

**BELL ATLANTIC DIRECT CASE  
CC DOCKET NO. 95-145**

**ISSUE A- Information Request (par. 12-14):**

**A(1) We direct Bell Atlantic to provide the dollar amounts of the dedicated video dialtone investment, dedicated telephony investment, and shared investment for the Dover Township service offering, including related capital costs and cost components.**

Attachment A(1) contains spreadsheets which show the dedicated video dialtone, dedicated telephony and shared investments for the broadcast and narrowcast channels in the Dover Township service offerings. The spreadsheets also calculate the related capital costs and cost components associated with each investment.

The video dialtone access links (direct connection and serving wire center connection) and the messaging port offerings are composed of only dedicated video dialtone investments. These investments, including related capital costs and cost components, were provided in Attachment Pre(4).

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**A(2) Bell Atlantic must also provide the total dollar amount of projected plant construction and related capital costs and cost components that will be dedicated to video or telephony or shared.**

The total projected costs for constructing the Dover Township video dialtone system were calculated from the tariff cost study (see Pre(2), above) and determined to be \$68,402,434.

Attachment A(2) shows how this projection is divided into specific rate elements and to specific system facilities and pieces of equipment. These divisions are used to provide the investment split among dedicated video, dedicated telephony/other, and shared, resulting in the following total plant construction projections:

|                  |               |
|------------------|---------------|
| Video Dialtone:  | \$ 9,561,310  |
| Telephony/Other: | \$ 13,248,028 |
| Shared:          | \$ 45,593,096 |

Related annual capital costs and cost components are also shown in the Attachment.

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**A(3) We also direct Bell Atlantic to provide a block diagram detailing the major hardware components and buildings involved in the video dialtone system from the programmer's premises to the end-user customer. This diagram should include: the signal generator and lines, fiber and coaxial lines, supertrunk transmitter, supertrunk receiver, Lightguide terminating equipment, digital cross-connects, multiplexers, serving wire center, video serving office, video distribution office, and host digital terminal.**

A block diagram detailing the major hardware components and buildings involved in the video dialtone system is provided as Attachment A(3).

In order to provide the detail specified by the Commission, a second page of the attachment details the terminating equipment<sup>17</sup> arrangements present when transmissions enter and exit locations such as central offices, controlled environmental vaults (CEVs) and point of presences.

For example, fiber between the video distribution office and the HDT location<sup>18</sup> includes fiber terminating equipment at both ends. When the transmission stream being carried is at a lower speed than the interoffice transport, the network utilizes the appropriate combination of multiplexers, digital cross connect equipment and fiber terminating equipment at both ends of the transmission path to step up or step down the transmission speeds. This is illustrated by the terminating equipment shown at the ends of the 56 Kbps transmission path between the packet switch and the HDT.

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<sup>17</sup> Lightguide terminating equipment, which is manufactured by AT&T, is one type of fiber terminating equipment.

<sup>18</sup> HDTs are located either within central offices or CEVs.

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**A(4) Bell Atlantic should also provide a detailed map of the video dialtone service area that shows the locations of the remote HDT units and provides distance measurements between the various major equipment pieces.**

Maps are provided for equipment and facilities serving approximately 60% of the Dover Township service area, corresponding to the system facilities that have been engineered to date. Approximately 1000 detailed maps showing the locations of remote HDT units and providing distance measurements between major equipment pieces are provided as Attachment A(4) which can be found in separate binders.

An additional 350 detailed maps, which are each approximately 2' x 3' in size, could not be legibly reduced and reproduced for inclusion in the filing. Full size copies of these maps are available for inspection at Bell Atlantic's offices at 1133 20th Street, N.W., Washington, D.C. Please call Marie Breslin at (202) 392-6990 to make arrangements for such inspection.

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**A(5) For each item of this list, Bell Atlantic should include the unit investment, number of units, and the resultant investment, as well as capital costs and cost components.**

Attachment A(5) provides the unit investment, number of units, and the resultant investment and cost components for the major hardware elements involved in the video dialtone system from the programmer-customer's premises to the end-user subscriber.

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**A(6) Bell Atlantic should also show what the effects on dedicated cost calculations would be if facilities that only incurred de minimis use by a second service were considered to be totally dedicated to the primary service. Specifically, we direct Bell Atlantic to consider equipment which has 10% or less of its total usage, as measured by minutes of use, from a secondary service to be wholly dedicated to the primary service.**

As discussed below, in response to Information Request A(7), Bell Atlantic does not have the ability to measure minutes of use on a component basis. Therefore, Bell Atlantic cannot identify the equipment in the Dover build that has de minimis use by video dialtone or by telephony/other services. In addition, Bell Atlantic has no reason to measure minutes of use since the system itself, as well as its specific technical components, is not cost sensitive to minutes of use.

In an effort to provide the Commission with the requested information, and recognizing that there is currently no information available regarding usage of integrated video/voice networks, Bell Atlantic explored other options for estimating the video versus telephony usage of the proposed system. As described below, Bell Atlantic used its video dialtone trial usage reports as well as public source information to estimate Dover system usage.

Bell Atlantic's reports to the Commission regarding its technical trial of asymmetric digital subscriber line (ADSL) video dialtone service in Northern Virginia included end-user usage logs reporting voice, video and data usage of their ADSL equipped lines. The averaged results of Bell Atlantic's initial, interim, and final reports show usage patterns of 69% voice, 28% video, and 3%

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data services.<sup>19</sup> These results are summarized in Attachment A(6). There is no de minimis usage here,<sup>20</sup> but if shared investments were to be allocated using this data, there would be a slight decrease to the costs filed in Bell Atlantic's tariff; 28.32% of shared costs were assigned to video dialtone in the tariff, based on the allocator developed using the ratio of directly assignable investments. Use of the ADSL based trial data is, however, an inappropriate approximation of overall usage on a broadcast system. The ADSL service provides video-on-demand "stored" programming to end-user subscribers. It is not, in its current form, a substitute for cable or over-the-air broadcast programming. In addition, these results come from a technical trial during which a limited set of programming sources were delivered over the system at no charge while technical issues were studied, tested and improved. The characteristics of this trial data, based on different services, do not reflect an adequate approximation of usage on a broadcast service platform, such as the one Bell Atlantic is deploying in Dover Township.

Another method examined as a possible proxy for system-wide usage was usage data reported in cable and telephony studies. For example, 1994 Cable Television Advertising Bureau

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<sup>19</sup> *See* Letter from Marie Breslin, Bell Atlantic, to Olga Madruga-Forti, Federal Communications Commission (dated Sept. 27, 1993), Attachment at 2; Letter from Betsy Anderson, Bell Atlantic, to James Schlichting, Federal Communications Commission (dated Oct. 24, 1994), Attachment at 2; Letter from Marie Breslin, Bell Atlantic, to James Schlichting, Federal Communications Commission (dated June 26, 1995), Attachment at 2.

<sup>20</sup> To the extent that data is considered separately from voice, the 3% usage would be considered de minimis. The result would be to increase the cost allocation to both voice and video.

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statistics<sup>21</sup> show an average of 8.3 viewing hours per cable household per day, while a 1995 Yankee Group survey<sup>22</sup> shows that the average residential telephone usage is 23.2 minutes. Based on this data, a minutes of use comparison for the system would indicate that 96% should be allocated to video and 4% to voice. Applying the de minimis criteria to this data indicates that the entire system would be allocated to video dialtone-- voice usage would be considered de minimis. Similarly, using holding times as an allocation methodology would yield the same results. The average video holding time of 120 minutes and the average telephony holding time of 7.5 minutes, would result in an allocation of 95% to video and 5% to voice.

An allocation based on usage per day or holding time per session is inappropriate, for at least five reasons.<sup>23</sup> First, it leads to absurd results; namely, it would impose all of the costs of constructing this upgraded, multi-use, integrated network on only one of the services offered over this network -- video dialtone. This approach would drive video dialtone prices to uneconomic levels that would drive away all potential programmer-customers.<sup>24</sup> Second, it does not take into account that Bell Atlantic is required by state regulatory commitments to upgrade its network to be capable of providing both advanced voice and new broadband services. Third, it fails to recognize the efficiencies of an integrated network and that all services, including voice service,

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<sup>21</sup> Cable Television Advertising Bureau (CAB), 1994 Cable TV Facts, at 20.

<sup>22</sup> The Yankee Group, 1995 Technologically Advanced Family Survey (TAF), October 1995.

<sup>23</sup> *See* Taylor Direct Case Affidavit and response to Information Request A(8) below.

<sup>24</sup> *See* Rider Declaration.

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will benefit from the service quality and maintenance and operations savings this network will provide. Fourth, as new services begin to be offered over the network, revenues from these services will also recover a portion of the network's costs. Finally, it apportions cost using an allocator that is irrelevant to actual network design or cost causation.<sup>25</sup>

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<sup>25</sup> *See* Taylor Direct Case Affidavit.

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**A(7) Bell Atlantic shall provide an estimation of the breakdown of minutes of use of shared equipment between telephony and video dialtone services.**

The equipment within the Dover Township video dialtone architecture that is jointly used to provide both video dialtone and telephony/other services are the host digital terminals the optical network units, fiber facilities and terminating equipment, drops and network interface devices. Relative minutes of use among the video and telephony/other services transported over the integrated system are not and cannot be measured by this equipment, for reasons more fully explained in response to Information Request A(8).

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**A(8) Bell Atlantic may also discuss why such a methodology based on minutes of use of shared equipment by telephony and video dialtone services is inappropriate for assigning equipment costs and why equipment, incurring only a de minimis use by a second service, should still be classified as shared investment.**

A methodology based on minutes of use of shared equipment by telephony and video dialtone service is inappropriate for assigning equipment costs because the deployment of system equipment is not cost sensitive to minutes of use. For example, HDTs are placed based on the number of telephony subscribers to be served and the average number of lines per subscriber. ONUs are placed based on the number of homes to be served and geographical distance limitations. The number of HDTs or ONUs required is not related to video or voice usage. Not surprisingly, the Dover Township system technical components do not and cannot measure relative minutes of use. A minutes of use methodology would need to rely on some form of system-wide usage proxy, which would have to be arbitrary given that there are no existing sources of commercial video dialtone data.

In addition, the concept of minutes of use is not relevant in a broadcast environment where there are no defined starting or ending points to transmissions. Unlike a voice telephone call or video-on-demand "session", which has a set start point and duration, broadcast channels will be available for viewing by end-user subscribers at any time in which the programmer-customer is offering programming or information services.

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Finally, the inappropriateness of using minutes of use to measure an integrated video dialtone system has been documented by others. For example, Robert M. Pepper,<sup>26</sup> head of the Commission's Office of Plans and Policy, explored the differences between traditional voice telephony and broadband video and noted that:

"The notion of trying to set prices based on some measure of relative use becomes even more absurd if they are based on a combination of throughput and actual minutes of use patterns -- the average residential telephone is used only about 23 minutes each day while the average television set is on approximately seven hours daily. Thus, if relative use is based on time and throughput, the \$15.00 per month basic video charge would translate into flat rate telephone service of one-tenth of a cent per month."<sup>27</sup>

Mr. Pepper also observed:

"[L]ocal telephone service is priced at a penny a minute -- the marginal cost of an intraLATA call -- a two hour movie would cost \$843.75 just for transmission."<sup>28</sup>

Similarly, Dr. William Taylor has explained that any allocator that assigned fixed common costs to video dialtone service, such that the sum of the directly assigned incremental and allocated common costs exceeded the price at which the service could be sold in the market, would be unreasonable because all customers would be better off if video dialtone were supplied at a lower price.<sup>29</sup>

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<sup>26</sup> Through the Looking Glass: Integrated Broadband Networks, Regulatory Policies, and Institutional Change, 4 FCC Rcd 1306 (1988).

<sup>27</sup> *Id.* at ¶ 60 (citation omitted).

<sup>28</sup> *Id.* at ¶ 59.

<sup>29</sup> Taylor Direct Case Affidavit.

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**ISSUE B: Do Bell Atlantic's rates reflect the incremental costs of shared primary plant caused by its decision to offer video dialtone service in Dover Township, New Jersey?**

Yes, Bell Atlantic's rates do reflect the incremental costs of shared primary plant caused by its decision to offer video dialtone service in the service area.

Since the video dialtone access link, serving wire center connection and messaging port rate elements utilize network facilities that carry only video dialtone service, there is no shared primary plant associated with these rate elements. Broadcast and narrowcast channels, however, utilize network facilities that jointly carry video dialtone and other services, including voice services.

As required by the Commission's Reconsideration Order,<sup>30</sup> Bell Atlantic included in its direct costs of broadcast and narrowcast channels the incremental costs associated with shared primary plant. The appropriate amount of incremental investment in shared primary plant was determined by first identifying the shared primary plant necessary to provision the network. Incremental shared plant associated with video dialtone was determined by considering the technical and functional subelements of each shared network component. Any subelement that would not have been deployed on the integrated system if video dialtone was not to be provisioned over the system was categorized as incremental shared primary plant associated with video dialtone. Incremental shared plant associated with voice service was categorized in the

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<sup>30</sup> Video Dialtone Reconsideration Order, ¶¶ 217-20

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same manner. The incremental shared plant investments associated with video dialtone were directly allocated to video dialtone service.

The following investment components are the video dialtone-related incremental shared primary plant investments associated with the shared components of the integrated, joint-use network:

- Host digital terminal (HDT) - The HDT distributes video signals to end-user subscribers and contains the cross-connect function used to provision telephony dial tone line service. Incremental shared plant investments in the HDT consist of the central processing card utilized for the video dialtone portion of the system, the supertrunk receiver cards and the connecting cables between supertrunk receiver cards. (These components are described in more detail in response to Information Request B(5).)
- Optical Network Unit (ONU) - The ONU is located at the curb or attached to a telephone pole and separates the video and voice signals for delivery to each end user subscriber's premises. The incremental shared plant investment in the ONU consists of the video termination kit which interfaces with the coaxial cable video dialtone transport stream.
- Drop - The drop consists of coaxial and twisted pair cabling provided between the ONU and the network interface device, necessary to transport video and voice signals from the ONU to the end-user subscriber's premises. The incremental shared plant investment in the Drop consists of aerial and buried coaxial cable with associated poles and drop duct.

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- Network Interface Device - The network interface device represents the network demarcation point at the end-user subscriber's premises. Incremental shared plant investment consists of an adjunct modular plug which is added to the existing telephony interface device, allowing the integrated device to handle both video dialtone and telephony services.

This methodology is also explained in the Jackson Reply Affidavit, previously provided here in Attachment A.

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**ISSUE B- Information Request (par. 17-19):**

**B(1) Bell Atlantic must submit the dollar amount of the shared investment used to provide video dialtone and telephony services on a joint or common basis in Dover Township, as well as related capital costs and cost components.**

Attachment B(1) provides the investments and cost components associated with the video dialtone equipment that is common to the provision of video dialtone and telephony services.

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**B(2) Bell Atlantic must submit the projected shared costs that will be incurred in completing and operating the system, as well as related capital costs and cost components.**

As discussed in response to Information Request A(2) above, the total projected shared costs that will be incurred in constructing the system are: \$45,593,096.

Total projected operating costs associated with the shared network investments can be calculated from the information provided above, as Attachment B(1), by adding the maintenance and administration components of the annual costs. As shown in Attachment B(2), annual operating costs for shared components is projected to be \$2,957,369.

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**B(3) Bell Atlantic must submit this information for the signal generator and lines, fiber and coaxial lines, supertrunk transmitter, supertrunk receiver, lightguide terminating equipment, digital cross-connects, multiplexers, serving wire center, video serving office, video distribution office, and host digital terminal. Bell Atlantic should explain the methodology used to derive these amounts.**

The requested information was provided within Attachment B(2). Bell Atlantic's cost study methodology is explained in the response to Information Request Pre(4).

There are no shared investments associated with the signal generator and lines or the serving wire center categories listed in the Commission's request. These categories of investment are associated with the video dialtone access link and the serving wire center connection elements of the system, which are video dialtone only elements.

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**B(4) The booked portion of the shared investment should appear in subsidiary accounting records at the Part 32 level.**

As discussed in more detail in response to Information Request Pre(5), all plant investment associated with the Dover Township deployment is currently charged to Part 32.2003 Account, "Total Telecommunication Plant Under Construction". Subsidiary records will be created once the investment is moved to Part 32.2001 Account, "Telecommunications Plant in Service" in accordance with the requirements of Part 32.2000 (e)(4).

The booked portion of the actual shared investment--not shared investments associated with cost study projections on which the tariff is based-- will be appropriately reflected in subsidiary accounting records once the system is in service.

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**B(5) Bell Atlantic must also show what portion of these shared cost and cost components are (1) incrementally caused by the provision of video dialtone service, (2) incrementally caused by the provision of telephony services, or (3) unidentifiable as either (1) or (2).**

None of the costs identified as shared are incrementally caused by the provision of video dialtone service or by the provision of telephony. As explained in response to Issue A and Issue B above, Bell Atlantic categorized equipment as video, voice or shared based on its functions. Investments incrementally caused by the provision of video dialtone were directly assigned to video dialtone, investments incrementally caused by the provision of telephony services were directly assigned to voice, and investments unidentifiable as either were assigned to shared.

Attachment B(5) is a listing of the video dialtone system's shared equipment by component subsystem, categorized as incrementally caused by the provision of video dialtone service, by the provision of telephony services, or unidentifiable as either.

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**B(6) Bell Atlantic should provide a technical and detailed functional description of the broadband network that would be deployed without the video dialtone system. In particular, Bell Atlantic should provide the costs of a HDT, and ONU, drop facilities (loop facilities between the ONU and the end-user premises), and quad current limiter, for such a broadband system without video dialtone capabilities.**

As explained in response to Issue C, Bell Atlantic has chosen to deploy a fully integrated broadband system in Dover Township using a fiber-to-the-curb architecture. Bell Atlantic is deploying facilities that will allow expected demand for both narrowband and broadband services of many types to be met over a reasonable timeframe. Based on the vendors and architecture chosen for this system, the broadband network that would be deployed without video dialtone is essentially the same system, without the video-only sub-components that allow for video distribution over the integrated system.

A significant amount of the investment in a joint use, integrated network is appropriately characterized as shared because it is required by each service on the network but is not used exclusively by any one service. This is true for the integrated components of the Dover system as follows:

- The host digital terminal (HDT) in the non-integrated system would still be required to provide the cross connect function used to provision dial tone line service. In fact, the provision of telephony service acts as a limiting factor in engineering the efficient deployment of HDTs. Each HDT can serve a maximum of 378 voice lines and 512 video connections. The HDT would be composed of the same hardware configuration and administration and operations systems, as well as all of the powering, fans, and

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memory/control subcomponents that are deployed when an HDT handles video dialtone as well as telephony traffic.

- The optical network unit (ONU) in the non-integrated system would still be required to receive input from the HDT, convert it from optical to electrical signals and send the voice traffic for distribution over the copper cable drop. The ONU would also be necessary to receive powering from the quad current limiter to provide ringing functionality at the subscribers' telephones. The ONU would be composed of the same hardware and sub-components as deployed when an ONU is used to provide both video dialtone and telephony services.
- The Quad Current Limiter (QCL) distributes and monitors network power to the ONU. As discussed above, the primary requirement for QCL powering comes from the need to extend ringing functionality to end-users' premises equipment.
- The Drop facilities in a non-integrated system would no longer include coaxial cable drop wires, however, the required drop duct and trenching would be the same as that required for an integrated video dialtone/telephony system.

A telephony-only system would not, however, include any of the equipment previously included as video-only equipment, namely the ATM edge device, supertrunk transmitter equipment, video administration module and transport system, or the fiber connections from the video distribution office to the system's host digital terminals (HDTs). Within the integrated components of the system, described above, there would be no need to deploy any sub-

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component useful only for video distribution. These video-only sub-components are described in more detail in response to Information Request B(5) above.

The costs of an HDT, ONU, drop facilities and quad current limiter for a voice-only broadband system are provided as Attachment B(6). As is illustrated in the Attachment, the deployment of a non-integrated system would force the telephony services to recover 100% of the shared network investments of the broadband system.

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**B(7) Bell Atlantic should also describe the differences, if any, between the equipment used in the broadband network deployed in Dover Township and a broadband network without video dialtone service and the effect of such differences on cost.**

The differences between the equipment used in the broadband network deployed in Dover Township and a broadband network without video dialtone service and the effect of such differences on cost are provided in response to Information Request B(6).