

# The Economic Benefits of Cleveland Metroparks



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CONSERVING LAND FOR PEOPLE



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*The Trust for Public Land*

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## Executive summary

Started in 1917, Cleveland Metroparks is the oldest park district in Ohio. Cleveland Metroparks owns and manages 18 parks and the Cleveland Metroparks Zoo, which together contain over 22,800 acres, hundreds of trail miles, seven nature/science visitor centers, eight golf courses, over 50 picnic areas, and other high-quality park infrastructure. These facilities provide diverse recreational opportunities to the general public for free or at a minimal cost. Activities include biking, birding, boating, cross country skiing, exercising, fishing, exploring nature, golfing, hiking, horseback riding, playing in play areas, picnicking, sledding, swimming, viewing wildlife, walking, and more.

By providing park areas and access to an array of outdoor activities, Cleveland Metroparks generates numerous economic benefits within the local community.<sup>1</sup> Parks and trails enhance property values, provide recreational opportunities, improve human health, attract visitors, and provide natural goods and services such as filtering air pollutants and managing stormwater. Additionally, they support local jobs, boost spending at local businesses, and create local tax revenue. Specifically, these park areas produce the following economic benefits:

### Enhanced property values and government cost savings

- Cleveland Metroparks trails and parks increase the value of nearby residential properties because people enjoy living close to parks and trails and are willing to pay for the privilege. These areas raise the value of nearby residential properties by \$123 million and increase property tax revenues by \$3.09 million a year (Table 2).<sup>2</sup>
- Cleveland Metroparks reduces stormwater management costs by capturing precipitation, slowing its runoff, and reducing the amount of stormwater that enters the stormwater system. These park areas lower stormwater management costs by \$5.12 million annually (Table 4).
- Trees and shrubs in Cleveland Metroparks trails and parks remove air pollutants that endanger human health and damage structures. Such spaces reduce pollution control costs in Cuyahoga County and Hinckley Township by \$14.4 million per year (Table 5).

### Recreation and tourism

- Tourism is one of Cuyahoga County's largest industries, producing \$6.66 billion in sales annually. Cleveland Metroparks contributes to this industry.
- Approximately 11 percent of visitors to Cuyahoga County come for the purpose of visiting the outdoors, such as parks, trails, and beaches. These visitors spend \$733 million annually in the local economy and generate \$50.5 million in state and local sales taxes (Table 6).

1 The tax district of Cleveland Metroparks includes all of Cuyahoga County and Hinckley Township in Medina County. Cleveland Metroparks also owns land in Lake, Lorain, and Summit Counties. For the purposes of this study we have limited the geographic scope to Cuyahoga County and Hinckley Township, unless otherwise mentioned.

2 All numbers reported in the text and tables are rounded to three significant digits unless otherwise noted. Due to rounding, some report figures and tables may appear not to sum.

- Residents also enjoy Cleveland Metroparks trails and parks. Each year residents of Cuyahoga County receive a benefit of \$40.4 million for the direct use of these park facilities (Table 8).
- Independent research shows that park use translates into increased physical activity, resulting in medical cost savings. Approximately 144,000 adult residents of Cuyahoga County engage in physical activity at a level sufficient to generate measurable health benefits, yielding annual cost savings of \$59.5 million (Table 10).

### Additional benefits

- Cleveland Metroparks trails and parks provide a number of other important economic benefits that cannot be quantified at this time. These include improving quality of life and boosting local economies by attracting businesses and residents.
- These benefits create substantial and sustained economic value, which unfortunately is extremely difficult to quantify.

This study illustrates that Cleveland Metroparks trails and parks are key economic drivers that contribute at least \$855 million annually in economic benefits, as described below in more detail.

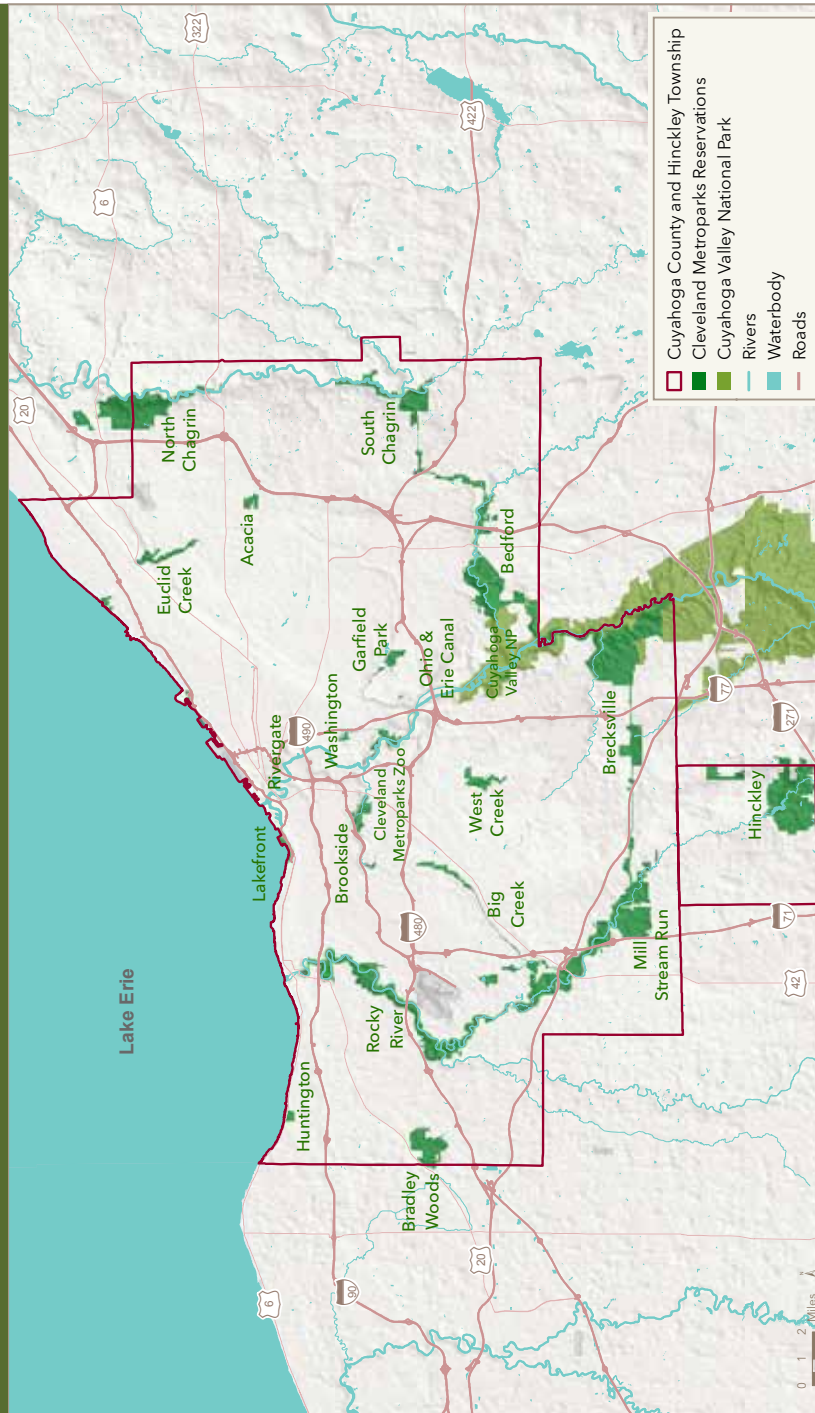
**Table 1. Summary of estimated annual benefits of Cleveland Metroparks trails and parks**

BENEFIT CATEGORY	BENEFIT SUBCATEGORY	LAND USE TYPE	TOTAL
Enhanced property values and government cost savings			
Enhanced property value	Additional property value*	Parks	\$ 114,000,000
		Trails	\$ 9,650,000
	Additional property tax	Parks	\$ 2,870,000
		Trails	\$ 226,000
Stormwater retention value		Parks and trails	\$ 5,120,000
Air pollution removal value		Parks and trails	\$ 14,400,000
Recreation and tourism			
Park tourism value	Tourism spending	Parks and trails	\$ 733,000,000
	Sales tax on tourist spending*	Parks and trails	\$ 50,500,000
Direct use value		Parks and trails	\$ 40,400,000
Human health value		Parks and trails	\$59,500,000
Summary			
Total annual value		Parks and trails	\$ 855,000,000

\* Additional property value cannot be included in the total annual value because it is a one-time boost to the properties' values and does not accrue each year. Also, to avoid double counting, sales tax on tourist spending is not included in the total (it is a subset of tourist spending).

# CLEVELAND METROPARKS

CUYAHOGA COUNTY AND HINCKLEY TOWNSHIP



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October 10, 2013  
Data Provided by: Cleveland Metroparks, National Park Service, and Esri.  
Cartography by The Trust for Public Land, [www.tpl.org](http://www.tpl.org)

# Property values and government cost savings

## Enhanced property value and increased tax revenues

Study after study has shown that parks and trails have a positive impact on nearby residential property values. All things being equal, most people are willing to pay more for a home close to a nice park or trail. The property value added by park and trail areas is separate from the direct use value gained; property value goes up even if the resident never visits the park or trail.

Property value is affected primarily by two factors: the distance from, and the quality of, the park or trail. While proximate value (“nearby-ness”) can be measured up to 2,000 feet from a park or trail, most of the value – whether such spaces are large or small – is within the first 500 feet. Therefore, this analysis of enhanced property value has been limited to 500 feet. Moreover, people’s desire to live near a park or trail also depends on the quality of the park or trail. Beautiful natural resource areas with public access, scenic vistas, and bodies of water are markedly valuable. Those with excellent recreational facilities are also desirable, although sometimes the greatest property values are realized a block or two away if there are issues of noise, lights, or parking. Less attractive or poorly maintained parks and trails may provide only marginal value to surrounding property values, and in some cases, these areas may actually reduce nearby property values.

Determining an accurate view of every property next to every park or trail is technically possible but prohibitively time-consuming and costly. Therefore, an extrapolative methodology was formulated to arrive at a reasonable estimate. All homes within 500 feet of parks or trails were identified. A home consists of a residential structure that is owned and taxed; thus, this analysis includes multiple unit dwellings (e.g., apartments) and single family homes.<sup>3</sup> The homes located within 500 feet of Cleveland Metroparks trails and parks in Cuyahoga County and Hinckley Township had a total market value of \$2.76 billion in 2012 (Table 2). Portions of Cleveland Metroparks consist of long, mostly linear, land holdings that connect larger land holdings. Within these land connectors are parkways and trails. For the purposes of this report, these sections were considered trails instead of parks to evaluate the economic benefits.

Typically the amount conservation lands add to the value of a property is determined based on the quality of the park or trail. That is, high quality lands add significant value, average quality lands add slight value, and low quality lands reduce value to surrounding residences. Data are not available to assess the quality of individual Cleveland Metroparks trails and parks; however, a recent survey conducted about 2011 park visitation indicated high overall satisfaction with facilities.<sup>4</sup>

3 Other property types were not considered in this analysis because sufficient data are not available to quantify the benefit. Non-residential property types are rarely studied in the literature as they are much more difficult to statistically analyze because there are more variables that influence value and fewer real estate transactions to compare.

4 A 2011 in-park study of visitors asked park visitors how satisfied they were on a 10-point scale, with 10 being highly satisfied. The average score for the sample of 4,500 park users was 8.92 with 91 percent of respondents giving Cleveland Metroparks a rating of eight, nine, or ten. In the leisure industry, an average of 8.0 is considered acceptable, with concerns being raised if the mean is below 8.0. These scores are a strong endorsement of Cleveland Metroparks; Robert D. Bixler, *Levels and Sources of Satisfaction among Users of the Park District* (Cleveland Metroparks, accessed October 3, 2013, <http://www.clevelandmetroparks.com/Resource.ashx?sn=Levels-and-Sources-of-Satisfaction>).

## Parks

Based on published literature results, the conservative value of 5 percent has been assigned as the amount that these conserved lands add to the market value of all dwellings within 500 feet of parks.<sup>5</sup> A 2009 report from the National Association of REALTORS® found the premium for homes near parks can extend three blocks and start at 20 percent for those homes directly adjacent (declining with distance from the park).<sup>6</sup> This analysis estimates that an added \$114 million in residential property value existed in 2012 because of proximity to parks (Table 2).

## Trails

This analysis assigns a 2 percent market value premium for homes within 500 feet of trails based on existing studies. Property values of homes in neighborhoods with trails have been shown to increase 2 percent to 14 percent.<sup>7</sup> The estimate for 2012 is that an added \$9.65 million in residential property value exists because of proximity to trails (Table 2).

The residential property tax rates for each parcel were used to determine how much additional tax revenue was raised by local units of government. Property tax rates differ by parcel depending on the city, village, or township in which they are located. The total value captured in additional property tax revenue derived from parks and trails is \$3.09 million each year (Table 2).

These estimates are conservative for the following reasons. First, the estimates leave out all the value of dwellings located beyond 500 feet from a park or trail even though evidence exists for marginal property value beyond such distances. Second, as mentioned, they only measure a 5 percent marginal value for parks though studies have shown up to a 20 percent premium and marginal values up to distances of 2,000 feet.<sup>8</sup> Third, as discussed, they only measure a 2 percent marginal value for trails though studies have shown up to a 14 percent premium and marginal values up to distances of 5,000 feet.<sup>9</sup> Therefore, these estimates provide a lower bound estimate of the “true” impact of parks and trails on property values.

5 John L Crompton, *The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base* (Second Edition, Ashburn, Virginia: National Recreation and Park Association, 2004).

6 National Association of REALTORS®, *On Common Ground* (Winter 2009).

7 Greg Lindsey, Joyce Man, Seth Payton, and Kelly Dickson, “Property Values, Recreation Values, and Urban Greenways” (*Journal of Park and Recreation Administration* 22, no. 3, 2004, pp.69-90). Found a residential property value premium of 14 percent within one-quarter of a mile of a trail in Indianapolis, Indiana; Harrison Campbell and Darla Munroe, “Greenways and Greenbacks: The Impact of the Catawba Regional Trail on Property Values in Charlotte, North Carolina” (*Southeastern Geographer* 47, no. 1, 2007, pp.118-137). Found a residential property value premium of three percent within 5,000 feet of a greenway in Charlotte, North Carolina; Paul Asabere and Forrest Huffman, “The Relative Impacts of Trails and Greenbelts on Home Price” (*Journal of Real Estate Finance and Economics* 38, 2009, pp. 408-419). Found residential property value premiums of two, four, and five percent for trails, greenbelts, and both trails and greenbelts, respectively, within the neighborhood containing the amenity.

8 National Association of REALTORS®, *On Common Ground* (Winter 2009); John L Crompton, *The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base* (Second Edition, Ashburn, Virginia: National Recreation and Park Association, 2004).

9 Greg Lindsey, Joyce Man, Seth Payton, and Kelly Dickson, “Property Values, Recreation Values, and Urban Greenways” (*Journal of Park and Recreation Administration* 22, no. 3, 2004, pp.69-90); Campbell, Harrison Campbell and Darla Munroe, “Greenways and Greenbacks: The Impact of the Catawba Regional Trail on Property Values in Charlotte, North Carolina” (*Southeastern Geographer* 47, no. 1, 2007, pp.118-137); Paul Asabere and Forrest Huffman, “The Relative Impacts of Trails and Greenbelts on Home Price” (*Journal of Real Estate Finance and Economics* 38, 2009, pp. 408-419).

Table 2. Enhanced residential property value due to proximity to Metroparks trails and parks

	TOTAL MARKET VALUE	MARKET VALUE PREMIUM	ADDITIONAL MARKET VALUE	ADDITIONAL ANNUAL PROPERTY TAX REVENUE
Parks	\$ 2,270,000,000	5 %	\$ 114,000,000	\$ 2,870,000
Trails	\$ 483,000,000	2 %	\$ 9,650,000	\$ 226,000
<b>Total</b>	<b>\$ 2,760,000,000</b>		<b>\$ 123,000,000</b>	<b>\$ 3,090,000</b>

In addition to contributing additional property tax revenue, parks and trails save local municipal governments money. Parks save communities money through avoided costs on expensive infrastructure, schools, and other municipal services that are required by residentially developed areas. A study in neighboring Lake County showed that for every \$1 paid in local taxes, residential development required \$1.16 and \$1.24 in municipal services in Madison Village and Township, respectively.<sup>10</sup> This is consistent with studies across the country that have shown that residential development contributes less in taxes than it requires in municipal services.<sup>11</sup> The land use categories of commercial and industrial development and farms and forest land more than paid for themselves. They contributed more in property taxes than they required in municipal services, ranging from \$0.30 to \$0.37 in services for every \$1 in property tax revenues.<sup>12</sup> Although the study did not consider parks in these land use categories because park properties are tax exempt, The Trust for Public Land expects that the additional property tax revenues from nearby properties could outweigh the costs of services required in the park and that parks would have a better cost of community services ratio than residential development.



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10 American Farmland Trust, *A Cost of Community Services Study for Madison Village and Township, Lake County, Ohio* (Northampton, Massachusetts: Farmland Information Center, 2008).

11 American Farmland Trust, *Cost of Community Services Fact Sheet* (Northampton, Massachusetts: Farmland Information Center, 2010).

12 American Farmland Trust, *A Cost of Community Services Study for Madison Village and Township, Lake County, Ohio* (Northampton, Massachusetts: Farmland Information Center, 2008).

## Reducing the cost of managing stormwater in urban areas

Stormwater management is increasingly becoming an issue for communities in Cuyahoga County and Hinckley Township. When rainwater flows off roads, sidewalks, and other impervious surfaces, it can cause flooding, erosion, and declines in water quality by carrying pollutants with it. Unfiltered rainwater can flow directly into waterways, causing significant and costly ecological problems such as algal blooms. Additionally, dealing with stormwater is an expensive endeavor. The Northeast Ohio Regional Sewer District (NEORS), which provides sewer and stormwater management services to a large portion of Cuyahoga County, budgeted over \$17.1 million to cover stormwater operating expenses in 2013.<sup>13</sup> This number does not include costly capital expenses that are required to upgrade infrastructure.

Cleveland Metroparks trails and parks reduce stormwater management costs by capturing precipitation and/or slowing its runoff. Large pervious (absorbent) surface areas allow precipitation to infiltrate and recharge the groundwater. Also, vegetation provides considerable surface area that intercepts and stores rainwater, allowing some to evaporate before it ever reaches the ground. In effect, urban green spaces function like minior storage reservoirs and are the original form of green infrastructure.

The Western Research Station of the U.S. Forest Service in Davis, California, has developed a model to estimate the value of stormwater retained by parks. This model was run for this analysis by researchers at the University of California, Davis. Inputs to the model consist of geographic location, climate region, surface permeability, acres of parkland, land cover percentages, and types of vegetation. This model provides a preliminary estimate of the value of stormwater retention for Cleveland Metroparks trails and parks in Cuyahoga County and Hinckley Township.

First, The Trust for Public Land determined the perviousness of Cleveland Metroparks trails and parks using the National Land Cover Database of land use and land cover created by the U.S. Geological Survey (Table 3). The remaining areas consist of impervious roadways, parking areas, buildings, hard courts, and water surfaces. Cleveland Metroparks trails and parks are 72.5 percent permeable; 27.5 percent of the precipitation falls on impermeable surfaces.

**Table 3. Acreage and permeability of Cleveland Metroparks trails and parks\***

ACRES OF PARKS	ACRES	PERCENT OF TOTAL
With pervious soil	14,000	70.0
With impervious soil	5,500	27.5
Under water	500	2.5
<b>Total</b>	<b>20,000</b>	<b>100.0</b>

\*As calculated by the University of California, Davis.

Second, The Trust for Public Land estimated the amount of perviousness of the rest of Cuyahoga County and Hinckley Township (i.e., the county without its parkland) using the same data. The pervious land consists largely of residential front and backyards, private natural areas such as cemeteries, public institution grounds, and office campuses. Cuyahoga County is 55 percent permeable, meaning that 45 percent of the precipitation falls on impermeable surfaces.

13 Northeast Ohio Regional Sewer District. 2013 Budget Report.

Third, The University of California, Davis calculated the amount and characteristics of rainfall from U.S. weather data. Typically, Cuyahoga County receives 38.13 inches of rain per year. The model, which combines aspects of two other models developed by researchers at the U.S. Forest Service, uses hourly annual precipitation data for Cuyahoga County to estimate annual runoff. The reduction in runoff attributable to Cleveland Metroparks trails and parks was calculated by comparing the modeled runoff with the runoff that would leave a hypothetical site of the same size but with land cover that is typical of the surrounding urban development (i.e., with streets, rooftops, parking lots, etc.) In other words, it is not the entire amount of water being retained by Cleveland Metroparks trails and parks; rather it is the marginal amount of water held back above what would normally be held back if the parks were developed similar to the rest of Cuyahoga County and Hinckley Township.

The final step in determining the economic value of stormwater retention by Cleveland Metroparks trails and parks is estimating the cost to manage stormwater using gray infrastructure (e.g., concrete pipes, sewers, and the like). It is difficult to estimate the marginal cost of stormwater management because the county does not track the cost. One reason for this is that Cuyahoga County is a very urban area and the communities manage their local infrastructure through home rule. Instead of stormwater infrastructure being centrally managed, it is managed by numerous units of local government and NEORS (in the case of combined sewers) within Cuyahoga County. Therefore, the University of California, Davis based the cost of stormwater management on an average of what has been shown in places where this information has been collected. A total annual stormwater retention value of \$5.12 million is estimated for Cleveland Metroparks trails and parks (Table 4).



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**Table 4. Annual stormwater cost savings from Cleveland Metroparks trails and parks**

	INCHES	AMOUNT
Rainfall	38.1	2,770,000,000 cubic feet
Runoff with parks	4.39	319,000,000 cubic feet
Runoff without parks	10.3	745,000,000 cubic feet
Runoff reduction from parks	5.88	427,000,000 cubic feet
Runoff reduction rate		57 %
Cost of treating stormwater (\$ per cubic foot)		\$ 0.01
Total savings from parks		\$ 5,120,000

## Air pollution removal by vegetation

Air pollution is a significant and expensive problem associated with metropolitan growth that injures human health and damages structures. The human cardiovascular and respiratory systems are affected, with broad consequences for health care costs and productivity. In addition, acid rain, smog, and ozone increase the need to clean and repair buildings and other costly infrastructure.

Trees and shrubs have the ability to remove pollutants from the air humans breathe. Leaves absorb gases such as nitrogen dioxide, sulfur dioxide, carbon monoxide, and ozone. Particulate matter, which includes small particles of dust, metals, chemicals, and acids, can also be removed by adhering to plant surfaces. The vegetation in parks and trails plays a role in improving air quality, helping nearby areas avoid the costs associated with pollution.



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The Trust for Public Land estimated the value of air pollution that is removed by urban trees using a model designed at the Northeast Research Station of the U.S. Forest Service in Syracuse, New York. This approach, which is based on the U.S. Forest Service's Urban Forest Effects (UFORE) model, is location-specific, taking into account the air pollution characteristics of a given region. This is important because even if two parts of the country have similar forest characteristics, the parks and trails could nevertheless generate different results based on differences in ambient air quality.

First, The Trust for Public Land determined the amount of tree canopy cover in Cleveland Metroparks trails and parks using the National Land Cover Database of 2006 (the most recent data available). While Cuyahoga County has street trees and numerous other trees on private property, this study measures only the economic value of trees on Cleveland Metroparks properties. Sixty-eight percent of Cleveland Metroparks trails and parks are covered with tree canopy.

Next, The Trust for Public Land calculated the flow of pollutants through Cleveland Metroparks trails and parks within a given time period (known as "pollutant flux"), taking into account the concentration of pollutants and the velocity of pollutant deposition. Then the model considered the resistance of the tree canopy to the air, seasonal leaf variation, and the behavior of different types of trees and other vegetation.

The calculator used hourly pollution concentration data for the City of Cleveland, obtained from the U.S. Environmental Protection Agency. The total pollutant flux was multiplied by tree canopy coverage to estimate total pollutant removal by trees. The monetary value of pollution removal by trees was estimated using the median cost to prevent a unit of that pollutant from entering the atmosphere. For instance, the cost of preventing the emission of a short ton of carbon monoxide is \$1,530; the cost of preventing that same amount of sulfur dioxide is \$2,640.

Accounting for all of these factors, Cleveland Metroparks trails and parks provide an estimated \$14.4 million in air pollution removal each year (Table 5).

**Table 5. Value of air pollution removed by Cleveland Metroparks trails and parks (2012 \$)**

	TONS REMOVED	DOLLARS SAVED PER TON REMOVED	POLLUTANT REMOVAL VALUE
Carbon monoxide	39.4	\$ 1,530	\$60,400
Nitrogen dioxide	227	\$ 10,800	\$ 2,460,000
Ozone	571	\$ 10,800	\$ 6,170,000
Particulate matter	720	\$ 7,210	\$ 5,190,000
Sulfur dioxide	215	\$ 2,640	\$ 570,000
<b>Total</b>	<b>1,770</b>	<b>-</b>	<b>\$ 14,400,000</b>

## Recreation and tourism

Tourism is big business in Cuyahoga County. In 2011, the industry experienced \$6.66 billion in sales, up 5.8 percent from 2010. These sales generated \$886 million in federal, state, and local taxes, \$459 million of which went to state and local government coffers.<sup>14</sup> Outdoor recreation is an important subset of the tourism industry.

Parks and trails in Ohio play a vital role in the economy because they attract tourists and provide opportunities for outdoor recreation. These individuals then spend money that supports local employment and provides tax revenue. In Ohio, outdoor recreation annually generates \$17.4 billion in consumer spending, 196,000 direct Ohio jobs, \$5.1 billion in wages and salaries, and \$1.3 billion in state and local tax revenue.<sup>15</sup>

Federal, state, and local parks in Ohio attract millions of visitors each year that spend money in the local economy and support local jobs. These various levels of government each make contributions that are essential to the establishment and maintenance of park spaces and trails for public use. Cleveland Metroparks and Cuyahoga Valley National Park (CVNP) both play critical roles in providing a large trail network and expansive patchwork of parkland within Cuyahoga,



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14 Ohio Office of Tourism and Tourism Economics, *Cuyahoga County Detail* (presentation provided by Eric Herzog, Ohio Office of Tourism, August 13, 2013). These numbers are consistent with those available on the Positively Cleveland website. Positively Cleveland, "About Positively Cleveland" (accessed October 3, 2013, <http://www.positivelycleveland.com/about/>).

15 Outdoor Industry Association, *The Outdoor Recreation Economy: Ohio* (accessed July 30, 2013, [http://www.outdoorindustry.org/images/ore\\_reports/OH-ohio-outdoorrecreationconomy-oia.pdf](http://www.outdoorindustry.org/images/ore_reports/OH-ohio-outdoorrecreationconomy-oia.pdf)).

Medina, and Summit Counties. In fact, parts of three Cleveland Metroparks reservations are within the boundaries of CVNP (i.e., Brecksville, Bedford, and Ohio and Erie Canal Reservations). Additionally, Cleveland Metroparks and CVNP work together extensively to provide opportunities on the Ohio and Erie Canal Towpath Trail. A portion of the trail is located on Cleveland Metroparks property and the trail is continued by Cleveland Metroparks as it passes beyond CVNP's northern boundary.

These trail networks and park areas attract visitors both locally and regionally. There are 2.3 million visitors to CVNP each year, with 7,000 overnight stays.<sup>16</sup> Spending by non-local visitors to CVNP supports 530 jobs alone.<sup>17</sup> Looking at the entire state, the U.S. Department of the Interior reports that its activities in Ohio's recreation sector supported 1,170 jobs in 2012.<sup>18</sup>

Ohio also has 74 state parks that attract 48.9 million day-use visits and 2.3 million overnight visits each year.<sup>19</sup> Overnight state park visitors generated \$237 million in direct sales in 2009. Including direct and indirect effects, these 2009 visitors generated \$15.4 million and \$12.8 million in state and local taxes, respectively. Sales by these state park visitors also supported 4,640 direct and indirect jobs in Ohio.<sup>20</sup>

Management of Cleveland Lakefront State Park was recently transferred from the State of Ohio to Cleveland Metroparks; however, prior to this transaction, it was one of the most frequently visited state parks. The Ohio Department of Natural Resources reported 9.1 million visitor occasions in 2011.<sup>21</sup>

Cleveland Metroparks estimated that there were over 15.5 million recreational visits to the park system in 2011.<sup>22</sup> In addition to using the recreational facilities, Cleveland Metroparks and affiliate organizations host programs, workshops, and special events such as BugCity and Outdoor Odyssey, for residents and visitors of Cuyahoga County and Hinckley Township. Overall program attendance for 2011 was 3.4 million.<sup>23</sup> Additionally, Cleveland Metroparks employs over 480 full-time people.<sup>24</sup>

## Park tourism

Tourists visit parks and trails in Cleveland and Cuyahoga County to participate in a wide variety of activities. Though not always recognized, parks and trails play a significant role in the tourism economy of Cuyahoga County. Tourists' activities, the number of visitors, and tourist spending determine the contribution of parks and trails to the tourism economy. In Cuyahoga County, parks and trails are managed by Cleveland Metroparks, municipal organizations and other orga-

16 National Park Service, "Cuyahoga Valley NP: Visitation by Month Year" (2012 Visitor Use Statistics).

17 Yue Cui, Ed Mahoney, and Teresa Herbowicz, *Economic Benefits to Local Communities from National Park Visitation, 2011* (National Park Service, Natural Resources Report NPS/NRSS/ARD/NRR-2013/632).

18 U.S. Department of the Interior, *Economic Report: FY 2012* (July 29, 2013).

19 Personal communication with Jean Backs, Ohio Department of Natural Resources, August 13, 2013. Data are from 2011.

20 Ohio Department of Natural Resources, "About Us" (accessed September 9, 2013, <http://www.dnr.state.oh.us/parks/resources/aboutus/tabid/90/Default.aspx>).

21 Personal communication with Jean Backs, Ohio Department of Natural Resources, August 13, 2013. Data are from 2011.

22 Robert Bixler and Noreen Lazor, *2011 Park District Visitation: Statistics on Visitors Entering Reservations, Recreational Visits and Program & Facility Attendance* (Cleveland Metroparks).

23 Ibid.

24 Cleveland Metroparks, "By the Numbers" (as of 2012 annual year-end).

nizations; however, only some of them actually track visitor numbers and tourist expenditures. Thus, it is not possible to extrapolate the number of visitors to all of Cuyahoga County's parks and trails based on those numbers alone.

Nonetheless, The Trust for Public Land utilized information provided by Tourism Ohio to measure the value of parks and trails in Cuyahoga County's tourism economy. One can get a sense of how much money is spent and how much tax revenue is earned in Cuyahoga County due to the parks and trails in the County by applying the percentage of those visitors whose primary reason to visit Ohio in 2011 (the most recent year available) was the outdoors to the 2011 direct travel expenditures (e.g., visitor spending on lodging, food, and gas) and 2011 tax receipts within Cuyahoga County.

Parks and trails are important components in the local economy. As you can see from Table 6, tourists spend over \$6.66 billion in Cuyahoga County each year. Eleven percent of Ohio visitors cite the outdoors as a top reason for visiting and thus, approximately \$733 million in spending each year are attributable to the parks and trails that make the outdoors accessible to tourists. Spending by these park-related visitors generates \$21.3 million and \$29.1 million in local and state tax revenues, respectively.

While linked with Cleveland Metroparks trails and parks, CVNP provides exceptional economic opportunities to the region as a separate entity as well. CVNP is partially contained in Cuyahoga County and located a short distance from the urban areas of Cleveland and Akron. As shown in Table 7, the park attracts over 2.16 million visits each year. Spending by these park visitors supports 530 jobs earning \$14.9 million in labor income. This spending also generates \$2.89 million in state and local taxes.

### Cleveland Metroparks attracts birders

Birdwatching, or birding as it is commonly called, is an increasingly popular activity nationwide. Cleveland Metroparks trails and parks provide habitat for birds and draw visitors who are interested in observing them in their natural environment. In a survey that was conducted for this report (see the direct use section), 44 percent of residents explore nature, view wildlife, or geocache. An important component of wildlife watching includes birding. Additionally, the Cleveland area has a large concentration of birdwatchers, which can be attributed to proximity to and familiarity with birding sites, as well as involvement with several local birding groups.<sup>25</sup> A recent study of birding activity along Lake Erie, found that it has a significant impact on the local economy. The report indicated that birding at six Ohio natural areas along Lake Erie generated \$26 million in 2011, created 283 jobs with an associated \$8.9 million in personal income, and contributed \$1.9 million in local and state tax revenues. Although this study did not include any Cleveland Metroparks birding locations, these results help demonstrate the value of birding in the local economy.<sup>26</sup>

<sup>25</sup> Philip F. Xie, *Socio-economic Impacts of Birdwatching along Lake Erie: A Coastal Ohio Analysis* (Ohio Sea Grant OHSU-TS-061, 2012).

<sup>26</sup> Ibid.

Table 6. Tourism Spending and the Outdoors in Cuyahoga County (2011)<sup>27</sup>

CATEGORY	
Total direct travel spending in Cuyahoga County	\$ 6,660,000,000
Percentage of tourists whose primary reason to visit Cuyahoga County is the outdoors	11 %
Approximate spending of tourists whose primary reason to visit Cuyahoga County is the outdoors	\$ 733,000,000
Cuyahoga County total tourism tax receipts	\$ 194,000,000
Cuyahoga County tourism tax receipts attributable to parks and trails	\$ 21,300,000
State of Ohio total tourism tax receipts in Cuyahoga County	\$ 265,000,000
State of Ohio tourism tax receipts in Cuyahoga County attributable to parks and trails	\$ 29,100,000

In addition to parks and trails, the Cleveland Metroparks Zoo also draws visitors and tourists. In 2012, the Zoo attracted visitors from Cuyahoga County (37.6 percent), other counties within Ohio (48.2 percent), and other parts of the United States (14.2 percent). Respondents to a recent survey indicated that visitors traveled an average of 40.9 miles to arrive at the Zoo, with 10.7 percent of the visitors staying overnight in the area. Of the visitors who stayed overnight, 50.2 percent were making their first visit.<sup>28</sup>

Table 7. Cuyahoga Valley National Park and Tourism Spending (2011)<sup>29</sup>

CATEGORY	
Total direct travel spending	\$ 6,660,000,000
Direct spending by non-local visitors to Cuyahoga Valley National Park	\$ 37,200,000
Park visitor spending as a percentage of total direct travel spending	0.56 %
Number of visits to Cuyahoga Valley National Park	2,160,000
Spending per park visitor	\$ 17.20
Total state and local tax receipts of national park visitor spending	\$ 2,890,000
Jobs supported by spending of non-local visitors to Cuyahoga Valley National Park	530
Labor income supported by spending of non-local visitors to Cuyahoga Valley National Park	\$ 14,900,000

27 Ohio Office of Tourism and Tourism Economics, *Cuyahoga County Detail* (presentation provided by Eric Herzog, Ohio Office of Tourism, August 13, 2013); Ohio Office of Tourism and Tourism Economics, *Untitled Presentation* (presentation provided by Eric Herzog, Ohio Office of Tourism, July 29, 2013).

28 Robert D. Bixler and Noreen Lazor, *Summer 2012 Visitor Survey: Cleveland Metroparks Zoo* (report prepared for Cleveland Metroparks, Research and Program Evaluation, in cooperation with Cleveland Metroparks Zoo).

29 Yue Cui, Ed Mahoney, and Teresa Herbowicz, *Economic Benefits to Local Communities from National Park Visitation, 2011* (National Park Service, Natural Resources Report NPS/NRSS/ARD/NRR-2013/632); Ohio Department of Taxation, *Total State and Local Sales Tax Rates, By County* (accessed July 30, 2013, [http://www.tax.ohio.gov/portals/0/tax\\_analysis/tax\\_data\\_series/sales\\_and\\_use/salestaxmapcolor.pdf](http://www.tax.ohio.gov/portals/0/tax_analysis/tax_data_series/sales_and_use/salestaxmapcolor.pdf)); Personal Communications with Gary Gudmundson, Communications Director, Ohio Department of Taxation; Gudmundson confirmed that 7.75 percent was the combined sales tax rate for Cuyahoga County in 2011. This rate includes State (5.5 percent), County (1.25 percent), and Transit Authority Tax (1 percent).

## Direct use value

Cleveland Metroparks trails and parks provide direct recreational value to residents by providing access to recreational opportunities such as visiting playgrounds, picnicking, swimming, boating, walking on trails, watching wildlife, sledding, cross-country skiing, and biking.

Most direct recreational uses in public parks and trails, such as those in Cleveland Metroparks, are free of charge, but economists can still calculate value by determining the consumer's "willingness-to-pay" for the recreation experience in the private marketplace. In other words, if parks and trails were not available in Cuyahoga County or Hinckley Township, how much would the resident (or "consumer") pay for similar experiences in commercial facilities or venues? Rather than income, the direct use value represents the amount of money residents save by not having to pay market rates to indulge in the park activities they enjoy. Any user fees that are paid for a recreational experience within Cleveland Metroparks are subtracted from the willingness-to-pay value.

The model for quantifying the benefits received by direct users is based on the "Unit Day Value" method as documented in the Water Resources Council (WRC) Recreation Valuation Procedures written by the U.S. Army Corps of Engineers. The Unit Day Value model counts park visits by specific activity, assigning each activity a dollar value. Based on the WRC day use values, a range of \$2 to \$9 per visit is used for general park or trail use (e.g., playing in a playground, hiking, biking) and \$10-\$40 for specialized activities (e.g., golf).<sup>30</sup> In quantifying these benefits, The Trust for Public Land also recognized that not every visit within a given period of time has



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<sup>30</sup> The published ranges for FY 2012 are \$3.72 to \$11.17 for general recreation and \$15.13 to \$44.21 for specialized recreation. The minimum value for city park uses is \$2 to accommodate lower values associated with some high frequency, short duration activities, such as daily walks in the park.

the same value to the visitor. In fact, additional uses of a park or trail will be less valuable than the first use. For example, the value of walking on trails diminishes from \$2.00 for the first time to \$0.93 for the seventh time in a week. The Trust for Public Land also estimated an average “season” for different park uses to take into account reduced participation rates in the off-season. Although some people are active in parks 365 days a year, the direct use value does not count use during seasons in which participation rates drop to low levels. For activities for which a fee is charged, like golfing at a Metroparks golf course, the per-person fee is subtracted from the imputed value and only the “extra value” is assigned (e.g., if playing golf costs \$30 at a Cleveland Metroparks public golf course and \$65 at an Ohio private country club,<sup>31</sup> the direct use value would be \$35).

The Trust for Public Land then determined the number of visits to Cleveland Metroparks facilities through a professionally conducted telephone survey of 600 residents in Cuyahoga County.<sup>32</sup> This random-digit-dialed survey had an accuracy level of plus or minus 4 percent. Residents were asked to answer for themselves; adults with children under the age of 18 were also asked to respond for one of their children. The calculation includes only residents of Cuyahoga County so results cannot be extrapolated to Hinckley Township; however, the use of Cleveland Metroparks trails and parks by Hinckley Township residents would increase the estimated total direct use value. Additionally, the value from nonresident uses of parks is measured by the income to local businesses from what these visitors spend on their trips. This is covered under income from out-of-town visitor spending (see park tourism section above). The result of the Direct Use Calculator for Cuyahoga County is \$40.4 million for 2013 (Table 8).

**Table 8. The annual economic value of direct use of Cleveland Metroparks trails and parks by Cuyahoga County residents**

FACILITY/ACTIVITY	PERSON-VISITS	AVERAGE VALUE PER VISIT	VALUE
General park uses (e.g., playgrounds, trails, walking, picnicking, wildlife watching, etc.)	13,800,000	\$ 2.73	\$ 37,600,000
Special uses (e.g., festival, concerts, golf, horseback riding, etc.)	697,000	\$ 4.05	\$ 2,830,000
<b>Total</b>	<b>14,500,000</b>	<b>\$ 2.79</b>	<b>\$ 40,400,000</b>

The survey also indicated that the most popular activities for children were walking or hiking was followed by playground use, and picnicking or sitting on benches. For adults, walking or hiking was followed by enjoying nature, and picnicking or sitting. These are also the top three activities for adults and children combined (Table 9). These results are generally consistent with previous research, including a 2010-2011 in-park survey of park users that found many park users visit the park to walk or hike, relax, picnic, or observe nature/birdwatch.<sup>33</sup>

31 Cleveland Metroparks, “Golf” (accessed July 30, 2013, <http://www.clevelandmetroparks.com/Main/Recreation/Golf-11.aspx>); Personal Communication with Bob Zeman, Hawthorne Valley Country Club, July 30, 2013.

32 Barry Zepelowitz and Associates (September 2013).

33 Triad Research Group, *Cleveland Metroparks 2010-2011 In-Park Users Survey* (2011).

Table 9. Top ten activities on Cleveland Metroparks trails and parks

ACTIVITY	PARTICIPATION (ANNUAL VISITS)	DIRECT USE VALUE
1. Walk or hike	3,040,000	\$ 4,970,000
2. Explore nature, view wildlife, geocache	2,260,000	\$ 4,690,000
3. Picnic or sit	2,180,000	\$ 5,770,000
4. Visit playground	1,490,000	\$ 4,600,000
5. Walk a dog	1,440,000	\$ 2,050,000
6. Use exercise stations	928,000	\$ 7,890,000
7. Run or jog	885,000	\$ 2,950,000
8. Bike on mountain bike trails	822,000	\$ 2,830,000
9. Bike on paved trails or paths	369,000	\$1,260,000
10. Participate in league sports	314,000	\$ 766,000

## Helping to promote human health

Several studies have documented the large economic burden related to physical inactivity. One report released in August 2009 by the U.S. Centers for Disease Control and Prevention (CDC) estimates that obesity cost the U.S. economy \$147 billion in 2008 alone. Lack of exercise is shown to contribute to obesity and its many effects, and for this reason experts call for a more active lifestyle. For over a decade, research has suggested that access to parks can help people increase their level of physical activity.<sup>34</sup> The Trust for Public Land's Health Benefits Calculator measures the collective economic savings realized by residents of Cuyahoga County who use Cleveland Metroparks trails and parks to exercise.

The Trust for Public Land created the calculator by identifying the common types of medical problems that are inversely related to physical activity, such as heart disease and diabetes. Based on previous work in health care economics, The Trust for Public Land assigned a value of \$344 as the annual medical cost difference between those who exercise regularly and those who do not.<sup>35</sup> For persons over the age of 65, that value has been doubled to \$688 because adults over 65 years old typically incur two or more times the medical care costs of younger

34 K.E. Powell, L.M. Martin, and P.P. Chowdhury, "Places to Walk: Convenience and Regular Physical Activity" (*American Journal of Public Health* 93, no. 9, 2003, pp. 1519-1521); B. Giles-Corti and R.J. Donovan, "The Relative Influence of Individual, Social, and Physical Environment Determinants of Physical Activity" (*Social Science and Medicine* 54, 2002, pp. 1793-1812).

35 M. Pratt, C.A. Macera, and G. Wang, "Higher Medical Costs Associated with Physical Inactivity" (*Physician and Sportsmedicine* 28, 2000, pp. 63-70); D.W. Edington, and L. Yen, "Is It Possible to Simultaneously Reduce Risk Factors and Excess Health Care Costs?" (*American Journal of Health Promotion* 6, 1992, pp. 403-409); F. Wang, T.L. McDonald, L. Champagne, and D. Edington, "Relationship of Body Mass Index and Physical Activity to Health Care Costs among Employees" (*Journal of Occupational and Environmental Medicine* 46, no. 5, 2004, pp. 428-436); Milliman & Robertson, Chrysler Corporation, and the International Union of Auto Workers, *Health Risks and Their Impact on Medical Costs* (1995); N.P. Pronk, M.J. Goodman, P.J. O'Connor, and B.C. Martinson, "Relationship between Modifiable Health Risks and Short-Term Health Care Charges" (*Journal of the American Medical Association* 282, 1999, pp. 22235-2239); Chenoweth & Associates, Inc. [Health Management Associates], *The Economic Costs of Physical Inactivity, Obesity, and Overweight in California Adults: 2000* (prepared for the California Department of Health Services, 2000); Chenoweth & Associates, Inc. [Health Management Associates], *The Financial Cost of Various Risk Factors among Massachusetts Adults: 2003* (prepared for the Massachusetts Department of Public Health); Chenoweth & Associates, Inc. [Health Management Associates], *The Financial Cost of Physical Inactivity Among Michigan Adults: 2003* (prepared for the Michigan Fitness Foundation, Lansing, MI); D.H. Chenoweth, "The Economic Cost of Physical Inactivity in New York State" (*American Medical Association Quarterly* 14, no. 2, 2000, pp. 5-8); Chenoweth & Associates, Inc. [Health Management Associates], *The Economic Cost of Physical Inactivity, Obesity, Type II Diabetes, and Low Fruit/Vegetable Intake Among North Carolina Adults* (prepared for Be Active North Carolina, Inc., 2004); D.H. Chenoweth, "The Medical Cost of High Serum Cholesterol in Harris County, Texas" (*The Journal of Texas Medicine* 100, no. 5, 2004, pp. 49-53); Chenoweth & Associates, Inc. [Health Management Associates], *The Economic Cost of Physical Inactivity Among Washington State Adults* (prepared for The Washington State Department of Health and The Washington Coalition to Promote Physical Activity, 2004).

adults.<sup>36</sup> In one study, average health care expenses were \$3,350 for working-age people, but \$11,100 for adults over 65 years old.<sup>37</sup>

The key data input for determining medical cost savings is the number of park and trail users who engage in a sufficient amount of physical activity. The CDC defines this as at least 150 minutes of moderate activity per week or at least 75 minutes of vigorous activity per week. The same telephone survey that was used in the direct use valuation also determined residents' activities and their frequency, grouped by age. In accordance with CDC guidelines, The Trust for Public Land eliminated low heart-rate activities (e.g., picnicking, sitting, and wildlife watching) as well as respondents who engaged in strenuous activities fewer than three times per week because they were not being active enough to gain a health benefit. Likewise, The Trust for Public Land removed respondents who engaged in less strenuous but still healthful activities (e.g., walking or hiking) fewer than four times per week. The remaining users engaged in enough physical activity to warrant health care cost savings. The results of this survey indicate that approximately 144,000 adult residents in Cuyahoga County improve their health using Cleveland Metroparks trails and parks. In 2013, the combined health savings from park and trail use for the adult residents of Cuyahoga County was \$59.5 million (Table 10).<sup>38</sup>



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36 Ronald McDevitt and Sylvester Schieber, *From Baby Boom to Elder Boom: Providing Health Care for an Aging Population* (Washington, D.C.: Watson Wyatt Worldwide, 1996).

37 Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services, "The High Concentration of U.S. Health Care Expenditures" (accessed September 18, 2013, <http://www.ahrq.gov/research/findings/factsheets/costs/expriach/index.html#HowAre>).

38 Only residents of Cuyahoga County were surveyed. Therefore, the results cannot be extrapolated to Hinckley Township; however, the use of Cleveland Metroparks trails and parks by Hinckley residents would increase the annual value of health benefits.

Table 10. Estimated annual health benefits of physical activity by Cuyahoga County residents in Cleveland Metroparks trails and parks

CATEGORY	
Adults 18-64 years of age	
Average annual medical care cost difference between active and inactive persons between 18 and 64 years old	\$ 344
Number of adults (18-64) physically active in parks*	116,000
Subtotal of health care benefits	\$ 39,800,000
Adults 65 years of age and older	
Average annual medical care cost difference between active and inactive persons over 65 years old	\$688
Number of adults (65+) physically active in parks*	28,700
Subtotal of health care benefits	\$ 19,700,000
<b>Total annual value of health benefits from parks</b>	<b>\$ 59,500,000</b>
<b>Total adults active in parks</b>	<b>144,000</b>

\*Calculations are based on persons engaging in moderate or vigorous activity as defined by the CDC.



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# Additional benefits

## Economic Development

The high quality of life provided by open space amenities plays a critical role in the county's economic development. Cleveland Metroparks trails and parks, offering beautiful scenery and access to diverse recreational opportunities, make the county an attractive place to live and work. The most sought-after workers in today's economy look at more than just a paycheck when picking places of employment. Skilled workers are attracted to places like Cuyahoga County where there is open space, clean air and water, and ample opportunities for outdoor recreation. Businesses are drawn to these places to recruit the best workers.

One survey of high-tech workers found that a job's attractiveness increases by 33 percent in a community with a high quality of life. This is particularly important in Northeastern Ohio, where several high-tech industries, such as aerospace, insurance and financial services, and biomedicine, have been recognized as key industry clusters driving the economy.<sup>39</sup>

According to Forbes, Ohio ranks 12th in the nation in terms of quality of life as it applies to business and careers. In fact, quality of life was the most important asset considered by Forbes when determining Ohio's ranking on its "Best States for Business and Careers" list.<sup>40</sup> CNN Money recently recognized five small Ohio towns on the list of America's best small towns, making Ohio the best among Midwest states.<sup>41</sup> The Ohio Business Development Coalition's Executive Director recently highlighted the role abundant recreational resources play in creating Ohio's business climate.<sup>42</sup>

The City of Cleveland, Cuyahoga County, and State of Ohio have had success in attracting businesses because of the quality of life evident within their boundaries. In 2012, there were 28 Fortune 500 companies in the State, including six located in Cleveland and two others in Cuyahoga County.<sup>43</sup> Protecting Cleveland and Cuyahoga County's natural resources will ensure that workers and businesses will continue to locate in the area.

39 Cleveland Plus, "Cleveland Plus Industry Clusters" (accessed July 30, 2013, <http://www.clevelandplusbusiness.com/Key-Industries.aspx#AER>).

40 Forbes, "The Best States for Business and Careers" (accessed July 30, 2013, <http://www.forbes.com/best-states-for-business/list/>).

41 CNN Money, "Best Places to Live: Money's List of America's Best Small Towns" (accessed July 30, 2013, <http://money.cnn.com/magazines/moneymag/bplive/2011/states/OH.html>).

42 PR Newswire, "Ohio Is Best in the Midwest for Best Places to Live in America" (accessed July 30, 2013, <http://www.prnewswire.com/news-releases/ohio-is-best-in-the-midwest-for-best-places-to-live-in-america-127998568.html>).

43 CNN Money, "Annual Ranking of America's Largest Corporations" (May 21, 2012, accessed July 30, 2013, <http://money.cnn.com/magazines/fortune/fortune500/2012/states/OH.html>).

## Conclusion

This study illustrates that Cleveland Metroparks trails and parks are key economic drivers that contribute at least \$855 million annually in economic benefits. As explained above, Cleveland Metroparks trails and parks increase the value of nearby residential properties by \$123 million, which increases property tax revenues by \$3.09 million a year. Additionally, these park areas provide government cost savings. Specifically, by reducing the amount of stormwater that needs to be managed by local or regional governments they lower costs by \$5.12 million each year. By removing air pollutants that cause damage to structures and endanger human health, the trees and shrubs within Cleveland Metroparks lower pollution control costs by \$14.4 million per year.

Further, Cleveland Metroparks trails and parks contribute to the tourism economy. Eleven percent of visitors to Cuyahoga County come for the purpose of visiting the outdoors, such as the parks and trails provided by Cleveland Metroparks. These visitors spend \$733 million annually in the local economy and generate \$50.5 million in state and local sales taxes.

People who live in Cuyahoga County and Hinckley Township benefit from Cleveland Metroparks trails and parks. Each year residents of Cuyahoga County receive a benefit of \$40.4 million for the direct use of these park facilities. Additionally, approximately 144,000 adult residents of Cuyahoga County engage in physical activity at a level sufficient to generate measurable health benefits, yielding annual cost savings of \$59.5 million.

Cleveland Metroparks trails and parks provide a number of other important economic benefits that cannot be quantified at this time. These include improving quality of life and boosting local economies by attracting businesses and residents. These benefits create substantial and sustained economic value, which unfortunately is extremely difficult to quantify.



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