



SERVICE LEVEL BENCHMARKS FOR URBAN TRANSPORT

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SLBs FOR URBAN TRANSPORT

- Need
- Objective and approach
- Stakeholders
- Limitations and Challenges

SERVICE LEVEL BENCHMARKS

1. Public Transport facilities
2. Pedestrian Infrastructure facilities
3. Non Motorized Transport facilities
4. Usage of Intelligent Transport System (ITS) facilities
5. Travel speed along major corridors
6. Availability of Parking facilities
7. Road Safety
8. Pollution levels
9. Integrated Land Use Transport System
10. Financial Sustainability of Public Transport

1. PUBLIC TRANSPORT FACILITIES

- Public Transport systems will only include rail, or organised bus based systems
- Identify the availability and facility of public transport along the key corridors.
- The indicators required to calculate LOS of the Public Transport System are as follows:
 1. Presence of Organized Public Transport System in Urban Area
 2. Extent of Supply / Availability of Public Transport
 3. Service Coverage of Public Transport in the city (Bus route network density)
 4. Frequency of Public Transport Service
 5. Level of Comfort in Public Transport
 6. Percentage Fleet as per Urban Bus Specification

1. PUBLIC TRANSPORT FACILITIES

- 1. **Presence of Organized Public Transport System in Urban Area:** Within the first year, all JnNURM cities to establish Organized Public Transport System and by second year all 2 lakh plus population cities (as per 2001 census) to establish the same.
- 2. **Extent of Supply / Availability of Public Transport:** Within the first two years, all million plus cities but less than 4 million to increase public transit supply to service level 3 or above. All 4 million plus cities to increase supply to service level 2 or above.
- 3. **Service Coverage of Public Transport in the city (Bus route network density):** All million plus cities but less than 4 million to increase their public transit coverage at least supply to service level 3 or above. All 4 million plus cities to increase the service coverage to service level 2 or above.
- 4. **Average waiting time for Public Transport users:** All million plus cities to maintain average waiting time for public transport users to be a maximum of 10 minutes or below within 2 years.
- 5. **Level of Comfort in Public Transport (Crowding):** In all million plus cities, with in 2 years, the level of service should be 3 or above
- 6. **Percentage Fleet as per Urban Bus Specifications:** All million plus cities to have at least 25% of their fleet as per urban bus specifications by the end of first year.

Data required to calculate Indicators

1. Presence of Organized Public Transport System

- a) Calculate the total number of buses in the city
- b) Calculate the total number of buses under the ownership of STU/SPV or under concession agreement.

Calculate $[b / a] * 100$ and Compute LOS 1

LOS 1	Presence of organized public transport system
1	≥ 60
2	40-60
3	20-40
4	< 20

2. Extent of Availability of Public Transport per 1000 population

- a) No of Buses/ train coaches available in a city on any day (1 train coach is equivalent to 3 buses).
- b) Total Population of the city

Calculate $[a / b]$ and Compute LOS 2

LOS 2	Availability of Public Transport
1	≥ 0.6
2	0.4 - 0.6
3	0.2 - 0.4
4	< 0.2

3. Service Coverage (route kms / sq. km)

- a) Total length in route kms of the corridors on which public transport systems ply in the city.
- a) Area of the urban limits of the city (sq. kms).

Calculate $[a / b]$ and Compute LOS 3

LOS 3	Service Coverage(route length per sq.km of area)
1	≥ 1
2	0.7- 1
3	0.3 - 0.7
4	< 0.3

Data required to calculate Indicators

4. Average waiting time for Public Transport users

- a) Delineate the key corridors for public transport in the city
- b) Calculate the average waiting time (In min) of passengers for each route.
- c) Create the frequency distribution

Compute LOS 4

LOS 4	Average waiting time for Public Transport users
1	<=4
2	4 - 6
3	6 - 10
4	> 10

5. Level of Comfort in Public Transport

- a) Identification of key nodes / traffic origin points
- b) Passenger count on bus at key identified routes
- c) Seats available in the bus

Calculate [b / c] and Compute LOS 5

LOS 5	Level of Comfort in Public Transport
1	<= 1.5
2	1.5 – 2
3	2.0 – 2.5
4	>2.5

6. % of Fleet as per Urban Bus Specifications

- a) Total number of buses in the city
- b) Total number of buses as per urban bus specifications in the city

Calculate [b / a] *100 and Compute LOS 6

LOS 6	% of Fleet as per Urban Bus Specifications
1	75 - 100
2	50 - 74
3	25 - 49
4	< =25

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	< 12	The City has a good public transport system which is wide spread and easily available to the citizens. The system provided is comfortable.
2	12 - 16	The City has an public transport system which may need considerable improvements in terms of supply of buses/ coaches and coverage as many parts of the city are nor served by it. The frequency of the services available may need improvements. The system provided is comfortable.
3	17 - 20	The City has a public transport system which may need considerable improvements in terms of supply of buses / coaches and coverage as most parts of the city are nor served by it. The frequency of the services available needs improvements. The system provided is not comfortable as there is considerable over loading.
4	21-24	The city has poor or nil organized public transport system

Calculated LOS of Public Transport = (LOS1 + LOS2 + LOS3 + LOS4 + LOS5 + LOS6) and identify overall LOS as mentioned above

2. AVAILABILITY OF PEDESTRIAN FACILITIES

- It indicates the percentage of road length along the arterial and major road network or Public Transport corridors and at intersection that has adequate **barrier free** pedestrian facilities.
- The indicators to calculate the adequate pedestrian facilities are as follows:
 1. **Signalized intersection delay (% of intersections with average waiting time more than 45sec):** All million plus cities to target level of service 2
 2. **Street Lighting (Lux):** All million plus cities to target level of service 2
 3. **% of City Covered with footpaths (wider than 1.2 mtrs):** All million plus cities to target level of service 2.

Data required to calculate Indicators

1. Signalized intersections Delay (%)

- a) Total number of Signalized intersection
- b) Signalized intersections having average waiting time of pedestrians > 45 sec

Calculate $[b / a]$ and Compute LOS 1

LOS 1	Signalized intersections Delay (%)
1	< 25
2	25 - 50
3	50 - 75
4	≥ 75

2. Availability of Street Lighting

- a) Total length of road
- b) Calculate lux level (10 samples /km)

Compute LOS 2

LOS 2	Street Lighting (LUX)
1	≥ 8
2	6 - 8
3	4 - 6
4	< 4

3. Percentage of city covered

- a) Total length of road network
- b) Total length of footpath in the city

Calculate $[b / a]*100$ and Compute LOS 3

LOS 3	% of City Covered
1	≥ 75
2	50 - 75
3	25 - 50
4	< 25

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	3 - 5	The city has adequate barrier free pedestrian facilities at overall road network.
2	6 - 8	The city has pedestrian facilities which may need some improvements in terms of improvements in intersections, footpaths, and street lighting as some parts of the city are not served by it. The footpath available need improvements. The system provided is comfortable and sustainable
3	9-10	The city has pedestrian facilities which may need considerable improvements. The pedestrian facilities at intersection, availability of footpath etc needs improvements as many parts of the city are not served by it.
4	11 - 12	The city lacks adequate pedestrian facilities

Calculated LOS of Pedestrian Facility = LOS 1 + LOS 2 + LOS 3 and identify overall LOS as mentioned above

3. AVAILABILITY OF NON MOTORIZED VEHICLE (NMV) FACILITIES

- Indicates the percentage of dedicated cycle track / lane along the arterial & collector road network or public transport corridors with a minimum of 1.5 m width.
- All JnNURM cities to have NMV tracks on all major roads with in a year.
- Overall LOS is measured as a combination of the following attributes:
 1. **Presence of NMV Track:** All JnNURM cities to have NMV tracks on all major roads with in a year.
 2. **NMV Coverage (% network covered):** At least 25% network with in a year.
 3. **Encroachment on NMV roads by Vehicle Parking (%):** Target should be to have not more than 30% of NMV encroached i.e. LOS of 3 with in 1 year
 4. **NMV parking facilities at Interchanges (%):** Create NMV parking near all major bus stops, terminals and railway stations with in a year.

Data required to calculate Indicators

1. Network covered (%)

- a) Total length of road network (km)
- b) Total Length of NMT network (km)

Calculate [b / a] * 100 and Compute LOS 1

LOS 1	Network covered (%)
1	≥ 50
2	50 - 25
3	25- 15
4	< 15

2. Encroachment on NMV roads by Vehicle Parking (%)

- a) Total length of the Parking on Cycle Track
- b) Total length of NMT network

Calculate = [a / b]*100 and Compute LOS 2

LOS 2	Encroachment on NMV roads by Vehicle Parking (%)
1	≤ 10
2	10 - 20
3	20 - 30
4	> 30

3. NMT Parking facilities at Interchanges (%)

- a) Total no. of interchanges i.e major bus stops, terminals and railway stations
- b) Total no. of interchanges having bicycle parking

Calculate = [b / c]*100 and Compute LOS 3

LOS 3	NMT Parking facilities at Interchanges (%)
1	≥ 75
2	50 - 75
3	25- 50
4	< 25

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	3-5	The City has adequate NMT facilities at overall road network.
2	6 - 8	The City has NMT facilities which may need some improvements in terms of encroachments, parking facilities at interchanges etc as some parts of the city are not served by it. The system provided is comfortable and sustainable
3	9-10	The City has NMT facilities which may need considerable improvements as many parts of the city are not served by it.
4	11 - 12	The city lacks adequate NMT facilities

Calculated LOS of NMV facilities = LOS 1 + LOS 2 + LOS 3 and identify overall LOS as mentioned above

4. Level of Usage of Intelligent Transport System (ITS) facilities

- ITS refers to efforts to add information and communications technology to transport infrastructure and vehicles.
- The indicators to calculate the ITS facilities used by Public transport and Intermediate public transport (IPT) in the city are:
 1. **Availability of Traffic Surveillance System:** In all million plus cities, all rapid transit stations and all transit terminals will be equipped with CCTVs (Year-1) and all signalized intersections by year 2.
 2. **Passenger Information System (PIS):** In all million plus cities, major bus stops, all rapid transit stations and all transit terminals will be equipped with PIS system (Year-1). Older transit vehicles in these cities will be covered with GPS system in Year 2. Intermediate public transport systems will be covered with GPS in the years 2 to 3.
 3. **Usage of Global Positioning System:** All new transit vehicles will be equipped with GPS systems (Year-1 for all JnNURM cities and year 2 for two lakh plus population cities).
 4. **Signal Synchronization:** In all million plus cities, in the first 2 years, all the junctions on major roads will be signalized and synchronization will be undertaken (50% in year1 and 50% in year 2).
 5. **Integrated Ticketing System:** In all million plus cities, all public transit systems and sub-systems will be covered Automatic Ticketing System in the next 3 years (in a phased manner). All cities with rapid transit systems (Metro/BRT) to introduce integrated ticketing system during the next 3 years (To include integration of ticketing between sub-systems and parking).

Data required to calculate Indicators

1. Availability of Traffic Surveillance

- a) total no. of major bus stops, terminals, metro stations and signalised intersections having CCTVs
- b) total no. of major bus stops, terminals, metro stations and signalised intersections

Calculate $[a / b] * 100$ and Compute LOS 1

	Availability of Traffic Surveillance (%)
LOS 1	
1	≥ 75
2	50 - 75
3	25 - 50
4	< 25

2. Passenger Information System

- a) total no. of bus stops, terminals, metro stations having PIS
- b) total no. of bus stops, terminals, metro stations

Calculate $[a / b] * 100$ and Compute LOS 2

	Passenger Information System (PIS) (%)
LOS 2	
1	≥ 75
2	50 - 75
3	25 - 50
4	< 25

3. Global Positioning System

- a) No. of Public Transport Vehicles and IPT with functional onboard GPS and connected to common control center
- b) Total no. of Public Transport Vehicles and IPT

Calculate $[a / b] * 100$ and Compute LOS 3

	Global Positioning System / GPRS (%)
LOS 3	
1	≥ 75
2	50 - 75
3	25 - 50
4	< 25

Data required to calculate Indicators

4. Signal Synchronization

- a) No. of signals which are synchronized
- b) Total no. of signalized intersections

Calculate $[a / b] * 100$ and Compute LOS 4

LOS 4	Signal Synchronization (%)
1	≥ 75
2	50 - 75
3	25 - 50
4	< 25

5. Integrated Ticketing system

- a) Total Number of modes and operators in the city (Buses, IPT, Metro etc) which have integrated ticketing system
- b) Total Number of modes and operators in the city (Buses, IPT, Metro etc)

Calculate $[a / b] * 100$ and Compute LOS 5

LOS 5	Integrated Ticketing System (%)
1	≥ 75
2	50 - 75
3	25 - 50
4	< 25

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	5 - 7	The city has an adequate ITS facilities
2	8 - 10	The City has ITS facilities which may need some improvements in terms of integrated ticketing system, signal Synchronization, GPS/GPRS, PIS etc as some parts of the city are nor served by it.
3	11 - 15	The City has ITS facilities which may need considerable improvements terms of integrated ticketing system, signal Synchronization, GPS/GPRS, PIS etc as many parts of the city are nor served by it.
4	16 - 20	The city lacks adequate ITS facilities

Calculated LOS of ITS facilities LOS= LOS 1 + LOS 2 + LOS 3 + LOS 4 + LOS 5 and identify overall LOS as mentioned above

5. TRAVEL SPEEDS ALONG MAJOR CORRIDORS

- Level of service (LoS) may be measured along key corridors and then aggregated for the city.
 - Year 1 target is to arrest worsening of the situation in the initial period
 - Subsequently target to improve the service conditions to a reasonable level

- Level of Service is defined in terms of average travel speed of all through vehicles on the key corridors. It is strongly influenced by the number of vehicles along the corridor, number of signals per kilometer and the average intersection delay.

- The indicators to calculate the Traffic Density in the city are:
 1. Travel speed of Personal vehicles along key corridors
 2. Travel speed of Public Transport along key corridors

Data required to calculate Indicators

1. Average Travel speed of Personal vehicles along key corridors (Kmph)

- Delineate the key corridors of road traffic (personal vehicle) in the city.
- Compute running time on the key corridors
- Level of Service for personal vehicle along each corridor
- Weights of each corridor based on volume of personal traffic

LOS 1	Travel speed of Personal vehicles
1	≥ 30
2	25 - 30
3	15 - 25
4	< 15

Compute LOS 1 of motorized vehicles

2. Average Travel speed of Public Transport along key corridors (Kmph)

- Delineate the key corridors of public transport in the city.
- Compute running time on the key corridors
- Level of Service for public transport along each corridor
- Weights of each corridor based on volume of passengers

LOS 2	Travel speed of Public Transport
1	≥ 20
2	15 - 20
3	10 - 15
4	< 10

Compute LOS 2 of public transport vehicles

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	2	Primarily free flow- operations at average travel speeds usually about 70% of the free flow speed for the key corridors
2	3 -4	Small increase in flow may cause substantial increases in approach delay and hence, decrease in arterial speed.
3	5 -6	Significant approach delays and average travel speed of 1/3 of free flow speed or lower. Such operations are caused by some combination or adverse progression, high signal density, extensive queuing at critical intersections and inappropriate signal timing.
4	7 -8	Key corridors at extremely low speeds below 1/3 to 1/4 of the free flow speed. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse progression is frequently a contributor to this condition.

Calculated LOS of traffic density = (LOS1 + LOS2) and identify overall LOS as mentioned above

6. AVAILABILITY OF PARKING SPACES

- It indicates the restriction of free parking spaces for all vehicles in a city.
- The indicators to calculate the parking facilities are as follows:
 - **Availability of paid public parking spaces (%)**: To cover at least 50% of on street public parking spaces under 'paid parking'
 - **Difference in Maximum and Minimum Parking Fee in the City**: To keep maximum and minimum parking fee difference to at least 2:1.

Data required to calculate Indicators

1. Availability of on street paid public parking spaces

- a) Total available on street paid parking spaces in (Equivalent Car Spaces) ECS allotted for all vehicles
- b) Total available on street parking spaces in (Equivalent Car Spaces) ECS allotted for all vehicles

Calculate = $[a / b] * 100$. Compute LOS 1

LOS 1	Availability of on street paid public parking spaces (%)
1	≥ 75
2	50 - 75
3	25 - 50
4	< 25

2. Difference in Maximum and Minimum Parking Fee in the City

- a) Maximum parking fee being charged per 2 hours in the city (Rs)
- b) Minimum parking fee being charged per 2 hours in the city

Calculate = (a / b) . Compute LOS 2

LOS 2	Ratio of Maximum and Minimum Parking Fee in the City
1	≥ 4
2	4 - 2
3	2 - 1
4	1

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	2	Paid parking spaces are available in the city and the demand is well managed by incorporating differential parking rates for the CBD.
2	3 - 4	Paid parking spaces are available in the city and the demand is well managed by incorporating differential parking rates for the CBD. However some improvements may be required
3	5 - 6	Paid parking spaces provided in the city need to be improved upon and to cater to the demand some differential parking rates for the CBD have been adopted. The city authorities need to imitative considerable improvements measures.
4	7 - 8	The city authorities need to initiate immediate actions with respect to providing paid parking spaces and demand management for parking.

Calculated LOS of Parking facilities = (LOS1 + LOS2) and identify overall LOS as mentioned above

7. ROAD SAFETY

- Level of fatality is an indication of road safety. Road design and available road infrastructure, traffic management and other such reasons significantly contribute to road safety. The benchmark for the same is zero, as ideally fatalities and injuries out of accidents should be brought down to nil.
- Within the number of accidents, the vulnerable road users are pedestrians and persons with non-motorised vehicles. The benchmark value for the same is also zero.
- The indicators to calculate the LOS of road safety is as follows:
 1. **Fatality rate per lakh population:** To bring down fatality rates to 4 persons per lakh or below in all million plus cities within two years
 2. **Fatality rate for pedestrian and NMT (%):** To bring down fatality rates for pedestrian and NMT such that the share comes down to less than 40% within two years.

Data required to calculate Indicators

1. Fatality rate per lakh population

- a) Total number of fatalities recorded in road accidents within city limits in the given calendar year
- b) Population of the urban agglomeration in that year

Calculate= $[(a*1,00,000) / b]$ and Compute LOS 1

LOS 1	Fatality rate per lakh population
1	< =2 persons
2	2 -4 persons
3	4 - 6 persons
4	> 6 persons

2. Fatality rate for pedestrian and NMT (%)

- a) Total number of fatalities recorded of persons who were pedestrians or on non-motorised transport vehicles, in road accidents within city limits in given year
- b) Total number of fatalities recorded in road accidents within city limits in the given calendar year

Calculate = $[(a / b)*100]$ and Compute LOS 2

LOS 2	Fatality rate for pedestrian and NMT (%)
1	<= 20
2	20 -40
3	40 - 60
4	> 60

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	2	Level of Fatality rate in the city is very low.
2	3 - 4	Needs some improvements in Road design and available road infrastructure, traffic management and in other such reasons which significantly contribute to road safety.
3	5 - 6	Needs considerable improvements in Road design and available road infrastructure, traffic management and in other such reasons which significantly contribute to road safety.
4	7 – 8	Level of Fatality rate in the city is very high.

Calculated LOS of Road safety= (LOS1 + LOS2) and identify overall LOS as mentioned above

8. Pollution Levels

- This indicator indicates the Level of air Pollutants in the city i.e. average level of pollution in Urban areas.
- The indicator to calculate the pollution levels is **Annual Mean Concentration Range ($\mu\text{g}/\text{m}^3$)**.

Data Required to calculate indicator

Level of air Pollutants in the city- Indicates the average level of pollution in Urban areas.

1. Annual Mean Concentration Range ($\mu\text{g}/\text{m}^3$)				
Level	SO ₂	Oxides of Nitrogen	SPM	RSPM (Size less than 10 microns)
1 (Low)	0 - 40	0 - 40	0 - 180	0 - 40
2 (Moderate)	40 - 80	40 - 80	180 - 360	40 - 80
3 (High)	80 - 120	80 - 120	360 - 540	80 - 120
4 (Critical)	> 120	> 120	> 540	> 120

* As per CPCB guidelines

Annual Arithmetic Mean of minimum 104 measurements in a year taken twice a week 24-hourly at uniform interval (Data from CPCB)

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	<=5	Level of pollution in the city is very low.
2	6 - 9	Needs some improvements in emission standards and checking pollution etc.
3	10 - 13	Needs considerable improvements in emission standards and checking pollution etc.
4	14 – 16	Level of pollution in the city is very high.

Calculated LOS of Road safety= (LOS1 + LOS2) and identify overall LOS as mentioned above

9. INTEGRATED LANDUSE-TRANSPORT SYSTEM

- Indicates the effectiveness of land use-transport arrangements and Identify the level of Land use transport integration expected to result in overall trip reduction and mode shift in favor of public transit.
- The indicators to calculate the Land use transport integration are as follows:
 1. Population Density - Gross (Persons/Developed area in hect)
 2. Mixed Land use on Major Transit Corridors/Network (% non residential area)
 3. Intensity of Development citywide - City F.S.I (Floor Space Index - Master Plan/DP)
 4. Intensity of development along transit corridor- Ratio of FSI on Transit corridor to city FSI
 5. Pattern and Completeness of the network
 6. Area under Roads (%)
 7. Percentage network having exclusive ROW for Transit network

Data Required to calculate indicators

1. Population Density

- a) From remote sensing/satellite image or from Google compute developed area (Hact)
- b) Population of current year or the year for which FSI is available (Estimate may be made based on 1991 and 2001 agglomeration population).

Calculate population density= [b / a]*100 and Compute LOS 1

LOS 1	Population Density - Gross (Persons / Developed area in hact.)
1	>=175
2	150-175
3	125-150
4	< 125

2. Mixed Land-use Zoning

- a) Inventories land use along major transit corridors (500 meters approx) based Master Plan/Development Plan
- b) Calculate % of non residential area out of total area along transit corridor

Calculate land-use % of non residential area out of total developed area and Compute LOS 2

LOS 2	Mixed Land-use on Major Transit Corridors / Network (%)
1	>=30
2	15-30
3	5-15
4	<5

3.Intensity of Development – Citywide

- Floor space Index (applicable to most part of the city, i.e new developed area) as per Master Plan/DP.

Calculate As per Master plan/Development plan as applicable to new developed/developable area and Compute LOS 3

LOS 3	Intensity of Development - City (F.S.I (Floor Space Index - Master Plan/DP)
1	> =2
2	1.5-2.0
3	1.0 - 1.5
4	<1

Data Required to calculate indicators

4. Intensity of Development along Transit Corridors

- a) FSI along transit corridors as per master plan/DP
- b) FSI along transit corridors

Calculate Ratio = [b / a] and Compute LOS 4

LOS 4	Intensity of development- Ratio of FSI on Transit corridor to city FSI
1	>=3
2	2-3
3	1.5-2
4	<1.5

5. Road network Pattern and Completeness

- a) Based on existing & proposed network recognize/identify major roads and pattern
- b) Extent of completion

Compute LOS 5

LOS 5	Pattern and Completeness of the network
1	Clear pattern (ring-radial or grid-iron) and complete network
2	clear pattern (ring-radial or grid-iron) but not complete network
3	somewhat clear (ring-radial or grid-iron) pattern
4	no clear pattern

6. Area under Roads Density

- a) Measure overall developed area
- b) Measure overall area under roads

Calculate [b / a]*100 and Compute LOS 6

LOS 6	Area under Roads (%)
1	>=15
2	12-15
3	10-12
4	<10

7. % Network with Exclusive ROW for transit (for > 1 million population as per 2001 census)

- a) Total urban road and rail network
- b) Total network with exclusive ROW

Calculate [b / a] * 100 and Compute LOS 7

LOS 7	Percentage of network having exclusive ROW for Transit network
1	>=30
2	20-30
3	10-20
4	<10

City wide Level of Service

Overall LOS	Calculated LOS		Comments
	> 1 million population	< 1 million population	
1	<=8	<= 9	City Structure is appropriately planned in a manner which patronizes public transport.
2	9 -15	10 -14	City structure is some what coherent with the public transport system
3	16 - 22	15 - 20	Faint coherence between city structure and public transport system
4	23- 28	21 - 24	Inconsistency in the city structure and public transport system leading to lesser ridership and high dependence on personalized motor vehicles

Calculated LOS for > 1 million population = LOS 1 + LOS 2 + LOS 3 + LOS 4 + LOS 5 + LOS 6 + LOS 7 and identify overall LOS as mentioned above

Calculated LOS for < 1 million population = The City wide LOS is derived by adding the LOS = LOS 1 + LOS 2 + LOS 3 + LOS 4 + LOS 5 + LOS 6 and identify overall LOS as mentioned above

10. FINANCIAL SUSTAINABILITY OF PUBLIC TRANSPORT BY BUS

- The indicators to calculate the financial sustainability of public transport by bus is as follows:
 1. **Extent of Non-fare Revenue (%)**: All city transit system operators to achieve a minimum of 20% and above share
 2. **Staff /bus ratio**
 3. **Operating Ratio**: To take the operating ratio to atleast 1.

Data Required to calculate indicators

1. Extent of Non Fare Revenue

- a) Revenue collections per annum from non-fare related sources (i.e. sources excluding tariff box collections)
- b) Total revenue per annum from all sources

Calculate = [a / b]*100 and Compute LOS 1

LOS	Extent of Non fare Revenue (%)
1	> 40
2	40 - 20
3	20 - 10
4	< =10

2. Staff per bus ratio

- a) Calculate the total staff of bus operation and maintenance
- b) Calculate the total number of buses

Calculate= [a / b] and Compute LOS 2

LOS	Staff /bus ratio
1	< = 5.5
2	5.5 - 8.0
3	8.0 - 10
4	>10

3. Operating Ratio

- a) Calculate cost / bus
- b) Calculate earning /bus

Calculate= [a / b] and Compute LOS 3

LOS	Operating Ratio
1	< 0.7
2	0.7 - 1
3	1 - 1.5
4	>= 1.5

City wide Level of Service

Overall LOS	Calculated LOS	Comments
1	< = 4	The public transport of a city is financial sustainable.
2	5 - 7	The public transport of a city is financial sustainable but needs some improvements
3	8- 9	The public transport of a city is financial sustainable but needs considerable improvements
4	10 - 12	The public transport of a city is not financial sustainable.

Calculated LOS for financial sustainability of public transport = (LOS1 + LOS2 + LOS3) and identify overall LOS as mentioned above



Performance Report Card

- The minimum frequency of computation of the performance indicators is annually and the geographic jurisdiction for which it should be measured is municipal limits or planning boundary.
- On the basis of the above framework, ULBs should prepare Performance Report Cards, which would form the basis for reporting and monitoring performance.
- The Report Cards should necessarily contain the following information:
 - Municipal Areas / Development Authority
 - The time period for which performance is being reported
 - Current baseline and actual accomplishment of performance as time passes
 - Targeted performance levels for subsequent time periods (annually).
 - The Measure of reliability of the systems, on the basis of which the indicator has been measured (viz. either A or B or C or D)
 - Brief plan of action for achieving the targeted performance level for each of the forthcoming time periods.



Illustrative Performance report card Submitted to State / Central Govt.

- **Demographic details-**
 - Population:
 - Population density:

- **Total area in sq km:**
- **Reporting Frequency: Annual**
- **Time Period: FYI 09-10**

Reporting Jurisdiction: Limits of Municipal Boundary / Planning Boundary

S.No	SLB	LOS Actually achieved	LOS Targeted for next year	Action Plan to achieve the target
1	Public Transport facilities			
2	Pedestrian Infrastructure facilities			
3	Non Motorized Transport facilities			
4	Level of usage of Integrated Transport System (ITS) facilities			
5	Travel speed along major corridors			
6	Availability of Parking facilities			
7	Road Safety			
8	Pollution levels			
9	Land Use Transport Integration			
10	Financial Sustainability of Public Transport			



Thank You