Indiana Finance Authority
State Revolving Fund Loan Program

Green Project Reserve and Extreme Weather Incentives

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CIFA SRF Workshop

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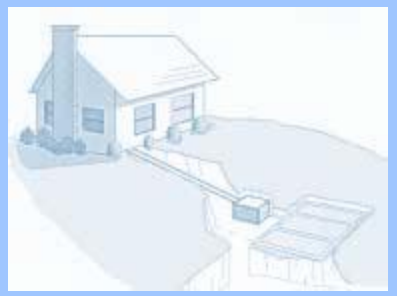
GPR and Extreme Weather Incentives

- How did we get here? NPS and GPR
- ***Current*** GPR Categories and Examples
- 2014 National Climate Assessment
- Why Extreme Weather Resiliency is Important
  - Increase in temperatures
  - Increase in precipitation
- ***New*** categories considered for the existing GPR checklist
- Extreme Weather Resiliency Examples
- Interest Rate Break Calculation

Nonpoint Source Incentives

- Starting in 2004, communities with “traditional” treatment works projects could add an eligible NPS project and receive up to 0.50% off the interest rate for the whole loan.
- $233 million in NPS work across 58 different loans since SFY 2004.
- Approximately 14,000 failing septic systems removed from service. Projects also included Brownfield remediation and stormwater best management practices.



GPR Categories

- Green Infrastructure
- Energy Efficiency
- Water Efficiency
- Environmentally Innovative
- **Extreme Weather Resiliency**

GPR Examples

Clean Water

Category 1: Green Infrastructure	Category 2: Water Efficiency	Category 3: Energy Efficiency	Category 4: Environmentally Innovative
Pervious or Porous Pavement, Rain Gardens, Bioretention	Installation of Water Efficient Plumbing Fixtures, UV Disinfection systems (typically replacing chlorination/dechlorination systems)	Variable Frequency Drives (VFDs), Supervisory Control and Data Acquisition (SCADA), Sewer Rehabilitation (Sewer and Manhole Lining)	Treated Effluent Water Reuse, Ductile Iron Pipe

GPR Examples

Drinking Water

Category 1: Green Infrastructure	Category 2: Water Efficiency	Category 3: Energy Efficiency	Category 4: Environmentally Innovative
Pervious or Porous Pavement	Installation of Water Efficient Plumbing Fixtures, Water Meter Installation in previously unmetered areas	Premium efficiency motors, Variable Frequency Drives (VFDs), Light Emitting Diode (LED) lighting	Water Main Replacement using Ductile Iron pipe, which contains 85% recycled materials

2014 National Climate Assessment

The National Climate Assessment summarizes the impacts of climate change on the United States, now and in the future.

A team of more than 300 experts guided by a 60-member Federal Advisory Committee produced the report, which was extensively reviewed by the public and experts, including federal agencies and a panel of the National Academy of Sciences.

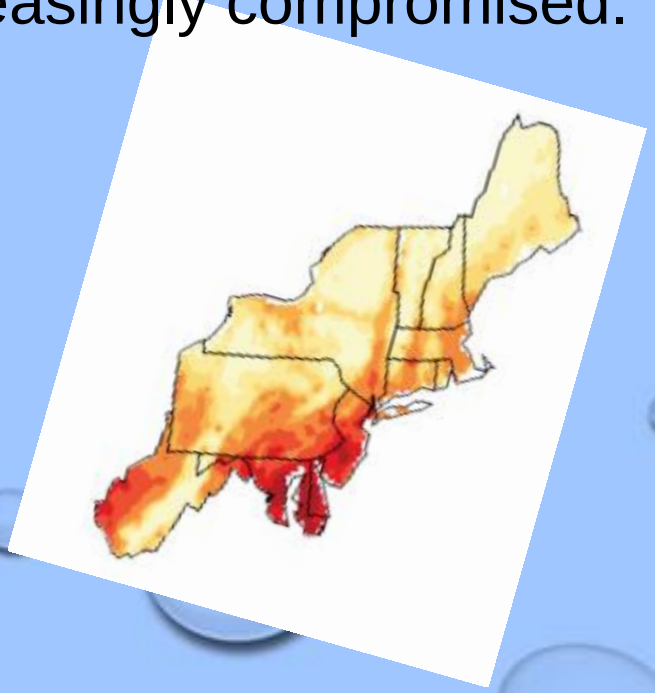
GlobalChange.gov
U.S. Global Change Research Program

2014 NCA Summary

NORTHEAST

Heat waves, heavy downpours, and sea level rise pose growing challenges to many aspects of life in the Northeast. Infrastructure, agriculture, fisheries, and ecosystems will be increasingly compromised.

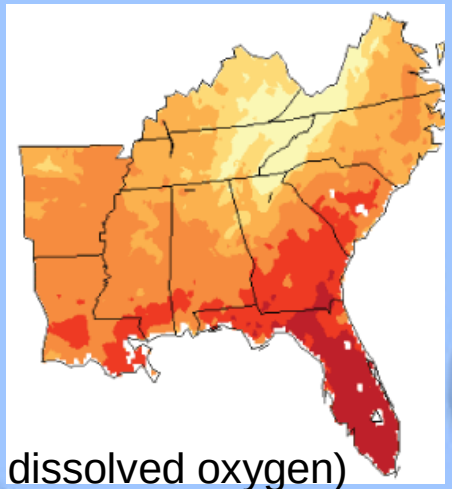
- Physical Flood Barriers
- Deeper intake levels in reservoirs
- Additional groundwater storage
- Additional well fields



2014 NCA Summary

SOUTHEAST

Sea level rise poses widespread and continuing threats to the region's economy and environment. Extreme heat will affect health, energy, agriculture, and more. Decreased water availability will have economic and environmental impacts.



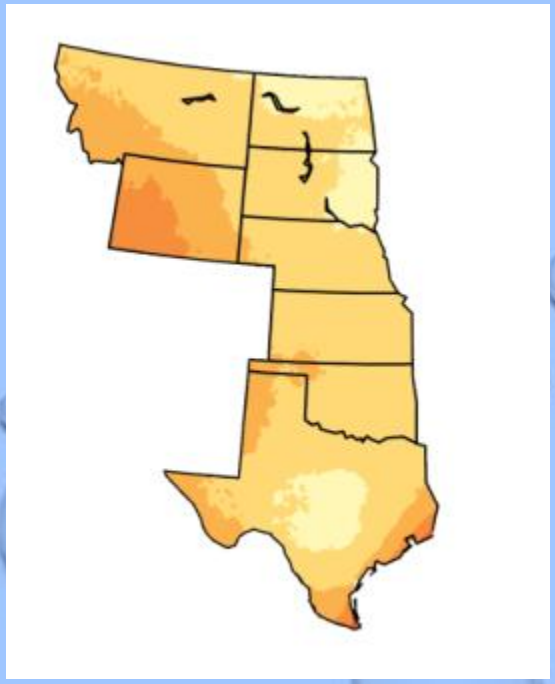
- Physical Flood Barriers
- Deeper intake levels in reservoirs
- Water conservation and reuse
- Additional treatment processes (example – increase dissolved oxygen)

2014 NCA Summary

GREAT PLAINS

Rising temperatures are leading to increased demand for water and energy. In parts of the region, this will constrain development, stress natural resources, and increase competition for water.

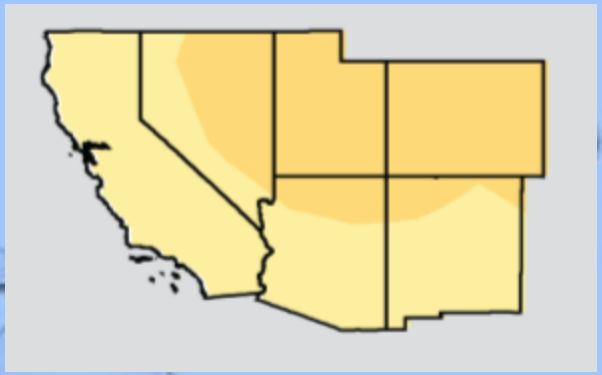
- Water conservation and reuse
- Increase water storage
- Increase source water supply



2014 NCA Summary SOUTHWEST

Increased heat, drought, and insect outbreaks, all linked to climate change, have increased wildfires. Declining water supplies, reduced agricultural yields, health impacts in cities due to heat, and flooding and erosion in coastal areas are additional concerns.

- Deeper intake levels
- Interconnections between utilities
- Additional water storage



2014 NCA Summary

NORTHWEST

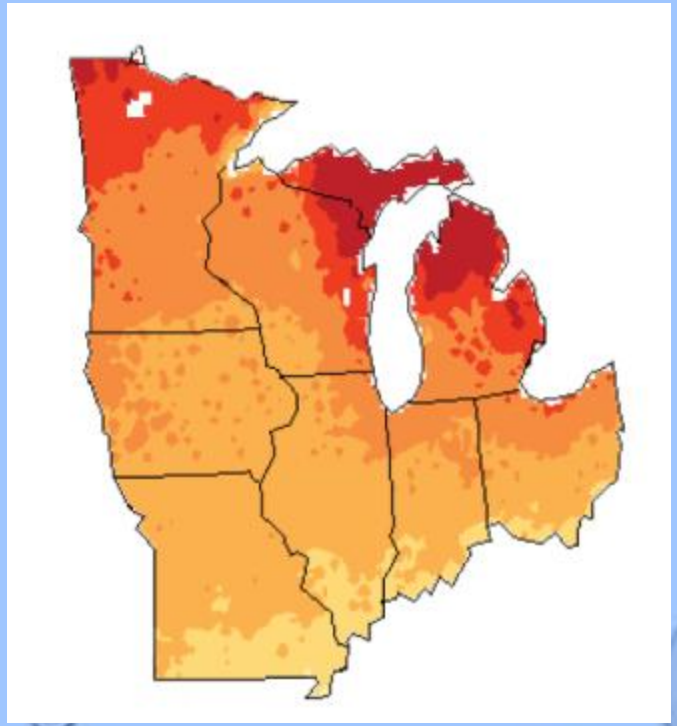
Changes in the timing of streamflow reduce water supplies for competing demands. Sea level rise, erosion, inundation, risks to infrastructure, and increasing ocean acidity pose major threats. Increasing wildfire, insect outbreaks, and tree diseases are causing widespread tree die-off.

- Water conservation and reuse
- Physical flood barriers
- Additional water storage

2014 NCA Summary

MIDWEST

Extreme heat, heavy downpours, and flooding will affect infrastructure, health, agriculture, forestry, transportation, air and water quality, and more. Climate change will also exacerbate a range of risks to the Great Lakes.

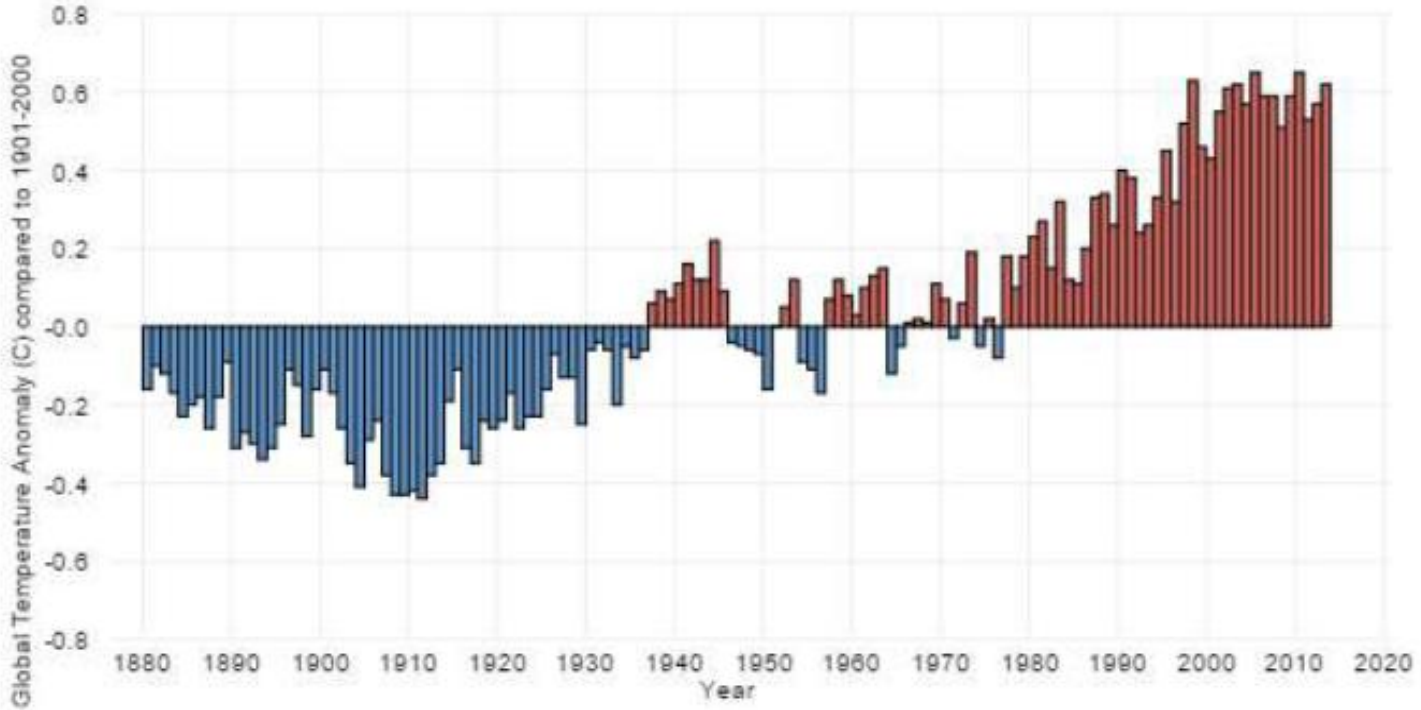


Why Extreme Weather Resiliency is Important

2014 National Climate Assessment
Key Message to the Midwest:
Increased Risks to the Great Lakes

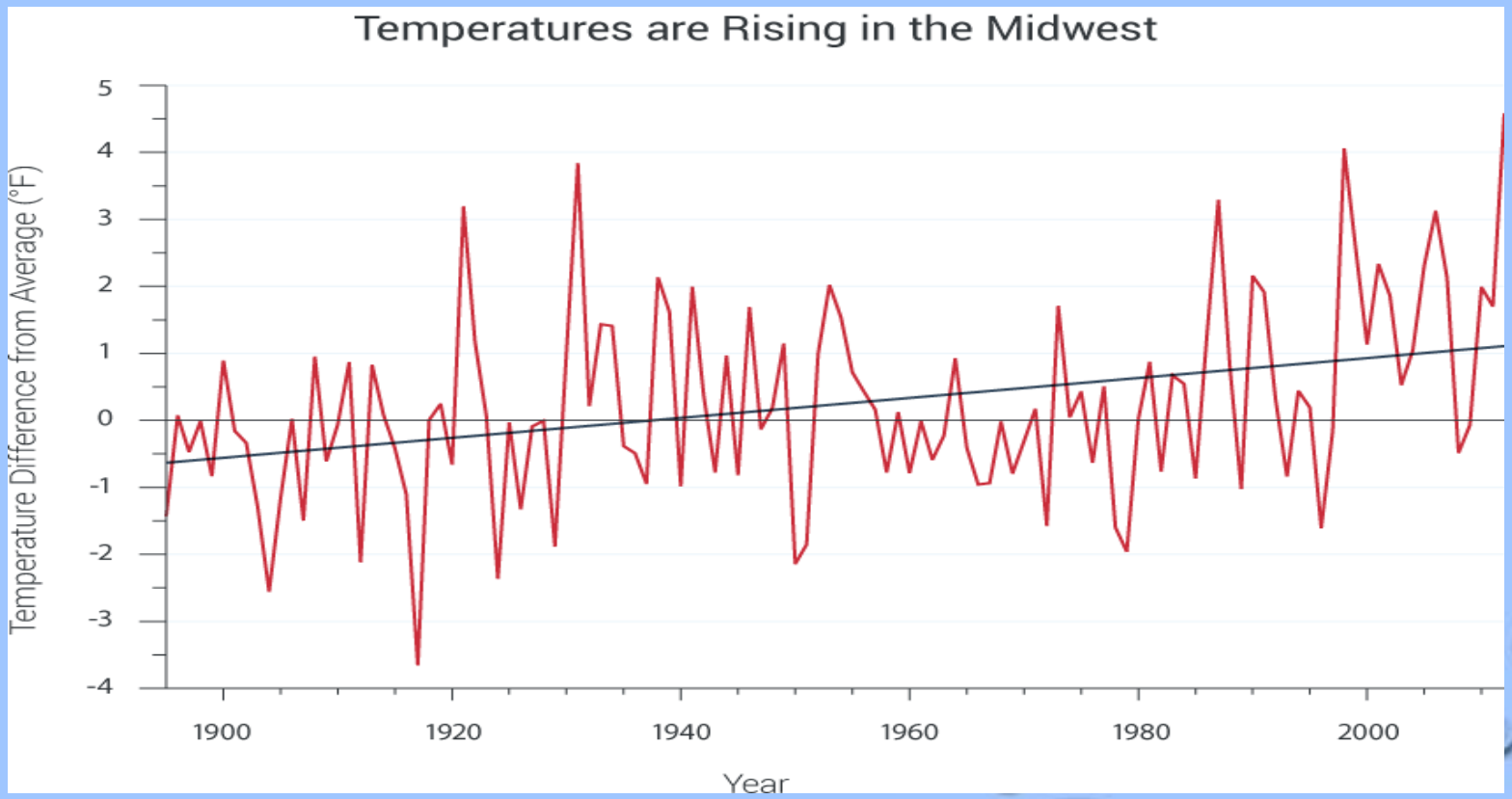
Climate change will exacerbate a range of risks to the Great Lakes, including changes in the range and distribution of certain fish species, increased invasive species and **harmful blooms of algae**, and declining beach health. Ice cover declines will lengthen the commercial navigation season.

Global Annual Temperature



Source: Climate.gov

Why Extreme Weather Resiliency is Important



Annual average temperatures (red line) across the Midwest show a trend towards increasing temperature. The trend (heavy black line) calculated over the period 1895-2012 is equal to an increase of 1.5°F. Source: 2014 National Climate Assessment

Why Extreme Weather Resiliency is Important

2014 National Climate Assessment
Key Message to the Midwest:
Increased Rainfall and Flooding

Extreme rainfall events and flooding have increased during the last century, and these trends are expected to continue, causing erosion, declining water quality, and negative impacts on transportation, agriculture, human health, and infrastructure.

Why Extreme Weather Resiliency is Important

2014 National Climate Assessment
Key Message Regarding Water Resources:
Droughts Intensify

Short-term (seasonal or shorter) droughts are expected to intensify in most U.S. regions.

Extreme Weather Resiliency Categories and Risks

New categories considered for the existing GPR checklist:

- Wet Weather Conditions – Higher intensity Rainfall Events (2008)
  - Increased Flood Risk
    - Access to site
  - Water Quality Issues
    - Non-point pollution
    - Combined Sewer Overflows
- Drought Conditions – (2012)
  - Lower Lake/Reservoir Levels
  - Reduced Groundwater Recharge

Extreme Weather Resiliency Example
Columbus, IN WWTP

2008 Flooding

Wastewater treatment plant evacuated

Surrounded by floodwater, Columbus Wastewater Treatment Plant was evacuated Friday after concerns that the roadway was deteriorating.

The Republic photo by Joe Harpring

By Nick Werner
nwerner@therepublic.com

City employees abandoned the Columbus wastewater treatment plant late Friday morning because of the rising East Fork White River.

The plant will continue to perform limited operations automatically, said Keith Reeves, director of utilities at Columbus Water and Sewage Utilities.

"It's the best we can do with the situation," he said.

The absence of plant workers will not affect functions any more than floodwaters already have, Reeves said.

Working automatically, the plant can collect only a small fraction of solid waste floating in the water.

But solids collection had already been limited because water was flowing into the plant too fast, Reeves said.

The plant's biological treatment operations are still performing, Reeves said.

During biological treatment, bacteria breaks down most organic matter.

The plant is incapable of properly treating more than 16 million gallons per day, Reeves said, and was working at capacity Friday.

All other water would flow into the river through the city's combined sewer overflows.

With as much flooding as the area has seen, contaminants have been diluted to the

(See SEWAGE on Page A5)

Extreme Weather Resiliency Example
Columbus, IN WWTP

2008 Flooding

Extreme Weather Resiliency Example
Columbus, IN WWTP

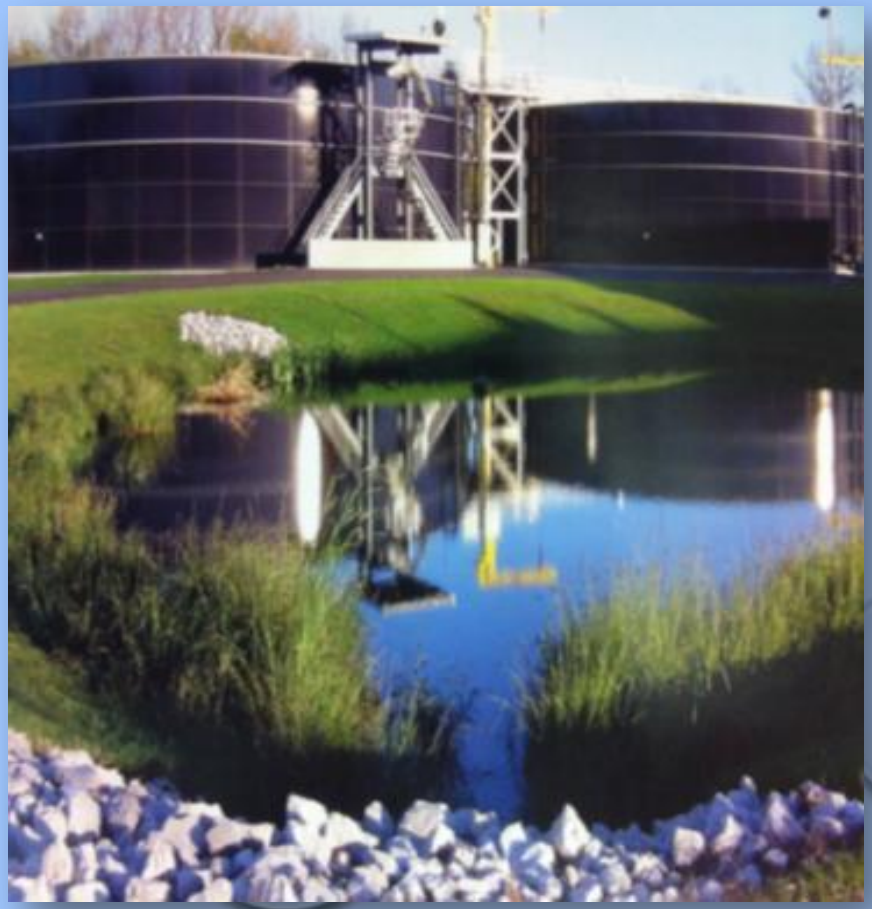
- New $56 million wastewater treatment plant in a less flood-prone location.
- Included water efficiency, energy efficiency, and green infrastructure elements.
- Received SRF funding from Indiana Finance Authority to finance project.
- Received EPA SRF Award for design and incorporation of green elements.

Extreme Weather Resiliency
Other Possible Examples in Areas Prone to Flooding

- Booster station in floodway along river bank
  - Install floodproof hatches
  - Install taller control panel or relocate control panel to higher ground
  - Install concrete bollards to minimize risk of floating debris hitting booster station
- Wells in floodway along river bank
  - Raise the wellhead above projected flood elevation
- Water Treatment Plant
  - Establish high water level response procedures
  - Install flood wall

Extreme Weather Resiliency
Other Possible Examples

- Physical Flood Barriers
- Interconnections with other utilities
- Planning Projects
  - Identify vulnerabilities
  - Develop emergency response plan
- Projects that capture and/or treat storm water
- Increase surface water storage



Current SRF Interest Rate

Wastewater SRF Interest Rates	User Rates (Over $50)	User Rates ($30 to $50)	User Rates (Under $30)
Tier III (MHI*: under $33,669)	2.00%	2.00%	2.10%
Tier II (MHI: $33,670 to $41,566)	2.00%	2.00%	2.35%
Tier I (MHI: over $41,567)	2.00%	2.10%	2.60%

** MHI reflected in 2000 Census*
Note: Up to an additional .50% reduction may be permitted if a non-point-source project is financed along with a point source project or a project that includes green/sustainable, including climate resiliency, components.

Drinking Water SRF Interest Rates	User Rates (Over $45)	User Rates ($25 to $45)	User Rates (Under $25)
Tier III (MHI*: under $33,669)	2.00%	2.00%	2.10%
Tier II (MHI: $33,670 to $41,566)	2.00%	2.00%	2.35%
Tier I (MHI: over $41,567)	2.00%	2.10%	2.60%

** MHI reflected in 2000 Census*
Note: Up to an additional .50% reduction may be permitted if a project is financed that includes green/sustainable, including climate resiliency, components.

GPR Interest Rate Break Incentive

If a loan recipient includes GPR components in their project, they may qualify for an interest rate break up to 0.5%.

To qualify, a loan recipient must:

- ✓ Submit a completed GPR checklist
- ✓ Provide description and cost
- ✓ Include a business case

Illustration of SRF Program Green Project Savings Calculation

Anytown Municipal Water Utility

	Full Credit Earned		Partial Credit Earned	
Total Debt Service - Traditional SRF Loan	$ 6,414,712.87		$ 6,414,712.87	
Total Debt Service - Up to 50 bp reduction for Green Project	$ 6,115,671.81	(1)	$ 6,204,555.63	(2)
Green Project Interest Savings	$ 299,041.06		$ 210,157.24	
Total Green Project Cost (must equal or exceed savings)	$ 500,000.00		$ 215,000.00	
Difference	$ (200,958.94)		$ (4,842.76)	

(1) 2.00% Interest Rate/ 50 bp reduction
(2) 2.15% Interest Rate / 35 bp reduction

Assumptions:
Bond Amount - $5,000,000
Term - 20 years
Traditional SRF Interest Rate - 2.50%

Indiana Finance Authority
State Revolving Fund Loan Program

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