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:** ________________________________
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: ________________

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**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, evaportranspiring 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:_______________

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**Project Summary:**

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**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)

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**Attach Supporting Documentation**

- [ ] Engineering Project Planning Documents
- [ ] Water/Energy Efficiency Determination (OEPA)
- [ ] Public Water System Records
- [ ] Other: ____________________________
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 2, 2009 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

Reason for replacement?

Original Installation  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   - [ ] Water/Energy Efficiency Determination (OEPA)
- [ ] Public Water System Records   - [ ] Other: ________________________________
Water Efficiency:

I. Water efficiency is the use of improved technologies and practices to deliver equal or better services with less water.

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 2, 2009 SRFARRA 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: ____________________________