LOCAL PUBLIC TRANSPORT ROUTE PLAN MANUAL

VOLUME 1

Department of Transportation
Department of the Interior and Local Government
Land Transportation Franchising & Regulatory Board

in cooperation with

Transportation Science Society of the Philippines
University of the Philippines - National Center for Transportation Studies
University of the Philippines - School of Urban and Regional Planning
University of the Philippines - National College of Public Administration and Governance
De La Salle University - College of Engineering
Mapúa University - School of Civil, Environmental and Geological Engineering
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If you have any questions or concerns, please email us at **lptrp@dotr.gov.ph**

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Abbreviations

CLUP	Comprehensive Land Use Plan
DENR	Department of Environment and Natural Resources
DILG	Department of the Interior and Local Government
DOTr	Department of Transportation
JMC	Joint Memorandum Circular
LGU	Local Government Unit
LPTRP	Local Public Transport Route Plan
LTFRB	Land Transportation Franchising & Regulatory Board
OFG	Omnibus Franchising Guidelines
PUB	Public Utility Bus
PUJ	Public Utility Jeepney
TNVS	Transport Network Vehicle Service
UV	Utility Van

Definition of Terms

Arterial Roads – Roads that provide the highest level of service for the longest uninterrupted distance, with some degree of access control**.** They may be highways and be circumferential or radial in form. These roads deliver traffic from collector roads to other arterial roads and expressways.

Certificate of Public Convenience (CPC) – Permit issued by the LTFRB for the operation of road transportation services for public use.

Collector Roads – Roads that provide a less highly developed level of service at a lower speed for shorter distances. Their function is to collect traffic from local roads and connect them to arterial roads.

Comprehensive Development Plan (CDP) – The action plan prepared by a local government to develop and implement priority sectoral and cross-sectoral programs and projects in the proper locations gradually and incrementally, until the desired shape or form of development is eventually attained.

Comprehensive Land Use Plan (CLUP) – The plan for long term management of the local territory, identifying areas where development can and cannot be located and directing public and private investments accordingly.

Developmental Routes – Routes designed to serve new residential, commercial, and other land use developments.

Expressways – Highways with limited access, normally with interchanges; may include facilities for levying tolls for passage in an open or closed system.

Filcabs – Public utility vehicles with seating capacity of seven (7) to eleven (11) passengers and are meant to replace tricycle services in all national roads, highways, expressways, or any arterial road. This kind of service may also serve intra-zonal movements.

Garage – An off-street area where public utility vehicles are stored/parked while not in operation and where repair/maintenance works are done.

Local Government Units (LGUs) – City, provincial, and municipal governments, or agencies or authorities responsible for special economic zones or administrative regions.

Local Public Transport Route Plan (LPTRP) – A plan detailing the route network, mode, and required number of units per mode for delivering public land transport services. This is prepared

by local government units and approved by the Department/LTFRB. This plan shall serve as the basis of a comprehensive local transport plan.

Local Roads – Roads not defined as arterial or collector. They primarily provide access to land with little or no through movement.

Loop Service – A continuous service with a specific route structure within a defined zone which includes, but is not limited to industrial parks, economic zones, school campuses, and emerging business districts. These routes shall start and terminate at an off-street terminal.

Operator – a holder/grantee of a valid and subsisting CPC issued by the LTFRB.

Public Utility Buses (PUBs) – Air-conditioned and/or non-air-conditioned coaches used as public utility vehicles and classified as mass transit system.

Public Utility Jeepneys (PUJs) – Public utility vehicles that are used as feeder services to mass transit systems such as buses, BRT and rail transport.

Public Utility Vehicles (PUVs) – Vehicles that carry passengers and/or cargo for a fee, offering services to the public, which may include, but are not limited to, UV Express service, PUBs, PUJs, TNVS, Filcab and Taxis.

Route – A path with defined starting and ending points that a public transportation unit is authorized to operate, as defined in the unit's CPC.

Stops – Are strategically located points or areas within an authorized route that are officially designated and allocated for pick-up and drop-off of passengers.

Terminal – Off-street areas where passengers board and alight, usually located at the start and at the end of a route.

Transfer Area – An area, hub, or facility where two or more routes meet, enabling passengers to connect or transfer to other routes or modes.

Transport Network Corporation (TNC) – An organization whether a corporation, partnership, or sole proprietor that provides pre-arranged transportation services for compensation using an internet-based technology application or digital platform technology to connect passengers with drivers using their personal vehicles.

Transport Network Vehicle Service (TNVS) – A Public Utility Vehicle accredited with a Transport Network Corporation (TNC), which is granted authority or franchise by the LTFRB to run a public transport service.

Transport Planning – The process of defining future policies, goals, investments, services, facilities, and designs to prepare for the expected mobility requirements of people and/or goods.

Turning Point – Route ends, zone centroids, road network or turn back systems (except for loop-type services) where public utility vehicles are allowed to maneuver to resume operation and where transfer services are normally available.

Utility Vehicle (UV) Express Service – A form of paratransit system which uses air-conditioned utility vehicles or vans that ferry passengers directly from an authorized origin and destination. They may pick-up (load) and / or drop-off (unload) their passengers within two (2) kilometer radius from their end points specified in their CPCs or within the territorial bounds of the commercial / business district specified therein.

Zoning Ordinance – Written regulations and laws passed by the Sanggunian of a Local Government Unit concerned that define how property in specific geographic zones can be used. The Zoning Ordinance is a legally binding set of rules and regulations affirming the usage of land in a city/municipality.

Chapter 1: Introduction

The passage of the Local Government Code of 1991 mandated national government agencies to coordinate, inform, and possibly involve local government units (LGUs) in the planning and implementation of their respective programs, projects, and activities. The Department of Transportation (DOTr), formerly known as the Department of Transportation and Communications (DOTC), required LGUs to issue a certification that attests the need for public transport services based on LGU development plans prior to designating and enforcing public transport routes. This process recognizes the mastery of LGUs of their own mobility and accessibility needs as well as of the local policies and ordinances that were established to address local transportation problems. As such, it is in the best interest of LGUs to widen their scope and take charge of local route planning.

It is along the abovementioned concept that the Local Public Transport Route Plan (LPTRP) was envisioned and delegated to LGUs to empower them in developing route-oriented transport plans.

Under the DOTr's Department Order No. 2017-011, also known as the "Omnibus Guidelines on the Planning and Identification of Public Road Transportation Services and Franchise Issuance," the DOTr shifts the determination and provision of public transportation services from the private sector to the public sector. This move empowers LGUs and, in effect, lessens their dependence on the private sector in initiating the planning of local, regional, and national transportation systems. To carry out this move, the LPTRP will guide LGUs in planning, designing, and implementing local public transportation routes.

The active role of LGUs in local transportation planning strengthens the DOTr and its associated agencies' mandate as the main government agency that authorizes, provides, and promotes adequate, safe, reliable, efficient, and environment-friendly public transportation for Filipinos.

1.1 Scope and Purpose of the Manual

The LPTRP Manual is designed for corridor-focused transportation route planning. It aims to guide LGUs in determining the appropriate public transportation routes within its locality based on passenger demand and corresponding public transport services. The manual lays out a simplified approach that can be utilized even with limited transportation data and/or without a comprehensive transportation plan in place.

The DOTr and the Land Transportation Franchising & Regulatory Board (LTFRB) will issue a separate manual or guidelines specifically for highly urbanized areas, cities, and municipalities that will require a more complex transportation model and analysis.

This manual does not invalidate any existing and planned comprehensive transportation plan of LGUs. However, the DOTr recommends that LGUs review their existing transportation plans so that these can be aligned with the provisions of the manual and complement other transportation modes such as non-motorized transport (NMT), rail, maritime, and civil aviation.

1.2 New Transportation Planning Process

Traditionally, the DOTr's Road Transport Planning Division (RTPD) determines the public transportation routes that are for franchising based on requests from public utility vehicle (PUV) operators. Entities, such as individuals and corporations, identify and apply for the corresponding franchise on the route that they would like to provide public transport service to. Given the supply-driven process of route allocation, the approved routes are often not integrated or interconnected with one another.

To improve the local transportation planning process, the new Omnibus Franchising Guidelines (OFG) empower LGUs to craft their own LPTRPs that reflect appropriate solutions to their public transportation service requirements.

Accordingly, cities and municipalities shall prepare their respective LPTRPs, focusing on intracity and intramunicipal trips. On the second level, provincial LGUs shall formulate their LPTRPs with an emphasis on intercity/municipal and intraprovincial trips. Cities and municipalities may add inputs to their corresponding provincial transportation plans. The DOTr shall play a major role in finalizing interprovincial and interregional routes. Likewise, for intercity and intermunicipal trips within Metro Manila and identified MUCEP[1] areas, the DOTr shall rationalize the routes in the interim. However, Metro Manila and MUCEP-area LGUs still need to determine the intracity/intramunicipality trips within their jurisdiction.

1.3 Role of Local Government Units and National Government Agencies in the Local Public Transportation Route Plan

The development of the LPTRP Manual is in line with the decentralization thrust of Republic Act No. 7160 or "The Local Government Code of the Philippines (LGC)" and the

[1] MUCEP areas: Consist of 16 Metro Manila cities (Caloocan, Las Piñas, Makati, Malabon, Mandaluyong, Manila, Marikina, Muntinlupa, Navotas, Parañaque, Pasay, Pasig, Quezon City, San Juan, Taguig, and Valenzuela); the municipality of Pateros; and the adjoining cities and municipalities of Bulacan, Rizal, Laguna, and Cavite.

Comprehensive Land Use Plan (CLUP), mandating LGUs to provide access and mobility to people through public transportation services so that they can utilize and participate in the different socioeconomic activities and amenities of LGUs.

The DOTr will assist LGUs in strengthening their capacities to prepare their own LPTRPs by drafting guidelines/manuals and conducting training workshops.

The DOTr will likewise be involved in preparing interprovincial, interregional, and national public transportation plans, which will require the integration of the different LPTRPs of each province to establish seamless interprovincial, interregional, and national public transport systems.

The Department of the Interior and Local Government (DILG), through the "Joint Memorandum Circular (JMC) No. 001 Series of 2017," will help the DOTr and the LTFRB in requiring all LGUs to prepare and submit their LPTRPs to the DOTr and the LTFRB.

The LTFRB shall retain its role as the economic regulator of the public transportation sector. It shall continue to take charge of the issuance of franchises based on, but not necessarily limited to, submitted local public transportation route plans from LGUs.

Chapter 2:
Basic Principles of
Public Transport Route Planning

2.1 Basic Principles

The main objective of public transportation route planning is to reduce the reliance on private vehicle use and move toward environmentally sound mobility solutions. To achieve this, the DOTr shall develop and promote high-quality public transportation systems, including NMT modes, and ensure the prioritization of the movement of people and goods instead of vehicles. Moreover, the DOTr shall promulgate, administer, enforce, and monitor compliance with public land transportation policies, laws, and regulations, which promote mobility as a basic human need.

To help realize the abovementioned objectives, the LPTRPs to be prepared by LGUs should be easy to understand and responsive to the transport and mobility needs of one locality, providing public transportation in underserved areas and rationalizing areas where there is an oversupply of public transportation modes. The LPTRPs must also be in conformance with and integrated with other local plans such as the CLUP and the Comprehensive Development Plan (CDP). Lastly, the LPTRPs should be monitored and evaluated following the same cycle of CLUP review or as frequently required.

2.2 Classification and Characteristics of Public Transportation Services

Passenger public transportation facilities can be classified into two main groups, as follows.

2.2.1 Non-Fixed Route Passenger Public Transportation

This type of service does not have a fixed route and, sometimes, a fixed fare rate. A trip is made after an agreement is reached between the driver and the passenger based on the passenger's request. This is usually provided by a private operator such as tricycles, taxis, rent-a-car, Transport Network Vehicle Service (TNVS), etc.

2.2.2 Fixed-Route Passenger Public Transportation

This type of service operates along a fixed route on a regular basis and fare rates are mostly fixed. In some cases, this service also follows a regular schedule. This is more popularly called **mass transit** or **transit** service.

The mass transit or transit type of public transportation is further classified according to the types of routes that they serve. These types of routes are as follows:

1. **Local or Short-Distance Route –** This route operates within small areas such as residential or commercial districts. It generally "feeds" the passengers to and from the main transit route.

2. **Trunk Line Route –** Within urban areas, this is part of the main transit route network that links major activity centers and operates along main thoroughfares.

3. **Interregional Route –** This is a long-distance route that connects regions. Terminals are located at the major urban centers in these regions. Road-based transportation modes that link these regional urban centers are also part of this route type.

Transit services can also be classified according to the space intervals of stations or stops. The main classifications are as follows:

1. **Collector/Distributor Service –** This corresponds to the local or short-distance route. As this service operates within small areas, roads are generally local ones and do not have restrictions on stopping. Vehicles usually run at low speeds, and pick (collect) and drop (distribute) passengers along roads in accordance with the passengers' requests.

2. **Regular Service –** This corresponds to the trunk line route, which operates along main highways where there are traffic restrictions on stopping. There are designated bus stops, and vehicles are to load and unload passengers at these stops.

3. **Express Service –** This also operates along the trunk line route or interregional route, but its stops are so widely spaced. In several cases, an express service stops only at the terminal located at a route's end.

The time of operation of a transit service is generally an "all-day" basis. The "day" in this term does not necessarily mean a 24-hr day. Except for long-distance interregional routes that operate on a 24-hr basis, most transit services operate for around 10–12 hr, depending on passenger demand. During special occasions, such as Christmas, Holy Week, and All Saints' Day, vehicles

with fixed routes are allowed to operate outside their routes on a limited basis to cater to the very high demand.

2.3 Guidelines in the Identification of Routes

As a rule, guidelines in the identification of routes should follow the hierarchy of roads as well as modes, which will be discussed in the next subchapter.

For the trunk line route or regular service route, Public Utility Buses (PUBs) are the prescribed transportation mode. Public Utility Jeepneys (PUJs) and Utility Vehicle (UV) express service are feeder services to PUBs. However, these two transportation modes (PUJs and UVs) may operate in very minimal portions of PUB routes.

Filcab Services are meant to replace tricycle service in all national roads, highways, and expressways, or any arterial road. It may also serve intrazonal movement.

It is important to understand the general movement of commuters in a study area. As discussed previously, it is important to consider the land uses and activities where these commuter trips are coming from and going to. Existing road network forms can also affect how service routes are laid out.

2.3.1 Road Network Forms and Hierarchy of Modes

The hierarchy of roads by function is shown and defined as follows:

1. **Expressways –** These are limited-access roads that charge a certain fee for use. Public transportation vehicles are usually not allowed to stop on these roads, whether to drop off or pick up passengers.

2. **Arterials –** These are limited-access roads that serve movement only. Buses are the appropriate transportation mode for these kinds of roads. On these roads, bus stops, where commuters can only ride a bus or be dropped off, are properly defined.

3. **Collectors –** These are medium-speed and medium-flow roads that serve both movement and access. Jeepneys, UVs, and Filcabs are the appropriate transportation modes for this type of road, which connect commuters coming from local roads to arterial roads.

4. **Local Roads –** These are slow-speed and low-flow roads where pedestrians and NMT have higher priority than motor vehicles. Examples of local roads include subdivision roads and barangay roads. Tricycles may be the transportation mode available on this type of road.

Figure 1 below illustrates this functional classification of roads.

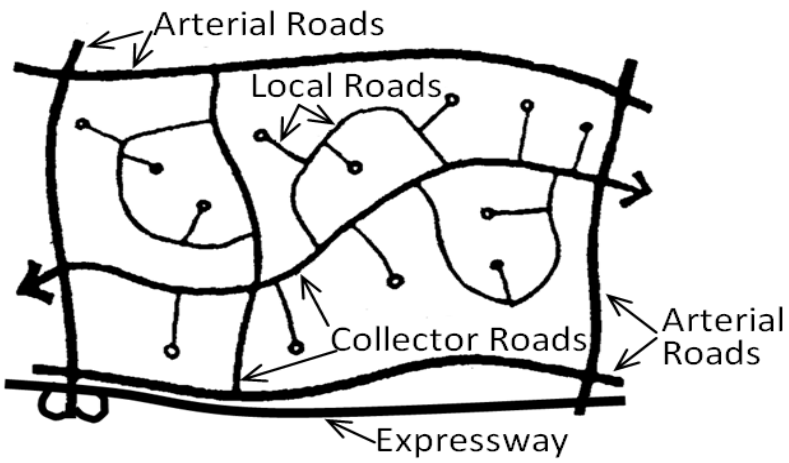


Figure 1: Functional classification of roads

Figure 2 shows the treatment of vehicular traffic movement and speed against access to property among road types, which is being favored in expressways and minimized in local roads.

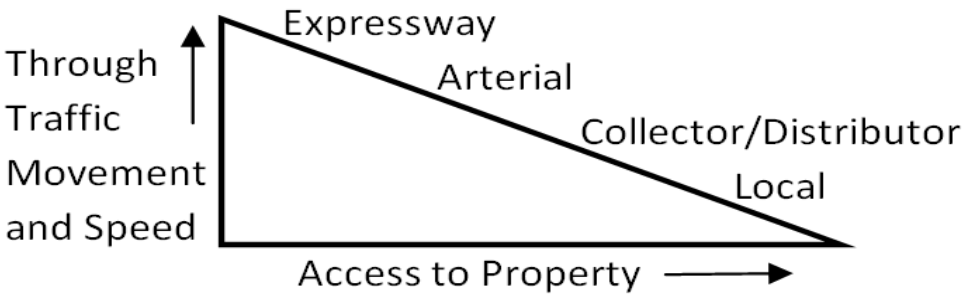


Figure 2: Treatment of vehicular traffic movement and speed against access to property among road types

2.3.2 Hierarchy and Classification of Public Transportation Modes

Currently, most people in the country use jeepneys, Filcabs, or tricycles as their main public transportation modes. It is thus important that public transportation planning is undertaken in cities to guide the development of their current transportation systems into appropriate mass transit systems.

Regardless of the transportation mode used, it is important that a vehicle can supply the passenger capacity per hour for the planned road corridor. Table 1 below provides the estimated

range of passenger capacity per hour of the transportation modes available in the country based on their service characteristics.

Table 1: Service characteristics of transportation modes and their passenger capacity per hour estimates

Transportation Modes	Assumed Seated Passengers	Typical Travel Speed (kph)	Range of Frequency/Hour (Headway in Minutes)	Passenger Capacity / Hour / Direction
Articulated bus or double-decker bus	120	25–50	12–60 (1–5)	1,440–7,200
Standard bus	50	25–40	12–120 (0.5–5)	600–6,000
Minibus	35	25–40	12–120 (0.5–5)	420–4,200
Jeepney/UVs	18	20–40	12–60 (1–5)	192–1,080
Filcab	12	20–30	12–60 (1–5)	144–720
Tricycle	3	15–25	12–60 (1–5)	36–180

Figure 3 below is a guide that can be modified depending on the service characteristics defined for the transportation mode that will serve city roads. Nevertheless, buses (standard, articulated, or double-decker) are on top of the hierarchy, followed by jeepneys, UVs, and Filcabs that may pass the corridors traversed by buses. At the lower end of the hierarchy are tricycles, which can traverse local roads and subdivision roads that will feed into the routes traveled by jeepneys, UVs, or Filcabs.

Pursuant to the OFG, the operation of tricycles shall be in accordance with the "Joint Memorandum Circular (JMC) No. 1, Series of 2008" of the DILG and the DOTC, which states the following: "*Tricycle operation should only be confined along city or municipal roads, not along national roads, and is limited only to routes not traversed by higher modes of public transport. Motorcycles and other farm implements, such as the kuliglig, are likewise not allowed as public transport conveyance."*

According to the OFG, the maximum estimated passenger demand that a minibus can serve is 5,000 passengers per hour per direction (pphpd), and this demand can easily be accommodated if the 4,200 seated passenger capacity indicated in Table 1 is increased by 20%. The range of passenger capacity provided in Table 1 for minibuses, jeepneys/UVs, and Filcab encompasses the maximum passenger demand provided in the OFG, which should be the estimate to be followed. It is, however, expected that the passenger demand could vary around these ranges depending on how the service performance standard is followed.

It should also be noted that some transportation modes like the standard, articulated, or double-decker bus can accommodate standing passengers, which are equivalent to 20% of its seating capacity. Hence, the passenger capacity per hour of these transportation modes can be higher.

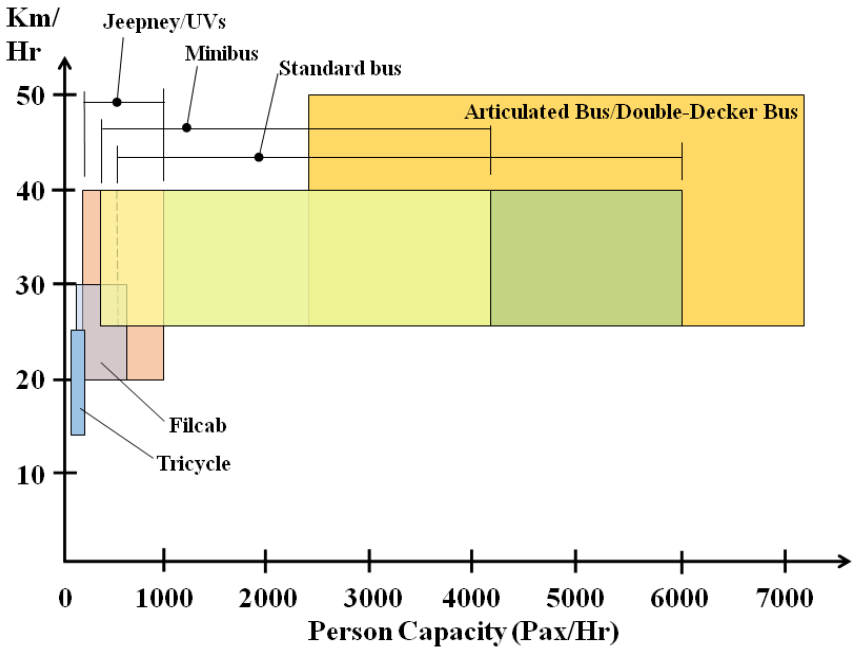


Figure 3: Estimated passenger capacity per hour per direction per type of mode used

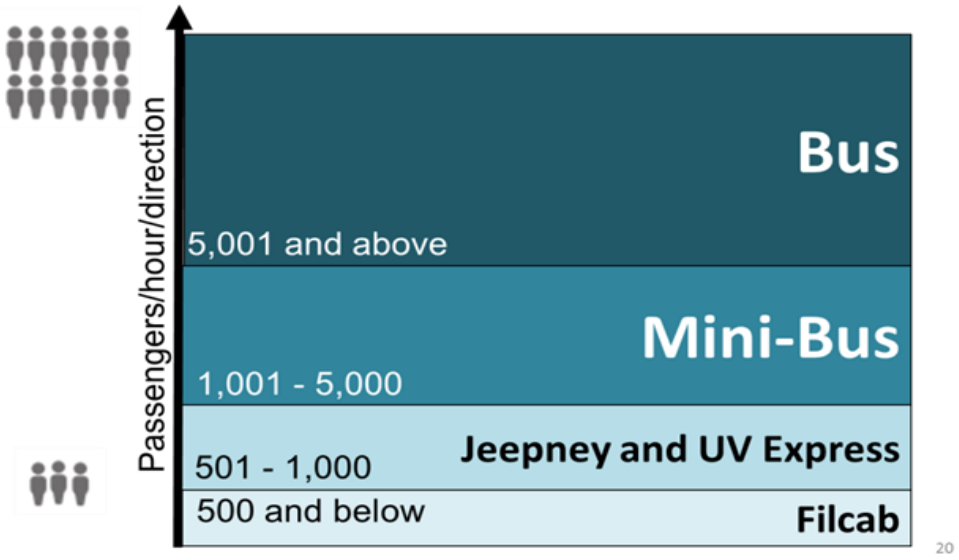


Figure 4: Passenger capacity per hour per direction per type of mode based on the OFG

2.4 Maximum Distance

According to the OFG, PUJ service routes should have the following maximum distances:

Table 2: Maximum distance of PUJ routes

Route Coverage	Maximum Route Length (km)
Highly urbanized cities, independent component cities, and component cities	15
Inter-regional, inter-provincial, provincial, and municipal	35

For PUJ loop services, the loop length should be governed by similar restrictions, unless deemed waived by the DOTr / LTFRB.

On the other hand, UV Express service routes should have the following maximum distances:

Table 3: Maximum distance of UV routes

Route Coverage	Maximum Route Length (km)
Highly urbanized cities, independent component cities, and component cities	35
Inter-regional, inter-provincial, provincial, and municipal routes originating or terminating in Metro Manila	35
Inter-regional, inter-provincial, provincial, and municipal routes not originating or terminating in Metro Manila	60

For PUBs, no maximum distance is required.

Exceptions to this policy may be granted if an application for exemption is expressly submitted in writing together with a conduct of transport survey/study. The LTFRB, through a formal unanimous resolution, shall grant exceptions subject to the following conditions/situations:

a) There is an absence of a transfer area between route ends;
b) There is an absence of alternative transport services, existing services/supply cannot meet the passenger demand, or the route has no transport services available;
c) Most sections of the route have limited road space or width, which discourage/prevent normal operations;
d) The transportation demand between the applied routes is not substantial to assure profitable operations; and
e) Other conditions that may be provided by the department and/or the LTFRB.

2.5 Route Modification

A transit route structure can be modified to suit the demand. Such modification should primarily consider changes in passenger demand patterns, changes in the road network, the profitability of operation, and the level of service acceptable to passengers. Modifications can be in the form of the following: (a) shortening, (b) extension, (c) change of route ends, and (d) change of path or "via."

Route modification may be influenced by the local traffic circulation plan, which is being prepared by the LGU concerned, pursuant to the Local Government Code. Changes in trip patterns caused by facilities, such as the location of terminals, seaports, and airports, may also induce route modification.

2.6 New or Developmental Routes

The recommendation of a new route for an existing route network is determined primarily by the passenger demand and road facilities. Usually, a new route is required when new areas are developed according to socioeconomic function (i.e., residential, commercial, industrial, etc.). Passenger demand is estimated based on the volume of potential users of the transportation service. A new route is initially considered developmental in nature and may have a few vehicle units at the onset. As the number of passengers in a new route increases, the capacity of the service is adjusted accordingly.

New routes shall be designed such that overlaps with existing routes do not exceed 25% of the length of any of the affected routes. Previously authorized routes may be restructured (merged with another route or a new route, shortened, or split into different routes) because of the marked changes in trip patterns brought about by urban renewal/redevelopment projects and/or the traffic circulation plans of LGUs.

Under the OFG, a minimum fleet size of 15 units for any type of PUV for six months shall be imposed on new developmental routes, subject to review by the LTFRB based on the actual demand.

Subject to an express and written grant by the LTFRB through a formal unanimous resolution, the 25% overlap limit may be waived subject to the following conditions:

a) A newly developed residential or commercial area is at least 5 km away from the origin/destination of the traditional route;
b) The passenger demand generated/attracted by a newly developed area is greater than what the existing route cannot adequately or economically serve;
c) Additional and/or new sections of a road network are developed, thereby providing shorter and faster trips; and
d) Other conditions that may be provided by the department and/or the LTFRB, with the approval of the department.

2.7 Route Connectivity

For major arterial roads, highways, and expressways, PUBs and minibuses are the prescribed modes of public transportation. However, PUJs, Filcabs, and UV Express service may operate on minimal portions of the PUB corridor for the sole purpose of providing intermodal transfers at bus stops as long as such purpose is indicated in the relevant LGU transportation plan.

Although this manual focuses on the corridor-based approach of route planning, it is recommended that LGUs anticipate the need for a network analysis approach, which will be discussed in the second volume of this manual, to solve traffic congestion issues and enhance connectivity with other available transportation sectors such as rail and maritime.

Chapter 3:
Public Transport Route Planning Process

3.1 Overall Process

As a general rule procedure, public transportation route planning, like any other planning activity, has the following stages, as shown in Figure 5. Each stage will be discussed in detail in Chapter 4, except for the monitoring and evaluation stage, which will be discussed in Chapter 7.

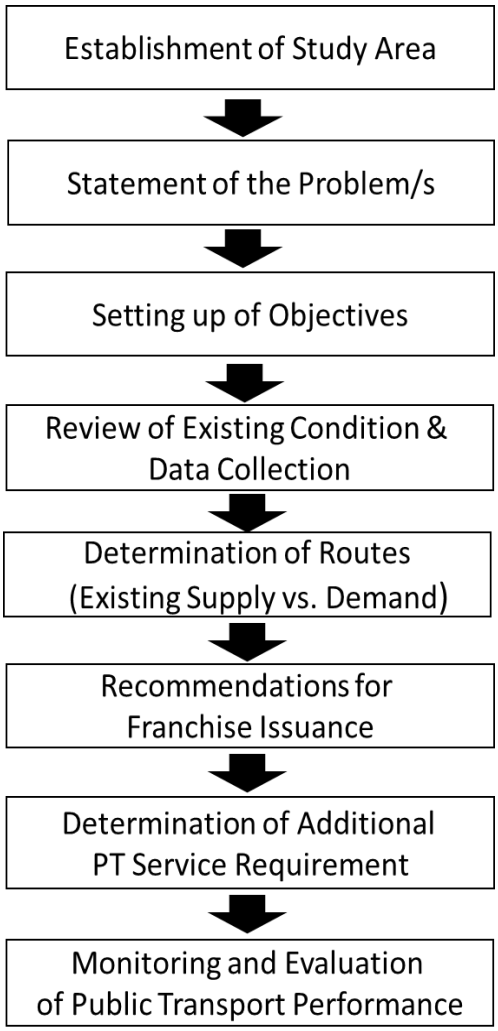


Figure 5: Transportation route planning process

3.2 Establishing the LPTRP Team

Prior to the conduct of the LPTRP, it is important that the chief of the LGU concerned forms a team through an executive order that will focus on the formulation of the LPTRP. The recommended composition for LPTRP teams can be found in Table 4 below.

Table 4: Composition of the LPTRP Team

LPTRP Team Members	Role	Data Preparation
Local Chief Executive	Chair	Signed the executive order
Head of the Transport Committee, Legislative Council	Co-chair	Traffic and Transport Code, authorized PUV terminals
Local Administrator (Provincial, City, or Municipal Administrator, as the case may be)	Co-chair	Executive–legislative agenda, transportation projects
Planning and Development Coordinator	Member	CLUP, CDP, Land Use Plan, demographic data
Head of the Tricycle Regulatory Unit (TRU)	Member	Tricycle franchising data
Head of the Traffic Management Office	Member	Traffic management plans
Head of the Engineering Office	Member	Road infrastructure data, base map
Head of the Agriculture Office	Member	Farm-to-market road data
Head of the Tourism Office	Member	Tourism development data
Representative from the local PNP Traffic Group	Member	Traffic accident data
Representative from the Association of Barangay Captain (ABC)	Member	Socioeconomic data, road infrastructure data
Representative from the DPWH District Office	Member	Road infrastructure data, base map
Representative from the LTO Regional Office / HPG	Member	Vehicle registration data

Representative from the LTFRB Regional Office	Member	Approved PUV franchises
Representative from the Business Sector	Member	
Representative/s from Transport Groups	Member	
Representative from the Academe or Nongovernment Organizations	Member	

The Local Chief Executive is the chair of the LPTRP team. The Local Administrator and/or the Head of the Transport Committee of the Legislative Council shall be the co-chair(s). On the other hand, the members of the team should be composed of officials and representatives from the LGU and national government agencies. Furthermore, it is strongly advised that representatives from the private sector, such as the transport sector, business sector, academe, etc., are included in the team.

Aside from the LPTRP Team, pursuant to the DILG-DOTr JMC No. 001 Series of 2017, LGUs should also secure the official inputs and/or comments of all the stakeholders within their respective jurisdiction in preparing the LPTRPs. Stakeholders include, but are not limited to, commuter groups, transport groups, and the academe.

Chapter 4:
Route Planning

The determination of a public transportation need at the local level is a technical process that requires the collection of primary and secondary data to be used for situational analysis. As a general procedure, public transportation planning, like any other planning activity, has the following stages.

4.1 Establishment of a Study Area

When one embarks on a PT planning activity, he/she should first identify the study area. The study area can be an existing corridor in a public transportation network, a district within an urban area, the whole urban area, a province, or a region. Identifying the study area will give the planner an idea on the study approach and the resources required. The administrative boundary of an LGU is considered as its study area.

4.2 Statement of the Problem

After delineating the study area, the planner should identify the problem(s) related to the public transportation system. An analysis may be required to show how these problems come about and what factors contribute to them. This analysis will assist the planner in the later stages of the study such as the identification of possible solutions and the determination of the data inputs required. Examples of public transportation problems include the following:

- Long passenger waiting time
- Low speeds
- Poor route structure
- Exorbitant prices
- Arrogant crews

The planner should note that the sources of information with regard to public transportation problems include citizens' complaints, the media, his/her own experiences, public officials, commuters, transport groups, etc.

4.3 Setting Up of Objectives

After identifying the public transportation problem(s), the next step is to set up a goal or an objective. The objective, which answers the question "*What* is desired *when*?," has to be an end

result that will eliminate or minimize the problem(s) stated. It will be more helpful to the planner if the objective is quantifiable.

To illustrate, let us take the problem of an unreliable public transportation service, as evidenced by the long and variable passenger waiting time. Let us say, for example, that passengers usually wait for 30 min – 1 hr before they can get a ride. The objective for addressing this problem can be to provide a more reliable public transportation service by reducing the average passenger waiting time of 30 min – 1 hr to less than 10 min in 2 years. In this example, the desired end result and the time frame for achieving the end result is specified. Furthermore, as illustrated, the objective must include indicators that can be used to determine if the goal has indeed been achieved within the expected time frame.

4.4 Analysis of the Existing Condition

This stage is basically knowing the existing supply versus the existing demand, and involves an actual examination of the factors that affect the relationship between supply and demand. A gap between supply and demand creates the problem(s) experienced by the providers and users of transit services. Both supply and demand are quantifiable. The analysis in this stage is carried out in three basic steps: (1) data collection, (2) data processing, and (3) data analysis.

4.4.1 Existing Plans and Studies

The major inputs or considerations in the formulation of the LPTRP are the CLUP, the CDP, the Transport and Traffic Code, and other urban and transportation planning available to LGUs. These major inputs or considerations are discussed as follows:

a. CLUP and Zoning Ordinance – The CLUP embodies the specific directions that guide and regulate the growth and/or development within LGUs. The Zoning Ordinance, on the other hand, is the legal instrument used to enforce compliance with the CLUP. As land use type and intensity is directly correlated with the nature of the travel demand, and the interaction between areas with specific land uses gives rise to passenger and goods movements, it is important that the connectivity between such land use areas and the magnitude of the demand arising therefrom are considered in the planning of public transportation routes. In addition, the generation of the CLUP also entails the conduct of sectoral studies that can give insight on how the LGU will operate in the immediate future and the planning horizon (long term). As such, the CLUP may provide guidance on the extent of the coverage and magnitude of the immediate, medium-term, and long-term service requirements that the public transportation routes may provide.

b. CDP – Each LGU is mandated to prepare a comprehensive multi-sectoral development plan that is to be initiated by its local development council and approved by its *Sanggunian*. This plan

contains the medium- and short-term action plans for implementing projects and other programs that are designed to realize the objectives of the CLUP. The CDP includes an "Infrastructure and Physical Development Plan" that encompasses an infrastructure-building program designed to support the adopted spatial strategy of LGUs. As such, the planning of public transportation routes should take into account the availability of suitable roadways that can accommodate the planned routes.

c. Traffic and Transportation Code – While some LGUs have a stand-alone transport and traffic code, almost all LGUs have at least a number of separate ordinances that affect the traffic management within them. Inasmuch as traffic ordinances may stipulate allowable directions of traffic flow, rules on stopping, and the like, these issuances need to be considered in the preparation of the LPTRP. It is also possible that some stipulations of these ordinances may run counter to the intended improvements to the routing system, and thus, some modifications to the ordinances may require a legislative action at the LGU level.

d. Traffic and Transportation Plans – Some LGUs have taken the initiative to elaborate on their transportation system development plans in a form that integrates the infrastructure and planning of public transportation services that respond to immediate-, medium-, and long-term requirements. These plans will be supported by studies that indicate the required extent of the coverage and scale of services to be provided by public transportation routes.

e. Other Plans – LGUs may have other plans (e.g., tourism plans, private sector's township development plan, disaster risk reduction management plan, the Forest Land Use Plan, the Coastal Management Plan, etc.) that will directly affect the development of the public transportation route system. The LPTRP should consider these plans as well.

4.4.2 Conduct of Public Consultations

An efficient and responsive public transportation system should be anchored on the needs of commuters. Thus, it is highly important for the public to be involved in the identification of public transportation issues that must be addressed. Involving the public can be done through Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) with various sectors of the community, with an emphasis on vulnerable stakeholders such as the elderly and Differently Abled Persons (DAPs).

4.4.3 Primary Data Collection

Depending on the problem and resources of the LGU, primary data collection should be undertaken, particularly when there is no local transportation data available. This subsection

describes traffic surveys that are undertaken for primary data collection. **Sample survey forms are included in the annexes of this manual.**

4.4.3.1 License Plate and Occupancy Count (Passenger Load) Survey

The License Plate and Occupancy Count Survey collects the following data:

1) Frequency of public transportation units by mode and route per direction;
2) The utilization ratio (UR) based on the number of public transportation units in operation;
3) Number of round-trips (NRT); and
4) Average load / passenger profile

For smaller cities and towns with limited resources for the conduct of full-scale public transportation surveys, a combined survey of license plate and occupancy count (passenger load) of public transportation vehicles may be conducted during their service period (e.g., 6 a.m. – 10 p.m). The survey is usually conducted mostly at the terminal of the route—a location where the passengers who would be riding are expected to have destinations. This location is usually on the outer boundary of the town center or city center.

The data to be collected includes the time of passing (hh:mm), vehicle license plate, passenger seating capacity (except the driver and the conductor), and passenger load (except the driver and the conductor) of the PUV / public transportation vehicle that passes by the survey station.

The data on the time of passing will yield the public transportation frequency by mode and by route per direction, which will serve as the expansion factor of the occupancy count / passenger load. Unique vehicle license plate numbers from the license plate number data, on the other hand, will yield the number of public vehicle units that are in operation, which can estimate the UR if the total fleet size can be obtained from the LTFRB regional office. Matching license plate data can also estimate the NRT. Seating capacity, on the other hand, is the number of passengers who can be seated inside a public transportation vehicle (e.g., PUB, PUJ, and UV Express service). If the average of seating capacities is taken, one can directly estimate the average seating capacity (ASC). Occupancy count / passenger load records the number of passengers occupying a public transportation vehicle by mode and by route as it passes by the survey station. Passenger load data multiplied by the public transport frequency by mode and by route (assuming 100% sampling) estimate the total number of passengers per day and per direction during the survey day.

A sample License Plate and Occupancy Count Survey form is shown in the annex of this manual.

4.4.3.2 Boarding and Alighting Survey

Another traffic survey that can collect data on passenger demand or load is the Boarding and Alighting Survey. This survey collects information on the number of passengers who board and alight at selected locations or stops and times along a public transport corridor.

In collecting data for this survey, an observer or surveyor boards the assigned public transportation vehicle at one end of a public transport route and selects a seat in which entering and leaving passengers can be readily seen. The surveyor counts and records the number of passengers once the trip starts. At each public transportation vehicle stop, the surveyor records the following information until the end of the trip:

a) Location of the public transport stop;
b) Number of boarding passengers at each public transport stop;
c) Number of alighting passengers at each public transport stop;
d) Time of arrival at each public transport stop; and
e) Time of departure at each public transport stop

A sample Boarding and Alighting Survey form is shown in the annex of this manual.

4.4.3.3 Classified Traffic Volume Count Survey

The most basic survey that must be conducted during primary data collection is the Classified Traffic Volume Count Survey, which counts the number of vehicles that pass by a given point on a road or given lane or direction of a road during a specified time interval. The purpose of this survey is to collect data on the number and types of vehicles that pass by a specified point on a link (link or mid-block counts) or make specified movements at an intersection (turning counts). Traffic volume is expressed as the rate of flow in vehicles per hour (veh/hr or vph) or vehicles per day (veh/day or vpd). Daily traffic volumes are not differentiated by lane or direction but are instead totals for the entire facility at a specified location.

Traffic count can be classified into the following vehicle types:

1) Pedicab
2) Bicycle
3) Motorcycle
4) Tricycle
5) Filcab/multicab
6) Jeepney
7) Minibus
8) Standard bus
9) Taxi
10) UV Express service
11) Passenger Cars (private car, SUV, owner-type jeep, pickup, and private van/AUV)
12) School or company bus / AUV
13) Delivery van / pickup

14) Tourist bus
15) Truck (two axles)
16) Truck (three or more axles)
17) Others (emergency vehicles, fire trucks, and off-road vehicles)

The locations of Classified Traffic Volume Count Surveys should coincide with the locations of Occupancy Count Surveys to expand the sample occupancy data or the boarding and alighting survey data.

The 16-hr traffic counts are usually conducted along public transportation corridors for at least one weekday and one weekend day. Traffic counts are conducted at 15-min intervals using manual tally (five-bar gate) or manual tally counters.

A sample Classified Traffic Volume Count Survey form is shown in the annex of this manual.

4.4.3.4 Traveltime Survey

For PT route planning, the Traveltime Survey is conducted to determine the turnaround time (TAT) for public transportation. This survey records the time it takes for vehicles to traverse a specified length of a roadway. It can also determine the locations, types, and extent of traffic delay.

There are available methods for conducting Travel Time Surveys—the test car technique, the license plate technique, the interview technique, the moving vehicle method, etc. However, among these techniques, the most common method is the test car technique. In the test car technique, a test vehicle is driven over a "test" section or study route in a series of runs. The time readings as the test vehicle passes by each station are recorded. When the test vehicle stops or is forced to travel slowly, the time, location, and cause for such stop or slow down are recorded on the field sheet.

The test car technique has two types:

a) "Floating Car" Technique – The driver of the test vehicle attempts to reach the median speed by driving past as many vehicles that pass by his/her vehicle as possible.
b) "Average Speed" Technique – The test vehicle travels at a speed that the driver believes to be representative of the speed of all traffic at the time.

A sample Travel Time Survey form is shown in the annex of this manual.

4.4.3.5 Road Inventory

Although not a direct requirement for the determination of necessary franchises, a Road Inventory Survey may be conducted to determine infrastructure support for better public transportation services. The purpose of this survey is to record the following information:

- Physical characteristics
- Current geometrics
- Pavement structure
- Traffic controls
- Signs
- Signals
- Road markings
- Parking restrictions
- Sidewalks
- Shoulders
- Adjacent land use
- Service provision (e.g., gas, water electricity, and telephone)
- Intensity of non-traffic activities that encroach upon a road space

The information that can be prioritized in the Road Inventory Survey include road width and the number of lanes of each homogeneous section of the proposed and/or existing public transport corridor.

An approximate and simple survey method involves surveyors walking or driving.

4.4.3.6 Public Transport Operator and Driver Interview Surveys

The survey on the costs of the operation and maintenance of public transportation modes can estimate the average daily operational cost of public transportation operation in peso per veh-km per day. This is one of the variables in the estimation of the viable load factor. The NRT can also be obtained from jeepney / UV Express service driver interview surveys.

A survey on bus operations involves interviewing the bus operator as bus lines usually have a fleet of bus units, while a survey on jeepneys and UV Express service vehicles involves interviewing both the operator and the driver as the operations of these vehicles are small scale in nature.

4.4.3.6.1 Bus Operator Interview Survey

The Bus Operator Interview Survey collects information on the operational characteristics of buses such as operational costs, vehicle fleet profile, repair and maintenance, and vehicle information. The following are the parts of this survey, which will be left with the bus company or operator so that the bus company's various offices/divisions can fill in the required operation, fleet, and maintenance information:

a) Part 1: Operator Information
b) Part 2: Fleet Information
c) Part 3: Vehicle Maintenance

A sample Bus Operator Interview Survey form is shown in the annex of this manual.

4.4.3.6.2 Jeepney / UV Express Service Operator/Driver Interview Survey

The Jeepney / UV Express Service Operator/Driver Interview Survey collects the operational characteristics of jeepneys and UV Express service vehicles such as operational costs, vehicle fleet profile, repair and maintenance, and vehicle information. The following are the parts of this survey:

a) Part 1: Operator Information – For the operator
b) Part 2: Vehicle Information – For the operator (for each PUJ / UV Express service unit owned)
c) Part 3A: Vehicle Maintenance –For the operator
d) Part 3B: Vehicle Information – For the Jeepney / UV Express service driver (sampled unit only)

A sample Jeepney / UV Express Service Operator / Driver Interview Survey form is shown in the annex of this manual.

Table 5 summarizes the traffic surveys discussed and the corresponding data that they collect.

Table 5: Summary of traffic survey methodologies

Kind of Survey	Objective / Data to Be Collected
License Plate and Occupancy Count (Passenger Load) Survey	1. Frequency of public transportation units by mode and route per direction 2. Utilization ratio (UR) based on the number of public transportation units in operation (UR) 3. Number of round-trips (NRT) 4. Average passenger load
Boarding and Alighting Survey	1. Passenger demand 2. Location of stops 3. Passenger load

Classified Traffic Volume Count Survey	Number of vehicles that pass by a given point on a road according to predetermined vehicle classifications; this will provide information on traffic conditions in the study area.
Traveltime Survey	Determine the turnaround time (TAT) for public transportation
Road Inventory	Determine infrastructure support for better public transportation services such as waiting sheds
Public Transportation Operator and Driver Interview Surveys	1. Information on 1) operator, 2) fleet, and 3) vehicle maintenance 2. Can also be used to obtain data on the number of round-trips (NRT)

4.5 Route Determination

The determination of route has two main components—route analysis, and supply and demand analysis. These components will be discussed in the succeeding sections.

4.5.1 Route Analysis

4.5.1.1 Road Network Characteristics

Road network characteristics deal with the basic data requirements of transportation planning. These characteristics should include the following:

- Road network map/layout
- Length of road by classification and type of pavement
- Inventory of streets (name and functional classification, number of lanes, width, capacity, type of operation, etc.)

As discussed in the previous section, roads are classified administratively into the following categories:

- National roads
- Provincial roads
- City/municipal roads
- Barangay roads

Oftentimes, road network characteristics also include traffic characteristics such as the following:

- Traffic volume by hour during peak and off-peak periods
- Vehicle occupancy by vehicle type and direction
- Pedestrian count by direction and location

4.5.1.2 Existing Transportation Services

Existing transportation services are essential in analyzing the supply and demand characteristics of a transportation service. The data that should be analyzed are the following:

- Transit network map/layout
- Transit routes by mode and transit line
- Length of routes by mode and transit line
- Operating characteristics (e.g., passenger waiting time, load factor, etc.)

4.5.1.3 Socioeconomic Data and Activities per Barangay

These data serve as basic inputs in analyzing vehicular and pedestrian flow. Socioeconomic data include the following:

- Population: Growth trends – Present population; distribution by age, sex, occupation, and income level
- Employment: Pattern of employment by occupation and location, present employment by industry, and total labor force

4.5.1.4 Trip Pattern Analysis

Trip pattern characteristics are useful in analyzing current conditions and evaluating the traffic impacts of a proposed development, and can be used to predict future situations that are helpful in developing traffic programs and transportation plans.
Trip pattern characteristics are described by the following:

- Pattern of economic activity: Market days, harvest season, special occasions, etc.
- Travel frequencies by age, sex, occupation, and income level
- Travel time by route, mode, and direction
- Trip characteristics: Origin, destination, trip length, modal choice, time of day, etc.

Likewise, trip pattern characteristics also analyze existing transport facilities, such as terminal facilities and parking facilities, and the location and physical description of road facilities like pedestrian crossings, overpasses, underpasses, waiting sheds, streetlights, etc.

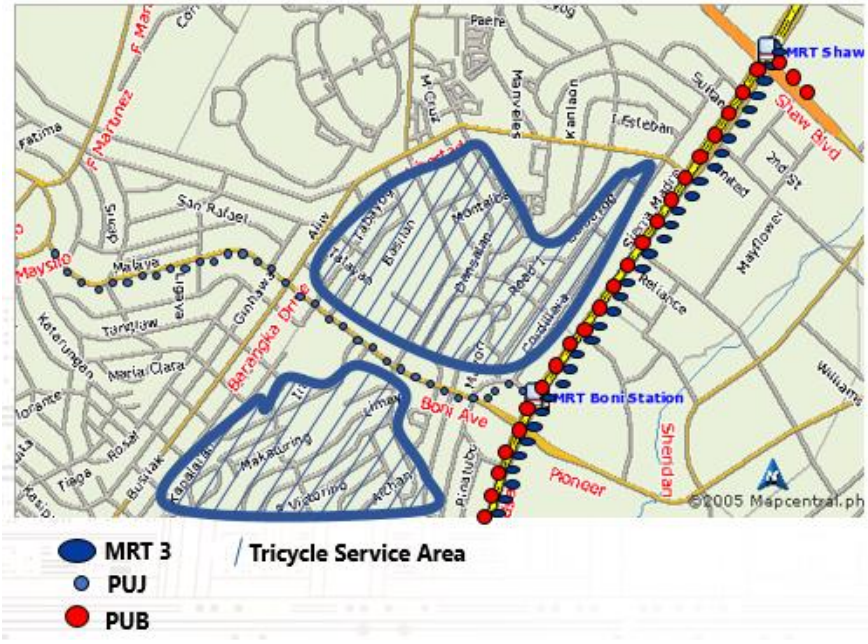
4.5.1.5 Identification of Route Based on the Hierarchy of Public Transportation Services

As discussed in Chapter 2.3.2 and as shown in Table 1, there is a hierarchy of public transportation modes that should be followed depending on their service characteristics such as passenger capacity per hour and per direction, frequency per hour, and travel speed. The hierarchy is as follows:

- PUBs (includes articulated, double-decker, and standard buses; etc.)
- PUJs
- Public utility vans
- Filcabs
- Tricycles

Figure 6 below is a theoretical determination of route based on the hierarchy of roads and the modes of public transportation.

Figure 6: Theoretical route determination



4.5.2 Demand and Supply Analysis

4.5.2.1 Passenger Volume and Load Profile

Passenger Volume represents the actual volume of passengers along a given section of a route. It can be derived from Classified Traffic Volume Count Surveys and/or Boarding and Alighting Surveys.

On the other hand, Passenger Load Profile is a graphical presentation of the passenger volume on each section of a given corridor. The term "corridor" generally refers to a stretch of highway, street, or parallel highway/street in which one or more transit routes pass through.

4.5.2.2 Passenger Waiting Time

The Passenger Waiting Time in a given route or corridor, which refers to the duration of time that passengers have to wait at stops to get a ride, is measured from the time a passenger arrives at a stop until the time he/she actually boards a transit vehicle. It can be determined through an actual survey that observes a sample of passengers at a given transit stop or station.

4.5.2.3 Viable Load Factor

The Viable Load Factor represents the minimum average load factor at which transit operation earns a reasonable or viable profit. In general terms, it can be determined by getting the ratio of the profitable gross revenue to the maximum potential revenue. It can be computed as follows:

$$Viable\ Load\ Factor = \frac{C_a + I_a}{S_c * F} \qquad \text{(Equation 1)}$$

where:

C_a = Average vehicle operating cost per vehicle-km per day
I_a = Reasonable profit per vehicle-km per day
S_c = Average seating capacity per bus
F = Fare per seat-km, based on LTFRB's rates

or

$$Viable\ Load\ Factor = \frac{Gross\ Revenue}{F * R_1 * S_c} \qquad \text{(Equation 2)}$$

where:

Gross Revenue = Operating expense (OE) + net income
OE = Average vehicle operating cost * total distance traveled per day
F = Fare per seat-km, based on LTFRB's rates
R_1 = Route length
S_c = Average seating capacity per bus

It usually ranges **from 0.60 to 0.80**.

4.5.2.4 Utilization Rate

The Utilization Rate is the ratio of the average number of units actually operating per day to the total fleet. It can be computed as follows:

$$\text{Utilization Rate (UR)} = \frac{\text{Number of Units in Operation Every Day}}{\text{Total Number of Proposed Units}}$$

4.5.2.5 Number of Round-Trips

The NRT provides the average number of round-trips made per vehicle per day. It can be determined through a license plate survey and can be computed as follows:

$$\text{NRT} = \frac{\text{Service Period}}{\text{Time to complete one round-trip from origin to destination}}$$

4.5.2.6 Average Seating Capacity

Average Seating Capacity represents the average number of available seats offered by transit vehicles in a given route. It can be determined by the actual counting of a vehicle's seating capacity and by getting the average figure.

4.5.2.7 Estimating Unit Requirement per Route

Estimating Unit Requirement refers to the desired level of service or "frequency" requirement of a route. It should be represented in number of units per route per mode. The basic formula for computing the estimating unit requirement is as follows:

$$\text{Number of Units} = \frac{\text{PD}}{\text{UR} \times \text{VLF} \times \text{ASC} \times \text{NRT}}$$

where:
PD (passenger demand) may be computed as follows:

- Passenger count covering the total service period
- For new services, the demand can be based on the 10 years and above population of the zone multiplied by 2.

UR = Utilization rate
VLF = Viable load factor
ASC = Average seating capacity
NRT = Number of round-trips

4.6 Determination of Additional Public Transportation Service Requirement

Additional Units can be computed through the following formula:

$$\text{Additional Units} = NU_n - NU_o$$

where:
NU_n = Required number of units
NU_o = Existing number of units

4.7 Recommendation for Franchise Issuance

The LTFRB will issue a memorandum circular that discusses the issuance and regulation of franchises as part of the Implementing Rules and Regulations of the OFG.

Chapter 5: Public Transportation System Development

5.1 Passenger Facilities and Garage

The basic PUV service supply requirements include the following:

(a) The *vehicles* to ferry passengers along the route

(b) *Stops* along the service route where passengers can alight and board. A stop may also serve as a transfer point to another route that uses it. Hence, a stop may be used by several routes.

(c) *Terminals* may refer to an origin or destination terminal. An origin terminal is where a passenger's journey begins and may also serve as a transfer station, say from another route or mode, while a destination terminal is where a passenger's current journey will end. A passenger may need another transfer when going to his/her target destination.

(d) The *garage* to hold vehicles after their target service operation, and when waiting to be called to serve and be serviced for maintenance and regular vehicle checkup

The minimum standard facility requirements for stops and terminals are as follows.

5.1.1 Vehicle

The OFG discusses the new specification of all PUVs such as PUBs and minibuses, PUJs, UVs, Filcabs, school services, taxis, TNVS, tourist transport services, and shuttle services. In general, these PUVs should comply with the standards of LTFRB and DENR.

For an effective monitoring and management of PUVs, vehicle and route codes may be adopted by the LTFRB. Figure 7 is an example of a vehicle and route code.

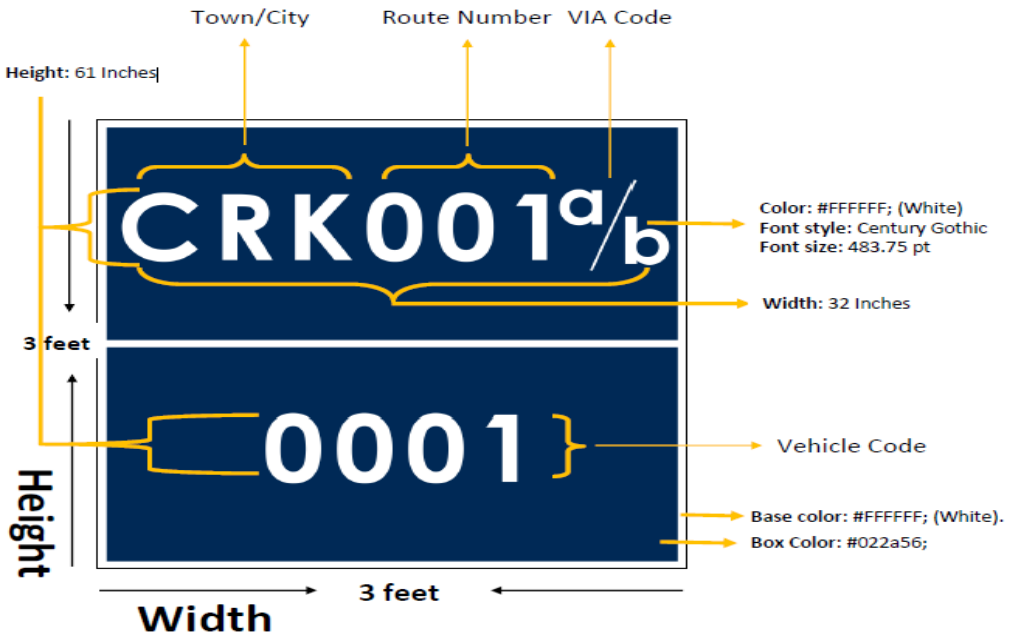


Figure 7: Sample vehicle and route code

5.1.2 Stops

Stop signs should show the name and number of the stop; the route(s) using the stop; the estimated schedule of vehicle arrival at the stop or, at the very least, the frequency of vehicle arrival at the stop; and the hotline number of the LTFRB. It is possible to put the path of a route being served and the location of a current stop on the route in a stop sign instead of the vehicle schedule. It is also recommended that a route numbering system be used in stops for the ease of use of commuters, particularly of people new to the area and tourists. A stop sign can also be combined with letters when there are variations in the areas covered, particularly in suburban locations. Furthermore, colors can be used in combination with numbers and letters.

The recommended design and contents of a stop is shown in Figure 8.

Additional amenities can be provided in a stop such as a *covered roof* to protect commuters from rain or heat and *benches* for them to be able to sit while waiting for the bus. *Lighting* can also be provided particularly during nighttime.

PUV stops can be located at the nearside, far side, or mid-block, as shown in Figure 9. The distances that are not allowable for use as a parking zone, which are measured from the nearest intersection and the mid-block location distance of a stop, were obtained from the Department of Public Works and Highways (DPWH) Manual.

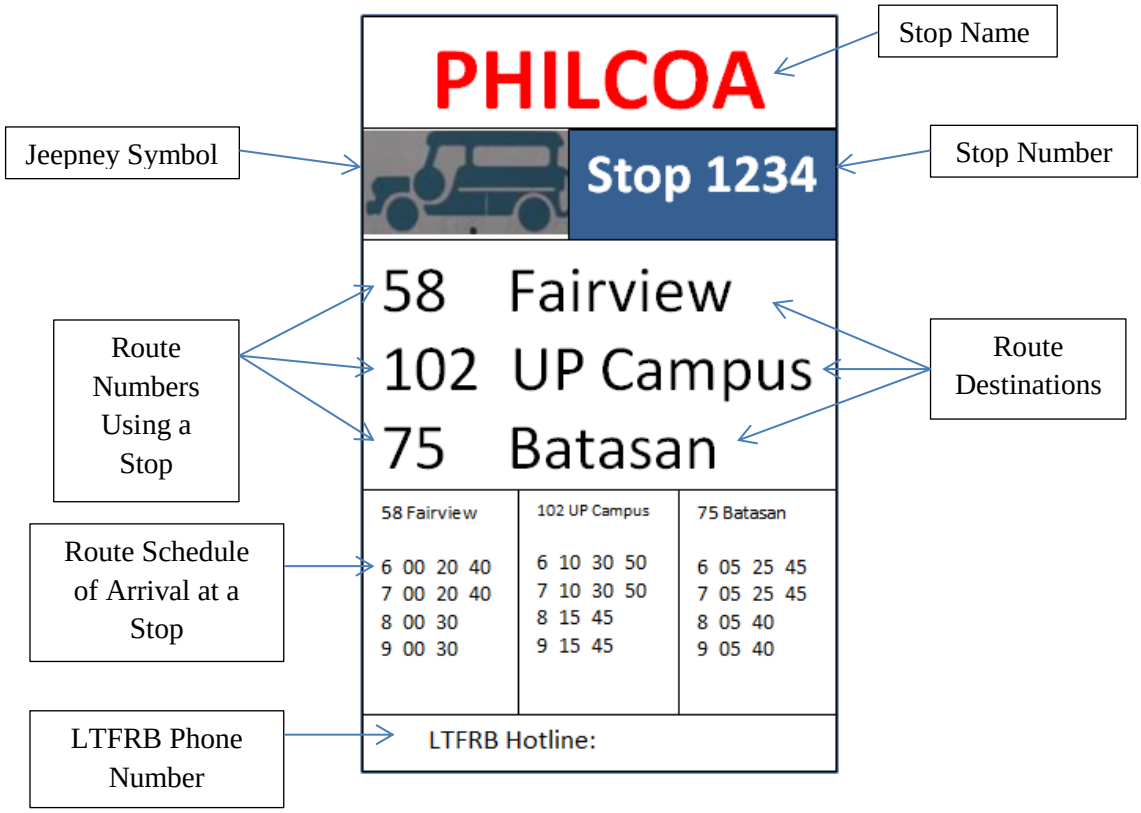


Figure 8: Recommended stop design

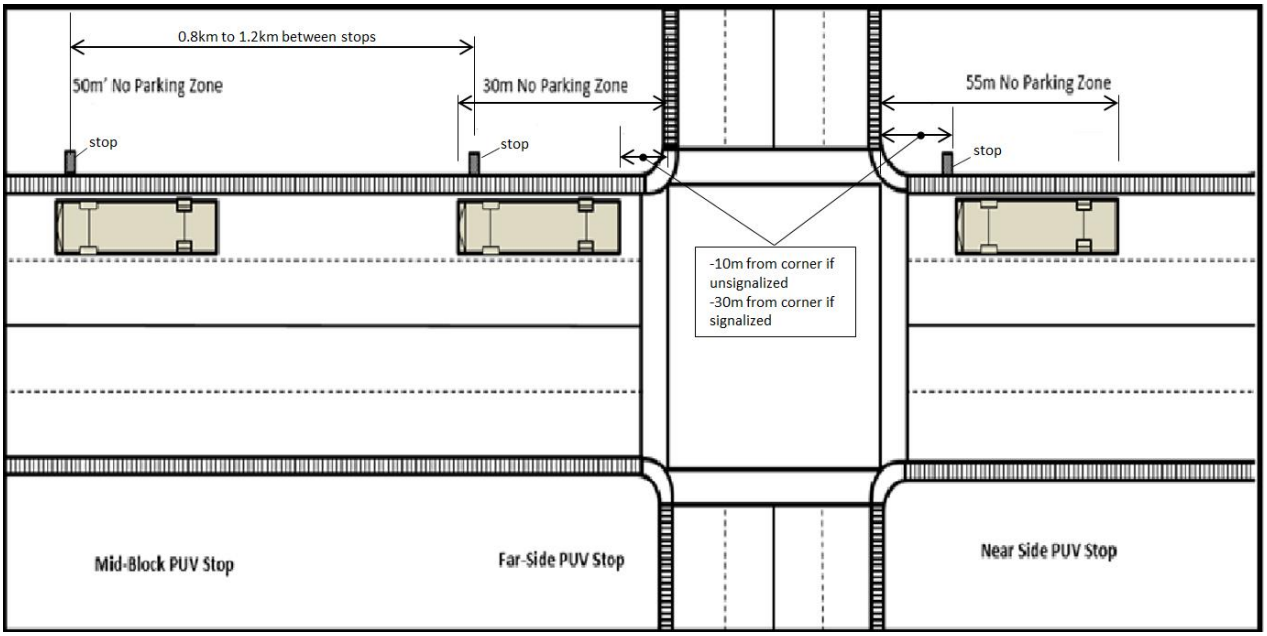


Figure 9: Location of far-side, mid-block, and nearside PUV stops

5.1.3 Terminals

Transportation terminals are usually located off-street at the origin and destination points of a service route, and may serve as a transfer point to another PUV route for passengers to be able to continue their journey. The towns and cities of our country usually have integrated transport terminals in which most routes that serve the city or nearby towns congregate.

As many routes converge on integrated transport terminals, they should comply with the minimum standard requirements for the operation of off-street terminals. LTFRB will issue a memorandum circular for terminal operations as part of the Implementing Rules and Regulations of the OFG.

5.2 Operations and Management

5.2.1 Terminals and Turning Points

The requirements for public transportation terminals shall remain enforced and adhered to in all franchise applications and petitions. All public transportation terminals shall comply with the LGU's land use and zoning plan. As such, the concerned LGU, in coordination with the DOTr and the LTFRB, shall have the authority to designate terminal locations and issue prior clearance to operate the said terminals, consistent with the DILG-DOTr JMC No. 01, Series of 2008.

Terminals are areas where passengers embark and disembark, and they shall be located at both ends of a route. If a terminal is rented or leased, the validity of its contract is at least equal to the duration of its franchise's validity, which is five years.

Furthermore, the minimum locational standards, as provided in the Housing and Land Use Regulatory Board's (HLURB) "Locational Guidelines and Standards for Land Transportation Terminals and Garages," pursuant to Board Resolution No. R-408, Series of 1988, and Memorandum Circular No. 12, Series of 1988, must be complied with. The following are the specifications of the minimum locational standards:

1. If the municipality has an approved zoning ordinance, the location of bus stations/terminals and freight/truck terminals should be at the periphery of a commercial zone.

   Jeepney / UV Express service terminal – May be located within the commercial zone provided, which is not near to a major intersection in which traffic congestion occurs.

2. If the municipality has no approved zoning ordinance, the location of bus stations/terminals and freight/truck terminals should be outside the center of commercial activities to minimize street congestion.

   Jeepney / UV Express service terminal – May be located within the central business district / commercial area, provided that it is not near to a major road intersection in which traffic congestion occurs.

3. Terminals should be more than 100 m away from institutional establishments, particularly schools and hospitals, as a safeguard against noise and air pollution.

4. Terminals must be accessible to commuters (i.e., transfer routes are available or within a terminal's service radius). However, direct access to major thoroughfares, particularly high-speed highways and expressways, should be discouraged for safety and smooth traffic flow purposes.

The minimum terminal size is computed using the following formula:

$$\textbf{130\%} \times \frac{\textbf{Number of Vehicles}}{\textbf{2}} \times \textbf{Area of Vehicles}$$

Where area of vehicle:

PUB = 36 m^2
PUJ/UV/Filcab = 16 m^2

In the formula, the number of authorized vehicles is divided by 2 because it is expected that there will be terminals at both ends of the route. Meanwhile, the additional 30% in the minimum terminal size will allow the maneuvering of vehicles inside the terminal.

The destinations of provincial bus routes that are bound for metropolitan areas shall be up to the available integrated terminals, which shall also serve as transfer areas.

5.2.2 Public Transportation Performance Indicators

An ideal public transportation system should satisfy the basic objectives of safety, adequacy, reliability, convenience/comfort, and economy. These objectives have to be quantified so that the actual performance of a public transportation system can be assessed. The following are the various parameters or indicators that are used in measuring a public transportation system's performance.

5.2.2.1 Frequency

Frequency is the number of vehicles dispatched per unit time. It indicates the level of adequacy and reliability of a public transportation service. It can also be measured by headway, which is the time interval between dispatched vehicles.

If	F = Frequency (Number of units per unit time)
and	H = Headway (In unit time)
then	H = 1/F

Example: If the frequency of public transportation is 20 veh/hr, then the headway can be computed as follows:

$$H = 1 \text{ hr} / 20 \text{ vehicles} \times 60 \text{ min/hr} = 3 \text{ min}$$

Travel speed – It refers to the average speed of a vehicle from its origin to its destination. It takes into consideration the actual running time as well as time delays. Conversely, travel time (TT) may also be used as an indicator of performance. Given the distance (L) and TT, average speed (ATS) is computed as follows:

$$ATS = L/TT$$

5.2.2.2 Reliability

This indicates the level of availability of a transit service. One measurement of reliability is the percentage of actual vehicle departures that are within the reasonable time deviation from scheduled departures. Another measure of reliability is passenger waiting time, which is measured by getting the average waiting time of passengers at a stop. Passenger waiting time is the duration from the time of arrival of a passenger at a stop or station up to the time he/she actually rides a transit vehicle. Although there is no standard level of waiting time, the rule of thumb is that the average waiting time should be one-half the expected headway for a transit service that is reliable.[2] However, this can increase for less reliable services. Passenger waiting time can be estimated using passengers' perception of a reasonable time for waiting to get a ride.

5.2.2.3 Safety and Security

This refers to the level at which passengers who use transit services are vulnerable to the risk of being physically harmed because of road crashes or crimes. Safety and security is related to the

[2] Hess, D. B., et. al. (2004). Waiting for the Bus. *Journal of Public Transportation*, Vol. 7, No. 4.

physical and mechanical features of a vehicle and, more importantly, the manner by which a vehicle is being operated. They are also related to the condition of the infrastructure facilities in which vehicles operate. The level of safety of a transit service may be measured in terms of the number of accidents per vehicle-km of operation.

5.2.2.4 Point Capacity

This gives the maximum number of passengers that a transit service can carry past a certain point along the route per unit time. Point capacity depends on the passenger carrying capacity of a vehicle, which is usually in terms of the number of passenger spaces or seats offered and the number of trips made within a unit time duration.

Example: A 60-seater bus making two round-trips in an hour in a given route has a point capacity of 120 pphpd. If there are ten 60-seater buses serving the route and making two round-trips per hour, then the total point capacity of the transit service in the corridor is 1,200 pphpd.

5.2.2.5 Distance Capacity

This gives the carrying capacity of a transit service in terms of the number of passenger-kilometers offered. As a transit service is dynamic in nature, capacity is not limited to the number of spaces (or seats) offered but to the said number of passenger spaces over a distance, thus the unit "passenger-kilometers." The relevance of distance capacity is indicated in the manner a passenger is charged for his/her ride. The fee is generally in terms of peso per passenger-kilometer (i.e., the passenger has to pay for the seat he/she occupies over a certain distance).

5.2.2.6 Passenger Expense

This gives the price level that a passenger has to pay for the public transportation services that he/she availed of in the form of fares. From an economic point of view, fares have to be reasonable in terms of affordability[3] for passengers and the financial acceptability of the operators who have to earn a decent profit to maintain a level of service that is acceptable to passengers.

5.2.2.7 Utilization

This measures the degree at which the service is utilized. One way of measuring utilization is the ratio of actual passenger occupancy to the distance capacity, which is known as the load

[3] Affordability pertains not to the actual price but to the cost relative to how much people have at their disposal to use.

factor. Another measure of utilization is the ratio of actual vehicles operated per day to the total fleet of vehicles. A higher ratio of utilization is good for both the operator and passengers.

5.2.2.8 Quality of Service

This refers to the degree with which passengers enjoy the services rendered to them. Quality of service is measured in terms of comfort, convenience, aesthetics, cleanliness, attitude of crew, and ease of using the system and other amenities. Its indicators may include the ratio of standees to seated passengers or the number of complaints lodged against public transportation crew.

5.2.2.9 Impact to the Environment

This refers to the effect of a public transportation service to air quality, noise level, and traffic as well as its long-term impact on land values and economic activities generated.

5.2.2.10 Intelligent Transport System

In the planning of a public transportation route, the use of an intelligent transportation system such as the automated fare collection system (AFCS), CCTV, dashcam, and the Global Position System to track the positions of public transportation vehicles and provide pertinent information to passengers is highly encouraged for efficient operations.

5.3 First and Last Mile Access

The nature of passenger transportation services in the Philippines can be described as a door-to-door, intermodal public transport service. In our country, it is common for a passenger to take at least two or more transport modes to move from his/her origin (i.e., home) to his/her destination (i.e., work/office). The first and last mile access, which completes the trip, usually involves some walking or is undertaken using low-occupancy, smaller transport modes. These modes can either be motorized (e.g., e-trikes, tricycles or motorcycles, and inland water transport) or non-motorized (e.g., pedicabs). Majority of the distance traveled by these modes are quite short, ranging from 200 m to 3 km—a distance that can easily be undertaken using more efficient transport modes such as walking and cycling.

5.3.1 Walking

Walking is the most basic, active, and inclusive form of transportation. The first mile-last mile trip would consist of a walk trip. In the Philippines, pedestrians account for about 40%–60% of modal shares in urban centers. Moreover, walking plays a major role in the development of an integrated multimodal transport system. Ensuring that the built environment supports seamless,

safer, easier, and more convenient walking (e.g., noting the importance of covered walkways) has significant potential to boost the modal share of walking in a neighborhood, which in turn provides health, social, environmental, and economic benefits to individuals, communities, and the government.

In addition, for walking to become viable, the following directives should be followed:

a) Ensure a continuous urban pedestrian network;
b) Provide a safe and secure walking environment;
c) Improve and develop pedestrian facilities; and
d) Enhance the environment within narrow streets by limiting car passage (i.e., pedestrianization).

5.3.2 Cycling

Cycling actively engages the cyclist or rider, hence, it is described as a human-powered, pedal-driven, single-track NMT. Typically, its configuration consists of two wheels that are attached to a frame, one in front and one in the back, traveling along one single line. People cycle for two major reasons: for leisure and as part of their daily commute.

Given the relative absence of bicycle infrastructures and the danger of cycling on most of the roads in the Philippines, evaluating the conditions for cycling according to directness, comfort, coherence, safety, and attractiveness will be an important process.

Public bicycle-sharing scheme is a shared low-carbon point-to-point transport mobility that is available to the public for short-term use (i.e., 30 min or less). It refers to a bank of bicycles that can be picked up and dropped off at numerous points across an urban area by subscribing, hiring, and returning a bike service. While this scheme has been implemented in several cities worldwide, its implementation in the Philippines has been limited. The first fourth-generation pilot bicycle-sharing scheme is being developed by the University of the Philippines, with the potential for scaling up and adoption by local governments.

5.3.3 Pedicabs

The pedicab or the cycle rickshaw, a variation of the bicycle, is a three-wheeled non-motorized vehicle typically charged by foot and pedal power. Cycle rickshaws are capable of carrying one to three individuals aside from the driver or freight loads of up to 250 kg without a passenger. Its cruising speed can be up to 10 kph, but it generally has an average speed of 5.3 kph. As it serves a smaller neighborhood catchment, its average trip length is the shortest amongst the three identified indigenous transport mode at 2.3 km. Cycle rickshaws generally serve as feeder transport modes that complement other modes with variable route and schedule. In addition, because of the smaller number of passengers per trip, the waiting time of passengers is

significantly shortened. Pedicabs are usually part of passengers' first–last mile or in-between trips before they ride public transport types of commute. The latter usually belongs to the urban poor who have no other option but to invest in a bicycle and turn it into a pedicab in some cases as part of their livelihood or those residential areas that prefer a more quiet travel mode.

5.3.4 Tricycles

Tricycles serve as intrazonal trip providers. They usually provide transport from home to trunk lines in which four-wheeled public transport services are available. Consequently, tricycle operations are concentrated to subdivision/residential roads, barangay roads, and are restricted along national roads, highways, and expressways.

There are several options in modernizing the operation of tricycles, which will reduce its adverse environmental impacts. These include retrofitting current two-stroke engines to four-stroke engines, using LPG carbureted four-stroke engines, and using electric tricycles.

E-trikes are fuel cell or battery-operated three-wheeled vehicles that shift toward cleaner transport technology and have been implemented in several cities around the Philippines. The design and development of next-generation electric auto rickshaws is considered as a potential improvement as well as the development of solar-powered battery recharging stations at the city outskirts.[4]

Furthermore, according to the OFG, the LPTRP should also be the basis of the provision of tricycle operations.

[4] Lukic et al. (2007)

Chapter 6: LPTRP Preparation and Approval Process

6.1 Contents of the LPTRP

It is suggested that the LPTRP to be submitted by LGUs should have a minimum outline, as shown in the following:

I. Introduction
II. Composition of the LPTRP Team
III. Study Area / Corridor
IV. Statement of the Problem
V. Setting Up of Objectives
VI. Review of Existing Condition and Data
VII. Data Gathering
VIII. Analysis of Data
IX. Recommendation to the LTFRB
   - List and Map of Existing Public Transportation Routes
   - List and Map of Proposed Public Transportation Routes
   - Proposed Transportation Facilities

Table 6 below outlines the suggested contents of the List and Map of Existing Public Transportation Routes.

Table 6: Suggested contents of the List and Map of Existing Public Transportation Routes

Modes	Requirements
PUB, PUJ, UV Express service, Flab, tricycles, and other public transport operating in the area	• Route descriptions (streets and barangay) • Route distances • Number of operating and authorized units • Operating hours per route • Route turnaround time • Estimated travel time from origin to destination and average frequency/headway per route per day

Table 7 below outlines the suggested contents of the List and Map of Proposed Public Transportation Routes.

Table 7: Suggested contents of the List and Map of Proposed Routes

Modes	Requirements
PUB, PUJ, UV Express service, Flab, tricycles and other public transport operating in the area	• Route name, route length, route alignments, transport mode • Type of service required • Frequency of service along each route • Number of vehicles for each route • Route structure descriptions citing specific street and barangay names **Service Plan** • Specific location of stops, pickup, and drop-off points from origin to destination and vice versa, as well as terminal/turning points • Road classification map (distances, number of lanes per direction, and average travel speed)

Other important requirements include the following:

a. Estimated passenger volume
b. Inventory of available transport facilities including the following:
    - Park and ride, bicycle lanes, parking terminals, loading and unloading areas, Intelligent Transport Systems (ITS), and other transport infrastructure (i.e., airport, ports, and railways, as applicable)

6.2 Approval Process of the LPTRP

According to the OFG, the approval process of the LPTRP involves the following:

a) The LPTRPs and other documentary requirements shall be submitted to the LTFRB and the DOTr for approval.
b) The documentary requirements shall be evaluated and approved by the LTFRB and the DOTr for consistency and compliance with this department order and further memorandum circulars.
c) Once the LPTRP is approved, the LTFRB shall conduct an open and transparent process to select the public transport operators who will deliver the required services.

d) If the LGU is not ready to take on the responsibility for public transport route planning in its domain or if an approved LPTRP for the city/municipality is not yet available, the DOTr can determine the routes and services for which franchises shall be issued by the LTFRB.
e) The LTFRB shall develop an online database of public transportation franchises by region, route, and type of service.

Table 8: Approval process of the LPTRP

Steps	Agency Concerned
Step 1: Draft the LPTRP.	LGU
Step 2: Submit the LPTRP to the LTFRB.	LGU
Step 3: Review the compliance of the LPTRP with the OFG.	LTFRB
Step 4: Issue an NOC or an NONC depending on the results of the review.	LTFRB
Step 5: • If an NOC is issued, pass an ordinance adopting the LPTRP and endorse the same to the LTFRB. • If an NONC is issued, revise the LPTRP.	LGU
Step 6: Conduct a transparent operator selection and issuance of franchise(s).	LTFRB

Chapter 7: Monitoring and Evaluation of a Public Transportation System

7.1 Purpose of Monitoring and Evaluation

Monitoring shall pertain to supervising the activities in progress to ensure that they are on-course and on-schedule in meeting the objectives and performance targets set in the initial stages of crafting the LPTRP. It shall be conducted by the respective LGUs and the LTFRB. Thereafter, the data gathered from monitoring shall be used in evaluating the LPTRP.

Evaluation shall pertain to the systematic and objective assessment of the performance of the available public transport. It shall be the basis of updating/developing succeeding plans and/or the retaining of already approved and on-going services.

The purpose of monitoring and evaluation is to ensure that a sustainable public transport is provided. Sustainable transport, as defined in the Philippine National Environmentally Sustainable Transport Strategy (NESTS), is "transport development that meets the needs of the present without preventing future generations from meeting their needs." The economic, environmental, and social aspects shall be major considerations. In integrating these three main components, there should be a focus on resilience, inclusiveness, and the quality of life. Hence, the framework below shall be adopted.

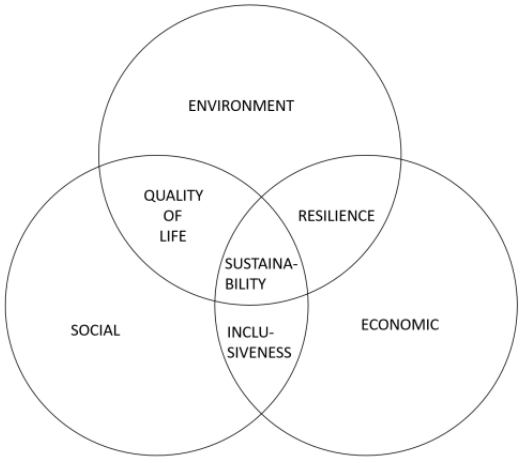


Figure 10: Modified framework for sustainable transportation by F. A. A. Uy (2017)

7.2 Public Transportation Performance Indicators

Table 9 below summarizes the possible performance indicators that can be used to gauge the level of service of public transport services. The indicators should be measured using actual data gathered through the various tools recommended. However, LGUs are not limited to the public transport performance indicators and measures listed below.

Monitoring and data collection may be done on a per-route basis and using the different PUV modes as subcategories. This should be prepared and included under the Monitoring and Evaluation Plan (see Section 7.4), which is also included in the LPTRP.

Table 9: Public transportation performance indicators and measures

Sustainability Aspect	Dimensions	Performance Indicators and Measures
Social	Safety	Accident rate, severity ratio, number of vehicles that are 15 years old and older
	Security	Availability of CCTVs and GPS
Environment	Clean transport	Emission testing of vehicles, compliance to the Clean Air Act, compliance to the OFG
Economic	Affordable transport	Travel cost, fare rates
	Revenue generation	Revenue per passenger per route, average monthly revenue per route, deadhead
Quality of life	Comfort and convenience	Passenger load factor, seat comfort, hours of service, transfer time
	Speed	Average running speed, average dwell time, average travel time
	On-time performance	Passenger waiting time, frequency of PUVs
	Reliability	Frequency of PUVs, scheduling adherence, service reliability, Public Transport Passenger Survey
Resilience	Adaptability	Adherence to plan, flexibility ability to maintain service, quickly recover after interruption or disaster

Inclusiveness	Passenger satisfaction	Service satisfaction (through FGD, public meetings, household surveys, mailed questionnaire, telephone survey)
	Governance	Passenger commendation, complaint system
	Mobility	Ease of travel, geographic coverage of PUVs
	Accessibility	Distance from the nearest public transport terminals/stops, service frequency, PWD

7.3 Schedule of Monitoring and Evaluation

In line with this, monitoring and evaluation reports shall be made semiannually or annually depending on the complexity of the plan and are to be discussed before the approval of the LPTRP.

The monitoring and evaluation plan should uphold the sustainability framework. Each local government shall determine the public transport objectives and outcomes. The outcomes are statements on what the local government is able to do or demonstrate to address each objective. The performance indicators, on the other hand, are specific criteria or performance level that shall enable the measurement of the outcome. Each performance indicator should have an identified monitoring measure with the corresponding schedule of data gathering. Evaluation can be done more often or when the need arises. The over-all evaluation of public transport shall be done at least after three years. The Monitoring and Evaluation Plan shall be submitted as part of the application document.

Table 10: Monitoring and evaluation plan

Objective	Outcomes	Performance Indicators	Monitoring Measures	Monitoring Schedule	Evaluation Measures
e.g., Environment	A city that pioneers and promotes green transportation (What does the city/municipality do?)	Legislation of significant ordinances to support green public transportation	No. of Ordinances		
e.g., Safety	A municipality that adopts innovative	Significantly improve road safety	Accident Rate, Severity Ratio		

	technology improve public safety	Initiate projects that adopts innovative technology	No. of projects		

7.4 Conduct of Monitoring and Evaluation

The conduct of monitoring shall be the responsibility of the concerned local government. However, during evaluation, a representative from the public transport organization, commuters, and the academe should be included.

ANNEXES

Transport and Traffic Survey

A. License Plate and Occupancy Count (Passenger Load) Survey

For smaller cities and towns with limited resources for the conduct of full-scale public transportation surveys, a combined survey of license plate and occupancy count (passenger load) of public transport vehicles may be conducted during the service period (e.g., 6 a.m. – 10 p.m.).

The survey is usually conducted at a location in which the passengers who would be riding are expected to have destinations (e.g., the terminal point of the route). This location is usually on the outer boundary of the town center or city center.

A sample License Plate and Occupancy Count Survey form is shown in Figure 11. The License Plate and Occupancy Count Survey collects time of passing (hh:mm), vehicle license plate, passenger seating capacity (except driver and conductor), and the passenger load (except driver and conductor) of the PUV / public transport vehicle that passes the survey station.

The data on the time of passing will yield the public transport frequency by mode and by route per direction, which can serve as an expansion factor of the occupancy / passenger load. Unique vehicle license plate numbers from the license plate number data, on the other hand, will yield the number of vehicle units in operation, which can estimate the UR if total fleet size can be obtained from the LTFRB regional office. Matching of license plate data can also estimate the NRT. Seating capacity is the number of passengers who can be seated inside a public transportation vehicle (e.g., PUB, PUJ, and UV Express Service). If the average of seating capacities is taken, one can directly estimate the ASC. Passenger load / occupancy count records the number of passengers occupying a public transportation vehicle by mode and by route as it passes the survey station. Passenger load data multiplied by the public transport frequency by mode and by route (assuming sampling is 100%) estimates the total number of passengers per day and per direction during the survey day.

Table 11: Sample License Plate and Occupancy Count Survey form

License Plate and Occupancy Count (Passenger Load) Survey
Department of Transportation (DOTr)

Route Name: ____

Public Transport Mode: ____________________________________

Direction: ____

Date of Survey: ____

Time (hh:mm)	License Plate No.	Passenger Seating Capacity	Number of Passengers

Table 12: Sample Boarding and Alighting Survey form

Boarding and Alighting Survey
Department of Transportation (DOTr)

Route: _____

Plate No.: _____ Date: _____

Major Station (indicate the landmark)	**Number of Passengers**	
	Boarding	Alighting

Table 13: Sample Classified Traffic Volume Count Survey form

Classified Traffic Volume Count Survey
Department of Transportation (DOTr)

Road Name: _____ Direction: _____
Location: _____ Date: _____

Time (hh:mm)	List of All Applicable Vehicles (from the 17 vehicle types listed in Section 4.4.2.3)				

Table 14: Sample Travel Time Survey form

Travel Time Survey
Department of Transportation (DOTr)

Road Name: _____ Date: _____

Number of Trips: _____ Time: _____

From: _____ To: _____

Trip No.	Distance		Journey Time		Delay Time		Cause of Delay
	km	m	min	s	min	s	

B. Public Transport Operator and Driver Interview Surveys

The survey on the costs of operation and maintenance of the public transport mode can estimate the average daily operational cost of public transport operation in pesos per veh-km per day. This is one of the variables in the estimation of the viable load factor. The number of round-trips (NRT) can also be obtained from the jeepney/UV Express driver interview surveys.

The survey of bus operations would interview the operator since usually it has a fleet of bus units while the survey on jeepneys and UV express vehicles would interview both the operator and driver since operations are small scale.

C. Bus Operator Interview Survey

Operational characteristics of buses such as operational costs, vehicle fleet profile, repair and maintenance and vehicle information are collected. The following are the parts of survey instrument of Parts 1, 2, and 3 will be left with the bus company or operator for its various offices/divisions to fill in the required operation, fleet, and maintenance information.

Part 1: Operator Information
Part 2: Fleet Information
Part 3: Vehicle Maintenance

The survey forms are shown in Tables 15–18.

D. Jeepney / UV Express Operator/Driver Interview Survey

Operational characteristics of jeepneys and UV Express vehicles such as operational cost, vehicle fleet profile, repair and maintenance, and vehicle information are collected. The following are the parts of the survey instrument:

Part 1: Operator Information – For the operator
Part 2: Vehicle Information – For the operator (for each PUJ/UV Express unit owned)
Part 3A: Vehicle Maintenance – For the operator
Part 3B: Vehicle Information –For the jeepney / UV Express driver (sampled unit only)

The survey forms are shown in Tables 19–23.

Table 15: Sample Bus Operator Interview Survey form – Part 1

BUS OPERATOR INTERVIEW SURVEY
Department of Transportation (DOTr)

Date:		**Surveyor's Name:**		**Control No.:**	

PART 1: OPERATOR INFORMATION – FOR THE OPERATOR

INFORMATION ON THE OPERATOR – GENERAL	
Name of operator/company	
Business address	
Existence of in-house gas station? (Y/N)	

INFORMATION ON THE OPERATOR – OPERATING EXPENSES	
Administrative cost (overhead)	
Insurance (annual)	
Vehicle registration fee (annual)	
Franchising supervision fee (annual)	
Annual report fee	
Franchise application fee (every five years)	
Taxes (quarterly)	
Fines (quarterly)	
Amortization	
Other costs (Please specify.)	

Table 16: Sample Bus Operator Interview Survey form – Part 2

BUS OPERATOR INTERVIEW SURVEY

PART 2: FLEET INFORMATION – FOR THE OPERATOR

No.	Plate Number	Type of Service		Condition of Engine		Engine Model/ Year	Year of 1st Regist.	Status		Route
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					
		A/C	□	Brand New	□			Operational	□	
		Ord.	□	Surplus (Unused)	□			Not Operational	□	
				Secondhand (Used)	□					

Table 17: Sample Bus Operator Interview Survey form – Part 3 (1 of 2)

BUS OPERATOR INTERVIEW SURVEY FORM

Date		**Surveyor's Name:**		**Control No.:**	

PART 3: VEHICLE MAINTENANCE – FOR THE MECHANIC/DRIVER

Type of Bus (Model / Year or Series) in the Fleet:

_____

How often do you repair/replace the following components?

Automotive Part	Repair (frequency per year)	Estimated Cost per Repair	Replacement (frequency per year)	Estimated Cost per Replacement
Brake system				
Clutch				
Tire/wheel				
Battery				
Bearings				
Belt (fan, timing)				
Fuel filter				
Piston ring				
Lamps (bulb)				
Body				
Electrical system				
Others (Please specify.)				

Please use another sheet, if necessary, for other types (model / year or series) of buses in the fleet.

Table 18: Sample Bus Operator Interview Survey form – Part 3 (2 of 2)

PART 3: VEHICLE MAINTENANCE – FOR THE MECHANIC/DRIVER

Type of Bus (Model / Year or Series) in the Fleet:
_____

Maintenance Activity: (Check and state how often these are done.)

Activity	Indicate Frequency per Year	Cost per Activity
Tune-up/calibration of the injection pump		
Changing oil (brake fluid and engine oil)		
Checking of brakes		
Cleaning the air filter/cleaner		
Cleaning the exhaust pipe		
Adjusting the ignition system		
Wheel alignment		
Cooling system		
Others (Please specify.)		

Please use another sheet if necessary for other types (model / year or series) of buses in the fleet.

Table 19: Sample Jeepney / UV Express Operator Interview Survey form – Part 1

SURVEY ON JEEPNEY/UV EXPRESS OPERATIONS
Department of Transportation (DOTr)

Date:		**Surveyor's Name:**		**Control No.:**	

PART 1: OPERATOR INFORMATION – FOR THE OPERATOR

GENERAL	
Name of the operator	
Address	
Occupation (if retired, the former occupation or job)	
No. of operational units	

OPERATING EXPENSES	
Insurance (annual)	
Vehicle registration fee (annual)	
Franchising supervision fee (annual)	
Annual report fee	
Franchise application fee (every five years)	
Fines (quarterly)	
Other costs (Please indicate including the amount.)	

Table 20: Sample Jeepney / UV Express Operator Interview Survey form – Part 2

PART 2: VEHICLE INFORMATION – FOR THE OPERATOR (FOR EACH PUJ / UV EXPRESS UNIT OWNED)

Vehicle 1:			
Make/model/year of the engine			
Condition of the engine	☐ Brand new ☐ Secondhand	Surplus?	☐ Yes ☐ No
Seating capacity		Mode of acquisition of jeepney (e.g., from savings, retirement, loan, etc.)	
Name of the manufacturer or assembler of vehicle or body			
Vehicle 2:			
Make/model/year of the engine			
Condition of the engine	☐ Brand new ☐ Secondhand	Surplus?	☐ Yes ☐ No
Seating capacity		Mode of acquisition of jeepney (e.g., from savings, retirement, loan, etc.)	
Name of the manufacturer or assembler of the vehicle or body			
Vehicle 3:			
Make/model/year of the engine			
Condition of the engine	☐ Brand new ☐ Secondhand	Surplus?	☐ Yes ☐ No
Seating capacity		Mode of acquisition of jeepney (e.g., from savings, retirement, loan, etc.)	
Name of the manufacturer or assembler of the vehicle or body			

Table 21: Sample Jeepney / UV Express Operator Interview Survey form – Part 3A (1 of 2)

SURVEY ON JEEPNEY / UV EXPRESS OPERATIONS

Department of Transportation (DOTr)

Date:		**Surveyor's Name:**		**Control No.:**	

PART 3A: VEHICLE MAINTENANCE – FOR THE OPERATOR

Model/Year of the Jeepney / UV Express:
_____

How often do you repair/replace the following components?

Automotive Part	Repair (frequency per year)	Estimated Cost per Repair	Replacement (frequency per year)	Estimated Cost per Replacement
Brake system				
Clutch				
Tire/wheel				
Battery				
Bearings				
Belt (fan, timing)				
Fuel filter				
Piston ring				
Lamps (bulb)				
Body				
Electrical system				
Others (Please specify.)				

Please use another sheet if necessary for other units (model / year or series) operated by the respondent.

Table 22: Sample Jeepney / UV Express Operator Interview Survey form – Part 3A (2 of 2)

PART 3A: VEHICLE MAINTENANCE – FOR THE OPERATOR

Date:		**Surveyor's Name:**		**Control No.:**	

Model/Year of the Jeepney / UV Express:

_____

Maintenance Activity: (Check and state how often these are done.)

Activity	Frequency per Year	Cost per Activity
Tune-up/calibration of the injection pump		
Changing oil (brake fluid and engine oil)		
Checking of brakes		
Cleaning the air filter/cleaner		
Cleaning the exhaust pipe		
Adjusting the ignition system		
Wheel alignment		
Cooling system		
Others (Please specify.)		

Please use another sheet, if necessary, for other jeepneys / UV Express (model / year or series) operated by the respondent.

Table 23: Sample Jeepney / UV Express Operator Interview Survey form – Part 3B

PART 3B: VEHICLE INFORMATION – FOR THE JEEPNEY / UV EXPRESS DRIVER (SAMPLED UNIT ONLY)

Date:		**Surveyor's Name:**		**Control No.:**	

Sample Number			
Plate number / license plate *(rehistradong plaka ng sasakyan)*			
Route description *(ruta)*			
Route length *(haba ng binabiyaheng ruta)*			
Passenger seating capacity (except the driver) *(dami ng pasaherong nailalaman ng jeepney [hindi kasama ang tsuper])*			
Days of operation of the jeepney (per week) *(ilang araw bumibiyahe ang jeepney sa isang linggo)*			
Start and end time of the operation of the jeepney unit	From	Start and end time of the operation of the jeepney unit	
	To		
Average gross revenue per day (PhP) *(pangkaraniwang kabuuang kita sa isang araw)*			
Highest revenue day / amount (PhP)			Highest revenue day / amount (PhP)
Lowest revenue day / amount (PhP)			Lowest revenue day / amount (PhP)
*Gross revenue for this day (PhP) *(kabuuang kita ngayong araw)*			
Rental fee (boundary) per day (PhP)			
Driver's take-home pay for the day (PhP)			
Terminal fee (PhP)			
Dispatcher's fee (PhP)			
Barangay fee (PhP)			
Fines (Please specify per month.) (Average) (PhP)			
Other fees (Please specify.)			
Average daily fuel cost (PhP or L)			
*Fuel cost for this day (PhP)			
Nominal tank size (L) *(kapasidad ng fuel tank [L])*			

LOCAL PUBLIC TRANSPORT ROUTE PLAN MANUAL

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If you have any questions or concerns, please email us at **lptrp@dotr.gov.ph**