# FTA's Second State of Good Repair Roundtable Intercontinental Hotel, Chicago, Illinois July 21-July 23, 2010

## Wednesday, July 21, 2010



## Therese McMillan, Deputy Administrator, FTA Richard Rodriguez, CTA President

Therese McMillan, Deputy Administrator of FTA, began her welcoming remarks by thanking the participants for attending FTA's Second State of Good Repair (SGR) Roundtable and commending them for their commitment to improving the nation's transportation system.

A reliable, well maintained system, she said, is crucial to ensuring the mobility of the nation's population, especially to those for whom transit is the only option. Secretary of Transportation Ray LaHood has included SGR as one of five goals in the Strategic Plan for the Department of Transportation, she said.

FTA's *National State of Good Repair Assessment Study*, she pointed out, reveals that bringing the nation's rail and bus transit systems into a SGR would cost the United States \$77.7 billion—and another \$14.4 billion a year to maintain it.

The backlog is significant and funding is limited, she said, but "the sky is not falling."

The agency is making headway on this issue. Nearly \$2 billion of ARRA funding went toward investing in SGR projects. Another \$775 million has also been made available to improve the nation's bus and bus facilities, she added.

Bringing the nation's transportation systems into a SGR will require commitments from all levels of government as well as the private sector. FTA's proposed SGR program—to be presented during the Roundtable—should serve as a springboard for conversation on how to solve the nation's backlog problem—and avoid backlogs in the future.

At the heart of the SGR debate, she said, is this question: How do you maintain what you have and still expand the system?

"Your insight is invaluable as we try to get arms around this important challenge for the transit industry," she said.

Richard Rodriguez, CTA President, gave an overview of the transit system. The property's backlog, he said, is considerable. CTA estimates it will need \$6.8 billion a year for the next five years to reach SGR. Major components of the system have outlived their useful lives including 22% of its tracks, 37% of its garages and 32% of its rail cars.

But improvements are on their way. CTA, for instance, is revamping its North Red and Purple Lines, built in the early 1900s, and modernizing its stations. The line carries 18% of CTA daily riders.



Is CTA looking at different station sites or is it sticking with historical locations?

Rodriguez said that many stations in the Red and Purple lines are one city block apart. "We are looking at repositioning the stations to make them more efficient," he said.

Is there local support for transit projects?

Rodriguez explained that half of the property's operating funds come from local government, but local leaders don't realize that federal capital funds can't be used for operating costs. "The responsibility is on us to become less dependent on federal funding," he said.

One source of income is corporate sponsorship. Apple, for instance, build a store next to one of CTA's dilapidated station and agreed to invest \$4.5 million to refurbish the subway entrance building, the underground train platform and a bus turnaround driveway.

In exchange, Apple asked CTA for "first rights of refusal" for naming the station and placing advertising within it. "It's not officially an Apple station," he added, "but people call it that. It doesn't give me elevators but it goes a long way."

Does the property shut down stations to speed up construction?

Rodriguez said the property shuts down some stations during upgrades, "but never two in a row," and it offers riders bus services in the interim. The property also educates riders, elected officials and community leaders about the benefits of having a better transit system. "Our customers understand it," Rodriguez said, "but don't tolerate it for long."

A participant warned the group about the dangers of shutting down entire lines. "Riders found another way to go" he said, "and they (transit properties) had a hard time bringing them back."

## Thursday, July 22, 2010

Opening Remarks

## Therese McMillan, Deputy Administrator, FTA

McMillan commended FTA staff and industry for their progress in furthering the SGR dialogue. "Our time for making SGR a focal point of federal attention is now," she said. "We have a (DOT) Secretary who gets it and made SGR a major plank in the Department's strategic plan."

FTA Administrator Peter Rogoff is devoting time and resources to improve the condition and efficiency of transit systems.

FTA released the second phase of the SGR analysis of systems nationwide, issued at the heels of the study conducted in 2009, which examined the SGR needs of seven major operators. "This is the time for us to make some progress, put proposals on the ground and move forward," she said.

It's important to recognize, she said, that federal action or assistance alone won't get the nation's systems into SGR. "It will require activities and commitment resources from local and state levels. What we do with federal program shouldn't interfere with what you do locally."

But at the national level, she said, "we'll need to be on consistent footing to uniformly define the issue... and advocate for changes."

FTA needs to know what properties need "on the ground." The appropriations bill included \$5 million to advance SGR initiatives. FTA is putting together asset management courses for continuing education and training to advance "collective thinking" on SGR—and it wants industry feedback. "You and your colleagues are beneficiaries. Your input is important."

Around-the-Table—Introduction and Agency SGR Updates/Challenges

## Sean Libberton, Deputy Associate Administrator, Office of Program Management, FTA

Sean Libberton, Deputy Associate Administrator, Office of Program Management, FTA, asked transit agencies to take turns going around the room to introduce themselves, describe SGR challenges they face and express what they would like to get out of the conference.

**William Parks, Maryland Transit Administration (MTA), Baltimore, Maryland,** said that funding allocations do not cover the cost of sorely needed interlocking replacements and track repairs. Little headway has been made in fixing up bus facilities because of neighborhood concerns. The property is revamping its bridge program, gearing up for annual inspections as required under a new FRA mandate. Parks would like to learn more about asset management classes.

Allen Smith, Metropolitan Transit Authority (MTA), New York City, New York, said their property's rail system will expand to 38 miles, mostly embedded track, including five additional lines and increasing the number of light rail vehicles.. The property has signed a contract with a facility provider and OM contractor to develop a capital asset replacement plan. Smith is eager to learn about other properties' SGR programs.

Joseph Shaffer, Greater Cleveland Regional Transit Authority, (GCRTA), Cleveland, Ohio, said his agency is too financially strapped to do routine maintenance and keep lifts in service. GCRTA plans to close one of three major garages, and keep less than 500 buses on the road—the lowest number since 1920. He'd like to use his knowledge about pavement management systems to develop asset management systems.

**Joe Lorenzini, Metra**, Chicago, Illinois, said his agency participated in an asset management study sponsored by RTA and then decided to develop its own inventory of assets. An RFP is about to be issued seeking bids for contractors. Lorenzini wants to learn more about asset management. "How deeply should we go into it?" he asked. "Do you want to inventory every window, door and bolt?"

**Jerry Rutledge, King County Metro, Seattle, Washington,** said his system is trying to strike a balance between expanding services and maintaining current lines. "There seems to be a tendency to start with shortfall on the maintenance end," he said. "The more we cut back on maintenance, the quicker we have to start looking at asset replacement." What can properties do to bring SGR into the limelight? "Do we have the political will to integrate it so we can get the funding it takes?"

**Tracy Beidleman, Metro, St. Louis, Missouri,** said the property must come up with \$129 million to replace nearly 43 of its original light rail vehicles and fix the roof top of its Union Station tunnel. "If we don't do something in the next two to three years," he said, "we'll have to slow down the service or shut it down." The agency needs to identify critical components that need to fixed right away, and avoid last-minute "knee jerk reaction" decisions.

**Kathy Klevorn, Metro, St. Louis, Missouri,** said her region is made up of nearly 100 municipalities which disagree on how local resources should be spent. A new local sales tax was imposed to help fund transit after the property was forced to cut \$37.5 million in service, including cancelling bus orders. The property's vehicle maintenance program is nationally recognized so there are no more "crisis replacements."

**Daniel Mazza, South Florida Regional Transportation Authority (SFRTA), Pompano Beach, Florida,** said his property spent over 10 years on a double tracking project, and construction of 72 miles of commuter rail. Some stations do not have double tracking because of environmental concerns. "But things are beginning to fall apart," he said. Most of the 5-year capital budget funding will go towards purchasing new rolling stock, although some stations need to be repaired and painted.

**Paul Edwards, Utah Transit Authority, Salt Lake City, Utah,** said that the bus system is in a SGR, and new facilities are in good shape because they are under extended warranty. The property plans to build about 60 bridges, and bring the bridge inspection function in-house. Edwards wanted advice on asset inventory. "We are confused at the level of granularity we want to get down to," he said.

**Rolando Cruz, Long Beach Transit, Long Beach, California,** said his agency operates buses only, and the system—over 40 years old—is in a SGR. The property is struggling, however, with maintaining spare ratio standards of 20% in dealing with gasoline hybrid vehicles. Long Beach Transit is now drafting a comprehensive maintenance facility plan so condition assessments can be conducted. He hopes to get software companies involved in the process.

**George Karbowski, Foothill Transit, West Covina, California,** said his agency's 11-years-old facilities are in a SGR. The property is working with a manufacturer to build electric buses. "We are teaching truck mechanics how to maintain electronic systems on buses," he said. Classes are offered at a nearby college. Preventive maintenance, he said, is key to successful transit operations. His view: "You pay me now or pay me a lot more later."

**Errol Stevens, Regional Transportation District, Denver, Colorado,** said his agency is now adopting a lifecycle approach, providing numerical ratings for each asset component "so you can on an annual cycle indicate what condition things are in." The program also involves a financial resource allocation model so assets nearing the end of their useful life can be on a renewal list.

**Carlton Allen, BART, Bay Area Rapid Transit (BART), San Francisco, California,** said the rail system has expanded from 60 to 100 miles, but little reinvestment has gone toward renovating facilities. The agency focuses on safety—and maintenance is typically deferred due to lack of resources. Some vehicles will have been in service for 50 years by the time they are replaced. The property continuously struggles with "reinvestment versus expansion."

**Brian McDonough, Niagara Frontier Transportation Authority**, Buffalo, New York, operates 326 buses, 57 of which are diesel hybrids. Massive corrosion is the property's number one headache, affecting equipment, facilities and infrastructure. Maintaining service in the city has become increasingly difficult as more people move to the suburbs. The property is in the process of assessing equipment and setting up a preventive maintenance program.

**Fred Smith, New York City Transit, New York City, New York,** said his agency received \$1.5 billion over the last two decades to improve the transit system and bring them into SGR.

Knox O'Callaghan, Metropolitan Atlanta Rapid Transit Authority, (MARTA), Atlanta, Georgia, said the transportation system is aging, and most capital funding has gone towards funding SGR and safety activities.

**Christine Lo Curto, Central New York Regional Transportation Authority, Syracuse, New York** said state funds, which covered 46% of operational costs, has been drastically cut. "We are cutting into preventative maintenance to fill the gaps," she said.

**Robert Lo Curto, Central New York Regional Transportation Authority, Syracuse, New York,** explained that although the property is in SGR now, it will have to replace most of its 260 bus fleet in two years. "Our issues are asset replacement and how we'll have to flip flop the percentage of money used for preventive maintenance into replacing capital assets," he said.

**Jacob Balter, MTA Long Island Railroad, Jamaica, New York,** said that "SGR needs to be married with system expansion because the expansion will rely on the core system." Plans are underway to switch to microprocessor technology, a move that will disrupt service but will allow the property to more efficiently provide services. "We need to take a plant constructed in 1913 and re-imagine it to address 21<sup>st</sup> century needs," he said.

**Richard Jarrold, Kansas City Area Transportation Authority, Kansas City, Missouri,** said his property's 35-year-old facility is out of date, energy inefficient and inaccessible. "Every year," he said, "funding for facility improvements gets into the budget but priorities shift it elsewhere." He wants to learn more about asset management, but "would hate to see SGR become a series of FTA requirements, data collection, reporting requirements."

**Vicki Barron, TriMet, Portland, Oregon** said that her agency's strategy is to piggyback improvements to construction projects. The agency, for instance, upgraded existing tracks across the bridge when it shut down the steel bridge to construct a rail extension. Capital improvement funds are limited, but ARRA "helped plug holes for us." She wants to know: Has industry settled on preferred software?

**David Springstead, Metropolitan Atlanta Rapid Transit Authority, (MARTA), Atlanta, Georgia,** said the property is in Phase I of its asset condition assessment and will soon conduct a facility utilization study to determine whether train yards, for instance, are being used at full capacity. The property's goal is to link the MAXIMUS system to the financial system.

**Homer Carter, Hampton Roads Transit, Norfolk, Virginia, said their system** is transitioning from being a small bus company into a light rail property. Its first major bus garage facility broke ground in October. The property is undertaking two major capital projects simultaneously, placing strains on "existing human capital," he said.

**Thomas Noll, Port Authority of Allegheny County, Pittsburgh, Pennsylvania**, said his property's rail car fleet is new but its 850 bus fleet is aging quickly because of the beating they take in the snow, salt and terrain. The Port Authority also maintains all or part of about 75 to 80 bridges. Inspection costs can run to \$350,000 a year.

**Michael Hubbell, Dallas Area Rapid Transit (DART), Dallas, Texas,** said that SGR is considered an integral part of the 20-year financial planning requirement, allowing the property to design strategies that will allow for new construction and maintenance of existing assets. He applauded the Deputy Administrator for emphasizing the need for federal—as well as local—commitments.

**Peter Garino, New Jersey Transit, Newark, New Jersey,** said FTA declared the property to be in SGR, having invested \$5 billion over ten years on SGR initiatives, and another \$3 billion in New Starts projects. "I hope that FTA doesn't come up with a system that penalizes properties that made local investments because I'll never get money from local sources again," he said.

**Ed Birkholz, Metro Transit, Minneapolis, Minnesota,** said bus repair facilities at his agency are about 30 years old and in need of upgrades. The property will need to conduct a space evaluation study to make sure the new facilities accommodate articulated buses and Compressed Natural Gas buses in addition to the more traditional 40-foot diesels.

John Goodworth, Regional Transportation Authority (RTA), Chicago, Illinois, said his property will soon publish its first capital asset condition assessment along with a 10-year plan to bring the system into SGR. Along with CTA, Metra and Pace, RTA examined 74 asset types within five major categories including, in part, rolling stock, track and structure, electrical signal and other subway equipment. The document will become "a living document over the next ten years so we can keep it more current," he said.

**Grace Gallucci, Regional Transit Authority (RTA), Chicago, Illinois,** explained that FTA's SGR report "brought to light our worst fears." The property needs \$25 billion to reach a SGR, but only \$8 billion in revenue streams are expected to be received over the next 10 years. The property must prioritize the repairs. "We are developing a decision tool that will help us determine what is the best approach to spending our funds," she said.

**Geoffrey Hobin, Transit Authority of River City (TARC), Louisville, Kentucky,** said that his property is in SGR thanks to ARRA. Funds were used to renovate a storage building, and build a roof on a bus garage. The property is not in "dire need" of asset management, but he is concerned that the better they do the fewer federal dollars they'll get. "I hope FTA is looking at the next authorization and plugging in some kind of performance based allocation," he said.

**Michael Connelly, Chicago Transit Authority (CTA), Chicago, Illinois,** said his property has made good strides with inventory assessments. Connelly said he was stepping back, removing himself from the day-to-day repairing elevators to "looking at the bigger picture for the region."

**Denise Longley, Los Angeles County Metropolitan Authority (LACTMA), Los Angeles, California,** said the agency was taken by surprise during its SGR assessments when the South Coast Air Quality Management District issued new emission rules that affected its CNG stations. Luckily, ARRA funds helped address the issue. The agency is struggling with prioritizing projects. "It's always rolling stock versus capital," she said. Martin Batistelli, Los Angeles County Metropolitan Authority (LACTMA), Los Angeles, California, said the agency has identified 845 groupings of assets but is running into "premature obsolescence issues with equipment" because the manufacturers either stopped making equipment components or went out of business. Without the right components, the equipment becomes "unmaintainable" and the property ends up having to replace it.

**Glen Tepke, Metropolitan Transportation Commission, (MTC), Oakland, California,** said that his agency gathered assets data of 22 transit operators in the region and is now developing a process for updating inventory regularly. Rail cars, electronic trolleys and other transit vehicles will be due for replacement over the next decade. Tepke would like FTA to "develop a common definition for SGR" and describe how to measure it.

**Carrie Wagener, Chicago Transit Authority (CTA), Chicago, Illinois,** said his department maintains the infrastructure underneath the trains including tracks, signal and power on substations. The property has an in-house maintenance and inspection workforce. He would like to learn more about granularity, how deeply properties should delve into assets, since "it's becoming increasingly important in our department."

**Joseph Petito, Metropolitan Transit System, San Diego, California,** said the "massive scale" Blue Line capacity enhancement project will replace 63 of its original fleet. "We hope the efficiency of newer vehicles will help us maintain a level we need to operate." To accommodate low floor vehicles, the property will need to retrofit 23 stations.

## Jeffrey Knueppel, Southeastern Pennsylvania Transportation Authority (SEPTA),

**Philadelphia, Pennsylvania,** said his property's communication and signal systems are either in SGR or will be soon, but the power in railroad substations-dating back to the 20s—is in disrepair. To get into a SGR, the property would need to double its funding for the next 5 to 10 years. "Stimulus was a great help," he said, "but we are going from feast to famine. We just lost 25% of normal capital funding."



Keith Gates, Director, Office of Budget & Policy, FTA Therese McMillan, Deputy Administrator, FTA Aaron James, Director, Office of Engineering, FTA Chris Nutakor, Office of Engineering, FTA

Making the Case: Defining the Magnitude of SGR-National SGR Study

Keith Gates, Director, Office of Budget and Policy, FTA, reported on the findings of the 2009 National State of Good Repair Assessment, which examined the level of investment needed to bring the nation's transit systems into SGR and to keep them well maintained thereafter. The study is a sequel to the Rail Modernization Study, which assessed the cost of bringing nine of the nation's largest systems into SGR.

FTA used the Transit Economic Requirements Model (TERM) approach to estimate the costs of attaining and maintaining a SGR. The study revealed the following:

- The current SGR backlog for the U.S. Transit industry is estimated to be \$77.7 billion.
- If this backlog were addressed "tomorrow," an additional annual investment of \$14.4 billion would be required to maintain SGR into the future.
- Alternatively, a total annual investment of \$18.3 billion would attain SGR over a twentyyear period while also addressing normal replacement.

The current annual reinvestment rate is about \$12.5 billion—about \$1.9 billion less than the \$14.4 billion in normal replacement needs.



Where does TERM's database come from?

Gates said that FTA used replacement cost data that grantees submitted to the agency. "It's (data) specific to that agency," he said. TERM's asset database also includes figures derived from Standard Set of Costs.

One participant said his property needs a 50% increase in funding to eliminate backlog over 20 years. Did FTA look at the impact of keeping the system in a state of disrepair?

Gates said the agency focused on the capital side, not operations. The project is based on the percentage of assets which have passed their useful life. "We are doing our best to make sure you have good assets," he said, "but how you operate them is still up to you."

Setting the Stage: Concepts for a FTA SGR Program

McMillan set forth a potential concept for a proposed FTA SGR program. She suggested that the program integrate asset management policies with investment decisions. Grantees would identify and manage asset conditions, and FTA would provide technical assistance and funding to help them with the task.

"You can't manage assets unless you know what you've got and what condition they're in," she said. Grantees must record inventory of assets, lifecycle, condition and criteria for replacing or upgrading them. "Once you know where you are, decide where you want to go and how to get there."

To develop a national scale program, FTA and industry must come to an agreement on a definition for SGR.



How can FTA avoid rewarding agencies that don't invest in SGR and penalize those that have?

One participant suggested that properties focus on the projections of shortfalls, which would include the cost of the backlog and the cost of avoiding a backlog. "If the size of a backlog or shortfall is a criteria in funding allocations, then it should be the go forward projection that is the key figure as oppose to past back log, which would be included in that," he said.

McMillan emphasized the importance of making "continuous improvement against backlogs." Grantees whose properties are in a SGR must also realize that if patterns of investment don't keep up "you're in danger of falling into the backlog club. That's not where you want to go," she said.

McMillan encouraged the group to continue brainstorming about what an SGR program should consist of and how it should be implemented. "Let's not box ourselves into coming up with one solution that is static," she said. "Think of whatever program we have as a breathing living (entity) that needs to be adapted over time as we get a better handle on the depth of the problem and how we may be able to approach it."

Another participant raised concerns about operating expenses. "As you run out 10 or 15 years on sheer operation of assets," he said, "those costs can get away from you, forcing the agency to shift its capital program expenditures to just the sheer operations of those assets." His property places a cap on operating expenses to ensure revenues are available for reinvestment in the capital program.

McMillan said that issues involving preventive maintenance would hopefully be discussed as part of a property's asset management strategy.

What impact do backlogs have on operating costs and reliability?

One participant explained that the long-range planning process resulted in a shortfall costs figure. "We had a tough time translating (shortfall) into what this may mean," he said. "If a property doesn't replace assets, what's the impact on reliability or performance?"

It would be useful to have some "metric" to apply to those numbers, he added, so properties can communicate to their boards, local officials and the community about the dangers of operating a continually deteriorating system.

Addressing the Challenge: Formulating a Definition of SGR for a Federal Program

Aaron James, Director, Office of Engineering, said FTA worked closely with the SGR Industry Group, reviewed research and consulted with other federal agencies to summarize the different definitions for SGR. The following is a straw man definition of SGR: A transit system is in a SGR if the agency keeps a list of all its capital assets and rolling stock, if its management plan is integrated with management processes, and if a certain percentage of its assets are within their useful life and the rest are performing to their design.

A system is in a SGR if transit infrastructure and vehicles are well maintained and replaced before their condition deteriorates to the point of presenting a safety risk, or if they meet customer expectation for comfort and reliability.

DISCUSSION

How do you determine if an entire system is in a SGR? Can you come up with a percentage that says 'You are in a SGR?'

James said the rankings for a system may be based on percentages or on items. FTA is eager to promote discussion on this topic and urges participants to come forth with ideas. FTA will conduct a pilot program to identify best practices in all facets of asset management "We want to see who (transit) has made the most advancement in that regard and how FTA can help them in furthering that," he said.

Surveying Current Asset Management Practices: A National and International Review

Chris Nutakor, Office of Engineering, FTA, summarized asset management practices of domestic

and international of domestic and international agencies.

Most agencies, he said, developed a working definition of SGR and established a

comprehensive set of performance measures such as average age of assets and distance between in-service failures. Agencies also developed asset inventories, with information stored at the vehicle level for buses and rail cars by track sections.

Agencies performed condition assessments regularly for vehicles and track, and periodically for other assets.

Advancing SGR in Our Industry

Where Are We Going From Here? FTA's Next Steps

Aaron James, Office of Engineering, FTA Keith Gates, Office of Budget & Policy, FTA Terrell Williams, Office of Research & Innovation, FTA Chris Nutakor, Chief Office of Engineering, FTA Scott Baker, Senior Consulting Manager, AECOM

James said the Senate version of the DOT-HUD FY2010 Appropriations Bill directs FTA to improve the use of asset management practices among transit agencies and gives the agency \$5 million in support of this initiative.

FTA will use the funds to develop asset management standards that take into account public safety, and it will provide technical assistance to agencies implementing such plans. FTA will also conduct a pilot program designed to identify best practices of asset management plans. "We're looking for planning-stage case studies," James said, "to use in promoting ways that the planning process can support SGR needs."

Gates explained that TERM, FTA's capital needs analysis tool, analyzes transit investment scenarios at the National level for SGR backlogs, average condition of assets by category, and 20 to 50 year projections of capital investment needs. The model contains extensive database of industry assets

TERM—Local Investment Tool Edition (LITE) is a version of TERM that can be used as an analysis tool for Capital Improvement Planning. The analysis relies on agency provided asset inventories, and calculates standard SGR metrics.

Terrell Williams, Office of Research & Innovation, FTA, reported on research activities underway to support the SGR initiative. The Transportation Technology Center, for instance, is

developing a tool to track railcar maintenance, and will develop a condition based maintenance evaluation model.

The New England Professionals is researching the applicability of Six Sigma Methodology in Heavy Rail Maintenance.

One proposed project would identify improved rail maintenance practices to increase rail safety and fleet availability. Another will look at ways to improve safety and energy efficiency, and a third will examine the use of asset management in transportation planning.

Nutakor added that FTA is also developing an asset management planning course. The agency is working with consultants to put together the "framework" of the course. Modules will be added down the line for different elements of SGR.

Scott Baker, Senior Consulting Manager, AECOM, reported that the National Transit Institute (NTI) will offer a day and a half asset management course starting late August. By the end of the course, participants should be able to define transit asset management, describe basic asset management principles and provide strategies to develop and implement an asset management program.

Modules developed are related to asset management principles such as performance measurement, implementation, and asset management tools and techniques.

Speakers then opened up the floor for discussion on what questions participants would like the course to address. A few are highlighted below.

- ➢ Granularity: Where do I start? How far do I drill down?
- How do we simplify the asset management concept so participants can explain it to policy-makers and other stakeholders?
- > What types of software systems are out there on asset management?
- ➤ How do you conduct condition assessments?
- Should the industry develop standard language that identifies systems, subsystems, and condition vocabulary?
- ▶ What are other agencies doing? Any Lessons Learned they could share with FTA?



Is a system-wide rating based on the value of each asset and collectively summed and normalized?

Gates said that the system is based on the value of assets below the 2.5 threshold number.

One participant said a consultant put together lists of criteria with which to assess asset conditions. "You could go through the facility and have ways of rating 60 different components of that facility and that would give you an overall rating for the facility," he said.

The "beauty" of a condition rating scale, he said, is that it can be applied across all asset types to get a measure for the entire system. "The rating scale was set up so a 2 or 3 on a bus is comparable to 2 or 3 on a track," he said.

Another participant argued that asset conditions don't necessarily reflect how the system is running. "You have to look at its net effect of the operation of your system. Not all ratings are equal," he said. Having ten buses with a 1 rating may mean fewer buses will be on the road, but a 1 rating for a rail interlocking could have a much bigger impact. "If you do the math without weighting you are missing all of these other factors that go into assessing the true impact that can help you prioritize, so these weighting are important."

Gates explained that by making weight variable, capital improvement planners can run different scenarios and generate the kind of graphics that will help them communicate to the board the implications of their decisions.

Gates emphasized the importance of keeping the TERM model simple. "Simplicity is a virtue," he said. "As long as you can avoid fancy theory and come up with straightforward analysis that people can understand you'll have credibility with the board.

Can a certain asset condition be assumed based on age? Gates said, "We can look at the age and amount it is used and convert age to condition. It allows us to talk about condition without going through the expensive process of getting up-to-date condition assessments."

Transit Agencies' Next Steps

## Carl Rokos, Maintenance Superintendent, Chapel Hill Transit Peter Garino, Chief, New Jersey Transit Fred Smith, Acting Senior Vice-President, New York City Transit

Carl Rokos, Maintenance Superintendent, Chapel Hill Transit, explained that Chapel Hill Transit's Capital Improvement Plan (CIP) incorporates components of the Short Range Transit Plan and SGR. The Condition Assessment, part of the CIP, is used to prioritize, schedule and assess funding for replacement and upgrades of the property's assets.

The average fleet age, for instance, is 7 years. Currently, 35% are eligible for replacement. By 2013, 61% will be eligible.

Peter Garino, Chief, New Jersey Transit, said New Jersey Transit initiated a series of internal capital program management tools in 2005 that track funding, calculate projects' budgets and prioritize needs. Decision making was pushed down to those closest to the infrastructure conditions. In its May 7, 2009, Financial Capacity Report of New Jersey Transit, FTA said "NJT operations may be characterized as efficient and effective," he said. "The system is in a state of good repair, with good on- time performance and no slow zones in their entire rail network."

Fred Smith, Acting Senior Vice-President, New York City Transit, explained that asset inventories are key in assembling the 20-year needs analysis, required by law to be produced every five years. The condition of assets is updated with input from maintenance. Basic information on the entire capital asset base is valuable because it leads to fewer surprises in the area of programming/prioritization



Would an asset management system include maintenance management as well?

Rokos said that his property is looking at Asset Works Software, which tracks all functions related to maintenance of vehicles and equipment. "We'll probably start out with vehicle maintenance section and then add modules that will incorporate asset management," he said.

Who within the agency decides to make SGR a priority?

Garino said that the staff made that decision. "Much of the infrastructure was 100 years old," he said.

Garino said that sometimes the money for a project is there, but other unrelated problems prevent the project from coming into fruition "On bus garages," he said, "I've said, 'go build it,' but then we can't find a place for it." The property then considered expanding its existing garages.

How much does it cost to implement a Positive Train Control system?

Garino said the agency is estimating it will cost about \$150 million, but "none of us will know until we go out to bid."

Another participant said that technology employed over the past few years has extended the useful life of components like elevated track structures.



**Ronald Humphrey, President, Code Red Business Solutions** Michael Matichich, Senior Economist and Planner, CH2M Hill

DOD Perspective — Total Asset Visibility

Ronald Humphrey, President, Code Red Business Solutions, said that to create an affordable solution for lifecycles, properties need to re-examine the way they approach railcar and bus system design—and focus on engineering processes and reliability (SGR). To have total asset visibility, he added, properties must fully integrate their data systems.

Properties can use lifecycle cost calculations to support requests for Congressional funding.

Properties should share spare parts with agencies that need them to lower costs. "You can even take spare parts and put them in regional area and just ship them as needed to the certain properties rather than having every property have a full gamut of spares," he said.



How does DoD deal with obsolete assets?

Humphrey said that DoD vendors often re-engineer electronic parts. "We put together a brand new circuit card, place it in the old box and give it back to them (pilots). This way it has the same functionality."

Transit agencies should ask DoD vendors if they can reengineer transit-related electronic systems.

Sometimes, he added, manufacturers will sell the drawings of the component so that other vendors can recreate it. But transit agencies need to figure out how badly they need the parts and how much they're willing to pay for them. "Many facilities," he said, "are old and you don't have money to change them, so you (have to) fix the old equipment."

The UOSA Approach: Combining Condition Assessments with Risk Analyses

Michael Matichich, Senior Economist and Planner, defined asset management as an integrated set of processes aimed at cutting down lifecycle costs of owning, operating and maintaining assets at an acceptable level of risk. He then presented a case study from the Upper Occoquan Service Authority (UOSA) in which the "top-down" approach was used to identify 1,912 assets that merited detailed field assessments.

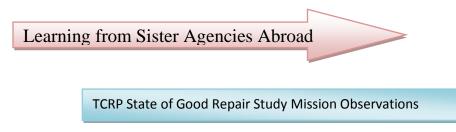
The results of the condition assessment and risk analyses were used by the agency to address assets with high risk scores and to guide development of the capital renewal program. UOSA's risk reduction efforts parallel DOT's to "identify 'safety-critical asses' as a means of establishing priority re-investment decisions," he said.



McMillan assured participants that asset management systems can seem unwieldy, but they can be broken down into "manageable" portions. The key question is how far to drill down. "Building the basic pieces that can take you to a more sophisticated risk management approach is very helpful," she said. "Getting to the end point seems intimidating but there are ways to do it in building blocks while making improvements along the way."

Matichich said that many utilities in the water industry are just starting to develop inventories, and assets drill down no further than 4 or 5 levels of detail. Some eventually drill down to 8 levels.

## Friday, July 23, 2010



Rolando Cruz, Executive Director and Vice-President, Long Beach Transit Jerry Rutledge, Manager of Power Facilities, King County Transit Glen Tepke, Transit Capital Properties Manager MTC Oakland Aarons James, Director, Office of Engineering, FTA

Rolando Cruz, Executive Director and Vice-President, Long Beach Transit, described how transit agencies in other countries implement asset management programs. Assets in Nottingham Tram, for instance, need to last 5 years beyond their useful life and funding is set aside for mid-life rehab of vehicles.

Oslo performs full assessments of entire systems every three years. Twice a year, independent firms drive all the tracks and assess asset conditions.

Europe, Cruz said, is adopting PASS 55 – "whole life asset management" – industry standards.

Jerry Rutledge, Manager of Power Facilities, King County Transit, reported on the TCRP International's SGR Study Mission. He said that universal definitions for SGR did not exist. But agencies understood the concept, and had their own definition, usually based on the person's role and responsibilities in their organization.

London TfL, he said, had the most SGR information and documentation. Bus replacement is on a 3-year schedule. Street furniture, shelters, signage and other assets are replaced on an asneeded condition basis. The property is still developing asset condition indicators for fixed assets.

Berlin rated a 10-year list of SGR projects in order of priority. The property inspects and documents all major system elements on a 1-5 rating system. Germany requires transit operators to implement asset management programs.

Glen Tepke, Transit Capital Properties Manager MTC Oakland, said that funding for SGR programs is a universal challenge—most agencies have backlogs and shortfalls. Funding sources vary. In Strasbourg, for instance, employer tax is a major source for operations, maintenance and expansion. In Nottinghamshire, the costs of private commuter bus service are covered entirely by fares.



Do contracts have provisions on maintaining equipment in working order?

One of the speakers said that contract terms focus on performance standards, calculated as percentage of time vehicles were available and percentage of runs completed without incident. "Yes they were standards," he said, "but they were based on outcomes rather than input measures of what work would be done on the vehicles or infrastructure."

Karbowski said that his property uses penalties and bonuses to motivate contractors to maintain fleet and facilities in SGR. Contracts specify that returned vehicles must be in the same condition as they were when received, subject to wear and tear. "An advantage to that system is that I know what my maintenance and operation costs are going to be for the term of the contract," Karbowski said.

**Developing Building Block Capacity** 

#### Sean Libberton, Deputy Associate Administrator, Office of Program Management, FTA

Sean Libberton, Deputy Associate Administrator, Office of Program Management, FTA, reported on proposed federal legislation designed to help transit systems reach a SGR. Some congressional proposals, he said, are seeking to establish a backlog investment fund, while others are considering modifying the fixed guide way modernization formula.

"These are very politically charged, long-term reauthorization issues," he said. A proposal that can be implemented immediately, however, would allow FTA to provide technical assistance to properties setting up transit asset management system. "There is a will in that area to move forward," he said.

The Senate Banking Committee is considering a proposal requiring transit properties to implement asset management programs. "There is concern among us in FTA and in the industry that to tie safety, asset management and SGR together can be dangerous," he said. "The banking staff assured us that they don't mean to make that kind of connection, but they do want to advance both safety legislation and also the concept of asset management."

Building Block #1: Implementation and Maintenance of an Asset

## Eric Waaramaa, Deputy Director, Financial Planning, MBTA Mike Hubbell, Vice President, Maintenance, Dallas Area Rapid Transit

Eric Waaramaa, Deputy Director, Financial Planning, MBTA, said SGR is now the primary focus of MBTA's 5-year Capital Improvement Program. MBTA can now prioritize SGR capital reinvestment needs, come up with a "fix-it-first" strategy and focus on less visible but more critical projects.

Key to success: Getting buy-in from upper management that an SGR database is an important tool for asset management and long term financial planning, and from department managers that inputting accurate data yields best results.

No transit system can achieve and maintain the "ideal" SGR over time, he said, but a good asset management program can help better define the current problem, accurately forecast future

capital funding needs, optimize investments and make an argument for increased capital funding levels.

Mike Hubbell, Vice President, Maintenance, Dallas Area Rapid Transit, cautioned participants to choose the asset evaluation pool carefully. Rather than starting with financial capital assets, properties should select assets and asset classes that can impact safety or service or have significant impact on operating or capital expenses.

Lessons Learned: Commit to the assessment on a regular interval, use consistent process and scoring systems, and document the method of data capture. "Don't get mired in the numbers," he said. "Step back and consider assets from an overall sub-group perspective." Analyze the data to determine trends and use data to make informed financial plan decisions.



How do agencies come up with replacement costs?

A speaker said that replacement costs come from different sources, depending on the asset. Properties do market surveys to come up with vehicle costs. Construction teams develop fixed assets costs (facilities, bridges) based on current industry trends. Certain indices are upgraded every year.

Building Block #2: Training the Workforce for Asset Management

## Jeff Hiott, Senior Program Manager, American Public Transportation Association

Jeff Hiott, Senior Program Manager, American Public Transportation Association, said properties drafting SGR plans should also develop training programs for the workforce to ensure they can maintain the equipment and infrastructure." Staff training, he said, is key to maintaining a SGR.

"The biggest assets you have are your people," he said, "those working on your equipment, driving your buses and doing number crunches."

Properties should also ask manufacturers to help provide the training.

Building Block #3: Innovative Financing Options for SGR

#### Jeff Ensor, Consultant, Parsons Brinckerhoff

Jeff Ensor, Consultant, Parsons Brinckerhoff, focused his presentation on financing options for SGR investments, the most traditional of which is Tax Exempt Borrowing. Two new tools which have yet to be used by transit agencies include Qualified Energy Conservation Bonds, and New Clean Renewable Energy Bonds.

How are projects funded? The revenue source for Grand Central Terminal Redevelopment by MTA, for instance, was additional leasing and concession revenues resulting from the redevelopment. The revenue source for the NY Penn Station/Farley Redevelopment was \$200 million from private joint development partners resulting from 20% tax credit. It was financed through private debt and equity.

Ensor said that debt can help address near-term SGR needs when cash is tight, but interest costs reduce future funds available for SGR. Long-term Public Private Partnerships (PPP) concessions can help ensure assets stay in SGR, but Value for Money analysis is needed to assess whether PPP is the best option.



## Aaron James, Director, Office of Engineering, FTA

James reported on highlights of the meeting.

First, he wanted to clarify how FTA will use the \$5 million appropriated. James said the funds will be used to provide support to three categories of projects including asset management pilot projects, (FTA will soon issue notice of funding availability), condition assessment methodology, SGR management practices.

#### Takeaways

- Many elements of the asset management plan are already in place, James said. FTA's job is to incorporate what's been done into its SGR initiative without adding "burden to what you are already doing."
- Participants agreed there is a need for some SGR "standards," but not necessarily technical specifications. "FTA would provide guidelines so we can ensure we are

consistent and speaking the same language." A request was made that FTA prepare a brief paper on SGR that can be used as talking points.

- > Concerns were raised about addressing issues of obsolescence.
- The rating system put forth by FTA is one way the agency can measure a property's SGR. "But we want to step back and ensure we can identify something with sufficient flexibility that gives federal government a way to observe and determine the SGR for all transit systems."
- James mentioned the possibility of forming committees to capitalize on the momentum generated by the group on SGR topics. "We want to keep the conversation going," he said, without waiting a year until the next SGR workshop.

"We all strive to bring the nation's system into a SGR," James said. "We talked about training, funding, data allocation, and a need to find a way to integrate all that so we are not working cross purposes."

James thanked participants for attending the workshop.

The meeting was adjourned.