

# FARE ADJUSTMENT FORMULA AND MECHANISM REVIEW REPORT 2023

**MOVING FORWARD TOGETHER: BETTER RIDES,  
AFFORDABLE FARES AND SUSTAINABLE PUBLIC TRANSPORT**



# CONTENTS

1

**Foreword**

4

**Executive Summary**

9

**Chapter 1 - Background**

12

**Chapter 2 - Singapore's Public Transport System**

19

**Chapter 3 - Current Fare Adjustment Formula and Mechanism**

25

**Chapter 4 - Engagements**

41

**Chapter 5 - Recommendations**

56

**Acknowledgements**

57

**Annexes**

67

**Glossary of Terms**

# FOREWORD

2.5 million commuters depend on Singapore's public transport system daily, to get to their workplaces, schools, homes and social and recreational activities. Public transport is not only essential for our daily lives but also serves as a key enabler of economic activities and environmental sustainability for our city state. Compared to driving an internal combustion engine car, taking public transport reduces our carbon footprint by up to 90 per cent, making public transport one of the most sustainable means of transportation, after walking and cycling.

Let's take a quick look back at the past 10 years to see how far we have come.

Singapore's public transport connectivity, reliability and waiting times have improved over the years. From a single Mass Rapid Transit (MRT) line in 1987, commuters today enjoy six lines, served by 200 MRT stations and Light Rail Transit (LRT) stations. With this, 7 in 10 households are within 10-minute walk of a train station now. The public bus fleet has also expanded from 4,500 in 2013 to 5,800 today. The maximum scheduled frequency for buses during peak hours has improved from 30 minutes in 2013 to 15 minutes in 2023 for trunk services, and from 10 minutes in 2013 to 8 minutes in 2023 for feeder services.

Even as the public transport system underwent significant improvements over the years, we have kept public transport fares affordable, through productivity improvements and government subsidies. In fact, commuters have been spending significantly less on public transport as a share of their household income.

The share of monthly household income spent on public transport over the past 10 years has ranged from 2.4% to 3.1% for the second decile of household income (representing the lower-income commuter group) and from 1.7% to 2.2% for the second quintile of household income (representing the average public transport commuter).

## How has Singapore achieved these outcomes?

Singapore's public transport system is kept humming by about 22,000 public transport workers. They are the heroes of the public transport system with their tireless contributions to keep public transport services safe, reliable and well-maintained. Currently, there are four public transport operators in Singapore. They have the responsibility to continually invest in their operations which includes the maintenance of the system and paying their workers fair wages.

To keep fare affordable, the Government has been providing significant annual operating subsidies of more than \$2 billion for public transport. For every journey that commuters take, the Government subsidises more than \$1. This is in addition to the huge infrastructure investments incurred by the Government to build and expand the rail network and bus infrastructure.

An affordable, high-quality and financially sustainable public transport system is a shared responsibility among the Government, public transport operators, and commuters.

## The Twin Mandate of the Public Transport Council

Ensuring that commuters enjoy better rides with affordable fares while keeping the public transport system financially sustainable, has always been and remains the twin mandate of the Public Transport Council (PTC).

The fare adjustment formula and mechanism stewarded by the PTC provide a clear and objective basis for fare adjustments, by assessing the cost changes in the operation of the public transport system, while enabling the PTC to defer fare adjustments to future years when economic and social realities warrant it. This helps to maintain fare affordability.

The recent Fare Review Exercise 2022 is a case in point. Due to the global energy crunch, costs increased by 13.5% as reflected in the fare formula. In view of the significant increase and the increased costs of living in a high inflation economy post-COVID, 10.6% of the fare adjustment amount was deferred to moderate the fare increase faced by commuters. This required the Government to increase subsidies by about \$200 million to keep public transport operationally viable.

## The Review of the Fare Adjustment Formula and Mechanism

In August 2022, the Government tasked the PTC to undertake a review of the fare adjustment formula

and mechanism. This report is the outcome of the review exercise. As part of the review process, the PTC conducted surveys and engaged in numerous dialogues with commuters, the National Transport Workers' Union, public transport operators and academics. PTC also consulted our overseas counterparts to learn from their experiences.

It is very heartwarming for me to see Singaporeans and residents of diverse backgrounds, ages and abilities taking time to come for the public engagement sessions. The participants shared with one another on their aspirations for public transport in Singapore. They listened to one another and ideated solutions to address the challenges and opportunities to serve the common good. During the engagement sessions, almost all participants gave high marks for the public transport system in Singapore even as they wished for easing of peak hour crowding. It is encouraging to see many of them positive about the public transport system, and balanced and realistic in their views. Most agreed in principle that users of public transport need to pay for the use of the services, and the need for balanced cost-sharing between commuters and taxpayers to ensure the financial sustainability of the public transport system. They also felt that more could be done to help those with greater needs.

### Why is the review timely?

This review is timely but challenging. On one hand, the public transport system is dealing with an uncertain operating environment post-COVID, where ridership has not recovered to pre-COVID levels and the impact of flexible work arrangements on ridership remains unclear. At the same time, public transport operators are faced with a myriad of challenges which includes rising manpower costs and a local manpower crunch, as well as volatile energy prices resulting from the long tail of supply chain disruptions during the pandemic, made worse by the Russia-Ukraine conflict. Add to that an economy that is experiencing inflationary pressures with inflation at a 14-year high, driving up costs of doing business and costs of living. The Government also has to carefully balance its books and make difficult choices like raising the GST rate to help meet Singapore's expanding social, security and other needs. Given fiscal constraints, higher subsidies for public transport costs would have to be traded off against other public spending needs.

At the same time, the Government believes that we can and should aim high in building a better Singapore. In the Land Transport Masterplan 2040, the aspiration is for 20-Minute Towns and a 45-Minute City Singapore. We can look forward to an even better commuting journey experience.

It is therefore important to squarely address the issue of how to operate such a high-quality public transport system in a sustainable manner, while keeping fares affordable - which is PTC's twin mandate. What lies at the heart of the public transport system is not simply the buses and trains. It is the people - the commuters, public transport workers, taxpayers and policymakers - and how everyone plays his or her role. This partnership approach is what guides the review and the specific proposals. Together, we shall move forward and achieve our aspiration of better rides, affordable fares, and a sustainable public transport system - one that continues to bring good value to our people and fosters a caring commuting culture in all of us.

**Ms Janet Ang**

*Chairperson, Public Transport Council  
April 2023*

# EXECUTIVE SUMMARY



On 15 August 2022, the Minister for Transport, Mr S Iswaran, appointed the Public Transport Council (PTC) to conduct a review of the public transport fare adjustment formula and mechanism. Such reviews are typically conducted every five years<sup>1</sup>, to ensure that the formula and mechanism are responsive to changes in the industry and external environment and remain relevant.

A Workgroup was formed to undertake the review. This report covers the Workgroup's key observations and final recommendations, which have been endorsed by the PTC.

In conducting the review, the Workgroup was guided by the PTC's twin mandate of ensuring fare affordability and the financial sustainability of the public transport system.

Today, the PTC reviews public transport fares annually during the Fare Review Exercise. It uses a fare adjustment formula that considers the key cost drivers in providing public transport services, such as general operating costs, manpower costs, energy costs and growth in public transport network capacity. The formula provides a clear and objective basis for the fare adjustment quantum each year. This protects commuters' interests by limiting the allowable fare adjustment. In addition, the PTC has the flexibility to defer in part or in full the fare adjustment quantum yielded by the formula using the Deferred Fare Adjustment mechanism<sup>2</sup>, taking into consideration the economic and social situation each year.

<sup>1</sup> The last two reviews were conducted in 2013 and 2018.

<sup>2</sup> For any year where the fare adjustment amount granted is less than the maximum permitted, the remaining quantum will be carried over to subsequent Fare Review Exercises.

Both the fare adjustment formula and mechanism have worked well in balancing the need to ensure fare affordability and the need for fares to keep pace with changes in operating costs.

[Refer to Chapter 3 - Current Fare Adjustment Formula and Mechanism on Page 19.](#)

The Workgroup engaged widely, seeking a wide range of perspectives during the review process. This was done through surveys, public engagement sessions and dialogues with the public transport industry including the trade union, public transport operators, overseas public transport authorities and experts.

[Refer to Chapter 4 - Engagements on Page 25.](#)

### The Workgroup's Recommendations on the Fare Adjustment Formula and Mechanism for 2023-2027

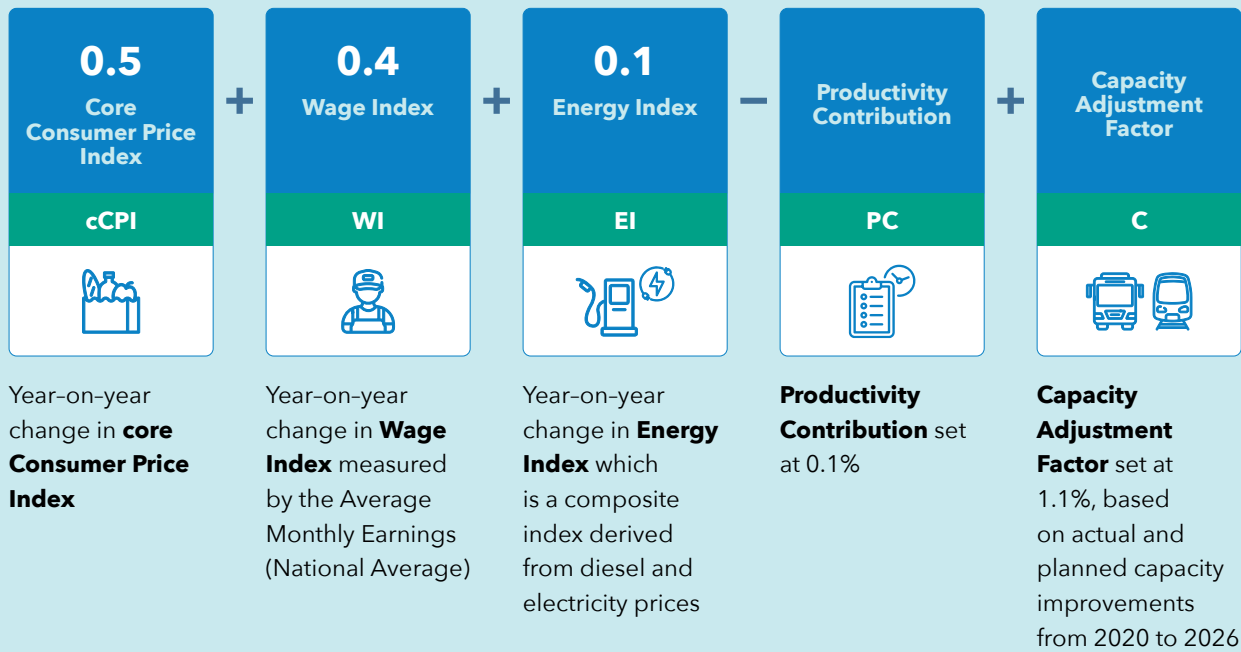
In its deliberations, the Workgroup took into consideration three major developments in the public transport landscape: (i) the inflationary environment, (ii) uncertainty in ridership patterns and recovery post-pandemic, and (iii) continuous enhancements to the public transport system with rising government subsidies, in order to make public transport more accessible, reliable and inclusive.

Against this backdrop, the Workgroup affirmed the current approach of adjusting fares annually based on the fare adjustment formula and mechanism.

The formula ensures fare affordability while capturing changes in operating costs. Each formula component and the mechanism was carefully deliberated. The key recommendations are as follows:

- ① **Retain the core Consumer Price Index, Wage Index and Energy Index** at their existing weightages in the updated formula, as these indices continue to closely reflect the operating cost structure of the public transport industry;
- ② **Change the Productivity Extraction**, which is based on sharing of public transport operators' realised productivity savings with commuters, to a **Productivity Contribution** fixed at 0.1% for the next five years, to maintain the expectation for public transport operators to strive for continuous productivity improvements; and
- ③ **Replace the Network Capacity Factor**, which is based on annual changes in public transport network capacity and ridership, **with a Capacity Adjustment Factor**, fixed at 1.1% for the next five years, based on actual and planned capacity improvements from 2020 to 2026.

The proposed fare adjustment formula, to be applied from 2023 to 2027, is as follows:



as compared to the fare formula implemented from 2018 to 2022:

$$0.5 \text{ cCPI} + 0.4 \text{ WI} + 0.1 \text{ EI} - \text{PE} + \text{NCF}$$

where:

PE = Productivity Extraction set at 0.1%, based on half of the productivity gain achieved by the public transport operators.

NCF = Year-on-year change in Network Capacity Factor which measures capacity provision relative to commuter demand for the entire public transport system.



The key aspects of the recommendations are elaborated below.

### Energy Index

During the review, the Workgroup deliberated at length and examined the options to reduce volatility of the Energy Index (EI). It decided to retain the EI as it is currently formulated, to accurately reflect the electricity purchase options of public transport operators, and to ensure that changes in this index are consistently captured during this uncertain period.

### Productivity Contribution

The prevailing Productivity Extraction (PE) is intended for commuters to benefit by sharing the productivity gains of the public transport operators in the form of a lower formula output. During the Fare Adjustment Formula and Mechanism Review in 2018, PE was set at 0.1%, based on half of the productivity savings realised by the public transport operators from 2012 to 2016.

The last five years saw exceptional circumstances with variable ridership and significantly higher costs incurred by the public transport operators resulting in negative productivity gains, which would have meant a zero PE value. The Workgroup felt that it is important that operators continue to be cost-efficient and strive for continuous productivity improvements and thus recommends shifting the approach from sharing public transport operators' realised productivity savings with commuters, to setting an expected Productivity Contribution at 0.1% for the next five years (2023-2027).

### Capacity Adjustment Factor

The prevailing Network Capacity Factor (NCF) was intended to track cost movements due to public transport capacity changes relative to commuter demand. It reflected the recurrent operating costs due to capacity adjustments, such as opening new Mass Rapid Transit (MRT) lines and running new bus services, as well as increasing the frequency of trains and buses so that they are less crowded.

However, NCF was not designed to track short-term exceptional fluctuations in demand and supply such as during the COVID-19 pandemic. The drastic fall in ridership resulted in an extremely high NCF, leading the PTC to exclude NCF contribution from February to December 2020 and for the entire year of 2021 in the computation of the 2021 and 2022 fare adjustment quantum respectively.

In view of the uncertainty in the pace and extent of the recovery of ridership post-COVID and to better cope with any future unexpected volatility in ridership, the Workgroup recommends replacing NCF with a Capacity Adjustment Factor (C). C will be fixed at 1.1% for five years (2023-2027), based on the public transport network capacity growth from 2020 to 2026.

### Deferred Fare Adjustment Mechanism

The Deferred Fare Adjustment mechanism allows the PTC to exercise discretion to defer in part or in full the fare adjustment quantum to subsequent Fare Review Exercises to moderate fare increases, with the intention that these deferred amounts would eventually be implemented. This flexibility has enabled the PTC to shield commuters from sharp fare increases, such as during the COVID-19 pandemic, or when energy prices spiked in the recent Fare Review Exercise 2022, and smoothen the fare adjustments. Hence, the Workgroup recommends to retain the Deferred Fare Adjustment mechanism, while being mindful that deferred fare increases would need to be funded by additional government subsidies paid by taxpayers, in order to ensure the financial viability and sustainability of the public transport system.

### Ensuring Better Rides, Affordable Fares, and Sustainable Public Transport

Taken as a whole, the recommendations will allow the fare adjustment formula and mechanism to better respond to the macroeconomic and operating environment while continuing to ensure fare affordability for all commuters, particularly vulnerable groups. The proposed fare adjustment formula, to be applied from 2023 to 2027, will form the basis for the PTC's deliberations at each year's Fare Review Exercise from 2023 to 2027.

One of the PTC's key priorities is to ensure that public transport fares remain affordable, especially for lower-income households. The PTC will continue to carefully assess the impact of any fare adjustment on fare affordability at each Fare Review Exercise and consider using the Deferred Fare Adjustment mechanism, and any additional measures as

appropriate to mitigate the impact on vulnerable commuter groups.

The Workgroup appreciates that the Government is already providing significant annual operating subsidies for public transport, to the tune of over \$2 billion or more than \$1 for every journey taken, which has gone a long way towards ensuring fare affordability for commuters. The Workgroup foresees the need for the Government to continue providing sufficient support for lower-income or needy groups to help them cope with increases in their public transport expenditure. Nevertheless, the Workgroup recognises that it will not be sustainable to keep increasing the subsidies, as it would be borne by current and future taxpayers.

Singapore is fortunate to have an affordable, high-quality and financially sustainable public transport system. To maintain this and allow the PTC to discharge its twin mandate will require close partnership and shared responsibility across the Government, public transport operators, and commuters: where the Government plans and funds the development of public transport infrastructure, and subsidises operating costs; operators operate services safely, reliably and cost-effectively under the Land Transport Authority's (LTA) and PTC's regulatory oversight and commuters pay fares to cover an appropriate share of operating costs. This will ensure the continued viability and quality of the public transport system, and enable it to meet our daily commuting needs, 365 days a year.

# BACKGROUND

## AT A GLANCE

**This chapter provides background on the formation of the Fare Adjustment Formula and Mechanism Review Workgroup (“Workgroup”) and explains the Workgroup’s approach to review and propose improvements to the fare adjustment formula and mechanism.**

Since 1998, the PTC has been using a fare adjustment formula and mechanism to guide its deliberations on fare adjustments (refer to [Annex A](#) for the evolution of the fare adjustment formula).

The formula provides a clear and objective basis to determine the maximum amount of fare changes that can be granted (fare adjustment quantum) each year during the annual Fare Review Exercise.

Subsequently, a rollover mechanism was introduced in 2013. The mechanism allows the PTC to exercise

discretion to defer part of or the entire fare adjustment quantum arising from a Fare Review Exercise to subsequent Exercises. In doing so, the PTC would consider the prevailing economic and social conditions and the affordability of fares, and assess whether there is a need to moderate the impact on commuters. [Annex B](#) reflects the fare formula output, fare adjustment quantum and adjustments granted over the last decade, when this mechanism was used.



Together, the fare adjustment formula and mechanism enable the PTC to deliver on its twin mandate of ensuring affordable fares while keeping the public transport system financially sustainable.

The PTC also tracks the Public Transport Affordability Indicator (PTAI) which measures public transport expenditure as a percentage of household income to assess fare affordability for lower-income commuter group (represented by the second decile of household income) and the average public transport commuter (represented by the second quintile of household income).

In addition, the PTC carefully considers the tools at its disposal to cushion the impact of fare adjustments for specific concession groups and heavy users of public transport (refer to [Annex C](#)). This approach has worked well to balance fare affordability and financial sustainability.

### **The Fare Adjustment Formula and Mechanism Review 2023**

Once every five years, the fare adjustment formula and mechanism are reviewed to ensure that they remain relevant and responsive to the changes in the public transport industry and the external environment.

On 15 August 2022, Minister for Transport S Iswaran appointed the PTC to conduct a review of the public transport fare adjustment formula and mechanism with the following terms of reference:



*Review the effectiveness of the current fare adjustment formula and mechanism, in consideration of the changes in the public transport industry and commuting patterns.*



*Propose how we can better maintain the balance to keep public transport fares affordable while ensuring the financial sustainability of the public transport system.*

The PTC formed a Workgroup, comprising the following members, to undertake the review.

### Chairperson

Ms Janet Ang  
Chairperson, Public Transport Council

### Members

Mr Abdullah Shafiie Bin Mohamed Sidik  
Chairman, Siglap South Community Centre  
Management Committee

A/P Lynette Cheah  
Associate Professor of Engineering Systems,  
Singapore University of Technology and Design

Dr Vincent Chua  
Retired, formerly Associate Professor at the  
Singapore University of Social Sciences

Ms Lee Huay Leng  
Editor-in-Chief of Chinese Media Group,  
SPH Media Limited

Mr Lim Boon Wee  
Deputy Secretary (Services), Ministry of Education

Mr Mak Mun Whai  
General Secretary of National Transport Workers'  
Union

Mr Tan Soo Nan  
Executive and Non-Independent Director of Raffles  
Medical Group and Raffles Health Insurance Pte Ltd


Mr Yeo Teck Guan  
Senior Group Director (Public Transport), Land  
Transport Authority

Mr Tan Kim Hong  
Chief Executive, Public Transport Council

### Review Approach

The Workgroup consulted widely to better understand the concerns and perspectives of the various stakeholder groups. The Workgroup surveyed 1,000 commuters, held public engagement sessions comprising 24 focus groups with representation from different commuter groups, and conducted dialogue sessions with representatives from the trade union, public transport operators and academics. The Workgroup also engaged with public transport authorities and operators in other cities to learn from their experiences.

Overall, the Workgroup supported by the PTC staff held close to 30 meetings, engagement sessions and dialogue sessions over 70 hours in the last eight months to deliberate on the issues and considerations for the fare adjustment formula and mechanism. These are elaborated in the next few chapters.

 Refer to Chapter 4 - Engagements on Page 25.

# SINGAPORE'S PUBLIC TRANSPORT SYSTEM

## AT A GLANCE

**This chapter gives an overview of the value of public transport, highlights key improvements and changes to the Singapore public transport system before and during the COVID-19 pandemic, as well as post-pandemic.**

### The Value of Public Transport

Singapore's public transport system serves about 2.5 million commuters every day. It is an essential service and the backbone of mobility enabling everyone to go about their daily lives. The public bus and train sectors employ about 22,000 workers in total. A good public transport system keeps our city liveable and green, and enables an efficient economy.

Public transport has evolved over the years, contributing significantly to the development of Singapore.

Today's public transport system is accessible and inclusive, serving commuters of every age, from all socioeconomic segments and of different physical abilities. The percentage of the population who use

public transport is high. In 2019, 64% of motorised journeys during daily peak hours were made on public transport. By the 2030s, with the expanded network that the Government is building, this is expected to increase to 75%. Public transport is a shared experience for many Singaporeans across different backgrounds. It also enables people to meet and connect with one another, and helps to reduce social isolation and build relationships and communities.

Through a concerted effort across different government agencies to prioritise and seamlessly integrate Walk Cycle Ride modes of transport, users of public transport are now also more likely to walk and cycle the "last mile" to get to and from public transport nodes. This contributes to active mobility and supports the Government's vision for Healthier SG.



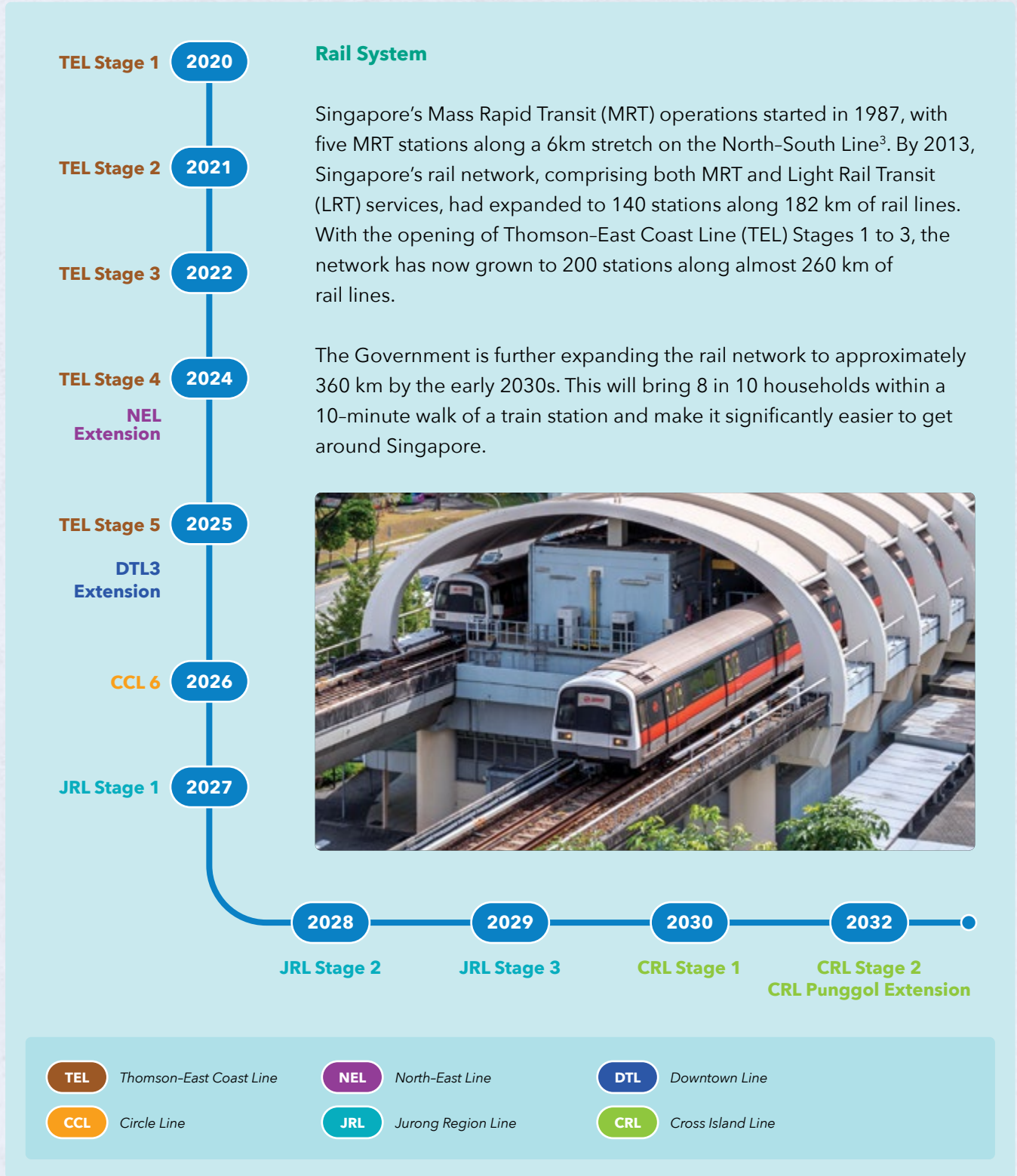


In addition, public transport contributes to a greener city. It offers a lower-carbon alternative to private car trips. Greater reliance on public transport is a critical part of our response to climate change and our decarbonisation efforts.

Furthermore, when more people take public transport, less land is needed for roads and parking thereby allowing more space to be freed up for other uses, including social and recreational purposes. Traffic congestion and pollution are also reduced as a result.

Finally, public transport enables economic development by connecting people to schools, training, jobs, and other services, and promotes social equity by reducing the barriers to accessing economic opportunities. An efficient public transport system also contributes to Singapore's economic productivity, by reducing the time needed for travel.

### An Overview of Singapore's Public Transport System



<sup>3</sup> From Yio Chu Kang MRT station to Toa Payoh MRT station.



Rail service reliability has been improving. Since 2017, significant investments were made to acquire new trains, renew the rail systems (e.g. signalling system, power supply system), initiate mid-life upgrading (e.g. refurbishment of trains), intensify maintenance, and expand the technician workforce. As a result, the rail system has become more reliable. Mean Kilometres Between Failures (MKBF), a measure of how frequently disruptions occur, has improved significantly from 94,000 train-km in 2013 to 690,000 train-km in 2018. Since 2019, MKBF has exceeded the 1 million train-km target. In the last five years, the number of service delays exceeding 30 minutes ranged from 3 to 9 delays per year for the entire MRT network.

### Public Bus Services

Public bus services form the other significant part of the public transport system. Buses play an integral role in our hub-and-spoke system, connecting commuters from their origins to transport hubs, and from transport hubs to their destinations.

Before 2012, public buses were run by two private companies without subsidy from the Government. On a commercial basis, it was difficult for the bus operators to improve service levels considerably. In 2012, to significantly expand bus capacity, enhance service levels and improve connectivity to benefit commuters, 1,000 new buses and 80 new bus routes were introduced, as part of the Bus Service Enhancement Programme (BSEP) funded by the Government.

In 2016, the bus industry transitioned to the Bus Contracting Model (BCM) where the Government retains the fare revenue and operators are paid a service fee to operate and maintain the bus services. Since then, the scheduled frequency of all services has been enhanced to 15 minutes or less during peak periods, with at least half scheduled to arrive every 10 minutes or less. Feeder services are scheduled at even shorter intervals of no more than 8 minutes.



*To date, about 60 electric buses and 50 hybrid buses are in service with another 400 electric buses planned to replace diesel buses reaching their statutory lifespan from December 2024 onwards. The LTA is committed to having a 100% cleaner-energy public bus fleet by 2040, with 50% to be electric buses by 2030.*

### During Peak Periods

**100%**

Basic Bus Services  
Scheduled at **15 Minutes**  
or Less Intervals

**50%**

Basic Bus Services  
Scheduled at **10 Minutes**  
or Less Intervals

**100%**

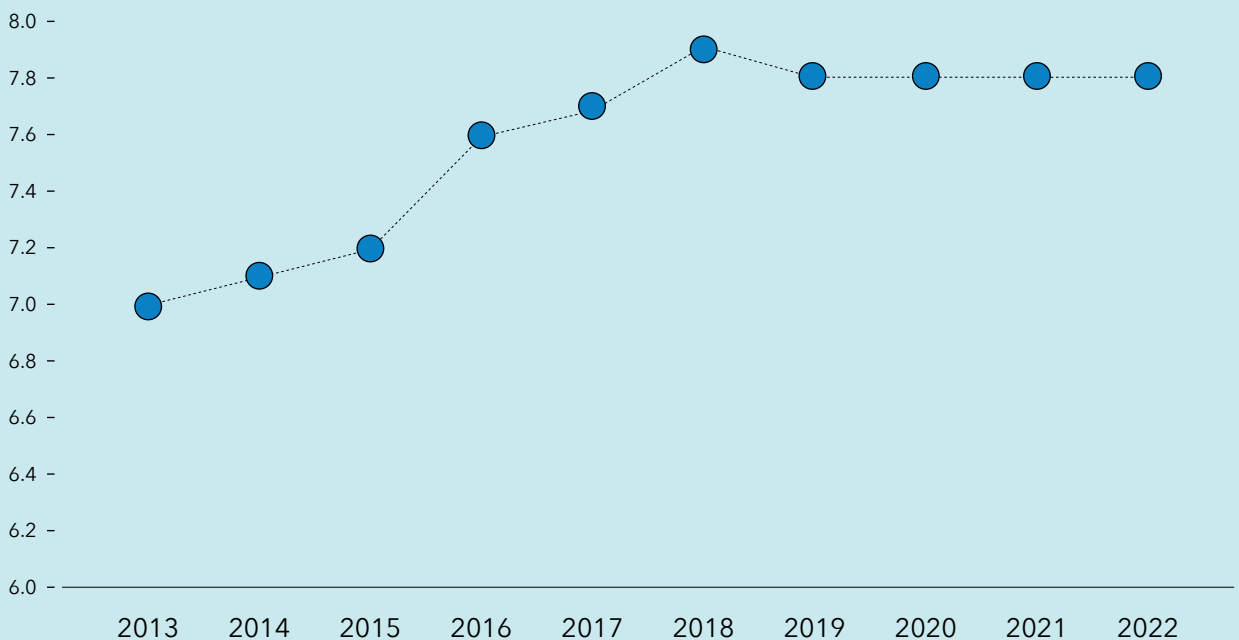
Feeder Bus Services  
Scheduled at **8 Minutes**  
or Less Intervals

### Commuter Satisfaction with Singapore’s Public Transport

Commuter satisfaction with public transport services improved substantially from 2013 and has remained high since (refer to Figure 1). According to the 2022 annual Public Transport Customer Satisfaction Survey (PTCSS), 9 in 10 commuters were satisfied with the public transport. A similarly high satisfaction was seen in the Public Transport Survey for Persons with Disabilities.

Figure 1

**PTCSS - Mean Satisfaction Score of Public Transport Services**



Singapore’s public transport system is also consistently ranked among the best in the world. McKinsey’s 2021 report named Singapore as the leading city out of 25 major cities in public transport affordability<sup>4</sup>, public transport use, as well as safety

and sustainable development. According to an Oliver Wyman Forum study in partnership with University of California, Berkeley in 2022, Singapore ranked fourth for Urban Mobility Readiness and for Public Transit<sup>5</sup>.

4 The comparison includes monthly travel card prices and taxi fare per kilometre relative to the average individual income level of city residents and the number of passenger categories entitled to fare discounts. Source: [https://www.mckinsey.com/~media/mckinsey/business\\_functions/operations/our\\_insights/building\\_a\\_transport\\_system\\_that\\_works\\_new\\_charts\\_five\\_insights\\_from\\_our\\_25\\_city\\_report\\_new/elements-of-success-urban-transportation-systems-of-25-global-cities-july-2021.pdf](https://www.mckinsey.com/~media/mckinsey/business_functions/operations/our_insights/building_a_transport_system_that_works_new_charts_five_insights_from_our_25_city_report_new/elements-of-success-urban-transportation-systems-of-25-global-cities-july-2021.pdf).

5 Source: <https://www.oliverwymanforum.com/mobility/urban-mobility-readiness-index.html>.

## Financing of Public Transport

With the enhancements to the public transport system in the last decade, commuters now enjoy better public transport connectivity and accessibility. These enhancements have come at a higher cost to the system, and fares have not kept pace. Over the last decade, operating costs for the public transport system rose by an average of 7% per annum. Fare adjustments have ranged from -4.2% to 7.0%, i.e. an average of 1% per annum (refer to [Annex B](#) for the quantum of annual fare adjustments). As ridership only grew slightly, this created an increasing gap between cost increases and fare revenue increases, which required the Government to step in with significant operating subsidies. This was further compounded when ridership fell sharply due to the COVID-19 pandemic.

Currently, the Government subsidises public transport services by more than \$2 billion annually i.e. more than \$1 for every journey, on top of fully funding all public transport infrastructure (e.g. construction of MRT stations, bus interchanges, bus stops etc). The Workgroup noted that this contrasts with the previous approach where the Government funded only the construction of public transport infrastructure and operating costs were recovered fully by the operators through fares and non-fare revenue.

Over the next decade, the Government plans to improve connectivity and convenience for commuters by expanding the rail network and costs are expected to rise in tandem. It will not be sustainable to keep increasing the subsidies, which would be borne by current and future taxpayers. We must continue to strike a balance in cost sharing between commuters, who directly benefit from the enhancements to the network, and taxpayers in general. Only with this partnership approach can Singapore continue to have a viable public transport system that serves Singaporeans' transport needs now and in the future.



### Government

Plans and funds the development of public transport infrastructure, and regulates public transport operators. Government also ensures fare affordability by subsidising public transport operating costs when fare revenue does not fully cover costs.



### Public Transport Operators

Operate services safely, reliably and cost-effectively, under LTA's and PTC's regulatory oversight. The operators must continue to innovate and be efficient in their operations, and derive productivity gains. They also need to invest in the training and development of public transport workers and offer competitive wages to attract and retain workers (refer to [Annex D](#) for more on public transport operators' role).



### Commuters

Pay for public transport services through fares. Adult commuters shoulder some of the cost of lower fares for concession groups. There is a need to ensure that public transport subsidies borne by taxpayers, which cover the shortfall in fare revenue, are sustainable.

### Impact of COVID-19 and Economic Realities

The COVID-19 pandemic severely disrupted the public transport industry. At the height of the pandemic, daily bus and rail ridership fell by over 70%. Despite the fall in ridership, operators and public transport workers continued to operate public transport services so that essential workers could travel safely and conveniently. The Government also provided additional subsidies and support schemes to ensure continuity of public transport services.

Since the easing of safe management measures in April 2022, public transport ridership has gradually increased. As of January 2023, ridership has recovered to about 90% of pre-pandemic levels. However, the ridership recovery has been uneven. For example, public transport journeys in the morning peak to Woodlands and Tuas are already back to pre-COVID levels but journeys to the Downtown Core in the morning peak are at about 70% of pre-COVID levels. Due to adjustments in work practices, ridership and travel patterns may not have fully stabilised yet.

Meanwhile, the public transport operators encountered a new wave of challenges, from high inflation and rising manpower costs to volatile energy prices.

Looking back, the public transport system has journeyed through a period of both planned structural change and unanticipated disruptions. Given the circumstances, the Workgroup is of the view that it has collectively weathered these challenges relatively well.

### Uncertainties in the Future of Public Transport

On the supply side, the higher inflationary environment has driven up the cost of public transport services by larger increases than before. To keep the public transport sector attractive to workers amidst a tight labour market, public transport operators will also need to pay higher wages. As the public transport system expands and becomes more accessible and well-connected, the cost base will inevitably grow.

On the demand side, there is uncertainty of how the ageing population and changing travel patterns due to the shift towards flexible work arrangements will affect ridership. On the other hand, we are confident that ridership and overall public transport mode share will increase in the longer-term, as more Singaporeans choose to take public transport as the network expands and accessibility improves, and in support of environmental sustainability.

These uncertainties weighed heavily on the Workgroup's minds. During the review, the Workgroup strove to ensure that the fare adjustment formula and mechanism will best reflect the changes in costs of operations and enhancements to the public transport system while keeping fares affordable for commuters amidst these challenges ahead.

# CURRENT FARE ADJUSTMENT FORMULA AND MECHANISM

## AT A GLANCE

This chapter gives an overview of the current fare adjustment formula and mechanism, the Workgroup's assessment of how the current formula and mechanism have delivered on their purpose, and areas to be addressed in the review.

### Review of the Fare Adjustment Formula and Mechanism

The fare adjustment formula and mechanism are reviewed once every five years to ensure that they are responsive to changes in the public transport industry and external environment. The fare adjustment formula, valid from 2018 to 2022, comprises year-on-year change in core Consumer Price Index (cCPI),

year-on-year change in Wage Index (WI), year-on-year change in Energy Index (EI), as well as a Productivity Extraction (PE) and Network Capacity Factor (NCF). Refer to [Annex E](#) for the detailed definitions and data sources. These factors broadly reflect the changes in costs of operating public transport services.

### Fare Adjustment Formula (2018 to 2022): $0.5 \text{ cCPI} + 0.4 \text{ WI} + 0.1 \text{ EI} - \text{PE} + \text{NCF}$

**cCPI** Year-on-year change in core Consumer Price Index

**WI** Year-on-year change in Wage Index measured by the Average Monthly Earnings (National Average)

**EI** Year-on-year change in Energy Index which is a composite index derived from diesel and electricity prices

**PE** Productivity Extraction set at 0.1%

**NCF** Year-on-year change in Network Capacity Factor which reflects capacity provision relative to commuter demand for the entire public transport system

**Workgroup’s Observations**

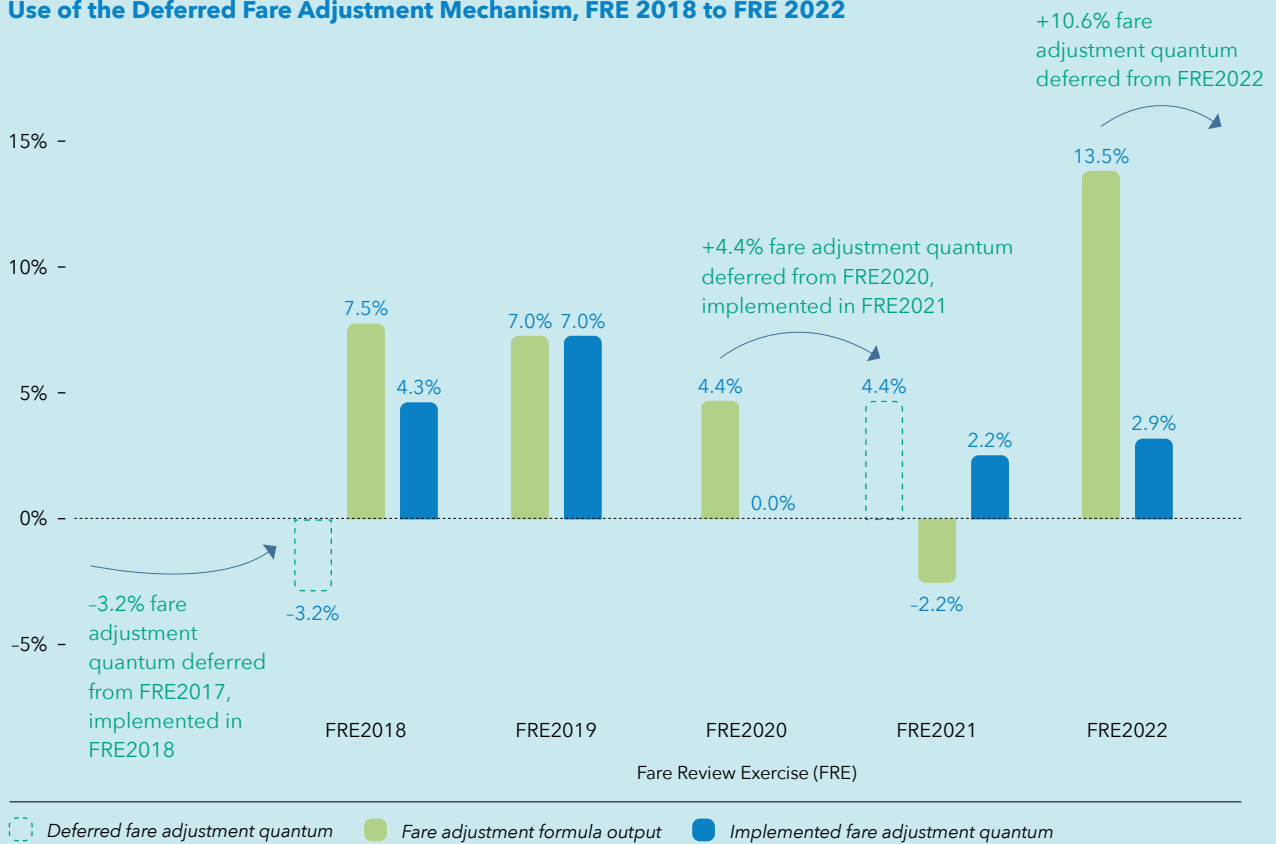
- The fare adjustment formula and mechanism have generally achieved their purpose, notwithstanding the need to exclude NCF after the impact of COVID-19 on ridership.

Throughout this period (2018–2022), the fare formula generally reflected most of the key drivers of public transport operating costs. Unit general operating costs (e.g. maintenance and repair costs) have moved in line with cCPI. Unit manpower costs and unit energy costs have also moved in line with WI and EI respectively.

The formula also ensured that when the public transport operators enjoy productivity gains, these gains are shared with the commuters through PE. Finally, NCF acts as a proxy for cost changes arising from changes in public transport capacity versus ridership.

- The mechanism to defer fare adjustment quantum has enabled the PTC to keep fare adjustments affordable and gradual. Fare increases were deferred entirely in Fare Review Exercise (FRE) 2020 when COVID-19 struck and substantially in FRE 2022 when energy prices increased by 117%. Figure 2 below illustrates this effect.

Figure 2  
Use of the Deferred Fare Adjustment Mechanism, FRE 2018 to FRE 2022



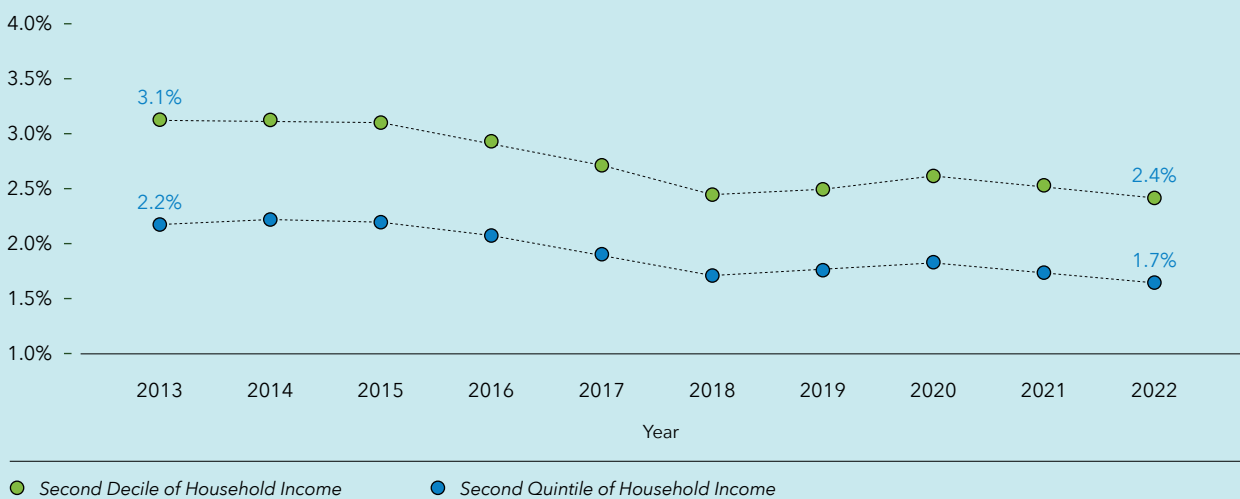
The dotted bar shows the deferred fare adjustment quantum from previous year(s); the green bar shows the fare adjustment formula output from the respective Fare Review Exercise year; and the blue bar shows the implemented fare adjustment quantum.

Over the past decade, public transport fare affordability has improved. The Public Transport Affordability Indicator (PTAI) shows that on average, households in the second income decile (11<sup>th</sup> to 20<sup>th</sup> percentile, representing the lower-income commuter group) and households in the second income quintile (21<sup>st</sup> to 40<sup>th</sup> percentile, representing the average public transport commuter) now spend a lower share of their income on public transport compared to 10 years ago.

The Workgroup noted that the 2013 Fare Review Mechanism Committee (FRMC) had suggested two markers for affordability<sup>6</sup>, and by these measures, the outcomes achieved have been good. In the last decade, the share of monthly household income spent on public transport has ranged from 2.4% to 3.1% for the second decile of household income (representing the lower-income commuter group) and from 1.7% to 2.2% for the second quintile of household income (representing the average public transport commuter) (refer to Figure 3).

$$\text{Public Transport Affordability Indicator} = \frac{\text{Monthly household expenditure on public transport}}{\text{Monthly household income}} \text{ of the household group}$$

Figure 3  
**Monthly Public Transport Expenditure as a Percentage of Household Income (2013 - 2022)**  
 Public Transport Affordability Indicator



<sup>6</sup> The two markers were: i) that fare affordability for the second quintile income group households should not deteriorate from the level in 2013; and (ii) that the fare affordability for the second decile income group households should improve over time from the level in 2013.



➤ Significant enhancements have also been made to the public transport system in Singapore, including better connectivity and service frequencies. These require more resources (e.g. trains and buses, number of staff or enlarged job scopes, energy consumed), and incur more costs. To better capture these costs, NCF was introduced into the fare formula in 2018. NCF acted as a proxy for the change in operating costs due to capacity adjustments (e.g. when new MRT stations are opened or trains and

buses frequencies are improved), relative to the level of commuter demand, with equal weightage given to rail and bus.

Such capacity growth serves commuters by improving connectivity, reducing crowding, as well as shortening travel and waiting times. When capacity growth is not met by ridership increases, NCF will be an addition to the fare adjustment quantum.



- ③ When the pandemic hit in early 2020, the PTC had to exclude NCF from the fare adjustment formula, as public transport ridership dropped significantly. As NCF was not designed to track exceptional fluctuations in ridership, the PTC conducted a mid-term review and decided to exclude NCF from February 2020 to December 2020 in the computation of the fare adjustment quantum, given the exceptional circumstances. If NCF had been computed as per normal, it would have yielded an output of 50.0% for the 2021 Fare Review Exercise. This would have resulted in a 50.0% (about 60 cents) increase in fares arising from NCF alone. Instead, the public transport system relied on various forms of government COVID-19-related support to cover the revenue shortfall. As ridership remained affected by the pandemic in 2021, NCF was also excluded entirely in the 2022 Fare Review Exercise.

Three years on, ridership is still recovering. In January 2023, public transport ridership has reached 90% of pre-COVID levels. As travel patterns have yet to stabilise because of adjustments to work practices, the final impact on ridership, the typical distance travelled per journey and fare revenue per journey remains unclear.
- ③ Meanwhile, the rail network continued to expand as part of the Government's long-term plans. The Thomson-East Coast Line Stages 2 and 3 were opened in August 2021 and November 2022 respectively. More than 180,000 households are now within a 10-minute walk from a TEL station and can save up to 40% of travel time. As the network expands, costs of operations will rise. The Workgroup recognised that it would not be sustainable to continue to exclude the impact of improved capacity from the fare formula. At the same time, we must do so in a way that does not make the formula output and fare adjustments too volatile.
- ③ As the COVID-19 pandemic abated and economies reopened, there was a global energy crunch which caused energy prices to surge. This was compounded by the Russia-Ukraine conflict. These resulted in a significant spike in the EI to 117% for the 2022 Fare Review Exercise (FRE). In comparison, EI ranged from -36% to +32% for the FRE from 2013 to 2021 (refer to Figure 4).
- ③ Alongside more volatile energy prices, we have also entered a higher inflationary environment. For 2023 as a whole, cCPI is expected to average 3.5% to 4.5%<sup>7</sup>, compared to the historical cCPI of up to 2.5% in the last decade (refer to Figure 5).

<sup>7</sup> Source: MAS Monetary Policy Statement - April 2023

Figure 4

**Surge in Energy Index for Fare Review Exercise (FRE) 2022**

Y-O-Y Change in Energy Index

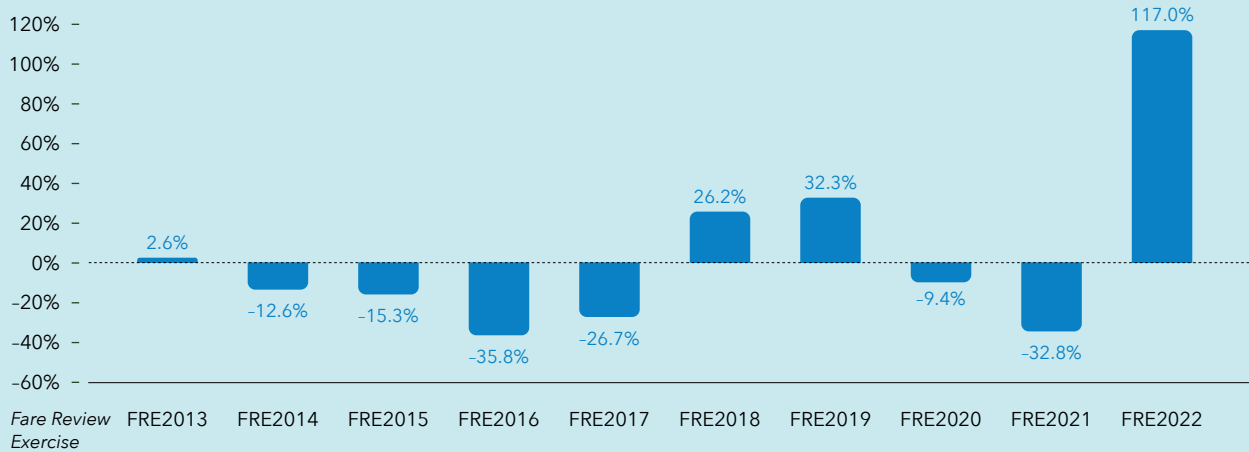
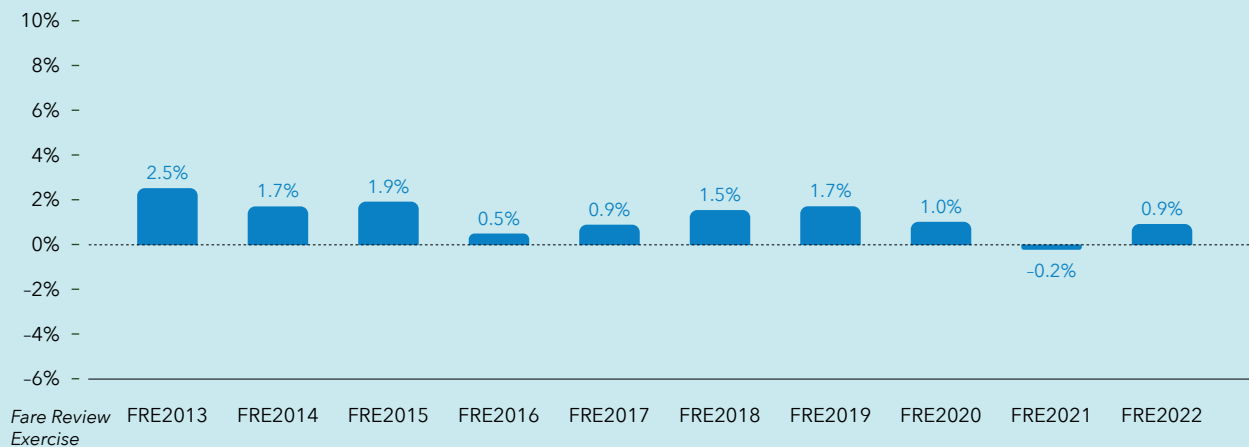


Figure 5

**Core inflation in the last decade**

Y-O-Y Change in core Consumer Price Index



**Next Steps**

Given the new challenges in the current operating environment, the Workgroup revisited the indices in the fare adjustment formula and examined ways for the fare adjustment formula to continue to keep pace with cost changes in public transport, while reducing its volatility and maintaining fare affordability.

[Refer to Chapter 5 - Recommendations on Page 41.](#)

# ENGAGEMENTS

## AT A GLANCE

**This chapter shares the Workgroup’s key observations from engagements with commuters, the trade union, public transport operators, academics, and public transport authorities and operators in other cities.**

Engagement is an important part of the review process. The Workgroup consulted widely to understand the concerns and perspectives of the various stakeholder groups. It conducted a face-to-face survey, held public engagement sessions comprising different commuter groups, as well as conducted dialogues with representatives from the trade union, public transport operators, academics, and public transport authorities and operators in other cities.



### Survey and Public Engagements

(Aug 2022 - Nov 2022)

Survey and public engagement sessions (24 focus groups)



### Stakeholder Engagements

(Oct 2022 - Jan 2023)

Dialogue sessions with trade union, academics and operators



### Engagements with Overseas Counterparts

(Aug 2022 - Nov 2022)

Dialogue sessions with transport authorities, operators and experts (Brussels, Hong Kong, London, Paris, Seoul, Sydney)

## Listening to the Public

## Survey

To better understand commuters' sentiments on public transport fares, face-to-face surveys were conducted with 1,000 commuters at 10 MRT stations and 10 bus interchanges across Singapore from late August to mid-September 2022. These are the key findings from the survey:

**Value-for-money**

86% of the respondents felt that their journey offered good value for money.

**Fare affordability**

72% of the respondents felt that their daily expenditure on public transport was affordable.

**Willing to pay more to cross-subsidise the more vulnerable groups**

57% of adult respondents were willing to pay higher fares so that senior citizens, persons with disabilities, lower-wage workers and students can pay lower fares.

**Fare adjustment should keep pace with cost changes**

94% of the respondents agreed that fare adjustments should keep pace with operating cost increases, such as the wages of public transport workers, repair and maintenance costs and energy costs.

## Public Engagement Sessions

Public engagement sessions with 24 focus groups involving over 200 participants from different commuter segments were conducted in November 2022. The key observations from the sessions are:

### **Fares are generally affordable, but some commuters from vulnerable groups expressed some anxiety:**

Most participants agreed that public transport fares in Singapore are affordable, relative to their income. They noted that public transport services were subsidised by the Government, and felt that it was important for the Government to continue to do so to ensure quality, accessibility and affordability. Some vulnerable commuters (e.g. persons with disabilities and Workfare Transport concession cardholders) expressed concerns over their ability to afford public transport and hoped for further support for their public transport expenses. Some sole breadwinners also expressed anxiety about the size of their families' total public transport expenditure.

### **Concession schemes perceived positively:**

Participants perceived the current concession schemes (e.g. senior citizens, students, persons

with disabilities) positively. Participants embraced such schemes, as they understood that everyone benefitted from concession schemes at various points in life, first as children or students, and later as senior citizens. Thus, most adult commuters were willing to help pay for the concession schemes. However, there was low awareness of the discounted monthly concession passes.

### **Willing to pay more to cross-subsidise concession groups:**

Should there be an increase in public transport fares, most participants felt that fare adjustments should be shared across all commuter groups, though concession groups should bear a smaller fare increase. The consensus was that working adults were earning income and could therefore better absorb fare increases than concession groups.



**Generally satisfied with service standards:** Most respondents were satisfied with the current public transport service standards. Among the minority who had complaints, their complaints include crowdedness during peak hours, errant driving behaviour by some bus captains, train breakdowns, and crowd management issues during service disruptions.



### Do you know?

The Singapore Bus Academy (SGBA) conducts safe driving courses for both new and existing Bus Captains (BCs). To inculcate safe driving habits, new BCs undergo a compulsory five-day Enhanced Vocational Licence Training Programme. To reinforce safe driving habits, existing BCs are scheduled to attend a one-day 'BC Drive Safe' refresher training course.

All four public bus operators also invested in telematics systems onboard buses to monitor BCs' driving behaviour and proactively identify those who require refresher training. Besides the continual safety training for their BCs, operators also provide incentives for safe driving and impose disciplinary procedures on errant BCs.

**Recognised that improvements in service can come with higher costs:** While participants suggested several areas of improvement for public transport services, they acknowledged that these improvements would result in higher operating costs (e.g. shortening bus waiting times would require more buses, drivers and diesel consumption) and most would rather forgo such improvements if these meant paying higher fares.

During the public engagement sessions, participants were presented with hypothetical scenarios, for example:

*To make waiting time shorter (from 10 minutes to 8 minutes), there will be a need to add, say, 16 more runs [per day] and it will cost \$1.2 million [per year] to provide the bus service.*

*What is your preference?*

- (a) maintain current service level; or*
- (b) improve service standards further which will come at an even greater costs*

*Most participants chose (a). Overall, participants were satisfied with current service standards*



Public engagement sessions were conducted in Central, West and East of Singapore. Each was 3 hours long and they were attended by more than 200 participants in total. Participants were engaged in smaller focus groups of 8-10 participants per group.

### Comments from participants



"Yes, my mother told me [about the concession schemes]. I think it's the circle of life - as a student I'm subsidised 70%, and as I grow up I need to pay for the students. It's reasonable because they are the future of Singapore, so it is great." - **Student**



"When I was a student I didn't have income, and I used the concession. And I felt that it really helps. But at least now when I have income, it makes more sense for me to pay back." - **Working Adult**



"...if you've already enjoyed as students, pay [as an adult for] however many years, then go back to senior to enjoy [concession fares], I think that's okay." - **Elderly**



"Go by percentage. I think the working adults should be paying more in percentage." - **Working Adult**



"That's why I feel that the people who are actually able to provide, should provide." - **Student**



"I feel good. Because it's as if I'm helping the lower income to make it balanced. I don't mind." - **Working Adult**

### Dialogues with Key Stakeholders

The Workgroup also held dialogue sessions with the trade union (i.e. National Transport Workers' Union (NTWU)), domestic public transport operators and academics.

Among the various stakeholders, there was broad consensus on the challenges confronting the public transport sector - high and volatile energy prices, rising manpower costs, wage competition from other sectors, and drop in ridership. As a result, there was a delicate balance to be struck, in raising fares to keep up with costs while ensuring that fares remained affordable to most. These challenges were not unique to Singapore; overseas transport operators and authorities faced similar challenges, which the Workgroup heard from its dialogues with them.

While different cities adopt different fare adjustment approaches, local stakeholders (trade union, public transport operators and academics) were of the general view that macroeconomic indices used in the Singapore's fare adjustment formula reflected changes in operating costs and should be retained. Both operators and the academics affirmed the use of a formula-based approach for annual fare

adjustments. Given the continuous improvements in public transport capacity, uncertainty in ridership, and a volatile and elevated cost environment, some academics expressed the need to review Network Capacity Factor (NCF) and Productivity Extraction (PE) to ensure that the fare adjustment formula remains relevant and responsive to the prevailing operating environment.

The following sections elaborate on the feedback from these stakeholders.

### Trade Union

The NTWU shared that the Wage Index in the fare formula helped public transport operators to pay their workers a fair wage. That said, the trade union noted that there are challenges in recruiting, training, and retaining workers in the public transport industry, especially with an ageing workforce. For instance, although the wages and working conditions of bus captains have improved over the last five years, NTWU was concerned about keeping wages of public transport workers competitive, given strong competition for manpower across all sectors of the economy in the years ahead.





### Should the fare adjustment formula include a service quality component?

There are existing frameworks such as Rail Reliability Incentive (RRI), Bus Service Reliability Framework (BSRF) and Operating Performance Standards (OPS)<sup>8</sup>. These frameworks set strict requirements for service quality, including incentives for good performance and penalties for lapses. NTWU shared that public transport workers are motivated to deliver safe and reliable services. If and where there were isolated service quality lapses, the penalties should be directly borne by the operator that is responsible for the lapse, and not the system as a whole. Reducing fares may deprive an otherwise well-run public transport system of the necessary resources to maintain high standards.

The academics engaged shared the same view and cautioned against including a service quality component in the formula, as current service levels are already highly optimised after a period of heavy investment, and further improvements would be challenging and incrementally more costly to achieve.



<sup>8</sup> RRI is a temporary grant from 2020 to 2023, which holds rail operators to a set of performance standards on both the operation and the maintenance of the rail system. BSRF measures bus reliability and bus operators are rewarded with incentives if service reliability is improved and penalised if reliability deteriorates. OPS stipulates the performance required for service quality, safety and key equipment reliability, failing which penalties apply.



## Guek Peng Kian

Senior Bus Captain  
SBS Transit



### What were some challenges you faced during the pandemic and how did you overcome them?

Manpower was tight, especially after Malaysia imposed the Movement Control Order (MCO) and with the quarantine of confirmed or suspected COVID-19 cases. As a result, bus captains had shorter meal breaks and shorter rest time. Many of us had to eat alone in the buses because of limited seating capacity at NTWU canteens. We also had to respond and adjust quickly each time there was a new development or new routine to follow due to the changes in safe management measures.

I was worried whenever I heard a cough or sneeze on the bus as I was afraid that I would get infected and bring the virus home. Some passengers also boarded the bus without wearing masks. Thankfully, they

agreed to use the masks I provided them with. Bus captains also had to maintain good personal hygiene habits, and do weekly Antigen Rapid Tests (ARTs) to work safely.

Amongst the first to be vaccinated, we had fears about the side effects of the vaccine. What gave me courage was seeing my key leaders from NTWU taking the lead to be vaccinated. Every month, the company would provide us with face masks, sanitisers and Vitamin C tablets.

Despite all the challenges, I have never once thought of quitting my job. We were assured by the company, the union and I had the strong support of my family.



Choa Kwok  
Seng Jason @  
Isa Abdullah  
Choa

Assistant Engineer  
SMRT Rail



**What were some challenges you faced during the pandemic and how did you overcome them?**

As an essential worker, I felt a strong sense of duty to ensure that our trains were able to operate safely and reliably during the pandemic. However, there's always a worry that I will get infected with the virus and transmit it to my loved ones and colleagues. This was especially so during the early stages of the pandemic before we were vaccinated.

Performing heavy maintenance of trains can be strenuous, hence wearing a mask made it more difficult. I struggled initially and had to take short breaks to recover. But over time, I learned how to regulate my breathing better. I'm appreciative of my management and the union for understanding the challenges that we face.

My work also requires me to work as a team and I must ensure that we follow safe management measures such as mask wearing and social distancing without affecting communications and teamwork.

In fact, our sense of camaraderie as a team had strengthened and that made the experience memorable.

### Public Transport Operators

The public transport operators provided the following feedback:

- **Retain the use of a fare adjustment formula to adjust fares annually.**  
 The public transport operators agreed with the use of a formula to determine the allowable fare adjustment quantum.
- **Set the value of Productivity Extraction (PE) at zero or 0.1%,** given the current challenging public transport financials. The public transport operators affirmed that their core role was to deliver safe and reliable services, while maintaining cost efficiency and deriving productivity gains.

🔗 Refer to Chapter 5 - Recommendations on Page 48.



#### Is the fare adjustment formula reflective of the prevailing cost environment?

Based on the current methodology, the changes in the indices from 2020 to 2021 were used to derive the fare adjustment quantum for the 2022 Fare Review Exercise, with the resulting fare adjustments only implemented in late December 2022. The public transport operators expressed concern regarding the timeliness of data used in each Fare Review Exercise and the risk that fare adjustments may be out of sync with the prevailing operating cost environment by the time they are made.

The academics similarly highlighted the time gap between the changes in cost and when the corresponding fare adjustment takes effect.

🔗 Refer to Chapter 5 - Recommendations on Page 51.



Credit: Ministry of Transport (MOT)

## Academics

Over two dialogue sessions, the academics gave their suggestions and views in light of the changes to the public transport industry and commuting patterns. The key takeaways are as follows:

### ① Understanding of Financial Sustainability

While the public was well informed about the fare adjustment each year, some academics felt that more could be done to inform the public about how the public transport system was funded. For instance, the public was generally unaware that the Government provides more than \$2 billion annually in operating subsidies, i.e. more than \$1 for every journey, to sustain the public transport system. More could be done to help the public understand the implication of government subsidies on the longer-term financial sustainability of the public transport system, and the burden on current and future generations of taxpayers.

### ① Macroeconomic Indices in the Fare Adjustment Formula

The academics were of the view that cCPI, WI and EI reflected changes in operating costs for the public transport system and should be retained in the updated fare formula. They noted that while some commuters would prefer a less volatile index, this sometimes came at a trade-off of not being responsive to the cost pressures faced by the public transport operators.

### ① Relevance of PE

Given the current challenging financial situation for the public transport industry, the academics expressed the view that PE might no longer be relevant. In the current state where public transport is subsidised, the PE that was not recovered from fares was essentially paid for by government subsidies. However, some academics highlighted that the PE was still useful in signalling that the public transport operators were expected to maintain cost efficiency, derive productivity gains, and share these with the commuters.

[Refer to Chapter 5 - Recommendations on Page 48.](#)

### ① Relevance of NCF

The academics said that changes in operating costs due to additional capacity should be factored into the fare formula. However, some academics commented that NCF was difficult for commuters to understand. In addition, sharp drops in ridership during the pandemic had caused NCF to spike. There were suggestions to replace the annually updated NCF with a factor reflecting longer-term planned expansion in public transport capacity, thereby removing year-on-year changes in ridership and capacity from the formula, which would in turn reduce variability in the formula output.

[Refer to Chapter 5 - Recommendations on Page 49.](#)

### ➤ **Deferred Fare Adjustment Mechanism**

The academics acknowledged that the Deferred Fare Adjustment mechanism fulfilled its purpose of smoothing fare adjustments. However, they expressed concern that large deferments, especially if made successively, would impact the financial sustainability of public transport services. They emphasised the importance of ensuring that the gap between revenue and costs does not continue to widen.






## Dialogues with Public Transport Authorities and Operators from Other Cities

The Workgroup engaged with public transport authorities and public transport operators from other cities (Brussels, Hong Kong, London, Paris, Seoul and Sydney) via a series of dialogues and sharing sessions to better understand the challenges, recent developments and trends going forward in the public transport industry. The exchanges focused on three key areas: fare levels and schemes, fare adjustment approaches, and challenges arising from the impact of COVID-19 and inflation.

### Ideal Attributes for Public Transport Fares

From these exchanges, the Workgroup observed that the ideal attributes for public transport fares include:

-  **Clear and simple:** Commuters should know how much they have to pay for their journey and the basis for the fare.
-  **Affordable:** Public transport fares must remain broadly affordable for all. Fare levels should be differentiated for different commuter groups in accordance with their circumstances. Affordability could be achieved via concession schemes, government subsidies, and/or subsidies from employers.
-  **Integrated:** Public transport fares should ideally be integrated across different transport modes to allow commuters to leverage on the entire public transport network, without being “penalised” for making transfers, for more efficient travel.

The Workgroup is of the view that the fare structure in Singapore bears these attributes. The fare structure is fully integrated between bus and rail services, and commuters pay based on the distance travelled, regardless of whether they are travelling via a single service or making transfers between bus and train services.

To improve affordability, the Workgroup noted that there are several concession schemes available in Singapore, such as concession fares and monthly concession passes, catering to different groups of commuters, such as senior citizens, students, persons with disabilities, and lower-wage workers. Refer to [Annex E](#) for more information on fares in other cities.



In Singapore, depending on the distance travelled, fares range from S\$0.99 to S\$2.26 for adults, regardless of the mode of travel or the operator. A commuter pays a single fare for the entire journey; he does not pay an additional fare or boarding charge, when he makes a transfer to another mode (e.g. from bus to train). In many other cities, fares are not integrated.

In Hong Kong, train fares are distance-based, ranging from HKD 4.70 to HKD 28.70 (~S\$0.80 to ~S\$4.90) for adults while bus fares vary across different operators. For services by Kowloon Motor Bus (KMB), Hong Kong's largest bus operator, bus fares range from HKD3.50 to HKD14.20 (~S\$0.60 to ~S\$2.40) for adults. Commuters have to pay separate fares across different modes and bus operators.

In London, fares across Transport for London's underground network are zone-based. In Zone 1, during peak hours, the fare is £2.80 (~S\$4.60) for adults while they pay a flat fare of £1.75 (~S\$2.90) for bus and tram services. Commuters have to pay separate fares across different modes.

In these cities, there are also concession schemes and passes available for different commuter groups to ensure fare affordability. Typically, there are discounted schemes for children, students, senior citizens, and lower-income commuters in addition to daily, weekly or monthly passes for heavy public transport users. Examples include the MTR City Saver Pass in Hong Kong and the Navigo weekly and monthly travel passes in Paris.

*Note: Due to differences in fare structure and transfer rules in different cities, the comparison above is based on the range of fares across different cities, and may not be directly comparable with Singapore's distance-based fares.*



## Fare Adjustment Approach

The Workgroup noted that different cities adopt different fare adjustment approaches, depending on their social and public policy priorities (refer to box below for fare adjustment approaches in different cities). The Workgroup observed that fare adjustments in regular, smaller steps, as opposed to large ad-hoc increases, provided more certainty and predictability to commuters and operators.

The Workgroup also noted that few systems use a formula that comprises several components to guide fare adjustments. The most common Fare Adjustment Mechanism is to peg fare increases to inflation. While different cities adopt different fare adjustment approaches, the Workgroup recognised that all cities must balance fare affordability and financial sustainability of the public transport system.

### Fare Adjustment Approach in Other Cities

Some cities use a fare formula to adjust fares. In Hong Kong, MTR fares are adjusted based on the Fare Adjustment Mechanism (annual review), which references only two components: the Composite Consumer Price Index and the Nominal Wage Index (Transportation Section), with an additional, predetermined productivity factor. The direct-drive fare adjustment formula<sup>9</sup> is capped at the level of change in Median Monthly Household Income, such that fares remain affordable.

In Sydney, the Independent Pricing and Regulatory Tribunal (IPART), an independent authority, determines and recommends to the Government what the maximum public transport fares should be. Factors considered include the cost of providing the services and the non-user benefits (e.g. reduced road congestion). Every year, the Transport for New South Wales then decides on the actual fare adjustments, up to the maximum fares set by IPART.

Some cities do not have a fixed frequency for adjusting fares, while others such as New York adjust fares biennially. In recent years, London has made annual adjustments in public transport fares, by 4.8% in March 2022 and 5.9% in March 2023, to help Transport for London, which has run into financial difficulties, improve its financial sustainability.

<sup>9</sup> In Hong Kong, fare setting for MTR fares is in accordance with the "Fare Adjustment Mechanism" (FAM) which is a direct-drive formula linked to changes in consumer price index and wage index as well as pre-determined productivity factor. This direct-drive formulaic approach formed part of the rail merger agreement between the Hong Kong Government and the MTRCL, the FAM has been incorporated into the Operating Agreement (OA) between the two parties and is legally binding. Source: Transport and Logistics Bureau of the Government of the Hong Kong Special Administrative Region <https://www.tlb.gov.hk/>.

Also refer to <https://www.mtr.com.hk> for latest changes to the MTR Fare Adjustment Mechanism

### COVID-19, Changes in Commuting Patterns and Impact on Financial Sustainability

The Workgroup observed that at the height of the COVID-19 pandemic, many cities experienced sharp drops in ridership. This had significant impact on revenue. While ridership has since increased, it remains below pre-COVID levels in many cities. Although exceptional government funding and subsidies were able to soften the immediate effects of revenue losses at the peak of the pandemic, overseas authorities and operators expressed concern that these would not be sustainable in the long run.

Moreover, these authorities and operators observed changes to commuting behaviour post-pandemic (e.g. shift away from traditional peak-hours commuting, fewer public transport journeys on Monday and Friday, more leisure journeys on weekends). They found it increasingly challenging to project ridership growth, even as cities continue to plan for and invest in more sustainable and car-lite transport systems.

Authorities and transport operators in different cities also shared that they are grappling with increases to general operating costs due to inflation in the costs of maintenance materials and spare parts, rising a rise in manpower costs in a tight labour market, and a surge in energy prices. The Workgroup noted that these are similar challenges faced by the public transport industry in Singapore.

The Workgroup also noted that financial sustainability and fare revenue resilience are the foremost concerns across public transport systems. For any system, consistent, stable fare adjustments that keep pace with cost changes, enable better longer-term planning by operators and authorities. Conversely, without a sustainable financing framework, there could be pressure to cut cost or reduce service quality, leading to degradation of public transport services.

### Conclusion

Through these engagement sessions, the Workgroup gained a better understanding of the different perspectives of the various stakeholders, their concerns regarding public transport fares, and common challenges faced by the public transport sector in the different cities. The insights and perspectives helped the Workgroup shape its recommendations for the fare adjustment formula and mechanism.

# RECOMMENDATIONS

## AT A GLANCE

**This chapter sets out the Workgroup’s recommendations for the proposed fare adjustment formula and mechanism for 2023–2027, as well as views on how the PTC should continue to fulfil its twin mandate of ensuring affordable public transport fares and a financially sustainable public transport system.**

Having consulted stakeholders and experts, the Workgroup deliberated on each of the fare formula components and mechanism. It concluded that the current fare adjustment formula and mechanism have generally worked well and served its purpose. However, improvements could be made to the formula to help reduce the volatility of the fare adjustment quantum.

### Deliberations and Considerations

In its deliberations, the Workgroup had three key considerations:

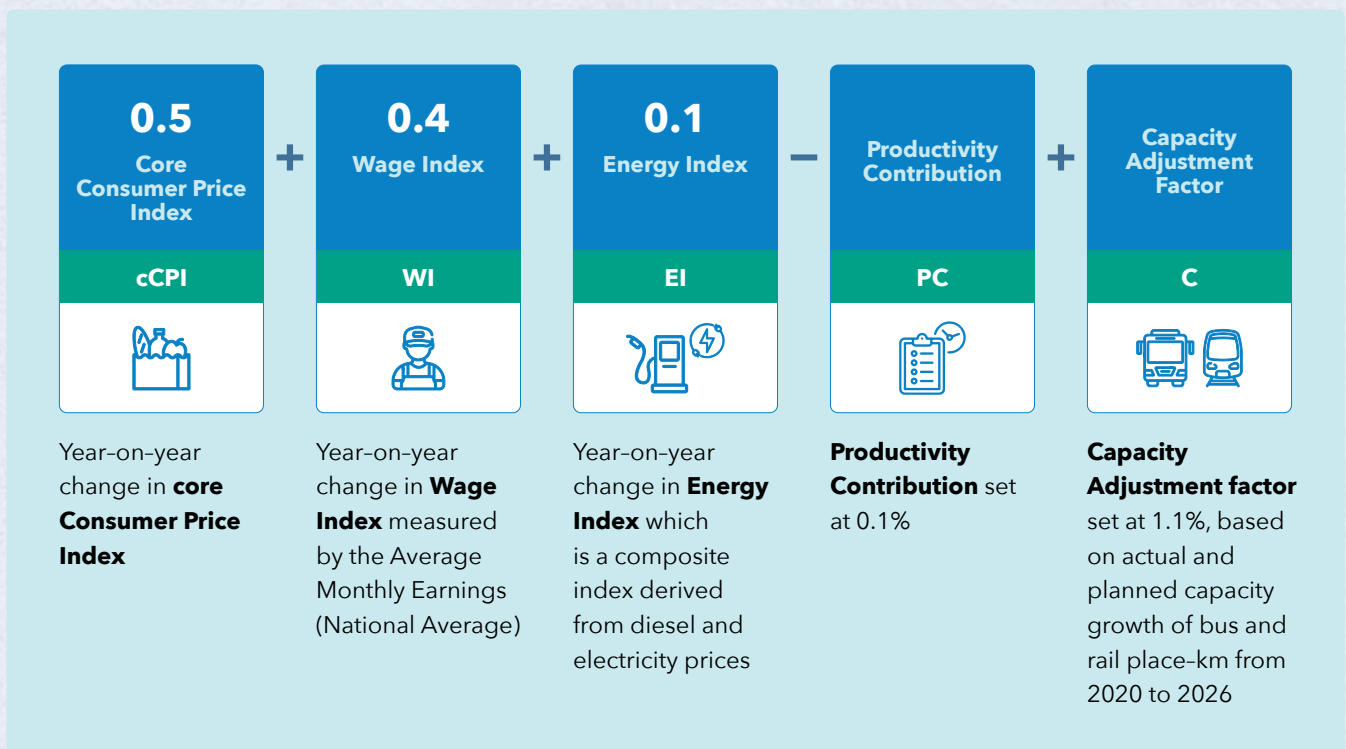
- **Ensuring sustainability and cost efficiency, and maintaining service quality:** The formula should reflect the changes in public transport operating costs due to inflation, energy price fluctuations, manpower costs and overall business costs. However, the formula should not simply transfer operators’ costs onto commuters. The formula and mechanism must continue to incentivise operators to operate efficiently and improve productivity. The updated fare adjustment formula should continue to reflect the overall cost drivers for the public transport system, and not be based solely on the actual costs incurred by the operators. The formula should also reflect the incremental costs arising from the expansion of the public transport network.
- **Reducing volatility of fare adjustments:** The Workgroup was keenly aware of the significant volatility in the fare formula output, especially in recent years. This was caused by the sharp drop in ridership due to COVID-19, elevated inflation and a surge in energy prices from 2021, which was reflected in the fare formula output for the Fare Review Exercise 2022. Hence, the Workgroup studied ways to reduce the volatility of fare formula output.
- **Ensuring affordability of public transport fares:** The PTC must ensure that fares continue to be affordable. PTC has been tracking expenditure on public transport as a percentage of income for both the lower-income and average households as a measure of fare affordability. The PTC also reviews fares for different concession groups and monthly passes for heavy public transport users.

## Recommendations

Taking into account the above considerations, the Workgroup recommends:

- **Retaining the formula-based approach**, as it has been found to be effective both in recognising the cost drivers of operating the public transport system and keeping fares affordable over time. As the formula does not simply transfer operators' actual costs to commuters ("cost-plus" model), it also imposes discipline on public transport operators to drive operational efficiency.
  - **Retaining the year-to-year change in Energy Index (EI)** as the proxy for energy cost changes and maintaining the weightage of this index at 0.1. The Energy Index is a composite index derived from diesel and electricity prices. Given the uncertainty in the energy market, the Workgroup recommends to retain the EI in its current formulation for this cycle.
  - **Retaining the Deferred Fare Adjustment mechanism**, as it has allowed the PTC to consider the prevailing economic and social situation in the year of review and the impact on affordability for commuters from the lower-income and average households, when deciding on the appropriate fare adjustment to implement. Any part of the fare formula output that is not implemented for that year will be deferred to future exercises and be considered together with that year's fare adjustment quantum calculated by the formula. The PTC is mindful that deferred fare increases are paid for by government subsidies each year.
  - **Replacing the Productivity Extraction (PE) with Productivity Contribution (PC)** and setting the PC value at 0.1% for the next five years (2023–2027). The Workgroup is of the view that operators should strive for continuous productivity improvements.
  - **Replacing the Network Capacity Factor (NCF) with a Capacity Adjustment Factor (C)** fixed at 1.1% over the next five years (2023–2027). The sharp drop in ridership resulted in a spike in the NCF, and uncertainty in how travel patterns will evolve and the pace of ridership recovery could cause further variability in the fare formula output. The Workgroup is of the view that the revised C factor based on capacity growth of bus and rail place-km will offer more stability for the next five years. This Capacity Adjustment Factor can be updated in the next review of the fare adjustment formula to take into account subsequent changes in capacity, and ridership, if relevant.
- As for the fare adjustment formula, the Workgroup recommends:
- **Retaining the year-on-year change in core Consumer Price Index (cCPI)** as the proxy for general cost changes and maintaining the weightage of this index at 0.5.
  - **Retaining the year-to-year change in Wage Index (WI)** as the proxy for manpower cost changes and maintaining the weightage of this index at 0.4.

The recommended revised fare adjustment formula for the next five years (valid from 2023-2027) is as follows:



### Core Consumer Price Index

The cCPI has been a component in the fare adjustment formula since 2013. The cCPI measures changes in consumer prices in Singapore, excluding the cost of accommodation and private transport. Within the fare adjustment formula, it serves as a proxy for changes to the cost of operations of public transport, including maintenance cost and depreciation of operating assets, while excluding manpower and energy.

The Workgroup reviewed and concluded that the cCPI remains relevant and should be retained in the fare adjustment formula. The cCPI has also been relatively stable historically.

### Wage Index

The WI was introduced as part of the 2005 Fare Review Mechanism Committee recommendations to capture manpower costs separately from other cost items, given that manpower cost is one of the key drivers of public transport operating cost. The WI measures the change in national average monthly earnings over the preceding year. As a component for the fare adjustment formula, the WI is a proxy for the change in manpower cost incurred by the public transport operators.

The Workgroup affirmed that the WI should be based on a general wage indicator and not public transport operators' actual manpower costs. The latter would be akin to a cost-plus model and might not encourage public transport operators to manage their manpower costs.

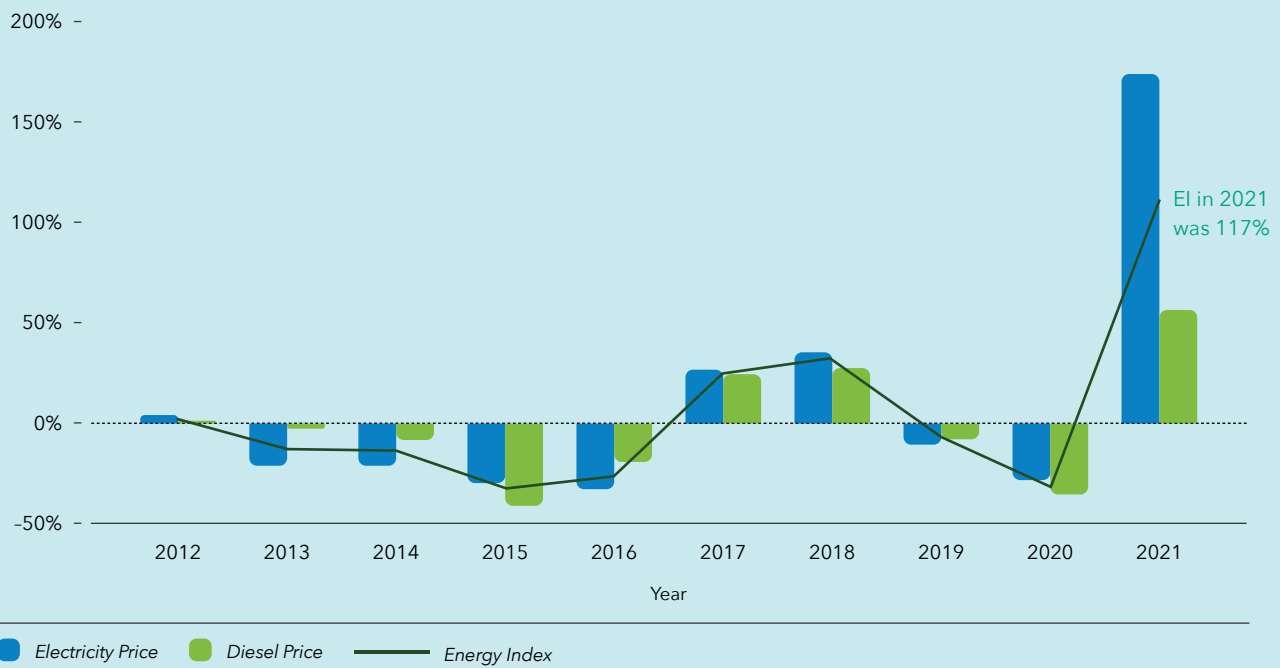
During the review, the Workgroup analysed the overall wage trends captured in the national quarterly Average Monthly Earnings (AME) and the median Gross Monthly Income (GMI) reported by the Ministry of Manpower, as well as wage trends specific to the land transport sector's workforce. These reflected similar growth over the past five years. Therefore, the Workgroup concluded that the current WI adequately captures wage trends for the public transport industry and recommends retaining WI in the fare adjustment formula.

### Energy Index

The EI, which measures the year-on-year change in diesel and electricity prices, was introduced as part of the 2013 Fare Review Mechanism Committee recommendations to track energy costs separately (instead of through the cCPI), to better represent changes in the public transport operators' operating costs. This was in response to a significant divergence in the cost trends for energy compared to other costs, with energy prices seeing significantly greater increases and volatility.

With the EI at 117% in 2021, the Workgroup paid particular attention to the EI, and how the impact of energy cost changes on public transport operations should be reflected in the new formula (refer to Figure 6).

Figure 6  
Energy Index



Source: Electricity and diesel prices from Energy Market Company (EMCSG) and energy market data providers such as Argus respectively.

Energy cost continues to be one of the most volatile components of the public transport system’s total cost. For example, based on SBS Transit (SBST)’s financial results for calendar year 2022, SBST’s energy cost had increased by 74% from calendar year 2021.

As such, the Workgroup assessed that the EI is still needed and should be retained as a separate component so that the formula can remain responsive to energy cost changes.

### **50:50 Split Between Electricity and Diesel Cost in the Energy Index**

The Energy Index is a composite index, reflecting the approximate 50:50 split in energy costs between diesel (for buses) and electricity (for trains). Based on public transport operators' latest energy cost breakdown, the 50:50 split between diesel cost and electricity cost remains broadly appropriate.

However, this ratio is not likely to remain static moving forward. The rail network will expand further, and there will be a growing proportion of electric and hybrid buses in the fleet. This suggests a higher weightage for electricity cost as compared to diesel cost in the future, even if movements in electricity and diesel prices remain similar. Nonetheless, these are longer-term trends, and actual diesel and electricity costs are not likely to deviate substantially from the 50:50 split in the next five years. As such, the Workgroup proposes to retain the 50:50 split.

### **Using Argus as the Sub-Index for Diesel**

At present, the majority of public buses run on 10 parts-per-million (ppm) diesel. Pricing data on 10 ppm diesel is available from energy market data providers such as Argus. This is also used as a benchmark in LTA's bus contracts. The Workgroup therefore recommends retaining 10 ppm diesel pricing as the EI sub-index for diesel in the Energy Index.

### **Using Wholesale Electricity Price as the Sub-Index for Electricity**

Currently, the Wholesale Electricity Price (WEP) is used for the electricity component of the Energy Index. In 2021, the electricity component increased significantly, and together with the more modest increase in the diesel component, led to an unprecedented EI of 117% in Fare Review Exercise 2022.

The Workgroup examined the volatility of the WEP and considered the option of introducing Extra High Tension Regulated Tariffs (EHT RT) pricing data, which is less volatile than the WEP, into the electricity sub-index of the Energy Index. However, as public transport operators are contestable consumers, they cannot purchase electricity at EHT RT prices.

The Workgroup also noted that the experience over the recent years is likely to have been caused by exceptional factors. For several years prior to the global energy crunch, electricity prices in Singapore were depressed, as electricity generation companies had over-invested in generation capacity and over-contracted for term gas contracts with significant take-or-pay requirements. Furthermore, at the onset of COVID-19, aggregate demand fell which caused further reduction in electricity prices. As suppliers adjusted, a global energy crunch occurred when global economies re-opened in 2021, leading to a spike in prices. This was further exacerbated by the Russia-Ukraine conflict beginning in early 2022, and prices have remained elevated since then. Brent crude oil prices spiked from less than US\$50 in 2020 to more than US\$100 per barrel in 1H2022.





Credit: SBS Transit

Global energy markets are also in transition due to the push for decarbonisation and the shift towards electrification and cleaner energy sources. The Energy Market Authority (EMA) recently conducted a review of Singapore's power sector and will be introducing measures to strengthen the market. These enhancements will ensure that Singapore is well-positioned to navigate the energy transition. However, the impact on energy prices remains uncertain.

Given these uncertainties and the exceptional circumstances facing the energy market, the Workgroup is of the view that it would be premature to make significant changes to the electricity component of the Energy Index (e.g. to include EHT RT into the composition) now.

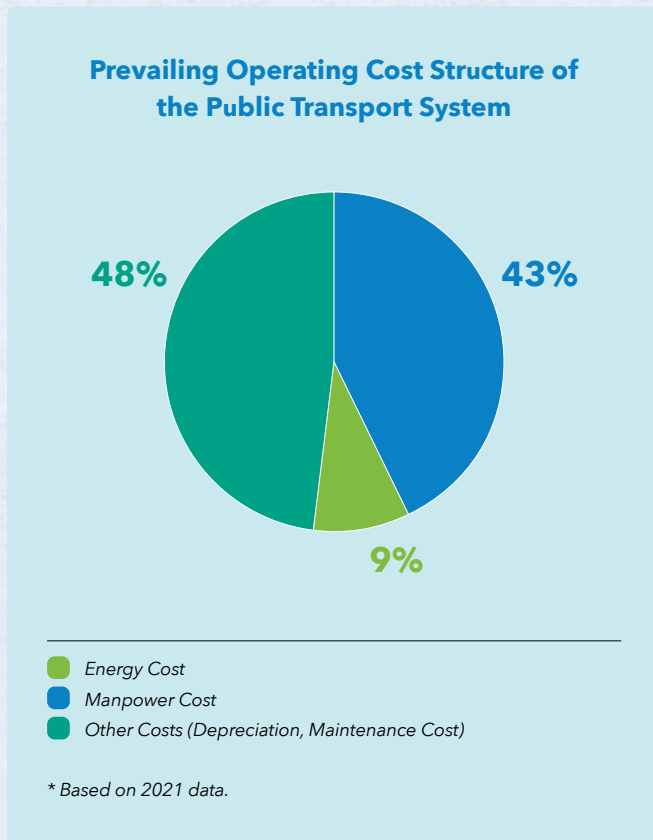
The Workgroup proposes to retain WEP as the electricity component for the next 5-year period, after considering the following:

- ④ Retaining WEP will ensure consistency in the EI and fare formula output during this uncertain period, with both spikes and dips in electricity prices captured using the same electricity sub-index; and
- ④ As contestable consumers, public transport operators have the option of buying electricity from retailers or from the wholesale electricity market, which means WEP remains a relevant benchmark for public transport operators' costs.

Should the Energy Index result in a sharp adjustment to fares in any fare review exercise, the Deferred Fare Adjustment mechanism can be used to moderate the adjustments, as was done in the 2022 Fare Review Exercise.

**✓ Weightages of Indices in the Fare Adjustment Formula**

The relative weightages for the indices (cCPI, WI and EI) in the fare adjustment formula were set based on the prevailing operating cost structure of the public transport system (bus and rail) at the time of the previous review. Based on the latest available data of such costs (in 2021), the relative weights for the various cost components have remained similar. Hence, the Workgroup proposes to retain the weightages of cCPI, WI and EI as 0.5, 0.4 and 0.1 respectively.



**✓ Replace Productivity Extraction (PE) with Productivity Contribution (PC)**

The Productivity Extraction (PE) was added to the fare adjustment formula in 2005. PE allows commuters to benefit from the productivity gains of the public transport operators, as it moderates the fare formula output.

From 2012 to 2016, public transport operators achieved average productivity gains, measured as the growth in value added per employee, of 0.2% per year. Thus, from 2018, PE was set at 0.1%, i.e. at half of these productivity gains, to be shared with commuters.

A similar approach could be taken to determine PE, based on productivity gains from 2017 to 2021. However, the Workgroup noted that there were exceptional developments during this period which had a major impact on productivity. During the pandemic, the Government provided substantial temporary support and grants to companies, including the public transport operators, such as the Jobs Support Scheme, Foreign Worker Levy (FWL) waiver and FWL rebate. Without these support schemes, the public transport operators would have incurred significant losses.

As the public transport operators' gains in value added per employee over the last five-year period were attained mainly through the provision of government support, the Workgroup was of the view that this did not reflect the public transport operators' true productivity gains. This view was supported by the academics that the Workgroup consulted.

Given that the intention of the PE is to share the public transport operators' productivity gains with commuters, as a principle, any productivity losses in the public transport industry would not be passed on to commuters, as affirmed by the 2013 Fare Review Mechanism Committee (FRMC). Excluding the Government's support, the value added per employee for the period 2017-2021 would be negative, and thus PE would be set at zero (i.e. PE = 0%).

However, the Workgroup agreed that it is important for the public transport operators to improve cost-efficiency and productivity. In place of the PE, the Workgroup proposes a Productivity Contribution (PC) with a value set at 0.1% for the next five years (2023 - 2027) as a signal to the public transport operators that they should strive for continuous productivity improvements.

### **Replace Network Capacity Factor (NCF) with Capacity Adjustment Factor (C)**

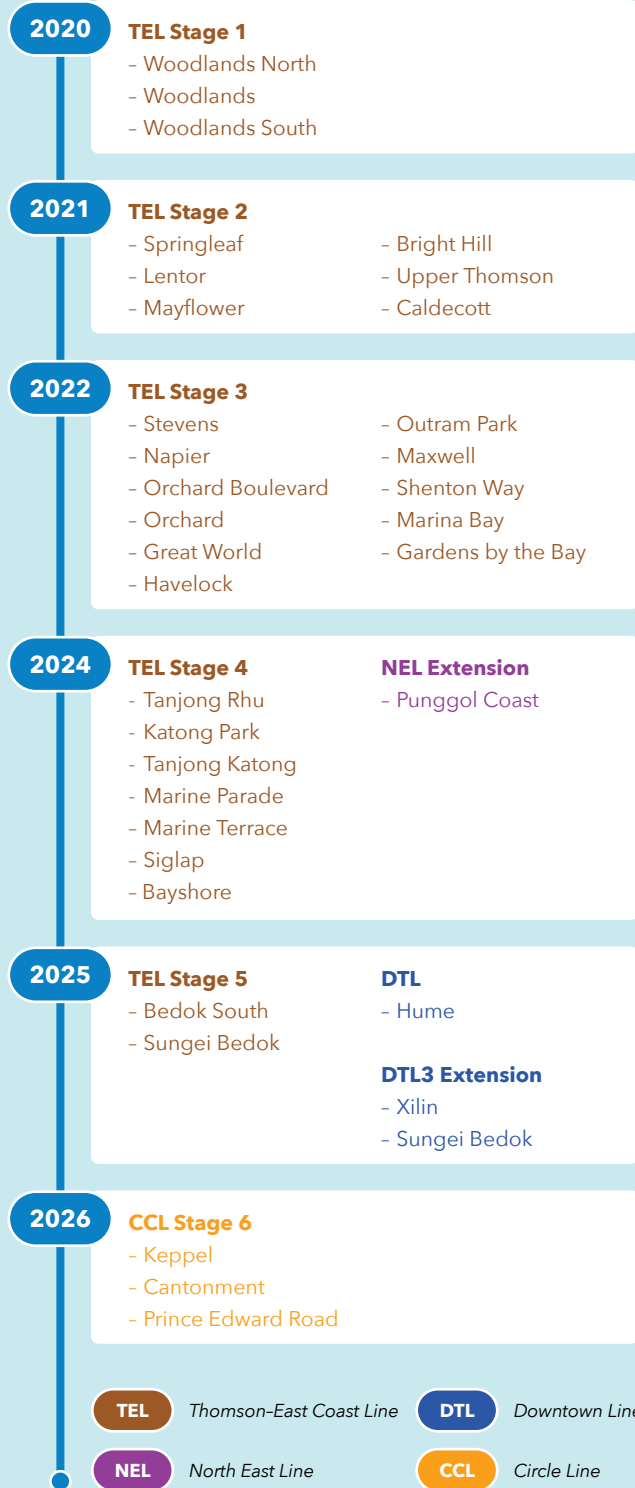
The NCF was introduced in 2018 as a proxy for the cost changes due to capacity adjustments relative to the level of commuter demand, such as operating more trains and buses to reduce crowding and expand the public transport network to offer better connectivity, with equal weightage given to rail and bus travel. The costs of running public transport are affected by both the unit price and quantity of resources required. Without NCF, only changes in the unit prices of resources are captured, while changes in costs due to additional quantity supplied are not accounted for.

NCF's contribution to the fare formula was 3.0%, 1.6% and 3.9% in the 2018, 2019 and 2020 Fare Review Exercises respectively. However, NCF was not designed to track sharp fluctuations in demand and supply during exceptional periods such as the COVID-19 pandemic. For example, due to the sharp drop in ridership in 2020, the NCF in the 2021 Fare Review Exercise would have been 50.0%. This meant that fares could have increased by 50%, all else being equal. This was not the intended use of the NCF, as the sharp drop in ridership was not due to organic changes in ridership patterns. Thus, the PTC decided to exclude the NCF contributions from February to December 2020, from the computation of the fare adjustment quantum, and fully excluded it in 2021. Even when ridership recovers to pre-COVID levels, the NCF will continue to fluctuate, increasing in years when new rail lines open and turning negative when ridership catches up. This will increase the variability of the fare formula output.

The Workgroup agreed that it was important for capacity expansion, as a major factor affecting cost changes, to continue to be captured in the fare adjustment formula. However, there is a clear need to address the variability of NCF which in turn can cause variability in fares. Looking ahead, the Workgroup proposes to replace NCF with a smoothed Capacity Adjustment Factor (C), based on public transport network capacity growth from 2020 to 2026, spread over five years (2023 to 2027). The annual C value will be fixed at 1.1% during this period. This will avoid the year-to-year changes that affected NCF. For this review, C includes both actual capacity increases from 2020 to 2022, as well as planned capacity increases from 2022 to 2026<sup>10</sup>. The C value of 1.1% largely reflects the improved connectivity and lower journey times arising from the opening of the Thomson-East Coast Line (TEL).

<sup>10</sup> Capacity Adjustment Factor (C) is based on public transport network capacity growth from January 2020, when NCF was suspended, to 2026.

### MRT Lines from 2020-2026



Increases in ridership can improve the financial sustainability of the public transport system, but total ridership presently remains below pre-COVID levels. There is no certainty of when (and whether) ridership will recover to pre-COVID levels over the next few years. Thus, the Workgroup recommends that the C value of 1.1% for 2023 to 2027 be set without accounting for ridership changes. While ridership has been excluded from the formulation of C for this five-year window, it could be considered in the next Fare Adjustment Formula and Mechanism Review when ridership fully recovers.

The Workgroup also discussed suggestions to include a service quality component (e.g. rail reliability) in the fare adjustment formula but decided against this. The Workgroup is of the view that C would capture the cost of improvements in service standards to some extent, such as more frequent train or bus services. For reliability of services, LTA regulates public transport operators and ensures that baseline performance standards are met.

[Refer to Chapter 4 - Engagements on Page 31.](#)

## Annual Fare Review Exercises

Currently, the PTC reviews bus and train fares annually. The fare adjustment quantum for the year, as derived from the formula, together with any deferred fare adjustment quantum from previous exercises, will form the upper bound of the allowable fare adjustment that can be granted. The Workgroup recommends retaining the same approach of conducting annual Fare Review Exercises. This will allow fare adjustments to be made in regular, smaller steps.



During the review, the Workgroup noted feedback from the public transport operators and academics regarding the timeliness of data used in each Fare Review Exercise. At present, data from past years is used to determine the relevant indices for each exercise, which are in turn used to derive the fare adjustment quantum (e.g. data from 2020 and 2021 were used in the 2022 Fare Review Exercise to derive the fare adjustment quantum implemented in end-2022). The Workgroup noted concerns that this may result in the fare adjustments being out of sync with the latest price movements.

The Workgroup proposes that the PTC explore ways to make the Fare Review Exercise more reflective of the prevailing cost environment. This will make the fare adjustments more timely for the public transport system, while minimising the impact on commuters. PTC will need to study if and when to make the adjustments.





### **Validity Period for Fare Adjustment Formula (2023-2027)**

The Workgroup also recommends retaining the five-year validity period for the Fare Adjustment Formula and Mechanism. This is to provide certainty to commuters and the public transport operators, while ensuring that the formula and mechanism are reviewed regularly to ensure its relevance. The revised formula is valid from 2023 to 2027, barring significant, unexpected changes in the public transport cost structure or public transport operating environment.

### **Deferred Fare Adjustment Mechanism**

Under the existing fare adjustment mechanism, the PTC is able to:

-  Defer the full amount determined by the formula; or
-  Smoothen the fare adjustment quantum yielded by the fare formula over more than one fare review exercise.

This flexibility to defer part of or the full fare adjustment quantum to future fare review exercises has enabled the PTC to shield commuters from fare increases during periods such as the COVID-19 pandemic in 2020, or from large fare adjustments due to sudden spikes in costs. Indeed, if there was no deferred fare adjustment mechanism, fares in 2023 would have increased by 13.5%, or about 16 cents per journey for all commuter groups due to the sharp increase in energy prices.

With each deferral however, the Government has to increase operating subsidies to the operators. Without these subsidies, the operators will have to bear the higher costs of manpower, energy and materials. This would not be financially viable for them. However, government subsidies are paid for by taxpayers, and as such, fare increases that are deferred have to be implemented eventually, unless they are offset by negative fare adjustment formula outputs. This strikes a balance in allowing the PTC to smoothen the impact of sharp increases in fares after taking into account social and economic realities, while ensuring that the overall public transport system remains financially sustainable, and does not inadvertently over-tax public finances.

The Workgroup recommends retaining the flexibility of deferring part of the fare adjustment quantum to subsequent Fare Review Exercises.

## How will the PTC Continue to Ensure that Public Transport Fares are Affordable?

### Approach to Monitor Fare Affordability

Currently, the PTC checks that public transport fares remain affordable by tracking the Public Transport Affordability Indicator (PTAI), i.e. the percentage of household income spent on public transport. The PTC also listens to feedback from the community through public engagement and surveys, to identify potential concerns about fare affordability, such as from specific commuter segments. The Workgroup is of the view that this approach to monitor fare affordability has generally worked well and should be retained.

Based on PTAI trends over the last 10 years, public engagement and surveys' findings, the Workgroup is of the view that current public transport fares have remained affordable to commuters. Public transport fares in Singapore, as compared to overseas cities, also remain reasonable.

In light of the current high inflationary environment and uncertain economic outlook over the next few years, the Workgroup emphasises the need for the PTC to continue to monitor the PTAI closely, especially for the second decile of household income (lower-income) households. Besides retaining the current methodology of computing the PTAI to track fare affordability, the Workgroup is of the view that the PTC should leverage new technology to refine and expand its capability to gather timely feedback and sentiments.

### Public Transport Concession Schemes

Public transport concession schemes, in the form of concession fares and monthly concession passes, remain important tools to ensure fare affordability for commuters, especially those from vulnerable groups and lower-income households.



The Workgroup reviewed the existing concession schemes and noted that seven commuter groups benefit from some form of public transport travel fare concessions and made several observations:

- ③ More than 2 million commuters are covered by the seven concession schemes. This means about 1 in 2 Singaporeans are eligible for concessionary fares.
- ③ The concession schemes currently in place covering young children, students and undergraduates, full-time national servicemen, senior citizens, persons with disabilities and lower-wage workers are sufficiently comprehensive and adequate in ensuring fare affordability across the commuting population.
- ③ With the exception of the two concession schemes subsidised by the Government/taxpayers (i.e. the Workfare Transport Concession Scheme and Persons With Disabilities Concession Scheme), other concession schemes are cross-subsidised by other commuters. Based on the public engagement sessions and survey findings, the Workgroup noted that adult commuters are generally not opposed to the principle of cross-subsidising concession groups, where adult fares are set higher to enable fares to be lower for vulnerable groups e.g. senior citizens, students and persons with disabilities. This is heartening and reflects a caring public transport community.

### **Adult Monthly Travel Pass (AMTP) to cap Public Transport Expenditure**

Adults who are heavy public transport users can purchase the AMTP for unlimited travel on Singapore's train and basic bus services. This effectively caps their monthly public transport expenses and is designed to benefit heavy public transport users. However, during the review, the Workgroup observed that not all commuters who will benefit from the AMTP do so, even when their fare expenditure exceeds the cost of these passes, possibly due to a lack of awareness of the travel pass among adult commuters. Also, these commuters may not be actively monitoring their fare expenditure or might not think that the savings from AMTP are significant.

The Workgroup recommends that the PTC raise public awareness of such monthly concession and travel passes and leverage on technology to prompt heavy public transport users to consider switching to these passes as a way to cap their monthly travel expenditure. The Workgroup further recommends that the PTC consider, during Fare Review Exercises, how to price monthly passes to better achieve the aim of ensuring fare affordability for heavy users of public transport.



## Public Transport Fund (PT Fund) and Targeted Support for Lower-Income Households

In any public transport system, the Workgroup recognises that there will be some lower-income households which will, regardless of the fare level set and the concession schemes in place, need additional targeted support. In this case, support is provided in form of Public Transport Vouchers.

Since 2013, whenever fares are adjusted, public transport operators are required to contribute, based on their profitability, a portion of increased revenue towards the PT Fund. This is a way of getting operators to share any expected increase in fare revenue with commuters. The PT Fund is co-funded by the Government and is drawn down to help lower-income households cope with fare adjustments through the distribution of Public Transport Vouchers. This arrangement of systematically setting aside resources to help those most affected by fare increases has worked well. The Workgroup is of the view that the PTC should continue to mandate public transport operators to contribute to the PT Fund when there is a positive fare adjustment.

With the recent high inflationary environment, the Government has been providing additional, targeted support for lower-income households. The Workgroup foresees the need for the Government to continue providing sufficient support for lower-income or needy groups so that public transport remains affordable for them. For example, in years with higher fare increases, the Government could continue to provide Public Transport Vouchers to cushion the impact of these adjustments on lower-income households.

For those who require even more help, lower-income households do have access to other assistance schemes administered by the Citizens' Consultative Committees (CCCs) and Community Development Councils (CDCs) that could help them defray the cost of various essential services, including public transport.

Taken as a whole, the Workgroup felt that these measures will continue to cushion the impact of fare adjustments on lower-income households.

### Conclusion

In conducting this review, the Workgroup took into consideration the views it has heard from various stakeholders and three major developments in the public transport landscape, namely: (i) the inflationary environment; (ii) uncertainty in ridership patterns and recovery post-pandemic; and (iii) continuous enhancements to the public transport system with rising government subsidies, in order to make public transport more accessible, reliable and inclusive. The Workgroup's recommendations are consistent with the principles and the purpose of the fare adjustment formula and mechanism as set out at the onset, and seek to achieve a balance in ensuring that the public transport system remains financially sustainable and fares remain affordable in the years to come.

# ACKNOWLEDGMENTS

The Workgroup would like to express its appreciation to many individuals, representatives, and organisations in Singapore and abroad for their contributions to this review. They have generously given their time to share their experience and perspectives during various engagement and dialogue sessions, and provided useful feedback for the review.

The Workgroup would also like to thank the officers from the Public Transport Council for providing immensely valuable secretariat support for its deliberations and engagements, as well as officers from the Ministry of Transport and Land Transport Authority for their additional assistance and expertise.

## Organisations

### Government Agencies and Private Entities

- Department of Statistics
- Energy Market Authority
- Land Transport Authority
- Ministry of Health
- Ministry of Manpower
- Ministry of Transport
- National Transport Workers' Union
- Senoko Energy Supply Pte Ltd

### Public Transport Operators

- Go-Ahead Singapore
- SBS Transit
- SMRT Corporation Ltd
- Tower Transit Singapore

### Overseas Transport Operators/Organisations

- Go-Ahead London
- Hong Kong Mass Transit Railway
- Île-de-France Mobilités
- Independent Pricing And Regulatory Tribunal
- International Association of Public Transport
- Metroline, London
- Metropolitan Transport Commission, South Korea
- RATP Group, Paris
- STIB-MVIB, Brussels
- The Transport Strategy Centre, Imperial College London
- Transport for London
- Transport for New South Wales

---

## Academics

- Assistant Professor Terence Fan
- Associate Professor Hsieh Cheng-Hsien
- Mr Gopinath Menon
- Associate Professor Raymond Ong Ghim Ping
- Associate Professor Eugene Tan
- Associate Professor Walter Theseira
- Dr Timothy Wong

## Evolution of Fare Adjustment Formula for Fare Review Exercise (FRE)

FRE Year	Formula
1998-2000	$CPI + X$ , where $X = 2\%$
2001-2004	$CPI + X$ , where $X = 1.5\%$
2005-2007	$0.5CPI + 0.5WI - PE$ , where $PE = 0.3\%$
2008-2012	$0.5CPI + 0.5WI - PE$ , where $PE = 1.5\%$
2013-2017	$0.4cCPI + 0.4WI + 0.2EI - PE$ , where $PE = 0.5\%$
2018-2022	$0.5cCPI + 0.4WI + 0.1EI - PE + NCF$ , where $PE = 0.1\%$
2023-2027 (proposed)	$0.5cCPI + 0.4WI + 0.1EI - PC + C$ , where $PC = 0.1\%$ and $C = 1.1\%$

# ANNEX B

## Fare Adjustment Formula Output and Fare Adjustment Quantum Granted (2013-2022)

Fare Review Exercise (FRE) Year	Fare Adjustment Formula Output (A)	Deferred Fare Adjustment Quantum from Previous FREs (B)	Fare Adjustment Quantum (A) + (B)	Fare Adjustment Quantum Granted
2013	2.1%	4.5%	6.6%	3.2%
2014	-0.6%	3.4%	2.8%	2.8%
2015	-1.9%	0%	-1.9%	-1.9%
2016	-5.7%	0%	-5.7%	-4.2%
2017	-3.9%	-1.5%	-5.4%	-2.2%
2018	7.5%	-3.2%	4.3%	4.3%
2019	7.0%	0%	7.0%	7.0%
2020	4.4%	0%	4.4%	0%*
2021	-2.2%	4.4%	2.2%	2.2%
2022	13.5%	0%	13.5%	2.9%


\* In FRE2020, fares were frozen to help commuters cope with the impact of COVID-19.

## Concession Schemes

Concession schemes, in the form of concession fares and monthly concession passes, remain critical tools in the fare affordability toolkit, helping the PTC to ensure affordability for commuters, especially the vulnerable groups.

The concession commuter groups are defined by age (e.g. senior citizens), by education level and type (e.g. primary, secondary or tertiary students) and other needs (e.g. lower-income commuters, persons with disabilities). Children below 7 years old travel free.

Seven commuter groups enjoy concession fares on a per journey basis, and/or monthly concession passes.

 Refer to Chapter 5 - Recommendations on Page 53.

PTC's key considerations for offering concessions to any group are:

- a. **Income or earning ability**
  - i. Groups with lower earning ability and are likely to find fares high or unaffordable (e.g. persons with disabilities, workfare income supplement recipients); or
  - ii. Dependents (e.g. students, most senior citizens).
- b. **Residency/ citizenship status**
  - i. Mainly focused on Singapore citizens residing in Singapore.

The key principles when PTC considers which gaps to address in concessions are affordability, compassion and consistency.



### Affordability

Public transport fares should be affordable to all Singaporeans.



### Compassion

Concessions should be offered to groups that need them the most.



### Consistency

Concessions should be aligned across groups with similar situations and circumstances.

# ANNEX D

## Public Transport Operators' Role

During the engagement sessions with the public transport operators, the Workgroup noted operators' commitment to pursue continuous service improvement and innovation, greater cost efficiency, and upskilling of public transport workers and asked for further accounts of their efforts.

The following are key initiatives shared by the operators and the Land Transport Authority (LTA).

## Cost Efficiency Strategies

- In the face of rising cost pressures in the provision of public transport services, public transport operators have adopted various initiatives and processes to control costs and find savings:
  - i. Amalgamation of contracts: SBS Transit (SBST) and SMRT have achieved cost savings through the amalgamation of relevant contracts to capitalise on greater economies of scale and achieve cost savings. For example, both SBST and SMRT did a joint tender to purchase rail tracks.
  - ii. Long-term contracts for maintenance and technical support: SBST and SMRT, with the support of the LTA, has entered into Long-Term Services Support (LTSS) contracts with critical systems' Original Equipment Manufacturers (OEMs), for Bukit Panjang LRT (BPLRT), Circle Line (CCL), North East Line (NEL), and North-South and East-West Line (NSEWL). These contracts ensure provision of technical support services, spares availability, and obsolescence management, with price certainty, throughout the asset lifecycle.
  - iii. Process re-engineering: SBST and SMRT have adopted improvement initiatives. Some key initiatives include,
    - Dynamic Depth - SMRT worked with LTA and SBST in 2021 to implement Dynamic Depth as the standard for categorising rail defects (from Fixed Depth to Dynamic Depth) which enables better optimisation and prioritisation of how defective rails are identified and replaced. This resulted in savings of more than \$1 million in the form of cash savings and productivity.
    - Bill of Materials review for C830 trains overhaul in 2021. Based on past overhaul experience and projection of estimated failure rate, SMRT was able to better differentiate between parts for Mandatory Replacement and Conditional Replacement, and achieve savings of over \$6.5 million.
  - iv. Tower Transit Singapore (TTS) has also adopted Kaizen principles to regularly review their operation workflow to enhance efficiency and perform lean process engineering to optimise manpower usage and increase productivity.
  - v. Go-Ahead Singapore is progressively rolling out buses with roof-mounted solar panels on service. A total of 52 buses are expected to complete installation by April 2023. The solar panels convert solar energy into electrical energy to augment the charging of the bus battery. This reduces load on the bus engine and saves fuel.

## Training and Development of Public Transport Workers

Continuous upskilling of workers is crucial to ensure that the public transport workforce acquires sufficient skills depth to support the complexity of public transport operations, and is ready to embrace new transport technologies and digitalisation. This will help to ensure quality and reduce the cost of maintenance and operations, enabling the public transport system to become more efficient and achieve productivity gains.

LTA co-developed the Rail Manpower Development Package in collaboration with the PTOs and the National Transport Workers' Union (NTWU) in November 2019. Since then, more than 2,900 rail workers have been trained in emerging technologies and skills such as data and statistical analytics, condition-based monitoring, and have also undergone courses in System Maintenance and Asset Management to deepen critical maintenance skills.

The establishment of the Singapore Bus Academy (SGBA) in October 2016 was another testament of the industry's tripartite efforts. The LTA, the NTWU, the Employment and Employability Institute (e2i) and the four bus operators (Go-Ahead Singapore, SBST, SMRT and TTS) came together to invest in skills training, reskilling and upskilling of the bus workforce.

The flagship programme, Enhanced Vocational Licence Training Programme (EVLTP), standardises foundational training for new Bus Captains (BCs) to ensure a consistent service delivery standard across the bus workforce and facilitate job mobility within the industry. New BCs who have undergone this foundational training programme have found it useful.

Beyond foundational training, SGBA also conducts refresher modules and advanced level modules for BCs to help them stay relevant and deepen their competencies.

With transition to cleaner energy vehicles, BCs and technicians will require new skillsets to operate and maintain them. In this regard, SGBA has been working with the industry partners such as the bus operators, the NTWU, Original Equipment Manufacturers (OEMs) and the Institutes of Higher Learning (IHLs) to curate relevant training programmes on cleaner energy buses for the bus workforce.

Working closely with SGBA, the four bus operators have also subscribed to professional certification programmes jointly certified by SGBA and the Institute of Engineers Singapore (IES) since 2018. Examples include the Certificate for Technical Specialist (Bus), Certificate for Chartered Engineering Technicians and Certificate for Chartered Engineering Technologists, and the Singapore BusTech Grand Challenge since 2021. This is part of the industry's efforts to raise the recognition of such professional competencies and build a sustainable pool of technical professionals to support the public bus industry. With these professional certifications, workers can achieve professional and career advancement via a skills-based, non-academic pathway, to take on roles as Engineering Technicians and Engineering Technologists.

Other company-specific initiatives include the following:

- SBST has established Memorandums of Understanding (MOUs) with IHLs to co-create learning content and training programmes for their workforce.
- SBST has also set up the Rail Training Institute to consolidate training resources for a sharper focus to drive training and development initiatives for their workforce.
- SMRT has established partnerships with the Singapore Institute of Technology and Singapore Polytechnic to provide their staff with opportunities to attain engineering degrees or diplomas through workplace learning programmes.
- In addition, SMRT has signed an MOU with all five of Singapore's polytechnics to enhance workforce readiness, and support lifelong learning and employability of their workers. This enables SMRT to offer both fresh polytechnic graduates and alumni a wide range of career opportunities in public transport from engineers, cyber security experts to operators, communications, and behavioural science specialists.



*The Workgroup recognised that public transport operations can be made more efficient with the support of the LTA, which designs and plans the public transport network. For example, the LTA as the central bus planner regularly reviews the bus network, loading and travel pattern of bus services to explore opportunities to optimise bus services (routes, frequency) and introduce targeted injection of capacity for new developments or for specific time periods with increased demand (e.g. start and after dismissal periods near schools), while balancing need to optimise system costs and efficient allocation of resources. LTA has also embraced new technologies to help the public transport operators enhance their operational efficiency, such as the following:*

- *Condition monitoring of assets such as the Tyre Pressure Monitoring System (TPMS). Through audio and visual alerts, the TPMS facilitates prompt and appropriate corrective actions to reduce the effects of over/under inflation of tyres on their wear and tear. This helps to maintain the quality of bus ride, lowers operation cost and improves bus reliability.*
- *Integration of the bus on-board CCTV system with the Collision Warning System to optimise resources and minimise inventory and cost of operations.*



## Fare Adjustment Formula (Valid from 2018-2022)

### 0.5 cCPI + 0.4 WI + 0.1 EI - PE + NCF

**cCPI** Year-on-year change in core Consumer Price Index. It is a proxy of the change in general costs of certain components of public transport operations such as maintenance and operating asset depreciation, and excluding manpower and energy.

*Data source: Department of Statistics (DOS)/ Monetary Authority of Singapore (MAS)*

**WI** Year-on-year change in Wage Index measured by the Average Monthly Earnings (National Average), adjusted for any change in the employer's CPF contribution rate. It is a proxy of the change in manpower costs of the public transport system.

*Data Source: Department of Statistics (DOS)/ Ministry of Manpower (MOM)*

**EI** Year-on-year change in Energy Index which is a composite index derived from diesel price and electricity prices. It is a proxy for the change in energy costs in the public transport system.

*Data Source: Energy Market Company (EMCSG) and energy market data providers such as Argus*

**PE** Productivity Extraction (PE) set at 0.1%. This is based on half of the productivity gain achieved by the public transport operators.

**NCF** Year-on-year change in Network Capacity Factor which reflects capacity provision relative to passenger demand for the entire public transport system. It measures the change in place-kilometres (total distance covered by the operated bus and train trips taking into account passenger capacity of buses and trains) per passenger kilometre (total distance travelled by each commuter within the public transport network) over the preceding year, with equal weightage to both bus and rail modes.

$$NCF = 0.5 \times \Delta \frac{\text{Operated train place km}}{\text{Passenger km for train}} + 0.5 \times \Delta \frac{\text{Operated bus place km}}{\text{Passenger km for bus}}$$

# ANNEX F

## Comparison of Fares across Cities

Comparisons of fares<sup>11</sup> and concession schemes across cities indicated that public transport fares in Singapore are comparable or lower. This is especially so taking into consideration that fares are integrated with a single fare charge when a journey has inter-modal transfers (i.e. between bus and train).

### Singapore



Fare Structure/ Basis of Fares	Journey Card Fare (Adult)	Monthly Passes (Adult)
Distance	<b>Rail and Bus</b> <b>S\$0.99 to S\$2.26</b>	<b>Rail and Bus</b> Adult Monthly Travel Pass (AMTP) – <b>S\$128</b>

### Hong Kong



Fare Structure/ Basis of Fares	Journey Card Fare (Adult)	Monthly Passes (Adult)
Distance	<p><b>Rail</b> HKD 4.70 to HKD 28.70 <b>(~S\$0.80 to ~S\$4.90)</b></p> <p><b>Bus (KMB)</b> HKD 3.50 to HKD 14.20 <b>(~S\$0.60 to ~S\$2.40)</b></p>	<p><b>Rail only</b> MTR City Saver covers 67 designated urban stations, valid for 40 single journeys within 40 days for HKD435 (<b>~S\$74</b>).</p> <p>The Monthly Pass Extra offers unlimited rides between designated stations and 25% discount off normal fares for connecting journeys between non-designated stations for HKD 405 to HKD 635 (<b>~S\$68 to ~S\$107</b>).</p>

<sup>11</sup> Accurate as at March 2023. Adjusted based on currency exchange rate as at March 2023.

Note: Due to differences in fare structure and transfer rules in different cities, the comparison above is based on the range of fares across different cities, and may not be directly comparable with Singapore's distance-based fares.

## Seoul



Fare Structure/ Basis of Fares	Journey Card Fare (Adult)	Monthly Passes (Adult)
Rail: Distance Bus: Flat	<p><b>Rail</b>            KRW 1,250 to KRW 3,650  <b>(~\$1.30 to ~\$3.70)</b></p> <p><b>Bus</b>            KRW 1,000 to KRW 2,400  <b>(~\$1.00 to ~\$2.50)</b> depending on the service</p>	<p><b>Rail only</b>            Seoul Subway Commuter Card valid for 60 rides within 30 days.            KRW 55,000 (<b>~\$56</b>)</p>

## Taipei



Fare Structure/ Basis of Fares	Journey Card Fare (Adult)	Monthly Passes (Adult)
Rail: Based on origin-destination pairs, which varies by distance  Bus: Zonal	<p><b>Rail</b>            NTD 20 to NTD 65  <b>(~\$0.90 to ~\$2.80)</b></p> <p><b>Bus</b>            NTD 15 to NTD 45  <b>(~\$0.70 to ~\$2.00)</b></p>	<p><b>Rail and Bus</b>            Monthly Adult pass at NTD 1,280 (<b>~\$56</b>) for unlimited rides on MRT, bus and youbikes.</p>

## Paris



Fare Structure/ Basis of Fares	Journey Card Fare (Adult)	Monthly Passes (Adult)
Zonal for the Greater Paris region, flat within Paris city	€2.10 flat (within Paris) ( <b>~\$3</b> )	<p><b>Rail and Bus</b>            Navigo Travel Pass, price varies depending on the number of zones and duration.</p> <p>For unlimited travel in all zones: Monthly €84.10 (<b>~\$122</b>)</p>



## London

Fare Structure/ Basis of Fares	Journey Card Fare (Adult)	Monthly Passes (Adult)
Rail: Zonal Bus: Flat	<p><b>Rail</b> £1.90 to £5.60 <b>(~S\$3.10 to ~S\$9.20)</b></p> <p><b>Bus</b> £1.75 (<b>~S\$2.90</b>)</p>	<p><b>Rail and Bus</b> Adult Travelcard, price varies depending on the number of zones.</p> <p>For unlimited travel in all zones: Monthly £285.70 <b>(~S\$470)</b></p>



## Sydney

Fare Structure/ Basis of Fares	Journey Card Fare (Adult)	Monthly Passes (Adult)
Distance	<p><b>Rail</b> AUD 3.79 to AUD 7.24 <b>(~S\$3.40 to ~S\$6.50)</b></p> <p><b>Bus</b> AUD 3.20 to AUD 5.05 <b>(~S\$2.90 to ~S\$4.50)</b></p>	<p><b>Rail and Bus</b> No monthly pass. However, there is a weekly cap on fares paid of AUD 50 (<b>~S\$45</b>).</p>

# GLOSSARY OF TERMS

Terms	Descriptions
<b>Adult Monthly Travel Pass (AMTP)</b>	This is a monthly pass option available to adult commuters, whereby the commuter pays a monthly price in return for unlimited travel on public transport. Monthly passes help to limit the total public transport expenditure of commuters who are heavy or frequent users of public transport.
<b>Capacity Adjustment Factor (C)</b>	An indicator measuring the growth of capacity of the public transport system. The capacity is measured in place-kilometres i.e. the total distance covered by operated bus and train trips multiplied by the passenger capacity of the bus and train respectively.
<b>Concession Cards</b>	<p>These are non-transferable cards issued to eligible individuals belonging to specific commuter groups, in accordance with the eligibility criteria of the defined public transport concession schemes.</p> <p>The cards are proof of eligibility for individuals to enjoy concession fares when they travel on public transport.</p>
<b>Concession Schemes</b>	<p>Concession schemes accord reduced fares to eligible commuter groups for their travel on public transport.</p> <p>Eligible individuals belonging to the commuter groups will be issued with concession cards.</p>
<b>Concessionary Fares</b>	<p>Reduced fares on a per journey basis that are offered to eligible commuter groups, such as students and senior citizens, in accordance with the concession schemes.</p> <p>Eligible commuters will be issued with concession cards of the relevant scheme in order for them to benefit from reduced fares on per journey basis.</p>

Terms	Descriptions
<p><b>Core Consumer Price Index (cCPI)</b></p>	<p>Also known as MAS Core Inflation Measure, this index is published by the Monetary Authority of Singapore (MAS). It is a measure of underlying consumer price inflation and is based on a subset of the Consumer Price Index (CPI) basket that captures the underlying trend in prices which can be addressed by MAS' monetary policy. It excludes the cost of accommodation and private road transport.</p> <p>As a component within the fare adjustment formula, it refers to the change in core Consumer Price Index in a given year over the preceding year. It is a proxy of the change in general costs of certain components of public transport operations such as maintenance and operating asset depreciation, excluding manpower and energy.</p>
<p><b>Decile</b></p>	<p>One tenth of a given sample of data, grouped based on a range of a particular variable, e.g. income distribution. The 1<sup>st</sup> (or lowest) decile refers to the lowest 10<sup>th</sup> percentile group; the 2<sup>nd</sup> decile refers to the 11<sup>th</sup> - 20<sup>th</sup> percentile group; and so on.</p> <p>A decile of income distribution contains a range of household incomes, bounded by maximum and minimum household incomes of that decile.</p>
<p><b>Deferred Fare Adjustment Quantum</b></p>	<p>The portion of the fare adjustment quantum that is not granted by the PTC in a particular Fare Review Exercise and is deferred to the next exercise.</p>
<p><b>Energy Index (EI)</b></p>	<p>A composite index to reflect diesel and electricity prices. As a component within the fare adjustment formula, it refers to the change in Energy Index in a given year over the preceding year. It is a proxy for the change in energy costs in the public transport system.</p>

Terms	Descriptions
<b>Fare Adjustment Formula</b>	A formula that is used to calculate the maximum fare adjustment quantum in a particular Fare Review Exercise.
<b>Fare Adjustment Granted</b>	The percentage of fare adjustment on total fare revenue granted by the PTC in a particular Fare Review Exercise.
<b>Fare Adjustment Mechanism</b>	A mechanism adopted by the PTC to evaluate and decide on the change in fare levels for public transport.
<b>Fare Adjustment Quantum</b>	The cap on the percentage of fare adjustment on total fare revenue in a particular Fare Review Exercise. It is derived from the fare adjustment formula.
<b>Fare Level</b>	This refers to the fares charged on a particular service type (e.g. trunk bus services, feeder bus services, express bus services, train services).
<b>Fare Review Exercise (FRE)</b>	The process performed by the PTC to consider and decide on fare adjustment in a particular year, in accordance with the fare review framework.
<b>Fare Review Framework</b>	This refers to an overall framework that governs the review of fares for public transport. It consists of the fare adjustment formula, the fare adjustment mechanism and related considerations that lead to a decision on the granting of a fare adjustment.
<b>Fare Structure</b>	This refers to the method in which the fare for a trip or a journey is calculated. The fare structure currently takes into consideration the service type (e.g. trunk or feeder bus services) and the distance travelled.
<b>Household Expenditure Survey (HES)</b>	A survey conducted by the Singapore Department of Statistics once every five years, to collect detailed information on the consumption expenditure of resident households in Singapore. This is where information on household expenditure on public transport is drawn from.

Terms	Descriptions
<p><b>Monthly Concession Pass (MCP)</b></p>	<p>This is a monthly pass option available to eligible commuter groups, whereby the commuter pays a monthly price in return for unlimited travel on public transport. Monthly passes help to limit the total public transport expenditure of commuters who are heavy or frequent users of public transport.</p>
<p><b>Network Capacity Factor (NCF)</b></p>	<p>This is a component in the fare adjustment formula valid from 2018-2022. NCF reflects capacity provision relative to passenger demand for the entire public transport system. It measures the change in place-kilometres (total distance covered by the operated bus and train trips taking into account passenger capacity of buses and trains) per passenger kilometre (total distance travelled by each commuter within the public transport network) over the preceding year, with equal weightage to both bus and rail modes.</p> $NCF = 0.5 \times \Delta \frac{\text{Operated train place km}}{\text{Passenger km for train}} + 0.5 \times \Delta \frac{\text{Operated bus place km}}{\text{Passenger km for bus}}$
<p><b>Productivity Contribution (PC)</b></p>	<p>The Productivity Contribution (PC) component in the new fare adjustment formula (valid from 2023-2027) is set at 0.1% and is shared with commuters from 2023 - 2027.</p>
<p><b>Productivity Extraction (PE)</b></p>	<p>This is part of the fare adjustment formula and reflects the provision where public transport operators have to share part of their productivity improvements with the commuters. It should not be negative even if and when the public transport operators achieve negative productivity improvements.</p> <p>The Productivity Extraction (PE) component in the 2018-2022 fare adjustment formula is based on half of the productivity gain achieved by the public transport operators. The value is based on average productivity gains between 2012-2016 and was shared with commuters from 2018-2022.</p>



Terms	Descriptions
<b>Public Transport Affordability Indicator (PTAI)</b>	<p>An indicator to track the affordability of public transport fares over time. It is defined as the percentage of monthly resident household income spent on public transport.</p> <p>The PTC tracks fare affordability of households in the 2<sup>nd</sup> decile (11<sup>th</sup> – 20<sup>th</sup> percentile group) and 2<sup>nd</sup> quintile (21<sup>st</sup> –40<sup>th</sup> percentile group) of resident household income distribution.</p>
<b>Public Transport Fund (PT Fund)</b>	<p>A fund set up to help the needy or targeted commuter groups to cope with public transport fare adjustments. In the years of fare increase, the public transport operators are required to contribute a portion of their fare adjustment granted to the Fund. In addition, financial penalties from public transport operators’ service lapses are also channelled to the Fund.</p>
<b>Public Transport Operators (PTOs)</b>	<p>These refer to public bus and train operators licensed by the Land Transport Authority (LTA) to provide public transport services.</p> <p>For example, SBS Transit Rail Pte Ltd, SMRT Trains Ltd and SMRT TEL Pte Ltd provide rail services; and Go-Ahead Singapore, SBST Transit Ltd, SMRT Buses Ltd and Tower Transit Singapore provide bus services.</p>
<b>Quintiles</b>	<p>One fifth of a given set of data, grouped based on a range of a particular variable, e.g. household income per household person. The 1<sup>st</sup> (or lowest) quintile refers to the lowest 20<sup>th</sup> percentile group; the 2<sup>nd</sup> quintile refers to the 21<sup>st</sup> – 40<sup>th</sup> percentile group; and so on.</p> <p>A quintile of income distribution has a range of household incomes, bounded by maximum and minimum household incomes of that quintile.</p>
<b>Wage Index (WI)</b>	<p>An index that is based on the national average monthly earnings published by the Department of Statistic (DOS) and the Ministry of Manpower (MOM). As a component within the fare adjustment formula, it refers to the change in national average monthly earnings for a given year over the preceding year. It is a proxy of the change in manpower costs of the public transport system.</p>



**mTower, 460 Alexandra Road, #05-01A, Singapore 119963**

**Tel: (65) 6354 9020 | Fax: (65) 6258 5463**

**Email: [ptc\\_office@ptc.gov.sg](mailto:ptc_office@ptc.gov.sg)**