

INDICATOR 1

WATER USE & DEVELOPMENT



OVERVIEW

Water from the Susquehanna River Basin is needed for public water supply, electrical generation, manufacturing, agricultural, environmental, recreational and many other purposes. The basin is rich in energy resources. Increased activity in the energy sector is driving new water use, including drilling for natural gas and new or upgraded coal-fired and nuclear power plants. SRBC continues to employ scientific criteria to balance sustainable development of water resources in the basin and protect the aquatic ecosystem from potential impacts associated with water use.

BALANCING WATER USE AND INSTREAM FLOW PROTECTION

Although the Susquehanna River Basin is abundant in water resources, unconstrained development of the resources has the potential to impact other water users and aquatic ecosystems. SRBC has protective regulations, policies and guidance in place to afford adequate protection of instream flows while still allowing for necessary water use. Examples of instream flow protection measures implemented by SRBC include conservation releases, passby flows and consumptive use mitigation. Consumptive use is water that is withdrawn and not returned to the basin undiminished in quantity.

Conservation releases are prescribed flow quantities that must be maintained downstream of an impoundment. Passby flows are prescribed streamflow levels at which a withdrawal must cease. Consumptive use mitigation is the elimination or replacement of consumptive water use during critical low flow periods.

Overarching Issue

The Susquehanna River Basin provides water to support a variety of industries, including public water supply, with increased activity in the energy sector. Heightened demand requires a focus toward sustainable planning and management of the water resources within the 27,510-square-mile drainage basin. Low flow protection and consumptive use mitigation are two ongoing concerns. SRBC continues to work on policies aimed at instream flow protection and to take actions related to the Commission's Consumptive Use Mitigation Plan.

INDICATOR CRITERIA

Criteria	Assessment Period	
	Jan 1 - Dec 31, 2009	Jan 1 - Dec 31, 2011
Amount of reported consumptive water use (MGD - million gallons per day)	110	127
Amount of reported surface water withdrawal (MGD)	2,404	2,841
Amount of reported groundwater withdrawal (MGD)	111	131
Amount of freshwater delivered to natural gas well pads (MGD)	1	6

Data Sources: SRBC water use data

SRBC owns water storage at two U.S. Army Corps of Engineer (USACE) reservoirs - Cowanesque and Curwensville - for release during times of low flow to mitigate for regulated consumptive uses. SRBC also has arrangements with the USACE for water at its Whitney Point Restoration Project to be released for downstream environmental restoration purposes during times of low flow. In addition, SRBC partnered with the Pennsylvania Department of Environmental Protection at its Lancashire 15 mine drainage treatment plant to mitigate consumptive uses by agricultural operations in the Pennsylvania portion of the basin.

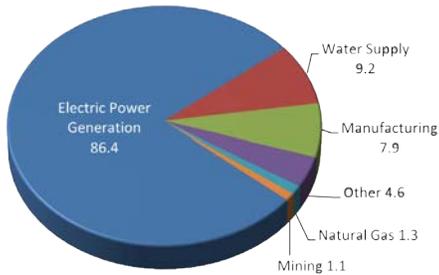
SRBC continues to evaluate and refine its implementation of instream flow protection measures. The recent development of a new Low Flow Protection Policy is one such example.

Natural Gas Post-Hydrofracture Report Summary		
Parameter Assessed	Assessment Period	
	Jan 1 - Dec 31, 2009	Jan 1 - Dec 31, 2011
Water supplied by Public Water Supply (%)	52	29
Water supplied by SRBC-approved sources (%)	48	71
Average volume of water used per well (mgal)	3.73	4.54
Average flowback fluid recovered (%)	10	7
Wells reusing flowback fluid (%)	58	87

Data Sources: SRBC water use data

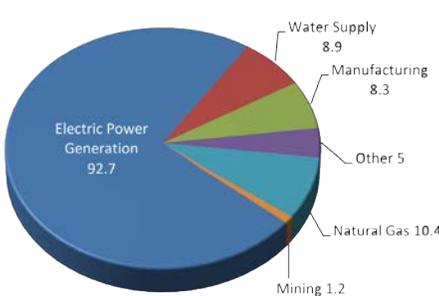
**REPORTED CONSUMPTIVE WATER USE
BY INDUSTRY**

(MGD) 2010 STATUS*

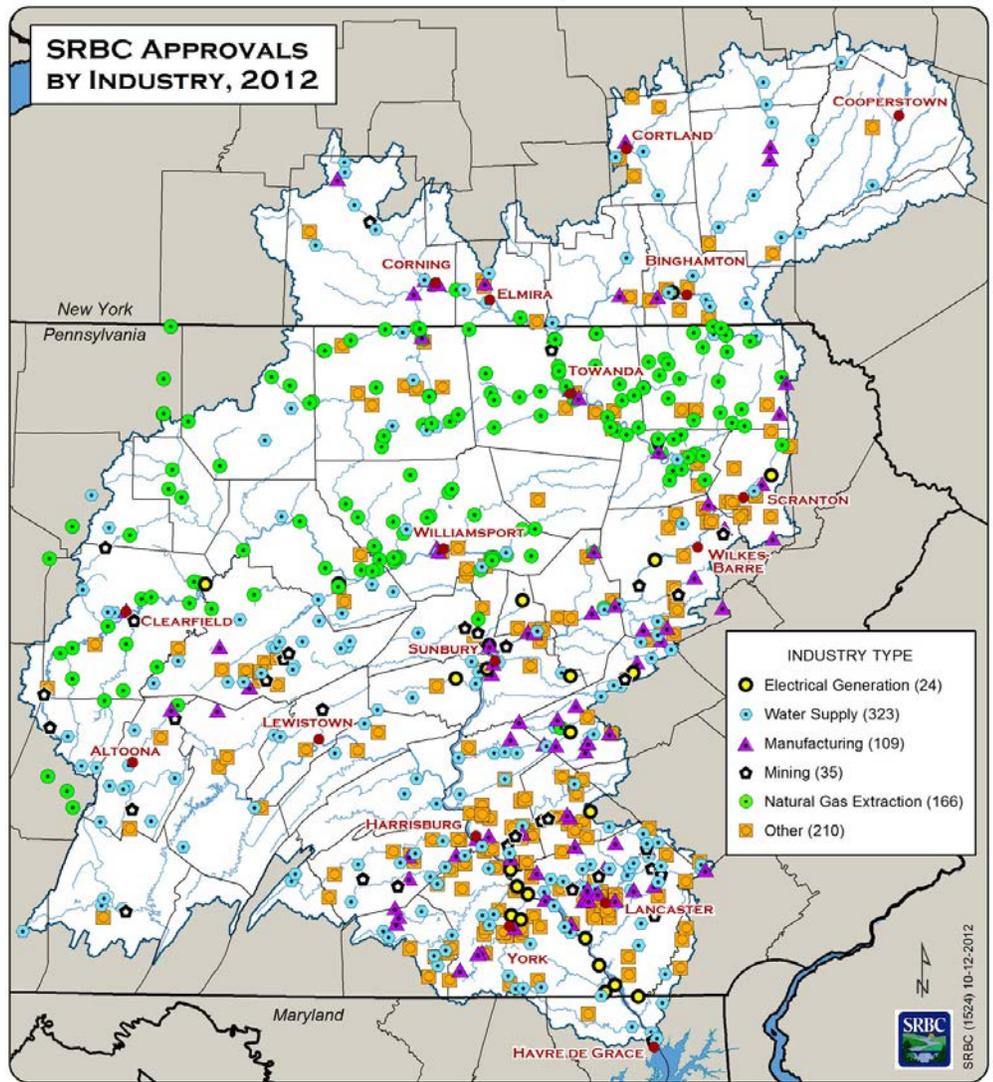


**REPORTED CONSUMPTIVE WATER USE
BY INDUSTRY**

(MGD) 2012 STATUS*



*2012 status based on 2011 SRBC water use data; 2010 status based on 2009 SRBC water use data
MGD — million gallons per day



FOCUS STORY

DEVELOPING THE LOW FLOW PROTECTION POLICY

The USACE, SRBC, and The Nature Conservancy (TNC), in cooperation with other project stakeholders, conducted an Ecosystem Flow Study culminating in a November 2010 report entitled “Ecosystem Flow Recommendations for the Susquehanna River Basin.”

In the report, TNC presented a set of recommended flows to protect the species, natural communities, and key ecological processes within the various stream and river types in the Susquehanna River Basin. One of the most critical findings of the study is that seasonal flow recommendations are preferred to year-round flow recommendations as ecosystem flow needs are naturally seasonal.

These ecosystem flow recommendations are one of the original motivations that triggered SRBC to develop a new Low Flow Protection Policy, which was adopted as final in December 2012. The policy provides seasonally variable criteria for determining passby flows and conservation releases associated with approved withdrawal projects.

Water Use Industry	Reported Groundwater Withdrawals (MGD)		Reported Surface Water Withdrawals (MGD)	
	Jan 1 - Dec 31, 2009	Jan 1 - Dec 31, 2011	Jan 1 - Dec 31, 2009	Jan 1 - Dec 31, 2011
Electric Generation	4.8	5.6	2,352	2,749
Water Supply	51	51	23	57
Manufacturing	17	17	26	25
Mining	27	46	0.7	1.5
Other	11	10	2.0	1.4
Natural Gas Extraction	0.0	0.9	0.8	8.3

Data Sources: SRBC water use data