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# TRO Impairment Modeling

*BellSouth Analysis of Competitive Entry (BACE) Model*

*Overview*

*2003*

A NOTE ABOUT INPUTS AND SETTINGS SHOWN IN THIS PRESENTATION

All inputs and system settings shown in this document are illustrative. They may or may not match values used in a study or proceeding. Nor, should they be construed to represent a view of any party in a proceeding.

# DISCUSSION OVERVIEW

- TRO modeling guidelines
- Description of BACE model structure
- Walk through model interface

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# MODELING TEAM



- BellSouth
- CostQuest Associates
- LECG

# TRO MODELING GUIDELINES

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- Capable of granular analysis
  - §472 ... We find that technical shortcomings in each of these studies preclude us from relying on their results to evaluate impairment at the national level. These shortcomings include... (2) **insufficient granularity in their analyses.**
  - §485 All of these studies... strongly support the need for a **more granular analysis of impairment.** We have insufficient evidence in the record, however, to conduct this granular analysis. **Such an analysis would require complete information about UNE rates, retail rates, other revenue opportunities, wire center sizes, equipment costs, and other overhead and marketing costs. ...**
- Assumes efficient business model and network architecture
  - §517 ... Specifically, state commissions must determine whether entry is likely to be economic utilizing the **most efficient network architecture** available to an entrant... The analysis must be based on the **most efficient business model for entry rather than any particular carrier's business model.**
- Provides a business case analysis
  - n. 1581... to evaluate the feasibility of self-deploying a switch, states should perform a **business case analysis** of providing local exchange service... cost factors listed should not be considered in isolation, but only in the context of a **broad business case analysis that examines all likely potential costs and revenues.**
- Incorporates all likely revenues and costs
  - §519... In determining the likely revenues available to a competing carrier in a given market, the state commission must consider **all revenues that will derive from service to the mass market, based on the most efficient business model for entry.** These potential revenues include those associated with providing **voice services, including (but not restricted to) the basic retail price charged to the customer, the sale of vertical features, universal service payments, access charges, subscriber line charges, and, if any, toll revenues.** The state must also consider the revenues a competitor is likely to obtain from using its facilities for providing **data and long distance services and from serving business customers.**
- Uses NPV as the test of impairment
  - n. 260 Stated in more technical terms, the condition [of a firm entering the market, and hence no-impairment] is **whether the net present value of the expected economic profit is positive.**

# BACE MODEL APPROACH

- Key model features
  - Granular Inputs and Outputs
    - Customers, products, geography, revenues, and costs
  - Business case approach
    - Cash flow modeled over 10 years
    - Net Present Value (NPV) analysis of cash-in versus cash-out
  - Forward-looking engineering
  - Optimization routines
  - Support for multiple levels of state geography
    - LATAs, UNEZones, Metropolitan Statistical Areas (MSA), Component Economic Area (CEA), etc...
  - Windows based
    - Access, Excel and Visual Basic

# SIMPLIFIED PROCESS FLOW

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## SIMPLIFIED PROCESS FLOW

### CLEC definition

- Customers targeted
- Products sold
- Starting position (e.g., greenfield or established CLEC)

### CLEC impairment model

**Price process:**  
Determine the price for each product sold over time

**Quantity process:**  
Calculate the quantity of products sold to each customer segment in each wire center

**Network process:**  
Determine the unit costs to provision the CLEC network

**Operating process:**  
Determine the unit costs to operate a CLEC

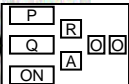
**Revenue process:**  
Calculate revenue based on P and Q

**Assignment process:**  
Calculate the CLEC's costs based on the quantities of products sold and unit costs

**Optimize offering (user controlled):**  
Drop CLLIs, LATAs and/or DSL that are not marginally profitable. Determine whether Colo or EELs should be used

**Output reporting process:**  
Generate NPV and financial reports by geographic entity (LATA, CEA, MSA) for output

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# BACE STUDY PARAMETERS

- BACE allows the user to control basic CLEC and BACE study parameters:
  - CLEC financial parameters
    - Debt and Equity structure
    - Cost of Capital
    - Federal and State tax rates
    - Treatment of tax losses (if any)
  - Size of the CLEC
    - Scope of operations
    - Relative purchasing power
  - Basic study parameters
    - CLEC network architecture options
    - Treatment of terminal value
    - Basic network and optimization approach



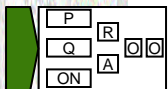
# PRODUCT OFFERINGS

- BACE contains a product array that allows the user to specify the products offered
  - Local
  - LD
    - InterLATA, IntraLATA, International, Toll Free, and calling card
  - Data
    - DSL and Non-DSL
  - Voice Mail
  - Access
- BACE allows the user to specify bundled offerings, for example:
  - Local and LD
  - Local, LD, and Voice Mail
  - Local, LD, Voice Mail, and Data

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# CUSTOMER SEGMENTATION

- Customer segments based on state-specific aggregate telecom spend
  - BellSouth data aggregate within these segments to provide baseline product demand and price

## Residence

Residence – 1 <sup>st</sup> quintile (top)
Residence – 2 <sup>nd</sup> quintile
Residence – 3 <sup>rd</sup> quintile
Residence – 4 <sup>th</sup> quintile
Residence – 5 <sup>th</sup> quintile (bottom)

## Business

	1-3 lines	4-8 lines	9-23 lines	24+ lines
Top	Top	Top	Top	Top
Middle	Middle	Middle	Middle	Middle
Bottom	Bottom	Bottom	Bottom	Bottom

# PRICE PROCESS OVERVIEW

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## ➤ Price of products and bundles

### Structure and Base Data

- Current Product Price (based on actual BellSouth data)
  - Res: 5 spend bands
  - Bus segments: 3 spend bands
- Geographic
  - UNE Zones
- Products
  - Local, LD, Data, Voice Mail, Access
  - Bundled offerings

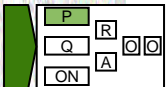
### User Inputs

- Initial CLEC Discount
- Bundle Prices
- Price trend over 10 years
  - Products
  - Bundles

### Output

- Price over 10 years
  - A-la-carte
  - Bundled
- Data at the BellSouth end office level by customer segment

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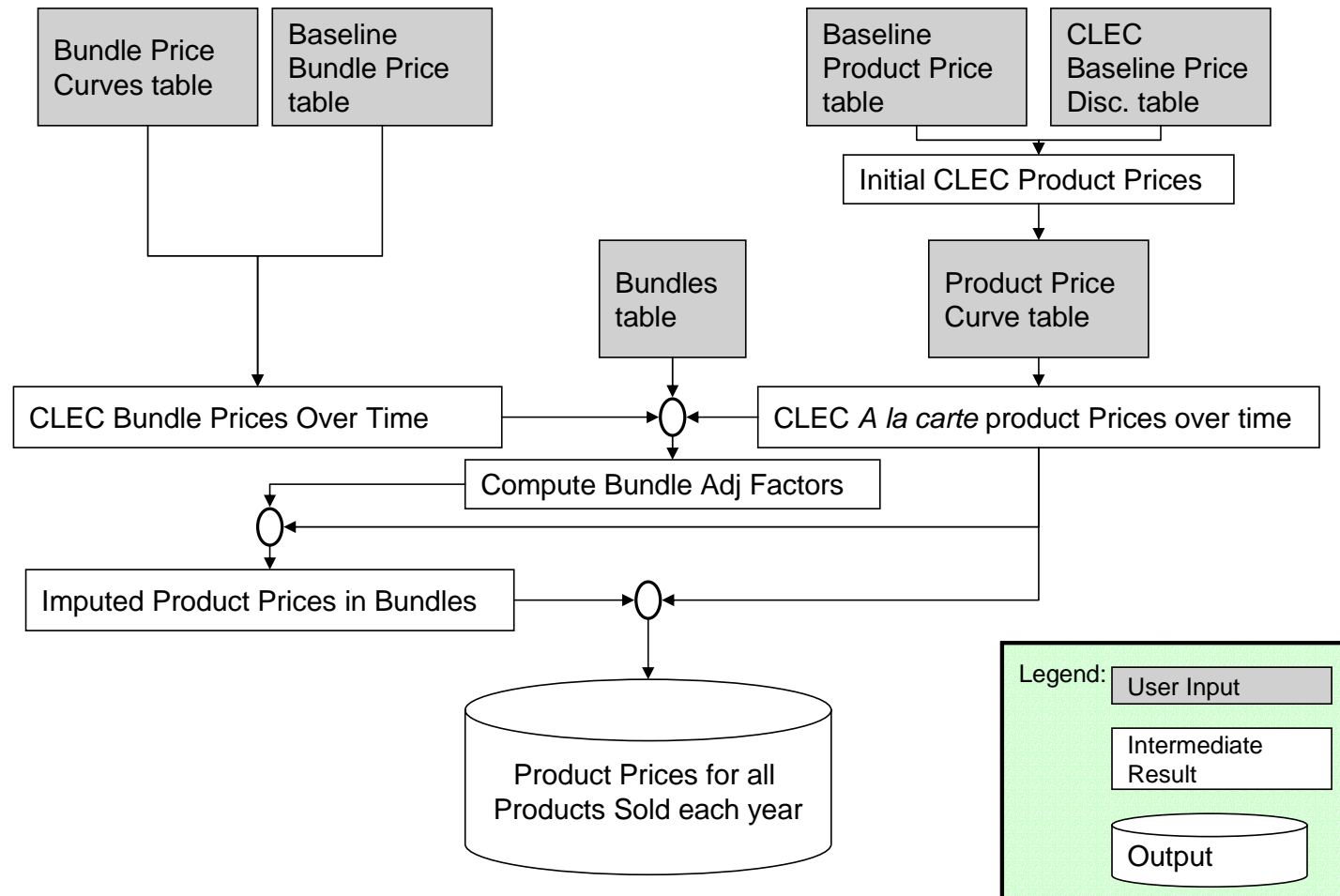


# PRICE PROCESS FLOW

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**P-Process: Determine the Price for *a la carte* and bundled product offerings**



# QUANTITY PROCESS OVERVIEW

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## ➤ Determination of product quantities

### Structure and Base Data

- Customers Counts (based on actual BellSouth data)
  - Res: 5 spend bands
  - Bus segments: 3 spend bands
- Current product demand (based on actual BellSouth data)
  - By customer segment
- Geographic
  - LATAs, UNE Zones, MSAs, CEAs
- Products
  - Local, LD, Data, Voice Mail, Access
  - Bundled offerings

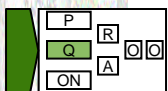
### User Inputs

- Market Share
  - Customers
  - Products within Customers : LD, Voice Mail, Data
  - Bundles of products
- Churn by product and customer segment
- Market Growth over time of customers
- Demand growth over time of Products and Bundles
- Profile of what CLEC offers

### Output

- Product demand over 10 years
  - A-la-carte
  - Bundled
- Product gross additions over 10 years
- Data at the BellSouth end office level by customer segment

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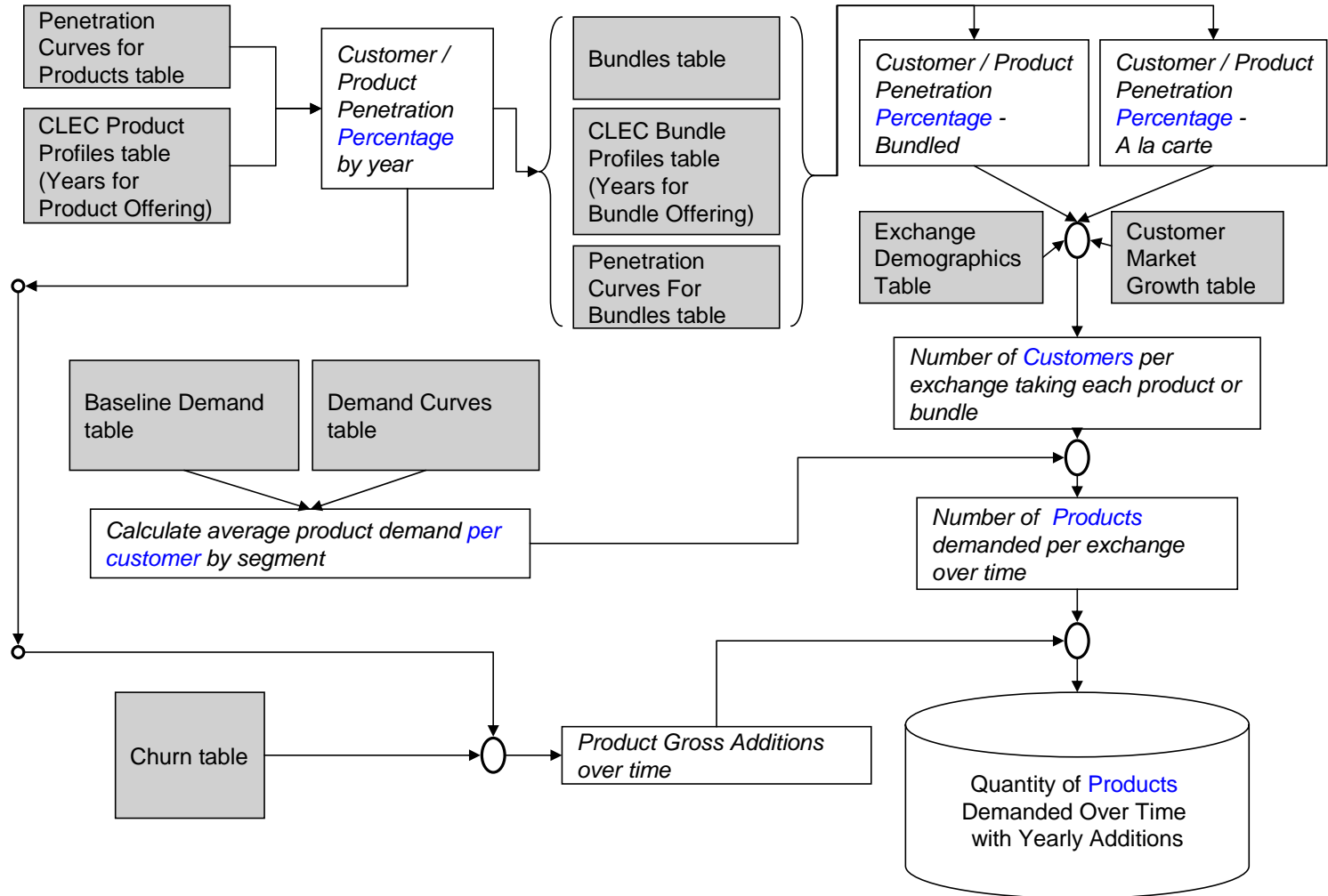


# QUANTITY PROCESS FLOW

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## Q-Process: Determine the quantity of products demanded/sold

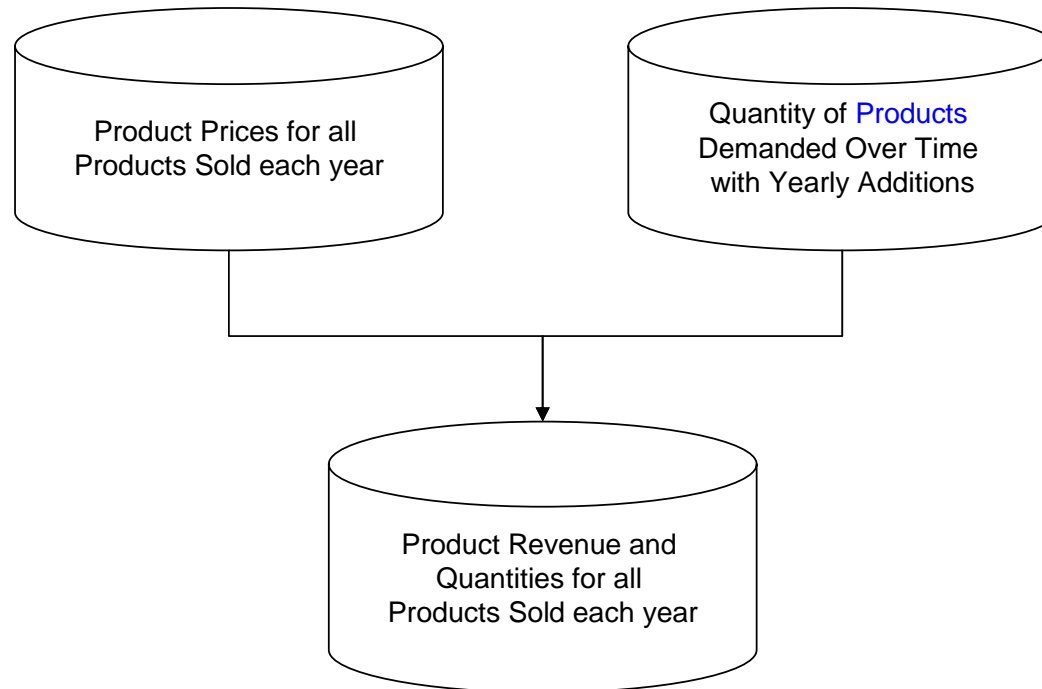


# REVENUE PROCESS OVERVIEW

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**R-Process: Determine the revenue (Price x Quantity)**



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P	R		
Q	A	Q	Q
ON			

# NETWORK PROCESS

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- Network process: determine costs to provision required capacity

## ➤ Inputs

- BellSouth UNE rates and colocation fees
- BellSouth special access rates
- BellSouth network capex and opex for network equipment
- BellSouth loadings and factors

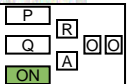
## ➤ Assumptions

- CLEC network design—including equipment choices, collocation and CO design—and topology
- Equipment and operating costs for CLECs are scalable to ILEC costs

## ➤ Outputs

- Cost to provision a “unit” of network capacity
- Costs include materials, engineering, installation, power, land and building, etc..

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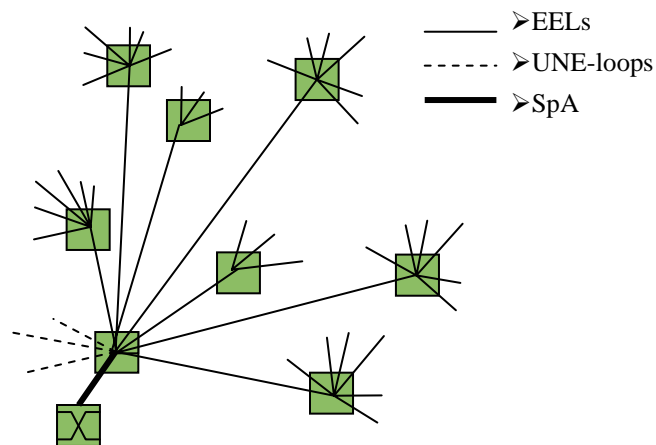
# NETWORK DESIGN: DESCRIBING THE CLEC NETWORK OPTIONS

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## ➤ Architecture scenario one – EELs



- One switch per LATA
- EELs to serve most customers
- Collocation in every LATA at an access tandem to serve all lines within the LATA
- SpA connections between CLEC and BellSouth infrastructure (e.g., tandems, databases)

SpA – Special Access

EEL – Enhanced Extended Link

UNE – Unbundled Network Element

■ ➤ BST CO

■ ➤ BST CO with CLEC colo

⊗ ➤ CLEC CO (switch)

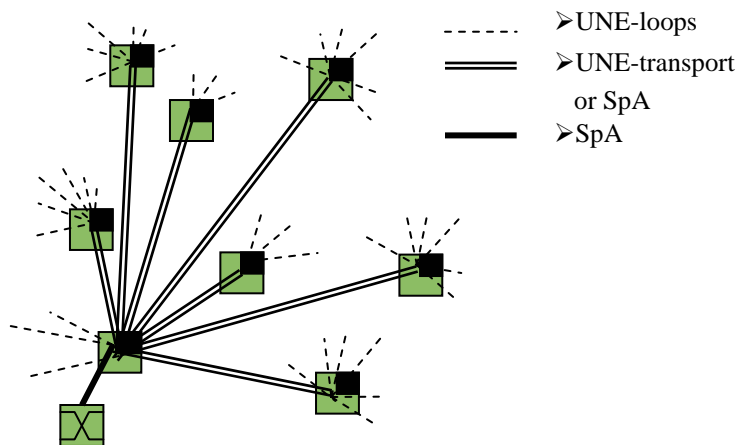
# NETWORK DESIGN: DESCRIBING THE CLEC NETWORK OPTIONS

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## Architecture scenario two – Collocation



- One switch per LATA
- UNE-loops to reach customers
- User adjustable choice of transport (UNE-transport or SpA) as surrogate for CLEC-owned infrastructure
- Broad DSL footprint
- SpA connections between CLEC and BellSouth access tandem infrastructure (e.g., tandems, databases)

SpA – Special Access

EEL –Enhanced Extended Link

UNE – Unbundled Network Element

➤BST CO

➤BST CO with CLEC colo

➤CLEC CO (switch)

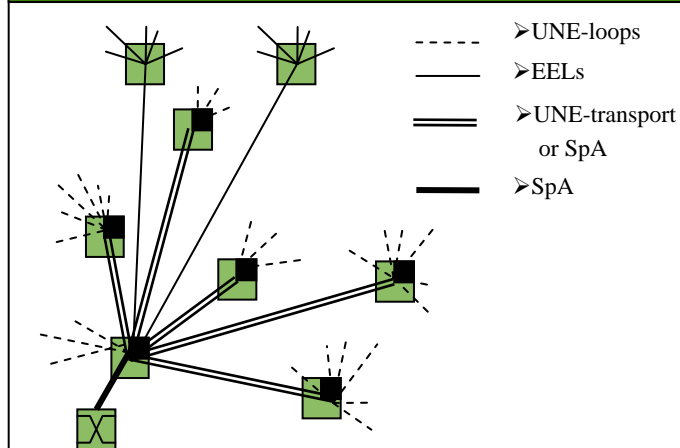
# NETWORK DESIGN: DESCRIBING THE CLEC NETWORK OPTIONS

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## Architecture scenario three – Collocation/EELs Hybrid



- One switch per LATA
- BACE optimizes collocation and EELs
- For collocation
  - UNE-L
  - UNE-transport or SpA as surrogate for CLEC-owned infrastructure
  - Included in DSL footprint
- SpA connections between CLEC and BellSouth access tandem infrastructure (e.g., tandems, databases)

SpA – Special Access

EEL – Enhanced Extended Link

UNE – Unbundled Network Element

 ➤ BST CO

 ➤ BST CO with CLEC colo

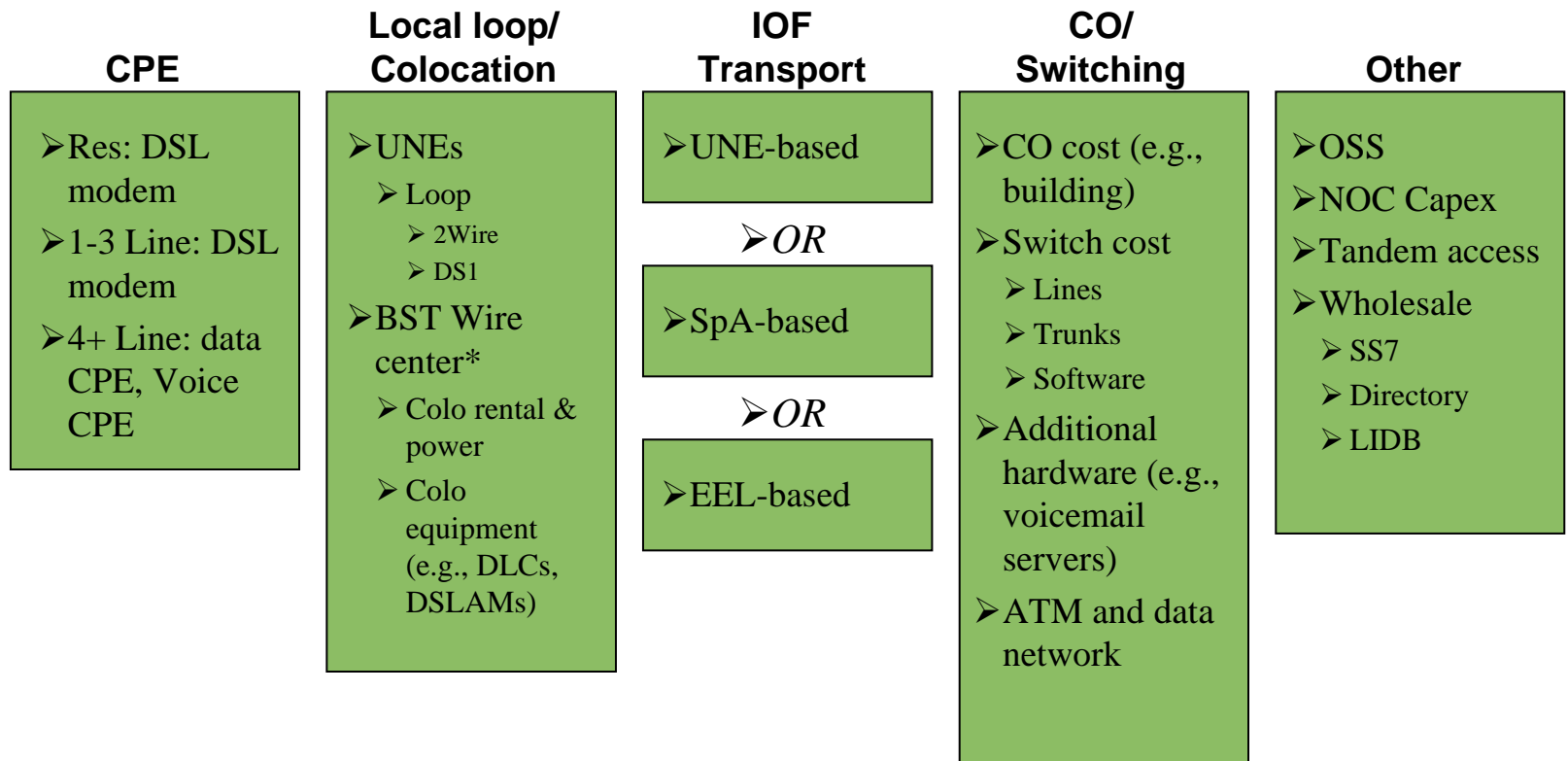
 ➤ CLEC CO (switch)

# NETWORK COMPONENTS

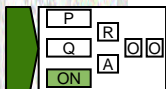
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- Network components required for CLEC to provision local service (non-exhaustive list)



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\* Not applicable for EEL-based CLEC

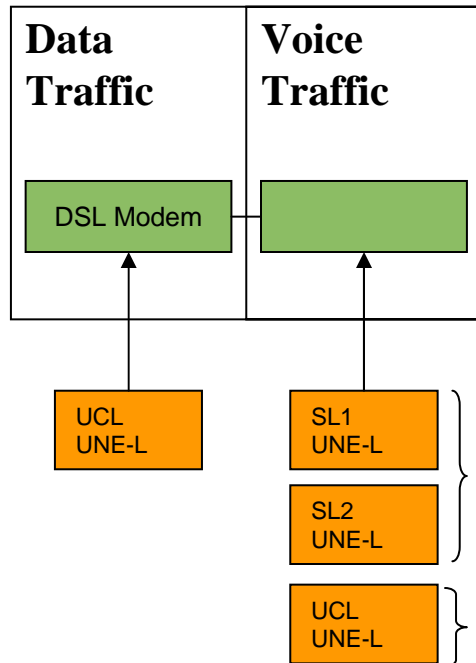
# NETWORK DESIGN: DESCRIBING CLEC FACILITIES – End User

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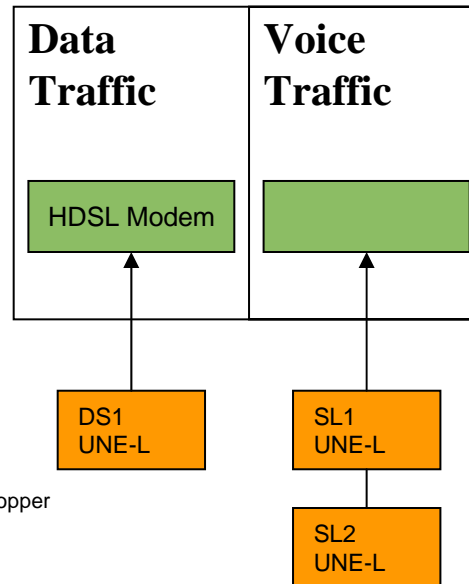
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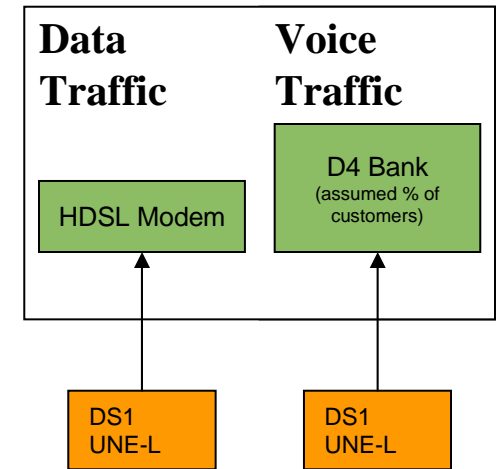
**Res and Bus: 1-3 lines**



**Bus: 4 to 8 lines**



**Bus: 9 + lines**



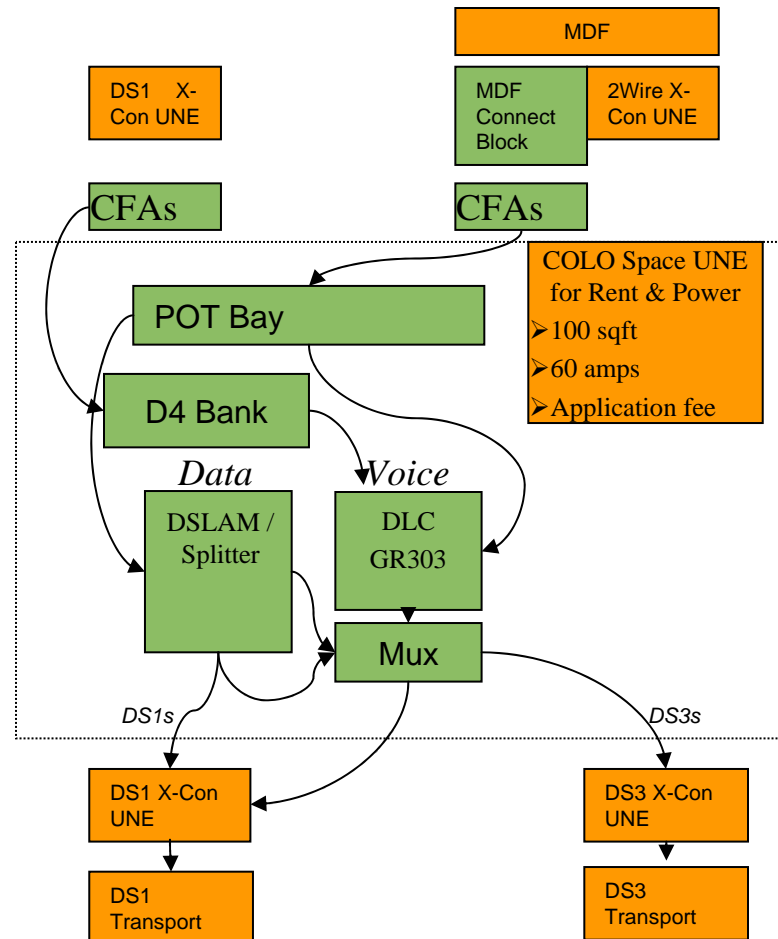
Notes: - All costs include recurring and non-recurring as appropriate  
- Orange indicates BST provided: Green indicates CLEC provided

# COLO NETWORK DESIGN: DESCRIBING CLEC FACILITIES

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## ➤ BST End Office



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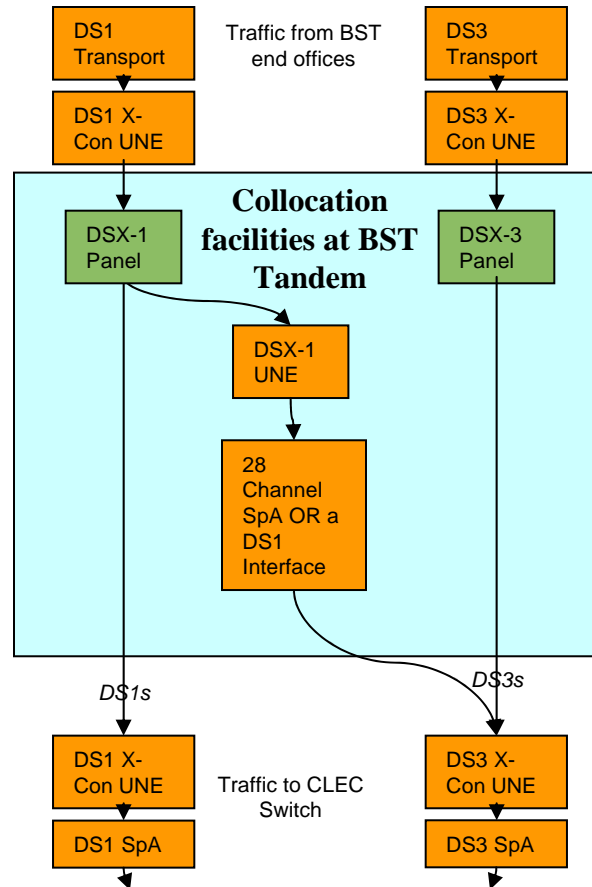
Notes: - All costs include recurring and non-recurring as appropriate  
 - Orange indicates BST provided: Green indicates CLEC provided

# COLO NETWORK DESIGN: DESCRIBING CLEC FACILITIES

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## ➤ BST Tandem Office: Traffic From BST End Offices



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Notes: - All costs include recurring and non-recurring as appropriate  
- Orange indicates BST provided: Green indicates CLEC provided



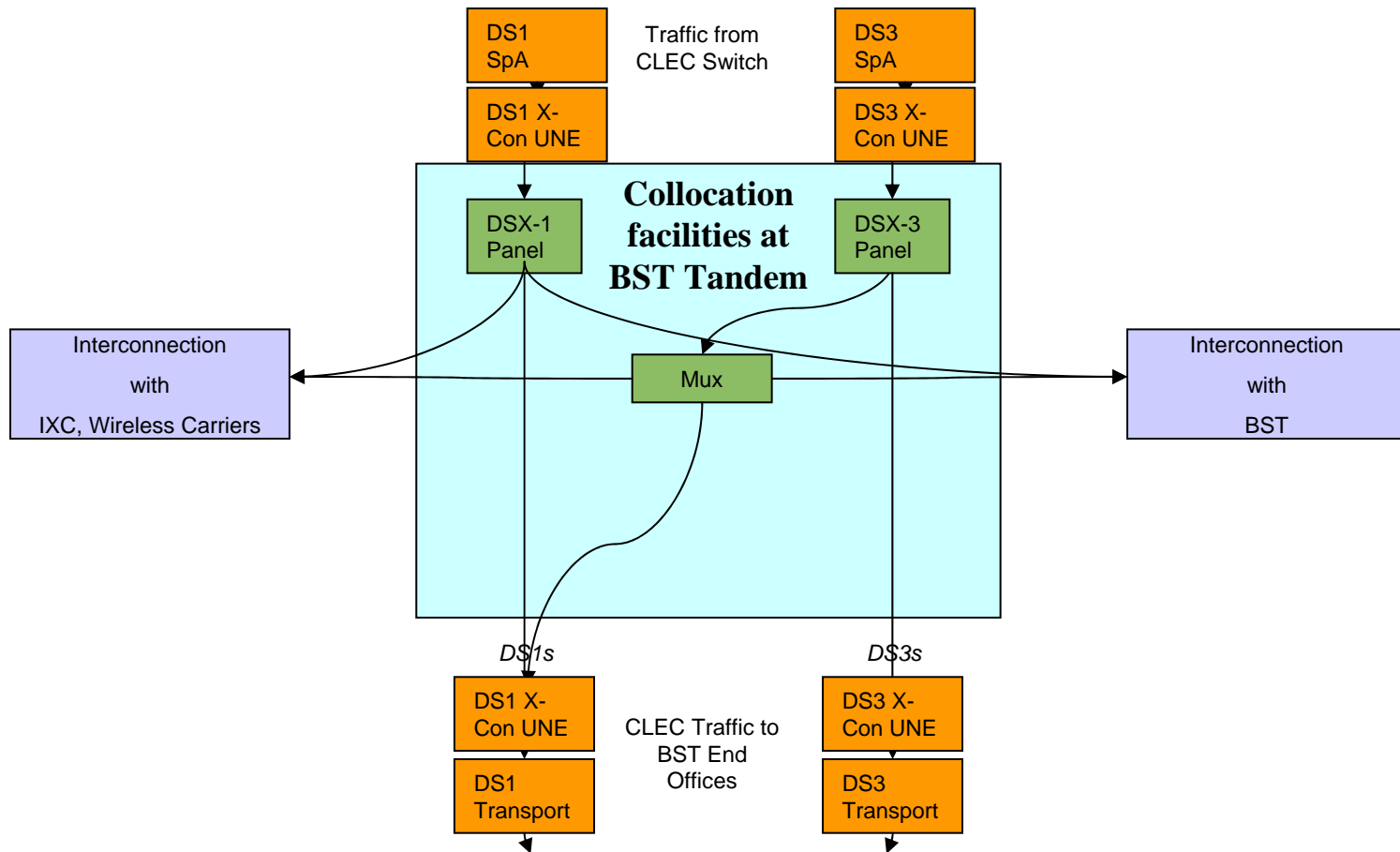
# COLO NETWORK DESIGN: DESCRIBING CLEC FACILITIES

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## ➤ BST Tandem Office: Traffic from CLEC Switch



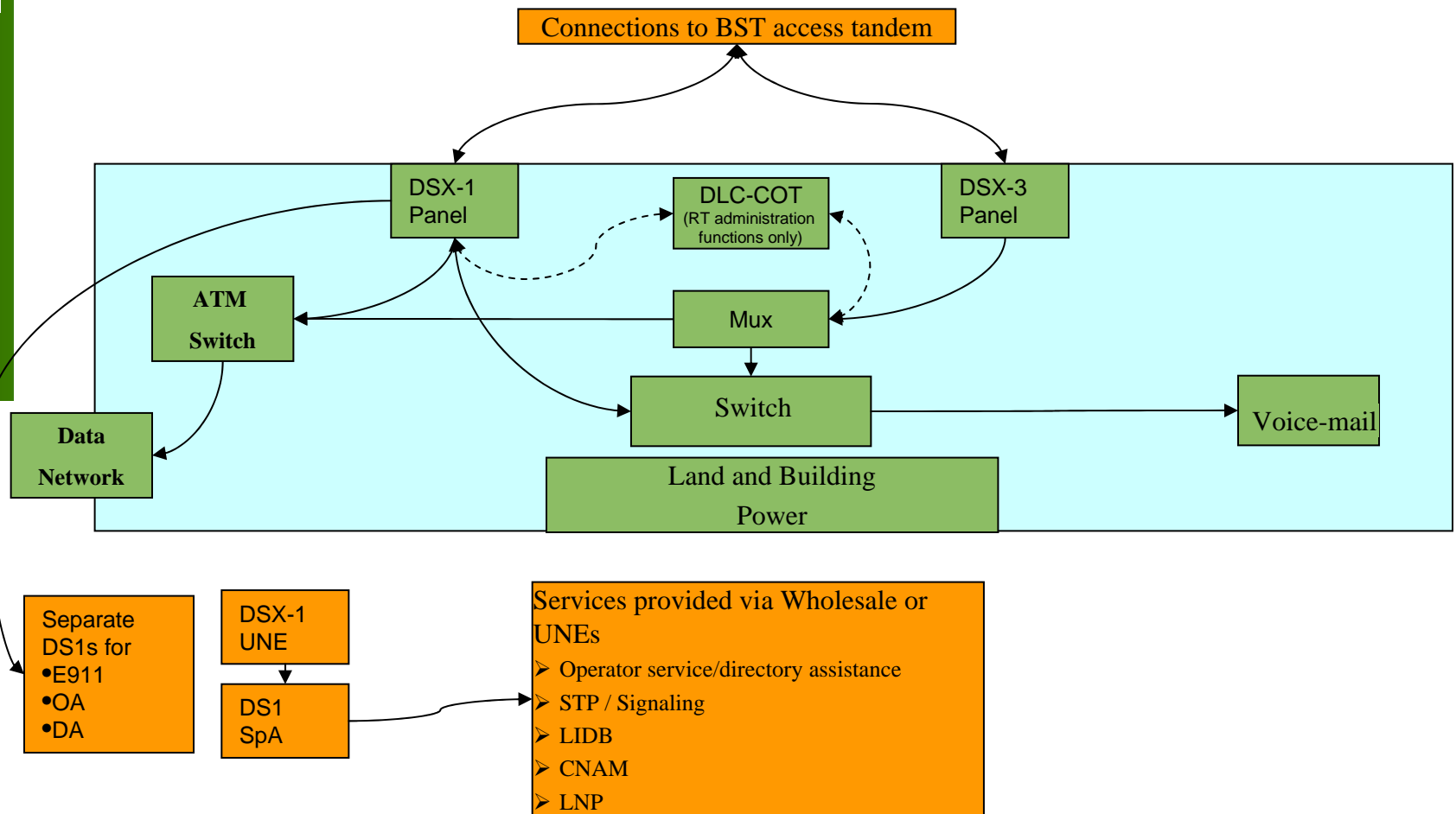
Notes: - All costs include recurring and non-recurring as appropriate  
 - Orange indicates BST provided: Green indicates CLEC provided: Purple is other entities

# NETWORK DESIGN: DESCRIBING CLEC FACILITIES

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## ➤ CLEC Switching Center



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Notes: - All costs include recurring and non-recurring as appropriate  
 - Orange indicates BST provided: Green indicates CLEC provided

# OPERATING PROCESS

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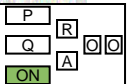
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- Operating process: calculate the cost of operating a competitive carrier

## ➤ Inputs

- ILEC operating costs from ARMIS
- Public information on CLEC operating costs (e.g., from analyst reports)

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## ➤ Assumptions

- Scaling of ILEC to CLEC costs
- Impact of CLEC size on costs (e.g., established vs. greenfield CLEC)

## ➤ Outputs

- Per-unit costs to operate CLEC over time

# OPERATING COST COMPONENTS

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- Operating costs for a competitive carrier (non-exhaustive list)

## Network Operations

- Operations and maintenance
  - Transport
  - Switch/CO
  - Data network
- NOC
- Ad-Valorem taxes

## Customer Operations

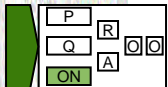
- Sales and marketing
- Customer installation
- Billing
- Customer care

## Corporate Operations

- G&A
  - HR
  - Legal
  - Regulatory
  - Finance and accounting
  - IT
  - Property management

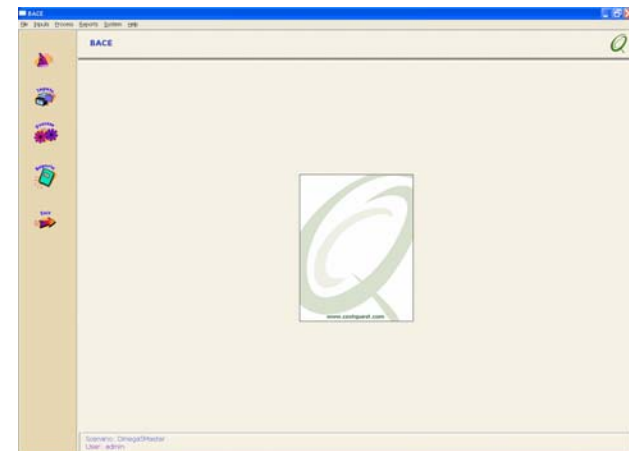
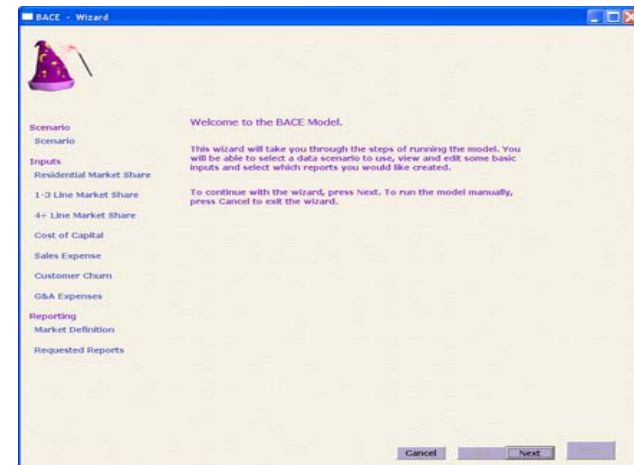
Sales and G&A

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# USING BACE

- User can run BACE in either of two modes:
  - Wizard
    - Guides the user through selecting key inputs and reports and processes the model
  
  - Step by Step
    - User controls all inputs, selects processing options, and manually runs reports



# BACE REPORTING

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## ➤ BACE Reporting options

### Choose geographic entity

- Corporate/footprint
- City (MSA, MMA)
- LATA
- CEA , UNEZone, etc..

### Choose costs

- Direct costs only
- Direct and indirect costs

### Choose customers

- All
- Residential
- Business
  - 1-3 lines
  - 4-8 lines
  - 9-23 lines
  - 24+ lines

### Choose reporting structure

- NPV
- Income statement
- Cash flow statement

### Choose products

- Local voice
- LD voice
- Data
- Voice Mail

# Q&A

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