risk that would be incurred by a new market entrant, risk that is not reflected in historical costs of capital.

The BCPM uses a default cost of capital of roughly 11.4%. This comes from a cost of debt at 7.8%, a debt ratio of 32.8%, an equity ratio of 67.2% and a cost of equity of 13.16%. This cost of capital represents the cost incurred by an efficient entrant offering basic service in a competitive market environment. It is consistent with the 11.25% rate of return that has been supported by the Commission.[29]

It is also consistent with the cost of capital obtained by Dr. James Vander Weide, Professor of Finance, Duke University, when he recently estimated a 7.6% cost of debt, a 13.9% cost of equity and a weighted average cost of capital of 11.8% (when the debt/equity ratio is 32.8%/67.2%).[30] The 11.4% used in the BCPM represents a conservative compromise between the Commission approved 11.25% and the estimated figure of 11.8%.

The Hatfield Model versions 2.2.2 and 3.0 both use a 10.01% cost of capital. Sprint believes that this figure is much more reflective of historical capital costs rather than forward-looking costs. As such, a capital cost figure of 10.01% does not accurately account for the additional risk encountered by a new market entrant. Sprint believes that the Commission's currently prescribed interstate rate of return represents a reasonable approximation of the cost of capital that should be used in a proxy model.

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[29] The Bureau has released a Public Notice seeking comment on whether the Commission should commence a represcription proceeding. Common Carrier Bureau Sets Pleading Schedule for Preliminary Rate of Return Inquiry, Public Notice, DA 96-139, 61 Fed. Reg. 6641 (rel. Feb. 21, 1996). But see, Interconnection Order, para. 702.

[30] Dr. Vander Weide presented this discussion during the workshops conducted by the staff of the Federal-State Joint Board on universal service relating to the selection of a proxy cost model for determining the cost of providing the service supported by the universal service support mechanism used on January 14 and 15, 1997.

H. Treatment of Joint and Common Costs

The Staff states that if proxy models are used to estimate forward-looking economic costs, the question of joint and common costs must be addressed.[31] In the case of pricing of unbundled network elements, costs that are jointly caused by a set of network elements can be allocated among the individual elements in that set. Common costs include costs incurred by the company's operations as a whole. The Staff notes that given these joint and common costs, setting prices for individual network elements based on forward-looking incremental costs alone would not recover the full forward-looking cost of the network.

The Staff notes that if proxy models are used in determining Universal Service support payments or in setting cost-based access charges, additional issues are raised in the treatment of joint and common costs. Each of the proxy models addresses these issues differently. The Staff notes that BCM2 assumes common costs are equal to 75 percent of the ARMIS per-line common costs and that Hatfield 2.2.2 assumes that corporate overhead expenses vary with the size of the firm, and the model attributes a fixed proportion of aggregate total cost, set by default at 10 percent, to overhead expenses.

Sprint advocates that Universal Service support calculations should be based on a benchmark calculation to encourage efficiency. The most appropriate methodology to apply in the development of unbundled network elements is to begin with current joint and common costs allocated to TELRIC investment on a percentage basis. Sprint advocates an annual productivity adjustment to joint and common costs to motivate incumbent LECs to harvest cost efficiencies.

Attachment 1 provides a spreadsheet example of Sprint's proposed adjustment to joint and common costs. The data shown is Sprint Local Telecommunications Division's 1995 unavoided

costs and reflects Sprint's expectation of productivity gains. (In the Attachment "joint" costs are referred to as "other direct" expenses.) In subsequent years, Sprint proposes that other direct and common expenses will be adjusted by the interstate productivity factor of 5.3% offset by any increase in the Gross Domestic Product - Price Index (GDP-PI) and any incremental wholesale costs applicable for that year. The attachment provides a simple illustration of how the other direct and common expenses might decline under a given set of circumstances. In this example, initial year other direct and common costs of $13.60 per line per month decline to $11.44 by the fourth year -- a decline of approximately 16%.

Sprint advocates that the application of other direct and common costs should be made on a percentage basis rather than a fixed amount per line. For example, Sprint allocates its other direct expenses based on TELRIC investment. Common expenses are allocated based on TELRIC revenue requirement. Allocations of a fixed amount per unit send inappropriate price signals. In the case of unbundled loops, there are wide geographic differences in loop costs based primarily on distance and density. Applying the same dollar amount of markup for other direct and common cost expenses would disproportionately increase the price charged for lower cost loops. These lower cost loops are those most likely to face immediate facilities-based competition if irrational economic price signals are conveyed. As an analogy, retail marketers commonly apply a percentage markup to their costs to account for overhead costs. It would not be reasonable in an appliance business to expect that all refrigerators would carry the same dollar markup. The range in refrigerator prices is too wide, accounting for legitimate differences in size and features that affect the underlying cost. Sprint urges the Commission to affirm the application of other direct and common costs on a percentage markup basis.

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[31] Staff Analysis para. 70.

IV. CONCLUSION

Sprint shares Staff's belief that proxy models can be valuable tools in developing rules in access reform, interconnection, and universal service. One model with sufficient flexibility could be used in all three situations. While we have not had the opportunity to thoroughly test Hatfield 3, Sprint is convinced that BCPM is the superior model in building the kinds of networks that need to be developed in Universal Service.

BCPM is much more rigorous in its investment logic; it is much more precise in its treatment of variable conditions (e.g. terrain, soil, density, et al.); it is much more realistic in its approach to the cost of capital; it is much more flexible; and it is much more granular in its approach to units of geography. Sprint submits that the adoption of BCPM in these respects is appropriate and consistent with the guidelines set forth in the Staff Analysis.

Respectfully submitted,

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February 19, 1997

Analysis of Other Direct and Common Costs

FICTITIOUS EXAMPLE

Component	Total Unbundled Cost	Total Unbundled Cost/Line/ Month	% of Total TELRIC
Total Embedded Cost (Not Avoided)	5,500,000,000	$ 45.83	
TELRIC Direct Cost	5,000,000,000	$ 41.67	84.03%
Other Direct	500,000,000	$ 4.17	8.40%
Common	450,000,000	$ 3.75	7.56%
Total TELRIC + Oth Dir + Common	5,950,000,000	$ 49.58	100.00%
Incr. Wholesale Costs (1st Yr Only)	20,000,000	$ 0.17	
Total TELRIC + Oth Dir + Common + Incr.	5,970,000,000	$ 49.75	

			Access Lines	AL Growth	Productivity	GDP-Pi
1st Year	5,970,000,000	$49.75	10,000,000			
TELRIC	5,000,000,000	$ 41.67				
Other Direct & Common	950,000,000	$ 7.92				
2nd Year	6,126,250,000	$49.09	10,400,000	4.00%	5.300%	2.800%
TELRIC	5,200,000,000	$41.67				
Other Direct & Common	926,250,000	$7.42				
3nd Year	6,257,241,250	$48.68	10,712,000	3.00%	5.300%	2.600%
TELRIC	5,356,000,000	$41.67				
Other Direct & Common	901,241,250	$7.01				
4th Year	6,336,422,771	$48.33	10,926,240	2.00%	5.300%	2.200%
TELRIC	5,463,120,000	$41.67				
Other Direct & Common	873,302,771	$6.66				

CERTIFICATE OF SERVICE

I, Melinda L. Mills, hereby certify that I have on this 19th day of February, 1997, served via Federal Express Priority Overnight or Hand Delivery, a copy of the foregoing "Comments of Sprint Corporation on Staff Analysis of Forward-Looking Economic Cost Proxy Models," in the Matter of Cost Models in Universal Service Notice of Proposed Rulemaking, CC Docket No. 96-45, filed this date with the Acting Secretary, Federal Communications Commission, to the persons on the attached service list.

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CPD Docket No. 97-2

Comments of Strategic Policy Research, Inc.*

We have previously recommended that the Commission reconcile top-down and bottom-up estimates of costs.** This procedure has been successfully employed by the British regulatory agency Oftel. We believe that such reconciliation would yield higher estimates of forward-looking long-run incremental costs than the bottom-up cost models considered heretofore by the Commission. To contribute to such a reconciliation procedure, we attach hereto *A New Set of "Top-Down" Incremental Cost Measures, February 18, 1997 (Revised)*, for the Commission's consideration.

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** *See* J. Haring, C. S. Monson and J. H. Rohlfs, *Comments on FCC's Industry Demand and Supply Simulation Model* (July 8, 1996) [available at http://www.spri.com]. In that earlier submission to the FCC, we described the alternative approaches to cost estimation in some detail, offering a taxonomy of different models along with some rudimentary estimates of loop costs based on a top-down approach.

Table of Contents

Preface to the Revised Study

This paper is a revision of the one previously distributed on November 17, 1996. It incorporates a number of model improvements, including the following:

1. We now use estimates of the economic value of capital instead of net book value. We develop explicit estimates of economic values for cable and wire and switching, which comprise most of the investment of local exchange carriers. For these important categories of plant, we no longer assume that regulatory depreciation is, or ever has been, an adequate proxy for economic depreciation. Consequently, the model results are no longer tied to embedded costs.
2. We have expanded our sample to include the years 1990-1992, as well as 1993-1994. The larger sample reflects a broader range of experience and allows model parameters to be estimated more precisely
3. The model includes square miles of serving area as an explicit explanatory variable. The new model allows for the possibility that cost relationships may vary with density.
4. The study now includes explicit sensitivity analysis. That analysis demonstrates that the model results are robust with respect to plausible variations in key modeling assumptions.
5. The model is now estimated using the variance components (random-effects) method. That method is widely used for estimation on pooled time-series cross-section data and has important advantages over ordinary least squares.

A New Set of "Top-Down"

Incremental Cost Measures

February 18, 1997

(Revised)

Summary

This paper presents a new set of incremental cost estimates for key elements of telecommunications service. The estimates are substantially *higher* than those previously reported by others. In particular, we estimate that the total-element long-run incremental cost of loops is 62 percent higher than the FCC proxy, which is purportedly cost-based. Our estimate for switching is 32 percent higher than the upper end of the FCC's proxy range. These differences derive primarily from differences in the cost modeling techniques that are utilized. Previous estimates have been based on a "bottom-up" engineering approach that conjectures about costs of building and operating a *hypothetical* network. We adopt a "top-down" econometric approach based on the costs of additions to capacity and expansion of operations of a large number of *existing* networks to make inferences about forward-looking incremental costs. Our estimates of incremental cost are based on economic valuation of capital rather than embedded costs. One comparative advantage of a top-down approach