ENVIRONMENTAL FINANCIAL ADVISORY BOARD

AUG 28 2008

Honorable Stephen L. Johnson
Administrator
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Johnson:

The Environmental Financial Advisory Board (EFAB) is pleased to submit the enclosed report, "Relative Benefits of Direct and Leveraged Loans in State Revolving Loan Fund (SRF) Programs" for the Agency's consideration.

Based on the Board's analysis of data on both the Clean Water and Drinking Water SRFs, this report shows that state programs that leverage their SRF funds have provided greater assistance as a percentage of their capitalization grants than those that use the direct loan approach. The Board recommends that EPA encourage a careful evaluation of the benefits of using leveraging by States that have significant unmet current demand for clean water or drinking water loans.

Revolving loan funds, however, are intended to both provide environmental assistance today and to develop sustainable means for providing assistance in the future. An SRF will become sustainable when, on an annual basis, its recycled federal and state capitalization and retained earnings are sufficient to continue its existing level of project funding in inflation adjusted dollars. Under this definition, the SRFs have not yet achieved sustainability.

It is sometimes argued that SRF leveraging increases current assistance at the expense of future projects. However, SRFs that currently use the direct loan approach could maintain the current level of assistance and increase the growth of their retained earnings by using a leveraging approach to fund their loans and investing their remaining equity to grow retained earnings. Augmenting their equity capital through leveraging could allow such States to increase available and future funding for construction of environmental infrastructure regardless of any future changes in Federal capitalization grants.

EFAB recognizes that EPA has worked to educate states about the potential benefits of leveraging. However, we recommend that the Agency expand the audience it is trying to reach. Some State financial officers, for example, may not be especially familiar with the SRF program or how it can be most effectively used. Appearances by EPA at meetings of the Government Finance Officers Association, the National Association of State Treasurers or the Governors' Association may be a productive supplement to meetings with those who already have significant knowledge of the SRF program.

In addition to encouraging leveraging as described above, EFAB believes that there are several other actions the Federal government could take to enhance the potential for SRFs to become self-sustaining over the long term.

1. Allow states to elect an approach that would eliminate the connection between Federal capitalization grant draws and the expenditure of funds for construction of SRF funded projects, similar to what has been done in the past.

2. Interpret the perpetuity rule on a dynamic rather than a static basis, by measuring compliance taking account of an SRF's expected earnings over time, rather than based on annual year-end results

3. Exempt the federal and state investment in the SRFs from federal arbitrage regulations.

Finally, EFAB believes that there are additional potential opportunities to expand the sustainability of SRF's by expanding the kinds of investments that SRFs can use. An investment strategy that is more typical for large endowed funds, such as pension funds, would be expected to significantly increase the growth rate of SRF equity needed to achieve SRF sustainability. We believe that EFAB could provide valuable information to the Agency by exploring the benefits of more aggressive investment of SRF equity. If the Agency would like EFAB to explore this topic in greater depth we would be pleased to do so, with the objective of making recommendations to EPA regarding any appropriate program changes.

The Board appreciates the continuing opportunity to provide financial advisory assistance to EPA on issues of national importance. We want to thank the Agency for the exceptional support we have received in this review from staff in the Office of Water, especially Kit Farber and Howard Rubin, who provided invaluable assistance to our deliberations.

We would be pleased to answer any questions or brief you or any of your staff should you desire additional information about this report, and we look forward to continuing to assist EPA in the mission of protecting human health and the environment.

Sincerely,

A. James Barnes
EFAB Chair

A. Stanley Meiburg
EFAB Designated Federal Official

Enclosure

cc: Marcus Peacock, Deputy Administrator
Ben Grumbles, Assistant Administrator for Water
Lyons Gray, Chief Financial Officer

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Relative Benefits of Direct and Leveraged Loans in State Revolving Loan Fund (SRF) Programs

August 2008

Printed on Recycled Paper

Report on the Relative Benefits of the Direct Loan and Leveraged Loan Approaches for Structuring State Revolving Loan Funds

Executive Summary

Introduction

USEPA estimates national wastewater infrastructure needs range between $331 and $450 billion and that drinking water infrastructure needs range between $154 and $466 billion. There is no single correct estimate for needs, but the available data illustrate the growing gap between infrastructure needs and spending levels.

In light of the great need and increasing demand for water and wastewater financing, in August, 2006, the Environmental Financial Advisory Board ("EFAB" or "the Board") initiated a review of States use of a financing technique known as leveraging in the management of the State Clean Water and Drinking Water State Revolving Funds (SRFs). Leveraging refers to the practice of using Federal SRF capitalization grants as security for bonds the proceeds of which are deposited in the SRF, as authorized in 33USC1383(d) [Clean Water Act] and 42USC300j-12(2) [Safe Drinking Water Act]. State SRF Programs lend the bond proceeds to communities to support the development of wastewater and drinking water infrastructure.

The questions before the Board were whether States which used leveraging tended to have higher rates of loans as a percentage of their Federal capitalization grants, whether leveraging would improve the sustainability of the SRFs, and whether the Board ought to recommend that EPA do more to promote the use of leveraging. To assess this, EFAB compiled and analyzed substantial data on both the Clean Water and the Drinking Water SRFs.

SRF Programs by Lending Structure

States have substantial flexibility in the design of their SRF programs and, in particular, their lending structures. There are two broad types of SRF loans. Direct loans are made by states directly from SRF equity. Leveraged loans are funded in whole or in part with borrowed money raised in the bond market. The use of bond proceeds permits the amount of loans to exceed the amount of SRF equity. Every SRF program that uses leveraged loans also has some direct loans within its portfolio. This report groups leveraged SRFs by – low (up to 33.33% of loans funded with bond proceeds), medium (between 33.33% and 66.67% of loans funded with bond proceeds), or high (more than 66.67% of loans funded with bond proceeds).

Table 1 details the number of states with direct loan and leveraged loan SRF programs.

Table 1: Number of States by Lending Structure

SRF Program	Direct Loan States	Leveraged ~ Low States	Leveraged ~ Medium States	Leveraged ~ High States
Clean Water	24	9	9	9
Drinking Water	31	4	6	10

Table 2 indicates the population (in millions) served by these programs.

Table 2: Populations Served (millions).

SRF Program	Direct Loan States	Leveraged ~ Low States	Leveraged ~ Medium States	Leveraged ~ High States
Clean Water	87.0	83.7	66.5	61.7
Drinking Water	182.1	15.5	34.3	66.9

Both direct loan and leveraged loan programs have been successful in making loans with significantly greater value than the federal capitalization grants. Note that the DWSRF in Table 3 is a newer program than the CWSRF, resulting in less equity having revolved to make additional loans.

Table 3: SRF Capitalization and Loans – As of June 30, 2007

Lending Structure	CWSRF Capitalization Grants	CWSRF Loans Executed	DWSRF Capitalization Grants	DWSRF Loans Executed
Direct Loan States	$7,398,400,000	$12,833,600,000	$3,501,900,000	$4,412,500,000
Leveraged ~ Low States	$5,658,500,000	$11,814,400,000	$520,600,000	$771,400,000
Leveraged ~ Medium States	$5,768,200,000	$15,968,100,000	$888,100,000	$2,084,500,000
Leveraged ~ High States	$7,197,000,000	$23,333,000,000	$1,612,000,000	$4,683,800,000

- In both direct and leveraged loan programs, a subsidy to borrowers is provided by the SRF foregoing some or all of the interest that could otherwise be earned on program equity. For zero interest loans, all interest is foregone.

- If federal capitalization grants decline as was anticipated at the initiation of the SRF programs, the SRFs will have to depend more on growth of retained earnings to sustain their programs.

- If states are making loans at identical interest rates (but above zero interest), leveraged loan states use less SRF equity; thus, with the same amount of equity, a leveraged state can fund more projects. For example, if the interest rate is 50% of the market rate, leveraged loans would use half the equity of direct loan states.

Sustaining an SRF Program

- Although the primary goal of any SRF is to make loans, there is another important goal, which is to ensure that over time the program is sustainable. States must continually balance

their need to use SRF equity for loans and the need to invest equity to generate retained earnings for future SRF uses.

- The "opportunity cost" of an SRF program is the difference between: (a) how much an SRF "earns" on equity used to make a loan; and (b) the investment return that an SRF could have earned on that same amount. The higher the opportunity cost to an SRF, the less sustainable its program will be. EFAB's analysis shows that leveraged loan programs can better enable states to sustain their SRFs than direct loan programs.

- The following analysis shows how direct loan programs may increase retained earnings through leveraging.

  - If a state has $100 of projects that need to be funded and provides a 50% interest rate subsidy versus a borrower's normal 4% tax-exempt borrowing cost, the state could use $100 of equity for a direct loan. In this case, the SRF would earn around 2% on the $100, or $2.00.

  - However, if the state issued bonds to fund the $100 of loans, it could use $50 of equity to support the loans and invest the remaining $50 of equity. In this case, the SRF would be able to earn a taxable market rate of return of about 4.5% on the invested $50, or $2.25, a 12.5% better return.

- Potential uses for additional SRF earnings include supporting additional projects immediately by making additional leveraged loans or retaining such earnings to grow SRF equity and, thus, enhance the SRF's capacity to fund future projects.

- There are also at least two administrative actions the USEPA can take to further enhance the potential for SRFs to be perpetually self-sustaining:

  - EPA could allow states to elect an approach that would eliminate the connection between federal capitalization grant draws by the state and the construction pace of SRF funded projects. Since all grant draws must remain within the SRFs, the federal contributions would remain secure but could be used to accelerate the growth of SRF retained earnings.

  - EPA also could interpret the agency's "perpetuity rule"[1] on a dynamic, rather than, static basis. By measuring perpetuity rule compliance based on expected earnings over time, rather than current year-end results, project funding capacity can grow more rapidly.

- EPA can also promote sustainability by supporting Congressional action to exclude SRF investments from arbitrage regulation. For grant monies pledged to support tax-exempt

[1] *In actuality, there is no specific USEPA "perpetuity rule" although USEPA and the states recognize that the SRFs must be maintained in perpetuity. The Clean Water Act requires that the fund balance in each SRF "shall be available in perpetuity for providing … financial assistance." [33 U.S.C.1383 §603(c)] Similar language appears in the Safe Drinking Water Act, "The fund corpus shall be available in perpetuity for providing financial assistance…." [42 U.S.C. 300j-12(c)]. While EPA does not have any specific rule that implements this language, in its definition of CWSRF Financial Indicators (see CWSRF 01-3,dated October 31 2000), for example, the agency seeks to gauge sustainability of the fund by determining if retained earnings, net of cumulative state match bonds repaid, is equal to or greater than zero. If this test is met, "the CWSRF is deemed to be maintaining its contributed capital…."*

bonds, SRFs would be able to retain market interest returns within the SRFs instead of rebating earnings to the federal government.

- Another potential opportunity that EFAB can explore is expanding SRF investment opportunities. Generally, SRFs are restricted to using only the most conservative investments. An investment strategy similar to large endowed funds, such as pension funds, can increase the growth rate of SRF retained earnings.

Primary Conclusions

- SRF programs have been very successful in financing clean water and drinking water projects, regardless of program design.

- EFAB's analysis of data on both the Clean Water and the Drinking Water State Revolving Funds (SRFs) shows that state programs that have leveraged their SRF funds have provided greater assistance as a percentage of their capitalization grants than those that have not leveraged.

- If federal capitalization grant dollars decrease, to be able to sustain their SRF programs states will need to maximize their earnings on SRF equity.

- States can increase project funding capacity and increase retained earnings by utilizing innovative financing concepts that are now being applied in some states.

- States can enhance project funding capacity if compliance with the perpetuity rule is determined based on expected earnings over time, rather than current year-end results. Compared to direct loan programs, leveraged programs can fund more loans with the same amount of equity.

Recommendations

- EPA should encourage direct loan states to improve SRF sustainability by showing those states how leveraging can be used to increase their retained earnings.

- EPA should assist states to develop sustainable SRFs by administratively allowing states to accelerate capitalization grant draws, modifying its interpretation of the perpetuity rule, and by advocating for arbitrage relief focused specifically on SRF programs.

- EFAB should explore the benefits of developing more aggressive parameters for SRF equity investments and recommend appropriate program changes to EPA.

Report on the Relative Benefits of the Direct Loan and Leveraged Loan Approaches for Structuring State Revolving Loan Funds

Section I. Introduction

USEPA estimates national wastewater infrastructure needs range between $331 and $450 billion and that drinking water infrastructure needs range between $154 and $466 billion. There is no single correct estimate for needs, but the available data illustrate the growing gap between infrastructure needs and spending levels.

In light of the great need and increasing demand for water and wastewater financing, in August 2006, USEPA's Environmental Financial Advisory Board ("EFAB" or "the Board") began an extensive review of both the Clean Water State Revolving Fund ("SRF") and the Drinking Water SRF. The goal of this effort was to determine whether States which used leveraging tended to have higher rates of loans as a percentage of their Federal capitalization grants, whether leveraging would improve the sustainability of the SRFs, and whether the Board ought to recommend that EPA do more to promote the use of leveraging.

Leveraging refers to the practice of using Federal SRF capitalization grants as security for bonds issued the proceeds of which are deposited in the SRF, as authorized in 33USC1383(d) [Clean Water Act] and 42USC300j-12(2) [Safe Drinking Water Act]. State SRF Programs lend the bond proceeds to communities to support the development of wastewater and drinking water infrastructure. There are two primary kinds of SRF loans, direct loans and leveraged loans.

Description of Direct and Leveraged Loans

Direct loans are made by states "directly" from SRF equity which includes federal contributions, state contributions, and retained earnings. For direct loans, a subsidy is provided to borrowers by charging a lower interest rate than would be charged on a market rate loan, i.e., by forgoing potential earnings on equity. The maximum subsidy is achieved by providing a 0% loan. For such a loan, the borrower's subsidy equals the market interest rate at which the SRF loan recipient would otherwise have borrowed, which is the tax-exempt or taxable market interest rate.

In contrast, leveraged loans are funded in whole or in part with the proceeds of bonds issued by the SRF, including 100% bond funded leveraged loans and loans which include various combinations of bond proceeds and equity. States, EPA and the national bond rating agencies categorize SRF leveraging structures as "blended loan," "cash flow," "hybrid" and "reserve fund" models. Each of these leveraging structures share the following common themes: (1) bond proceeds are deposited to the SRF; (2) bond proceeds increase lending capacity; and (3) bond proceeds are secured by combinations of equity investments and other SRF loans (both bond-funded and direct loans).

The descriptions of the types of loans discussed in this report are simple examples of the basic types of leveraging methods rather than specific examples of any individual state program. In actual practice, many SRF programs originate direct loans and leveraged loans through a variety of leveraging structures tailored to the needs of a particular state. Section V analyzes the direct loan, blended loan and reserve fund approaches. This is done to illustrate a primary conclusion of this report, which is that by leveraging their SRF programs, states that currently make only direct loans can increase lending or can maintain lending and simultaneously increase retained earnings.

Contents of the Report

The Report includes detailed historical data on both the Clean Water and Drinking Waters SRFs. It then analyzes that information, identifying various characteristics of the general types of SRF programs managed by all the states and Puerto Rico. Following the discussion of the states' SRF programs' characteristics, the Report offers a detailed analysis of how use of the direct loan and leveraged loan models can affect the long-term sustainability of states' SRF programs and offers recommendations of how the federal government can improve the opportunities for such sustainability.

The Report includes the following sections:

- Section II – Historical Data for the SRF Program

  This section provides information from the inception of the SRF programs to June 30, 2007 regarding the amount and source of equity in the Clean Water and Drinking Water SRFs, the amount of retained earnings in each state program, and the amount of executed loans as a percent of the federal contribution. Section II also includes the states grouped by lending structure.

- Section III – Analysis of Historical Data

  Using the data provided in the tables in Section II, this section summarizes and explains the data.

- Section IV – Characteristics of States by Leveraging Factor

  This section defines "leveraging factor" and uses that factor to indicate how that factor affects or is affected by the role of a financing agency or authority in a state's program, the distribution of states funding their required state match through bonding programs, the relationship between leveraging factor, and the amount of assistance provided to disadvantaged communities and the correlation of leveraging factor to the amount of retained earnings in the SRF programs.

- Section V – Detailed Analysis of the Direct Loan and Leveraged Loan SRF Approaches

Building on the information in prior sections, Section V evaluates the relative effectiveness of the direct loan and leveraged loan models. In addition to reviewing the techniques used by each model to provide subsidized loans for clean water and drinking water projects, this section provides a meticulous analysis of the costs of providing loans under each model, the effectiveness of each approach in growing retained earnings in order to maximize the sustainability of the SRF program and then looks at the policy alternatives regarding the benefits of providing more loans currently versus investing for future sustainability of the SRF programs.

- Section VI – Conclusions and Recommendations

  Drawing from the body of the Report, Section VI outlines the conclusions that are derived from the data and analyses presented and makes recommendations to USEPA regarding how the federal government can improve the opportunities for states to ensure the sustainability of their SRF programs.

Section II. Historical Data for the SRF Program

To begin its analysis of SRF leveraging, EFAB compiled the most comprehensive data available to date on both the Clean Water SRF and the Drinking Water SRF. Data is provided for each of the 50 states' and Puerto Rico's SRF programs.

The tables that follow show the total federal and state contributions to the SRF programs as of June 30, 2007. The tables also provide information on the dollar value of the SRF loans made by each state, the amount of leveraged bond proceeds as a percent of loans executed, and the amount of retained earnings as a percent of equity in the program. Finally, the tables show the amount of SRF loans made as a percent of the federal capitalization in each state.

The four tables in this Section include:

- Table 4-A: CWSRF Data by State as of June 30, 2007

  States are sorted alphabetically.

- Table 4-B: CWSRF Data by Lending Structure as of June 30, 2007

  States are grouped by lending structure:

  - Leveraged ~ High – more than 66.67% of loans funded with bond proceeds.
  - Leveraged ~ Medium – between 33.33% and 66.67% of loans funded with bond proceeds.
  - Leveraged ~ Low – up to 33.33% of loans funded with bond proceeds.
  - Direct Loan – loans are solely funded with equity.

- Table 5-A: DWSRF Data by State as of June 30, 2007

  States are sorted alphabetically.

- Table 5-B: DWSRF Data by Lending Structure as of June 30, 2007

  States are grouped by lending structure:

  - Leveraged ~ High – more than 66.67% of loans funded with bond proceeds.
  - Leveraged ~ Medium – between 33.33% and 66.67% of loans funded with bond proceeds.
  - Leveraged ~ Low – up to 33.33% of loans funded with bond proceeds.
  - Direct Loan – loans are solely funded with equity.

Table 4-A
CWSRF Data by State as of June 30, 2007 (millions)

	Federal Capitalization	State Capitalization	Equity	Retained Earnings as % of Equity	Leveraged Bond Proceeds	Loans Executed	Leveraged Bonds as % Loans Executed	Executed Loans as % of Federal Capitalization
United States	23,549.3	5,309.4	32,899.3	16.6%	27,735.1	62,949.1	44.06%	267.3%
Leveraged ~ High	6,499.9	1,498.9	8,477.7	10.6%	19,116.9	22,333.0	85.60%	343.6%
Leveraged ~ Medium	5,252.9	1,153.0	7,311.2	16.4%	7,226.0	15,968.1	45.25%	304.0%
Leveraged ~ Low	5,148.6	1,177.6	7,442.8	18.9%	1,392.2	11,814.4	11.78%	229.5%
Direct Loan States	6,647.9	1,479.8	9,667.5	20.3%	-	12,833.6	0.00%	193.0%
Alabama	233.0	108.3	341.7	11.2%	587.1	829.3	70.79%	355.9%
Alaska	143.3	30.2	209.4	20.0%	-	237.0	0.00%	165.4%
Arizona	154.9	42.3	209.0	10.0%	449.6	764.7	58.79%	493.7%
Arkansas	168.5	36.5	233.2	15.1%	116.9	403.3	28.99%	239.3%
California	1,765.2	468.1	2,611.5	17.3%	298.9	3,869.0	7.73%	219.2%
Colorado	203.3	41.0	253.8	7.1%	648.7	727.5	89.17%	357.8%
Connecticutt	337.0	103.9	477.9	10.7%	950.5	1,120.3	84.84%	332.4%
Delaware	117.1	23.0	149.8	9.7%	-	175.5	0.00%	149.9%
Florida	838.8	189.3	1,324.3	25.0%	150.7	2,567.7	5.87%	306.1%
Georgia	455.9	97.0	717.9	26.9%	-	808.7	0.00%	177.4%
Hawaii	180.9	70.9	313.1	22.0%	-	355.6	0.00%	196.6%
Idaho	113.8	23.7	172.8	23.1%	-	278.3	0.00%	244.6%
Illinois	1,074.0	198.9	1,492.6	17.7%	189.5	2,028.8	9.34%	188.9%
Indiana	566.1	123.0	666.0	3.8%	1,686.8	1,756.6	96.03%	310.3%
Iowa	282.9	64.2	354.9	14.8%	186.5	560.1	33.30%	198.0%
Kansas	210.5	43.9	245.6	0.0%	464.3	797.6	58.21%	378.9%
Kentucky	322.0	69.2	479.6	21.2%	-	523.5	0.00%	162.6%
Louisiana	274.4	57.2	380.2	15.8%	-	436.6	0.00%	159.1%
Maine	184.7	40.9	257.7	15.4%	97.3	426.0	22.84%	230.6%
Maryland	558.7	114.3	803.8	20.5%	160.9	1,178.8	13.65%	211.0%
Massachusetts	861.5	184.2	1,307.8	22.8%	3,291.1	3,776.7	87.14%	438.4%
Michigan	1,018.4	212.5	1,262.2	5.8%	2,219.8	2,463.3	90.11%	241.9%
Minnesota	451.0	126.1	666.0	16.2%	1,066.7	1,811.1	58.90%	401.6%
Mississippi	223.7	48.6	352.5	25.4%	-	472.3	0.00%	211.1%

Table 4-A *(continued from prior page)*
CWSRF Data by State as of June 30, 2007 (millions)

	Federal Capitalization	State Capitalization	Equity	Retained Earnings as % of Equity	Leveraged Bond Proceeds	Loans Executed	Leveraged Bonds as % Loans Executed	Executed Loans as % of Federal Capitalization
Missouri	642.2	159.0	852.6	10.4%	1,569.7	1,638.1	95.82%	255.1%
Montana	116.0	36.9	158.4	5.0%	-	229.6	0.00%	197.9%
Nebraska	119.2	26.5	168.2	16.4%	-	268.2	0.00%	225.0%
Nevada	113.5	22.8	146.1	9.9%	104.7	306.8	34.13%	270.3%
New Hampshire	227.5	51.3	316.1	14.8%	-	446.3	0.00%	196.2%
New Jersey	1,019.2	236.6	1,647.6	30.4%	1,177.4	2,751.0	42.80%	269.9%
New Mexico	124.1	30.0	192.9	22.8%	-	205.5	0.00%	165.6%
New York	2,482.1	534.3	3,129.8	9.7%	7,637.0	9,269.8	82.39%	373.5%
North Carolina	441.5	95.8	675.9	23.2%	-	887.4	0.00%	201.0%
North Dakota	114.6	30.0	162.7	16.6%	75.3	189.0	39.84%	164.9%
Ohio	1,363.2	270.4	1,678.5	6.1%	1,638.6	3,818.8	42.91%	280.1%
Oklahoma	172.9	41.3	227.3	16.7%	146.0	512.5	28.49%	296.4%
Oregon	262.5	54.8	388.2	21.1%	-	636.4	0.00%	242.4%
Pennsylvania	841.8	194.0	1,121.0	16.1%	-	1,589.2	0.00%	188.8%
Puerto Rico	306.4	66.1	378.5	8.0%	-	340.0	0.00%	111.0%
Rhode Island	156.3	32.6	185.7	1.8%	526.2	751.4	70.03%	480.7%
South Carolina	281.0	57.2	493.2	32.4%	-	587.4	0.00%	209.0%
South Dakota	102.9	24.2	137.6	22.5%	45.5	268.2	16.96%	260.6%
Tennesse	387.7	81.8	650.1	30.3%	-	839.3	0.00%	216.5%
Texas	1,257.8	262.3	1,630.0	10.0%	1,615.1	3,957.8	40.81%	314.7%
Utah	134.4	27.6	178.6	12.4%	-	259.5	0.00%	193.1%
Vermont	110.7	23.1	132.7	2.6%	-	134.3	0.00%	121.3%
Virginia	568.2	118.7	925.8	28.5%	634.3	1,571.3	40.37%	276.5%
Washington	415.9	86.6	605.6	19.9%	-	930.3	0.00%	223.7%
West Virginia	362.4	75.5	464.3	8.9%	-	536.8	0.00%	148.1%
Wisconsin	608.4	127.0	872.2	21.4%	-	1,386.2	0.00%	227.8%
Wyoming	77.3	25.9	96.4	46.9%	-	269.7	0.00%	348.9%

Table 4-B
CWSRF Data by Lending Structure as of June 30, 2007 (millions)

	Federal Capitalization	State Capitalization	Equity	Retained Earnings as % of Equity	Leveraged Bond Proceeds	Loans Executed	Leveraged Bonds as % Loans Executed	Executed Loans as % of Federal Capitalization
United States	23,549.3	5,309.4	32,899.3	16.6%	27,735.1	62,949.1	44.06%	267.3%
Leveraged ~ High	6,499.9	1,498.9	8,477.7	10.6%	19,116.9	22,333.0	85.60%	343.6%
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Leveraged ~ Low	5,148.6	1,177.6	7,442.8	18.9%	1,392.2	11,814.4	11.78%	229.5%
Direct Loan States	6,647.9	1,479.8	9,667.5	20.3%	-	12,833.6	0.00%	193.0%
Leveraged ~ High ~ Leveraged Bonds Funded More than 66.67% of Total CWSRF Loans								
Indiana	566.1	123.0	666.0	3.8%	1,686.8	1,756.6	96.03%	310.3%
Missouri	642.2	159.0	852.6	10.4%	1,569.7	1,638.1	95.82%	255.1%
Michigan	1,018.4	212.5	1,262.2	5.8%	2,219.8	2,463.3	90.11%	241.9%
Colorado	203.3	41.0	253.8	7.1%	648.7	727.5	89.17%	357.8%
Massachusetts	861.5	184.2	1,307.8	22.8%	3,291.1	3,776.7	87.14%	438.4%
Connecticutt	337.0	103.9	477.9	10.7%	950.5	1,120.3	84.84%	332.4%
New York	2,482.1	534.3	3,129.8	9.7%	7,637.0	9,269.8	82.39%	373.5%
Alabama	233.0	108.3	341.7	11.2%	587.1	829.3	70.79%	355.9%
Rhode Island	156.3	32.6	185.7	1.8%	526.2	751.4	70.03%	480.7%
Leveraged ~ Medium ~ Leveraged Bonds Funded Between 33.33% and 66.67% of Total CWSRF Loans								
Minnesota	451.0	126.1	666.0	16.2%	1,066.7	1,811.1	58.90%	401.6%
Arizona	154.9	42.3	209.0	10.0%	449.6	764.7	58.79%	493.7%
Kansas	210.5	43.9	245.6	0.0%	464.3	797.6	58.21%	378.9%
Ohio	1,363.2	270.4	1,678.5	6.1%	1,638.6	3,818.8	42.91%	280.1%
New Jersey	1,019.2	236.6	1,647.6	30.4%	1,177.4	2,751.0	42.80%	269.9%
Texas	1,257.8	262.3	1,630.0	10.0%	1,615.1	3,957.8	40.81%	314.7%
Virginia	568.2	118.7	925.8	28.5%	634.3	1,571.3	40.37%	276.5%
North Dakota	114.6	30.0	162.7	16.6%	75.3	189.0	39.84%	164.9%
Nevada	113.5	22.8	146.1	9.9%	104.7	306.8	34.13%	270.3%
Leveraged ~ Low ~ Leveraged Bonds Funded Up to 33.33% of Total CWSRF Loans								
Iowa	282.9	64.2	354.9	14.8%	186.5	560.1	33.30%	198.0%
Arkansas	168.5	36.5	233.2	15.1%	116.9	403.3	28.99%	239.3%
Oklahoma	172.9	41.3	227.3	16.7%	146.0	512.5	28.49%	296.4%
Maine	184.7	40.9	257.7	15.4%	97.3	426.0	22.84%	230.6%

Table 4-B ***(continued from prior page)***

CWSRF Data by Lending Structure as of June 30, 2007 (millions)

	Federal Capitalization	State Capitalization	Equity	Retained Earnings as % of Equity	Leveraged Bond Proceeds	Loans Executed	Leveraged Bonds as % Loans Executed	Executed Loans as % of Federal Capitalization
South Dakota	102.9	24.2	137.6	22.5%	45.5	268.2	16.96%	260.6%
Maryland	558.7	114.3	803.8	20.5%	160.9	1,178.8	13.65%	211.0%
Illinois	1,074.0	198.9	1,492.6	17.7%	189.5	2,028.8	9.34%	188.9%
California	1,765.2	468.1	2,611.5	17.3%	298.9	3,869.0	7.73%	219.2%
Florida	838.8	189.3	1,324.3	25.0%	150.7	2,567.7	5.87%	306.1%
Direct Loan States ~ CWSRF Loans Funded Only with CWSRF Equity								
Alaska	143.3	30.2	209.4	20.0%	-	237.0	0.00%	165.4%
Delaware	117.1	23.0	149.8	9.7%	-	175.5	0.00%	149.9%
Georgia	455.9	97.0	717.9	26.9%	-	808.7	0.00%	177.4%
Hawaii	180.9	70.9	313.1	22.0%	-	355.6	0.00%	196.6%
Idaho	113.8	23.7	172.8	23.1%	-	278.3	0.00%	244.6%
Kentucky	322.0	69.2	479.6	21.2%	-	523.5	0.00%	162.6%
Louisiana	274.4	57.2	380.2	15.8%	-	436.6	0.00%	159.1%
Mississippi	223.7	48.6	352.5	25.4%	-	472.3	0.00%	211.1%
Montana	116.0	36.9	158.4	5.0%	-	229.6	0.00%	197.9%
Nebraska	119.2	26.5	168.2	16.4%	-	268.2	0.00%	225.0%
New Hampshire	227.5	51.3	316.1	14.8%	-	446.3	0.00%	196.2%
New Mexico	124.1	30.0	192.9	22.8%	-	205.5	0.00%	165.6%
North Carolina	441.5	95.8	675.9	23.2%	-	887.4	0.00%	201.0%
Oregon	262.5	54.8	388.2	21.1%	-	636.4	0.00%	242.4%
Pennsylvania	841.8	194.0	1,121.0	16.1%	-	1,589.2	0.00%	188.8%
Puerto Rico	306.4	66.1	378.5	8.0%	-	340.0	0.00%	111.0%
South Carolina	281.0	57.2	493.2	32.4%	-	587.4	0.00%	209.0%
Tennesse	387.7	81.8	650.1	30.3%	-	839.3	0.00%	216.5%
Utah	134.4	27.6	178.6	12.4%	-	259.5	0.00%	193.1%
Vermont	110.7	23.1	132.7	2.6%	-	134.3	0.00%	121.3%
Washington	415.9	86.6	605.6	19.9%	-	930.3	0.00%	223.7%
West Virginia	362.4	75.5	464.3	8.9%	-	536.8	0.00%	148.1%
Wisconsin	608.4	127.0	872.2	21.4%	-	1,386.2	0.00%	227.8%
Wyoming	77.3	25.9	96.4	46.9%	-	269.7	0.00%	348.9%

Table 5-A
DWSRF Data by State as of June 30, 2007 (millions)

	Federal Capitalization	State Capitalization	Equity	Retained Earnings as % of Equity	Leveraged Bonds	Loans Executed	Leveraged Bonds as % of Loans Executed	Executed Loans as % of Federal Capitalization
United States	6,534.2	1,875.5	9,212.7	8.7%	4,856.0	11,952.2	40.6%	182.9%
Leveraged ~ High	1,612.0	570.1	2,465.8	11.5%	3,685.4	4,683.8	78.7%	290.6%
Leveraged ~ Medium	888.2	217.4	1,269.7	12.9%	984.1	2,084.5	47.2%	234.7%
Leveraged ~ Low	522.9	117.5	679.9	5.8%	186.5	771.4	24.2%	147.5%
Direct Loan States	3,511.2	970.5	4,797.4	6.6%	-	4,412.5	0.0%	125.7%
Alabama	110.1	39.7	167.4	10.5%	191.0	253.1	75.5%	230.0%
Alaska	80.6	19.6	102.2	2.0%	-	121.1	0.0%	150.3%
Arizona	91.1	19.4	113.3	2.5%	158.1	348.7	45.3%	383.0%
Arkansas	62.1	20.6	89.3	7.4%	-	96.2	0.0%	154.8%
California	611.7	160.7	810.0	4.6%	-	616.0	0.0%	100.7%
Colorado	98.9	25.2	129.4	4.1%	219.5	267.5	82.1%	270.4%
Connecticutt	58.1	16.8	83.1	9.9%	69.6	87.2	79.8%	150.1%
Delaware	54.2	15.0	71.8	3.6%	-	71.9	0.0%	132.7%
Florida	145.3	58.0	238.2	14.7%	-	274.1	0.0%	188.7%
Georgia	79.5	30.1	114.0	3.9%	-	130.1	0.0%	163.6%
Hawaii	59.8	17.2	81.2	5.2%	-	69.5	0.0%	116.1%
Idaho	63.3	15.9	83.1	4.7%	-	80.6	0.0%	127.3%
Illinois	282.8	59.7	364.2	6.0%	105.3	417.4	25.2%	147.6%
Indiana	138.9	24.9	170.3	3.8%	255.6	299.5	85.3%	215.6%
Iowa	147.4	25.8	179.0	3.2%	93.1	233.2	39.9%	158.3%
Kansas	100.7	23.6	135.9	8.5%	268.5	373.1	72.0%	370.7%
Kentucky	75.6	27.3	110.8	7.1%	-	96.6	0.0%	127.8%
Louisiana	92.6	14.3	108.8	1.7%	-	91.6	0.0%	99.0%
Maine	47.7	16.9	68.0	5.0%	8.3	60.0	13.8%	125.8%
Maryland	43.0	19.5	74.1	15.7%	-	76.2	0.0%	177.2%
Massachusetts	217.3	57.1	339.9	19.3%	681.4	768.0	88.7%	353.5%
Michigan	241.1	62.3	321.9	5.7%	409.4	417.8	98.0%	173.3%
Minnesota	127.7	40.9	184.5	8.6%	177.0	368.8	48.0%	288.8%
Mississippi	80.7	20.7	119.3	15.0%	-	119.3	0.0%	147.8%

Table 5-A *(continued from prior page)*
DWSRF Data by State as of June 30, 2007 (millions)

	Federal Capitalization	State Capitalization	Equity	Retained Earnings as % of Equity	Leveraged Bonds	Loans Executed	Leveraged Bonds as % of Loans Executed	Executed Loans as % of Federal Capitalization
Missouri	111.1	33.2	147.1	1.9%	221.9	239.5	92.7%	215.6%
Montana	79.7	17.1	99.7	2.9%	-	105.0	0.0%	131.7%
Nebraska	40.2	16.8	62.4	8.7%	-	71.8	0.0%	178.6%
Nevada	57.9	18.4	80.8	5.6%	-	90.6	0.0%	156.6%
New Hampshire	33.9	17.8	56.8	9.0%	-	69.7	0.0%	205.5%
New Jersey	232.7	41.4	325.8	15.9%	217.6	464.2	46.9%	199.5%
New Mexico	52.1	15.1	71.3	5.8%	-	45.0	0.0%	86.4%
New York	413.6	265.0	827.6	18.0%	1,168.1	1,705.0	68.5%	412.3%
North Carolina	150.5	35.8	202.1	7.8%	-	171.8	0.0%	114.1%
North Dakota	90.1	22.4	119.4	5.8%	43.4	140.8	30.8%	156.3%
Ohio	233.1	74.8	392.1	21.5%	257.8	539.5	47.8%	231.5%
Oklahoma	122.3	22.3	143.3	-0.9%	200.4	273.1	73.4%	223.2%
Oregon	59.3	26.6	94.2	8.8%	-	83.9	0.0%	141.6%
Pennsylvania	239.3	50.4	323.7	10.5%	-	358.7	0.0%	149.9%
Puerto Rico	103.7	19.9	124.6	0.8%	-	110.3	0.0%	106.3%
Rhode Island	56.2	15.1	75.0	4.9%	80.5	130.1	61.9%	231.3%
South Carolina	73.7	19.3	105.7	12.0%	-	99.7	0.0%	135.3%
South Dakota	102.3	18.5	128.3	5.8%	29.5	153.2	19.3%	149.8%
Tennesse	76.1	20.7	105.2	8.0%	-	110.8	0.0%	145.7%
Texas	507.8	122.9	646.3	2.4%	-	482.5	0.0%	95.0%
Utah	44.4	15.1	62.1	4.2%	-	49.4	0.0%	111.2%
Vermont	41.9	16.7	60.7	3.5%	-	44.9	0.0%	107.3%
Virginia	48.1	31.0	83.7	5.5%	-	82.6	0.0%	171.6%
Washington	150.9	42.0	208.5	7.5%	-	218.1	0.0%	144.5%
West Virginia	55.3	15.1	73.8	4.6%	-	58.1	0.0%	105.1%
Wisconsin	161.3	32.5	219.0	11.5%	-	205.5	0.0%	127.4%
Wyoming	86.7	18.4	114.0	7.8%	-	110.8	0.0%	127.8%

Table 5-B
DWSRF Data by Lending Structure as of June 30, 2007 (millions)

	Federal Capitalization	State Capitalization	Equity	Retained Earnings as % of Equity	Leveraged Bonds	Loans Executed	Leveraged Bonds as % of Loans Executed	Executed Loans as % of Federal Capitalization
United States	6,534.2	1,875.5	9,212.7	8.7%	4,856.0	11,952.2	40.6%	182.9%
Leveraged ~ High	1,612.0	570.1	2,465.8	11.5%	3,685.4	4,683.8	78.7%	290.6%
Leveraged ~ Medium	888.2	217.4	1,269.7	12.9%	984.1	2,084.5	47.2%	234.7%
Leveraged ~ Low	522.9	117.5	679.9	5.8%	186.5	771.4	24.2%	147.5%
Direct Loan States	3,511.2	970.5	4,797.4	6.6%	-	4,412.5	0.0%	125.7%
Leveraged ~ High ~ Leveraged Bonds Funded More than 66.67% of Total DWSRF Loans								
Michigan	241.1	62.3	321.9	5.7%	409.4	417.8	98.0%	173.3%
Missouri	111.1	33.2	147.1	1.9%	221.9	239.5	92.7%	215.6%
Massachusetts	217.3	57.1	339.9	19.3%	681.4	768.0	88.7%	353.5%
Indiana	138.9	24.9	170.3	3.8%	255.6	299.5	85.3%	215.6%
Colorado	98.9	25.2	129.4	4.1%	219.5	267.5	82.1%	270.4%
Connecticutt	58.1	16.8	83.1	9.9%	69.6	87.2	79.8%	150.1%
Alabama	110.1	39.7	167.4	10.5%	191.0	253.1	75.5%	230.0%
Oklahoma	122.3	22.3	143.3	-0.9%	200.4	273.1	73.4%	223.2%
Kansas	100.7	23.6	135.9	8.5%	268.5	373.1	72.0%	370.7%
New York	413.6	265.0	827.6	18.0%	1,168.1	1,705.0	68.5%	412.3%
Leveraged ~ Medium ~ Leveraged Bonds Funded Between 33.33% and 66.67% of Total DWSRF Loans								
Rhode Island	56.2	15.1	75.0	4.9%	80.5	130.1	61.9%	231.3%
Minnesota	127.7	40.9	184.5	8.6%	177.0	368.8	48.0%	288.8%
Ohio	233.1	74.8	392.1	21.5%	257.8	539.5	47.8%	231.5%
New Jersey	232.7	41.4	325.8	15.9%	217.6	464.2	46.9%	199.5%
Arizona	91.1	19.4	113.3	2.5%	158.1	348.7	45.3%	383.0%
Iowa	147.4	25.8	179.0	3.2%	93.1	233.2	39.9%	158.3%
Leveraged ~ Low ~ Leveraged Bonds Funded Up to 33.33% of Total DWSRF Loans								
North Dakota	90.1	22.4	119.4	5.8%	43.4	140.8	30.8%	156.3%
Illinois	282.8	59.7	364.2	6.0%	105.3	417.4	25.2%	147.6%
South Dakota	102.3	18.5	128.3	5.8%	29.5	153.2	19.3%	149.8%
Maine	47.7	16.9	68.0	5.0%	8.3	60.0	13.8%	125.8%
Direct Loan States ~ DWSRF Loans Funded Only with DWSRF Equity								
Alaska	80.6	19.6	102.2	2.0%	-	121.1	0.0%	150.3%

Table 5-B *(continued from prior page)*

DWSRF Data by Lending Structure as of June 30, 2007 (millions)

	Federal Capitalization	State Capitalization	Equity	Retained Earnings as % of Equity	Leveraged Bonds	Loans Executed	Leveraged Bonds as % of Loans Executed	Executed Loans as % of Federal Capitalization
Arkansas	62.1	20.6	89.3	7.4%	-	96.2	0.0%	154.8%
California	611.7	160.7	810.0	4.6%	-	616.0	0.0%	100.7%
Delaware	54.2	15.0	71.8	3.6%	-	71.9	0.0%	132.7%
Florida	145.3	58.0	238.2	14.7%	-	274.1	0.0%	188.7%
Georgia	79.5	30.1	114.0	3.9%	-	130.1	0.0%	163.6%
Hawaii	59.8	17.2	81.2	5.2%	-	69.5	0.0%	116.1%
Idaho	63.3	15.9	83.1	4.7%	-	80.6	0.0%	127.3%
Kentucky	75.6	27.3	110.8	7.1%	-	96.6	0.0%	127.8%
Louisiana	92.6	14.3	108.8	1.7%	-	91.6	0.0%	99.0%
Maryland	43.0	19.5	74.1	15.7%	-	76.2	0.0%	177.2%
Mississippi	80.7	20.7	119.3	15.0%	-	119.3	0.0%	147.8%
Montana	79.7	17.1	99.7	2.9%	-	105.0	0.0%	131.7%
Nebraska	40.2	16.8	62.4	8.7%	-	71.8	0.0%	178.6%
Nevada	57.9	18.4	80.8	5.6%	-	90.6	0.0%	156.6%
New Hampshire	33.9	17.8	56.8	9.0%	-	69.7	0.0%	205.5%
New Mexico	52.1	15.1	71.3	5.8%	-	45.0	0.0%	86.4%
North Carolina	150.5	35.8	202.1	7.8%	-	171.8	0.0%	114.1%
Oregon	59.3	26.6	94.2	8.8%	-	83.9	0.0%	141.6%
Pennsylvania	239.3	50.4	323.7	10.5%	-	358.7	0.0%	149.9%
Puerto Rico	103.7	19.9	124.6	0.8%	-	110.3	0.0%	106.3%
South Carolina	73.7	19.3	105.7	12.0%	-	99.7	0.0%	135.3%
Tennesse	76.1	20.7	105.2	8.0%	-	110.8	0.0%	145.7%
Texas	507.8	122.9	646.3	2.4%	-	482.5	0.0%	95.0%
Utah	44.4	15.1	62.1	4.2%	-	49.4	0.0%	111.2%
Vermont	41.9	16.7	60.7	3.5%	-	44.9	0.0%	107.3%
Virginia	48.1	31.0	83.7	5.5%	-	82.6	0.0%	171.6%
Washington	150.9	42.0	208.5	7.5%	-	218.1	0.0%	144.5%
West Virginia	55.3	15.1	73.8	4.6%	-	58.1	0.0%	105.1%
Wisconsin	161.3	32.5	219.0	11.5%	-	205.5	0.0%	127.4%
Wyoming	86.7	18.4	114.0	7.8%	-	110.8	0.0%	127.8%

Section III. Analysis of Historical Data

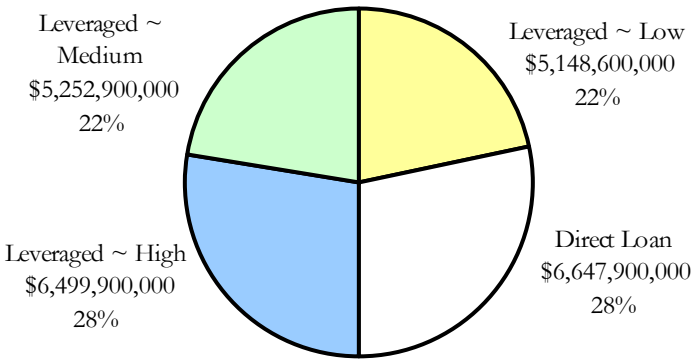
Clean Water SRF Program

To review and compare data, states were grouped into one of four lending structures:

- Direct Loan – Includes 24 states that originate CWSRF loans only with CWSRF equity.
- Leveraged ~ Low – Includes 9 states that have issued leveraged bonds to fund up to 33.33% of their total CWSRF loans.
- Leveraged ~ Medium – Includes 9 states that have issued leveraged bonds to fund between 33.33% and 66.67% of their total CWSRF loans.
- Leveraged ~ High – Includes 9 states that have issued leveraged bonds to fund more than 66.67% of their total CWSRF loans.

As of June 30, 2007, EPA has awarded more than $24.9 billion in Capitalization Grants to CWSRF Programs throughout the United States. Of this $24.9 billion awarded, states have allocated $23.5 billion to capitalize the CWSRF ("CWSRF Federal Capitalization"), $1.0 billion to administer the CWSRF, and $381.8 million for transfer to the DWSRF. The chart to the right depicts the allocation of the $23.5 billion in CWSRF Federal Capitalization by the four groups of states.

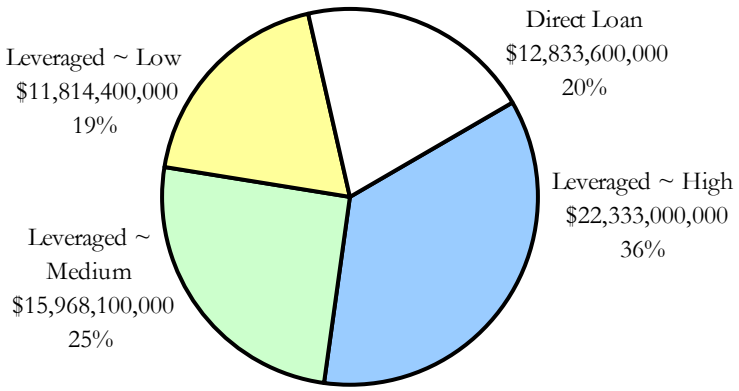
CWSRF Federal Capitalization, June 30, 2007



Both direct loan and leveraged loan programs have been successful in making loans in excess of federal capitalization. The $23.5 billion of CWSRF Federal Capitalization has enabled states to originate more than $62.9 billion in CWSRF loans as of June 30, 2007.

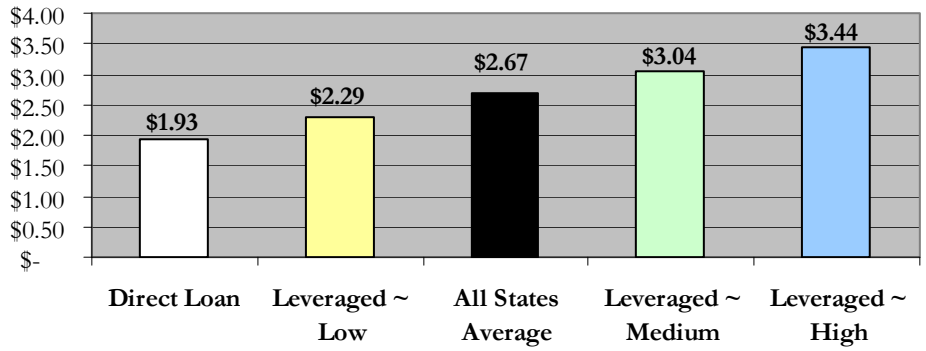
As shown in the chart to the right, the 24 states that operate direct loan programs have originated $12.8 billion in loans – 20% of the total loans originated through June 30, 2007. The 27 states that leverage have originated $50.1 billion in loans – 80% of the total loans originated. It is worth noting that 9 states categorized as "Leveraged ~ High" originated 36% or $22.3 billion of the total loans.

$62.9 Billion of CWSRF Loans Executed, June 30, 2007



As a result of lending state contributed capital, recycled federal and state contributed capital, and retained earnings, all states have, in effect, "leveraged" their CWSRF federal grants by originating an amount of loans that exceeded their CWSRF Federal Capitalization. As shown in the chart below, the average "leveraging factor" for all state CWSRF programs was $2.67 of loans for each $1.00 of CWSRF Federal Capitalization.

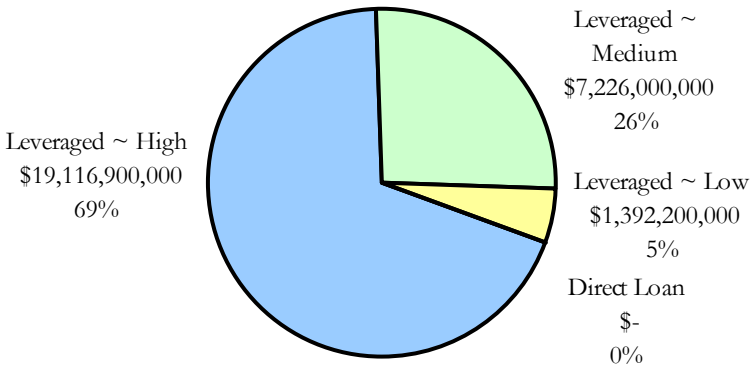
$ of Loans per $1.00 of CWSRF Federal Capitalization



The highest "leveraging factor" for a single state was $4.94 of loans for each $1.00 of CWSRF Federal Capitalization and the lowest "leveraging factor" was $1.11.

Through June 30, 2007, twenty-seven states have issued more than $27.7 billion in leveraged bonds to meet demand for CWSRF loans. As shown in the chart to the right, the nine states categorized as "Leveraged ~ High" have issued 69% of the total leveraged bonds through June 30, 2007.

$27.7 Billion in Leveraged Bonds, June 30, 2007



Each SRF program has three components within their CWSRF equity:

- Federal Capitalization – The amount of federal funding held in perpetuity as an asset within the CWSRF in the form of a loan receivable, cash, or an investment.

- State Capitalization – The amount of state match funding held in perpetuity as an asset within the CWSRF in the form of a loan receivable, cash, or an investment.

- Retained Earnings – The amount of loan interest payments and investment earnings generated and retained by the CWSRF in the form of a loan receivable, cash, or an investment. Unlike federal and state contributions, retained earnings are not required to be held in perpetuity as long as their use/expense is directly related to repaying either match or leveraged bonds.

Many states have a fourth component of CWSRF "related equity" which is held outside EPA's definition of the CWSRF. Loan fees, for example, are not deposited into the SRFs in many states.

Loan fees can be used for any purpose related to the enabling federal CWSRF statutes and do not need to be held in perpetuity. However, it is reasonable to assume that states will eventually expend loan fees to administer the CWSRF or for some other purpose related to the CWSRF. Accordingly, this report excludes loan fees from the analysis of retained earnings.

Based on data reported annually by each state to EPA, it is possible to measure and compare CWSRF retained earnings. The chart below depicts retained earnings as a percentage of CWSRF equity as of June 30, 2007. Due to the greater volume of subsidized loans originated, states categorized as "Leveraged ~ High" and "Leveraged ~ Medium" typically have less retained earnings as compared to states categorized as "Leveraged ~ Low" and "Direct Loan." On average, states have 16.52% of their CWSRF equity in the form of retained earnings.

Retained Earnings as % of CWSRF Equity, June 30, 2007

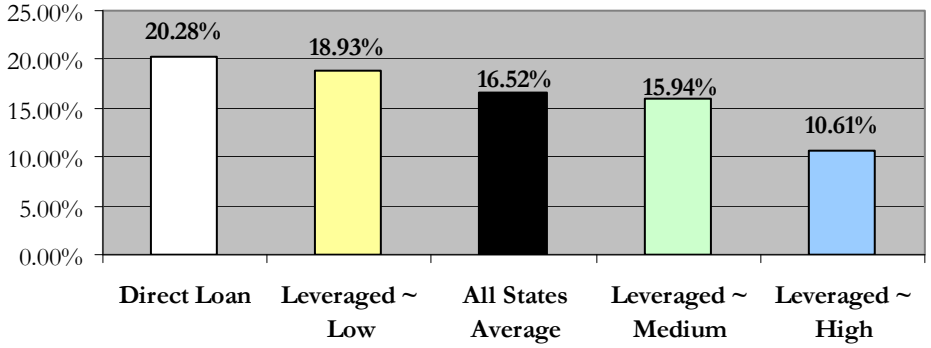


Table 6 provides additional detail on retained earnings. The data indicates that twelve of the twenty-four direct loan states have retained earnings within the top third of all states. In contrast, seven of the nine Leveraged ~ High states have retained earnings within the bottom third.

Table 6: Analysis of Retained Earnings as % of CWSRF Equity

Ranking of States by % of Retained Earnings	Top Third	Middle Third	Bottom Third
Average Retained Earnings as % of Equity	25.95%	16.97%	7.68%
# of States			
Direct Loan (24 States)	12	7	5
Leveraged ~ Low (9 States)	2	7	0
Leveraged ~ Medium (9 States)	2	2	5
Leveraged ~ High (9 States)	1	1	7
Average Loan Rates (Overall Average is 2.10%)	2.14%	2.42%	2.01%
Borrowed Match as % of Total Match	9.31%	15.96%	41.65%
Loan Disbursements as % of Loans	79.31%	87.51%	91.11%

In addition to the impact of issuing leveraged bonds, other factors influence the amount of CWSRF retained earnings including:

- Source of State Match – Appropriated match can have a comparatively positive effect on retained earnings while borrowed match can translate into less retained earnings.

- Loan Disbursements as % of Loans – States that disburse loan proceeds slowly are more likely to earn and retain income on cash balances before loan proceeds are disbursed to borrowers.

- More Recent Financing Innovations –Since the late 1990s, there have been various financing innovations which have enabled states to invest at higher yields and retain the income.

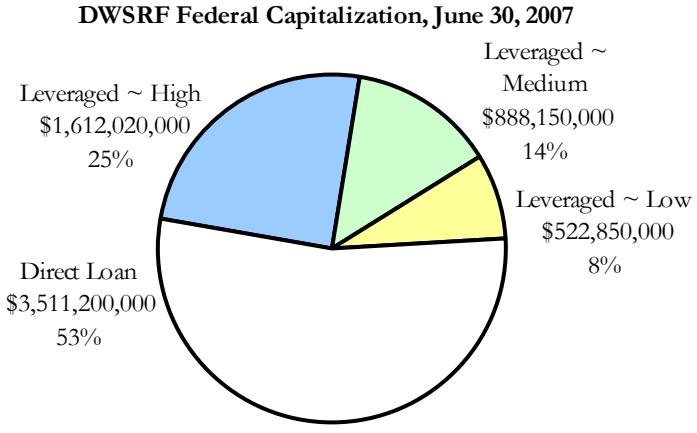
Drinking Water SRF Program

Similar to the CWSRF analysis, to review and compare DWSRF data, states were grouped organized into one of four lending structures:

- Direct Loan – Includes 31 states that originate DWSRF loans only with DWSRF equity.
- Leveraged ~ Low – Includes 4 states that have issued leveraged bonds to fund up to 33.33% of their total DWSRF loans.
- Leveraged ~ Medium – Includes 6 states that have issued leveraged bonds to fund between 33.33% and 66.67% of their total DWSRF loans.
- Leveraged ~ High – Includes 10 states that have issued leveraged bonds to fund more than 66.67% of their total DWSRF loans.

As of June 30, 2007, EPA has awarded more than $8.1 billion in Capitalization Grants to DWSRF and Set-Aside Programs throughout the United States. Additionally, states have transferred $381.8 million of funding from the CWSRF to the DWSRF. Of this $8.5 billion awarded or transferred to the DWSRF, states have allocated $6,522.6 million to capitalize the DWSRF, $689 million to DWSRF forgivable principal, $1,299.1 million to administer set-aside programs, and $11.6 million to set-aside loan programs.

The $6,522.6 million of DWSRF capitalization and the $11.6 million of set-aside loans can be collectively considered as the DWSRF Federal Capitalization. The chart to the right depicts the allocation of the $6,534.2 million ($6.5 billion) in DWSRF Federal Capitalization by the four groups of states.

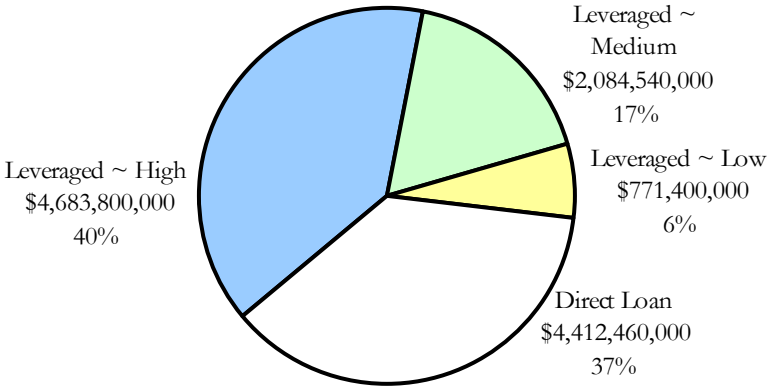


Both Direct Loan and Leveraged Loan programs have been successful in making loans in excess of the DWSRF

Federal Capitalization. The $6.5 billion of DWSRF Federal Capitalization has enabled states to originate more than $11.9 billion in DWSRF loans as of June 30, 2007.

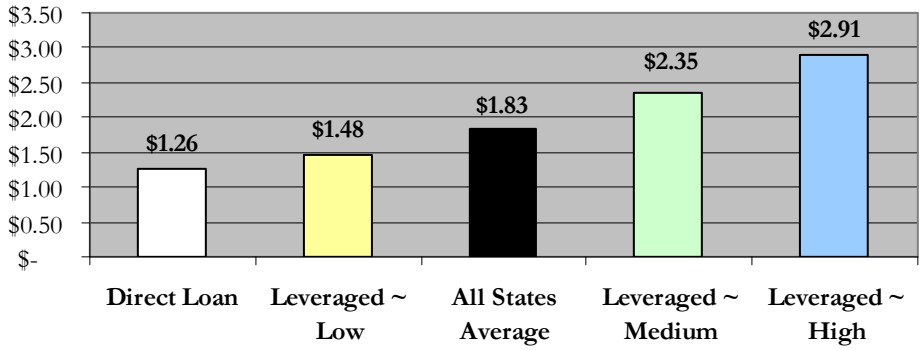
As shown in the chart to the right, the 31 states that operate direct loan programs have originated $4.4 billion in loans – 37% of the total loans originated through June 30, 2007. The 20 states that leverage have originated $7.5 billion in loans – 63% of the total loans originated. It is worth noting that 10 states categorized as "Leveraged ~ High" originated 40% or $4.7 billion of the total loans.

$11.9 Billion of DWSRF Loans Executed, June 30, 2007



As a result of lending state contributed capital, recycled federal and state contributed capital, and retained earnings, most states have, in effect, "leveraged" their DWSRF federal grants by originating an amount of loans that exceeded their DWSRF Federal Capitalization. As shown in the chart below, the average "leveraging factor" for all state DWSRF programs was $1.83 of loans for each $1.00 of DWSRF Federal Capitalization.

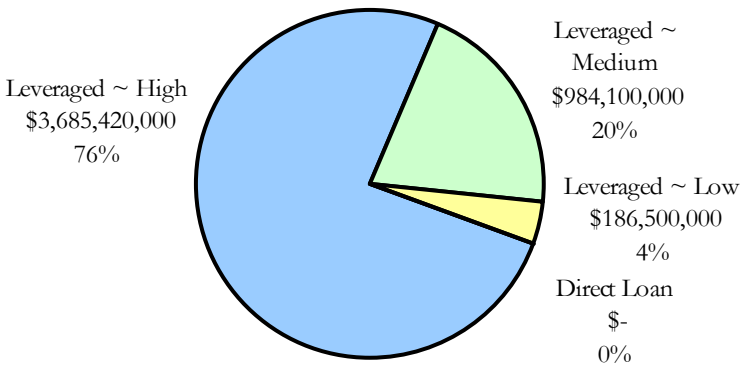
$ of Loans per $1.00 of DWSRF Federal Capitalization



The highest "leveraging factor" for a single state was $4.12 of loans for each $1.00 of federal capitalization and the lowest "leveraging factor" was $0.86.

Through June 30, 2007, twenty states have issued more than $4.9 billion in leveraged bonds to meet demand for DWSRF loans. As shown in the chart to the right, the ten states categorized as "Leveraged ~ High" have issued 76% of the total leveraged bonds through June 30, 2007.

$4.9 Billion in Leveraged Bonds, June 30, 2007



Each DWSRF program has three components within their equity:

- Federal Capitalization – The amount of federal funding held in perpetuity as an asset within the DWSRF in the form of a loan receivable, cash, or an investment.

- State Capitalization – The amount of state match funding held in perpetuity as an asset within the DWSRF in the form of a loan receivable, cash, or an investment.

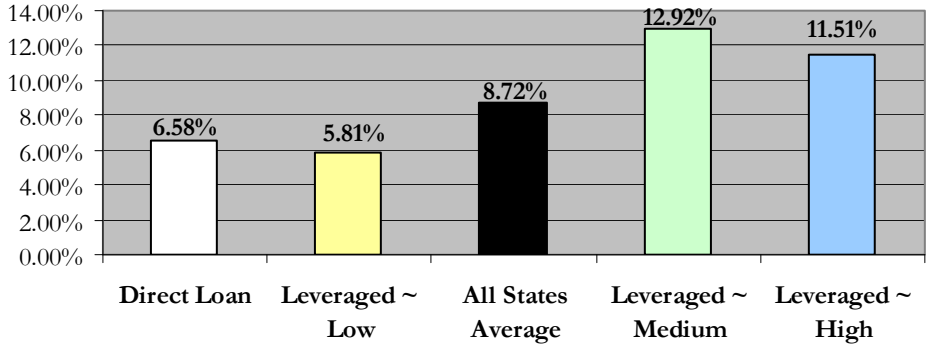
- Retained Earnings – The amount of loan interest payments and investment earnings generated and retained by the DWSRF in the form of a loan receivable, cash, or an investment. Unlike federal and state contributions, retained earnings are not required to be held in perpetuity as long as their use/expense is directly related to repaying either match or leveraged bonds.

Many states have a fourth component of DWSRF "related equity" which is held outside EPA's definition of the DWSRF. Loan fees, for example, are not deposited into the SRFs in many states.

Loan fees can be used for any purpose related to the enabling federal DWSRF statutes and do not need to be held in perpetuity. However, it is reasonable to assume that states will eventually expend loan fees to administer the DWSRF or for some other purpose related to the DWSRF. Accordingly, this report excludes loan fees from the analysis of retained earnings.

Based on data reported annually by each state to EPA, it is possible to measure and compare DWSRF retained earnings. The chart below depicts retained earnings as a percentage of DWSRF equity as of June 30, 2007. On average, states have 8.72% of their DWSRF equity in the form of retained earnings.

Retained Earnings as % of DWSRF Equity, June 30, 2007



It is worth noting that the six states categorized as "Leveraged ~ Medium" and the 10 states categorized as "Leveraged ~ High" have above average DWSRF retained earnings. This contrasts with the CWSRF where "Leveraged ~ Medium" and "Leveraged ~ High" states have below average retained earnings. In part, this can be explained by leveraging innovations states have employed as a result of lessons learned in CWSRF leveraging from 1989 through the implementation of the DWSRF in 1997-1998.

Table 7 provides additional detail on DWSRF retained earnings. Similar to the CWSRF data detailed in Table 6, the source of state match can have an effect on DWSRF retained earnings. Appropriated match can have a comparatively positive effect on retained earnings while borrowed match can translate into retained earnings.

Table 7: Analysis of Retained Earnings as % of DWSRF Equity

Ranking of States by % of Retained Earnings	Top Third	Middle Third	Bottom Third
Average Retained Earnings as % of Equity	14.90%	6.34%	3.10%
# of States			
Direct Loan (31 States)	9	11	11
Leveraged ~ Low (4 States)	0	4	0
Leveraged ~ Medium (6 States)	3	1	2
Leveraged ~ High (10 States)	5	1	4
Average Loan Rates (Overall Average is 2.20%)	2.38%	2.08%	2.16%
Borrowed Match as % of Total Match	16.37%	13.65%	34.64%
Loan Disbursements as % of Loans	79.55%	80.39%	77.30%

Section IV. Characteristics of States by Leveraging Factor

Clean Water SRF Program

As stated earlier within Section III, each state has a "leveraging factor" which measures the amount of executed CWSRF loans based on the amount of Federal CWSRF Capitalization. As of June 30, 2007, states have executed $62.9 billion of CWSRF loans based on $23.5 billion of Federal CWSRF Capitalization. The national average for CWSRF loans executed was $2.67 of loans for each $1.00 of Federal CWSRF Capitalization; in other words the average CWSRF "leveraging factor" was $2.67.

All states can be ranked by their CWSRF leveraging factor and placed into the top third, middle third, and bottom third. The leveraging factor for the top third of the states ranged from $4.94 to $2.70, the middle third ranged from $2.70 to $2.01, and the bottom third ranged from $1.98 to $1.11. For detail on individual states, see Table 4-A or Table 4-B.

As a means of comparing and contrasting states, Table 8 shows the number of states by:

1. Leveraging Factor, and
2. Lending Structure.

Table 8: CWSRF Leveraging Factor and Lending Structure

Lending Structure	Top Third Leveraging Factor	Middle Third Leveraging Factor	Bottom Third Leveraging Factor
Leveraged ~ High	7	2	0
Leveraged ~ Medium	7	1	1
Leveraged ~ Low	2	5	2
Direct Loan States	1	9	14
Total Number of States	17	17	17

As shown in Table 8, states in the top third for leveraging factor are significantly more likely to be "Leveraged ~ High" and "Leveraged ~ Medium" states. In contrast, states in the bottom third are significantly more likely to be "Direct Loan" states.

As another means of comparing and contrasting, states can be categorized into one of four categories by the role of a finance authority/agency in day to day CWSRF management:

- Lead Role – A finance authority/agency serves as the lead contact and manages all aspects of the CWSRF from generating the Intended Use Plan to servicing loans.
- Significant Role – A finance authority/agency manages some, but not all, aspects of the CWSRF including programmatic and financial aspects.
- Minor Role – A finance authority/agency may service loans and may issue state match or leveraged bonds on behalf of the CWSRF.
- No Role – No finance authority/agency is involved in any aspect of the CWSRF program.

Table 9 shows the number of states by:

1. Leveraging Factor
2. Finance Authority/Agency Role

Table 9: CWSRF Leveraging Factor and Finance Authority/Agency Role

Finance Authority/Agency Role	Top Third Leveraging Factor	Middle Third Leveraging Factor	Bottom Third Leveraging Factor
Lead Role	11	5	3
Significant Role	4	2	3
Minor Role	2	5	5
No Role	0	5	6
Total Number of States	17	17	17

As shown in Table 9, states in the top third for leveraging factor are significantly more likely to assign a lead or significant CWSRF management role to a finance authority/agency. In contrast, states in the bottom third are more likely to assign a minor or no management role to a finance authority/agency.

Table 10 presents CWSRF national averages for five program measures and compares these national averages to the averages by leveraging factor rankings.

Table 10: CWSRF Leveraging Factor and Program Measures

Program Measure	CWSRF National Average	Top Third Leveraging Factor	Middle Third Leveraging Factor	Bottom Third Leveraging Factor
Average Interest Rate	2.10%	2.32%	2.28%	1.96%
Average % of Loans Funded with Leveraged Bonds as % of Total Loans	44.1%	62.4%	29.5%	4.9%
Average % of Match Bonds as % of Total Match	24.1%	37.2%	14.6%	13.8%
Average % of Disadvantaged Assistance as % of Equity	10.9%	10.1%	5.4%	21.2%
Average % of Retained Earnings as % of Equity	16.6%	13.5%	20.1%	16.7%

Based on the data in Table 10, states ranking in the top third for the CWSRF leveraging factor are:

1. more likely to set CWSRF interest rates above the average interest rate of 2.10%,
2. significantly more likely to fund CWSRF loans with leveraged bonds,
3. significantly more likely to rely on bonds for CWSRF state match,
4. somewhat less likely to provide disadvantaged terms to CWSRF borrowers, and
5. less likely to have CWSRF retained earnings, as a percentage of equity, above the average retained earnings of 16.6%.

In contrast, states ranking in the bottom third for the CWSRF leveraging factor are:

1. more likely to set CWSRF interest rates below the national average of 2.10%,
2. significantly more likely to fund CWSRF loans with CWSRF equity,
3. significantly more likely to rely on appropriations for CWSRF state match,
4. significantly more likely to provide disadvantaged terms to CWSRF borrowers, and
5. likely to have CWSRF retained earnings, as a percentage of equity, approximately equal to the average retained earnings of 16.6%.

Drinking Water SRF Program

Similar to the above analysis of the Clean Water SRF, each state has a "leveraging factor" which measures the amount of executed DWSRF loans based on the amount of Federal DWSRF Capitalization. As of June 30, 2007, states have executed $11.9 billion of DWSRF loans based on $6.5 billion of Federal DWSRF Capitalization. The national average for DWSRF loans executed was $1.83 of loans for each $1.00 of Federal DWSRF Capitalization; in other words the average DWSRF "leveraging factor" was $1.83.

States can be ranked by their DWSRF leveraging factor and placed into the top third, middle third, and bottom third. The leveraging factor for the top third of the states ranged from $4.12 to $1.77, the middle third ranged from $1.73 to $1.35, and the bottom third ranged from $1.33 to $0.86. For detail on individual states, see Table 5-A or Table 5-B.

As a means of comparing and contrasting states, Table 11 shows the number of states by:

1. Leveraging Factor, and
2. Lending Structure.

Table 11: DWSRF Leveraging Factor and Lending Structure

Lending Structure	Top Third Leveraging Factor	Middle Third Leveraging Factor	Bottom Third Leveraging Factor
Leveraged ~ High	8	2	0
Leveraged ~ Medium	5	1	0
Leveraged ~ Low	0	3	1
Direct Loan States	4	11	16
Total Number of States	17	17	17

States in the top third for leveraging factor are significantly more likely to be "Leveraged ~ High" and "Leveraged ~ Medium" states. In contrast, states in the bottom third are significantly more likely to be "Direct Loan" states.

Identical to the CWSRF analysis, states can be categorized into one of four categories by the role of a finance authority/agency in day to day DWSRF management:

- Lead Role – A finance authority/agency serves as the lead contact and manages all aspects of the DWSRF from generating the Intended Use Plan to servicing loans.

- Significant Role – A finance authority/agency manages some, but not all, aspects of the DWSRF including programmatic and financial aspects.
- Minor Role – A finance authority/agency may service services loans and may issue state match or leveraged bonds on behalf of the DWSRF.
- No Role – No finance authority/agency is involved in any aspect of the DWSRF program.

Table 12 presents the number of states by:

1. Leveraging Factor, and
2. Finance Authority/Agency Role.

Table 12: DWSRF Leveraging Factor and Finance Authority/Agency Role

Finance Authority/Agency Role	Top Third Leveraging Factor	Middle Third Leveraging Factor	Bottom Third Leveraging Factor
Lead Role	10	3	3
Significant Role	3	4	3
Minor Role	1	5	2
No Role	3	5	9
Total Number of States	17	17	17

States in the top third for leveraging factor are significantly more likely to assign a lead or significant DWSRF management role to a finance authority/agency. In contrast, states in the bottom third are more likely to assign a minor or no management role to a finance authority/agency.

Table 13 presents DWSRF national averages for five program measures and compares these national averages to the averages by leveraging factor rankings.

Table 13: DWSRF Leveraging Factor and Program Measures

Program Measure	DWSRF National Average	Top Third Leveraging Factor	Middle Third Leveraging Factor	Bottom Third Leveraging Factor
Average Interest Rate	2.20%	2.47%	2.36%	1.79%
Average % of Loans Funded with Leveraged Bonds as % of Total Loans	40.6%	62.8%	25.3%	0.34%
Average % of Match Bonds as % of Total Match	21.5%	24.4%	18.8%	19.9%
Average % of Disadvantaged Assistance as % of Equity	32.3%	42.2%	31.3%	21.3%
Average % of Retained Earnings as % of Equity	8.7%	13.2%	7.2%	4.8%

Based on the data in Table 13, states ranking in the top third for the DWSRF leveraging factor are:

1. significantly more likely to set DWSRF interest rates above the average interest rate of 2.20%,
2. significantly more likely to fund DWSRF loans with leveraged bonds,
3. more likely to rely on bonds for DWSRF state match,
4. significantly more likely to provide disadvantaged terms to DWSRF borrowers, and
5. significantly more likely to have DWSRF retained earnings, as a percentage of equity, above the average retained earnings of 8.7%.

In contrast, states ranking in the bottom third for the DWSRF leveraging factor are:

1. significantly more likely to set DWSRF interest rates below the average interest rate of 2.20%,
2. significantly more likely to fund DWSRF loans with DWSRF equity,
3. more likely to rely on appropriations for DWSRF state match,
4. significantly less likely to provide disadvantaged terms to DWSRF borrowers, and
5. significantly more likely to have DWSRF retained earnings, as a percentage of equity, below the average retained earnings of 8.7%.

Section V. Detailed Analysis of the Direct Loan and Leveraged Loan SRF Approaches

Introduction

Both the direct loan approach and the leveraged loan approach are methods for implementing the purpose of EPA's State Revolving Fund ("SRF") Program – to encourage environmental compliance by providing low-cost or "subsidized" loans to qualifying environmental projects both currently and in the future. The purpose of this section is to evaluate the relative effectiveness of the two approaches in furthering EPA's objectives for the SRF Programs.

The topics discussed below with respect to the two approaches include:

- Descriptions of the two approaches and variations thereof;
- The techniques employed under each approach to provide interest subsidies for qualifying loans;
- The capacity to provide loan subsidies under each approach and the loan capacity of an SRF under each approach;
- The relative cost to an SRF under each approach of providing loan subsidies;
- The effective returns under each approach on SRF equity used to provide interest subsidies, including the impact of the Internal Revenue Service ("IRS") arbitrage regulations which limit the investment returns on SRF equity under certain circumstances;
- The effectiveness of each approach in generating retained earnings in order to grow the amount of equity in the SRF; and
- The policy tradeoff that exists between (i) applying earnings on SRF equity to provide loan subsidies today and (ii) retaining such earnings and utilizing the earnings thereon to provide loan subsidies in the future on either existing or future SRF loans.

Subsidized Borrowing

Loan subsidies are provided by SRF's using two basic approaches (as used herein, "loan" includes purchased obligations as defined in the Clean Water and Drinking Water Acts):

- Direct Loan Approach. Making loans to finance qualifying projects at below market rates funded solely from SRF equity ("direct" loans). The "equity requirement" for a direct loan equals the amount of the loan; the loan rate on the SRF equity equals the target subsidized loan rate.
- Leveraged Loan Approach. Making loans to finance qualifying projects at below market rates funded in whole or in part with borrowed money ("leveraged loans"). For an SRF using

a leveraged loan approach, the capacity of the SRF to make loans for qualifying projects will exceed the amount of the SRF's equity. Historically, two basic techniques have been used to create leveraged loans, the reserve fund approach and the blended loan approach. The descriptions of the types of loans discussed below are simple examples of the basic types of leveraging methodologies that are used in SRF programs. They are the building blocks that states use to design their unique programs. In actual practice, many SRF programs use some or all of the basic loan methodologies in combination (referred to herein as the "cash flow approach"). There are a variety of permutations of the basic approaches which are used together with various financial innovations described later in this report.

- Reserve Fund Approach. Making leveraged loans from money borrowed at market rates and using earnings on invested SRF equity to pay or reimburse part of the interest cost on the bonds issued to fund the loans. The invested SRF equity is typically deposited into a reserve fund. The equity requirement for a loan under the reserve fund approach is the amount of equity, invested at the market interest rate, necessary to produce the target interest subsidy. To produce a loan rate equal to x% of the market rate, i.e., a loan subsidy equal to (1 minus x%) of the market rate, the equity requirement equals (1 minus x%) times the loan amount

- Blended Loan Approach. Making leveraged loans from a combination of equity and money borrowed at market rates. The borrowers' interest cost is a combination of the market rate on the portion of the loans derived from the borrowing and a significantly below market rate (e.g., 0%) that is charged by the SRF on the portion of the loans derived from equity. In order to repay the bonds, the SRF must charge the bond interest rate on the portion of the loan made from bond proceeds. So, if any bond proceeds are used, the borrower's interest cost will be more than 0%. The "equity requirement" for a loan under the blended loan approach is the amount of equity bearing a 0% loan rate that in combination with the balance of the loan (which is funded from bond proceeds and bears a market interest rate) produces a combined loan rate equal to the target subsidized loan rate. To produce a loan rate equal to x% of the market rate, the equity requirement equals (1 minus x%) times the loan amount. Under the blended loan approach, the cost to an SRF of funding the portion of its loans made from bond proceeds is the tax-exempt or taxable market rate. Economically, to use the minimum amount of equity to support the loans (i.e., the equity requirement), the equity must be lent at a 0% interest rate. The SRF may choose to quote a single "blended" interest rate for the entire loan. However, in this discussion, a distinction will be made between the loan rate on the portion of the loan made from bond proceeds (i.e., the market rate) and the 0% loan portion made from equity.

The direct and leveraged loan approaches have been used with success by various SRFs. Over time, many leveraged SRF programs have evolved to incorporate elements of both the blended rate and the reserve fund approaches. The equity requirements described above for each approach represent the minimum amounts of equity needed to support a given subsidized loan. In the discussion below, it is always assumed that the amount of equity associated with a loan under either the blended loan or direct loan approach equals the equity requirement since it would be an inefficient use of SRF resources to utilize more equity than the equity requirement to support a loan.

SRF Financing Models Best Understood in Three Basic Forms

To understanding the financial workings of SRFs it is necessary to understand in some detail how SRFs work in their basic forms. The subsidy provided to an SRF borrower is the difference between (a) the rate at which the entity could otherwise borrow (a tax-exempt or taxable municipal rate, e.g., 4%) and (b) the SRF loan rate (e.g., 2%). Given the illustrative 4% and 2% municipal bond and SRF loan rates, respectively, the loan subsidy provided would be 2% (i.e., the market rate minus the loan interest rate), which represents a 50% subsidy versus the borrower's alternative 4% cost of funds. The loan subsidy as a percentage of the market rate is referred to below as the "subsidy percentage". The technique employed to provide an interest subsidy and the capacity of the SRF to make subsidized loans depend on the SRF's particular approach.

- Direct Loan Approach. For a direct loan SRF with $100 in equity, the SRF could make up to $100 of 2% equity-funded loans. The subsidy is provided by only charging 50% of the market tax-exempt rate that the SRF borrower would otherwise pay. The 2% loan interest (which represents 1 minus the subsidy percentage times the market tax-exempt rate) would go to retained earnings. As the loans are repaid, the SRF equity originally used for the loans would be repaid and become available for new projects in the same amounts as the principal repayments. An SRF's effective return on equity used to make a direct loan is structurally limited to the sum of the subsidy provided plus actual loan interest. Such sum will always equal the interest cost that the borrower would otherwise have paid on a loan, i.e., the market rate.

  Nationally, approximately 25% of SRF loans are considered "hardship" loans, which are loans with interest rates below the state's average SRF loan rate. Hardship loans can be made with a 0% interest rate, or, in the case of the drinking water program, with a rate below 0%, i.e., some principal "forgiveness," which in effect is a grant of some amount. For a 0% loan, there is no benefit to leveraging since earnings on $1 of equity are needed for each $1 of 0% loan. So, 0% loans are made as direct loans, even by leveraging SRFs unless additional state support from outside the SRF is used to pay debt service.

- Blended Loan Approach. For a leveraged SRF originating blended loans (funded by a combination of equity and bond proceeds), the SRF could make $100 of loans funded from (a) $50 of bond proceeds that are lent to the borrowers at the market rate of 4% and (b) $50 of equity that is lent to the borrowers at 0%. The result is that the borrowers' overall rate would be 2%. The subsidy percentage achieved under the blended loan approach is the equity amount used to make loans divided by the total loan amount (i.e., 50% in our example). The effective return on equity used to make the 0% direct loans is structurally limited to the subsidy provided thereon, which equals the market rate on the bonds. As the loans are repaid, the equity originally used to make loans would be repaid and become available for new projects in amounts equal to the subsidy percentage times the principal repayments. The remaining $50 of equity could be similarly used to provide an additional $100 of 2% loans. So, the loan capacity would be twice as much as under the direct loan approach. The loan or

- Reserve Fund Approach. For a reserve fund SRF with $100 of equity, the SRF could make $100 of loans from $100 of bond proceeds and use the interest earnings on $50 of equity (e.g., invested at 4%) to pay 50% of the interest on the bonds. The equity required equals the loan amount times the subsidy percentage. As the loans are repaid, the equity originally deposited in the reserve fund would be released and become available for new projects in amounts equal to the subsidy percentage times the principal repayments. The remaining $50 of equity could be similarly used to provide an additional $100 of 2% loans. So, the loan capacity would be twice as much as under the direct loan approach. The loan or "leveraging" capacity of a reserve fund approach SRF, stated as a multiple of SRF equity, equals 1 divided by the subsidy percentage (i.e., 2 times SRF equity in our example). Alternatively, rather than being used for additional loans, the remaining $50 of equity could be invested specifically to generate retained earnings.

When leveraging there are transaction costs associated with the issuance of debt used to fund all or a portion of the SRF loans. In the absence of the SRF program, borrowers would incur most of the same costs. However, when using the direct loan approach, certain of the costs (in particular underwriters' discount) are not incurred by the SRF or the borrower to raise the funds used to make loans.

- For SRF's that leverage for the purpose of funding more loans than can be funded under the direct loan approach, any increased transaction costs are simply the price of funding loans for additional projects. However, the impact of such costs needs to be considered when evaluating the relative benefits of using the direct or leveraged loan approaches in funding the same amounts of loans. To measure the impact, the amount of such costs should be deducted in determining the financial benefits of the leveraged approaches relative to the direct loan approach. However, if a direct loan program does not impose the same transaction charges as the borrowers otherwise would have to pay if they borrowed outside the SRF, the actual debt service cost to SRF borrowers is slightly lower than the costs under either leveraged approach.

- Assuming average incremental transaction costs of $7.50 per thousand dollars of loans, the additional transaction costs for $100 of bonds under the reserve fund approach would be 75 cents. The additional transaction costs for $50 dollars of bonds under the blended loan approach would be 37 cents. As detailed below, even with transaction costs, the increases in retained earnings that can be achieved under the leveraged approaches are significantly greater than the increases in transaction costs under those approaches.

- However, additional transaction charges, such as state bond charges, may be imposed on an SRF in connection with the issuance of SRF bonds. Such charges could offset any relative financial benefit of the leveraged approaches over the direct loan approach. Where such charges are present, a specific analysis of their impact would be required.

In both the direct loan approach and the blended loan approach, the subsidy is created by investing SRF equity in loans to SRF borrowers and by foregoing earnings that could be realized if the loans to the borrowers were made at market rates. In the reserve fund approach, the subsidy is created by (1) making other (i.e., non-SRF loan) investments with SRF equity (which could be taxable investments) and (2) using the earnings thereon to pay or reimburse a portion of the interest cost on the debt issued to fund the borrowers' SRF loans. If the debt is tax-exempt, the taxable investment rate may be higher than the interest cost on the debt. The investment return on SRF equity is restricted under certain circumstances by the "arbitrage regulations" promulgated by the Internal Revenue Service. In particular, the arbitrage regulations provide that the investment return on bond proceeds (including such equity) may not exceed the yield on the tax-exempt bonds.

- Assume for example that an SRF: (1) borrows $100 at a tax-exempt rate (e.g., 4%) to fund SRF loans, (2) invests $50 of equity in higher rate taxable investments (e.g., at 4.50%) and (3) uses the earnings to provide loan subsidies (i.e., by paying or reimbursing a portion of the interest cost on the debt). The arbitrage regulations require that any amount by which the investment earnings exceed the interest cost on the debt (i.e., 0.5%) must be rebated to the IRS. So, the equity deposited in a reserve fund is effectively invested at the market tax-exempt rate. Given that the debt interest rate and the "net" equity investment rate are the same, the subsidy percentage achieved under the reserve fund approach is the equity amount deposited in the reserve fund divided by the loan amount (i.e., 50% in our example). To the extent that SRF equity is not invested in loans and is not treated as bond proceeds, the earnings thereon are neither structurally nor legally limited to the bond yield.

- However, financial innovations which have evolved since inception of the SRF programs have enabled leveraging SRFs to achieve higher investment returns on uncommitted SRF equity by either (a) using funds that are already yield restricted (such as existing direct loans) to fund new loan subsidies or (b) reducing the amount of dollars required to be invested to fund loan subsidies, by using both the principal and interest of direct loans or scheduled releases of principal from other pledged investments to fund loan subsidies. Conserving and investing on an unrestricted basis equity that would otherwise have been pledged to support loan subsidies on a restricted basis would on average increase an SRF's program investment returns by the difference between the arbitrage restricted tax-exempt and unrestricted taxable investment rates. Such increased return could be immediately used to increase funding capacity or captured as retained earnings.

Except for hardship loans within the drinking water SRF, the maximum loan interest subsidy that can be provided by making a direct loan of SRF equity is achieved by making a 0% loan. The subsidy in our example would be 4%, i.e., the difference between the borrower's alternative tax-exempt borrowing cost (4%) and the 0% loan rate, which represents a 100% interest subsidy.

- For a leveraged loan under the blended loan approach, a 0% rate would not be possible if any portion of the loan were derived from bond proceeds (unless a state provides additional support from outside of the SRF). The result of eliminating the bond proceeds (in order to achieve a 0% interest rate) is a loan derived solely from equity, i.e., a direct loan.

- As noted above, for a leveraged loan under the reserve fund approach, the subsidy percentage achieved equals the equity amount deposited in the reserve divided by the loan amount. So, to provide a 100% subsidy from earnings on SRF equity, a dollar of equity must be used (i.e., invested in the reserve fund) for each dollar of loans, just as under the direct loan approach.[2]

The "opportunity cost" to an SRF of funding a subsidized loan is the difference between (a) the investment return on the equity used to make the subsidized loan and (b) the investment return that such equity could earn if it were not used to make a subsidized loan. For this purpose, the "investment return" on equity used to make a direct loan includes both the actual loan interest and the amount of the subsidy that is provided to the loan recipient. Under both the direct loan and leveraged loan approaches, the opportunity cost to the SRF of providing the subsidy on a tax-exempt loan is greater than the subsidy itself. If the equity were simply invested by the SRF in taxable fixed income investments, the SRF would earn a taxable rate, e.g., 4.5%. Given a 4% tax-exempt rate, the cost to the SRF of providing a 50% subsidy (2% loan rate) will exceed the subsidy provided to the borrower by 0.5% times the amount of equity used to provide the loan subsidy. To make $100 of loans to a tax-exempt borrower under the direct loan approach, 2.5% in earnings are forgone (the taxable interest rate at which the equity could otherwise be invested minus the loan interest rate) of which 2% represents the subsidy and 0.5% would be lost to the SRF. To make $100 of loans to a tax-exempt borrower using the blended loan approach, the $50 equity portion of the loan would earn 0%. So, 4.5% of potential investment earnings on $50 would be foregone and the subsidy created on the equity portion of the loan would be 4% (the market tax-exempt rate minus the loan rate). The additional 0.5% that could be earned on a taxable investment would be lost to the SRF. To make $100 of loans to a tax-exempt borrower under the reserve approach, $50 of equity would be invested in taxable investments at 4.5%. Of the 4.5%, 0.5% would be rebated to the IRS and so lost to the SRF and 4% would be used to fund 50% of the interest on the $100 loan.

- The opportunity cost of providing $100 of direct loans is 0.5% on $100, whereas the opportunity cost of providing the same amount of subsidized loans under either the blended loan or reserve fund approach is 0.5% on $50.

- Without the limitations imposed by the arbitrage regulations, an SRF could retain all 4.5% of earnings on the equity invested under the reserve fund approach. The additional 0.5% earnings could go to retained earnings, reducing the cost of the subsidy to 2%. So, the subsidy and the cost to the SRF of providing the subsidy would be identical. If arbitrage relief were achieved, the reserve fund approach and the cash flow approach could be used to generate higher retained earnings, because of the taxable investment rate, than either the direct loan or blended rate approach.

There are basically three potential uses for earnings and forgone earnings on SRF equity, whether such equity is invested in SRF loans or in other investments:

[2] *Note that Massachusetts has used a leveraged approach to fund 0% loans without using a dollar of equity for every dollar of loan. However, other state monies were used to make debt service assistance payments equal to the loan interest that was not funded with earnings on equity.*

- Earnings and foregone earnings on equity can be used to fund loan subsidies as described above.

- Earnings on equity can be retained by the SRF, which increases the SRF's equity.

- Earnings on equity (including interest on equity-funded loans) can be used to pay debt service on bonds ("state match bonds") that are issued to fund all or a portion of the SRF's required state match. For SRF's that use earnings to pay state match bond debt service, there are fewer earnings on SRF equity available to provide loan subsidies or to grow retained earnings.

An SRF's capacity to provide loan subsidies, to grow retained earnings, and to pay state match bond debt service, which are all funded from actual or foregone earnings on equity, is determined at any point in time by the amount of equity held by the SRF.

Sources of SRF Equity – Retained Earnings

Universally, the principal sources of equity in state SRFs are the federally provided capitalization grants, the required (20%) state matching grants (collectively "contributions"), and any additional state contributions or fees charged to borrowers, to the extent that all of the foregoing have been received and deposited in the SRF ("contributed capital"). An additional source of equity in all SRFs is retained earnings, i.e., earnings that are not immediately spent to fund loan subsidies or to pay state match bond debt service. An SRF's "equity" is comprised of its contributed capital and retained earnings.

Retained earnings are created (a) from loans made from SRF equity under the direct loan approach if the loan interest rate exceeds 0%, or (b) under the blended loan approach if the loan interest rate on the direct loan portion of the SRF loan exceeds 0% or, if applicable, the rate necessary to fund debt service on any state match bonds, or (c) if under the reserve fund approach, the SRF applies less than all of its investment earnings (after arbitrage rebate) toward loan subsidies. Another source of retained earnings is investments made with equity that has been repaid by a borrower or released from a reserve ("recycled") and that has not yet been redeployed by the SRF. Retained earnings could also be generated by specifically investing a portion of the SRF equity solely for the purpose of generating retained earnings, rather than, as is common, using the same dollars of equity to fund loan subsidies and to pay any state match bond debt service and also to generate retained earnings. An advantage of this approach is that the earnings on such specifically invested equity, or program investments as the term is used by some leveraging SRFs, (1) may not be restricted by the arbitrage regulations and (2) would not be effectively restricted by operation of the direct loan or blended rate approach.[3]

Equity may be invested directly in interest-bearing loans related to a project and may be invested in other investments to generate earnings. Such interest and other earnings can be used to fund loan subsidies currently or to grow retained earnings. Due to the perpetuity rule[4], contributed

[3] *The financial managers of leveraged SRF programs have also developed innovative structuring and management techniques that have enabled them to achieve higher investment returns than can be achieved under the direct loan approach.*

[4] *In actuality, there is no specific USEPA "perpetuity rule" although USEPA and the states recognize that the SRFs must be maintained in perpetuity. The Clean Water Act requires that the fund balance in each SRF "shall be available in perpetuity for providing … financial assistance." [33 U.S.C.1383 §603(c)] Similar language appears in the Safe Drinking Water Act, "The fund corpus shall be available in perpetuity for providing financial assistance…."*

capital derived from federal and state contributions cannot be used directly to pay loan subsidies, only the earnings (or foregone earnings) on contributed capital can be used for loan subsidies. However, retained earnings can be used in all of the same ways as contributed capital – to fund loans and to generate additional earnings – and, in addition, can be directly applied to pay loan subsidies. The flexibility to use retained earnings directly to fund loan subsidies has been important in enabling financial innovation in many SRF leveraging programs.

> Each state SRF must make a policy choice as to (a) the portion of its potential earnings on equity that are used to meet current environmental needs, by funding subsidies on loans made today, and (b) the portion of such earnings that are used to increase the SRF's capacity to meet future environmental needs, by growing retained earnings. Using more earnings to grow equity makes it easier to achieve sustainability in two respects: (1) it reduces the amount of projects that can be funded currently, thus lowering the funding level that has to be sustained (although obviously this has negative environmental impact), and (2) it increases the amount of equity that will be available in the future to fund loan subsidies.

Historically, a leveraged approach has been used to increase or maximize an SRF's ability to meet current environmental needs. By contrast, some states may determine to use a direct loan approach if they have lower loan demand or place a greater emphasis on increasing their capacity to meet future environmental needs. However, by taking advantage of financial innovations developed by leveraging states, a direct loan SRF that makes interest-bearing loans can use leveraging to both (a) make the same amount of subsidized loans that it would otherwise have made and (b) increase the rate of growth of its retained earnings. This result is achieved by devoting separate portions of the SRF's equity to funding loan subsidies and to growing retained earnings. Using both the principal and interest of the equity investments that fund the subsidy, rather than interest only, reduces the principal amount of equity that must be invested to fund the subsidy and permits more equity to be used to grow retained earnings. The equity devoted solely to growing retained earnings can be invested without any yield restriction under the arbitrage regulations.

Comparison of Direct Loan and Leveraged Loan Approaches

Using the direct loan approach, $1 of equity is required for each $1 of loan provided for qualifying projects. In many cases because of SRF resource constraints, this may limit the portion of an individual project that can receive SRF financing; e.g. some states cap the total loan amount a project may receive from the SRF. An advantage of the leveraged approach is the ability to provide subsidized loans for a significantly greater amount of qualifying project costs. The direct loan approach could be utilized to give the same amount of loan subsidies to the same specific projects (by giving 0% direct loans for only a portion of each such project). However, there is a much clearer identification that the benefit of the SRF program is being conveyed to the entire project under the leveraged approaches because a loan can be given to the borrower by the SRF for the entire amount of qualifying project costs.

[42 U.S.C. 300j-12(c)]. While EPA does not have any specific rule that implements this language, in its definition of CWSRF Financial Indicators (see CWSRF 01-3,dated October 31 2000), for example, the agency seeks to gauge sustainability of the fund by determining if retained earnings, net of cumulative state match bonds repaid, is equal to or greater than zero. If this test is met, "the CWSRF is deemed to be maintaining its contributed capital…."

Given any particular interest subsidy, stated as a percentage of the market rate, the leverage factor on SRF equity that can be created using a leveraged loan approach is 1 divided by that subsidy percentage. The loan capacity equals the amount of SRF equity times the leverage factor. So, given a 1/2 market rate interest subsidy, SRF equity can be used to provide 2 times that amount of SRF loans. Given a one third market rate interest subsidy, SRF equity can be used to provide 3 times that amount of SRF loans. If an SRF is fully leveraged (i.e., the targeted loan amount equals the loan capacity), the earnings on equity of the leveraged SRF (other than earnings on recycled equity) would be fully utilized to fund the subsidies on the loans. By contrast, a direct loan SRF that provides a one third of market rate interest subsidy receives loan interest equal to 2/3 of the market interest rate to grow retained earnings, which can be used to provide loans in the future. A direct loan program that provides a 1/2 market rate interest subsidy receives loan interest equal to 1/2 of the market interest rate to grow retained earnings. Consequently, a typical direct loan SRF that makes interest-bearing loans should have more retained earnings (as a percentage of SRF equity) than a typical SRF that uses a leveraged approach.

The additional loan capacity that is available under the leveraging approaches can be used to meet more of the SRF's potential loan demand and to provide loans with longer repayment periods. The Board has previously issued a report entitled "Application of Useful Life Financing to State Revolving Funds" in which, for a variety of reasons described therein, the Board recommended that EPA approve state requests for approval of useful life financing with repayment terms beyond 20 years. One impact of an SRF moving from providing 20 year loans to providing 30 year loans would be a reduction in the amount of equity that is recycled on an annual basis. For a direct loan SRF, such a reduction in recycled equity would in turn reduce the amount of loans that could be funded annually by the SRF. However, leveraging can be used to maintain a similar level of project funding in both the short and intermediate term.

If federal capitalization grant contributions decline in the future, the SRFs will have to depend more on internal growth of equity to sustain their programs. Such internal equity growth comes from retained earnings. Reducing or eliminating impediments to the growth of retained earnings will help the SRFs to become more sustainable.

EPA could enhance the ability of SRFs to grow earnings using financing innovations in two ways.

- EPA could allow states to make draws on federal capitalization grants independent from the expenditure of funds for project costs. This was formerly the case for states that elected to use aggressive leveraging at the outset of the SRF. Given that the purposes of the SRF program include meeting both current and future environmental needs, EPA should be financially indifferent whether capitalization draws are used immediately to fund projects or invested to grow retained earnings. This is particularly true because permitting the latter will enable some SRFs to grow their equity faster.

- EPA could apply the perpetuity rule on a dynamic, rather than a static basis. Under this alternative approach, compliance would be measured over time based on the SRF's

reasonable expectations regarding future investment earnings (including earnings on future investments) rather than be based on current year-end results.

Impact of Debt Structure on Effective Loan Rate

Under today's market conditions, callable bonds are generally sold with a bond coupon (e.g., 5%) that is significantly higher than the yield (e.g., 4%) that the borrower pays until the call date (the "stated yield"). The bonds maturing in years 11 and thereafter are typically callable beginning in 10 years. The price of the bonds is increased to reflect the fact that the borrower will receive interest at 5%, even though the bond yield is 4%. For example, the price of a $100 bond might be increased to $103 to reflect the higher bond coupon. The additional $3 above the amount of the bond is referred to as a "bond premium", and such a bond is referred to as a "premium callable bond". But, the adjusted price only reflects the assumption that the 5% coupon will be received until the call date. As a result, the bond yield until the call date would be 4% (taking account of the impact of the bond premium). But, the borrower's interest cost after the call date would equal the bond coupon, i.e., 5%.

- Due to the prevalence of "premium" callable bonds in the municipal market, the market rate from which the loan subsidy is deducted after year 10 (i.e., after the bond call date) for a leveraged SRF will initially be higher than for a direct loan SRF. If, as is typical, premium callable bonds are used by an SRF, after the call date, the effective interest rate on the bonds will increase from the stated yield (e.g., 4%) to the bond coupon (e.g., 5%). So, the interest rate, before application of the interest subsidy, on the portion of the SRF's loans that are made from bond proceeds would increase after the call date from the stated yield (e.g., 4%) to the bond coupon (e.g., 5%). For an SRF using the blended loan approach and providing a 50% interest subsidy, the subsidized loan rate in this example would increase after the call date from 2% to 2.50%. For an SRF using the reserve fund approach, under the arbitrage regulations, the 50% reserve fund could be invested at only at 4%, both before and after the call date. So, the effective loan rate in this example would increase after the call date from 2% to 3%. By contrast, the loan rate from which the subsidy is deducted for a direct program is typically the stated market tax-exempt yield (e.g., 4%) and does not change during the life of the loan. So, given a 50% subsidy, the loan rate would be 2% throughout the life of the loan.

- If a leveraged SRF issues premium callable bonds and thereafter tax-exempt interest rates decline sufficiently, the SRF's bonds can be refunded for savings relative to the original stated yield. Taking account of refunding savings, the loan rate under a leveraged approach may ultimately be lower than the loan rate under the direct loan approach. Even without a decline in rates, the callable bonds might be refunded to reduce the SRF's interest cost after year 10 to a rate below 5%. However, unless the interest rate after year 10 (net of refunding transaction costs) can be reduced to or below the stated yield of the original financing (i.e., 4%), the leveraged loan borrowers will pay a higher subsidized rate than the direct loan borrowers with the same market rates and interest subsidy.

  SRFs using a leveraged approach can completely avoid the premium bond phenomenon by issuing non-callable bonds, which have a yield (e.g., 4%) that does not change during the term of the bonds. For a leveraged SRF that uses non-callable bonds to fund its SRF loans,

the rate from which the subsidy is deducted would remain the same during the entire term of the SRF loans, just as in the case of the direct loan approach. Also, callable bonds are used by bond issuers with the expectation that the opportunity to refund the bonds in the future will ultimately result in a lower borrowing cost. SRF Borrowers would also face the same dilemma – whether to use callable or non-callable bonds – if they were to fund their projects outside of the SRF program. Accordingly, in the analyses discussed herein, the possible use of premium bonds is ignored and the stated bond yield (e.g., 4%) is used to evaluate the financial benefits of the leveraged approaches relative to the direct loan approach.

Impact of Bond Refunding on Effective Loan Rate

If general interest rate levels decline after an SRF loan is made, a borrower could refinance a market rate loan originally made in a higher (e.g., 4%) market rate environment at the current lower (e.g., 3.50%) market rate. Given the ability to lower the cost of a market rate loan and that the borrower would have acted to refinance a market rate loan, the borrower's effective loan subsidy also declines. If a state refinances SRF bonds, the loan subsidy would decrease from the original 2% to 1.50% (3.50% less the 2% loan rate) unless the SRF loan is also refinanced.

- Generally, there have been few circumstances where states have refinanced direct loans when market interest rates decline. If a direct SRF loan remains unchanged, the 2% loan interest would continue to be allocated to retained earnings and the borrower's effective loan subsidy would be 1.50%. Recreating a 50% interest subsidy would require a reduction in the loan interest rate to 1.75%, reducing the growth in retained earnings by 0.25%.

- For a leveraged loan using a blended loan approach, the bonds issued to fund the market rate portion of the loan could be refinanced to the lower, 3.50% market rate. The equity portion of the loan would remain, in this example, at 0%. The 50 basis point savings on the market rate portion could either be (a) used to reduce the borrower's net interest cost to 1.75% by lowering the loan rate on the market rate portion of the loan to 3.50% (thereby maintaining a 50% interest subsidy) or (b) retained by the SRF (in effect increasing the rate on the equity portion of the loan to 0.50%) and used to increase retained earnings or to fund loan subsidies, in which case the borrower would have a 2% loan rate and a 1.50% interest subsidy. There should be no impact on SRF equity specifically invested to generate retained earnings.

- For leveraged loans using a reserve approach, the entire loan could be refinanced to the lower interest rate (3.50%). If the reserve fund were yield restricted to the new 3.50% tax-exempt loan rate, the result would be the same as for the blended loan approach – a 50 basis point savings on the loan which could be allocated either to the borrower or to retained earnings or loan subsidies. However, consistent with the arbitrage regulations, reserve fund SRF programs have been able to refinance much of their debt initially issued to fund loans to lower interest rates while retaining the earnings on the related reserve funds that remain invested at the higher original bond yield.[5] The result is that reserve fund leveraged programs can generate more earnings to provide loan subsidies or to accumulate retained earnings than

[5] *In accordance with IRS' Universal Cap Rule, the amount of investments on which earnings are subject to yield restriction is limited to the amount of tax-exempt bonds outstanding. Therefore where bonds are refunded in advance of the call date, the amount by which the invested balances in the reserve and refunding escrow exceeds the bonds outstanding can be invested unrestricted*

programs using either the blended rate approach or the direct loan approach. There should be no impact on SRF equity specifically invested to generate retained earnings.

Managing for Optimal Program Performance

For any specific amount of interest-bearing loans that could be funded using the direct loan approach, a better economic result might be achieved in several areas using a leveraged approach by:

- Specifically investing a portion of the SRF's equity for the purpose of growing retained earnings, to the extent that such equity can be invested without yield restriction (certain considerations relating to the ability to invest equity without yield restriction are discussed below);

- Taking advantage of financial innovations adopted by leveraging states which increase the amount of earnings that can be generated and retained under a leveraged fund approach; and

- Taking advantage of reductions in market rates (either to lower the borrower's subsidized interest rate or to make the interest savings available to the SRF) without adversely affecting the originally anticipated growth in retained earnings.

In the $100 example, the present value benefit of an additional 0.50% of earnings on the $50 dollars of equity that could be invested without yield restriction under either the blended loan or reserve fund approaches would exceed $2.10 for a 20 year loan and $2.75 for a 30 year loan. Table 14 at the end of this section summarizes an analysis of the financial benefits of the blended loan approach and reserve fund approach relative to the direct loan approach given various assumptions regarding leverage factors, loan maturities, and refunding opportunities. The indicated benefits are achievable to the extent that the equity specifically invested to grow retained earnings can be invested without yield restriction.

As noted above, other program costs such as state bond charges could reduce or eliminate the indicated financial benefit of the leveraging approaches as shown in the chart.

Financing innovations adopted by leveraging states have capitalized on existing retained earnings balances to achieve higher equity growth rates. This was achieved by (a) pledging either equity invested at the tax-exempt bond rate (as allowed under the arbitrage rules) or reserve releases and direct loan principal and interest payments to meet contracted subsidy obligations and (b) investing recycled SRF equity in unrestricted investments in amounts sufficient to restore paid out equity. Assuming the tax-exempt bond rate is 4% and the taxable investment rate is 4.5%, under the innovative arrangement in use by some states, recycled equity sufficient to restore paid out equity over the life of the subsidy obligation can be invested at the unrestricted 4.5% taxable rate instead of the restricted 4% tax-exempt rate. This represents a 12.5% increased annual return on such equity. The additional return can be captured as a direct increase in retained earnings or by applying such earnings as interest subsidy for additional projects. The additional projects that can be financed are equal to the equity conserved times the leveraging rate. Either approach raises SRF project funding capacity beyond that which can be

achieved with the three basic forms. This is a highly desirable outcome in that it extends the reach of finite SRF equity.

The added value captured by the innovative financing approach can be demonstrated by looking at the relationship between financial assistance benefits delivered and equity allocation needed to deliver the benefits. The three basic loan forms, the direct loan, blended loan, and reserve models provide benefits on a percentage basis that can correlate with the percentage equity allocation made to support the targeted benefit. For each of models discussed, expressed in percentage terms, the benefit/equity ratio (the ratio of the interest subsidy percentage to the equity used as a percentage of the loans made) is 1:1 with the exception of direct loan financings where the loan rate is greater than zero. In such cases the benefit/equity ratio is less than 1:1. However, the new innovative financing approaches can turn the benefit/equity ratio positive. In the above example, the ability to generate cash flow at the unrestricted taxable rate of 4.5% results in a positive 1.125:1 benefit/equity ratio. The ratio between the taxable/tax-exempt yield spread and the tax-exempt yield will drive the benefit/equity ratio. The more positive the taxable/tax-exempt spread, the greater the benefit of investing equity on an unrestricted basis and the higher the benefit/equity ratio for any given tax-exempt yield. In the example cited where the tax-exempt rate equals 4%, if the available taxable/ tax-exempt spread rises by an additional 0.50%, the benefit to equity ratio rises to 1.25:1. The benefit/equity ratio can be an effective measure of SRF equity utilization. Table 15 at the end of this section shows the benefit-to-equity relationship for the basic and innovative financing models discussed in this section.

Constraints on this modification to the leveraging model that have been required by bond counsels for some issuers consist of (a) the present value of the subsidy commitments, to be directly paid by equity, must be less than accumulated retained earnings on the bond closing date (this is necessary to assure that the SRF perpetuity rule is not violated) and (b) only recycled equity and retained earnings can be used to make unrestricted investments (to avoid any nexus between new federal grant draws and the bonds issued to fund leveraged loans).

An SRF program that previously made interest bearing direct loans can (a) use the direct loan principal and interest to fund the interest subsidies on its new loans as described above and (b) invest its recycled equity at an unrestricted yield to grow retained earnings (rather than investing or making direct loans with the recycled equity to fund such subsidies). The interest rates on existing loans are already fixed and using such interest to fund interest subsidies on new loans does not subject such interest to yield restriction. So, using such interest on existing loans would not adversely affect the investment returns of the SRF. Also, a direct loan SRF can use leveraging to fund all of its loan demand using new capitalization grants and specifically invest all of its recycled equity at an unrestricted yield to grow retained earnings. This strategy would also flip the benefit/equity ratio of such programs from <1:1 to >1:1.

It is possible that the innovations described in the preceding two paragraphs can be applied using new capitalization grants as well as recycled equity. The legal issue for some SRF bond counsels is whether there is a sufficient nexus between the new capitalization grant draws and the bonds issued to make leveraged loans that such grants would be treated as bond proceeds, even though they are not used to pay or secure the bonds. EPA could eliminate the legal issue, and thus increase the ability of the SRFs to grow their equity, by modifying any provisions of the

SRF regulations that may be viewed as creating a nexus between the capitalization grant draws and an SRF's bonds. For example, capitalization grant draws could be made on a quarterly basis, as was at one time permitted for states that elected to use "aggressive leveraging." To the extent that funds are drawn before being applied to fund loans, such funds would contribute to the loan capacity and/or sustainability of the SRF by generating additional retained earnings.

Another regulatory provision that, as currently applied, limits an SRF's ability to grow its equity using the innovations described above is the perpetuity rule. EPA could address this issue by viewing compliance with the perpetuity rule on a dynamic, rather than a static, basis. For example, compliance could be certified by each SRF taking account of its reasonably expected earnings over the life of its loan portfolio, rather than by looking only at the equity available in the SRF at the end of each year. This change could allow states that adopt the new innovative financing approaches, discussed in this report, to further reduce the amount of equity needed (together with the earnings thereon) to fund interest subsidies. Consequently, it would decrease the amount that is subject to yield restriction and permit a larger amount of unrestricted equity to be invested specifically to grow retained earnings.

The Trade-Off between Current and Future Loan Capacity

A policy issue affecting SRF programs that provide loan subsidies of less that 100%, (i.e., interest-bearing loans) is what portion of the earnings on SRF equity should be allocated to retained earnings rather than being used to provide loan subsidies today on a larger amount of loans for qualifying environmental projects. A decision by an SRF to apply a portion of its current earnings on SRF equity toward retained earnings, rather than loan subsidies, can be reflected either in a lower loan subsidy percentage or in a lower dollar amount of loans. Such a decision might reflect a thoughtful policy determination that balances current and future environmental needs.

As noted above, retained earnings can be used to make loans or can be invested in market rate securities or structured investments to generate additional earnings. In either case, such retained earnings would be available in the future to provide loan subsidies for current or future projects. Over a very long period of time, the retained earnings accumulated by an SRF will contribute to the "sustainability" of its SRF program. Achieving sustainability is an important goal of the SRF program. For this purpose, an SRF would be expected to achieve "sustainability" at that point in the future at which it is projected to develop the ability using its current loan funding approach to continue to provide subsidized loans for qualifying environmental projects solely from recycled equity derived from its contributed capital and retained earnings (i.e., without receiving additional funding grants beyond such point, but assuming the continuation of the current level of funding grants until such point) in an amount equal to some target funding level (e.g., the amount of loans that the SRF provides today) and in real (i.e., SRF project cost inflation-adjusted) dollars. Even over a long period of time, in order for an SRF to achieve sustainability, a significant portion of the earnings on the SRF's equity would have to be allocated to retained earnings, rather than being applied to provide loan subsidies today.

Allocating a larger share of the earnings on SRF equity to retained earnings would increase the rate of growth of retained earnings, thus reducing the time required to achieve sustainability. But,

it would also make it easier to achieve sustainability in a somewhat misleading way. Since such an allocation reduces the amount available to provide loan subsidies today, it reduces the SRF's current ability to make loans. If the target funding level were defined in terms of today's funding level, such an allocation would make it easier to achieve sustainability simply by lowering the target funding level.

An Area for Further Study

A potential area for further study by the Board is whether there are modifications to the current approaches used to invest SRF equity that might better facilitate meeting the objectives of the SRF Program, including making SRFs more sustainable.

In aggregate, the state SRFs have been capitalized or "endowed" with contributed capital in excess of $32.6 billion and with total equity in excess of $38.4 billion. Such SRF equity is invested in extremely conservative investments. In fact, it is overwhelmingly invested at high-grade tax-exempt interest rates. An investment strategy that is more typical for such a large endowed fund would be expected to significantly increase the growth rate of SRF equity.

Observations

- In the context of state pension funds, every state has extensive experience in managing the investment of pools of equity that have achieved long-term investment returns in excess of both tax-exempt and taxable fixed-income returns.
- What is important to the future health and success of the SRF Program is the investment return achieved over the long term, not the result achieved from year to year. This highlights the importance of viewing compliance with the perpetuity rule on a dynamic, rather than static, basis.
- As discussed herein, it is currently possible for SRFs to invest a portion of their equity on an unrestricted basis with no impact on loan funding capacity. As further noted, through various regulatory changes, EPA can enhance the ability of SRFs to invest equity without yield restriction. Such unrestricted equity could be invested using a modified investment approach that produces higher investment returns.
- If SRFs could achieve endowment-like returns on SRF equity, it might be advantageous for them to fund a portion of their loan demand with taxable bonds in order to fully avoid any yield restriction. The expected benefit of the unrestricted investment would exceed the increase in borrowing cost.
- The incremental investment return benefit could be significant on the portion of SRF equity invested using the new approach, conservatively 1% to 1.5%. However, for credit reasons, only a portion of the SRF equity could be invested using the new approach, perhaps as much as 33% to 50% of the invested portion of SRF equity. Also, given existing investments and bond financings, it would take a period of years for the alternative approach to be fully implemented. Finally, an endowment-like investment approach can be expected to achieve a higher investment return over the long-term.

- By using a modified investment approach, SRFs that currently leverage could both (1) continue to make the same amount of loans that they would have previously made, given their available equity and (2) achieve additional earnings growth that is neither rebated to the IRS nor required to fund loan subsidies.
- Arbitrage relief would enable SRFs to achieve the best of both worlds – to fund all of their loan demand at low tax-exempt rates and to maximize the investment returns on their equity.

Table 14: Comparison of the Example Leveraged Approaches to the Direct Loan Approach

Assumptions						
Project Cost	$ 100	$ 100	$ 100	$ 100	$ 100	$ 100
Reserve Approach Loan Par	$ 101	$ 101	$ 101	$ 101	$ 101	$ 101
Blended Loan Approach Equity Loan Par	$ 67	$ 67	$ 50	$ 50	$ 33	$ 33
Blended Loan Market Rate Loan Par	$33.58	$33.58	$50.38	$50.38	$67.17	$67.17
Maturity	**20**	**30**	**20**	**30**	**20**	**30**
Tax-exempt Bond Interest Rate	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Loan Rate	1.33%	1.33%	2.00%	2.00%	2.67%	2.67%
Leveraging Factor	**1.5**	**1.5**	**2**	**2**	**3**	**3**
Reserve Fund	$67.17	$67.17	$50.38	$50.38	$33.58	$33.58
Reserve Investment Rate	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
Transaction Costs/$1000	$7.50	$7.50	$7.50	$7.50	$7.50	$7.50
Refunding Rate	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%
Bonds Refunded Under Reserve Approach	33%	33%	50%	50%	67%	67%
Results for Reserve Fund Approach versus Direct Loan Approach						
PV Benefit of Original Reserve Fund Approach Loan Debt Service (A)	($0.57)	($0.52)	($0.61)	($0.57)	($0.66)	($0.63)
PV Benefit of Reserve Fund Approach Loan Debt Service After Refunding (B)	($0.24)	$0.34	($0.09)	$0.77	$0.07	$1.25
PV of Reserve Fund Approach Retained Earnings (C)	$1.29	$1.68	$2.12	$2.78	$2.97	$3.92
Total Original Benefit of Reserve Fund Approach (D=A+C)	$0.72	$1.17	$1.50	$2.21	$2.31	$3.29
Total Benefit of Reserve Fund Approach After Refunding (E=B+C)	**$1.05**	**$2.02**	**$2.03**	**$3.55**	**$3.04**	**$5.17**
Results for Blended Loan Approach versus Direct Loan Approach						
PV Benefit of Original Blended Loan Approach Loan Debt Service (F)	($0.25)	($0.25)	($0.38)	($0.38)	($0.50)	($0.50)
PV Benefit of Blended Loan Approach Loan Debt Service After Refunding (G)	$0.09	$0.61	$0.15	$0.97	$0.23	$1.38
PV of Blended Loan Approach Retained Earnings (H)	$1.49	$1.94	$2.27	$2.98	$3.07	$4.06
Total Original Benefit of Blended Loan Approach (I=F+H)	$1.24	$1.69	$1.89	$2.60	$2.57	$3.56
Total Benefit of Blended Loan Approach After Refunding (J=G+H)	**$1.58**	**$2.55**	**$2.42**	**$3.95**	**$3.30**	**$5.43**

Table 15: Comparison of Basic and Innovative Financing Models Using the Benefit/Equity Ratio

Financing Amount: $100.00. In all cases, the SRF loans are assumed to be tax-exempt and the market loan rate is assumed to be 4%. Under the three basic approaches, the taxable/ tax-exempt spread does not affect the outcome because the SRF equity is legally or structurally yield restricted to a 4% investment rate. For leveraged loans, the SRF equity allocation for each scenario equals (A) the interest subsidy percentage divided by (B) the effective investment rate divided by the loan rate.

Model	Available Taxable Rate/Effective Investment Rate	Interest Subsidy Benefit	SRF Equity Allocation[6]	Interest Subsidy Percentage	SRF Equity Allocation Percentage	B/E Ratio
	%	%	$	%	%	
	(2)	(3)	(4)= see above	(5)=(2)/4%	(6)=(4)/(100	=(5)/(6)
Direct	4.5/4	2	100.00	50	100	.50
	4.5/4	4	100.00	100	100	1.00
Blended Loan	4.5/4	2	50.00	50	50	1.00
	4.5/4	1	25.00	25	25	1.00
Reserve	4.5/4	2	50.00	50	50	1.00
	4.5/4	1	25.00	25	25	1.00
Innovative	4.5/4.5	2	44.44	50	44.44	1.125
	4.5/4.5	1	22.22	25	22.22	1.125
	5.0/5.0	2	40.00	50	40.00	1.25
	5.0/5.0	1	20.00	25	20.00	1.25

Section VI. Conclusions and Recommendations

Conclusions

- The federal State Revolving Fund (SRF) programs for clean water and drinking water allow states substantial flexibility in the design of individual state programs.
- Both direct loan and leveraged loan programs have been successful in funding SRF projects representing significantly greater value than the amount of federal capitalization grants.
- In both direct and leveraged loan programs, a subsidy to borrowers is provided by the SRF using some or all of the earnings on SRF equity that could otherwise be used to grow program equity.
- If federal capitalization grant contributions decline in future years, the SRFs will have to depend more on internal growth of equity to sustain their programs.
- Leveraged loan programs make it possible for an SRF to meet a greater amount of current loan demand by using more of its earnings on equity to provide loan subsidies currently, rather than to grow retained earnings.
- Historically, the direct loan approach has been used by SRFs that have less current loan demand or that place more emphasis on growing retained earnings to meet future environmental needs. However, by taking advantage of recent financial innovations developed by leveraging SRFs, direct loan SRFs can use leveraging to fund the same amount of loans as they would currently fund and can simultaneously maximize their earnings on SRF equity by investing a portion of their equity specifically to enhance the growth of their retained earnings.
- EPA can administratively facilitate the use of such financial innovations to grow equity, and thereby develop more sustainable SRFs by allowing states:
  - To allow draws of capitalization grants, without regard to the expenditure of SRF funds for project costs; and
  - To interpret the perpetuity rule on a dynamic, rather than a static, basis, by measuring compliance taking account of an SRF's expected earnings over time, rather than based on current year-end results.
- Arbitrage relief for SRFs would have an even greater impact on the ability of SRFs to become sustainable.
- A potential area for further study by the Board is whether a different approach to investing SRF equity would enhance the ability of SRFs to grow equity, meet long term program demands, and to become sustainable.

Recommendations

- ❒ EPA should encourage direct loan states to improve SRF sustainability by showing the states how leveraging can be used to increase those states' retained earnings.

- ❒ EPA should assist states to develop sustainable SRFs by administratively allowing states to accelerate draws of capitalization grants, modifying its interpretation of the perpetuity rule and by advocating for arbitrage relief focused specifically on SRF programs.

- ❒ EFAB should explore the benefits of developing more aggressive parameters for SRF equity investments and recommend appropriate program changes to EPA.