

بيروت في ١٨ آذار ٢٠٢٤

وزير البيئة

د. ناصر ياسين

للاطلاع على مرفقات هذا القرار الدخول على الرابط
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قرار رقم ١/٢٥

المعايير والشروط الدنيا المتعلقة بعملية الفرز الميكانيكي

إن وزير البيئة،

بناءً على المرسوم رقم ٨٣٧٦ تاريخ ٢٠٢١/١٠/١٠ (تشكيل الحكومة)،

بناءً على القانون رقم ٢١٦ تاريخ ١٩٩٣/٤/٢ (إحداث وزارة البيئة)، لا سيما المادة الأولى منه،

بناءً على القانون رقم ٤٤٤ تاريخ ٢٠٠٢/٧/٢٩ (حماية البيئة)،

بناءً على القانون رقم ٦٩٠ تاريخ ٢٠٠٥/٨/٢٦ (تحديد مهام وزارة البيئة وتنظيمها)،

بناءً على القانون رقم ٨٠ تاريخ ٢٠١٨/١٠/١٠ (قانون الادارة المتكاملة للنفايات الصلبة)، لا سيما المادة ٢١ منه،

وبعد استشارة مجلس شورى الدولة (الرأي رقم ٢٠٢١/٩١-٢٠٢٢ تاريخ ٢٠٢٢/٢/٢٢، الرأي رقم ٢٠٢٣/٦١-٢٠٢٤ تاريخ ٢٠٢٤/١/٢٣، الرأي رقم ٢٠٢٣/٨٨-٢٠٢٤ تاريخ ٢٠٢٤/٢/٢٢)،

يقرر ما يأتي:

المادة ١ - تحديد المعايير والشروط الدنيا

تحدد المعايير والشروط الدنيا الواجب التقيد بها بالنسبة لعملية الفرز الميكانيكي وفق أحكام الملحق المرفق.

يتوجب على كل جهة تتولى معالجة النفايات الصلبة البلدية من خلال الفرز الميكانيكي اتخاذ الاجراءات الضرورية لوضع هذه المعايير والشروط الدنيا موضع التنفيذ.

المادة ٢ - الملحق

يعتبر الملحق المرفق بهذا القرار جزءاً لا يتجزأ منه.

المادة ٣ - حق فرض معايير وشروط جديدة
تحتفظ وزارة البيئة بحق فرض معايير وشروط جديدة أو تعديل أي منها عندما تدعو الحاجة.

المادة ٤ - إلغاء القرارات المخالفة

تلغى كافة القرارات المخالفة لأحكام هذا القرار أو

وزارة البيئة

قرار رقم ١/٢٤

المعايير والشروط الدنيا المتعلقة بعملية الجمع والنقل

إن وزير البيئة،

بناءً على المرسوم رقم ٨٣٧٦ تاريخ ٢٠٢١/١٠/١٠ (تشكيل الحكومة)،

بناءً على القانون رقم ٢١٦ تاريخ ١٩٩٣/٤/٢ (إحداث وزارة البيئة)، لا سيما المادة الأولى منه،

بناءً على القانون رقم ٤٤٤ تاريخ ٢٠٠٢/٧/٢٩ (حماية البيئة)،

بناءً على القانون رقم ٦٩٠ تاريخ ٢٠٠٥/٨/٢٦ (تحديد مهام وزارة البيئة وتنظيمها)،

بناءً على القانون رقم ٨٠ تاريخ ٢٠١٨/١٠/١٠ (قانون الادارة المتكاملة للنفايات الصلبة)، لا سيما المادة ٢٠ منه،

وبعد استشارة مجلس شورى الدولة (الرأي رقم ٢٠٢١/٩١-٢٠٢٢ تاريخ ٢٠٢٢/٢/٢٢، الرأي رقم ٢٠٢٣/٦١-٢٠٢٤ تاريخ ٢٠٢٤/١/٢٣، الرأي رقم ٢٠٢٣/٨٨-٢٠٢٤ تاريخ ٢٠٢٤/٢/٢٢)،

يقرر ما يأتي:

المادة ١ - تحديد المعايير والشروط الدنيا

تحدد المعايير والشروط الدنيا الواجب التقيد بها بالنسبة لعملية الجمع والنقل وفق أحكام الملحق المرفق.

يتوجب على كل جهة تتولى عملية جمع ونقل النفايات الصلبة البلدية اتخاذ الاجراءات الضرورية لوضع هذه المعايير والشروط الدنيا موضع التنفيذ.

المادة ٢ - الملحق

يعتبر الملحق المرفق بهذا القرار جزءاً لا يتجزأ منه.

المادة ٣ - حق فرض معايير وشروط جديدة

تحتفظ وزارة البيئة بحق فرض معايير وشروط جديدة أو تعديل أي منها عندما تدعو الحاجة.

المادة ٤ - إلغاء القرارات المخالفة

تلغى كافة القرارات المخالفة لأحكام هذا القرار أو غير المتفقة مع مضمونه.

المادة ٥ - نشر القرار والعمل به

ينشر هذا القرار ويعمل به فور نشره في الجريدة الرسمية ويبلغ حيث تدعو الحاجة.

بيروت، في

قرار رقم المعايير والشروط الدنيا المتعلقة بعملية الجمع والنقل

إن وزير البيئة،
بناءً على المرسوم رقم 8376 تاريخ 2021/10/10 (تشكيل الحكومة)،
بناءً على القانون رقم 216 تاريخ 1993/4/2 (إحداث وزارة البيئة)، لا سيما المادة الأولى منه،
بناءً على القانون رقم 444 تاريخ 2002/7/29 (حماية البيئة)،
بناءً على القانون رقم 690 تاريخ 2005/8/26 (تحديد مهام وزارة البيئة وتنظيمها)،
بناءً على القانون رقم 80 تاريخ 2018/10/10 (قانون الإدارة المتكاملة للنفايات الصلبة)، لا سيما المادة 20 منه،
وبعد استشارة مجلس شورى الدولة (الرأي رقم 2022-2021/91 تاريخ 2022/2/22، الرأي رقم 2023/61-2023-2024 تاريخ 2024/1/23، الرأي رقم 2023/88-2024 تاريخ 2024/2/22)،

يقرر ما يلي:

المادة 1 - تحديد المعايير والشروط الدنيا
تحدد المعايير والشروط الدنيا الواجب التقيد بها بالنسبة لعملية الجمع والنقل وفق أحكام الملحق المرفق.
يتوجب على كل جهة تتولى عملية جمع ونقل النفايات الصلبة البلدية اتخاذ الإجراءات الضرورية لوضع هذه المعايير والشروط الدنيا موضع التنفيذ.

المادة 2 - الملحق
يعتبر الملحق المرفق بهذا القرار جزءاً لا يتجزأ منه.

المادة 3 - حق فرض معايير وشروط جديدة
تحتفظ وزارة البيئة بحق فرض معايير وشروط جديدة أو تعديل أي منها عندما تدعو الحاجة.

المادة 4 - إلغاء القرارات المخالفة
تلغى كافة القرارات المخالفة لأحكام هذا القرار أو غير المتفقة مع مضمونه.

المادة 5 - نشر القرار والعمل به
ينشر هذا القرار ويعمل به فور نشره في الجريدة الرسمية ويبلغ حيث تدعو الحاجة.

وزير البيئة
د. ناصر ياسين

Standards and Conditions for the collection and transportation systems

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Standards and Conditions for the collection and transportation systems

Law Number 80 on *Integrated Solid Waste Management* in Lebanon, provides a general framework for solid waste management in the country. Article 20 of this Law refers to collection and transport of municipal solid waste and dictates specifically that “Service providers (municipalities, union of municipalities, decentralized administrations, private sector contractors, etc.) shall be responsible for collecting and transporting solid waste from collection points to the designated facilities in a manner that does not inflict harm to the environment, in accordance with the standards and conditions set by the Ministry of Environment upon a decision of the Minister of Environment.”

This document proposes a technical specifications framework for the design and operation, of the collection and transport system that can be incorporated into the existing legislation.

1. Scope

This document aims to foster safe and sustainable collection and flow of wastes as appropriate for the specific type and classification. This document aims to encourage the development and implementation of a national system for efficient and transparent waste collection, segregation, transfer and tracking. The system will include monitoring, recording and control of the collection and transfer of wastes from one holder to another and from the point of generation through the final point of ultimate reuse, recycling, resource recovery or disposal.

2. Applicability

For promoting public health, welfare, and safety of the all Lebanese citizens it is necessary to establish reasonable requirements and standards relating to the collection and transportation of municipal solid waste and recyclables.

These standards will be based on Law no. 80 dated 10 October 2018 on integrated solid waste management, particularly Article 20, and they should be applied by all public and private collection and transportation systems.

Collection, transportation and transfer of waste shall be carried out by Service Providers (SPs). SPs maybe either public or private. In both cases they need to have proper licenses for specific types of wastes and services.

3. Collection and Transportation Requirements.

All waste generators, including commercial and industrial waste ones, are required to provide safe storage and handling of their wastes and shall engage an appropriate licensed SP for collection and transportation of their waste. They are also required to provide full disclosure to the licensed SP regarding the waste characteristics, any potential hazard and precautions required (if any) through a proper waste data sheet. Any waste generator that

produces a hazardous waste, as defined under waste classification policy, is required to comply with the relevant policies and regulations.

SPs are responsible to ensure that the waste collection throughout the country is carried out in a timely and efficient manner and public spaces and streets are kept clean and free from odors and litter. For residential complexes under the control of developers, the responsibility of collection and transportation of segregated waste shall rest with the developer of residential complex / project.

SPs are responsible to identify collection routes that minimize fuel requirements and emissions, including the strategic location of transfer stations that result in shorter transport distances to unloading.

All waste generators are required to deposit domestic hazardous waste such as batteries including car batteries, fluorescent tube / bulbs, compact fluorescent lamps (CFLs) or energy saving bulbs, solvent / paint cans, etc. separately at designated hazardous waste collection points.

The choice of the right collection method /system should be based on:

- Existence of lanes or streets and road network
- Type of storage bins and vehicles available
- Ease of access by collection vehicles
- Truck load limits in lanes or streets
- Community objectives

Collection systems may include hand collection, semi-automated collection, or automated collection.

3.1 Collection equipment.

(a) All vehicles used for the collection and transportation of solid waste (or materials which have been separated for the purpose of recycling) which are considered to be operating in interstate or foreign commerce shall meet all applicable standards established by the Government of the Lebanese Republic, including, but not limited to, Traffic Safety Standards and Noise Emission Standards.

(b) All vehicles used for the collection and transportation of solid waste (or materials which have been separated for the purpose of recycling) shall be enclosed or adequate provisions shall be made for suitable cover, so that while in transit there can be no spillage.

(c) The equipment used in the compaction, collection, and transportation of solid waste (or materials which have been separated for the purpose of recycling) shall be constructed, operated, and maintained in such a manner as to minimize health and safety hazards to solid waste management personnel and the public. This equipment shall be maintained in good condition and kept clean to prevent the propagation or attraction of vectors and the creation of nuisances.

ANNEX 1 provides more details regarding the design and the operations of collection vehicles.

3.2 Collection management.

The collection of solid wastes (or materials which have been separated for the purpose of recycling) shall be conducted in a safe, efficient manner, strictly obeying all applicable traffic and other laws. The collection vehicle operator shall be responsible for immediately cleaning up all spillage caused by his operations, for protecting private and public property from damage resulting from his operations, and for creating no undue disturbance of the peace and quiet in residential areas in and through which he operates.

ANNEX 2 provides more details regarding the management of collection systems.

3.3 Collection Spillage.

Clean-up at collection point. The person operating the collection system shall provide for prompt clean-up of all spillages caused by the collection operation.

Persons transporting solid waste shall not discharge or allow the discharge of solid waste from the vehicle on the way to the municipal solid waste facility. If a discharge of waste occurs during transportation, the transporter shall take immediate action to contain the waste and to clean up and remove the discharged waste to an approved solid waste management facility.

3.4 Health and Safety

- (a) All collectors and other personnel directly dealing with collection of solid waste shall be equipped with personal protective equipment to protect them from the hazards of handling solid wastes.
- (b) Necessary training shall be given to the collectors and personnel to ensure that the solid wastes are handled properly and in accordance with the guidelines pursuant to this Standards and Conditions; and
- (c) Collection of solid waste shall be done in a manner which prevents damage to the container, and spillage or scattering of solid waste within the collection vicinity.

3.5 Temporary storage

The owner or occupant of each eligible premises shall be responsible to contain designated collectible waste to prevent the escape of waste materials into the environment. The owner or occupant of each eligible premises is responsible to gather waste material placed for collection in front of the eligible property that has escaped from its container onto public or private property. Proper bags shall be used. Loose materials placed in containers shall not be collected.

Only bags which meet the following specifications and requirements shall be utilized for municipal collection:

- (i) Bags must be watertight and securely tied with an overall length of between 0.5 meters and 1 meter when empty,
- (ii) Bag weight not to exceed 25 kilograms including contents,
- (iii) Bags must have a thickness of at least 0.375 millimeters to prevent breakage, tearing or splitting upon collection, and

- (iv) Bags shall be of a specific color in accordance with the local authority's and the MoEs guidelines

No person or entity shall keep any solid waste or allow any solid waste to remain upon any premises within the city for more than seven days. At least once a week all solid waste generated within or on any premises in the city shall be removed from the premises and disposed of in accordance with the provisions of these guidelines except under the following conditions:

- (i) Where the solid waste collector normally providing collection services at the premises is unable to perform collection services due to strikes, holidays and weather conditions or other incidents usually classified as force-majeure ones,
- (ii) Where severe weather conditions make it impossible for the solid waste collector normally providing collection services at the premises to perform collection services using normal collection equipment,
- (iii) Official holidays interrupt the normal seven-day collection cycle, in which case collections may be postponed to the nearest working day of the solid waste collector.

3.6 Ownership of solid waste and recyclable material.

Except as otherwise provided by law, once solid waste and recyclable material have been placed for collection in a Local Administration container, ownership of such material transfers to the Local Administration.

3.7 Collection frequency

Municipal solid waste (MSW) containing putrescibles shall be collected at a **minimum of twice weekly** to prevent propagation and attraction of vectors and the creation of public health nuisances. The collection should be made more frequently (**a minimum of four times weekly**) in circumstances where vector breeding or harborage potential is significant (warm season).

Transporters of MSW shall be responsible for ensuring that all solid waste collected is unloaded only at facilities authorized to accept the type of waste being transported. Off-loading at an unauthorized location or at a facility not authorized to accept such waste is a violation of Article 20 on the collection and transportation of MSW of Law 80.

Municipal solid waste operations shall be conducted to offer the least possible obstruction and inconvenience to public traffic or disruption to the peace or quiet of the area within which collections are affected. The collection hours shall be as specified by a duly adopted resolution of the appropriate Local Administration.

4 Collection equipment.

4.1 Waste bags, bins, and containers

The starting point in a municipal solid waste management collection system is storage of the waste at the point of generation. The waste generator is normally responsible for the waste they produce prior to collection, but once it is set out for collection, the responsibility transfers to the municipality. The container systems used by the waste generator can either aid or hinder the collection activity depending on its ease of handling and compatibility to the collection vehicles used.

Waste containers (or bins) are containers for temporarily storing municipal solid waste and is usually made of metal or plastic. They are rolling or stationary.

Technical details on waste storage equipment are described in ANNEX 3

4.2 Waste Collection Vehicles

The selection of a collection vehicle requires the potential user to consider operator comfort and ergonomics, safety, fuel consumption, collection efficiency, and cost. The number and type of collection vehicles in organized collection systems in large urban communities can be quite varied depending on their specific purpose. In smaller communities, economics may dictate that only one or two vehicle types are used.

Technical details on waste collection equipment are found in ANNEX 4.

5. Municipal solid waste collection design parameters

The municipal solid collection programs are implemented following the assessment of the requirements for the design and elaboration of collection programs such as:

- Quality and quantity of municipal waste. In the absence of such estimates, data from similar areas, where such an assessment has been done.
- Determination of the optimum collection routes concerning the frequency - the time of collection - transport – stall for unloading at the waste management facility - return to the last collection point.
- Defining routes for the collection of bulky items.
- Calculation of the required personnel and equipment and placement of the temporary storage media of MSW for the uninterrupted operation of the collection.
- Cost-benefit analysis for the various alternative scenarios of the collection systems considering and the lifespan of the processing and/or disposal facilities.

6. Manifestation system

It is important that waste movements are tracked to ensure waste is transported from the place of generation to the intended destination. An effective tracking system will help to

minimize illegal waste movements and illegal waste dumping. For that purpose, MoE has the responsibility for maintaining and improving systems for tracking waste loads and vehicles through a proper manifestation system that will be developed.

Each licensed SP shall follow the relevant manifestation requirements. Waste generators are responsible for ensuring and recording waste quantities using the MoE manifest form.

In any case, SPs should keep records that include:

(a) a complete list of clients (i.e. the name and address of companies/premises where the waste is collected)

(b) the following information on each of the clients (not applicable for residents, but only for entities and institutions):

- i) frequency of collection (e.g. daily, alternate days, weekly etc.);
- ii) type and quantity of waste collected;
- iv) the volume or weight of waste per collection;
- v) where the waste is disposed of
- vi) the vehicle or container used for collection of the waste (i.e. registration number of vehicle/identification number of the container for each trip whenever requested);
- vii) the type and origin of waste being disposed, which must be declared at the disposal facilities.

7. Training of personnel

The SPs shall ensure that all drivers and collection crews are fully briefed and trained so that they are conversant with the following:

- the requirements of the environmental protection, in accordance with the Law Number 80 on *Integrated Solid Waste Management* in Lebanon;
- the different types of waste and their health and environmental risks;
- the procedures to follow in case of spillage;
- the Health and Safety procedures required to be applied to protect their own health and avoid injuries

ANNEX 1: Design and Operations of collection vehicles

Recommended procedures: Design.

(a) Whenever possible, enclosed, metal, leak-resistant compactor vehicles should be used for the collection of solid wastes.

(b) Safety devices, including, but not limited to, the following should be provided on all collection vehicles:

- (1) Exterior rear-view mirrors.
- (2) Back-up lights.
- (3) Four-way emergency flashers.
- (4) Easily accessible first aid equipment.
- (5) Easily accessible fire extinguisher.
- (6) Audible reverse warning device.

(c) If crew members ride outside the cab of the collection vehicle for short trips the vehicle should be equipped with handholds and platforms big enough to safeguard against slipping.

(d) Vehicle size should take into consideration: Local weight and height limits for all roads over which the vehicle will travel; turning radius; and loading height in the unloading position to insure overhead clearance in transfer stations, service buildings, incinerators, or other facilities.

(e) Engines which conserve fuel and minimize pollution should be used in collection vehicles to reduce fuel consumption and air pollution.

Recommended procedures: Operations.

(a) Collection vehicles should be maintained and serviced according to manufacturers' recommendations, and receive periodic vehicle safety checks, including, but not limited to, inspection of brakes, windshield wipers, taillights, backup lights, audible reverse warning devices, tires, and hydraulic systems. Any irregularities should be repaired before the vehicle is used. Vehicles should also be cleaned thoroughly at least once a week.

(b) Solid waste should not be allowed to remain in collection vehicles over 24 hours and should only be left in a vehicle overnight when this practice does not constitute a fire, health, or safety hazard.

ANNEX 2: Management of collection systems

Recommended procedures: Operations.

1. Records should be maintained detailing all costs (capital, operating, and maintenance) associated with the collection system. These records should be used for scheduling maintenance and replacement, for budgeting, and for system evaluation and comparison.
2. The collection system should be reviewed on a regular schedule to assure that environmentally adequate, economical, and efficient service is maintained.
3. Solid waste collection systems should be operated in a manner designed to minimize fuel consumption, including, but not limited to, the following procedures.
 - a. Collection vehicle routes should be designed to minimize driving distances and delays.
 - b. Collection vehicles should receive tune ups in accordance with their maintenance instructions, tires should be maintained at recommended pressures, and compaction equipment should be serviced regularly to achieve the most efficient compaction.
 - c. Compactor trucks should be used to reduce the number of trips to the disposal site. Wherever compactor trucks are not available, other types can be used providing at minimum an enclosed waste storage space that is water proof.
 - d. When the distance or travel time from collection routes to disposal sites is great, transfer stations should be used when cost effective.
 - e. Residential solid waste containers which are serviced manually should be placed at the curb or alley for collection.
 - f. For commercial wastes which do not contain food wastes or other odorous components, storage capacity should be increased to achieve a less frequent collection and more economic collection.
4. All transporters of solid waste shall maintain records for at least three years to document that waste was taken to an authorized MSW facility.
5. On request of the Local Administration or competent Authority with jurisdiction, a transporter is responsible for providing adequate documentation regarding the destination of all collected waste including billing documents to prove that the proper disposal procedure is being followed.
6. Each transporter delivering waste to a solid waste management facility shall immediately remove any non-allowable wastes delivered to the solid waste management facility or, at the option of the disposal facility operator, pay any applicable surcharges to have the disposal facility operator remove the nonallowable waste.
7. If non-allowable wastes are discovered in a load of waste being discharged at an MSW facility, the transporter shall immediately take all necessary steps to determine the origin of the non-allowable waste and to assure that non-allowable wastes are either not collected or are taken to a facility approved to accept such wastes.

Collection Vehicles and Equipment

- (d) The used vehicles shall be designed to consider road size, condition, and capacity to ensure the safe and efficient collection and transport of solid wastes. The waste compartment shall have a cover to ensure the containment of solid wastes while in transit. For identification, vehicles shall bear the body number, the name, and telephone number of the municipality/contractor/agency collecting solid waste.
- (e) Collection vehicles should be maintained and serviced periodically and should receive periodic safety checks. Safety defects in a vehicle should be repaired before the vehicle is used.
- (f) All vehicles and equipment used for the collection and transportation of municipal solid waste shall be constructed, operated, and maintained to prevent loss of liquid or solid waste material and to minimize health and safety hazards to solid waste management personnel, the public, and the environment. Collection vehicles and equipment shall be maintained in a sanitary condition to preclude odors and fly breeding.

ANNEX 3 Technical details of waste bins

Waste storage containers

TABLE 1 provides an overview of common waste storage containers.

Table 1. Waste Storage Containers

Type	Typical applications	Attributes
Bags 	Hand collection of waste	• Low weight & ease of handling • Low weight • Reduces litter, however bags tear easily • Prevent fly entrance or emergence • No return trip to curb saves collection time • Residents buy the bags • Susceptible to animals
Colored bags 	Hand Collection of recyclables	• Ease of handling • Recyclable contents unaffected by rain • Bags may tear and are not suitable to hold sharp objects • No return trip to curb • Convenient to resident • Contents can be identified by collector • Resident buy the bags • Requires debagging and more intensive sorting after collection
Clear bag 	Hand Collection of food waste	• Ease of handling unless bag is filled with heavy wet organic materials • Convenient to use by homeowner • Non-degradable bags require debagging at compost facility • Biodegradable bags may be added into compost facility • No return trip to curb • Contents can be identified by collector
Roll-out bins 	Semi-automated or automated collection of waste	• Typical sizes 130 L to 360 L • Ease of use – rolled by resident to set out point • Too large for hand collection • Safe and efficient when used with automated collection • Can be used for waste, recycling, or organics collection • Must be compatible to the type of collection vehicle lift systems used
Hyd-a-Way Containers	Residential Multi-family Parks Commercial	• Animal proof • Waste is fully contained • Can be adopted for recycling depots • Generally limited to bagged garbage • Compatible to Haulall Collection

		vehicles
Roll-off containers 	Industrial uses Scrap metal Sludge handling	• Can accept large objects and large volumes • Can be used for rural homeowner drop-off facilities • Can be designed for use in recycling depots • Bin designs must be compatible to specific lifting equipment and truck rails
Lugger Containers 	Industrial uses Scrap metal Construction and demolition waste Sludge handling	• Industrial uses • Scrap metal • Sludge handling Can receive large objects • Can be used for homeowner drop-off facilities • Can be designed for use in recycling depots • Can be used for sludge handling • Must be compatible to lugger truck lifting devices
Self-contained compaction containers 	Grocery and retail stores Shopping malls	• Self-contained • Compaction reduces storage requirement • Compactor is hauled with the container • Suited to high volume generators • Not well suited to handle construction debris and like materials • Can be used for compaction and storage of cardboard at recycling depots • Compatible power systems required to operate compactor • Must be compatible with design of tilt frame truck used

Technical characteristics of rolling waste bins

The use of rolling waste bins presupposes the existence of a mechanical (automated or semi-automated) collection and there is a standardization on the market of metallic or plastic in capacities from 75 -1,700 liters.

Automated collection is effective when the following conditions are met:

- The area is connected effectively with regional or national road network.
- The condition of its road surface (width, slopes) is satisfactory in order to allow the access of the waste collection vehicles to the temporary storage points without damage and excessive delays.
- The residents must transfer their waste to their predetermined positions (containers).

Particular attention should be paid to the places where the bins will be placed as well as to the selection of their size. The bins should be placed in the recesses of the curb (kerb) and care should be taken so that they can be easily accessed by the waste collection vehicle without intermediate obstacles (parked cars, etc.). When the bins are placed exactly at the unloading point, they are adjusted to the lifting mechanism of the collection vehicle by the collection crew. Otherwise, the collection vehicle is preceded by the manual transport of the waste container to the unloading point (this distance must not exceed the 15 m.). The return of the container to its position is done by the crew of the waste collection vehicle.

The technical characteristics of the rolling waste bins operating with comb and/or rotary lifting mechanisms are mentioned in the European standards (DIN EN 840).

DIN EN 840 is the European standard for the manufacture of mobile waste containers that specifies requirements for the dimensions and design, the performance criteria and testing, and the health and safety requirements of manufactured two and four wheeled containers.

Specifically, the standards are the following:

DIN EN 840-1:2013 - Mobile waste and recycling containers - Part 1: Containers with 2 wheels with a capacity up to 400 l for comb lifting devices - Dimensions and design

DIN EN 840-2:2013 - Mobile waste and recycling containers - Part 2: Containers with 4 wheels with a capacity up to 1,300 l with flat lid(s), for trunnion and/or comb lifting devices - Dimensions and design

DIN EN 840-3:2013 - Mobile waste and recycling containers - Part 3: Containers with 4 wheels with a capacity up to 1,300 l with dome lid(s), for trunnion and/or comb lifting devices - Dimensions and design

DIN EN 840-4:2013 - Mobile waste and recycling containers - Part 4: Containers with 4 wheels with a capacity up to 1 700 l with flat lid(s), for wide trunnion or BG- and/or wide comb lifting devices - Dimensions and design

DIN EN 840-5:2013 - Mobile waste and recycling containers - Part 5: Performance requirements and test methods

DIN EN 840-6:2013 - Mobile Waste And Recycling Containers - Part 6: Safety And Health Requirements;

Collection container selection may be based on the following factors:

- Level of service desired in a community
- Community standards
- Type of collection system in use or desired
- Convenience to the waste generator
- Waste types and volumes generated
- Length of required storage time (time between collection days)
- Available commercial services in a community
- Economics
- Community recycling targets

ANNEX 4: Waste collection vehicles

The size and type of vehicles used are normally determined by the level of service desired, the amount of waste generated, and the type of waste being collected. If a collection vehicle is being selected on the basis of collecting waste from existing storage containers, choices may be somewhat limited, whereas, if the municipality is looking to change to a more efficient collection system, the type of storage containers used may need to be changed to match the vehicle selections. This is particularly true where a municipality converts to automated collection from manual collection systems.

When planning a transfer station, it is essential that the designer has a complete understanding of the types of vehicles used for waste collection in a community. The transfer station must not only be able to handle the volume of waste that will arrive, but it must be able to safely handle the number and type of collection vehicles that it will serve. The solid waste systems planner should also consider the capability of existing equipment to haul directly to a landfill and the economics of that haul before deciding on the type of transfer station required, or even if a transfer station is required.

Common collection vehicles are shown in Table 2. This is not intended to be an exhaustive list of all makes and models but is intended to provide a general overview of the types of vehicles available.

Table 2. Waste Collection Vehicles

Type	Typical applications	Attributes
Rear load compactor 	Urban residential Rural	• Hand load bags or cans into rear hopper • Compaction blade packs from hopper into truck body • Low lift height 12 to 20 m³ capacity • 2- or 3-man crew • Economic hauling up to 40 km depending on size
Semi-automated Rear loader 	Urban residential Rural	• Fitted with hydraulic lifts to raise and dump roll-out carts • Reduces collector injuries • Can accommodate larger containers than with hand collection • 12 to 20 m³ capacity • 2- or 3-person crew • Economic hauling up to 40 km depending on size.

Dual Compartment Side Loader 	Multi-material collection	- Two compartments for two stream collection system Compartments are different sizes to reflect material volume differences - Once one compartment is full, truck must make trip to tip areas - Efficient when both materials can be unloaded at same location
Tilt Frame – Cable Hook 	Services roll-off bins	- Tilt frame with guide rails hoists to load and empty roll-off containers - Uses hook carriage system or cable system to pull bins onto tilt frame - Can accommodate bins sizes from 15 to 38 cu. meters depending on truck capacity Can be used for other - equipment such as water tanks
Hook Hoist 	Services Hook Lift bins	- Hook system pulls bins onto truck frame and lifts bins to empty - Similar attributes to Tilt-frames
Lugger tracks 	Services lugger bins	Uses a frame that lowers to the bin and lift and swings it onto the truck bed

The factors that should be considered in selecting waste collection vehicles typically includes:

- Intention of the collection system
- Type of storage containers used
- Loading location (curbside or lanes)
- Truck body or container capacity
- Minimum crew size
- Lift height
- Safety and operator comfort
- Required turning radius to access streets and lanes
- Loading and unloading mechanisms
- Legal load limits
- Hauling distance from collection route to tip location
- Economics