

PARKING POLICY 2.0

FOR BENGALURU

Final – December, 2020



Directorate of Urban Land Transport
Urban Development Department, Government of Karnataka

PARKING POLICY FOR BENGALURU CITY

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Chapter 1- Introduction	2
1.1 Background	2
1.2 State of Parking in Bengaluru.....	2
1.3 Parking Related Regulations	3
1.4 2012 Parking Policy of Bengaluru	3
Chapter 2- Objectives	4
2.1 Need for Parking Policy 2.0	4
2.1 Objectives of the Parking Policy.....	4
Chapter 3- Parking Policy Directives	6
3.1 POLICY 1: Preparation of area level parking management plans.	6
3.2 POLICY 2: Charges for parking.....	8
3.3 POLICY 3: Streamlining on-street parking.....	10
3.4 POLICY 4: Restriction on residential on-street parking.....	11
3.5 POLICY 5: Provisioning for off-street parking	12
3.6 POLICY 6: Parking Regulations for ToD influence zones	13
3.7 POLICY 7: Regulation of transport vehicle parking	15
3.8 POLICY 8: Management of public parking	17
3.9 POLICY 9: Adoption of technology in efficient parking management	18
3.10 POLICY 10 Enforcement of parking	18
3.11 POLICY11: Parking revenue and fine utilization.....	19
PART – II: ANNEXURES	20
ANNEXURE-1: Brief guidelines Process of preparing the Area Parking Plan.	21
ANNEXURE-2: Guidelines for identifying non-residential roads for parking.	21
ANNEXURE-3: Guidelines for Identifying Residential Roads for Parking.	23
ANNEXURE-4: Suggested Mechanism for Adopting Parking Permit.....	23
ANNEXURE-5: Suggested Framework for Parking Portal.	24
ANNEXURE-6: Potential strategies that can be adopted for monitoring and enforcement in residential and non-residential areas	34

Chapter 1- Introduction

1.1 Background

1. Bengaluru city has seen unprecedented growth in population and consequently in the number of vehicles registered in the city. The data published by the Department of Transportation, Government of Karnataka reveals that the number of registered vehicles in the city has crossed 94 lakhs (9.4 million) as of May, 2020 and the compound annual growth rate (CAGR) of vehicle registrations is over 10% per annum.
2. The roads in Bengaluru are congested with typical average speed on major roads during peak hours being around 15 km/h and average public bus transport speed being around 10 km/h. Various initiatives like introduction of metro rail, construction of flyovers, etc. have not resulted in perceivable changes in alleviating congestion on the roads of Bengaluru. There is a need to moderate vehicle usage while concurrently developing sustainable transport infrastructure to be able to cope with the mobility challenges in the city.
3. Projections as per the draft Revised Master Plan (RMP) for Bengaluru, 2031 reveals that the population would at least double between 2015 and 2031 and the total number of trips would triple in the same period. The projections of draft RMP 2031 paint a grim picture of a stressed city with degrading quality of life and health conditions. For Bengaluru to become a liveable city, it is required to address a wide variety of issues, of which parking is one of the most critical. Addressing parking is expected to have many consequential impacts desired for Bengaluru, such as reduction of vehicular travel demand, reclaiming scarce road space for pedestrians and other sustainable mobility uses, and lower pollution.

1.2 State of Parking in Bengaluru

4. Until now, parking is largely unregulated across the city. On-street parking is rampant as it is not chargeable in most places and is increasingly causing issues of safety for other road users and reduced carrying capacity of roads. Very few locations, where parking is charged are managed without coordination by unorganized sector and charges levied vary as per whims of the operator. Locations where parking happens today are not clearly marked as parking bays and there is no signage put up. Above issues, couple with lack of adoption of technology makes management and enforcement of parking an uphill task.
5. The high parking demand seen on roads, especially in business areas is not only due to the sustained spurt in vehicle ownership and population over the past decade but also because of the inefficient public transport system connecting all parts of the city, poor pedestrian infrastructure, inefficient last and first mile connectivity and absence of demand management measures such as pricing of parking.
6. The civic agency and other public and private entities have built off-street parking infrastructure (multi-level parking lots) in few locations, but the approach has not been successful as on-street parking still remains unmanaged, free of cost and unenforced. Such off-street facilities appoint its own concessionaries but the management is often carried out manually and data is neither collected nor shared in the absence of a data sharing policy leaving the civic agency as well as public with little information on the quantum and type of parking that is available and the operational practices adopted by the contractors.
7. With new mobility systems that have emerged recently in Bengaluru like the metro, aggregator facilitated taxis or micro mobility modes; city has seen changing demand for parking, spatially and in the quantum of parking. In view of these issues, clear cut parking policy and framework to manage parking is necessary.

1.3 Parking Related Regulations

8. As per Karnataka Municipal Corporations (KMC) Act, the civic agency has the obligatory function to not only lay new roads but also construct, maintain, alter and improve all public streets (Chapter 5, section 58, sub-section 13 & 19). The KMC act also under the chapter on licenses and fees (chapter 17, section 348, 349, 350), gives the municipal corporation the power to provide halting places or parking spaces while charging or levying fees for the same. It also further gives Commissioner of the corporation the power to prohibit parking at undesignated places especially around any place where space for on-street or off-street parking has been designated. The corporation may also through the person appointed to collect parking fee seize and detain the motor vehicle if the fee levied is not paid on demand.
9. While road space is owned by the Municipal Corporation and parking management is the civic agency's function, the parking enforcement in Bengaluru is done by traffic police as per the provisions of the Karnataka Police Act of 1963. As per the act, it is the duty of the police to regulate and control traffic on streets (Chapter 6, section 69). Further, the traffic police also has the power to make orders for regulation of traffic and for preservation of order in public places. Hence, they may regulate the conditions under which vehicles remain standing on a street and use the street as a halting place (Chapter 4, Section 31, sub-section (b)). Hence, the traffic police is presently enforcing no-parking in accordance with the Karnataka Police Act.
10. However, enforcement is only one key part of parking management and in the absence of an organised and well planned and managed parking regime that is technology supported, the problems we face today will continue.

1.4 2012 Parking Policy of Bengaluru

11. An initial Parking Policy was prepared for Bengaluru by the Directorate of Urban Land Transport and the policy was adopted by the BBMP council in March, 2012. The overarching principle of the policy was to progressively reduce the demand for parking and facilitate organized parking for all types of vehicles through automated metered parking system. The policy suggested pricing of parking to encourage mode shift to public transport and differential pricing between off-street and on-street parking lots as a disincentive to regulate on-street parking, especially long duration on-street parking; adoption of proof-of-parking for registration of vehicles; construction of MLCPs/automated parking for optimized use of spaces; construction of park-and-ride; incentivising vacant plot owners to lease for off-street parking lots, etc.
12. Subsequently, based on the policy, a detailed parking action plan for implementation in the core areas of Bengaluru was developed by DULT. The action plan proposed refurbishment of 11 existing off-street parking locations, development of 10 new off-street locations and as well creating organized on-street parking along about 85 roads. BBMP has selected a concessionaire to develop and operate on-street parking as per the action plan and the plan is being implemented in phases.¹

¹The streets where smart parking system is implemented by BBMP as per the earlier policy, may be retained as-is and this new policy may not be applicable to those till the end of the existing concession period.

Chapter 2- Objectives

2.1 Need for Parking Policy 2.0

- 1 The civic agency, Bruhat Bengaluru Mahanagara Palike (BBMP) adopted a parking policy for Bengaluru in 2012. However, since its adoption, there have been several changes in the demand for parking such as:
 - Commissioning of the metro system,
 - Aggregator run taxi systems becoming popular in the city,
 - Increasing popularity of micro mobility options like shared cycles and bikes for last mile connectivity,
 - Proposal of the State Government like mutation of major arterial corridors into high density corridors for seamless mobility,
 - Rapid conversion of residential plots to commercial land use without due enforcement of parking requirements as per bye-laws,
 - Infringement of residential roads by vehicles accessing nearby commercial areas,
 - Increasing vehicular population.
- 2 Hence, there was a need to review the existing parking policy to further strengthen its use as an instrument to discourage the use of personal vehicles and to ease road space for seamless movement of people and vehicles.

2.1 Objectives of the Parking Policy

- 3 Bengaluru, a fast growing metropolis, has set its goal to move a major share of its population through mass transit systems like metro, suburban rail and bus based systems. Currently more than 40% of the trips in the city are catered by public transport and RMP 2031 envisages that close to 70% of trips will be required to be catered by mass transit/public transport for city to avoid grid-lock. In this context, the parking policy will be instrumental in achieving the broader mobility objectives of Bengaluru.
- 4 The parking policy proposes to achieve the following objectives through its implementation in a phased manner:

Objective 1: Move from chaotic parking to well organized parking:

- Organise and manage on-street parking so as to ensure that parking does not impinge upon seamless vehicular and pedestrian circulation.
- Shift supply of parking off-street, and minimize on-street parking supply to free up scarce street space for transit and NMT supportive uses.
- Free-up residential streets with regulated parking to allow these streets to transform into walkable & liveable streets
- Inclusive planning of parking supply to support local business opportunities, facilitate people to access social infrastructure and recreational facilities.

Objective 2: Move from free parking to paid parking:

- Charge the user the cost of parking to largely transfer the cost of using a scarce resource from public at large to the beneficiary
- Unbundle parking charges and make users directly pay for their desired parking convenience

Objective 3: Move from Government driven parking supply to market driven parking supply and management:

- Enable faster development of organised off-street parking supply and efficient management through means of private market forces. City needs to explore privately financed and market driven off-street parking regime, in addition to public funded, government created off-street parking regime

Objective 4: Move from passive and weak enforcement of parking regulations to active management of parking demand:

- Urban local body to consider parking management as one of its key functions and deliver parking services in a systemic and efficient manner
- Use of technology in enforcement and management of parking to better address concerns of manpower shortage, efficiency and pilferage.
- Support and increase the patronage of public transport by cross subsidizing transit and NMT infrastructure through parking revenue

Chapter 3- Parking Policy Directives

- 1 In order to achieve the objectives in the previous Chapter, ten focus areas are identified and policies are under these focus areas as Policy Directives.

Mapping of Policy Directives to Objectives	
Objective 1: Move from chaotic parking to well organized parking	Policy 1: Preparation of Area Level Parking management Plans Policy 3: Streamlining On-street Parking Policy 4: Regulation of Residential Parking Policy 7: Regulation of Transport Vehicles
Objective 2: Move from free parking to paid parking	Policy 2: Charging for Parking
Objective 3: Move from Government driven parking supply to PPP/market driven parking supply & management	Policy 5: Provision of Off-Street Parking Policy 6: Parking norms for ToD influence zones
Objective 4: Move from weak enforcement of parking regulations to active management of parking demand	Policy 8: Management of Public Parking Policy 9: Adoption of Technology for Parking Management Policy 10: Enforcement of Parking Policy 11: Parking Revenue Utilization

3.1 POLICY 1: Preparation of area level parking management plans.

Need for Area Parking Plan:

- 2 As the parking demand in an area is met by the overall parking inventory available in an area, parking solutions (for planning and management) should be conceived at an area level rather than at the scale of an individual road or an individual parking lot. Owing to the size and complexity of a metropolitan city like Bengaluru, the city requires a systemic approach to be adopted to determine the actual need for public parking within an area and to identify locations for provision of parking.
- 3 The policy proposes to achieve a systemic approach through preparation of an area level parking plan for various zones in Bengaluru.

Preparation of Area Parking Plan (APP):

- 4 The Directorate of Urban Land Transport (DULT) would be responsible for the initial preparation of the Draft Area Parking Plans (APP) for various zones in Bengaluru, which will be finalised with concurrence of BBMP and Bengaluru Traffic Police.
- 5 Civic agency (BBMP) would be responsible for implementing the Area Parking Plans for all zones (BBMP Zones) in Bengaluru.
- 6 Zonal Task Forces (ZTFs) would be constituted by the civic agency for all BBMP zones. ZTFs would be headed by the respective zonal Joint Commissioners of the civic agency and shall have the following members.
 - Representatives of concerned jurisdictional Traffic Police (rank of DCP and ACP)
 - Representatives of jurisdictional officers of the Transport Department (RTO/ARTO)

- 7 ZTF's shall assist DULT, BBMP and BTP in preparation of the APP; review, provide approval and implement the Area Parking Plans for their respective jurisdictions (zones); and initiate periodical revision of Area Parking Plans and parking fee structure in accordance with the timelines prescribed in the policy. A Committee under the Chairmanship of Additional Chief Secretary, UDD with members as Commissioner, DULT (Member Secretary), Principal Secretary, Transport Department, Additional Commissioner of Police (Traffic), Commissioner, BBMP and Commissioner, BDA shall be setup (hereinafter referred as Apex Committee) for monitoring the preparation and implementation of APP in all zones. Citizen Representatives and subject matter experts may be involved as special invitees in the Committee as per the needs. The Apex Committee shall review the planning and implementation status, approve periodic revision of parking fee structure and provide the necessary co-ordination between agencies for the successful operation of parking in the city. The Apex Committee shall exist and perform its functions as mentioned in the policy until the time UMTA/ BMLTA is functional for Bengaluru. Once UMTA/BMLTA is functional, all functions of the Apex Committee shall be taken up by UMTA/ BMLTA.

Preparation of Area Parking Plan

- 8 The Area Parking Plans shall be prepared for all Zones of Bengaluru in compliance with the policy and guidelines provided in **Annexure-1**. The APP shall include all types of parking like off-street, on-street, park-and-ride, residential parking, etc. In all the parking lots provision shall be made for all vehicle types, including bicycles, IPT and shared mobility.
- 9 APPs shall also identify provision for transport vehicle parking as necessary in all zones and for on-street loading and un-loading zones in commercial areas.
- 10 APP should differentiate on-street parking into 2 categories: Commercial and Residential for the purpose of facilitating paid parking system. On-street parking categorization may be made based on the following criteria:

Type of On-street Parking	Abutting Landuse
Commercial	Streets which have 30% or other specified percentage or above commercial or non-residential establishments
Residential	Streets which have less than 30% or other specified percentage commercial/non-residential

- 11 APP shall identify and demarcate on street parking lots. Some critical No-Parking zones, where safety hazard or restriction of emergency access may arise due to illegal parking, shall be demarcated on ground through appropriate physical design, signage and road markings as per IRC: SP: 12-2015 for the information of the general public and for ease of enforcement.
- 12 APPs should also identify location of signage, real-time information, parking meters, access control and other necessary devices for parking management at identified parking lots.
- 13 The Area Parking Plans shall be published for public feedback and consultations before they are finalized with concurrence of BBMP and BTP.

Revision of APP

- 14 Once APPs are prepared and implemented, the Zonal Task Forces may periodically (every 2-3 years) review the APP of their respective Zones to check for changes in parking demand that may arise due to change in land use, developments, improvements in public transport connectivity to the area, notification of TOD zones or plans, etc.
- 15 Any revision/ modifications necessary to the Area Parking Plan would be recommended by the Zonal Task Force for review of DULT. Such recommendations/plan revision would be reviewed by DULT with concurrence of BBMP and BTP and placed for approval of UMTA/Apex Committee.
- 16 The approved Area Parking Plans for all zones would be adopted by the Master Plan for Bengaluru. The APPs could be vetted for revision once in 5 years and along with the revision of the Comprehensive Mobility Plan for the city.

3.2 POLICY 2: Charges for parking

- 17 Parking consumes prime and scarce urban space in thriving business and commercial areas at the expense of other uses and hence when not charged incurs an opportunity cost. Road space is limited in Bengaluru and needs to be prioritised to promote sustainable modes of transport rather than store parked vehicles.
- 18 When parking is either free or heavily subsidized or bundled with other costs, the demand for parking inflates as users do not pay the cost of parking utility. This may either lead to congestion on roads as people cruise for free parking, since parking supply cannot catch-up with ever inflating demand or the high cost of supplying parking to meet the demand will be difficult to economically justify.
- 19 Hence, parking should not be provided free of cost and utilization of any designated public parking space shall be charged a fair part of the true cost of parking. Parking charges may ensure that commuting by private vehicle is more expensive than commuting by public transport in the city.

Parking Charges Framework:

The following framework shall be followed for pricing parking usage in Bengaluru.

- 20 Pricing on-street higher than off-street parking to move demand from on-street to off-street to help eliminate congestion, bottle necks, delay and reduced mobility efficiency arising from on-street parking.
 - On-street parking price may be 1.5 to 3 times higher than off-street parking.
- 21 Use differential pricing for various types of on-street parking to spatially distribute the demand for parking across a commercial or business district. Streets with high level of activity and congestion may be priced higher as opposed to roads with lower activity and congestion.
 - The Area Parking Plan (APP) should identify non-residential roads that are within 250m around intense commercial areas, where the on-street parking, if provisioned in the APP, shall be priced higher than other on-street parking fee.
- 22 Pricing long duration on-street parking higher than short term to ensure increased turnaround and discourage locking of on-street parking space for longer duration.
 - On-street parking shall as far as possible be encouraged only for short duration parking (not exceeding 1 hour).
 - In order to discourage long duration parking, parking charges be increased, when parking duration exceeds 1 hour.

- 23 Pricing may encourage park-and-ride (off-street) near peripheral mass transport stations by allowing subsidized long duration fee for park-and ride users.
- Mechanisms may be developed to segregate park-and-ride users from general parking users at these locations.
 - Park-and-ride users could be charged subsidized rates for parking their vehicles at these facilities that nudge commuters to ride transit than driving their vehicles in the city.
- 24 Pricing to ensure there is turnaround of parked vehicles and discourage abandonment of vehicles at off-street locations.
- Parking longer than 48 hours may be charged up to twice the normal off-street price and
 - Parking beyond 96 hours without necessary prepaid tickets may be treated as abandonment of vehicle for necessary action by traffic police.
- 25 Pricing Residential Parking system through a permit based system should be evolved after piloting in some areas of the city initially. Residential parking permits may be charged a fee quarterly or annually based on the permit.

Methodology to calculate non-residential parking fee:

- 26 Base parking fee would be established in each zone based on the cost of public commuting. On-street and off-street parking fee, and residential permit fee for a zone may be calculated as a multiple of the base fee established for that zone as follows.
- 27 The minimum base parking fee shall may be set at to and fro public transport fare (of BMTc bus) for an 11km trip (*average one-way trip length in Bengaluru*) to incentivize commuters to use public transport.
- 28 Parking fee for different types of parking facilities could be determined as follows:

Type of Parking	Car Parking Fee
Off-street locations	Base parking fee
On-street – Commercial Parking	1.5 to 3 times (Base parking fee) Depending on location On-street parking fee beyond 1 hour should be increased for busy commercial areas
Residential Parking Permit (annual fee) Not for HDCs/Arterial or Sub-Arterial Roads For Ward level Roads only	Small cars < Rs.1000 Medium cars Rs.3000/4000 MUVs/SUVs Rs.5000
Park-and-Ride fee	0-6 hours: a suitable multiple of 0.75* Base parking fee 6-12 hours: a suitable multiple of 0.75*Base parking fee 12-24 hours: a suitable multiple of 0.75*Base parking fee

Note: The type of on-street parking is determined in the APP

- 29 No charges shall be levied for parking of bicycles (and pedal assisted electric bicycles) at spaces designated for bicycle parking. Charges for all other vehicles may be determined as per the Passenger Car Equivalent (PCE) factor.

- 30 Monthly parking pass may be formulated for the benefit of regular users of off-street parking lots.
 - The monthly parking pass may be calculated as price of 10 hour parking for a given vehicle category for 25 day/month.
- 31 Bulk parking fee mechanism for off-street parking, may be formulated to facilitate shared mobility operators and e-commerce delivery agents. Such beneficiaries shall be validated by the aggregator and RTO. A database of such beneficiaries should be maintained in the central parking portal.
 - Parking fee, on a prorated basis for the duration occupied shall be redeemed as and when an off-street parking facility is utilized.
 - Redemption of bulk parking fee shall be valid only at off-street parking lots and shall not be valid at any on-street parking lot.

Periodical Revision Parking Fee structure

- 32 The base parking fee may be considered for revision by the civic agency once in two and a half (2.5) years by following the same methodology as described above.
- 33 If the average parking occupancy data over a year shows that more than 95% of parking space in a Zone is occupied for more than 5 hours in a day, then one the following may be followed to ensure there is some availability of parking within a zone.
 - Parking fee may be considered for increase to regulate the parking demand or increase turnover of parking.
 - Civic agency shall strive to create additional off-street parking as envisaged in APP.
 - Explore possibility of increasing parking capacity by adoption of multi-level parking and automated parking systems
- 34 When the fee structure is being revised, the civic agency shall also obtain consent of the Apex Committee/ UMTA. The revised fee structure shall be widely publicised through various media and on the parking portal before notifying the same.
- 35 If the civic agency does not approve the revision as per the policy within 2 months of the stipulated timelines, the matter will be deemed to be placed before the Government or Apex Committee for approval of revision, if revised rates are in accordance with the policy.

3.3 POLICY 3: Streamlining on-street parking

- 36 Unregulated on-street parking is today consuming prime and scarce road space in thriving business and commercial areas at the expense of safe pedestrian footpaths and other transit supportive uses. Hence, it is critical to organise and manage on-street parking so as to not only ensure that parking does not impinge upon seamless vehicular and pedestrian circulation but to also free up scarce street space for sustainable, transit and NMT supportive uses.

Framework to streamline on-street parking:

- 37 Regulating parking on congested streets and streets with high activity: On-street public parking shall NOT be provided on roads and areas like around multi-level parking lots, transit stations etc identified by Traffic Policies and marked with No Parking signs.
- 38 Defining parking spaces through physical means: A key initial step for effective regulation of on-street parking is to establish “parking” and “no-parking” zones. Parking areas should be defined through physical means such as curbs, bulb-outs, signage and pavement markings. However, on-street parking may be provisioned, based on necessity for short-

term parking, provided such parking does not impact circulation of pedestrians and vehicles.

- 39 Promoting NMT: Space for 10 number of bicycle parking may be allocated in each designated parking (on-street and off-street).
- 40 Prioritizing pick-up/drop-off, loading/un-loading over parking along street edge: Road space should be prioritised for improving access for people to safely reach their places of activity by carving space for drop-off/ pick-up by private or shared mobility, bus bays etc. In addition, curb side bays may be provided for loading and unloading of goods in a safe manner, without creating conflict with pedestrians & circulating vehicular traffic.
- 41 Prevent long term on-street parking: On-street parking, when needs to be provided, may only be used for short duration parking. In order to discourage long duration parking, a parking fee mechanism where long duration parking costs more than short duration needs to be adopted and/or time restrictions (maximum allowable duration) may be notified through signage and enforced.
- 42 Auto rickshaw stands: Auto rickshaw plays important role in last mile connectivity and serving short length trips in Bengaluru. Auto rickshaws are typically hailed by customers and hence providing a designated parking area for auto rickshaw is required at street level. Dedicated auto rickshaw stands shall be created on-street in every locality as identified in the Area Parking Plan. These stands may not be located on abutting carriageway of major roads or roads with high traffic and maybe located on cross-streets. On major roads where space exists beyond footpath, auto stands can be provisioned. The auto stand areas created shall be made available to the auto rickshaw drivers at no cost. However, the auto stands may be metered to obtain data on occupancy, turnover, etc.
- 43 On-street parking should ensure safety of road users is not compromised. Maintaining unobstructed visibility is critical for safety at junctions and near to pedestrian crossings. Clearance shall also be maintained at entry/ exit of emergency services. On-street parking may not be provisioned as far as possible close to junctions, pedestrian crossings, transit stops/ stations and emergency facilities. Guidelines provided in the **Annexure-2** may be followed while provisioning on-street parking.

3.4 POLICY 4: Restriction on residential on-street parking

- 44 Residential streets in neighbourhoods are meant for local movement and till a decade ago were also safe havens for light recreation by children and the elderly alike. However, today most residential neighbourhood streets are overtaken by on-street parking rendering these streets not only unsafe but also at times inaccessible to ambulances and fire tender vans during an emergency. The absence of any regulation on residential area on-street parking coupled with violations of the zoning regulations (ZR) of the master plan, where the minimum parking mandated by the ZR is not adhered to has resulted in significant increase in on-street parking demand.
- 45 In the long term, Bengaluru must regulate all on-street parking in residential areas and reclaim much of this space for common public good. The burden of providing parking space for personal vehicles should be on the vehicle owner and not the civic agency.
- 46 The following measures are recommended to manage on-street residential parking in the short term on a pilot basis
 - a. Permit system to manage on-street parking in the short term on a pilot basis in some selected areas.
 - b. Available road width may be considered while provisioning on-street parking to ensure that parked vehicles do not obstruct circulation of emergency vehicle circulation

- 47 Such reclaimed residential street space will in turn be safer for walking and cycling and will lead to more people choosing to walk, cycle or use public transport. A steady shift towards sustainable mobility especially for last mile commute at the residential level will also ensure a lower private vehicle ownership. However, a phased approach is necessary to reduce inconvenience to the public and hence ensuring adoption.

Pilot system of Permit system to regulate on-street parking in selected residential areas

- 48 The civic agency may adopt a permit system for allotting designated parking zones near their homes to residents on a pilot basis in a few selected areas. People shall be able to purchase parking permits on a quarterly or annual payment basis and can be renewed at the end of the term. It will serve as an authorization to occupy the designated parking areas in the locality.

However,

- A permit does not guarantee a parking spot but only authorizes the permit holder to park on the road for which the permit is allotted, if space is available.
 - Permits are issued for a particular street and cannot be used to park elsewhere.
 - Permit is given to a vehicle and not person.
 - Permit holder needs to mandatorily reside on the road for which permit is issued.
 - Each applicant may only apply for permit for one vehicle.
 - Permits shall not be issued to applicants residing in buildings that are in violation of the Approved Building Plan/ Zonal Regulation.
 - The permit shall be issued against permit fee.
- 49 The civic agency may use the road categorisation and stipulations laid out by Area Parking Plan while determining suitability of residential roads to provide parking. Guidelines on this are provided in **Annexure-3**.
- 50 After studying the impact of the pilot scheme it can be extended gradually to other areas in the city in phases. Guidelines on mechanism to implement residential permit is provided in **Annexure-4**.

Creating awareness and widespread citizen participation

- 51 Any measure to place a price on an item that was previously free is likely to be met with resistance. The case of on-street parking in residential areas is also no different and requires widespread citizen participation to build a slow yet steady movement towards reclaiming residential street space from parking. Hence, the civic agency may engage with elected representatives and citizens at the ward level for creating awareness, building consensus and allocating parking space.

3.5 POLICY 5: Provisioning for off-street parking

- 52 As road space is limited it is critical to shift on-street parking activities to off-street facilities particularly in high use areas such as commercial areas, transit areas and locations with demand for park-and-ride. The policy aims to propel this shift by adopting the following measures.
- i. Pricing strategy: pricing on-street parking higher than off-street parking (Refer Policy 2)
 - ii. Parking Restrictions: Banning on-street parking around multi-level parking lots, transit stations, pedestrian only streets (Refer Policy 3)
 - iii. Augmenting off-street parking capacity: Adding off-street parking in areas with high parking demand but inadequate off-street supply
 - iv. Using technology to leverage parking as a shared resource

- 53 To promote bicycle usage in the city, the civic agency may create dedicated off-street bicycle parking lots at important destinations like transit interchanges, large parks/recreational places, stadiums, etc.

Mechanisms to develop off-street parking facilities:

- 54 The need for off-street parking is expected to be met by better utilization of existing inventory and augmentation with new inventory in the following ways:

Utilisation of Existing Off-street Inventory

- Higher pricing of on-street parking will serve as an impetus for properties to restore parking space (provided as per Zonal Regulations) appropriated for other use to its original intended use.
- Pricing of on-street parking will encourage existing underutilised parking spaces within buildings to be made available for public use using technology.
- Establishments whose existing parking is not being fully utilised may rent the same to the civic agency who in turn will use it as public parking.
- Establishments may also share their parking lot and allow other customers to park for a fee. In such cases, the establishments shall provide the parking information on the parking portal maintained by the civic agency.

Introduction of New Off-street Inventory

- In commercial areas with high parking demand within each zone, the civic agency may notify these areas as no-tolerance enforcement zones to provide sufficient safeguards for private sector to invest in off-street parking lot development
- Owners of vacant plots maybe encouraged to utilize their land for off-street parking. The civic agency should facilitate development and operations of off-street parking facility by entering into an agreement with owners of vacant plots and Professional Parking Space Management Agency, where the owner may lack the wherewithal to operate such facilities on their own. The agreement can be for a short duration initially and may be extended with mutual consent of all parties. The terms of the agreement, including revenue sharing, may be stipulated by the civic agency. The civic agency would have options in the agreement regarding construction of MLCP/ mechanised parking, or surfacing of plot for at-grade parking, so that the owner of the plot may indicate his choice while entering into the agreement.
- In case off-street capacity planned in the Area Parking Plan is not catered by market forces, the civic agency may undertake setting up of off-street parking infrastructure to meet the gap in supply, preferably through PPP. The civic agency could engage an existing agency (such as Smart City Company Ltd. or dedicated cell within BBMP, etc.) for assessing the off-street parking feasibility and take up development of off-street parking lots in a focused manner.

3.6 POLICY 6: Parking Regulations for ToD influence zones

- 55 ToD is being planned in Bengaluru around mass transit to achieve higher densities, better streetscape for convenient access to mass transit by foot or cycling, mixed land use to facilitate activities locally, convenient multi-modal integration for first/last mile commute etc. These aside, it is also critical to re-think parking norms within the influence area of a transit station, both within plots and outside. Defining separate parking regulations for ToD influence zones is a very effective tool for:-

- Reducing vehicular trips to/from and through, within the TOD Zone
- Reclaiming public land for more equitable uses

- Shifting people to sustainable modes of transportation i.e. MRTS, buses, IPT, NMT and walking. and,
- Increasing usable built up area by decreasing parking area.

Parking Strategies for ToD Zones:

- 56 Reduced Parking Requirements in ToD Zones: At present Bangalore has a Zonal Regulation that applies uniformly across the city and is sensitive to only land use. However, it is desirable to have a different approach to parking regulations within ToD Zones such as reducing parking requirements and incorporating measures that discourage people from providing large number of parking space (without placing a maximum cap). This allows for maximum built up area allowed as per permissible FAR to be utilized for occupation rather than parking hence effectively increasing density.
- 57 Parking requirement is recommended to be lowered for all uses according to the recommendations that follow, except for essential services such as hospitals.
- 58 Parking regulations for residential use: Lowering of minimum parking to be provided will help increase affordability of properties within the ToD Zone. This move will also attract residents who do not own personal vehicles and aims to use transit to occupy housing within the ToD Zone. The following recommendations may be considered.
- a. One parking per two dwellings, if the DU is less than 50 sq.m
 - b. One parking per Dwelling Unit for all units that are more than 50 sq.m
 - c. 10% of total parking shall be provided as visitor parking.
 - d. Parking over and above the stipulated minimum parking may be provided subject to the following conditions.
 - Additional parking provided over and above the minimum shall be included in the FAR calculation.
 - Part of such additional parking created may be given to corporation/planning authority to be operated as public parking.
 - Such shared parking to have independent access from adjacent public roads with proper entry / exits.
- 59 Parking regulations for within the TOD Zone for all uses except residential may be as follows:
- Minimum parking may be lowered compared to the minimum parking stipulated in the Zonal Regulations, RMP 2015
 - Parking may not be sited between the building and the street
- 60 Parking regulations for developments integrated with or developed within the transit station:
- Minimum parking may be lowered compared to the minimum parking stipulated in the Zonal Regulations, RMP 2015.
 - Separate park and ride facilities maybe proposed within Transit station as a paid facility at Peripheral stations
- 61 Parking regulations for Multi Sectoral Industrial parks (that includes knowledge based, logistics based, sector specific and integrated industrial parks set up by government agency/ private sector as per the Industrial policy 2020-2025)
- Mandate provision of bus bays/stops and bus parking within the industrial estate.
 - Suitably lower minimum (2wheeler and 4 wheeler) parking requirements compared to the Zonal Regulations.
 - Facilitate common parking facilities in industrial estates by allowing or requiring developers to pay into a fund to be used for building common/shared parking rather than each development providing their own on-site parking.

3.7 POLICY 7: Regulation of transport vehicle parking

Parking of freight vehicles:

- 62 Freight related movement in cities is closely linked to location of wholesale markets, type of produce/item, existing distribution system etc. In order to improve freight related parking issues, the following short term and long term proposals are suggested.

Short Term Strategies

Time based restriction for parking or loading/unloading of freight vehicles within city limits:

- Freight vehicles (HCVs) may not be allowed to park on-street or carry out loading/unloading activities on-street during peak hours of the day (say between 9 AM to 11 AM and 6 PM to 8 PM).
- Smaller freight vehicles (ICVs, LCVs and MCVs) carrying essential commodities like water and medicines may be exempted from the above restrictions.
- When freight vehicles are parked at paid parking lots during chargeable hours, parking charges shall apply as mentioned under Policy 2.

Long Term Strategies

Setting up of truck terminals at city periphery: Truck terminals and warehousing facilities need be set up in city periphery in all major directions for heavy vehicles/trucks (HCVs or ICVs) to allow for commercial vehicles to park or carryout loading and unloading as necessary.

Consider Shifting of strategic wholesale markets to other peripheral locations to decongest city centre: A separate study shall be taken up by civic agency to understand feasibility of shifting suitable wholesale markets from city centre to alternate peripheral locations.

Parking of Intercity/Interstate buses:

- 63 A significant amount of interstate and intercity travel demand is met by private and state owned buses. Presently, these buses are allowed to ferry passengers to the interiors of the city and have multiple pick-up and drop off points (which includes waiting and halting) and results in extreme traffic congestion and significant delays on roads.
- 64 Strategic locations may be identified for setting up of bus terminals (Satellite Bus Stations) and depots for state run and private intercity and interstate services. These should preferably be located near cross roads of major highways entering the city and peripheral ring road alignment, to allow for dispersion of traffic from these terminals along the circular roads (PRR & ORR), thereby reducing the need for all traffic to enter the congested city core before dispersing. Convenient access to one or more mass transit like metro, city bus services, suburban rail from these terminals is necessary.
- 65 These terminals may be well integrated with BMTC services, metro services, IPT services, park-and-ride facility and other feasible last mile connectivity services to ensure passengers are not significantly burdened by the need to transfer.
- 66 Until Satellite Bus Stations/Intermodal Transit Hubs (IMTH) are set up:
- a. Pick up and drop off of passengers by RTC and private buses are permitted at authorised stops as per the route map approved by RTA.
 - b. Parking of RTC buses and privately operated buses may park the buses within their own premises.

- c. A fee equivalent to say 2 to 3 times the on-street full-day parking fee of 3 car spaces prevailing in that area shall be levied on all operators including KSRTC, other STUs and private operators for parking within the public roadway or street limits.

Parking of construction vehicles

- 67 Parking of construction vehicles (CV) on road is proposed to be restricted to between 9 PM and 8 AM in order to bring a certain degree of control over, bottlenecks and congestion created by construction vehicles when parked on-street. Parking of construction vehicle may be regulated on all order of roads including residential streets.
- 68 Construction vehicles that violate parking regulations shall be clamped and released on payment of penalty equivalent to 2-3 times the on-street full-day parking fee of 3 car spaces prevailing in that area.

Parking provisions for school transport

- 69 Most schools in the city do not have space for parking school buses and vans within the campus leading to haphazard parking of school buses and vans on roads. Large number of schools also do not have space for pick up and drop facility within their premises leading to not only parents stopping on the kerb edge and causing bottlenecks but also creating an unsafe environment for children.
- 70 The problem becomes significant as even new schools are now following this trend of facilitating parking, pick up and drop off on roads adjoining school premises. Hence, the following measures may be put in place to mitigate the problem.
- 71 **For Existing schools:**
 - a. Schools may consider staggering the class timings of different standards so that the load experienced by roads during opening and closing hours is distributed over a few off-peak hours.
 - b. School management shall prepare a circulation plan for pick up and drop off activities for school children within the school premises. All schools must make arrangements to provide space for pick up, drop off and bus parking within their premises or other private premise, within one or two years.
 - c. School management shall also prepare a plan for parking of buses during idling hours within the school premises or other private premises.
 - d. If any school does not have space for parking buses during idling hours within their premises, or other private premises they must undertake to hire buses from BMTC or any other operator who runs buses throughout the day so that buses do not idle on roads after dropping the students.
 - e. In case the schools are not able to create space for pick up and drop off even after 1 or 2 years, they must prepare a plan for pick up and drop off activities at the nearest bus stop/bus bay. However, schools shall ensure that children can safely walk into the school from the drop off location.
 - f. Pick up and drop off space (other than bus stops) shall be cordoned off for the particular time and manned by school security staff.
 - g. The Zonal Task Force shall prepare a list of general conditions to govern pick up and drop off activities on road and the same which shall be followed by all schools. All schools shall also provide an undertaking to follow the same.

72 For New Schools:

Any new school coming up may have suitable space for pick up and drop off and parking during idling hours.

3.8 POLICY 8: Management of public parking

73 Management of public parking shall be carried out efficiently in a manner to reduce the violations and need for extensive enforcement.

Broad Parking Management Functions

- 74 Management of public parking facilities may include the following activities:
- i. Identifying existing parking facilities within the parking concession area and making them available on a pay & use basis
 - ii. Activities recommended in this policy may as far as possible be performed using technology including collection of parking fee, booking of violation, grievance redressal etc.
 - iii. Assisting users to find parking space within a parking lot (off-street and on-street)
 - iv. Maintenance of parking lots and associated systems
 - v. Bringing all public parking under one information network through web portal, mobile app, etc. for locating the parking lot and booking the slot
 - a. Identification of free parking spaces and make it available in the information network
 - vi. Actively communicating with parking lot users to ensure violations are minimized, including sending SMS to the registered owner when a vehicle is found to parked incorrectly, exceeds parking durations for which payment is made, etc.
 - vii. Grievance redressal
 - viii. Handling and curbing of unauthorized and illegal parking within the designated area
 - a. Penalizing of unauthorized/illegal parking
 - b. Clamping of unauthorized/illegal parking
 - ix. Handing over of unclaimed/confiscated/clamped/towed vehicles, which were not claimed within a week, to the jurisdictional traffic police.

Responsibilities of agencies/institutions in parking management

- 75 The Zonal Joint Commissioner, BBMP would be responsible for administering the O&M within their respective zones through one or more professional agency (hereinafter referred as Parking Space Management Agency) as appropriate. Parking Space Management agencies appointed for operations and maintenance of parking districts may utilize appropriate technologies for efficient operations and management of parking within the allotted area.
- 76 Parking Space Management Agencies may collect and disseminate data in real-time on occupancy of parking lots (availability or non-availability of spaces within parking lots--on-street; off-street and shared parking) to ensure people are kept informed of where parking is available within an area. Such information may be displayed through several means like Variable Message Signs installed at critical locations, mobile applications, web applications, entrance of parking lots, at each floor of a multi-level parking lot, etc. Parking Space Management agencies may assist users in finding parking places and help in regulating irregular parking at designated on-street and off-street locations to ensure operations are carried out smoothly, without obstruction to circulation of pedestrians and vehicles in that area. If any violations are found within the parking area, the Parking Space Management agency shall inform the registered owner of the vehicle by SMS/voice call to ensure violations are immediately corrected by the user.
- 77 The users utilizing parking spaces reserved for disable people may carry proof of disability issued by the Government. The Parking Space Management Agencies may maintain electronic and video proof of violation with time stamp and geo stamp using mobile apps as well as other electronic mechanisms. A text message may be sent to the phone number linked to the registration number of the vehicle immediately upon booking of violation.

Any exemptions sought by the vehicle owner must happen in the form of an appeal against fine before any officer appointed for such purpose by the Zonal Commissioner.

- 78 The Parking Space Management Agencies may maintain such evidence of violation (where penalised) in electronic format for a period of at least 1 year and make available to the civic agency or Government Agency as required within that duration.
- 79 The civic agency, through an independent agency, may get performance audit of Parking Space Management Agencies regularly to assess the effectiveness demonstrated by the agencies in upkeep of parking lots, monitoring, revenue collection and facilitation of public.

3.9 POLICY 9: Adoption of technology in efficient parking management

- 80 For efficient management and enforcement of parking it is crucial to adopt technology. The civic agency should endeavour to utilize latest technology for setting up parking spaces such as RFID tag, on-street meters, automated boom barriers, CCTVs, and computerized parking slips with timers, VMS parking boards, mobile applications, and so on. This will be implemented to assess parking demand; reduce monetary pilferage; reduce parking violation with parking meters; allow mobile payment; manage differential rates; inform users about parking availability. The technologies may be so designed to be user friendly, provide direct usage and revenue reports to concerned government agencies to enable them to conduct audits.
- 81 All public parking related information could be integrated in Central Parking Portal hosted by the civic agency. The portal could display real time information on parking status of all parking lots in the city. The portal would also be used to gather parking related information from all businesses that provide for parking (even if it is not a public parking). The parking portal may be built on an open interoperable digital infrastructure in the form of Open APIs/ Protocols. The broad framework for the parking portal is suggested in **Annexure-5**.
- 82 In addition to the portal, the civic agency may use the data to disseminate information on availability of parking, pricing and parking restrictions, if any to users through various means like VMS boards, mobile app, etc. to enable users to make informed decisions on parking choices.
- 83 Private players/operators/start-ups may be encouraged to offer competitive and creative technology solutions that would help the civic agency to optimise the use of and augment parking spaces.

3.10 POLICY 10 Enforcement of parking

- 84 Enforcement of parking at city level requires significant manpower, equipment (towing vehicles), space (to stored towed vehicles) and effort (challaning, collection of fines, etc.). Hence, all efforts may be to minimize need for enforcement by practicing efficient management practices in operating parking lots.
- 85 However, strict enforcement of parking is also crucial to achieve the desired objectives envisaged in this policy. The enforcement powers for penalizing of vehicles that violate the parking rules at on-street (commercial and residential) and off-street parking locations (lots) and to realize the penalties will be exercised by such officers of the civic agency by making necessary amendments to the Municipal Corporations Act or drafting applicable rules. Any parking violations outside of the on-street or off-street parking lot premises shall be considered as traffic violation and enforced by the traffic police
- 86 The civic agency shall strictly enforce corrective measures and penalisation in regard to violation of the Zonal Regulations/Building Bye-Laws with respect to parking.

Mechanisms for monitoring & enforcing parking violations:

- 87 Monitoring and enforcement should go hand in hand. Monitoring and enforcement must be easy to adopt, to the extent possible, must be less dependent on manpower and hassle free for the public through technology driven solutions. Monitoring and enforcement would be the responsibility of the Zonal Task Force, who may perform their duties through parking space management agencies.
- 88 Monitoring and enforcement (M&E) has to be dealt with for residential and non-residential areas. Multiple methods can be utilized for M&E using fool-proof technology driven methods, engaging with associations like resident welfare associations, business associations and enabling citizens to monitor and report violations. Some potential methods that can be adopted are indicated in **Annexure-6**.
- 89 If all these measures and any technology driven systems are put in place, the need for manpower for M&E will come down thus bringing down the cost of M&E. Apart from cost reduction, it will become irrefutable, hassle free, and could significantly eliminate pilferage/ mismanagement. Manpower may be deployed for bare minimum functions like assistance at parking lot, monitoring of parking lots, etc. by the professional agency.
- 90 Owners of illegally or wrongly parked vehicles may be fined and clamped, if necessary, by the Parking Space Management Agency or BTP for violations in the designated parking lots or outside the designated parking lots respectively. Towing may be done only in the event that the illegally parked vehicle is obstructing pedestrian or traffic movement.
- 91 However, the Civic agency and the Parking Space Management Agency may strive to ensure that need for towing of vehicles is minimized through effective communication and active monitoring of parking lots as extensive towing operations itself usually lead to undesirable obstruction for movement of vehicles on roads.
- 92 When vehicles that are repeatedly found violating parking norms (with violations 5 times or more), vehicle registration of such vehicles may be recommended to be suspended by the transport department and vehicles may be clamped by the traffic police until the time suspension is revoked.
- 93 In case a violating vehicle is removed by a towing service or impounded, as the case may be, the towing charges including the cost of manpower and the parking/ custody charges for the impounded vehicles should be levied as notified by the Bengaluru Traffic Police. These charges may be revised by BTP from time to time.

3.11 POLICY11: Parking revenue and fine utilization

- 94 The broader objective of utilization of the parking revenue should be to reduce the demand for parking by improving other sustainable mobility options like footpath and public realm for improved conditions for walking, safe cycling infrastructure, integrated public transport network, etc. Thereby, over time need to commute by private vehicles would reduce and land allocated for parking can be reclaimed and put for more productive use.
- 95 Part of the revenue generated from parking fee (or annuity obtained from Parking Space Management Agency) and parking fines may be deposited in a dedicated Parking Fund Account created by the civic agency.
- 96 The parking funds shall be ring-fenced and should be utilised by the civic agency only for developmental works related to safety of pedestrians, road safety, development of infrastructure for non-motorised transport (NMT), footpath improvement, improving public realm for pedestrian on streets (planting of avenue trees), improving transit infrastructure (like bus stops, bus bays, IMTH, etc.), subsidizing public transport, and carrying out awareness activities to citizens on parking and sustainable transport uses.

PART – II: ANNEXURES

ANNEXURE-1: Brief guidelines Process of preparing the Area Parking Plan.

The following process to be followed while preparing the Area Parking Plans to ensure consistency across the various zones until a detailed toolkit is made available as guidance for preparation of Area Parking Plans:

- Delineate the Zone into parking districts for the ease of surveying, planning and administering parking in the Zone. These parking districts may be typically 5-10square km in size, maybe larger in areas with less population density/commercial activity.
- Identify the existing parking inventory (on-street and off-street) in the Zone.
- Assess the extent of parking in the Zone over the day, which includes, on-street, off-street and illegal parking during weekdays and weekends
- This shall include assessment of parking turnover, parking duration, types of vehicles parked, etc. for each identified parking lot (currently operating legally or illegally).
- Willingness-to-pay for parking at different areas in the zone for on-street and off-street parking may be assessed. Based on the willingness-to-pay, assess the likely demand for parking at different parking districts in the Zone as parking demand (quantity of parking and duration of parking demand would change when parking is charged).
- Identify suitable locations off-street and some locations on-street (if needed) to meet the likely parking demand in the area.
 - Meeting parking demand off-street shall be prioritized to the extent possible, before considering any on-street parking.
 - Identified off-street locations shall have proper vehicular accessibility and shall be safe for people to access by foot as well.
- APPs shall identify location of signage, real-time information, parking meters, access control and other necessary devices for parking management at identified parking lots.
- The concerned or affected citizen groups (like resident welfare associations, commercial establishment associations, transport operators and/or trade associations) shall be consulted before finalizing the Area Parking Plans by the respective Zonal Task Force.

ANNEXURE-2: Guidelines for identifying non-residential roads for parking.

The following guidelines can be considered for allocation of parking space on non-residential roads.

Public Roadway/ Street width	One Way Road	Two Way Road
< 9m	Parking as decided	
9m – 12m	One sided parallel parking	Parking as decided
12m – 15m	One sided parallel parking	One sided parallel parking
15m – 18m	Two sided parallel parking	One sided parallel parking
Greater than 18m	Two sided parallel parking	Two sided parallel parking

Note: The APP may consider the planned function of the road, pedestrian and traffic volume on the road, where available and suitably allocate parking.

Minimum Design Standards for On-street Parking:

Appropriate design standards may be followed while preparing and implementing the Area Parking Plan as follows to ensure on-street parking is optimised without creating safety concerns on road:

- On-street parking may be about 50 meters from intersections on each arm of a road at major intersections and up to 25 meters from intersections on each arm at minor intersections.
- Parking, when provided, may be provided at a reasonably safe distance away from pedestrian crossings and access to/from fire stations, police stations, transit stations, bus stops. However, appropriate clear distance over-and-above the minimum requirements at intersections and access to emergency/priority services may be duly considered to ensure that parking, when provided, does not impinge safety or operational efficiency of roads at these locations.
- On-street parking spaces may be designed as per minimum requirements of IRC:SP:12-2015 to the extent possible. The design should minimize conflict between parking, walking and cycling.
- Parking spaces allocated to differently abled persons may be located closer to footpath ramps, elevators or access to establishments.

Minimum Design Standards for Off-street Parking Facilities

When off-street parking is provided the following design standards may be followed.

- a. Open areas designated as parks, playgrounds, gardens, rivers, tanks/lakes, rajakaluve, may not be consumed for development of parking.
- b. Off-street parking locations should have good accessibility for vehicles to ingress and egress. Preferably must have access from other than major roads to avoid direct conflict with flowing traffic on major roads. Off-street parking facilities would be most impactful if is located within 350-700m of an activity centre.
- c. The off-street parking spaces should be designed to comply with design standards as per the, IRC:SP:12-2015, National Building Code and BIS standards.
- d. Special provisions for parking for differently - abled may be made as per Bureau of Indian Standards, National Building Code of India of 2016, IRC: SP:12:2015 and Harmonized Guidelines and Space Standards for barrier free built environment for persons with disability and elderly persons, 2016 of Ministry of Urban Development, Government of India.
- e. Stacked parking and valet parking may be appropriately considered to increase parking capacity at MLCP.
- f. MLCPs may also be gradually equipped with facilities like electric buggy, bicycles (PBS), so that users of all abilities can park vehicles and access their destinations.

ANNEXURE-3: Guidelines for Identifying Residential Roads for Parking.

The APP can follow the following guidelines for provision of residential on-street parking:

Avg. Public Roadway/ Street width (in meters)	Road Functionality	Status of Parking (2W and 4W)
<=9.0m	-	To be decided by Task Force
9.0m – 12.0m	Caters local traffic	Parking permitted on ONE side
9.0m – 12.0m	Connector to a major road	To be decided by Task Force
>12.0m	Caters local traffic	Parking permitted on BOTH side
>12.0m	Connector to a major road	Parking permitted on ONE side
>12.0m	major traffic road	To be decided by Task Force

Note: The actual parking space allocation may be determined based on site condition and traffic volume data, when available.

The APP can also recommend circulation plans (For e.g. one-way pairs) for areas where there are limited thoroughfares and road widths are less than 9m.

ANNEXURE-4: Suggested Mechanism for Adopting Parking Permit.

Mechanisms to ensure a technology driven permit system

- It is imperative to have a technology driven spatial database of residential parking inventory both within properties and on road to ensure transparency, to understand the demand vs. supply gap, to inform future policy formulation.
- As a first step, the civic agency may immediately create a road by road spatial database with on-street parking inventory on residential streets by aligning with the Area Parking Plan guidelines. These parking spaces may to be assigned unique identification numbers and stored in a database along with geographic location details.
- Road wise parking inventory may be completed on priority basis and parking permits issued against identified on-street parking spaces. On issue of a permit, the database to be automatically updated with assigned vehicle number, and other vehicle identification details. A permit tag may also be issued indicating parking space id, vehicle number and validity period, so that owner can display the same in front windshield for easy verification of proof of permit.
- Subsequently, the civic agency may also carry out an enumeration to map the actual parking inventory available within plots as per the approved building plans. Each parking space within plots may be assigned unique identification number and stored in the database with plot address and ownership details. Once this process is complete, vehicle owners desiring to apply for on-street residential parking permit, but has parking availability within a plot as per building plan shall be charged twice the parking permit fee.
- The parking space tagging may be automatically updated onto the database for all new building plan approvals.
- The civic agency may conduct surprise inspections as specified in Policy 9 to enforce the permit system and violators shall be served with hefty fines to the tune of 1/4th of annual parking fee. Automatic fines shall be issued with photographic evidence to the vehicle owner.

- The parking space allocation information and availability of enumerated parking spaces may be made available on-line to ensure transparency and enable self-validation by citizens. The civic agency may create a web/mobile application to facilitate reporting violations by citizens.

ANNEXURE-5: Suggested Framework for Parking Portal.



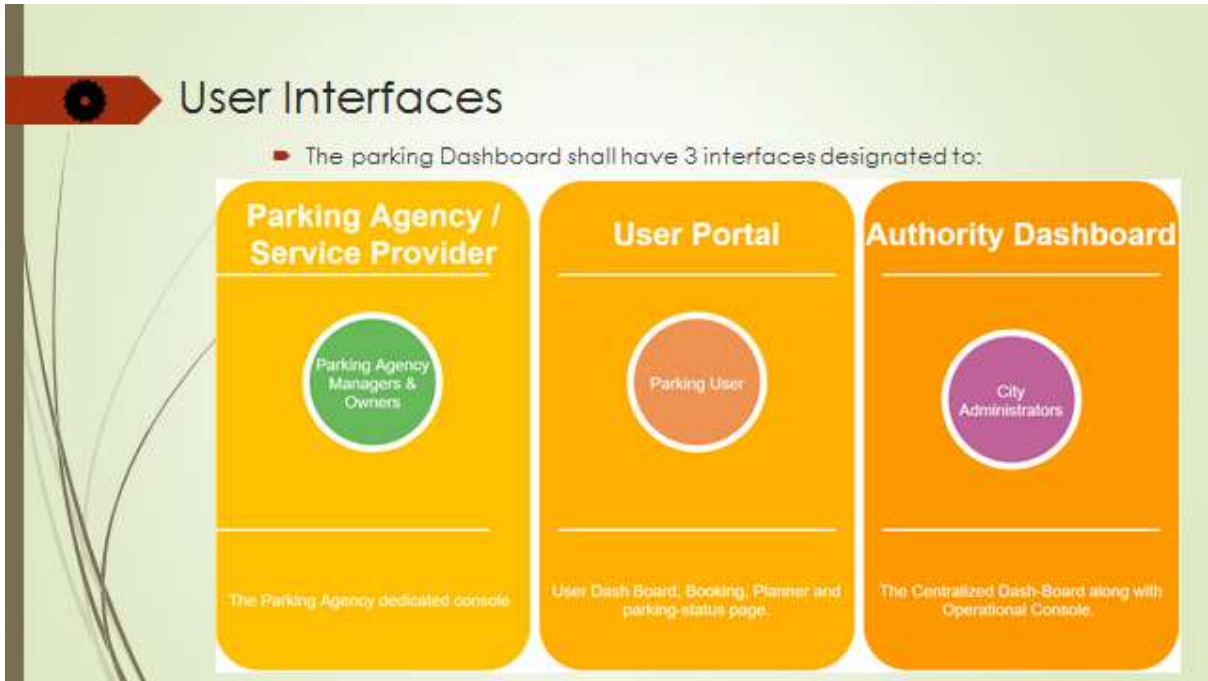


Figure 1 Interface for guide different users of the parking portal



Figure 2 Portal Features for Parking Agency

Admin Register Parking-Agency

Home Dashboard

Firm/Agency/Individual Name:

Address of Parking Agency:

Street Details: City: State:

Country: PIN:  Location

I Am A:

Individual Owner Business / Organization

Add your Logo:

No file chosen

Contact Details:

Phone: Customer Support:

Email:

Choose Password:


Password:

Confirm Password:

Figure 3 Registration Page Details

Admin Parking Agency Admin Login

Home Dashboard



Agency Admin Login

Welcome Back!

Remember Me

[Forgot Password?](#)

[Create an Account!](#)




Figure 4 Login Page for Parking Agency

Admin | **Add Your Parking-Space**

Add Parking

NAME AND DESCRIPTION

Name:

Description:

WHERE IS YOUR PARKING SPACE?

Choose Service Location:

Enter Your Space Address:

State: Country: Postal Code:

Geolog Location: Longitude: Latitude:

ABOUT YOUR SPACE

Type Of Space:

On-Street Off-Street

Amenities:

CCTV Sheltered Security Guard

Figure 5 Workflow for Adding Parking Location Details

Admin | **Add Your Parking-Space**

Add Parking

Declare Your Parking Space (Slots)

Bike: CAR: Bicycle: LCV: Bus/Mini-: HMV:

Parking System Method

Automated (ANPR/RFID & Sensor Based) Semi-Automated (Handheld or Computer Ticket Based) Manual (Printed Ticket Based or Manual Register Based)

Parking Category

Ordinary Business Premium

Payment Method

Credit/Debit Card Wallet Payment BHIM UPI Online Cash

Operational Hours

Round the Clock Set Operation Hours: -

Picture

No file chosen

Figure 6 Workflow for Adding Parking Space Details within a Lot

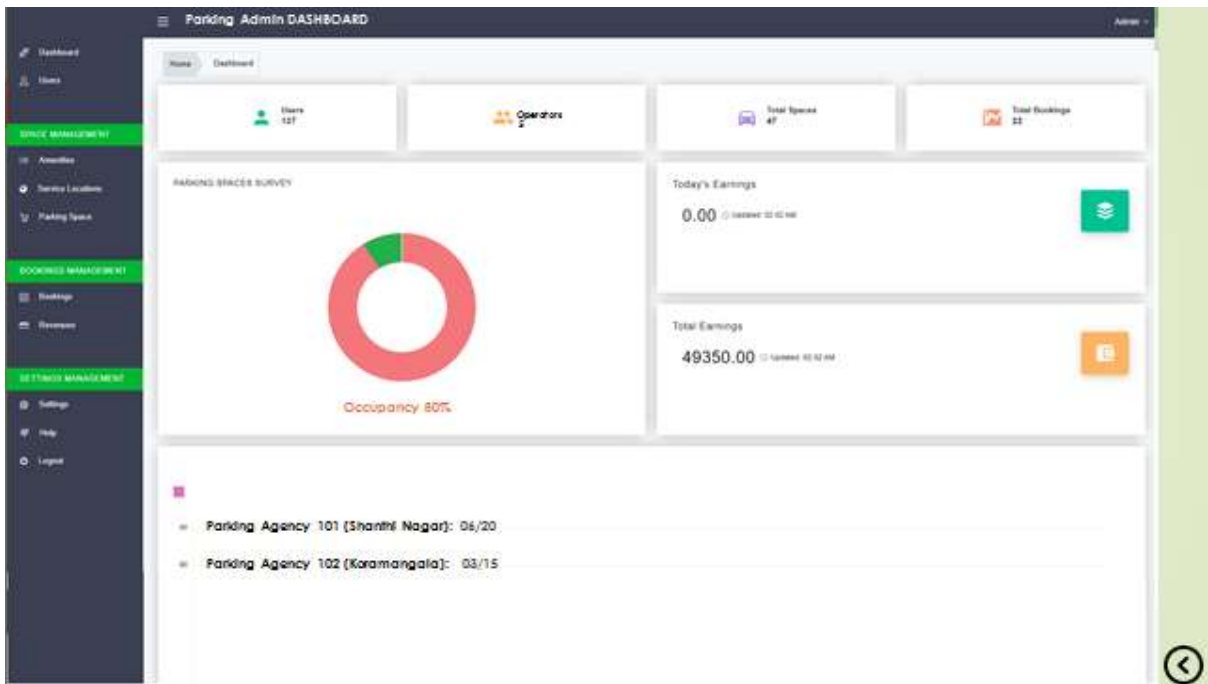


Figure 7 Parking Agency Dashboard for Monitoring

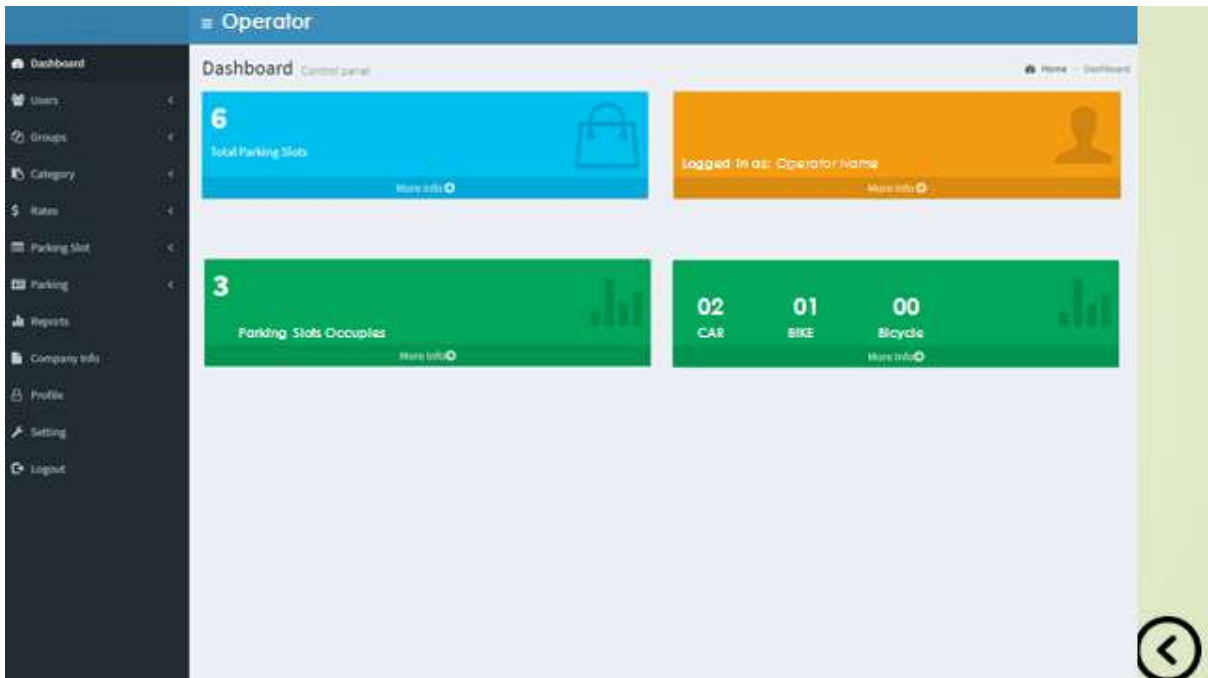


Figure 8 Alternate Dashboard View

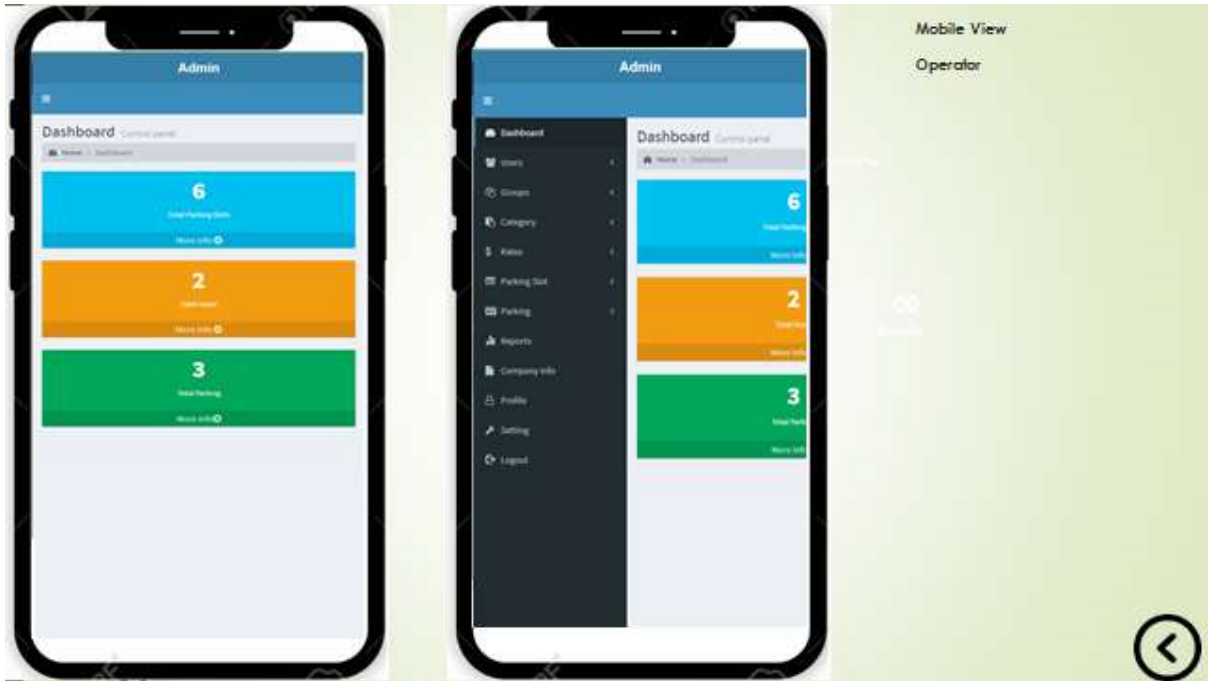


Figure 9 Dashboard View on Mobile

Number Plate	Check in	Check-out	Vehicle type	Rate name	Rate	Slot	Total time	Total Amount
PA-018FD8	2020-07-08 02:36 pm	2020-07-08 09:33 am	Bicycle	Bicycle	₹ 10	CarSlot-1	19 hours	₹ 10
PA-CT6481	2020-07-08 02:28 pm	2020-07-08 02:34 pm	Car	CarPrice	₹ 20	CarSlot-2	1 hour	₹ 20
PA-7775AA	2020-07-08 02:27 pm	2020-07-08 02:34 pm	Car	CarPrice	₹ 20	CarSlot-1	1 hour	₹ 20

Figure 10 Detailed View of Parked Vehicles

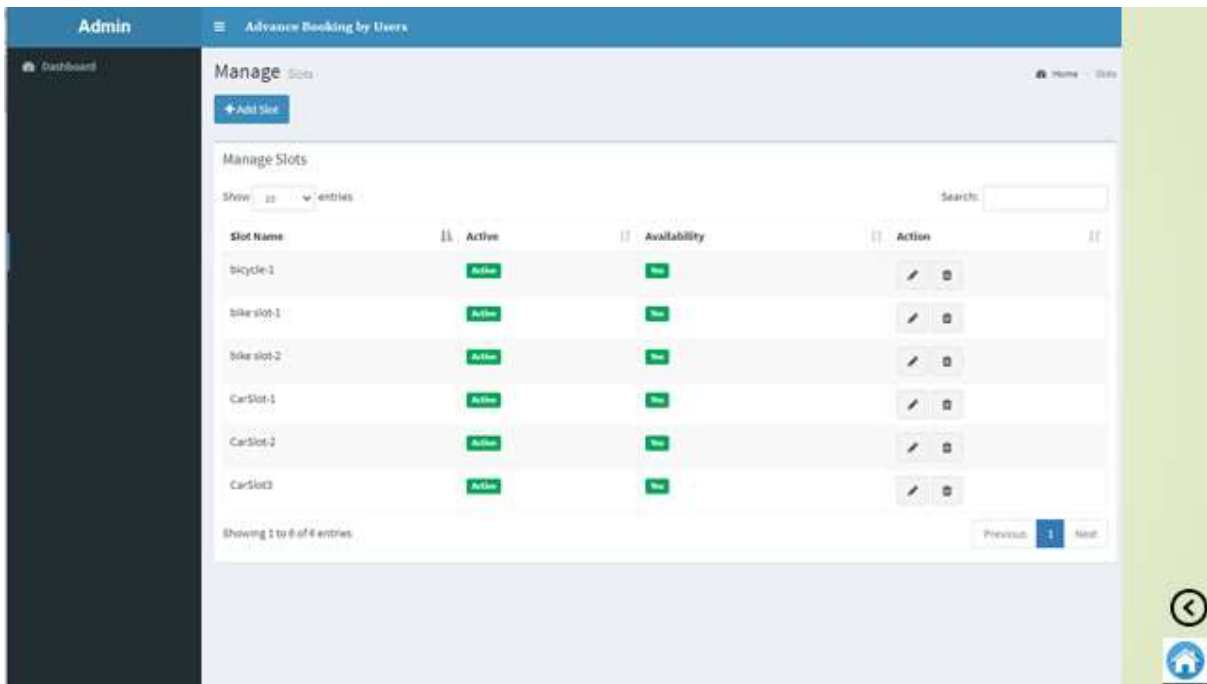


Figure 11 Parking Slot-wise View

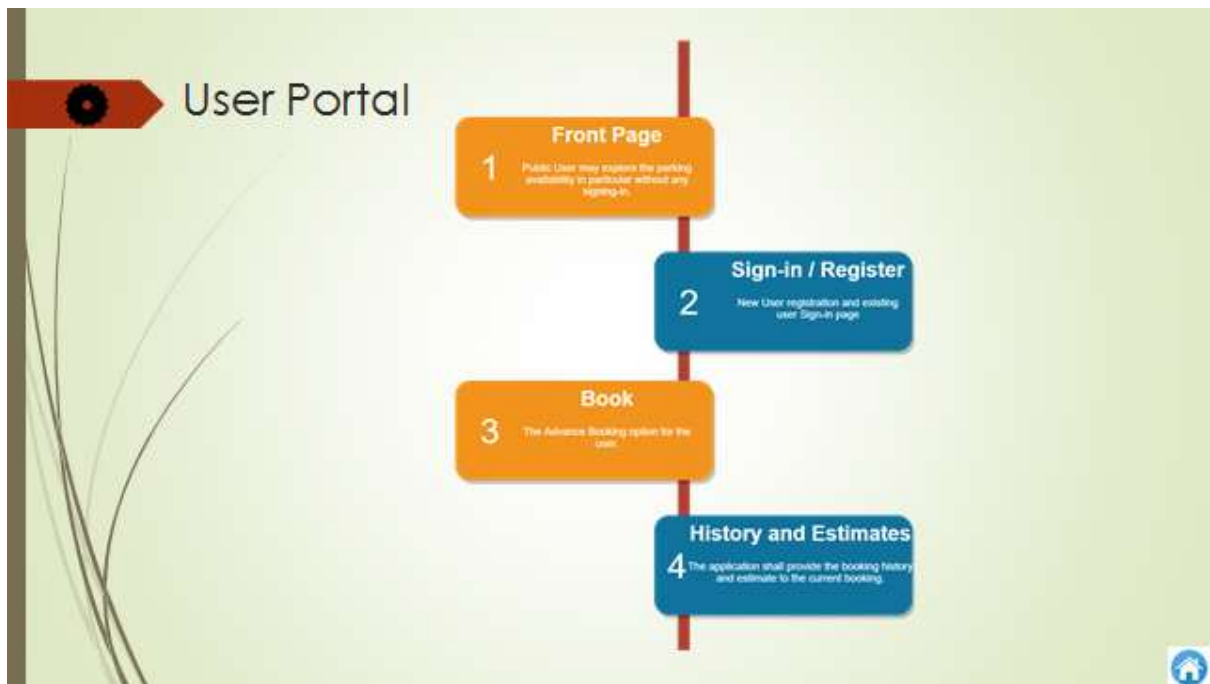


Figure 12 Portal Options for Parking User



Figure 13 Landing Page for Users – indicating availability of parking slots

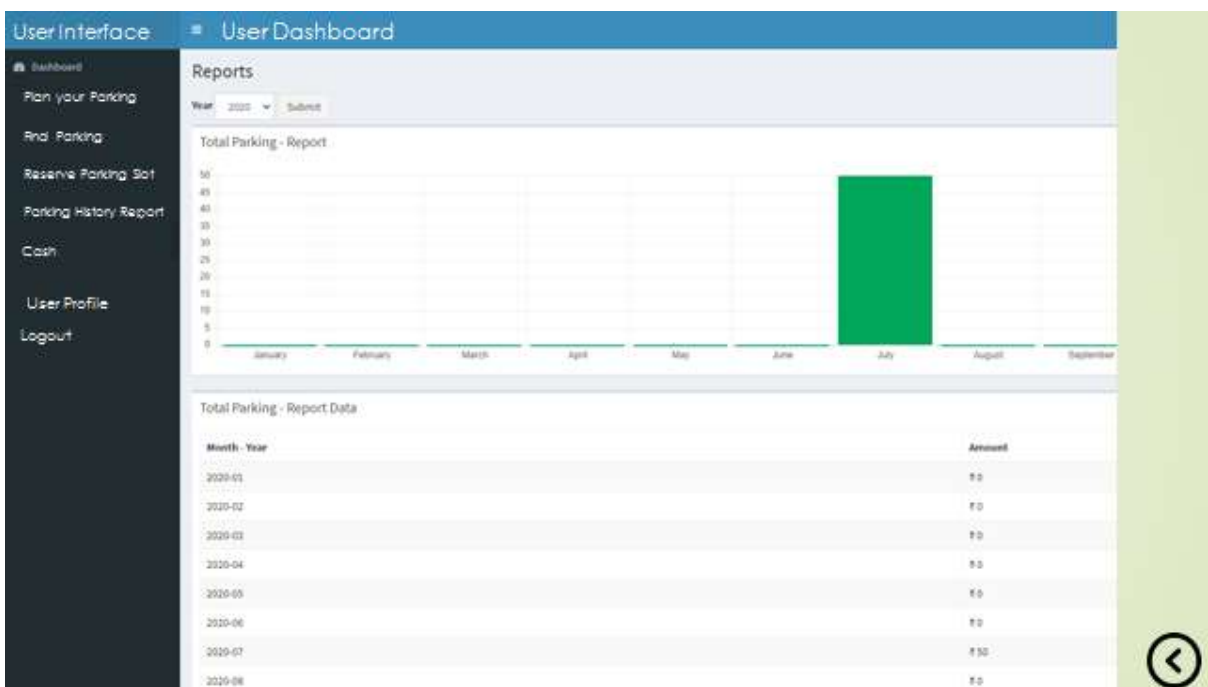


Figure 14 User Dashboard Indicating Usage Trends and Money Spent



Figure 15 Portal to Facilitate Users to Reserve Parking Slots

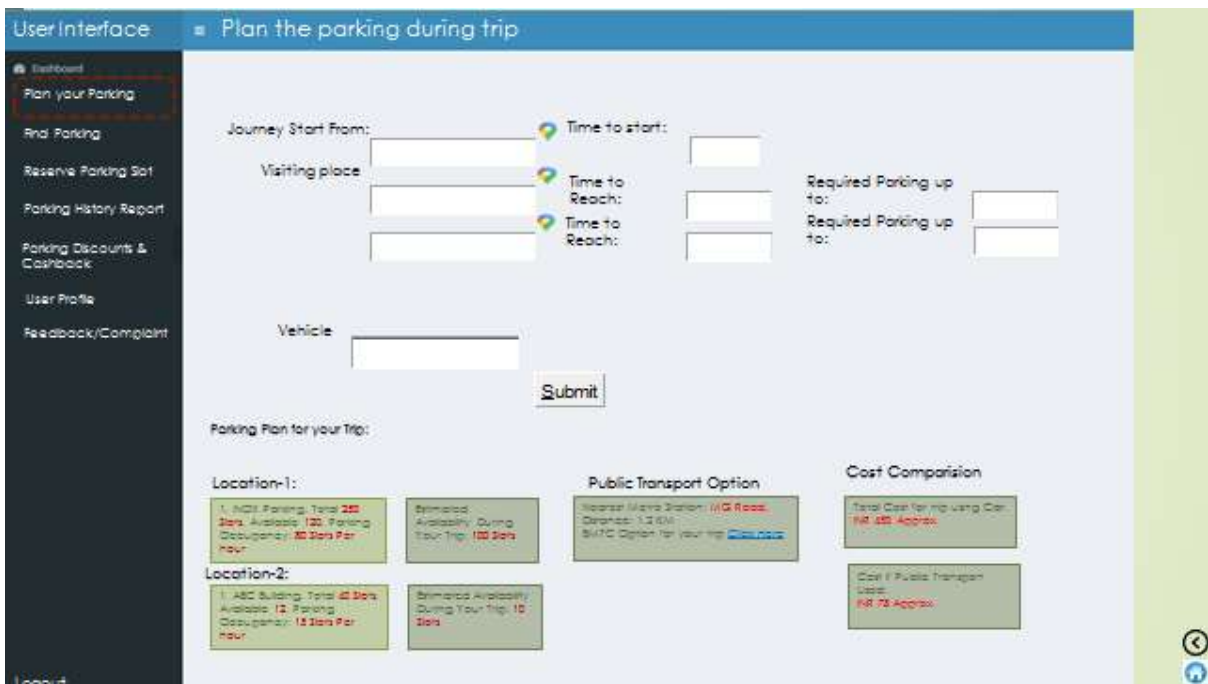


Figure 16 Parking Planning for Entire Journey/Day



Figure 17 Dashboard for Authority/Civic Agency

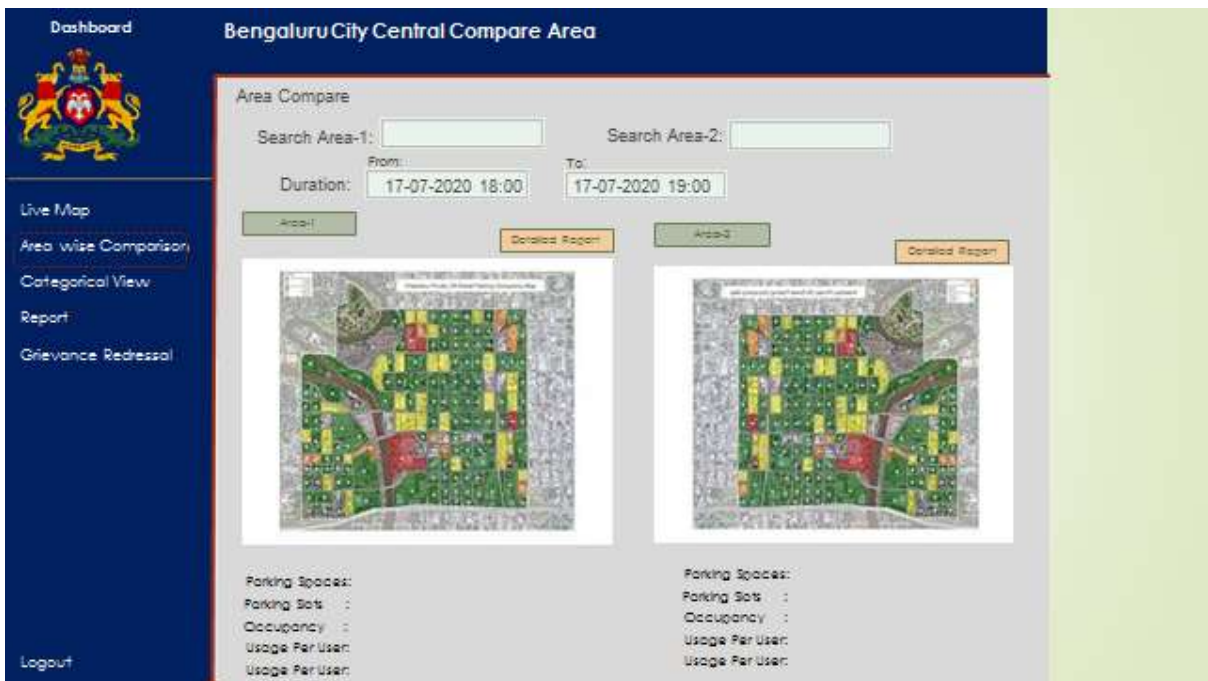


Figure 18 Portal to Facilitate Authorities to Compare Performance of Different Parking Zones

ANNEXURE-6: Potential strategies that can be adopted for monitoring and enforcement in residential and non-residential areas

Potential Strategies for Residential M&E

- i. Use existing CCTV cameras installed by different public agencies like BBMP, BTP or any other agency.
- ii. Moving vehicle mounted with video camera scanner, which can read number plates of vehicles regularly of all residential roads.
- iii. RFID tag method can also be tried out on selected categories like private buses, HCVs construction vehicles.
- iv. Government of India has passed order mandating all transport/commercial vehicles to have GPS devices fitted by 2020. Tracking of idling time of transport/commercial vehicles using the GPS device data is another possibility.
- v. Use of local volunteers can also be thought of using RWAs and other associations.
- vi. Parking census once a year during night time.
- vii. Any combination of the above methods or any other suitable methods, based on the availability/readiness on ground may be utilized for monitoring and enforcement on residential roads

Potential Strategies for Non-residential Areas M&E

- i. Use existing CCTV cameras installed by different public agencies like BBMP, BTP or any other agency. More CCTV cameras may be installed to ensure monitoring and enforcement is robust.
- ii. Moving vehicle mounted with video camera scanner, which can read number plates of vehicles regularly of all non-residential roads.
- iii. RFID tag method can also be tried out on selected categories of vehicles.
- iv. Government of India has passed order mandating all transport/commercial vehicles to have GPS devices fitted by 2020. Tracking of idling time of transport/commercial vehicles using the GPS device data is another possibility.
- v. Parking violation reporting by citizens using mobile app
- vi. Mandating commercial property owners to have one camera focused on the road in front of their properties, which would act as safety for their property as well as monitoring mechanism for parking violations.
- vii. All transport buses of BMTC can be fitted with a camera focusing on the road by government funding. This would give continuous data for parking violations and electronic record for all accident cases involving BMTC buses.
Any combination of the above methods or any other suitable methods, based on the availability/readiness on ground may be utilized for monitoring and enforcement.