

Estimated costs of BMPs that could generate N reductions for trading. Please see the notes below for important assumptions and qualifications.

Sector	BMP	Unit	Lifespan	Costs				TN Reduction				
				Construction Cost per unit	Land Purchase Cost per unit	Land Rental Cost per unit per year	Annual Cost per unit per year	annual TN load reduction (lbs/unit)	Construction cost per pound	Land Acquisition cost per pound	O&M or Annual cost per pound	Total annual cost per pound of TN reduction
Ag	Poultry Litter Treatment (alum, for example)	animal unit	1	\$0	\$0	\$0	\$5	0.00	-	-	-	-
Ag	Barnyard Runoff Control	acre	10	\$5,700	\$0	\$0	\$0	8.59	\$66	\$0	\$0	\$66
Ag	Alternative Crops	acre	10	\$181	\$0	\$0	\$0	10.23	\$2	\$0	\$0	\$2
Ag	Conservation Tillage - Total Acres	acre	1	\$0	\$0	\$0	\$17	0.47	\$0	\$0	\$36	\$36
Ag	Cover Crop Standard Drilled Wheat	acre	1	\$0	\$0	\$0	\$50	3.65	\$0	\$0	\$14	\$14
Ag	Cropland Irrigation Management	acre	10	\$9,600	\$0	\$0	\$0	0.41	\$2,341	\$0	\$0	\$2,341
Ag	Decision Agriculture	acre	10	\$137	\$0	\$0	\$0	0.52	\$26	\$0	\$0	\$26
Ag	Sorbing Materials in Ag Ditches	acre	5	\$625	\$0	\$0	\$0	0.00	-	-	-	-
Ag	Enhanced Nutrient Management	acre	1	\$0	\$0	\$0	\$10	0.89	\$0	\$0	\$11	\$11
Ag	Forest Buffers	acre	15	\$3,300	\$0	\$83	\$133	29.50	\$7	\$3	\$5	\$15
Ag	Grass Buffers; Vegetated Open Channel - Agriculture	acre	10	\$260	\$0	\$83	\$170	24.99	\$1	\$3	\$7	\$11
Ag	Horse Pasture Management	acre	5	\$3,000	\$0	\$0	\$0	0.00	-	-	-	\$0
Ag	Land Retirement to hay without nutrients (HEL)	acre	10	\$1,304	\$0	\$83	\$0	7.19	\$18	\$12	\$0	\$30
Ag	Land Retirement to pasture (HEL)	acre	10	\$1,304	\$0	\$83	\$0	8.33	\$16	\$10	\$0	\$26
Ag	Loafing Lot Management	acre	10	\$15,000	\$0	\$0	\$0	25.58	\$59	\$0	\$0	\$59
Ag	Non Urban Stream Restoration; Shoreline Erosion Control	foot	15	\$100	\$0	\$0	\$0	0.01	\$667	\$0	\$0	\$667
Ag	Prescribed Grazing	acre	5	\$3,000	\$0	\$0	\$0	0.45	\$1,333	\$0	\$0	\$1,333
Ag	Precision Intensive Rotational Grazing	acre	5	\$3,000	\$0	\$0	\$0	0.64	\$938	\$0	\$0	\$938
Ag	Water Control Structures	acre	10	\$520	\$0	\$0	\$0	3.72	\$14	\$0	\$0	\$14
Ag	Wetland Restoration	acre	15	\$3,375	\$0	\$83	\$0	11.11	\$20	\$7	\$0	\$28
Forest	Forest Harvesting Practices	acre	1	\$0	\$0	\$0	\$45	7.21	\$0	\$0	\$6	\$6
WWTP	Set Permitted Load	MGD	20	\$0	\$0	\$0	\$0	9198.00	-	\$0	\$0	-
Urban	Bioretention/raingardens	acre treated	20	\$9,469	\$3,000	\$0	\$383	4.16	\$114	\$36	\$92	\$242
Urban	Bioswale	acre treated	20	\$9,000	\$2,000	\$0	\$233	5.97	\$75	\$17	\$39	\$131
Urban	Urban Forest Buffers	acre	20	\$6,507	\$0	\$0	\$206	5.73	\$57	\$0	\$36	\$93
Urban	Urban Infiltration Practices - no sand/veg no under drain	acre treated	20	\$10,863	\$5,000	\$0	\$217	5.68	\$96	\$44	\$38	\$178
Urban	Urban Infiltration Practices - with sand/veg no under drain	acre treated	20	\$11,563	\$5,000	\$0	\$227	7.52	\$77	\$33	\$30	\$140
Urban	Vegetated Open Channel - Urban	acre treated	20	\$4,500	\$2,000	\$0	\$128	3.06	\$74	\$33	\$42	\$148
Septic	Septic Connection in Critical Area	system	20	\$11,000	\$0	\$0	\$200	17.57	\$31	\$0	\$11	\$43
Septic	Septic Connection within 1,000 feet of stream	system	20	\$11,000	\$0	\$0	\$200	11.03	\$50	\$0	\$18	\$68
Septic	Septic Connection -- other	system	20	\$11,000	\$0	\$0	\$200	6.57	\$84	\$0	\$30	\$114
Septic	Septic Denitrification in Critical Area	system	20	\$12,375	\$0	\$0	\$225	8.82	\$70	\$0	\$26	\$96
Septic	Septic Denitrification within 1,000 feet of stream	system	20	\$12,375	\$0	\$0	\$225	4.96	\$125	\$0	\$45	\$170
Septic	Septic Denitrification -- other	system	20	\$12,375	\$0	\$0	\$225	3.23	\$192	\$0	\$70	\$261
Septic	Septic Pumping in Critical Area	system	1	\$0	\$0	\$0	\$193	0.79	\$0	\$0	\$244	\$244
Septic	Septic Pumping within 1,000 feet of stream	system	1	\$0	\$0	\$0	\$193	0.50	\$0	\$0	\$386	\$386
Septic	Septic Pumping -- other	system	1	\$0	\$0	\$0	\$193	0.30	\$0	\$0	\$643	\$643

Notes:

1. Most of the Urban BMPs costs include land acquisition, but only the cost of Impervious Surface Reduction is increased significantly by the land acquisition costs. Urban Forest Buffers and Urban Nutrient
2. The selected Ag BMPs do not include ones that involve AFOs, CAFOs, nurseries or manure, and do not include BMPs that are required to meet the Ag baseline.
3. The Urban costs are for mixed urban (pervious and impervious).
4. Costs for upgrading WWTPs were based on actual costs of upgrades to ENR of WWTPs with hydraulic capacity over 500,000 gpd. Upgrading minors may be more or less expensive on a per pound basis,
5. The costs do not include costs of certification and verification, continuing inspections or administrative costs associated with trades.
6. Interest rate is initially set at 0.0%. Thus, the estimated costs in this spreadsheet represent the annual cost, in current dollars, for one unit of the BMP. This method makes no assumptions about funding
7. Costs for Urban BMPs were based on estimates from EPA and from King & Hagan. The load reduction model used was MAST.
8. Costs for septic BMPs considered the actual costs of Maryland-approved systems, and electricity costs based on manufacturers' estimates.
9. Costs for Agricultural BMPs were based on estimates from EPA, the Maryland Department of Agriculture, and Wieland. For some, the load reduction model was 5.3.2. A combination load reduction model