

# Revenue Impacts of Proposed Changes to TriMet's Transfer Policy

July 2013

# Proposed Changes to Policy

- Current Policy
  - Transfers valid for 2 hours
- Proposed Changes
  - Before 7:00 PM: Transfers valid for 3 hours instead of 2 hours
  - After 7:00 PM: Transfers valid until end of service day
- New Data Since Prior Analysis

# Revenue Impacts of Proposed Changes

- Direct effect
  - Decrease in revenue from additional free trips
- Indirect effect
  - Decrease in revenue as buyers of one-day passes switch to single cash fare
- Indirect effect
  - Increased sales because of lower perceived price

# Cash and Single-Ride Ticket Trips

- *Origination* first boarding on a trip from origin to destination (transfers do not count)
- Typical weekday:
  - 68,384 cash and ticket originations
    - 27.6% of all weekday originations
- Typical weekend day:
  - 50,096 cash and ticket originations
    - 36.6% of all weekend originations

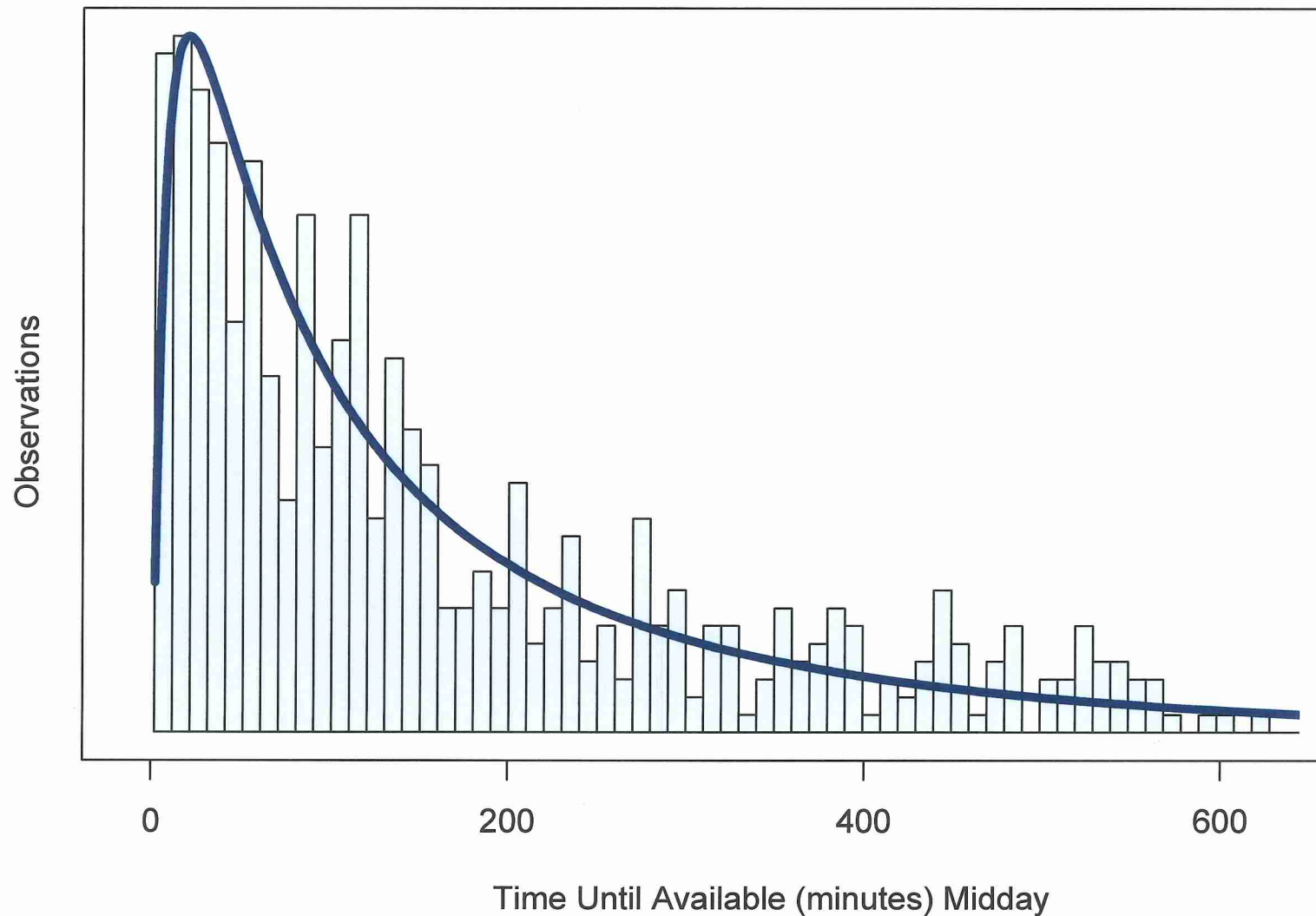
# Cash and Single-Ride Ticket Trips

Daily Cash and Ticket Originations		
Time period	Number	Percent
Weekday AM Peak (before 9:00 AM)	10,992	16.1%
Weekday Mid-Day (9:00 AM to 4:00 PM)	30,249	44.2%
Weekday PM Peak (4:00 PM to 7:00 PM)	17,324	25.3%
Weekday Evening (after 7:00 PM)	9,819	14.4%
<b>Weekday Total</b>	<b>68,384</b>	<b>100.0%</b>
Weekend Day (before 7:00 PM)	39,325	78.5%
Weekend Evening (after 7:00 PM)	10,771	21.5%
<b>Weekend Total</b>	<b>50,096</b>	<b>100.0%</b>

# Estimating Number of Free Trips Under Transfer Policies

- Time Until Available (TUA) is time between start of this trip and end of activity at destination
  - Distribution of times until available is different at different times of the day and on weekends
- Is this the last trip of the day?
- If  $TUA < \text{time transfer}$  is valid and this isn't the last trip of the day, next trip is free

# TUA Distribution for Mid-Day



# Calculation of Changes in Free Trips

	<b>Weekday Before 9AM</b>	<b>Weekday 9AM-4PM</b>	<b>Weekday 4PM-7PM</b>	<b>Weekday After 7PM</b>
% less than 120 minutes	11.5%	46.5%	36.9%	24.9%
% less than 180 minutes	22.5%	58.2%	48.1%	38.4%
% less than end of service	100.0%	100.0%	100.0%	100.0%
 % Not Last Trip of the Day	 82.3%	 57.1%	 17.7%	 12.2%
 % Free Under Current Policy	 9.5%	 26.5%	 6.5%	 3.0%
% Free Under Proposed Policy	18.5%	33.2%	8.5%	12.2%

# Calculation of Direct Revenue Losses

Calculation of Revenue Losses	Weekday Before 9AM	Weekday 9AM-4PM	Weekday 4PM-7PM	Weekday After 7PM	Weekend Before 7PM	Weekend After 7PM
Cash and Ticket Originations	10,992	30,249	17,324	9,819	39,325	10,771
% Free Current Policy	9.5%	26.5%	6.5%	3.0%	26.5%	3.0%
Number Free Current Policy	1,043	8,025	1,131	297	10,433	326
% Free Proposed Policy	18.5%	33.2%	8.5%	12.2%	33.2%	12.2%
Number Free Proposed Policy	2,039	10,057	1,474	1,194	13,075	1,309
Additional Free Trips per Day	996	2,032	343	897	2,642	983
Number of Days per Year	259	259	259	259	106	106
Additional Free Trips per Year	257,935	526,290	88,924	232,171	280,025	104,224
Average Revenue per Trip	\$1.88	\$1.88	\$1.88	\$1.88	\$1.88	\$1.88
<b>Change in Revenue</b>	<b>\$ (484,917)</b>	<b>\$ (989,425)</b>	<b>\$ (167,177)</b>	<b>\$ (436,481)</b>	<b>\$ (526,448)</b>	<b>\$ (195,940)</b>
<b>Total Over All Time Periods</b>	<b>\$(2,800,388)</b>					
From Before 7PM	\$(2,167,967)					
From After 7PM	\$ (632,421)					

# Potential Additional Revenue Losses from One-Day Pass Users

- One-day pass costs the same as two cash fares
  - 64% of passes used for just two trips
- If a user is intending to take two trips and can predict that they will get their second trip free, they could purchase a single cash fare instead of a day pass

# Potential Additional Revenue Losses from One-Day Pass Users

Potential Revenue Change from One-Day Passes	Weekday Before 9AM	Weekday 9AM-4PM	Weekday 4PM-7PM	Weekday After 7PM	Weekend Before 7PM	Weekend After 7PM
Number of one-day pass originations	6,475	13,971	8,239	5,246	19,482	5,447
% with two one-way trips	82%	64%	65%	62%	58%	68%
Number of 2-trip 1-day pass originations	5,310	8,941	5,355	3,253	11,369	3,707
% Half-Free Under Proposed Policy	12.4%	22.0%	17.8%	18.0%	22.0%	18.0%
Free Trips Under Proposed Policy	330	983	476	293	1,250	334
Number of Days per Year	259	259	259	259	106	106
Additional Free Trips per Year	85,581	254,565	123,253	75,836	132,466	35,369
Average Fare Revenue per Trip	1.88	1.88	1.88	1.88	1.88	1.88
Change in Revenue	(160,893)	(478,583)	(231,716)	(142,571)	(249,037)	(66,494)
Total Over All Time Periods	(1,329,295)					
From Before 7PM	(1,120,229)					
From After 7PM	(209,066)					

# Potential Offsetting Revenue Effects of Additional Sales

- Lower perceived price for transit trips could lead to more trips sold (“buy one, get one free”)
- Responsiveness of transit trips to fare price is called “price elasticity of demand” and has been studied
- Demand for transit is price-inelastic
  - Average price elasticity during peak periods:  $-0.20$
  - Average price elasticity during peak periods:  $-0.33$

# Potential Offsetting Revenue Effects of Additional Sales

Potential Revenue Change from Additional Fares	Weekday Before 9AM	Weekday 9AM-4PM	Weekday 4PM-7PM	Weekday After 7PM	Weekend Before 7PM	Weekend After 7PM
Paid Trips That Would Come With Free Subsequent Trip :	257,935	526,290	88,924	232,171	280,025	104,224
Average Cost of Two Trips Under Proposed Policy	\$1.88	\$1.88	\$1.88	\$1.88	\$1.88	\$1.88
Average Cost of Two Trips Under Current Policy	\$3.76	\$3.76	\$3.76	\$3.76	\$3.76	\$3.76
Ratio of Proposed Cost to Current	0.5	0.5	0.5	0.5	0.5	0.5
Assumed Price Elasticity of Demand	-0.20	-0.33	-0.20	-0.33	-0.33	-0.33
Percent Change in Quantity Demanded	14.9%	25.7%	14.9%	25.7%	25.7%	25.7%
Additional Paid Trips Demanded	38,354	135,264	13,223	59,671	71,970	26,787
Average Revenue per Paid Trip	\$1.88	\$1.88	\$1.88	\$1.88	\$1.88	\$1.88
Change in Revenue	\$72,106	\$254,296	\$24,859	\$112,182	\$135,304	\$50,359
Total Over All Time Periods	\$649,106					
From Before 7PM	\$486,565					
From After 7PM	\$162,541					

# Effects of OPAL's Proposal on Annual Revenue

- Direct effect
  - \$2.8 million decrease
- Potential effects
  - \$1.3 million decrease (one-day passes)
  - \$0.65 million increase (new sales)
- Estimates
  - Low:  $\$2.8 - \$0.65 = \$2.150$  million
  - High:  $\$2.8 + \$1.3 = \$4.100$  million
  - Direct plus all potential effects:  
 $\$2.8 + \$1.3 - \$0.65 = \$3.450$  million
  - Direct plus  $\frac{1}{2}$  of potential effects:  
 $\$2.8 + \frac{1}{2} (\$1.3 - \$0.65) = \$3.125$  million

# Net Estimated Changes in Revenue from Alternative Policies

Proposed Transfer Time		Low or High Estimate	Estimated Change in Revenue		
Before 7PM	After 7PM		Before 7PM	After 7PM	All Day
180 Minutes	Until End of Service	Low	(1,681,402)	(469,881)	(2,151,283)
		High	(3,288,196)	(841,487)	(4,129,683)
150 Minutes	Until End of Service	Low	(905,086)	(469,881)	(1,374,967)
		High	(1,777,918)	(742,726)	(2,520,644)
180 Minutes	180 Minutes	Low	(1,681,402)	(84,600)	(1,766,003)
		High	(3,288,196)	(322,931)	(3,611,127)
150 Minutes	150 Minutes	Low	(905,086)	(44,636)	(949,722)
		High	(1,777,918)	(170,380)	(1,948,298)

# Summary

- OPAL's proposal and alternatives all result in a substantial loss of revenue
- Analysis does not include costs to users resulting from reductions in service due to lost revenue