

Building Strong Collaborative Relationships for a Sustainable Water Resources Future:

STATE OF KENTUCKY

SUMMARY OF STATE WATER PLANNING

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The findings contained in this report are based on the information collected from the literature search and interviews for this initiative and should not be construed as an official Department of the Army position, policy or decision unless so designated by other official documentation.

STATE OF KENTUCKY

Note:

At the time of the development of this summary (March 2009), the Kentucky Department of Water was in the process of finalizing its 2009 Operation Plan to be released July 1, 2009. This summary will be updated to include changes in state water resources goals and objectives as provided by the Kentucky POC when that document is completed. This version contains interview insights as well as POC edits excluding those that will alter the Water Management Vision and Goals Section.

1. STATE/REGIONAL WATER PLANNING STATUS

Kentucky does not have a comprehensive water resources management plan, but has separate statewide efforts aimed at water supply and water quality issues. Planning within the state occurs at the regional and county levels, with financial and technical assistance from the state's lead water resources agency, the Department of Environmental Protection's (DEP) Division of Water (DOW).

In 1996, Governor Patton issued Executive Order 96-1339 directing the Water Resources Development Commission (WRDC) to prepare a strategic plan for water development in Kentucky with the aim of providing water and sewer service to every citizen by 2020. The commission, headed by the Commissioner of the Department for Local Government (DLG), comprised executives from several state agencies including the Finance and Administration Cabinet, Environmental and Public Protection Cabinet (EPPC), Transportation Cabinet, Public Service Commission, League of Cities, Rural Water Association, Council of Area Development Districts, County Judge/Executive Association, Magistrates and Commissioners Association, and Rural Development.

Recently, the EPPC was reorganized by Gov. Steve Beshear into the Public Protection Cabinet, the Energy and Environment Cabinet (EEC) and the Labor Cabinet. DEP was previously part of the EPPC and now belongs to the EEC along with the Office of the Secretary, the Department of Natural Resources (DNR), and the new formed Department for Energy Development and Independence, as well as several independent commissions (EEC, 2009).]

WRDC published separate strategic plans for water and sewer systems in 1999. The water plan, "Water-Resource Development: A Strategic Plan (WRDC, 1999)," fulfilled several objectives:

- Inventory all water systems in Kentucky and assess their respective strengths and weaknesses.
- Develop recommendations to build on the strengths and eliminate the weaknesses of Kentucky's water systems.
- Develop strategies to improve the level of water service for Kentucky.

Based on the water resource issues identified in their water systems assessment, WRDC provided the state with the following recommendations (WRDC, 1999):

1. Maintain and expand the Water Resource Information System to provide a comprehensive database for each public water system.
2. Increase planning, management, technical, financial, reporting and rate-setting assistance for small systems.
3. Establish statewide water-loss audit, leak-detection and repair program.
4. Promote and encourage water-system regionalization. Barriers to regionalization—real or imagined—should be removed or reduced where improvements in service, operations and economies of scale can be realized.
5. Identify appropriate mergers of water systems. Encourage such mergers with incentives.
6. Provide assistance to "unattractive" merger candidates.
7. Encourage rates for water systems that are based on cost-of-service principles.
8. Establish uniform accounting and reporting procedures applicable to all public water systems.
9. Improve the effectiveness of baseline funding requirements for water projects. Establish and promulgate system development standards as to materials, quality, size specifications, and installation inspection.
10. Establish a centralized review process for funding water projects. Establish a centralized review and approval process for development plans.
11. Increase the use of technology in the process of funding water projects.
12. Provide quality- and quantity-assurance support for small private water systems such as homeowner wells.
13. Require adequate on-site sewage treatment before allowing hookup to public water.
14. Promote "universal jurisdiction," in which a local management agency is responsible for all water service within its geographic jurisdiction or service area. Establish certified service territories, in which a water service system is responsible for making reasonable extensions of service to all persons within its service area.
15. Develop potential water supplies in eastern Kentucky for small community systems.
16. Examine alternatives to improve fire protection in rural areas.
17. Develop new sources of funding.

WRDC estimated that Kentucky would need to invest at least \$2.8 billion dollars of the \$8 billion needed for public water supply infrastructure between 2006 and 2020 (Figure 1). This estimate is based on local needs to expand, upgrade, and replace infrastructure, and to meet the requirements of the Safe Drinking Water Act (SDWA) (Figure 2).

The 2020 initiative was intended to provide access to safe and reliable drinking water to all citizens of the commonwealth by 2020. Areas with unserved or underserved water supplies were identified and incorporated into a planning process that identified responsible water service providers for those areas.

Public Water Projects 2006-2020

County	New Miles of Line	New Customers Served	New Lines in \$1000	Line Rehab in \$1000	Sources in \$1000	Treatment in \$1000	Tanks & Pumps in \$1000	TOTAL NEEDS IN \$1000
Total	6,822	59,229	329,569	114,901	76,550	151,752	129,101	801,873

Figure 1. Kentucky’s Public Water Project Needs (WRDC, 1999)

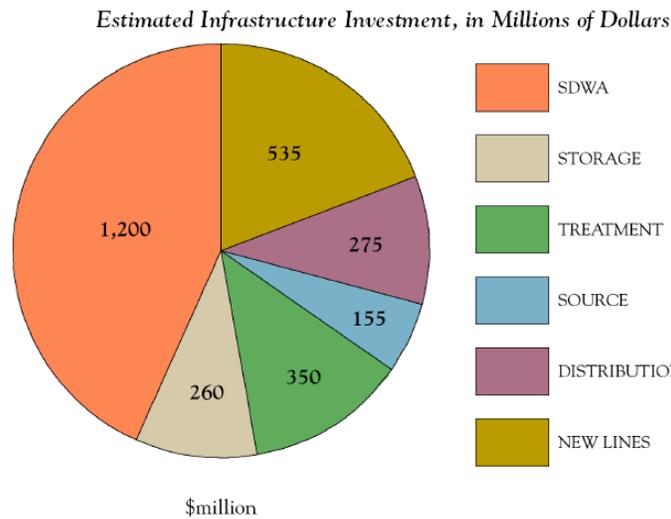


Figure 2. Distribution of \$2.8 Billion Needed by 2020 for Public Water Supply Infrastructure (WRDC, 1999)

As a direct result of the WRDC report, the Water Resource Information System (WRIS) was established within the Kentucky Infrastructure Authority (KIA) within DLG (KIA, 2009c). KIA is the state agency responsible for funding construction of public works projects (KIA, 2009a). WRIS comprises strategic plans, maps, guidance and training documents, water supply assessments, and GIS data that are designed to assist water planners and managers. DOW also is the agency with primacy in the distribution of Drinking Water SRF and Clean Water SRF funding. The DOW works closely with KIA in developing the intended use plans for allocation and applications of these funds.

Kentucky’s water supply management planning process was formed under KRS 151 in 1990. The DOW had the responsibility to promulgate regulations for a comprehensive county or multi-county water supply planning process. Under the leadership of the DOW all 120 counties had developed water supply plans by July 01, 1999. In 2000, Senate Bill 409 transferred primary planning responsibility to the KIA (DOW, 2009d). The bill directed Kentucky’s 15 Area Development Districts (Figure 3) to oversee the planning process: Northern Kentucky, Buffalo Trace, Kentuckiana Regional Planning & Development Agency (KIPDA), FIVCO (Carter, Greenup, Boyd, Lawrence, and Elliott Counties), Big Sandy, Kentucky River, Cumberland Valley, Bluegrass, Gateway, Lincoln Trail, Barren River, Lake Cumberland, Green River, Pennyriple, and Purchase. Area Development Districts provide consultation and engineering information to Kentucky’s 120 counties and serve as link to state government for the county governments and water suppliers. With assistance from DOW, the development districts were mandated to develop a Water Management Plan that evaluated the adequacy of the district’s current and future water supplies and infrastructure with emphasis on un-served and underserved areas (Kentucky Revised Statutes §151:603).

ADDs are not regulatory agencies but partnerships of local units of government. The DOW is the primary state agency for providing technical assistance to the Water Management Planning process facilitated by the ADDs.

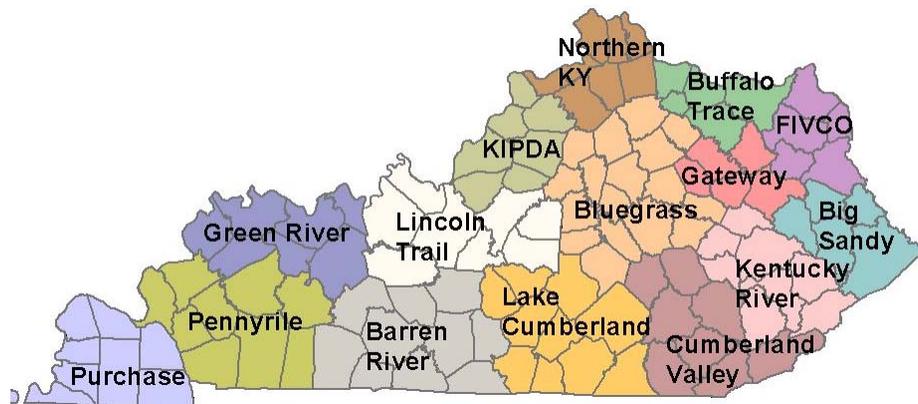


Figure 3. Kentucky’s Area Development Districts (DOW, 2009)

District-wide Water Management Plans were developed in 2003 as revisions and compilations of the earlier county water supply plans developed in 1999. The Area Development Districts facilitated the Water Management Planning Councils for the ADD in summarizing their water system deficiencies and estimating the amount of funding needed to supply majority of their residents in un-served and underserved areas. These summaries were appended to the WRDC Strategic Plan (KIA, 2009c).

Presently the ADDs and Water Management Planning councils are working with many agencies including the DOW to update the Area Water Management Plans (including wastewater planning) and expand the scope and content of the annually updated WRIS planning data.

In 2007, Senate Joint Resolution 109 mandated EEC, with assistance from the Drought Mitigation and Response Advisory Council (DAC), to develop a state drought plan by December 31, 2008. This plan, the Kentucky Drought Mitigation and Response plan was completed on schedule to achieve three major objectives: 1) creation of a state-level organizational structure to facilitate coordination of state and federal agencies in drought monitoring, response and mitigation activities, 2) establishment of a consistent basis for evaluating the severity of drought conditions, and 3) promoting a long-term strategy of evaluating the state’s drought vulnerabilities and identifying actions that will reduce the impacts from future droughts.

This plan is available to the public on the Division of Water’s website or by contacting Bill Caldwell at (502) 564-3410 or at emailing bill.caldwell@ky.gov.

In addition to water supply and wastewater planning, DOW provides water quality monitoring and watershed-based planning as part of their Watershed Management Framework.

2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

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DOW is responsible for inspecting and monitoring the quality of drinking water, water resources, groundwater, and wastewater treatment systems across the state of Kentucky (DEP, 2008). DOW is divided into six branches: Water Infrastructure, Compliance and Technical Assistance, Surface Water Permits, Resource Planning and Program Support, Water Quality, and Watershed Management.

DNR's Division of Conservation plays a supporting role in state water resources planning by providing assistance to Kentucky's 121 county-based conservation districts through soil and water conservation programs (DNR, 2009).

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Planning documents related to water supply and water infrastructure are maintained in KIA's online database, WRIS.

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3. WATER MANAGEMENT VISION AND GOALS

This section should be updated based upon the 2009 Operation Plan to be released July 1, 2009.

DEP's mission is, "Protect and enhance Kentucky's environment to improve the quality of life for all Kentuckians," and their vision is, "The Department for Environmental Protection

envision a healthy and productive commonwealth with balanced stewardship of the land, air and water where future generations enjoy an environment as good as or better than the present (DEP, 2008).”

DOW’s mission is, “to manage, protect and enhance the water resources of the Commonwealth for present and future generations through voluntary, regulatory and educational programs (DOW, 2008).” Their Operational Plan (DOW, 2008) is intended to serve as a road map toward accomplishing this mission, taking into consideration current environmental, regulatory and resource conditions. The plan identifies four major objectives and associated strategies, including:

1. Develop sustainable permitting programs that provide sound decisions in a timely manner
 - a. Maintain progress toward reducing and/or maintaining zero permit and data entry backlogs
 - b. Implement organizational structure that provides cross-program training and flexibility in assignment of staff to meet needs as they arise
 - c. Evaluate processes to improve efficiency
 - d. Identify activities that are not providing sufficient added value and target for elimination, or shift to other responsible parties
 - e. Update fee regulations to provide resources to meet federal and state obligations and improve permitting programs
2. Protect and improve water quality
 - a. Fully implement wet weather compliance programs
 - b. Reduce pollutants in surface waters
 - c. Develop and implement watershed plans or TMDLs as appropriate
 - d. Develop an outreach strategy for elected officials and the public regarding water quality
 - e. Implement new organizational structure to improve efficiencies in collection of water quality data and assessment and analysis of water quality conditions and trends
3. Ensure the integrity of water infrastructure through proper planning and promotion of sustainable infrastructure concepts
 - a. Promote the U.S. Environmental Protection Agency’s (USEPA) Sustainable Infrastructure Initiative
 - b. Improve efficiency and decision making regarding water infrastructure
4. Focus compliance efforts to meet federal and state obligations and promote objectives 1 to 3
 - a. Meet federal and state obligations
 - b. Improve efficiencies in compliance determinations
 - c. Identify activities that are not providing sufficient added value and target for elimination, or shift to other responsible parties

4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT

DOW continuously monitors hydrologic conditions throughout the state, including precipitation, streamflows, lake elevations and various drought indices (DOW, 2009a). This information is used to detect emerging drought conditions, to identify the locations and severity of drought and to provide timely and appropriate public notification.

While Kentucky does not have a groundwater strategy, state law requires that entities engaged in activities that could potentially pollute groundwater develop and implement a Groundwater Protection Plan (401 Kentucky Administrative Regulations 5:037). Types of activities that require a plan include (DOW, 2009b):

- Pesticide storage and handling for commercial purposes.
- Pesticide application for commercial purposes, maintenance of public rights of way or institutional lawn care
- Land treatment or land disposal of a pollutant
- Storage, treatment, disposal or handling of a waste
- Commercial or industrial storing or related handling in bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants held in tanks, drums or other containers or piles
- Transmission in pipelines of raw materials, finished products or other pollutants
- Installation or operation of on-site sewage disposal systems
- Storing or related handling of road oil, dust suppressants or de-icing agents at a central location
- Application or related handling of road oils, dust suppressants or de-icing materials
- Mining and associated activities
- Installation, construction, operation or abandonment of wells, boreholes or core holes
- Collection or disposal of pollutants in an industrial or commercial facility through the use of floor drains that are not connected to on-site sewage disposal systems, closed-loop collection or recovery systems, or a waste treatment system permitted under the Kentucky Pollution Discharge Elimination System
- Impoundment or containment of pollutants in surface impoundments, lagoons, pits or ditches
- Commercial or industrial transfer, including loading and unloading, in bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling or other pollutants.

Watershed management for water quality and environmental uses in Kentucky is based on the Kentucky Watershed Management Framework (DOW, 2009e). The Framework is a guide for ongoing coordination of water resource management activities by organizations throughout the state. Management goals of the Framework are:

- Conserve and enhance public health
- Conserve and enhance watershed ecosystems
- Support watershed resource use to achieve water quality standards and conservation goals
- Conserve and improve ambient conditions
- Reduce or prevent pollutant loadings and other stressors

In the Watershed Framework, Kentucky’s 12 major river basins are divided into seven management units that are assigned to a five-year rotating management schedule (Figure 4). There is no legal or statutory relationship between the seven management units and the area development districts; however, they work collaboratively when and if necessary. The management units serve as entities to organize and execute the water quality assessments required by the EPA.

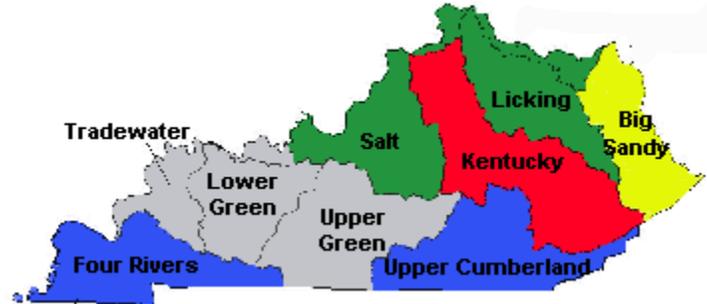


Figure 4. Kentucky’s Seven Watershed Management Units (DOW, 2009)

Responsibility for overseeing infrastructure funding is shared between KIA and DOW’s Resource Planning and Program Support Branch (KIA, 2009b). Funding is available through the Clean Water State Revolving Fund (SRF), Drinking Water SRF, Wastewater Revolving Loan, Infrastructure Revolving Loan, and DOW’s nonpoint source pollution (Section 319) program.

Emergency water planning for Kentucky is conducted by the Department of Emergency Management, who develops the Kentucky Emergency Operations Plan (KyEOP) (KYEM, 2009). According to KyEOP, flooding and tornadoes are the most prevalent weather related hazards in the state. Despite the threat of flooding, no state or regional flood mitigation plans could be found.

One major statewide initiative that will potentially affect water quality and supply is the state’s 7-Point Strategy for Energy Independence developed by the Department for Energy Development & Independence (DEDI, 2008). The following are strategies and goals outlined in the Energy Plan:

1. Improve the energy efficiency of Kentucky’s homes, buildings, industries and transportation fleet.
 - Goal: Energy efficiency will offset at least 18 percent of Kentucky’s projected 2025 energy demand
2. Increase Kentucky’s use of renewable energy
 - Goal: By 2025, Kentucky’s renewable energy generation will triple to provide the equivalent of 1,000 megawatts of clean energy while continuing to produce safe, abundant, and affordable food, feed and fiber
3. Sustainably grow Kentucky’s production of biofuels
 - Goal: By 2025, Kentucky will derive from biofuels 12 percent of its motor fuels demand (775 million gallons per year, which represents approximately 20 percent of Kentucky’s current transportation fuels demand), while continuing to produce safe, abundant, and affordable food, feed and fiber

4. Develop a coal-to-liquids industry in Kentucky to replace petroleum-based liquids
 - Goal: Kentucky will develop a coal-to-liquids industry that will use 50 million tons of coal per year to produce four billion gallons of liquid fuel per year by 2025
5. Implement a major and comprehensive effort to increase gas supplies, including coal-to-gas in Kentucky
 - Goal: Kentucky will produce the equivalent of 100 percent of our annual natural gas requirement by 2025 by augmenting in-state natural gas production with synthetic natural gas from coal-to-gas processing
6. Initiate aggressive carbon capture/sequestration projects for coal-generated electricity in Kentucky
 - Goal: By 2025, Kentucky will have evaluated and deployed technologies for carbon management, with use in 50 percent of our coal-based energy applications
7. Examine the use of nuclear power for electricity generation in Kentucky
 - Goal: Nuclear power will be an important and growing component of the nation’s energy mix and Kentucky must decide whether nuclear power will become a significant part of meeting the state’s energy needs by 2025

The Energy Plan suggests that increased hydropower production is not a feasible strategy due to the large capital investments required and availability of non-dammed, high-power rivers in the state. Other renewable energy options such as harnessing wind power were also not considered feasible.

Increasing the production of biofuels was therefore chosen a leading energy alternative. Several corn and diesel plants are currently operating in Kentucky. To achieve 107 million gallons of biodiesel production by 2025 (Figure 5), the state estimates that 25 percent each of Kentucky’s soybean and wheat acreage must be converted to canola/sunflower in double-cropped rotation. In addition, the state would need to develop 1 or 2 new 50 million gallon per year production facilities. Future water resources planning in the state will need to consider needs water demands associated biofuel production.

Biofuel	Feedstock	Million Gal/yr	tBtus/yr
Ethanol	Corn	186	14.1
	Switchgrass**	361	27.4
	Corn Stover + Residues	121	9.2
	Ethanol Total:	668	50.7
Biodiesel	Vegetable Oil **	107	14.9
	Grand Total:	775	65.6

Figure 5. Kentucky’s Potential Biofuels Production Capacity in 2025 (Energy Strategy, 2008)

5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

The state is involved in numerous federal and state partnerships for water resources planning and management. Among these partners are the USEPA, U.S. Geological Survey, U.S. Army Corps of Engineers, U.S. Department of Agriculture, Kentucky Division of Geographic Information, Kentucky Natural Resources Information System, Public Service Commission, Kentucky

Geological Survey, Kentucky Rural Water Association, and Kentucky Ground Water Association. Kentucky's Area Development Districts and counties also assist in planning. The basis for these partnerships is to implement water quality programs and water infrastructure projects.

Kentucky collaborates with Indiana, West Virginia, Ohio, New York, Illinois, Pennsylvania, and Virginia on water quality issues through its membership in the Ohio River Valley Water Sanitation Commission and the Ohio River Basin Commission. Kentucky also collaborates with Tennessee as part of the Cumberland River Compact and with West Virginia in the Big Sandy River Basin.

The public is involved in state and regional water planning through the various Area Development Districts and county planning boards. They can also directly participate in meetings and hearings announced on DOW's Public Involvement and Assistance webpage (DOW, 2009d).

6. PLAN IMPLEMENTATION STRATEGY

DOW implements its plans for water resources through the strategies and actions outlined in their annual Operational Plan (Appendix A; DOW, 2008). Actions are intended to be carried out during the fiscal year. Example actions proposed in the 2008 Operation Plan include:

- Develop a plan for making improvements to and fully implementing a water resources database by June 30, 2009
- Institute a process to evaluate how each permitting program currently and potentially functions within the context of a watershed approach and focus by June 30, 2009
- Expand the use of agreements with water and sewer utilities which have engineering resources to conduct water line extension and sewer line extension reviews within their systems and with DOW oversight
- Have each community with recurring sanitary sewer overflows (occurring more than once during a 12 month period) operating under an approved sanitary sewer overflow plan by March 2009
- Initiate development of a statewide nutrient reduction plan for phosphorus and nitrogen consistent with the Mississippi River Gulf Hypoxia Task Force recommendations
- Develop an implementation strategy for addressing the challenges in impaired watersheds by June 30, 2009
- Identify impaired waters that are candidates for bypassing TMDL development and develop a schedule for watershed planning for those waters by June 30, 2009
- Define what is / is not a watershed-based plan (WBP), the authority for approving WBPs, and determine the implications to permitting programs, TMDLs, Agriculture Water Quality obligations and baseline requirements, permit offsets, and water quality trading by June 30, 2009
- Develop 80 TMDLs by June 30, 2009
- Develop an outreach strategy for state and local elected officials regarding the importance of sustainable infrastructure and implications of failing to provide for it by November 2008

- Develop a public education strategy to raise awareness regarding the benefits of water conservation, green infrastructure, asset management and other sustainable infrastructure concepts
- Work with local officials to identify and develop sustainable funding mechanisms for watershed planning and plan implementation
- Identify where data gaps exist regarding stream flows throughout the state and develop protocols for incorporating gauging requirements in water withdrawal and KPDES (Kentucky Point Discharge Elimination System) permits

7. OUTCOMES ASSESSMENT PROCESS

Each year, DOW publishes an annual report on the Division's activities during the previous fiscal year (DOW, 2008). The report does not necessarily measure the specific actions set forth in the Performance Operation Plan. According to 2008 Report, one of the most daunting challenges is the current and future problems associated with the state's aging water and sewer infrastructure. Based on the latest Clean Water and Drinking Water Infrastructure Needs Survey, Kentucky needs over \$5 billion in the next 15 years to adequately address its infrastructure needs. DOW continues to play a significant role in state water resources planning and management, and advocates integrated, holistic planning and permitting approaches as well as alternative approaches to financing infrastructure systems. The Department of Water endorses an integrated water resources management (IWRM) approach but not under the formalized umbrella of a state integrated water management plan. An integrated approach is specifically involved in the state's infrastructure planning.

8. NEEDS, CHALLENGES, AND CRITICAL PRIORITIES – INTERVIEW INSIGHTS

The key water resources issues/needs in the state of Kentucky are:

- Adequate treatment of waste water
- Vulnerability to hazards such as drought and floods
- Maintaining water supply in high population centers, specifically the Cincinnati/Louisville/Lexington "golden triangle" area
- Placing a focus on smaller-scale watershed water resources issues
- Developing green infrastructure
- A better understanding of the groundwater and surface water connection

Kentucky's water resources needs are not unlike most other states in the region or country. Funding, and with that, staff and data are key. Kentucky relies on federal assistance for acquiring valuable basic scientific data, modeling, and simulation. As a result, cooperation with federal agencies such as the Corps of Engineers and USGS is a crucial to making informed water resources planning and management decisions. In addition, the state of Kentucky is in favor of more federal guidance and collaboration in not only planning, but also in working to facilitate a clearinghouse of state water resources planning and information to promote the more efficient use of time and resources. An arena where states can openly communicate and share water resources planning experiences could engender more effective and innovative solutions to water resources issues.

The traditional manner of looking at water resources in the state of Kentucky using a one-size-fits-all approach is being modified to take on a more focused approach that characterizes and addresses issues that center on the watershed scale. Critical water quantity issues in the state focus mainly on an increasing demand in the “golden triangle” region which includes the metropolitan areas of Cincinnati, Louisville, and Lexington as well as the potential impact of drought on water supply. The biggest water quality issue in the state deals with the adequate treatment of waste water, especially in eastern Kentucky. Going into the future the Kentucky DOW is emphasizing expanded outreach and education to its citizens as well as working to become more responsive as a state agency and more efficient in conducting state required business.

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