



Auckland Transport
HOP Rail Roll-out Review

16 May 2013

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Conclusions and recommendations

Conclusions & Recommendations

Conclusions

- Any impact of the HOP roll out on patronage has been short-lived and patronage has increased year on year since December 2012
- Current levels of fare evasion are within the bounds of comparable systems overseas. Of the systems studied only London performed significantly better primarily because it is largely gated
- The types of measures taken to reduce fare evasion and encourage switching to HOP are consistent with those used overseas but the financial measures, such as discounts and penalties, are generally weaker
- There are a number of hurdles and disincentives which exist to increasing on line top up
- Timing of the AT HOP retail network launch to coincide with the bus roll out has contributed to congestion at VRDs on stations
- The performance, availability and lack of real time information for VRD's has created opportunity for further revenue leakage

Recommendations

1. Review fee structure for on line top up, particularly the 25c fee for one time on line top up (no fee for auto load), and consider additional discount for products bought on line
2. Use data analytics of HOP data to inform revenue protection and improve its effectiveness
3. Consider increasing the price of paper single tickets and migrate other residual paper products to encourage further migration onto HOP
4. Revise website and written material to better promote online top up
5. Change and improve the way patronage data is reported to normalise between months and years
6. Improve the VRD interface to speed up transactions from this channel
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8. Consider adding cell phone top up products for HOP
9. Review Thales performance metrics to ensure they are customer defined and accountable for reducing VRD down time
10. Provide better real time machine outage data to enforcement officers on trains
11. Consider pre loaded cards for casual users and tourists
12. Consider the most effective deployment of revenue protection officers once HOP is rolled out on buses

Comparison of strategies with other jurisdictions

Types of measures taken by Auckland Transport to encourage uptake and patronage and reduce evasion are consistent with similar systems elsewhere

Measure	Comparable systems	AT HOP
Phase out of paper tickets	Progressive withdrawal of paper products for passes, with residual paper single ticket in most systems	AT has withdrawn most discounted monthly passes and multi-journey paper tickets. There are some residual paper tickets which remain to be transferred or removed
Pricing differential	Initial differential pricing between paper and electronic products. "Discount" generally increased over time by increasing the cost of any residual paper products	AT has retained a 10% premium for cash paper single fares over HOP. This difference can be increased over successive annual fare reviews
Increased gating	Mixture of partially gated and fully gated systems. Oyster progressively rolled out gating from central London over time until the system was largely gated	Gated stations at Britomart and Newmarket intercept around 70% of all passengers. Plans to roll out gating to Manukau in late 2013 and other high volume stations are under consideration and would increase the proportion of travel through gated stations to around 80%
Increased penalties	Punitive fine levels and legal remedies such as potential arrest and successful prosecution on Oyster system (99.8% successful prosecution of fare evaders on buses)	Penalty fares have been introduced and progressively increased from \$5 to \$10 to \$20. Plans are being progressed for more punitive fine levels and enforcement powers. Support is required from central government for enabling legislative
Increased retail network	Cards are available from an extensive range of on and off network outlets. All systems have an extensive off network retail agency often through newsagent retailers.	Customer service centres were established to support the roll out on rail, along with station VRDs and on line top up. A new HOP retail network is to be launched in conjunction with the bus roll out, available also to rail customers
Charges for card issue	Cards were initially issued free on some systems to encourage initial uptake. Later in the roll out deposits and, in some cases, payments for cards were introduced	Free AT HOP cards were provided to rail users who were also holders of bus operator smartcards. A free exchange is also planned for the bus roll out. A charge of \$10 for the purchase of the card applies otherwise

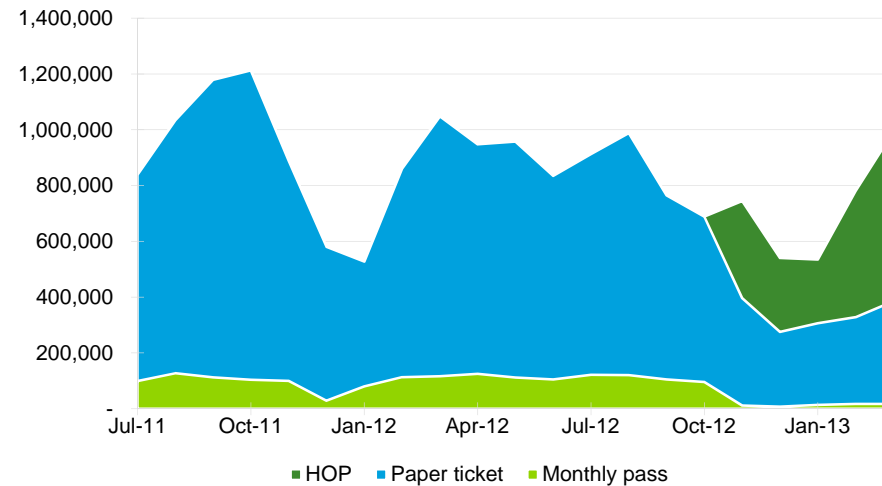
History and current problems

Introduction of HOP

HOP was introduced onto the rail system in October 2012 as part of AT's AIFS programme

- Auckland's integrated fare system, HOP, was introduced onto the rail system in October 2012 and ferries in November 2012. Bus roll-out will commenced shortly
- Over 60 VRD's have been installed across 42 rail stations, with at least one VRD on every platform for HOP top-up and paper ticket sales
- Existing off station retail network for rail was closed down. A replacement retail network will be commissioned as part of the bus roll-out
- New customer service centres were provided for HOP card purchase at several locations:
 1. Britomart station
 2. Newmarket station
 3. New Lynn station
 4. AUT
 5. Ferry building Auckland
 6. Ferry building Devonport
 7. Papakura train station
- Rail passengers were required to deal with a significant change in purchasing behaviour with the introduction of HOP – from a mix of on-board, retail and counter sales to station vending machine and counter sales, supported by on-line top-up

Patronage by Ticket Type



- HOP uptake has accelerated since January 2013
- On network purchasing patterns have carried over from the previous paper based system

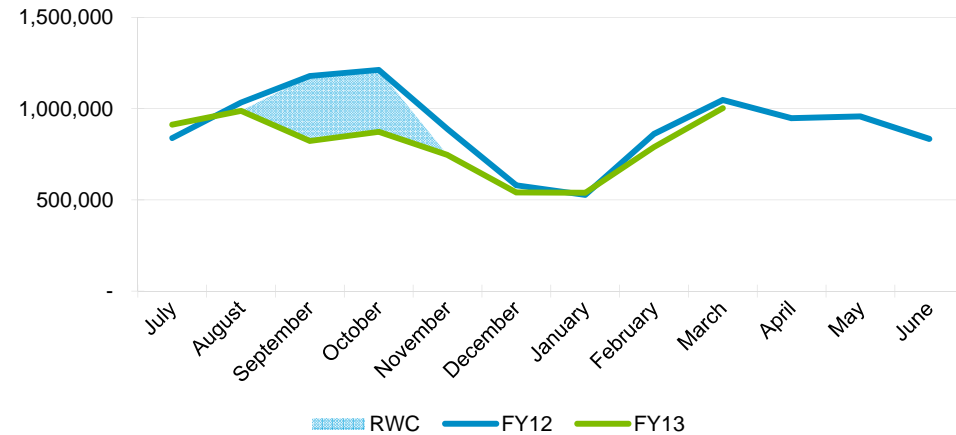
Roll out Problems

Reported problems with the HOP system following the initial go live date have attracted significant media attention and this is continuing

Based on media coverage and the information provided through the various interviews carried out as part of this review a number of problems have been reported with the roll out of HOP on rail.

- Reports of queuing at machines resulting in passengers missing services
- Low level of reported VRD machine reliability. VRD unavailability has averaged 4.1% since 22 March 2013, with daily spikes of up to 8%. An improvement has been seen in May with an average unavailability of 2.9% month to date and reduced variability
- Waiting times for on line top up funds to clear onto cards has meant they were not always available at the time of travel
- Media reports of machines swallowing coins and a general lack of user friendliness e.g. no voice prompt for blind passengers.
- Instances where HOP cards were frozen when not tagging on and off properly during the initial phase while customers were getting used to new system

Rail Patronage by Month



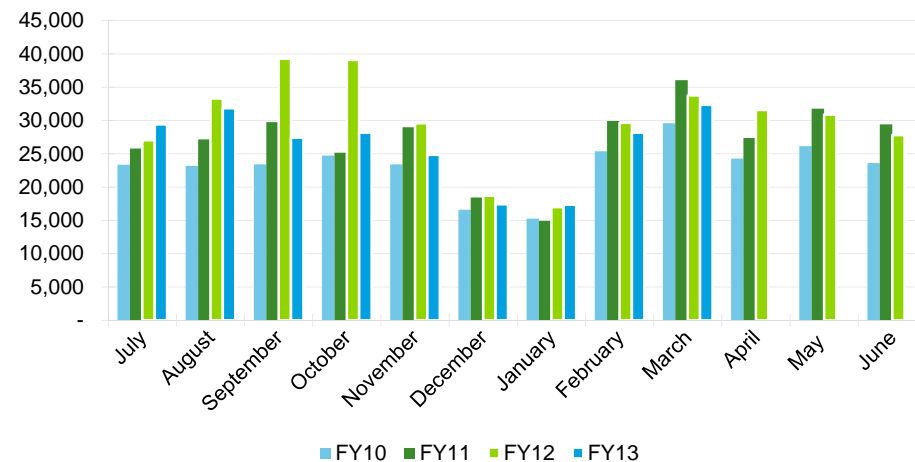
- Fraudulent use of gold card tickets.
- Limited real time information on VRD status and fault clearance is available to enforcement officers
- Thales response times for machine repairs may not be sufficient
- Concern that the new system was leading to increased levels of fare evasion
- Publicly reported monthly total patronage has reduced year on year over 2012 and is below targeted levels. This has been attributed to the introduction of HOP

Measured Monthly Patronage

Total monthly patronage in FY13 versus FY12 and FY11 is lower in some months but the measurement base is not consistent over time

- Total monthly patronage has fallen for FY12 versus FY13 since September 2012.
- Patronage was previously measured based on ticket sales and estimates of product usage with patronage “booked” at the time of ticket or pass sale up to the HOP introduction. Pre HOP patronage data assumes 43 trips for a monthly pass and 10 trips at the time of sale for a 10 trip ticket
- Patronage under HOP is measured at the time of travel based on real time data
- The monthly reported patronage has not been adjusted for
 - Differences in patronage measures pre and post HOP
 - Incidence of public holidays between years
 - Leap years
 - Assumptions on the number of trips on a monthly pass (43 assumed pre Hop versus approximately 30 for the month of March)
 - Transfer trips
 - Occurrence of special events, e.g. rugby games and concerts and other one-offs

Patronage per day



Inferred level of fare evasion

Fare evasion was previously estimated to be in the range of 6% to 10% as reported in Auckland Transport board papers but has previously been difficult to detect and estimate

- 6 monthly leakage surveys carried out by Veolia indicate leakage levels varied between 3% and 10% (average of 6.4%) between 2008 and 2012 prior to the HOP roll out as reported to the Auckland Transport Board
- Measures of fare evasion by on board ticket inspections were unreliable during peak times due to train overcrowding preventing thorough checks
- The system has been largely ungated providing significant opportunity for fare evasion particularly between outer stations. This was mitigated by on board ticket sales under the previous system
- Penalties for fare evasion have historically been light and are not considered a significant deterrent
- The previous paper based system provides further opportunities for passive fare evasion which is impossible to detect

Where are we now?

Normalised Patronage Data

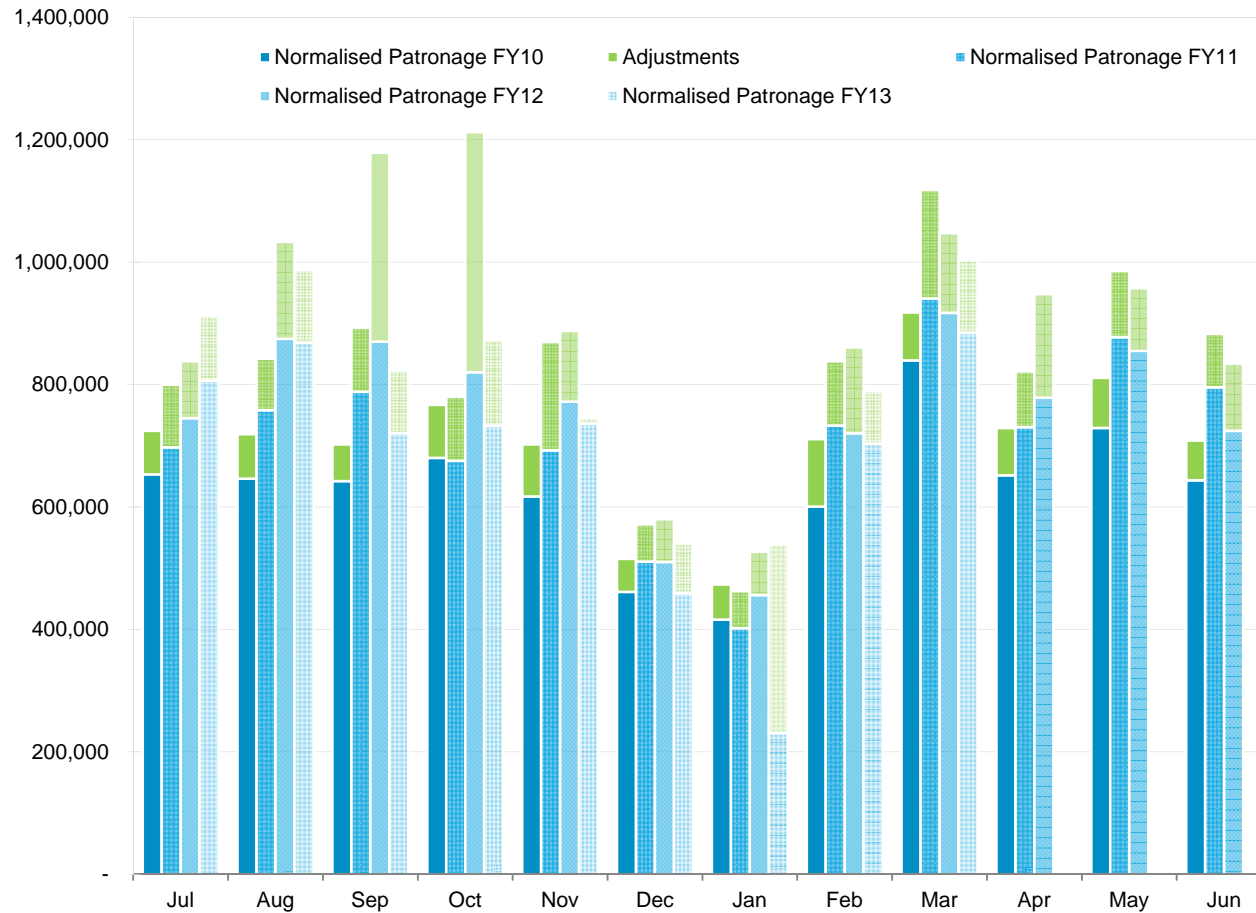
Total patronage data is not directly comparable pre and post HOP and between months and needs to be normalised

- Patronage data must be normalised in order to isolate any impact of the HOP implementation
- The data has been adjusted as follows:
 - Removal of events days: Eden park sports event, events at Vector arena or Telstra stadium
 - Patronage on public holidays was removed
 - Complimentary tickets either issued to staff or on lieu of a complaint were removed
 - Patronage for 29 February 2012, being a leap year effect, was removed
 - Lines Closures: all patronage during the period 25 December 2012 to 20 January 2013 where the lines were closed for electrification was removed
 - Monthly pass adjustment: assumption of 43 trips replaced with an average of 30 trip observed from the HOP data.
- All legacy 10 trip and monthly tickets that were bought in October 2012 would have been counted as journeys in October despite some of the journeys actually taking place in November and December
- We have effectively amortised those 10 trips and monthly tickets bought in October through the month and into November
- Removal of weekend patronage to focus on weekday patronage by month

Normalised Patronage Data

Adjustments isolate normal weekday patronage by month, excluding one-off events, measurement changes and calendar effects

Total Patronage and Normalisation Adjustments

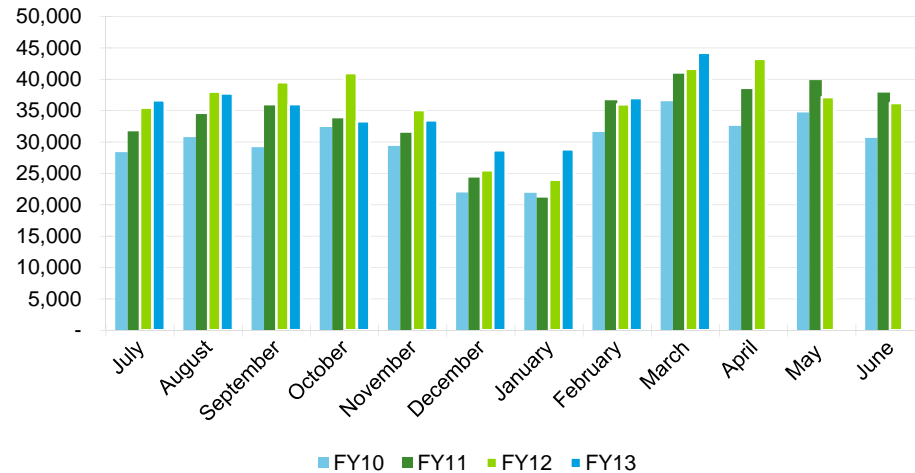


Normalised Patronage Data

Average normalised workday patronage has been calculated to provide a more directly comparable measure of rail patronage pre and post HOP

- The bulk of passengers travel on working weekdays however the incidence of workdays varies between equivalent months in different years
- Normalised monthly patronage has been divided by the total number of workdays in the month (excluding weekends, public holidays, and the days where the rail system was closed for electrification) to give average weekday patronage levels
- Average workday patronage for FY13 has exceeded all previous years since December and is higher under HOP than the previous paper ticket system
- September to October 2011 patronage is affected by the RWC. Given the incidence of RWC games during working weekdays it is not possible to accurately adjust for this event
- The FY12 patronage results in the RWC shoulder months of August and November 2011 also outperform FY13. This may be due to increased tourist rail travel during this period.

Normalised Patronage per Workday



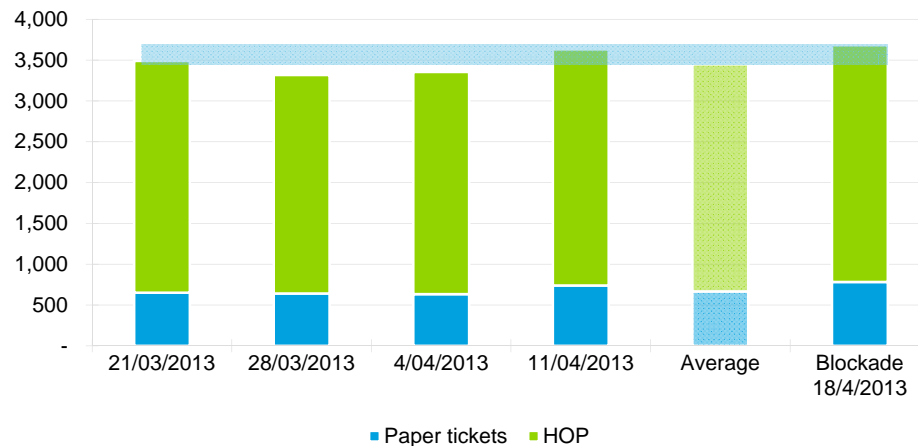
- Significant changes in patronage measurement occurred with the changeover to HOP in October 2012
 - 10 trip ticket and monthly pass sales ceased from 26 October 2012
 - There was a substantial surge in sales of these products immediately prior to their withdrawal
 - Patronage from these sales was “booked” in October but travel took place in November and December without appearing in HOP or paper transaction data

Fare Evasion

Levels of fare evasion are now being more accurately assessed

- Evasion has not been monitored as accurately and systematically in the past. Estimated evasion levels prior to the HOP launch are estimated to have been between 3% and 10% based on 6 monthly survey data from Veolia.
- Subsequently trial blockades and a partial Western Line blockade have now been completed
- Blockades require all passengers to purchase a ticket and compare revenues and patronage with previous equivalent days, giving an estimate of fare evasion
- Middlemore blockade required all passengers to tag on or purchase a ticket. Results were distorted by around 100 school students without a ticket
- Western line blockade identified 6.8% fare evasion. This should improve with greater penetration of HOP and station gating, however results from more recent blockades have been more volatile
- Veolia reports 4.2% fare evasion based on inspection data since 12 April following retraining of inspectors. This is based on a weekday inspection rate of around 17% and is a more reliable measure than blockade comparisons

Western Line Blockade



Survey Results pre HOP
→ Implied evasion ≈ 3% to 10%

Middlemore trial blockade 11/4/2013
→ Implied evasion 8.5-9.2%

Western Line blockade 18/4/2013
→ Implied evasion 6.8%

Ticket inspections since 12/4/2013
→ Implied evasion 4.2%

What is being done currently?

Current revenue protection and improvement programme

Auckland Transport is implementing a programme of further measures to increase revenue and reduce evasion

Increased monitoring and evasion penalties and improving VDR performance

- More hand held devices are being ordered for ticket officers
 - Additional 20 devices to be delivered in June to provide a device for each of the 55 inspectors
 - Further training has been undertaken to improve the accuracy of the capture of evasion data
- More VDR machines are on order to
 - Reduce queues
 - Reduce lead time for repair
- Increasing inspection staffing and frequency to target 1 in 3 inspection rates
- Improving machine interface to reduce transaction times and queues
- Increasing penalty fares from \$5 to \$10 to \$20
- Pursuing legislative change to allow enforceable penalties of \$200+

Improving network design to reduce opportunities for evasion

- Compliance at gated stations is very high with approximately 70% of all trips currently passing through gated stations at Britomart and Newmarket
- Plans to increase gating of stations starting with Manukau scheduled for late 2013 and Grafton, Henderson and New Lynn under consideration
- This will increase the proportion of trips going through a gated station to around 80%

Increase the incentives to move to HOP and online top up

- 10% price differential between paper tickets and HOP reflecting the previous discount for 10 trip tickets versus singles. Higher discount levels were considered unaffordable
- The retail top up network to be rolled out for buses will also be available to rail travellers
- Reduce the time delays for funds to appear on cards through “work around” additional data updates in addition to the existing overnight data run

Revenue protection measures

Driving improved fare recovery levels by increasing the profile of revenue protection activities

- A programme of blockades is underway and the frequency is being increased – opposite is the blockade schedule for the week beginning 30/4
- Blockades are being advertised but with dates unspecified on all trains to increase passenger awareness and influences their decision to buy a ticket
- Keeping these dates confidential gives AT flexibility as to when to hold blockades (i.e. sunny, non school holiday days) and the opportunity to cancel if they need to
- Evasion is highest amongst school students. A programme of meetings with school principles has been undertaken, emphasising the consequences of fare evasion for the offenders. This has proved successful to date based on recent blockade data

	Monday	Tuesday	Wednesday	Thursday	Friday
AM Peak (6:30 - 8:30) Station 1 Station 2			Papatoetoe Puhinui	Middlemore	Otahuhu Westfield
PM Peak (4:00 - 6:30) Station 1 Station 2		Manurewa Homai			

Some issues still remain

Customers have adapted to the new system but a number of problems still remain

Need to increase levels of off system purchase and remove barriers to on line use

- \$0.25 fee for online top up is a disincentive to one time on line top up (no fee for auto load)
 - The online method of payment is cheaper to run and will reduce queues at stations, yet there is no price differential to incentivise passengers to use this channel versus VRD's for one off top up
 - If customers are not using one off on line top ups it will be harder to move them to auto top ups despite the fee differential between the two
 - Once initial buying patterns are established they are hard to change based on TfL and Myki experience
 - Customers have to wait over 24 hours in some instances before money is available to use on their card
 - This drives higher demand for VRD's where transaction times remain long
- The written instructions on the website direct users to the machines in the first instance
- On line top up is not given any prominence on the website and in written material provided with HOP card purchases

VRD machine performance remains poor

- Queuing
 - There are still queues at station VRDs
 - Around 45 seconds to one minute transaction time at machines in part due to configuration and visual interface. This results in passengers missing their chosen service
- Different payment methods between machine locations
 - At some stations cash only machines are on one side of the platform and eftpos or credit card are on the other side
- Delay of real time data on machine outages
 - Limited real time information is available to ticket inspectors. Current emailed information is inadequate for effective enforcement
 - The Thales report provides infrequent lists of VRD faults and provides no update when faults are rectified
 - Reported machine outage rates are improving but remain a potential source of revenue leakage
 - Performance measures for Thales may not support adequate levels of service

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Other issues

- There is currently no off-station retail network available for topping up
- Purchasing patterns have been driven by the previous system where purchases were made on board or at the station which has seen limited take up of on line top up
- It is not clear the extent to which the bus retail network will be suitable and convenient for rail travellers or match the locations of the previous rail retail network
- The elapsed time since the shut down of the rail retail network may make it difficult to re-establish off network purchasing patterns
- Card registration processes are a further hurdle to on line top up
- Confusing product offering with HOP Snapper and AT HOP. Google searches take customers to HOP Snapper in preference to AT HOP

What has been the experience in other countries and how does that compare to HOP?

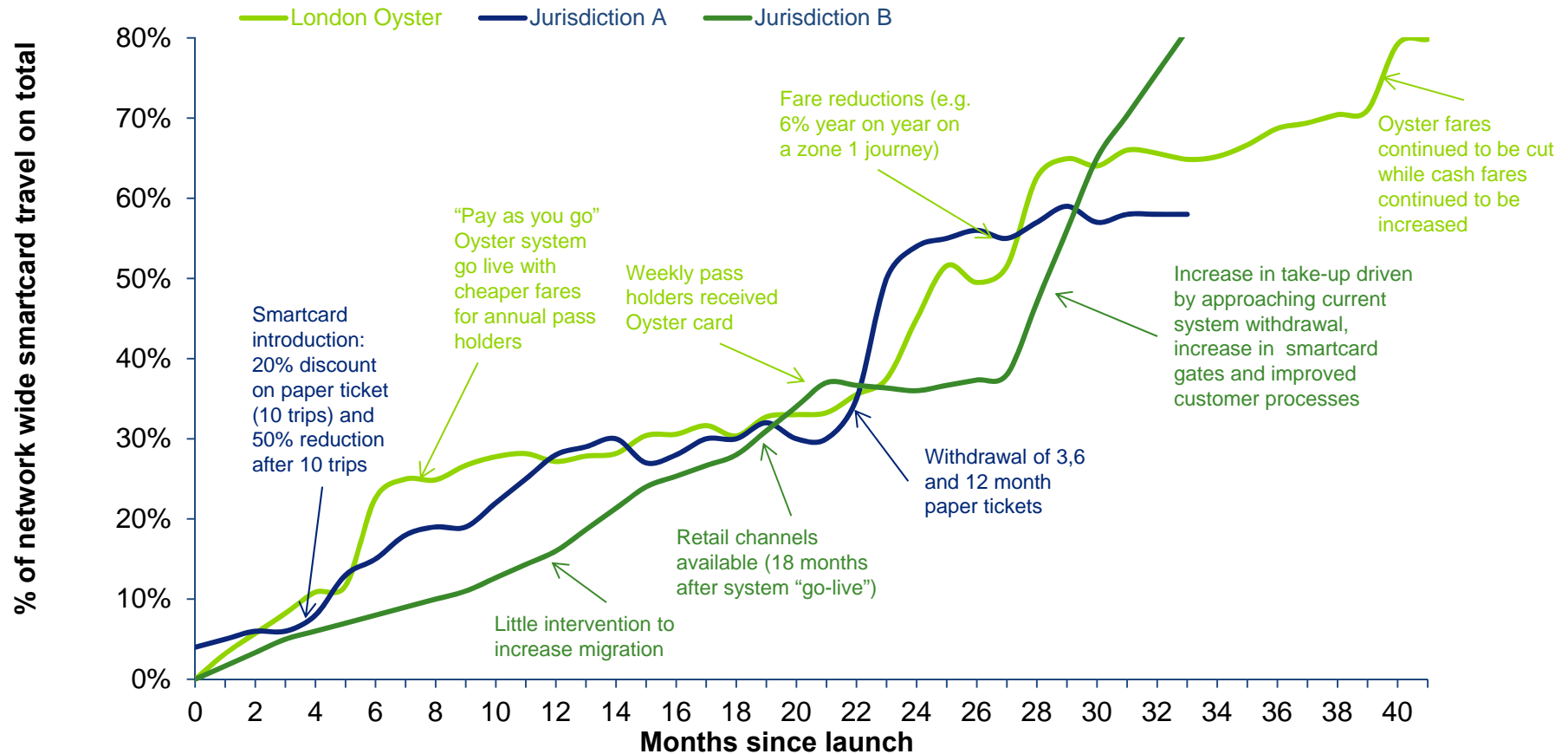
Case Studies of other integrated ticket implementations

- We have identified 5 case studies to use as a comparison to the HOP roll-out
- We have compared these roll out case studies with experience on HOP to date
- Where data is in the public domain we have named the case study and where the data is not public we have not named the specific case study client
- We have looked at key factors in each case study as a basis for comparison to HOP including:
 - Uptake rates and sales channels
 - Factors influencing uptake
 - Evasion rates
 - Measures taken to improve revenue collection rates



Roll out and take up comparison

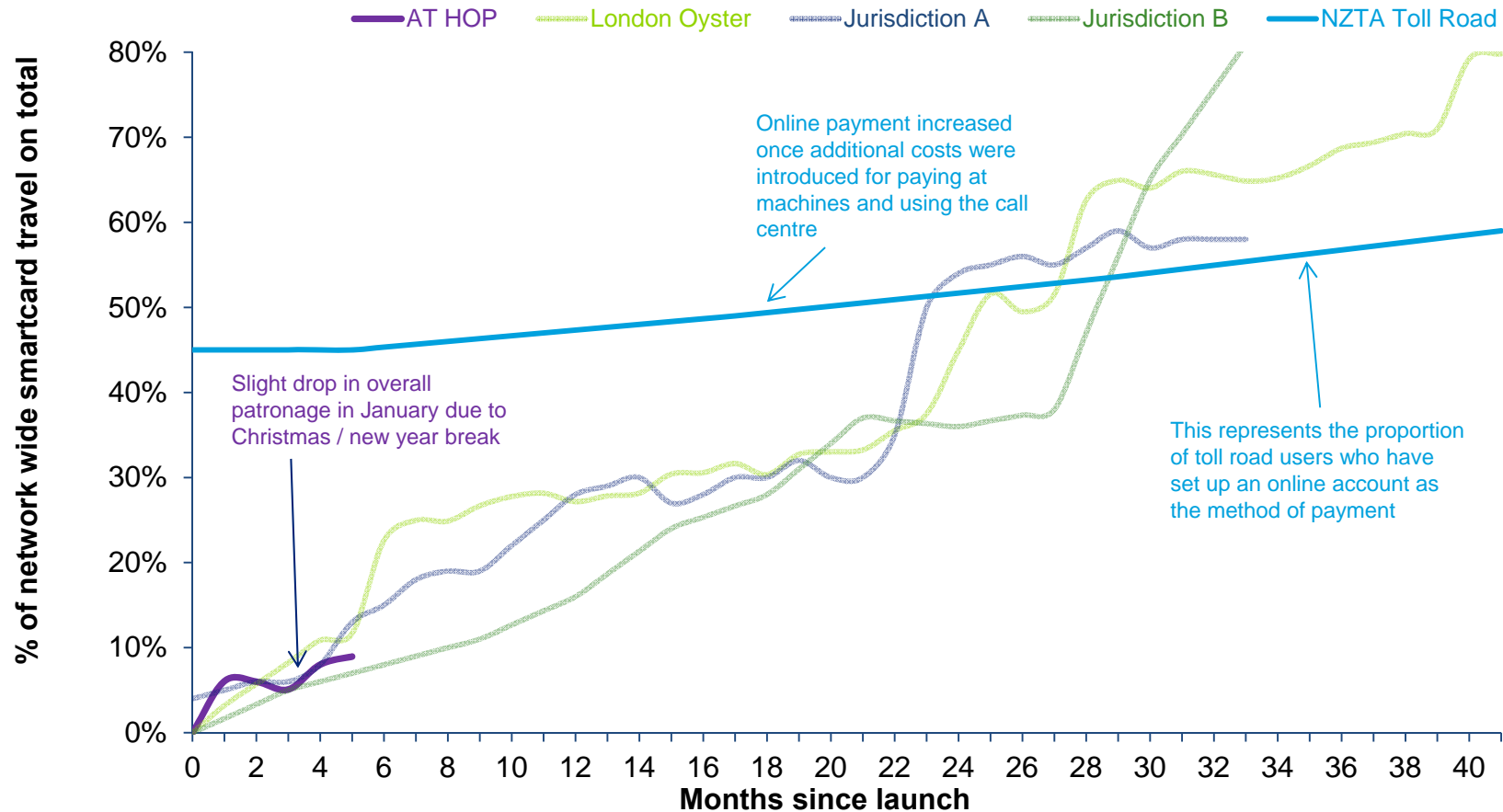
Other larger more complex jurisdictions have adopted a managed roll out by mode and progressive withdrawal of existing ticketing over a 24-36 month period



- London Oyster card encompasses bus and underground modes starting from October 2003
- Jurisdiction A: monthly figures are estimated based on average weekly week day travels and adjusted for seasonality
- Jurisdiction B metropolitan train starting from January 2010. Monthly figures estimated from quarterly data

Roll out and take up comparison

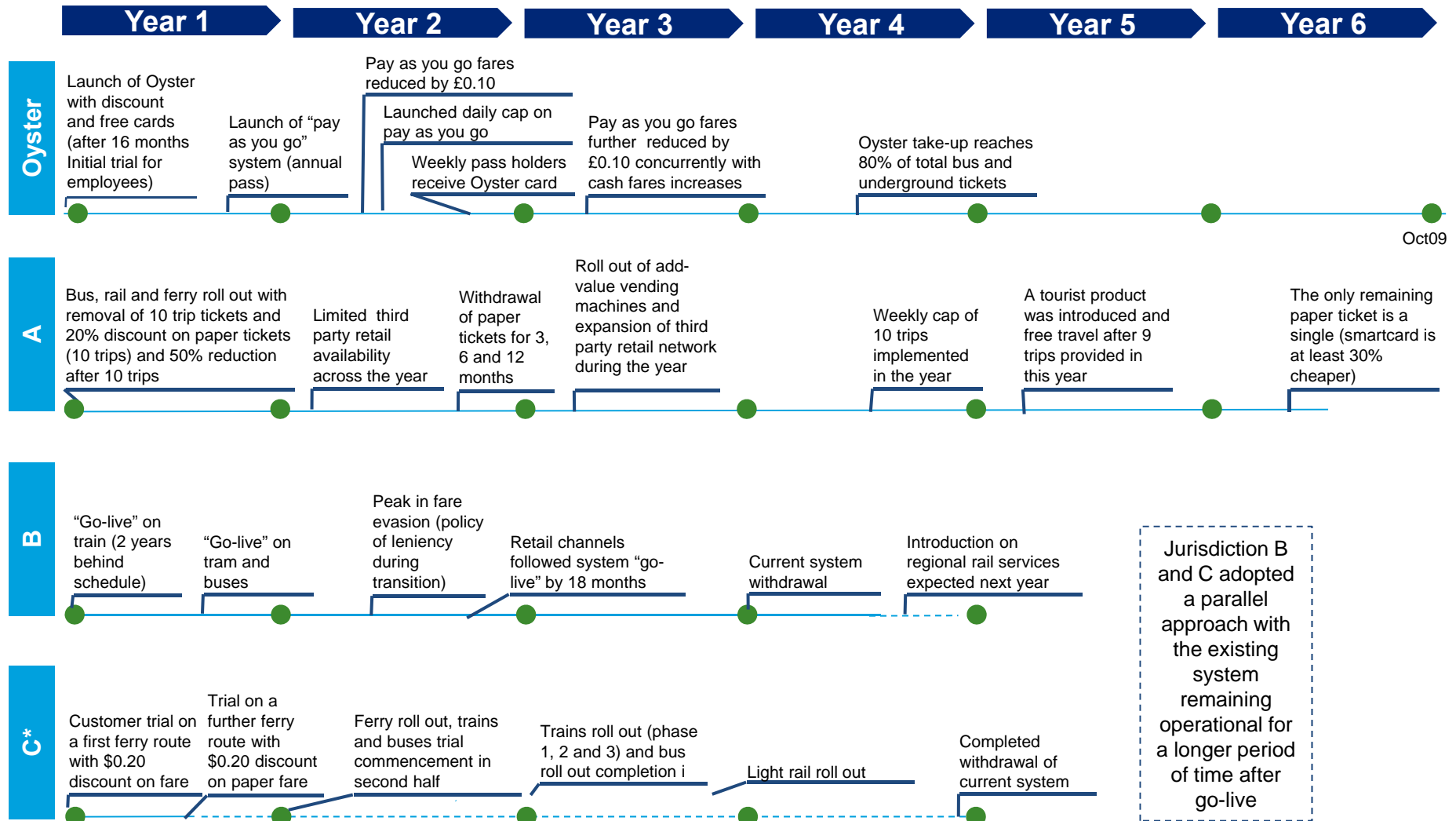
AT HOP take up to date is similar to other jurisdictions and should now accelerate faster with the roll out across bus



- AT HOP take up rate based on data in the "Trip_Calculator_2012_13.xlsx" file
- Ferry and bus patronage was extracted from the March Board Meeting Paper agenda item no.9
- NZTA figures are sourced from their operating reports on the website www.tollroad.govt.nz

Roll out comparative analysis – timeline

Price differential appears to have been a key contributor for increasing take-up of smartcard use in other jurisdictions

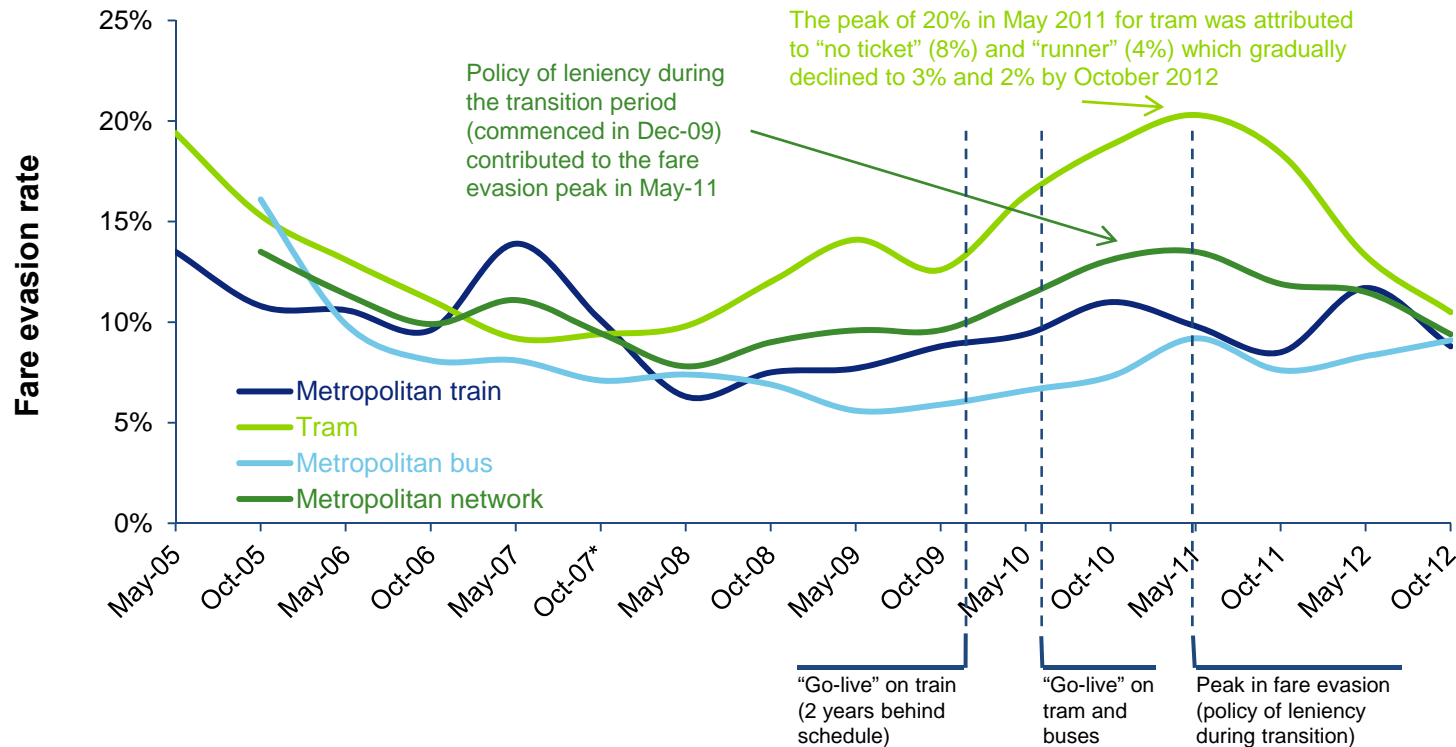


**The majority of the smartcard roll out is the planned approach (currently in progress)*

Fare evasion analysis – Myki

Fare evasion in Melbourne peaked in May 2011 due to a lenient approach during the transition period

Fare evasion - Myki



Media release (24 April 2013)

A new Public Transport Victoria revenue protection plan: reduce fare evasion to 7% through intensifying inspections on trams and buses, introduction of buying and topping up Myki cards on buses and drivers taking a tougher stance on passenger who do not touch on.

Rail and bus

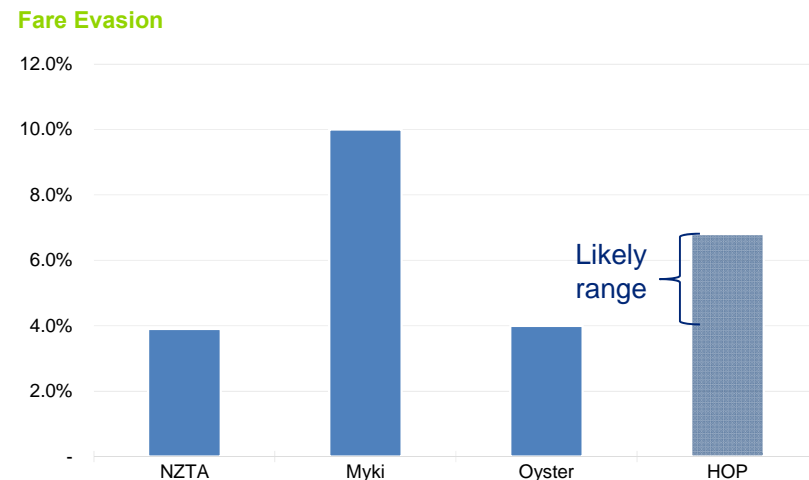
Fare evasion on rail during the transition period was not considered significantly higher than before the smartcard introduction. A temporary increase on fare evasion on buses was associated with people touching on and touching off immediately or at the next stop at the back of the bus (this has now been rectified through software changes).

Notes: October 2007 data have been estimated (average value between previous and following period) as survey data were not sufficiently robust to support calculation of a result for metropolitan train and metropolitan network. Definition: fare evasion constitutes those who are travelling without a ticket or without a valid concession entitlement and encompasses the following behaviours: no ticket, runner, full fare breach, no entitlement, hoverer/purchaser. Methodology: survey is conducted by teams of Authorised Officers accompanied by survey staff on weekdays and weekends at set times. Survey encompasses all the lines within the "commuter belt". Estimation procedures have enabled the calculation of a precision measure, in the form of 95% confidence interval, for each estimate.

Evasion rate comparison

Measurement and technology differences restrict comparability but AT evasion rates are better than the most directly comparable systems

- AT's rail fare evasion is below that of Myki which is the closest comparable system and has been achieved much more quickly – Myki ran at rates of 10 to 20% for over two years before stabilising at around 10%. It now has a stated target of 7%.
- Myki's fare evasion rate of around 10% is based on a rail system similar to AT's in that most of the stations are not gated
- The NZTA toll system is a completely closed system with number plate recognition of every vehicle referenced back to the central vehicle data base. Whilst not directly comparable it still has a revenue leakage of around 4%
- Oyster is a mostly gated system which contributes to a low rate of fare evasion. In the early comparable phases of Oyster, the fare evasion rate on the Underground was around 4%, then reducing to under 1.5% today. Residual evasion is mainly attributable to technology failures and misuse of concession tickets for the elderly and children



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