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BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

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)  
IN THE MATTER OF DETERMINING PRICES )  
FOR UNBUNDLED NETWORK ELEMENTS (UNEs) )  
IN QWEST CORPORATION'S STATEMENT OF )  
GENERALLY AVAILABLE TERMS (SGAT) )  
\_\_\_\_\_ )

CASE NO.  
QWE-T-01-11

EXHIBITS OF

DICK BUCKLEY

QWEST CORPORATION

November 12, 2003

## INDEX OF EXHIBITS

<u>DESCRIPTION</u>	<u>EXHIBIT</u>
Summary of LoopMod Changes	No. 25
LoopMod Help Screen Data	No. 26
LoopMod Default Values	No. 27
Basic Configuration of Local Loop Outside Plant Network	No. 28
Examples of Density Group Serving Areas	No. 29

## Summary of Changes - LoopMod V2.1

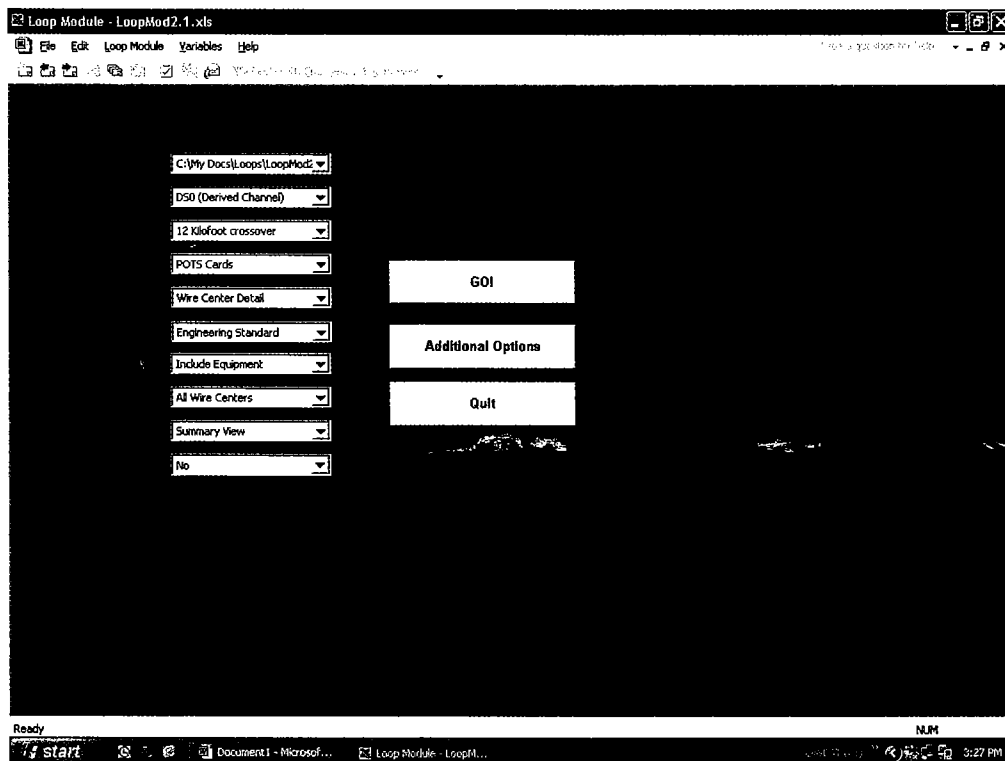
The Loop Module (LoopMod) is an update to the Qwest Corporation (formerly U S WEST) Regional Loop Cost Analysis Program (RLCAP) model that is designed to estimate the investments associated with the provision of the local loop and drop outside plant. The program is a collection of Microsoft Excel based spreadsheets that contain data on the designs and components of the network, the prices for those components and the labor necessary to install them. In addition there is data included as to the dispersion of customers utilizing these local loops.

The Qwest personal computer based loop costing programs were first developed in 1988 and have evolved over the years in order to reflect the current outside plant technologies and Qwest network guidelines. In addition to the normal updates that take place during the life of a model (prices, technology changes, line counts, etc.), LoopMod includes changes to the user interface that ease adjustments to the myriad of network inputs used by the model. Listed below are summaries of these changes and the rationale behind them.

### 1. Updated user screens.

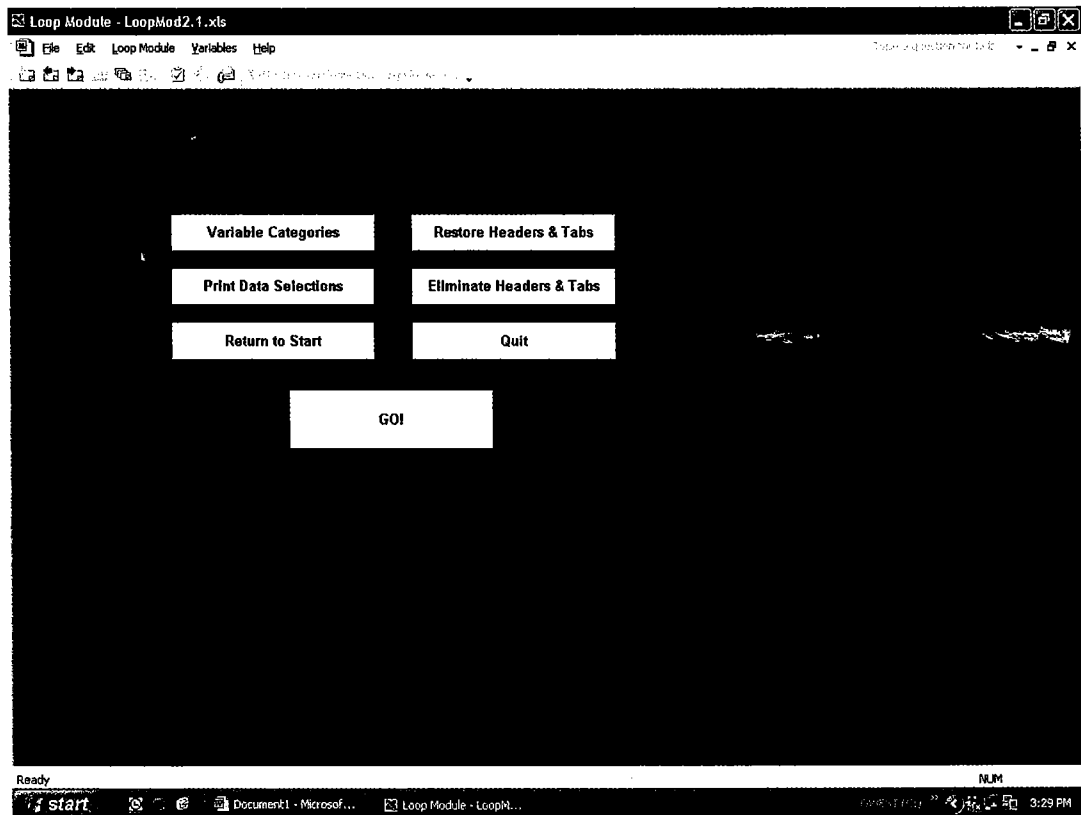
Earlier versions of the loop programs required the user to “baby-sit” the program and hit a button at several points during the processing to reach a final result. These intermediate steps have been removed so that after the user makes the appropriate selections and starts the run, the program will process to completion. The Start screen or first screen that the user encounters contains all of the standard items that would be required for a typical loop and drop investment run. For most situations runs can be completed from this location in a matter of minutes. These selections are discussed detail in the attached “LoopMod V2.1 Default Values”. Below are brief descriptions of each screen.

#### **Start screen**



## Additional Options Screen

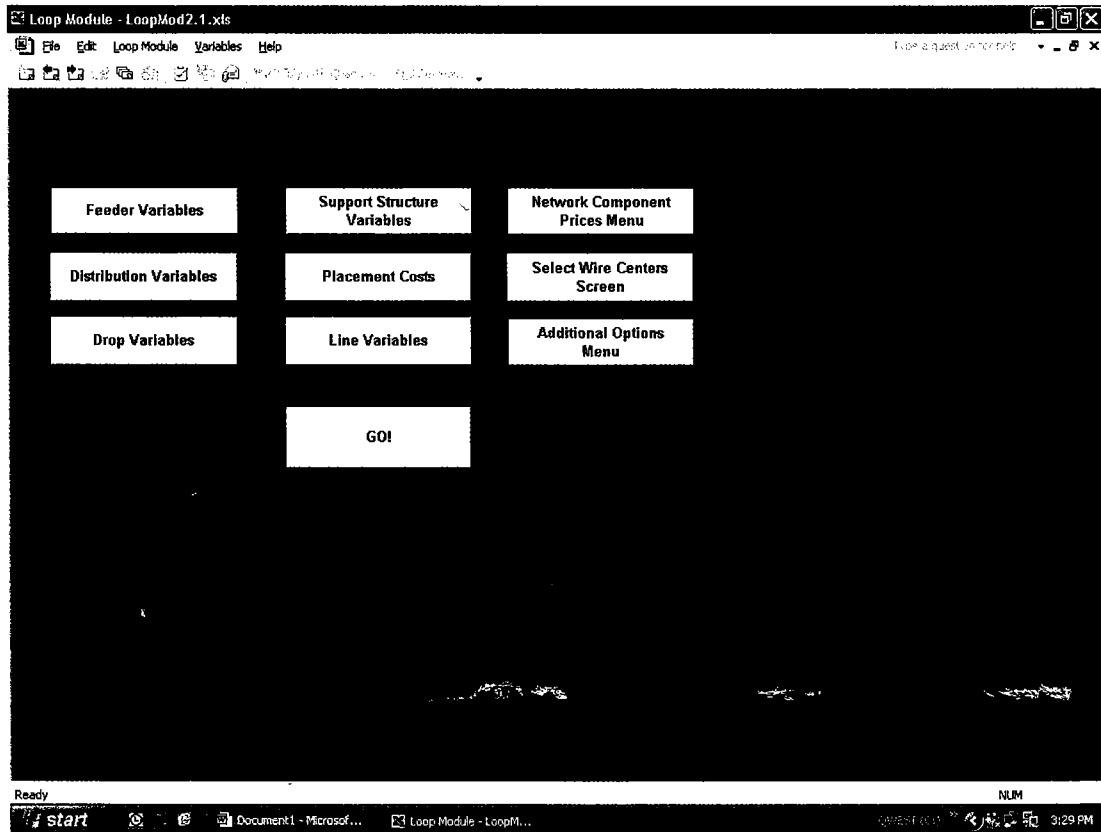
When a user wants to make more detailed adjustments, there is an “Additional Options” button that will take them to another screen. This screen contains options that allow the user to start the program processing, exit the program, return to the initial screen, restore or eliminate headers and tabs, print the data selections and select another screen for editing various inputs. This screen is used for making changes to default data included in standard runs.



After printing the data selections or making changes at the Variables Categories screen level the user can start the program processing from this location. If the “Return to Start” button is pressed a message box will come up with a warning that all non-default data will be overwritten. The user then has the option to cancel the return and run with the settings or continue with the return to start.

## Variable Categories screen

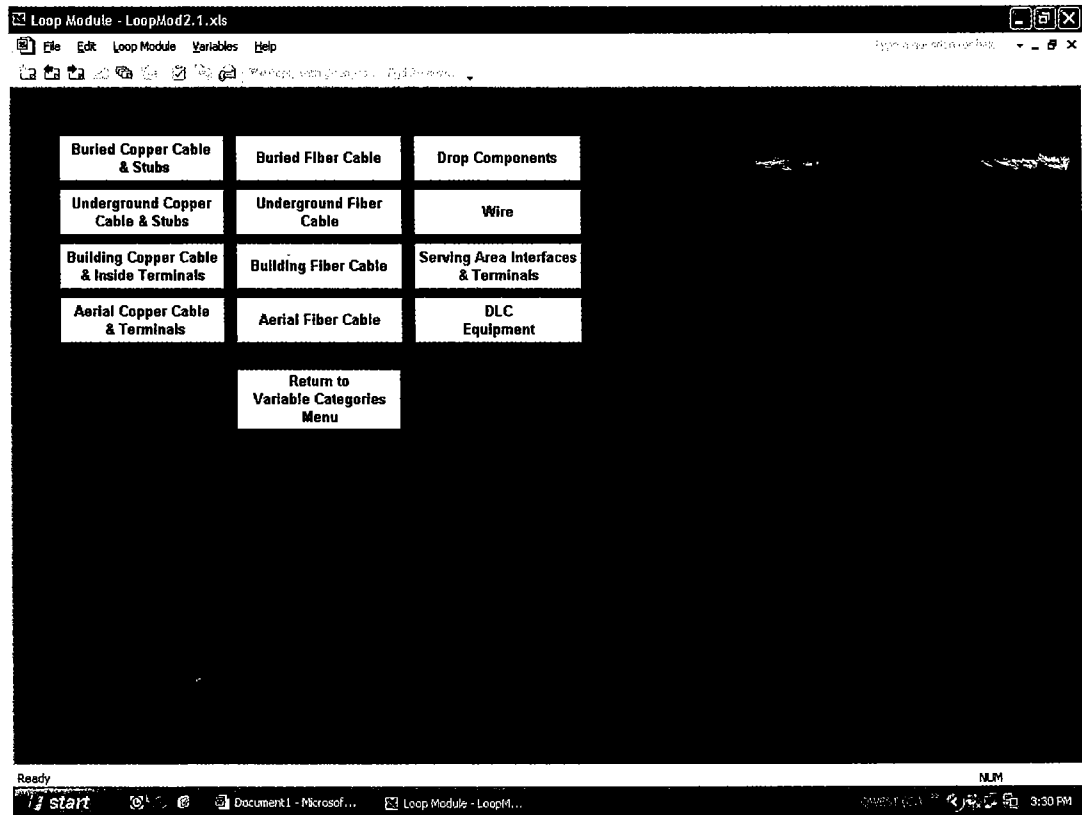
The Variables Categories screen is where the user will input the majority of the adjustments to the default settings. Input data such as cable and equipment prices, line counts, drop lengths, sharing percentages, and wire center lists are all accessible here.



Once the default inputs are adjusted to the levels desired by the user, the "GO" button can be pressed to run the program or the user can select the "Additional Options Menu" button to return to that screen.

## Network Component Prices screen

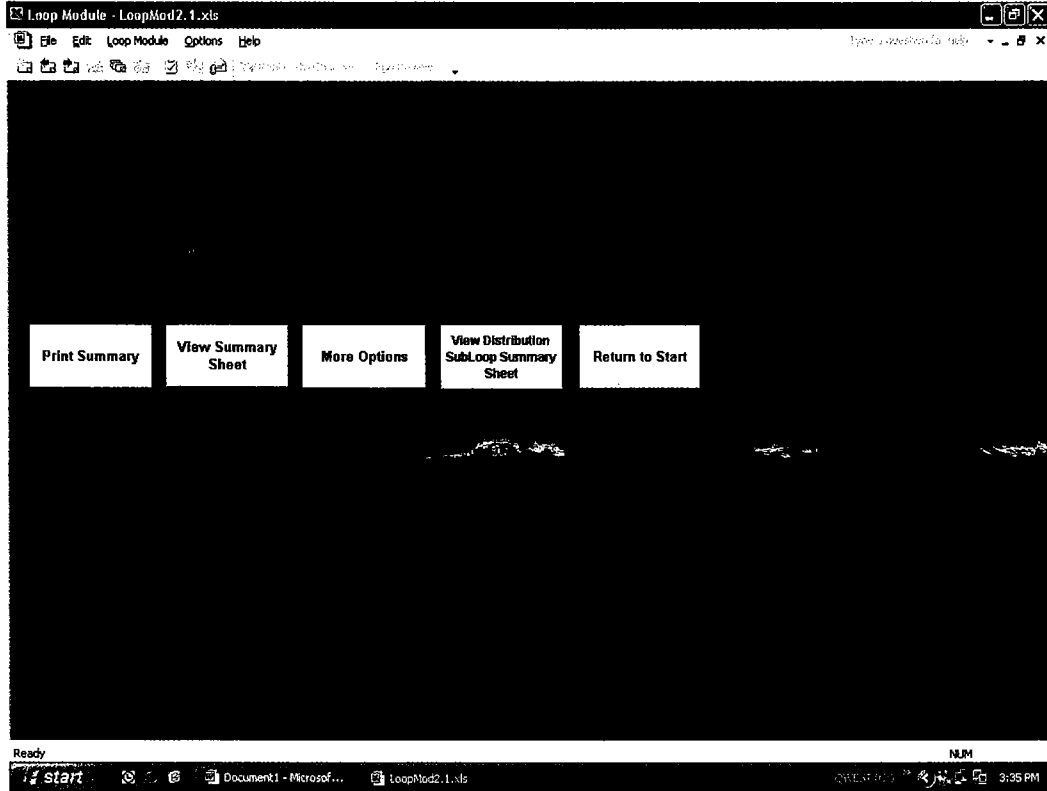
The Network Component screen is where the user will input the price adjustments to the default settings. Input data for cable and equipment prices are accessible through the various buttons on this screen.



Once the default inputs are adjusted to the levels desired by the user, the "Return to Variable Categories Menu" button would be pressed and the run could be initiated from that screen.

## Results screen

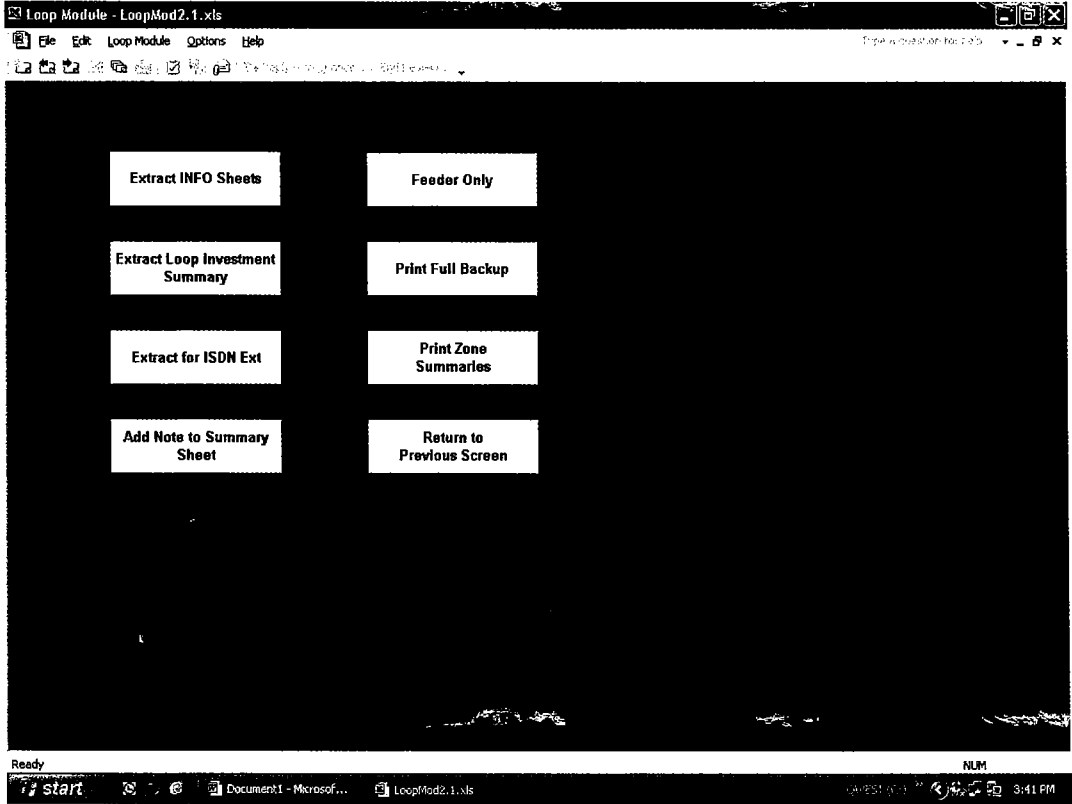
The results screen contains a summary of the loop and drop investments and buttons that enable the user to either view or print the more detailed investment summary sheet. It also contains the "More Options" button that takes the user to another screen with additional extract and printing options.



Once the user is done the "Return to Start" button can be used to start the process over with a different set of selections.

**More Options Screen**

This screen contains various extract buttons to create files for retention of outputs or further analysis. There are also print buttons to backup or lower level results summaries. The "Add Note" button is useful in sensitivity tests for linking results with changes to inputs.



When the user is finished here "Previous Sheet" will return the user to the "Results screen". From there the user can return to the "Start screen" and quit the program or make additional runs.

## **2. Increased input variability**

The variables sheet shown above allows the user a mechanized means of adjusting a variety of inputs that were previously less accessible. Sharing, for instance, can now be accessed through a button on this sheet, as can drop lengths, cable sizing factors, aerial percentages, and the mix of placement activities. There is no longer a need to modify formulas in underlying spreadsheets to make these sorts of adjustments.

## **3. Structure Sharing**

Structure sharing is now an input variable for aerial structure, underground structure, and buried structure. Within buried the user can vary the percent sharing on feeder-urban, feeder-rural, and distribution designs DG1, DG2, DG3, DG4 and DG5. The structure sharing percentages represent the percentage of investment USWC will avoid through sharing of the construction costs for poles, conduit systems or trench. For example, if the Telephone Company is assumed to be responsible for 80% of the cost of trenching for a buried cable, the sharing input for that situation would be 20%.

From an actual application perspective, the aerial and underground structure ratios are reduced by the sharing percentages. The buried structure sharing, because of the variety of activities involved, is a more complex calculation. For example, certain portions are not subject to sharing, lay cable in particular. Consequently, the sharing percentage will apply only to the activities, which can actually be shared.

## **4. Placing cost data**

The latest data from the currently negotiated contracts has been incorporated into the development of cost information for the various placing activities for buried plant. This information is used for both cable and drop placements.

## **5. Disaggregation of placing cost by density**

The mix of buried plant placing activities can now be varied at a distribution Density Group level. In addition the mix can be set differently for urban feeder versus rural feeder. This allows the user to take advantage of lower cost placing methods, such as plowing or cut & restore sod, where density would allow it while still reflecting the costs of placing plant in mature, higher density neighborhoods. The higher density areas would likely require the use of techniques such as directional boring or cut & restore of asphalt or concrete

## **6. Feeder modeling**

The feeder parameters under the Variable Categories menu address cable sizing factor, aerial percentages, mix of placement activities, and sharing percentages. In the feeder model selection box there is an option entitled "Custom Model". This option will allow the user to adjust such inputs as the cross-over points between copper and Digital Loop Carrier (DLC), between underground and buried placement (for either fiber or copper), and between urban and rural placement mix for buried facilities. This screen also provides the user the ability to adjust sizing factors for DLC systems and channel units and to set parameters for distance zones.

## **7. Fill variable distribution design**

The default distribution design reflects particular "pairs per site" type cable sizing. If the user wishes to place cable with a different utilization level, there is an option available that will drive the cable sizing to the desired fills. The calculations underlying the design is that in a pairs per site type design the engineer would allow for 2 or 3 pairs at each site (home) the cable passes. This drives the sizing of the cable, e.g., after passing the 8<sup>th</sup> home in a 3 pair design the cable would move from a 25 (with 24 pairs used) to a 50 pair. The 9<sup>th</sup> home would be assigned pairs 26, 27 and 28 in the 50 pair cable.

In a fill type design the fill percentage will drive the number and fraction of pairs required at each site. For instance, with a 66% fill as each home is passed the design would assume 1 working pair and ½ non-working pair. The net effect of this is that a 25 pair cable will now serve more homes than it did in the 3 pair design. The length of the trench does not change, but the size of the facility within it does. This provides a saving on material (a 25 pair cable is about 75% of the cost of a 50 pair cable) but does not have an impact on the placing or structure cost.

## **8. Drop length data by Density Group**

Drops are utilized in Density Group 3, 4 & 5. One of the primary differences between the three designs is lot size. Drop length would logically vary with lot size. To better relate drops to the designs, a unique length can be input for each of the three designs. Length can also be input separately for aerial versus buried. This provides drop data that more accurately reflects the density differences from one state to another.

## **9. Unit Calculation for Density Groups**

The density group Unit or divisor calculation is based on the number of additional lines and the percentage of idle dedicated lines. Idle dedicated lines are those lines that are primaries at a location and consequently left assigned even when a location is temporarily vacant. An example of this would be an apartment that may be unoccupied for 2 months. It would cause extra labor activity and administrative problems to use that primary pair for another renters additional line demand. It is more efficient to leave it idle and available for the next renter in that unit. The additional line demand would be met with pairs designed for that purpose. In the Unit calculation the designed number of units (400 homes in a subdivision for instance) is adjusted to reflect both the downward effect on utilization of idle dedicated as well as the upward effect of additional line take. The additional line percentage is based on the number of additional lines divided by the total number of residential lines.

## **10. Cost Calculations**

The final results from LoopMod are at the investment level. To maintain consistency with the other Qwest models, the investment outputs are converted to monthly costs within the Integrated Cost Model (ICM). This provides for consistent output format for the various components of complete cost studies and allows the study analyst the ability to make sensitivity runs more easily.

## **Help screen data from LoopMod V2.1**

The following information is also available through the Help menus while running LoopMod.

### **Start Screen**

#### **State Name**

Displays the state for which the investments are run.

#### **Path**

Establishes the computer path on which the program will run.

#### **DS0 Vs Fiber Pair**

Selection will determine the whether investments are calculated on a DS0 or Fiber pair basis.

#### **Feeder Model**

Selection will determine the feeder design.

#### **Channel Card**

Selection will determine the Remote Terminal Channel Unit cost used in the study.

#### **Distribution File**

This selection will determine the Distribution Group file to be used.

#### **Pairs Per Site**

This selection will allow the user to select 1 pair per site, 2 pair per site or Engineering Standard distribution designs. It also allows the user to select Custom and build a set of fill driven designs.

#### **Pair Gain**

Selection will include or exclude the pair gain equipment investments.

#### **Process Group**

Selection will determine which Wire Centers (or group of Wire Centers) will be included in the results.

#### **Report View**

This selection will determine the level of detail in the output.

#### **GO!**

This selection runs the program.

#### **Additional Options**

This selection takes the user to the Additional Options screen.

#### **Quit**

Selecting this option will terminate the program. No user changes will be saved.

**Feeder Model** (Option on Start Screen)

Default Feeder Model is 12 Kilofoot Crossover for fiber

**12 Kilofoot Crossover** is the point at which fiber replaces copper in the feeder.

**Custom Model** will allow changes to:

- Copper / Fiber Crossovers
- Copper Underground / Buried Crossovers
- Fiber Underground / Buried Crossovers
- Urban / Rural Crossovers
- DLC Card and System Fills
- "Distance Zones" Definitions

**Distribution File** (Option on Start Screen)

Default is Wire Center Detail

**Distribution Area Detail**

Each Distribution Area will be individually processed (same result as Wire Center Detail)

**Wire Center Detail**

The Distribution Areas have been condensed to speed up processing. One condensed Distribution Area representing each Distribution Group will be processed (same result as Distribution Area Detail)

**Custom**

Takes user to DAAalyze.mdb. This is a Microsoft Access database that contains the network distribution area (DA) data and the criteria used in mapping DAs to Density Groups

Note on Distribution Groups:

There are five Distribution Groups modeled in LoopMod:

- DG 1 - High Rise buildings (structures with a single entrance facility)
- DG2 - Multi-building/Multi-tenant
- DG3 - Single family Serving Area Concept with standard lot size
- DG4 - Single family Serving Area Concept with large lot size
- DG5 - Very low density

## **Pairs Per Site** (Option on Start Screen)

Default is Engineering Standard.

### **Engineering Standard**

Designs are 2 pairs per site for DG1 and DG2, 3 pairs per site for DG3 and DG4, and 2 pairs per site for DG5.

### **1-Pair per Site**

This selects a set of designs that are 1 pair per site for all Distribution Groups.

### **2-Pairs per Site**

This selects a set of designs that are 2 pairs per site for all Distribution Groups.

### **Custom Model**

This option will allow the user to select a fill level for distribution cable sizing for each Distribution Group. The fills approximate pairs per site based on one worker per location (33% = 3 pairs per site, 50% = 2 pairs per site.)

## **Process Group** (Option on Start Screen)

Default is All Wire Centers

### **All Wire Centers**

Includes all Wire Centers in the state

### **Specific Wire Centers**

Includes only the Wire Centers selected by the user. The user must go to the "Select Wire Center" menu option or variable category

### **MSA Zone 1**

Includes all Wire Centers in the predetermined MSA Zone 1 for the state

### **MSA Zone 2**

Includes all Wire Centers in the predetermined MSA Zone 2 for the state

### **MSA Zone 3**

Includes all Wire Centers in the predetermined MSA Zone 3 for the state

## **Report View** (Option on Start Screen)

Default is Summary View

### **Summary View**

All of the Wire Centers selected will be averaged and displayed once.

### **Detail View**

Each Wire Centers selected will have it's own investment displayed.

## **Additional Options Screen**

### **Variable Categories**

This selection takes the user to the Variable Categories screen (input edits).

### **Print Data Selections**

This option will print the variable selections identified on the Data sheet.

### **Return to Start**

This option will display a dialog box advising the user that returning to Start will erase any variable changes that have been made to the options presented on the Variables screen below. The user can choose to continue on to the Start screen or remain on the Additional Options screen.

### **Restore Headers & Tabs**

Select this option when access is required to the background worksheets.

### **Eliminate Headers & Tabs**

This option returns the program to its default condition of hidden headers and tabs.

### **Quit**

Selecting this option will terminate the program. No user changes will be saved.

### **GO!**

This selection runs the program.

## **Variable Categories Screen**

### **Feeder Variables**

This option will display all of the variables concerned with Feeder.

### **Distribution Variables**

This option will display all of the variables concerned with Distribution.

### **Drop Variables**

This option will display all of the variables concerned with Drop.

### **Support Structure Variables**

This option will display all of the variables concerned with Support Structure ratios.

### **Placement Costs**

This option provides the opportunity to change the placement activity costs for buried cable (45C) and buried fiber (845C).

### **Line Variables**

This option will display all of the variables concerned with Line counts.

### **Network Component Prices Menu**

Selecting this button will take the user to the Network Component Prices screen. It provides the opportunity to change all material investments including copper cables, load coils, fiber, stubs, pedestals, inside terminals, cross-connects (SAIs), and digital loop carrier systems. Defaults are the network based unit investments by state. English descriptions are located to the right of the data.

### **Select Wire Centers Screen**

This will take the user to a screen that will display all of the Wire Centers available for processing.

### **Return to Additional Options Screen**

Select this button to return to the Additional Options screen.

## **Feeder Variables Screen**

### **“Distance Zones” Boundaries (Feeder Only!)**

This option will create up to 8 Zones within each Wire Center that are based on distance from the Central Office. Pressing the “Feeder Sections” button will take the user to FeederMod.xls – the Feeder pre-processor. The user can then define the “Distance Zones” and create the custom feeder model.

Pressing this button will automatically set the Feeder Model variable on the Start Screen to “Custom”.

The “Distance Zones” should be created for Distribution to match the ones created for Feeder.

### **Feeder Fill Information**

Feeder Fill for Copper Cable is the Copper Cable sizing factor. The default is 80%

Feeder Fill for Fiber Cable is the Fiber Cable sizing factor. The default is 100%.

### **Aerial Feeder Percentages**

Determines the amount of Aerial Copper will be used instead of Buried Copper. The Default is 14%.

### **Placement Activities and Sharing Percentages**

This option provides the opportunity to change the placement activity percentages. The feeder placement activity percentages are segmented by Urban and Rural. The total activity percentage must total 100% for both Urban and Rural feeder!

Sharing percentages for each activity can be specified. The default is 20%.

