

Investment Loading Factors Technical Description

June 2003

Policy and Law Organization

Table of Contents

GENERAL DESCRIPTION..... 2

INTEREST DURING CONSTRUCTION..... 3

POWER/MISCELLANEOUS EQUIPMENT 5

PROVISIONING EXPENSE..... 6

SALES TAX 7

STRUCTURE RATIO..... 8

TELCO..... 10

TOTAL INVESTMENT FACTOR..... 12

GENERAL DESCRIPTION

Investment loading factors calculate capitalized investments that are required in addition to the specific material or EF&I (Engineered, Furnished and Installed) investments to determine total investment. These investment loading factors are applied to material and EF&I investments in the various investment models and programs. A description of each investment loading factor follows.

INVESTMENT LOADING FACTORS SUMMARY

FACTOR	DESCRIPTION
Interest During Construction	Interest expended for the construction of telephone plant prior to the time it is placed in service.
Power & Miscellaneous Equipment	Capitalized investment amounts for such items as central office auxiliary power equipment, rectifiers, DC batteries, ringing, back-up power equipment, alternators, and rack & ladders. These factors are applied to investments.
Provisioning Expense	Transportation and warehousing costs used with terminal equipment and most OSP equipment.
Sales Tax	Includes a composite of state and local sales taxes which are applied to the purchase of equipment, supplies, installation, etc., as applicable.
Structure Ratio	A ratio of conduit investment to underground cable and underground fiber investment for interoffice and exchange use.
Telco	Applied to EF&I switching investment costs to calculate the additional portion of required company engineering and installation costs.
Total Investment Factor (TIF)	Used primarily in private line studies to determine the additional capitalized costs for mountings and plug-in equipment.

INTEREST DURING CONSTRUCTION
(aka Allowance for Funds Used During Construction (AFUDC))
Overview

DESCRIPTION

The Interest During Construction (IDC) factor is used to estimate the interest that accrues during the time plant is under construction. IDC is the cost of capital funds used to construct plant. IDC is capitalized as part of the installed investment. The IDC factors are developed at a state level and apply to all accounts except Land (Account 2111), Artworks (Account 2122.2), Capital Leases (Account 2681), and Intangibles (Account 2690).

DATA SOURCES

The Plant Additions are from the MR2A report (Changes In Telephone Plant Accounts) for the current year on which the factors are based. The IDC amounts are from Account 7340 (Allowance for Funds Used During Construction) for the current year on which the factors are based. The Interest Rate charged to Construction is provided by the Finance department. The Cost of Debt is provided by the Asset Accounting department. The Telephone Plant Index (TPI) is provided by Joel Popkin & Co., economic consultants.

ASSUMPTIONS

1999 data was used since it represented the most current annual data at the time the IDC factor was calculated.

METHODOLOGY

- A. Collect Plant Addition amount by state from the company MR2A report. Use the Total Telephone Plant Added In Service (2001) less the accounts of Land (2111), Artworks (2122.2), Capital Leases (2681), and Intangibles (2690) to develop the adjusted Total Telephone Plant Added In Service. Collect the IDC amount in Account 7340 by state from the general ledger journal file.
- B. Calculate IDC factor by state for the current year on which the factor is based.
$$\text{IDC Factor} = \text{IDC} / \text{Adjusted Total Telephone Plant Added}$$
- C. Calculate the IDC factor for future years using the percent change in TPI (applied to the denominator of Plant Added) and the percent change in the Interest Rate Charged to

Qwest

INVESTMENT LOADING FACTORS

Construction or the Cost of Debt (applied to the numerator of IDC).

Future IDC = (1 + % Change in Interest Rate Charged to Construction or Cost of Debt) * Current Yr. IDC

Future Plant Added = (1 + % Change in TPI) * Current Yr. Plant Added

Future IDC Factor = Future IDC / Future Plant Added

- D.** The final published IDC factor is the result of an average of the IDC factor calculated in 'C' above and the previously published IDC factor. An average is developed since interest is added to projects that can start in one year and complete in another year.

POWER/MISCELLANEOUS EQUIPMENT

Overview

DESCRIPTION

The purpose of the Power Factor is to estimate the investment in power plant required for central office and circuit equipment and to estimate any miscellaneous equipment investment not included in the Engineered Furnished and Installed (EF&I) investment calculated by the cost analysts (i.e., miscellaneous frames and portable generators).

The Power Factor is calculated on a state specific basis.

DATA SOURCES

Power equipment investments come from the Continuing Property Record (PICS/DCPR) extracts. Total booked Central Office Equipment (COE) and Circuit Investments come from the General Ledger for each state. Power investment associated with CLEC Power Collocation charges comes from revenues as identified by USOC's SP1PA and SP1JA.

METHODOLOGY

- A.** Identify Collocation power investment; this is determined as follows, on a state specific basis:

$$\frac{\text{Total revenues for USOC's SP1PA \& SP1JA}}{\text{Charges per Amp}} \div 12 \text{ (Months)}$$

This calculation equals quantities of DC Amps purchased.

Quantities purchased * Investment per DC AMP equal total amount of Collocation associated power equipment.

- B.** Calculating the relationship between power and other miscellaneous investment to direct circuit and COE investment is referred to as the power factor.

Numerator = Total Power investment as identified by the PICS/DCPR report less Collocation associated equipment per A above.

Denominator = Total booked COE & Circuit investment less total power investment as identified by the PICS/DCPR report.

PROVISIONING

Overview

DESCRIPTION

The Provisioning factors (Warehousing & Transportation) estimate the cost of warehousing and transportation functions associated with capital acquisitions. The specific provisioning functions accounted for include receiving and stocking inventory, filling requisitions from stock, monitoring and replenishing stock levels, delivering, storing and loading and unloading material. This factor is on a total Qwest basis since the company has only one central warehouse that services all fourteen states.

DATA SOURCES

A total Provisioning Rate is provided by the Local Network Finance Department. This is a 12-month average rate, which is used in actually clearing out provisioning costs from account 6512 to final account. Also obtained from that organization is the split of total costs incurred between warehousing costs and transportation costs.

METHODOLOGY

Since the corporate provisioning rate obtained from the Network Finance Department is only one total factor, a calculation is necessary to determine the split between warehousing and transportation. This is accomplished as follows:

Warehousing Factor =

$$\text{Warehousing Costs} / \text{Warehousing and Transportation Costs} * \text{Provisioning Rate}$$

Transportation Factor =

$$\text{Transportation Costs} / \text{Warehousing and Transportation Costs} * \text{Provisioning Rate}$$

SALES TAX FACTORS

DESCRIPTION

The purpose of the Sales Tax Factor, which is obtained from the Corporate Tax Department, is to provide an estimate of the sales tax costs that are associated with investments. The factor can be used, in conjunction with other factors and data, to develop total installed investment.

DATA SOURCE

The Sales Tax Factors are provided by the Qwest Tax Department on a state specific basis.

STRUCTURE RATIOS

DESCRIPTION

The purpose of this study is to develop ratios of conduit investment (4C) to underground cable (5C) and to underground fiber (85C) investment. Application of the structure ratio calculates the structures investment when multiplied times the fiber or cable investment.

DATA SOURCES

Investment for 5C and 85C came from the Regional Loop and Cost Analysis Program (RLCAP). Investment for the conduit structure was developed on a component basis and added together for a complete placement investment. Components looked at for this investment included boring, trenching and shoring, asphalt cut removal and replacement, conduit and placement, vaults and placement and finally innerduct for fiber installation. Inputs for these components came from the design detail used in the Coster Program. The Coster program is utilized to estimate Individual Case Basis studies on a going forward basis for the System Design Center.

ASSUMPTIONS

The following considerations were utilized to develop this application:

- a) No inner ducts per duct were considered for copper. Three inner ducts per duct for fiber were considered.
- b) 2.25 ducts per trench were considered in this study utilizing 4" conduit.
- c) One manhole vault was considered placed every 650 feet with none placed at each end.
- d) Installations include a two foot wide trench.
- e) Restoration included would be minimal under trenching.

This study represents average placement in varied conditions.

METHODOLOGY

Structure ratio for copper cable exchange and interoffice was calculated based on an average installation. The average installation represented by a weighting of ninety percent trenching, ten percent boring and an additional five percent for shoring. Asphalt cut/removal/replacement were also included on an average installation of eighty percent asphalt cut/removal/replacement and twenty percent none required. Investment for 4C was developed by adding together on a per foot investment the following items weighted as previously described. A per foot investment for boring, trenching, shoring and asphalt cut/removal/replacement. The placement of 2.25

Qwest

INVESTMENT LOADING FACTORS

four-inch ducts in the trench and the placement of one manhole vault every 650 feet with no placement of vaults at the ends. The total of these items was then divided by the per foot investment in underground copper cable. Structure ratio for fiber cable exchange and interoffice was calculated exactly like the copper with the following exceptions. Investment on a per foot basis was included for innerduct and total structure investment was divided by the opportunity to place three inner ducts in each duct. The process is as follows:

A. Identify structure labor and material costs, quantity and Structure length. The following functions are required for structure placement: Boring, trenching, shoring, asphalt cut removal and replacement, conduit and placement, vaults and placement and finally innerduct for fiber installation.

B. Calculate the total current loaded labor and material costs per duct per foot. This is accomplished by dividing current labor and material costs by the quantity and again by the length in feet for each function.

$$\begin{array}{l} \text{Current Labor} \\ \text{and Material} \\ \text{costs per foot} \\ \text{(Average)} \end{array} = \begin{array}{l} \text{Current labor} \\ \text{and material} \\ \text{costs (Average)} \end{array} / (\text{Quantity} \times \text{Length})$$

C. Cable sizes were determined by using data from the 7A Plant Report. The average cable size was calculated by dividing the fiber or conductor miles by the sheath miles. The loaded cable or fiber Material cost per foot for the calculated size was looked up in the RLCAP price lists.

D. Calculate structure ratio by dividing structure placement total by the cable or fiber loaded material cost/foot.

$$\begin{array}{l} \text{Structure} \\ \text{Ratio} \\ \text{(Average)} \end{array} = \begin{array}{l} \text{Current Labor and Material} \\ \text{costs per foot (Average)} \end{array} / \begin{array}{l} \text{Cable or Fiber Loaded Material} \\ \text{Costs/foot} \end{array}$$

TELCO

Overview

DESCRIPTION

The Telco factor is developed to estimate the Qwest (Telco) labor costs, over and above the Engineered, Furnished and Installed (EF&I) costs, which are capitalized as part of central office (CO) switching equipment installations. This factor can then be used, in conjunction with other factors, and data, to develop the total installed investment (i.e., booked investment) associated with the CO switching equipment.

DATA SOURCES

FRC (Field Reporting Code) 377C (Digital Electronic Switching) investment amounts were extracted from the General Ledger journal file for the years of 2000 and 2001. The investments extracted have the account status of 2001 (Plant in Service), 2003 (Plant Under Construction-Short Term), and 2004 (Plant Under Construction-Long Term). The cost type detail needed for the Telco factor calculation resides in the account status to which the transaction was originally incurred, and therefore the three investment accounts (2001, 2003, and 2004) must be analyzed to provide the complete annual cost data. (Note: At the time the 2003 Telco factor was calculated, the year 2002 data was not yet finalized due to restatement issues; therefore, only a two year average was used based on years 2000 & 2001.)

ASSUMPTIONS

The vendor material and vendor labor amounts include sales tax.
Interest During Construction (IDC) was not included in these factors.

METHODOLOGY

- A. Pull FRC 377C for the current year activity by EXTC and classify each EXTC as telco labor, vendor labor, vendor material, or not applicable to this calculation (i.e., retirement entries, account transfers, IDC, etc.).
- B. Calculate the current Telco factor by dividing the total telco labor by the sum of total vendor labor and total vendor material, as follows:
$$\text{Telco Factor} = \text{Total Telco Labor} / (\text{Total Vendor Labor} + \text{Total Vendor Material})$$
- C. Develop the final Telco factor by calculating an average of the three most recent Telco factors based on data from the three most recent years. This is done to

Qwest

INVESTMENT LOADING FACTORS

reflect a more representative long run expense trend factor (i.e., one less prone to annual data variations).

TOTAL INVESTMENT FACTOR

Overview

DESCRIPTION

The purpose of this study is to develop composite factors that when multiplied against material cost will produce the total installed investment for plug-ins and mountings. Separate factors are calculated for each of the following accounts; (57C Circuit Equip. Other Analog Equipment, 67C Radio Microwave, 157C Circuit Equip. Digital Data System, 257C Circuit Equip. Pair Gain Digital, 357C Circuit Equip. Other Digital Equipment, 457C Circuit Equip. Pair Gain Analog and 858C Channel Term Equipment.) These factors include Labor and Engineering (both telco and vendor), Interest During Construction, Provisioning, Sales Tax and Power. It also includes testing investment for all accounts except 858C.

DATA SOURCES

Material, Vendor and Telco (Qwest) Labor and Engineering costs are extracted from the General Ledger Journal file booked in the current year to each FRC extracted. The material is split between Mountings (Hardwire) and Plug-ins using a PICS/DCPR report. The Sales Tax is obtained from the Qwest Tax Department. Power, Interest During Construction and Provisioning are factors calculated in the Qwest Cost Group. Material testing comprised 3% of booked material cost, per engineering.

ASSUMPTIONS

Two factors are calculated for each account code. The first factor includes warehousing and transportation and the second factor includes transportation only. Shown below are the calculation formulas for Mountings and Plug-ins factors with warehousing and transportation. The factors for transportation are identical but do not include a warehouse component.

Mountings –

$$\begin{array}{r}
 \text{Material Costs} * (1+\text{Sales Tax Factor})*(1+\text{Power}) \\
 \hline
 \text{Material} * .97\% \text{ (To reflect testing component)} * (1+\text{IDC Factor}) \\
 \hline
 \text{(Material Cost (1+Sales Tax Factor)*(Warehousing +Transportation Factor))+(Vendor Labor* (1+Sales Tax factor))+Telco Labor} \\
 \hline
 \text{Material Costs} * (1-\text{IDC Factor})
 \end{array}$$

Plug-ins –

$$\begin{array}{r}
 \text{Material Costs} * (1+\text{Sales Tax Factor})*(1+\text{Power}) \\
 \hline
 \text{Material} * .97\% \text{ (To reflect testing component)} * (1+\text{IDC Factor}) \\
 \hline
 \text{(Material Cost (1+Sales Tax Factor)*(Warehousing +Transportation Factor))} \\
 \hline
 \text{Material Costs} * (1-\text{IDC Factor})
 \end{array}$$