

Clean Water State Revolving Fund Project Types

Water Efficiency

- Water meters
- Plumbing fixture retrofits or replacement
- Water efficient appliances
- Water efficient irrigation equipment (e.g., moisture and rain sensing equipment)
- Education programs
- Incentive programs (e.g., rebates for installing rain barrels or permeable surfaces)

Water Reuse and Precipitation Harvesting

- Collection and treatment systems (e.g., wastewater, stormwater, and subsurface drainage water collection and treatment)
- Distribution lines to support water reuse and the use of harvested precipitation
- Transmission lines, injection wells, and green infrastructure infiltration systems for groundwater recharge
- Equipment to reuse reclaimed water
- Direct potable reuse

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Gray Infrastructure

- Traditional pipe, storage, and treatment systems
- Real-time control systems for CSO management
- Sediment controls including:
 - Filter fences
 - Storm drain inlet protection
 - Street sweepers
 - Vacuum trucks

Green Infrastructure

- Green roofs, green streets, and green walls
- Rainwater harvesting collection, storage, management, and distribution systems
- Real-time control systems for harvested rainwater
- Infiltration basins
- Constructed wetlands, including surface flow and subsurface flow (e.g., gravel) wetlands
- Bioretention/bioswales (e.g., rain gardens, tree boxes)
- Permeable pavement
- Wetland/riparian/shoreline creation, protection, and restoration
- Establishment/restoration of urban tree canopy
- Replacement of gray infrastructure with green infrastructure including purchase and demolition costs

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Cropland Activities

- Manure injection equipment
- Manure spreaders
- Water efficient irrigation equipment
- Conservation tillage equipment
- Windbreaks
- Sediment control basins
- Terraces
- Diversions
- Buffer and filter strips
- Rip-rapping
- Streambank stabilization
- Chemical use reduction (e.g., chemical spray equipment and chemical storage containment structures)

AFO Activities

- Livestock/milk house waste management systems
- Manure containment structures
- Vessel composters
- Manure injection equipment
- Well sealing and water diversions to avoid feedlots
- Fencing/alternative water supply for animals to keep them out of water bodies

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Shoreline Activities	Instream Activities	Invasive Species Control
<ul style="list-style-type: none">• Re-establishing riparian vegetation• Wetlands development or restoration• Living shorelines• Swales• Filter Strips• Barrier beach and dune systems	<ul style="list-style-type: none">• Re-establishing aquatic vegetation• Restoring oyster/mussel beds• Artificial reef establishment• Fisheries and shellfish restocking and restoration• Fish ladders• Removal of contaminated sediments• Water control structures for flow regime and salinity• Dam removal• Culvert removal	<ul style="list-style-type: none">• Equipment to remove or prevent the spread of invasive species

Silviculture

Silviculture includes forestry activities such as removal of streamside vegetation, road construction and use, timber thinning and harvesting, and site preparation for the planting of trees. Eligible water quality projects that remediate or prevent pollution from silviculture activities include capital projects, or portions of projects, that control erosion from access roads, maintain the stability of stream banks, ensure the revegetation of harvested areas, and control the introduction of pesticides and fertilizers into waterways. The purchase of forested land for water quality purposes is also eligible (see *Surface Water Protection and Restoration*).

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TABLE 3.1: Category 1 – Treatment	
<i>Example Projects</i>	
<ul style="list-style-type: none"> • New facilities or portions of facilities, including: <ul style="list-style-type: none"> ○ Mixers/Flocculation/Sedimentation ○ Filtration ○ Chemical addition systems and equipment ○ Disinfection ○ Filter backwash recycling ○ Residuals handling ○ On-site generation of disinfectants ○ Corrosion control infrastructure • Upgrades, rehabilitation or replacement of facilities or portions of facilities • Potable reuse or reuse that mitigates the need for additional potable supply • Desalination plants • Raw water storage that is part of the treatment process and located on the property where the treatment facility is located • Point of access or point of use treatment devices (i.e. filters) are only eligible if the device is the compliance treatment technology and the devices are owned and maintained by the public water system 	

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TABLE 3.2: Category 2 – Transmission and Distribution	
<i>Example Projects</i>	
<ul style="list-style-type: none"> • Installation, replacement or rehabilitation of infrastructure to improve water pressure to safe levels or to prevent contamination caused by non-potable liquids entering the system through leaks or pipe breaks <ul style="list-style-type: none"> ○ Transmission mains ○ Distribution mains ○ Meters (e.g., flow meters, customer meters, master meters) ○ Appurtenances (e.g., valves, hydrants, pipe restraints) ○ Pump stations • Service line replacements, regardless of pipe material and ownership of the property on which the service line is located⁶ (service line can be replaced up to premise plumbing⁷) • New water main extensions to serve existing residents not served by a safe supply of potable water (this includes installation of the service line up to premise plumbing) • Reclaimed wastewater effluent and water reuse infrastructure and distribution systems (aka “purple pipe”) where such infrastructure mitigates the need for additional potable supply 	

⁶ There are many mechanisms in which a community could fund replacing the privately owned portion of a service line, such as a rebate program or directly funding construction if a temporary easement is obtained. Some states or communities may have law(s) that prohibit funding projects on private property.

⁷ For more detailed explanation, please refer to U.S. EPA’s May 9, 2016, memorandum from Anita Maria Thompkins, Director, Drinking Water Protection Division: “Clarification of Drinking Water State Revolving Fund Eligibility of Service Line Replacement on Private Property”

TABLE 3.3: Category 3 – Source

Example Projects

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- Development of new sources to replace a contaminated drinking water source or to increase drought resilience
- Raw water intakes, wells or other constructed infrastructure that allows for movement of raw water into the treatment plant or into the distribution system
- Alternative supply in case of emergency or drought, such as:
 - Interconnections
 - Surface water intakes
 - Ground water wells
- Aquifer storage and recovery (ASR) system for water storage (e.g., part of a reclaimed water system), including:
 - Wells
 - Pumps
 - Pipes
 - Wellhead structures
- Riverbank filtration wells
 - Plugging abandoned wells when new replacement wells are drilled

TABLE 3.4: Category 4 – Storage

Example Projects

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- New storage or replacement/rehabilitation of existing structures to continue to maintain compliance and protect public health by:
 - Preventing microbiological contaminants from entering a public water system
 - Equalizing water demands
 - Reducing pressure fluctuations in the distribution system
 - Providing reserves when power outages and other emergencies occur
 - Storing water for reclaimed water (aka “purple pipe”) systems
 - Providing drought resiliency

TABLE 3.5: Category 5 – Consolidation

Example Projects

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- Purchase of a water system and all of its assets (including land and water rights)
- Interconnection of systems:
 - to resolve SDWA noncompliance
 - to achieve the technical, managerial and financial capacity needed to prevent noncompliance
 - to reduce the overall per household cost of service
 - for drought resiliency

Note – consolidation projects cannot be for growth purposes

TABLE 3.6: Category 6 – Creation of New Systems
<i>Example Projects</i>
<ul style="list-style-type: none"> • Projects which upon completion will create a community water system to address existing public health problems with serious risks caused by unsafe drinking water provided by individual wells or surface water sources <ul style="list-style-type: none"> ○ Projects to address existing public health protection problems associated with individual wells or surface water source must be limited in scope to the specific geographic area affected by contamination • Projects that create a new regional community water system to eliminate individual systems with technical, managerial and financial difficulties

In general, unless a project is expressly prohibited by statute or regulation, it is likely eligible for DWSRF assistance as long as it addresses present or prevents future violations of health-based drinking water standards. When in doubt contact your EPA Regional DWSRF coordinator. Some types of eligible projects may cut across two or more of the categories above. Examples of such eligible projects for a few select types of projects are presented below (Note: projects listed above could also fall into these categories).

TABLE 3.7: Examples of Water Security Projects
<ul style="list-style-type: none"> • Installation of security measures to protect infrastructure and prevent vandalism or purposeful contamination of the drinking water, such as: <ul style="list-style-type: none"> ○ Fencing and gates ○ Lighting ○ Cameras ○ Closed circuit television

TABLE 3.8: Examples of Energy Efficiency Projects
<ul style="list-style-type: none"> • Energy efficient retrofits, upgrades or new pumping systems and treatment processes • Pump refurbishment to optimize pump efficiency • Pipe projects that prevent water loss. • Projects that result from an energy efficiency related assessment • Renewable energy projects, which are a part of a public health project, such as wind, solar, geothermal and micro-hydroelectric that provide power to a utility • Utility energy management planning, including energy assessments, energy audits and optimization studies • Additional eligible energy efficiency projects are listed in Appendix B “Sustainability: Examples of Resilience and Green Projects”

TABLE 3.9: Examples of Other Capital Projects

- Purchase of spare parts in conjunction with an initial capital project, as is customary during normal course of business
- Large capital equipment purchases, such as:
 - Supervisory control and data acquisition (SCADA) systems
 - Leak detection devices and equipment
 - Stand-by power generators and associated accessories
 - Database infrastructure or software (e.g., asset management systems, inventory tracking software)
- Vehicles used solely (or funding appropriately proportioned) for the project under which they were funded
- Administration buildings for the water system (which could include billing offices, laboratories, control centers, engineering departments and other water system offices) that the water system uses solely for its own management (or the DWSRF financial contribution can be prorated for the space used by the water system), including the land on which they are situated
- Decommissioning/deconstructing old facilities to make way for new facilities
- Acquisition of existing infrastructure (e.g., purchase a finished water reservoir from another community)
- Purchase of land or other infrastructure required as part of cross-cutter mitigation implementation

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In addition, other activities eligible for an assistance agreement could include planning and design, water utility audits, leak detection studies, identification of service line materials, optimization studies, drought contingency plans, and other evaluations that might results in a capital project or in a reduction in demand to alleviate the need for additional capital investment.

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3.4 **Ineligible Projects**⁸

The following projects are ineligible for DWSRF assistance. Deviations are possible for any except those projects explicitly prohibited by statute, as discussed further below.

- Construction or rehabilitation of dams
- Purchase of water rights, unless the water rights are owned by a system to be purchased for consolidation as part of a capacity development strategy

⁸ 40 CFR 35.3520(e)

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- Regionalization/interconnections/partnerships
- Communications/telemetry
- Energy efficient equipment upgrades
- Salt water resistant equipment/tanks
- Larger capacity water storage tanks
- Backflow prevention (including backsiphonage or backpressure)
- Relocation or deepening of wells/new water source
- Planning and assessment activities

For additional information about becoming more resilient to flooding, refer to the EPA's "Flood Resilience: A Basic Guide for Water and Wastewater Utilities" released in 2014 (https://www.epa.gov/sites/production/files/2015-08/documents/flood_resilience_guide.pdf).

Note on new Federal Flood Risk Management Standard. In 2014, a federal interagency task force developed new Federal Flood Risk Management Standards for federally-funded projects, published as Presidential Executive Order 13690, revising standards in Executive Order 11988, Floodplain Management. These federal flood risk management standard has two main improvements: 1) encourage, but not mandate, the use of natural features and nature-based approaches in development of alternatives and 2) provide a higher vertical elevation and corresponding floodplain, where appropriate, to address current and future flood risks. For the second improvement, any construction or substantial improvements in or affecting a floodplain must use one of three approaches for determining the elevation and corresponding flood hazard area: a) "Climate-Informed Science Approach" – using models and data that incorporate forecasting based on climate science, b) freeboard (base flood elevation + X) – where X is 2 feet or 3 feet if deemed a critical action (a critical action being any activity for which even a slight chance of flooding would result in significant impact) or c) 500-year floodplain.

Part A.2 – Drought/Loss of Water Supply

During any given year, drought conditions are occurring in at least one region of the country. The start, severity and duration of drought for a particular area is not disposed to forecasting. Impacts to drinking water systems can include a reduced or lack of raw water source, lack of system pressure, pipe breaks from soil shrinkage and land subsidence, and loss of recharge capability or capacity for recovery. In general, water management practices, techniques and equipment that use less water will help reduce demand on existing supplies before drought conditions even occur, making drought conditions to some degree more manageable.

Examples of drought mitigation projects:

- Drought related assessment and planning efforts

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- Drought contingency plans
- Wells – additional, replacement, deepening and rehabilitation; new pumps for deeper wells
- Intakes – reposition, relocation, elevation, alternative, backup
- Interconnection to other water systems
- Integrate water and wastewater utilities (restructure utility for viability)
- Water recycling and water reuse (including storm water reuse) – includes projects that replace potable sources with non-potable sources, reclaimed wastewater effluent systems (treatment, distribution and storage), filter backwash recycling
- Source water protection – purchase recharge area, implementation of protective measures, including permeable surfaces
- Water audits, Leak detection studies
- Pipe replacement/repair
- Booster pumping – to move water to where it is needed (e.g., from new source, from another system or from another pressure zone)
- Finished water storage
- Failing equipment replacement (such as pumps)
- Treatment for alternative sources with differing water quality

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Part A.3 – Other Extreme Events

In addition to flooding and drought, there are other extreme events that resilience projects would protect or mitigate the effects of, including tornados, earthquakes, forest fires, sea level rise, accidents and deliberate attacks. Many of the examples of resilience projects listed above would be applicable in other such situations.

Examples of Other Mitigation Projects (not previously listed):

- Integrated water resources management planning – life cycle costs are minimized which enables communities to adopt more efficient and cost-effective infrastructure solutions
- Renewable energy supply
- Vulnerability assessments, adaptation plans, extreme weather mitigation plans
- Strengthening facility and operational security – fencing, cameras
- Harden control facilities, transmission mains, pump stations and storage facilities
- Install/replace earthquake shutoff valves and other pertinent valves

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PART B – GREEN PROJECTS

States were required under the ARRA and FY 2010 and FY 2011 Appropriations Acts to apply a percentage of that year's DWSRF appropriation to "green" projects or "green" components of projects, called the Green Project Reserve (GPR). GPR projects are defined as green infrastructure,

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water efficiency, energy efficiency and environmentally innovative. While a green program has been discretionary under the DWSRF since FY 2012, states can develop their own green programs and include the criteria for “green” projects in the state’s Intended Use Plan. States can also choose to utilize the EPA’s previous GPR guidance, created for FY 2010 and FY 2011 funds. Please note that the EPA has refined its green project framework so that:

- (1) Business cases are no longer required for projects beyond meeting FY 2010 and FY 2011 grant requirements.
- (2) Any water loss reduction or energy savings in DWSRF projects that a state or water system determines is significant to be addressed will serve to characterize those projects or project components as “green.”

DWSRF funds may be used for various green projects, including assessments and equipment that promote conservation of water or energy resources. These may be stand-alone projects or may be aspects incorporated into a larger infrastructure project. Common DWSRF core projects often already include green elements and states can identify these elements to count them toward their green program. Green elements should be incorporated into projects from their inception and evaluated during the planning and design phases.

A detailed list of example projects and criteria for green projects and project components is provided below.

Part B.1 – Green Infrastructure

Definition: Water management techniques that protect, restore or simulate the natural hydrology. Green infrastructure can range in scale from site design approaches such as green roofs and pervious pavement to regional planning approaches such as conservation of large tracts of open land.

Criteria:

- Improvement in source water quality and/or quantity
- Maximization of reliance on natural hydrologic functions

Examples of Wet Weather Management Projects:

The following types of projects, done at a utility-owned facility or as part of a water infrastructure project, are considered “green” if they are a part of an eligible DWSRF project:

- Pervious or porous pavement
- Bioretention
- Green roofs

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- Rainwater harvesting/cisterns
- Gray water use
- Xeriscape or drought resistant landscaping
- Landscape conversion programs
- Retrofitting or replacing existing irrigation systems with moisture and rain sensing equipment

Part B.2 – Water Efficiency

Definition: The EPA defines water efficiency as the use of improved technologies and practices to deliver equal or better services with less water. Water efficiency encompasses conservation and reuse efforts, as well as water loss reduction and prevention, to protect water resources for the future.

Criteria:

- Water efficiency can be accomplished through water saving elements or reducing water consumption. This will reduce the amount of water taken out of rivers, lakes, streams, ground water or from other sources.
- Water efficiency projects should deliver equal or better services with less net water use as compared to traditional or standard technologies and practices.
- Efficient water use often has the added benefit of reducing the amount of energy required by a drinking water system, since less water would need to be treated and transported; therefore, there are also energy and financial savings.
- Proper water infrastructure management should address where water losses could be occurring in the system and fix or avert them. This could be achieved, for example, by making operational changes or replacing aging infrastructure.
- Note: Many of these project types can also be funded by the Clean Water SRF, such as water meters, water efficient fixtures and reclaimed water systems.

Examples of Water Efficiency Projects:

- Any distribution pipe replacement or rehabilitation that will reduce water loss and prevent water main breaks (see AWWA M28 *Rehabilitation of Water Mains*)
- Water meter replacement with traditional water meters (see AWWA M6 *Water Meters – Selection, Installation, Testing and Maintenance*)
- Storage tank replacement/rehabilitation to reduce water loss
- New water efficient landscape irrigation system (where there currently is not one)
- Installing or retrofitting water efficient devices such as plumbing fixtures and appliances
 - (a) For example – showerheads, toilets, urinals and other plumbing devices
 - (b) Implementation of incentive programs to conserve water such as rebates
 - (c) [WaterSense](#) labeled products

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- Installing any type of water meter in previously unmetered areas:
 - (a) If rate structures are based on metered use
 - (b) Can include backflow prevention devices if installed in conjunction with water meter
- Replacing existing broken/malfunctioning water meters with:
 - (a) Automatic meter reading systems (AMR), for example:
 - (i) Advanced metering infrastructure (AMI)
 - (ii) Smart meters
 - (b) Meters with built in leak detection capability
 - (c) Water meters in conjunction with backflow prevention devices
- Retrofitting/adding AMR capabilities or leak equipment to existing meters (not replacing the meter itself)
- Conducting water utility audits, leak detection studies and water use efficiency baseline studies, which might result in a capital project or in a reduction in demand to alleviate the need for additional capital investment
 - (a) Funded through set-asides: Small Systems Technical Assistance, State Program Management – Capacity Development or Local Assistance & Other State Programs – Capacity Development; where consistent with the state capacity development strategy
 - (b) For standard practices, see AWWA M36 *Water Audits and Loss Control Programs*
 - (c) Free Water Audit Software, Version 4.1 (2010)
- Developing conservation plans/programs which might result in a water conserving capital project or in a reduction in demand to alleviate the need for additional capital investment
 - (a) Funded through set-asides: Small Systems Technical Assistance, State Program Management – Capacity Development or Local Assistance & Other State Programs – Capacity Development; where consistent with the state capacity development strategy
 - (b) For standard practices, see AWWA M52 *Water Conservation Programs – A Planning Manual*
- Reclaimed wastewater effluent, recycled water and water reuse projects that replace potable sources with non-potable sources
 - (a) Gray water, condensate and rainwater reuse systems (where local codes allow the practice)
 - (b) Reclaimed wastewater effluent systems
 - (c) Distribution systems and storage associated with water reuse and recycling
- Retrofit or replacement of existing landscape irrigation systems that use potable water to more efficient landscape irrigation systems, including moisture and rain sensing controllers
- Projects that result from a water efficiency related assessments (such as water audits, leak detection studies, conservation plans, etc.) as long as the assessments adhered to the standard industry practices referenced above
- Distribution system leak detection equipment (portable or permanent)

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- Automatic flushing systems (portable or permanent)
- Pressure management
 - (a) Pressure reducing valves (PRVs) in areas with excessive pressures
 - (b) Pressure management studies/projects to reduce leaking pipes, pipe failures and impacts of pressure surges
- Internal plant water reuse (such as backwash water recycling)
- Educational activities and demonstration projects for water or energy efficiency (such as rain gardens)

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Part B.3 – Energy Efficiency

Definition: Energy efficiency is the use of improved technologies and practices to reduce the energy consumption of water projects, use energy in a more efficient way and/or produce/utilize renewable energy to reduce water system expenditures.

Criteria:

- Projects should include products and practices which will decrease environmental impacts, such as reducing greenhouse gas emissions and provide financial savings.
- Projects should include approaches to integrate energy efficient practices into daily management and long-term planning (<https://www.epa.gov/sustainable-water-infrastructure/energy-efficiency-water-utilities>).
- Operator training in conjunction with any energy savings project is strongly encouraged in order to maximize the energy savings potential.

Examples of Energy Efficiency Projects:

- Energy efficient retrofits, upgrades or new pumping systems and treatment processes (including variable frequency drives (VFDs))
- Pump refurbishment to optimize pump efficiency (such as replacing or trimming impellers if pumps have too much capacity, replacing damaged or worn wearing rings/seals/bearings, etc.)
- Projects that result from an energy efficiency related assessments (such as energy audits, energy assessment studies, etc.), that are not otherwise designated as categorical
- Projects that cost effectively eliminate pumps or pumping stations
- Projects that achieve the remaining increments of energy efficiency in a system that is already very efficient
- Upgrade of lighting to energy efficient sources (such as metal halide pulse start technologies, compact fluorescent, light emitting diode, etc.)

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- Automated and remote control systems (SCADA) that achieve substantial energy savings (see *AWWA M2 Instrumentation and Control*)
- Renewable energy projects, which are part of a public health project, such as wind, solar, geothermal and micro-hydroelectric that provide power to a utility (micro-hydroelectric projects involve capturing the energy from pipe flow)
 - (a) Locate utility-owned renewable energy projects can be located on-site or off-site
 - (b) Includes the portion of a publicly owned renewable energy project that serves the utility's energy needs
 - (c) Must feed into the grid that the utility draws from and/or a direct connection exists
 - (d) For more information, visit EPA's clean energy [website](#).
- Utility energy management planning, including energy assessments, energy audits, optimization studies and sub-metering of individual processes to determine high energy use areas, which might result in energy efficiency capital projects or in a reduction in demand to alleviate the need for additional capital investment
 - (a) Funded through set-asides: Small Systems Technical Assistance, State Program Management – Capacity Development or Local Assistance & Other State Programs – Capacity Development; where consistent with the state capacity development strategy
 - (b) For standard energy management practices, see *Ensuring a Sustainable Future: An Energy Management Guidebook for Wastewater and Water Utilities*, located at <http://efcnetwork.org/wp-content/uploads/2013/08/Ensuring-a-Sustainable-Future.pdf>
 - (c) [Energy Efficiency Step-By-Step Guide](#)
 - [National Electric Manufacturers Association](#) (NEMA) Premium energy efficiency motors
- Educational activities and demonstration projects for water or energy efficiency (such as rain gardens)
- Using existing tools such as [Energy Star's Portfolio Manager](#) or Check Up Program for Small Systems ([CUPSS](#)) to document current energy usage and track anticipated savings