

# The Role of Highways in Livable Communities – Case Studies



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## Highways and Livability



Highways play a huge role in livable communities by providing a safe, reliable, highly connected, and well-maintained system of roads that allow easy access to jobs, housing, education, and a multitude of community services. The United States became the model of the world because of its highways that allow for freedom of movement and individual choice for lifestyles. The completion of the National Highway System is by far the largest construction project in human history. Americans depend on the highway system to provide a driving experience by which they can safely navigate to work, home, and to access other transportation needs. In addition, America's economic prosperity can be directly linked to expansion of the highway system. Highways will continue to play a new crucial role in America's future by enhancing and improving communities.

In support of the DOT/HUD/EPA Partnership for Sustainable Communities, the FHWA Office of Planning, Environment, and Realty completed a series of case studies to highlight some examples underway in rural, urban, and suburban areas of highways that support of livable communities. The case studies portray how highways support the progression of livable communities. While neighborhoods are the foundations upon which most people build their lives, highways have the one single most important factor—mobility—allowing the safe and efficient movement of people, freight, and emergency vehicles, this is the cornerstone of highways role in livability. This series of case studies include:

- Arizona Department of Transportation - Use of Innovative Highway Materials to Support Livability.
- San Francisco Livable City - Highly Connected Streets to Support Livability.
- I-215 in San Bernardino - Use of Highway Operational Improvements to Support Livability.
- St. Louis – Multimodal Transportation Initiatives to Support Livability
- Missoula, Montana - Connecting Transportation and Land Use to Support Livable Communities.
- North Central Pennsylvania Regional Planning And Development Commission – Connecting Highways to Local and Regional Community Services that Support Livable Communities.
- Gateway Route One - An Innovative, Community-Led Land Use and Transportation Planning Project for Maine's Mid-Coast.
- Cheyenne, Wyoming - Integrating Land Use, Transportation, and Parks and Open Space
- I-95 Corridor, Miami to Ft. Lauderdale - Improving Highway Operations to Support Livable Communities.



## Arizona Department of Transportation - Use of Innovative Highway Materials to Support Livability

One role highways play in the development of livable communities is safety. Public safety is a fundamental goal for all transportation improvement safety projects that are undertaken specifically to correct a public safety deficiency or to raise awareness about public safety strategies on America's streets and highways. Traditional highway paving technologies now use new methodologies such as, rubberized concrete. The use of rubber is of interest as a result of additional elasticity imparted to the binder and enhanced safety related to improved roadway skid resistance. In addition to the noise reduction of rubberized asphalts, there are numerous environmental benefits such as the recycling of tires.

Using sustainable renewable technologies such as rubberized asphalt promotes highway's role in livability. Creating pavement that is smoother, safer and quieter is one way Arizona has improved the quality of life for its residents. Arizona Department of Transportation (ADOT) began a pilot program in 2003 to see how well rubberized asphalt would reduce traffic noise. Public response was so great that ADOT eventually used rubber asphalt on the entire Phoenix Freeway system.

What are the benefits of rubberized asphalt? Rubberized asphalt performed so well for the major infrastructure facilities operated by ADOT, that in 2005 road experts in Chandler, Arizona began experimenting with rubberized asphalt on city streets. Two stretches of arterial streets in Chandler were redone in the summer of 2003 and reopened in November. The use of rubberized asphalt in the southeast Valley of Phoenix showcased benefits outweighing any drawbacks. As the community grew, they were fortunate to have the resources available to make their growing road system as efficient as possible with rubberized asphalt helping to meet their goals.

In addition to the use of rubberized asphalt, the ADOT also successfully deploys operational strategies such as intelligent transportation system and Ramp Metering in the Phoenix and Tucson areas. These operational strategies are effective in improving the flow and reducing travel times on the nation's highway system.



## San Francisco - Livable City - Highly Connected Streets to Support Livability

As stated by Secretary LaHood, livability is investing resources in a way that recognizes the unique character of each community. The next three case studies are urban examples of highways role in support of livable communities.

In San Francisco, officials are working to provide an interconnected network of express bus and HOV lanes, taking full advantage of their freeway system. This includes converting a traffic lane in each direction on the Bay Bridge for this purpose. A converted lane on the Bay Bridge will have enormous benefits for ridesharing, which already represents 13% of commuters into the San Francisco area. A dedicated rapid bus system will also reduce traffic on San Francisco's streets. The Livable City's strategy for reclaiming the central city includes:

- A street reclaiming program that is turning one-way to two-way street conversions with widened sidewalks and completed bicycle networks,
- "Get Transit Moving" with transit-priority measures by improving connections, creating accessible transit, and creating and/or improving plazas and parks, and
- Reclaiming streets and parking lots for public spaces.

The San Francisco Livable City's complete streets campaign works at three scales: citywide reform, neighborhood planning, and individual projects. San Francisco is working citywide to improve streets standards; improve the effectiveness, responsiveness, and coordination of city departments; and increase funding opportunities for complete streets projects. At the neighborhood scale, they are working to empower every neighborhood to create its own complete streets plan and to secure the funding and bureaucratic support to implement neighborhood plans. San Francisco is also engaged in innovative projects all over the city to create complete streets and demonstrating what is possible.

San Francisco is working to ensure that city streets, which cover over 25% of San Francisco's land area, turn into well-designed, maintained, safe, and attractive public spaces that support walking, bicycling, and public transit. Complete neighborhoods exist where walking, bicycling, and transit are the best choices for most trips; where public spaces are beautiful, well designed, and well maintained; and where housing is more plentiful and affordable.

The citywide strategy in San Francisco includes:

- Reclaiming the Central City,
- Providing Great Street Networks,
- Building Neighborhood Centers ,
- Providing Home Zones,
- Developing a Green Network,
- Improving Roadway standards,
- Improving planning and public participation, and
- Creating stable funding and improve project coordination.



### I-215 in San Bernardino - Use of Highway Operational Improvements to Support Livability.

Highway widening projects enhance a highway's capacity and operations. These types of improvement projects are designed to reduce traffic congestion, improve freeway operations, and to contribute to the region's economic vitality. I-215 runs through the cities Riverside and San Bernardino. Part of a \$437 million project for widening I-215 in San Bernardino City is funded with \$128 million in American Recovery and Reinvestment (ARRA) funds and \$250 million in state bonds. The total \$800 million dollar widening of I-215 is the country's largest ARRA funded highway project. This project will improve the livability in San Bernardino with:

- Enhance access to both the east and west sides of the city
- Reduce noise with new sound walls
- Improve air quality by reducing congestion
- Increase mobility
- Eliminate fast-lane entrances and exits
- Widen freeway bridges
- Aid traffic merging by adding auxiliary lanes

This project involves adding a mixed-flow lane and a carpool lane both northbound and southbound from just north of Interstate 10 to State Route 210 (SR-210). Flyover connectors from I-215 to SR-210 also will be constructed, as well as auxiliary lanes, sound walls and retaining walls. Widening and realigning of the freeway will improve access to the west side of I-215 and enhance safety with the removal of entrances and exits from the fast lane and the addition of more conventional diamond interchanges. Right-of-way will be required for the project along the corridor.

The project has a total of four phases. Construction began on the project's first two phases in 2007, and the two phases include bridge replacement and road widening along the southern end of the corridor in the economically distressed downtown San Bernardino. The City of San Bernardino has been struggling with severe economic and social problems since the closure of the Norton Air Force Base in 1994.

When completed in 2013, all four phases of the \$800 million project will help revitalize one of America's most economically distressed communities. It will also relieve congestion along a congested corridor.



## St. Louis – Multimodal Transportation Initiatives to Support Livability

The St. Louis region enjoys access to four modes of transportation — air, rail, road, and water. The availability of so many options provides the community with easy travel around the region, along with some of the lowest shipping costs in the country. Several transportation initiatives are taking place throughout the region to improve traffic safety, ease congestion, and expand the way our communities think of transportation.

The reconstruction of I- 64, one of the region’s main interstates, is a major \$535 million project in St. Louis County and the City of St. Louis that began in 2007. The new I-64 project will replace aging bridges, improve flow, reduce noise, and improve safety through the upgrade of pavement, and construct a new interstate to interstate connection between I-64 and I-170. Illinois and Missouri Departments of Transportation, community leadership, and elected officials are collaborating to build a new, 8-lane Mississippi River Bridge to reduce congestion and make it easier to travel between Missouri and Illinois. Once complete, the bridge is expected to meet capacity needs until 2025.

The Saint Louis Great Streets Initiative designed by the East-West Gateway Council of Governments creates lively and attractive streets around the region that will promote economic and social benefit while safely moving vehicles, pedestrians, and bicyclists. Each year, the East-West Gateway selects 3-4 streets from a pool of applicants to be redesigned by a team of planners, engineers, city managers, and elected officials to better connect residents with services, amenities, and each other. The East-West Gateway holds workshops for community leaders to learn how to apply the same design techniques to streets in their communities.

Much of Greater St. Louis' character and charm arises from its neighborhoods, which foster a connectedness among people that is rare today among large metropolitan areas. Whether the connection extends to their neighborhoods, parishes, or the whole community, St. Louis tends to develop strong ties to their surrounding areas. Many neighborhoods throughout the region have active neighborhood associations, including organized associations for each of the 79 neighborhoods within St. Louis City. The newest neighborhood to blossom in St. Louis City is downtown with urban living in the city center. Thousands of trendy lofts, condominiums, and apartments are available in beautifully restored historic buildings that once served as the center of industry and commerce in the city.

When the New I-64 project is complete, a total of 456,000 tons of concrete and asphalt will be recycled. Using recycled concrete as the base material for roadways reduces the pollution involved in transporting material to and from a quarry. Steel products such as rebar, guardrail, signs, and lights will be recycled and reused in the production of other metal goods. The interchanges will be improved to improve traffic flow and reduce congestion. In addition, on the nearby streets, the construction of three new roundabouts will eliminate signals which require electricity, will reduce emissions, and plant 3700 trees along the project.



### Missoula, Montana – Connecting Transportation and Land Use to Support Livable Communities.

Also emphasized by Secretary LaHood is “the era of one-size-fits-all transportation projects must give way to the enhancement of unique community characteristics.” The next three case studies are rural examples of highways role in support of livable communities.

Missoula County’s “Rural Initiatives” is responsible for the collection and distribution of data, legislation, regulations, and policies relative to Missoula County. Activities conducted by the Rural Initiative include: comprehensive land use and parks planning, land use planning implementation, rural outreach and issue investigation, natural resource monitoring, and protection. The planning process includes representatives from the rural areas including: agricultural, farming and timber land protection tools, and funding mechanisms; water course and water source protection through land use planning/implementation; and cultural resource protection and enhancement. These representatives recognize regional diversity and are involved in interagency coordination with Federal, state, and tribal agencies.

Efforts conducted in support of livability include:

- The Missoula Brownfields Program is using the expertise of their Street Department, Parks Department, and the State Department of Environmental Quality to conduct environmental cleanup.
- Missoula County recently passed a complete streets policy. In addition to slowing traffic, Missoula is planning to develop several trail connections to the under bridge that will allow bicyclists and pedestrians to have alternatives to Madison Street. According to the Mayor of Missoula “The Madison under bridge is a great facility used by everyone. This is a great step towards Missoula’s multimodal system.”
- Context sensitive design will help improve the function and safety of Missoula’s intersections to better serve neighborhoods and accommodates all modes of transportation.
- Missoula County is moving forward on work to extend the Milwaukee bicycle/pedestrian trail. A new roundabout is also helping traffic flow smoothly, increasing safety and beautifying the area. “It’s making travel along Higgins Avenue easier for drivers, bicyclists and pedestrians and making it safer for all to cross the east and west areas of the county” said the Mayor of Missoula. This \$600,000 construction project is being funded with American Recovery and Reinvestment Act funding.

Missoula County has done a great job in improving and maintaining the infrastructure is an important element of a livable community. This includes streets, sidewalks, curbs, and the sewer system. They have also supported green infrastructure, including parks, open spaces, trails, and public lands in support of economic development, good streets, and reliable energy.



North Central Pennsylvania Regional Planning And Development Commission – Connecting Highways to Local and Regional Community Services that Support Livable Communities.

In response to the tremendous growth in the areas of energy, tourism, recreational development, infrastructure and municipal assistance, the Community Development Department within the North Central Pennsylvania Regional Planning and Development Commission has been charged with developing integrated strategies and policies for community development and regional planning activities that are consistent with the organization's Regional Action Strategy (RAS) and strategic plan. The intention of the RAS is to encourage the exchange of meaningful strategies on how communities can soundly manage growth and development to efficiently and effectively link land use, transportation, and economic development decision-making at a regional level.

The Commonwealth of Pennsylvania developed keystone principles for growth, investment, and resource conservation that include: redevelop first, provide efficient infrastructure, concentrate development, increase job opportunities, foster sustainable businesses, restore and enhance the environment, enhance recreational and heritage resources, expand housing opportunities, plan regionally, implement locally, and be fair.

The Community Development Department has identified the following strategic goals in support of livability:

- Promote cooperative efforts among the community (county, city, and municipal governments) and Economic Development agencies that advance individual and common interests in targeting commercial, industrial, and infrastructure development that is data driven and supported.
- Promote quality of life initiatives while safeguarding the region's assets.
- Assess and inventory regional infrastructure needs, including water, sewer, transportation, energy, utilities, education, healthcare, housing and site remediation.
- Expand community outreach and engagement in a range of regional planning and development topics.
- Establish and implement a communication plan to update stakeholders and the general public, share success stories, and promote community and regional planning
- Collect, compile, organize, analyze and disseminate data and data procedures needed for regional policy-setting and decision-making using the evolving capabilities of GIS.

In 2009, \$59.2 million was allocated to fund 50 community-led planning and construction projects. These projects were selected from an overwhelming response of over 400 applications requesting more than \$600 million in funding. The Federal Safe Routes to School initiative, included in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users authorized federal programs for highways, highway safety, and transit from 2005 through



2009. The projects were reviewed by Metropolitan and Rural Planning Organizations, the Federal Highway Administration, Penn DOT district, and others to facilitate project selection. Selected projects were jointly announced with 30 projects selected for the Safe Routes to School Program. The North Central Pennsylvania Regional Planning and Development Commission received funding for three counties with related highway improvements from this effort:

- City of Altoona will receive \$300,000 to install bike and pedestrian amenities that connect the downtown to the Penn State Altoona campus.
- Centre County MPO, in conjunction with North Central RPO, will receive \$100,000 to study potential park and ride lots in the Moshannon Valley to provide commuter service to neighboring communities.
- Ferguson Township will receive \$2,970,000 to install a collector road between two arterial roads serving travelers within a proposed traditional neighborhood development that includes a highly connected local street grid.
- Jefferson County Punxsutawney Borough will receive \$607,200 to upgrade the local transportation network in the downtown area to better complement the inter-modal Punxsutawney Transit Facility.

Investments in smart transportation and creating safe routes to schools offer travel options that can help reduce our reliance on fossil fuels. Building more rational connections within communities can reduce vehicle use and attract pedestrians and bicyclists. The intention of the RAS for Central Pennsylvania is to encourage the exchange of meaningful strategies on how communities can soundly manage growth and development to efficiently and effectively link land use, transportation, and economic development decision-making at a regional level. This has resulted in a comprehensive planning process that promotes livability and community development.

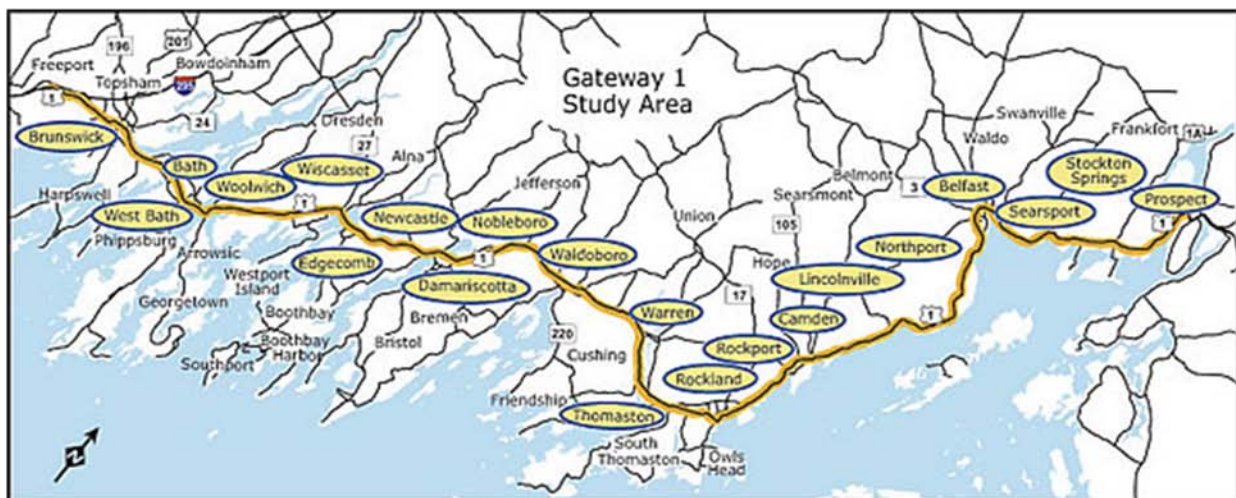


Gateway Route One: An Innovative, Community-Led Land Use and Transportation Planning Project for Maine’s Mid-Coast.

This project produced several principles that help develop livable communities. These principles include: promoting mixed-used communities; implementing minimum lot size and frontage requirements that have a direct impact on transportation; building schools, day care centers and recreation areas near neighborhoods; planning large retail activities near interstate interchanges; creating opportunities to co-locate public facilities; designing neighborhood streets to a smaller scale than state roads; adopting driveway and entrance location and design standards; and preserving open space plans for large lot sizes.

Gateway Route One is an elevated highway that whisks people through towns over the Kennebec River, through Wiscasset’s historic downtown Main Street, and into mid-coast Maine. Maine DOT views Route One as a road that transports goods and people quickly, safely and efficiently. In the past, there have been clashing visions for the road. The state is responsible for regional transportation infrastructure decisions, but municipalities are responsible for making decisions that affect their individual stretches of road. The intersection of those often competing viewpoints has left its mark on Route One, where disjointed planning efforts have been marked by a lack of collaboration, wasted funds, and results that oftentimes had unintended consequences, such as increased congestion and a loss of scenery.

In 2005, Gateway Route One received Federal funding in the amount of \$350,000. In 2006, they received an additional \$1.3 million. The funds were used to maintain efficiencies in the highway system while still providing opportunities for the towns to pursue economic development along the corridor. This included developing a stretch of road with fewer entrances and exits for gas stations and retail stores. The most important outcome of Gateway Route One is the relationships that developed between the DOT and the communities. In 2009 more than 16 communities signed the Statement of Agreement that demonstrates their commitment to the development of the corridor.





## Cheyenne, Wyoming - Integrating Land Use, Transportation, and Parks and Open Space

From the outset of the planning process, Plan Cheyenne was intended to be different from most community master plans by placing specific emphasis on integrating three major elements of the community's planning efforts: land use, transportation, and parks and recreation and open space. These three major elements support one another and build on the vision for our community established by Vision 2020. In preparing Plan Cheyenne the community sought to fundamentally change the typical nonintegrated planning process so that land use, parks and open space, and transportation are more closely linked, bringing the concepts of mobility and livable communities into a sharp focus.

The Plan Cheyenne Community and Transportation Plan promote the development of mixed use and activity centers along a network of principal arterials in the community. Over time, development along the corridors will be compact enough to support greater transit use. Commercial activity centers will be designed to promote walking and should be connected to neighborhoods with local streets, sidewalks, and trails.

Many people envision the transportation system as the network of streets and highways that allows for automobile and truck travel within, to, and through the region. In Cheyenne, roads make up only one component of the transportation system. Transit service, bicycle facilities, and pedestrian infrastructure are essential to Cheyenne's well balanced multimodal transportation system. The system includes railroad corridors, airports, intermodal truck terminals, traffic signals, and stop signs.

Cheyenne's roadway network is based on a range of different types of facilities with varying characteristics that, when combined, make up the roadway system. Their early transportation modeling showed that future roads near I-25 would face severe traffic. As a result, the planning team adjusted Cheyenne's Future Land Use Plan to include more mixed-uses along the Interstate and to shift some of the nonresidential uses to the east side.



I-95 Corridor, Miami To Ft. Lauderdale – Improving Highway Operations To Support Livable Communities.

This case study support livable communities by improving highway operations through a coordinated effort between the State DOT and local communities.

The Interstate 95 (I-95) Express between Miami and Ft. Lauderdale is one of several Florida Department of Transportation (FDOT) operational improvements designed to reduce congestion and make I-95 a better experience for drivers, residents, and transit users. It will create more travel options and encourage the use of ridesharing and transit alternates. The project provides a new transportation choice offering congestion-free and reliable travel on I-95. Traditional widening or supply-only strategies are not only cost-prohibitive, but result in significant social and environmental impacts. I-95 Express is a multimodal, congestion management strategy and is the first of its kind in Florida.

The I-95 Express is FDOT’s Congestion Management Program for I-95 in southeast Florida, which combines express or High Occupancy Toll (HOT) lanes with carpool and transit incentives, ramp signaling, and rapid incident detection and management strategies. The program has considerably improved the overall operational performance of I-95. Customers choosing to use the express lanes have significantly increased their travel speed during PM peak periods of 4 PM - 7 PM. Speeds increased in the HOV lane from approximately 20 MPH to a monthly average of 57 MPH. Also speeds increased for drivers travelling in the general purpose lanes for a significant PM peak period increase in average from approximately 20 MPH to a new monthly average of 41 MPH.



Average volume along the express lanes in the PM peak period 4 PM - 7 PM was nearly 7,000 vehicles. These vehicles traveled at speeds greater than 45 MPH over 95% of the time. The Federal requirement for HOV to HOT lane conversion is 90% for 45 MPH speeds during the peak period. From inception to June 30, 2009, the I-95 Express Lanes have also: remained open to motorists 95.5% of the time, serviced approximately 4.2 million vehicle trips and produced revenue of approximately \$2.8 million dollars.

The public was also surveyed to gauge feedback by daily users of I-95 though the corridor. The results of a May 2009 survey that was distributed to commuters showed that, 76% of those who have used the I- 95 Express believed it is a more reliable trip than the general purpose lanes.