



*The Lowell Institute's Partners In Public Dialogue Presents:*

# GLOBAL MODELS for Boston's Commuter Rail System



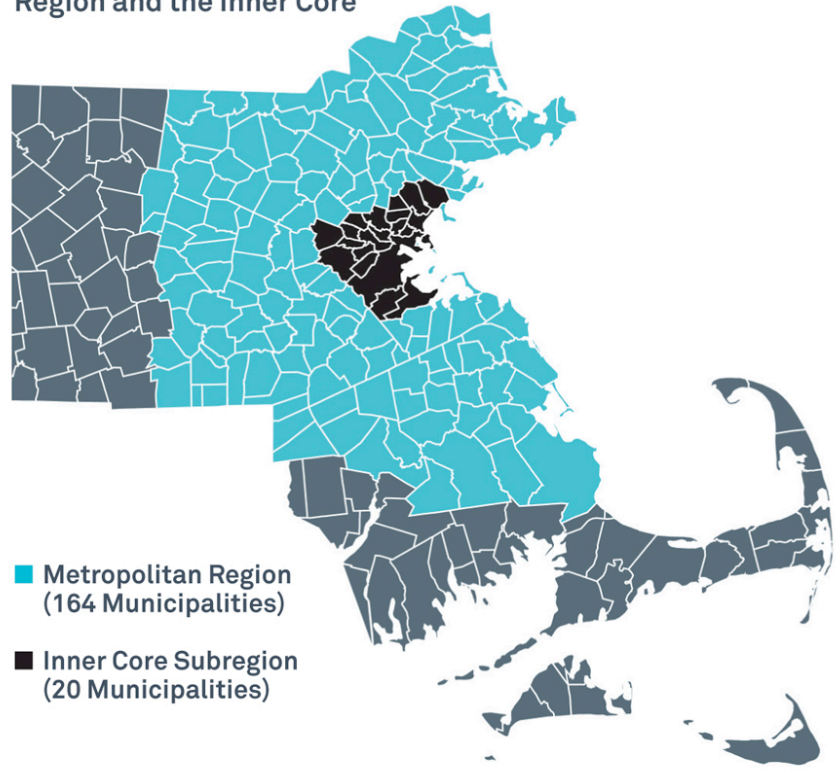
**A  
BETTER  
CITY**





# WE ARE A REGIONAL ECONOMY

**FIGURE I:** The 164-Municipality Metropolitan Boston Region and the Inner Core



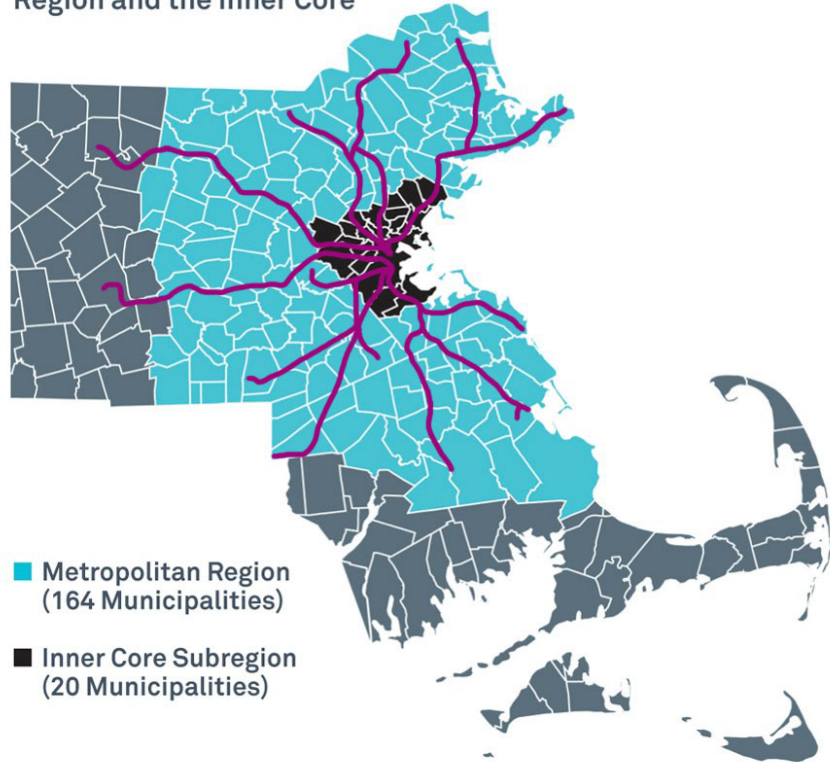
- 69% of state's population
- 74% of jobs
- 84% of GDP
- Projected continued population, jobs and housing growth through 2040.

Source: ABC "The Transportation Dividend" from MAPC region definition.



# WITH AN EXTENSIVE COMMUTER RAIL NETWORK

**FIGURE I:** The 164-Municipality Metropolitan Boston Region and the Inner Core



- 388 route miles
- 14 branches
- 138 Stations
- 39,000+ Parking Spaces
- 35 million passengers annually or ~10% of all MBTA ridership

Source: ABC "The Transportation Dividend" from MAPC region definition.



# OUR IN-PLACE INFRASTRUCTURE WOULD BE COST PROHIBITIVE TO REPLICATE TODAY

FOR EXAMPLE:

In 2016, Seattle-Tacoma Area Voters Approved  
~\$54 Billion (of which ~28 Billion in New Local Taxes) to add:



- **+62 miles** Light Rail (for total 116 miles)
- **One** commuter rail extension and train capacity improvements
- **Two** new Bus Rapid Transit lines

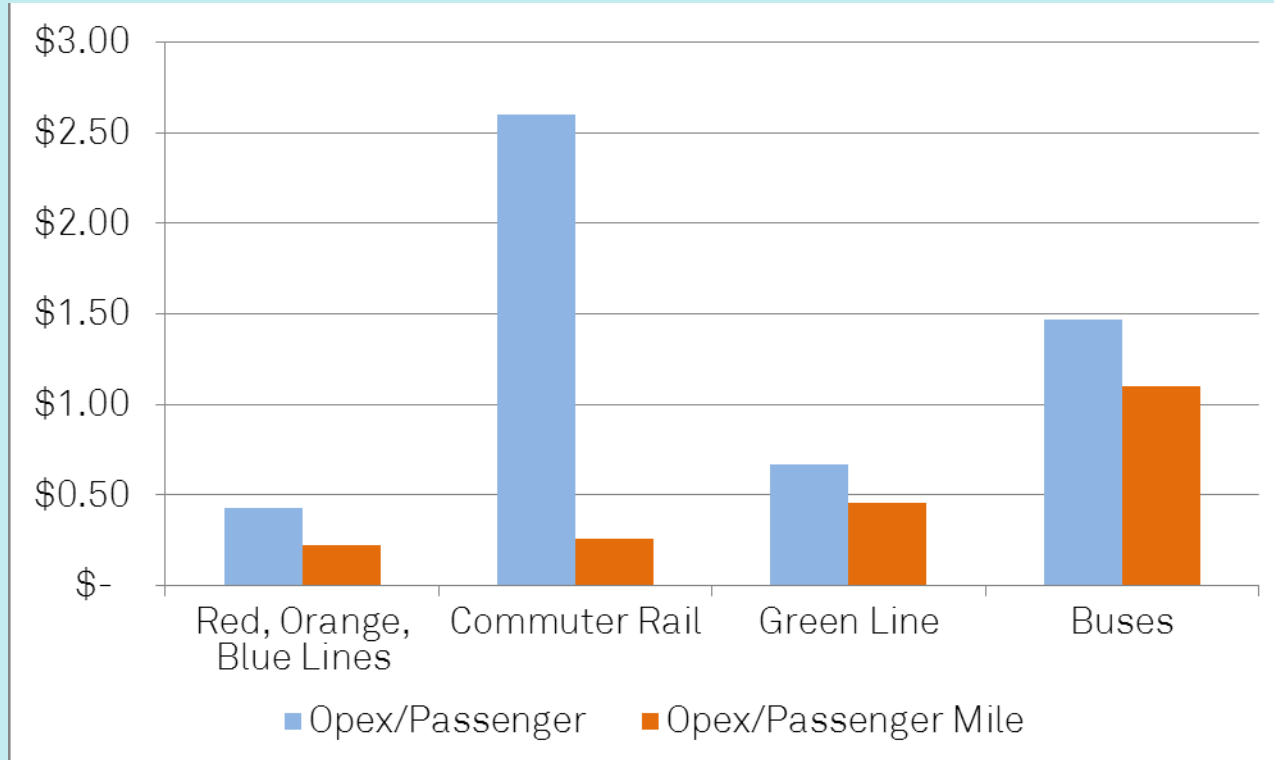
# THE CHALLENGE IS MODERNIZING OUR SERVICE MODELS AND EQUIPMENT



- Diesel locomotives push-pull train cars
- Focused on moving people into center urban hub in mornings and out in evenings
- Limited mid/off-peak service



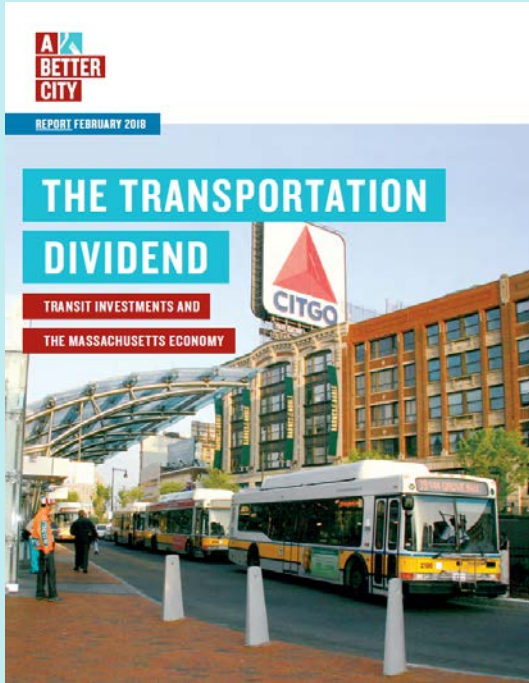
# HIGHLY COST EFFICIENT WHEN MEASURED BY PASSENGER MILE



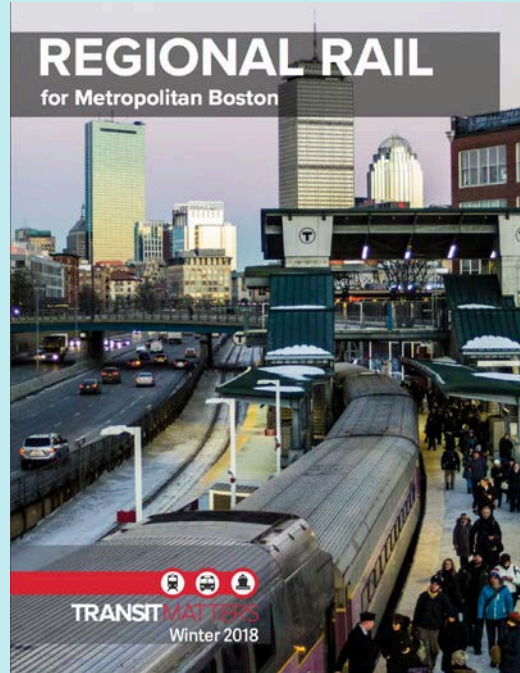
Source: Analysis of FTA data



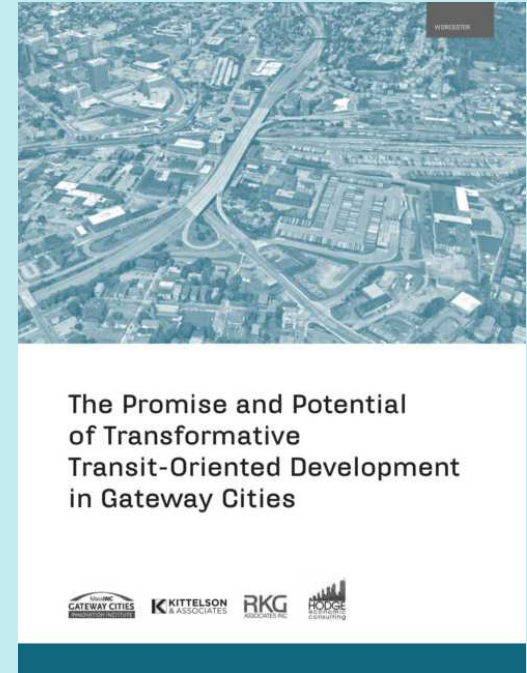
# RESEARCH IS FOCUSED ON THE POSSIBILITIES OF “REGIONAL” RAIL



A Better City  
2018



TransitMatters  
2018

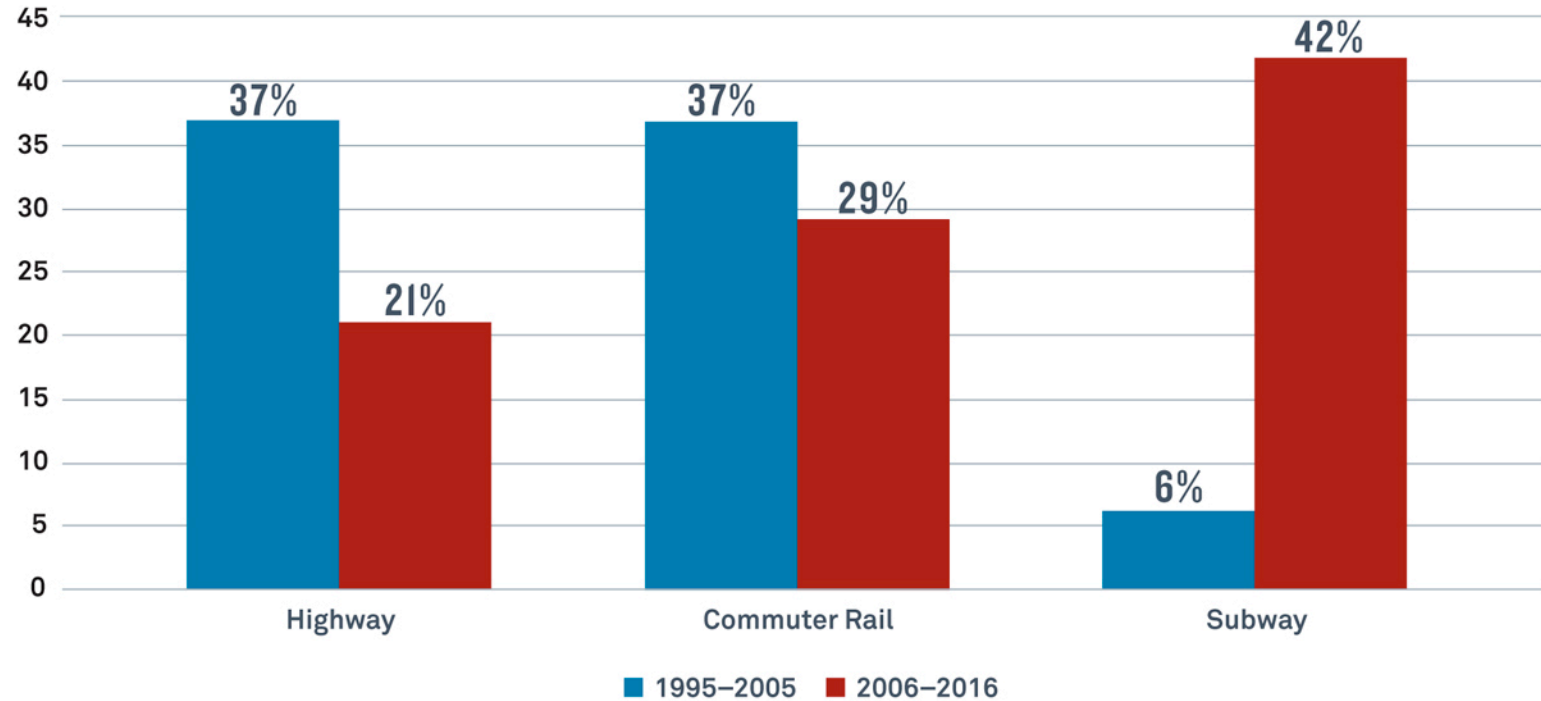


MassINC  
2018



# ECONOMIC DEVELOPMENT SEEKS FREQUENT TRANSIT ACCESS

**FIGURE II:** Share of State's Net Job Growth by Transportation Infrastructure

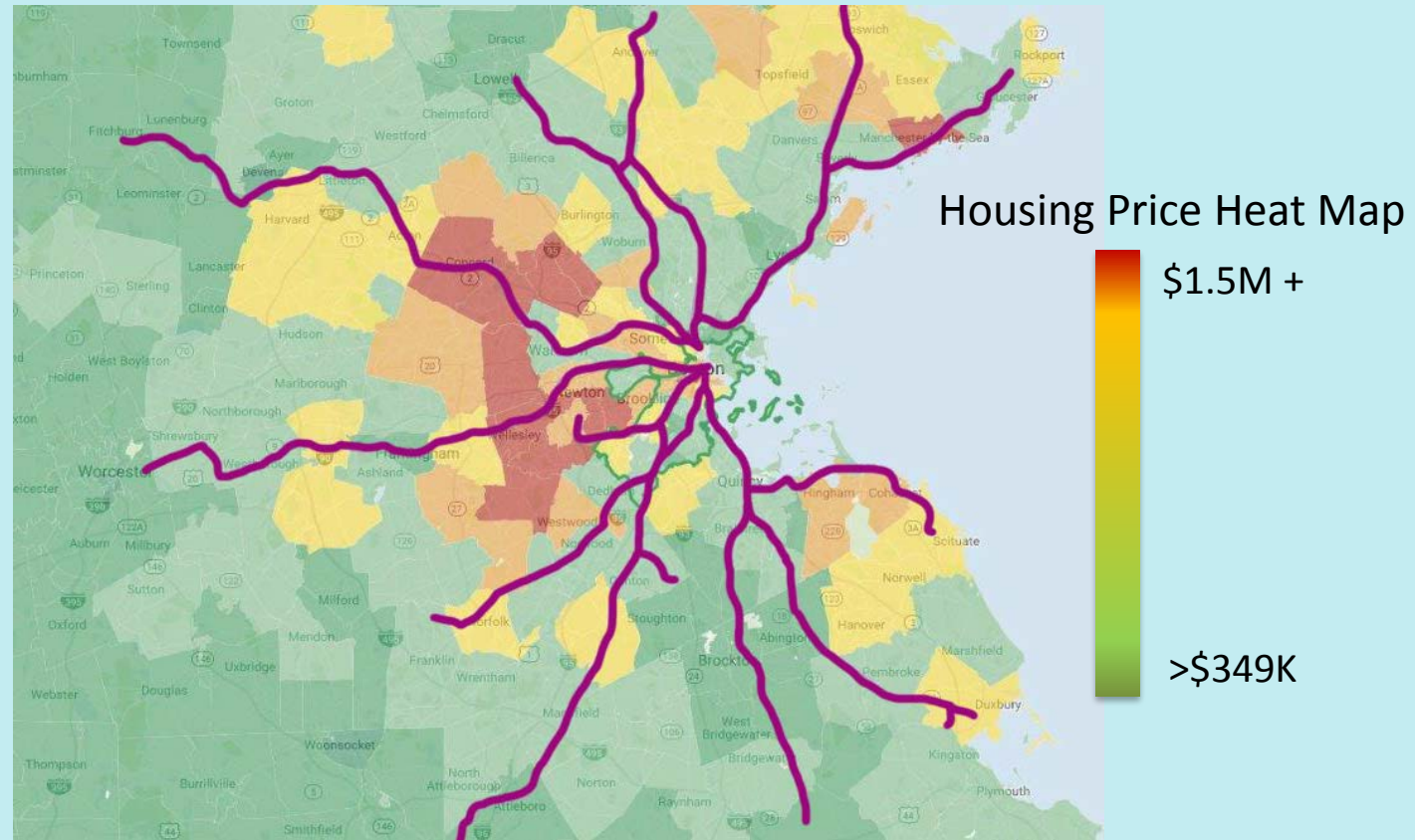


Source: A Better City, "The Transportation Dividend," 2018. Analysis by MassINC of ES-202 data provided by Executive Office of Labor & Workforce Development.





# REGIONAL RAIL WILL EXPAND ECONOMIC GROWTH AND RELIEVE PRESSURES IN THE INNER CORE



Source: Trulia. MBTA.





# RAIL VISION



**massDOT**  
Massachusetts Department of Transportation  
 **Massachusetts Bay  
Transportation Authority**

## DRAFT Objectives

1. Match service with the **growing and changing needs** of the region
2. Enhance **economic vitality**
3. Improve the **passenger experience**
4. Help the Commonwealth achieve its **climate change** resiliency targets
5. Maximize **return on investment** (financial stewardship)



# HOW DO WE COMPARE?

	Routes	Route Miles	Fleet Power	Operations	Farebox Recovery	Peak Frequency (min.)	Off-Peak Frequency (min.)
Boston	14	388	Diesel	Contracted	49%	20	60
Toronto	7	341	Both	Contracted	92%	15	30
London	9	103	Electric	Contracted	78%	7.5	10
Philadelphia	13	224	Electric	Inhouse	57%	15	30
NYC-LIRR	11	319	Electric	Inhouse	55%	10	30
SF Bay Area	1	77	Diesel	Contracted	81%	20	45
Paris	13	900	Electric	Inhouse	38%	5	5

Source: MassDOT. "MBTA Rail Vision: Lessons Learned from Peer Systems Review."



# Toronto Overview

A Better City –  
Global Models for Boston's Commuter Rail System  
November 14 2018

Anna M. Pace

# Toronto Overview

- Context – Toronto and the Greater Toronto Area
- GO Transit Today
- GO Expansion Regional Express Rail (RER)
- Getting to RER - 2025



# Toronto



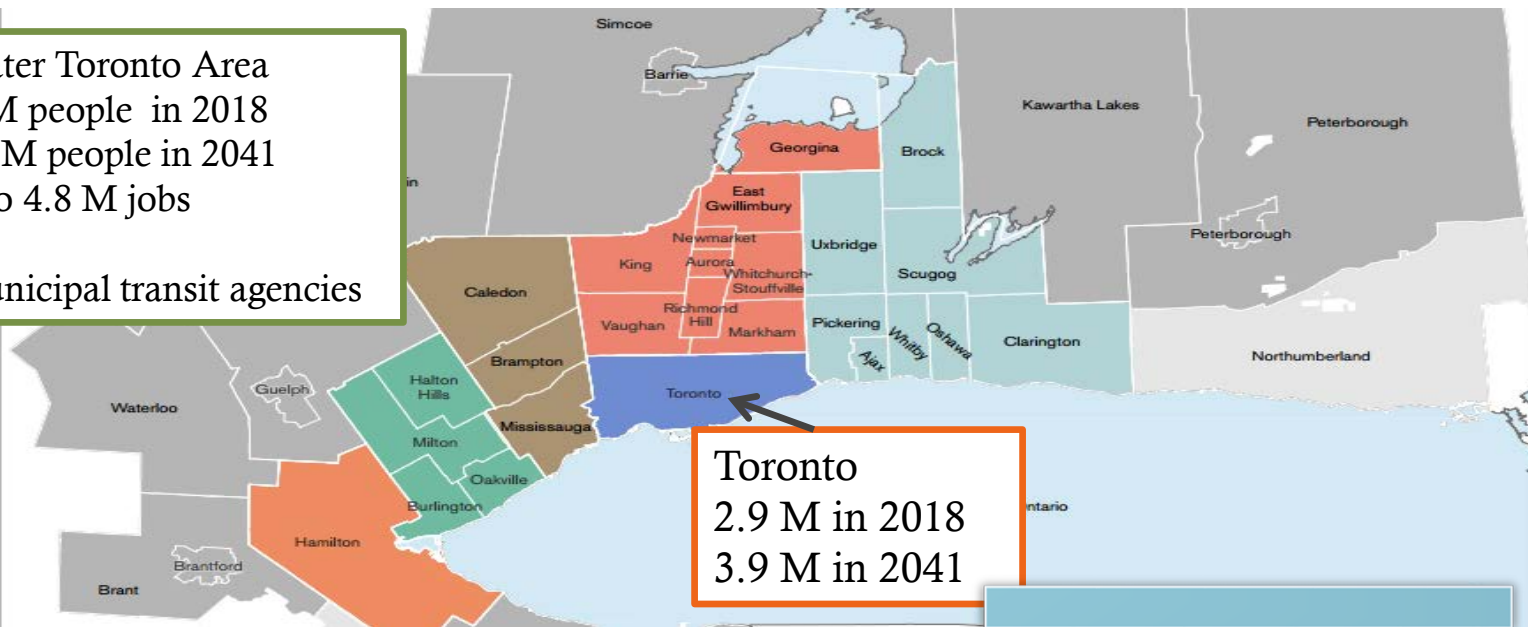


# Greater Toronto Area

Greater Toronto Area  
7.2 M people in 2018  
10.1 M people in 2041

3.6 to 4.8 M jobs

9 municipal transit agencies



# GO Transit Today



## System Map Plan du réseau



GO TRAIN LINES / LIGNES DE TRAIN GO	GO BUS / AUTOBUS GO
Lakeshore West	Bus Routes / Lignes d'autobus
Niagara Weekend service in summer months. Service fréquent lundi-vendredi.	Hwy 407 Bus Service / Service d'autobus Hwy 407 Frequent Service Monday-Friday. Service fréquent lundi-vendredi.
Milton	Major bus stop with parking / Arrêt d'autobus principal avec stationnement
Kitchener	TTC subway connection / Correspondance aux métro de la TTC
Barrie	<small>* Separate fare required / Titre distinct requis</small>
Richmond Hill	416 869 3200 TTY 1 800 387 3652 1 888 GET ON GO <a href="http://gotransit.com">gotransit.com</a>
Stouffville	<small>MAP NOT TO SCALE / CARTE NON À L'ÉCHELLE</small>
Lakeshore East	
Union Pearson Express*	

Part of this system shown /  
Arrêts d'autobus ne sont pas tous indiqués.  
©Metrolinx 2018  
Version: September 2018

# GO Transit Today

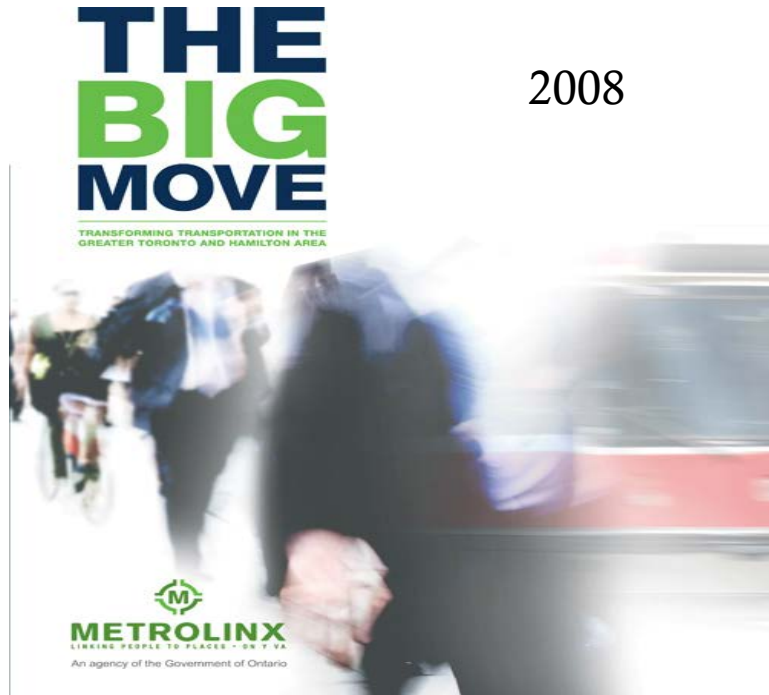
- 7 lines, 61 stations 452 route kilometers (281 miles)
- 75 locomotives, 656 bi-level passenger coaches
- 1850 train trips per week, 222,000 weekday passengers
- 91% of all train commuters use Union Station
- 75,261 parking spaces, 9 parking structures



# GO Transit Today



# GO Expansion - Transportation Plans



2008



2018

# GO Expansion and Regional Express Rail

- Announced in 2015 by the Province of Ontario
- Built on planned GO Transit improvements and extensions
- Electrification – the game changer
- Transformational – all-day two-way frequent service



# GO Expansion RER in 2025

- 2-way all-day 15 min. service on 5 lines
- Train trips per week - 1,500 in 2015 to 6,000
- 12 new stations
- Peak Period service - X 2, Off Peak service – X 4
- \$16 B over 10 years

# Getting to 2025

- Continuous service improvements
- Union Station Upgrades
- Stations – planning and design
- Cross-jurisdictional and community involvement
- Studying Hydrail – hydrogen fuel cells



# Getting to 2025 -Level Boarding





# Getting to 2025 – Express Service



# Getting to 2025

- RFQs - issued in April 2018
  - Construction, operation, maintenance, rolling stock, signaling
  - New stations
- Comprehensive Business Cases and Benefits Management
  - RER – updated
  - New stations – individual and network
- Embedding design excellence, sustainability and accessibility



# Getting to 2025

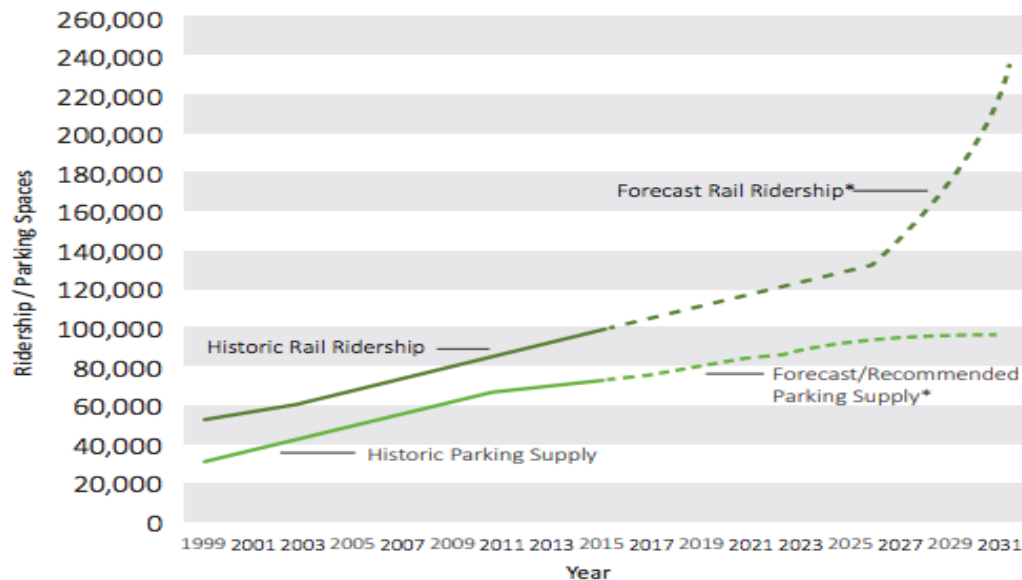
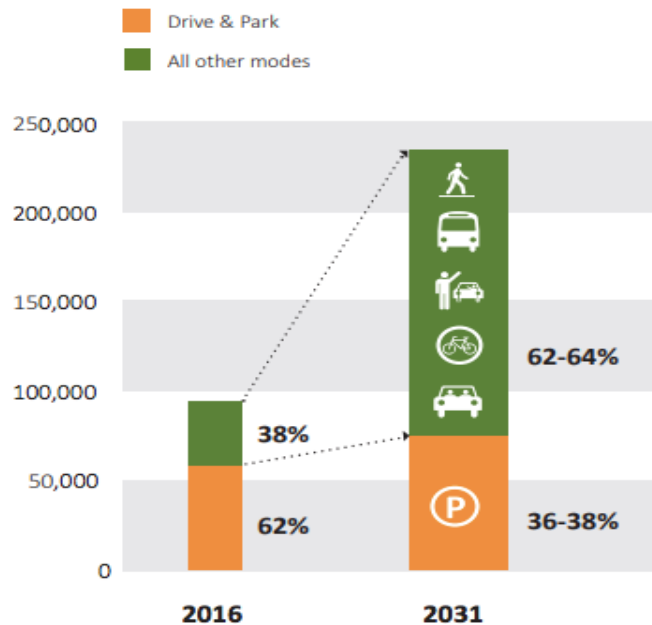
## Contributing Initiatives

- Designing and development of communities and transit stations to support transit use
- Parking demand strategies to encourage car sharing and other
- Addressing first and last mile needs –station access
- Fare and service integration with local transit systems

# Getting to 2025 -Parking



# Getting to 2025





# Getting to 2025 - Transit Oriented Development



# TRANSFORMING THE GO TRAIN NETWORK



**52 New Train Sets**  
faster service



**New GO Tracks**  
150 km



**22 New Stations**  
32 upgraded



**Bridge Upgrades**  
45+



**6000 Trips / Day; 300% increase**



**15 Minute Service**  
or better



**10 rail/road grade separations**  
1 rail/rail grade separation

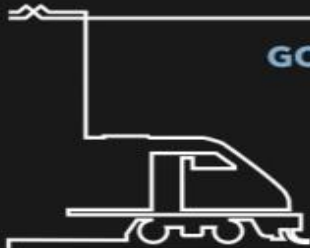


**263 km**  
of electrified service  
or signal enhancements

## GO RAIL EXPANSION: FOR A GREATER REGION

### A Regional Rapid Transit Network

- all-day, 15-min service
  - faster trains
  - 300% service increase
  - 6000 trips per week
- More Access & stations closer to home
- 21 new GO stations
  - 32 station upgrades
  - walking, cycling
  - local transit connections
- An Improved Union Station
- 4 times the service
  - 3 times the space
  - a more comfortable customer experience



### WHAT IT TAKES

- New GO Tracks**  
150 km
- New Bridges & Tunnels**  
More reliable
- 263 km of electrified service**  
or signal enhancements
- New GO Service**  
Extended routes
- New GO Stations**  
More connections
- New Infrastructure**  
Supports electrification

Trains up to every 15 minutes

Service in both directions

More all-day service

Faster, electric trains



### BUILDING FOR A GROWING REGION

- 9M+ residents by 2041
- Average commute is 80+ minutes
- Gridlock costs our economy \$6-11B annually
- Investments provides over \$30B in benefits to the region over the next 60 years
- Ridership is expected to increase to approximately 127 million customers within five years of completion

### CONNECTING YOU TO THE THINGS THAT MATTER

More options to live, work and play where you choose

- More Access and stations in your community
- Travel on your own schedule
- Cleaner sustainable technology

METROLINX



*Thank You*







# Transforming commuter rail: Lessons from London

Isabel Dedring, Arup

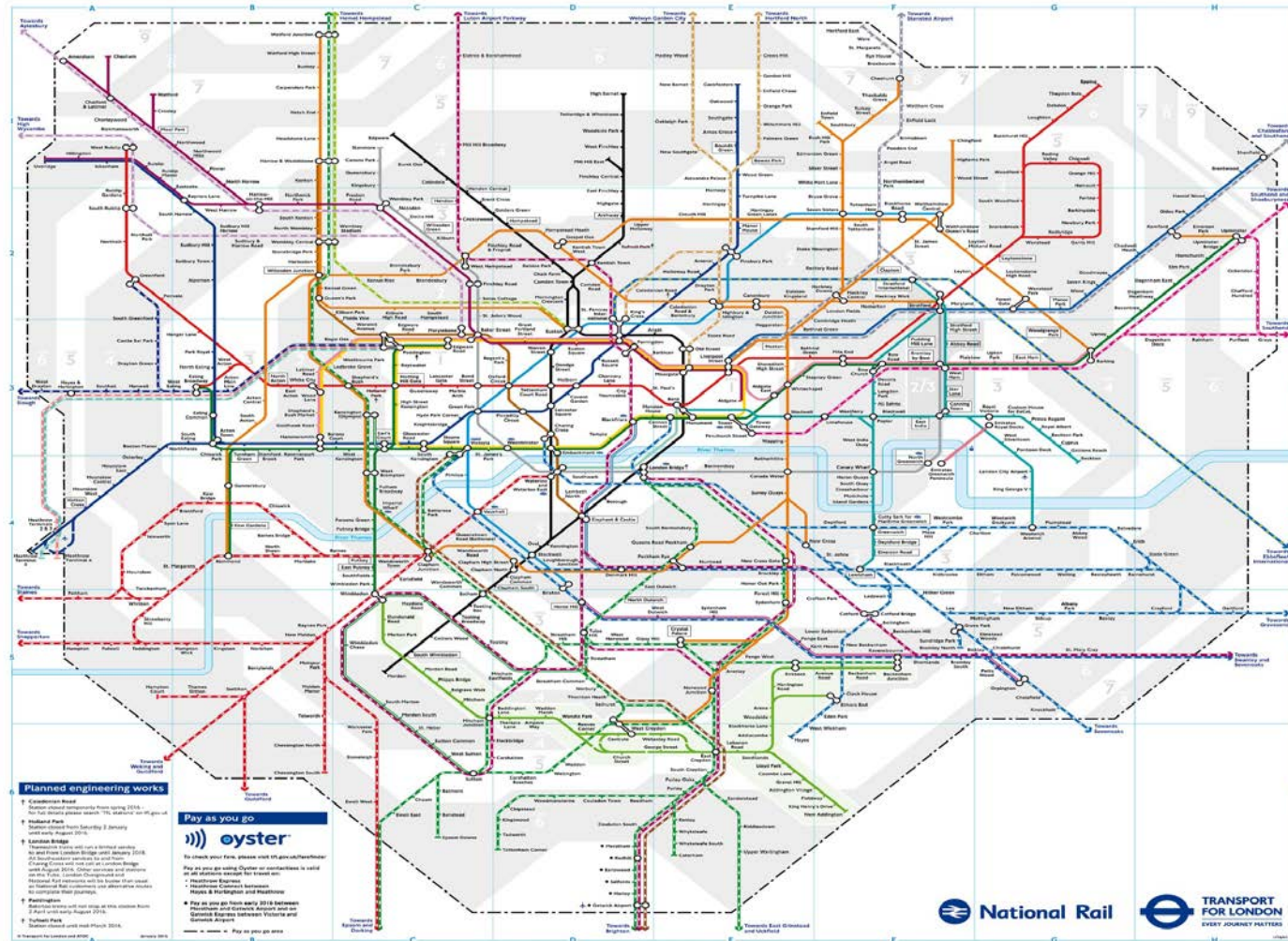
Platform 1  
Northbound trains

Context

378 1



Extensive  
Tube and rail  
network –  
85% of the  
morning  
commute

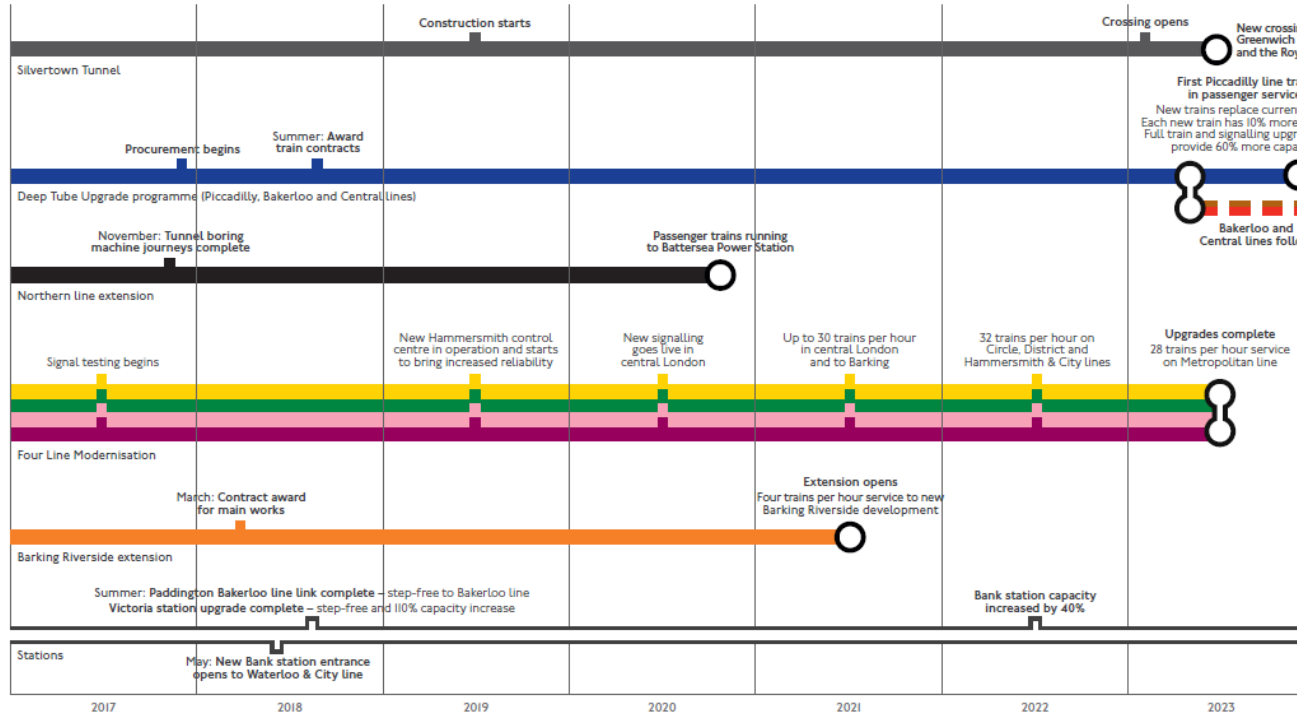


# Integrated city transport agency



# Familiarity with long-term capital programmes

## Key milestones of the Investment programme



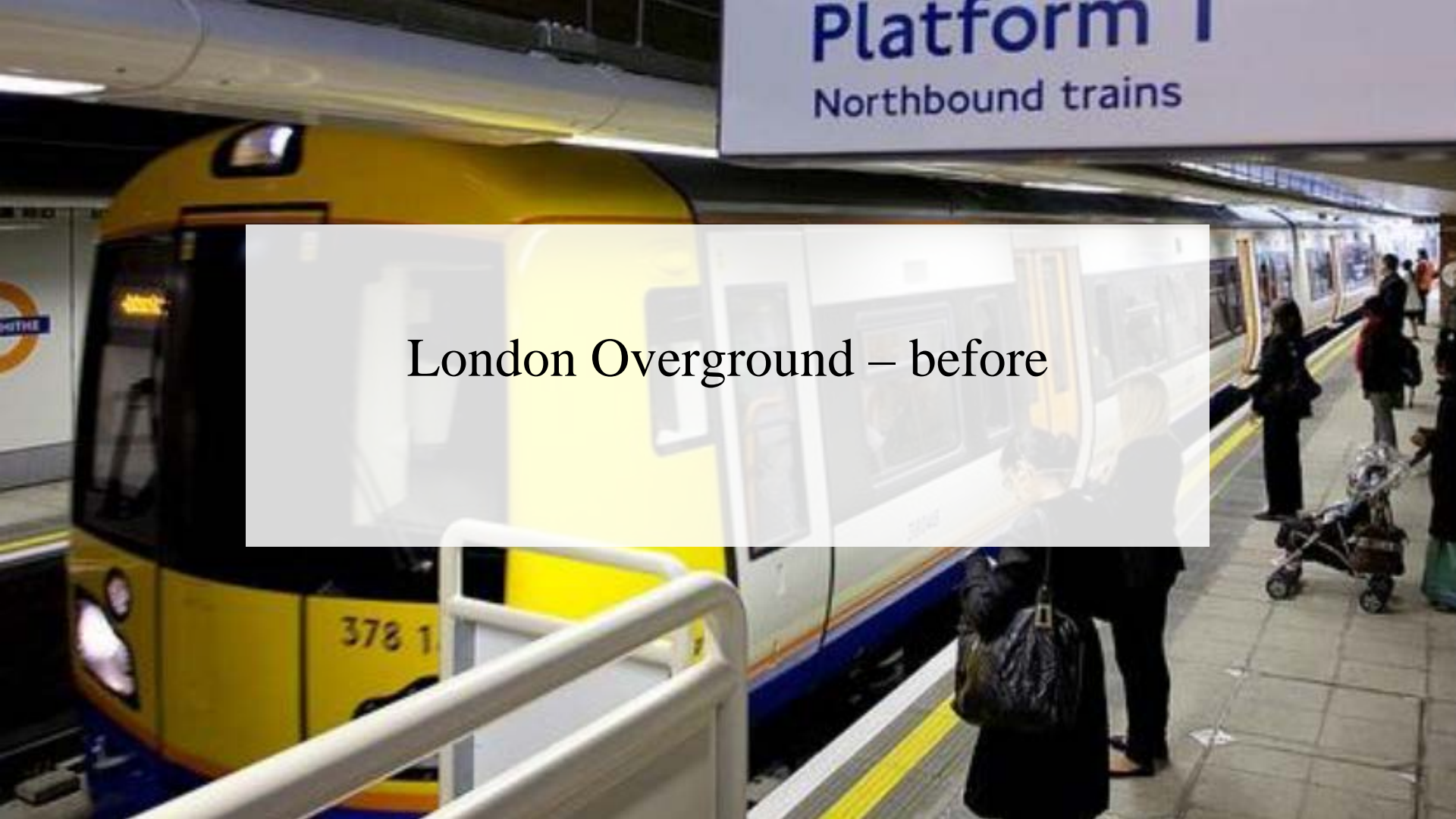


## But some major constraints

- National railway operator looking after services in London
- No overarching strategy across entities
- Underinvestment in “low-priority” shorter distance services
- Shared line with freight – seen as major challenge
- Concern about paths being ‘stolen’ from other services

Platform 1  
Northbound trains

London Overground – before



# The original Overground network

- 4 lines with wide geographic reach but disconnected
- No turn up and go service – 2-4 trains per hour
- 37 stations, 75 route miles
- 2 new stations under construction at Imperial Wharf & Shepherds Bush
- Serving 19 London boroughs
- 35 million passengers per annum

# Poor performance on every dimension

- Dilapidated rolling stock and stations
- Poor reliability, with 80% on-time arrivals
- Low service frequency
- Revenue falling 5%/year, against a growing London rail market
- Lowest-ever score in National Rail Passenger Survey (NPS) history
- High levels of fare evasion (20%+)
- Unsafe – crime on the network

Poor  
performance  
on every  
dimension –  
dilapidated  
stations





Political  
attention  
focused on  
the problems  
– and the  
opportunity

**2006 London Assembly Transport  
Committee report**

**‘London’s Forgotten Railway’**

***‘Shabby, unreliable, unsafe, overcrowded –  
these are the words used to describe the  
North London Railway by people who have  
spoken to the Committee during our  
review’***

Platform 1  
Northbound trains

The Overground model



# London Overground – 2007

- Concession devolved to TfL from central Government
- Separate operating entity
- Phased – start with visible changes to boost ridership and support
- Turn up and go service
- Brand alignment with TfL, not rail network
- Programme of capital investment

# Operating model reflects the ‘hybrid’ nature of the Overground

- Operator: Arriva Rail London (£65m pa)
- Train maintenance: Bombardier (£35m pa)
- Maintenance of TfL network: Cleshar (£10m pa)
- Network control: Network Rail (£2m pa)
- TfL retain control of strategic planning, project management, marketing and communications, customer service, train service oversight and revenue risk

# Phased programme – starting with North London Line stations

Deep clean, rebranding, painting

Station refurbishment

**Real-time info**



Departure displays  
PA announcements  
Disruption info

**Ticketing**



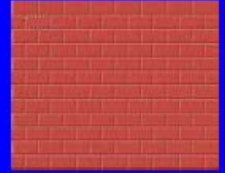
Oyster PAYG

**Staffing**



Whole traffic day

**Structures and finishes**



**Static information**



Multimodal info  
Signage

**Safety & security**



Help points, gating  
CCTV, lighting

**Station fabric**



Refurbishment

**Shelter and seating**



Step free access, gate lines

Turn up and go service in time for Olympics (8 pax. 4 freight trains per hour)



Phased  
programme

–

New rolling  
stock, then  
5-car  
upgrade and  
platform  
lengthening



Phased  
programme

—

East  
London  
Line  
expansion



# Phased programme

—

# East London Line expansion





## Significant capital investment, but in ‘waves’

- **North London Line Route Improvement** - £350 million completed in 2011 – capacity improvements for mixed-traffic railway to deliver 8 passenger trains and 4 freight trains per hour as part of the London Olympics capital programme
- **East London Line** delivered in 3 phases - £1.5 billion completed end 2012 – reopened 9 miles of new and refurbished railway in East London providing new transport connections for some of the capital’s most deprived boroughs
- **London Overground Capacity Improvement** - £350 million completed in 2015 – 20 percent network capacity increase from 4 to 5 carriage trains
- **Gospel Oak to Barking Electrification** - £125 million completed in 2017
- **Barking Riverside Extension** - £120 million, programmed completion 2022 – 1.5 km of new rail line to unlock 10,000+ new homes

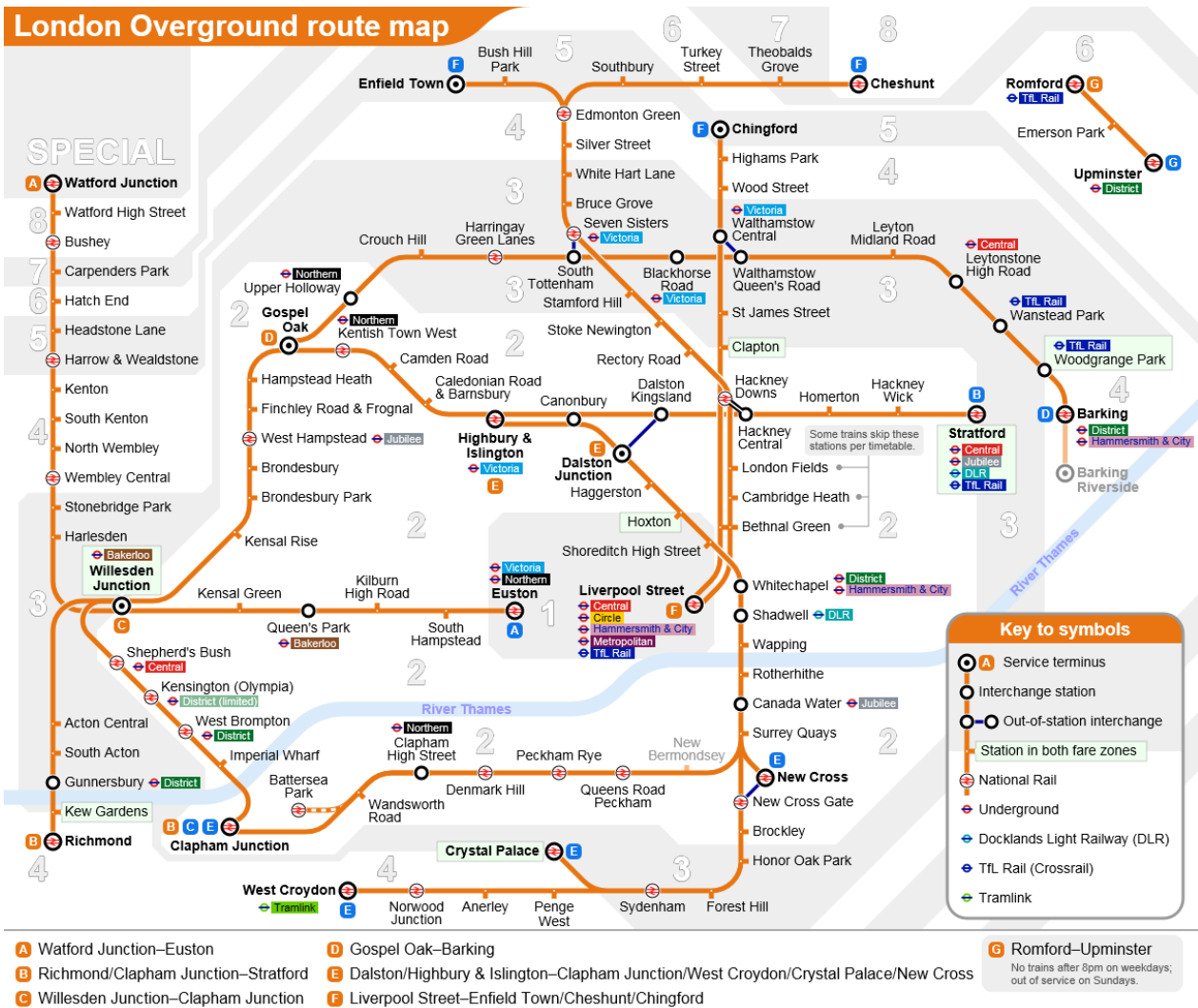
Platform 1  
Northbound trains

Outcomes and impact

378 1



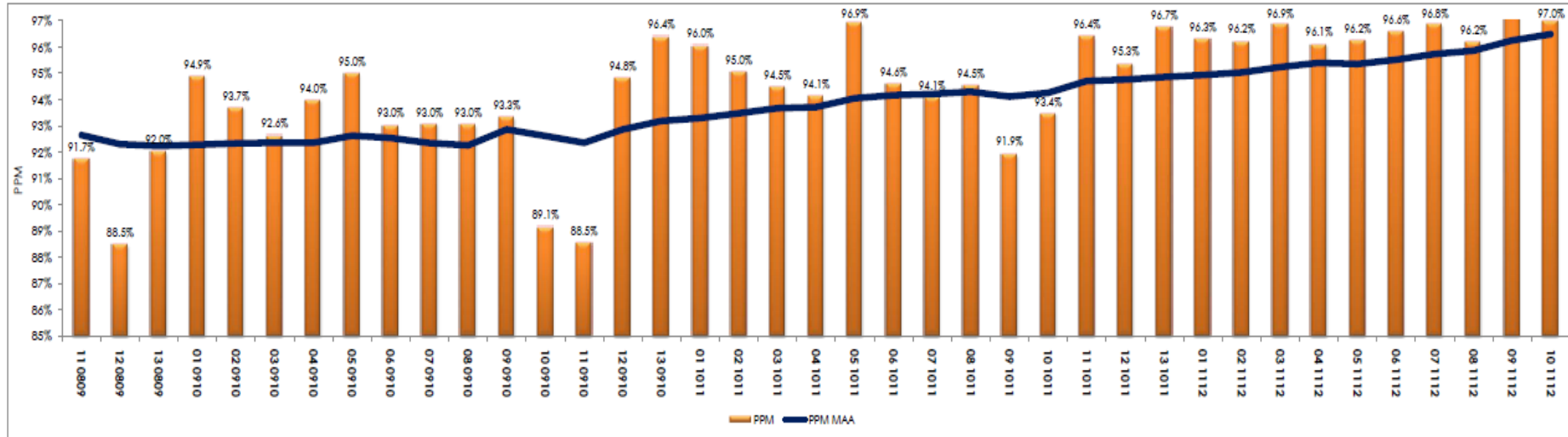
# The Overground network today



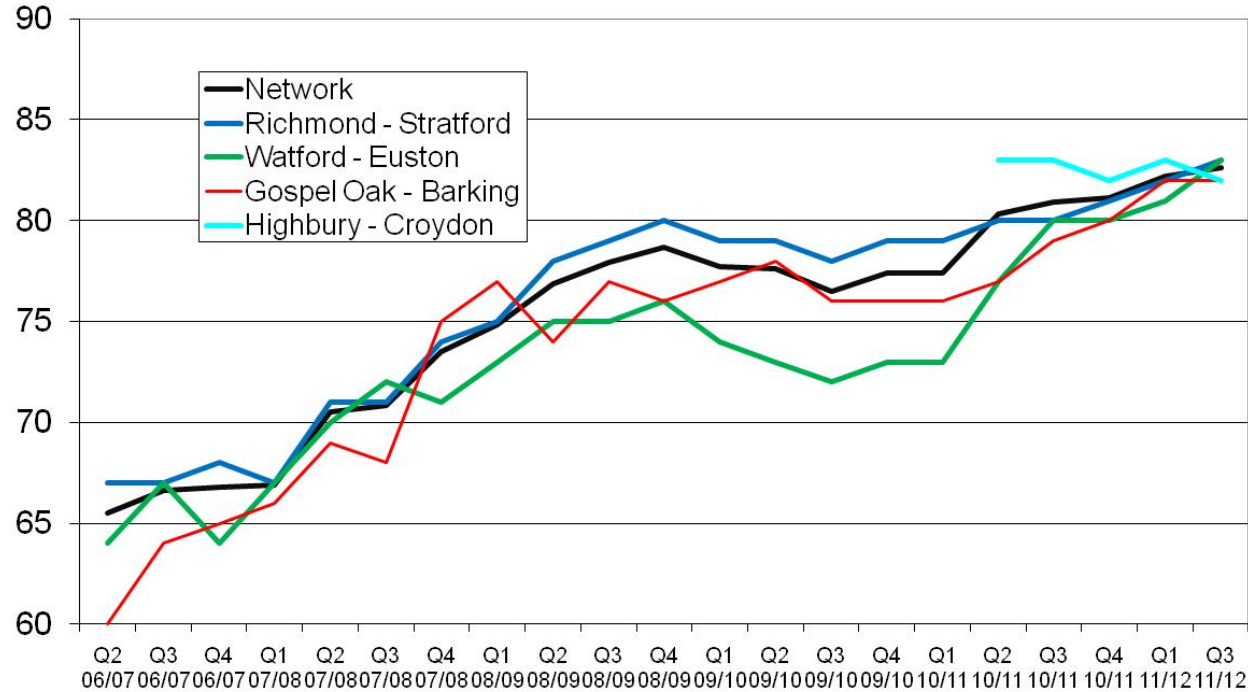
# London Overground - Overview

- 1560 trains per day: fourth largest train operation in the UK
- 110 stations
- 98 trains
- 189 million passengers per annum, the third largest train operator by passenger volume in the UK

# Improvements in performance (96% on time)

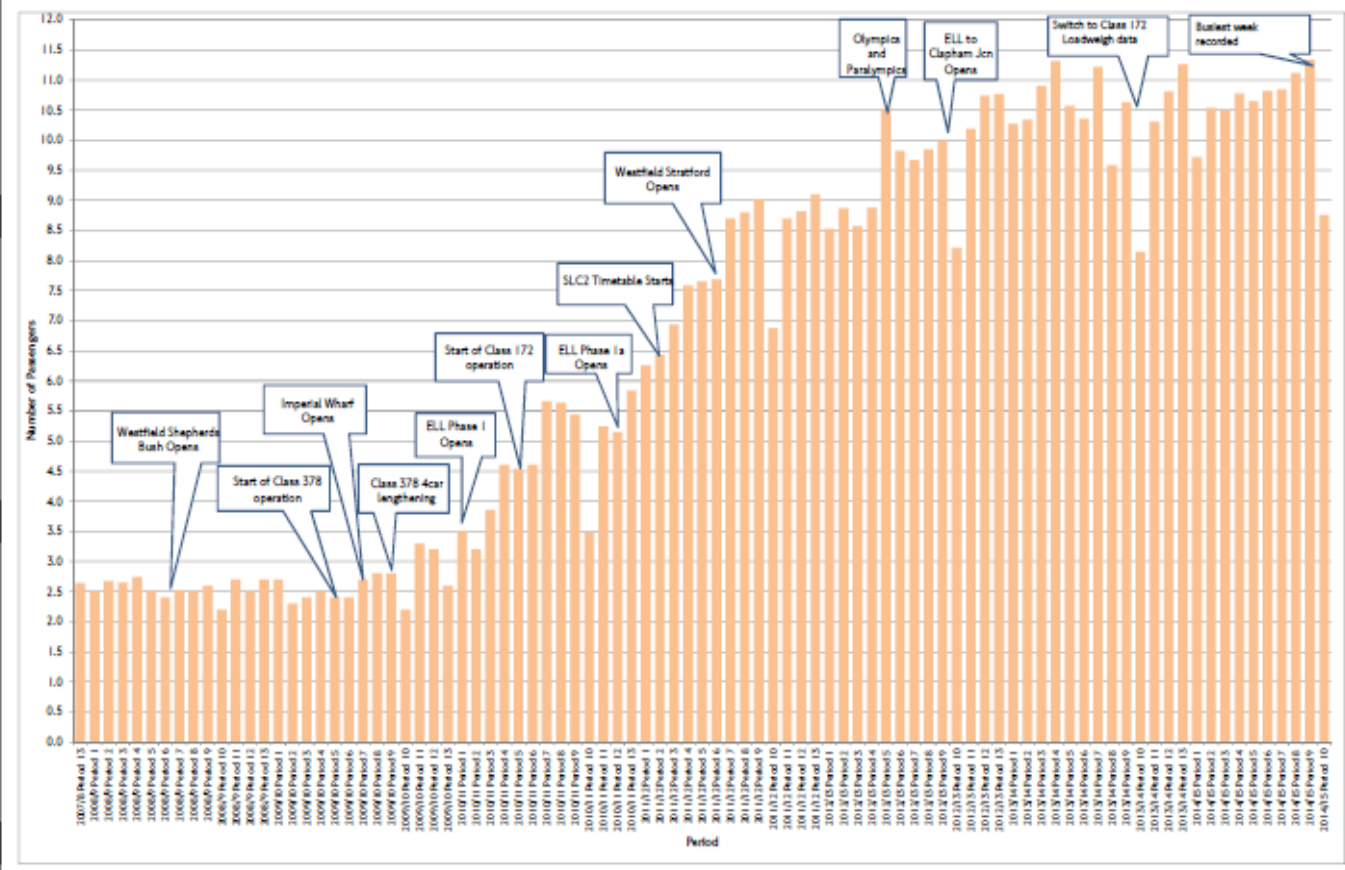


# Improvements in customer satisfaction to 'very good'



Dramatic growth in ridership – doubling on like-for-like basis, quadrupling if we count extensions

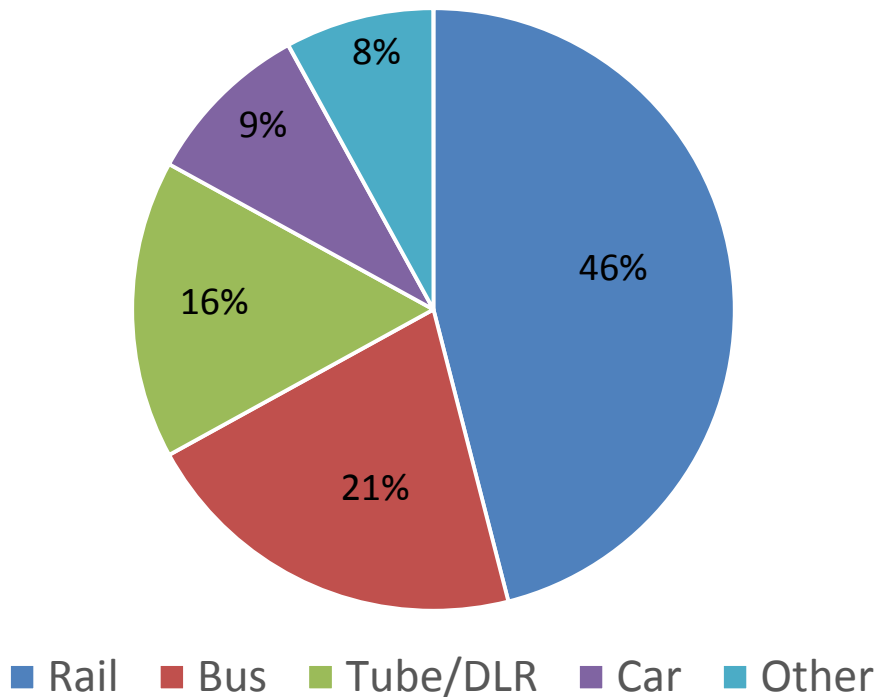
2) Growth in Overground passenger boardings since the start of the Overground Concession (millions, by four weekly period)



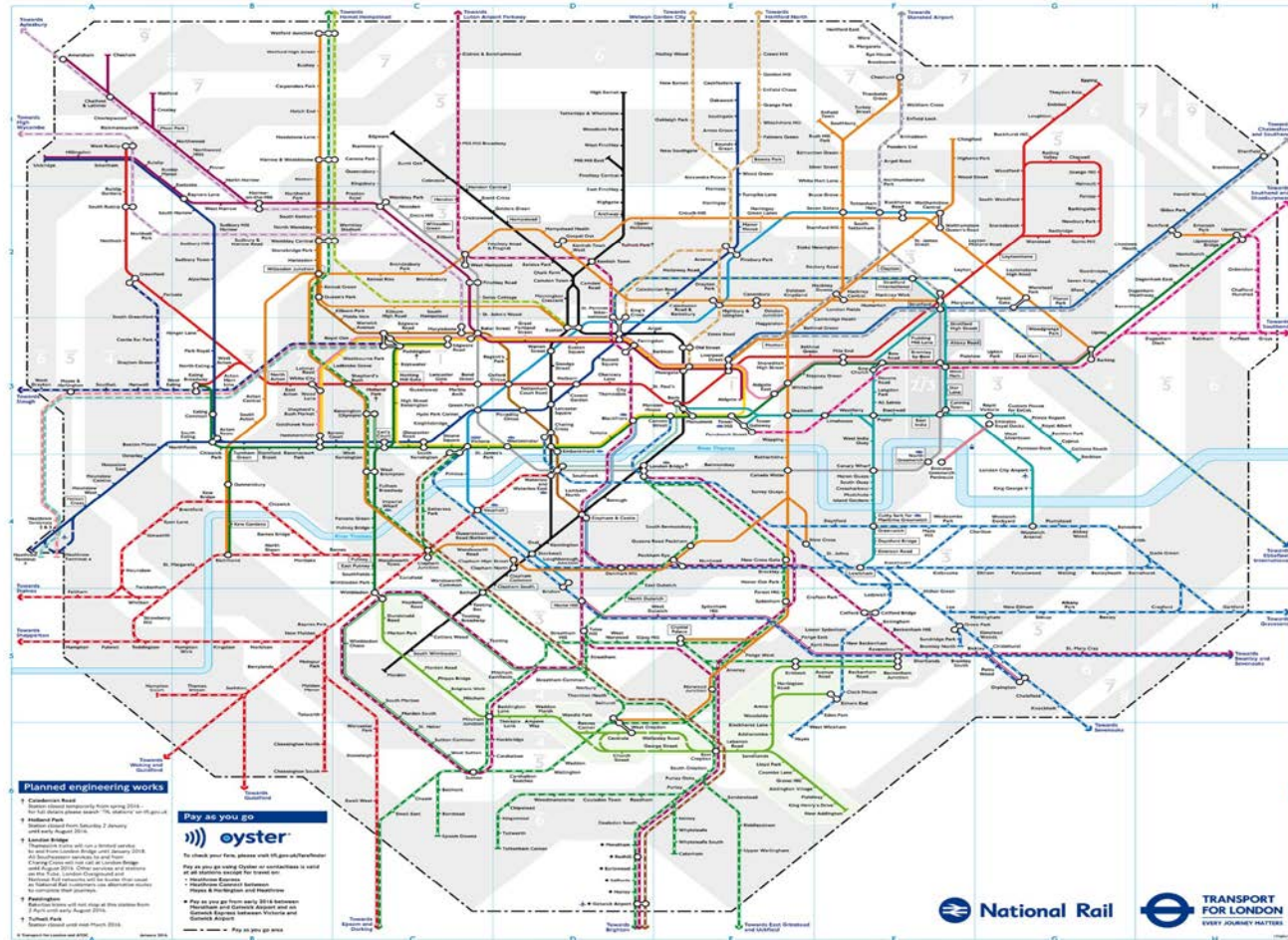


Mode shift –  
including  
away from  
car

East London Line: Previous mode



# Decongestion impact on busy central London interchange stations



Economic  
impact:  
increased  
property  
values,  
improved  
access to jobs  
for deprived  
areas





Economic  
impact:  
increased  
property  
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areas



Barking  
Riverside –  
10,000 homes  
unlocked by  
an extension  
of the  
Overground

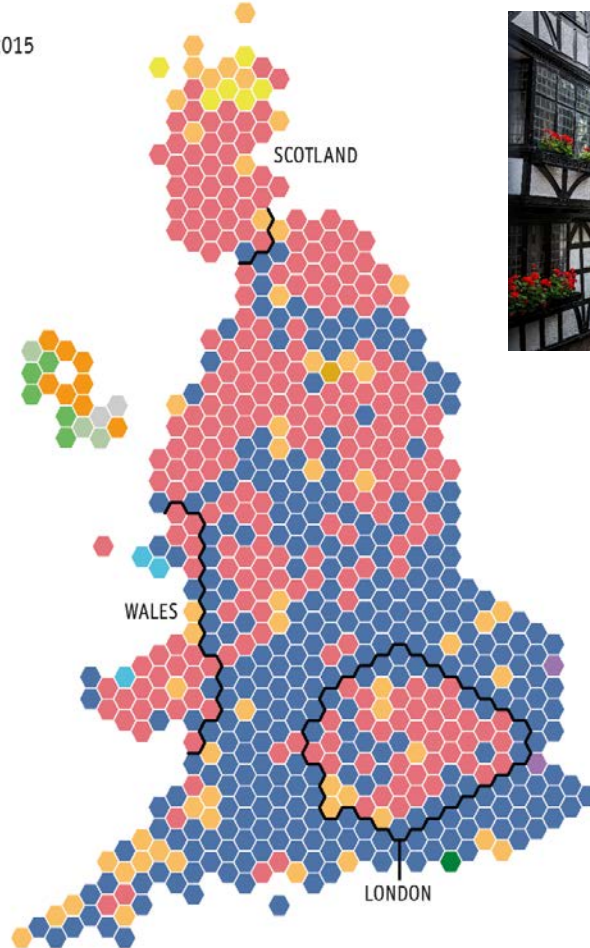




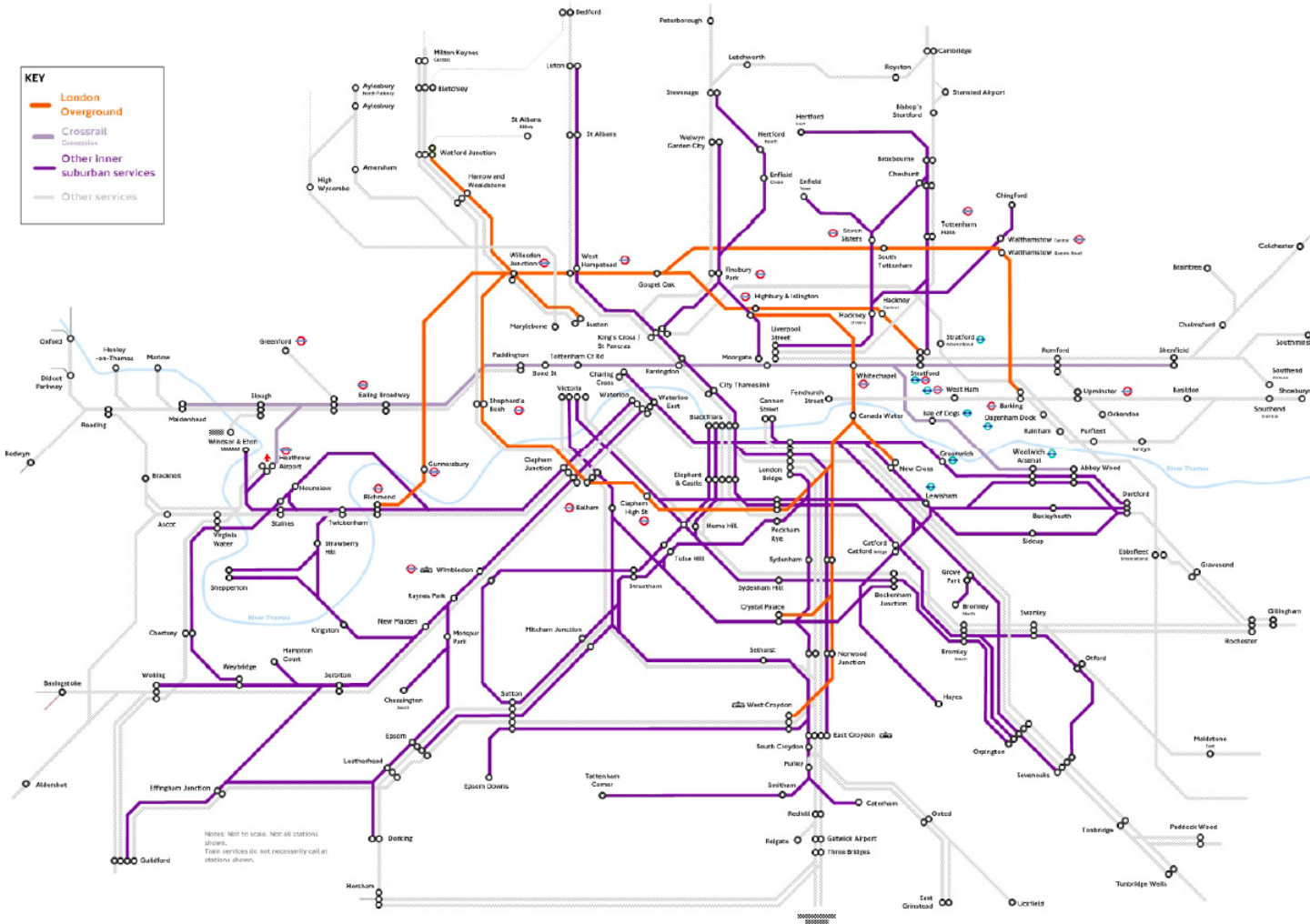
# Ongoing discussion about further extension to rural London

**Seats held**  
By political party, as of March 2015

- Conservative
- Labour
- Lib Dem
- SNP
- Plaid Cymru
- Green
- UKIP
- Sinn Fein
- Respect Party
- Democratic Unionist Party
- Social Democratic & Labour Party
- Other



# Ongoing discussion about further extension to rural London



Emerging  
challenges



# Emerging challenges

- Victim of its own success – overcrowded
- Softening of demand growth to 2% pa
- Performance still strong, but current operator underperforming
- No forward investment programme
- Mayoral desire to extend the model to other parts of the railway being stymied by local politics and lack of government support



# Summary

- ‘Superficial’ changes make a big difference
- Incremental development builds momentum for further investment
- Separate operating model gives focus
- Mixing with freight and long-distance passenger services not ideal, but it can be managed – in fact long-distance passengers can benefit
- Undeniable impact on local economy, equity, property values – how might we have harnessed this better?



# Transforming commuter rail: Lessons from London

Isabel Dedring, Arup

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# GLOBAL MODELS for Regional Rail



**Isabel Dedring**

Former Deputy Mayor of  
London for Transport,  
Global Transport Leader, Arup

Moderator:



**Bruce Mohl**

Editor, Commonwealth Magazine



**Anna Pace**

Former Director of Project,  
Planning and Development,  
Toronto Metrolinx



**A**

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