



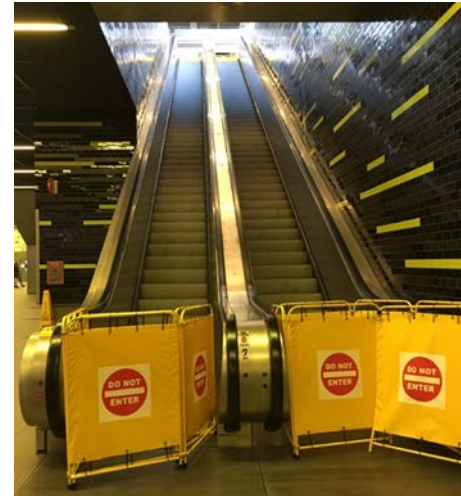
 **SOUNDTRANSIT**

Escalator Performance Update

Sound Transit Board
June 22, 2017

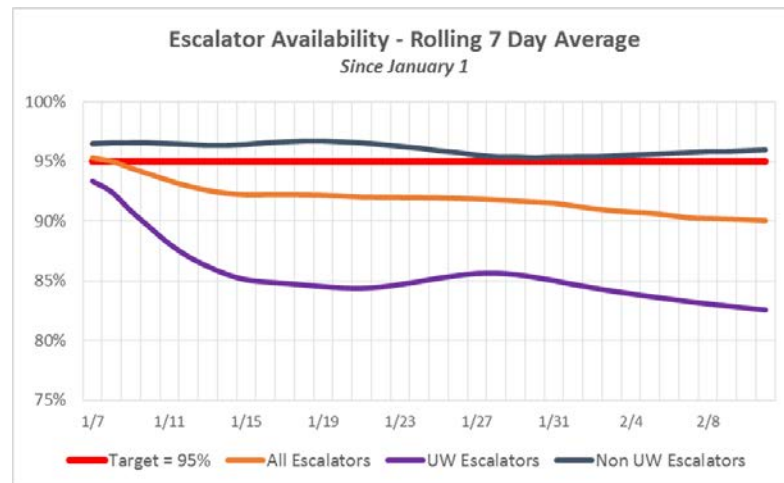
Agenda

- Background and update on recent performance
- Report
- Findings and Actions to Date
- Recent Performance Update
- Next Steps



Background

- New stations associated with UW and Capitol Hill added 20 new conveyances
- Poor availability led to poor customer experience
- Performance at UW Station in particular had not met standards
 - Target availability = 95%, in February we were in the low 80s
- Long-term outages drove performance results



Engineering Study

- Problems evaluated in engineering study
 - Design
 - Installation
 - Maintenance
- No single solution because there is no single problem
 - Components failed well before expected
 - Escalators in poor condition considering their age

Findings: Design

- Escalators are more commercial grade than transit grade due to ST decision regarding standards at the time of design
- Premature replacement of these units may be necessary based on actual UW Station service loads
- Equipment damage has occurred when reversing the direction of the escalators; compliance regarding functional reversibility is inconclusive

Findings: Installation

- Hoffman/Schindler installation of equipment in pits creates difficulties in performing maintenance
- Equipment impacts caused service interruptions
- ST was unable to obtain maintenance records largely undocumented during care and custody by Hoffman/Schindler
- Pit heaters as installed are not adequately functioning

Findings: Maintenance

- Pits need cleaning by KONE, under contract with KCMetro
- Remaining step chains need re-tensioning and handrails adjusted during KONE annual maintenance
- Lubrication by KONE is inconsistent

Findings: Installation/Maintenance

The root cause of the following items is inconclusive and may be caused by installation and/or maintenance:

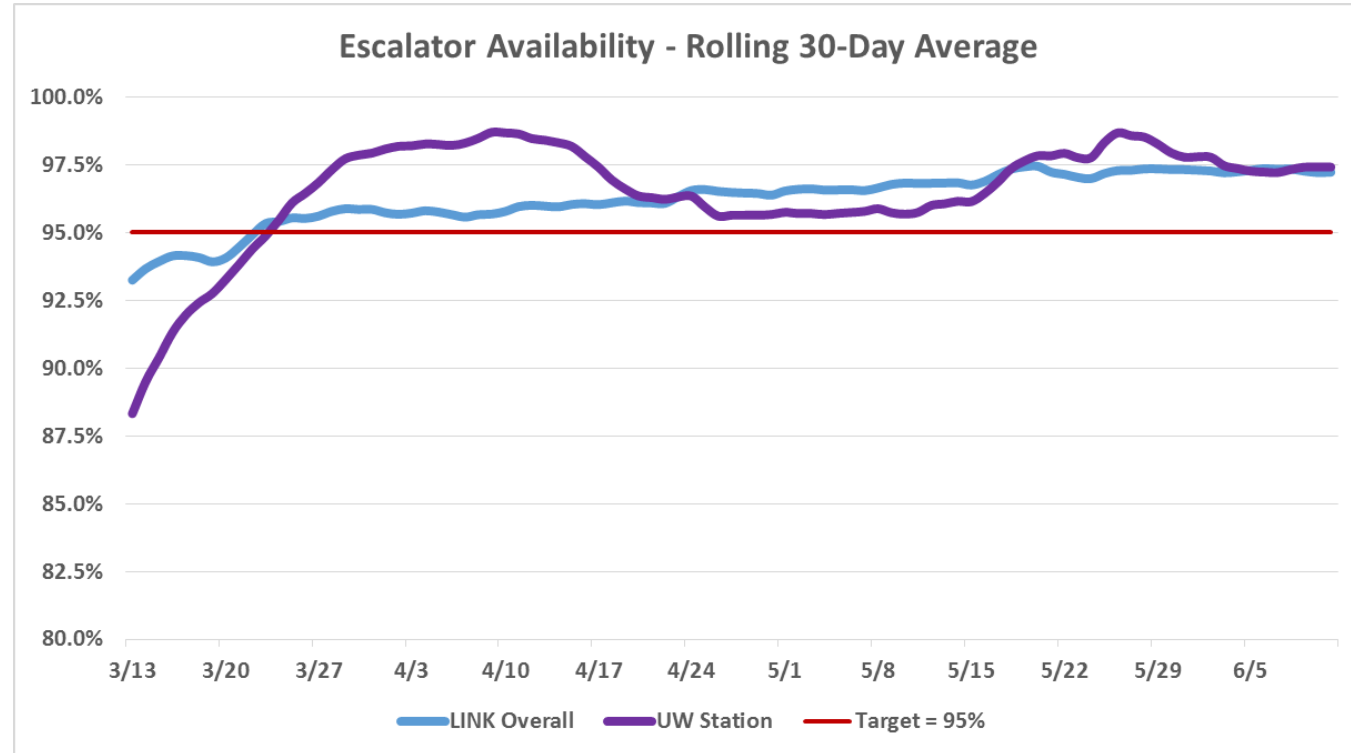
- Incorrect drive chain alignment caused uneven wear
- Comb plate switches were not uniformly set
- Automatic oilers are not all functioning

Actions Performed

- ST led corrective action with considerable staff time, effort and cost
- Hoffman/Schindler performed limited corrections and adjustments at no cost to the Agency
- KONE replaced major components that have failed prematurely
- ST working with KCMetro to drive KONE performance expectations
- ST is currently limiting reverse running of the escalators
- Independent consultant monitoring execution of recommended UW Station work

Recent Performance

- Rolling 30 day average availability has improved
- Escalator performance since late March is above target availability



Conclusions & Next Steps

- Complete consultant's recommendations for sustained reliability
- Work with manufacturer to solve comb plate service failures; these are not functioning as expected following Hoffman/Schindler adjustments
- Continue to investigate reversibility and sustained operation of these units
- Monitor quality of maintenance performed by KONE
- Determine extent to which re-work is warranted to rectify design issues

Conclusions & Next Steps

- Longer term takeaways:
 - Passenger issues with the escalators at UW Station are exacerbated by lack of parallel stairs
 - Design of future stations moving into construction has been changed to add parallel stairs where possible
 - All stations in design include stairs parallel or near escalators
 - Specifications for all future stations have been updated to align with transit standards
 - Bundling longer term maintenance contracts with manufacture and installation for reliability