specific to the density area differential cable cost in the given density column, if applicable.

1.18.2 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

1.18.3 Rationale

These inputs allow the user to enter their company specific fiber cost data by cable size and density.

2 *Structure Inputs*

Structure type and costs vary by type of facilities [Aerial, Buried or Underground], density, rock and water presence, and soil conditions [Normal, Soft Rock and Hard Rock]. Below ground placement cost for both conduit and buried cable are averaged from the forward looking LEC cost data received from data requests. LECs provided data for the cost of each different placement activity in each of the density zones and for each of the three different model soil conditions. This information was then averaged for the placement activity default cost inputs. Placement activities include such items as plowing, trenching, boring, and concrete cutting. Each of the activities relating to a surface opening (cut and restore sod, concrete, or asphalt) should include all of the subsurface work functions within the input i.e. cut and restore concrete includes the trenching below the concrete, the backfill and tamping of the subsurface, and any protection, signing, site prep, etc. associated with the site.

Every placement activity has two associated inputs – 1.) the percentage of time that the activity occurs and 2.) the percent of the total placement cost retained by the company when multiple companies share the facility.

2.1 Hard Rock Aerial Distribution Cable

2.1.1 Definition

Structure costs associated with Aerial Distribution cable for Hard Rock placement situations cover costs for Poles and Anchors and Guys. Default sharing is included for poles. Anchors and guys as not assumed to be shared since the default input value are only sufficient to support the telephone facilities placed by the model. The anchor and guy input spacing interval is divided by the average pole span input to determine the additive by pole for the anchors and guys.

The user inputs consist of a single Base Cost per Unit input field applicable for all density zones. Within each density zone there are two additional cost input fields - Cost Adjustment, and Installation Cost, and one percentage input field - Percent Assigned Telephone for [Poles and Anchors and Guys]. The base cost represents the material cost of the structure. An entry in the cost adjustment is not required, but allows the user to increase or decrease the cost by density band, if desired. Installation cost is entered in the density entry cell. The Model algorithms, in the Loop.xls module, price out the structure costs associated with the aerial cable costs as follows:
The Weighted Amount for poles is calculated, upon saving the input file, by multiplying the sum of the Base Cost Per Unit plus Cost Adjustment plus Installation Cost times the Percent Assigned Telephone for each density. The calculation for anchors and guys multiplies the sum of the Base Cost Per Unit plus Cost Adjustment plus Installation Cost times the Percent Assigned Telephone and then divides that result by the number of pole spans between guys. [Reference Section 4 for Spacing Inputs]

2.1.2 Suggested Input Values

The default pole size used in the model is a 45-foot class 5 poles, purchased and placed by the Telephony Company. The second column reflects the Base Cost Per Unit for each activity. The default cost per foot values in the model are based on national averages for that activity. The third column displays the Cost Adjustment of the activity for the specific density group and terrain difficulty, and should be represented as dollars value either as plus or minus. The fourth column displays the Installation Cost of the activity for the specific density group and terrain difficulty. The fifth column represents the Percent of activity Assigned Telephone. For example: If 50 percent is represented for poles this indicates that the telephone company shares pole costs with other companies 50 percent of the time.

2.1.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.1.4 Rationale

These inputs allow the user to input their company specific pole, anchor, and guy costs for aerial distribution cable in Hard Rock placement situations by density.

2.2 Hard Rock Aerial Feeder Cable

2.2.1 Definition

Structure costs associated with Aerial Feeder cable for Hard Rock placement situations. Unit costs are defined in the same manner as for distribution except are applicable to feeder plant.

2.2.2 Suggested Input Values

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs and percent assigned telephone may be utilized in all densities or may be adjusted by using the ADJUSTMENT field by placing an incremental dollar cost (increase or decrease) that is specific to the density area cost in the given density column, if applicable.

2.2.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.2.4 Rationale

Allows the user to input their company pole and anchors and guys structure cost data on a company-specific basis for aerial feeder cable in Hard Rock placement situations by density.

2.3 Hard Rock Buried Distribution Cable

2.3.1 Definition

Structure costs associated with Buried Distribution cable for Hard Rock placement situations. Covers eleven costs analogous with placing buried distribution cable using such activities as [Plow, Rocky Trench or Bore Cable].

2.3.2 Suggested Input Value

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.3.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.3.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for buried distribution cable in Hard Rock placement situations by density.

2.4 Hard Rock Buried Feeder Cable

2.4.1 Definition

Structure costs associated with Buried Feeder cable for Hard Rock placement situations. Covers eleven costs analogous with placing buried feeder cable using such activities as [Plow, Rocky Trench or Bore Cable].

2.4.2 Suggested Input Value

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.4.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.4.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for buried feeder cable in Hard Rock placement situations by density.

2.5 Hard Rock Distribution Conduit

2.5.1 Definition

Structure costs associated with Underground Distribution conduit for Hard Rock placement situations. Covers eight costs analogous with placing buried distribution conduit using such activities as [Trench & Backfill, Rocky Trench or Boring].

2.5.2 Suggested Input Value

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.5.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.5.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for underground distribution cable in Hard Rock placement situations by density.

2.6 Hard Rock Feeder Conduit

2.6.1 Definition

Structure costs associated with Underground Feeder conduit for Hard Rock placement situations. Covers eight costs analogous with placing buried distribution conduit using such activities as [Trench & Backfill, Rocky Trench or Boring].

2.6.2 Suggested Input Value

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.6.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.6.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for underground feeder cable in Hard Rock placement situations by density.

2.7 Normal Aerial Distribution Cable

2.7.1 Definition

Structure costs associated with Aerial Distribution cable for Normal Rock placement situations. Covers cost for Poles and Anchors and Guys only. Sharing is considered with poles, but not anchors and guys as they are placed per strand. Anchors and Guys are assumed to occur every 1000 feet so their costs are calculated on a per foot basis then added to the cost of the poles. The poles placed in the BCPM Model are 45-foot class 5 poles, purchased and placed by the Telephony Company.

2.7.2 Suggested Input Values

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.7.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.7.4 Rationale

Allows the user to input their company pole and anchors and guys structure cost data on a company-specific basis for aerial distribution cable in Normal Rock placement situations by density.

2.8 Normal Aerial Feeder Cable

2.8.1 Definition

Structure costs associated with Aerial Feeder cable for Normal Rock placement situations. Covers cost for Poles and Anchors and Guys only. Sharing is considered with poles, but not anchors and guys as they are placed per strand. Anchors and Guys are assumed to occur every 1000 feet so their costs are calculated on a per foot basis then added to the cost of the poles. The poles placed in the BCPM Model are 45-foot class 5 poles, purchased and placed by the Telephony Company.

2.8.2 Suggested Input

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.8.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.8.4 Rationale

Allows the user to input their company pole and anchors and guys structure cost data on a company-specific basis for aerial feeder cable in Normal Rock placement situations by density.

2.9 Normal Buried Distribution Cable

2.9.1 Definition

Structure costs associated with Buried Distribution cable for Normal Rock placement situations. Covers eleven costs analogous with placing buried distribution cable using such activities as [Plow, Rocky Trench or Bore Cable].

2.9.2 Suggested Input

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.9.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.9.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for buried distribution cable in Hard Rock placement situations by density.

2.10 Normal Buried Feeder Cable

2.10.1 Definition

Structure costs associated with Buried Feeder cable for Normal Rock placement situations. Covers eleven costs analogous with placing buried feeder cable using such activities as [Plow, Rocky Trench or Bore Cable].

2.10.2 Suggested Input

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.10.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.10.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for buried feeder cable in Normal Rock placement situations by density.

2.11 Normal Distribution Conduit

2.11.1 Definition

Structure costs associated with Underground Distribution conduit for Normal Rock placement situations. Covers eight costs analogous with placing buried distribution conduit using such activities as [Trench & Backfill, Rocky Trench or Boring].

2.11.2 Suggested Input

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted

by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.11.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.11.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for underground distribution cable in Normal Rock placement situations by density.

2.12 Normal Feeder Conduit

2.12.1 Definition

Structure costs associated with Underground Feeder conduit for Normal Rock placement situations. Covers eight costs analogous with placing buried distribution conduit using such activities as [Trench & Backfill, Rocky Trench or Boring].

2.12.2 Suggested Input

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.12.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.12.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for underground feeder cable in Normal Rock placement situations by density.

2.13 Soft Rock Aerial Distribution Cable

2.13.1 Definition

Structure costs associated with Aerial Distribution cable for Soft Rock placement situations. Covers cost for Poles and Anchors and Guys only. Sharing is considered with poles, but not anchors and guys as they are placed per strand. Anchors and Guys are assumed to occur every 1000 feet so their costs are calculated on a per foot basis then added to the cost of the poles. The poles placed in the BCPM Model are 45-foot class 5 poles, purchased and placed by the Telephony Company.

2.13.2 Suggested Input Values

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.13.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.13.4 Rationale

Allows the user to input their company pole and anchors and guys structure cost data on a company-specific basis for aerial distribution cable in Soft Rock placement situations by density.

2.14 Soft Rock Aerial Feeder Cable

2.14.1 Definition

Structure costs associated with Aerial Feeder cable for Soft Rock placement situations. Covers cost for Poles and Anchors and Guys only. Sharing is considered with poles, but not anchors and guys as they are placed per strand. Anchors and Guys are assumed to occur every 1000 feet so their costs are calculated on a per foot basis then added to the cost of the poles. The poles placed in the BCPM Model are 45-foot class 5 poles, purchased and placed by the Telephony Company.

2.14.2 Suggested Input Values

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.14.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.14.4 Rationale

Allows the user to input their company pole and anchors and guys structure cost data on a company-specific basis for aerial feeder cable in Soft Rock placement situations by density.

2.15 Soft Rock Buried Distribution Cable

2.15.1 Definition

Structure costs associated with Buried Distribution cable for Soft Rock placement situations. Covers eleven costs analogous with placing buried distribution cable using such activities as [Plow, Rocky Trench or Bore Cable].

2.15.2 Suggested Input Value

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.15.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.15.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for buried distribution cable in Soft Rock placement situations by density.

2.16 Soft Rock Buried Feeder Cable

2.16.1 Definition

Structure costs associated with Buried Feeder cable for Soft Rock placement situations. Covers eleven costs analogous with placing buried feeder cable using such activities as [Plow, Rocky Trench or Bore Cable].

2.16.2 Suggested Input Value

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.16.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.16.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for buried feeder cable in Soft Rock placement situations by density.

2.17 Soft Rock Distribution Conduit

2.17.1 Definition

Structure costs associated with Underground Distribution conduit for Soft Rock placement situations. Covers eight costs analogous with placing buried distribution conduit using such activities as [Trench & Backfill, Rocky Trench or Boring].

2.17.2 Suggested Input Value

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.17.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.17.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for underground distribution cable in Soft Rock placement situations by density.

2.18 Soft Rock Feeder Conduit

2.18.1 Definition

Structure costs associated with Underground Feeder conduit for Soft Rock placement situations. Covers eight costs analogous with placing buried distribution conduit using such activities as [Trench & Backfill, Rocky Trench or Boring].

2.18.2 Suggested Input Value

(Documentation under development)

There are nine density zones designed in BCPM. The same derived costs, percent activity and percent assigned telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

2.18.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

2.18.4 Rationale

Allows the user to input their company structure cost data on a company-specific basis for underground feeder cable in Soft Rock placement situations by density.

3. *Manhole Inputs*

Sizing of conduit and manholes are based on the required amount of facilities required for telephony. No additional duct capacity has been added for sharing. For example, if a placement of three copper cables is required then three ducts are placed for the cables and one duct is placed for maintenance. This example would place a pre-cast manhole (PTS-

65) with four ducts. Manhole costs and duct cost per foot is averages from data provided by a number of LECs.

3.1 Hard Rock Manholes

3.1.1 Definition

These input reflect costs associated with manholes that are placed in hard surface rock. Unit sizes include hand holes with maximum capacity of two ducts, 4'x6' manholes with a capacity of four ducts, a 12'x6'x7', and an Adder size of 12'x6'x7', each of which can connect to nine ducts. An Adder refers to additional midsections that are required when duct requirements exceed the standard 9-duct manhole size of 12x6x7. The conduit per duct foot input is material cost only and does not include any trenching.

3.1.2 Suggested Input Value

There are two COST input fields for Per Unit Cost available to the user: Material and Installation, which applies to all nine density zones. Within each density zone there are two additional input fields, Cost Adjustment and Percent Assigned Telephone for each unit such as a handhole or nine-duct manhole. The Material cost represents the material, supply cost, tax, and engineering. The Installation covers all costs associated with placing the manhole and includes restoring the ground to pre-digging conditions. The Cost Adjustment is not mandatory, but allows the user to increase or decrease the cost by density, if desired. The Unit Cost, for the Handhole, Manhole, Manhole and Adder is calculated upon saving the input file and uses the Material plus Installation plus Cost Adjustment time Percent Assigned Telephone for each density. Similarly, the Conduit Per Duct Foot is calculated using Material time Percent Assigned Telephone for each density.

The first column shows the Unit. The second column reflects the Material Per Unit Costs. The third column displays the Installation Per Unit Costs. For the subsequent columns, in each density, the first column reflects the Cost Adjustment of the activity for the specific density group and terrain difficulty. The second column represents the Percent Assigned Telephone. For example: If 75 percent is input for a shared handhole, this indicates that the telephone company shares this activity with other companies 25 percent of the time when placing underground cable. Note: Handholes are not large enough to include both telephone and other facilities.

There are nine density zones designed in BCPM. The same derived costs, and Percent Assigned Telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

3.1.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

3.1.4 Rationale

Allows the user to input their company manhole cost data on a company-specific basis for underground cable in Hard Rock placement situations by density.

3.2 Normal Rock Manholes

3.2.1 Definition

These inputs represent costs associated with manholes placed in normal soil conditions. Unit sizes include hand holes with maximum capacity of two ducts, 4'x 6' manholes with a capacity of four ducts, a 12'x6'x7', and an Adder size of 12'x6'x7', each of which can connect to nine ducts. An Adder refers to additional midsections that are required when duct requirements exceed the standard nine duct manhole size of 12x6x7. The conduit per duct foot input is material cost only and does not include any trenching.

3.2.2 Default Input Value

There are two COST input fields for Per Unit Cost available to the user: Material and Installation, which applies to all nine density zones. Within each density zone there are two additional input fields, Cost Adjustment and Percent Assigned Telephone for each unit such as a four duct manhole. The Material cost represents the material, supply cost, tax, and engineering. The Installation covers all costs associated with placing the manhole and includes restoring the ground to pre-digging conditions. The Cost Adjustment is not mandatory, but allows the user to increase or decrease the cost by density, if desired. The Unit Cost, for the Handhole, Manhole, and Adder is calculated upon saving the input file and uses the Material plus Installation plus Cost Adjustment times the Percent Assigned Telephone for each density. Similarly, the Conduit Per Duct Foot is calculated using Material times the Percent Assigned Telephone for each density.

The first column shows the Unit. The second column reflects the Material Per Unit Costs. The third column displays the Installation Per Unit Costs. For the subsequent columns, in each density, the first column reflects the Cost Adjustment of the activity for the specific density group and terrain difficulty. The second column represents the Percent Assigned Telephone. For example: If 75 percent is input for sharing a handhole, this indicates that the telephone company shares this handhole with other companies 25 percent of the time.

There are nine density zones designed in BCPM. The same derived costs, and Percent Assigned Telephone maybe utilized in all densities or maybe adjusted by using the COST

ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

3.2.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

3.2.3 Rationale

Allows the user to input their company manhole cost data on a company-specific basis for underground cable in Normal Rock placement situations by density.

3.3 Soft Rock Manholes

3.3.1 Definition

These are costs associated with manholes placed in soft surface rock or difficult soil. Unit sizes include hand holes with maximum capacity of two ducts, 4'x6' manholes with a capacity of four ducts, a 12'x6'x7', and an Adder size of 12'x6'x7', each of which can connect to nine ducts. An Adder refers to additional midsections that are required when duct requirements exceed the standard nine-duct manhole size of 12x6x7. The conduit per duct foot input is material cost only and does not include any trenching.

3.3.2 Suggested Input Value

There are two COST input fields for Per Unit Cost available to the user: Material and Installation, which applies to all nine density zones. Within each density zone there are two additional input fields, Cost Adjustment and Percent Assigned Telephone for each unit such as a four-duct manhole. The Material cost represents the material, supply cost, tax, and engineering. The Installation covers all costs associated with placing the manhole and includes restoring the ground to pre-digging conditions. The Cost Adjustment is not mandatory, but allows the user to increase or decrease the cost by density, if desired. The Unit Cost, for the Handhole, Manhole, and Adder is calculated upon saving the input file and uses the Material plus Installation plus Cost Adjustment time Percent Assigned Telephone for each density. Similarly, the Conduit Per Duct Foot is calculated using Material time Percent Assigned Telephone for each density.
The first column shows the Unit. The second column reflects the Material Per Unit Costs. The third column displays the Installation Per Unit Costs. For the subsequent columns, in each density, the first column reflects the Cost Adjustment of the activity for the specific density group and terrain difficulty. The second column represents the Percent Assigned Telephone. For example: If 75 percent is represented for a handhole, this indicates that the telephone company shares this handhole with other companies 25 percent of the time when placing underground cable.

There are nine density zones designed in BCPM. The same derived costs, and Percent Assigned Telephone maybe utilized in all densities or maybe adjusted by using the COST ADJUSTMENT field by placing a dollar cost (increase or decrease) that is specific to the company's different cost in the given density, if applicable.

3.3.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

3.3.4 Rationale

Allows the user to input their company manhole cost data on a company-specific basis for underground cable in Soft Rock placement situations by density.

4 Spacing Inputs

Manhole and pole spacing defaults are established by averaging the spacing data provided by the LECs. Denser areas (above 651 households per square mile) require shorter spacing due to larger cables, greater cable sag, and clearance requirements. Larger aerial cables, due to their weight, will sag more in mid-span between poles. Larger UG cables increase pulling tension for pulls between manholes.

4.1 Distribution Spacing Table

4.1.1 Definition

These inputs represent the distance, in feet, between the various elements of the OSP Distribution plant structure elements. There are three different spacing requirements; Manhole, Pole and Guy spacing for each of the nine density zones in BCPM.

4.1.2 Suggested Input Value

There are three input fields available to the user. Manhole Spacing, Pole Spacing and Guy Spacing. The entry is in feet for the respective item and requires whole numbers. Fractions are not allowed such as 725.5 feet. The spacing parameters are a component of the Structure costs Model algorithms in the Loop.xls module when pricing out the various pieces of the OSP facilities for Aerial cables.
The first column shows the nine density zones in BCPM. The second, third and fourth columns are the user-input columns for Manhole, Pole and Guy spacing respectively. The Relative Pole Unit's product is the number of spans between the Anchors and Guys. For Example; 6.00 reflects the placement of a Guy every six poles. The Relative Pole Units is calculated, upon saving the input file, and uses Guy Spacing divided by Pole Spacing for each density. The number is then utilized in the calculation of the Structure costs to

derive the Weighted Amount for Anchors and Guys, which is used in either Aerial Feeder or Distribution cables placement for Normal, Soft Rock and Hard Rock conditions by density. Reference Section 2.1, 2.2 2.7, 2.8, 2.13 or 2.14 for Weighted Amount calculation on Anchors and Guys.

4.1.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

4.1.4 Rationale

Allows the user to input their company Spacing requirement for Manhole, Pole and Guy data on a company-specific basis for Aerial Distribution cable in either Soft Rock, Hard Rock or Normal placement situations by density.

4.2 Feeder Spacing Table

4.2.1 Definition

These inputs represent the distance, in feet, between the various elements of the OSP Feeder plant. There are three different spacing requirements; Manhole, Pole and Guy spacing for each of the nine density zones in BCPM.

4.2.2 Default Input Value

There are three input fields available to the user. Manhole Spacing, Pole Spacing and Guy Spacing. The entry is in feet for the respective item and requires whole numbers. Fractions are not allowed such as 725.5 feet. The spacing parameters are a component of the Structure costs Model algorithms in the Loop.xls module when pricing out the various pieces of the OSP facilities for Aerial cables.
The first column shows the nine density zones in BCPM. The second, third and fourth columns are the user-input columns for Manhole, Pole and Guy spacing respectively. The Relative Pole Unit's product is the number of spans between the Anchors and Guys. For Example; 6.00 reflects the placement of a Guy every six poles. The Relative Pole Units is calculated, upon saving the input file, and uses Guy Spacing divided by Pole Spacing for each density. The number is then utilized in the calculation of the Structure costs to derive the Weighted Amount for Anchors and Guys, which is used in either Aerial Feeder or Distribution cables placement for Normal, Soft Rock and Hard Rock conditions by density. Reference Section 2.1, 2.2 2.7, 2.8, 2.13 or 2.14 for Weighted Amount calculation on Anchors and Guys.

4.2.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of the LEC engineering Team subject matter experts.

4.2.4 Rationale

Allows the user to input their company Spacing requirement for Manhole, Pole and Guy data on a company-specific basis for Aerial Feeder cable in either Soft Rock, Hard Rock or Normal placement situations by density.

5.1 *Percent Table Inputs*

The Plant type mix for Distribution copper, Feeder copper, and Fiber feeder is based on a forward look as to the type of plant expected to be placed in each density zone. It is expected that less aerial plant will be placed in a forward look due to high first cost, high maintenance costs, and local ordinances requiring all new facilities to be placed out of sight.

5.1 Copper Plant Mix Table [CopperHardMixTable]

5.1.1 Definition

This table represents the percentages, by density, when facility placement [Copper] occurs in Hard Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.1.2 Suggested Input Value

The following table is applied when copper facilities are being placed in Hard Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Percent Drop Aerial, Part2 Aerial Copper Distance, Part2 Buried Distance, Part2 Underground Distance and Aerial cable Distance. The percentage adjusts the material and structure costs, for the plant mix selected, and used in calculating Term, Drop and NID, Subfeeder Part2 and DLC to FDI segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.1.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.1.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.2 Copper Plant Mix Table [CopperNormMixTable]

5.2.1 Definition

This table represents the percentages, by density, when facility placement [Copper] occurs in Normal Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.2.2 Suggested Input Value

The following table is applied when copper facilities are being placed in Normal Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Percent Drop Aerial, Aerial Copper Distance, Buried Distance, Underground Distance and Aerial cable Distance. The percentage adjusts the material and structure costs, for the plant mix selected, and used in calculating the Term, Drop and NID, Subfeeder Part2, Main Feeder, and Subfeeder, segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.2.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.2.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.3 Copper Plant Mix Table [CopperSoftMixTable]

5.3.1 Definition

This table represents the percentages, by density, when facility placement [Copper] occurs in Soft Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.3.2 Suggested Input Value

The following table is applied when copper facilities are being placed in Soft Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Percent Drop Aerial, Aerial Copper Distance, Buried Distance, Underground Distance and Aerial cable Distance. The percentage adjusts the material and structure costs, for the plant mix selected, and used in calculating the Term, Drop and NID, and Subfeeder Part2 segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.3.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.3.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This

plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.4 Density Cable Sizing Factor Table [DensityFillTable]

5.4.1 Definition

The Density Cable Sizing Factor Table reflects an optimal fill that would be expected for a cable serving a known number of subscribers with little, if any, growth. There is some excess capacity for administration and breakage. The less dense areas reflect a somewhat lower fill as a result of travel and the higher expected cost of re-enforcement as the predominant type of plant is buried. Distribution fills are generally higher due to the amount of Underground and/or Buried plant and the risk of re-enforcement where established landscaping is the rule.

5.4.2 Suggested Input Value

The following table applies to the percent fill expected or the Feeder or Distribution plant facility for a given density. There are two input fields available to the user, Feeder and Distribution.

The Model algorithms, in the Loop.xls module, use these cable-sizing factors diversely. Foremost, Feeder fill factor determines the GRID plant type, based on the BreakPoint in the distance calculations. In turn, this factor also determines the number of pairs required in each quadrant based on working pairs for the Digital Loop Carrier to Feeder Distribution Interface segments of the plant. Furthermore, the Feeder fill factor determines the Subfeeder copper pairs per GRID, the Subfeeder Part2 size of copper, and the working pairs from the Subfeeder, the fibers needed, and the copper pairs needed for the Main Feeder segments of the OSP plant.

For the Distribution fill factor, this is used to determine the pairs per branch cables for all quadrants in order to properly size the cable leading back to the back bone cable and FDI.

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.4.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.4.4 Rationale

Allows the user to place company specific inputs in order to optimize the cable fill and design the most efficient plant possible based on specific study areas.

5.5 Density House Hold Table [DensityHhTable]

5.5.1 Definition

This table determines the mix of single family and multi-family dwelling units by density group. There are nine density groups within BCPM. The table also contains the average number of units in each multi-family dwelling unit by density group.

5.5.2 Suggested Input Value

There are two input fields available to the user: Percent Single Family and Per Multi-unit Dwelling. The other two columns, Percent Multi-Family Dwellings and Lots per HouseHold are calculated off the user adjustable inputs. Taking 1 minus the Percent Single Family derives the Percent Mulit-Family Dwellings. Taking the Percent Single Family plus Percent Multi-Family dividend by Multi-Unit Dwellings derives the Lots per HouseHold.

5.5.3 Source

The default values were derived from the census bureau national survey of housing characteristics. To deviate from the census data new inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.5.4 Rationale

The table is used to determine an accurate size and mix of drop, NID, and terminal investments.

5.6 Distribution Plant Mix Table [DistriHardMixTable]

5.6.1 Definition

This table represents the percentages, by density, when facility placement [Distribution] occurs in Hard Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.6.2 Suggested Input Value

The following table is applied when Distribution facilities are being placed in Hard Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Aerial, Buried or Underground Distances for branch and backbone, and DLC to FDI cables in all quadrants. The percentage adjusts the material and structure costs as well as the allocation of FDI, for the plant mix selected, and is used in calculating the New Distribution, DLC to FDI and Electronic and FDI segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.6.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.6.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.7 Distribution Plant Mix Table [DistriNormMixTable]

5.7.1 Definition

This table represents the percentages, by density, when facility placement [Distribution] occurs in Normal Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.7.2 Suggested Input Value

The following table is applied when Distribution facilities are being placed in Normal Terrain conditions for a given density. There are two input fields available to the user:

Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Aerial, Buried or Underground Distances for branch and backbone, and DLC to FDI cables in all quadrants. The percentage adjusts the material and structure costs as well as the allocation of FDI, for the plant mix selected, and is used in calculating the New Distribution, DLC to FDI and Electronic and FDI segments of the OSP facilities

There are nine density zones designed in BCPM. The model sponsors were asked to make inputs available for each of the density groups.

5.7.3 Source

These inputs should be obtained from Outside Plant planning or engineering experts for the company under study, if possible. The values supplied with BCPM are defaults and represent the judgment and experience of The LEC engineering Team subject matter experts.

5.7.4 Rationale

Based on where the company builds their OSP facilities determines the percentage for the type of plant to be deployed. Thereby, resulting in specific percentages of Underground, Buried or Aerial plant favorable to the topology of the OSP area being constructed. This plant mix table allows the user to input their company specific percentages of plant mix used in their selected study area.

5.8 Distribution Plane Mix Table [DistriSoftMixTable]

5.8.1 Definition

This table represents the percentages, by density, when facility placement [Distribution] occurs in Soft Rock Terrain situations for Underground, Buried and Aerial. Generally, in low densities there is a greater percent of Buried plant than Underground, and conversely, in higher densities more UnderGround than Buried plant.

5.8.2 Suggested Input Value

The following table is applied when Distribution facilities are being placed in Soft Rock Terrain conditions for a given density. There are two input fields available to the user: Underground Percent and Buried Percent. The Aerial Percent is calculated upon entering the other two percentages.

The Model algorithms, in the Loop.xls module, use these percentages in determining Aerial, Buried or Underground Distances for branch and backbone, and DLC to FDI cables in all quadrants. The percentage adjusts the material and structure costs as well as