

## **City of Shelby Electric Service Regulations - Shelby, N.C.**

September 2005

The Terms and Conditions for Electric Service for the City of Shelby's Electric System are now in written form and in the future will be distributed to all new Customers and any existing Customers requesting a copy.

The Electric Service Regulations are intended for use as a Customer Service tool by City personnel to provide the rules and regulations of how the City Electric Division provides Electric Service to its Customers. When used in an appropriate manner and with common sense, all new and existing Customers of the City's Electric System will be treated in a fair and equal manner.

The understanding and cooperation of all City employees is essential if the City is to provide excellent Customer Service to its Customers. This manual does not address every possible problem, question, or concern related to Electric Service. Rather, it is a guide for a systematic approach to providing Electric Service.

The Electric Service Regulations will assist in the daily activities of City personnel and will also assist in training of new employees in their Customer Service duties. Proper utilization of this guide will allow City personnel to provide the best service possible.

In conclusion, the Terms and Conditions provide the Customer with a guide for what to expect from the City of Shelby and the Electric Service Regulations provide a guide for City personnel to use providing the best Service to Customers of the City's Electric System.

Jay Stowe  
Utilities Director

**City of Shelby Electric Service Regulations - Shelby, N.C.**

**City of Shelby  
Terms and Conditions of Electric Service  
and  
Electric Service Regulations**

Distribution List

City Manager  
Assistant City Manager  
Assistant Utilities Director  
City Attorney  
Electricities - Member Services Supervisor  
Electric Superintendent  
Electric Service Crew Supervisor ( 2 copies )  
Finance Director  
Fire Chief  
Inspections and Code Enforcement  
Parks and Recreation Director  
Human Resources Director  
Planning and Community Development  
Police Chief  
Public Works Director  
Customer Services Manager

# City of Shelby Electric Service Regulations - Shelby, N.C.

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### Date of Publication

September 2005

### Date of Revisions

### Right to Appeal

Any Customer served or to be served in accordance with these Electric Service Regulations has the option to dispute any interpretation of the regulations made by a City of Shelby Employee or Representative. Appeals should be made in writing to the Utilities Director of the City of Shelby.

## 1.0 Terms and Definitions

The following are terms and definitions followed in the City of Shelby Electric Service Regulations.

City - City of Shelby, North Carolina.

Customer - Any person, business, or corporation being served or to be served from the City's electric system.

Developer/Builder - Any person, agent, firm or corporation having a legal or equitable interest in the property being responsible to the owner.

Dip Pole - A City pole which serves secondary voltage underground facilities.

Nominal System Voltage - The City's standard system voltage is the base rating of 120 volts.

Owner - Any person, agent, firm or corporation having a legal or equitable interest in the property.

Point of Delivery - Where the City's responsibility terminates and the Customer's responsibility begins.

Primary System Voltage - The City's primary system voltage is 12,470 / 7,200 volts wye.

Revenue Credit - Estimated Customer billing for a period of two years.

Riser Pole - A City pole which serves primary voltage underground facilities.

Secondary System Voltage - The City service to Customers with configurations of voltages less than or equal to 600 volts.

Service Connections - The point in which the Customer's equipment comes in electrical contact with City's facilities.

## **2.0 National Electric Safety Code**

The applicable rules and regulations of the American National Standards Institute (ANSI) and Institute of Electrical and Electronic Engineers (IEEE) titled "National Electric Safety Code", is hereby adopted by reference as the electric safety construction rules of the City.

## **3.0 Special Consideration Customers**

- (a) The City recognizes that some of its Customers for medical reasons may be sensitive to the availability of electric service and may require special consideration during such times interruptions of service occur. For this reason, the City has developed a medic alert list from information gathered from Customers, local physicians and hospitals.
- (b) It is the City's intent to give medic alert Customers priority consideration in times of scheduled switching and outages or uncontrollable circumstances. Uninterrupted service cannot and is not guaranteed by the City when a Customer is assigned to the medic alert list.
- (c) This consideration does not mean or imply these Customers will be the first Customers to have power restored, but that the City will make every effort to restore service as soon as possible taking into account these Customers' special circumstances.
- (d) In the event the power is not able to be restored quickly, the City will make reasonable effort to notify these Customers so they can take action to provide for their own protection and well being.
- (e) The City under no circumstances guarantees continuous electric service to any of its Customers, including those assigned to the medic alert list and its Customers by applying for and accepting electric service understand and agree that the City can not and does not guarantee interruption free electric service.

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### 4.0 Standard Voltages

- (a) The City shall make available where possible (dependent upon the City's electrical distribution system configuration) the following service voltages:

Single-Phase Systems

120/240 volt, three wire

Three-Phase Systems

120/208 volt, four wire, wye

120/240 volt, four wire, high leg

277/480 volt, four wire, wye

240 volt, three wire, delta

480 volt, three wire, delta

Primary System

7,200 / 12,470 volt, four wire, wye

- (b) The voltage supplied to the Customer's point of delivery should not have voltage variations exceeding five percent (5%) above or below the City's standard nominal voltage for residential Customers and ten percent (10%) above or below the City's standard nominal voltage for all other Customers.
- (c) The City will install facilities with sufficient capacity to serve the Customer's normal load requirements. Information regarding loads and desired voltage will be communicated by the Customer to the City when the service is initially requested. It is the Customer's responsibility to advise the City of any electrical load or method of operation change that might affect the City's ability to meet the Customer's load requirements.

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- (d) Upon request of the Customer, the City will monitor the voltage at the Customers point of delivery with the appropriate and available monitoring devices for a period of time deemed necessary by the City to determine the nature of the problem. The City will notify the Customer and tell them the nature of the problem and possible solutions if the voltage is not within the above stated guidelines.

### **5.0 Electric Meters**

- (a) The Customer will be required to furnish and install the appropriate meter base for the type of service unless otherwise specified in these regulations.
- (b) The City Electric Division shall approve and agree to the location of all metering equipment. The meter will be located where accessible and convenient to read, not be unreasonably exposed to damage, not be in any unduly dirty location and will not be inconvenient to City access for reading, maintenance, replacement, or repair.
- (c) The City Electric Division shall approve the location of all metering equipment in accordance with the following provisions:
  - (1) The meter shall be located between the height of four and one half (4 1/2) feet and five and one half (5 1/2) feet for convenience of reading, unless otherwise approved by the Electric Superintendent or designee.
  - (2) In cases of existing meters located on the structure not convenient or readily accessible for reading and servicing purposes, it shall be the responsibility of the owner/occupant to relocate the meter, at his expense, to a location approved by the City Electric Division.
  - (3) The owner occupant shall have thirty days in which to relocate the meter upon written notice from the City Electric Division. If not relocated after thirty days notice, the City may terminate electrical service to the structure



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until such time as the meter is relocated to a location approved by the City Electric Division.

- (4) The owner of the meter supporting structure is responsible for its condition and for maintenance of the proper socket position and leveling. Excessive tilt or unstable location of a meter socket must be corrected before the meter is installed.
- (5) It shall be the owners responsibility for insuring the meter base is accessible, lockable and in good condition. Failure to do so can result in termination of service until such equipment is repaired or replaced.
- (d) The Developer or Builder will incorporate multiple bay or multiple gang metering facilities, as determined by the City Electric Department. Multiple or gang metering facilities must be permanently labeled as to the apartment it feeds prior to being energized.

### 6.0 Temporary Electric Service

6.01 Temporary Service - There are no charges for temporary service installation, other than normal application fees and deposits, providing the following guidelines are met:

- (a) Service will be delivered at a standard voltage of 120/240 volts, single phase, 3 wire.
- (b) The Customer requesting temporary service will contact the City Electric Department and Building and Zoning Department and present a plot layout. Sufficient advance notice shall be provided prior to building the foundation to allow engineering and construction of permanent electrical facilities.
- (c) At the time the Customer requests temporary service the City may require the Customer to submit a letter of intent requesting that the City provide permanent electric service.

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- (d) The temporary service delivery pole must be located within the following guidelines:
  - (1) In an overhead service area: within 50 feet of the City's closest pole.
  - (2) In an underground service area: within (3) three feet of the nearest underground enclosure or pad mount transformer.

### **6.02 Additional Charges**

In the event facilities are to be installed which will not become part of the permanent installation, the additional charges to the Customer will be determined by calculating the installed and removed costs less salvage value.

### **7.0 Overhead / Underground Line Extensions**

#### **7.01 Primary Line Extensions**

- (a) For the primary portion of the single-phase overhead or underground line extension to serve a permanently-occupied structure, the City will furnish, at no cost, the least cost overhead or underground service as determined by the City, which is compatible with the Customer's requirements and the City's engineering standards. In the event the Customer requests other than the least cost overhead or underground service, the Customer will pay for the difference in the installed costs and the least cost for installation.
- (b) For the primary portion of a two-phase or three-phase overhead or underground line extension to serve a permanently-occupied structure, the City will extend multi-phase electric service to the Customer's property line or the City's riser pole. The Customer will pay construction costs minus revenue credit or the installed cost minus the single-phase cost for the installation, whichever is less. In the event the Customer requests additional construction in excess of the City's

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engineering standards, the Customer will pay for the additional installation.

### **7.02 Secondary Line Extensions**

For the secondary portion of an overhead or underground line extension to serve a permanently-occupied structure, the City will furnish, at no cost, the least cost overhead or underground line extension as determined by the City, which is compatible with the Customer's requirements and the City's engineering standards and the appropriate Underground Service Regulation. In the event the Customer requests other than the least cost overhead or underground secondary line extension, the Customer will pay construction costs minus revenue credit or the difference in the installed costs and the least cost for installation, whichever is less.

### **7.03 Securing of Rights-of-Way**

The Customer will be required to grant the City rights-of-way on their private property at no cost to the City and may be required to assist the City in obtaining rights-of-way on other properties. The City will be under no obligation to construct any facilities unless rights-of-way are obtained. These rights-of-way will be surveyed and recorded.

## **8.0 Underground Service for Single Phase Residential and Commercial Customers**

### **8.01 Individual Service**

Prior to the installation of the underground distribution system by the city, the final grade levels of the building sites shall be established by the owner. The

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building construction program shall be coordinated with the installation of underground electrical facilities to permit unimpeded access of the city's equipment to the installation sites; to allow installation of underground conductors; and to eliminate dig-ins to the underground electrical facilities after installation. Should streets, driveways, curbs or other obstructions be present prior to installation of underground facilities resulting in additional expense to the city, payment for these additional expenses shall be paid before installation of the underground electrical facilities has begun, or if installation of electrical facilities are required by the owner before final grades are established, and either of these conditions result in additional expenses to the city, payment for these additional expenses shall be made to the city by the owner.

The City of Shelby will install a secondary service up to 150' at no cost. Additional footages for secondary underground service will be charged to the customer.

Should existing sidewalks, septic tank systems, fuel tanks, other utility line, or other manmade obstructions result in additional expenses to the city, payment for same will be made by the owner.

Actual costs brought about in connection with the compliance of special requirements, if any, of municipalities, state and federal highway agencies or departments regarding the breaking of pavement, ditching, backfilling, and other related conditions, will be paid by the owner.

The city will make, or adjust, charges to the owner to collect the actual additional costs to the city due to adverse conditions, such as: the composition of the land where the underground facilities are to be installed is such that standard construction equipment cannot be used to complete the installation; or, special equipment materials are needed for stream crossing structures or concrete structures; or, dynamite is required or if abrupt changes in final grade levels exceed a slope ratio of one (1) when measured within three (3) feet of the trench.

The city's agreement to provide underground service is dependent upon the

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securing of all necessary rights, easements, rights-of-way, privileges, franchises or permits for the installation of such service from those requesting the underground facilities. The owner agrees to insure that all such necessary rights, easements, blanket rights-of-way, privilege, franchises or permits are properly recorded on each deed. The city shall exercise care in the utilization of its underground equipment during construction, but ultimate responsibility for the protection of shrubs, trees, and grass sod will be with the owner. Reseeding of trench cover will be done by the owner. Shrubs, trees, or any other obstacles shall not be placed within ten (10) feet of transformer or cabinet openings which would hinder the access of the city at any time.

### **8.02 Changing Overhead to Underground Service**

- (a) When an individual Customer requests the City to convert an existing overhead service to underground, the Customer shall pay a minimum of \$500 charge or the actual cost whichever is greater. This shall be paid in advance of any construction.

### **9.0 Underground Service for Commercial and Industrial Three Phase Customers**

#### **9.01 General Underground Installations**

- (a) The Customer will furnish any necessary right-of-way for the installation of the City's equipment. This equipment includes, but is not limited to transformers, poles, conductor and switchgear.
- (b) The Customer will be required to receive service from a pad mounted transformer if the City determines the Customer's current load or future load to be in excess of 200 kW. For the purpose of this section the load will be determined solely and exclusively by the City and the City may use several factors to make this determination. These factors could include, but not limited to, diversified load

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calculation, actual load data, installed service size and configuration, future load growth, existing City circuit configuration, and City engineering standards. Any exception to this requirement will be at the sole discretion of the City.

- (c) When the Customer is required to install secondary voltage conduit (with pull tape) such installations shall be trenched to a depth of no less than 24" and no greater than 36" from final grade. Trench shall have marking tape installed 12" above conduit. A separation of 12" is required between the City's facilities and any other utilities facilities. The installation shall be coordinated with the City Electric Division. On all roadway crossings the conduit will be installed no less than 36" below final roadway grade. All conduits will be "blown out" to remove any debris and capped after installation.
- (d) When the Customer is required to install 4" primary voltage conduit (with pull tape) such installations shall be trenched to a depth of no less than 36" and no greater than 48" from final grade. A trench shall have marking tape installed 12" above conduit. A separation of 12" is required between the City's facilities and any other utilities facilities. The installation shall be coordinated with the City Electric Division. On all roadway crossings the conduit will be installed no less than 36" below final roadway grade. All conduits will be "blown out" to remove any debris and capped after installation.
- (e) All Customer installations listed in these policies will be inspected by the City Electric Division before the trench is backfilled or the installation is completed. The Customer will be required to reconstruct any portion of the installation which deviates from City engineering standards or the approved underground system design.
- (f) The city will make, or adjust, charges to the owner to collect the actual additional costs to the city due to adverse conditions, such as: the composition of the land where the underground facilities are to be installed is such that standard construction equipment cannot be used to complete the installation; or, special equipment materials are needed for stream crossing structures or concrete structures; or, dynamite is required or if abrupt changes in final grade levels

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exceed a slope ratio of one (1) when measured within three (3) feet of the trench.

### **9.02 Individual Commercial Underground Three Phase Services**

#### **Pad Mounted Services**

If the Customer is to be served from a pad mounted transformer, with no other Customer served from this transformer, the following conditions apply:

- (a) The Customer will furnish and install a transformer pad as per the City's specifications, 4" conduit from the City's riser pole location to the primary side of the transformer pad, mount electric meter base on their facilities, all secondary conduit and secondary conductor and 1" conduit (with pull tape) from the secondary side of the transformer pad to the meter base. The Customer will be required to furnish and install 4" PVC electrical conduit (with pull tape) in designated areas as determined by the underground system designed by the City.
- (b) The City will furnish and install all primary conductors, pad mounted transformer, electric meter, and metering conductors. The City will furnish the current transformer rated electric meter base.
- (c) The City will make all electrical connections on the source and load terminals of the transformer.
- (d) The City will determine the location of the pad mounted transformer and the electric meter.
- (e) The point of delivery for Individual Underground Pad Mounted Services will be at the terminals of the City's pad mount transformer, and Customer will furnish and install all conductors and conduit past the point of delivery.

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### **9.03 Individual Commercial Underground Services**

#### **Pole Mounted Services**

If the Customer is to be served from a pole mounted transformer, with no other Customer served from this transformer, the following conditions apply:

- (a) The Customer will furnish and install as per City specifications appropriate size conduit (with pull tape) from the City's service pole location to the Customer supplied meter base or current transformer cabinet (as determined by the City).
- (b) The City will furnish and install pole mounted transformer, electric meter, and metering conductors.
- (c) The City will make all electrical connections on the source terminals of the metering facilities.
- (d) The City will determine the location of the electric meter.
- (e) The point of delivery for Individual Underground Pole Mounted Services will be at the terminals of the Customer's metering facilities and Customer will furnish and install all conductors past the point of delivery.

### **9.04 Multiple Commercial Underground Services**

If the Customer is to be served from a pad mounted or a pole mounted transformer, with one or more Customers served (or to be served) from this transformer, the following conditions apply:

- (a) The Customer will furnish and install as per City specifications appropriate size conduit (with pull tape) as determined by the City for the size of the service from the City's lift pole or transformer pad to the Customer's current transformer cabinet or meter base.



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- (b) The Customer will furnish and install on their facilities a self-contained meter base or a City furnished transformer rated meter base and Customer furnished current transformer cabinet of appropriate size. The meter base will be mounted by the customer at a location approved by the City Electric Department. All meter bases shall be permanently labeled as to the address it serves prior to being energized.
- (c) The City will furnish and install all secondary conductors to the metering facilities, electric meter and necessary metering conductors.
- (d) The City will determine the location of the electric meter.
- (e) The point of delivery for Multiple Underground Services will be at the source terminals of the meter base or current transformer cabinet connections, and Customer will furnish and install all conductors past the point of delivery.

### **9.05 Unit Development Underground Services**

Requirements for multiple Customers to be served from a pad mounted or a pole mounted transformer, and a single developer is building a shopping center or similar installation of multiple Customers in one dwelling or structure; are as follows:

- (a) The Developer or Builder will furnish and install a transformer pad, if required, all conduits required and all metering facilities.
- (b) The Developer or Builder will incorporate multiple bay or multiple gang metering facilities, as determined by the City Electric Department. All meter bases shall be permanently labeled as to the address it serves prior to being energized.
- (c) The City will furnish and install all conductor to the Customer's point of delivery, transformers, metering conductors and electric meters.

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- (d) The point of delivery for Unit Development Underground Services will be at the source terminals of the meter base or current transformer cabinet connections, and Customer will furnish and install all conductors past the point of delivery.

### **9.06 Changing Overhead to Underground Services**

- (a) When an individual Customer requests the City to convert an existing commercial overhead service to underground, the Customer will furnish: the provisions for new underground services as stated in the sections above, plus the cost of all new equipment, cost for removal of overhead electric service less salvage value as determined by the City Electric Division.
- (b) If the existing overhead service is determined by the City to be outdated, in need of repair or inadequate to serve the Customer's new load, the cost of removing the overhead service may be waived.

### **9.07 Secondary Delivery Industrial Underground Services:**

If the Customer is to be served from a pad mounted transformer or outdoor substation type transformer(s), with no other Customer served from this transformer, the following conditions apply:

- (a) The Customer will furnish and install a transformer pad (if required) as per the City's specifications, 4" conduit (with pull tape) from the City's riser pole location to the primary side of the transformer pad, mount City furnished current transformer rated meter base on the Customer's facilities, all secondary conduit and secondary conductor and 1" conduit (with pull tape) from the secondary side of the transformer pad to the meter base. The Customer will be required to furnish and install 4" PVC electrical conduit (with pull tape) in designated areas as determined by the underground system designed by the City. The depth of the underground conduit (with pull tape) will be no less than 36" to no more than 48" below final grade. On all roadway crossings the conduit (with pull tape) will be

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installed no less than 36" below final roadway grade. Trench shall have marking tape installed 12" above conduit. All clearances from water, sewer, telephone, cable television and any other underground facilities will be no less than 24". All conduits will be "blown out" to remove any debris and capped after installation.

- (b) The City will furnish and install all primary conductors, pad mounted or substation type transformer, electric meter, current transformer rated electric meter base and metering conductors.
- (c) The City will make all electrical connections on the source and load terminals of the transformer.
- (d) The City will determine the location of the pad mounted transformer and the electric meter.
- (e) The point of delivery for Industrial Underground Secondary Services will be at the terminals of the City's pad mount transformer or bus. The Customer will furnish and install all conductors past the point of delivery.
- (f) If the Customer requests more than one point of delivery to a structure the Customer must receive service at primary voltage. A facilities charge will be added to all facilities installed or furnished by the City above and beyond the City's normal services specified in this section.

### **9.08 Primary Delivery Industrial Underground Services:**

If the Customer is to be served from a primary distribution feeder, the following conditions apply:

- (a) The point of delivery for Industrial Underground Primary Services will be at the terminals of the City's disconnect switches or metering facilities as mutually and contractually agreed by the City and the Customer. Any additional facilities past the point of delivery installed and maintained by the City for the City's use will be

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considered the City's equipment.

- (b) The Customer will furnish and install all facilities past the City's point of delivery.
- (c) The City will furnish and install metering facilities to monitor the Customer's energy usage. A facilities charge will be added for any additional facility that the Customer requires from the City's metering.
- (d) The City will make all electrical connections on the City's primary feeders at the point of delivery.
- (e) A facilities charge will be added for all facilities installed or furnished by the City for the Customer past the City's point of delivery.
- (f) When a Customer requests the City install facilities past the primary metering, the City will maintain all installed City facilities to the service connections of the equipment. A facilities charge will be added for any facilities installed or furnished by the City for the customer pas the City's point of delivery.

### **9.09 Primary Delivery Industrial Services:**

If the Customer is to be served from a primary distribution feeder the following will apply:

- (a) The point of delivery for Industrial Primary Delivery Services will be at the terminals of the City's disconnect switches or metering facilities as mutually and contractually agreed by the City and the Customer.
- (b) The Customer will furnish and install all facilities past the City's point of delivery.
- (c) The City will install metering facilities to monitor the Customer's energy usage. The installed cost of all metering facilities the City installs will be charged to the Customer.

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- (d) The City will make all electrical connections on the City's primary feeders at the point of delivery.
- (e) A facilities charge will be added for any facilities installed or furnished by the City for the Customer past the City's point of delivery.
- (f) The City will, upon request and mutual agreement, furnish, install, and maintain facilities not normally required upon reimbursement by the Customer or agreement for the Customer to pay a facilities charge.

### **9.10 Changing Overhead to Underground Services**

- (a) When an individual Customer requests the City to convert an existing industrial overhead service to underground, the Customer will furnish the following: the provisions for new underground services as stated in the Underground Service section above, plus the cost of removing the overhead electric service as determined by the Electric Division.
- (b) If the existing overhead service is determined to be outdated, in need of repair or inadequate to serve the Customer's new load, the cost of removing the overhead service will be waived.

### **10.0 Underground Electric Service for Residential Subdivisions, Apartment Complexes, Single Phase Commercial, and Multi-Family Housing Developments**

#### **10.01 Developer's Installation Requirements**

When a development within the service area of the City is to be subdivided into residential lots or (single phase service) commercial lots and has been approved by the City Plan Review Process and the City Planning Department, a distribution system will be installed underground at the written request of the Developer, provided the following conditions are met:

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- (a) The Developer is required to furnish to the City an approved plot plan or subdivision map with street rights-of-ways, property lines, sidewalks, storm drains, approved water lines, approved sewer lines and any other utilities or physical features.
- (b) The City will design an underground distribution system for the most efficient installation and service. The City will design the underground distribution system for the entire development. The City will install only the portion of the underground distribution system which serves the current section of the development and is mutually agreed to by the City and the Developer.
- (c) Upon agreement by the City and Developer on an installation plan the Developer is required to furnish the City with all necessary right-of-way to install the approved underground electrical distribution system. (surveyed by developer and submitted to the City).
- (d) The City will furnish and install all transformers, transformer pads for single phase padmount transformers, and all electrical pull-boxes, handholes and pedestals.
- (e) The depth of the underground conductors will be no less than 24" below final grade. A separation of 12" is required between the City's facilities and any other utilities facilities. On all roadway crossings the conduit will be installed no less than 36" below final roadway grade
- (e) The Developer will be required to mark all proposed property corners and grade all proposed installation areas to within 6 inches of final grade before installation of conduit or conductors is to begin. In the event the underground electrical distribution system installation is completed and the Developer has regraded to a level in which the City's equipment does not meet City engineering standards, the Developer will be required to reconstruct the facilities.
- (f) The city will make, or adjust, charges to the owner to collect the actual additional costs to the city due to adverse conditions, such as: the composition of the land

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where the underground facilities are to be installed is such that standard construction equipment cannot be used to complete the installation; or, special equipment materials are needed for stream crossing structures or concrete structures; or, dynamite is required or if abrupt changes in final grade levels exceed a slope ratio of one (1) when measured within three (3) feet of the trench.

### **10.02 Multi-Phase Service**

When a Developer or Customer requests multi-phase service in a development which the City has designed or installed a single-phase system, the Developer or Customer will be required to install a concrete pad for the three-phase transformer and pay for the entire cost to install the additional facilities to provide the service.

### **10.03 Moving Installed Facilities**

In the event that the City's facilities are requested to be relocated, the Developer or Customer making the request will be required to pay for the entire cost for relocation.

### **10.04 Individual Services**

- (a) Services to individual residential dwellings or lots will be in accordance with the City of Shelby Underground Electric Service for Single Phase Residential and Commercial Customers.
- (b) Single Phase Residential and Commercial Customers requesting electric service for structures in such subdivisions must be served underground in accordance with the City of Shelby Underground Electric Service for Single Phase Residential and Commercial Customers Regulation.

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### **10.05 Multi-Dwelling Structures**

For service to multi-dwelling structures, the Developer will be required to furnish and install a multi-gang meter facility on one common side of the structure as approved by the City. Each meter base shall be permanently marked and maintained as to the customer address it feeds prior to being energized.

### **11.0 Relocation of City Facilities**

Customers requesting the City to relocate installed facilities will pay for the cost of this relocation. These charges can be waived or adjusted in the event that the relocation is advantageous to the City for maintenance, reliability or future service requirements as determined by the Utilities Director.

### **12.0 Street Lighting**

The purpose of street lighting is to illuminate roadways within the City of Shelby. Street lighting is not for lighting structures or commercial properties or for personal security purposes or crime prevention purposes.

The purpose of this document is to establish guidelines for effectively lighting the public streets under the control of the City of Shelby. Proper street lighting not only serves the needs of the motoring public but also contributes to the livability of the public along the streets. Street lighting also contributes to personal safety and security, as well as comfort and welcome of pedestrians along the streets. Street lighting influences the public's choice of transportation, i.e., driving, walking, riding a bike or bus. Care should be taken to balance the needs for cars, trucks, buses, pedestrians, and bicyclists.

Street lighting considerations involve a variety of engineering design issues. These may include issues such as wattage, color of light, shielding of light, fugitive light, energy efficiencies, mounting heights, and more. Because of on going research in the field of lighting, street lighting and outdoor lighting plans should be reviewed and updated on a regular basis.

The street lighting requirements contained herein shall apply to new installations. Existing street lighting shall be evaluated and improvements made according to these guidelines as time permits and funds are made available.



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### Street Classification

The appropriate classification for each street under the control of the City of Shelby should be determined by the role each street plays as part of the entire traffic system. The criteria for determining street classification should include the following:

1. Average daily traffic volume.
2. Non-automobile use (trucks, buses, pedestrian).
3. Posted speed limit.
4. Spacing of connecting streets.
5. Length of streets.
6. Number of traffic lanes.
7. Points of access (driveways) per mile.
8. Proximity to public or community building (example: fire station, city hall, community center).
9. Visibility (example: curves, hills, visual obstructions).

For the purpose of these guidelines the streets are divided into five (5) categories.

#### **Major Thoroughfare:**

Usually four lanes, these streets carry the highest volume of traffic. They are principle routes for through-traffic flow. Partial access control is maintained to limit access to intersections with other roads. Right of way is usually 70 to 120 feet and above.

#### **Minor Thoroughfare:**

These streets supply as the main arteries for intra-city mobility. These routes connect the Major Thoroughfares or principle areas of traffic generation such as downtown, shopping centers, airports, etc. They are usually the main routes leaving the city. They may be two lane, two lane with a turn lane, or four lane. Right of way is usually 45 to 70 feet.

#### **Collector:**

These streets are found in multi-family residential, commercial, and industrial areas. Collectors usually have slightly wider right of ways than Sub Collectors and may have provisions for on street parking, sidewalks, planting strips, etc. Collector streets may be used for truck or bus traffic and usually connect Minor Thoroughfares. Right of way is usually 30 to 60 feet.

#### **Sub Collector:**

Sub Collectors are found only in single family residential neighborhoods. The right of way is usually narrower than Collector Streets and provide access to private property by means of a large number of driveways. Sub Collectors carry a low to moderate traffic volume at low posted speed limits and discourage through traffic. Right of way is usually 20 to 60 feet.

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### Local Residential/Cul-de-Sac/Marginal Access:

Local Residential/Cul-de-Sac/Marginal Access streets are for direct access to private property which may be residential, commercial, or industrial. This classification is made up of the largest amount of total street mileage, but carry the smallest part of the traffic volume. Local Residential/Cul-de-Sac/Marginal Access streets are usually two lane with the narrowest right of way and pavement width.

## STREET LIGHTING

Street Lighting Design Table:

Road	Pedestrian Conflict Area	Average Luminance $L_{avg}$ (cd/m <sup>2</sup> )	Luminance Uniformity $L_{avg}$ to $L_{min}$ Max. Allowed	Luminance Uniformity $L_{max}$ to $L_{min}$ Max. Allowed	Veiling Luminance Ratio $L_v$ to $L_{avg}$ Max. Allowed
Major Thoroughfare	High	1.0	3 to 1	5 to 1	0.3 to 1
	Medium	0.8	3 to 1	5 to 1	0.3 to 1
	Low	0.6	3.5 to 1	6 to 1	0.3 to 1
Minor Thoroughfare	High	1.2	3 to 1	5 to 1	0.3 to 1
	Medium	0.9	3 to 1	5 to 1	0.3 to 1
	Low	0.6	3.5 to 1	6 to 1	0.3 to 1
Collector and Sub Collector	High	0.8	3 to 1	5 to 1	0.4 to 1
	Medium	0.6	3.5 to 1	6 to 1	0.4 to 1
	Low	0.4	4 to 1	8 to 1	0.4 to 1
Local Residential/Cul-de-Sac/Marginal Access	High	0.6	6 to 1	10 to 1	0.4 to 1
	Medium	0.5	6 to 1	10 to 1	0.4 to 1
	Low	0.3	6 to 1	10 to 1	0.4 to 1

Note: This table was taken from the Illuminating Engineering Society of North America

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RP-8-00 American National Standard Practice for Roadway Lighting. Road types been modified to match the City's classifications.

### **Fixture:**

The standard street lighting fixture shall be a cobra head style, length of arm as required, 250 watt, 120/240 volt, high-pressure sodium (HPS), IES Distribution Type III, photoelectric cell operated switch, full cutoff optics, and a minimum of 26,000 initial lumens. Non standard fixtures may be selected by the City for special applications, or lighting designs that are required to meet the criteria as set forth by IES RP-8-00.

### **Spacing:**

The spacing of fixtures shall be as follows:

Major Thoroughfare	To be determined by ANSI/IESNA RP-8-00
Minor Thoroughfare	100 – 200 ft.
Collector	100 – 200 ft.
Sub Collector	100 – 250 ft.
Local Residential/Cul-de-Sac/ Marginal Access	100 – 250 ft.

Spacing may be accomplished by staggered or single side layout.

### **Mounting Height:**

The fixture mounting height shall be a minimum of 23 feet and a maximum of 35 feet from grade.

### **Voltage Drop:**

All street lighting electrical circuits of 120/240 volts shall be limited to 5% voltage drop.

### **General:**

Street lighting should be placed at all intersections and at other high volume pedestrian areas. Where sidewalks exist on only one side of the street, street lighting should be placed on that side if possible to provide illumination for pedestrians. A street light should be placed on each cul-de-sac, at the point where the tangent meets the circular outside of the cul-de-sac.

On streets with sidewalk and a high volume of pedestrian traffic, the addition of lower pedestrian oriented type street lights should be considered. Examples of these areas would be in the vicinity of shopping centers, theaters, downtown district, stadiums, etc.

Where the City has an existing pole line, these poles will be used for street lighting purposes whenever possible. Additional poles will be added as required. Fixtures added

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to a street with the City's standard lighting shall be similar in style and illumination to the existing fixtures.

Street light support shall not be placed within 4 feet of a fire hydrant or 5 feet of a residential driveway.

### **REQUEST FOR STREET LIGHTING ALTERATIONS**

When a request is received for street lighting rearrangement, installation, or removal the City shall:

1. Review any existing street lighting to determine if illumination levels are presently in compliance with these guidelines.
2. Review the street for conditions which may require special safety considerations.

Requests for street lighting alterations may require written approval by all property owners fronting the street in question.

Should the street lighting be found in compliance with these guidelines, the relocations, replacement, and retirement cost shall be paid in full by the requesting party or parties prior to the installation of any street lighting alterations.

### **DECORATIVE OR NON-STANDARD LIGHTING**

The City has compiled a list of decorative or non-standard poles and fixtures that meet their requirements. Prior to installation, neighborhoods may request an approved decorative or non-standard fixture and pole in lieu of the standard wood pole and fixture. If approved by the City the following shall apply.

1. All poles and fixtures installed in the neighborhood shall be compatible.
2. Lighting levels and layout must be approved by the City prior to installation.
3. All upfront engineering fees shall be paid by the developer or neighborhood prior to design work.
4. Cost difference between a standard installation (cobra head fixture on a wood pole) and a decorative or non-standard pole and fixture chosen shall be paid by the developer or neighborhood. Additional underground cost for labor and materials shall also be paid by the developer or neighborhood. All cost to the developer or neighborhood shall be estimated and paid prior to any work being accomplished.

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### 13.0 Rental Area Lighting

- (a) Outdoor Area Lighting will be supplied in accordance with the Customer's Application for Outdoor Lighting and the City of Shelby Outdoor Lighting Contract. The service supplied by the City will include furnishing and installing the lighting units requested by the Customer and connecting the same to the City's system, all in accordance with the City's service regulations. These facilities, with automatic control, will be owned, maintained, and operated by the City, and the City will furnish the electricity required for the illumination of the lamps from dusk to dawn. The City will perform, as soon as practicable during regular working hours, necessary maintenance to restore illumination after the Customer has notified the City that the lamp is not burning. Any area lighting not in accordance with this regulation must be approved by the Director of Utilities.
  
- (b) This service shall be for use in lighting of outdoor areas by the means of sodium vapor fixtures installed on brackets extending (4) four feet or less from a City owned pole. These lighting units can be installed on City owned poles on which overhead secondary voltage exists, or to which such voltage can be extended without additional transformer installation.

#### 13.01 Rental Area Lighting Units Available

- 100 watt High Pressure Sodium Vapor
- 250 watt High Pressure Sodium Vapor
- 400 watt High Pressure Sodium

#### 13.02 Installing Area Lighting

- (a) Customer requests for Rental Area Lighting installations will be submitted to the Customer Services Office by the Customer. The Utility personnel will meet with the customer and determine the proper placement of lights.
  
- (b) Rental Area Lighting will be placed on Customer property only where a utility

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line truck has access. No Area Light Poles will be set in locations inaccessible to a line truck.

- (c) The Customer shall be informed prior to any installation that any damage to driveways or grounds, will not be the responsibility of the City of Shelby. In addition, an Electric Services Installation Provision form must be completed.

### **13.03 Disconnecting Area Lighting**

- (a) Customer requests for Rental Area Lighting disconnects will be submitted to the Customer Services Office by the Customer. The procedure below shall be followed for Area Light disconnects.
- (b) Disconnect orders require the Service Crew to disconnect electric service from the lighting fixture. In the event the Customer desires the entire unit to be removed, the pole, light fixture, and secondary cable will be removed.
- (c) The Customer will be informed prior to any disconnect that any damage to driveways or grounds will not be the responsibility of the City of Shelby.
- (d) Disconnects shall be completed within ten (10) working days of the receipt of the service order in the Electric Division, weather permitting.

### **13.04 Replacing or Repairing Area Lighting**

In the event an area lighting unit is not operating, the Service Crew will make an attempt to repair the existing unit with available "in stock" repair parts. When these parts are not available or have been exhausted, the lighting unit will be replaced with available lighting units.

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### **14.0 Structure or Equipment Moving - Customer Requirements**

The Customer requesting the City assist in providing safe clearance of its electrical facilities will be required to meet the following conditions:

- (a) The Customer will be required to give the City advance written notice of the structure or equipment to be moved, the loaded height and the loaded width of the structure or equipment and a route map three weeks prior to the movement.
- (b) The City will not approve any proposed route that is not previously approved by the other local utility companies and the N.C. Department of Transportation, if required. The City will approve the route with corrections as necessary and the Customer be required to show this approved route to the Service Crew performing the clearances before beginning the move.
- (c) The Customer will be required to pay all costs involved to provide safe clearances of the City's electrical facilities. At the Customer's request, the City will give the Customer an estimate of the cost of these clearances which is only an estimate and the costs may vary due to other complications.
- (d) The Customer will be required to pay all costs for any damages to the City's equipment and facilities if the Customer fails to notify the City according to the above regulation.
- (e) The City will not be held liable for any damages or injuries from City facilities due to failure with this regulation.

### **15.0 Service Interruptions**

- (a) The City will use reasonable diligence to provide an uninterrupted supply of electricity, but it does not undertake to guarantee an uninterrupted supply. Therefore, should the supply of electricity fail or become interrupted or become defective through act of God, accident, strikes, or labor troubles, or any other cause beyond the reasonable control of the City, the City shall not be liable for

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such failure, interruption or defect.

- (b) The City reserves the right to suspend service without liability on its part at such times and for such periods and in a manner as it may deem advisable for (a) the purpose of making necessary adjustments to, changes in, or repairs to lines, substations, and facilities; (b) in cases where the continuance of service to the Customer's premises would endanger persons or property; (c) if the City in good faith believes, because of civil disorder, riot, insurrection, war, weather, fire, or other condition beyond the reasonable control of the City for the protection of the public or employees of the City; or (d) if ordered by a duly constituted public authority.
- (c) Whenever the City contemplates a scheduled suspension of service, it will make reasonable effort to coordinate the same with Customers and to give advance notification of the intent to suspend service and the reason therefore.
- (d) In the event of a power shortage or an adverse condition or disturbance on the system of the City or any other directly or indirectly interconnected system, the City may, without incurring liability, take such emergency action as, in the judgement of the City, may be necessary. Such emergency action may include, but not be limited to, reduction or interruption of the supply of electricity to some Customers or areas in order to compensate for a power supply shortage on the City's system or to limit the extent or duration of the adverse condition or disturbance on the City's system, or to prevent damage to the Customer's equipment or the City's transmission facilities, or to expedite the restoration of service. The City may also reduce the supply of electricity to compensate for an emergency condition on an interconnected system.
- (e) In the event the City should fail to supply any utility service contracted for, whether from causes beyond its control or accidents, the City shall not be liable for damages by reason of such failure.



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### 16.0 Assignment of Rate Schedules

- (a) The City Customer Services Department determines which rate schedule is applicable for a structure.

### 17.0 **Tree Maintenance**

- (a) General Provisions

The following guidelines are used to help determine which vegetation is to be trimmed or cut away from existing overhead distribution lines. All line clearing shall comply with the requirements given by OSHA and ANSI A 133.1 – 1988.

- (1) **Primary Circuits, Rural Lines**

Right-of-way in rural areas is 30 feet wide, i.e., 15 feet on either side of the centerline of the primary facilities, except as may be otherwise defined by either the Right-of-Way or by an on-site inspection. Any question as to a deviation from 30 feet will be resolved by the City. All vegetation on the right-of-way should be cut to the ground except an occasional low-growing species such dogwood and red bud which may be left for aesthetics, provided simple clearance is assured and access is in no way impaired.

- (2) **Primary Circuits, Yard and Urban Lines**

Vegetation should be cut or trimmed back to obtain 15 feet of clearance on each side of the line while maintaining an aesthetically acceptable appearance in the neighborhood. Use of professionally accepted pruning techniques and promotion of landscape alternatives are expected.

- (3) **Secondary Circuits Other than Multiplex Cables**

Vegetation should be cut or trimmed back to obtain a 6-foot radial clearance path around the line. Professional and aesthetical considerations are to be observed as previously stated.

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### (4) Secondary Circuits – Multiplex Cable – Services

The City does not maintain clearance on any secondary multiplex cable service. Nor does the City maintain secondary clearance on lines to outside rental lights. The City will “drop” the line so that a property owner may remove limbs or trees.

- (5) Professional and aesthetical considerations are to be observed as previously stated a reasonable effort will be made to contact the owner or resident prior to any tree trimming.
- (6) Efforts made by municipal personnel to notify property owners and residents include the following: personal contact, first class mail or bulk mailing.

### (b) Identification Of Trees To Be Trimmed/Removed

- (1) The term easement shall be construed to include right-of-way for the purpose of this writing.

#### (2) Primary Lines:

Trees, other than low growing species within the easement will be cut. Trees outside the easement that require routine trimming will be cut.

Trees outside the easement and considered to be endangering electric lines will be removed to the level of the electric line. The Customer is responsible for the remaining portion and disposal of all wood.

Trees outside the easement and not considered endangering electric lines will not be removed.

Dead trees within the easement will be cut.

Dead trees outside the easement that are endangering electric lines will be removed to the level of the electric line. The customer is responsible for the remaining portion and disposal of all wood.

Dead trees outside the easement not endangering electric lines will not be removed.

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Consideration of other situations is based on the extent of possible danger to municipal facilities and the likelihood of service interruption to other customers. Accessibility for workers and equipment shall also be considered in those circumstances where trees of questionable status are involved.

When a customer request will be worked is dependent in part on higher priority work and the extent of danger posed by the tree.

### (c) **Tree Trimming Standards**

All trimming, both initial and re-trimming, shall be executed in accordance with established, sound principles of tree care. It shall combine emphasis on tree health and satisfactory clearance for power lines. Standard Tree Trimming methods of this policy are detailed in Section 5.

#### (1) **Guidelines**

- a. All branches or limbs should be cut flush with the supporting trunk or limb. This cut should not be made to create an unduly large open area, but should be cut far enough away from the main branch to leave the branch collar intact. To avoid splitting back the branch and tearing the bark, three cuts should be made: An undercut is made approximately a foot away from the limb junction. The limb is “stub cut.” The final cut is made at the crotch, leaving as small a wound as possible. See Standard for Natural Target Pruning.
- b. When only a portion of limb is to be removed, the portion removed should be cut back flush to limb at least one-third the diameter of the portion removed.
- c. Suitable tools and equipment shall be used and shall be kept in good working all times.

### (d) **Clearances**

Clearance shall be sufficient to allow the line to function properly without causing unnecessary damage to tree and shall comply with the requirements given by OSHA and ANSI Z 133.1 – 1988.

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### (1) Guidelines

- a. Right-of-Way Clearances: When re-clearing, the right-of-way should be restored to its original width. In cases where the initial width was less than 30 feet, an effort should be made to obtain additional clearance to obtain 30 feet.
- b. Tree Trimming: Trees shall be trimmed to obtain a minimum of three year's clearance. Where trees have been "rounded over" for years and these clearances cannot be obtained without severely mutilating the tree, every effort will be made to obtain customer authorization to remove the tree. Where these trees cannot be removed, natural trimming methods should be employed to avoid excessive stump sprouting.
- c. Special Clearances: Down, span and other guys shall be free of weight, strain, or pressure from trees. Vines on poles and guys shall be cut. Working clearance from trees shall be obtained around transformers, cross arms and risers.
- d. Dead Wood: All dead wood shall be removed that may, under any circumstances, contact primary conductors. Dead limbs that are potentially hazardous to traffic or pedestrians will also be removed during line clearance operations as an additional safety feature. Dead limbs previously pruned by the Electric Department shall be removed.
- e. Wood and Brush: All wood and brush produced on the job must be disposed of by the end of the workday and the area left broom clean. Brush under four inches in diameter is to be chipped and removed from the work site. All wood larger than four inches shall be cut into two-foot lengths and left on job site.

### (e) Types Of Tree Trimming

Tree trimming is herein subdivided into four general types; top, side, under and through. These four types have been generally accepted as they relate to overhead line position with respect to tree crowns. Individual trees and tree species have definite growth habits which tend to lend themselves best to one or more of these four types of trimming. Familiarity with these growth habits proves very helpful in trimming individual trees, and in planning new overhead lines in tree zones.

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“Natural” pruning, in all four types of tree trimming procedures, is defined as making all cuts at laterals (limb junctions). “Directional” pruning involves cutting back to laterals which are growing away from the conductors. We can effectively control the re-growth of the tree, and minimize our tree/line clearances by combining “natural” trimming as the positive effects it will have on the health of the tree. The tree is much less likely to suffer wood decay problems in the future if stubs are not left. Sucker sprout growth will also be greatly reduced.

### (1) **Top Trimming**

Topping is cutting back the entire upper crown and is generally required when a tree stands in close alignment with a primary pole line. It may sometimes be necessary, for appearance sake, to trim some of the longer side limbs back during top trimming. It is recommended that, when top trimming a tree, it be done through “natural” trimming methods as opposed to “rounding-over.” Although it may be impractical to “naturally” trim many of the existing “round-over” currently found on our system, there is an opportunity to initiate “natural” trimming procedures on young trees in need of top trimming. “Rounding-over” usually causes a short trim cycle to ensue due to rapid sucker growth resulting from the stub cuts. Good practice indicates that shade trees should initially be topped back no more than approximately one-fourth of their existing crown heights.

### (2) **Side Trimming**

Side trimming is the shortening back or complete removal of side limbs that project toward conductors located to one side of the tree alignment. Limbs overhanging the conductors should, under most circumstances, be removed so as to provide better protection for the lines during adverse weather conditions. Avoid side trimming trees back to a vertical line, arbitrarily stubbing limbs back to a certain point. Utilize natural trimming methods and evaluate where each individual limb should be pruned imaginary. Basing cuts on the branching habit of each limb will promote better health for the tree as well as provide a job with a more natural appearance.

### (3) **Under Trimming**

Under trimming is the cutting of limbs and branches back to a major tree trunk to provide conductor or clearance below the tree crown.

Under trimming should be avoided when possible. The results of under trimming are overhanging limbs, which can negatively affect reliability.

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Conditions conducive to under trimming would be strong wooded species, like large oaks along main thoroughfares.

**SECTION – f – RESERVED:**

**SECTION – g – RESERVED:**

**SECTION – h – RESERVED:**

**SECTION – i – CUSTOMER NOTIFICATION**

### **j. Recommended Basic Right-of-Way Maintenance Practices**

In order to maintain adequate distribution right-of-Ways and service reliability and to maintain proper respect for our customer's property, as well as to minimize tree-related damage claims against the City, the following basic operating practices should be followed:

#### **(1) Customer Notification**

- a. Make a reasonable effort to notify customers of the City's intentions to trim, especially on yard trees, which have not previously been trimmed. This effort may include knocking on their door or leaving a note stating the City's intentions. After reasonable notification efforts have been made, proceed with the appropriate trimming. Good judgment should always be exercised in determining the appropriate steps of customer notification. Based on sound judgment it may not be necessary to make any contact with a customer in rural non-residential areas or in many cases where the right-of-way has been systematically cleared to a certain width during the past maintenance cycles.
- b. Should the customer object to the work unit doing necessary trimming and it cannot be resolved by the crew, supervision shall be notified and they shall attempt to convince the customer that the work must be completed.
- c. Should the customer still object, management/supervision should take whatever steps are required to assure that necessary trimming is done. The City has a responsibility and right to obtain proper line clearance.

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- d. Customer concurrence will normally be required in the case of tree removal or right-of-way widening beyond 30 feet.

### **(2) Customer Requests**

Justified customer requests for tree trimming/removal that meet guidelines, should normally be done when a work unit is scheduled to be in the immediate area. Emergency situations such as tree conditions, which are threatening immediate danger to customer service, public safety or City equipment will be exceptions to efficient work unit scheduling. Customer requests are covered in Section 2.

### **(3) Directional Trimming**

Every attempt should be made to directionally trim trees. Where customer objection is severe, explanations shall be made in an effort to educate the customer that the trimming procedures advocated by the City are based on arboriculturally sound principles and in actuality are the best techniques for the health of the tree.