Sprint

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January 14, 1997

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N. W. Room 222
Washington, D.C. 20554

RE: CC Docket No. 96-45, In the Matter of Federal-State Joint Board on Universal Service

Dear Mr. Caton,

On Monday, January 13, 1997, Pacific Bell, Sprint, and US WEST, sponsors of the Benchmark Cost Proxy Model (BCPM), conducted an overview of the model at 2101 L Street, N.W., Washington, D.C. Notification of the overview was distributed during December 1996, and all interested parties were invited to attend.

The following members of the FCC staff attended the presentation:

Robert Loube	Dan Gonzalez	Brian Clopton
David Krech	Brad Wimmer	David Kunuch
Anthony Bush	Anu Seam	Ed Krachner
Chris Bardner	Tony Dell	Thomas Boasberg
Emily Hofnar		

In addition to the above listed members of the FCC staff, approximately 120 interested parties for many aspects of the telecommunications industry attended the overview. The attached information was distributed by the joint sponsors of the BCPM to all attendees of the meeting. This notification is being filed today since the meeting concluded around 5:15 p.m. EST on January 13, 1997.

It is requested that this information be made a part of the record in this matter. Two copies of this letter, in accordance with Section 1.1206(a)(1) of the Commission's Rules and Regulations, are provided for this purpose.

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Please call on the above telephone number if there are questions.

Sincerely,

Warren D. Hannah

Attachment

c: Attendees

Benchmark Cost Proxy Model (BCPM)

January 13, 1997

USWEST®

Sprint®

PACIFIC TELESIS℠

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Section 1.....Presentation

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FCC

PROXY COST MODEL

WORKSHOP

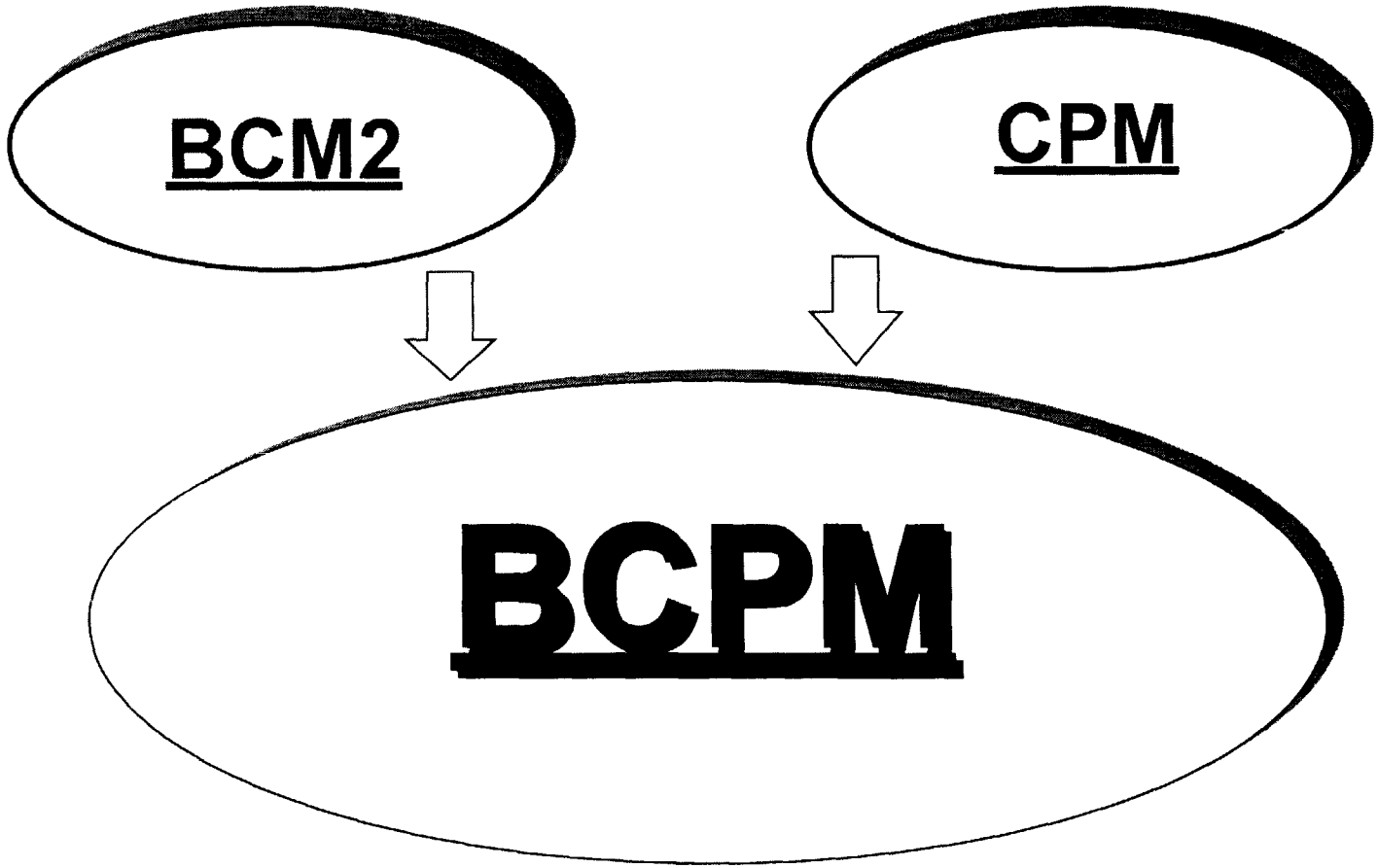
Pacific Bell, Sprint, U S WEST

Benchmark Cost Proxy Model

Purpose of the Model

- Identify High Cost Geographic Areas (e.g. CBGs)
- Develop Benchmark Cost Range
  - Basic Single Line Service
  - Efficient Design
  - State-of-the-Art Technology
- Allow Evaluation of Multiple Proposals for High-Cost Support Targeting
- Provide Capability for the Development of Unbundled Network Element Costs

Benchmark Cost Proxy Model



Pacific Bell, Sprint, U S WEST

Model Enhancements

Refinement of Model Dynamics

- Capital Cost Module
- Structure Cost Refinements
- Flexibility for Smaller Company Inputs
- More Disaggregated Cost Categories

Refinement of Input Data

- Expanded Forward-Looking Data Sampling
- Increased Accuracy/Flexibility of Household Data

Ease of Use

- Model Logic, Equations Open & Available for View
- Expanded User Controlled Input & Report Levels

Enhanced Model Detail

- Unit of Geography
- Refinement of Market/Demand Information
- Loop
- Switching
- Annual Costs/Expenses

Benchmark Cost Proxy Model

Unit of Geography

Census Block Groups (CBG, Used in BCM2)

- Defined by U.S. Bureau of the Census (Publicly Available)
- 250-550 Housing Units
- Ideal Size 400 Units

Census Blocks (Basis for Grid Data Used in CPM)

- Sub-Unit of CBG
- Being Tested As Geographic Unit in BCPM

GRIDS (CPM)

- 1/100Th Degree Latitude, Longitude
- Approximately 3,000 X 3,000 Ft.
- Possible Geographic Unit in Future BCPM

Benchmark Cost Proxy Model

Small Unit of Geography Necessary:

- Large Variation in Costs Within Wire Center
- De-Averaging More Accurately Identifies Cost
- Will Allow for More Precise Targeting of Subsidy
- Avoids Competitive Distortions Inherent in Using Higher Levels of Aggregation (e.g. Exchange or Study Area) for USF Purposes

Refinement of Market/Demand Data

- **Placement of Access Lines**

  Mapping CBG to Correct Serving Entity

- **Estimation of Access Lines in Geographic Area**

  Residential Customers

  Single Line Business Customers

  Special Access

- **Recognition of Multiple Dwelling Units**

Benchmark Cost Proxy Model

Assumptions: Loop Technology

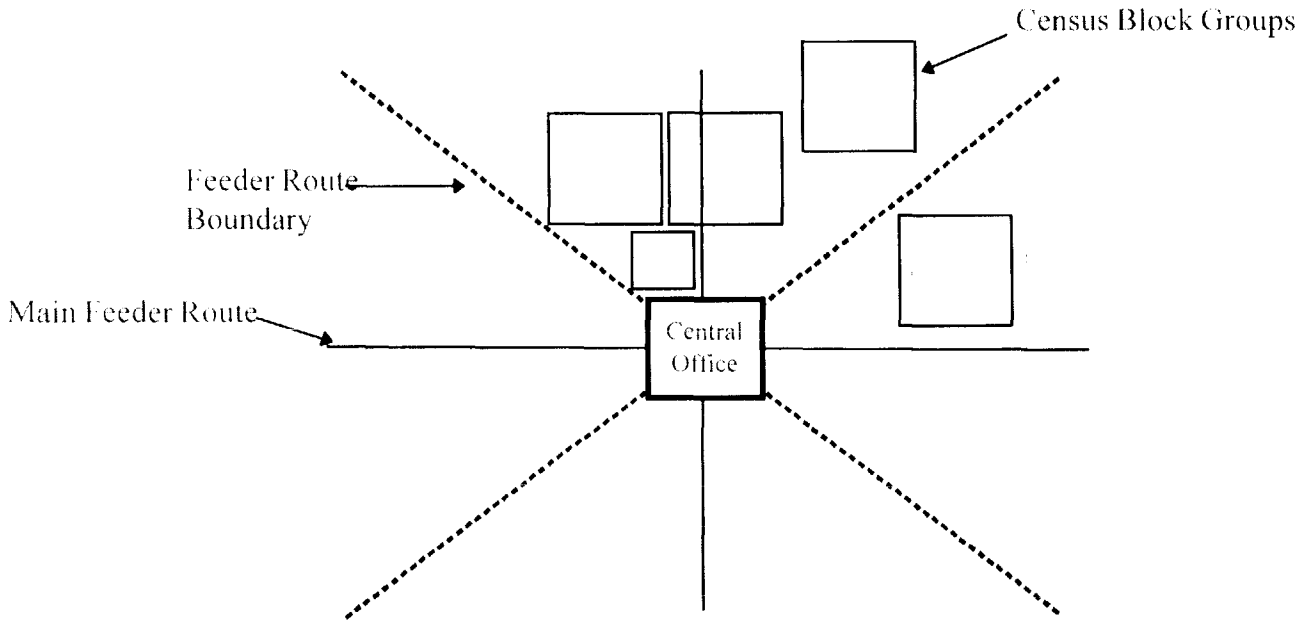
- Distribution Plant - Analog Copper Technology
  - Fiber
- Analog Copper Feeder Where Loop Length Is User Selectable Input: 6,000; 9,000; 12,000; 15,000; 18,000
- Fiber Feeder For Digital Subscriber Line Carrier Where Loop Length >User Set Maximum
  - Remote Terminal At Feeder Plant End - At or in the CBG
- Two Types of Digital Loop Carrier Systems
  - Large Digital Loop Carrier (DLC-L) for Terminals Needing Capacity > 240 Lines
  - Small Digital Loop Carrier (DLC-S) for Terminals Needing Capacity <= 240 Lines
  - Both Products Utilized in Drop/Add Configurations With DLC-L Having Total Capacity of 2016 VG Channels Per 4 Fibers and DLC-S Have Total Capacity of 672 VG Channels Per 4 Fibers

Assumptions: Feeder Plant Architecture

- Feeder Cable Begins at CO and Extends to the Appropriate Interface Point Within the CBG
- 4 Main Feeder Routes Leave CO With Feeder Route Boundaries at 45° Angle From Main Route
- Cable and Fiber Feeder Systems Share Structure in Main Feeder Systems
- Main Feeder Routes Are Segmented at Taper Points
- Each Feeder Segment'S Cable Size Determined by Segment Capacity
- Feeder Cable Size From 25 Pair to 4200 Pair, Fiber Cable Size From 12 Strand to 288 Strand

Benchmark Cost Proxy Model

Feeder Plant



Changes From BCM2/CPM to BCPM: *Feeder Plant*

<u>Increased Detail:</u>

- Break Out of Feeder Distribution Interface As a Separate Item of Plant.
- Organized to Increase Ease of Identifying Feeder vs. Distribution in CBG.
- Separation of Underground vs. Buried.

Benchmark Cost Proxy Model

Assumptions: Distribution Plant Architecture

- Households Are Evenly Distributed in CBG
- Distribution Cable Begins at Feeder Distribution Interface and Ends at Customer Premises
- Distribution Plant Designed to Reach All Households in CBG Through Placing of Cables Between Subdivision Lot Lines
- Copper Distribution Length Limited at User Adjustable Maximum
- Distribution Cable Size From 12 Pair to 3600 Pair
- Percentage of Business Lines Terminated at DS1 Level Signal (User Adjustable Input)
- Fiber Utilized Below Copper Distance Breakpoint in CBGs Where Line Demand Exceeds Maximum Copper Cable Size

Changes From BCM2/CPM to BCPM:

Distribution Plant Architecture

BCM2

- Pedestal
- SAI or FDI Included in Loading Factor
- No Multiple Dwelling Units Recongnized

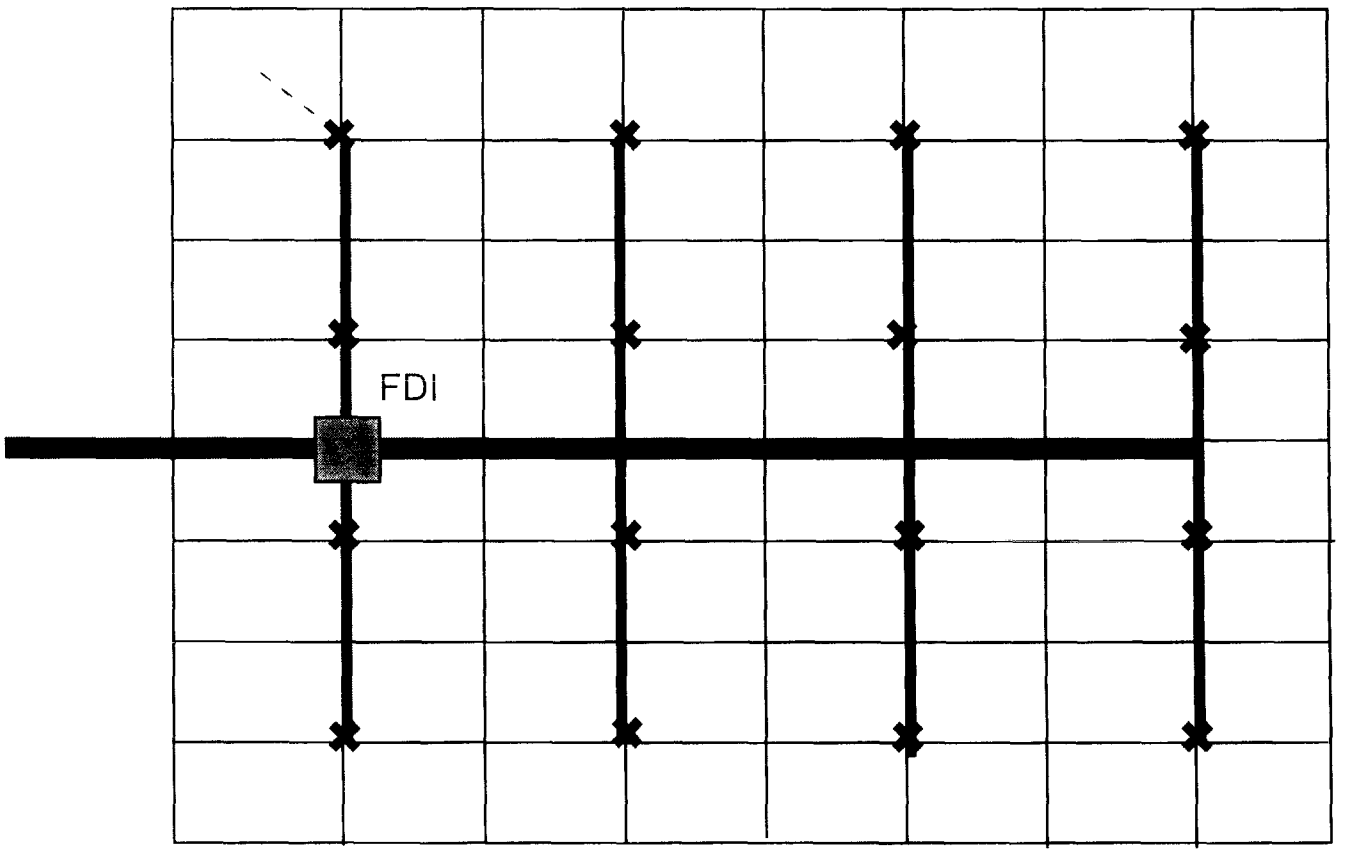
BCPM (CPM)

- Drop terminal included with pedestal
- FDI size and cost uniquely engineered
- Now multiple dwelling units recognized

Benchmark Cost Proxy Model

Distribution Plant with Copper

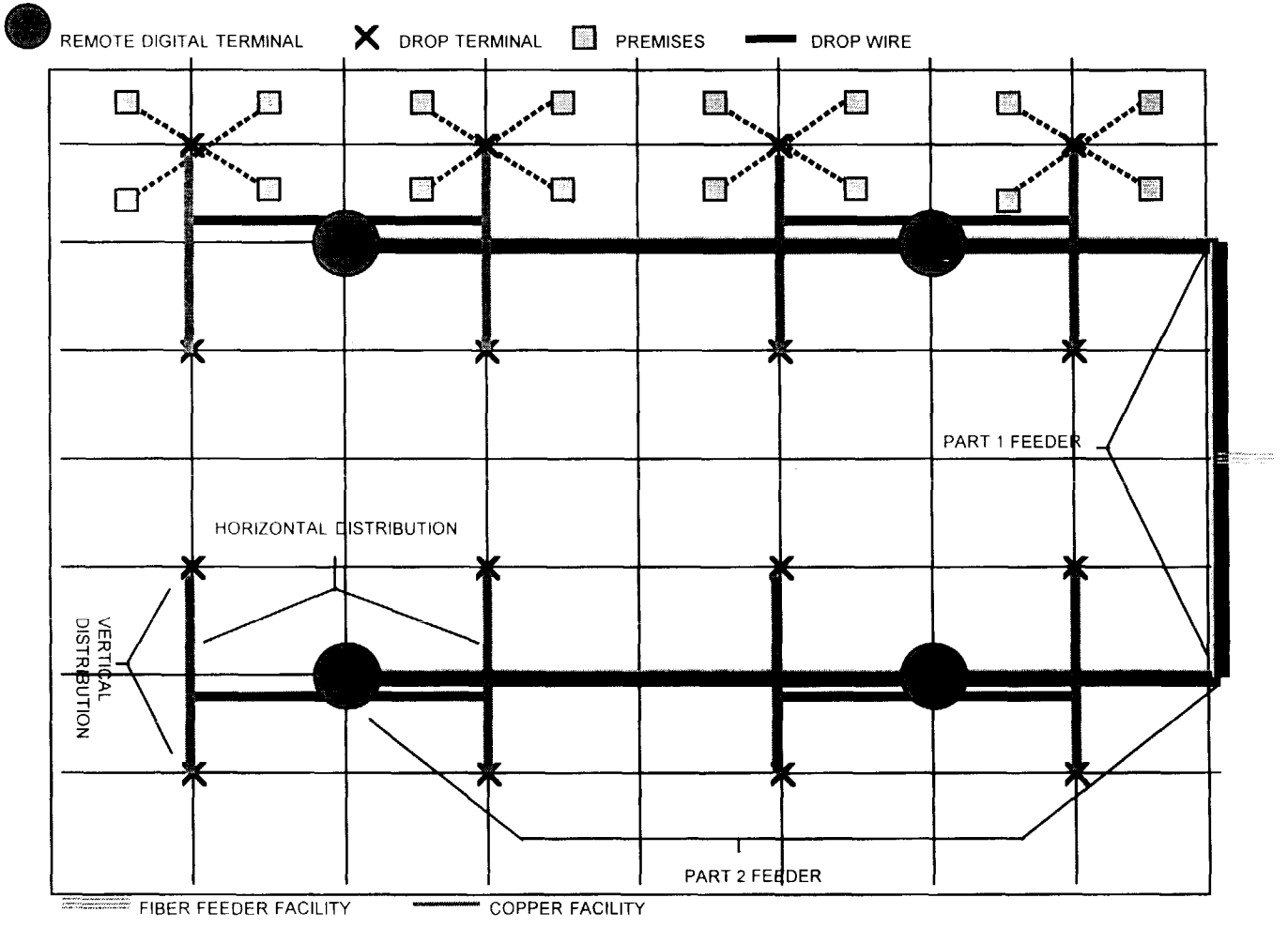
✖ Pedestal ▬ Copper Facility - - Drop Wire



Pacific Bell, Sprint, U S WEST

Benchmark Cost Proxy Model

EXAMPLE OF DISTRIBUTION PLANT WITH FIBER



Assumptions: Density

- Density of Existing Population Determines the Construction Methods Used in Deploying Telephone Plant.
- Density of Population Determines Potential for Growth and the Future Need for Additional Capacity.
- Density of Population Influences the Mix of Underground, Buried and Aerial Plant.

Changes From BCM2/CPM to BCPM: *Density*

BCM2

Six (6) Density Groups

- 0 < And <= 5
- 5 < And <= 200
- 200 < And <= 650
- 650 < And <= 850
- 850 < And <= 2550
- 2550+

BCPM (CPM)

Seven (7) Density Groups

- 0 < and <= 10
- 10 < and <= 50
- 50 < and <= 150
- 150 < and <= 500
- 500 < and <= 2000
- 2000 < and <= 5000
- 5000+

Benchmark Cost Proxy Model

Assumptions: Terrain Placement Costs

- Placement Depths For Copper 24"; For Fiber 36" - User Adjustable Input
- Terrain Indicators Include: (Source: U.S.D.A./S.C.S.)
  - Depth to Water Table
  - Depth to Bedrock
  - Hardness of Bedrock
  - Surface Soil Texture
- Critical Water Table Depth 36" - User Adjustable
- If Water Table or Bedrock Within Placement Depth, Then Structure Costs Reflect Additional Construction
- Otherwise, Surface Texture Examined For Plowing Difficulty

Assumptions: Fill Factors

Density	Feeder	Distribution
0 to 10	75%	40%
10 to 50	80%	45%
50 to 150	80%	55%
150 to 500	85%	65%
500 to 2000	85%	75%
2000 to 5000	85%	80%
5000 plus	85%	80%