

QSI Consulting, Inc.

TELRIC STUDIES *Mechanics of a TELRIC Study*

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QSI TELRIC "CHEAT SHEET"

Prepared by:



INVESTMENT BASED COSTS

$$\text{TELRIC BASED RATE} = \frac{[(\text{INVESTMENT} \times \text{ACF}) / 12] + \text{SHARED \& COMN COSTS}}{[(I \times \text{ACF}) / 12] + \text{S\&C}}$$

1. INVESTMENT

A. Equipment Purchase Price

- or ("Material Cost")
- i. Appropriate Network Architecture?
- ii. How much equipment do we need?
- iii. Are appropriate vendor contract terms & conditions reflected (discounts, etc.).
- iv. Proper mix of equipment / technology
- v. Pricing Index applied? Appropriate?

B. Support Assets / Investments

- i. Land, Buildings, Electricity
- ii. Poles, conduit, etc.

C. "EF&I" - Engineered Furnished & Installed

- i. What is data source for factors- trended?
- ii. Consistent with vendor contract?
- iii. Forward looking assumptions - age of data?
- iv. Proportion of *TIC* - "Total Installed Cost"

2. ANNUAL CHARGE FACTORS

A. Cost of Capital

- i. Capital Structure (Equity vs. Debt)
- ii. Cost of Debt
- iii. Cost of Equity
 - market value vs. book value
 - CapM vs. Discounted Cash Flow
- iv. Appropriate risk adjustment

B. Depreciation Expenses

- i. Economic Life (by plant account)
 - Prescribed lives vs. accelerated
- ii. Net Salvage (Salvage Value - Removal Cost)
 - mortality Curve (straight line vs. Gompertz)

C. Maintenance Expenses

- i. Data Source (proper USOA accounts)
 - Age of Data
 - Properly forward looking (trended)?
 - NRC Expenses removed (avoid 2-count)

D. Revenue related Taxes and Fees

- i. Federal and State Taxes
- ii. Gross Receipts Fees
- iii. Regulatory Charges

E. Ad Valorem Taxes

(non-revenue related taxes)

- i. Property Taxes

F. Miscellaneous Support Recovery

- i. Support Assets, minor materials, etc.
 - Ensure no double-recovery with S&C costs

3. SHARED & COMMON COSTS

A. Develop S&C Pool (identify account data)

- i. Ensure not directly attributable
 - Attributable to individual products/UNEs
 - Attributable to high level business units, i.e., retail vs. wholesale, regulated vs. non-regulated, etc.
- ii. Properly forward looking
 - one time expenses removed
 - trends properly identified
- iii. Reasonable to recover from Competitors
 - Litigation expenses
 - Luxury Perqs - (Skyboxes, Sporting events, etc.)
- iv. Ensure no double-recovery with ACFs, support factors, EF&I, etc.

B. Develop S&C % markup

- i. Derive S&C Pool from steps (A.) above
- ii. Divide S&C Pool by ?
 - Total Regulated Revenues?
 - Total Directly Attributable Costs?
- iii. Fixed Allocator? Consistent among all?
- iv. Remember as either total regulated revenues or directly attributable costs increase (i.e., denominator), % will fall

C. Apply S&C % markup

- i. Do not allow compound recovery

CLASSROOM PROJECT

$$\frac{[(\$100.00 \times .2500) / 12] + 10\%}{12} = \$2.29$$

TELRIC EXAMPLE - DERIVING INVESTMENT

Prepared by: **QSI CONSULTING**
Market Solutions • Litigation Support

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DERIVING INVESTMENT.....A VERY SIMPLE EXAMPLE

THE EXAMPLE:

We're attempting to derive the monthly, Total Service Long Run Incremental Cost ("TSLRIC" or "TELRIC") for a copper feeder build required to support 5 individual Distribution Areas supporting 250 access lines per DA. The DAs are within 5,000 feet of our central office such that direct copper circuits meet our engineering guidelines.

ENGINEERING REQUIREMENTS:

- In1 - 3,000 feet of feeder cable needed
- In2 - 1600 pair cable chosen to accommodate demand requirements
- In3 - Buried Feeder Cable is possible (i.e., no pole or conduit required)
- In4 - copper cable contract provides for 1,600 pair cable at \$41.6667 per foot, *INSTALLED*.

DERIVATION OF INVESTMENT:

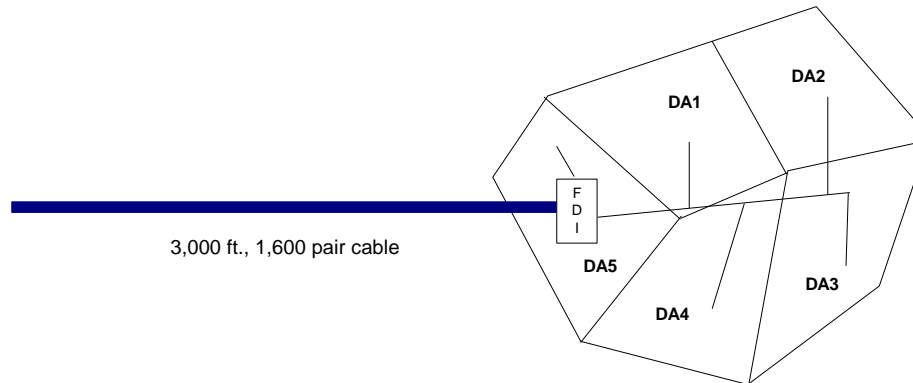
STEP 1	Develop Total Material Cost:	3,000 ft. X \$41.6667 per foot =	\$125,000.10
STEP 2	"Unitize" Investment:	$\frac{1,250 \text{ revenue pairs}}{1,600 \text{ installed pairs}} = \text{Fill Factor}$	78.13%
	Step 2A	$\frac{\$125,000.10}{1,250 \text{ revenue pairs}} =$	\$100.00

FILL FACTOR ALTERNATIVE

Most models don't calculate "per unit" investment by dividing revenue pairs by installed pairs. Instead they derive a per pair investment and apply a fill factor. The result is the same:

$$\$125,000.10 / 1,600 = \$78.13$$

$$\$78.13 / .7813 = \$100.00$$



CLASSROOM PROJECT

$$[(\$100.00 \times .2500) / 12] + 10\% = \$2.29$$

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Switching Related Issues

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Denver, Colorado*



LOCAL COMPETITION AND UNE REMAND ORDERS

- ◆ SWITCHING RELATED UNEs
 - Line Ports
 - Features
 - Unbundled Local Switch (ULS) Usage
 - Trunk Ports -- Common & Dedicated
 - Packet Switching
 - SS7 Signaling

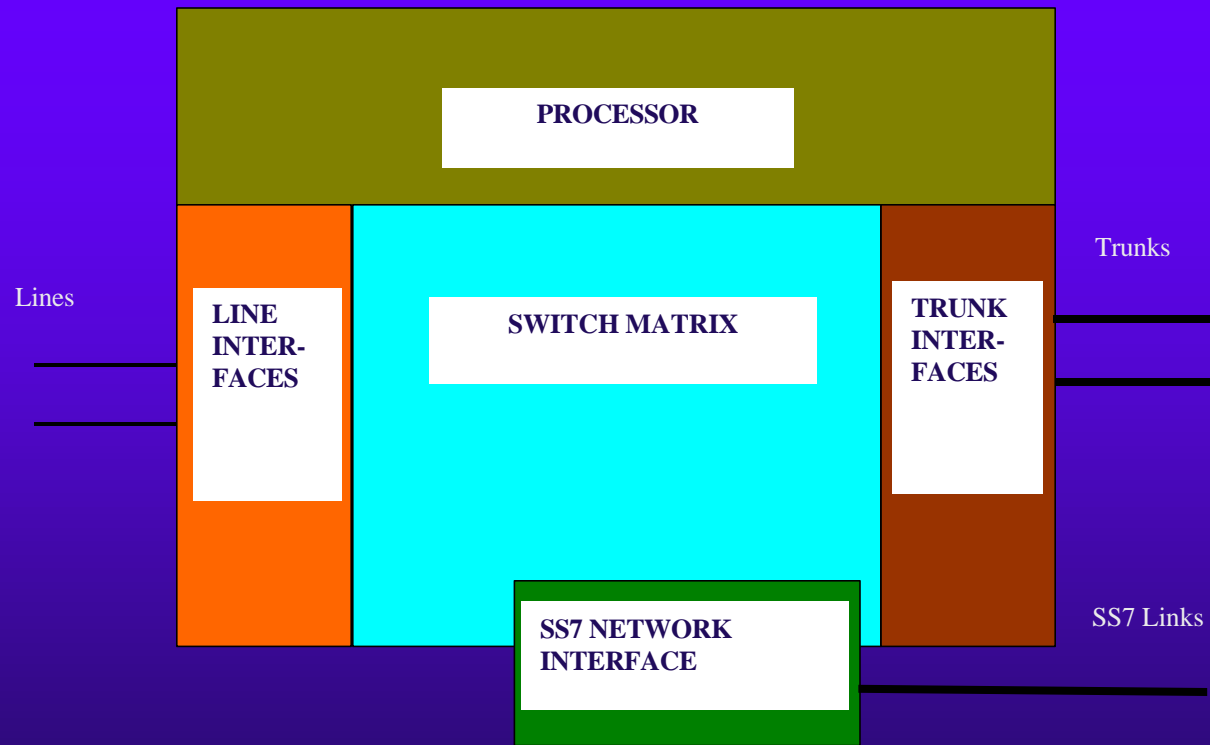


LOCAL COMPETITION AND UNE REMAND ORDERS

- ◆ § 51.319 Specific unbundling requirements.
 - (c)(1)(B) [...] an incumbent LEC shall not be required to unbundle local circuit switching for requesting telecommunications carriers when the requesting telecommunications carrier serves end-users with four or more voice grade (DS0) equivalents or lines, and the incumbent LEC's local circuit switches are located in:
 - (i) The top 50 Metropolitan Statistical Areas [...]
 - (ii) In Density Zone 1 [...]

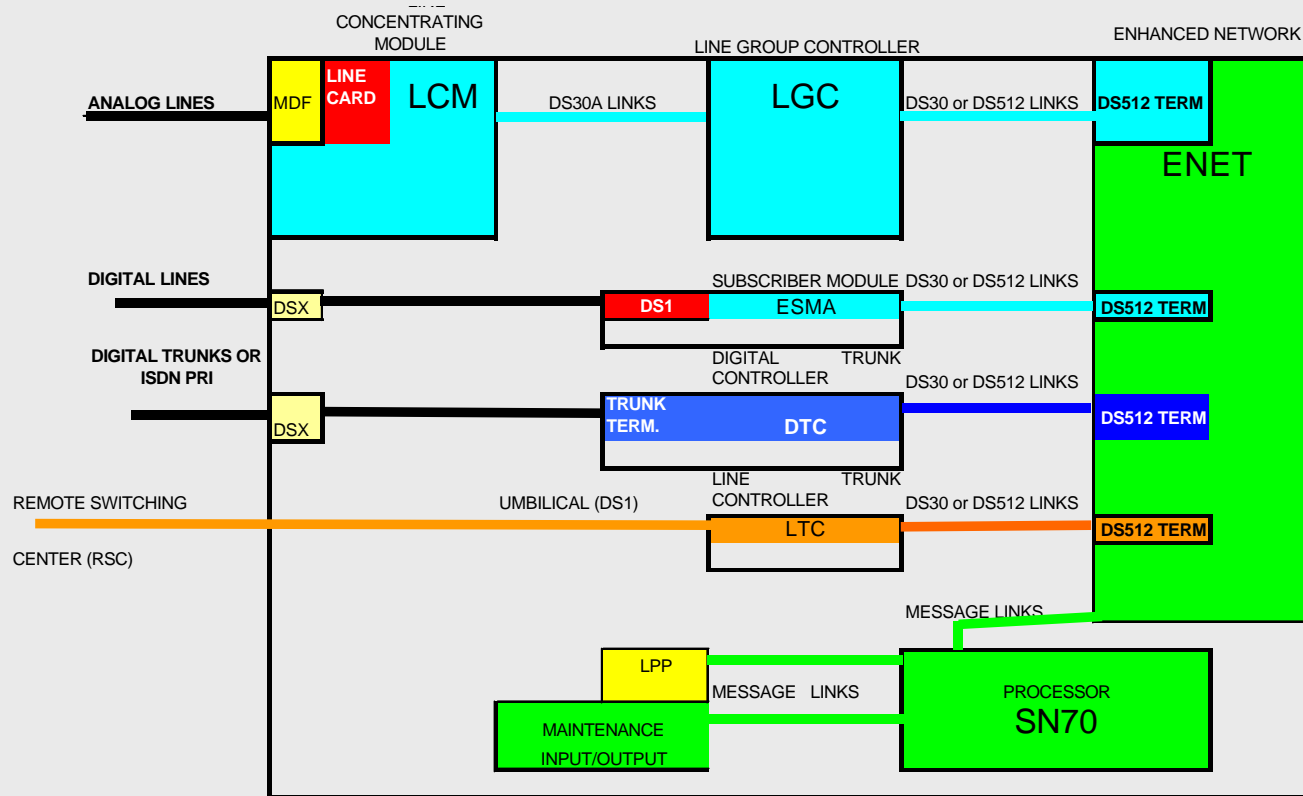


TYPICAL SWITCH ARCHITECTURE



CRITICAL ISSUES IN SWITCH COST STUDIES

NORTEL DMS 100 SWITCH ARCHITECTURE PARTITIONING



Minimum Cost per Line Line CCS Millisecond cost Cost per Octet Trunk CCS Umbilical CCS

CRITICAL ISSUES IN SWITCH COST STUDIES

- ◆ Vendor Contracts
- ◆ Assignment of Traffic-Sensitive and Non-Traffic Sensitive Costs
- ◆ Rate Design – Which rates recover which costs?

CRITICAL ISSUES IN SWITCH COST STUDIES – VENDOR CONTRACTS

- ◆ Bifurcated price/discount Structure
 - Growth lines have low discounts
 - New/cutover lines have huge discounts
 - Appropriate weighting is critical
- ◆ How are switches purchased?
 - On a per line basis, or piece part?

CRITICAL ISSUES IN SWITCH COST STUDIES – VENDOR CONTRACTS

- ◆ Weighting of growth lines and new/cutover lines should reflect TELRIC methodology
- ◆ FCC mandates scorched node approach:
 - TELRIC starts with current wire center locations and then reconstructs the local network using the least cost, most efficient technology for reasonably foreseeable capacity requirements (§ 685)



CRITICAL ISSUES IN SWITCH COST STUDIES – VENDOR CONTRACTS

- ◆ Weighting of growth lines and new/cutover lines should reflect TELRIC methodology
 - Under scorched node approach, all switches are newly placed under the terms and conditions of the current switch vendor contracts
 - Wisconsin, Michigan and New Jersey Commissions ordered weighting of +/- 70% new/cutover and 30% growth discounts
- ◆ ILECs typically use only growth discounts



CRITICAL ISSUES IN SWITCH COST STUDIES – VENDOR CONTRACTS

- ◆ Assuming 18 year economic life for a digital switch and 4% line growth per year, the following weighting can be calculated:
 - New/cutover lines 72%
 - Growth lines 28%

CRITICAL ISSUES IN SWITCH COST STUDIES – RATE DESIGN

- ◆ Rate design should reflect cost causation and promote economic efficiency
 - NTS costs should be recovered on a non-usage sensitive basis – flat, monthly charges.
 - Truly TS costs should be recovered on a usage sensitive basis. BUT ARE THERE TS SWITCHING COSTS?
 - Feature costs should be included in line port charges.





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