

## POTENTIAL IMPACTS FROM REGIONAL TRANSPORTATION PLAN PROJECTS

The previous section provided a general overview of the pertinent natural features and cultural resources that are subject to impact by the development of the projects included in the regional transportation plan. Transportation projects have the ability to negatively impact resources directly, indirectly, and cumulatively.

- Direct impacts occur at the same time and place as the action. Examples of direct impacts from transportation projects include increasing impervious land cover by building new roads and degrading water quality by enclosing sections of a stream in a culvert.
- Indirect impacts occur at a different time or place as the action. Examples of indirect impact from transportation projects include increased traffic volumes caused by the construction of additional highway travel lanes and new greenfield residential development caused by new road construction.
- Cumulative impacts are the result of a sum of activities occurring around the resource and consider the past, present, and the reasonable foreseeable future. An example of cumulative impacts from transportation projects include the impact of the project itself, the impact of the residential development made possible by the transportation project, and the new commercial development built to support the residential development.

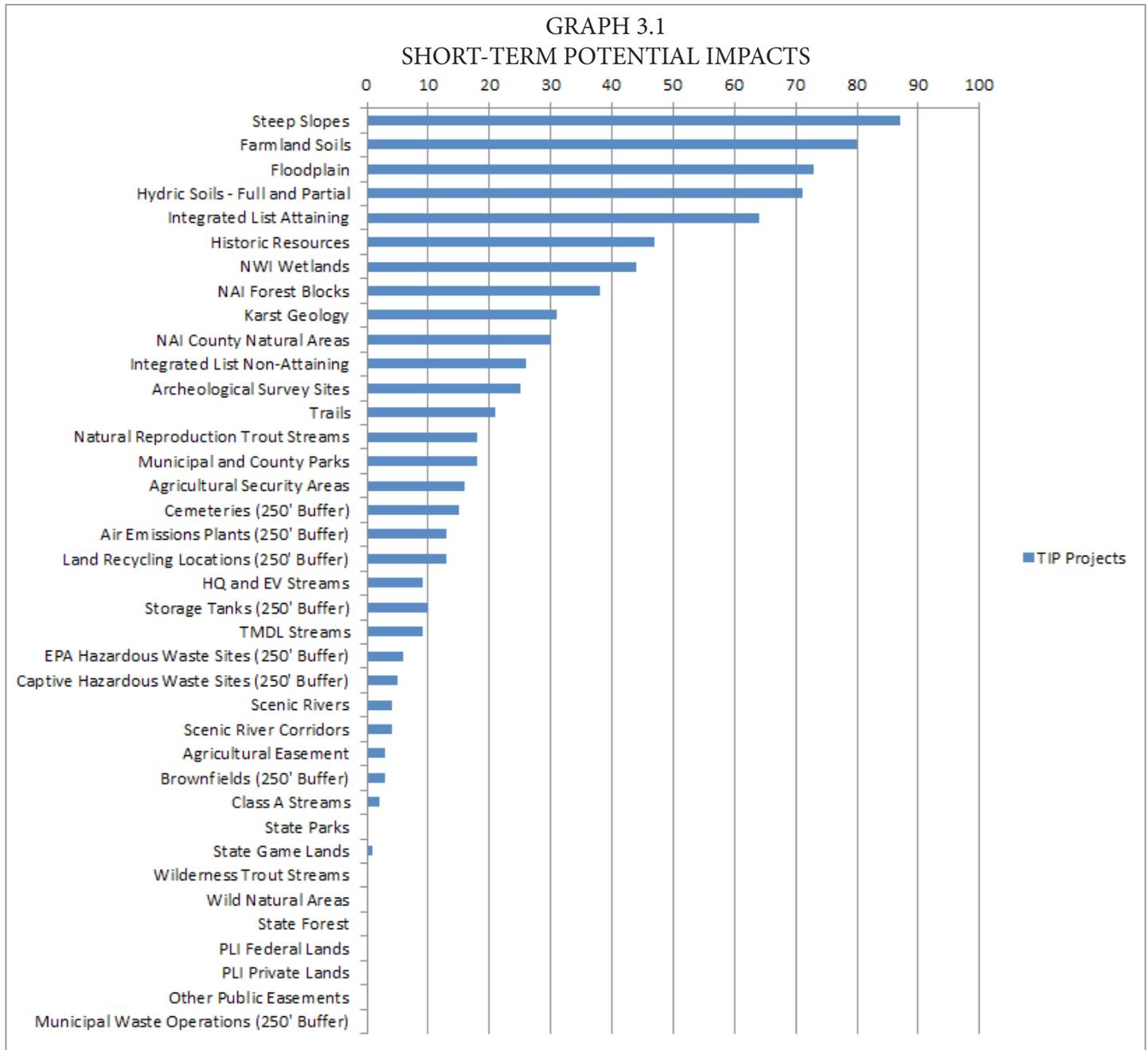
During each transportation project, sponsors work with federal and state regulatory and resource agencies during the NEPA process to identify resources and develop strategies to avoid, minimize, or mitigate any potential environmental impacts. These strategies can include altering project locations to avoid a specific stream or habitat or altering construction methods to minimize the impact to an existing wetland. When impacts can be neither avoided nor minimized, they must be mitigated. Mitigation strategies include building noise walls, constructing/replacing wetlands, and excavation/data recovery of significantly impacted archeological sites.

For the regional transportation plan, potential environmental impacts were assessed based on the location of each resource and each project. It is important to note that a resource's presence in the vicinity of a project does not necessarily mean that the resource will be impacted by the project. These considerations can only be made once design/engineering for the project has begun and the project scope is more defined.

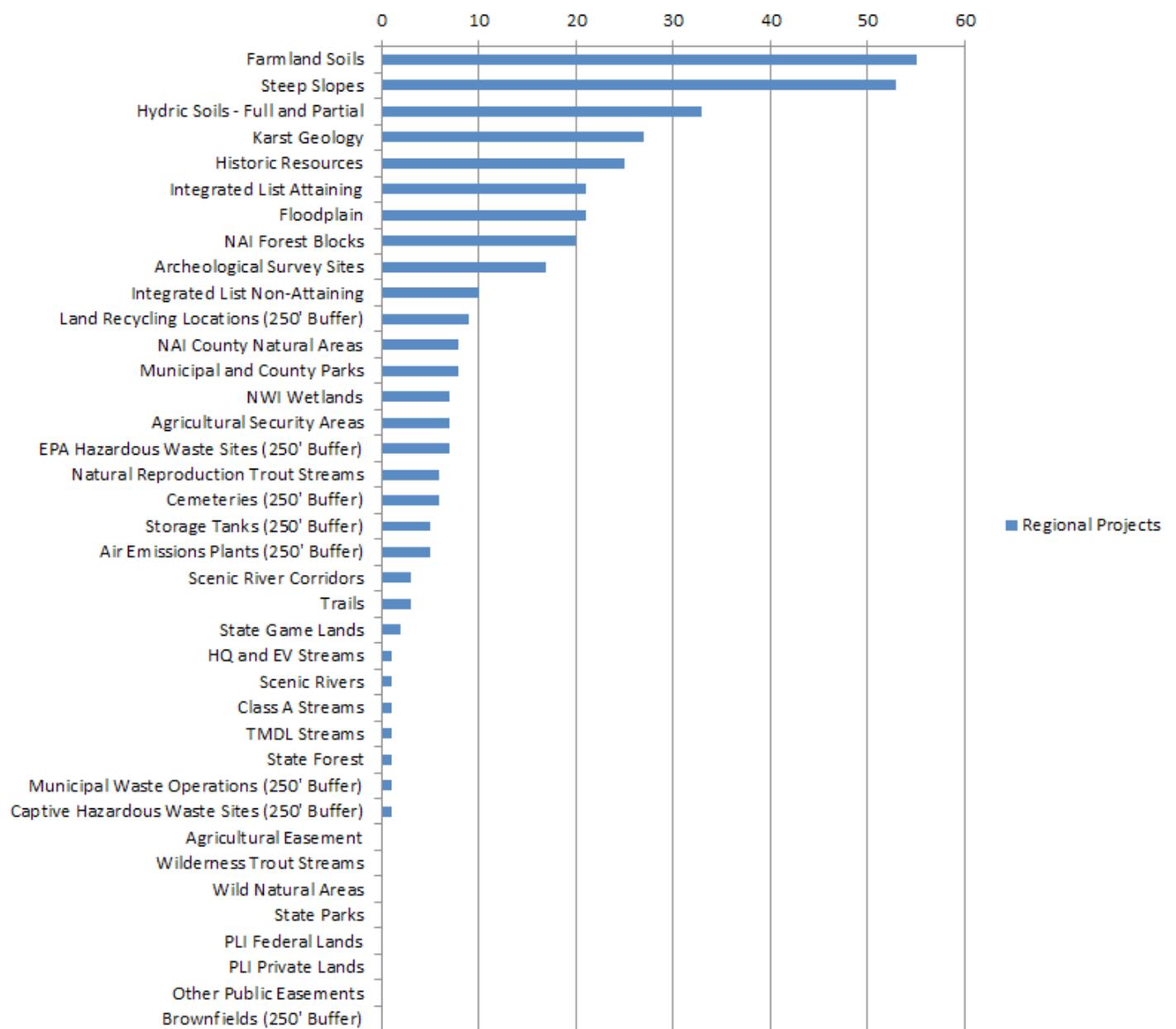
An analysis was conducted using a geographic information system (GIS) to map the locations of both environmental resources and transportation projects. A 250-foot buffer was applied to each conceptual project area to account for data variation and potential future changes in project scope. GIS software was then used to determine any natural resources that fall within the buffered project areas. This analysis resulted in a list of resources in the vicinity of each project, as well as a total of projects in the vicinity of each natural resource. Not included in this analysis were low-cost safety improvements, resurfacing projects, and any other projects to be within the existing right-of-way and unlikely to produce additional impacts. Two different time frames were examined, using 2015 – 2018 TIP projects for short term impacts and 2019-2040 RTP projects for long term impacts.

Graph 3.1 and 3.2 shows the results of this analysis. As previously stated, a resource's close proximity to a project does not necessarily indicate that the resource will be impacted, but that the potential for impact exists. The intent of this environmental overview is to provide general summary of the natural and cultural resources of the HATS Region and alert future project managers of potential issues that may affect any project. By examining the number of projects potentially impacting each natural resource, the overall relationship between the regional transportation plan and the environment can be seen.

Because of the unique challenges inherent in determining potential impact for threatened and endangered species, a Pennsylvania Natural Diversity Index (PNDI) analysis was done for each project. The result of this analysis was then provided to the relevant regulatory agencies for input, from which RTP mitigation strategies were developed. The result of this analysis is included in the Appendix.



GRAPH 3.2  
LONG-TERM POTENTIAL IMPACTS



The natural and cultural resources with the greatest potential for short term impact include steep slopes, farmland soils, floodplains, hydric soils, and streams attaining their designated use. The resources with the greatest potential for long term impact include farmland soils, steep slopes, hydric soils, karst geology, and PHMC historic resources. Many of these resources are found throughout the HATS Region, making their inclusion on the list unsurprising. While these resources have a high potential for impact based on their proximity to projects, the significance of the impact will be determined during the design/engineering phase of each project.

More importantly, the cumulative impacts of all types of development are potentially more significant than that of any single transportation project. New developments and agricultural fields, due to increased runoff, have a higher potential impact on streams than transportation projects. Similarly, farmland soils and wetlands are much more likely to be impacted by land development than by transportation projects. The Regional Growth Management Plan, produced by Tri-County Regional Planning Commission, addresses negative impacts to the region from a land use perspective.

## POTENTIAL MITIGATION STRATEGIES

The scopes of the projects on the 2040 HATS regional transportation plan indicate that few will require significant mitigation efforts. As the scopes of the projects are refined, HATS will continue to utilize the most current data to evaluate projects and develop mitigation strategies. Sites with the greatest potential for environmental restoration or conservation will be investigated. The consolidation of small, fragmented mitigation projects into one large, contiguous site can maximize the ecological benefits and better address the region's top environmental priorities.

Specifically, the following mitigation strategies will be pursued by HATS and the relevant partners/agencies:

- Work with all local, regional, state and federal organizations and agencies to avoid, minimize, or mitigate impacts from TIP and LRTP projects through the use of the LPN system
- Make Level 2 LPN forms as robust and comprehensive as possible based on available data to identify potential issues and impacts early in project development
- Continue data collection effort to ensure TCRPC GIS data is as up-to-date as possible
- Investigate possible sites for construction of a wetland bank or other mitigation measures in the Tri-County region, working with PennDOT and relevant agencies
- Coordinate with PennDOT and farmers to reduce impacts on agricultural land by reducing takings, improving stormwater management, maintaining access to working fields, etc.
- Remain committed to farmland preservation by adhering to land use recommendations contained in TCRPC's Regional Growth Management Plan
- Continue working with PHMC to identify and preserve all key cultural and historic resources in the HATS region, and if needed, to identify and implement advanced mitigation strategies
- Continue to identify and map resources of local importance that are not listed on or eligible for the National Register of Historic Places (view sheds, unique buildings, farmsteads, barns, walls, etc.)
- Continue early coordination with PA Game Commission, PA Fish and Boat Commission, PA DCNR and US Fish and Wildlife Service
- Consult in advance with PA Fish and Boat Commission on all bridge projects associated with the protected trout streams in the HATS region
- Consult with PA Fish and Boat Commission on all bridge projects where in-stream work will be required and where seasonal work restrictions may be warranted
- Work with DCNR and PennDOT staff during environmental and engineering scoping field views to protect important plant species listed in PA Chapter 45
- Coordinate with relevant agencies on all projects within NAI Top Priority Sites, particularly along the Conodoquinet Creek corridor
- Investigate opportunities during transportation planning and programming to avoid or minimize 4(f) or 6(f) property impacts or find ways to further enhance the property or properties in general
- Consult with PA DEP Chesapeake Bay Watershed Implementation Plan for issues that may have an effect on the HATS Regional Transportation Plan and activities which can be advanced through the project development process, including urban stream restoration, dirt and gravel road erosion, and sediment control
- Continue to participate in all PennDOT District 8-0 TIS/TIA and HOP scoping meetings

The link between where we live and where we work plays a crucial role in defining both our transportation needs and habits. While housing location is a key factor in determining access to economic and educational opportunities, exposure to crime and environmental hazards, and the ability to accumulate wealth, it is rarely considered in transportation planning discussions. The spatial mismatch between jobs and housing is particularly burdensome on lower income, carless households as the service-oriented jobs are located primarily in suburban areas, which lack the density of population and activity to support a fixed route transit system. Even for those with cars, transportation costs factor into housing affordability.

Traditionally, housing is considered affordable if it costs 30% or less of the household income. When transportation costs are added, the percentage considered affordable increases to 45%. As shown in Figure 3.1 (affordability), housing costs in the HATS region are generally considered affordable. However, the addition of transportation costs, including vehicle, fuel, and insurance costs, dramatically raises the cost of living for residents to a level above the affordable threshold. This illustrates why the connectivity, or location efficiency, between residential and employment facilities is so crucial to the economic health and quality of life in our region.

Reducing vehicle miles travelled (VMT) is a key element to addressing the energy and climate change policies intended to curb the production of greenhouse gases while also reducing the overall maintenance costs on our transportation system by decreasing wear-and-tear. Supporting transit and transit-oriented development (TOD) generates benefits for the transportation system, the environment, and our communities by encouraging compact, walkable, mixed-used development. Creative financing options, such as location-efficient mortgages and “Live Where You Work”, complement development policies by taking into account the anticipated savings of decreased commuting costs. Down-payment and closing-cost assistance considers the additional disposable income from lower commuting costs that become available for housing investment.

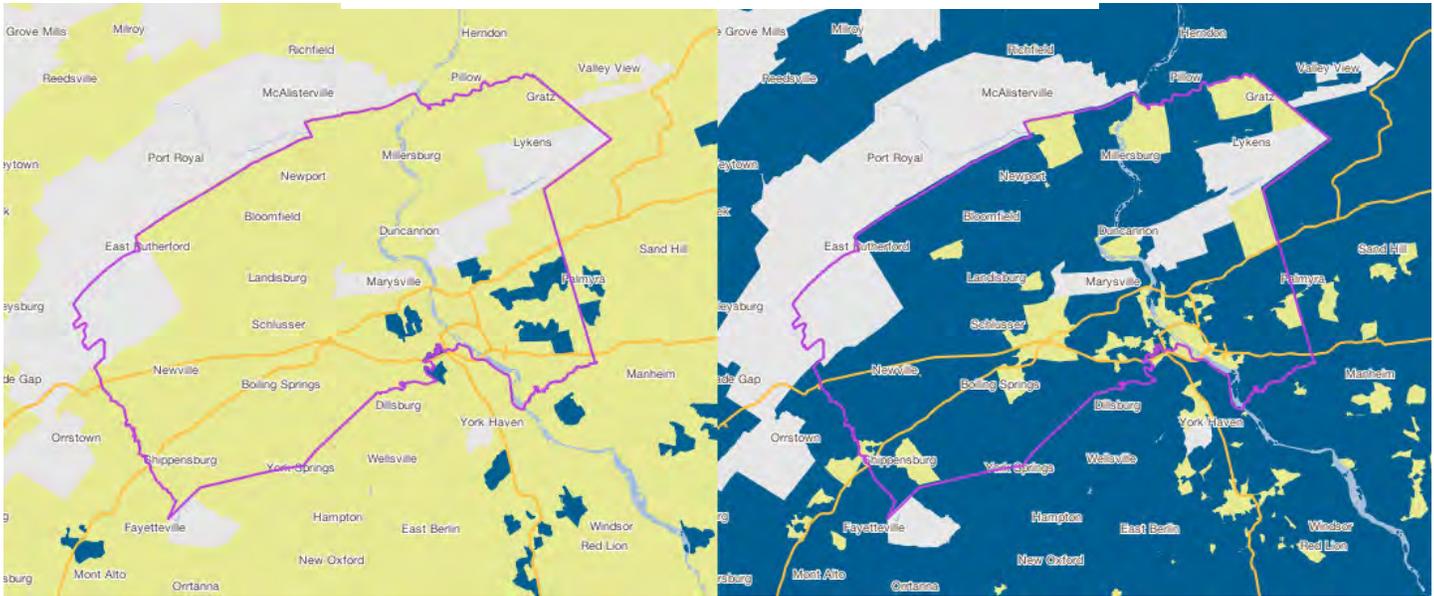
### **PARTNERSHIP FOR SUSTAINABLE COMMUNITIES**

Established as an interagency partnership between HUD, DOT, and EPA, the Partnership for Sustainable Communities seeks to develop places in more environmentally and economically sustainable ways through its six livability principles:

- Provide more transportation choices
- Promote equitable, affordable housing
- Enhance economic competitiveness
- Support existing communities
- Coordinate and leverage federal policies and investment
- Value communities and neighborhoods

By incorporating these principles into federal funding programs, policies, and legislation, the Partnership for Sustainable Communities works to coordinate federal housing and infrastructure spending to create more prosperous neighborhoods, allow people to work closer to home, save money and time, and reduce pollution. Within the HATS region, two projects have received funding through this program: the Human Service Transportation Technology Project, which seeks to improve bus service by utilizing the latest technology, and the Rutherford Intermodal Facility Expansion, which will increase freight capacity at a key regional facility.

FIGURE 3.1  
HOUSING AFFORDABILITY



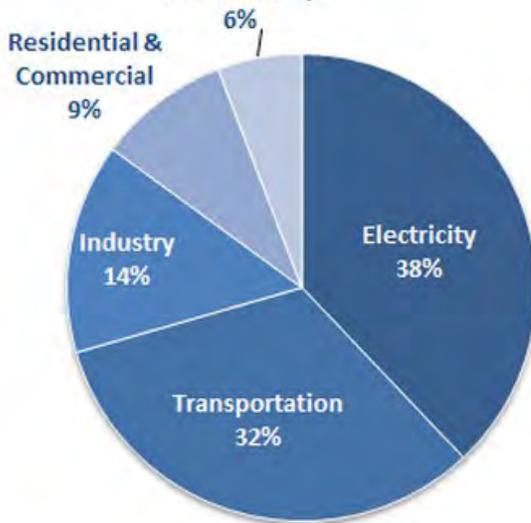
Yellow < 30%, Blue > 30%

Yellow < 45%, Blue > 45%  
Source: Center for Neighborhood Technology

**CLIMATE CHANGE**

As global temperatures rise and the frequency of severe weather events increases, the effects of climate change have become one of the most important threats to our communities – both ecologically and economically. The primary greenhouse gas (GHG) is carbon dioxide (CO<sub>2</sub>), of which the United States is the world’s largest emitter. The transportation sector accounts for roughly one-third of this output, with cars and trucks making up nearly 60% of transportation sector emissions, according to the 2010 US Climate Action Plan. This illustrates the significant impact daily transportation habits have on GHG emissions and climate change. While some GHG reductions can be achieved through the development of new vehicle and fuel technologies and shifting from long-haul trucking to rail shipping, the growth of VMT must be slowed, or even reversed, to achieve the targeted reductions in emissions.

**CHART 3.1**  
**CO<sub>2</sub> Emission Sources**  
Other (Non-Fossil Fuel Combustion)



Note: All emission estimates from the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012*.

Although high-density residential areas tend to produce more CO<sub>2</sub> emissions per acre, they also tend to produce less CO<sub>2</sub> per household, as seen in Chart 3.1. The increased density decreases CO<sub>2</sub> emissions by enabling more transportation choices to be supported, eliminating the need to drive for every trip, and reducing the distance between destinations.

This dramatic shift in our region’s approach to development and transportation investment will require a great amount of collaboration among regulatory agencies, plans, elected officials, developers, and other transportation stakeholders. Much of the coordination and guidance for this effort, however, has begun.

In 2009, the EPA released two findings for greenhouse gases under Section 202(a) of the Clean Air Act that will impact the transportation sector:

- **Endangerment Finding:** The current and projected concentrations of the six key well-mixed greenhouse gases, including CO<sub>2</sub> and hydrofluorocarbons, in the atmosphere threaten the public health and welfare of current and future generations
- **Cause of Contribute Finding:** The combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

While these findings do not represent an obligation or requirement by themselves, they are a pre-requisite for implementing emissions standards for vehicles through the Clean Air Act. In recent years, the EPA, in conjunction with NHTSA and DOT, has developed new emissions and fuel efficiency standards for vehicle categories from light-duty passenger vehicles to heavy-duty fleet vehicles.

In 2009, the American Association of State Highway and Transportation Officials (AASHTO) released Real Transportation Solutions for Greenhouse Gas Emissions Reduction, outlining their commitment and strategies for reducing greenhouse gas emissions from the transportation sector. AASHTO outlines four basic strategies, all of which are consistent with the principles of this plan:

- **Smarter Travel:** Limit VMT growth to 1% annually by increasing transit availability/investment and modifying land use strategies to emphasize mixed use, transit-oriented, infill development
- **Better Cars:** Develop high-efficiency and zero-emission vehicles by leveraging the latest technology
- **Better Fuel:** Develop and increase use of electricity and natural gas as a fuel replacement for gasoline
- **Optimize the System:** Eliminate inefficiencies in transportation network including congestion and bottlenecks, while encouraging eco-driving, driving techniques which maximize fuel efficiency

The Pennsylvania Climate Change Action Plan, released in 2009, was mandated by the Pennsylvania Climate Change Act (Act 70) of 2008. It was prepared by the Pennsylvania Department of Environmental Protection (PA DEP) in collaboration with the PA Climate Change Advisory Committee (CCAC). The Plan's goal is a 30% reduction in GHG emissions from year 2000 levels by 2020. The action plan identifies specific recommendations and recent actions taken by Pennsylvania and the Federal government, that, when implemented, are projected to exceed the goal.

Actions already taken at the state and/or federal level

1. Pennsylvania Clean Vehicles (PCV) Program, and Federal Vehicle GHG Emissions and CAGE Standards
2. Biofuel Development and In-State Production Incentive Act
3. Diesel Anti-Idling Program

Actions to be implemented the future

4. Low-Rolling-Resistance Tires
5. Eco-Driving
6. Utilizing Existing Public Transportation Systems
7. Increasing Participation in Efficient Passenger Transit
8. Cutting Emissions from Freight Transportation
9. Increasing Federal Support for Efficient Transit and Freight Transport in PA
10. Enhanced Support for Existing Smart Growth/Transportation and Land-Use Policies
11. Transit-Oriented Design (TOD), Smart Growth Communities, and Land Use Solutions

The transportation implementation actions recommend continuation of familiar state programs such as Pennsylvania Community Transportation Initiatives (PCTI), the Smart Transportation initiative, the Land Use planning and Technical Assistance Program, (LUPTAP), and the Main Street and Elm Street programs. Implementation also calls for innovative funding and development strategies such as Transit Revitalization Investment Districts (TRID), transit oriented development (TOD), smart growth principles, and multi-municipal planning.

Released by the White House in June 2013, The President's Climate Action Plan sought to lower GHG emissions to 17% below year 2005 levels. To accomplish this, the plan boasts three pillars: cut carbon pollution, prepare for the impacts of climate change, and lead international efforts to combat global climate change and prepare for its impacts. The plan includes, as part of the first pillar, "building a 21st-century transportation sector" by increasing fuel economy standards and developing and advanced transportation technologies. These long-term strategies are designed to combat both the potential economic and potential ecological impacts of climate change.

The vision and goals of this plan, 2040 Regional Transportation Plan, are consistent with the established policies and recommendations for climate change mitigation listed above. Specifically, the vision includes creating a transportation system that is efficient environmentally responsible, multi-modal, and integrated with land use planning. Specific goals consistent with climate change mitigation are:

- Improve the performance and operation of our transportation system for all modes
- Improve quality of life, promote human health and provide a safe experience for all users
- Encourage livable communities and efficient land use

#### **ADAPTATION TO CLIMATE CHANGE**

Climate change poses numerous threats to our region's transportation system, including more frequent flooding, accelerated pavement deterioration and bridge damage, and increased maintenance costs. There is little, if any, consensus on the degree to which or when our region will be impacted by these changes. As a result, agencies are not taking action to adapt the transportation system, instead simply waiting for further guidance and focusing on reducing GHG emissions. Preliminary steps can be taken to develop adaptation strategies, beginning with smart growth principles. Through implementation of the recommendations of the Regional Growth Management Plan (RGMP) and our local development regulations we can facilitate compact development, minimize development of floodplains and flood-prone areas, encourage use of green infrastructure, and adjust facility design standards. Additionally, coordinating with neighboring communities and local emergency agencies can assist to develop information on critical infrastructure and "all hazards" management. HATS will continue to incorporate more pro-active adaptation strategies in its transportation planning efforts in the future.