UNITED STATES BICYCLE ROUTE SYSTEM

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Environmental Impacts

Perhaps the two greatest environmental benefits of bicycling are that it produces no pollution and consumes no fossil fuel. Annual emissions of greenhouse gases (GHG) in the U.S. are projected to ***increase by 35 percent*** between 2005 and 2030, from 7.2 to 9.7 billion tons CO^2 equivalent, a standardized measure of GHG emissions[1]. The greater the number of trips made by bicycle, the slower the rate of increase. The designation of bicycle routes helps:

• Decrease CO^2 and Fuel Usage by Increasing Cycling:

Increasing pedestrian and bicycling trips, with a corresponding decrease in automobile trip lengths, by as little as 1 to 3 miles on average, can have a significant effect on both emissions and fuel consumption.[2]

Amount of CO^2 and fuel bicycling could save each year with moderate increases:

- 6 to 14 million tons of CO^2
- 700 million to 1.6 billion gallons of fuel

• Utilize Existing Infrastructure Resources:

Bicycles in general use very few natural or community resources; bicycle resources needed for traveling or parking place very few new demands on public spaces, including roads and highways.[3] By establishing U.S. Bicycle Routes primarily on existing facilities, the amount of new construction and development will be minimal, causing little threat to current undeveloped areas.

80 to 90 percent of the U.S. Bicycle Route System will ideally utilize existing infrastructure.

• Achieve Cost Savings Through Energy Conservation and Pollution Reduction:

The consumption of natural resources imposes a broad but often invisible cost on society. Reducing energy and natural resource consumption and limiting the emission of damaging pollutants can help save significant public or household expenditures.[4]

Switching from automobile to bicycle or walking trips can have significant cost savings for communities and individuals:

- 3-5¢ per mile in energy costs
- 1-12¢ per mile in air pollution costs
- 2-5¢ per mile in noise pollution

• Educate Travelers, Increase Awareness, and Build Appreciation of National Resources:

Bicycle travel helps build a strong appreciation and vocal support for our nation's cities, towns, countryside, and natural wonders. As low-impact transportation, bicycle travel fits well in both compact urban communities and wide natural landscapes. The U.S. Bicycle Route System will help educate travelers, increase awareness, and build appreciation of the natural, cultural, historic, and environmental resources of our nation.

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1) Jon Creyts, Anton Derkach, Scott Nyquist, Ken Ostroski, Jack Stephenson. *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?* (McKinsey &Company, U.S. Greenhouse Gas Abatement Mapping Initiative Executive Report, December 2007); **2)** Thomas Gotschi, Ph.D. and Kevin Mills, J.D. Active Transportation for America. *The Case for Federal Investment in Bicycling and Walking*. (Rails-to-Trails Conservancy, 2008); **3)** US DOT, FHWA. Case Study No. 15 *The Environmental Benefits Of Bicycling And Walking*. Publication No. FHWA-PD-93-015. Retrieved from http://atfiles.org/files/pdf/BikePedBen.pdf; **4)** Litman, Todd. *Quantifying the Benefits of Nonmotorized Transportation For Achieving Mobility Management Objectives*. (Victoria Transport Policy Institute, September 2009). Retrieved from http://www.vtpi.org/nmt-tdm.pdf

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Economic Impact and Benefits

One way to look at the economic impact and benefits of investing in bicycle routes and systems, such as the U.S. Bicycle Route System, is to look at the economic impact of previously established bicycle routes and networks, both domestically and abroad. Several states have commissioned surveys, reports, and summaries of the economic effects of bicycle travel, while several other such reports have looked at the success of cycling investments abroad. Below are the economic figures from several of those reports. By the numbers:

- **$924 million: Economic activity supported by bicycle recreation in Wisconsin.**

  $533 million of which is direct economic impact occurring annually. The employment impact, as measured by full-time equivalent jobs, is 13,193 jobs. Maggie Grabow, Micah Hahn, and Melissa Whited. *Valuing Bicycling's Economic and Health Impacts in Wisconsin* (The Nelson Institute for Environmental Studies, Center for Sustainability and the Global Environment, University of Wisconsin-Madison, January 2010).

- **$134 million: Estimated annual spending by bicyclists on Québec's *La Route Verte*.**

  As estimated for 2006. *Route Verte* cyclists spent a total of $95.4 million in 2000, which corresponds to revenue of approximately $15.1 million for the government of Québec and $11.9 million for the government of Canada. *Retombées économiques de la Route verte* (March 2003, pdf. Summary viewed online 1 February 2010: http://www.routeverte.com/rv/index_e.php?page=retombees_e)

- **$60 million and 1,407 jobs: North Carolina's estimated annual impact from bicycle facilities in the Outer Banks.**

  A nearly **nine-fold** increase on the initial $6.7 million in public funds invested in construction of bicycle facilities. Judson J. Lawrie, Thomas P. Norman, Mary Meletiou, and Sarah W. O'Brien. *Bikeways to Prosperity: Assessing the Economic Impact of Bicycle Facilities* (TR News 242 January-February 2006).

- **$36.3 million: Estimated direct spending by bicycle tourists in Maine in 1999.**

  Maine Department of Transportation. *Bicycle Tourism in Maine: Economic Impacts and Marketing Recommendations* (Executive Summary, April 2001).

- **$98 per day: Average amount spent by cyclists on the Great Allegheny/C&O Canal Towpath when traveling by bicycle for more than one day.**

  Businesses along the trail attribute one quarter of their gross income to trail users for a total economic impact of $40.6 million in gross revenue in 2008. Campos Inc., *The Great Allegheny Passage Economic Impact Study* (2007–2008) (The Progress Fund/Job #07-294, 7 August 2009).

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Health Benefits

During the past four decades, obesity levels in the United States have risen dramatically. The rates of chronic disease – including heart disease, stroke, diabetes, some types of cancer, sleep disorders, joint pains, mental illness and depression – have similarly risen while the amount of physical activity that Americans participate in has steadily decreased. Fortunately, cycling offers a low-impact form of physical activity that appeals to a wide range of the population. Cycling and the implementation of bicycle routes can help:

• Reduce Health Risks and Improve Well-Being

Each year in the United States, sedentary lifestyles are estimated to contribute to as many as 255,000 preventable deaths. Scientific studies have shown that moderate levels of physical activity provide clear heath benefits.[1] Endurance types of physical activity, such as cycling, reduce the risk of developing obesity, osteoporosis, and depression;[2] such activities may improve quality of life and psychological well being.[1]

• Increase Access and Options for Safe Physical Activity

Bicycling is a form of physical activity that can be done throughout much of one's lifespan. The initial investment is relatively low, and the opportunity and access to bicycling is greater than many other forms of physical activity.

Sedentary lifestyles are often prevalent when options for physical activity are limited. Environments that facilitate active lifestyles are desirable because of the health benefits of physical activity.[3] By linking urban, suburban, and rural areas through signed, mapped routes, the U.S. Bicycle Route System hopes to incentivize bicycle travel and thereby increase physical activity.

• Increase Safety for Bicyclists

A number of studies have also shown that as both the amount of bicycle infrastructure and the number of bicyclists increase, bicycle fatality rates decrease.[4, 5]

• Promote Physical Activity in Underserved Communities

By utilizing existing infrastructure and improving safety along long-distance corridors, the U.S. Bicycle Route System can help provide safe and accessible locations for cycling in a wide range of communities. Rural communities are especially underserved for health or recreation facilities, making cycling routes and safety investments particularly valuable.[6]

• Provide Significant Cost Savings for Public Agencies, Private Companies, and Individuals

Switching to walking or cycling can provide a significant cost savings through increased physical health, decreased chronic diseases, and long-range improvements in public health expenditures.[7]

Studies from the United States, Europe, and New Zealand have all demonstrated that moving from inactivity to moderate walking or cycling distances have improved individuals' physical health and in some cases decreased public expenditures by several thousand dollars annually.

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1) Hahn et al. 1990 and Powell and Blair 1994 in Department of Health and Human Services, *Physical Activity and Health: A Report of the Surgeon General*. CDC, Atlanta, GA. 1996; **2)** Saris et al. 2003; Landers and Arent 2001; **3)** Transportation Research Board Special Report 282. *Does the Built Environment Influence Physical Activity? Examining the Evidence* (Transportation Research Board, Washington, D.C. 2005. www.TRB.org); **4)** Alliance for Biking & Walking. *Bicycling and Walking in the United States 2010 Benchmarking Report.* Washington, D.C., 2010; **5)** Jacobsen, P.L., *Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling* (Injury Prevention, 9, 2003, pp. 205–209); **6)** Casey, Alicia A., et al. *Impact of the food environment and physical activity environment on behaviors and weight status in rural U.S. communities*. (Preventive Medicine 47. 600–604. 2008); **7)** Littman, Todd. *Quantifying the Benefits of Nonmotorized Transportation For Achieving Mobility Management Objectives*. (Victoria Transport Policy Institute, September 2009). Retrieved from http://www.vtpi.org/nmt-tdm.pdf

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Transportation Benefits

In addition to providing a place for cyclists to travel, bicycle travel has many transportation benefits, including:

• A Reduction in Air Pollution, Greenhouse Gas Emissions, and Congestion

As a zero-emission vehicle, increased bicycle use reduces the amount of air pollution and greenhouse gases, both of which are rising. The U.S. Department of Energy reports that transportation energy is expected to increase 19% between 2010 and 2035.[1] Bicycles occupy much less space than motor vehicles, easing roadway congestion, and interest in bicycle travel is increasing. The number of personal trips made by bicycle increased 30% between 1990 and 1995.[2]

• Cost Effective Spending

Bicycles are low cost to purchase, maintain, and insure, and require zero gasoline consumption. Public infrastructure costs are also lower than motor vehicle and public transport.[3] Furthermore, 80-90% of the U.S. Bicycle Route System will ideally be on existing (as is) facilities. Infrastructure investment might include adding shoulders and providing access to bridges, tunnels, or other important links.

• A High Investment Return

Bicycle facilities increase tourism dollars. From 1987 to 2006, the North Carolina DOT invested $6.7 million dollars in public funds to construct a network of bicycle facilities along Outer Banks. The annual economic impact has been $60 million and 1,407 jobs supported, an approximate **nine-fold** return on the initial investment.[4]

• Elevated Infrastructure Priorities

Designating routes on the U.S. Bicycle Route System can increase awareness about, and the need to address, a lack of facilities and infrastructure along the route. Projects otherwise without funding might be more likely to receive funding if designated as a U.S. Bicycle Route. Furthermore, findings from a recent study indicate that higher investments in bicycling and walking transportation have a higher mode share and are safer for bicyclists and pedestrians.[5]

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1) U.S. Energy Information Administration. *Annual Energy Outlook 2010 Early Release*. Table 2. Energy Consumption by Sector and Source (The Paul H. Nitze School of Advanced International Studies, Washington, D.C. December 14, 2009); **2)** Don Pickrell and Paul Schimek. *Trends in Personal Motor Vehicle Ownership and Use: Evidence from the Nationwide Personal Transportation Survey* (Cambridge: U.S. DOT Volpe Center, 23 April 1998); **3)** John Pucher and Ralph Buehler. *Making Cycling Irresistible: Lessons from The Netherlands, Denmark and Germany* (Transport Reviews, Vol. 28, No. 4, 495–528, July 2008); **4)** Judson J. Lawrie, Thomas P. Norman, Mary Meletiou, and Sarah W. O'Brien. *Bikeways to Prosperity: Assessing the Economic Impact of Bicycle Facilities* (TR News 242 January-February 2006); **5)** Alliance for Biking & Walking. *Bicycling and Walking in the United States 2010 Benchmarking Report* (Washington, D.C. 2010).