MANAGEMENT RESPONSE SUMMARY
AG AUDIT REPORT

May 29, 2017

EXECUTIVE SUMMARY

Our TTC response to the AG report is as follows:

1) Overall, we agree with the findings outlined in the report

2) We have already begun to implement processes to realize some of the cost savings identified

3) We believe a further savings validation needs to be completed for some of the key findings

1) OVERALL FINDINGS

1) The TTC agrees with the 19 recommendations outlined in the report

2) We will start *immediately* to take the necessary steps to implement the necessary processes to realize savings

3) The following TTC departments will work collaboratively to implement the findings:

    a) Rail Cars & Shops

    b) Bus Maintenance

    c) Materials and Procurement

2) WE HAVE STARTED TO SOLUTION

As an example, we already have changed our process to manage low dollar value purchases by:

- Mirroring other transit organizations policies and procedures to drive ordering efficiencies
- Changing our policy for purchases under $250, by reducing the need for multiple quotations
- Changing our Purchase Order process to include the addition of more blanket orders. We agree that use of blanket orders drives a faster ordering process, and also allows the TTC to leverage our spend to drive deeper discounts with vendors

3) SAVINGS

The TTC will undertake a comprehensive analysis of the potential savings based on the following AG recommendations:

1) Aftermarket Parts Warranty

2) Tracking of Cores

3) Alternative Part Sourcing

4) Reduction of Spare Ratios

We cannot validate that the estimated savings in the report, for these specific areas, are achievable without further detailed analysis

AFTERMARKET WARRANTY

- We are unsure that millions of dollars can be saved in pursuing an aftermarket warranty on parts. Most parts' warranties cover one to three years.

- We cannot substantiate that there are significant savings without further analysis of part failure rates within, and outside of, the warranty periods

- The additional resource costs needed to manage claims from the savings totals were not deducted

ALTERNATIVE PART SOURCING

- TTC will accept the use and procurement of aftermarket parts that perform equal to or better than the OEM parts

- Estimated savings will be measured against the costs of resources needed to identify alternative parts and evaluate performance and quality of aftermarket parts.

- Further due diligence on potential savings needs to conducted.

CORES

- We agree that there are savings associated with better tracking of cores
- We are unsure that we can extrapolate from the report's small sample sets of cores, that there are millions of dollars in potential savings by better tracking
- Further analysis of potential savings needs to be conducted
- To conclude these parts are reusable, added labour costs to analyze these parts, should be considered. These labour costs were not deducted from any potential savings in the report

SPARE RATIOS

- As noted in the report, the number of buses out of service as a result of lack of parts is already at a low level of 10-12 buses, versus the 50+ buses out of service due to parts shortage in the past
- TTC's spare ratios are in line with peer agencies of similar size
- There is a correlation between adequate spare ratio and asset reliability, which ultimately translates into quality of service
- TTC's current spare ratios in place are providing an adequate balance between service requirements, maintenance requirements and quality of service

BUSES OUT OF SERVICE

- The buses out of service for parts problems has greatly improved
- Previously, it was clear that hybrid parts and on-board controllers for the stop announcement system were the major causes of this issue
- A new contract with BAE was signed, and an internal IT solution for the controllers has been found
- Please note that 34 vehicles valued at $68 Million out of service is measured out of a fleet size of over 2,345 vehicles overall. This means that only about 1.5% of the fleet is out of service, as a result of a parts shortage

Questions

APPENDIX

SPARE RATIOS

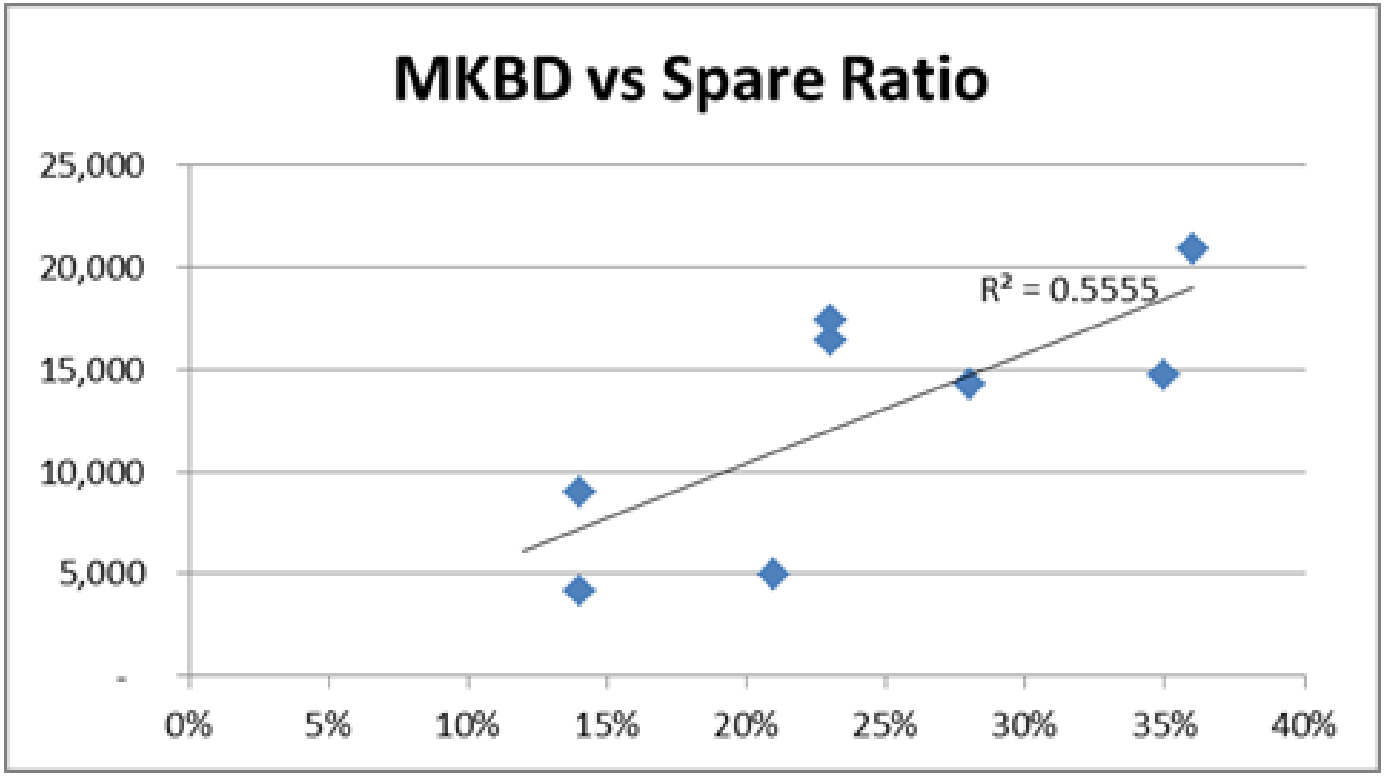
- Numerous variables affect spare ratios:
  - Operating environment and duty cycle of equipment:
    - number of stops
    - average operating speed
    - distance between stops
    - road and traffic conditions
    - passenger loading
    - etc.
  - Expected life cycle of equipment and vehicle
  - Number of technologies on the vehicle
  - Average age of the fleet

- There is no one spare ratio that fits all agencies

Fleet Sizes > 1000 Buses

SPARE RATIOS

- There is however a correlation between spare ratio and asset reliability



Fleet Sizes > 1000 Buses

SPARE RATIOS

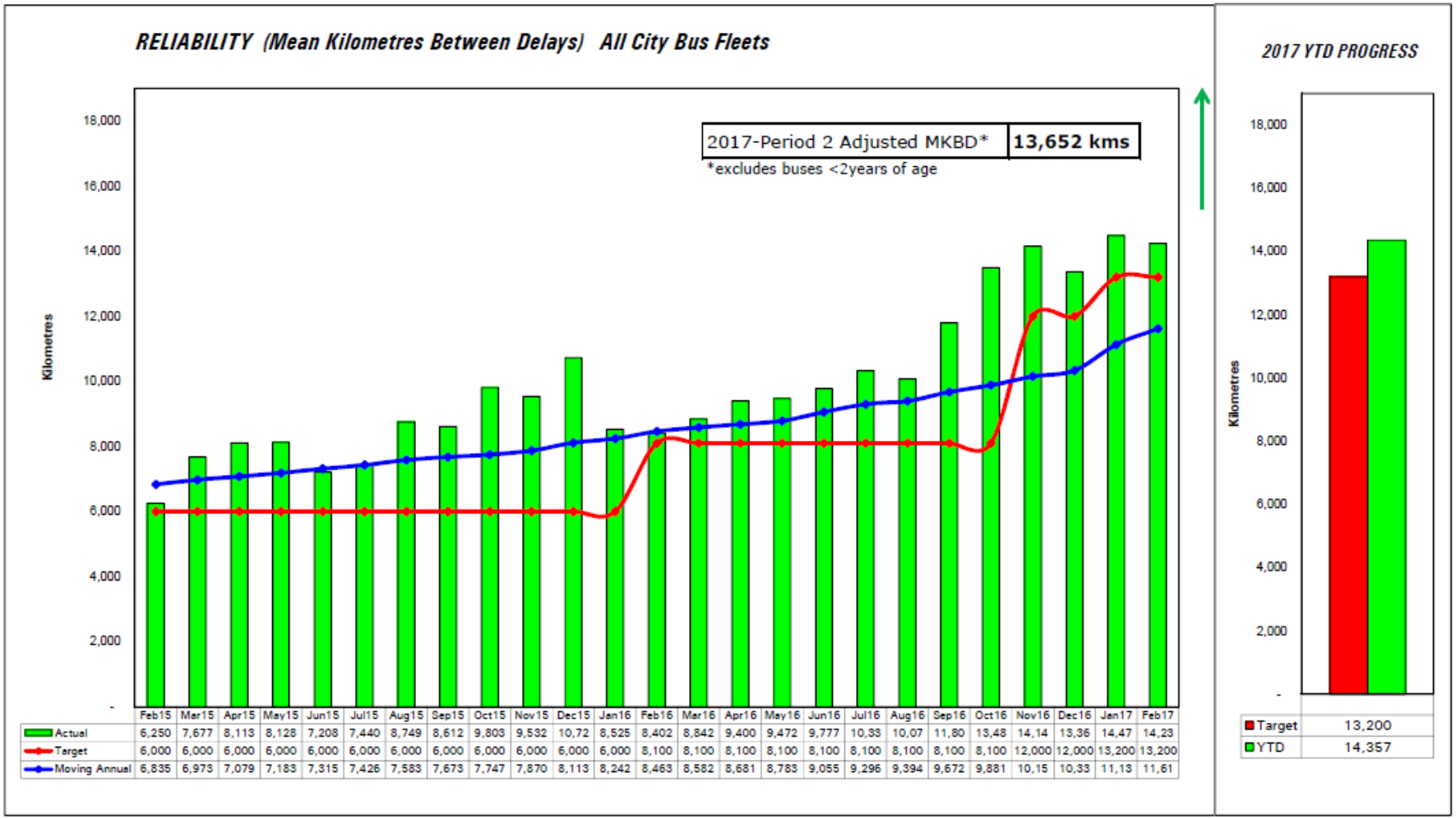
- Optimum spare ratio balances service requirements, maintenance requirements and funding to provide the best quality of service possible

- Bus Maintenance's spare ratio – which is between 22-23% has allowed effective preventative maintenance programs to be put into place while meeting increased service needs (service growth, subway closures and streetcar backfill)

- Evidence of this balance has been improvement in vehicle reliability – (Refer to graph on Slide 12)

- The total spare ratio is composed of:
  - 18% Operating
  - 4%-5% Capital

SPARE RATIOS



SPARE RATIOS

- TTC's spare ratio is in line with peer agencies of similar size

- Recall:
  - 12-Year bus life (US)
  - 18-Year bus life (TTC) combined with more aggressive operating environment

2015 Data	Fleet Size	Spare Ratio	MKBD (kms)
MTA New York City Transit	3,827	15%	13,484
New Jersey Transit Corporation	2,220	19%	23,592
Los Angeles County Metropolitan Transportation Authority dba: Metro	2,151	22%	19,667
Chicago Transit Authority	1,891	19%	16,045
Washington Metropolitan Area Transit Authority	1,500	15%	14,887
Southeastern Pennsylvania Transportation Authority	1,404	20%	11,470
MTA Bus Company	1,272	17%	12,967
Toronto Transit Commission (2017 Period 2 Data)	1,961	18% Operating 5% Capital	14,230