

**Defining Affordability:
Targeting Federal Funds to Improve Water Quality to “Disadvantaged Communities” in
North Carolina**

by

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Executive Summary

Under the Drinking Water State Revolving Fund (DWSRF) Program, states receive capitalization grants to improve their drinking water facilities. States may provide longer term loans and principal forgiveness (not to exceed 30% of their annual DWSRF grant) to “disadvantaged communities.” This research explores how North Carolina should define a “disadvantaged community” as it relates to the DWSRF. It includes an exploration of the criteria used by the thirty other states that have already established disadvantaged communities programs. The paper aligns existing practices from other states with the unique needs of North Carolina to suggest specific affordability criteria that this state should employ in determining which populations are eligible to receive this type of financial assistance. With water rates currently rising faster than overall inflation, these funds may be crucial in supplying safe drinking water to smaller, poorer communities across North Carolina.

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Introduction

Safe drinking water is essential to health. In the United States, the cost of providing high quality drinking water has been increasing since the passage of the Safe Drinking Water Act (SDWA). In fact, water rates are now actually increasing faster than overall inflation.¹ This increasing cost places a financial burden on smaller, poorer communities. This paper explores one possible source of financial assistance for providing quality drinking water in the state of North Carolina.

BACKGROUND

The Drinking Water State Revolving Fund (DWSRF)

The SDWA amendments of 1996 created the Drinking Water State Revolving Fund (DWSRF). In general, a revolving fund is an account that is repeatedly expended, replenished, and then expended again. For the DWSRF program, money deposited into the fund is loaned at low interest rates to eligible parties. New loans are subsequently made from the loan principal repayments and interest revenues received from the original borrowers.² The program provides federal grants to states for assisting communities in installing and upgrading safe drinking water treatment facilities. The DWSRF was authorized at \$599 million for Fiscal year 1994, and \$1 billion per year after that through Fiscal Year 2003. The law permits appropriation in future years of any funds authorized, but not appropriated in prior years. The allotment that each state receives from the fund is proportional to the state need identified in the most recent survey of drinking water infrastructure needs.³ To receive DWSRF funds, each state is required to provide a 20% match of the total amount that it is to receive from the federal grant.⁴

The DWSRF program involves each state preparing an “intended use plan” which identifies eligible projects and their priority, based on factors such as seriousness of health risk, compliance needs, and system economic need. States have some flexibility in how they design the programs. In particular, special programs can be designed for what the amendment termed a “disadvantaged community” (DC). Section 1452 of the SDWA of 1996 defines a “disadvantaged community” as “the service area of a public water system that meets affordability criteria established after public review and comment by the State in which the public water system is located.”⁵ States may provide additional subsidization, including principal forgiveness and loan terms of up to 30 years to DCs for up to 30% of the annual DWSRF capitalization grant (See Appendix A).⁶ In North Carolina, this amounts to about \$4.2 million for 2005.

A 2002 General Accounting Office (GAO) report found that 31 states had established DC programs as part of their DWSRF. Of the states with programs, 21 provided about \$94 million in special subsidies, mainly principal forgiveness, and 23 offered extended loan terms.⁷

North Carolina

Originally, North Carolina elected not to create a DC program.⁸ However, after five years into the DWSRF program, the state has expressed interest in creating one. In a planning discussion on DC funding programs, several state officials, private consultants, and nonprofit groups agreed that a disadvantaged program in North Carolina should focus on communities located in small, isolated pockets of poverty that are currently unserved or served by systems with a history of problems.⁹

North Carolina’s intended use plan identifies nine long term goals of the DWSRF program. Implementation of a DC program would directly serve the following top four goals:

1. Support the North Carolina goal of assuring safe and healthy drinking water for state residents and visitors served by public water supplies
2. Increase the percent of the population served by safe water systems.
3. Increase the safety of public water systems
4. Promote safe and affordable drinking water.¹⁰

Research Question

This paper analyzes affordability criteria that North Carolina could use to develop a DC program. Approximately 30 other states have implemented DC programs. In fact four of the other seven states in EPA's region 4 (Florida, Georgia, Kentucky and South Carolina) already have programs.¹¹ While there are certainly valuable lessons that North Carolina can learn from states with existing programs, this state faces certain unique challenges. Perhaps the fundamental challenge is that North Carolina has more small water systems per capita than any other state in the country. This paper draws on the experience from other states in developing similar programs, but also incorporates considerations that are unique to North Carolina.

Measuring Affordability

Since EPA's definition of a disadvantaged community is quite broad, each state has significant flexibility when establishing a program. Other states have taken advantage of this flexibility and as a result, have created programs that are based on vastly different eligibility criteria. These criteria range from quantitative measures such as target user charges and poverty levels to more qualitative measures such as stipulating that the community must have applied to all other federal and state financial assistance programs for which it is eligible.¹² This paper will focus on the quantitative measure of affordability criteria.

The term "affordability" can be considered the ability of a water system and its customers to support the cost of compliance with water regulations. Affordability is inextricably related to water system capacity, where "capacity involves the financial, technical and even managerial capability of the system to provide a safe, reliable and adequate water supply."¹³

Affordability criteria can be determined on the household level or on the community/water system level. Factors that affect affordability criteria on the water system level include ratios of revenues to expenditures as well as credit and bond ratings. However, affordability criteria for DC programs have generally focused on the household level.

The EPA has published guidelines that states can use in developing affordability criteria for drinking water. These guidelines include an appendix of the affordability measures and thresholds used by 22 selected studies. While about half of the studies used the MHI (Median Household Income)¹⁴ in some way, at least four of these studies employ a **mean** household income in their measures.

According to these EPA guidelines, the first step in determining affordability criteria involves the screening out of communities where the household impact of water system costs is relatively low. The guidelines provide the following example:

$$\frac{\text{Total Annual User Charges}^{15} \text{ (AUC)}}{\text{Annual MHI}} = X \text{ percent}$$

Where X = a household affordability ratio

The EPA supplies possible variations to the above equation. One of these variations is the use of **mean** household income in the denominator.¹⁶

Median Household Income

Median household income (MHI) has been most widely used to indicate affordability. EPA itself defines national affordability of drinking water as 2.5% of MHI (based on current water bill).¹⁷ Despite its wide use, many researchers and practitioners view the MHI as a faulty indicator. For example, researchers Supalla and Ahmad found that "median household income was a poor indicator of financial capacity,

because it did not adequately reflect differences in the distribution of income within a community, or differences in wealth.¹⁸ The MHI has been especially criticized for masking the isolated pockets of poverty within a given area by assuming that the distribution of household incomes below the MHI is the same everywhere. Rubin points out that two communities, A and B, can have the same MHI, but community A has 20% of its households living below the poverty level while community B has no one living below the poverty level.^{19 20}

FINDING AN APPROPRIATE MEASURE OF AFFORDABILITY FOR NORTH CAROLINA

Programs in Other States

The General Accounting Office found that even though criteria for defining disadvantaged communities (DCs) varied, 21 states used MHI as a criterion in determining whether communities qualify as disadvantaged.²¹ As of 2002, in seven of these states a community qualified as disadvantaged if its annual household water expenditure exceeded 1% of its MHI. Eleven states that use the MHI had established thresholds for water rates ranging from 1.25 to 2% of MHI.²² Appendix B shows a tabular summary of programs across the country.

Recommendation

Based on an extensive review of existing disadvantaged community (DC) programs across the country, the author proposes a sliding scale based on mean income in establishing affordability criteria for a DC program in North Carolina. As an initial screen, the MHI of the community to be served should not exceed the state MHI. Once this has been established, a sliding scale based on a Target User Rates (TUR) should be developed, such as in the following example:

Table 1

Mean Household Income Level (per year)	Portion Mean Income Spent on Drinking Water (per year)
< \$20, 000	1%
\$20, 000 - \$30, 000	1.2%
>\$30, 000	1.4%

Note: The second column of table 1 is calculated by applying the system's published rate structure to a standard monthly use estimate (5,000 gallons). Any additional annualized capital recovery costs that would normally be assessed if the system carried out the project without funding are also included.

Based on Table 1, if a community with a mean household income level of \$10, 000 per year would spend more than \$100 per year on water costs, then this community should qualify for the DC program. A community with a mean income of \$35,000 would need to spend over \$490 per year on water costs in order to qualify for the program.

The concept of a sliding scale is based on New York's DC program. New York calculates a Target Service Charge (TSC) to determine eligibility for its DC program. The state has three different TSCs based on the income level involved. The lowest TSC relates to the lowest bracket of income. The values of mean household income reflect slight adjustments from the New York model based on a lower cost of living in North Carolina.²³ Other states, such as Georgia, use similar target rates. In Georgia, the Target User Rate (TUR) is calculated as 1.25% of the MHI. Although it does not have a DWSRF DC program, North Carolina considers projects where the required household water user fees would exceed .75% of the MHI as being eligible for state high-unit cost (HUC) grants. The HUC Grant program is historically one of the largest drinking water funding programs in the state.²⁴

New York's approach of a sliding scale of target rates is suggested over Georgia's use of a fixed TUR. The rationale for using a sliding scale is to build a progressive element into the program. The underlying principle is that a household with a higher income can afford to pay a larger percentage of income on drinking water.

Use of the Mean

A large part of the popularity of the MHI is due to its wide availability through the census data. The mean may be the better measure of central tendency for cases such as the DWSRF disadvantaged communities (DC) programs. The mean is susceptible to being skewed by outliers of extremely high or extremely low incomes. The main argument for using the median when it comes to income is that a few extremely wealthy individuals usually skew the mean towards a higher value. In the case of applicants to a DC program, these richer individuals are not expected to be present in the sample. As a result, the mean is not expected to be distorted to a higher number than is truly representative of the community's income. Fossett and South state that "if, however, extreme incomes are not misrepresented, the selection of medians over means implies a theoretical argument that group differences in attaining very low or very high incomes should not be given much consideration."²⁵ In the case of a DC, much consideration **should** be given to low incomes. A study comparing mean and median income at the metropolitan area level found that "there is not only a theoretical preference for using mean rather than median income, but using median income seems to 'over-control' the association of income equality compared with using mean household income."²⁶ The median has too high a tendency to mask the extreme cases of poverty that may lie beneath it. Hence, the author recommends the mean for purposes of defining affordability criteria for a DC program.

Case Study – Rhoney Community

Rhoney is a very small, minority community of about 15 households located approximately 10 miles from Hickory in Catawba County, North Carolina. The area's water service is provided by the Rhoney Water Corporation which was founded in 1965 by five members of the community itself. The construction of the distribution system "has never been approved by the (North Carolina) Division of Environmental Health and is not operated and maintained in accordance with applicable rules."²⁷ The water corporation is on EPA's list of "significant non-compliance."²⁸

The City of Hickory is the nearest water system that could incorporate Rhoney. If Rhoney residents were asked to pay half of the capital costs for this project over a period of ten years, the annual water charges for Rhoney residents if they are connected to the City of Hickory's system will be at least \$1430.²⁹ The smallest level of census data available for the Rhoney area is the census block level. According to these data, the mean household income is \$31,577. If these data are used, Rhoney would qualify as a disadvantaged community as proposed above.³⁰

OTHER FACTORS TO CONSIDER

Obtaining the Data on Mean Income

For large areas, the census may provide the relevant data on mean income. For example, the census provides mean income information on the county, census tract, municipality, and block group levels. Using these levels of data, a community may be able to qualify based on the criteria in table 1. However, in many cases, the boundary of the area to be served as a disadvantaged community (DC) would not coincide with these political boundaries. Even when the boundaries do match, considerable changes in income are possible between census years.³¹ Perhaps, most importantly, the DCs may be so small that they are masked within these larger areas with higher income. Hence, for potential DCs that cannot qualify based on data from a wider area such as the block group level, the author recommends that household income surveys be conducted.³² For example, the census block in which Rhoney is located

includes 410 households, while there are only 15 households in Rhoney. Thus, the census's smallest level of data, the block group, is more than twenty five times larger than this community. The author expects that a household income survey would reveal lower mean incomes for Rhoney residents.

Since income surveys may be costly in terms of both time and finances, perhaps their cost can be factored into the administration costs of the overall DC program. A reliable survey needs to include some method of verifying the income level reported by individuals.

Who Can Apply

EPA defines a "public water system" as any system that serves more than 25 persons or has more than 15 connections. It describes a disadvantaged community (DC) as "the service area of a public water system." This implies that two major groups can apply to the DC program outlined above. Firstly, currently failing systems with a poor history of violation records could feasibly apply on their own behalves. (Here the term "violation" refers to failure of the water system to meet all federal drinking water safety standards). Secondly, a system that is currently performing well, but would like to extend service to a low income community outside of its current service area can also apply to the program. In the latter case, the income data collected would be only from the community to be incorporated. The applicant would need to include the rates that it **intends** to charge households of the outlying community, including the annualized cost of capital to serve the new customers. Such a structure will provide the needed financial incentive for well-performing systems to incorporate lower income, often remote, consumers. In this second case, the low income households may even include households on potentially contaminated private well water.

Feasibility

An important feasibility consideration is the financial viability of assisted areas. The DWSRF provides funds for capital projects. However, administrators need to consider whether households will be able to pay the "tap-on" fee. Perhaps this fee can be factored into the DC grant in some way. In many cases, customers in a new service area also have trouble paying the new monthly water bill. Higher bills often result from a new rate structure. When a community is switched over to an improved water system, the rate structure often changes from a flat rate to one based on metered usage. Water bills are usually higher due to faulty plumbing.³³ Since leaky plumbing does not affect the water bill under the flat rate structure, customers tend to overlook water overuse under flat rate billing. Hence customers of the new service area need to be advised about the effect that leaks can have on their water bill under the new system.

Another feasibility consideration is access to the program. Effective advertising of the new disadvantaged community (DC) program is critical. The state may choose to target certain water systems, such as those with a history of violations of the water safety regulations, in the advertising process. The applicants may often be small communities with little resources. Therefore the application process to the DC program should not be too involved and should include an avenue for applicants to receive adequate counsel and technical assistance.

Conclusion

This paper proposes a sliding scale based on mean income as the basis for affordability criteria in developing a disadvantaged community (DC) program in North Carolina. While the paper focuses on defining affordability criteria, there are many other aspects to consider in developing a program that is fiscally sound: that is, one that assists needy areas in improving their water quality and yet protects the longevity of the revolving fund. One such factor would be to set a maximum amount of finances that the state will apply to a single public water system. This policy may help to make the program more equitable. Even with such a restriction, the optional DC program offered through the DWSRF has the potential to improve the drinking water quality to poor areas across North Carolina.³⁴

NOTES:

¹ Beecher, J. A., Shanaghan, P. E.. “Water Affordability and the DWSRF.” American Water Works Association. Journal; May 1998; 90,5 p. 68

² The Drinking Water State Revolving Fund Program – Financing America’s Drinking Water From the Source to the Tap, Report to Congress. May 2003 p. 4

³ Note: This survey is conducted every four years in accordance with the law.

North Carolina’s allotments were as follows:

1997 – 3.6%

1998 – 1.81%

1999 – 1.76%

The Drinking Water State Revolving Fund Program – Financing America’s Drinking Water From the Source to the Tap, Report to Congress. May 2003 p. 9

⁴ The Safe Drinking Water Act Amendments of 1996: Strengthening Protection for America's Drinking Water <http://www.epa.gov/safewater/sdwa/theme.html>

⁵ US Code Title 42, Chapter 6A, Subchapter XII, Part E, Section 300j-12. State Revolving Loan Funds.

⁶ US Code Title 42, Chapter 6A, Subchapter XII, Part E, Section 300j-12. State Revolving Loan Funds.

⁷ GAO, “Drinking Water: Key Aspects of EPA’s Revolving Fund Program Need to Be Strengthened.” GAO-02-135. January, 2002 p. 16

⁸ Department of Environment and Natural Resources - Division of Environmental Health

Public Water Supply Section. The State of North Carolina Intended Use Plan for Drinking Water State Revolving Fund – Funding for Federal Fiscal Year 2003. Draft-03/01/04 p. 9

http://www.deh.enr.state.nc.us/pws/srf/IUP/DRAFT_IUP2003.pdf

⁹ Meeting Notes: NC Drinking Water State Revolving Fund Disadvantaged Community Funding Programs Planning Discussion, School of Government - UNC Chapel Hill, 12/01/2004

¹⁰ Department of Environment and Natural Resources - Division of Environmental Health

Public Water Supply Section. The State of North Carolina Intended Use Plan for Drinking Water State Revolving Fund – Funding for Federal Fiscal Year 2003. Draft-03/01/04 p. 2

¹¹ Heaney, Chris. Comparison of Drinking Water State Revolving Fund (DWSRF) Programs and other Federal Assistance to Disadvantaged Communities in EPA Region 4.

¹² Other criteria in Minnesota include:

1. the project receives public health priority points under Minnesota Rules part 4720.9020,
2. the total project costs (including annual debt service and operation and maintenance) exceed 1.4% of median household income

The Drinking Water State Revolving Fund Program: Case Studies in Implementation

III. Disadvantaged Communities. EPA 816-R-00-005, August 2000 p. B- 7

¹³ Beecher, J. A., Shanaghan, P. E.. “Water Affordability and the DWSRF.” American Water Works Association. Journal; May 1998; 90,5 p. 68

¹⁴ MHI is a measure that divides the household income distribution into two parts: one-half of the cases falling below the median household income and the other half above the median.

¹⁵ Annual user charges are usually calculated based on multiplying the volumetric rate by the average volume used by customers of the previous year or the volume use expected for the coming year. In other cases, the AUC is based on a standard volume such as 5,000 gallons per month.

¹⁶ U.S. EPA – Office of Water. “Information for States on Developing Affordability Criteria for Drinking Water.” EPA 816-R-98-0002. February, 1998. p. 13

(Note: AHI (Average Household Income) is used, where the word “average” refers specifically to the mean as opposed to the median.)

¹⁷ Note: The affordability standard used by EPA is based on the concept of an “expenditure margin.” EPA's expenditure margin is calculated by determining the difference between an assumed “maximum affordable water bill” (which EPA assumed to be 2.5 percent of MHI) and the current cost of water for the median system (current baseline water bill) of a given size category.

Note: A subsequent study by the National Drinking Water Advisory Council found a value of 1% of the MHI to be more reasonable. (Source: “Recommendations of the National Drinking Water Advisory Council to U.S. EPA on Its National Small Systems Affordability Criteria” http://www.epa.gov/safewater/ndwac/pdfs/report_ndwac_affordabilitywg_final_08-08-03.pdf July 2003

¹⁸ Supalla, Raymond J. and Saeed Ahmad. 1997. Defining the Financial Capacity of Rural Communities to Meet Sewer and Water Needs. The Agricultural Research Division. Institute of Agriculture and Natural Resources, Report no, 175.

¹⁹ Rubin, S.. "Affordability of Water Service." Rural Water Partnership Fund." White Paper. National Rural Water Association. 2001 p. 14

²⁰ Critics have also pointed out that many low income households are actually renters who do not pay directly for water. Instead renters have their water costs included in their rent payment. On the other hand, households at the Median Income level are most likely homeowners. As a result, some argue that trying to compare these two groups along the parameter of MHI is tantamount to comparing apples to oranges. Other factors, such as federal rent subsidies further complicate the attempt to determine the real impact of water costs on low income households. (Rubin, S.. "Affordability of Water Service." Rural Water Partnership Fund." White Paper. National Rural Water Association. 2001 p. 16)

²¹ GAO, "Drinking Water: Key Aspects of EPA's Revolving Fund Program Need to Be Strengthened." GAO-02-135. January, 2002 p. 16

²² GAO, "Drinking Water: Key Aspects of EPA's Revolving Fund Program Need to Be Strengthened." GAO-02-135. January, 2002 p. 16

²³ U.S. EPA – Office of Water. "Information for States on Developing Affordability Criteria for Drinking Water." EPA 816-R-98-0002. February, 1998. p. 23 p. Appendix – 49

MHI	Target Service Charge
\$0 to \$24,725	1% of MHI
\$24,726 to \$39,557	$\$247 + (\text{MHI} - \$24,725) \times 0.03$
\$39,558 and above	1.75% of MHI

Note: New York has made modifications to this calculation after 2003. See: <http://www.health.state.ny.us/nysdoh/water/final/2005/contents.htm>

²⁴ North Carolina General Statutes, GS 159G-6(c)(2), p. 107

²⁵ Fossett, M., South, S. "The Measurement of Intergroup Income Inequality: A Conceptual Review" Social Forces; Mar83, Vol. 61 Issue 3, p855, 17p

²⁶ Blakely, T. A., Kawachi, I. "What is the difference Between Controlling for Mean Versus Median Income in Analyses of Income inequality" Journal of Epidemiology and Community Health, May 2001 v55 i5 p352

²⁷ Letter: by Midgette, R. W.. Protection and Enforcement Branch, State of North Carolina Department of Environment and Natural Resources – Division of Environmental Health and Water Supply Section. 11/12/04

²⁸ According to the EPA, "Significant non-compliance" involves failure to comply with the following permit requirements:

- Major exceedance of effluent limits; failure to meet a compliance schedule milestone by 90 days or more; submitting a major report 30 days or more past the due date; other violations of concern to Director;
- failure to comply with requirements of any enforcement order "

²⁹ This figure is based on Rhoney residents paying half of the capitalization costs for this project over a 10 year period. It is modeled after the town of Farmville, NC, where the town's water extension policy includes the option of the town paying the initial cost of a water line, followed by monthly reimbursements from customers. A portion of the capital costs of extending the service is divided by 120 months (10 years), which is in turn divided by the number of customers. This additional amount is added to each customer's bill for 10 years.

³⁰ See Appendix C for calculations

³¹ U.S. EPA – Office of Water. "Information for States on Developing Affordability Criteria for Drinking Water." EPA 816-R-98-0002. February, 1998. p. 23

³² See Appendices D and E for examples

³³ Ovaska, S. Bracken, D. "Water Cut off at Trailer Park." News & Observer. 02/21/05

³⁴ The author would like to thank Richard Whisnant, Jeff Hughes and Aimee Wall of the Institute of Government for their academic guidance. Also, thanks to Leah Martin and Sherry Long of the Western Piedmont Council of Governments as well as Sid Harrell of the North Carolina Department of Natural Resources for their assistance.

APPENDIX A – 1996 Amendments to the Safe Drinking Water Act (Disadvantaged Communities)**TITLE 42 > CHAPTER 6A > SUBCHAPTER XII > Part E > § 300j–12 > (d) Assistance for disadvantaged communities****(1) Loan subsidy**

Notwithstanding any other provision of this section, in any case in which the State makes a loan pursuant to subsection (a)(2) of this section to a disadvantaged community or to a community that the State expects to become a disadvantaged community as the result of a proposed project, the State may provide additional subsidization (including forgiveness of principal).

(2) Total amount of subsidies

For each fiscal year, the total amount of loan subsidies made by a State pursuant to paragraph (1) may not exceed 30 percent of the amount of the capitalization grant received by the State for the year.

(3) “Disadvantaged community” defined

In this subsection, the term “disadvantaged community” means the service area of a public water system that meets affordability criteria established after public review and comment by the State in which the public water system is located. The Administrator may publish information to assist States in establishing affordability criteria.

APPENDIX B – Summary of Disadvantaged Communities Programs in Other States

State	Region	Eligibility Criteria Used	Other Program Characteristics
Arkansas	VI	<p>A PWS which:</p> <ul style="list-style-type: none"> • is below the State's average MHI level (based on latest census), or • the system's user charge ratio $\leq 1.0\%$. 	<p>The user charge ratio is the projected PWS average yearly water user charge rate for 4,000 gallons of water divided by the system's MHI. Provides principal forgiveness: will be allowed to extend the loan repayment terms from 20 years to 30 years or the life of the project, whichever is less</p>
California	IX	<p>State regulations allow assistance so that the resultant water rate to the average residential user is no higher than 1.5 % of the MHI for the community.</p>	<p>The offer of additional assistance will be dependent upon the DC's ability to repay a loan. Thus, factors such as household income levels, current and projected monthly consumer water charges, and the cost of the proposed project become determining factors when setting the interest rate on SDWSRF loans. The maximum amount of additional financial subsidy to be awarded to a single PWS in any one fiscal year shall not exceed \$1,000,000.</p>
Florida	IV	<p>A financially disadvantaged community is a municipality, county, or agency that has a PWS service jurisdiction served by a CWS and has an MHI < the statewide average as reported in the most recent census or other verifiable determination (i.e., local survey)</p>	<p>Florida has a program assistance component where retired engineers help small systems meet operator certification requirements and meet the loan terms and repayment schedule.</p>
Georgia	IV	<p>The two-part GEFA affordability test consists of:</p> <ol style="list-style-type: none"> 1. Determining whether a community is performing at a reasonable level of effort given its economic characteristics based upon the minimum monthly household water bill for 6,000 gallons of water, and 2. The community's 2000 Median Household Income (MHI) multiplied by 1.25% to ascertain the target user rate. Should the actual monthly user rate be higher than the target monthly water rate, the community will be eligible to be considered "disadvantaged" for the purposes of a subsidized loan not to exceed \$500,000 per community per calendar year 	
Kentucky	IV	<p>Applicants shall meet the following criteria:</p> <ol style="list-style-type: none"> 1. The MHI of the applicant's jurisdiction shall be < the state MHI; 2. After undertaking the proposed drinking water project, the residential water bill for 4,000 gallons of usage shall reasonably be estimated to exceed 1.25 % of the MHI. 	<p>The term "hardship community" is used in KY, instead of "disadvantaged community".</p>
Maine	I	<p>The Affordability Criteria is based on the MHI of the water system's year-round residential customers and its calculated maximum water rate goal. Residential customers of a water system must have an MHI of \$35,178 per year or less to qualify for receipt of DC assistance. (This figure is the average MHI for non-metropolitan Maine from the 2000 Census. (MHI) at or between \$28,142 and \$35,178: $MHI \times 1.5\% = MWRG$ (MHI) of \$28,142 or less: $MHI \times 1.3\% = MWRG$</p>	<p>Only principal forgiveness is offered in the DC program • Income data can come from either the 2000 Census or from a more current independent system income survey • Income surveys must be conducted by an independent third-party • Income surveys shall not be valid for more than four years.</p>

Maryland	III	<p>A DC is:</p> <ol style="list-style-type: none"> 1. a small community (less than 10,000 residents) where the average water user rate per Equivalent Dwelling Unit (EDU) exceeds (or will exceed as a consequence of the new debt) the Target User Rate (TUR) of 1.0% of Median Household Income (MHI), or 2. (b) a community (small or large) where the MHI is less than or equal to 70% of Maryland Statewide MHI, or 3. a community (small or large) where the average water user rate per EDU was increased by 20% or more (in anticipation of the new debt) or will need to increase by 20% or more to achieve the financial capacity (as determined by the State, which may include a phased in rate increase over time) to repay the DWSRF loan, or where the average water user rate exceeds (or will exceed as a consequence of the new debt) the TUR. 	
Michigan	V	<p>The updated median annual household income (MAHI) of the area to be served must be < 120% of the state's updated MAHI.</p> <p>Once this condition is met, a community will be afforded the DC status if one of the following is true:</p> <ul style="list-style-type: none"> • > 50% of the area to be served by the proposed project is identified as a poverty area by the Census. • The updated MAHI of the area to be served is < the most recently published federal poverty guidelines for a family of four in the contiguous United States. • The updated MAHI is < the updated state-wide MAHI and the annual user costs for water supply exceed 1.5 % of the service area's MAHI. • The updated MAHI is > the updated state-wide MAHI and the annual user costs for water supply exceed 3% of the service area's MAHI. 	<p>The costs of the project must be borne by the customers in the service area. If costs are spread over a larger area, then that area must demonstrate that it meets the poverty or affordability criteria.</p> <p>The major benefits for qualified communities include extension of loan terms to 30 years, 50 additional priority points, and assistance to help defray the costs of preparing project plans.</p>
Minnesota	V	<p>Applicant meets the following:</p> <ol style="list-style-type: none"> 1. the project receives public health priority points under Minnesota Rules part 4720.9020, 2. the total project costs (including annual debt service and operation and maintenance) exceed 1.4% of MHI, and 3. the applicant also applies to all other federal and state financial assistance programs for which it is eligible. 	
Montana	VIII	<p>Communities with combined monthly water system and wastewater system rates \geq 2.2% of the community MHI or, if there is only a water system, rates > 1.4% of the community MHI.</p>	<p>An annual 1% interest rate reduction on the first \$500,000 of loan principal. The regular interest rate will apply to the balance of the loan. DCs are also eligible for extended loan terms of up to 30 years.</p>
Nebraska	VII	<p>If system's MHI < than 120 % of the state MHI and</p> <ol style="list-style-type: none"> 1. either they have received an administrative order from the Department for compliance with the drinking water standards, or 2. the system's annual average metered water usage is less than 100 gallons per person per day because of their effective water conservation plan. 	<p>The system's water usage information may be obtained from individual water service meter usage or from the water well meter(s), whichever number is greater.</p> <p>A \$100,000 loan forgiveness ceiling will be applied to disadvantaged communities.</p>

Nevada	IX	<p>At this time, Nevada has not established the criteria for administering a program that provides subsidized assistance (grants, forgiven principal, etc.) to public water systems serving disadvantaged communities.</p> <p>If necessary, procedures and regulations will be developed for disadvantaged communities in the future.</p>	<p>The current prioritization process does take into account the MHI in the area served by a water system with a project on the project list. The process ranks projects in communities with a lower MHI higher than an equivalent project in a community with a higher MHI. This ranking process, therefore, gives those projects serving communities with a lower MHI the first opportunity at loan funds.</p>
New Jersey	II	<p>A municipality whose MHI is 35% or more below the State's MHI</p>	<p>The current IUP does not call for providing additional funds for DCs. But, DCs, identified in the Project Priority System- Category D, Affordability Criteria, will receive more ranking points. Thus DCs will receive a higher priority to qualify for the low interest loans available under the DWSRF financing program.</p>
New York	II	<p>Only projects that have a total project cost less than \$10,000,000, are eligible for hardship assistance</p> <p>A Target Service Charge (TSC) is calculated to determine eligibility for the DC program The state has 3 different TSCs based on the income level involved (i.e a sliding scale).</p>	<p>An applicant may not be awarded more than \$2 million in grants in a particular funding period.</p>
Ohio	V	<p>The director may designate a community as a DC based on, at least:</p> <ol style="list-style-type: none"> 1. (a) MHI in the area served by the applicant or PWS, and (b) User cost 2. The director may consider other factors such as unemployment, poverty levels, population growth, age distribution of population, and other socio-economic factors in his determinations 	<p>The DC program is proposed to go into effect at the beginning of the 2006 program year.</p>
Oregon	X	<p>A community whose average water cost for a residential customer in the service area of the water system is at least the state average for like systems (which have recently undergone a construction project) after the proposed project improvements are completed and currently meets at least two of the criteria listed below:</p> <ol style="list-style-type: none"> 1. The debt for community water systems that operate water systems only is at least \$250 per capita 2. The water system includes at least 51% low and moderate income persons as defined by the most recent census data or as defined by an approved local survey. 3. The residents of the community water system have documented financial burden due to a recent national or state declared disaster. 	<p>Effective rate calculation methods will be determined by Board resolution from time to time, using the Revenue Bond Buyer Index (RBBI) as a basis point and a method to reduce the interest rate from a recent RBBI rate down to a potential minimum of zero percent. (The Oregon Economic Development Department determines the current state average water cost used for the program. The cost includes any General Obligation Debt for the water system and will be based on a standard residential water usage of 7,000 gallons per month.)</p>
Pennsylvania	III	<p>The amount of MHI that should be available to pay for water service by residential customers will range from 1 - 2% of the community's adjusted MHI; dependent upon the specific socio-economic factors that are provided by the Pennsylvania Department of Community and Economic Development.</p>	<p>Systems qualifying for term extensions must exceed the user rate(s) found in similar systems according to a financial capability model. The terms will be extended to a point that will allow the residential user rate to fall to a level equal to similar systems' cost of water service, as determined by the demographic analysis and financial capability analysis.</p>

Rhode Island	I	<p>The entire service area of a public water system meets the following criteria:</p> <ol style="list-style-type: none"> 1. Has a service area MHI ≤ the State non-metropolitan MHI 2. Has a ratio of 25% interest subsidy debt service schedule for a planned project plus the existing rate structure and resultant user fee to the service area MHI greater than .999 % 3. The applicant has applied for inclusion to the State's project priority list and for a DWSRF loan from the Department of Health and the RI Clean Water Finance Agency respectively. 	<p>Systems found to be eligible will qualify for the following DWSRF interest subsidies in addition to the standard 25% subsidy: User fees with DWSRF Debt service/Service area MHI ≥ Interest subsidy .999% - 25% 1 % to 1.249% - 50% 1.25% to 1.499% - 75% ≥1.5% - 100%</p>
South Carolina	IV	<p>Two "levels:"For level 1, system must be one of the following:</p> <ul style="list-style-type: none"> • Service area < 80% of State MHI; or, Service area >80%of State MHI, but < 100% ofState MHI and: • Applicant is located in a county with an unemployment rate at least 1% point > the latest annual State average; or, • The current or proposed annual user charge, based on 6,000 gallons per month, exceeds 1.25% of the applicant's MHI.For Level 2, <p>Both of the following two criteria must be met:</p> <ul style="list-style-type: none"> • The applicant's MM is less than \$26,256 (the State MHI); and, • A rate increase is required for the project which would result in a user charge higher than the targetuser charge. 	<p>If the applicant meets criteria for level 1, the term of the loan may be extended up to 30 years and the project would be funded at the standard interest rate.Target user charge = annual average residential water user charge,based on 6,000 gallons per month, equal to at least 1.25% of the applicant's MHI.</p>
South Dakota	VIII	<ol style="list-style-type: none"> 1. For municipalities and sanitary districts: the median household income is < the state-wide MHI; and the monthly residential water bill is \$20 or more for 5,000 gallons usage; or 2. For other CWS: the MHI is below the state-wide MHI; and the monthly water bill for rural households is \$50 or more for 7,000 gallons usage. 	<p>DCs below the statewide MHI, but ≥ 80%, are eligible to extend the term of the loan up to 30 years. DCs below 80 % of the statewide MHI, but ≥ 60 % may receive up to a 2 percentage point reduction in interest rates. DCs with a MHI < 60 % of the statewide MHI may receive a 0% loan.</p>
Tennessee	IV	<p>Tennessee uses the Ability to Pay Index (ATPI) to determine priority for DWSRF assistance. Communities with greater economic need are given lower points and a higher ranking in the IUP. The allocation formula uses a broad definition of fiscal capacity that includes per capita income, per capita property tax base, and per capita sales.</p>	<p>The IUP says that “Tennessee’s DWSRF does not have a separate loan program for disadvantaged communities.”</p>

Texas	VI	<p>A DC is the service area of a PWS that has an adjusted MHI that is no more than 75% of the state MHI for the most recent year for which statistics are available; and</p> <ol style="list-style-type: none"> Has a Household Cost Factor for water rates that $\geq 1\%$ (for water only; or has a Combined Household Cost Factor for water and sewer rates that is $\geq 2\%$. Household Cost Factor = Average Yearly Water Bill, or Combined Household Cost Factor = Average Yearly Water Bill + Average Yearly Sewer Bill AMHI = 1990 Annual Median Household Income x Texas Consumer Price Index for 7/00 [160.21] Average Yearly Water Bill = Average number of persons per occupied household x 2,325 (monthly gallons per person) x current rate structure {including cost of project} x 12 Average Yearly Sewer Bill = Average number of persons per occupied household x 1,279 (monthly gallons per person) x current rate structure {including cost of project} x 12 	<ol style="list-style-type: none"> If the adjusted MHI for the service area is 75% - 70% of the state MHI, the Board will offer a loan with a 1.0% interest rate. If the adjusted MHI for the service area $\leq 70\%$ but $> 60\%$ of state MHI, the Board will offer a loan with a 0.0% interest rate. If the adjusted MHI for the service area is $\leq 60\%$ but $> 50\%$ of the state MHI, the Board will offer a loan with a 0.0% interest rate and 15% of the principal will be forgiven. If the adjusted MHI for the service area is $< 50\%$ of state MHI, the Board will offer a loan with a 0% interest rate and 35% of the principal will be forgiven.
Utah	VIII	<p>Communities located in an area which has a median adjusted gross income which is $\leq 80\%$ of the State's median adjusted gross income, (as determined by the Utah State Tax Commission from federal individual income tax returns) excluding zero exemption returns or where the established annual cost of drinking water service to the average residential user exceeds 1.75% of the median adjusted gross income.</p>	<p>DCs may receive 0% loans, negative interest rate loans, or principal-forgiveness loans. Terms for each method of financial assistance shall be determined by Board resolution. The Board has determined that up to 20% of DWSRF funds may be used for principal forgiveness to disadvantaged communities.</p>
Vermont	I	<ol style="list-style-type: none"> The municipality in which the water system is located or the users of the water system must have an MHI $<$ the average of the community MHI of the state. The water system must have an annual household water user cost greater than 1.0 % of the MHI after construction of the proposed water supply improvements, or, if the MHI is at or above the state average of community MHIs, the water system must have an annual household water user cost greater than 2.5 % of the MHI after construction of the proposed water supply improvements. 	<p>There is a separate School Water System Disadvantaged Program. All municipally owned public school water systems are eligible for loan principal forgiveness under the disadvantaged program.</p>
Virginia	III	<p>Disadvantaged waterworks are those:</p> <ol style="list-style-type: none"> Whose application for a construction loan is to primarily resolve a health or compliance problem, Will serve less than 3300 people on a retail connection basis, Have or may have, after the project is completed, monthly user rates that exceed the target rate, and Where the median household income is 80% or less than the state average. 	<p>Larger waterworks may receive this designation if taking over another waterworks which would be determined to be disadvantaged under this criteria, or by providing drinking water service to existing unserved areas with health problems.</p>
Washington	X	<p>DCs (those at or below the 80% county MHI level) will be offered loans at .5 or 0%, depending on whether they are below the 80% or 50% of the county MHI, respectively.</p>	<p>DCs falling below 50% of the county MHI will have the option of requesting a 30-year loan payment period.</p>
West Virginia	III	<p>The proposed user MHI must be disadvantaged such that the proposed rates for 4500 gallons must not be less than 1.5 % of the MHI.</p>	<p>DCs receive loans at an interest rate less than 2% or extended loan terms up to 30 years</p>
Wisconsin	V	<p>The two eligibility criteria are:</p> <ol style="list-style-type: none"> The local governmental unit's population must be less than 10,000; and The local governmental unit's MHI must be $\leq 80\%$ of the State's MHI. 	<p>Wisconsin will not be making loan subsidies below a further reduced interest rate in order to preserve as much of the loan monies as possible to meet the high demand for assistance. As Wisconsin's DC program is not offering principal subsidies, there is no limit on how many communities may qualify.</p>

APPENDIX C – Calculations of Rhoney Community’s Potential Annual Water Charges

Target User Rate = 1.4%

Mean Household Income for Rhoney = **\$31,577**
(Based on CensusCD 2000 Long Form, Release 2.0.)

Annual Water Charge for Rhoney = $\$31,577 \div 1.4\% = \mathbf{\$442}$

Monthly Water Rate from Hickory = \$34.16
(Based on Hickory's rate structure and use of 5,000 gallons per month)

Annual Water Rate (Excluding capital costs) = Monthly Water Rate \times 12 months = $\$34.16 \times 12 = \mathbf{\$410}$

Capital costs of installing system in Rhoney = **\$300,000**

Assuming that Rhoney residents bear half of this cost $\rightarrow \$300,000 \div 2 = \mathbf{\$150,000}$

Annual Water Rate (Including capital costs annualized over 10 years) =
[(half of capital costs \div number of households) \div 10 years] + Annual Water Charge =
[($\$150,000 \div 15$) \div 10] + 410 = **\$1,410**

APPENDIX D – Sample Household Income Survey -1

Source: The Drinking Water State Revolving Fund Program: Case Studies in Implementation III. Disadvantaged Communities. EPA 816-R-00-005, August 2000 p. C- 25

The Washington State
Public Works Board
Drinking Water State Revolving Fund (DWSRF)
2000 – Income Survey

Water System Applicant:

Instructions:

This water system may be eligible for a lower interest rate for a DWSRF loan to rehabilitate the water system. In order to qualify for the reduced rate, a majority of residents served by the water system must have incomes that are below the county's median income level.

To determine if the water system qualifies, a random sample of residents must complete the survey form below and return it to the Public Works Board. You have been selected to participate in that survey. The survey is anonymous, and we request that you help us retain that status by returning the survey in the enclosed envelope and not add any identifying information.

Survey Questions

1. Does this household receive its drinking water from the system?
Yes ____ No ____ (If no, then do not answer any other questions)
2. How many people live in this household? _____
3. What was the household's total income during 1999? _____

- The number of people in the household should equal the number of people who lived in the residence for at least six months of the year.
- The income reported here should be the same as reported on tax returns.

Thank you for your time and assistance. Please call John LaRocque at (360) 586-2523 if you have any questions about this survey or the DWSRF.

The Washington Public Works Board's Income Survey procedure is as follows:

- 1) Borrower (water system) provides a mailing list of customers.
- 2) Public Works Board picks a random sample from the list.
- 3) If the "universe" is less than 100, the Board requires at least 25 responses; if the universe is more than 100, the Board requires fifty responses. (If response rate is too low, surveys will be re-mailed, but a second mailing has not been necessary to date.)
- 4) The Board mails the surveys, collects them, and tabulates the results.

APPENDIX E - Sample Household Income Survey - 2

Source: "Income Verification #2" Western Piedmont Council of Governments, Hickory, NC received 02/15/05

**COMMUNITY DEVELOPMENT BLOCK GRANT
REHABILITATION LOAN/GRANT PROGRAM
CONFIDENTIAL VERIFICATION OF EMPLOYMENT, INCOME, BENEFIT**

TO: _____ CASE # _____
 _____ DATE OF REQUEST _____

THE APPLICANT IDENTIFIED BELOW HAS APPLIED FOR A LOAN/GRANT FOR PROPERTY REHABILITATION UNDER TITLE I OF THE HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974. THE APPLICANT HAS AUTHORIZED THIS AGENCY IN WRITING TO OBTAIN VERIFICATION FROM ANY SOURCE NAMED IN THE APPLICATION. YOUR VERIFICATION OF EMPLOYMENT/INCOME/BENEFIT IS FOR THE CONFIDENTIAL USE OF THIS AGENCY AND THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT. PLEASE FURNISH INFORMATION REQUESTED BELOW.

SOCIAL SECURITY NUMBER: _____/_____/_____

APPLICANT'S NAME AND ADDRESS: _____

AUTHORIZATION: I HEREBY AUTHORIZE RELEASE OF THE FOLLOWING REQUESTED INFORMATION.

 SIGNATURE OF APPLICANT

=====

THE INFORMATION REQUESTED HAS BEEN CHECKED () BELOW:

- () 1. THE GROSS AMOUNT OF APPLICANT'S EARNINGS (INCLUDING OVERTIME, BONUS, COMMISSIONS, ETC.) RECEIVED DURING THE PAST TWELVE (12) MONTHS \$ _____
- () 2. THE GROSS AMOUNT OF APPLICANT'S SOCIAL SECURITY BENEFITS RECEIVED DURING THE PAST TWELVE (12) MONTHS \$ _____
- () 3. THE GROSS AMOUNT OF APPLICANT'S _____ BENEFITS RECEIVED DURING THE PAST TWELVE (12) MONTHS \$ _____
- () 4. THE TOTAL AMOUNT OF RENTAL PAYMENTS RECEIVED BY APPLICANT DURING THE PAST TWELVE (12) MONTHS \$ _____

=====

SIGNATURE OF EMPLOYER/SERVICE/AGENCY/RENTER:

 SIGNATURE

 TITLE

 DATE

=====

**UPON COMPLETION OF THIS FORM, PLEASE RETURN IT TO THE FOLLOWING AGENCY:
 (Agency contact information)**