Rock River Region
Water Resources Action Plan

Acknowledgements

PROJECT LEAD

Blackhawk Hills Regional Council
309 1st Ave, Rock Falls, IL 61071
(815) 625-3854
https://www.blackhawkhills.com

PROJECT PARTNERS

Bi-State Regional Commission
1504 3rd Ave, 3rd Fl, Rock Island, IL 61201
(309) 793-6300
https://www.bistateonline.org

North Central Illinois Council of Governments
613 W Marquette St, Ottawa, IL 61350
(815) 433-5830
https://www.ncicg.org

Region 1 Planning Council
127 N Wyman St, Ste 100, Rockford, IL 61101
(815) 319-4180
https://r1planning.org

Contents

GLOSSARY OF ABBREVIATIONS

Abbreviation	Definition
BSP	Best Stewardship Practices
BSRC	Bi-State Regional Commission
BHRC	Blackhawk Hills Regional Council
BW	Boone and Winnebago Counties Subregion
DAO	Driftless Area and Ogle County Subregion
EDO	Economic Development Organization
GATA	Grant Accountability and Transparency Act
GRL	Green River Lowlands Subregion
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
ISWS	Illinois State Water Survey
IWRC	Illinois Water Resource Center
NGO	Non-governmental Organization
NPO	Not-for-profit Organization
NCICG	North Central Illinois Council of Governments
NRGPPC	Northern Illinois Regional Groundwater Protection Planning Committee
QC	Quad Cities Subregion
RAILS	Reaching Across Illinois Library System
R1PC	Region 1 Planning Council
RPO	Regional Planning Organization
RWA	Regional Water Authority
SWCD	Soil and Water Conservation District
USDA	United States Department of Agriculture
US EPA	United State Environmental Protection Agency
WRC	Water Resources Consortium

INTRODUCTION

Over one-fifth of Earth's freshwater is found in the Great Lakes region, so for us in Northwest Illinois, accessing abundant water seems like a sure thing. However, changes in global climate, consumer demand, and population growth mean uncertainty here too. In 2006, the Illinois Department of Natural Resources (IDNR), in coordination with the Illinois State Water Survey (ISWS), established a state water supply planning program. IDNR would also designate 11 planning regions and offer financial and technical assistance to start local planning processes.

The Rock River Region water resources planning area consists of 11 counties in Northwest Illinois, involving 4 regional planning organizations (RPOs):

- Blackhawk Hills Regional Council (BHRC) - Carroll, Jo Daviess, Lee, Ogle, Stephenson, Whiteside
- Bi-State Regional Commission (BSRC) - Henry, Rock Island
- North Central Illinois Council of Governments (NCICG) - Bureau
- Region 1 Planning Council (R1PC) - Boone, Winnebago

Milestones have included:

- In 2018, ISWS released the report *Water Demand in the Rock River Water Supply Planning Region, 2010-2060*, which examined current and future water demand by sector
- Initial planning throughout the 11-county region involving RPOs, IDNR, ISWS, and other stakeholders
- Four distinct scenario planning processes

Subregions where RPOs undertook scenario planning included:

Subregion	Counties	Lead
Boone and Winnebago Counties (BWC)	Boone, Winnebago	R1PC
Green River Lowlands (GRL)	Bureau, Henry, Lee, Whiteside	BHRC, BSRC, NCICG
Quad Cities (QC)	Rock Island, Henry	BSRC
Driftless Area + Ogle County (DAO)	Carroll, Jo Daviess, Ogle, Stephenson	BHRC

Figure 1 – Subregion and RPO Locations

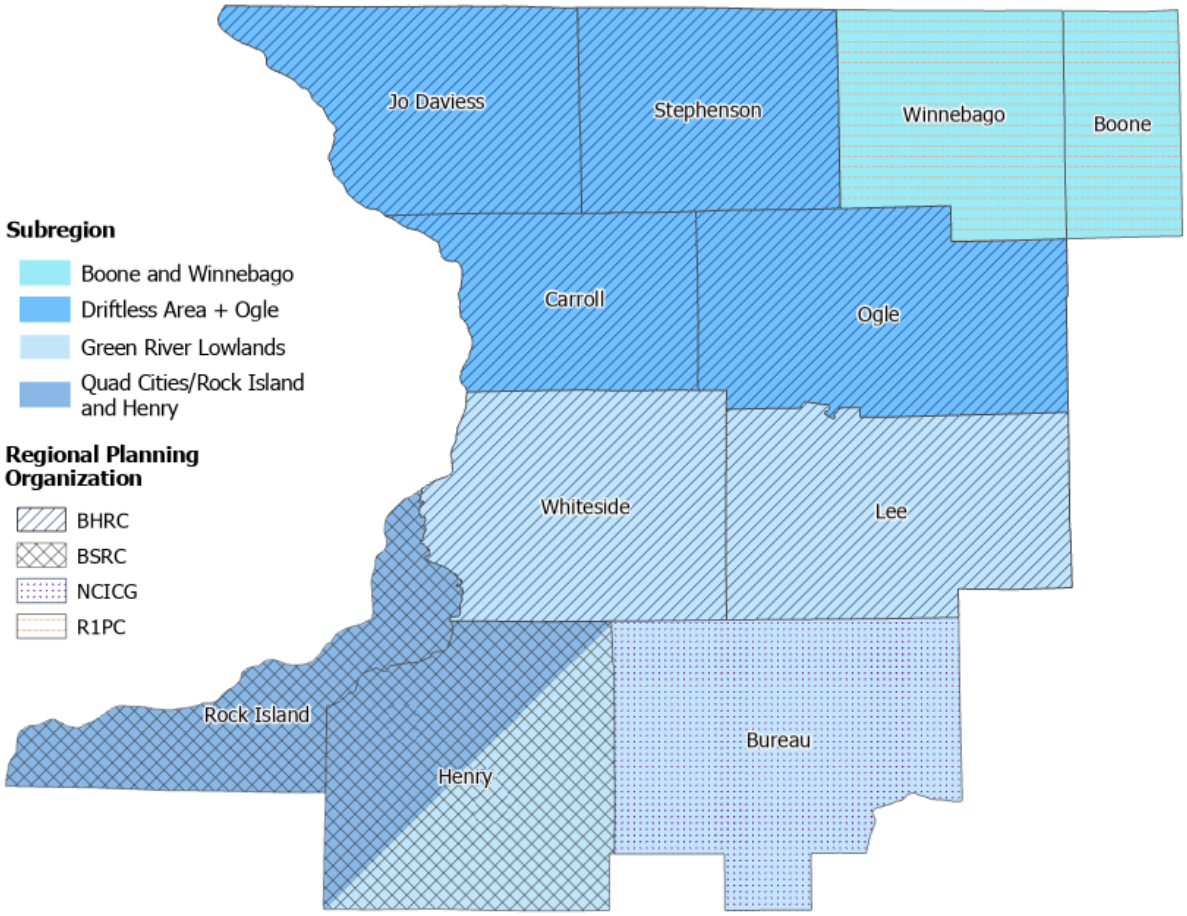


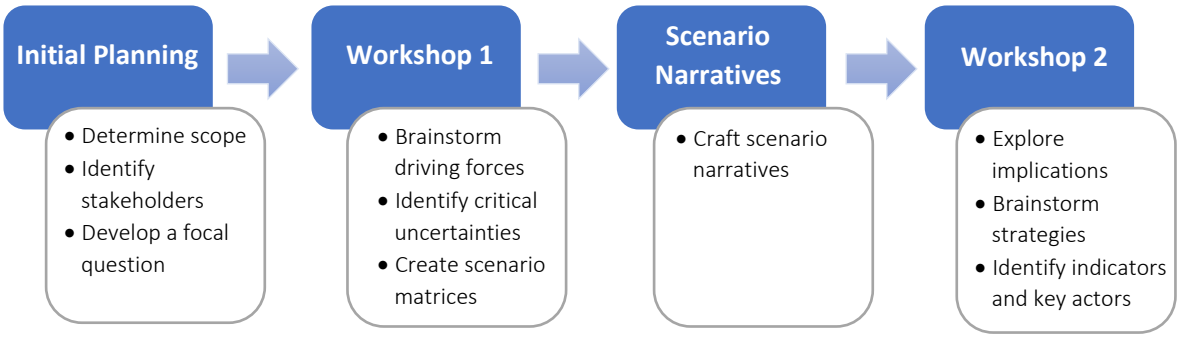
Image created in ArcGIS Pro using US Census Bureau TIGER/Line Shapefiles: Counties (and equivalent), 2024.

The Rock River Region Water Resources Action Plan (WRAP) is the product of the milestones above and other planning outputs. It offers strategies vetted by Northwest Illinois stakeholders, from experts to the general public. Communities and businesses should use WRAP to support local governments/ organizations, various constituencies/customers, and our unique natural systems/ecologies that make life here possible. From Flint to Joliet to Los Angeles, there are numerous examples of what happens to communities without an adequate, clean, or resilient water resources. It benefits us to avoid becoming a cautionary tale.

SCENARIO PLANNING SUMMARY

The full scope of scenario planning efforts can be found in BHRC's 2023 report, *Rock River Region Water Resources Planning: Scenarios for Northwest and North Central Illinois* and its 2025 addendum, *Rock River Region Water Resources Planning 2025 Addendum – Scenarios for the Driftless Area + Ogle County Subregion*. Both efforts are summarized here.

Figure 2 – Typical Scenario Planning Process

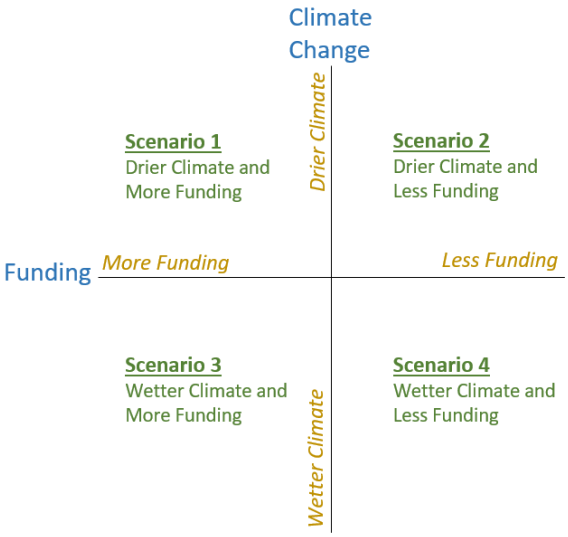


During scenario planning workshops, facilitators asked participants to brainstorm driving forces influencing the region's future water supply; these were later ranked by importance and uncertainty. Each subregion chose climate change as a top driving force. The second driving force varied as follows:

- BW - Funding/Social Value of Water
- GRL - Collective Public Response to Regulations
- QC - State/Local Budgets/Funding
- DAO - Population Change

Facilitators/participants established extremes for each driving force, creating four scenarios. Figure 3 provides an example.

Figure 3 – Example of Driving Forces and Four Scenarios



Stakeholders created these subregion scenarios:

Subregion	Scenario 1	Scenario 2	Scenario 3	Scenario 4
BW	**Funding Dries Up** Hotter/Drier Climate and Less Available Funding	**Adapting to Drought** Hotter/Drier Climate and More Available Funding	**Flooded with Trouble** Hotter/Stormier Climate and Less Available Funding	**Weathering the Storm** Hotter/Stormier Climate and More Available Funding
GRL	**Apocalypse Plow** Extreme Climate Change and Passive Response	**Risky Agribusiness** Mild Climate Change and Passive Response	**How Not to Drain Your Flagon** Extreme Climate Change and Active Response	**Greenfinger** Mild Climate Change and Active Response
QC	**Springing to Action** More Water and Funding Availability	**Moving Muddy Waters** Water Variable (Highs/Lows) and Funding Availability	**Rising Waters - No Paddle** More Water and Funding Limitations	**Water Ripples - No Boat** Water Variable (Highs/Lows) and Funding Limitations
DAO	**Dial R for Rise** Extreme Climate Change and Population Increase	**Fellowship of the Spring** Mild Climate Change and Population Increase	**Silence of the Lands** Extreme Climate Change and Population Decrease	**Dog Day Afternoons** Mild Climate Change and Population Decrease

At a later workshop, facilitators asked attendees to suggest strategies to mitigate or prevent each scenario's undesirable outcomes. RPOs then used these suggestions to shape water resources action items for the Rock River Region.

ACTION ITEMS

Note: Lead actors do much of the work to implement programs or projects. Key stakeholders are necessary for programs and projects to be especially effective.

1. Partnerships and Planning

1.1 Explore creating a water resources consortium			
Timeline	1-2 years (3-5 years with RWA)	**Lead actor(s)**	RPOs
Cost	Low (moderate with RWA)	**Key stakeholder(s)**	Businesses, conservation organizations, energy utilities, farmers, higher education, local governments, private water utilities, state/federal agencies

A water resources consortium (WRC) consists of water resources stakeholders from a particular area that provide leadership in water stewardship. They collaborate on ideas, build relationships, share resources, and champion stewardship projects. The WRC structure facilitates actions such as emergency response, hazard mitigation/resiliency planning, and technical training. WRCs streamline and expand water stewardship efforts, saving money and spreading impact.

Rock River Region RPOs should review the organization and efficacy of other WRCs to propose Northwest Illinois' own WRC framework, then present it to key stakeholders. Because WRCs lack regulatory power, the consortium should also explore combining WRC and regional water authority (RWA) functions. RWAs can regulate and permit large capacity withdrawals, responding to demand issues across governmental silos more swiftly than either individual communities or a WRC.

1.2 Improve volunteer recruitment and public engagement			
Timeline	Ongoing	**Lead actor(s)**	Project leads
Cost	Low	**Key stakeholder(s)**	Businesses, conservation organizations, energy utilities, farmers, higher education, local governments, private water utilities, state/federal agencies

Key stakeholders can collaborate through WRCs to rank priorities and develop initiatives that incorporate volunteers, especially those with particular expertise in water stewardship. Volunteer retention is helped by maintaining communication, providing progress and impact updates, and offering opportunities for development and fellowship. Existing training materials for developing recruitment and retention programs are available at the US EPA, VolunteerMatch, the Center for Community Health and Development at the University of Kansas, and the AmeriCorps Office of Research and Evaluation.

Outreach and education events can increase awareness regarding the region's specific water stewardship needs.

1.3 Adopt water stewardship goals/actions; incorporate best practices into local plans			
Timeline	1-2 years to develop (3-5 years for communities without plans)	**Lead actor(s)**	Businesses, energy utilities, local governments, park and forest districts, private water utilities
Cost	Low (high for communities without plans)	**Key stakeholder(s)**	Conservation organizations, ISWS, IWRC, RPOs, SWCDs, state/federal agencies, tourism agencies

Lead actors should keep their business/community planning and policy documents updated and include goals/actions that tackle water stewardship. Examples of plans/policies include capital improvement plans; continuity of operations plans; comprehensive plans; zoning, subdivision, and stormwater ordinances; hazard mitigation plans; and building codes. Key stakeholders may be in a position to support business/community planning efforts by providing technical assistance (TA), such as facilitating meetings and developing plans. Key stakeholders should also continue to build their capacity to provide TA to lead actors.

The region's key stakeholders can support adoption further by developing best stewardship practices (BSP) templates for various sectors based on the latest research from educational/scientific institutions and advice available from early adopters. Lead actors should engage with the key stakeholders as they develop BSP templates. BSPs can take many forms – general, specific, regional, local, and so on. Examples include the California Department of Water Resources' BMP guidance webpage and the Chicago Metropolitan Agency for Planning's (CMAP) Stormwater Management Strategy paper.

1.4 Engage the public during planning processes			
Timeline	Ongoing	**Lead actor(s):**	Local governments, private water utilities
Cost	Low	**Key stakeholder(s):**	Businesses

In water matters (and other decision-making), local government should involve the general public in participatory processes, ideally beyond what is legally required. Relevant data, analysis, and documents should be accessible online and in-person in the languages that constituents speak. Meaningful public engagement sessions should be held as needed at times and in locations accessible to various groups. Public participation guides and examples can be found from agencies such as the US EPA, IDOT, and the Chicago Metropolitan Agency for Planning.

2. Infrastructure

2.1 Incorporate conservation design/green infrastructure into public works and policies			
Timeline	Ongoing	**Lead actor(s)**	Local governments
Cost	Low to high	**Key stakeholder(s)**	Engineering consultants, households, RPOs, state/federal agencies, University of Illinois Extension, water operator collaboratives

As local governments upgrade their public works, they should incorporate conservation design/green infrastructure that aids water filtering, infiltration, and retention. Specific approaches might include:

- Reducing impervious surfaces
- Incorporating blue and green roofs
- Constructing bioswales and planting filter strips
- Stabilizing streambanks
- Incorporating native species
- Removing invasive species

Conservation design/green infrastructure should be addressed during a project's concept development, preliminary design, and construction documentation stages. Engineering consultants should recommend appropriate conservation design/green infrastructure on a project-by-project basis, especially at the outset, as many communities may not have sufficient exposure to prompt a discussion.

In general, key stakeholders may be able to provide technical assistance, including helping communities identify achievable water stewardship infrastructure projects and develop corresponding asset management/capital improvement plans. Incremental investments and demonstration projects can help elected officials make better decisions down the road about larger investments.

Further, state/federal agencies should coordinate with local officials on what conservation design/green infrastructure approaches can be worked into plans (for example, municipal/IDOT collaboration is critical where state highways abut/intersect downtowns, business districts, and critical corridors).

Plans/policies maintained by local governments should be developed in consultation with key stakeholders. Policy improvements through updated zoning might include:

- Reduced lot sizes
- Cluster and conservation subdivision development
- Nature-based solutions to stormwater management
- Best stewardship practices

2.2 Incorporate new water treatment technologies in water systems			
Timeline	3-5 years	**Lead actor(s)**	Local governments, private water utilities
Cost	High	**Key stakeholder(s)**	Engineering consultants, ISWS, RPOs, state/federal agencies, University of Illinois Extension, water operator collaboratives

Local governments and private water utilities treat water using various methods, like chlorination in supply and coagulation, flocculation, sedimentation, filtration, and disinfection in treatment. However, as new public health threats are identified (e.g., PFAS), more advanced methods will be needed. New technology is often expensive, and being an early adopter can be challenging. There may also be initial downsides, like increased energy use and water loss. Communities should comply with basic legal requirements but also assess individually what else they are capable of doing with the help of well-trained public works employees, third-party expertise, and regular assets management and capital improvement planning.

2.3 Support water recycling in industry and agriculture			
Timeline	3-5 years	**Lead actor(s)**	Businesses
Cost	Moderate to high	**Key stakeholder(s)**	Conservation groups, county farm bureaus, ISWS, local governments, state/federal agencies, SWCDs

While bringing recycled water to drinking standards is often costly, some non-potable sources can be used for agricultural and industrial processes, reducing the need for aquifer or surface water withdrawals from public and private supplies. This can be especially helpful in counties like Bureau, Lee, and Whiteside, where the highest water demand in 2010 was seen in the self-supplied irrigation, livestock, and environmental sector.[1] Wastewater from municipal and private water utilities should be tested for PFAS and other contaminants before being applied to farm fields.

2.4 Identify unsewered communities and households			
Timeline	1-2 years	**Lead actor(s)**	Local governments, RPOs
Cost	Low to moderate	**Key stakeholder(s)**	Households in unincorporated areas, State/federal agencies

According to IEPA, “over 200 communities in the state of Illinois have inadequate or nonexistent wastewater collection and treatment facilities.”[2] Individual households, especially in rural areas, may rely on outdated or failing septic systems, leading to untreated water impacting human health and natural systems. Funding is available to help unsewered communities update existing or construct new wastewater treatment systems. This funding can also be used to connect unsewered homes and businesses. To match local needs with state/federal funding, Northwest Illinois communities and households must be more rigorously identified, an initiative that RPOs, with the support of counties and municipalities, can lead.

3. Education and Training

3.1 Illustrate the true cost of water production to system users			
Timeline	1-2 years	**Lead actor(s)**	Local governments, private water utilities, RPOs
Cost	Low	**Key stakeholder(s)**	Businesses, conservation organization

System users do not generally pay the full cost of distributing and treating water. With nearly 79.5 million gallons used daily, the public supply sector in the Rock River Region accounted for the second-highest reported water use in 2010.[1] Water systems are typically underground and out of sight, making improvements more politically difficult to achieve.

Undervaluing water promotes waste. Costs for maintaining and replacing systems are deferred to the next administration until the problem can no longer be ignored; by this point, costs have increased significantly. Expressing the true cost of water and the consequences of deferred maintenance can support active stewardship and incremental improvements.

3.2 Expand training offerings for water professionals and public officials			
Timeline	1-2 years	**Lead actor(s)**	Local governments, private water utilities, RPOs
Cost	Low	**Key stakeholder(s)**	NRGPPC, University of Illinois Extension, water operator collaboratives, workforce agencies

To identify specific training needs, lead actors should conduct an assessment of knowledge and skills gaps among water operators, then suggest or provide online and in-person training opportunities. Training organizations include:

- WaterOperator.org
- Environmental Finance Center Network

Lead actors should ensure that budgets have line items for training and travel and encourage and incentivize employees to pursue professional certifications that emphasize water stewardship. Professional certifications include:

- Water Science and Conservation Certificate
- WaterSense Professional Certifications
- Certified Stormwater Manager
- Certified Water Efficiency Professional
- Alliance for Water Stewardship Standard certification

3.3 Develop water stewardship curriculum for educational institutions*			
Timeline	1-2 years	**Lead actor(s)**	Community colleges, conservation organizations, ISWS, regional offices of education, SWCDs, University of Illinois Extension
Cost	Moderate	**Key stakeholder(s)**	Park and forest districts, primary/secondary schools, public libraries

Lead actors should survey the state of water stewardship curricula. Their findings should serve as a starting point. Key stakeholders will need to determine individually how best to incorporate the new curricula at their institutions. They should also support educators that require professional development opportunities to better incorporate water stewardship teaching.

3.4 Introduce water stewardship employment opportunities in and out of schools*			
Timeline	1-2 years	**Lead actor(s)**	Community colleges, primary/secondary schools, youth organizations
Cost	Moderate	**Key stakeholder(s)**	Local governments, private water utilities, regional offices of education, University of Illinois Extension, state/federal agencies

Lead actors should introduce students to water stewardship occupations through career exploration programs, planned events, and extracurriculars, such as:

- During/after-school clubs
- Citizen science opportunities
- Volunteer organizations
- Competitions
- Hands-on projects

The awareness process should start early, with youth organizations (such as 4-H and FFA) and agriculture teachers making this a core curriculum component. Key stakeholders should supply school counselors with materials regarding educational pathways. Internship and apprenticeship programs can provide hands-on experiences that foster valuable skills.

Many students face financial barriers in pursuing their passions and careers; scholarships and financial aid specifically directed at students interested in water stewardship occupations can help them feel more financially secure when pursuing their professional ambitions.

* In 3.4 and 3.5, water education may need to be incorporated with larger environmental education initiatives since developing and introducing new curriculum, however important, can be burdensome to educators, especially without administrative support.

3.5 Connect agricultural producers to technical assistance and funding opportunities			
Timeline	Ongoing	**Lead actor(s)**	County farm bureaus, SWCDs
Cost	Low	**Key stakeholder(s)**	Community foundations, Illinois Department of Agriculture, RPOs, state/federal agencies

Federal and state agencies provide opportunities for farmers to become better stewards of water; however, farmers may not know that a program exists, not fully understand its scope, or find the program requirements too cumbersome. Technical assistance providers and advocacy/educational organizations can improve participation generally (e.g., awareness programs, sponsored trainings) and specifically (e.g., direct grant writing and administration support).

Seeding a fund for small farmers that provides small-dollar assistance for expensive engineering stamps or other professional certifications (required for some state/federal programs) can improve enrollment by the same. Community foundations and RPOs can support, even administer, such a program.

3.6 Assist home and business owners with enacting water stewardship measures			
Timeline	Ongoing	**Lead actor(s)**	Community foundations, energy utilities, local governments, private water utilities, social services organizations
Cost	Low	**Key stakeholder(s)**	Businesses, households

Non-potable water sources can be used for residential applications. Simple rainwater harvesting measures – like installing rain barrels – can support judicious water use during drought.

The State of Illinois does not have a statewide incentive program for home and business water stewardship measures. However, local governments, private water utilities, and energy utilities can help home and business owners through locally developed incentive programs. Examples include:

- The City of Rochelle and Jo-Carroll Energy, which provide utility bill credits for installing energy-efficient appliances.
- The Village of Deerfield, which partners with local plumbers to provide savings on dye testing toilets for leaks.
- The Fillmore County Soil and Water Conservation District, which offers reduced cost rain barrel kits.

Water providers can also run awareness campaigns about these and other water stewardship supports, like ENERGY STAR rebates.

4. Funding and Incentivization

4.1 Evaluate public water pricing, including emergency fees			
Timeline	3-5 years	**Lead actor(s)**	Local governments, private water utilities
Cost	Low	**Key stakeholder(s)**	Conservation organizations, RPOs, social services organizations

Uniform rate structures, decreasing block rates, and flat fees fail to encourage adequate water conservation. Other approaches – like increasing block rates and excess consumption surcharges – are more effective at discouraging overconsumption. Whatever the approach, full-cost water pricing aims to recover the cost of providing water to a community. It encourages water conservation and ensures that a system has sufficient funding to address past (i.e., debt), current, and future expenses.

Full-cost water pricing may be more burdensome in stagnant communities. Most cities and villages in the Rock River region are losing population, resulting in higher maintenance costs per capita. Water affordability is a concern for low-income populations, although there are several ways to reduce costs. The most common is charging "lifeline rates," where low-income households are charged a reduced fee for a set amount of water consumption (usually the minimum sanitary requirement) and higher rates beyond that level. Another option is to increase residential retrofitting. Municipalities can partner with energy utilities and community organizations to distribute retrofit kits or provide direct upgrades to home and business owners. They may also enact a retrofit-on-resale ordinance.

Water utility owners must consider applying additional use fees in times of scarcity, setting ordinances where rates are higher when drought is exceptional. They might refund all emergency fees post-drought, use them to further invest in the community's water network, or take a hybrid approach. Multiple guidelines for setting conservation water rates exist from the US EPA, the Water Research Foundation, and CMAP.

Communities that do not monitor water use are the least likely to be able to respond appropriately during water emergencies, assign fair costs to users, and understand/predict consumption trends. Proper monitoring is part and parcel of a meaningful water stewardship.

4.2 Develop programs for business water stewardship; highlight businesses that exceed standards			
Timeline	1-2 years	**Lead actor(s)**	Chambers of commerce, EDOs, local governments
Cost	Low	**Key stakeholder(s)**	Businesses

In 2010, the self-supplied industrial and commercial sector in the Rock River Region consumed about 28.4 million gallons per day.[1] Local governments can incentivize businesses to participate in best practices for reducing water use. Chambers of commerce and economic development organizations can schedule workshops that teach cost-effective methods of reducing water use. In addition to incentives, creating a regional recognition program for high-performing water stewards is a simple, cheap strategy. Businesses that participate could be honored annually, and lead actors could highlight such businesses. The US EPA's WaterSense program has a Best Management Practices guide for many types of commercial and institutional facilities that could be used as a starting point, and WaterSense has an H2Otel Challenge to help hotels manage their water use.

4.3 Plan for the long-term impacts of new development			
Timeline	Ongoing	**Lead actor(s)**	Chambers of commerce, EDOs, local governments
Cost	Low	**Key stakeholder(s)**	Businesses, RPOs, state/federal agencies

When considering a development proposal, local officials should review the community's existing assets to determine the sufficiency of existing water and other resources. It would further benefit communities to develop plans – stand-alone, part of a comprehensive plan, etc. – that consider the effects of new businesses, especially large consumers (e.g. data centers, manufacturing, and food processors), on resources decades out. Regional organizations and state/federal agencies can help with impact assessment, which provides a foundation for both the community and incoming business against unexpected shocks.

4.4 Incentivize farmers to diversify production			
Timeline	Ongoing	**Lead actor(s)**	Conservation organizations, SWCDs, state/federal agencies
Cost	Low	**Key stakeholder(s)**	County farm bureaus, farmers, Illinois Farm Bureau

The Nature Conservancy predicts that heat and water stress due to climate change will reduce corn and soybean yields in the long-term and negatively affect livestock production.[3] For example, in our region, there was a noticeable rise in the installation of center pivot irrigation after drought in 2012.[4]

Agricultural producers and communities may compete for water in the absence of technological or other advancements. Technological advancements (e.g., genetically modified organisms) may mitigate or overcome some of these challenges but not all. The Illinois Farm Bureau and county farm bureaus are aware of the issue, but they can only educate farmers. State/federal incentives are needed to advance cover cropping, no-till farming, and perennial crop planting. Some organizations that are already working in this area are the Illinois Sustainable Ag Partnership and the Food and Agriculture Climate Alliance.

5. Data Collection

5.1 Support voluntary reporting among farmers			
Timeline	3-5 years	**Lead actor(s)**	ISWS, RPOs
Cost	Low	**Key stakeholder(s)**	Energy utilities, farmers, county farm bureaus, Illinois Farm Bureau, private foundations

ISWS collects insufficient data to properly assess agricultural water use in the Rock River Region. To improve data collection, RPOs, in conjunction with county farm bureaus and ISWS, should help collect and anonymize water use data, reporting it in aggregate by ZIP code or census tract. After collecting sufficient baseline data, lead actors could better assess current water use and predict future consumption.

To support data collection and reporting efforts, RPOs, county farm bureaus, and ISWS – in cooperation with farmers – would need to seek funding from the Illinois Farm Bureau, private foundations, energy utilities, etc. to install water meters on irrigation systems and design a new automated data upload system.

5.2 Integrate new water monitoring/repair systems			
Timeline	Ongoing	**Lead actor(s)**	Local governments, private water utilities
Cost	Moderate to high	**Key stakeholder(s)**	Engineering consultants

Understanding who is using water and how much of it underpins water stewardship. Efficient, advanced water monitoring helps everyone: municipalities and private water utilities can use it to proactively detect leaks and respond more efficiently; customers can lower their bills by following use and making adjustments; and consultants/researchers can find better data to improve their recommendations. New monitoring/repair technologies include:

- Centralized and real-time use monitoring
- Remote leak sensing
- Adaptive and modular water delivery systems
- Self-healing infrastructure

Older water systems may use manual readings or short-distance transmissions to collect meter data. These approaches are labor intensive and produce emissions. Additionally, customers may not detect leaks until they receive their water bill. Advanced metering infrastructure (AMI) transmits water readings to utilities in real time and often enables customers to use online portals to see water use data. Leaks can be detected much sooner by customers and the utility. Utilities should conduct a benefit-cost analysis of AMI and evaluate alternatives prior to transition.

Local governments and private water utilities should also conduct regular use audits, using findings to update asset management and capital improvement plans. This supports timely maintenance, repairs, and upgrades to water systems.

5.3 Model subsurface tile drainage systems			
Timeline	3-5 years	**Lead actor(s)**	ISWS, SWCDs, University of Illinois Extension
Cost	Moderate	**Key stakeholder(s)**	County farm bureaus, farmers

Farmers use subsurface tile drainage to improve crop yields. Once water reaches a certain height underground, it is carried away to drain beyond production areas.

The impact of tiling on nutrient loss has been investigated, but less is known about how tiled fields affect aquifer recharge. Hydrogeologic systems are highly complicated. Modeling subsurface tile drainage in Northwest Illinois could advance tiling best practices and help agricultural producers mitigate the potential for tiled fields to exacerbate drought conditions, reduce runoff/erosion, and avoid inundating downstream land owners.

5.4 Track water system losses			
Timeline	Ongoing	**Lead actor(s)**	Local governments; private water utilities
Cost	Moderate to high	**Key stakeholder(s)**	RPOs

Some water supply systems lose over half of their drinking water because of leaks; leaks also impact stormwater and wastewater systems. In addition to wasting a valuable resource, leaky systems may increase treatment costs. Roads, sidewalks, and other infrastructure can sustain damage from water leaks, and compromised pipes can become contaminated.

In Illinois, only systems within the Great Lakes basin are required to report water losses. Public loss reporting by water providers in the Rock River region would serve as a springboard for regional problem solving. Once the scope is understood, the WRC (1.1) or other entities could identify next steps.

FUNDING SOURCES

Loans		
Name	Funds	Pg
Lead Service Line Replacement	Lead service line replacement	18
Wastewater/Stormwater and Drinking Water Loans	Design and construction of waste, storm, and drinking water projects	18
Water Infrastructure Finance and Innovation Act	Water infrastructure projects of national and regional significance	18
Water and Waste Disposal Loan and Grant Program	Clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and storm water drainage	19
Water and Waste Disposal Loan Guarantees in Illinois	Private lenders to offer financing for water and waste disposal systems	19

Grants		
Name	Funds	Pg
104B Research Grants Program	Exploratory research or educational projects	20
Boat Access Area Development Program	Public boat and canoe access areas on Illinois' lakes and rivers	20
Building Resilient Infrastructure and Communities	Hazard mitigation activities	20
Community Development Block Grant – Public Infrastructure	Water and sanitary sewer systems, storm sewer upgrades, or combined sewer separations	21
Energy Efficiency and Conservation Block Grant	Energy audits and government energy efficiency building upgrades	21
Environmental Education Grants Program	Environmental education projects	21
Environmental Quality Incentives Program	Conservation on working agricultural lands	22
Federal Grant Support Program	Matching share support for federal grants	22
Flood Mitigation Assistance Program	Projects that reduce or eliminate the risk of repetitive flood damage to NFIP-insured buildings	22
Green Infrastructure Grant Opportunities	Green infrastructure projects related to stormwater runoff	23
Hazard Mitigation Grant Program	Hazard mitigation plans and projects that reduce or mitigate future disaster loss	23
Nonpoint Source Grants	Watershed-based planning and implementation projects that address water quality impairments to surface and groundwater resources	23
Public Water Supply Energy Efficiency	Energy efficiency upgrades at public water supply facilities	24

Public Works and Economic Adjustment Assistance	Physical infrastructure in distressed communities to become more economically competitive	24
Revolving Funds for Financing Water and Wastewater Projects	Revolving loan funds that provide financing to improvement water and waste disposal systems	25
Rural Decentralized Water Systems Grant Program	Revolving loan funds and subgrants to homeowners for supporting access to individually owned water and wastewater services	25
Solid Waste Management Grants in Illinois	Programs that provide technical assistance or training for solid waste disposal sites	25
Special Evaluation Assistance for Rural Communities and Households Grant	Predevelopment feasibility studies, design, and technical assistance on proposed water and waste disposal projects	26
Unsewered Communities Grants	Planning and constructing wastewater collection and/or treatment solutions	26
Water and Waste Disposal Predevelopment Planning Grants in Illinois	Planning and development of applications in low-income communities for USDA Rural Development water or waste disposal projects	26
Water and Waste Disposal Technical Assistance and Training Grants	Identification and evaluation of water problems; technical assistance; grant application preparation	27
Watershed Protection and Flood Prevention Operations Program	Watershed project plans (planning and implementation)	27

Other

Name	Funds	Pg
Circuit Rider Program - Technical Assistance for Rural Water Systems	Technical assistance to rural water systems that are experiencing day-to-day operational, financial, or managerial issues	28
Water Technical Assistance Services	Connects communities to experts for drinking water, sewage, and stormwater needs; includes help with federal funding applications	28

1. Loans

Lead Service Line Replacement

Agency	IEPA	**Match**	N/A - principal forgiveness available
Max Funding	N/A	**Deadlines**	Mar 31 (every year)
Eligible Applicants	Public and private entities		
Description	Provides loans for the replacement of lead service lines; all loans have a 0% interest rate and term of 30 years, though disadvantaged communities may choose to have a term up to 40 years		
Website	https://epa.illinois.gov/topics/grants-loans/state-revolving-fund/lslr-loans.html		

Wastewater/Stormwater and Drinking Water Loans

Agency	IEPA	**Match**	N/A - principal forgiveness available
Max Funding	N/A	**Deadlines**	Mar 31 (every year)
Eligible Applicants	Public and private entities		
Description	Provides low-interest loans through the State Revolving Fund, which includes the Water Pollution Control Loan Program (wastewater and stormwater projects) and the Public Water Supply Loan Program (drinking water projects)		
Website	https://epa.illinois.gov/topics/grants-loans/state-revolving-fund.html		

Water Infrastructure Finance and Innovation Act

Agency	US EPA	**Match**	Maximum credit assistance is 49% of eligible project costs; up to 80% for some small communities
Max Funding	N/A	**Deadlines**	Rolling
Eligible Applicants	Local, state, and tribal government entities • Partnerships and joint ventures • Corporations and trusts • Clean Water and Drinking Water State Revolving Fund programs		
Description	Provides long-term, low-cost, supplemental loans to water infrastructure projects of national and regional significance		
Website	https://www.epa.gov/wifia		

Water and Waste Disposal Loan and Grant Program

Agency	USDA Rural Development	**Match**	N/A
Max Funding	N/A	**Deadlines**	Rolling - funds are replenished Oct 1, plan accordingly
Eligible Applicants	Most local and state governmental entities • Federally recognized tribes • Private not-for-profits		
Description	Provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and storm water drainage to households and businesses in eligible rural areas, which includes rural areas and towns with populations of 10,000 or fewer, tribal lands in rural areas, and colonias. Primary funding is long-term, low-interest loans. If funds are available, a grant may be combined with a loan.		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-loan-grant-program-14		

Water and Waste Disposal Loan Guarantees in Illinois

Agency	USDA Rural Development	**Match**	N/A
Max Funding	Loan guarantee percentage is published annually in a Federal Register notice	**Deadlines**	Rolling
Eligible Applicants	Federal and state-chartered banks • Savings and loans • Farm Credit Banks with direct lending authority • Credit unions • Other non-regulated lending institutions approved under specified criteria		
Description	Helps private lenders provide affordable financing to qualified borrowers to improve access to clean, reliable water and waste disposal systems for households and businesses in rural areas		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-loan-guarantees/il		

2. Grants

104B Research Grants Program

Agency	Illinois Water Resources Center	**Match**	50 (federal) / 50 (non-federal)
Max Funding	$20,000	**Deadlines**	Variable
Eligible Applicants	Faculty members or professionals affiliated with four-year institutions		
Description	Funds exploratory research or educational projects that enhance water sciences research and higher education throughout Illinois		
Website	https://iwrc.illinois.edu/resources/funding-opportunities		

Boat Access Area Development Program

Agency	IDNR	**Match**	Not required for construction; 90 (program) / 10 (other) for land acquisition
Max Funding	$200,000 (motorized) $80,000 (non-motorized)	**Deadlines**	Variable
Eligible Applicants	Municipalities • Townships • Counties • Park districts • Conservancy districts • Port districts • Any other local government agency capable of providing lands for public recreational purposes		
Description	Provides financial assistance for the acquisition, construction, and expansion/rehabilitation, including necessary A/E services, of public boat and canoe access areas on Illinois' lakes and rivers; eligible sites limited to navigable public bodies of water		
Website	https://dnr.illinois.gov/grants/boataccessareadevelopmentprogram.html		

Building Resilient Infrastructure and Communities Program

Agency	FEMA	**Match**	Standard is 75 (federal) / 25 (non-federal); up to 90 (federal)
Max Funding	Variable	**Deadlines**	Variable
Eligible Applicants	States • District of Columbia • US Territories • Federally recognized tribes • Local governments (through subapplications)		
Description	Provides funding for hazard mitigation activities; local governments must submit subapplications for assistance to state/territory primary applicants		
Website	https://www.fema.gov/grants/mitigation/learn/building-resilient-infrastructure-communities		

Community Development Block Grant – Public Infrastructure

Agency	DCEO	**Match**	Not required
Max Funding	$1 million	**Deadlines**	Variable
Eligible Applicants	Units of local government. Municipalities must not be a HUD direct entitlement community or located in an urban county that receives entitlement funds. County and township applicants should not include areas that are incorporated within a city or village; incorporated areas must apply on their own behalf, regardless of whether a water district or sanitary district is involved.		
Description	Funds public infrastructure projects with priority given to projects involving water and sanitary sewer systems, storm sewer upgrades, or combined sewer separations; must benefit at least 51% low-to-moderate income persons		
Website	https://dceo.illinois.gov/communitydevelopment/csbgpublicinfrastructure.html		

Energy Efficiency and Conservation Block Grant

Agency	IEPA	**Match**	Not required
Max Funding	$250,000	**Deadlines**	Variable
Eligible Applicants	Units of local government that are not eligible to receive US Department of Energy's Energy Efficiency and Conservation Block Grant Program Formula Grant or Voucher funding directly (see website for list)		
Description	May conduct energy audits and government energy efficiency building upgrades based on US Department of Energy Blueprints		
Website	https://epa.illinois.gov/topics/energy/energy-efficiency/energy-efficiency-conservation-block-grant.html		

Environmental Education Grants Program

Agency	US EPA	**Match**	75 (federal) / 25 (non-federal)
Max Funding	$100,000	**Deadlines**	Variable
Eligible Applicants	Local education agency • State education or environmental agency • College or university • Not-for-profit organization as described in section 501(c)(3) of the Internal Revenue Code • Noncommercial educational broadcasting entity • Tribal education agency		
Description	Supports environmental education projects that promote environmental awareness and stewardship and help provide people with the skills to take responsible actions to protect the environment		
Website	https://www.epa.gov/education/grants		

Environmental Quality Incentives Program

Agency	USDA Natural Resources Conservation Service	**Match**	N/A
Max Funding	None	**Deadlines**	Rolling
Eligible Applicants	Farmers, ranchers, and forest landowners who own or rent agricultural land		
Description	Provides technical and financial assistance to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, increased soil health and reduced soil erosion and sedimentation, improved or created wildlife habitat, and mitigation against drought and increasing weather volatility		
Website	https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives		

Federal Grant Support Program

Agency	DCEO	**Match**	1:1 of matching share
Max Funding	$5 million (EDA Tech Hub designees); $2 million (everyone else)	**Deadlines**	Applications due at least 3 weeks prior to the associated federal program submission deadline
Eligible Applicants	Local governments • Not-for-profit organizations • For-profit organizations • Small businesses • Educational organizations		
Description	Helps Illinois communities meet federal match requirements by providing up to half of the matching share; for example, if a federal grant requires an 80 (federal) / 20 (local) match, DCEO will provide half of that match, making the total project funding 80% federal, 10% DCEO, and 10% local		
Website	https://dceo.illinois.gov/aboutdceo/grantopportunities/3073-2554.html		

Flood Mitigation Assistance Program

Agency	FEMA	**Match**	Standard is 75 (federal) / 25 (non-federal); up to 90 (federal)
Max Funding	Variable	**Deadlines**	Variable
Eligible Applicants	States • District of Columbia • US Territories • Federally recognized tribes • Local governments (through subapplications)		
Description	Funding for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program; local governments must submit subapplications for assistance to state/territory primary applicants		
Website	https://www.fema.gov/grants/mitigation/learn/flood-mitigation-assistance		

Green Infrastructure Grant Opportunities

Agency	IEPA	**Match**	75 (program) / 25 (other); 85 (program) / 15 (other) in environmental justice areas
Max Funding	$2.5 million	**Deadlines**	Variable
Eligible Applicants	Any GATA pre-qualified entity that has legal status to accept funds from the state of Illinois		
Description	Funds projects to construct green infrastructure best management practices (BMPs) that prevent, eliminate, or reduce stormwater runoff into Illinois' rivers, streams, and lakes		
Website	https://epa.illinois.gov/topics/grants-loans/water-financial-assistance/gigo.html		

Hazard Mitigation Grant Program

Agency	FEMA	**Match**	Generally 75 (federal) / 25 (non-federal)
Max Funding	Based on estimated total federal assistance, may be subject to sliding scale	**Deadlines**	Available after a presidentially declared disaster
Eligible Applicants	States, territories, and federally recognized tribes, which can submit applications on behalf of sub-applicants (local governments, including cities, townships, counties, special district governments, state agencies, and tribal governments)		
Description	Provides funding to develop hazard mitigation plans and rebuild in a way that reduces, or mitigates, future disaster losses		
Website	https://www.fema.gov/grants/mitigation/learn/hazard-mitigation		

Nonpoint Source Grants

Agency	IEPA	**Match**	60 (federal) / 40 (non-federal)
Max Funding	$1.2 million	**Deadlines**	Variable
Eligible Applicants	Any GATA pre-qualified entity that has legal status to accept funds from the state of Illinois		
Description	Funding for watershed-based planning projects and watershed-based plan implementation projects to prevent, eliminate, or reduce water quality impairments to Illinois' surface and groundwater resources		
Website	https://epa.illinois.gov/topics/water-quality/watershed-management/nonpoint-sources/grants.html		

Public Water Supply Energy Efficiency

Agency	IEPA	**Match**	80 (federal) / 20 (non-federal); 90 (federal) / 10 (non-federal) in environmental justice areas
Max Funding	$500,000	**Deadlines**	Variable
Eligible Applicants	Publicly-owned public water supply facilities in Illinois		
Description	Funding for energy efficiency upgrades at public water supply facilities that reduce the amount of energy consumed by water treatment operations; must be identified in an energy efficiency assessment completed within the past 5 years (free energy assessments are available through Smart Energy Design Assistance Center at University of Illinois)		
Website	https://epa.illinois.gov/topics/energy/energy-efficiency/energy-efficiency-public-water-infrastructure-/pws-grants.html		

Public Works and Economic Adjustment Assistance

Agency	EDA	**Match**	50 (federal) / 50 (non-federal); up to 100 (federal) if distress criteria is met
Max Funding	$30 million (typically under $3 million)	**Deadlines**	Variable
Eligible Applicants	District organization of an EDA-designated Economic Development District • Indian Tribe or a consortium of Indian Tribes • State, county, city, or other political subdivision of a state, including a special purpose unit of a state or local government engaged in economic or infrastructure development activities, or a consortium of political subdivisions • Institution of higher education or a consortium of institutions of higher education • Public or private not-for-profit organization or association acting in cooperation with officials of a political subdivision of a state		
Description	Helps distressed communities revitalize, expand, and upgrade their physical infrastructure to enable them to become more economically competitive		
Website	https://www.eda.gov/funding/programs/public-works		

Revolving Funds for Financing Water and Wastewater Projects

Agency	USDA Rural Development	**Match**	80 (program) / 20 (other)
Max Funding	Unknown	**Deadlines**	Variable
Eligible Applicants	Not-for-profits that have legal authority to operate a revolving loan fund and financial, technical, and managerial capacity to comply with relevant state and federal laws and regulations		
Description	Helps qualified not-for-profits create revolving loan funds that can provide financing to extend and improve water and waste disposal systems in rural areas		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/revolving-funds-financing-water-and-wastewater-projects/il		

Rural Decentralized Water Systems Grant Program

Agency	USDA Rural Development	**Match**	90 (program) / 10 (other)
Max Funding	None	**Deadlines**	Variable
Eligible Applicants	Nonprofits that have expertise and experience promoting the safe, productive use of individually-owned household water wells systems; legal authority to act as a lender; sufficient expertise and experience in lending activities; and financial, technical and managerial capacity to comply with relevant federal and state laws and regulations		
Description	Provides funding to create a revolving loan fund or award subgrants to homeowners for supporting access to individually owned water and wastewater services in eligible rural areas; must be in rural areas and towns with a population of 50,000 or fewer		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/rural-decentralized-water-systems-grant-program/il		

Solid Waste Management Grants in Illinois

Agency	USDA Rural Development	**Match**	Not required
Max Funding	None	**Deadlines**	Oct 1 - Dec 31
Eligible Applicants	Public bodies • Not-for-profits • Federally-recognized tribes • Academic institutions		
Description	Reduces or eliminates the pollution of water resources by funding projects that provide technical assistance or training to improve planning for and management of solid waste disposal sites; must be in rural areas and towns with a population of 10,000 or fewer		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/solid-waste-management-grants/il		

Special Evaluation Assistance for Rural Communities and Households Grant

Agency	USDA Rural Development	**Match**	Variable
Max Funding	Depends on number of applications awarded	**Deadlines**	Rolling
Eligible Applicants	Most state and local governmental entities • Not-for-profits • Federally recognized tribes		
Description	Helps very small, financially distressed rural communities with predevelopment feasibility studies, design, and technical assistance on proposed water and waste disposal projects; limited to rural areas with 2,500 or fewer people and have a median household income below the poverty line or less than 80% of the statewide non-metropolitan median household income based on latest Census data		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/search-special-evaluation-assistance-rural-communities-and-households-grant/il		

Unsewered Communities Grants

Agency	IEPA	**Match**	Planning - not required Construction - formula
Max Funding	Planning - $30,000 Construction - $5 million	**Deadlines**	Variable
Eligible Applicants	A county, municipality, township, or political subdivision whose primary purpose is to construct, operate and maintain wastewater treatment facilities, including storm water treatment systems, public water supply facilities, or both		
Description	Planning - assists small and disadvantaged communities in developing a project plan that identifies a solution to their wastewater collection and treatment needs Construction - assists small and disadvantage communities in constructing wastewater collection and/or treatment solutions for areas where wastewater collection and/or treatment are presently non-existent or inadequate		
Website	https://epa.illinois.gov/topics/grants-loans/unsewered-communities.html		

Water and Waste Disposal Predevelopment Planning Grants in Illinois

Agency	USDA Rural Development	**Match**	75 (program) / 25 (other)
Max Funding	$60,000	**Deadlines**	Rolling
Eligible Applicants	Most state and local governments • Not-for-profit organizations • Federally recognized Tribes		
Description	Helps low-income communities plan and develop applications for proposed USDA Rural Development water or waste disposal projects. Must be in rural areas/towns with populations of 10,000 or fewer, federally-recognized tribal lands, or colonias.		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-predevelopment-planning-grants/il		

Water and Waste Disposal Technical Assistance and Training Grants

Agency	USDA Rural Development	**Match**	Not Required
Max Funding	None	**Deadlines**	Oct 1 - Dec 31
Eligible Applicants	Not-for-profits that have the proven ability, background, experience and capacity to provide technical assistance or training on a national, regional or state basis		
Description	Helps the following: qualified, private not-for-profits provide technical assistance and training to identify and evaluate solutions to water and waste problems; applicants prepare applications for water and waste disposal loans/grants; and associations improve the operation and maintenance of water and waste facilities; must be in either rural areas and towns with populations of 10,000 or fewer or tribal lands in rural areas		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-technical-assistance-43		

Watershed Protection and Flood Prevention Operations Program

Agency	USDA Natural Resources Conservation Service	**Match**	Variable
Max Funding	None	**Deadlines**	Rolling
Eligible Applicants	Federal, state, and local governments • Federally recognized tribes		
Description	Provides technical and financial assistance to plan and implement authorized watershed project plans for the purpose of flood prevention, watershed protection, public recreation, public fish and wildlife, agricultural water management, municipal and industrial water supply, water quality management		
Website	https://www.nrcs.usda.gov/programs-initiatives/watershed-protection-and-flood-prevention-operations-wfpo-program		

3. Other

Circuit Rider Program - Technical Assistance for Rural Water Systems

Agency	USDA Rural Development	**Match**	N/A
Max Funding	N/A	**Deadlines**	Rolling
Eligible Applicants	Public body, not-for-profit, or tribe with legal authority to own and operate a water facility		
Description	Provides technical assistance to rural water systems that are experiencing day-to-day operational, financial, or managerial issues; circuit riders can assist with board training, management/finance, operation/maintenance, water treatment, regulatory compliance, facility security, loan application and reporting, disaster/emergency assistance		
Website	https://www.rd.usda.gov/programs-services/water-environmental-programs/circuit-rider-program-technical-assistance-rural-water-systems		

Water Technical Assistance Services

Agency	EPA	**Match**	N/A
Max Funding	N/A	**Deadlines**	Rolling
Eligible Applicants	Local governments/communities • Drinking water utilities/systems • Wastewater utilities/systems • Stormwater utilities/systems • States • Tribes • Territories • Non-governmental organizations		
Description	Connects communities to experts who help assess and implement solutions for their drinking water, sewage, and stormwater needs, including assistance with applying for federal funding		
Website	https://www.epa.gov/water-infrastructure/water-technical-assistance-waterta		

REFERENCES

[1] Meyer, S.C., Dziegielewski, B., Zhenxing, Z., Abrams, D., and Walton, K.R. (January 2019). *Water Demand in the Rock River Water Supply Planning Region, 2010-2060*. Illinois State Water Survey. https://www.ideals.illinois.edu/items/109383

[2]Illinois Environmental Protection Agency. (n.d.). Unsewered Communities Grants. https://epa.illinois.gov/topics/grants-loans/unsewered-communities/ucpgp.html

[3]Wuebbles, D., J. Angel, K. Petersen, and A.M. Lemke (Eds.). (2021). *An Assessment of the Impacts of Climate Change in Illinois*. The Nature Conservancy. https://doi.org/10.13012/B2IDB-1260194_V1

[4]Iordache, V. and Abrams, D. (July 11, 2023). *Groundwater Resources in the Green River Lowlands*. Illinois State Water Survey. https://storymaps.arcgis.com/stories/faa648644eb14d6c84c299392ed5d0c0

[5]Ghane, E. (February 23, 2024). 2022 Ag Census reveals surprising trend in acreage of tile drainage in the Midwest. Michigan State University. https://www.canr.msu.edu/news/2022-ag-census-reveals-surprising-trend-in-acreage-of-tile-drainage-in-the-midwest