New York City Transit

2009 State of Good Repair Roundtable

New York City Transit

July 2009

Summary of Major Assets

Visible Infrastructure

6,300 Railcars

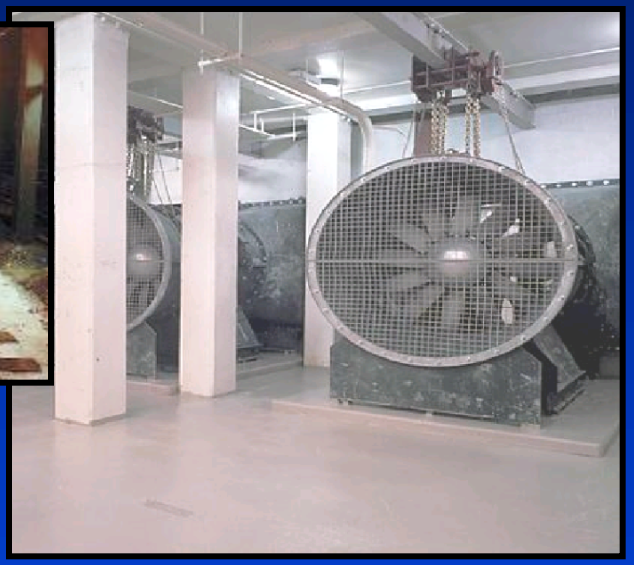
4,700 Buses

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.

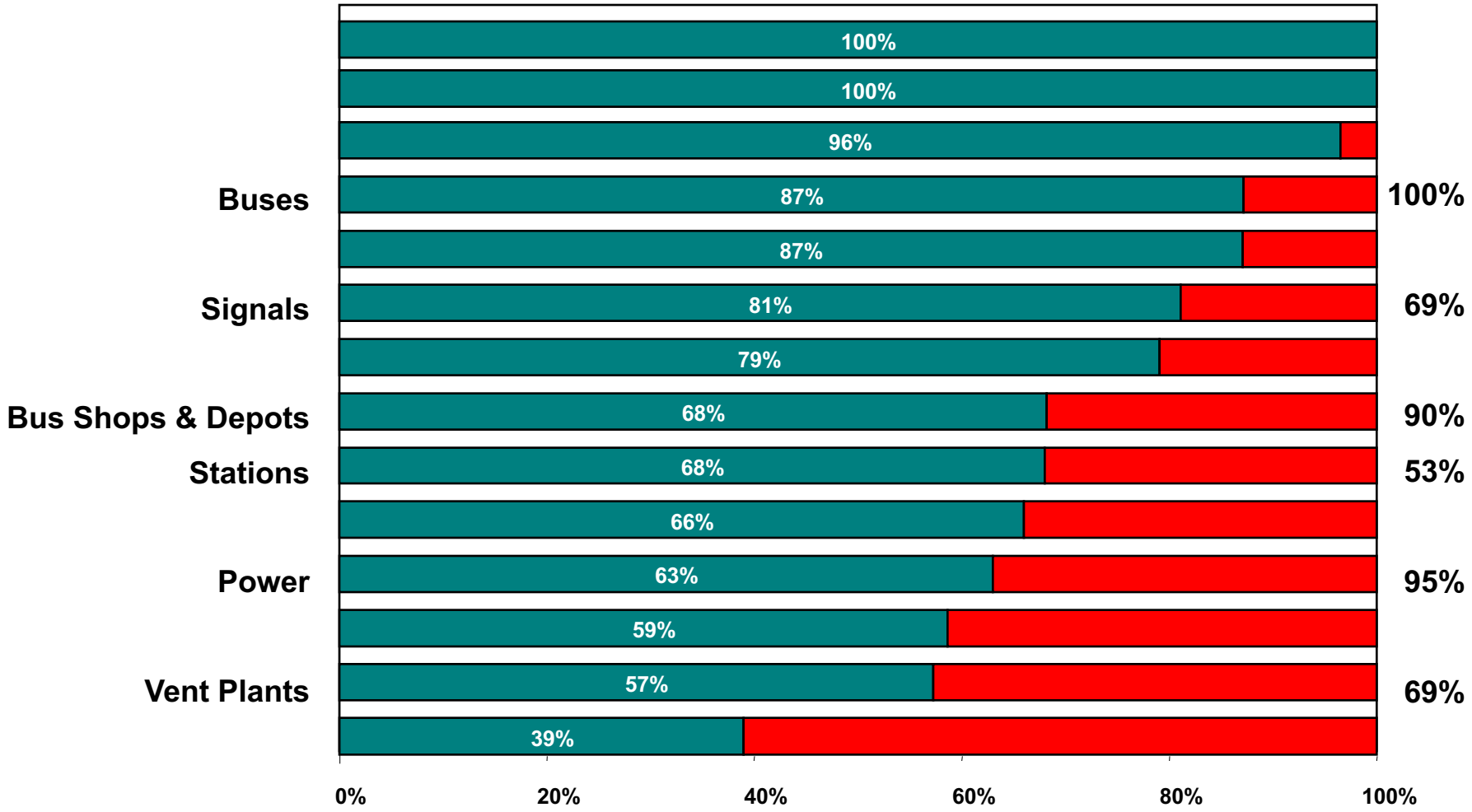
Measuring Good Repair – *Revised* Approach

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



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;

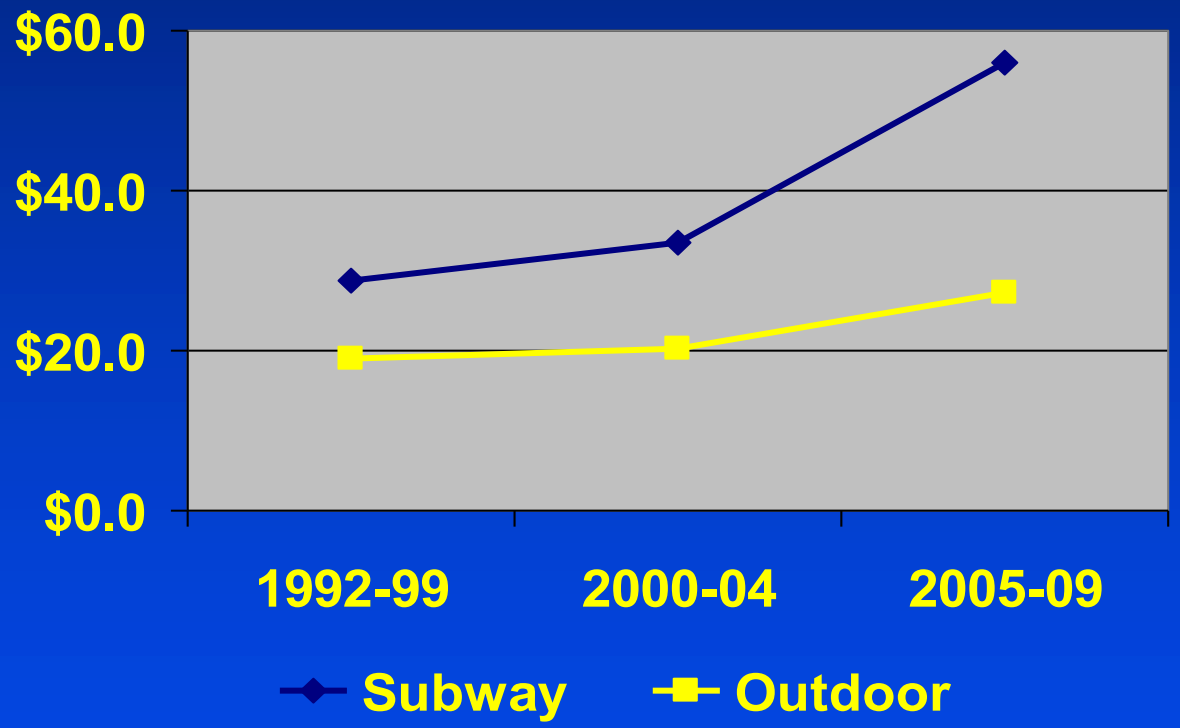
- Signals – 68% progress to 81%

  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 prograr component ex: "Replace street stations"
  - Stations with a high proportion conditions are still programmed rehabilitation
  - Eliminates defects in faster time
- **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*