Drinking Water State Revolving Fund

Green Project Reserve Funding Status

March 26, 2010

I. Introduction

The American Recovery and Reinvestment Act (ARRA) of 2009 provided $2 billion to the Drinking Water State Revolving Fund (DWSRF) for states to finance high priority "shovel ready" infrastructure projects needed to ensure safe drinking water. Under ARRA, states were required to provide at least 20% of their allotment for green projects, including green infrastructure, energy or water efficiency, and environmentally innovative activities. For convenience, EPA referred to this provision as the "Green Project Reserve (GPR)." The GPR was an entirely new requirement for the DWSRF, and required significant time and effort to complete.

This report summarizes the great success EPA and the state DWSRF programs achieved in implementing the GPR requirement of ARRA. The primary data used in the development of this report are records from the DWSRF Project and Benefits Reporting System (PBR). These data are supplemented with additional qualitative information from experience in assisting the EPA Regional coordinators and their state counterparts.

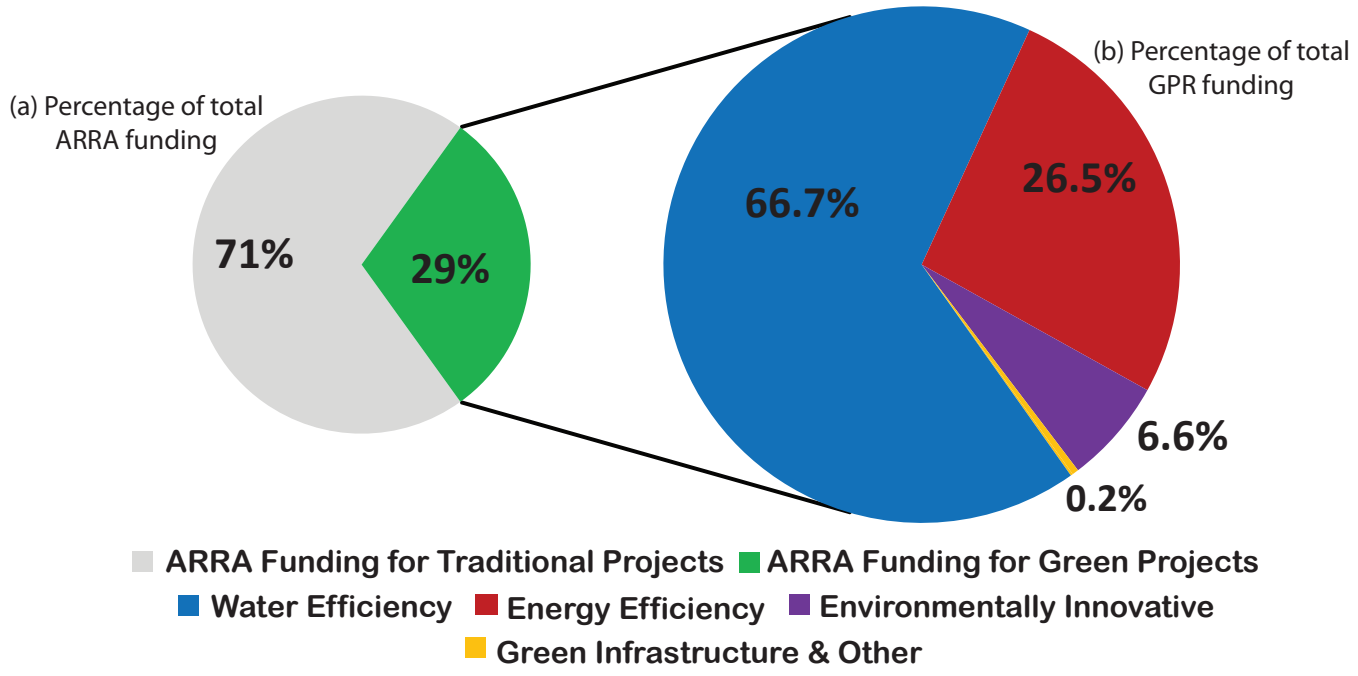


Figure 1. Percentage of GPR Funding Allocated to GPR Categories.

The data used for this analysis were extracted from the PBR database on March 15, 2010 (last updated by states on March 12). Throughout the document, the term "states" refers to the 50 states and Puerto Rico. All data include funds for projects and set-asides. Because the states continue to update the database, this analysis represents a snapshot of conditions at the time data were extracted. Further data limitations exist because the level of QA/QC performed by each state varies along with the variety of methods, criteria, and timing for entering the data. Similarly, the qualitative information on the GPR program continues to evolve.

National GPR Funding Per Category

- Water Efficiency – $360M
- Energy Efficiency – $143M
- Environmentally Innovative – $36M
- Green Infrastructure – $1M
- Total GPR – $540M

II. National Summary

As of February 17, 2010, over $540 million in loan agreements for GPR project components had been executed, representing 29% of total ARRA funding for DWSRF projects. Project components in all four GPR categories—energy efficiency, water efficiency, green infrastructure, and environmentally innovative—are being funded. Water efficiency projects received two-thirds (66.7%) of all GPR funding, while energy efficiency (26.5%), and environmentally innovative projects (6.6%), received the remainder of funds. Green infrastructure projects (0.2%) and uncategorized green projects (0.03%) accounted for less than 0.5% of total GPR funding.

The majority of GPR projects fell into the water efficiency category, and, while a detailed analysis of the projects is still underway, installing new water meters in previously unmetered areas accounts for a substantial percentage of these water efficiency projects. Because of the new GPR requirement, states were able to focus on projects (such as metering) that addressed a backlog of unmet need. ARRA projects may have significantly reduced this backlog. This suggests that caution should be exercised when extrapolating ARRA's GPR success to potential future GPR-type provisions in the base DWSRSF program.

Discussion of GPR Loan Size and Average ARRA Loan Size

The average value of GPR projects is similar to the average value of all ARRA projects as shown in the table below. Based on PBR data, the average loan size for the 519 GPR projects ($1.05 million) is comparable to the average loan size for all 1,433 ARRA projects ($1.30 million).

Table 1. Average and median values of ARRA loans, by EPA Region. Includes projects and set-asides.

EPA Region	Average ARRA Loan	Median ARRA Loan	Average Green Loan	Median Green Loan
Region 1	$667,209	$350,000	$719,723	$300,000
Region 2	$2,410,726	$1,523,352	$1,733,385	$397,000
Region 3	$1,621,581	$931,928	$1,425,672	$936,856
Region 4	$1,174,679	$711,426	$1,027,841	$495,227
Region 5	$1,076,609	$549,986	$670,699	$282,846
Region 6	$2,377,963	$1,100,000	$1,434,481	$414,035
Region 7	$1,007,048	$350,953	$639,072	$237,055
Region 8	$884,553	$750,000	$710,244	$500,000
Region 9	$2,185,481	$1,042,759	$3,308,903	$2,309,945
Region 10	$1,397,734	$642,325	$1,281,756	$410,000
U.S. total	$1,295,699	$630,100	$1,047,147	$368,585

For the most part, this pattern is consistent across EPA Regions. However, there is a substantial difference between the average loan values in two Regions. In Region 6, the average value of a GPR-funded loan is substantially smaller (by approximately $1 million) than that of the average ARRA loan. On the other hand, in Region 9, the average value of a GPR loan is substantially larger (by approximately $1 million) than that of the average ARRA loan. These differences can be driven by variations in the average GPR project sizes in the largest state in each Region. For example, despite allocating more funding to traditional SRF loans ($90 million) than to GPR loans ($60 million), the comparatively large average value of $5.5 million for the 11 GPR funded loans in California drives up the average GPR loan in Region 9. Two water meter replacement projects further increased the average value of the 11 GPR loans in California.

Many outliers skew the Regional and national data, and it is helpful to examine the median loan size to understand a "typical" loan. Nationally, the average GPR loan was $1.05 million while the median GPR loan was only $0.37 million; the average ARRA loan was $1.30 million while the median was $0.63 million. In Region 2, the average GPR loan was $1.73 million while the median GPR loan was only $0.40 million. The broad range of ARRA loans makes it difficult to characterize a "typical" loan size.

Geographical Distribution of GPR funded DWSRF Projects

The geographic distribution of the GPR-funded DWSRF projects varies widely across the U.S. Certain areas including Northern California, South Texas, North Central Texas, and Southeast Michigan had high levels of GPR funding. These locations may have received high levels of GPR funding due to state priorities to provide water service to rural districts (i.e. South Texas and North Central Texas) or to upgrade water distribution systems in traditional heavily industrialized urban areas (i.e. Southeast Michigan).

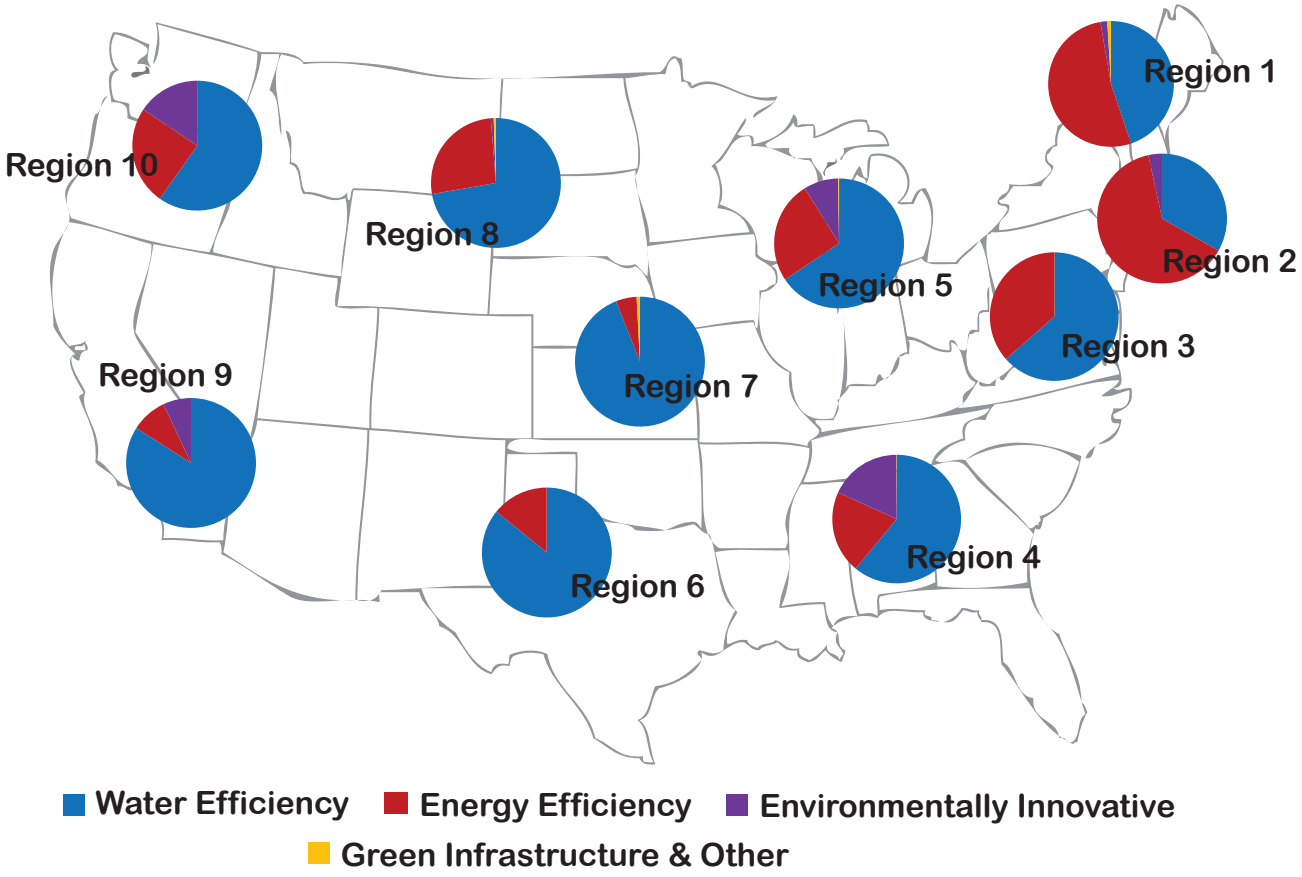


Figure 2. Green Funding in Categories by EPA Region.

Regional patterns in the distribution of GPR funding into the four green categories are shown in Figure 2 (Additional detailed data on this subject are included in Appendix 1.) On average, the states in Regions 1 and 2 allocated at least 50% of the GPR funding to energy efficiency projects. On average, the states in the remaining 8 Regions allocated at least 60% of green funds to water efficiency.

Because of ARRA's emphasis on funding "shovel ready" projects, it is likely that regional differences in GPR allocations within project categories stem from pre-existing conditions on the ground. For example, inter-category variations may be driven by pre-existing climatic or economic differences. Higher fuel costs in the Northeast may have generated the large percentage of energy efficiency projects in Regions 1 and 2. In addition, Massachusetts and New York actively encouraged energy efficiency projects through their local energy programs. On the other hand, the arid conditions in the Plains and Southwest may account for the high percentage of water efficiency projects funded by GPR in Regions 6, 7, and 9.

III. States Summary

Exceeding the Threshold

All the states met the ARRA 20% GPR threshold. The states with the highest percentage of GPR spending include Montana, Rhode Island, and Ohio, which spent between 40 and 50% of their allocation on GPR projects. At the other end of the spectrum, nine states had green spending below 22%. Data on the percentage spent on green projects for the remainder of the states are included in Appendix 2.

The success each state achieved in attaining the 20% green funding threshold may depend on the strategies each used and the economic climate across the country. As noted below, many states proactively solicited green funded projects and theoretically achieved the 20% threshold at the early stages of the funding process. The total green funding for many states diminished substantially because for many funded projects the final bids were much lower than the initial engineer estimates.

Table 2. Top ten states in GPR spending.

State	EPA Region	Total ARRA Funds Awarded	Green Spending	Percentage Green
Montana	8	$19,500,000	$9,631,400	49%
Rhode Island	1	$19,500,000	$8,883,011	46%
Ohio	5	$58,460,000	$23,185,929	40%
South Carolina	4	$19,500,000	$7,587,638	39%
Pennsylvania	3	$44,006,270	$16,607,139	38%
Mississippi	4	$19,500,000	$7,344,207	38%
Virginia	3	$20,761,000	$7,794,977	38%
California	9	$159,008,000	$59,710,786	38%
Tennessee	4	$20,238,000	$7,512,420	37%
Kentucky	3	$20,450,000	$7,289,706	36%
U.S. Total		$1,871,581,520	$540,327,877	29%

Initial Approaches to Meeting the Challenge

The states developed different approaches to achieving the 20% green funding threshold by the February 17, 2010 deadline. Below are several examples of these strategies.

Connecticut Connecticut identified a single green project early in the funding process to receive all the GPR funds. The project consisted of installing an automated meter reading system as well as additional

metering replacement for about 35,000 meters in the City of Hartford. A business case was required for this project.

Virginia Virginia issued a GPR specific solicitation in early 2009. Virginia received 255 project applications for over $416 million and ultimately had to deny a large portion of those applications. Solicitation efforts by the state included sending mass mailings and e-mails to all water systems, posting information on the state Web site, and holding six public meetings in February, March, April and June throughout the state.

Arizona In addition to providing funds for green capital improvements, Arizona allocated $200,000 of ARRA technical assistance set-aside funds for pre- design and design grants for "green infrastructure" projects. Grant applications included projects for installation of solar components, conducting energy audits, and various energy efficiency improvements at drinking water facilities. Each grant was limited to $35,000. To encourage inclusion of green elements into drinking water projects, Arizona waived the local match requirement for the grant.

Georgia, Alabama Georgia and Alabama required all green projects to submit a business case. Georgia found this process useful during the priority scoring process. Alabama found even more green projects than they anticipated using this tool for development of their intended use plan (IUP).

Indiana Indiana had an existing SRF program encouraging systems to incorporate green components in their drinking water projects. Communities used the checklist from this program to identify which portions of their projects were "green". In return for including green components in projects, the state offered to reduce the community's loan interest rate by 0.5%. Indiana used the information from these checklists to identify projects which would qualify as green under the ARRA requirements.

California Early in its ARRA funding process, California decided that it would pursue only "categorical" green water meter projects (i.e. new meters in previously unmetered areas only) to account for all GPR funds.

Alaska Alaska began its ARRA funding process by soliciting green-only projects, targeted solely at disadvantaged communities. Because there is very little metering in Alaska several of the green projects included metering.

Ohio Ohio requested, as part of its 2009 pre-application process, data on whether projects included categorical or business case components of GPR and the estimated amount of funding needed for those elements of the project. Ohio then developed the intended use plan (IUP) based on these data, in order to prioritize shovel-ready projects, and identify the projects for GPR funding potential. Through iterative modifications to its strategy, Ohio successfully reached the 20% threshold. (See Appendix 3 for a more detailed description of this successful GPR funding program.)

As the ARRA funding process proceeded, some states determined that meeting the 20% GPR threshold was easier for CWSRF projects than for DWSRF projects. Three states, Georgia ($18M), Minnesota ($10.5M), and Pennsylvania ($21.6M), modified their original strategies in time to transfer ARRA funds from the DWSRF to the CWSRF program to meet the GPR threshold.

Final Strategies for Closing the Gap

By mid-summer of 2009 most states had solicited and identified sufficient projects to meet and surpass the 20% GPR threshold using a version of the initial strategies shown above. As the ARRA funding program progressed through 2009, various factors created challenges to states in their efforts to actually meet their GPR threshold by February 17, 2010. These factors included: (1) the election to not seek ARRA funding for a given project; (2) the determination that the planned project was ineligible; and (3) the receipt of bid responses at values far lower than the original estimates. (In some cases, bid responses were 50 % below the originally estimated value.)

For example, Texas, Pennsylvania and Idaho are three states that realized in late 2009 and early 2010 that they might not meet the 20 % GPR requirement. These states had to identify and capture additional GPR costs even though: (1) no additional ARRA funds were available; (2) no time was available to identify or solicit new "green" projects (even if there was funding available); and (3) state staff resources were fully focused on meeting the other critical elements of the ARRA funding requirements. As a result of these challenges, each of the three states requested contractor support from EPA to identify additional green components in existing projects to meet the GPR requirement.

With EPA contractor assistance, existing ARRA-funded projects with the highest probability of containing additional green elements were identified and prioritized based on the inclusion of potentially "categorical green" components in the project. The highest prioritized projects were those which included pump upgrades, distribution improvements, SCADA systems and leak detection equipment, AMR technology as well as water line replacement. By carefully dissecting each project and reviewing information provided by project engineers, such as bid sheets and equipment specifications, the required additional GPR costs needed were identified for each of the three states, as highlighted below:

- In Texas, an additional $1.1 million was identified in categorical green elements from four additional projects which allowed the state to exceed the required $32 million.
- In Pennsylvania, business cases were developed for two water line replacement projects for an additional $1 million which allowed the state to exceed the required $8 million.
- In Idaho, additional categorical elements were identified from four existing GPR projects which allowed the state to exceed the required $4 million.

Even though the constraints on time and resources caused these three states to adopt this approach, the examples show that there are commonly more "green" elements in existing projects than originally identified by the loan recipient or the state. Similarly, these examples highlight the need to capture the relatively low value components such as design and engineering costs, installation expenses, and forced labor accounts as these small amounts may accumulate quickly.

IV. Conclusions

The data summarized in this report indicate that:

1) All the states met the 20% threshold for GPR with 10 exceeding a 35% threshold.

2) The strategies to attain the 20% threshold were varied but ultimately successful with cooperation between the state, EPA, and the loan recipient.

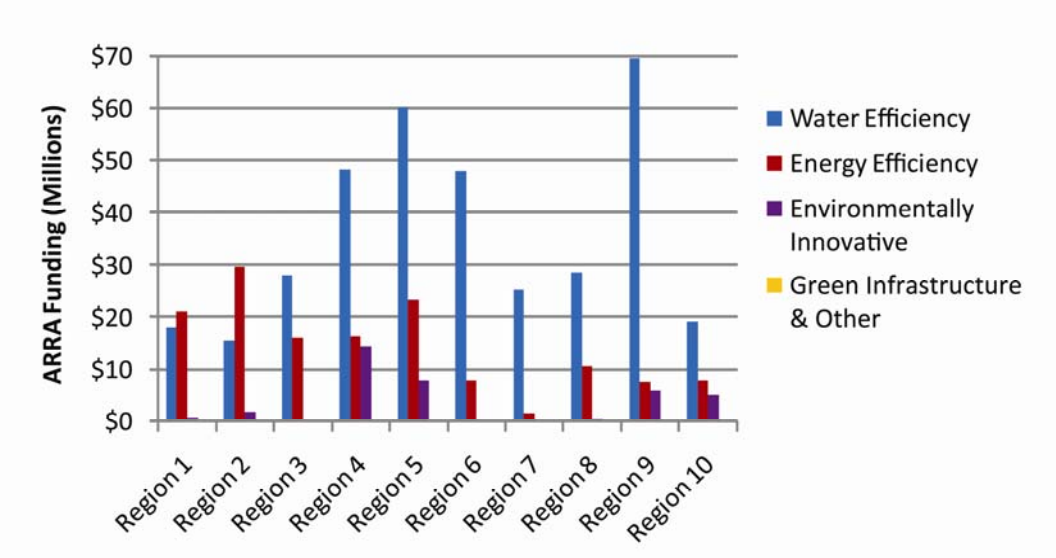
3) Regional differences in allocation of GPR funds amongst the four green categories may be attributed to climatic differences and state priorities.

4) The majority (66.7%) of the $541M in GPR funding, on a national basis, went to water efficiency projects.

5) The sizes of GPR loans varied across the states with a mean loan value of $1M and a median loan value of $0.4M.

6) Caution should be exercised when extrapolating ARRA's GPR success to potential future GPR-type provisions in the base DWSRSF program.

Appendix I – Green Funding by Category and EPA Region



EPA Region		Total Green Funding	Green Infrastructure	Water Efficiency	Energy Efficiency	Environmentally Innovative	Other
Region 1	Value of Projects	$40,304,508	$390,000	$18,075,563	$21,132,650	$706,295	$0
	% of Total Green		1%	45%	52%	2%	0%
Region 2	Value of Projects	$46,801,406	$0	$15,549,385	$29,661,196	$1,590,825	$0
	% of Total Green		0%	33%	63%	3%	0%
Region 3	Value of Projects	$44,195,826	$0	$28,070,636	$16,125,190	$0	$0
	% of Total Green		0%	64%	36%	0%	0%
Region 4	Value of Projects	$79,143,788	$72,200	$48,288,492	$16,432,833	$14,350,263	$0
	% of Total Green		0%	61%	21%	18%	0%
Region 5	Value of Projects	$92,556,422	$66,200	$60,048,589	$24,392,189	$7,867,144	$182,300
	% of Total Green		0%	65%	26%	8%	0%
Region 6	Value of Projects	$55,944,768	$0	$48,026,080	$7,918,688	$0	$0
	% of Total Green		0%	86%	14%	0%	0%
Region 7	Value of Projects	$26,841,032	$225,000	$25,230,609	$1,385,423	$0	$0
	% of Total Green		1%	94%	5%	0%	0%
Region 8	Value of Projects	$39,773,648	$263,000	$28,360,793	$10,869,855	$280,000	$0
	% of Total Green		1%	71%	27%	1%	0%
Region 9	Value of Projects	$82,722,582	$0	$69,516,989	$7,403,216	$5,802,377	$0
	% of Total Green		0%	84%	9%	7%	0%
Region 10	Value of Projects	$32,043,897	$0	$19,158,450	$7,885,447	$5,000,000	$0
	% of Total Green		0%	60%	25%	16%	0%
U.S. Total	**Value of Projects**	**$540,327,877**	**$1,016,400**	**$360,325,586**	**$143,206,687**	**$35,596,904**	**$182,300**
	% of Total Green		**0.2%**	**66.7%**	**26.5%**	**6.6%**	**0.03%**

Appendix 2 – Green funding as a percentage of the total ARRA spending per state

State	Total ARRA Funds Awarded	Green Spending	Percentage Green
Alabama	$19,500,000	$6,463,610	33%
Alaska	$19,500,000	$6,523,927	34%
Arizona	$55,340,000	$12,731,480	23%
Arkansas	$24,485,000	$4,965,000	20%
California	$159,008,000	$59,710,786	38%
Colorado	$34,352,000	$9,950,860	29%
Connecticut	$19,500,000	$5,929,684	30%
Delaware	$19,500,000	$6,000,000	31%
Florida	$88,074,000	$21,465,113	24%
Georgia	$36,699,250	$8,246,768	23%
Hawaii	$19,500,000	$5,660,426	29%
Idaho	$19,500,000	$4,097,970	21%
Illinois	$79,538,000	$22,446,566	28%
Indiana	$27,212,000	$6,943,788	26%
Iowa	$24,293,000	$5,627,000	23%
Kansas	$19,500,000	$4,160,623	21%
Kentucky	$20,450,000	$7,289,706	36%
Louisiana	$27,626,000	$6,949,000	25%
Maine	$19,500,000	$4,511,800	23%
Maryland	$26,832,000	$7,447,800	28%
Massachusetts	$52,216,000	$12,580,834	24%
Michigan	$67,454,000	$23,444,625	35%
Minnesota	$24,577,000	$4,915,400	20%
Mississippi	$19,500,000	$7,344,207	38%
Missouri	$37,862,000	$12,957,447	34%
Montana	$19,500,000	$9,631,400	49%
Nebraska	$19,500,000	$4,095,962	21%
Nevada	$19,500,000	$4,619,890	24%
New Hampshire	$19,500,000	$4,448,826	23%
New Jersey	$43,154,000	$13,408,777	31%
New Mexico	$14,950,000	$4,108,047	28%
New York	$86,811,000	$29,479,824	34%
North Carolina	$65,625,000	$13,234,326	20%
North Dakota	$22,100,000	$6,302,850	29%
Ohio	$58,460,000	$23,185,929	40%
Oklahoma	$31,481,000	$7,279,000	23%
Oregon	$28,515,000	$7,822,000	27%

State	Total ARRA Funds Awarded	Green Spending	Percentage Green
Pennsylvania	$44,006,270	$16,607,139	38%
Puerto Rico	$19,500,000	$3,912,805	20%
Rhode Island	$19,500,000	$8,883,011	46%
South Carolina	$19,500,000	$7,587,638	39%
South Dakota	$19,500,000	$4,323,625	22%
Tennessee	$20,238,000	$7,512,420	37%
Texas	$160,656,000	$32,643,721	20%
Utah	$19,500,000	$4,876,675	25%
Vermont	$19,500,000	$3,950,353	20%
Virginia	$20,761,000	$7,794,977	38%
Washington	$41,806,000	$13,600,000	33%
West Virginia	$19,250,000	$6,345,910	33%
Wisconsin	$37,750,000	$11,620,114	31%
Wyoming	$19,500,000	$4,688,238	24%
U.S. Total	**$1,871,581,520**	**$540,327,877**	**29%**

Appendix 3 – State of Ohio ARRA Success Story

Ohio's ARRA Success Story

- Ohio funded 62 drinking water projects to assure adequate supplies of safe drinking water for 1.2 million people in 150 communities.
- Ohio received $58.46 million in ARRA funds.
- Ohio combined ARRA funds with $61.4 million in water supply revolving loan funds for a total of $120 million in assistance to Ohio communities.
- Ohio EPA received nearly 1,700 requests for funding from 488 water systems.

Job Creation/Retention: Strengthening Ohio Businesses and Communities

Reporting period ending 12/31/09
Total FTEs: 293.06
ARRA FTEs: 153.59

- 119 different companies (contractors) received contracts for ARRA projects. This does not include their subcontractors.
- 25 companies were awarded contracts on more than one project.

Saving Ohioans Money:

- Ohio chose to make all $58.46 million in ARRA funds "free money" through principal forgiveness loans.
- Ohio communities receiving ARRA and water supply revolving loan awards will also save nearly $85 million in interest they would paid if these projects would have been funded with market rate loans.
- These savings are a direct benefit to Ohioans (rate payers).

What Ohio Did:

- Ohio funded 62 drinking water projects for 59 public water systems, thus improving the quality and reliability of drinking water for approx. 1.2 million Ohioans in 150 communities.
- Ohio ranks #3 in the nation for funding the most ARRA drinking water projects.
- Ohio ranks #2 in the nation for devoting 39.7% of ARRA funding to "green" projects (ARRA required at least 20%).
- 43.5% of ARRA funding went to disadvantaged communities.
- 79% of ARRA funding went to small communities serving less than 10,000 people.
- 34 ARRA funded projects will help 197,000 people located in Appalachian counties.

Public Health Benefits:

- Ohio EPA strives to help Ohioans receive high quality and reliable quantities of drinking water.
- Higher quality drinking water is being achieved through:
    - New and improvements to existing water treatment facilities – 19 projects
    - Connecting public water systems to other more reliable systems – 19 projects
    - Providing public drinking water to areas with contaminated or less reliable private wells – 12 projects

- 14 public water systems under enforcement for exceeding drinking water standards will return to compliance.

- Improved or more reliable quantities of drinking water are being achieved through:
    - Replacing leaking and failing waterlines – 32 projects
    - Installing new wells – 7 projects
    - Installing new and replacing existing pumps and booster stations – 15 projects
    - Installing and repairing existing water storage facilities -10 projects
    - New water meters – 7 projects

- Water Savings
    - 14 projects are replacing a total of nearly 34 miles of leaking and failing water lines preventing about 177 million gallons of water loss annually. Annual water savings as a percentage of total water production ranges from1% to 57% across these systems.

Ohio's Approach to GPR

With careful pre-planning and an aggressive approach to meeting ARRA requirements, including GPR, the state of Ohio successfully met the ARRA deadline of February 17, 2010 and greatly exceeded the 20% requirement for GPR.

As part of the pre-application process last year, the state of Ohio requested that applicants indicate whether projects included categorical or business case components of GPR and the estimated amount of funding needed for those elements of the project. The Intended Use Plan (IUP) was developed using a three-step process. First, the state identified projects in priority order that indicated they would be ready-to-go by June 2009. This deadline was established to meet the ARRA goal of having 50 % of the funds targeted to projects that could be initiated by June 17, 2009. Second, the state evaluated these projects to determine how much GPR funding was identified to assess how far these projects would get toward the 20% requirement. The state then identified additional green projects in priority order to achieve at least the 20% target. Finally, the state allocated the remaining resources based on projects that indicated they would be ready-to-go by September 2009.

Although it appeared, based on this process, that the state would meet the 20% GPR requirement, the state became a bit concerned once bids were opened and were coming in under estimate, and additional guidance was received from EPA. The state decided to more aggressively evaluate every project on its IUP for green components. The state developed a more detailed green evaluation criteria worksheet and business case template (see Appendix 6). Additionally, staff from each of the district offices worked directly with consulting engineers to conduct a more thorough evaluation for every project on the IUP.

Because a large number of the projects were for distribution line replacements, the vast majority of the projects required development of a business case based on the guidance prepared by the state in September 2009. Of the 62 drinking water projects funded, 39 had green components and almost all required a business cases. In the end, the state exceeded the 20% requirement, reaching almost 40% for GPR.

Appendix 4 – Green Evaluation Criteria Worksheet and Business Case Template

Ohio Environmental Protection Agency
Division of Drinking and Ground Waters

Water Supply Revolving Loan Account
Green Project Reserve Form

Ohio EPA is requesting Water Supply Revolving Loan Account (WSRLA) loan applicants provide information about potential green components of their project(s).

PWS Name: _____ PWSID: _____

Project Name: _____

Total Estimated Project Cost: $_____ Total Estimated Green Amount: $_____

Type of "Green" Element(s) included in this project. For each box that is checked the corresponding page of this form must be completed and submitted with this cover page. Attach additional pages as necessary:

- ☐ **Green Infrastructure** (porous pavement, bioretention, trees, green roofs, and other practices that mimic natural hydrology and reduce effective imperviousness)
- ☐ **Energy Efficiency** (energy audit, water pump system improvements or replacements, variable frequency drives, SCADA, on-site clean power, solids treatment or handling, replacement or rehabilitation of distribution lines)
- ☐ **Water Efficiency** (water meter installation or replacement, leak detection equipment, water line replacement, water audit, water efficient fixtures)
- ☐ **Other Environmentally Innovative Activity**

Completed by:

Name:_____ Title:_____
(Please print)

Signature: _____ Date: _____

For OEPA use only:

Project #: _____ DWSRF #: _____

DWSRF Project Descriptions and Examples for Green Project Reserve

U.S. EPA anticipates that "water or energy efficiency" projects will likely be the principal focus of the Green Project Reserve under the DWSRF. However, there may also be projects, or components of projects, that qualify for consideration under the Green Infrastructure Reserve in the DWSRF on the basis of application of green infrastructure or being environmentally innovative.

Under the Green Project Reserve in the DWSRF both entire projects may be considered for inclusion or appropriate identifiable components of larger projects may be considered for inclusion. Whatever projects or project components are included, such projects or project components must clearly advance the objectives articulated in the specific categories discussed below.

There are some types of projects that clearly will qualify toward the Green Project Reserve, being entirely and explicitly framed as a green infrastructure or water or energy efficiency project. However, some types of traditional projects may also have benefits that may in some cases be counted toward the Green Project requirement. For example, lower friction afforded by a new distribution pipe could reduce the energy needed to pump water through the distribution system. For such traditional projects (or portion of a project) to be counted, Ohio EPA's project files must contain documentation that the clear business case for the project (or portion) investment includes achievement of identifiable and substantial benefits that qualify as Green Project benefits.

Principles and approach to developing a Business Case for water and energy efficiency projects

A. Energy and water efficiency projects should demonstrate substantial benefits/savings compared to the existing equipment

B. Water and energy efficiency benefits/savings must be a substantial part of the rationale or justification for the project, and cannot simply be incidental water and/or energy efficiency benefits

C. Technical component of a business case: Using information from maintenance or operations records, engineering studies, project plans, etc.
    1. that identify problems (including any data on water and/or energy inefficiencies) in the existing facility
    2. that clarify the technical benefits from the project in water and/or energy efficiency terms

D. Financial component of a business case:
    1. Estimate cost and water savings from the project based on the technical analysis of benefits.
    2. Determine, within total project costs, that savings associated with energy and water efficiency improvements comprise a substantial part of financial justification for project.

Green Infrastructure (porous pavement, bioretention, trees, green roofs, and other practices that mimic natural hydrology and reduce effective imperviousness).

PWS Name: _____ PWSID: _____

Project Name: _____

Total Est. Project Cost:_____ Total Est. Green Reserve Amount:_____

Project Summary:

Business Case Narrative:

Attached Supporting Documentation

☐ Engineering Project Planning Documents ☐ Water/Energy Efficiency Determination (OEPA)

☐ Public Water System Records ☐ Other: _____

Green Infrastructure

I. Definition: Green Infrastructure includes a wide array of practices that manage wet weather to maintain and restore natural hydrology by infiltrating, evapotranspiring and capturing and using stormwater. In the context of the DWSRF, green infrastructure consists of site-specific practices, such as green roofs and porous pavement at drinking water utility facilities. In addition to managing rainfall, these green infrastructure technologies can simultaneously provide other benefits such as reducing energy demands.

a. Green infrastructure projects can be stand alone projects. They do not need to be part of a larger capital improvement project.
b. Examples of projects include, but are not limited to:
    i. Implementation of wet weather management systems for utility buildings and parking areas which include: porous pavement, bioretention, trees, green roofs, and other practices that mimic natural hydrology and reduce effective imperviousness.
    ii. The entire cost of the green roof is eligible, not just the incremental costs. This includes the roof as well as structural changes necessary to support the additional weight of the green roof.

Energy Efficiency (energy audit, leak detection equipment, water pump system improvements or replacements, variable frequency drives, on-site clean power for treatment systems, replacement or rehabilitation of distribution lines)

PWS Name: _____ PWSID: _____

Project Name: _____

Total Est. Project Cost: _____ Total Est. Green Reserve Amount: _____

Project Summary:

Pump Facilities

Age of existing pumps or pumping facilities?	
Existing pump/motor efficiency rating, if known?	
New pump/motor efficiency rating.	
Estimated Annual Electrical Savings	
Estimated Annual Costs Savings	

Business Case Narrative: (Calculate Energy Efficiency Improvements and costs savings) Attach Supporting Documentation

Energy Efficiency:
Energy efficiency includes capital projects that reduce the energy consumption of eligible drinking water infrastructure projects.

I. Eligible costs associated with energy efficiency projects may include:
   a. Planning and design activities for energy efficiency that are reasonably expected to result in a capital project are eligible.
   b. Building activities that implement capital energy efficiency projects are eligible.
   c. Costs associated with a utility energy audit if required as a condition of assistance

II. Examples of projects include, but are not limited to:
   a. Energy efficient retrofits and upgrades to pumps and treatment processes (requires business case)
   b. Leak detection equipment
   c. Producing clean power for treatment systems on site (wind, solar, hydroelectric, geothermal, biogas powered combined heat and power)
   d. Replacement or rehabilitation of distribution lines (requires business case)

Water pump system improvements or replacements
A business case is needed to show that the pump(s) selected for the project ranks among the most energy efficient commercially available. Efficiency improvements should be substantial compared to the average efficiency currently available for that type of pump. At minimum, the business case should provide specific information for the pumps and equipment selected, including manufacturer, make, and model of key components, and documentation of the energy efficiency specifications for proposed equipment, which identifies substantial savings over other currently available equipment.

Business cases for projects specifically designed to improve the operational efficiency of a pump station to improve overall hydraulic conditions in the distribution system will also be considered. For example, if a pump station is no longer operating at the same hydraulic grade line as the rest of the pump stations in that same pressure zone, then energy savings can be achieved by replacing those pumps with ones properly designed for the existing conditions. The business case must include adequate documentation, such as direct reference to a preliminary engineering report or other planning document, of the reasons for upgrading the pump station, as well as what the estimated energy savings are from doing so.

Variable Frequency Drives (VFDs)
Variable speed frequency drives are in certain conditions of use categorically eligible for GPR. Many water and wastewater system motors, especially older ones, turn at nearly constant speed. However, much of the time pumps or blowers operate at less than maximum design speed. Installing a VFD will generally increase/reduce pump and blower activity proportionally to increased/reduced flows. Such an upgrade could generate significant energy savings, especially for utilities that experience great changes in flow.

VFDs will be considered categorically green provided that certain conditions of installation and use, needed to ensure that they are always efficient, are met. Note that this means that the project must provide adequate assurances or commitment to meet those conditions for the project to be green, but that a business case is not required. Some VFDs can be manually bypassed, such as in an emergency situation, making it possible to operate the pump without realizing the energy savings made possible by the VFD. This is appropriate for temporary situations, but energy savings are not realized if the VFD is left in bypass mode. Because VFDs must be operated properly in order to achieve “green” savings, GPR qualification must include (1) adequate training for the utility’s staff which operates this equipment (consistent with current operator certification requirements), and (2) integration of current limiting and auto restart features into VFDs and ensuring the controls are intuitive.

Projects that improve the energy efficiency of solids treatment (i.e. sludge dryers and incinerators, improved anaerobic digestion systems) and handling (i.e. chemicals like lime, fly ash, and other alkaline materials)

Solids treatment improvements are categorically eligible for the GPR if these changes achieve a 20 percent net energy reduction. If the project does not achieve the 20 percent net energy reduction, then a business case must show substantial energy savings.

Energy audits
Under the DWSRF, energy audits are categorically eligible if they are required as a condition of assistance or if they are reasonably likely to result in a capital project (see EPA March 3 SRF ARRA Guidance, Attachment 8). An energy audit is performed with the expectation that it will reveal ways to reduce energy use at water utilities. "Planning and design activities for energy efficiency projects that are reasonably expected to result in a capital project" qualify for the GPR.

Water audits
Under the DWSRF, water conservation plans or water audits are categorically eligible if they are required as a condition of assistance or if they are reasonably likely to result in a capital project (see EPA March 3 SRF ARRA Guidance, Attachment 8 (at http://www.epa.gov/water/eparecovery/docs/2009-03-02_Final_ARRA_SRF_Guidance.pdf)). A water audit is performed with the expectation that it will reveal leaks, malfunctioning valves, or other unaccounted water losses. Considering the widespread need to rehabilitate or replace aging and often leaky transmission and distribution pipes across the US, water audits can be expected to demonstrate ways to improve the 'water efficiency' objectives SRF funding. "Planning and design activities for water efficiency projects that are reasonably expected to result in a capital project" qualify for the GPR.

Supervisory Control and Data Acquisition (SCADA)
Eligible for GPR if a business case for the system identifies substantial energy efficiency improvements.

WATER EFFICIENCY: (i.e. water main replacement, meter installation, leak detection equipment, water efficient features)

PWS Name: _____ PWSID: _____

Project Name: _____

Total Est. Project Cost: _____ Total Est. Green Reserve Amount: _____

Project Summary:

Water Main Replacement

Water main material/length to be replaced?	
Est. total system water lost due to breaks and leaks	
Est. water loss from pipe being replaced	
Total annual production	
Number of breaks recorded in past 24 months for the area to be replaced?	
Est. Annual water savings	
Est. annual costs savings	
Other efficiencies to be gained by the replacement? (i.e. reduced head and therefore less energy loss in an upstream pump station, etc.)	
Meter Installation/Replacement	⬭ Original Installation ⬭ Replacement
Reason for replacement?	
Est. annual water savings	
Est. annual costs savings	

Business Case Narrative (Calculate water saving improvements and costs savings):

Attached Supporting Documentation

☐ Engineering Project Planning Documents
☐ Public Water System Records
☐ Water/Energy Efficiency Determination (OEPA)
☐ Other: _____

Water Efficiency:

I. Water efficiency is the use of improved technologies and practices to deliver equal or better services with less water.
   a. WaterSense program Focus on Utilities - http://www.epa.gov/watersense/tips/util.htm

II. Eligible costs associated with water efficiency projects may include:
   a. Planning and design activities for water efficiency that are reasonably expected to result in a capital project.
   b. Purchase of water efficient fixtures, fittings, equipment, or appliances
   c. Purchase of leak detection devices and equipment
   d. Purchase of water meters, meter reading equipment and systems, and pipe
   e. Construction and installation activities that implement capital water efficiency projects.
   f. Costs associated with development of a water conservation plan if required as a condition of DWSRF assistance.

III. Water efficiency projects can be stand alone projects. They do not need to be part of a larger capital improvement project.

IV. Examples of projects include, but are not limited to**:**
   a. Installation of water meters or automated meter reading systems
   b. Retrofit or replacement of water using fixtures, fittings, equipment or appliances (can include rebate programs)
   c. Distribution system leak detection equipment
   d. Replacement or rehabilitation of distribution lines (requires business case)

Water efficient fixtures
Many water efficient projects such as the installation or retrofit of water efficient devices are categorically eligible for green reserve. Water efficient fixtures include low flow shower heads, toilets, and other plumbing devices designed to use less water. See Tracy Mehan's memo at http://www.epa.gov/safewater/dwsrf/pdfs/memo_dwsrf_policy_2003-07-25.pdf (DWSRF 03-03, issued 7/25/03).

Leak detection equipment
In general, leak detection equipment is categorically eligible for the GPR of the DWSRF.

Water line replacement projects (i.e. replacing leaking pipes)
Some water line replacement projects may be considered eligible under the GPR if they make a sufficient business case for their efficiency benefits. This business case should provide specific data documenting water loss (at minimum, systemwide, or more localized data if available), should identify the length, C-values, pipe material, diameter, and provide a general description of position within system, of pipes being rehabilitated/replaced, and should document that the pipes to be replaced are the primary source of water loss (if such data is available). At a minimum, the business case should provide specific information on the basis for rehabilitation/replacement of the pipes covered in the project, such as pipe age and type, and any relevant break repair or other maintenance records. This information should give a reasonable basis to expect that the pipes proposed for replacement are likely to generate the largest return in leak reduction for the size of the project. Thus, a pipe replacement project based essentially on useful life assessments, without more, would not be eligible. Finally, if energy efficiency is relevant to project qualification as "green", the business case should provide any available documentation regarding expected increases in energy efficiency as explained in Attachments to EPA's March 3 SRF ARRA Guidance (at http://www.epa.gov/water/eparecovery/docs/2009-03-02_Final_ARRA_SRF_Guidance.pdf), for such traditional projects as pipe replacement, the state will have to document the business case in the project file to demonstrate the substantial (not incidental) water or energy efficiency benefits of the project in order to qualify the project or eligible portion to use GPR funding.

Installing water meters

A project for the installation of water meters in a previously unmetered water system is categorically green, with the simple caveat that such projects would also need to include a commitment by the PWS to bill a metered rate based on consumption.

A project that proposes to replace existing water meters with newer water meters is not categorically green, and a business case is required to identify and document briefly any water and/or energy efficiency improvements from such replacement. Because a metered system would have already seen its water conservation benefits, installing new water meters would not affect the water efficiency of the system, unless the system can demonstrate that the existing water meters are substantially malfunctioning as part of a business case. Projects to replace existing water meters with automated meter reading systems also require a business case, as a type of meter replacement project as described above.

OTHER ENVIRONMENTALLY INNOVATIVE ACTIVITY

PWS Name: _____ PWSID: _____

Project Name: _____

Total Est. Project Cost: _____ Total Est. Green Reserve Amount: _____

Project Summary:

Business Case Narrative:

Attached Supporting Documentation

☐ Engineering Project Planning Documents ☐ Water/Energy Efficiency Determination (OEPA)

☐ Public Water System Records ☐ Other: _____