

**Socioeconomic Value of the Delaware River Basin
in Delaware, New Jersey, New York, and Pennsylvania**

Executive Summary

The Delaware River Basin, an economic engine for over 400 years

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Executive Summary

What do the Guggenheim Museum, Boeing, Sunoco, Campbell's Soup, DuPont, Wawa, Starbucks, Iron Hill Brewery, Philadelphia Eagles, Camelback Ski Area, Pt. Pleasant Canoe Livery, Salem Nuclear Power Plant, and United States Navy all have in common? They all depend on the waters of the Delaware River Basin to sustain their business.

The Delaware River Basin is an economic engine that supplies drinking water to the 1st (New York City) and 5th (Philadelphia) largest metropolitan economies in the United States and supports the largest freshwater port in the world. The Delaware Basin's water supplies, natural resources, and ecosystems in Delaware, New Jersey, New York, Pennsylvania and a small sliver of Maryland:

- Contribute \$22 billion in annual economic activity from recreation, water quality, water supply, hunting/fishing, ecotourism, forest, agriculture, open space, and port benefits.
- Provide ecosystem goods and services (natural capital) of \$21 billion per year in 2010 dollars with net present value (NPV) of \$683 billion discounted over 100 years.
- Are directly/indirectly responsible for 600,000 jobs with \$10 billion in annual wages.

The Basin











The Delaware River Basin occupies almost 13,000 sq mi (not including the river and bay) in Delaware, Maryland, New Jersey, New York, and Pennsylvania. In 2010, over 8.2 million residents lived in the basin including 654,000 people in Delaware, 2,300 in Maryland, 1,964,000 in New Jersey, 131,000 in New York, and 5,469,000 in Pennsylvania. Nearly 3,500,000 people work in the basin with 316,000 jobs in Delaware, 823,000 jobs in New Jersey, 70,000 jobs in New York, and 2,271,000 jobs in Pennsylvania. An additional 8 million people in New York City and northern New Jersey receive drinking water from the Delaware via interbasin transfers. The Delaware Basin occupies just 0.2% of the continental U.S. yet supplies drinking water to 5% of the U.S. population.

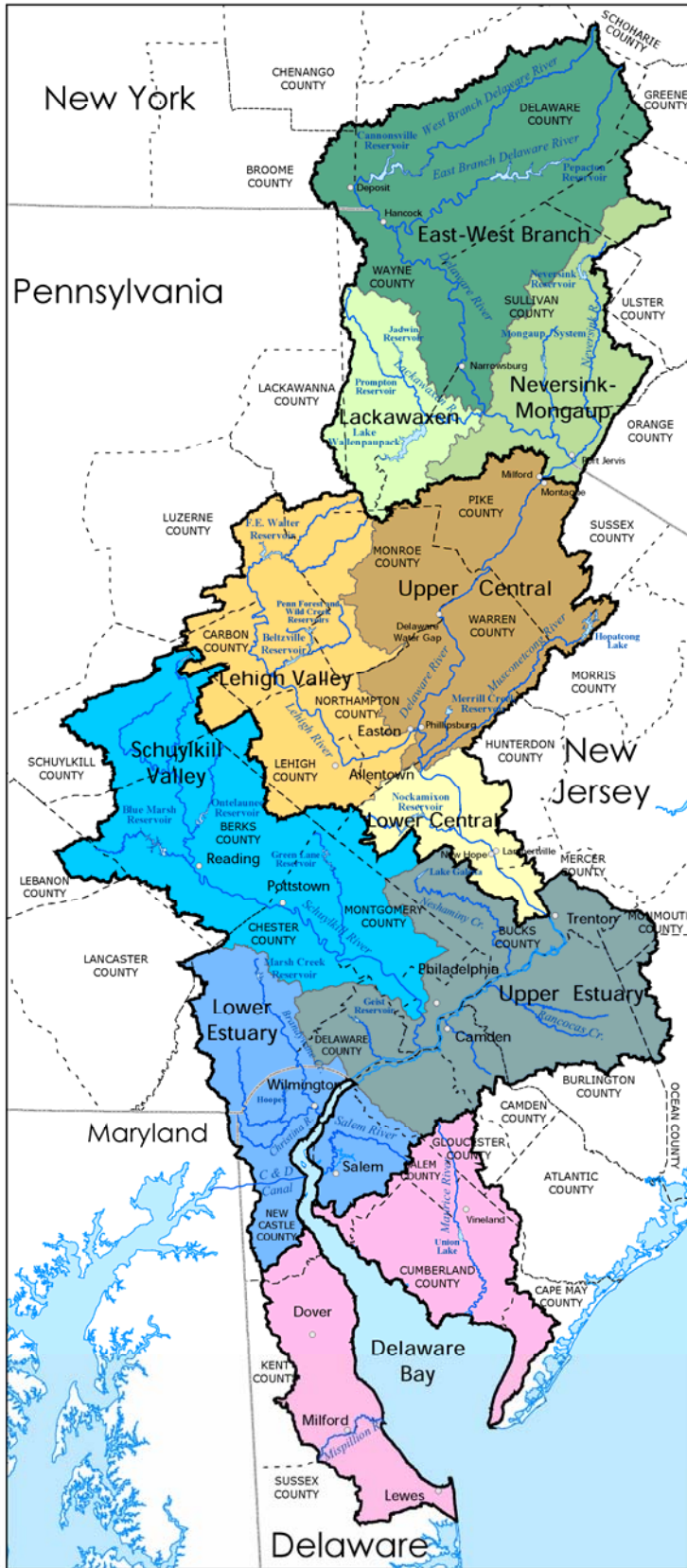
The population of the Delaware Basin is now exceeds 8 million which if considered as a single state, would be the 11th most populous state after North Carolina and New Jersey but ahead of Virginia and Massachusetts. The Delaware Basin occupies:

- Delaware (50% of the State's area and 74% of the First State's population)
- New Jersey (40% of the State's area and 22% of the Garden State's population)
- New York (5% of the State's area and 0.7% of the Empire State's population)
- Pennsylvania (14% of the State's area and 43% of the Keystone State's population).

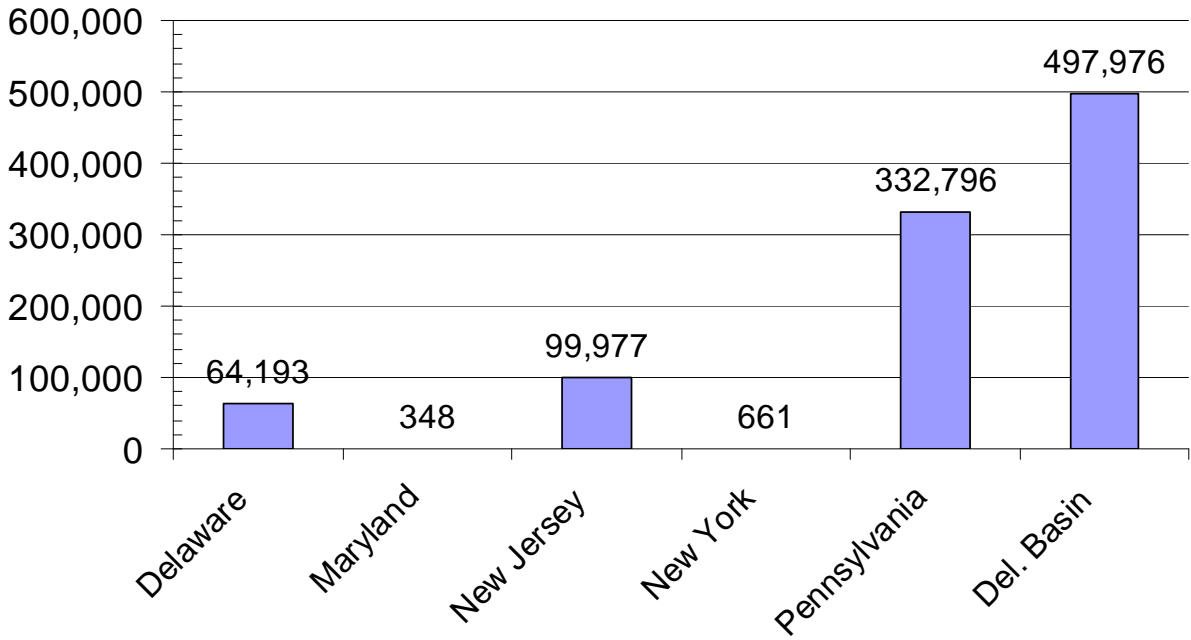
Between 2000 and 2010, the population in the Delaware Basin increased by 6.1% or 472,066 people. Over the last decade, the population increased by 30% in Pike County, Pa.; by over 20% in Kent and Sussex counties, Del. and Monroe County, Pa.; and by over 10% in Gloucester and Ocean counties, NJ, Orange County, NY, and Chester, Lehigh, and Northampton counties, Pa. Several counties in the basin lost population since 2000: Cape May, NJ; Broome, Delaware, and Greene counties, NY; and Lackawanna, Luzerne, and Schuylkill counties, Pa.

Watersheds of the Delaware River Basin

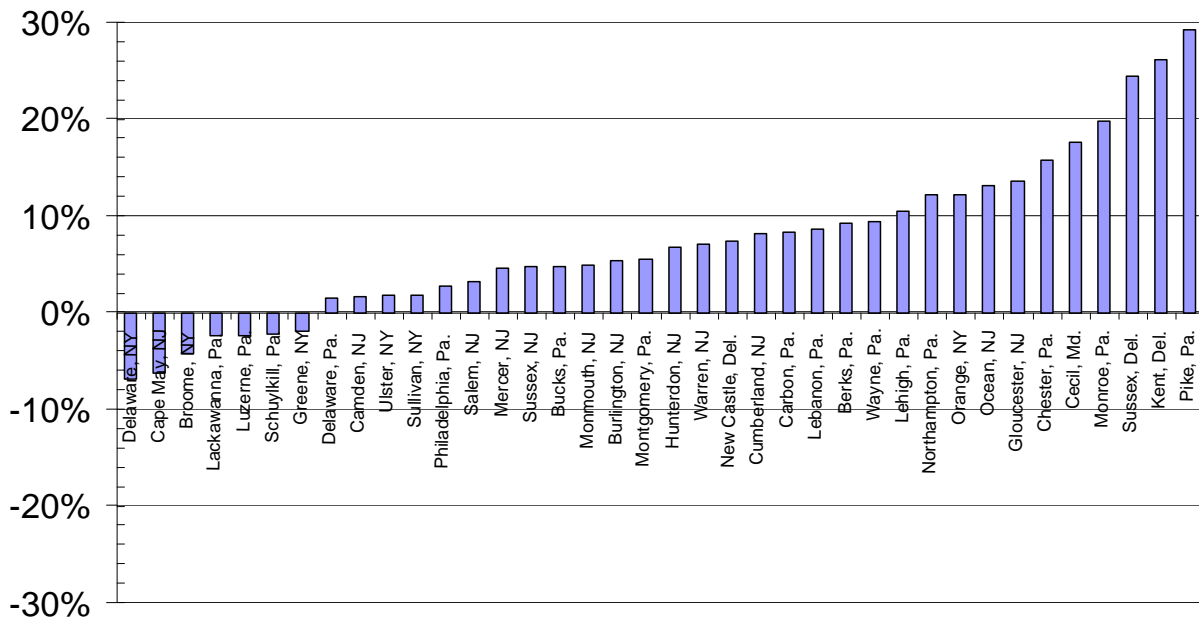
-  East-West Branch Watersheds
-  Lackawaxen Watersheds
-  Neversink-Mongaup Watersheds
-  Upper Central Watersheds
-  Lower Central Watersheds
-  Lehigh Valley
-  Schuylkill Valley
-  Upper Estuary Watersheds
-  Lower Estuary Watersheds
-  Delaware Bay Watersheds



Population Change Delaware Basin, 2000-2010



Population Change by County Delaware Basin, 2000-2010



Annual Economic Activity

The Delaware Basin contributes close to \$22 billion in annual market/non-market value to the regional economy from the following activities:

- Recreation \$0.83 billion
- Fish and Wildlife \$1.54 billion
- Public Parks \$1.83 billion
- Water Quality \$2.46 billion
- Navigation/Ports \$2.62 billion
- Agriculture \$3.37 billion
- Water Supply \$3.71 billion
- Forests \$5.13 billion

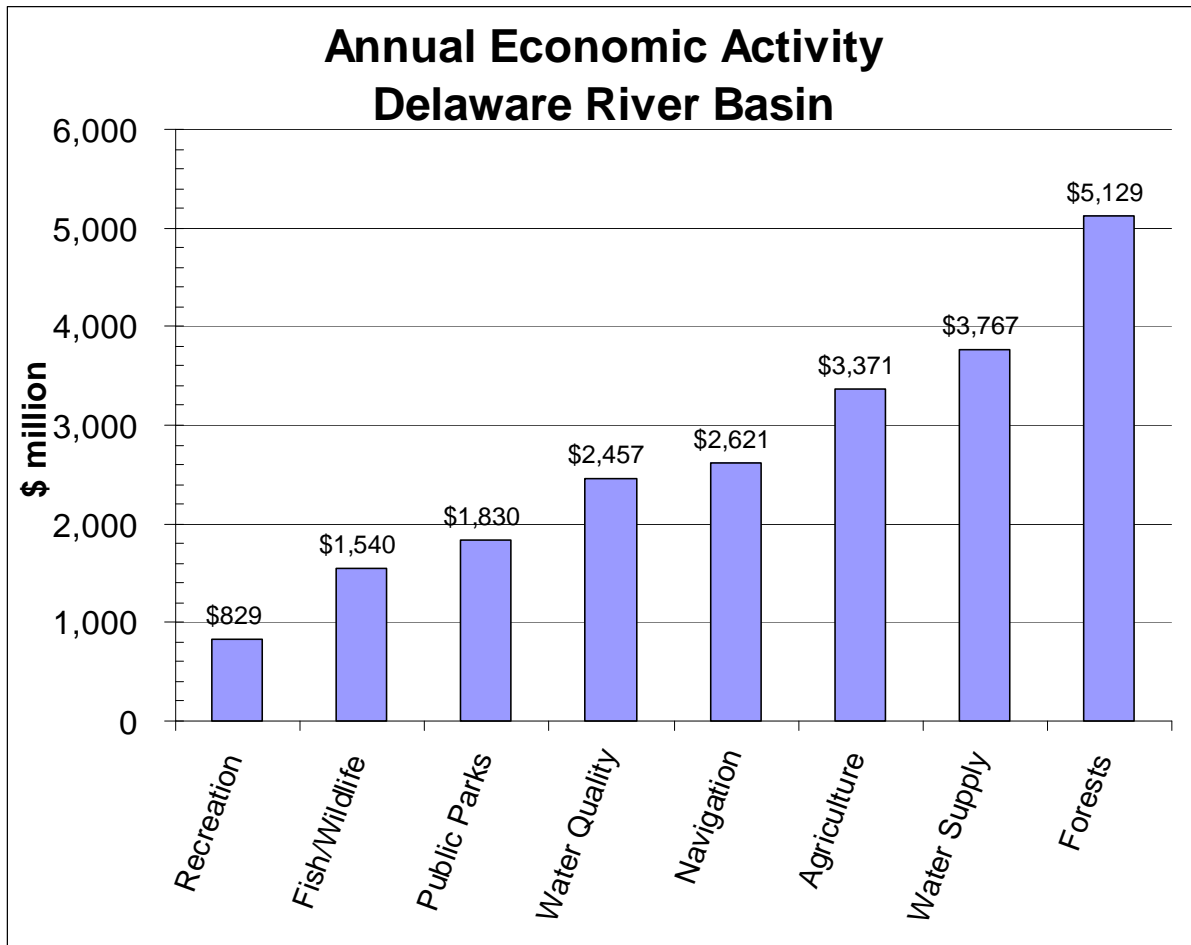


Table E1. Annual economic value supported by the Delaware River Basin.

Market Value	2010 (\$ million)
Recreation (Boating, Fishing, Swimming)	
Skiing (1.9 million ski-days @ \$45/day)	325
Paddling-based Recreation (620,860 paddlers)	362
Del. Water Gap River Recreation (267,000 visitors)	41
Canoe/Kayak/Rafting (225,000 visits)	9
Water Quality	
Water Treatment by Forests (\$96/mgd)	63
Wastewater Treatment (\$4.00/1000 gal)	1,722
Increased Property Value (+8% within 2000 ft of river)	13
Water Supply	
Drinking Water Supply (\$4.78/1000 gal)	3,145
Reservoir Storage (\$0.394/1000 gal)	145
Irrigation Water Supply (\$300/ac-ft)	32
Thermoelectric Power Water Supply (\$44/ac-ft)	273
Industrial Water Supply (\$200/ac-ft)	179
Hydropower Water Supply (\$32/ac-ft)	20
Fish/Wildlife	
Commercial Fish Landings (\$0.60/lb)	34
Fishing (11-18 trips/angler, \$17-\$53/trip)	576
Hunting (16 trips/hunter, \$16-50/trip)	340
Wildlife/Bird-watching (8-13 trips/yr, \$15-\$27/trip)	561
Wild Trout Fishing	29
Agriculture	
Crop, poultry, livestock value (\$1,180/ac)	3,371
Public Parks	
Del. Water Gap Natl. Rec. Area (4.9 million visits)	100
Maritime Transportation	
Navigation (\$15/ac-ft)	220
Port Activity	2,400
Delaware Basin	≈ \$14.3 billion
Non-Market Value	
2010 (\$ million)	
Recreation (Boating, Fishing, Swimming)	
Clean Water Act Restoration	
Viewing/Aesthetics (\$0.58/person)	5
Boating (\$0.76/person)	6
Fishing (\$2.95/person)	24
Swimming (\$6.88/person)	57
Water Quality Based Recreation	
Swimming (\$13.40/trip)	9
Boating (\$30/trip)	47
Fishing (\$62.79/trip)	52
Wildlife/bird watching (\$77.73/trip)	104
Water Quality	
Willing to Pay for Clean Water (\$38/nonuser-\$121/user)	659
Forests	
Carbon Storage (\$827/ac)	3,592
Carbon Sequestration (\$29/ac)	126
Air Pollution Removal (\$266/ac)	1,155
Building Energy Savings (\$56/ac)	243
Avoided Carbon Emissions (\$3/ac)	13
Public Parks	
Health Benefits (\$9,734/ac)	1,283
Community Cohesion (\$2,383/ac)	314
Stormwater Benefit (\$921/ac)	121
Air Pollution (\$88/ac)	12
Delaware Basin	≈ \$7.7 billion

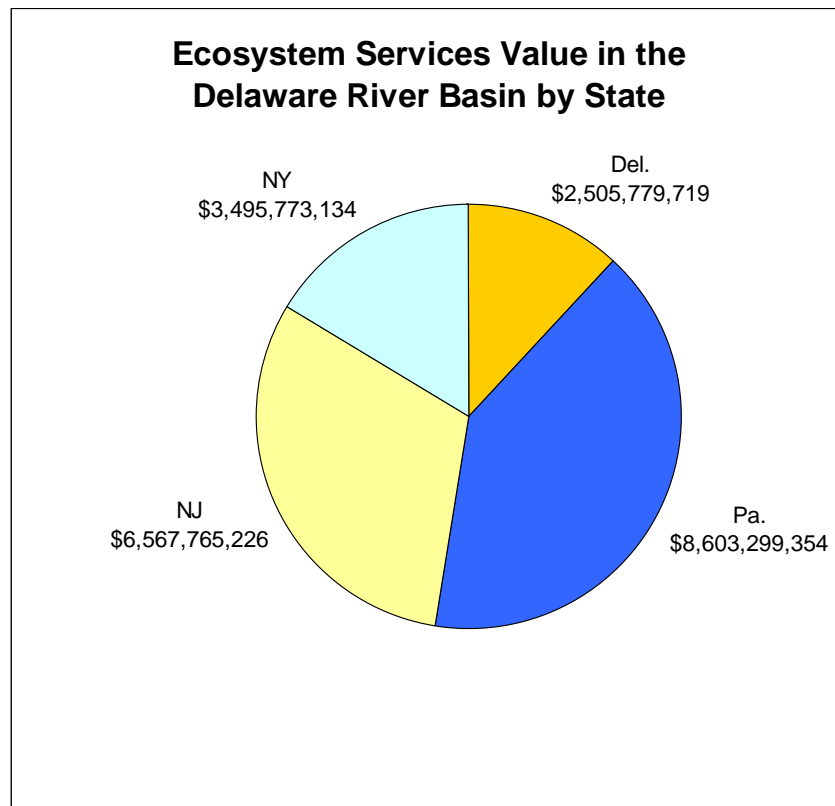
Ecosystem Services

The value of natural goods and services from ecosystems in the Delaware Basin is \$21 billion (\$2010) with net present value (NPV) of \$683 billion using a discount of 3% over 100 years. The contributions of ecosystem services by state include:

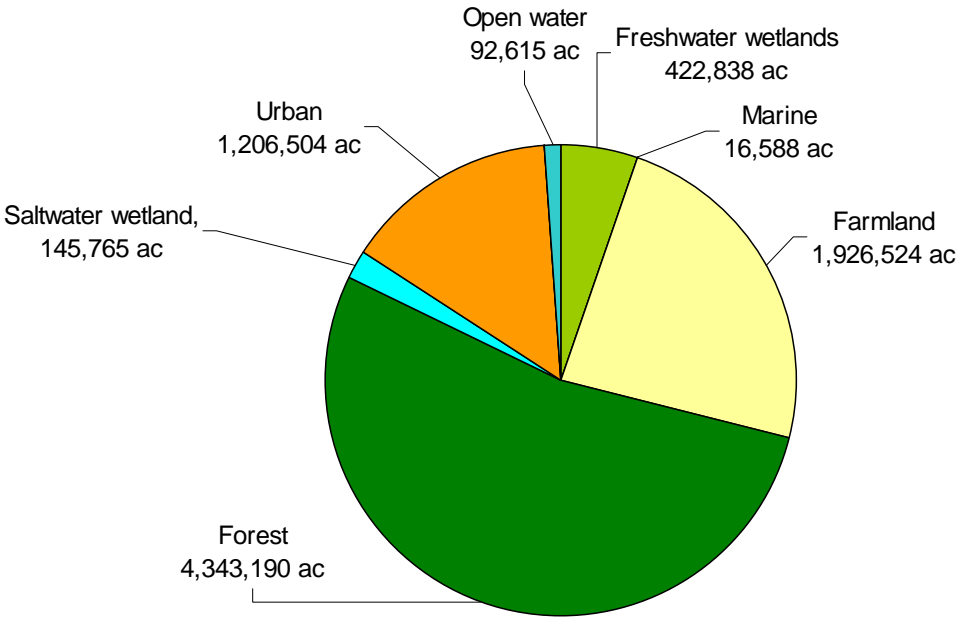
- Delaware (\$2.5 billion, NPV \$81.4 billion)
- New Jersey (\$6.6 billion, NPV \$213.4 billion)
- New York (\$3.5 billion, NPV \$113.6 billion)
- Pennsylvania (\$8.6 billion, NPV \$279.6 billion)

Table E2. Ecosystem goods and services provided by the Delaware River Basin

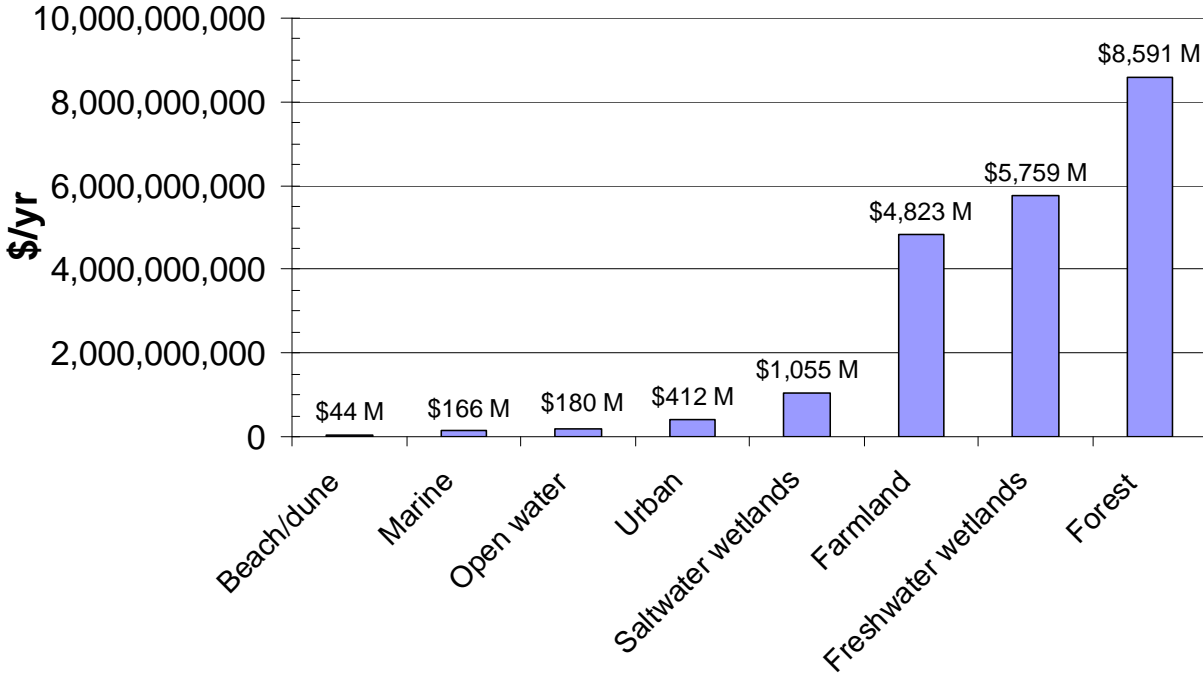
Ecosystem	Area (ac)	\$/ac/yr 2010	\$/yr 2010	NPV \$
Freshwater wetlands	422,838	13,621	5,759,329,048	187,178,194,067
Marine	16,588	10,006	165,982,947	5,394,445,767
Farmland	1,926,524	2,503	4,823,030,404	156,748,488,136
Forest land	4,343,190	1,978	8,591,367,360	279,219,439,184
Saltwater wetland	145,765	7,235	1,054,617,851	34,275,080,170
Urban	1,206,504	342	412,157,579	13,395,121,322
Beach/dune	900	48,644	43,758,633	1,422,155,566
Open water	92,615	1,946	180,210,703	5,856,847,857
Total	8,154,924		\$21,030,454,525	\$683,489,772,069

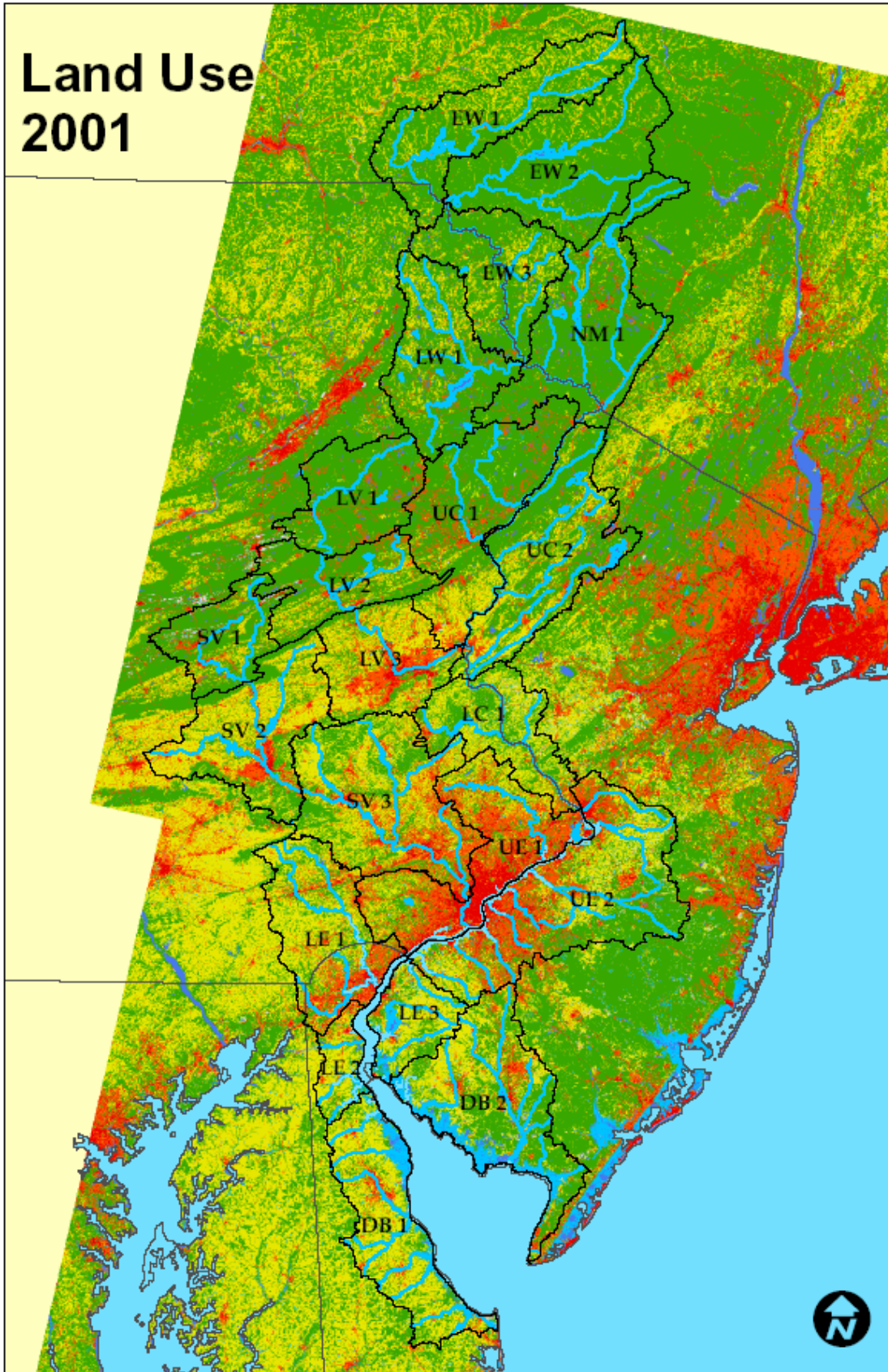


Ecosystems Area (acres) Delaware River Basin, 2005



Natural Capital Value of Ecosystems in the Delaware River Basin





Jobs and Wages

The Delaware River Basin is a jobs engine that supports 600,000 direct/indirect jobs with \$10 billion in annual wages in the coastal, farm, ecotourism, water/wastewater, ports, and recreation industries.

Table E3. Jobs and wages directly and indirectly supported by the Delaware River Basin

Sector	Jobs	Wages (\$ million)	Source
Direct Basin Related	240,621	4,900	U.S. Bureau of Labor Statistics, 2009
Indirect Basin Related	288,745	4,000	U.S. Census Bureau, 2009
Coastal	44,658	947	National Coastal Economics Program, 2009
Farm	45,865	1,376	USDA Census of Agriculture, 2007
Fishing/Hunting/Birding	44,941	1,476	U.S. Fish and Wildlife Service, 2008
Water Supply Utilities	8,750	485	UDWRA and DRBC, 2010
Wastewater Utilities	1,298	61	UDWRA and DRBC, 2010
Watershed Organizations	201	10	UDWRA and DRBC, 2010
Ski Area Jobs	1,753	88	Penna. Ski Areas Association
Paddling-based Recreation	4,226		Outdoor Industry Association (2006)
River Recreation	448	9	U. S. Forest Service/Nat'l. Park Service, 1990
Canoe/Kayak/Rafting	225		Canoe Liveries and UDWRA, 2010
Wild Trout Fishing	350	4	Maharaj, McGurrin, and Carpenter, 1998
Del. Water Gap Nat'l. Rec. Area	7,563	101	Stynes and Sun, 2002
Port Jobs	12,121	772	Economy League of Greater Phila., 2008
Delaware Basin Total	> 600,000	>\$10 billion	

Within the Delaware Basin are 3,480,483 jobs earning \$172.6 billion in wages including:

- Delaware (316,014 jobs earning \$16.5 billion in wages)
- New Jersey (823,294 jobs, \$38.1 billion in wages)
- New York (69,858 jobs earning \$2.5 billion in wages)
- Pennsylvania (2,271,317 jobs earning \$115.5 billion in wages)

Jobs directly associated with the Delaware River Basin (such as water/sewer construction, water utilities, fishing, recreation, tourism, and ports) employ 240,621 with \$4.9 billion in wages including:

- Delaware (15,737 jobs earning \$340 million in wages)
- New Jersey (62,349 jobs earning \$1.3 billion in wages)
- New York (32,171 jobs earning \$550 million in wages)
- Pennsylvania (130,364 jobs earning \$2.8 billion in wages)

Jobs indirectly related to the waters of the Delaware Basin (based on multipliers of 2.2 for jobs and 1.8 for salaries) employ 288,745 people with \$4.0 billion in wages including:

- Delaware (18,884 jobs earning \$270 million in wages)
- New Jersey (74,819 jobs earning \$1.0 billion in wages)
- New York (38,605 jobs earning \$400 million in wages)
- Pennsylvania (156,437 jobs earning \$2.2 billion in wages)

According to the National Coastal Economy Report (2009), coastal employment sectors within the Delaware River Basin are responsible for 44,658 jobs earning \$947 million in wages with contributions of \$1.8 billion toward the GDP including:

- Delaware (12,139 jobs, \$214 million in wages, \$392 million toward the GDP)
- New Jersey (4,423 jobs, \$140 million in wages, \$235 million toward the GDP).
- Pennsylvania (28,096 jobs, \$593 million in wages, \$1.2 billion toward the GDP).

Over 21,800 farms provide 45,865 jobs with \$1.9 billion in wages in the Delaware Basin including:

- Delaware (3,140 farm jobs earning \$129 million in wages)
- New Jersey (14,305 farm jobs earning \$587 million in wages)
- New York (2,410 farm jobs earning \$99 million in wages)
- Pennsylvania (26,010 farm jobs earning \$1.1 billion in wages)

Fishing, hunting, and bird watching/wildlife associated recreation employ 44,941 jobs with \$1.5 billion in wages in the Delaware Basin including:

- Delaware (4,080 jobs earning \$134 million in wages)
- New Jersey (17,477 jobs earning \$574 million in wages)
- New York (4,872 jobs earning \$160 million in wages)
- Pennsylvania (18,512 jobs earning \$608 million in wages)
-

Public and private water utilities that withdraw drinking water from the Delaware River Basin employ 8,750 people with wages of \$485 million including:

- Delaware (141 jobs earning \$7.8 million in wages)
- New Jersey (823 jobs earning \$46 million in wages)
- New York (5,600 jobs earning \$310 million in wages)
- Pennsylvania (2,186 jobs earning \$121 million in wages)

Wastewater utilities that treat and discharge wastewater to the Delaware River Basin employ 1,298 people with wages of \$61 million including:

- Delaware (108 jobs earning \$5 million in wages)
- New Jersey (257 jobs earning \$12 million in wages)
- New York (20 jobs earning \$1 million in wages)
- Pennsylvania (913 jobs earning \$43 million in wages)

Over 100 nonprofit watershed and environmental organizations employ at least 200 staff who earn at least \$9.5 million in wages to restore the watersheds in the Delaware River Basin.

In the Pocono Mountains of Pennsylvania, 9 ski resorts support 1,753 direct jobs in the Delaware Basin from aggregate annual revenues of \$87,655,063 from 1,908,228 skier visits.

Paddling-based recreation in the Delaware Basin is responsible for 620,860 participants and 4,226 jobs according to data prorated from the Outdoor Industry Association (2006).

The U. S. Forest Service and U.S. National Park Service estimated river recreation along the Upper Delaware River and Delaware Water Gap was responsible for 448 jobs with wages of \$8.8 million in 1986.

The 37 canoe/kayak liveries along the Delaware, Lehigh, and Schuylkill, and Brandywine Rivers have earnings of \$9 million per year and employ 225 people to lease watercraft to 225,000 visitors.

Along the Beaverkill, East Branch, West Branch, and upper main stem of the Delaware River in New York, wild trout fishing provides for 350 jobs with \$3.6 million in wages.

The Delaware Water Gap National Recreation Area recorded 4,867,272 recreation visits in 2001 that generated \$106 million in sales and 7,563 direct/indirect jobs with \$100 million in wages.

Delaware River ports from Wilmington to Philadelphia to Trenton are collectively the 5th largest port in the U.S. based on imports and the 20 largest U.S. port based on exports. These ports:

- Employ 4,056 workers who earn \$326 million in wages.
- Provide port jobs that support an additional two jobs each in port activity and employee spending for a total of 12,121 port related jobs with \$772 million in wages.
- Most of the 4,056 direct port jobs are in cargo handling and warehousing with petroleum port jobs adding up to less than 10% of employment
- Provides good jobs, the average salary of a port employee (with benefits) is over \$80,000.