEWER UTILITY	M	Morris	Hanover	78.6	$90.99	$363.95
NJ0024015	MOUNT HOLLY WPCF	M	Burlington	Mount Holly Twp	$33.00	$68.29	$405.15
NJ0025178	MOUNT LAUREL HARTFORD RD WPCF	M	Burlington	Mount Laurel Twp	$21.84	$72.56	$377.61
NJ0035343	OCEAN CITY REG WTF	M	Cape May	Ocean City	$67.89	$21.26	$356.61
NJ0024716	PHILLIPSBURG TOWN STP	M	Warren	Phillipsburg	$15.00	$57.38	$289.50

NJPDES Permit Number	Facility Name	Priority (H=>10, M=>3, L=>1)	County	Municipality	Base Charge (quarterly, SF Res)	Volume Charge (11.25K gallons per quarter)	Total Annual Cost (45K)
NJ0023728	PINE BROOK STP	M	Monmouth	Manalapan	$119.00	$0.00	$476.00
NJ0022047	RARITAN TOWNSHIP MUA STP	M	Hunterdon	Raritan Township	$165.25	$0.00	$661.00
NJ0024791	RIDGEWOOD VILLAGE WPC FACILITY	M	Bergen	Glen Rock Boro	$100.00	$0.00	$400.00
NJ0024791	RIDGEWOOD VILLAGE WPC FACILITY	M	Bergen	Ridgewood Village			Prop Tax
NJ0025038	SECAUCUS MUA	M	Hudson	Secaucus Town			Prop Tax
NJ0024562	SOUTH MONMOUTH REGIONAL SA	M	Monmouth	Wall Twp	$110.48	$0.00	$441.92
NJ0024872	TNSA SEWERAGE TREATMENT PLANT	M	Monmouth	Neptune	$115.00	$0.00	$460.00
NJ0024520	TWP OF OCEAN SEWERAGE AUTHORITY	M	Monmouth	Ocean Township	$115.00	$0.00	$460.00
NJ0024490	VERONA TWP WTP	M	Essex	Verona Twp	$125.00	$0.00	$500.00
NJ0023361	WILLINGBORO WPCP	M	Burlington	Willingboro	$57.25	$5.74	$251.95
NJ0029084	NORTH BERGEN MUA-WOODCLIFF STP	M	Bergen	Guttenberg Town	$0.00	$109.58	$438.30
NJ0029084	NORTH BERGEN MUA-WOODCLIFF STP	M	Hudson	North Bergen Twp	$0.00	$89.89	$359.55
NJ0024660	BURLINGTON CITY WWTP	L	Burlington	Burlington	96.75	$0.00	$387.00
NJ0020389	CLINTON TOWN WWTP	L	Hunterdon	Clinton	125	$0.00	$500.00
NJ0024031	ELMWOOD WTP	L	Burlington	Evesham Twp	$58.00	$30.75	$355.00
NJ0021369	HACKETTSTOWN MUA	L	Warren	Washington Twp	67.32	$0.00	$269.28
NJ0104990	HAMMONTON WWTP	L	Atlantic	Hammonton Town		$0.00	$741.13
NJ0024996	MOORESTOWN TWP WWTP	L	Burlington	Moorestown	$25.00	$67.50	$370.00
NJ0020184	NEWTON WASTEWATER TREATMENT PLANT	L	Sussex	Newton	$45.00	$54.38	$397.50
NJ0024856	SALEM CITY WWTF	L	Salem	Salem City	$132.53	$0.00	$530.12
NJ0024104	SUEZ WATER PRINCETON MEADOWS	L	Mercer	Plainsboro	$31.50	$0.00	$126.00

Acknowledgements

Principal Investigator

Daniel J. Van Abs Ph.D. FAICP, PP. Dan is a Professor of Professional Practice for Water, Society & Environment at Rutgers University's School of Environmental and Biological Sciences, where he focuses on planning and management policy for water infrastructure, water supply, wastewater and watershed protection. He joined the Rutgers faculty in 2012. Previously, he was senior director for planning and science with New Jersey's Highlands Water Protection and Planning Council, and he was director of watershed protection with the New Jersey Water Supply Authority. He served with the New Jersey Department of Environmental Protection for 12 years, six as manager for statewide water resources planning; and as technical director of the Passaic River Coalition for four years. Dan holds a Ph.D. in Environmental Science from SUNY-College of Environmental Science and Forestry. He is a licensed Professional Planner in New Jersey and former chairman of the New Jersey Clean Water Council. He was inducted in 2020 as a Fellow of the American Institute of Certified Planners, the highest honor offered in this field. Dan is co-editor with Karen O'Neill of the June 2016 Rutgers University Press book, *Taking Chances: The Coast After Sandy*. Further information is available at www.danvanabs.com.

New Jersey Future

Founded in 1987, New Jersey Future is a nonprofit, nonpartisan organization that promotes sensible growth, redevelopment and infrastructure investments to foster vibrant cities and towns, protect natural lands and waterways, enhance transportation choices, provide access to safe, affordable and aging-friendly neighborhoods and fuel a strong economy. The organization does this through original research, innovative policy development, coalition-building, advocacy, and hands-on strategic assistance. Further information is available at: www.njfuture.org. New Jersey Future provides the backbone staff and serves as fiscal agent for Jersey Water Works. New Jersey Future staff directly involved in the preparation of materials for this project were:

- **Tim Evans, Director of Research**. Tim is responsible for the original research and data analysis that support New Jersey Future's policy development. He regularly documents his research results in a variety of products, including full-length research reports and the monthly email newsletter. He also ensures that all of New Jersey Future's products and media communications are quantitatively accurate and defensible. For this project, he developed the spreadsheet model used to implement this methodology.
- **Kimberley Irby, Policy Analyst**. Kimberley provides research and analytical support to various programmatic areas, including the Jersey Water Works data dashboard, lead in drinking water, and combined sewer overflow communities. For this project, she supervised the Rutgers interns compiling utility rate schedules and cost calculations, developed the essential expenditures analysis using a revised version of the Teodoro (2018) methodology, and compiled all maps used in this report.

Project direction was provided by Jyoti Venketraman, Program Manager. Several Rutgers students compiled the utility rate schedules and household costs, as interns to New Jersey Future (Matthew Bewley and Zachary Kocaj) and to Dr. Van Abs (Tianyi Luo). Dr. Van Abs provided review of all results.

Jersey Water Works

Jersey Water Works is a collaborative effort of over 500 diverse organizations and individuals who embrace the common purpose of transforming New Jersey's inadequate water infrastructure by investing in sustainable, cost-effective solutions that provide communities with clean water and waterways; healthier, safer neighborhoods; local jobs; flood and climate resilience; and economic growth. Jersey Water Works' shared goals are end states the collaborative aims to help achieve over the next three to five years. Annual Work Plans are executed by the collaborative's committees. The projects will advance best practices, better stakeholder engagement, and affordability for all ratepayers, among other goals. Jersey Water Works includes hundreds of members: water and sewer utilities, governments, businesses, non-governmental organizations, consultants, academics, individuals and others. Further information is available at: www.jerseywaterworks.org.

The Asset Management and Finance Committee of Jersey Water Works was involved in discussions and review regarding the Phase 1 and Phase 2 reports and the resulting methodology and report. The project team wish to thank committee members who provided their thoughts and comments through the process.

Expert Advisory Panel

The author and New Jersey Future thank the expert advisory panel members who gave of their time and expertise to help improve this white paper. They retain no responsibility for any errors or decisions regarding the use of their ideas. In alphabetical order, the members were:

- John Albert, Chief Research Officer, Water Research Foundation
- Glenn Barnes, Director, Water Finance Assistance, LLC
- Richard W. Henning, Senior Vice President, Communications, SUEZ North America
- Stephanie Hoopes, PhD, National Director, United For ALICE, with assistance from Max Holdsworth and Andrew Abrahamson
- Lawrence Levine, Esq., Director, Urban Water Infrastructure & Senior Attorney, Natural Resources Defense Council
- Donald Shields, P.E. Vice President and Director of Engineering, NJ American Water Co., Inc.
- Manuel P. Teodoro, PhD, Associate Professor, Robert M. La Follette School of Public Affairs, University of Wisconsin