



PRESS RELEASE

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Trees Improve Air Quality and Protect Human Health

Annapolis, MD, November 18, 2011 – New data shows that trees can significantly improve air quality in metropolitan areas like Baltimore, MD and Washington, DC by filtering out pollution that is damaging to human health.

Released by the Center for Chesapeake Communities and Pinchot Institute for Conservation, the data shows that the trees in the Washington, DC area remove over 8.3 million pounds of nitrogen dioxide each year. To achieve a similar pollutant reduction, over 274,000 cars would need to be taken off the road each year. Based on studies of the costs of pollution to society such as health care, the District's tree cover saves nearly \$51 million annually.¹ In the Baltimore, MD area, trees remove close to 5 million pounds of nitrogen dioxide annually —equal to removing 183,000 cars from the road and saving over \$26 million in associated health care costs each year.

By lowering city temperatures and removing pollutants from the air, trees can reduce the risk to residents of developing a number of health problems including heart and lung disease and asthma, and ultimately reduce premature deaths. These benefits are important to Baltimore and Washington, DC residents as these communities are currently not meeting federal air quality standards for ozone and particulate matter.

Trees can provide benefits to local neighborhoods as well:

- Tanglewood Park in northern Prince George's County, Maryland removes over 3,500 pounds of ozone-forming pollutants per year. This service saves residents \$16,000 every year in avoided costs.
- The trees of Rock Creek Park in Washington, DC remove 63,500 pounds of ozone-forming pollutants each year, which has a value of \$285,000 dollars each year.
- Fountainhead Regional Park along the Occoquan Reservoir in Virginia removes nearly 89,000 pounds of ozone each year, which has a value of almost \$400,000 each year.

Center for Chesapeake Communities Executive Director Gary G. Allen noted, "Protecting trees and woods in urban areas just makes sense. It not only saves money for the city in reduced health care costs, it is one of the most cost-effective and multi-benefit strategies for meeting regional air quality goals."

¹ US Forest Service, Northern Research Station, Syracuse, NY. Unpublished results of i-Tree analysis of 2007 county data. October 2011

These findings could influence how the US Environmental Protection Agency considers trees in meeting air quality standards in the Baltimore and the Washington, DC metropolitan areas. Communities across the country are increasingly including tree cover in air quality plans to help them meet federal standards, however, the US EPA guidelines currently consider tree cover only a voluntary measure. The Center for Chesapeake Communities, Virginia Department of Forestry, and Pinchot Institute for Conservation, with funding from the USDA Forest Service, are investigating ways that these benefits can be used to allow landowners and local jurisdictions to take air quality “credit” for their tree planting and protection efforts.

“It is our hope that this effort will lead to landowners being able to market their forest’s air quality benefit,” said Virginia State Forester Carl Garrison.

Tad Aburn, Director of the Air and Radiation Management Administration at the Maryland Department of the Environment stated, “Maryland looks forward to including urban tree cover in a more substantial way in our air quality plans.”

Protecting and expanding tree cover goes beyond air quality benefits, including opportunities for recreation, wildlife habitat, flood control, and reaching the water quality goals that are the focus of the Chesapeake Bay Program, a federal state partnership to protect and restore the Chesapeake Bay.

“Trees and forests provide a multitude of ecological services. Forests are the best land cover for water quality: protecting and expanding trees and forests is critical to restoring the Chesapeake Bay. Trees also help sequester carbon, improve fisheries, stabilize stream banks, control erosion, and reduce the velocity of damaging runoff,” noted Nicolas DiPasquale, Director of the US EPA Chesapeake Bay Program.

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About the Center for Chesapeake Communities (www.chesapeakecommunities.org)

The Center for Chesapeake Communities works to assist local governments in their efforts to plan for growth and development and the protection of their own natural resources and the Chesapeake Bay. Providing tools, techniques, and technical assistance opportunities, the Center supports local government watershed initiatives. The Center addresses concerns of jurisdictions that are large or small, rural or urban, developed or developing. It is committed to informing, educating, training, and assisting local governments in the protection of local natural resources and the Chesapeake Bay.

About the Pinchot Institute for Conservation (www.pinchot.org)

The mission of the Pinchot Institute is to strengthen forest conservation thought, policy and action by developing innovative, practical, and broadly-supported solutions to conservation challenges and opportunities. Pinchot Institute accomplishes this through nonpartisan research, education and technical assistance on key issues influencing the future of conservation and sustainable natural resource management.

Table 1: Air Quality Benefits of Trees in the Washington, DC Area

Air Pollutant Removal Benefits of Forests*								
Washington DC Area	Carbon Monoxide (CO)	Nitrogen Dioxide (NO2)	Ozone (O3)	Particulate Matter (PM10)	Sulfur Dioxide (SO2)	Total	Car Effect**	State-wide Air Quality Rank***
	tons/year						Cars removed from the road/year	
Maryland								
Calvert County	184	407	2,281	1,326	355	4,553	25,717	11
Charles County	148	1,185	4,654	2,904	473	9,365	74,871	6
Frederick County	19	504	4,068	2,838	277	7,706	31,844	17
Montgomery County	110	647	2,906	2,065	503	6,233	40,876	11
Prince George's County	49	444	3,194	2,356	274	6,317	28,046	22
Virginia								
Alexandria City	1	15	57	35	6	115	978	130
Arlington County	2	24	129	75	19	249	1,520	129
Fairfax County	106	263	3,226	1,663	502	5,760	26,689	132
Fairfax City	1	5	29	20	5	60	336	111
Falls Church City	0	2	13	8	2	26	135	131
Loudoun County	127	402	3,401	2,402	223	6,557	25,421	127
Manassas City	2	3	31	22	2	60	218	111
Manassas Park City	0	1	10	7	1	19	69	111
Prince William County	100	227	2,571	1,835	175	4,908	14,327	111
Washington DC	20	56	254	149	44	522	3,537	NA
Totals	869	4,188	26,823	17,706	2,862	52,448	274,583	NA

* Figures derived from county averages of deciduous and evergreen trees from USDA Forest Service Forest Inventory and Analysis data.

** Car Effect represents the equivalent NO2 removal from trees that taking cars from the road would provide.

*** Based on data from County Health Rankings.com. Individual rankings can be the same, but totals are based on the number of jurisdictions in each state (MD: 24 and VA: 131). The lowest rank represents the best air quality.

Table 2: Air Quality Benefits of Trees in the Washington, DC Area

Air Pollutant Removal Benefits of Forests*							
Washington DC Area	Carbon Monoxide (CO)	Nitrogen Dioxide (NO2)	Ozone (O3)	Particulate Matter (PM10)	Sulfur Dioxide (SO2)	Total	State-wide Air Quality Rank**
	\$/year						
Maryland							
Calvert County	234,495	3,660,080	20,505,815	7,957,558	780,708	33,138,656	11
Charles County	188,844	10,655,894	41,832,470	17,431,218	1,041,798	71,150,225	6
Frederick County	24,199	4,532,121	36,564,313	17,031,420	609,623	58,761,677	17
Montgomery County	140,924	5,817,518	26,125,229	12,395,718	1,107,763	45,587,153	11
Prince George's County	62,603	3,991,606	28,708,399	14,143,245	602,655	47,508,508	22
Virginia							
Alexandria City	1,148	139,259	511,115	209,873	14,013	875,408	130
Arlington County	2,199	216,260	1,163,702	447,663	41,541	1,871,366	129
Fairfax County	121,636	3,798,418	25,800,088	10,308,874	804,081	40,833,097	132
Fairfax City	1,451	47,777	262,271	117,432	11,556	440,488	111
Falls Church City	435	19,252	117,185	50,399	4,238	191,509	131
Loudoun County	161,689	3,617,927	30,575,728	14,419,356	491,765	49,266,465	127
Manassas City	1,958	31,025	277,226	133,428	5,131	448,768	111
Manassas Park City	576	9,826	90,226	40,139	1,575	142,341	111
Prince William County	128,176	2,039,014	23,110,047	11,013,453	384,560	36,675,250	111
Washington DC	25,197	503,350	2,279,417	893,374	97,032	3,798,370	NA
Totals	1,095,531	39,079,327	237,923,232	106,593,152	5,998,038	390,689,280	NA

* Dollar values based on estimated costs to society (i.e., externalities) of air pollutants

** Based on data from County Health Rankings.com. Individual rankings can be the same, but totals are based on the number of jurisdictions in each state (MD: 24 and VA: 131). The lowest rank represents the best air quality.

Table 3: Air Quality Benefits of Trees in the Baltimore, Maryland Area

Air Pollutant Removal Benefits of Forests*								
Baltimore, Maryland Area	Carbon Monoxide (CO)	Nitrogen Dioxide (NO2)	Ozone (O3)	Particulate Matter (PM10)	Sulfur Dioxide (SO2)	Total	Car Effect**	State-wide Air Quality Rank***
	tons/year						Cars removed from the road/year	1 to 24 Best to Worst
Anne Arundel	116	1,050	4,034	2,104	616	7,920	66,344	20
Baltimore City	12	86	234	182	48	563	3,231	24
Baltimore County	173	707	3,566	2,834	672	7,951	75,301	23
Carroll	11	137	2,243	1,671	171	4,233	8,653	4
Harford	113	280	3,438	1,773	535	6,140	17,683	21
Howard	21	194	1,350	982	121	2,667	12,224	16
Totals	446	2,454	14,864	9,545	2,164	29,474	183,436	NA

* Figures derived from county averages of deciduous and evergreen trees from USDA Forest Service Forest Inventory and Analysis data.

** Car Effect represents the equivalent NO2 removal from trees that taking cars from the road would provide.

*** Based on data from County Health Rankings.com.

Table 4: Air Quality Benefits of Trees in the Baltimore, Maryland Area

Air Pollutant Removal Benefits of Forests*							
Baltimore, Maryland Area	Carbon Monoxide (CO)	Nitrogen Dioxide (NO2)	Ozone (O3)	Particulate Matter (PM10)	Sulfur Dioxide (SO2)	Total	State-wide Air Quality Rank**
	\$/year						1 to 24 Best to Worst
Anne Arundel	147,491	9,442,201	36,260,664	12,625,753	1,356,627	59,832,736	20
Baltimore City	15,633	775,697	2,104,657	1,093,700	105,404	4,095,091	24
Baltimore County	220,987	6,353,512	32,051,548	17,007,242	1,479,121	57,112,410	23
Carroll	14,285	1,231,516	20,160,629	20,160,629	10,030,662	51,597,719	4
Harford	144,862	2,516,725	30,908,285	10,640,432	1,177,002	45,387,306	21
Howard	26,665	1,739,751	12,131,624	5,891,875	266,699	20,056,614	16
Totals	569,922	22,059,402	133,617,407	67,419,631	14,415,515	238,081,877	NA

* Dollar values based on estimated costs to society (i.e, externalities) of air pollutants

** Based on data from County Health Rankings.com.