Membership of international benchmarking groups allows Sydney Trains to compare its performance with railway systems internationally and, through sharing best practises, identify opportunities for improvement.

Sydney Trains belongs to the Nova offshoot of CoMET and to ISBeRG:

- CoMET is a group of 16 of the world’s largest metros. Members have more than 500 million passenger journeys per annum.
- Nova is more diverse, comprised of 17 small to medium metros with less than 500 million passenger journeys per annum. Sydney Trains (previously known as CityRail) joined the Nova benchmarking group in September 2007.
- ISBeRG is a newer group comprising 14 members that, like Sydney Trains, operate inter-suburban commuter services with typically larger scale networks but lower patronage than either CoMET or Nova members. Sydney Trains joined the group in 2011.

Benchmarking is undertaken annually. This document provides a provisional update of selected charts from Sydney Trains’ previously published report and shows results for the calendar years 2011 to 2015. To preserve confidentiality of other members’ data, Sydney Trains’ performance is compared to the:

- average of all CoMET Members
- average of all Nova Members
- average of all CoMET/Nova Asian Members
- average of all CoMET/Nova European Members
- average of all CoMET/Nova North American Members
- average of all ISBeRG Members

In some cases there are changes to previously published figures due to revision of data. Comparison to averages may disguise some significant ‘highs’ and ‘lows’ in performance; individual results within each group may vary significantly.

Sydney Trains has a larger network than nearly all of the CoMET/Nova group members, but comparatively low patronage. It is a suburban railway with predominantly one-way commuting passenger flows in peak periods, higher average distances between stations, and longer average passenger journey lengths than most CoMET and Nova members.

For these reasons its performance is generally more comparable with that of other ISBeRG members.

**Note:** Sydney Trains’ data covers the period since the reorganisation in 2013. Revised data for prior years (Sydney CityRail) is not available for all data items and KPI analysis is not possible for the majority of indicators for years prior to 2013. Some of the graphs presented in this report therefore only show Sydney Trains data for the 2013-15 period.
Trains on time are defined as scheduled services that arrived within a five-minute threshold.

Although performance declined between 2011 and 2013, Sydney Trains’ performance improved in 2014 and is above target. Sydney Trains’ performance is comparable to similar operators and better than the ISBeRG average.

North American metros tend to have ageing assets and historical levels of underinvestment which affect asset quality.

Asian metro networks are newer and are the best performing in terms of on-time running and reliability. This is due to a combination of reliability centred maintenance, a culture of continuous improvement, and the age and design of their systems.
The percentage of cars used in the peak hour is a key measure of rolling stock utilisation as well as the performance of the rolling stock maintenance function. This KPI also reflects operational strategy regarding metros’ use of spare trains and investment strategy in terms of fleet size. This measure can be affected by the metro’s or railway’s ability to maintain all trains outside of peak periods (for example, if night working is not permitted, a lower level of performance is usually achieved).

This KPI can be influenced in particular years by fleet changes, including the retirement and/or refurbishment of existing cars or the procurement of cars for new lines and extensions, and/or to increase service on existing lines.

CoMET and Nova research suggests that sustainable best practice is approximately 90%, but some metros operate above this threshold through necessity.

The challenge is to achieve an efficient spare ratio within the context of operational requirements, service standards, ridership levels, demands of maintenance, overhaul and rebuild programs and extended procurement cycles.

Since 2013, Sydney Trains performance on this measure has declined significantly, from approximately 89% in 2013, to 87% in 2014, and to 83% in 2015. Whilst it remains comparable with CoMET and Nova averages, it now underperforms against other ISBeRG members. This is attributable to the introduction of the Waratah sets to the fleet while retaining our S Sets to provide for future timetable requirements until new Sydney growth trains are delivered.
This KPI is a measure of ‘net’ driver productivity, measuring the effectiveness with which driver time is used whilst at work rather than total driver time. Sydney Trains demonstrates low driver productivity relative to CoMET and Nova metros and also, though to a lesser extent, when compared to ISBeRG railways. Low driver productivity and two-person operation (driver and guard) are seen as the greatest cost drivers for Sydney Trains when compared to its international benchmarking group peers, many of which have driver-only operation. The increase in 2015 result is mainly attributable to better data for example, consistent with benchmark definition, we are now capturing standing time, (Note that this data represents only drivers and does not take into account the hours associated with guards). Sydney Trains work practices can be viewed as inflexible and outdated when examining international best practice. Other factors such as long lines extending far beyond the city centre and lower service frequencies exacerbate the challenges of driver scheduling in Sydney. These factors make Sydney Trains more comparable with railways within the ISBeRG group rather than the metros of CoMET and Nova. Some operators have successfully negotiated improved productivity and increased driver flexibility through measures such as: split shifts, part time drivers, and variable shift lengths.
Traction energy is a significant cost element for many operators. Environmental issues and the increasing cost of energy are adding pressure to reduce energy consumption.

For some members, non-traction energy represents a significant proportion of total energy consumption, due to the energy required to operate air conditioning systems, and vertical transport infrastructure such as lifts and escalators. Three CoMET and Nova metros reported that non-traction energy consumption was higher than traction energy usage.

Sydney Trains’ total energy consumption per passenger kilometre is higher than the CoMET, Nova and ISBeRG averages. The CoMET group average has shown a general downward trend since 2011. Similarly, the Nova, European and Asian group averages have decreased since 2011. The North American group average remained relatively constant between 2011 and 2015.

Sydney Trains’ energy consumption increased slightly in 2013 due to the rollout of the new Waratah rolling stock along with station upgrades.

Many operators have reduced traction energy consumption with lower train speeds in the off-peak period, new trains and regenerative braking for at least part of their fleet (which Sydney Trains’ newer trains have).

However, the reduction in operators’ year-on-year energy per passenger kilometre is also driven by passenger growth, particularly in Asian metros. The higher the passenger km, the more the marginal energy consumption will reduce.
This KPI measures the efficiency of traction energy use (more easily controllable by the operator than energy cost, because that depends on the price of energy, which in most cities is mainly outside operator control).

The denominator used (car kilometres) is more clearly under the control of the operator than passenger kilometres; although patronage is an important cost driver of station size and operating cost, traction energy relates most directly to the distance metro vehicles travel.

The contrast between this measure and the previous measure highlights the impact on performance of Sydney Trains’ low average passenger loadings.

Most CoMET, Nova and ISBeRG members have experienced a reduction in traction energy consumption per car kilometre since 2011. Sydney Trains' traction energy consumption is very similar to the ISBeRG average for both 2014 and 2015. It should also be noted that Sydney Trains operates double decker trains which are larger and heavier than most comparators' rolling stock, yet continue to perform well in energy efficiency terms.
Financial
Fare Revenue/Operating Cost

This KPI shows whether operators generate enough revenue from passengers (fares) to break even, without consideration of capital expenditure or any subsidies (including subsidies to customers in the form of concessionary fares and contract fees paid to the operator).

Despite a rise in real fare revenue per passenger kilometre, Sydney Trains’ operating cost recovery from fares is significantly below CoMET, Nova, and ISBeRG group averages. This has been the case for every one of the last five years.\(^1\)

Under Government directions and policies, Sydney Trains provides extensive concession entitlements and fares are generally low when compared to distance travelled (See page 9).

Asian metros: high performance is driven by passenger densities, i.e. fare revenue concentration. Lower labour costs also result in Asian metros tending to have lower operating costs.

\(^1\) Some ISBeRG members are not included in cost comparisons as they are not responsible for the cost of infrastructure maintenance (track, stations and other fixed installations) and hence do not have comparable cost structures. The four excluded members are NSB Oslo, S-Bahn Munich, DSB Copenhagen and London Overground.
This KPI shows the contribution secondary revenue (from sources such as advertising, retail, property and telecommunications) makes to cost recovery.

Income from non-fare revenue has been fairly stable for CoMET metros since 2011 as a proportion of operating cost. Meanwhile the Nova group average has consistently been less than half that of the CoMET members on this measure.

Non-fare revenue relative to operating cost had been falling in Asian metros as their networks expand, but there have been improvements in 2014 and 2015. Initiatives on some European and American metros have kept non-fare revenue relatively steady over the last five years; the increase in revenue on European networks in 2014 appears to be somewhat anomalous.

Note: Some ISBeRG members are not included in cost comparisons as they are not responsible for the cost of infrastructure maintenance (track, stations and other fixed installations) and hence do not have comparable cost structures. The four excluded members are NSB Oslo, S-Bahn Munich, DSB Copenhagen and London Overground.
The graph above shows the average fare revenue per passenger kilometre received by the operator, normalised by USD Purchasing Power Parity (PPP). This measure is a good proxy for the average fare, but it is not adjusted for the different levels of concessionary fare reductions charged by operators - and, as mentioned previously, Sydney Trains offers extensive concessionary fares.

Sydney Trains' fare revenue per passenger kilometre is low compared to other operators. Whilst the period 2011-13 saw revenue increase, 2014 and 2015 have seen decreases in excess of the gains observed in the three years preceding.

North American and European operators have been increasing fares in recent years in response to widening budget deficits, while some Asian metro operators continue to hold real fares constant, which has led to decreases in real terms.

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**Note:** Sydney Trains’ 2011/12 data is not directly comparable with subsequent years due to the reorganisation.
In recent years operating costs reduced in real terms for many CoMET/Nova metros, particularly in Europe. A contributing factor is that salaries appear to have decreased in response to the global economic crisis, however, in some metros real term salary increases are observed. Many metros are achieving lower unit operating costs by increasing the number of car kilometres operated – such as through longer trains, more frequent services, or network extensions. For growing metros, such as those in Asia, unit operating costs are reduced as fixed costs are spread over larger networks and service levels are increased.

Sydney Trains' total operating costs are relatively high compared to CoMET and Nova metros, though similar to other high-wage cities in the group. Sydney Trains' total operating costs are comparable to the ISBeRG railways, though unit costs are lower due to higher car kilometres. This may be partly due to more metro like operations in the CBD area of Sydney.

Asian metros tend to have large stations and very high levels of station staffing, but labour costs are relatively low. Some Asian and European metros have year-on-year productivity plans embedded in their budgets.

Note: Some ISBeRG members are not included in cost comparisons as they are not responsible for the cost of infrastructure maintenance (track, stations and other fixed installations) and hence do not have comparable cost structures. The four excluded members are NSB Oslo, S-Bahn Munich, DSB Copenhagen, London Overground.
Sydney Trains’ maintenance costs per car kilometre are high but have remained fairly constant between 2013 and 2015, in line with a number of other metros and suburban railways.

Sydney Trains has been undertaking a major programme of reforms to address inefficiencies and over-servicing that contribute to high costs. The programme will also drive efficiencies in contracting, contract administration and business overheads.

Sydney Trains operates an ageing predominantly double-decker fleet, which, contributes to higher maintenance costs. The replacement of the oldest carriages with the new Waratah fleet is helping to address this issue.

An increase in Sydney Trains stations' precincts investment over time (lifts, lighting and facilities) has led to an increase in the cost to maintain such assets. The increase in maintenance works to address the high priority defects has also increased maintenance cost between 2014 and 2015.

Infrastructure maintenance costs are high, however they have shown a marginal improvement, and are expected to continue to decrease.

The unit cost of maintenance (per car km) is increasing above the rate of inflation for the majority of CoMET and Nova metros in 2014 and 2015, with particularly large increases seen in one Asian metro in 2015.

Reasons for change in other metros include renegotiation of outsourced maintenance contracts, reliability centred maintenance and procurement of new trains.