



# Transit State of Good Repair

## BEGINNING THE DIALOGUE

October 2008

Prepared by:



U.S. Department  
of Transportation

**Federal Transit  
Administration**



U.S. Department  
of Transportation  
**Federal Transit  
Administration**

Administrator

1200 New Jersey Avenue S.E.  
Washington DC 20590

Dear Colleague:

I want to bring to your attention an issue of national importance. Maintaining the condition of our transit infrastructure is a pressing challenge for most of the Nation's transit systems. In a country where public transportation is increasingly looked to as a necessary and critical mode of travel, ensuring that local transit systems are maintained in a "state of good repair" to provide efficient, reliable, and safe service is more important than ever.

Earlier this year, the Federal Transit Administration (FTA) brought together representatives from 14 public transportation providers and State Departments of Transportation to discuss the state of repair of our Nation's transit inventory. We discussed, among other things, transit recapitalization and maintenance issues, asset management practices, and innovative financing strategies. We explored issues related to measuring the condition of transit capital assets, prioritizing local transit re-investment decisions, and preventive maintenance practices. And we discussed research needs and potential tools for helping agencies cope with this growing problem.

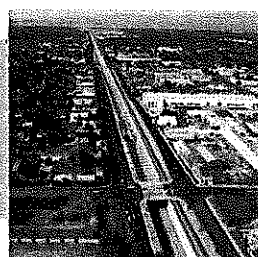
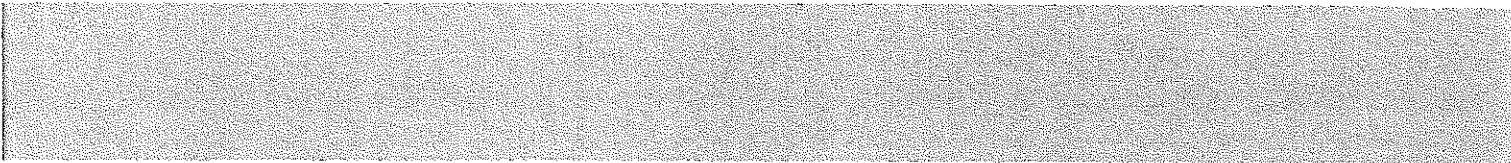
This report summarizes these issues and the experiences and ideas presented at the meeting. I thank each of the individuals and agencies who participated, and I look forward to continuing this dialogue with others in the industry.

FTA plans to convene a "State of Good Repair Roundtable" next year to further discuss the challenge of transit recapitalization, lessons learned, and best practices. We will report to Congress later this year on the level of investment needed to bring the Nation's largest rail transit agencies to a state of good repair, and will continue to explore other opportunities to discuss this issue and potential solutions.

I realize bringing our Nation's transit systems to a state of good repair – while at the same time planning for and implementing needed service expansions – is a steep challenge. But I am confident that working together we can develop the solutions to continue to provide public transportation to the millions of Americans that depend on it.

Sincerely,

A handwritten signature in black ink that reads "James S. Simpson". The signature is written in a cursive, flowing style.  
James S. Simpson

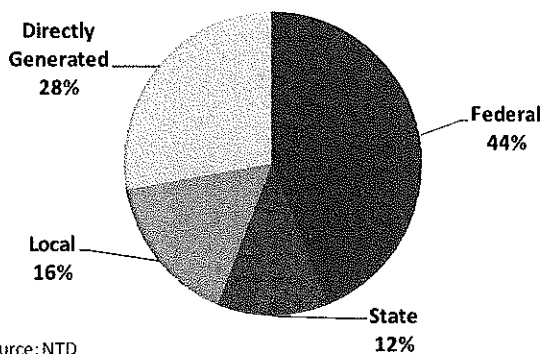


# Beginning the Dialogue

## □ State of Good Repair Initiative

Maintaining the nation's bus and rail systems in a state of good repair (SGR) is essential if public transportation systems are to provide safe and reliable service to millions of daily riders. Data, discussed later in this paper, indicates that investments to date have not been adequate. This report is the first step in a collaborative initiative to comprehensively articulate the problem, to define a commonly adopted definition of "state of good repair", and to identify strategies, technical assistance briefs, peer to peer exchanges, and best practices aimed at achieving such a state industrywide.

**Capital Funding Shares: 1997 to 2006**



Source: NTD

Since 1991, Federal, state and local funding resources have invested \$165 billion in the preservation and expansion of the nation's rolling stock and infrastructure. Despite this ongoing investment, much of the nation's rolling stock and infrastructure is deteriorating and the current capital reinvestment rates appear insufficient to halt or reverse this decline. For transit riders, this deterioration manifests itself in the form of declining service reliability. For transit operators, aging capital assets drive increasing maintenance costs and limits the ability to expand system capacity at a time of high demand prompted by high fuel costs. All share a mutual concern over the potential impacts on safety.

**Current capital reinvestment rates are only 60% to 80% of that required to address existing backlog and normal replacement needs**

These concerns have prompted FTA to take a closer look at the nation's transit recapitalization and maintenance needs. As we do so, FTA is partnering with the industry to help assess the magnitude of the problem and to identify meaningful solutions. Working together, we hope to ensure adequate commitment and resources to protect and preserve investments.

## □ Recent Trends

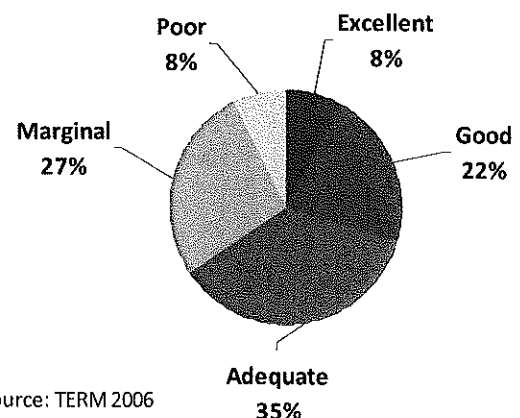
The ongoing decline of the nation's bus and rail assets and the increasing pressure on existing funding sources to address the resulting reinvestment needs



has been captured by a broad range of industry analyses. Consider the following:

■ **Current Conditions:** FTA analysis of national transit data suggests that roughly one-quarter of the nation's bus and rail assets are in marginal or poor condition (implying these assets are near or past their useful life or have one or more defective or deteriorated components). The proportion of assets in marginal or poor condition jumps to one-third when the analysis is limited to the nation's nine largest rail agencies (including these agencies' non-rail assets).

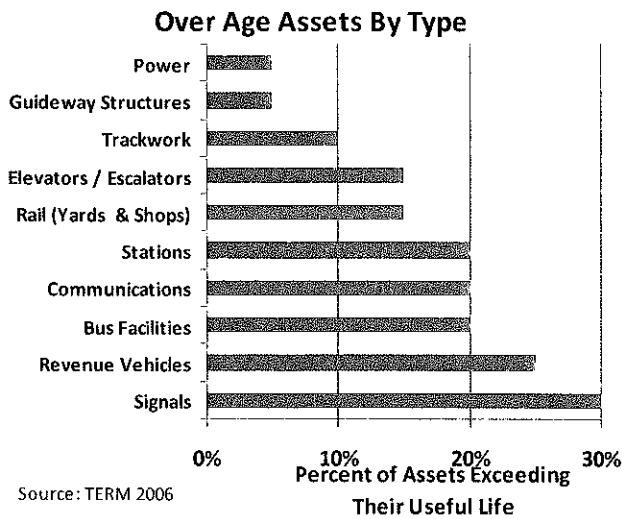
**Asset Conditions: Largest Rail Agencies**



Source: TERM 2006

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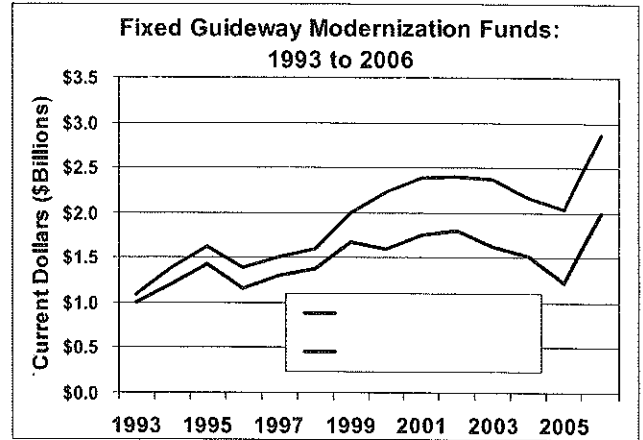
Asset conditions are generally poorest for the heavy rail and bus modes (both with roughly one-third of assets in marginal or poor condition). A lesser proportion (7%) of light rail assets are in marginal or poor condition, reflecting the significant level of investment in new light rail systems over the past twenty years (resulting in a greater proportion of younger assets compared to other modes). FTA expects these percentages to grow if recapitalization needs are not addressed.



■ **SGR Backlog:** Based on FTA analysis, the total level of investment required to bring the nation's bus and rail assets to a state of good repair is currently estimated at \$25 billion (\$2004). This investment would effectively replace all assets that currently exceed their expected useful life and address delayed rehabilitation activities. After eliminating the backlog, an additional \$9 to \$11 billion from all sources is required annually to maintain this state of good repair into the future. At present, annual capital reinvestment rates are only 60% to 80% of that required to address both the existing backlog and normal replacement needs.

■ **Declining Share of Federal Resources:** The nation's oldest and largest rail transit agencies carry nearly 60% of ridership and receive 40% of all Federal transit funding. And while the increase in the

number of rail systems throughout the country brings access to improved transit service to more Americans, the Fixed Guideway Modernization Program – FTA's primary source of rail capital replacement funds – is spread more thinly as new systems are added. As a consequence, the proportion of Fixed Guideway Modernization funds distributed to the oldest rail systems (with the highest proportions of poor and marginal asset conditions) has declined from over 90% in 1993 to less than 70% by 2006. The demand for Fixed Guideway Modernization funds will only accelerate as rail systems constructed in the 1980s and 1990s begin to experience their first major recapitalization needs.

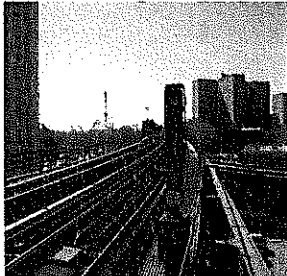


■ **Safety:** In recent hearings and reports, the National Transportation Safety Board (NTSB) stated its concern that the rail transit industry is not investing enough to protect its workers, passengers and capital assets. An example here is a July 2006 CTA Blue Line derailment where the NTSB concluded that: "The tie plates and fastener systems failed to maintain the track gauge because of the effects of corrosion and wear of the rail and fastener systems, and degraded ties." NTSB Member Higgins called the incident a "wake up call...to all transit agencies...with equipment and infrastructure that ages with each passing day."

■ **Local Examples:** Local agency analyses also highlight the need for significant capital reinvestment,

to address needs that remain unmet due to insufficient funding.

- New York City Transit (NYCT): NYCT has been working steadily since 1982 to bring the nation's largest and second oldest rail transit system to a state of good repair, this following a period of underinvestment and decline. After making significant progress, this long-term major reinvestment program recently encountered a setback following the defeat of New York's proposed congestion pricing plan, a measure that would have yielded a significant portion of funding to meet NYCT's reinvestment and expansion needs. Over the next twenty years, NYCT capital needs include roughly \$20 billion in state of good repair (SGR) investments and an additional \$2 billion in annual normal replacement (NR) investments.



- Massachusetts Bay Transportation Authority (MBTA): Boston MBTA estimates that it needs \$620 million in annual capital investment to attain its assets in a state of good repair over the next twenty years. With only \$470 million in anticipated annual funding, this leaves roughly \$150 million in annual unfunded capital needs. The resulting investment backlog includes parking, maintenance shops, and fare equipment, as well as assets that serve fewer passengers (and hence a lower investment priority). Eliminating the existing backlog would help improve operating speeds and reliability, reduce operating costs and encourage new ridership.

- Washington Metropolitan Area Transit Authority (WMATA): WMATA, along with San Francisco's Bay Area Rapid Transit (BART) and the

Metropolitan Atlanta Rapid Transit Authority (MARTA), is representative of a group of larger operators with rail systems entering their first major rounds of capital reinvestment needs. Built over the past thirty years, many of WMATA's rail assets are now entering "middle age," leading to increasing recapitalization needs. At the same time, the Washington Metropolitan region continues to grow, leading to tough choices between expansion and reinvestment.

## □ Beginning the Dialogue

Over the past several months, FTA has taken some initial steps to focus attention on transit capital asset preservation and renewal. Moving the industry towards an overall "state of good repair" is a key agency objective. Consider the following:

- What is a "state of good repair" (SGR) and how can we measure it?
- What is the magnitude of the SGR investment backlog?
- What is the gap between reinvestment needs and available resources?
- What strategies are agencies using to address SGR needs?
- How can FTA help?

The answers to these questions will impact how we think about and address state of good repair issues. Recent FTA initiatives have begun to address these challenges.



- **SGR Workshop**: In August 2008, FTA convened a two-day workshop with senior engineers and capital planning staff from 14 bus and rail agencies. The SGR Workshop provided local agency staff with an opportunity to discuss the magnitude of their SGR

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needs, potential strategies to address this problem, and the problem of limited resources. The discussion topics and findings from this workshop are provided at the end of this report. The SGR workshop represents only a first step in FTA's plan to partner with the industry to jointly assess and address the nation's transit recapitalization needs.

■ **Rail Modernization Study:** In response to a December 7, 2007 letter from twelve U.S. Senators<sup>1</sup>, and related language in the FY 2008 Transportation-HUD Appropriations bill, FTA is conducting a Rail Modernization Study. This study will assess the level of investment required to bring the nation's largest rail transit systems to a state of good repair. The study will also consider the gap between reinvestment needs and historic funding levels, and potential changes to the existing Fixed Guideway Modernization funding formulas. The study will be submitted to Congress in early 2009. Prior FTA rail modernization studies were completed in 1979 and in 1987.

■ **FTA SGR Working Group:** FTA has established an internal working group that meets regularly to consider SGR related issues and to establish new initiatives.

## □ Future Focus

Beyond these first steps, FTA is considering additional strategies to promote an understanding and awareness of national transit recapitalization and maintenance needs and potential solutions to address those needs.



<sup>1</sup> Senators signing the letter include: Richard Durbin, Barack Obama, Evan Bayh, Robert Casey, Hillary Clinton, Christopher Dodd, John Kerry, Edward Kennedy, Joe Lieberman, Robert Menendez, Charles Schumer, and Arlen Specter.

■ **SGR Roundtables and Advisory Groups:** FTA currently conducts biannual "roundtables" with industry engineering professionals to address common issues impacting the design and construction of New Starts projects. FTA is considering a similar roundtable program to address state of good repair issues. As with the existing Construction Roundtables, these "SGR Roundtables" would include industry engineering and capital planning experts, with the objective of sharing approaches and solutions to common state of good repair problems. These roundtables would also help ensure that FTA's strategies for attaining state of good repair accurately reflect real world reinvestment realities. The possibility of an SGR Roundtable received strong support from the transit agency staff attending FTA's recent SGR workshop.

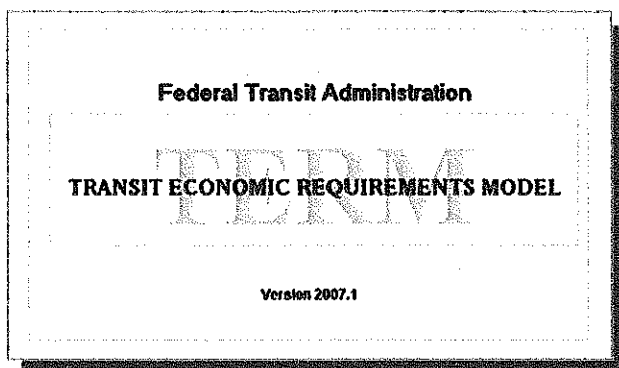
■ **Definition and Measurement of State of Good Repair:** At present, there is no industry accepted definition of "state of good repair." In the absence of a clear definition and reliable measures, Federal, state and local decision-makers cannot easily establish an operational policy of attaining a state of good repair, determine what it will take to reach that objective or determine when (or if) that goal has been attained. FTA will work with the industry to help define what is meant by "state of good repair" and how best to measure it. The goal would not be to impose a common definition or measures on the industry but rather to find a common language to discuss the problem.

*Asset management is a strategic capital planning process that supports well informed investment decisions based on good quality data and clear organizational objectives.*

■ **Transit Asset Management:** In the early 1990s, the nation's highway industry initiated development of the country's first transportation asset management systems. Today, virtually all state DOTs possess well

developed asset management processes designed to actively monitor current asset conditions and evaluate reinvestment needs and tradeoffs. In contrast, few U.S. transit operators possess asset management processes comparable to those in the highway sector. FTA looks forward to working together with the transit industry to jointly develop asset management approaches that serve our specific needs. Asset management can help agencies:

- Establish clear organizational SGR definitions and objectives;
- Assess the magnitude of the issue;
- Better coordinate agency planning, engineering and decision-making functions;
- Prioritize the use of scarce reinvestment funds.



■ **“TERM Light”:** FTA's Transit Economic Requirements Model (TERM) is an analysis tool designed to help evaluate long-term transit recapitalization needs. In development for more than a decade, TERM can estimate the level of capital investment required to attain a state of good repair (or other investment objective) and can also assess how variations in capital funding availability will likely impact the future condition and performance of transit assets. FTA is exploring the development of a simplified version of TERM (or “TERM Light”) for use by local agency capital planning staff. In return, FTA

will seek local agency asset data and participation in the ongoing improvement of this useful tool.

■ **National Transit Asset Inventory:** A prerequisite to effective, long-term transit capital reinvestment analysis – at either the national or local levels – is the availability of good quality asset inventory and condition data. At present, only a handful of U.S. transit operators actively maintain transit asset inventories for capital planning purposes and there is no Federal reporting on transit assets except vehicles. FTA is considering expanding the current National Transit Database (NTD) reporting requirements to include data on local agency asset inventory holdings and conditions. This data will support TERM's assessments of national reinvestment needs and will be valuable to those agencies not currently collecting this data for their own needs assessment purposes.

■ **Research and Technical Assistance:** The SGR Workshop identified several areas where FTA might provide research and technical assistance relating to state of good repair and asset management. Examples include:

- Asset Inventory Development: What are the best practices in the development of asset inventories and how are other agencies applying their inventories?
- Linear Asset Management Tools: How are rail transit agencies utilizing “linear asset management tools” for the maintenance management and capital planning needs of their linear rail asset types (e.g., right of way, signals, track, tower, structures, etc.)?
- Maintenance Management Systems: How can agencies make better use of their existing maintenance management systems to address state of good repair issues?
- Innovative Financing: How can FTA support the industry in developing and promoting the use of innovative financing methods specifically designed to support capital reinvestment?

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- Lessons Learned and Best Practices: What are the best practices in asset management and state of good repair planning?

### □ Next Steps

In the coming months, FTA will complete the Rail Modernization Study and other SGR related efforts designed to help inform the upcoming Surface Transportation Reauthorization. Moving forward, FTA will continue to promote attainment of industry-wide state of good repair as a key long-term objective. As we do so, we will work closely with the industry to better understand the problem and to develop effective strategies that preserve the nation's transit capital assets and ensure safe and reliable transit service to the nation's riding public.

