

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA



MINISTRY OF WATER AND ENERGY

NATIONAL GUIDELINE

FOR

**Technical Service Provision to Customers
by Urban Water Supply Utilities**

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ADDIS ABABA

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1. Introduction

1.1 Background

The provision of safe and adequate water supply and basic sanitation for the population has far reaching effects on health, productivity, quality of life, and at large to reduce poverty and ensure sustainable socio-economic development. As Ethiopia has a vision to reach the level of middle-income countries by the year 2025, provision of these basic necessities as early as possible for the whole population in addition to improving health of the population has a synergetic effect to enhancing the socio-economic development of the country to achieve its vision. Thus, the country has set ambitious targets of reaching nearly 100% coverage by the year 2015 in providing access to water supply and basic sanitation facilities in both urban and rural alike which is now incorporated in GTP/UAP.

The pace of urban development is increasing resulting in increase of urban water demand due to urban population growth and increasing of urban living facilities requiring high water consumption placing a challenge on the demand side of urban water supplies. Moreover, water sources and water supply infrastructures are also becoming susceptible to contamination due to unplanned spontaneous urbanization and indiscriminate settlements and UfW is also becoming serious problem placing a challenge on the supply side of urban water supplies. In addition to construction of new urban water supply schemes, both these challenges should have to be properly addressed in Operation and Maintenance too.

One of the main services of urban water utilities to their customers in operation and maintenance is provision of technical services. Technical services directly associated with technical management of customers' services include individual new service connection, shared service connection from existing connection, connection relocation, connection transfer, maintenance, etc. and the payment for

the services. As well there are also technical problems which hinder water distribution such as illegal connections and household storage.

In this regard, there are currently customary procedures, payments and problems coping mechanisms each urban utilities are using. However, the Water Policy directs to draw national standards for Operation and Maintenance of water supply facilities. Thus, the purpose of this document is to draw standard technical service provision procedure, standard principles for estimation of the payment for the technical service and the ways for coping technical problems hindering fair water distribution.

1.2 Customer Services

Water supply utilities' legal customers are those people who are connected to the service of the utilities bind with connection agreement with the utility irrespective of the type of their connections. Even though water supply beneficiaries from public taps are not legal customers of the utility, the service provider has legal obligation to provide to them the service efficiently. Moreover, those people who are not yet getting the service while living within the utilities mandated service area is also potential customers of the utilities. Customers already connected to the service need to ensure the reliability of the service and improve their service levels in line with their financial affordability while the customers which are not yet connected need to get connected to the service. Thus, utilities are required to meet the needs of these customers. Their purpose is to supply adequate, reliable and safe water supply to their customers all the time with reasonably affordable cost. Therefore, they are anticipated to provide customer oriented services. They are required to give their service efficiently and effectively to the customer and the customer is required to use the service diligently as per his service agreement engaged with the utility. For smooth provision of the service both sides are required to fulfill their duties and responsibilities. The services provided by the utility to the customer, the prerequisites required from the customer to get these services including the

payment, efficiency and effectiveness of the services provided should be clear to the customer in order to ensure transparency in the service and establish best relation between the provider and recipient of the service based on mutual understanding. For this purpose customers' forum need to be established and utilities need to have regular meetings with the forum. What the customer needs from the utility?

Basically the customer need from the water utilities among others:

- Provision of adequate water with standard quality and adequate pressure all the time (reliability),
- Reasonably affordable service charge for all services (financial, technical and management efficiency),
- Efficient and transparent customers' service, i.e. connection, relocation, maintenance, payment, complaint (one window service),
- Full information on the services of the utility,
- Initial information on pre-planned interruption of water supply.

In order to fulfill these anticipations of the customer, water supply utilities are required to have standardized service provision procedures with well established principles for payments of the services based on the provisions of the water management policy and strategy of the country.

1.3 Considerations from Water Policy and Strategy Documents for Customer Service Provision

Urban water supply utilities are required to provide their service in consideration of the directives and principles of water supply provision set in the water management policy and strategy. The service provision standard procedures and the payments for the services are thus required to be based on these policy and strategy directives and principles. Basic policy and strategy directives and principles in this regard include:

Regarding Standardization of Water Supply Services:

- Formulate and adopt national standards and criteria for the design, installation, construction, **operation, maintenance**, inspection and other activities in all water resources management undertakings.

Regarding access to safe water and pricing:

- As far as condition permit, every citizen shall have access to sufficient water of acceptable quality, to satisfy basic human needs,
- Water shall be recognized both as an economic and social goods,
- Water is a natural resource with an economic value, ensure fees are paid for service rendered,
- The price should be neither too high (discourage water use) nor too low (encourage abuses),
- Although all water resources development ought to be based on the "**economic value**" of water, the provision of water supply services, to the underprivileged sectors of the population, shall be ensured based on a special "**Social Strategy**",
- Ensure that pricing for urban water supplies shall aim at full cost recovery and develop cross-subsidization strategies and promote credit services,
- Enhance self-financed and total cost recovery program in urban water supplies,
- Ensure that all water supply undertakings will adequately address costs associated with operation and maintenance and be based on "cost-recovery" principles,
- Develop and implement water pricing measures that leads, stage by stage, to full cost recovery based upon user's payment capacities and by giving due consideration to appropriate technologies,
- Ensure transparency and fairness in the management of water supply services so as to enhance readiness to pay and participation by the users and communities in the financial management of systems,
- As willingness to pay by users of water systems is a powerful impetus for

financial sustainability of water resources systems, willingness to pay shall be promoted by, interalia stating the main objectives, instituting fairness in water systems, promoting transparency and communications.

Regarding Operation and Maintenance

- Promote the establishment of integrated operation and maintenance framework that provide reliable and sustainable water supply systems in all the regions,
- Develop guidelines and procedures for inspection, preventive, routine and curative maintenance services and for training of technicians as well as develop a network of monitoring systems,
- Promote the direct involvement of communities, particularly women, in the operation and maintenance of water systems,
- Promote that operation and maintenance of water systems is based on decentralized approach which enhances sustainability,
- Carry out operation and maintenance of all water supply and sanitation services in a sustainable and efficient manner,
- Create and promote a sense of awareness in communities of the ownership and their responsibilities for operation and maintenance of water supply systems and develop participatory management practices,
- Promote and encourage that conservation of existing water systems and efficient utilization of water is as feasible as development of new schemes,
- Promote the involvement and meaningful participation of the private sector in the management of water resources,
- Provide the necessary legal framework for penalties commensurate with the violation of legal provisions relating to water resources in order to produce deterrent effects.

Regarding technologies,

- Conduct regular assessment and inventory of WS scheme situation and develop technology selection criteria,
- Adapt to local condition and use internationally recognized technologies.

2. Objective

The objective of this standard guideline is to:

- ensure technical services to customers of water supply utilities are provided efficiently, effectively, sustainably and transparently with one window service,
- ensure customers have paid reasonably affordable price to the technical service they are provided which fully covers the service cost using low cost service connection technologies, high connection efficiency, etc
- ensure payments for technical services are based on fair estimation of the cost of the utility for the service,
- ensure connection fee is not being obstacle to get connected to the water supply service through introduction of various payment modalities,
- ensure all customers living within the utilities mandated boundary for water supply have got access to water supply service connection,
- Have a common understanding on illegal connections and the actions thereof and the need on household level water storage.

3. Scope

The scope of the guideline include only the technical services provided by the utilities to customers regarding their service connection such as new connection installation, connection relocation, connection transfer and maintenance. It doesn't include overall technical service activities undertaken by the utility in operation and maintenance. It also addresses some operation and maintenance challenges such as illegal connections, household level water storage, and technology options for service connections.

4. Recommendations on Customer Technical Service Provision Procedures and Payments

4.1. General

Customers' technical services covered in this guideline include: new service connection from the utilities distribution pipe line or from existing service connection, connection pipe relocation within a compound, connection transfer to other places, and service connection maintenance including water meter maintenance or replacement. Utilities are anticipated to build their capacity to provide these services through a one window service. The recommended procedures to be followed to entertain the customers' demand for such services and the estimate of the payments for the services are discussed below. Some of the recommendations in this regard are not new. Several urban utilities are also using similar procedures currently. However, most of the recommendations may be new drawn based on the directives and principles of the water policies and strategies.

4.2 New Service Connection

New service connection is a water pipeline laid from the nearest utilities' distribution pipeline or existing service connection to customers' residence, business or other service providing facilities. It doesn't include the pipeline downstream of the water meter. Utilities have to take into consideration the following factors in connecting customers to their water supply services:

- The point of connection at the utilities distribution line should be selected in such a way that the service connection of the customer is short, has adequate residual static pressure (at least 10 m of water head), accessible and not exposed for damage, the size of the pipe is adequate, there is no risk for water contamination, etc.

- The service connection pipe to the customer should be routed in such a way that the service connection of the customer is short, accessible and not exposed for damage, not exposed to the risk of water contamination, possibly not within property line of others, by the side walk of roads within the curbstone, well buried underground (unless the geology impede) etc.
- The minimum diameter of the service connection pipe for residential houses should be ½ inch (12.5 mm) for 1 household the size increasing depending on the length of the connection, the available residual static pressure at the connection and number of the households to be served,
- Stop valve (gate valve) need to be installed at the service connection where it branched out from the distribution pipe line,
- Water meter should be installed well secured 3-5m inside the property line of the customer where it is easily accessible for a meter reader, supervisors, and maintenance technicians in line with the manufacturer's guideline and provided with gate valves on both sides and housed in a meter box.
- There should be straight pipes on both sides of the water meter with a length of 10 and 5 times the meter's nominal diameter on the downstream and upstream side of the meter respectively to avoid turbulence which hinders proper functioning of the water meter,
- Check valve (non-return valve) need to be installed by the downstream side of the master water meter for multi-storey buildings (condominium houses, apartment buildings, etc) to avoid contamination of water in the distribution line by cross connection with sewer pipes.

4.2.1. Service Provision Procedure

The service provision procedure mainly focused to outline the prerequisites required from the customers and the actions to be taken by the utilities. The recommended procedure for new service connection includes:

- Application providing full address of the house and the applicant as per the standard format attached herewith,

- Documents on the legal status of the applicant to the house applied for water service connection (plan, kebele confirmation, etc), or
- For those who have no legal document to the house (not including those recognized as illegal settlers), ownership confirmation letter from Kebele/Woreda/municipality for the house. In this case, the customer will engage into unconditional commitment agreement with the utility for disconnection without any cost for the utility at any time. This option will be practiced only until the town/Woreda administrations completed providing legal ownership documents for those who have not it.
- Submission of original and photo copy of renewed identity card of the applicant,
- Effecting payment for technical service (connection design and cost estimation),
- Purchasing materials required for connection either from the utility or from outside as per the design,
- Effecting connection fee payment as per the connection estimate of the utility,
- Deposit money as a guarantee for the safety of the water meter if the meter is supplied by the utility to the customer for free and/or 3 months bill payment security advances estimated on monthly average consumption basis,
- Undertake connection agreement with the utility stating all obligations and rights of the customer and the utility based on the regional proclamation, regulation, and guidelines and guidelines of the utility,
- Do the connection,
- Register it in customers' list/logbook.

4.2.2. Payment Estimate for New Service Connection

Payments the customer required to pay for service connection design and cost estimate of the connection and for the service provided by the utility for the installation of the connection is required to be based on cost recovery of the utility (labor, material, tools and equipments) for the service provided as per the water policy. Moreover, the modality of the payment should consider the financial capacity of the customer and the utility and provide opportunity to the

customers to pay in few installments, pay including in water bills within limited period of time, etc. Accordingly, the estimate for the payment could be worked out based on the following:

(a) Payment for Technical Service (connection design and cost estimation)-it is the sum of the following cost components:

- **Transportation cost**- depends on the distance from the utility office to the house required to have water supply connection. If the utility staff uses rented vehicles, the cost would be the amount of the rent. If they use the vehicle of the utility, the cost includes the cost for the driver, the operation cost of the vehicle (fuel, oil, grease and other consumable items for the vehicle), and depreciation cost of the vehicle. These costs are calculated as the following:

Driver's cost (Birr) = monthly salary in Birr /156 hours (working hours in a month) X the time the driver is engaged in the work (hour)

Depreciation cost of the vehicle (Birr) = total cost of the vehicle (Birr)/life span of the vehicle (hour) X the time the vehicle is engaged in the work (hour)

Operation cost of the vehicle (Birr) = 1.1 (fuel + oil + grease cost) (Birr) consumed during the time the vehicle is engaged in the work.

Ten percent considers the cost for the wearing out items such as tire and some maintenance costs.

Thus, the transport cost in case of using the utilities' own vehicle would be the sum of the above cost components.

- **Skilled and unskilled labor cost required:** depends on type of skill required, magnitude of the work (man-hour), and rate of the payment (Birr/man-hr),

Skilled labor cost = monthly salary in Birr /156 hours (working hours in a month) X the time the skilled laborers are engaged in the work (hour)

If the skilled labor involved in the work is more than one, the cost for each will be calculated by the formula and summed up.

The customer could provide unskilled labor. However, if unskilled labor is provided by the utility, the cost will be calculated as the following:

Unskilled labor cost = daily wage in Birr/ 8 hours (working hours in a day) X the time the unskilled laborers are engaged in the work (hour). If unskilled labor is supplied by the customer, the cost will not be included in the service fee.

If the unskilled laborers involved in the work are more than one, the cost for each will be calculated by the formula and summed up.

- **Depreciation cost of equipments, instruments and tools required for the work:** e.g. surveying instrument, etc.: depends on the depreciation rate of the equipment (Birr/hr) and the total hour the instrument will be used in the work.

Depreciation cost is the portion of the cost value of a fixed asset (vehicle, instrument, equipment, plant, tools, etc) depreciated during the period of time the item is in use for the specific work, e.g. in this case for the study. Even though there are various methods for depreciation valuation, straight-line depreciation method which assumes the cost of the asset is distributed evenly over the useful economic life of the asset is used.

Useful economic life of the assets is adopted from pertinent guideline of the Ethiopian Government on the same. Thus, depreciation cost is calculated as:

Depreciation cost = Cost of the item (birr)/(economic life of the asset (year) X 8760 hours (hours in one year)) X hours the item is engaged in the work

(b) Service Connection Installation Fee: it is the sum of the following cost components:

- **Transportation cost (round trip):** depends on the distance from the utility office to the house,
- **Unskilled labor cost required for trench excavation:** depends on the width, depth and length of the trench, the soil condition and road crossing (Birr/m). If trench excavation and back fill is done by the customer, this cost will not be included in the connection fee.
- **Skilled and unskilled labor cost required for pipe installation:** depends on type of skill required (e.g. plumber), magnitude of the work (man-hour), and rate of the payment (Birr/man-hr). If unskilled labor is provided by the customer, the cost for unskilled labor is not included in the installation fee.

- **Depreciation cost of equipments, instruments and tools required for the work:** e.g. pipe cutter, vice, wrench, pipe threader, etc.: depends on the depreciation rate of the equipment (Birr/hr) and total hour the instrument will be used in the work.

The costs for each cost components are estimated as discussed above in 4.2.2 (a).

4.3. Service Connection from Existing Connection

Service connection from existing connection is a water pipeline laid from existing service connection to the new customer's residence, business or other service providing facilities. It doesn't include the pipeline downstream of the water meter. The segment of the service connection to be shared includes the service pipe line from the junction at the utilities distribution line to the junction of the service connection pipeline of the new customer. The cost of this segment of the service connection should have to be shared among the connected customers based on the utilities cost estimate as discussed below in Section 4.3.2 (c).

4.3.1. Service Provision Procedure

In this case, before undertaking the connection the utility has to ensure that the shared service connection pipe could provide adequate water with adequate pressure particularly at the peak hour demand for all customers connected or are to be connected. Moreover, the new customer requiring the shared connection should pay some parts of the investment cost for the shared service connection. Accordingly, the recommended procedure for new service connection from existing service connection includes:

- Application providing full address of the house and the applicant as per the standard format attached herewith,
- Documents on the legal status of the applicant to the house applied for water service connection (plan, kebele confirmation, etc), or
- For those who have no legal document to the house (not including those recognized as illegal settlers), ownership confirmation letter from

Kebele/Woreda/municipality for the house. In this case, the customer will engage into unconditional commitment agreement with the utility for disconnection without any cost for the utility at any time. This option will be practiced only until the town/Woreda administrations completed providing legal ownership documents for those who have not it.

- Submission of original and photo copy of renewed identity card of the applicant,
- Effecting payment for technical service (connection design and cost estimation),
- Purchasing materials required for connection either from the utility or from outside as per the design,
- Effecting connection fee payment as per the connection estimate of the utility,
- Deposit money as a guarantee for the safety of the water meter if the meter is supplied by the utility to the customer for free and/or 3 months bill payment security advances estimated on monthly average consumption basis,
- Effecting the cost sharing payment for the owner of the existing connection from which the customer is planned to be connected as per the cost estimate of the utility,
- Undertake connection agreement with the utility stating all obligations and rights of the customer and the utility based on the regional proclamation, regulation, and guidelines and guidelines of the utility,
- Do the connection,
- Register it in customers' list/logbook.

4.3.2. Payment Estimate for New Service Connection from Existing Connection

(a) Payment for Technical Service (connection design and cost estimation)-It is done similarly as it is discussed in Section 4.2.2 (a) above.

(b) Service Connection Installation Fee- It is done similarly as it is discussed in Section 4.2.2 (b) above.

In cases of service connections from the distribution line of the utility or from customers' existing connection, if water supply utilities are not in a position to supply water meters to the customers for various reasons, customers are entitled to purchase water meters which fulfill the standard requirement of the utility. In this case, the customer is not required to deposit money to guarantee the water meter safety and pay rent for the water meter as long as it is replaced by the utilities water meter. If deposit money is required to guarantee the utility for unpaid bills, the amount of the money should not exceed the bill for 3 months estimated based on average monthly water consumption. In case the customer is required to pay deposit money for the water meter safety guarantee installed from the store of the water utility, the customer has to be provided a grace period of at least 3 months from the date of the service connection for payment. Payment could be effected fully or by 2-3 installments partially depending on the financial capacity of the customer.

(c) Payment for shared segment of the connection to the neighborhood customer sharing his service connection-

The principle of the cost sharing is to enable the neighborhood customer who has shared his service connection to recover partly his actual expenditures in consideration of the depreciation costs of the materials used in the connection. Accordingly, the cost is estimated as per the following:

- Initially, the water utility decides how many customers could be connected to the existing service connection depending on the size of the pipe and the residual pressure available (i.e. flow available) and accordingly the percentage of the share – $1/n \times 100 = Y\%$, where n is number of customers that could be connected to the existing service connection.
- Y% of the excavation cost of the shared segment of the connection pipeline estimated based on the labor cost during the time of installation,
- Y% of the material cost utilized in the shared segment of the connection pipe line minus the depreciated cost of the materials,

- Y% of the skilled labor cost spent for installation of the shared segment of the connection pipe line based on skilled labor cost during the time of installation,
- Y% of the depreciation cost of tools and equipments utilized for installation of the shared segment of the connection pipeline based on depreciation costs of tools and equipments during the time of installation,

The sum of the above listed cost components will be the amount the new customer is required to pay for the neighborhood customer who has shared his service connection.

4.4 Connection pipe relocation in the compound of the house

Technical service for relocation of service connection pipe located in the compound of a customer may include activities such as assessment of the cause for relocation, relocation design and cost estimate, dismantling of the connection pipeline needed to be relocated, and installation of the pipeline to be relocated.

4.4.1. Service Provision Procedure

The service provision procedure mainly focused to outline the prerequisites required from the customers and the actions to be taken by the utilities. The recommended procedure for connection pipe relocation within the compound of the customer includes:

- Application providing full customer's data as per the standard format attached herewith,
- Effecting payment for technical services (assess the need and possibilities for relocation and prepare relocation cost estimate),
- Purchasing additional materials required for relocation either from the utility or from outside as per the assessment,
- Effecting payment of the relocation service fee as per the estimate of the utility,
- Do the relocation,
- Register the same in the customers' log-book.

4.4.2. Payment for connection pipe relocation

The payment for connection pipe relocation consists the cost for the technical service to assess the need for relocation, prepare relocation design and cost estimate. Accordingly, the cost is estimated as per the following:

(a) Payment for Technical Service (need and possibility of relocation assessment, design and cost estimation)- it is the sum of the following cost components.

- **Transportation cost (round trip)-** depends on the distance from the utility office to the house,
- **Skilled and unskilled labor cost required:** depends on type of skill required, magnitude of the work (man-hour), and rate of the payment (Birr/man-hr). If unskilled labor is provided by the customer, its cost is not included in the service fee.
- **Depreciation cost of equipments, instruments and tools required for the work:** e.g. vehicle, surveying instrument, etc.: depends on the depreciation rate of the equipment (Birr/hr), total hour the instrument will be used in the work.

The above cost components are estimated similarly as it is discussed in Section 4.2.2 (a) above.

(b) Connection relocation fee: it is the sum of the following cost components.

- **Transportation cost (round trip):** depends on the distance from the utility office to the house,
- **Unskilled labor cost required for trench excavation (for digging out the previous pipe and reinstate the trench and for trench excavation of the new location):** depends on the width, depth and length of the trench, the soil condition and road crossing (Birr/m). If trench excavation and back fill is done by the customer, this cost will not be included in the connection fee.
- **Skilled and unskilled labor cost required for pipe dismantling from old location and installation on the new location):** depends on type of skill required (plumber), magnitude of the work (man-hour), and rate of the payment

(Birr/man-hr). If unskilled labor is provided by the customer, its cost is not included in the service fee.

- **Depreciation cost of equipments, instruments and tools required for the work:** e.g. pipe cutter, vice, wrench, pipe threader, etc.: depends on the depreciation rate of the equipment (Birr/hr) and total hour the instrument will be used in the work.

The above cost components are estimated similarly as it is discussed in Section 4.2.2 (b) above. In service connection relocation, utilities have to ensure the previous service connection is totally disconnected from the system to avoid contamination.

4.5. Connection transfer to other places

The activities of the technical service for transfer of connection to other place is basically the same as new service connection in exception it may include additional activities such as dismantling of the previous service connection to use it in the new service connection (relocation of the previous service connection). However, in this case the customer may not be registered as new customer except modifying customer registration data on the previous registration database. Moreover, he may not be also required to deposit additional money if there is such requirement in service connection.

4.5.1. Service Provision Procedure

The service provision procedure mainly focused to outline the prerequisites required from the customers and the actions to be taken by the utilities. The recommended procedure for service connection transfer includes:

- Application providing full address of the house and the applicant as per the standard format attached herewith,
- Documents on the legal status of the applicant to the house applied for water service connection (plan, kebele confirmation, etc), or
- For those who have no legal document to the house (not including those recognized as illegal settlers), ownership confirmation letter from Kebele/Woreda/municipality for the house. In this case, the customer will engage

into unconditional commitment agreement with the utility for disconnection without any cost for the utility at any time. This option will be practiced only until the town/Woreda administrations completed providing legal ownership documents for those who have not it.

- Submission of original and photo copy of renewed identity card of the applicant,
- Clearance of payments for the previous connection,
- Effecting payment for technical service (connection design and cost estimation),
- Purchasing materials required for connection either from the utility or from outside as per the design,
- Effecting connection fee payment as per the connection estimate of the utility,
- Deposit money as a guarantee for the safety of the water meter if the meter is supplied by the utility to the customer for free and/or 3 months bill payment security advances estimated on monthly average consumption basis,
- Effecting the cost sharing payment for the owner of the existing connection from which the customer is planned to be connected as per the cost estimate of the utility if the connection is planned from existing service connection,
- Undertake new agreement with the utility by amending the existing connection agreement as per the new connection context,
- Do the connection,
- Modify the customers' data base with new data.

Note: the customer is not required to pay deposit money as he has paid for the previous connection which is going to be disconnected.

4.5.2. Payments for service connection transfer

The payment for connection pipe transfer includes the technical service to assess the need for the transfer and the materials that could be relocated, prepare the new connection design and the cost estimate including the dismantling cost if necessary. Accordingly, the cost is estimated as per the following:

(a) Payment for Technical Service (assessment of the need for transfer and the materials that could be relocated, preparing the new connection design and cost estimation)-it is the sum of the following cost components:

- **Transportation cost (round trip)**- depends on the distance from the utility office to the house (both the previous and the new one),
- **Skilled and unskilled labor cost required:** depends on type of skill required, magnitude of the work (man-hour), and rate of the payment (Birr/man-hr). If unskilled labor is provided by the customer, its cost is not included in the service fee.
- **Depreciation cost of equipments, instruments and tools required for the work:** e.g. vehicle, surveying instrument, etc.: depends on the depreciation rate of the equipment (Birr/hr), total hour the instrument will be used in the work.

The above cost components are estimated similarly as it is discussed in Section 4.2.2 (a) above.

(b) Service Connection Installation Fee including dismantling of the previous connection if necessary: it is the sum of the following cost components:

- **Transportation cost (round trip):** depends on the distance from the utility office to the house (both the previous and the new one if dismantling is required),
- **Unskilled labor cost required for trench excavation including dismantling of the previous connection if necessary:** depends on the width, depth and length of the trench, the soil condition and road crossing (Birr/m). If trench excavation and back fill is done by the customer, this cost will not be included in the connection fee.
- **Skilled and unskilled labor cost required for pipe installation and dismantling of the previous connection if necessary:** depends on type of skill required (e.g. plumber), magnitude of the work (man-hour), and rate of the payment (Birr/man-hr). If unskilled labor is provided by the customer, its cost is not included in the service fee.
- **Depreciation cost of equipments, instruments and tools required for the work:** e.g. pipe cutter, vice, wrench, pipe threader, etc.: depends on the

depreciation rate of the equipment (Birr/hr) and total hour the instrument will be used in the work.

The above cost components are estimated similarly as it is discussed in Section 4.2.2 (b) above.

4.6. Service Connection Maintenance including water meter maintenance or replacement

Even though any individual who come across any technical problem of the utilities water supply infrastructures associated with leakage of water has a moral responsibility to notify the same to the utility or any other relevant authority, the customer has legal responsibility to inform to the utility any defects on his service connection for timely maintenance. It is under the responsibility of the utility to undertake maintenance of any defects of the service pipeline upstream of the water meter (including the water meter) while any maintenance downstream of the water meter lies under the responsibility of the customer. Even though utilities have responsibility for maintenance of service pipe connections upstream of the water meter, the cost of the maintenance is covered shared with the customer. Accordingly, the customer is required to cover fully (100%) the material cost while the labor and other miscellaneous costs are covered shared with the customer in 50% proportion. However, the maintenance cost of water meter is fully covered by the utility unless the damage has occurred with the negligence of the customer. In case of condominium and real estate condominium apartment buildings, service connection maintenance responsibility lies on the utility for the connection segment upstream of the master water meter (including the master water meter) i.e. the water meter measuring the overall flow to the building while the maintenance of the segment downstream of the master water meter is under the responsibility of the customer(s). In spite of the utilities responsibility for maintenance of service pipe connections upstream of the master water meter, the cost of the maintenance is covered shared with the customers. Accordingly, the customers are required to cover fully (100%) the material cost while the labor and other miscellaneous costs are covered shared with the customers in 50% proportion. However, the maintenance cost of water meters

(both the master water meter and sub-meters installed at individual households) is fully covered by the utility unless the damage has occurred with the negligence of the customer(s). The common service connection pipes serving residents of condominium houses and real estate condominium apartment buildings could be a major source of physical losses of water unless well organized resident committee working closely with the utilities is established to manage this segment of the water supply system. The resident committee also shall engage in to agreement with the utility to pay the differences of the reading by the master water meter and the sum of all sub-meters. However, even though residents will pay for the loss by the master water meter, it would have significant impact on the supply of water to the town forcing the utility for unnecessary expenditures in investment for additional infrastructures (sources). Thus, utilities should strictly supervise the loss of water in this segment of the service connection. Moreover, utilities have also to work closely with the entities responsible to the construction of condominium houses/real estate condominium apartment buildings (i.e. condominium buildings development agency and real estate developers) to monitor and ensure the construction quality of the water supply and sanitation infrastructures before connecting to their system.

In any of the above maintenance works, if damage has occurred by a third party to the service connection, it would be liable to the cost of the maintenance.

4.6.1. Service Connection Maintenance Procedure

The recommended requesting procedure for maintenance of service connection includes:

- Application orally by phone or in written as per the standard format attached herewith,
- Sending to the site pertinent skilled person with repair log-book,
- Undertake the repair if possible and get signed the customer in the repair log-book and include the maintenance cost in the next month water bill of the customer or identify the problem and the necessary materials for repair, workout the repair cost and inform the same to the customer to buy the materials and pay 50% of the repair service cost to the utility if the defect is upstream of the water

meter. However, if repair is required for the water meter, it is done without cost for the customer. If damage has occurred by a third party to the service connection, it would be liable to the cost of the maintenance.

- Isolate the connection until it is repaired if there is leakage,
- Carry out the repair as soon as the customer made ready the material needed for the repair and paid 50% of the repair service cost,
- The repair is registered in the log-book of the customer.

Installation and maintenance of the service connection downstream of the water meter (not including the water meter) which is under the responsibility of the customer could be carried out by a private service provider/plumber. However, if the work includes installation of water storage tank, the service provider and/or the customer has to ensure the capacity of the water tank is below or equal to the maximum capacity set for the purpose in this guideline.

4.6.2. Payments for maintenance

It is the sum of the following cost components:

- **Transportation cost (round trip):** depends on the distance from the utility office to the house,
- **Unskilled labor cost required for trench excavation if required:** depends on the width, depth and length of the trench, the soil condition and road crossing (Birr/m). If trench excavation and back fill is done by the customer, this cost will not be included in the maintenance fee.
- **Skilled and unskilled labor cost required for pipe installation:** depends on type of skill required (plumber), magnitude of the work (man-hour), and rate of the payment (Birr/man-hr). If unskilled labor is provided by the customer, its cost is not included in the service fee.
- **Depreciation cost of equipments, instruments and tools required for the work:** e.g. pipe cutter, vice, wrench, pipe threader, etc.: depends on the depreciation rate of the equipment (Birr/hr) and total hour the instrument will be used in the work.

The above cost components are estimated similarly as it is discussed in Section 4.2.2 (b) above.

In order to minimize the cost and make it affordable to the customer, in all technical services discussed above, the customer shall provide from his own unskilled labor, shall himself do excavation and back filling works in which case these costs are not included in the service fee for the utility.

Based on the above discussed technical service payment estimate principles each utility shall calculate the average cost for each technical services in the town using average values for each variables and post the costs on the information board of the utility for transparency.

4.7. Recommended Connection Technologies

The water policy and strategy state that technologies to be used in urban water supply in general and in service connection in particular should ensure affordability of the customer to cover the investment and operation and maintenance cost among others. Hence, in this regard, the water policy recommends adapting internationally recognized technologies to local conditions.

(a) Service Connection Pipes

Currently HDP pipes are produced in the country facilitating their use in service connection. Hence these pipes are recommended for service connection for this and the following reasons in place of the traditional GIS pipe usually used for this purpose.

Its advantages over the other pipe materials, e.g. GIS pipe are:

- Has low supply, installation and maintenance cost,
- Easy for installation and repair not requiring special tools and special training,
- Has relatively low head loss, i.e, low energy consumptions, thus low O&M cost,
- Low risk of contamination in the service connection due to siphonage of contaminants at the joints as it has minimum joint or no joint at all.
- It has no corrosion problem which reduces the life span of the pipe and deteriorates the water quality supplied.

However, the pipe should be buried with sufficient depth to resist mechanical load and with precaution not to expose it to fire/heat.

(b) Water Meters

Water meters are efficient in working in low flow ranges. For flows having high flow range, e.g. multi-story buildings etc. use of combined water meter is recommended. Pressure rating, accuracy, minimum flow to start the meter, sealing condition, covering, etc are important factors to be considered in selecting water meters. Water meters functionality should be tested at least once in 1-2 years by the utility.

It is recommended to use meters with the following sizes (mm)

<u>Maximum monthly flow (m³)</u>	<u>water meter (mm)</u>
130.....	15
700.....	25
5000.....	50
20,000.....	100

5. Illegal connections and water use

There should be a common understanding on illegal connection or use of water among urban utilities. These may include:

- Have connection to the utility’s pipe network without knowledge, permission and legal connection agreement with the utility,
- Have connection before the water meter,
- Make the water meter to malfunction intentionally,
- Use of water for unauthorized use as per the connection agreement, e.g. for normal irrigation,
- Transferring one’s water pipeline to another person without the knowledge and agreement of the utility,
- Allowing another person to connect without the knowledge and agreement of the utility,
- Relocation of connection without prior knowledge and agreement of the utility,

As per the water policy, all these and other similar offences should be prohibited by regional proclamations and regulations with penalties stated.

6. Availability of Water Storage Facilities at Household Level

As it is discussed above one of the main demands of the customer from the utility is to ensure reliability of the water supply in terms of quantity and quality all the time. Currently most of the urban utilities are not in a capacity to ensure this demand of the customer. Thus, urban water supplies are not reliable which forces customers to store some water for reserve.

Thus, the problem associated with water storage at household level which affects fair distribution of water to customers is related more to utilities shortcomings in ensuring the reliability of water supply rather than being a fault of the customer. Thus, utilities have to ensure first continuous water supply to the customer which is unrealistic in the present urban water supply context which justifies the necessity of storage at household level this time. However, the volume of water storage facilities should be estimated based on the following considerations and their volume should be limited accordingly:

- ✓ The maximum days of continuous water supply interruption by the utility,
- ✓ Daily water consumption of the household (20 liter x the number of persons in the household)

Thus, the storage volume required will be the product of the amount of water required for the household in a day as estimated above multiplied by the maximum days of continuous water supply interruption to the household but not exceeding 2 m³. Moreover, storage for entities having high consumption such as commercial establishments, public institutions, condominium houses, apartment buildings and the like should be allowed only to store for their domestic use and should not exceed 10 m³. However, institutions and commercial establishments such as hospitals, universities and colleges, star hotels, jails, etc. which would have high water consumption are exempted from this restriction.

The storage should be closed with manhole access and have air vent (bend downward or protected with wire mesh) and should the material be standardized to avoid contamination. Moreover, the storage should be connected in such a way

to avoid stagnation of water and provided with drainage and overflow pipes with float valves. If the storage is overhead tanker it should be supported by a structure with adequate strength on firm foundation located at appropriate location (accessible, not susceptible to danger for the residents, and tanker not exposed for excessive heat and direct sunshine, etc) in the customer's premise. Customers are required to wash their tankers and disinfect them at least once in a year depending on the material type of the tanker and the water quality.

Annex-1

Application Form for Technical Service

To: (name of the town's water supply and sewerage service)

A. Applicant's Information:

Name _____

B. Address: City/Town _____, Sub-city _____, Kebele _____, House No. _____

Phone No. _____

C. Water Supply technical services applied for (mark in the space provided):

1. New service connection _____
2. New service connection from exist+++ing other service connection _____
3. Service connection relocation or extension in the premise _____
4. Water meter repair or replacement _____
5. Service pipe connection maintenance upstream of the water meter _____
6. Service pipe connection maintenance downstream of the water meter _____
7. Others (provide description) _____

D. Type of connection applied for (for new water supply service connection only: mark in the space provided)

1. Residential House Connection _____
2. Residential Yard Connection _____
3. Residential Shared Yard Connection _____
4. Institutional Connection _____
5. Commercial Connection _____
6. Industrial Connection _____

E. Address of the house/institution applied for water supply service connection:

Town_____, Sub-city_____, Kebele_____, House No _____

F. Cost to be covered by the applicant's own force (mark in the space provided)

1. Unskilled labor cost _____
2. Pipe trench excavation and back-fill cost_____

G. Attachments needed to this application in case of new water supply service connection:

1. Copies of ownership document with the originals for the house
2. Copy of identification card with the original

Name_____ Applicant's

Signature_____

Date_____

For the water supply service utility use only

1. Application _____ Received _____ by _____

2. Date and time
Received_____

3. Actions taken (what action, by whom, Date and time action taken)

1. _____

2. _____

3. _____

4. Date and time the work
completed_____

For Applicant's use

5. Applicant's confirmation (Signature and date)_____

6. Applicant's comment on the service:

Note: As built drawing of the service connection of the client would be attached to this application and filed together.