2009 State of Good Repair Roundtable

New York City Transit

July 2009
Summary of Major Assets

Visible Infrastructure
6,300 Railcars
4,700 Buses
468 Stations
(340 elevators/escalators)
Summary of Major Assets

Invisible Infrastructure

- 230 Pump Rooms
- 216 Power Substations
- 720 Miles of Track
- 3,446 Miles of Power Cabling
- 194 Fan Plants
- 16 Railcar Maintenance / Overhaul Shops
- 23 Rail Yards
- 728 Signal track miles (183 interlockings)
- 1,783 Mainline Switches
- 23 Depots/Shops
- 136 Subway tunnel route miles
- 70 Elevated Structure route miles
Taking Stock of Conditions

- Twenty year needs process requires full asset inventories (every 5 years)
- Asset inventory detail guided by projects and assessment needs
- Condition ratings assigned during inventory used as part of investment prioritization:
  -- Standard 1-4 condition rating system; condition 3-4 correlates to investment need
- Project Status system tracks projects and assets
Measuring Good Repair – *Legacy* Approach

- 1982 standard based on the promise of addressing a universe of needs by a certain date;
- A snapshot of SGR which didn’t reflect missed cycles of normal replacement or degraded conditions or changing standards;
- Asset never falls out of SGR!
- Difficult to explain and keep track of 25 years later;
- Details behind original SGR decisions lost.
Measuring Good Repair – Revised Approach

*More adequately communicates true conditions, functionality and capital asset needs*

- Recognizes SGR status on a more detailed sub-asset basis
- Condition information applies regardless of previous legacy rating
- Useful life, condition ratings and design standards are applied on a sub-asset level and are weighed proportionally
### Results of Revised Approach

**System Investment Strategy**

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<th>Category</th>
<th>Revised Approach</th>
<th>Traditional Approach</th>
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Prestudy:

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Results of Revised Approach

Several assets remain in “SGR”; but others are impacted:

• Stations – 53% progress to 68%
  387 stations still exhibit deficient conditions

• Power – 95% progress to 63%
  Category considered only substations (and only its rectifier equipment); now considers all substation parts plus circuit breaker houses, cabling, etc.

• Bus Fleet – 100% progress to 87%
  Strict factor of 12-year useful life rules out 600 over-age buses
Results of Revised Approach

- **Bus Shops / Depots** – 90% progress to 68%
  Recognizes reinvestment need required in mid-century facilities;

- **Ventilation Plants** – 69% progress to 57%
  Re-cast asset classification – modified to be based on tunnel segments where ventilation is used/needed;

- **Signals** – 68% progress to 81%
  Reflects greater SGR progress; more fairly represents substantial investments in interlockings versus a measurement based on track miles.
Case Study: A Non-Station-ary Approach

- 468 stations
- Average age: 45.5 years since last major investment
- Complicated multi-line and transfer operations
- Average station weekday ridership: 24,600
- High support costs during construction
Need for a New Station Approach: Rising Costs

Contributing Factors:
- High finish standards
- Historic preservation/restoration accuracy
- 24/7 operations
- Construction market dynamics
- Rising code compliance
Need for a New Station Approach: Critical Needs Not Being Addressed

- Funding constraints delayed scheduled investments
  - The original goal of bringing all 468 stations into good repair became increasingly unrealistic
- Mounting normal replacement work
- Capital and operating prioritization did not address critical needs in timely manner
- Flawed useful life assumptions
- Insufficient data on conditions
Comprehensive Condition Survey

- Engineering survey of all structural, non-structural and architectural conditions
- Components rated on a 5 point scale
- Some component ratings derived from combination of subcomponents
- Assessment provided ability to see the "whole problem"
- Highlighted that earlier station rehabilitations already exhibit defects that require reinvestment
- Provided database to test various investment scenarios
Revised Repair Strategy

- Backlog defects will be eliminated within 20 years
  - Investments now being programmed by component ex: “Replace street stairs at 5 stations”
  - Stations with a high proportion of deficient conditions are still programmed for full rehabilitation
  - Eliminates defects in faster timeframe

- **Strategy recognizes that not all components have the same replacement cycle**
Lessons Learned

• Condition information and reports are increasingly sophisticated – *Use Them*

• Scheduled Maintenance/Capital renewal – these operating and capital strategies make sense at *any* funding level

• Make the tough life cycle choices – *Throw Out the Gold Standards*

• There will never be “enough money” – *We can still make the “best” decisions*