

# Transportation, Development, and Environment

## More Transportation Choices and Compact Development Protect the Environment

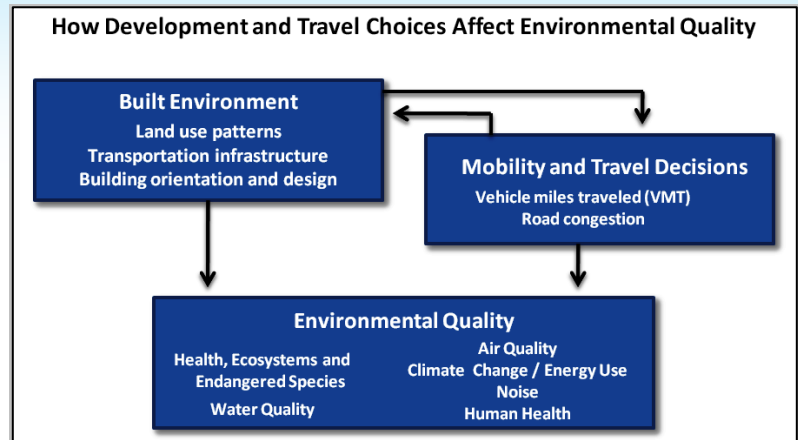
How we plan and develop communities and choose to travel affects environmental quality (see figure at right<sup>1</sup>). Providing more travel options in compact, connected communities leads to fewer car trips, which improve air and water quality. Developing more compactly, and reusing existing properties, can preserve rural lands and protect natural resources. Coordinating land use and development decisions with transportation investments can produce clear results:

### Land Conservation and Improved Water Quality.

Reducing the amount of land consumed by development helps preserve fields, farms, and forests, and supports better water quality. Runoff from developed areas is among the most common sources of water pollution in lakes, rivers, and along shorelines.<sup>2</sup> Preserved open land is able to act as a filter and flood control system, reducing or eliminating the need for costly water treatment and stormwater control infrastructure. Redeveloping existing Brownfields at higher densities also helps to conserve land.<sup>3</sup> One study found that each redeveloped brownfield acre preserves 4.5 acres of open space. Another analysis found that building eight housing units per acre rather than one will reduce runoff per unit by 74 percent.<sup>4</sup>

### Reduced Emissions and Improved Air Quality.

Driving less improves air quality and reduces air toxic pollutants. Each 1 percent of automobile travel replaced by walking or cycling decreases motor vehicle emissions



Development and travel decisions can affect environmental quality in several ways (EPA).



Brownfield redevelopment at Lowry Air Force Base, CO provides compact, walkable neighborhoods and usable open space. (ICMA)

<sup>1</sup> Graphic adapted from "Our Built and Natural Environments: A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality." EPA 231-R-01-002. 2001. p.2. [www.epa.gov/dced/pdf/built.pdf](http://www.epa.gov/dced/pdf/built.pdf)

<sup>2</sup> U.S. EPA "The National Water Quality Inventory: 2000 Report to Congress," [water.epa.gov/lawsregs/guidance/cwa/305b/index.cfm](http://water.epa.gov/lawsregs/guidance/cwa/305b/index.cfm)

<sup>3</sup> According to U.S. EPA, the term "brownfield site" means "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant".

<sup>4</sup> U.S. Environmental Protection Agency, "Protecting Water Resources with Higher-Density Development," 2006, [www.epa.gov/smartgrowth/pdf/protect\\_water\\_higher\\_density.pdf](http://www.epa.gov/smartgrowth/pdf/protect_water_higher_density.pdf)

Creating more livable communities through transportation choices



by 2 percent to 4 percent.<sup>5</sup> Walking, biking, and taking transit instead of driving can reduce greenhouse gas (GHG) emissions and impacts. Investments in transit, walking, and bicycling facilities, coupled with improved growth policies and urban and street design standards, have been shown to reduce per capita driving and resulting GHG emissions.<sup>6</sup> Nonmotorized transportation already reduces GHG emissions nationwide as much as 12 million metric tons of carbon-dioxide equivalents (MMTCO<sub>2</sub>) per year.<sup>7</sup> Potential future GHG reductions from increased walking, biking and transit trips could be between 33 and 91 MMTCO<sub>2</sub> per year.<sup>8</sup> Public transportation produces about 45 percent less carbon dioxide per person than traveling in individual vehicles.<sup>9</sup>

## Success Stories

**Transit-oriented development leads to fewer personal vehicles.** Arlington County, VA implemented transit-oriented policies to increase development density along transit lines. While there has been a 1 percent per year growth in population, VMT has not increased. This equates to a 20-30 percent VMT per person reduction from 1980 to 2005. In fact, 47 percent of commute trips in the county are taken by transit, walking, or biking compared to the regional average of 29 percent; while 12 percent of households do not own a car, compared to the regional average of 4 percent.<sup>10</sup>

**Land preservation and compact development preserves natural habitat.** Compact development and open space restoration in the Abacoa development in Jupiter, FL has helped preserve and restore habitat, home to a variety of species, including the endangered gopher tortoise. Approximately 393 acres adjacent to the 2,055-acre mixed-use development will be preserved as open space, with a 260 acre greenway. This undeveloped land also serves as a stormwater management system. A recent survey of residents found that 56 percent of survey respondents use the greenway and 98 percent said it was important to them.<sup>11</sup>



*Transit-oriented development around Arlington Metro stations helped provide walkable destinations and transit access to surrounding neighborhoods. (EPA)*



*The Abacoa development in Jupiter, FL uses greenways and open space to help manage stormwater (Abacoa).*

## Available Resources

“Cost-Effective GHG Reductions through Smart Growth & Improved Transportation Choices.” Center for Clean Air Policy.

[www.ccap.org/docs/resources/677/CCAP%20Smart%20Growth%20-%20per%20ton%20CO2%20\\_June%202009\\_%20FINAL.pdf](http://www.ccap.org/docs/resources/677/CCAP%20Smart%20Growth%20-%20per%20ton%20CO2%20_June%202009_%20FINAL.pdf)

Environmental Benefits of Smart Growth

[www.epa.gov/smartgrowth/topics/eb.htm](http://www.epa.gov/smartgrowth/topics/eb.htm)

<sup>5</sup> Litman, Todd (2009), “Quantifying the Benefits of Nonmotorized Transportation for Achieving Mobility Management Objectives,” Victoria Transport Policy Institute.

<sup>6</sup> Kooshian, Chuck, and Steve Winkelman, *Growing Wealthier: Smart Growth, Climate Change, and Prosperity*, Center for Clean Air Policy, January 2011.

<sup>7</sup> One million metric tons reduced would equal 216,000 passenger cars not driven for one year.

<sup>8</sup> [www.ccap.org/docs/resources/677/CCAP%20Smart%20Growth%20-%20per%20ton%20CO2%20\\_June%202009\\_%20FINAL.pdf](http://www.ccap.org/docs/resources/677/CCAP%20Smart%20Growth%20-%20per%20ton%20CO2%20_June%202009_%20FINAL.pdf)

<sup>9</sup> Kooshian, et al.

<sup>10</sup> “Cost-Effective GHG Reductions through Smart Growth & Improved Transportation Choices: An economic case for investment of cap-and-trade revenues.” Center for Clean Air Policy. June 2009. p. 16.

<sup>11</sup> [www.epa.gov/dced/case/abacoa.htm](http://www.epa.gov/dced/case/abacoa.htm)

Federal Highway Administration: [www.fhwa.dot.gov/livability](http://www.fhwa.dot.gov/livability)  
Partnership for Sustainable Communities: [www.sustainablecommunities.gov/](http://www.sustainablecommunities.gov/)

