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July 23, 1999

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**BY HAND DELIVERY**

Ms. Magalie R. Salas  
Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
TW-A325  
Washington, DC 20554

**Re: Comments of GTE Service Corporation and Its Affiliated  
Domestic Telephone Operating Companies in Response to  
Further Notice of Proposed Rulemaking: Universal Service –  
CC Docket No. 96-45 and Forward-Looking Mechanism for  
Non-Rural LECs – CC Docket No. 97-160**

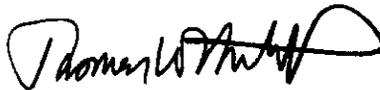
Dear Ms. Salas:

Please find enclosed for filing an original and six (6) copies of GTE's comments in the above matter responding to the Further Notice of Proposed Rulemaking released on May 28, 1999.

I have also enclosed two additional copies that I request be file stamped and returned to my messenger.

If you have any questions, please call me at (202) 342-8522. Thank you.

Sincerely,



Thomas W. Mitchell

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Enclosure

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Before The  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

JUL 23 1999

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of	)	
	)	
Federal-State Joint Board on	)	CC Docket No. 96-45
Universal Service	)	
	)	
Forward-Looking Mechanism	)	CC Docket No. 97-160
for High Cost Support for	)	
Non-Rural LECs	)	

**COMMENTS OF GTE SERVICE CORPORATION  
AND ITS AFFILIATED DOMESTIC TELEPHONE OPERATING COMPANIES  
IN RESPONSE TO FURTHER NOTICE OF PROPOSED RULEMAKING**

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## SUMMARY

The Commission should not adopt any input values, including those proposed in the FNPRM, until it has finalized a correctly working cost model platform. It is not possible or practical to decide whether the proposed inputs are reasonable unless the Commission and all parties know exactly what the platform does with them. The platform, however, is still a work in progress. The platform continues its non-linear development with 11 changes in the last eight months -- the most recent version was released on June 2, 1999, after the instant FNPRM was issued. Importantly, the changes to the model are not minor refinements or tweaks as one would expect if the model were nearing completion. Rather, as detailed herein, the Commission continues to make mass and inconsistent modifications between the model versions that encompass dramatic changes in approach and philosophy. In addition, as described in these Comments, GTE has identified 20 additional flaws from its review of the model platform that have yet to be addressed. All of these problems need to be fixed, and final decisions on inputs should be deferred until all such problems have been identified, solved, and the model platform is stable. In addition, the platform must comply with the Commission's Universal Service Order.<sup>1</sup> Accordingly, GTE urges the Commission to thoroughly evaluate the comments offered by all interested parties relating to the model platform, as well as the proposed inputs.

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<sup>1</sup> See *In the Matter of Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, *Report and Order*, FCC 97-157 (rel. May 8, 1997), at ¶ 250 ("Universal Service Order").

Aside from the problems that still exist with the platform, it is clear that the Commission should not adopt the proposed single set of values that apply to all carriers on a nationwide basis, and should instead approve company-specific input values. Company-specific values are needed so that the model generates cost estimates that accurately reflect the fact that the costs incurred by efficient carriers to provide universal service vary between states, and even between areas within the same state. The use of national average inputs will understate or overstate the costs of providing universal service for each carrier depending on the variability of each company to the national average. It is not a burdensome task to develop company-specific input values because the Commission already has most of the needed data and the remainder can be obtained.

Unfortunately, the Commission has tentatively rejected the company-specific approach and attempted to develop nationwide inputs based on flawed methodologies. These methodologies are not based on the actual operating experience and data that the FCC has in its possession. Instead, the Commission extrapolated inputs from data pertaining to the smallest rural ILECs in the country. The resulting proposed inputs, developed from data submitted by small, rural telephone companies to the Rural Utilities Service, are not reflective of the actual cost structure of a non-rural LEC. Rural company data are not representative of the costs incurred by non-rural carriers, and cannot serve as the starting point for developing inputs for non-rural carriers. This is particularly true when the Commission already has in its possession the data from the non-rural companies and can develop the inputs correctly. This material exists in Commission-required ARMIS reports as well as the responses submitted by the ILECs

in this docket to a Commission initiated survey that have been inexplicably ignored. The Commission developed several complex adjustments to this rural data in an attempt to make them more representative of non-rural companies, such as an adjustment to reflect an incumbent carrier's superior buying power, but they, too, are flawed.

A careful examination of the specific input values proposed by the Commission shows that they will lead to a significant underestimation of the costs of non-rural carriers. For instance, the Commission's model platform uses a fill factor that does not reflect reality, industry practice or the manner in which networks are constructed. The Commission mandated fill factor is not forward-looking and does not take into account ultimate demand. More importantly, the proposed fill factor will not produce a level of plant sufficient for any ILEC to meet state commission required quality of service standards and mandated network requirements from arbitration proceedings. This makes this input *per se* unreasonable and unlawful. Another example is artificially reducing the loop length in the cluster algorithm to adjust for a defect in the platform that caused an unreasonable output. The correct procedure is to correct the platform, not jury-rig the inputs to produce a reasonable result. Similarly, the proposed use of households, rather than housing units, to design the network results in less outside plant construction and lower costs when the network is built initially. Ultimately, much higher costs will be incurred when service is requested at previously unoccupied housing units and new outside plant has to be placed. Additionally, the platform's use of only one pole size, coupled with its assumption that all poles are shared equally with another utility, understates pole structure costs. The platform also assumes that there

would be unrealistically high levels of sharing of all types of structures and ignores zoning requirements and other factors that require a more costly plant mix than the Commission proposes. The inputs for switching, transport, and expenses are similarly plagued by costs that are too low due to assumptions that do not reflect reality. Perhaps most curious is the model's use of an allocation factor for feeder plant when the model's documentation states that is not the most appropriate approach.

The Commission correctly rejected on a tentative basis the undisclosed geocoded customer location data provided by PNR Associates, Inc., and should make its rejection of the geocoded data permanent.

For these reasons, GTE recommends that the Commission reject the input values proposed in the FNPRM, and develop company-specific values based on cost data that have been (or can be) submitted to the Commission by GTE and other non-rural companies. GTE further recommends that the input values not be finalized until the numerous problems that plague the platform are identified and solved.

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

In the Matter of	)	
	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
	)	
Forward-Looking Mechanism for High Cost Support for Non-Rural LECs	)	CC Docket No. 97-160
	)	

**COMMENTS OF GTE SERVICE CORPORATION  
AND ITS AFFILIATED DOMESTIC TELEPHONE OPERATING COMPANIES  
IN RESPONSE TO FURTHER NOTICE OF PROPOSED RULEMAKING**

GTE Service Corporation and its affiliated domestic telephone operating companies<sup>2</sup> (collectively "GTE") respectfully respond to the Federal Communications Commission's ("FCC" or "Commission") Further Notice of Proposed Rulemaking, FCC 99-120, released on May 28, 1999 ("Notice" or "FNPRM"), seeking comment on the inputs to the cost model platform (the "Platform" or "Model") adopted by the Commission in the Fifth Report and Order.<sup>3</sup>

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<sup>2</sup> GTE Alaska Incorporated, GTE Arkansas Incorporated, GTE California Incorporated, GTE Florida Incorporated, GTE Hawaiian Telephone Company Incorporated, GTE Midwest Incorporated, GTE North Incorporated, GTE Northwest Incorporated, GTE South Incorporated, GTE Southwest Incorporated, Contel of Minnesota, Inc., GTE West Coast Incorporated and Contel of the South, Inc.

<sup>3</sup> In the Matter of Federal-State Joint Board on Universal Service, In the Matter of Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC Docket Nos. 96-45, 97-160, *Fifth Report & Order*, FCC 98-279 (rel. October 28, 1998) ("Fifth Report & Order"). This docket -- CC Docket Nos. 96-45 and 97-160 -- is hereafter referred to and cited as the "Universal Service Cost Model Docket."

## I. INTRODUCTION

The Commission has devoted a significant amount of time and effort over the past several years to develop a cost proxy model for use in the federal universal service mechanism. Despite that laudable effort and with less than five months until the January 1, 2000, deadline for implementation of the federal universal service mechanism, it is clear from the FNPRM that the Commission still does not have a final cost proxy model platform or a set of input values that will generate reasonable estimates of the costs incurred by non-rural carriers to provide universal service. Absent such a platform or inputs, the Commission is without a mechanism capable of producing a sufficient and predictable universal service fund.

As explained in the Comments that follow, there are serious flaws in the methodologies that the Commission employed to develop the proposed inputs. Thus, even without analyzing each specific value, the set of inputs as a whole are unreliable and should not be adopted. Sections II and III of these Comments address in detail the continuing problems with the Platform, as well as the "global" methodological problems with the inputs. In Sections IV and V, GTE discusses many of the specific input values proposed by the Commission. GTE agrees with some of the Commission's proposals. For instance, GTE agrees with the decision to reject the use of data from PNR Associates, Inc. or any other source that has not been fully disclosed. In most cases, however, GTE disagrees with the Commission's proposals, explains the grounds for that disagreement, and suggests a remedy. Finally, in Section VI, GTE offers its position on several other universal service issues on which the Commission requested comment.

## II. MODEL PLATFORM FLAWS PRECLUDE THE ADOPTION OF ANY INPUTS

### A. Parties Cannot Be Expected To Properly Evaluate And Comment Upon The Proposed Inputs Until The Commission Has Finalized The Platform.

It is not reasonable for the Commission to expect that any interested party can provide definitive comments on the proposed input values at this time because the Commission has not yet finalized the Platform. The Commission expressly recognized in the Fifth Report & Order that the Platform was not complete, had missing parts and numerous flaws.<sup>4</sup> The Commission has issued updated versions of the Platform on a somewhat regular basis for the past six months -- 11 official versions since November 1998 -- the most recent of which was on June 2, 1999, subsequent to the Notice. Each time the Commission publishes one of these revised Platform versions on its Website, interested parties, like GTE, have had to re-examine the entire Platform in order to discern what modifications the Commission made, what new flaws were introduced, and what old flaws continue to exist. Most of the Commission's changes have dealt specifically with how the Platform uses inputs. For example:

- In the April 6, 1999, version of the Model, the recommended input for the distance limit for the cluster algorithm was changed from 18,000 to 17,000 feet. The stated reason for this change was "[s]ince the grid overlay procedure in the cluster interface module can potentially increase the distance of some customers from the cluster center, some clusters that might fall entirely within the distance limit, and therefore be served by analog plant, were being needlessly served by DLC [Digital Loop Carrier] technology."<sup>5</sup> In essence, the FCC found it necessary to manipulate an input value in order to produce what it believed was a reasonable output value based on defects in the Platform and the way it actually operates.

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<sup>4</sup> For these and other reasons, GTE (and other parties) petitioned the Commission to reconsider and vacate the Fifth Report and Order. See Universal Service Cost Model Docket, Petition of GTE For Reconsideration of the Commission's Fifth Report and Order, December 18, 1998. GTE's petition is pending.

<sup>5</sup> Design History of HCPM, History.doc (April 6, 1999).

- In the FNPRM, the Commission asserted that the trunk port input value used in earlier versions to develop both local switching and tandem investments would no longer be used to develop local switching investment.<sup>6</sup> This modification, which has yet to be incorporated in the Model, will cause the trunk port value to be used in the calculation of tandem investment only, thus understating the required investment.
- The Alternative Central Office ("C.O.") Factor, while still displayed in the Model's expense input worksheets, is no longer used to calculate switch-related expenses. If this input is no longer used in the Model, it should be removed.

Obviously, it is impossible for GTE to determine conclusively whether an input value is reasonable and appropriate unless it knows exactly how the input is used within the Model. Even AT&T and MCI WorldCom state that "without full access to the SM (Synthesis Model) platform and the customer location and 'user-adjustable' input values intended to be used by the model platform, it is difficult to determine whether the overall combination of the SM and its data will provide an accurate estimate of the forward-looking economic costs of universal service."<sup>7</sup> The Notice, however, proceeds on the faulty assumption that GTE is able to evaluate the proposed input values *before* the Commission has finalized the Platform. A cost model cannot be properly developed by simply designing, evaluating and then assembling its piece parts. The whole cost model -- final platform and inputs -- and the results it produces must be evaluated, as well as how the separate modules within the Model function in relation to each other. The ever changing versions of the Model, coupled with the lack of documentation on how the data are used within and among the modules, make such a proper analysis impossible. Indeed, when GTE analyzed the Model outputs released by the

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<sup>6</sup> FNPRM at ¶ 190.

<sup>7</sup> Universal Service Cost Model Docket, AT&T and MCI WorldCom *Ex Parte*, March 17, 1999, at p. 1.

Commission on June 17, 1999, it discovered that the modules used to produce these results were different than the modules released to the public on the FCC's Website on June 2, 1999. The scenario inputs page, which identifies the user adjustable inputs that vary from HAI Model Release 5.1 default settings, clearly shows that the switching and expense modules differ.<sup>8</sup> Consequently, the results released by the FCC are virtually meaningless to GTE, because the Commission has not released the modules used to produce them.

To achieve accurate cost estimates, both the Platform and the inputs must be correct. So long as the Commission reserves the right to change the Platform, GTE is unable to comment fully (and in some cases meaningfully) on the reasonableness of the proposed inputs. GTE must therefore reserve the right to review and comment upon all of the inputs and resultant outputs in concert with the final Platform.

**B. The Commission Must Correct All Platform Flaws Before Selecting Input Values.**

Despite eight months of nearly continuous modification by the Commission staff, the Platform still has serious flaws that preclude a complete analysis of the proposed inputs and corresponding outputs. These flaws include, but are not limited to, the following:

- The Model arbitrarily designates feeder placement investment as copper or fiber using fixed percentages that are hard-coded. This causes the Model to produce the same values for fiber feeder and copper feeder placement investment.<sup>9</sup> It is not

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<sup>8</sup> The switching and expense modules included in the version of the Model released June 2, 1999, were designated as rfcc switching io 527.xls and rfcc expense density 527.xls, whereas the switching and expense modules included in the Model that produced the results posted on June 17, 1999, were designated as rfcc switching io (hi fix version) and rfcc2 exp den no deftax 429.xls.

<sup>9</sup> HCPM Feedgrid.csv and HCPM/HAI Feeder by Cluster Workfile.

logical for a model to produce identical investment values for copper and fiber feeder placement, because the material and labor to engineer, place, and splice are markedly different. As a result, the Model produces incorrect feeder investment values and, therefore, incorrect monthly costs due to differing annual charge factors.

- The Model's use of fixed feeder percentages also produces fiber feeder placement costs in clusters and entire wire centers where there is no fiber cable.<sup>10</sup> If the Model assigns fiber feeder placement costs to a wire center, then it should also assign corresponding costs for fiber cable that is being placed. If there is no cable investment in the Model, then there should not be any corresponding investment to place the cable. This inconsistency in the Model precludes a meaningful analysis of the fiber placement and cable investment. Also, as Sprint has acknowledged, the "[c]urrent HCPM cannot support costs below the wirecenter. This is due to the fact that feeder costs are aggregated at the wirecenter and then spread equally back to each line."<sup>11</sup>
- There are inconsistencies between the Model documentation concerning Serving Area Interfaces ("SAIs") and how the Model actually operates. GTE's testing of the Model cannot produce an indoor SAI or a grid with multiple SAIs, even though the documentation indicates that the Model should place multiple SAIs, especially when the default input the FCC recommends is a maximum of two SAIs per cluster.<sup>12</sup>
- GTE's analysis reveals that the SAI sizes produced by the Model are undersized based on the number of lines in the cluster. The Model does not reflect the fact that the maximum SAI line capacity is one-half the number of pairs, adjusted for fill rates. This results in a significant underestimate of SAI investment and a network that does not function.
- The Model distorts the feeder distance and feeder costs calculated for individual clusters. In the Model, feeder and material placement costs and feeder distances for clusters are determined by multiplying the specific costs and distances for the Census Block Group ("CBG") times a Feeder Allocation Factor.<sup>13</sup> Interestingly, the Model documentation states that the use of this allocation factor in determining

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<sup>10</sup> *Id.*

<sup>11</sup> Universal Service Cost Model Docket, Sprint *Ex Parte*, October 2, 1998, at p. 2.

<sup>12</sup> HCPM Documentation (December 15, 1998) at p. 2.

<sup>13</sup> Pascal Logic Printout.pas. This factor appears to be the lines in the cluster times the feeder distance divided by the sum of the lines in each cluster times the feeder distance for each cluster in the CBG.

feeder costs and distances is not the most appropriate approach.<sup>14</sup> Yet, the Model still relies on the use of this factor.

- The format of the inputs required to run the Model's loop design module differs from the format required in other modules. For instance, pole material, labor and spacing inputs are not separate inputs in the loop design module. They are combined and included as an aerial structure placement cost per foot. In the switching module, however, these values are separate inputs. As a result and to be consistent, it is necessary for the user to map pole structure inputs between the loop design and switching modules.
- An error in the Model causes the total tandem Digital Cross-connect System ("DCS"), total Operator Service ("OS") tandem Add-Drop Multiplexer ("ADM") investment and total OS tandem investment to be overstated. The "total tandem DS3" and "total operator DS3" calculations incorrectly include the number of trunk *groups* per DS3 rather than the number of trunks per DS3. As a result, the denominators of the equations are understated, which causes the Model to overstate the DCS investment actually required.
- When the Model reports Low Density Digital Loop Carrier ("DLC") Remote Terminals, it does not report corresponding DLC lines. It is unrealistic to have DLC terminals without DLC lines. As a result, the Model's DLC investments cannot be meaningfully analyzed.
- The Model documentation defines Low Density DLC units as having a line capacity of 96 or 24 lines.<sup>15</sup> This is not consistent with the actual working of the Model. The Model counts Low Density DLCs (96 and 24 lines) on fiber as High Density DLCs.<sup>16</sup> This inconsistency prohibits complete analysis of the DLC portion of the Model.
- The various sizes of the DLC systems (2,016, 1,344, 672, 96, and 24 lines) are hard coded into the Model's software. The DLC equipment sold by vendors today offers additional modularity increments. The Model is not capable of accepting these additional requirements. Consequently, GTE is unable to use the Model to reflect the realities of its operating territories.
- The number of High Density DLCs appears to be incorrect because the number of 2,016 line unit terminals is multiplied by a factor of three for no apparent reason. Similarly, the number of 1,344 line unit terminals is multiplied by a factor of two. The arbitrary multiplication must be resolved before the Model can be meaningfully evaluated.

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<sup>14</sup> Design History of HCPM, History.doc (December 17, 1998) at p. 2.

<sup>15</sup> HCPM Documentation (December 15, 1998) at ¶ 5.2.1.

<sup>16</sup> Pascal Logic Printout.pas.

- The Model trues up residence lines, but not households. As a result, the residence line-to-household ratio is distorted. For instance, for individual clusters in GTE North-Pennsylvania, the ratio ranges from .78 to 1.15. This causes the Model to produce more households than residence lines in the three largest density zones and, as a consequence, incorrect funding levels.
- The Model logic fails to include the investment necessary to terminate all feeder pairs to the Main Distribution Frame ("MDF"). The Model applies a switch cost per-line factor to working lines that purportedly includes MDF-related costs. The Model fails to include an algorithm to capture the costs of terminating the remaining, non-working lines in the feeder cable on the MDF. This is not realistic. When a feeder cable is placed in the central office, all pairs in the cable are wired at the time of placement, not just the working pairs. Since the Model only assigns costs to the working pairs, it fails to include the costs of placing and wiring the entire cable. As a result, the Model understates MDF-related costs.
- Investment is not affected for autonomous switches greater than 10,000 lines by the switch port administrative fill factor. As a result, switch costs are understated.
- The FCC staff has proposed preliminary changes to some of the inputs in the switching module that are inconsistent with the algorithms contained in that module. The staff has proposed inputs for large switch investments that include power, while at the same time proposing inputs for small switch investments that do not include power. The Model, in its current state, can only handle one type of switch investment input – either with power included or without power included – but not both. While the FNPRM indicates that the inputs will be adjusted and certain parameters in the Model modified,<sup>17</sup> these changes were not made in the latest release of the Model.
- In the Notice, the Commission tentatively concluded "that the switch module should be modified to disable the computation that reduces the end office investment by the difference in the interoffice trunks and the 6:1 line-to-trunk ratio."<sup>18</sup> The latest version of the Model does not conform to the Commission's tentative ruling. The Model's switching module still reduces the per-line switch costs by a factor of 1/6 of the user-adjustable input dollar value for trunk ports. As a result, the Model continues to calculate switching investment incorrectly.
- The Model erroneously applies a line-to-trunk ratio for the local switching portion of the network that differs from the tandem and interoffice portions of the network. In the real world, end offices are built using line-to-trunk ratios that ensure customers will not experience blockage when trying to place a call. The characteristics of the end office are then factored into the construction of the tandem and interoffice

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<sup>17</sup> FNPRM at ¶ 157.

<sup>18</sup> FNPRM at ¶ 187.

portions of the network to ensure that all customer calls can be successfully completed. The Model does not reflect this relationship because it assumes a 6:1 line-to-trunk ratio for the local switching portion of the network, while assuming much higher line-to-trunk ratios (10:1 to 14:1) for the tandem and interoffice portions of the network. The utilization of this higher line-to-trunk ratio causes the Model to calculate insufficient electronics required to serve the trunk network. This will lead to blockage and causes the Model to produce a network that understates trunk requirements and corresponding trunk investment.

- Since its inception, the installation and operation of the Model has been problematic. For example, the past two versions of the Model could not be run when using the update.zip files provided by the FCC. In order to get the Model to run, it was necessary to copy the hmxldb.xls and hm50.mdb files from the install.zip download file. This fix was discovered only through time-consuming trial and error routines, which, unfortunately, have been necessary with many versions of the Model.
- Some files in the Model with the same file name and date inexplicably contain different content. For example, the history.doc files in the April 20, May 18, and June 2, 1999, versions of the Model all have the same date April 20, 1999, but contain different content. Updating files without updating the corresponding file name and/or date makes it difficult for the user to determine the changes made to the Model.
- The treatment of joint and common costs is an example of missing documentation, hard coded values, and unannounced changes. In the mid-March version, joint and common costs were calculated using a formula with hard-coded values. In the first version released in April, this formula was removed (without any documentation) and joint and common costs became a user-adjustable input. Finally, in the April 20 version, the formula returns, but with different hard-coded values. Again, no documentation exists as to why the change was made and from where the hard-coded values were derived.

Until these and all other Model flaws are remedied, the proposed inputs cannot be fully analyzed and should not be adopted.

### **III. THE METHODOLOGIES USED TO DEVELOP THE PROPOSED INPUTS ARE FLAWED**

The Commission has proposed groups of purportedly “national” input values that are fundamentally flawed from their inception for several reasons. First, “nationwide” inputs do not capture the cost differences between the companies that provide universal

service. Second, many inputs have been derived from rural data that bear no relation to the costs incurred by non-rural companies. That is, rather than using the wealth of ILEC data already available to the Commission, such as ARMIS data and detailed cost information filed in response to the Commission's own information requests in this proceeding, the Commission used a limited body of cost data submitted by small, rural telephone companies to the U.S. Department of Agriculture's Rural Utilities Service ("RUS"). These rural data reflect, in all material respects, costs that are significantly different than those faced by non-rural carriers. In many instances, the rural companies had no data on routine costs incurred by non-rural companies, such as costs for 26-gauge copper cable. In these cases, the Commission resorted to improper econometric regression analyses to derive the needed values. Recognizing that these derived costs were not representative of non-rural carrier costs, the Commission then invented and applied several complicated adjustments to the rural data, but to no avail. The rural data are simply not reflective of the costs incurred by non-rural LECs, and the Commission's proposed regression analyses and adjustments are flawed. As a result, the specific input values for most items of outside plant, switching, transport and expenses do not accurately reflect the forward-looking costs that non-rural carriers incur to provide universal service.

**A. The Commission Should Adopt Inputs That Are Company-Specific And Reject National Input Data.**

The cost to provide universal service varies among states, and even among geographic areas within each state. Therefore, the costs that an efficient carrier incurs to provide basic local exchange service in one area are not the same as those incurred by an equally efficient company providing service elsewhere. If the goal of the federal

universal service mechanism is to generate accurate cost estimates (and thereby a sufficient fund), then it must reflect these actual cost differences. The only way to do that is for the Model to use company-specific inputs, because only company-specific inputs reflect the geographical, operational, density and technological attributes that are implicitly included in the costs of each carrier that currently provides basic local service. Using company-specific inputs will also reflect each company's current contracts with construction and service vendors. These contracts should be considered because they reflect the parties' relative bargaining strengths, weaknesses, inventory requirements, market forces (supply and demand) and other factors.

It is wrong for the Commission to reject these realities, and rely instead on nationwide input values for a hypothetical network. The focus must be on the costs incurred to operate each ILEC's own network because ILECs have universal service obligations today. Consequently, it is the costs of the ILECs' various networks that should determine the amount of the required universal service support.

Even though the FCC claims to have selected "national or regional averages" for input values, the Model, in fact, uses many input values that are professedly neither. These inputs come from the HAI Model Release 5.0a ("HAI Model"), and are found in the Model's switching and expense modules. A sampling of them is contained in Attachment 1. These default inputs from the HAI Model are based on little more than the opinions of the engineers who helped develop that model; little or no actual

documentation exists to explain how these values were determined.<sup>19</sup> Moreover, in direct conflict with the FCC's claimed use of average values, the developers of the HAI Model's inputs have stated in numerous proceedings that its input values are *not* averages.<sup>20</sup> Indeed, the HAI Model designers (and by extension the FCC) developed scores of inputs from conversations at telecommunications conferences, HAI expert opinion and judgment, assumptions using various technical documents, and "typical values."<sup>21</sup> These input values should be rejected in favor of company-specific inputs.

If, as GTE proposes, the Commission decides to use company-specific input values, the Commission should develop those values based on data provided by the ILECs because that data already reflect the factors that the Commission is attempting to capture in input values, such as geography, demography, density and buying power.<sup>22</sup> It is not feasible to accurately isolate these intangible factors and account for them separately from material costs. It may be easy and expedient to compare raw data provided by the ILECs, calculate percentage differences, and draw conclusions, for instance, about the effect of terrain on an input value, but such a comparison cannot capture all factors embodied by the data, and thereby does not allow a truly meaningful analysis.

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<sup>19</sup> HAI Model Release 5.0a Inputs Portfolio, January 27, 1998.

<sup>20</sup> See, e.g., Before the Public Service Commission of Missouri, Direct Testimony of Thomas C. Madden on behalf of AT&T Communications of the Southwest, Inc., Docket T98-329 (June 30, 1998) at p.18.

<sup>21</sup> HAI Model Release 5.0a Inputs Portfolio, January 27, 1998.

<sup>22</sup> Should the FCC not be able to obtain company-specific information it deems necessary for the Model from publicly available information, e.g., ARMIS, it can establish a formal annual data gathering process similar to that which was established and exists with the current universal service mechanism.

If the Commission is not willing to develop company-specific inputs, the best alternative is to establish value ranges based on data gathered from non-rural carriers using a well-designed, clearly defined survey. Use of data reflecting the material prices and labor rates actually paid by non-rural carriers is superior to the FCC's efforts to force-fit rural LEC data into non-rural LEC cost studies. As explained below, the Commission's proposal to rely on the NRRI Study,<sup>23</sup> and the underlying RUS data, is unacceptable for a variety of reasons. If the cost inputs proposed for the Model are to have relevance to the forward-looking costs of providing telecommunications service in non-rural serving areas, then the data from which the inputs are derived must correspond to the companies actually serving those areas.

**B. The NRRI Study And The Underlying Rural Data Cannot Be Used As The Basis For Estimating The Forward-Looking Costs Of Non-Rural Carriers.**

GTE strongly objects to the use of the NRRI Study and the underlying RUS data as a basis for estimating the forward-looking costs of non-rural carriers for three principal reasons.<sup>24</sup> First, the RUS data are not representative of the costs incurred in non-rural serving areas, and may not even represent the costs incurred by the RUS companies. Second, the NRRI Study contains several methodological errors that render it useless for estimating the costs of any non-rural local exchange carrier. The FCC's proposals have carried forward these methodological errors and, consequently,

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<sup>23</sup> D. Gabel and S. Kennedy, "Estimating The Cost of Switching and Cables Based on Public Available Data," April 1998, NRRI 98-09 ("NRRI Study").

<sup>24</sup> In the following critique of the NRRI Study, GTE suggests several improvements to the FCC's application of the rural data. Notwithstanding these suggested improvements, the NRRI-based approach cannot accurately capture the costs of non-rural LECs.

cannot be relied upon. Third, the FCC's efforts to rehabilitate the shortcomings of the RUS data and the NRRRI Study have failed and, in some respects, compounded the existing problems. In addition to these reasons, GTE takes issue with the Commission's unexplained changes in the specification of the NRRRI Study's regression equations, and with the Commission's proposals concerning engineering, splicing and switching costs.

**1. The RUS Data in the NRRRI Study Do Not Reflect the Costs of Non-Rural Carriers and May Not Even Reflect Those of Small, Rural LECs.**

In the FNPRM, the Commission attempts to justify the use of the NRRRI Study and the underlying RUS data by noting that "the NRRRI Study provides estimates for outside plant structure and cable costs using cost data derived from construction contracts supplied by the RUS for a sample of companies that operate under various soil, weather, and population density conditions."<sup>25</sup> Even if this statement were true, it does not follow that the RUS data are representative of the costs of non-rural carriers. It is critical that samples used in a regression be representative of the companies to which the regression will be applied, since the farther one moves from the middle of the sample used, the less confidence one has in the resulting predicted values.<sup>26</sup> The NRRRI Study's authors have acknowledged the danger of using a regression of rural carrier cost data to develop costs for densely populated urban areas: "as a matter of sound econometrics . . . caution must be exercised when parameter estimates from a data set are used to forecast costs for areas that are too dissimilar to those from which the data

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<sup>25</sup> FNPRM at ¶ 74.

<sup>26</sup> R. Wonnacott and T. Wonnacott, *Econometrics*, p. 31 (1970).