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February 27, 2004

Ms. Marlene Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW, TW-A325  
Washington, DC 20554

***Re: CC Dkt. 02-6; Schools and Libraries Universal Service Support  
Mechanism***

Dear Ms. Dortch,

On February 27, 2004, the undersigned, Harry Cook, and Eugene Taylor, of BellSouth, Ellen Blackler of SBC, Clint Odom and Dennis Robins of Verizon, and Norina Moy of Sprint, met with Narda Jones, Kathy Tofigh, Greg Lipscomb, and Jennifer Schneider of the Wireline Competition Bureau. The purpose of the meeting was to discuss recent Orders and guidance regarding the eligibility of dark fiber. All material used during the meeting is attached.

This notice is being filed pursuant to Sec. 1.1206(b)(2) of the Commission's rules. If you have any questions regarding this filing please do not hesitate to contact me.

Sincerely,



Mary L. Henze

cc: N. Jones  
K. Tofigh  
G. Lipscomb  
J. Schneider

February 27, 2004

## Dark Fiber Issues

**I. Definitions – Some of the confusion surrounding this issue may be due to inconsistent use of the terms ‘dark’, ‘dry’ and ‘unlit’ fiber.**

FCC orders speak to **‘unlit dark fiber’** and use the terms unlit and dark interchangeably. (paragraphs 76 and 77 and associated footnotes in December Order).

In the TRO, the Commission defines dark fiber in the context of **dark fiber loops** as ‘fiber within an existing fiber optic cable that has not yet been activated through optronics to render it capable of carrying communications services.’ (51.319 (a)(6)) The TRO defined **dark fiber transport** as “unactivated optical interoffice transmission facilities”. (51.319 (e)(3))

A useful general definition of dark fiber that we believe is consistent with the FCC’s intent is from Newton’s Telecom Dictionary (December 1999) is:

Unused fiber through which no light is transmitted or installed fiber optic cable not carrying a signal. Sometimes dark fiber is sold by a carrier without the (usually) accompanying transmission service. It’s “dark” because it’s sold without light communications transmission. The customer is expected to put his own electronics and signals on the fiber and make it light.

**Dry Fiber** is used in the industry to mean dark fiber that also has no access to electrical power.

Some of the confusion surrounding this issue may be due to inconsistent use of the terms. For instance, Erate Central distinguishes between ‘unlit’ and ‘dark’ fiber when it advises that “‘dark’ fiber is not the same as ‘unlit’ fiber. ‘Unlit’ fiber means that the fiber is not being used; ‘dark’ fiber means that the modulating electronics are provided by the user, not the carrier.” <http://www.e-ratecentral.com/darkFiberFAQ.asp>

**II. We believe that guidance offered on the SLD website on Fiber Optics is not consistent with the rules. Specifically, the FAQ states:**

**Q2. Can a service provider convert a dark fiber service to an eligible lighted fiber service by installing a copper-to-fiber converter at applicant sites? (A copper-to-fiber converter is also known as a “TX-to-FX converter,” and sometimes known as a “GBIC.”)**

**A copper-to-fiber converter that provides electronics that modulate the fiber cable can meet the definition of optical equipment that is the single basic terminating component of a lighted fiber service as described below:**

[I]t is appropriate to provide Priority One discounts on service provider charges to recoup the cost of leasing optical equipment to light fiber, when that optical equipment is the single basic terminating component of an end-to-end network and it is necessary to provide an end-to-end telecommunications or Internet access service. [The FCC] reach[es] that conclusion even though the optical equipment on the customers' end, as a technical matter, is dedicated to the customer's sole use. Third Report and Order, FCC 03-323, released December 23, 2003, para. 49

<http://www.sl.universalservice.org/reference/EPSSFAQ-c.asp>

1. Dark Fiber combined only with a copper-to-fiber converter will not be a telecommunications or internet access service. To be functional, the service must also include a means to light the fiber and other functionality.

- There are 3 elements that must be in place to make dark fiber actually transmit information. You must have 1) the dark fiber, 2) copper-to-fiber converter equipment which translates the optical signal to an electronic signal, 3) the modulator which lights the fiber. (In addition to this equipment, in order to make dark fiber actually useful, additional elements - monitoring, maintenance and management - must be available.)
- Without the modulator which actually lights the fiber no signal can be sent or received.
- The converter can be a stand alone piece of equipment or included in a higher level piece of equipment that also lights the fiber.
- TX-to-FX converters, that simply convert the signal but do not light the fiber, combined with dark fiber, should not be eligible.

2. If an applicant previously purchased dark fiber , and now seeks to convert that contract to an end-to-end Priority One service, the Tennessee tests should apply.

- The service must meet all criteria of the TN test (recognizing the modification made in the December 2003 Order that a single piece of basic terminating equipment can, as a technical matter, be dedicated to a customer's sole use.)

3. A TX-to-FX converter may be a 'single basic terminating component', but it must have a signal to terminate. Without equipment to light the fiber, there is no signal.

4. If an applicant previously purchased dark fiber, and now seeks to convert that contract to an end-to-end Priority One service, the conditions for a minor contract modification are unlikely to be met.

- The price of the equipment necessary to light the fiber and convert the optical signals is likely to be too high to meet the test for a minor contract modification. (e.g., Basic stand alone 10-100 Mbps media converters are about \$600 - \$1,000; about \$2,500 in a chassis with power and management. GBICs run about \$1000 for medium haul (10km or less); \$3,000 for long haul (40KM) without any supporting equipment)
- Annual basic maintenance cost typically is about 15% of the cost of the equipment.
- Monitoring and management would also be an additional cost.
- If it is not a minor contract modification, it must be rebid.

**III. Guidance offered by Erate Central through its website is not consistent with the rules.** Erate Central states:

“As a result of the eligibility change, an Erate applicant currently receiving dark fiber services under a long-term contract must either convert the contract to cover a lit fiber system, with the necessary modulating electronics being provided (i.e., owned and maintained) by the carrier, or forego E-rate discounts on the service beginning on July 1, 2004.”

Erate Central goes on to advise that

The use of the term 'single basic terminating component' suggests, but does not explicitly say, that basic (and generally low cost) TX to FX converters (e.g., Cisco's GBICs) would qualify as the minimum modulating electronics. Pending FCC or SLD guidance to the contrary, applicants can assume that, if such converters are provided by the service provider the service will not be deemed an ineligible dark fiber system.

Erate central also advises in its Q and A: “2. Can more than the minimum modulating electronic components be provided to an applicant as part of a carrier's service? Yes. But

such additional equipment will be subject to the FCC's Tennessee Decision tests.”  
<http://www.e-ratecentral.com/darkFiberFAQ.asp>

1. Again, dark fiber combined only with a converter will not be a telecommunications or internet access service. It must also include a means to light the fiber.

- A GBIC is a card and can not function stand alone. It needs to be installed in a device (switch, router, etc) for power, logic control, timing monitoring/management, etc.

2. Equipment that will light fiber as well as convert optical signals is generally not low cost, and contracts that are modified to include leases of such equipment may not be able to meet the criteria for a minor contract modification.

3. All equipment associated with an end-to-end priority one service must meet the TN test, including any TX-to-FX converter.

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**C. Fiber Optics**

**Q1. "Dark fiber" service is not eligible in Funding Year 2004. If an applicant has a contract that includes dark fiber, may the applicant trade-in components that it owns to the service provider so that the service provider can use these components as a part of its provision of a lighted fiber service?**

Yes, but care must be taken to ensure compliance with FCC rules:

In cases in which a school or library has previously purchased equipment to light fiber, such equipment may be traded-in to the service provider and leased back by the applicant. The applicant may not use the credit for the trade-in to pay its non-discounted portion of the services. Such a contract modification would be deemed a minor contract modification under section 54.500(g) of the Commission's rules if this was within the scope of the original contract and the change has no effect or negligible effect on price, quantity, quality, or delivery under the original contract. For instance, such a change could fit within the minor contract modification rule if the original contract was for the provision of high bandwidth transmission capability. Third Report and Order, FCC 03-323, released December 23, 2003, para. 76, footnote 155

If the equipment being traded-in was purchased with E-rate funds, there are additional requirements for the trade-in that are described in the section of these Frequently Asked Questions labeled "Transfer or Trade-in of Components."

**Q2. Can a service provider convert a dark fiber service to an eligible lighted fiber service by installing a copper-to-fiber converter at applicant sites? (A copper-to-fiber converter is also known as a "TX-to-FX converter," and sometimes known as a "GBIC.")**



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A copper-to-fiber converter that provides electronics that modulate the fiber cable can meet the definition of optical equipment that is the single basic terminating component of a lighted fiber service as described below:

[I]t is appropriate to provide Priority One discounts on service provider charges to recoup the cost of leasing optical equipment to light fiber, when that optical equipment is the single basic terminating component of an end-to-end network and it is necessary to provide an end-to-end telecommunications or Internet access service. [The FCC] reach[es] that conclusion even though the optical equipment on the customers' end, as a technical matter, is dedicated to the customer's sole use. Third Report and Order, FCC 03-323, released December 23, 2003, para. 49

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## Dark Fiber Conversion FAQ

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Overview: In September 2003, the FCC announced that dark fiber transmission services would no longer be eligible for E-rate discounts as of FY 2004. Dark fiber was defined as fiber optic cable for which the service provider has not provided modulating electronics (Note: dark fiber is not the same as unlit fiber. Unlit means that the fiber is not being used; dark means that the modulating electronics are provided by the user, not the carrier.)

As a result of this eligibility change, an E-rate applicant currently receiving dark fiber services under a long-term contract must either convert the contract to cover a lit fiber system, with the necessary modulating electronics being provided (i.e., owned and maintained) by the carrier, or forego E-rate discounts on the service beginning July 1, 2004.

To date, neither the FCC nor SLD has fully detailed the steps an applicant must take to convert an ineligible dark fiber system to an eligible lit fiber system. The two key questions are: (a) what is the minimum modulating electronics that must be provided by the carrier; and (b), what procedures must be followed to modify a contract?

In the absence of more formal instructions, this set of Frequently Asked Questions is designed to provide preliminary guidance on the dark fiber conversion process. It is based on a combination of formal and informal information from the FCC and SLD, and on what we hope is good E-rate common sense. Applicants should be aware that the conclusions expressed herein are solely those of E-Rate Central. Applicants should continue to check the SLD web site for future announcements on this subject.

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[Dark Fiber FAQs \(rev 1/5/2004\)](#)

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1. **What is the minimum configuration of modulating electronics that could be**

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**provided by a carrier to assure that a fiber optic service would not be considered an ineligible dark fiber system?**

The FCC's recently released Third Order (FCC 03-323) states:

□ it is appropriate to provide Priority One discounts on service provider charges to recoup the cost of leasing optical equipment to light fiber, when that optical equipment is the single basic terminating component of an end-to-end network and it is necessary to provide an end-to-end telecommunications or Internet access service. □ [Paragraph 49]

The use of the phrase □single basic terminating component□ suggests □ but does not explicitly say □ that basic (and generally low cost) □TX to FX Converters□ (e.g., Cisco's □GBICs□) would qualify as the minimum □modulating electronics.□ Pending FCC or SLD guidance to the contrary, applicants can assume that, if such converters are provided by the service provider, the service will not be deemed an ineligible □dark fiber□ system.

In some manufacturers' product lines, the TX to FX conversion function is integrated into larger pieces of equipment. In this case, the first inline piece of equipment interfacing with a fiber optic cable should be considered the □modulating electronics.□

**2. Can more than the minimum modulating electronic components be provided to an applicant as a part of a carrier's service?**

Yes, but such additional equipment will be subject to the FCC's Tennessee Decision tests (i.e., it will not necessarily be considered part of a Priority One service). Indeed, the following footnote in the FCC's Third Order suggests that additional equipment will be considered Priority Two:

□To the extent an applicant seeks to lease multiple terminating components, one would be deemed eligible for funding as a Priority One service and the remainder would be eligible for funding as Priority Two internal connections.□ [Footnote 91]

Discounts on Priority Two equipment, whether

provided by a carrier or owned by the applicant, are available only as Internal Connections services.

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### 3. To convert dark fiber to lit fiber, may an applicant sell, trade-in, or otherwise transfer previously purchased modulating electronic components to the carrier?

Yes, but there are limitations on how the credit for such a transfer may be utilized. A footnote in the FCC's Third Order states, in part:

In cases in which a school or library has previously purchased equipment to light fiber, such equipment may be traded-in to the service provider and leased back by the applicant. The applicant may not use the credit for the trade-in to pay its non-discounted portion of the services.  [Footnote 155]

This guidance raises several important questions, namely:

- a. Do transfer limitations apply to all equipment, or only to equipment purchased by the applicant with E-rate support?

Although the FCC's footnote does not make this distinction, applicants should assume that only the transfer of equipment that was originally purchased with E-rate support is affected.

- b. At what price may the equipment be transferred?

The FCC Order is silent on this point. Based on discussions of this and related issues with the SLD, we believe that the transfer price for E-rate supported equipment must reflect  fair

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market value, and that there is a rebuttable presumption that fair market value can be defined by a three-year depreciation schedule (i.e., equal to the original purchase price less one-third for each year the equipment has been in service).

- c. If the credit cannot be applied to the non-discounted portion of the applicant's services, how should it be applied?

Although the FCC has not clarified this point, we believe that the underlying principle of the restriction is that, if equipment was purchased with E-rate support, a portion of its sales price should be credited back to the E-rate fund. Again, based on previous discussions with the SLD, the easiest way to do this is to credit the transfer price to pre-discount cost of the fiber transmission services in the year of sale. Suppose, for example, that the recurring cost of transmission services is \$1,000 per month (or \$12,000 for the year), and that the fair market value of the equipment transferred is \$3,000. Then, the applicant should only apply for discounts that year on \$9,000 (the annual service cost minus the equipment value). In this way, E-rate discounts for the year are effectively reduced by the discounted portion of the transferred equipment's sales price.

- d. Does the carrier have to buy the used modulating equipment, or may the carrier provide new equipment?

There appears to be no prohibition barring the carrier from providing new modulating electronics, but the added cost of this solution may affect the negligible price factor discussed below in FAQ # 4.

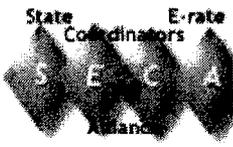
- e. If the carrier provides new electronics, may the applicant transfer the older equipment to other locations or sell it?

Generally, equipment originally purchased with E-rate discounts as Internal Connections cannot be sold or transferred. The FCC's new Third Order explicitly prohibits the sale or transfer of equipment purchased with discounts from the universal service program

in consideration of money or anything else of value for a period of three years after purchase.

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### 4. If an existing dark fiber system is to be converted to a lit fiber system, does the underlying contract have to be reflected in a Form 470 and re-bid?

Contracts for dark fiber conversions do not have to be re-posted and/or re-bid if: (a) state and local procurement rules do not require re-bidding; and (b), under E-rate rules, the required contract modifications are deemed  minor.  A footnote in the FCC's Third Order states, in part:

a contract modification would be deemed a minor contract modification under section 54.500(g) of the Commission's rules if this was within the scope of the original contract and the change has no effect or negligible effect on price, quantity, quality, or delivery under the original contract.  [Footnote 155]

The FCC has not clearly defined either contract  scope  or  negligible effect  but, given at least one Commissioner's separate comments on the dark fiber problem, we would not expect overly restrictive interpretations. As a general rule, if recurring service charges remain unchanged, or change by no more than a few percentage points, we believe contracts will not have to be re-bid.

If the conversion entails significant changes in the  price, quantity, quality, or delivery  of services, then the applicant must post an appropriate Form 470, re-bid the contract under state, local and E-rate rules, and sign a new contract or contract addendum.

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### **substitution request?**

If the conversion to a lit system takes place effective July 1, 2004, and the applicant's funding request for FY 2004 properly requested funding for a lit system, then no service substitution is required. In this case, there is no substitution.

The timing of the contract modification, however, is important. If a dark fiber system was funded for FY 2003, and if the system is being converted to a lit system during FY 2003, then at least technically (although probably not practically) a service substitution should be requested to assure funding for the remainder of FY 2003. The basis for this disclaimer is another footnote in the FCC's Third Order stating:

that a substitution that constitutes a minor contract modification under our rules will not automatically meet the requirements of our service substitution rule.

### **6. If a dark fiber system is not converted to a lit fiber system until July 1, 2004, what impact will there be on an applicant's E-rate funding for FY 2003 or earlier?**

There should be no impact. The new rule on dark fiber ineligibility is effective only for FY 2004 and ensuing years. Dark fiber services, meeting other E-rate rules for telecommunications (or Internet) services, were and are eligible through the end of FY 2003.

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