Sustainable Transportation for the 21st Century

Kirk D. Fauver, Environment & Transportation Planning Coordinator

12- March-2015
**Definition of Sustainability**

- Sustainable transportation... may be defined as: *the provision of safe, effective, and efficient access and mobility into the future while considering the economic, social, and environmental needs of society.*

**SOURCE:** TTI Report No. 0-5541-1
Population Growth (State of Texas)

- Population: 26.8 M people today; 36.4 M by 2030
- 2000-2010: more people moved to Texas than any other state
- Traffic delay has increased by more than 500 percent in the last two decades
- For the past fifteen years, construction of highway miles in Texas has lagged behind population growth and vehicle miles traveled in the state’s five largest metropolitan areas.
- Mobility concerns in rural areas also have shown not only through increasing congestion, but also through inadequate connecting routes, safety and operational concerns (e.g., during hurricane evacuations).
Population Growth in State of Texas

Percent Growth 2000-2008, Large Texas Metro Areas

- Dallas-Fort Worth: 22.1%
- Houston-Sugar: 21.5%
- Austin-Round Rock: 32.2%
- El Paso: 9.2%
- McAllen-Edinburg: 27.6%
- San Antonio Metro: 18.7%
Livability: Definition

- Livable Communities
  Encourage mixed-use, multimodal neighborhoods with highly-connected streets promoting mobility for all users

- The Livable Communities Initiative
  Provides transportation choices that promote place-based transportation policies that are centered on people
Livability: Determined by the Public

- “Livability,” is personal, subjective, and dependent upon the visions articulated by the residents, visitors, workers, and other stakeholders of a community.

One Size Does Not Fit All!
Livable Communities
National Biking and Walking Study

Number of Trips Taken by Bicycling and Walking, 1990–2009

18 billion trips by foot

42.5 billion trips by foot

Bicycle and Pedestrian Dollars by Funding Program

- Transportation Enhancement: 46%
- Safe Routes to School/NMT: 17%
- Other STP: 8%
- Recreational Trails Program: 2%
- Other: 14%
- CMAQ: 13%

Source: FHWA FMIS 2008: www.fhwa.dot.gov/environment/bikoped/bipedfund.htm. Abbreviations: CMAQ = Congestion Mitigation and Air Quality Improvement Program; TE = Transportation Enhancement Activities; NMT = Nonmotorized Transportation Programs; Other STP = Surface Transportation Program (STP except TE). Note: Data are based on funds obligated in 2008 and do not necessarily represent funds that were spent in this year.
Percent of Federal Transportation Dollars to Bicycling and Walking

Bicycle and pedestrian projects 1.2%

Other transportation projects 98.7%

Source: FHWA FMIS 2006-2008 Note: Data are based on funds obligated to projects between 2006-2008 and are not necessarily the amount spent in these years.
HUD/DOT/EPA Sustainable Communities Partnership

- **March 2009: HUD and DOT formed Partnership**
  Recognition that transportation costs must be included into the calculations of housing costs

- **June 2009: EPA joins Partnership**
  Recognition that our water, brown-fields, and air investments, policies, and actions can be part of the solution
HUD/DOT/EPA Sustainable Communities Partnership’s Guiding Principles

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Target resources to existing communities.
- Coordinate and leverage federal policies and investments.
- Value unique characteristics of communities no matter their size.
Examples of Livable Communities

Chattanooga, TN

Before

After
Livable Communities

Before

After

New York, NY
Livability Websites & Resources

www.fhwa.dot.gov/livability
http://www.dot.gov/livability
http://www.sustainablecommunities.gov/

- **New Livability Resources Online** The Livability Initiative has developed a library of materials to assist communities with building more livable communities.
- Fact Sheets on how incorporating livability into the transportation decision-making process can benefit communities.
- The Role of FHWA Programs in Livability: State of the Practice Summary.
- Videos of how rural, local and regional agencies are advancing the livability principles in their communities.
- Livability in Transportation Guidebook - FHWA-HEP-10-028
Federal-aid Funding Sources for Transportation-Related Livability Initiatives
Transportation Alternatives Program

Eligible Activities

- Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation.
- Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs.
- Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other non-motorized transportation users.
- Construction of turnouts, overlooks, and viewing areas.
Transportation Alternatives Program

Eligible Activities

- Community improvement activities, including—
  - inventory, control, or removal of outdoor advertising;
  - historic preservation and rehabilitation of historic transportation facilities;
  - vegetation management practices in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control; and
  - archaeo logical activities relating to impacts from implementation of a transportation project eligible under 23 USC.
Transportation Alternatives Program

Eligible Activities

- Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to—
  - address storm-water management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff; or
  - reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats.
Transportation Alternatives Program

Eligible Activities

- In addition to defined Transportation Alternatives (as described above), the following projects or activities are eligible:
  - The recreational trails program under 23 USC 206.
  - The safe routes to school program under §1404 of SAFETEA-LU.
  - Planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.
  - Workforce development, training, and education activities are also eligible uses of TAP funds. [§52004; 23 USC 504(e)]
Other Sources of FHWA and FTA Funds for Bicycle and Pedestrian Activities

- NHPP, STP, CMAQ, IM, etc.
- (See FHWA website at: http://www.fhwa.dot.gov/heap/guidance/bkepedtble.cfm)

### FHWA and FTA Funds That May be Used for Bicycle and Pedestrian Activities

<table>
<thead>
<tr>
<th>Program/Primary Purpose</th>
<th>Eligible Pedestrian and Bicycle Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan Planning (23 USC 104(f))</td>
<td>Bicycle and pedestrian planning as part of the metropolitan planning process.</td>
</tr>
<tr>
<td>Statewide Planning (23 USC 505)</td>
<td>Bicycle and pedestrian planning as part of the statewide planning process.</td>
</tr>
<tr>
<td>National Highway System (NHS) (23 USC 103)</td>
<td>Construction of pedestrian walkways and bicycle transportation facilities on land adjacent to any highway on the NHS.</td>
</tr>
<tr>
<td>Surface Transportation Program (STP) (23 USC 133)</td>
<td>Construction of pedestrian walkways and bicycle transportation facilities; nonconstruction projects for safe bicycle use; modify public sidewalks to comply with the Americans with Disabilities Act. Projects do not have to be within the right-of-way of a Federal-aid highway.</td>
</tr>
<tr>
<td>Surface Transportation Program Transportation Enhancements Set-aside (TE) (23 USC 133(d)(2))</td>
<td>3 of the 12 eligible categories are pedestrian and bicycle facilities, safety and education for pedestrians and bicyclists, and rail-trails.</td>
</tr>
<tr>
<td>Interstate Maintenance (IM) (23 USC 119)</td>
<td>No specific eligibility, but funds may be used to resurface, restore, rehabilitate, and reconstruct pedestrian and bicycle facilities over, under, or along Interstate routes.</td>
</tr>
<tr>
<td>Highway Bridge Replacement and Rehabilitation (HBRRP) (23 USC 144)</td>
<td>Pedestrian walkways and bicycle transportation facilities on highway bridges. If a highway bridge deck is replaced or rehabilitated, and bicycles are permitted at each end, then the bridge project must include safe bicycle accommodations (within reasonable cost). (23 USC 217(e))</td>
</tr>
<tr>
<td>Highway Safety Improvement Program (HSIP) (23 USC 148)</td>
<td>Replace and rehabilitate deficient highway bridges and to seismically retrofit bridges located on any public road.</td>
</tr>
</tbody>
</table>
Secretary DOT Mayor’s Challenge for Safer Bicycle Pedestrian Facilities (February 2015)

Mayors' Challenge Activities

- Take a Complete Streets approach
- Identify and address barriers to make streets safe and convenient for all road users, including people of all ages and abilities and those using assistive mobility devices
- Gather and track biking and walking data
- Use designs that are appropriate to the context of the street and its uses
- Take advantage of opportunities to create and complete ped-bike networks through maintenance
- Improve walking and biking safety laws and regulations
- Educate and enforce proper road use behavior by all
Climate Change and Sustainability
Climate Change and Sustainability

- We will have to protect our current assets and plan our future assets for adaptation purposes. Changes in the climate will dramatically affect our transportation infrastructure and operations.

  - **Sea level rise** could inundate coastal infrastructure in low-lying areas, or make it more vulnerable to storm surge effects.

  - **Increased hurricane intensity** has significant potential to damage bridges, ports, rail, and airport structures.

  - **Increases in storm intensity** could disrupt transportation operations and limit evacuation routes and emergency response capabilities.

  - **Increases in temperature extremes** could affect pavement performance and life, operations and maintenance.
Transportation & GHG Inventory

Percentage of U.S. Greenhouse Gas Emissions, 2006 (all gases, in Teragram [Tg] CO₂ equivalent)

Source: http://www.epa.gov/ghgreporting/index.html
Transportation & GHG Inventory (1990-2006)

Source: [http://www.epa.gov/climatechange/emissions/downloads/o8_CR.pdf](http://www.epa.gov/climatechange/emissions/downloads/o8_CR.pdf) (pg 50 of 473; Figure ES-13)
Transportation and Global Climate Change

Strategies to Reduce Emissions

- There are four primary strategies to reduce GHG emissions from transportation. To be most effective, all four must be pursued together.
  - Improve system and operational efficiencies
  - Reduce growth of vehicle miles traveled (VMT) Transition to lower GHG fuels
  - Improve vehicle technologies
U.S. DOT’s Climate Adaptation Plan

- U.S. DOT’s 2014 Climate Adaptation Plan describes the actions U.S. DOT will take to address potential climate impacts, including incorporating climate variability and change impact considerations in asset management systems, and ensuring that transportation plans and projects address potential climate impacts in order to protect federal investments.

FHWA Order 5520: Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events

- **Purpose:** Establish FHWA policy and responsibilities related to preparedness and resilience to climate change and extreme weather events.
- **Issued jointly by Environment & Planning, Infrastructure, Federal Lands Offices**
Supports FHWA’s Role and Mandate

- Implement relevant provisions of transportation law:
  - Projects shall “preserve and extend the service life of highways and enhance highway safety”
  - Allows use of Federal-aid funds for “protection against extreme events” for bridge and tunnel projects
- Comply with recent Executive Orders:
  - Climate Preparedness (2013)
  - Federal Agency Adaptation Planning (2009)
- Further the U.S. DOT Policy statement on Climate Change Adaptation (2011):
  “USDOT shall integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services and operations remain effective in current and future climate conditions.”

Order defines “Extreme Events”
23 USC § 109, 119, 133, 503, etc.
The Federal Highway Administration's (FHWA) "Success in Stewardship" newsletter is now available online.

The current issue highlights a new tool agencies can use to manage transportation assets vulnerable to climate change.

Web site location is: http://environment.fhwa.dot.gov/strmlng/newsletters/feb15nl.pdf
Tools & References

- U.S. DOT Transportation and Climate Change Clearinghouse at: http://climate.dot.gov/about/transportations-role/overview.html

- FHWA Transportation and Climate Change Newsletter (Prepared by the Office of Planning, Environment and Realty Federal Highway Administration) at: www.fhwa.dot.gov/environment/climate_change/
Tools & References

- AASHTO Center for Environmental Excellence has additional global climate case studies, policy guidance, and best management practices from around the U.S.

- Provides a one-stop source of environmental information for transportation professionals.

- See website at: http://environment.transportation.org/environmental_issues/sustainability/recent_dev.aspx
Contact information

Kirk D. Fauver
Statewide Planning Engineer (HPP-TX)
300 E. 8th Street, Room 826
Austin, TX 78701

PH: (512) 536-5952
FAX: (512) 536-5990
E-MAIL: kirk.fauver@dot.gov