



**Massachusetts Bay
Transportation Authority**

Lean introduction & overview

FMCB presentation

December 2017



What is Lean?

Lean is defined as a systematic approach to **continuous improvement** by applying principles and tools to **eliminate waste**

Lean focuses on speed without sacrificing quality for the customer



Lean guiding principles

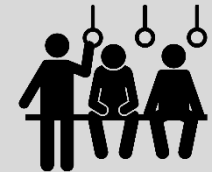
Frontline empowerment

- Those staff closest to the work have the best (feasible and impactful) ideas for improvements



Customer-driven

- Value is defined by the customer, i.e. value is what ultimately impacts their experience and perception



Low cost

- A series of small/simple or low cost improvements can have a significant impact



Process-oriented

- The focus is on how to evaluate and improve the process, not the people

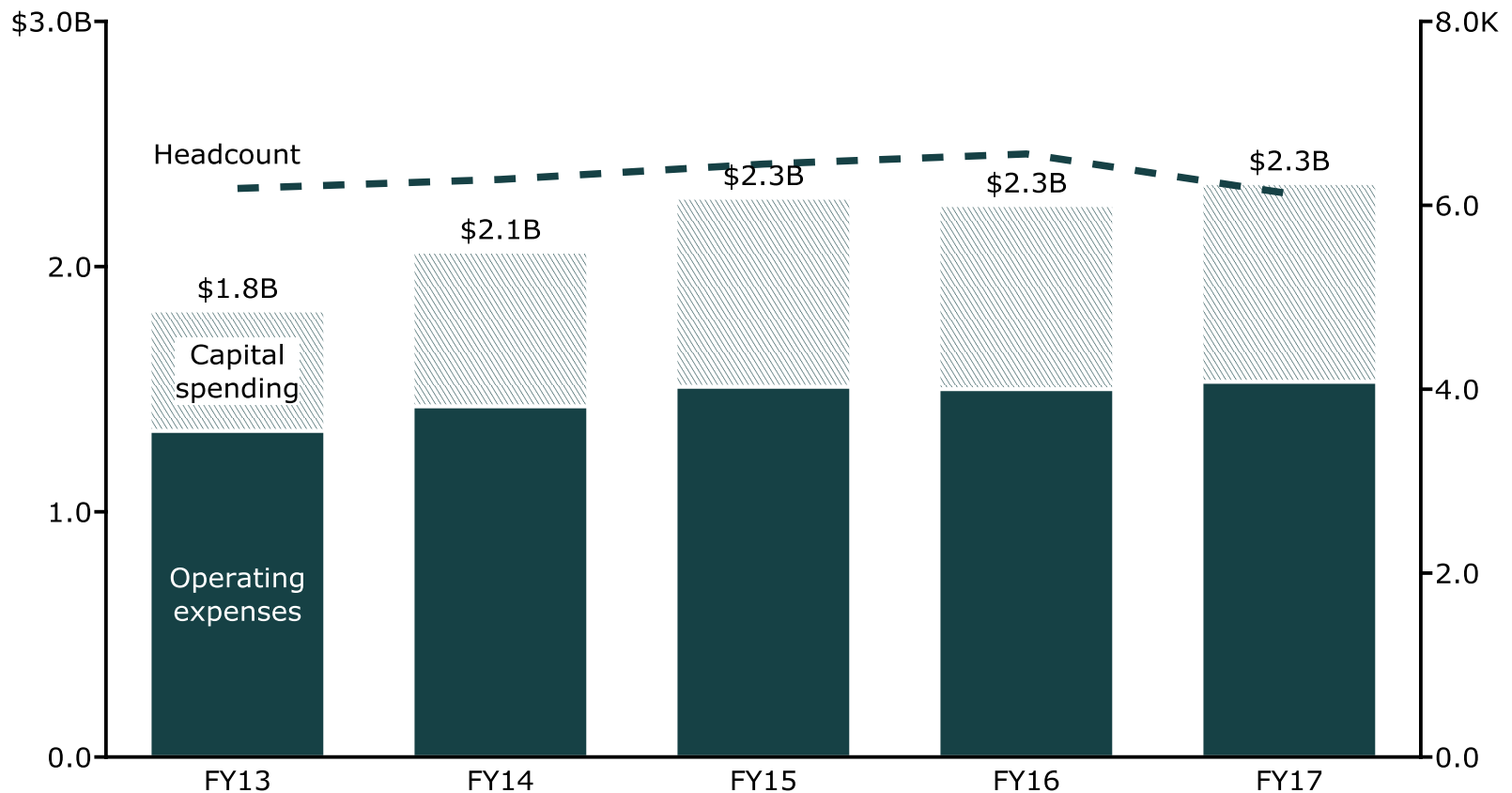




Perfect moment for Lean – a vehicle to increase capacity through efficiency

Total capital and operational spending (\$B)

MBTA headcount (K)



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* Excludes debt service

Note: Capital spending includes both SGR and Expansion spend; Headcount as of end of fiscal year and includes both operating and capital employees



The primary focus in Lean is about reducing ‘waste’ to improve productivity, not reducing cost

Examples of waste

- ① **Transportation:** Unnecessarily moving employees, inventory, or paperwork around
- ② **Inventory:** Having too much of something or the wrong thing
- ③ **Motion:** Any movement of people or machines that does not add value to the product or service
- ④ **Waiting:** Waiting for information, approvals, a useless meeting to end, etc.
- ⑤ **Over-Production:** Making more than is required or at the wrong time
- ⑥ **Over-Processing:** Effort that adds no value to the product or service from the customers’ viewpoint
- ⑦ **Defects:** Anything that results in a decrease in meaningful quality
- ⑧ **Skills:** The waste of not using people’s mental, creative, and physical abilities






Lean improvements increase productivity, safety, quality, and employee engagement and generate savings that can be reinvested into the business



While Lean started in manufacturing, it has had tremendous impact for many organizations, including government agencies

In past years, multiple federal, state and local entities and transportation entities have adopted Lean programs across the US, including Massport

Examples	 State of Ohio	 State of New York	 Massport
Project	<ul style="list-style-type: none"> Department of Transportation standardized asset data and reporting for equipment, parts inventory, and materials 	<ul style="list-style-type: none"> Department of Motor Vehicles reduced average 'in-office wait time' 	<ul style="list-style-type: none"> Massport adopted multiple Lean tools to streamline design and construction processes for Capital projects (e.g. pull planning)
Metrics	<ul style="list-style-type: none"> Reduced hours spent on paperwork by ~70% (savings of 475K hours/year) Reduced paperwork duplication by ~60% (from 264 versions to 1) 	<ul style="list-style-type: none"> Reduced time to register vehicle from casual sale by ~35% (from 60 to 39 min.) Reduced time to obtain a driver's permit by ~75% (from 172 to 45 min.) 	<ul style="list-style-type: none"> In first implementation, reduced construction time by 90 days and was able to open airline gates on time with no interruption of service Reduced invoice payment process from 20 steps to 6 steps
Outcomes	<ul style="list-style-type: none"> Employees' bandwidth shifted to maintenance work and other critical needs 	<ul style="list-style-type: none"> Customer experience improved with overall office wait times down ~50% 	<ul style="list-style-type: none"> Reduction of project schedule and cost

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We're already using Lean at the MBTA

Who: Transit Facilities Maintenance (~170 people across >15 trades)
Area of responsibility (incl. but not limited to): MBTA buildings, maintenance facilities, subway facilities, passenger stations, bus stations, ferry docks, parking garages, bridges, tunnels

Current state

- **Established baseline** of work being done (E&M-wide) with creation of new data set
- **Mapped as-is processes** and prioritized lack of standardization in closing work orders and identifying issues

New state

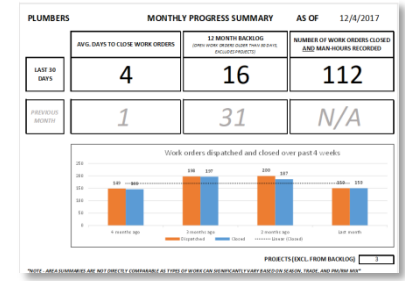
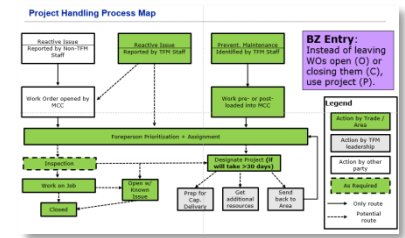
- Conducted **interviews, workshops, ride-alongs, and pilots with frontline** to craft & align on modified process
- Director of TFM simultaneously **ran 2-day Safety Stand-down** to improve physical workspace efficiency

Outcomes

- **~60% compliance** (vs. ~10% prior) with new standards for closing out work orders (goal >90%)
- **5% reduction in backlog** of open work orders
- **Closed feedback loop** via dashboards on shop floors

In progress / next steps

- **Lean workshop** conducted with supervisors and foremen on another TFM-wide process & identified challenges
- **Highest impact & most feasible initiatives** selected for design (focusing on improving communications)





How we will bring Lean to the MBTA

Lean coordination and internal resources

Co-identification of projects, facilitation, analysis, results aggregation

1

Evangelize

First wave of lean tools, bootcamps, and identification of 'lean liaisons'

2

Model

Deeper support in key department to create 'model' examples

3

Unify

Track and celebrate results, best practice / experience sharing across existing efforts

4

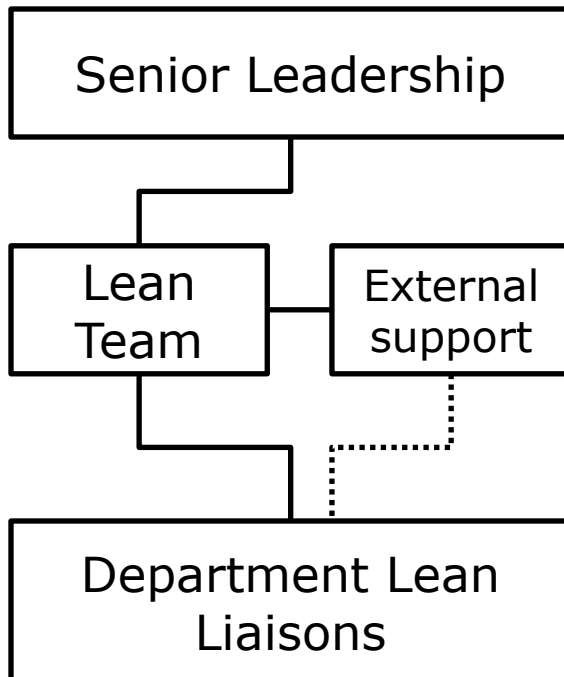
Sustain

Support from third parties (secondments, training, specialized consultants etc.), but with a goal to build internal skill sets and capabilities



Where we go from here

ORGANIZATION



TIMELINE

- **December 2017:** Senior Leadership training
- **Q1 2018:** 'Lean Liaisons' training & project selection; Deep-dive into key departments
- **Q2 2018:** 2nd round of liaison training & projects; 2nd deep-dive into key departments
- **End of Q2 2018:** Retrospective

TARGET OUTCOMES

What will impact look like?

- Customer experience
- MBTA productivity
- Employee engagement
- Safety & quality

How will we track progress?

- Lean dashboard (projects, impact / productivity, # of employees trained)
- Internal communication / celebration