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November 18, 2003

**VIA HAND DELIVERY**

Jean D. Jewell, Secretary  
Idaho Public Utilities Commission  
472 West Washington  
P.O. Box 83720  
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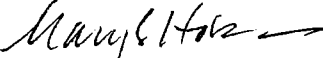
**Re: Docket No. QWE-T-01-11**

Dear Ms. Jewell:

Enclosed for filing with this Commission are an original and nine (9) copies of the revised Exhibit 27 to the Direct Testimony of Dick Buckley which were inadvertently mislabeled in the November 12, 2003, filing of Mr. Buckley's testimony. I am also including a disc containing the electronic version of the Direct Testimony and the exhibits for the court reporter.

If you have any questions, please contact me. Thank you for your cooperation in this matter.

Very truly yours,

  
Mary S. Hobson

:blg

Enclosures

cc: Service List w/ enclosures

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IDAHO PUBLIC  
UTILITIES COMMISSION

# **LOOP MODULE**

## **VERSION 2.1**

**Default Values**

**Idaho**

**Qwest Corporation**

**October 31, 2003**

# LOOP MODULE DEFAULT VALUES

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## 1. Overview

This section of the Loop Module User Manual includes descriptions of the inputs available to the users and the default values assigned to them. Also included is the source of the data that was used to establish these values. The data is based on the TELRIC economic guidelines. Thus, where current activities are reflective of what would be experienced within the TELRIC structure, that information will be included. Conversely, if the forward-looking equipment/activities/designs are not being implemented on a widespread basis, subject matter experts were consulted to develop an estimate of the appropriate values.

As new or additional data is gathered it will be included in this document.

## 2. Distribution Fill

**Description:** The data included under the distribution fill header is used to calculate the divisor used in each distribution design. The two values are for Idle Dedicated and Additional Lines percentages. The calculation is the design number of housing units plus the net of the idle dedicated percent and the additional lines percent. For example 400 homes plus (12% additional minus 4% idle dedicated) or 400 homes plus 8% or 432 working lines. The investment for the distribution area will then be divided by the 432 working lines. In addition the user has the ability to set utilization levels that will impact the pairs per site routine. Different fills will adjust where cables taper (e.g. 50 pair spliced to a 25 pair). The result is differing footages of the various cables as the total sheath footage will remain the same. The Idle Dedicated and Additional Line percentages can only be edited in the Loop Module. They are not in the ICM edit screens.

### **Default values:**

#### Distribution Fill

	<u>Percentages</u>
Idle Dedicated	4.00%
Additional Lines	15.75%

<u>Density Group Specific</u>	
	<u>Percentages</u>
DG1	50%
DG2	50%
DG3	33%
DG4	33%
DG5	50%

**Support:** The idle dedicated percentage is calculated by subtracting the additional lines from working and assigned lines, then subtracting working lines from assigned lines and dividing the result by the assigned lines. This information is provided by network from the Utilize database. The additional line percentage is developed from data out of the IFT database. The IFT reports show in-service quantities for products and services. The default input fills are based on Qwest network guidelines of two pairs per site in multi-family and low density and three pairs per site for single family residential.

### **3. Feeder Fill**

**Description:** The feeder fill is the factor by which feeder cable capacity is increased above the size needed to serve a given quantity of demand in order to provide spare pairs for breakage, line administration, and some amount of growth.

**Default values:**

#### **Feeder Fill for Copper Cable**

**Percent**  
80%

**Support:** The effective fill factor that is generated is typically less than the corresponding input feeder fill factor. This is due to discrete cable sizes that will result in a selected cable providing more pairs than the calculation requires.

### **4. Average Drop Lengths**

**Description:** The drop wire is the facility that extends from the nearest distribution terminal to the customer's premises. The lengths for that facility are broken out by aerial versus buried and by distribution density group. Only density groups 3, 4 and 5 use drops. Density groups 1 and 2 would utilize an entrance facility as opposed to a drop wire.

**Default values:**

#### **Average Aerial and Buried Drop Lengths**

	<b><u>Lengths</u></b>
Aerial Drop Length - Density Group 3	70
Aerial Drop Length - Density Group 4	200
Aerial Drop Length - Density Group 5	300
Buried Drop Length - Density Group 3	70
Buried Drop Length - Density Group 4	200
Buried Drop Length - Density Group 5	300

**Support:** The drop lengths are a function of the lot size. These are Qwest wide default lengths. When applied to the state specific mix of density groups they produce a statewide average drop length of approximately 110 to 120 feet. Surveys of existing drops in New Mexico, North Dakota, Minnesota and Wyoming have produced statewide averages from 150 to 180 feet. These averages are conservative as they exclude drops in excess of a certain length.

## 5. Placement Costs

**Description:** The placement costs are the contracted costs for various activities involving placement of buried plant. The placement costs are added to the cost of buried cable on a per cable foot basis. The cost added is a weighted average of the costs of each activity. This weighting is unique to each distribution density group and to urban and rural feeder. The weightings are discussed below in the Placement Percentages section.

**Default values:**

<u>Placement Costs</u>	<u>Costs</u>
2" Directional Bore	\$11.67
4" Directional Bore	\$15.64
Cut & Restore Asphalt	\$13.77
Lay Cable	\$0.87
Plow Cable	\$1.70
Plow Cable - Rocky	\$14.95
Missile	\$11.28
Restore Sod / Gravel	\$3.01
Fiber Trench	\$2.65
Hydro Mulch	\$4.29
Cut & Restore Concrete	\$12.43
Trench Cable - Hand	\$5.90
Trench Cable - Rocky	\$15.10
Trench Cable - Standard	\$1.85

**Support:** The costs for the various activities are drawn from the latest contracts the Network department has for placement of buried plant. Where a state has multiple contractors the number is a weighted average of the different prices. The weighting is based on the number of lines in the areas served by each contractor. Where there are variations on a single activity (e.g. plow - 24", 30' & 36"), those prices are weighted together based on their occurrence.

## 6. Placement Percentages

**Description:** The placement percentages are used to weight together the various activities involving placement of buried plant. The cost added to the buried cable is based on this weighting. The weighting is unique to each distribution density group and to urban and rural feeder.

### **Default values:**

#### Placement Percentages - Distribution

	<u>DG1</u>	<u>DG2</u>	<u>DG3</u>	<u>DG4</u>	<u>DG5</u>
Trench & Backfill	20%	25%	25%	30%	3%
Rocky Trench	5%	5%	5%	2%	0%
Plow	0%	0%	0%	28%	91%
Rocky Plow	0%	0%	0%	0%	4%
Cut & Restore Concrete	15%	10%	5%	3%	0%
Hand Dig Trench	5%	5%	5%	4%	0%
Bore Cable	20%	30%	45%	20%	0%
Cut & Restore Asphalt	20%	10%	10%	6%	2%
Cut & Restore Sod	15%	15%	5%	7%	NA
Hydro Mulch	NA	NA	NA	NA	0%

#### Placement Percentages - Feeder

	<u>Urban</u>	<u>Rural</u>
Trench & Backfill	30%	3%
Rocky Trench	5%	0%
Plow	0%	91%
Rocky Plow	0%	4%
Cut & Restore Concrete	15%	0%
Hand Dig Trench	5%	0%
Bore Cable	10%	0%
Cut & Restore Asphalt	20%	2%
Cut & Restore Sod	15%	NA
Hydro Mulch	NA	0%

**Support:** The activity percentages are a mix of placement methods that would be used to replace the existing network as well as grow it during the current feeder planning period. The percentages are based on the growth rates and interviews with outside plant engineers who were responsible for cable rehab work. The question to the engineers was phrased to address the type of activities that they would expect to use when cable placement is done in mature, existing areas. Data was also drawn from Qwest experience in placing plant for the Broadband trial in Omaha, NE. In addition, a citywide CATV rebuild in one of the Qwest states provided support to the utilization of boring in mature areas.

## **7. Sharing Percentages**

**Description:** The sharing percentages give recognition to the fact that there will be a reduction in placing costs due to either trench provided by a land developer or multiple facility providers using the same poles, trenches or conduit systems. The impact of these two scenarios is decidedly different. With trench provided by a developer, the only cost experienced by the facility provider is the cost of laying the cable in the open trench. With multiple facility providers using a common structure, the question of sharing becomes more complicated. Poles for instance, may be jointly owned or they may be accessed through the use of attachment fees. One constitutes a capital investment, while the other is an annual expense..

### **Default values:**

<b><u>Sharing Percentages</u></b>	<b><u>Percentage</u></b>
Aerial - Poles	50%
Underground- Conduit	5%
Buried - Urban Feeder	20%
Buried - Rural Feeder	20%
Buried - Distribution Density Group 1	20%
Buried - Distribution Density Group 2	20%
Buried - Distribution Density Group 3	20%
Buried - Distribution Density Group 4	20%
Buried - Distribution Density Group 5	20%

**Support:** The sharing percentages are an estimate of the portion of the structure cost that will be avoided through a mix of jointly owned structure and developer provided trenching. Certain work activities, such as actually laying a cable in the trench would not be reduced or shared, even if there are multiple facilities in a trench. The percentages are based on historical data, access line growth rates, and the opinions of outside plant subject matter experts.

## 8. Network Component Prices

**Description:** The sections below detail the various components that are used in each of the network categories (cables, terminals, DLC, etc.).

### 8.1 Buried Copper Cable and Stubs

**Description:** The cost per foot for buried copper cables, including material, supply, engineering, and splicing. Pricing for buried is discussed in sections 6 and 7. The cable stub costs are on a per cable basis for a 30 foot stub.

**Default values:**

<u>Buried Copper Cables &amp; Stubs</u>	
	<u>Cost</u>
25 pair - 22 gauge	\$0.89
50 pair - 22 gauge	\$1.17
100 pair - 22 gauge	\$1.66
200 pair - 22 gauge	\$2.66
300 pair - 22 gauge	\$3.74
400 pair - 22 gauge	\$4.82
600 pair - 22 gauge	\$7.25
25 pair - 24 gauge	\$0.76
50 pair - 24 gauge	\$1.00
100 pair - 24 gauge	\$1.37
200 pair - 24 gauge	\$2.12
300 pair - 24 gauge	\$2.88
400 pair - 24 gauge	\$3.72
600 pair - 24 gauge	\$5.26
900 pair - 24 gauge	\$7.67
1200 pair - 24 gauge	\$9.88
1800 pair - 24 gauge	\$14.42
600 pair - 26 gauge	\$5.26
900 pair - 26 gauge	\$7.67
1200 pair - 26 gauge	\$9.88
1800 pair - 26 gauge	\$14.42
50 pair - 24 gauge - stub	\$174.34
100 pair - 24 gauge - stub	\$197.04
300 pair - 24 gauge - stub	\$340.93
400 pair - 24 gauge - stub	\$402.17
600 pair - 24 gauge - stub	\$546.46
900 pair - 24 gauge - stub	\$673.63

**Support:** The cable material costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

## **8.2 Underground Copper Cable and Stubs**

**Description:** The cost per foot for underground copper cables, including material, supply, engineering, placing and splicing. Underground structure is discussed in sections 3. The cable stub costs are on a per cable basis for a 30 foot stub.

### **Default values:**

<b><u>Underground Copper Cables &amp; Stubs</u></b>	<b><u>Cost</u></b>
25 pair - 22 gauge	\$1.65
25 pair - 24 gauge	\$1.51
50 pair - 22 gauge	\$1.92
100 pair - 22 gauge	\$2.42
200 pair - 22 gauge	\$3.41
300 pair - 22 gauge	\$4.50
400 pair - 22 gauge	\$5.57
50 pair - 24 gauge	\$1.75
100 pair - 24 gauge	\$2.12
200 pair - 24 gauge	\$2.87
300 pair - 24 gauge	\$3.63
400 pair - 24 gauge	\$4.47
600 pair - 24 gauge	\$6.12
900 pair - 24 gauge	\$8.15
1200 pair - 24 gauge	\$9.87
1800 pair - 24 gauge	\$15.21
600 pair - 26 gauge	\$5.14
900 pair - 26 gauge	\$6.87
1200 pair - 26 gauge	\$8.03
1800 pair - 26 gauge	\$11.31
2400 pair - 26 gauge	\$14.06
3000 pair - 26 gauge	\$17.40
3600 pair - 26 gauge	\$20.42
4200 pair - 26 gauge	\$31.16
900 pair - 24 gauge - stub	\$323.48

**Support:** The cable material costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

### **8.3 Building Copper Cable and Inside Terminals**

**Description:** The cost per foot for building copper cables, including material, supply, engineering, placing and splicing. The inside terminals and connecting block costs are on a per item basis.

**Default values:**

<b><u>Building Copper Cables &amp; Inside Terminals</u></b>	
	<b><u>Cost</u></b>
25 pair - 24 gauge	\$1.98
50 pair - 24 gauge	\$2.23
100 pair - 24 gauge	\$2.59
600 pair - 24 gauge	\$6.48
900 pair - 24 gauge	\$9.14
50 pair - Inside Terminal	\$649.92
100 pair - Inside Terminal	\$659.56
600 pair - Inside Terminal	\$3,631.39
900 pair - Inside Terminal	\$5,414.49
50 pair - Connecting Block	\$89.68

**Support:** The cable and terminal material costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

## **8.4 Aerial Copper Cable and Terminal**

**Description:** The cost per foot for aerial copper cables, including material, supply, engineering, placing and splicing. The terminal costs are on a per item basis.

**Default values:**

<b><u>Aerial Copper Cables &amp; Terminal</u></b>	
	<b><u>Cost</u></b>
25 pair - 24 gauge	\$1.20
12 pair terminal	\$91.81
50 pair - 22 gauge	\$2.91
100 pair - 22 gauge	\$3.37
200 pair - 22 gauge	\$4.26
300 pair - 22 gauge	\$5.25
400 pair - 22 gauge	\$6.27
600 pair - 22 gauge	\$8.59
900 pair - 22 gauge	\$11.50
50 pair - 24 gauge	\$1.35
100 pair - 24 gauge	\$1.90
200 pair - 24 gauge	\$2.93
300 pair - 24 gauge	\$4.48
400 pair - 24 gauge	\$5.27
600 pair - 24 gauge	\$6.60
900 pair - 24 gauge	\$8.69

**Support:** The cable and terminal material costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

## **8.5 Buried Fiber Cable**

**Description:** The cost per foot for buried fiber cables, including material, supply, engineering, and splicing. Placing for buried cables is discussed in sections 6 and 7.

**Default values:**

<b><u>Buried Fiber Cables</u></b>	<b><u>Cost</u></b>
2 fiber cable	\$1.68
4 fiber cable	\$1.73
6 fiber cable	\$1.77
12 fiber cable	\$1.92
24 fiber cable	\$2.21
36 fiber cable	\$2.57
48 fiber cable	\$2.88
72 fiber cable	\$3.51
96 fiber cable	\$4.28
144 fiber cable	\$5.65
216 fiber cable	\$7.54

**Support:** The cable and terminal material costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

## **8.6 Underground Fiber Cable**

**Description:** The cost per foot for underground fiber cables, including material, supply, engineering, placing, and splicing. Underground structure is discussed in sections 3.

**Default values:**

<b><u>Underground Fiber Cables</u></b>	
	<b><u>Cost</u></b>
2 fiber cable	\$1.06
4 fiber cable	\$1.10
6 fiber cable	\$1.14
12 fiber cable	\$1.25
24 fiber cable	\$1.49
36 fiber cable	\$1.70
48 fiber cable	\$1.92
72 fiber cable	\$2.40
96 fiber cable	\$2.89
144 fiber cable	\$3.86
216 fiber cable	\$5.31

**Support:** The cable material costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

## **8.7 Building Fiber Cable**

**Description:** The cost per foot for building fiber cables, including material, supply, engineering, placing, and splicing. No structure cost is included, as the duct or raceway would be provided by the building owner.

**Default values:**

<b><u>Building Fiber Cable</u></b>	
	<b><u>Costs</u></b>
12 fiber cable	\$1.92
24 fiber cable	\$2.15

**Support:** The cable material costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

## **8.8 Drop Wire, NID and Placement**

**Description:** The cost per foot for the drop wire, cost per foot for the placing, the labor for the placing of the protector and the termination of the wires, the cost for the protector material, and the trip or mobilization charge.

### **Default values:**

<b><u>Drop Wire</u></b>	<b><u>Costs</u></b>
Buried 2 pair Drop -	
Placing per foot under 100 feet	\$0.72
Placing per foot over 100 feet	\$0.77
Protector & Termination Labor	\$31.92
Drop material	\$0.09
Protector material	\$14.89
Mobilization	\$33.35
Buried 3 pair Drop -	
Placing per foot under 100 feet	\$0.72
Placing per foot over 100 feet	\$0.77
Protector & Termination Labor	\$31.92
Drop material	\$0.11
Protector material	\$14.89
Mobilization	\$33.35
Aerial 2 pair Drop -	
Placement per drop	\$61.47
Protector & Termination Labor	\$31.92
Drop material	\$0.28
Protector material	\$14.89

**Support:** The drop material and placement costs are from the latest contracts Qwest has with outside vendors for the provision of drop facilities. The mobilization charge is divided by 14 in the calculation of buried drop costs to reflect the placement of multiple drops per visit as would be likely in a scorched node or network rebuild scenario.

## **8.9 Serving Area Interfaces and Terminals**

**Description:** The cost per item for Serving Area Interfaces (SAI) or cross-connect boxes and distribution terminals or pedestals. The SAI is the connection point between feeder cables and distribution cables and provides flexibility in assignment of pairs. The terminals are the connection point between distribution cables and the drops.

**Default values:**

**SAIs and Terminals**

	<u>Costs</u>
10 pair pedestal terminal	\$69.42
12 pair encapsulated splice terminal	\$55.17
600 pair SAI	\$2,259.76
1200 pair SAI	\$3,424.51
1800 pair SAI	\$4,722.47
2700 pair SAI	\$6,129.34
Splice Closure	\$38.36

**Support:** The SAI and terminal costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

## **8.10 C Rural Wire**

**Description:** The cost per wire foot for C-Rural Wire, including material, supply, engineering, and placing.. C Wire is a high tensile, single pair facility that is used in low density or rural applications.

**Default values:**

**C- Rural Wire**

	<u>Costs</u>
1 pair wire	\$0.62

**Support:** The wire material costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

## **8.11 Fiber Optic Equipment**

**Description:** The cost for central office and remote channel and terminal equipment for the fiber based Digital Loop Carrier systems. The costs include material, supply and installation.

**Default values:**

<b><u>Fiber Optic Equipment</u></b>	
	<b><u>Costs</u></b>
1344 Line Remote Terminals	
C.O. Terminal	\$16,850.43
Remote Terminal	\$84,254.02
Quad POTS Channel Unit	\$277.88
Quad ISDN Channel Unit	\$928.22
672 Line Remote Terminals	
C.O. Terminal	\$8,425.21
Remote Terminal	\$54,732.68
Quad POTS Channel Unit	\$277.88
Quad ISDN Channel Unit	\$928.22
32 Line Remote Terminals	
C.O. Terminal (HDT)	\$29,773.44
Remote Terminal	\$23,232.28
Quad POTS C.O. Channel Unit	\$256.29
ISDN C.O. Channel Unit	\$311.07
Quad POTS Remote Channel Unit	\$289.08
ISDN Remote Channel Unit	\$311.06
96 Line Remote Terminals	
C.O. Terminal 1 (1st RT)	\$6,678.14
C.O. Terminal 2 (Additional RTs)	\$4,291.04
Remote Terminal	\$31,649.87
Quad POTS Channel Unit	\$157.79
Quad ISDN Channel Unit	\$863.09
192 Line Remote Terminals	
C.O. Terminal 1 (1st RT)	\$10,969.18
C.O. Terminal 2 (Additional RTs)	\$4,291.04
Remote Terminal	\$32,288.91
Quad POTS Channel Unit	\$157.79
Quad ISDN Channel Unit	\$863.09

**Support:** The system costs are provided by the Qwest network organization. They are based on the latest prices Qwest is paying for these components.

